



CWM ENVIRONMENTAL LTD

NANTYCAWS LANDFILL SITE ANNUAL COMPLIANCE REPORT 2021

CP3735PB





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LIMITATIONS

1. INTRODUCTION

1.1. TERMS OF REFERENCE

- 1.1.1. This report has been produced by WSP on behalf of CWM Environmental Ltd and comprises the 2021 Annual Compliance Report for the Nantycaws Landfill Site, Carmarthenshire (the site).

1.2. BACKGROUND

- 1.2.1. Nantycaws Landfill Site is situated approximately 8.0km east of Carmarthen and 1.5km south east of Nantycaws in a rural setting. It is operated by CWM Environmental Ltd and only accepts non-hazardous waste.
- 1.2.2. The site has developed in a northerly direction and comprises seven (7 no.) cells, of which Cell 1 to Cell 5 (corresponding to Phase 1 and Phase 2) have been completed and capped. Phase 3, comprising Cell 6 and Cell 7, is currently operational but has not accepted waste since 2017 and is covered with a temporary cap. The site layout and configuration of the cells is shown in Figure 1.
- 1.2.3. The site has the following monitoring infrastructure:
- 16 combined groundwater and gas monitoring boreholes;
 - 2 groundwater monitoring boreholes;
 - 5 under-drainage monitoring points;
 - 10 gas monitoring wells;
 - 6 leachate monitoring points; and
 - 7 surface water monitoring locations.
- 1.2.4. The monitoring points are shown in Figure 1.
- 1.2.5. Due to the on-going Covid-19 Pandemic the chemical testing laboratory has experienced issues with resourcing and meeting testing deadlines. This has led to a number of instances where Limits of Detection (LOD) have varied and / or compliance with holding times have been exceeded. During 2021, the number of instances where incidents occurred was significantly reduced following a review of the issues that occurred during 2020 and we aim to reduce it further in 2022.

1.3. SCOPE OF WORKS

- 1.3.1. This report has been produced in accordance with points (a) and (j) as listed in Section 4.2.1 of Environmental Permit No. CP3735PB and its subsequent variations, hereafter referred to as “the Site Permit”. Specific reference has been made to the requirements within Compliance Assessment Report (CAR) reference 4547 from Natural Resources Wales (formerly Environment Agency Wales), dated 1st May 2012.

1.4. LIMITATIONS

- 1.4.1. This report is presented to CWM Environmental and Natural Resource Wales (NRW) with respect to the 2021 Annual Compliance Report for the site and may not be used or relied on by any other person or by the Client in relation to any other matters not covered specifically by the scope of this Report.

No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party. WSP cannot be held liable for third party information. Full details of the limitations are provided as Appendix D.

2. SITE SETTING

2.1. TOPOGRAPHY AND DRAINAGE

- 2.1.1. The site lies within the catchment of the Afon-y-Bantwen, which is approximately 1.2 km from the southern margin of the site at its closest extent. The site is effectively a land raise and was constructed on gentle southerly sloping land with approximate ground elevations of between 140 mAOD (metres Above Ordnance Datum) in the north, and 125 mAOD in the south.
- 2.1.2. Two small surface watercourses (little more than ditches receiving surface water runoff from the site) are present along the south eastern and south western margins of the site, both of which flow into the Afon-y-Bantwen (locations of these features are shown on Figure 1).

2.2. GEOLOGY AND HYDROGEOLOGY

- 2.2.1. The bedrock beneath the site comprises the Devonian aged Old Red Sandstone Formation. This unit forms the main water-bearing strata beneath the site and is classified as a Secondary A Aquifer according to the published 1:100,000 Groundwater Vulnerability Map (Map Sheet 35). Generally, the waters within the Old Red Sandstone Formation have low trace metal concentrations, but small areas can be anoxic and as a result may have elevated concentrations of certain trace metals such as iron or manganese.
- 2.2.2. The Old Red Sandstone Formation is overlain in places by unconsolidated drift deposits of variable thickness. These predominantly comprise stiff glacial till (formerly Boulder Clay), however some water-bearing granular horizons are present, possibly representing esker deposits (Fluvioglacial Deposits). These are laterally discontinuous but may be hydraulically linked to the underlying Devonian Old Red Sandstone Formation.
- 2.2.3. The site is located within a groundwater discharge area which provides base flow to the adjacent surface water features.

2.3. LANDFILL CONSTRUCTION

- 2.3.1. Construction of the landfill has progressed in three (3 no.) phases comprising seven (7 no.) cells:
- Phase 1 (Cell 1);
 - Phase 2 (Cell 2 to Cell 5 inclusive); and
 - Phase 3 (Cell 6 and Cell 7).
- 2.3.2. Phase 1 and Phase 2 have been completed and capped. Phase 3 is currently covered with temporary polythene cover to limit water infiltration and leachate production.
- 2.3.3. Phase 1 was constructed more than 25 years ago. It was not constructed as a fully contained facility and has no engineered liner. This part of the site is a 'closed' landfill and is subject to a different environmental permit.
- 2.3.4. Phase 2 and Phase 3 of Nantycaws Landfill Site are contained by engineered linings. The base and sides of Phase 2 consist of a high-density polyethylene (HDPE) geocomposite liner (GCL). This is underlain by an engineered geological barrier comprising reworked, locally sourced glacial material, approximately 1.0 m thick.

- 2.3.5. Phase 3 has a composite liner comprising 'Trisoplast' (9.0 cm of bentonite-enriched sand) underlain by an engineered geological barrier 0.5m in thickness, also formed from engineered glacial till.
- 2.3.6. A groundwater drainage system was incorporated below the base of Phase 1 and below the GCL of Phase 2 and Phase 3. This comprises a series of collection drains which drain by gravity to the south, with finger drains extending to individual seepages that were present within the undeveloped ground. This system currently discharges to the surface water ditches.
- 2.3.7. Groundwater levels around the site confirm a general southerly movement of groundwater on the site (Figure 1).

2.4. LEACHATE MANAGEMENT

- 2.4.1. All leachate from the three (3 no.) phases is pumped to a Leachate Holding Lagoon to the north of Cell 1 where it is aerated before being tankered off-site for disposal. An automated leachate extraction system was installed within the leachate sumps and the retrofitted in-waste monitoring wells in Cell 1 to Cell 5 (M1A to M4B and LMP5A and 5B), which was commissioned in January 2013. The system uses submersible pumps, which are triggered by float switches, positioned at pre-determined levels.
- 2.4.2. Leachate wells are monitored at sumps installed into each cell. During construction of the early phases of the site, Cell 1 was connected to Cell 2 via a pipe and similarly that Cell 3 is now hydraulically connected to Cell 4. These features are illustrated on Figure 1.
- 2.4.3. Cell 7 in Phase 3 of the landfill was constructed in March 2014 in which the monitoring wells Cell 7 Sump, LMP7a and LMP7b were installed. These have been added to the routine monitoring round and the results from Cell 7 Sump included within this report.

3. MONITORING REQUIREMENTS

3.1. PERMIT REQUIREMENTS

- 3.1.1. The monitoring considered in this report was undertaken by CWM Environmental Ltd, in accordance with the requirements in Section 3.6.1 of the Site Permit, detailed within the site *Environmental Monitoring and Management Plan (EMMP)*¹. The Site Permit refers to 'trigger levels' and 'control levels' (also referred to hereafter as compliance limits) derived from a Hydrogeological Risk Assessment (HRA) prepared for the site in 2006 and reviews of the HRA in 2014 and 2017². The Site Permit was subsequently updated by Permit Variation No. EA/EPR/CP3735PB/V004 following submission and agreement of improvement conditions to Natural Resources Wales (NRW). This resulted in a change to the compliance limits concentrations for diethylphalate and Mecoprop³⁴. This report refers to 'compliance limits' as the greater of the trigger and control concentrations.

3.2. LEACHATE

- 3.2.1. The requirements for monitoring of leachates included within the Site Permit are summarised in Table 3-1. Monitoring is required at six (6 no.) locations, with different suites required at monthly, quarterly and annual frequencies. The locations of the monitoring points are shown on Figure 1. The leachate pond monitoring point was decommissioned in June 2014 and therefore no results for this are contained in this report.
- 3.2.2. Compliance limits specific to individual cells are included within the HRA (2006), and the relevant determinands are highlighted in bold text within Table 3-1.

¹ Parsons Brinckerhoff (2012). Nantycaws Landfill Site Environmental Monitoring and Management Plan. Permit No. CP3735PB. Issue No. 4, March 2012.

² SLR (2006). Nantycaws Landfill Site. Hydrogeological Risk Assessment. SLR Report Ref 407.0610.00011/HRA, May 2006. Parsons Brinckerhoff (2014 and 2017). Nantycaws Landfill. Hydrogeological Risk Assessment – Four Yearly Review September 2014 and October 2017.

³ SLR (2008). Nantycaws Landfill Site. Application for a Permit Variation, Reference DP3134XD A(1) PPC Installation. Appendix SS3: Hydrogeological Modelling Report. SLR Report Ref 407.0610.00011, June 2008.

⁴ Environment Agency determination of Variation Application EPR/CP3735PB/V004, 23/09/2009.

Table 3-1 Leachate Monitoring Undertaken During 2021

Determinand	Monitoring Frequency	Monitoring Points
Ammoniacal Nitrogen as N	Monthly	Cell Sump 1 /2, Cell Sump 3 /4, Cell Sump 5, Cell sump 6, Cell Sump 7 and Leachate Holding Lagoon*
Chloride	Monthly	
Electrical Conductivity	Monthly	
Depth of leachate above the base of the liner	Monthly	
Mecoprop (pesticide)	Quarterly	
Diethylphthalate	Quarterly	
Dichloromethane	Quarterly	
4–methlyphenol	Quarterly	
Cadmium	Quarterly	
Total alkalinity	Quarterly	
Magnesium	Quarterly	
Potassium	Quarterly	
Total Sulphate	Quarterly	
Calcium	Quarterly	
Sodium	Quarterly	
Biological Oxygen Demand	Quarterly	
Chemical Oxygen Demand	Quarterly	
Total organic carbon	Quarterly	
Total oxidised nitrogen	Quarterly	
Manganese	Quarterly	
Iron	Quarterly	
Chromium	Quarterly	
Copper	Quarterly	
Lead	Quarterly	
Zinc	Quarterly	
Nickel	Quarterly	
Monitoring Point Base	Annually	
List 1 Substances	Annually	
* Monthly only, not included in quarterly compliance limit		

3.3. SURFACE WATER

3.3.1. The requirements for monitoring of surface waters included within the Site Permit are summarised in Table 3-2. The internal drainage ditches are monitored in accordance with Table S4.10 of the Site Permit. Compliance limits are only set for the determinands highlighted in bold in Table 3-2 at monitoring locations SW205a and SW206 (Figure 1).

Table 3-2 - Surface Water Monitoring Undertaken During 2021

Determinand	Monitoring Frequency	Monitoring Points
Ammoniacal Nitrogen	Monthly	SW201, SW202, SW203, SW204, SW205 , SW206 , SW207.
Chloride	Monthly	
Suspended Solids	Monthly	
pH	Monthly	
Temperature	Monthly	
Electrical Conductivity	Monthly	
Water Depth	Monthly	
Mecoprop (pesticide)	Quarterly	
Diethyphthalate	Quarterly	
Dichloromethane	Quarterly	
4-Methylphenol	Quarterly	
Cadmium	Quarterly	
Total Alkalinity	Quarterly	
Magnesium	Quarterly	
Potassium	Quarterly	
Total Sulphate	Quarterly	
Calcium	Quarterly	
Sodium	Quarterly	
Total Oxidised Nitrogen	Quarterly	
Total Organic Carbon	Quarterly	
Manganese	Quarterly	
Iron	Quarterly	
Chromium	Quarterly	
Copper	Quarterly	
Lead	Quarterly	

Determinand	Monitoring Frequency	Monitoring Points
Zinc	Quarterly	
Nickel	Quarterly	
Ionic Balance	Quarterly	
List 1 Screen	Annually	

3.4. GROUNDWATER

- 3.4.1. The requirements for monitoring groundwaters within the Site Permit are summarised in Table 3-3. Monitoring is required at twenty-one (21 no.) locations, comprising five (5 no.) locations within the under-drainage (UD) system and sixteen (16 no.) perimeter groundwater monitoring boreholes. As with the leachate monitoring, different suites are required at monthly, quarterly and annual frequencies. The monitoring points are shown on Figure 1.
- 3.4.2. All groundwater monitoring wells are sampled at the site in accordance with Table S4.11 of the Site Permit. The Site Permit specifies compliance limits in Table S4.5 at twenty (20 no.) locations, with the relevant determinands and locations highlighted in bold in Table 3-3.

Table 3-3 - Groundwater Monitoring Undertaken During 2021

Determinand	Monitoring Frequency	Monitoring Points
Ammoniacal Nitrogen as N	Monthly	NACW212, NACW219*, NACW227, NACW228, NACW229*, NACW203, NACW205, BH3/4, BH5/02, BH208, BH3/2*, BH3/3*, BH3/5*, BH3/6*, BH3/8*, BH3/9*, UD1, UD2, UD3, UD4, UD5.
Chloride	Monthly	
Electrical Conductivity	Monthly	
Water Level	Monthly	
Monitoring Point Base	Quarterly	
Mecoprop (pesticide)	Quarterly	
Diethylphthalate	Quarterly	
Dichloromethane	Quarterly	
4-methylphenol	Quarterly	
Cadmium	Quarterly	
Total Alkalinity	Quarterly	
Magnesium	Quarterly	
Potassium	Quarterly	
Total Sulphate	Quarterly	
Calcium	Quarterly	
Sodium	Quarterly	

Determinand	Monitoring Frequency	Monitoring Points
Nitrates	Quarterly	
Nitrites	Quarterly	
Total Oxidised Nitrogen	Quarterly	
Manganese	Quarterly	
Iron	Quarterly	
Chromium	Quarterly	
Copper	Quarterly	
Lead	Quarterly	
Zinc	Quarterly	
Nickel	Quarterly	
List 1 Screen	Annually	
* Quarterly only, not included in monthly compliance limit		

3.5. GAS MONITORING

3.5.1. The requirements for monitoring of landfill gases included within the Site Permit are summarised in Table 3-4. All in-waste boreholes are connected to the gas extraction system at the site. This report only contains the results of monitoring undertaken within the perimeter wells identified in Table 3-3 and Table 3-4 below. The locations of the twenty-five (25 no.) gas monitoring points are shown on Figure 1 and listed in Table 3-4 below.

Table 3-4 - Gas Monitoring Undertaken During 2021

Determinand	Monitoring Frequency	Monitoring Points
Methane	Monthly	NACW201, NACW202, NACW203, NACW204, NACW205, NACW212, NACW213, NACW215, NACW216, NACW219, NACW220, NACW227, NACW228, NACW229, NACW230, BH3/1, BH3/2, BH3/3, BH3/4, BH3/5, BH3/6, BH3/8, BH3/9, BH3/10, BH3/11.
Carbon Dioxide	Monthly	
Oxygen	Monthly	
Atmospheric Pressure	Monthly	
Differential Pressure	Monthly	
Temperature	Monthly	
Gas Flow Rate	Monthly	
Trace Gas Analysis	Annually	

4. MONITORING RESULTS

4.1. INTRODUCTION

- 4.1.1. This section presents the results of the monitoring undertaken during 2021. Attention is given to compliance with the compliance limits within the Site Permit (where applicable) and to data trends by comparison with the historic record obtained since 2014, illustrated by Figure 2 to Figure 19 and Table 4-1 to Table 4-9 at the end of this report. A summary of the compliance issues is provided at the end of the section.
- 4.1.2. The compliance monitoring is based on the 'monthly' and 'quarterly' monitoring suites, the results of which are shown on the laboratory certificates included within Appendix A. The extended suites undertaken in the annual monitoring are summarised in Appendix B, and the laboratory analysis for these included within Appendix C.

4.2. LEACHATE MONITORING

LEACHATE LEVELS

- 4.2.1. Leachates levels are monitored on a monthly frequency to determine the depth of leachate above the landfill liner and is a requirement of Table S4.1 within the Site Permit as shown in Table 3-1.
- 4.2.2. The monitored leachate levels within the leachate sumps obtained during 2021 are summarised in Table 4-1 and shown graphically in Figure 2, which also shows historic data from the beginning of 2014 compared to the relevant compliance limits. Recorded leachate heads were all well below their respective compliance limits with leachate heads remaining stable for most of the year. The mean recorded head above all sumps during 2021 was 0.35 m. There were no recorded exceedances of the compliance limits for 2021.
- 4.2.3. The following in-waste monitoring wells were retrofitted into Cell 1 to Cell 7 Sumps respectively:
- M1A to M4B inclusive (Cell 1 to Cell 4 Sumps);
 - LMP5a to LMP5b (Cell 5 Sumps);
 - LMP6a to LMP6b (Cell 6 Sumps); and
 - LMP7a to LMP7b (Cell 7 Sumps).
- 4.2.4. Given the absence of target pads at these locations, these boreholes were terminated approximately 2.00 m above the landfill base to avoid harming the landfill liner system and therefore cannot be used for compliance purposes. The mean head above the base of the boreholes monitored within these locations during 2021 is 0.23 m for all locations. A maximum head of 1.51 m was recorded at M3A (June 2021) and a minimum head of 0.01 m at both M3B (April 2021) and LMP6a (December 2021). An anomaly at M3A is recognised for November 2021 where a head of 3.78 m was recorded. WSP assume this is an anomalous record in field reporting as this has only occurred on one occasion. The data obtained since the start of 2014 are summarised in Figure 3 and show that leachate heads within the in-waste holes were generally similar during 2021 as 2020. Figure 3 shows the anomalous value recorded in M3A as well as the LMP7b anomaly recorded during 2020, which are not indicative of wider trends.
- 4.2.5. The head data shown in Figure 2 and Figure 3 indicate that the automated leachate extraction system has continued to be effective in maintaining low leachate heads across the site since early 2014, excluding the M3A and LMP7b anomaly detailed above.

LEACHATE CHEMISTRY - MONTHLY AND QUARTERLY SUITES

4.2.6. The leachate chemistry monitoring is summarised in Table 4-2 and shown graphically in Figure 4 to Figure 10. For all figures, where determinands were below detection limit of the laboratory, a value of half the detection limit has been plotted. The summary of concentrations provided below are based solely on laboratory data and does account for laboratory LOD (as reported). Results are shown on the laboratory certificates in Appendix A and Appendix C.

4.2.7. The leachate pond monitoring point was decommissioned in June 2014.

Ammoniacal Nitrogen as N and Chloride

4.2.8. The time series of Ammoniacal Nitrogen as N and Chloride concentrations recorded within the site leachates since 2014 are shown in Figure 4 and Figure 5, respectively. No exceedances of the compliance limits for Ammoniacal Nitrogen as N (3640 mg/l) and chloride (19000 mg/l) were noted during 2021.

4.2.9. The minimum recorded concentration of Ammoniacal Nitrogen as N (Figure 4) over the duration of the 2021 monitoring was 230 mg/l in Cell 1/2 Sump and, the maximum recorded concentration of 2410 mg/l also in Cell 1/2 Sump.

4.2.10. The minimum chloride concentration (Figure 5) recorded over the duration of the 2021 monitoring was 511 mg/l (Cell 6 Sump) and a maximum concentration of 11900 mg/l was recorded in Cell 1/2 Sump. Chloride concentrations were well below the compliance limit for all leachate monitoring sites.

Mecoprop (MCP)

4.2.11. Recorded concentrations of MCP in 2021 are provided in Figure 6. The minimum recorded concentration over the duration of 2021 was 0.002 mg/l (Cell 3/4 Sump) and a maximum concentration of 0.100 mg/l (Cell 1/2 Sump). Cell 1/2 Sump exceeded the compliance limit of 0.071 mg/l for MCP on two (2 no.) occasions during 2021, which recorded concentrations of approximately 0.100 mg/l in January and October 2021. Concentrations of MCP at Cell 1/2 Sump, between mid-2018 and 2020, have consistently exceeded compliance limits but have come back down below compliance limits during Q2 and Q3 2021. All other monitoring points were within their respective compliance limits during 2021. Schedule 6 Notices were issued for each exceedance of MCP in Cell 1/2 Sump (see Section 4.6).

4-methylphenol

4.2.12. Recorded concentrations of 4-methylphenol in 2021 (Figure 7) were below the laboratory LOD and compliance limit for all leachate monitoring points. No obvious trends are apparent in the data for 2021, with most of the results being below the laboratory LOD and compliance limit. The compliance limit for Cell 1/2 Sump and Cell 3/4 Sump is 1.6 mg/l. The compliance limit for Cell 5 Sump, Cell 6 Sump and Cell 7 Sump is 0.126 mg/l.

Dichloromethane

4.2.13. Dichloromethane was not recorded above the laboratory LOD (<0.003 mg/l) or compliance limit (0.033 mg/l Cell 1/2 and Cell 3/4 and 0.066 mg/l Cell 5 to Cell 7 Sumps inclusive) at any leachate monitoring point during 2021. No trends are apparent in the data obtained since 2014 to present (Figure 8).

Diethylphthalate

- 4.2.14. Recorded concentration of diethylphthalate in 2021 were below the laboratory LOD (0.01 mg/l) at all leachate monitoring points. The 'peak' in concentration for mid-2020 is due to an increase in laboratory LOD in April 2020 for Cell 1/2 Sump and Cell 7 Sump (Figure 9 and Section 4.2.5).

Cadmium (filtered)

- 4.2.15. Cadmium was detected above the LOD thirteen (13 no.) times at all leachate monitoring points. The maximum recorded concentration was 0.00059 mg/l in Cell 1/2 Sump and the minimum concentration was below the LOD. No breaches of the compliance limit (0.105 mg/l) has occurred over the duration of the 2021 monitoring (Figure 10).

LEACHATE CHEMISTRY – EXTENDED 'ANNUAL' SUITE OF ANALYSIS

- 4.2.16. Sampling of the site leachates for the annual suite of analysis took place on 18th October 2021. The suites for the annual 'List 1' monitoring was agreed with NRW beforehand and are summarised within the appended technical note (Appendix B). The results are shown on the Certificates of Analysis in Appendix C.
- 4.2.17. The general chemistry of the leachates in terms of transition metals and Hazardous Substances is discussed below.

'List 1' Substances Summary

- 4.2.18. In contrast to the other waters analysed, 'List 1' were detected in most leachates. For the sake of brevity and to aid comparison with the chemistry of the other waters (discussed later) these are discussed in general terms by compound type, with only specific mention of individual concentrations of determinands, where considered significant.
- 4.2.19. A summary of the following 'List 1' detected include:
- Of the pesticides and herbicides analysed, Azinphos ethyl and Fenitrothion was detected at Cell 5 Sump (1.67 µg/l) and Cell 3/4 Sump (2.06 µg/l) respectively. All other herbicides and pesticides were not detected above the LOD at any location.
 - SVOC (semi-volatile organic compounds) and Phenols were detected at Cell 1/2 Sump and the Leachate Holding Lagoon.
 - Cyanide was only detected at Cell 1/2 Sump (0.06 mg/l) but was not recorded above the detection limit for all other sites.
 - Aliphatics, aromatics, transition metals, BTEX (ethylbenzene, xylene and toluene) and VOCs (volatile organic compounds) were detected at most locations.
- 4.2.20. Phenols were detected in Cell 1/2 Sump (13.0 µg/l) and the Leachate Holding Lagoon (47.8 µg/l). Cell 1/2 Sump and the Leachate Holding Lagoon also had detections for 2-methylphenol at 19.4 µg/l and 42.5 µg/l, respectively. 3-methylphenol was detected at Cell 1/2 Sump and the Leachate Holding Lagoon at 8.0 µg/l and 34.1 µg/l, respectively. 2,4-dimethylphenol and 4-methylphenol was detected at the Leachate Holding Lagoon with values of 10 µg/l and 21.4 µg/l, respectively.
- 4.2.21. Detections of total aliphatics and aromatics (>C5-C35) were recorded at all leachate monitoring locations (Cell 1/2 Sump to Leachate Holding Lagoon inclusive). Concentrations ranged from 235 µg/l (Cell 3/4 Sump) to 939 µg/l (Cell 1/2 Sump). The average concentration for all leachate monitoring locations is 435.5 µg/l.

4.2.22. The recorded concentrations of the transition metals (dissolved concentrations) within the site leachates, not discussed above, were typically between one and two orders of magnitude greater than in the other waters sampled:

- Cadmium: recorded between 0.23 µg/l in Cell 3/4 Sump and 0.52 µg/l in Cell 1/2 Sump;
- Chromium: recorded between 55.90 µg/l in Cell 6 Sump and 164.00 µg/l in Cell 1/2 Sump;
- Copper: recorded between 2.26 µg/l in Cell 7 Sump and 21.90 µg/l in Cell 1/2 Sump;
- Iron: recorded between 2.08 mg/l in Cell 6 Sump and 12.40 mg/l in Cell 3/4 Sump;
- Lead: recorded between 1.65 µg/l in Cell 6 Sump and 12.60 µg/l in Cell 1/2 Sump;
- Manganese: recorded between 112.00 µg/l in Cell 1/2 Sump and 1300.00 µg/l in Cell 3/4 Sump;
- Nickel: recorded between 43.60 µg/l in Cell 6 Sump and 316.00 µg/l in Cell 1/2 Sump; and
- Zinc: recorded between 32.30 µg/l in the Cell 6 Sump and 127.00 µg/l in Cell 5 Sump.

4.3. SURFACE WATER MONITORING

SURFACE WATER CHEMISTRY - MONTHLY AND QUARTERLY SUITES

4.3.1. The surface water monitoring is summarised in Table 4-3 and shown graphically in Figure 11 to Figure 14. Table S4.3 of the Site Permit sets limits on allowable concentrations at two regulated emission points SW205a and SW206. The results obtained are discussed below and results are shown on the laboratory certificates appended to this report (Appendix A and Appendix C).

pH

4.3.2. The compliance limit for the site is between pH 6.0 – pH 9.0 at the regulated emission points SW205a and SW206. The compliance limit for SW205a and SW206 was not exceeded during 2021. pH is not recorded in-situ. For all surface water monitoring sites (SW201 to SW207 inclusive), pH was recorded between 7.2 and 8.3 for 2021.

Suspended Solids

4.3.3. The time series of suspended solids is shown in Figure 11. Measured concentrations of suspended solids were all below Site Permit limits of 70 mg/l (SW205a) and 50 mg/l (SW206). The maximum concentration recorded for SW205a and SW206 was 10.2 mg/l (May 2021) and 47.8 mg/l (September 2021), respectively. For all surface water monitoring sites (SW201 to SW207 inclusive), the concentration of suspended solids ranged between 1 mg/l and 121 mg/l for 2021. An anomalous spike of 121 mg/l occurs in SW204 (July 2021), which does not persist throughout the rest of the year. No trends are apparent in the data obtained since 2014.

Ammoniacal Nitrogen as N

4.3.4. Figure 12 shows the recorded concentrations of Ammoniacal Nitrogen as N for surface waters. No exceedances of the compliance limit for Ammoniacal Nitrogen as N (<1.0 mg/l) were recorded for SW205a and SW206. A maximum concentration of 0.5 mg/l and 0.2 mg/l were recorded at SW205a and SW206 respectively. The maximum recorded concentration of Ammoniacal Nitrogen as N at all other surface water locations was recorded at SW203 (9.2 mg/l) during November 2021. No obvious trends are apparent in the data.

Chloride

- 4.3.5. Concentrations of chloride recorded since 2014 are shown in Figure 13. No exceedance of the compliance limit (150 mg/l) was recorded at SW205a and SW206 in 2021. SW205a recorded a maximum concentration of 38.1 mg/l (November 2021) and SW206 recorded 50.8 mg/l (December 2021). The maximum concentration recorded at all other surface water monitoring locations was 65.7 mg/l (SW203).

Mecoprop (MCP)

- 4.3.6. The time series of MCP concentrations detected in the surface waters is shown in Figure 14. Over the duration of the 2021 monitoring, the laboratory LOD for MCP varied between 0.00004 mg/l and 0.00008 mg/l. The compliance limit for the site is 0.000055mg/l for SW205a and SW206. On three occasions, the laboratory LOD exceeded the compliance limit at SW205a (0.00008 mg/l July 2021) and SW206 (0.00008 mg/l January 2021 and July 2021 respectively) and therefore presents false breaches in Table 4-3.
- 4.3.7. MCP was not detected above the laboratory LOD during 2021.
- 4.3.8. Figure 14 shows a general increase in MCP at surface water locations during 2020, relative to 2019. This increase is due to an increase in laboratory LOD for MCP for samples that had interference. This trend has sustained at some locations during 2021.

Dichloromethane

- 4.3.9. Dichloromethane was not detected at any location above the laboratory LOD (0.003 mg/l) at any surface water monitoring point during 2021. The laboratory LOD was marginally above the Site Permit compliance limit of 0.002 mg/l for SW205a and SW206 and therefore presents false breaches in Table 4-3.

4-methylphenol

- 4.3.10. 4-methylphenol was not detected at most surface water monitoring locations above the laboratory LOD (0.001 mg/l) during 2021 and the Site Permit compliance limit of 0.001 mg/l was respected. The laboratory LOD for SW205a (0.002 mg/l) was marginally above the Site Permit compliance limit in July 2021 and therefore presents false breaches in Table 4-3.

Diethylphthalate

- 4.3.11. Diethylphthalate was not detected at any surface water monitoring location above the laboratory LOD (varied between 0.001 mg/l and 0.002 mg/l) for all sampling locations during 2021. The Site Permit compliance limit of 0.003 mg/l was respected.

Cadmium (filtered)

- 4.3.12. Cadmium was not detected at any location above the laboratory LOD (0.00008 mg/l) at any surface water monitoring point during 2021. The compliance limit for SW205a and SW206 is 0.0001 mg/l.

SURFACE WATER CHEMISTRY - EXTENDED 'ANNUAL' SUITE OF ANALYSIS

- 4.3.13. Sampling of the surface water for the annual suite of analysis took place on 18th October 2021. The suites for the annual 'List 1' monitoring was agreed with NRW beforehand and are summarised on the technical note in Appendix B. The results are shown on the laboratory Certificates of Analysis in Appendix C.

‘List 1’ Substances Summary

4.3.14. The following ‘List 1’ were not detected at any locations above their respective laboratory method detection limits (MDLs):

- Chromium;
- Cadmium;
- Phenols;
- SVOC; and
- BTEX (including ethylbenzene, m.p xylene, o-xylene and toluene).

4.3.15. The following ‘List 1’ were detected at some locations:

- Organics specifically dinitro-o-cresol detected at all surface water sampling locations. A minimum concentration of 0.78 µg/l at SW204 and a maximum concentration of 2.77 µg/l at SW207 was recorded.
- Naphthalene, a polyaromatic hydrocarbon, was detected at SW203 with a concentration of 0.0141 µg/l.

4.3.16. Other transition metals (i.e., in addition to cadmium [dissolved] and chromium [dissolved] above) were only detected at trace concentrations and are listed as follows:

- Copper: was detected at all surface water monitoring locations and concentrations ranged between 2.76 µg/l (SW206) and 4.59 µg/l (SW207);
- Iron: was detected at all surface water monitoring locations and concentrations ranged between 0.10 µg/l (SW202) and 0.23 µg/l (SW207);
- Lead: was detected at all surface water monitoring locations and concentrations ranged between 0.25 µg/l (SW205a) and 0.69 µg/l (SW207);
- Manganese: was detected at all surface water monitoring locations and concentrations ranged between 14.1 µg/l (SW206) and 42.2 µg/l (SW204);
- Nickel: was detected at all surface water monitoring locations and concentrations ranged between 0.84 µg/l (SW206) and 2.26 µg/l (SW201); and
- Zinc was detected at all surface water monitoring locations and concentrations ranged between 2.95 µg/l (SW204) and 11.20 µg/l (SW203).

4.4. GROUNDWATER MONITORING

GROUNDWATER LEVELS

4.4.1. The groundwater level data obtained from the perimeter monitoring boreholes are summarised in Table 4-4 and shown on Figure 1. The 2021 recorded groundwater level data indicates a general movement of groundwater from north to south at the landfill site, consistent with the site topography and historical monitoring.

GROUNDWATER CHEMISTRY - MONTHLY AND QUARTERLY SUITES

4.4.2. This section includes the chemistry of the under-drainage locations (UD1 - UD5) and the perimeter monitoring boreholes. It should be noted that the under-drainage locations are internal to the site, whereas the perimeter monitoring boreholes are external to the containment facility (Figure 1). Under-drainage monitoring point UD2 and perimeter monitoring borehole NACW227 were unable to be sampled for most of the year as they were dry.

4.4.3. The groundwater compliance monitoring is summarised in Table 4-5 and shown graphically in Figure 15 to Figure 19.

Ammoniacal Nitrogen as N

- 4.4.4. No exceedances of the Site Permit compliance limit for Ammoniacal Nitrogen as N (5.5 mg/l) were recorded in either the site under-drainage or perimeter monitoring boreholes during 2021. A maximum recorded concentration of 0.87 mg/l was recorded at UD4.
- 4.4.5. No trends are apparent within the time series data shown in Figure 15.

Chloride

- 4.4.6. No exceedances of the Site Permit compliance limit (150 mg/l) for chloride were recorded in either the under-drainage or perimeter monitoring boreholes during 2021. A range in chloride concentrations were recorded with the minimum concentration of 8.2 mg/l at BH3/3 and BH3/6 (July 2021) and maximum concentration of 64.9 mg/l at NACW228 (July 2021).
- 4.4.7. No obvious trends are apparent within the time series data shown in Figure 16.

Mecoprop (MCP)

- 4.4.8. One (1 no.) exceedance for MCP was recorded at NACW228 in July 2021 (0.0000995 mg/l). A Schedule 6 Notice have been issued for this exceedance. There were also 14 instances where the laboratory LOD (ranging between 0.0000400 mg/l and 0.0000800 mg/l) exceeded the compliance limit for MCP (0.0000550 mg/l) and therefore present false breaches in Table 4-5. No other exceedances of the Site Permit Compliance Limit for MCP, bar the exceedance at NACW228, was recorded in any of the under-drainage and perimeter borehole monitoring locations for the duration of 2021.
- 4.4.9. The time series data shown in Figure 17 illustrate the sporadic nature of the MCP detections and exceedance recorded at NACW228. NACW229 also has a recorded spike in July 2021 of 0.000107 mg/l, however there is no compliance limit at this location.

Dichloromethane

- 4.4.10. Dichloromethane was not detected at any location above the laboratory LOD (0.003 mg/l) at any point during 2021. The laboratory LOD was marginally above the Site Permit compliance limit of 0.002 mg/l for all groundwater monitoring locations and therefore presents false breaches (Table 4-5).

4-methylphenol and Diethylphthalate

- 4.4.11. There were no breaches of the Site Permit for these compounds during 2021, which were not detected in any groundwater location at any time (Table 4-5).

Cadmium (dissolved)

- 4.4.12. Cadmium was detected above its laboratory LOD (0.0000800 mg/l) at one perimeter borehole location with a concentration of 0.0000802 mg/l (BH3/3). There were no breaches of the Site Permit for Cadmium during 2021 (Table 4-5).
- 4.4.13. The time series of reported cadmium is shown in Figure 18 and shows no trends or obvious patterns.

Nickel (dissolved)

- 4.4.14. Nickel was detected above its laboratory LOD (0.0004 mg/l) on forty-four (44 no.) occurrences. There were no exceedances of the compliance limits for Nickel (0.0200 mg/l and 0.0370 mg/l for NACW212 only) during 2021. A maximum concentration of 0.0175 mg/l was recorded at NACW212 in 2021.
- 4.4.15. The time series of reported nickel is shown in Figure 19 and shows no obvious trend or pattern.

GROUNDWATER CHEMISTRY - EXTENDED 'ANNUAL' SUITE OF ANALYSIS

4.4.16. Sampling of the under-drainage and perimeter groundwater for the annual suite of analysis took place on 18th October 2021. The suites for the annual 'List 1' monitoring was agreed with NRW beforehand and are summarised on the technical note in Appendix B. The results are shown on the Certificates of Analysis in Appendix C. Monitoring locations NACW227 and UD2 were dry on most sample visits in 2021 and unable to be sampled.

Under-drainage 'List 1' Substances Summary

4.4.17. The following 'List 1' were not detected at any locations above their respective laboratory MDL:

- Phenol;
- SVOC;
- Chromium;
- Volatile Organic Compounds (VOC);
- Total aliphatics and aromatics (>C5 -C35); and
- Herbicides and Pesticides.

4.4.18. The following 'List 1' were detected at some locations:

- Polyaromatic Hydrocarbons (PAHs), specifically Naphthalene was detected at UD3 and UD4 with concentrations of 0.012 µg/l and 0.017 µg/l, respectively.
- Organics, specifically dinitro-o-cresol was detected at UD1, UD3, UD4 and UD5, with concentrations ranging from 0.215 µg/l (UD1) to 2.090 µg/l (UD5); and
- Transition metals (dissolved), excluding those discussed above:
 - Copper was detected at all locations and concentrations ranged between 0.48 µg/l (UD1) to 4.45 µg/l (UD5);
 - Lead was detected at UD4 (0.23 µg/l) and UD5 (0.31 µg/l). All other locations were below the laboratory LOD;
 - Manganese was detected at all locations and concentrations ranged between 17.00 µg/l (UD3) to 54.80 µg/l (UD1);
 - Nickel was detected at UD1 (0.75 µg/l) and UD5 (1.49 µg/l); and
 - Zinc was detected at all locations and concentrations ranged between 3.74 µg/l (UD1) to 6.62 µg/l (UD4).

Perimeter Groundwaters 'List 1' Substances Summary

4.4.19. The following 'List 1' were not detected at any locations above their respective laboratory LOD:

- Phenol;
- Cadmium;
- Mecoprop;
- Total aliphatics and aromatics (>C5 -C35);
- PAH;
- SVOC; and
- VOC.

4.4.20. The following 'List 1' Substances were detected at some locations:

- Polyaromatic Hydrocarbons (PAHs), specifically Naphthalene was detected at BH5/02 and NACW212 with concentrations of 0.016 µg/l and 0.022 µg/l, respectively.

- Organics, specifically dinitro-o-cresol, was detected at numerous locations (bar BH3/5). The concentrations ranged between 0.19 µg/l (BH3/4) to 15.70 µg/l (NACW203); and
- Transition metals (dissolved), in addition to cadmium noted above:
 - Chromium was detected at BH3/9 (1.47 µg/l) and NACW219 (1.28 µg/l). All other locations were below the laboratory LOD;
 - Copper was detected at fourteen locations (excluding NACW203 which was below laboratory LOD) and concentrations ranged between 0.83 µg/l (BH3/6) and 4.63 µg/l (BH3/4);
 - Lead was detected at twelve locations (excluding NACW203, BH3/8 and BH3/5 which were below laboratory LOD) and concentrations ranged between 0.20 µg/l (BH3/9) and 2.60 µg/l (NACW228);
 - Manganese was detected at all locations and concentrations ranged between 4.71 µg/l (BH3/3) and 933 µg/l (BH3/4);
 - Nickel was detected at twelve locations (excluding BH3/3, NACW203 and NACW205 which were below laboratory LOD) and concentrations ranged between 0.46 µg/l (BH5/02) and 6.13 µg/l (NACW228);
 - Zinc was detected at fourteen locations (excluding NACW203 which was below laboratory LOD) and concentrations ranged between 1.02 µg/l (BH3/3) and 14.40 µg/l (NACW212).

4.5. LANDFILL GAS MONITORING PERIMETER BOREHOLES

- 4.5.1. The requirements of the Site Permit are summarised in Table 3-4 and the gas data obtained during 2021 are summarised in Table 4-6 to Table 4-8.
- 4.5.2. BH3/3 was recorded as artesian for most of 2021 and BH3/5 was recorded as artesian in January 2021, therefore some gas measurements were not able to be taken. Borehole NACW220 was decommissioned in 2012 due to the construction and operation of Cell 7 Sump and no records are provided on this basis.

Methane

- 4.5.3. There was no exceedance of the compliance limit of 1% v/v above background methane during 2021. Methane was recorded at 0.1% at NACW201 in March 2021 but was recorded at 0.0% v/v at all other perimeter borehole monitoring locations.

Carbon Dioxide

- 4.5.4. There were no exceedances of the carbon dioxide compliance limit of 3.5% v/v during 2021. Carbon dioxide was recorded at all perimeter borehole monitoring locations and a maximum concentration of 3.3% was recorded at NACW201.

Oxygen

- 4.5.5. Oxygen concentrations at all monitoring locations ranged between 14.8% (BH3/8) and 25.2% (NACW219) during the 2021 monitoring.

4.6. SUMMARY OF CONTROL LEVEL BREACHES (SCHEDULE 6 NOTICES)

- 4.6.1. A total of 3 Schedule 6 Notices were issued to NRW during 2021 following breaches of the compliance limits within the Site Permit. These are shown in Table 4-9 and summarised below:
- One (1 no.) was submitted regarding Cell 1/2 Sump for breach of the compliance limit for Mecoprop (MCP) in Quarter 1 (Q1);

- One (1 no.) was submitted regarding NACW228 for breach of the compliance limit for MCPP in Quarter 3 (Q3); and
- One (1 no.) was submitted regarding Cell 1/2 Sump for breach of the compliance limit for MCPP in Quarter 4 (Q4).

4.6.2. The reported breaches are discussed in more detail in Section 5.

5. DISCUSSION

5.1. GENERAL CONSIDERATIONS

- 5.1.1. The overall impression from the results of the monitoring undertaken during 2021, was that the site had little (if any) impact on the surrounding water environment during this period, consistent with previous reporting.
- 5.1.2. The extended analyses ('List 1') of the leachate, surface water, perimeter groundwater and underdrainage confirmed that the chemistry of the leachate is considerably different to the ground waters and surface waters. It also confirmed that the groundwater and surface water chemistry was similar to each other and that they were both of good quality.
- 5.1.3. A variation in leachate strength is apparent within the leachate sumps, for example chloride is found at approximately 511 mg/l in Cell 6 Sump but at approximately 11900 mg/l in Cell 1/2 Sump. However, there is no indication that this is impacting on surrounding groundwater or surface water. Concentrations of indicator parameters within the leachate are greater than in the surrounding water environment typically by between one and two orders of magnitude and occasionally more. Furthermore, the leachate chemistry, both in terms of its general indicators (e.g. ammoniacal nitrogen and chloride) and its trace chemistry (e.g. transition metals, hydrocarbon species or herbicides etc.) is sufficiently different from the chemistry of the surrounding water environment that chronic leakage would be detected in groundwater. There has been no change to groundwater determinands or emerging trends that would indicate an impact from the rising leachate concentrations upon the water environment.

5.2. PERMIT BREACHES

- 5.2.1. The Permit breaches that occurred in 2021 related to reported concentrations of the following:
 - In Q1 and Q4 2021, an exceedance of Mecoprop (MCP) was recorded at the leachate monitoring point Cell 1/2 Sump; and
 - In Q3 2021, an exceedance of MCP was recorded at the groundwater monitoring point NACW228.
- 5.2.2. Regular occurrences of MCP exceedances have occurred throughout 2019 and 2020, and have appeared during the first and last quarter of 2021. It is recommended that a review of MCP exceedance in leachate and other monitoring locations is undertaken as a wider review outside of this factual report.
- 5.2.3. The MCP exceedance at NACW228 appears to be an isolated incident and was not sustained.

5.3. PROBLEMS ENCOUNTERED DURING GROUNDWATER MONITORING, 2021

- 5.3.1. The main problem experienced during the monitoring undertaken in 2021 was inability to obtain samples from borehole NACW227, immediately south of the Leachate Holding Lagoon and at underdrainage location UD2, on the north-eastern site margin.
- 5.3.2. Borehole NACW227 and UD2 were dry for the majority of 2021, as mentioned in paragraph 4.4.2 above. The reasons for this are unclear. Both these locations are controlled locations within the Site

Permit and investigations are therefore recommended to ascertain the causes for the dryness and whether the sampling locations can be re-instated.

5.4. QUARTERLY MONITORING ISSUES

- 5.4.1. Due to the on-going Covid-19 Pandemic the chemical testing laboratory has experienced issues with resourcing and meeting testing deadlines. This has led to a number of instances where Limits of Detection (LOD) have varied and / or compliance with holding times have been exceeded. During 2021, the number of instances where incidents occurred was significantly reduced following a review of the issues that occurred during 2020 and we aim to reduce it further in 2022.

5.5. LIMITS OF DETECTION

- 5.5.1. The detection limits for Dichloromethane, Mecoprop and 4-Methylphenol are in places higher than permit requirements for surface water and groundwater monitoring locations. This has been discussed with NRW and ALS previously and will be reviewed with ALS again in 2022.

5.6. RECOMMENDATIONS FOR ANNUAL 'LIST 1' SAMPLING 2022

- 5.6.1. The requirements for the parameters to be tested in the 'List 1' sampling during 2022, should be reviewed in the context of a review of the HRA. WSP recommend that the HRA is updated, with a view of submitting an Environmental Permit Variation, and should be considered for 2022 monitoring programme.

6. CONCLUSIONS AND RECOMMENDATIONS

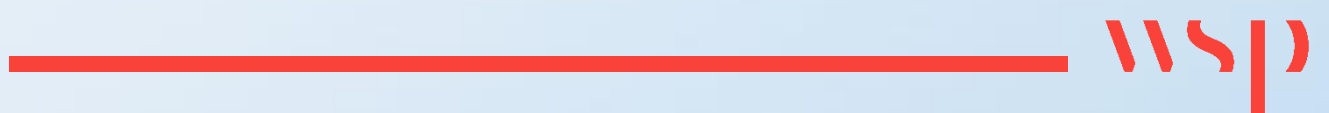
6.1. CONCLUSIONS

- 6.1.1. The monitoring results obtained during 2021 indicate that the landfill had little measurable and no significant or sustained impact on the surrounding environment.
- 6.1.2. There were three breaches of the Site Permit compliance limits relating to the monitored chemistry of the site leachate and groundwater during 2021. These are summarised in Table 4-9 and summarised below:
- One (1 no.) was submitted regarding Cell 1/2 Sump for breach of the compliance limit for Mecoprop (MCP) in Quarter 1 (Q1);
 - One (1 no.) was submitted regarding NACW228 for breach of the compliance limit for MCP in Quarter 3 (Q3);
 - One (1 no.) was submitted regarding Cell 1/2 Sump for breach of the compliance limit for MCP in Quarter 4 (Q4).
- 6.1.3. The breach at NACW228 appears to be an isolated incident, in time and space, and was not sustained, such that no obvious trends or patterns are apparent in the time-series data. Mecoprop in Cell 1/2 Sump had previously been a sustained breach from mid-2018 to 2020 and had 2 exceedances during 2021.
- 6.1.4. During 2016, CWM undertook an internal audit of all the water monitoring undertaken in the three preceding years, 2013 – 2015. This confirmed between two and seven Site Permit breaches in these years, set against a backdrop of between 21,000 and 22,000 laboratory determinations, and that the total site compliance exceeded 99.99 % in each year. Similar compliance was achieved in 2016 and 2017. Some rationalisation of the existing monitoring is therefore technically justified.
- 6.1.5. Monitored leachate heads within the sumps were compliant with the requirements of the Site Permit throughout 2021. The mean head recorded across all sumps during 2021 was 0.35 m.

6.2. RECOMMENDATIONS

- 6.2.1. The following recommendations are made:
1. Monitoring locations UD2 and NACW227 should be investigated to assess the causes for these drying. These locations should be reinstated if possible;
 2. The detection limits for Dichloromethane, Mecoprop and 4-Methylphenol should be investigated with the laboratory to confirm if there is any scope for reducing the detection limit of these determinants;
 3. An investigation into Mecoprop at Cell 1/2 Sump and nearby monitoring locations should be undertaken as a wider investigation than this factual report;
 4. An investigation to confirm assumptions regarding natural cadmium ranges in groundwater could be implemented; and
 5. Implementation of the recommendations made in the latest review of the HRA (Parsons Brinkerhoff, November 2017) and 2019 annual compliance report, regarding modification of the Site Permit and EMMP in the context of the monitoring information obtained.

TABLES



TABLES

Table 4-1 - Leachate Heads for Cell Sumps and In-waste Boreholes, 2021

Leachate Thickness (m above base of liner)												
	06/01/2021	09/02/2021	08/03/2021	20/04/2021	18/05/2021	14/06/2021	26/07/2021	10/08/2021	13/09/2021	18/10/2021	09/11/2021	03/12/2021
Cell Sumps												
Cell 1/2 Sump	0.35	0.38	0.13	0.18	0.22	0.27	0.45	0.32	0.36	0.37	0.42	0.28
Cell 3/4 Sump	0.47	0.51	0.33	0.30	0.30	0.33	0.44	0.50	0.50	0.23	0.40	0.37
Cell 5 Sump	0.60	0.60	0.07	0.40	0.38	0.44	0.36	0.32	0.39	0.25	0.30	0.30
Cell 6 Sump	0.40	0.40	0.32	0.30	0.28	0.32	0.34	0.30	0.01	0.39	0.45	0.37
Cell 7 Sump	0.53	0.56	0.06	0.24	0.48	0.42	0.44	0.32	0.37	0.36	0.44	0.09
In Waste Boreholes												
M1A	0.25	0.25	0.13	0.23	0.14	0.24	0.12	0.35	0.20	0.49	0.44	0.53
M1B	0.33	0.33	0.24	0.30	0.20	0.29	0.09	0.29	0.14	0.20	0.08	0.11
M2A	0.25	0.25	0.40	Dry	0.23	0.32	0.13	0.28	0.38	0.35	0.41	0.57
M2B	0.29	0.31	0.04	0.35	0.36	0.35	0.04	0.32	0.38	0.33	0.37	0.24
M3A	0.47	0.49	0.11	0.08	0.38	1.51	0.04	0.10	0.07	0.17	3.78	0.30
M3B	0.51	0.55	0.14	0.01	0.28	0.32	0.03	0.08	0.40	0.04	0.33	0.21
M4A	0.26	0.27	0.21	0.15	0.20	0.27	0.07	0.54	0.08	0.14	0.29	0.23
M4B	0.52	0.54	0.13	0.08	0.13	0.27	Dry	Dry	0.10	0.18	0.20	0.18
LMP5a	0.10	0.09	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
LMP5b	Dry	Dry	0.07	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
LMP6a	0.32	0.32	Dry	0.05	Dry	Dry	Dry	Dry	Dry	Dry	Dry	0.01
LMP7a	Dist	Dist	Dist	0.12	0.18	0.22	0.20	0.32	0.03	0.02	0.03	0.08
LMP7b	0.02	Dry	0.03	0.02	0.08	0.04	0.10	0.07	0.08	0.05	0.09	0.05

Table notes: Dist denotes 'Distorted Well'

Table 4-2 - Summary of Compliance Monitoring, Site Leachate 2021

Monthly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 1/2 Sump	Ammoniacal Nitrogen as N	mg/l	1	1	1	230	230	230	<3,640 mg/l	0
Cell 1/2 Sump	Ammoniacal Nitrogen as N	mg/l	4	2	2	784	609	959	<3,640 mg/l	0
Cell 1/2 Sump	Ammoniacal Nitrogen as N	mg/l	10	9	9	1801.11	1110	2410	<3,640 mg/l	0
Cell 3/4 Sump	Ammoniacal Nitrogen as N	mg/l	2	3	3	330.33	250	379	<3,640 mg/l	0
Cell 3/4 Sump	Ammoniacal Nitrogen as N	mg/l	4	7	7	787	538	897	<3,640 mg/l	0
Cell 3/4 Sump	Ammoniacal Nitrogen as N	mg/l	10	2	2	1285	1250	1320	<3,640 mg/l	0
Cell 5 Sump	Ammoniacal Nitrogen as N	mg/l	4	5	5	863.2	747	945	<3,640 mg/l	0
Cell 5 Sump	Ammoniacal Nitrogen as N	mg/l	10	7	7	1254.29	1060	1500	<3,640 mg/l	0
Cell 6 Sump	Ammoniacal Nitrogen as N	mg/l	2	4	4	423	395	445	<3,640 mg/l	0
Cell 6 Sump	Ammoniacal Nitrogen as N	mg/l	4	7	7	793	535	988	<3,640 mg/l	0
Cell 6 Sump	Ammoniacal Nitrogen as N	mg/l	10	1	1	1210	1210	1210	<3,640 mg/l	0
Cell 7 Sump	Ammoniacal Nitrogen as N	mg/l	4	4	4	685.75	612	794	<3,640 mg/l	0
Cell 7 Sump	Ammoniacal Nitrogen as N	mg/l	10	8	8	1411.25	1000	1550	<3,640 mg/l	0
Leachate Holding Lagoon	Ammoniacal Nitrogen as N	mg/l	4	3	3	764.67	721	840	<3,640 mg/l	0
Leachate Holding Lagoon	Ammoniacal Nitrogen as N	mg/l	10	9	9	1272.22	1000	2460	<3,640 mg/l	0
Cell 1/2 Sump	Chloride	mg/l	10	1	1	920	920	920	<19,000 mg/l	0



Monthly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 1/2 Sump	Chloride	mg/l	100	6	6	7560	5380	8640	<19,000 mg/l	0
Cell 1/2 Sump	Chloride	mg/l	200	5	5	11520	10900	11900	<19,000 mg/l	0
Cell 3/4 Sump	Chloride	mg/l	10	1	1	701	701	701	<19,000 mg/l	0
Cell 3/4 Sump	Chloride	mg/l	20	2	2	1450	1210	1690	<19,000 mg/l	0
Cell 3/4 Sump	Chloride	mg/l	40	4	4	3565	3240	3960	<19,000 mg/l	0
Cell 3/4 Sump	Chloride	mg/l	100	5	5	5402	4180	7210	<19,000 mg/l	0
Cell 5 Sump	Chloride	mg/l	40	2	2	3555	3340	3770	<19,000 mg/l	0
Cell 5 Sump	Chloride	mg/l	100	10	10	5408	4290	8250	<19,000 mg/l	0
Cell 6 Sump	Chloride	mg/l	10	2	2	732.5	620	845	<19,000 mg/l	0
Cell 6 Sump	Chloride	mg/l	20	6	6	884	574	1200	<19,000 mg/l	0
Cell 6 Sump	Chloride	mg/l	40	4	4	1160.25	511	1580	<19,000 mg/l	0
Cell 7 Sump	Chloride	mg/l	20	6	6	1392.5	975	1970	<19,000 mg/l	0
Cell 7 Sump	Chloride	mg/l	40	6	6	1780.67	814	2120	<19,000 mg/l	0
Leachate Holding Lagoon	Chloride	mg/l	4	1	1	4550	4550	4550	<19,000 mg/l	0
Leachate Holding Lagoon	Chloride	mg/l	40	6	6	3423.33	2550	3860	<19,000 mg/l	0
Leachate Holding Lagoon	Chloride	mg/l	100	4	4	4572.5	3960	5060	<19,000 mg/l	0
Leachate Holding Lagoon	Chloride	mg/l	200	1	1	12300	12300	12300	<19,000 mg/l	0

Monthly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 1/2 Sump	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	29630.83	4770	39300		0
Cell 3/4 Sump	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	15336.67	5440	25800		0
Cell 5 Sump	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	20566.67	14700	28900		0
Cell 6 Sump	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	8342.5	4690	13300		0
Cell 7 Sump	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	13040	7140	16900		0
Leachate Holding Lagoon	Electrical conductivity @20°C (lab)	µS/cm	20	12	12	19158.33	12000	39100		0

Quarterly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 1/2 Sump	4-Methylphenol	mg/l	0.01	3	1	0.01	0.01	0.0111	<1.6 mg/l	0
Cell 1/2 Sump	4-Methylphenol	mg/l	0.02	1	0	0.02	0.02	0.02	<1.6 mg/l	0
Cell 3/4 Sump	4-Methylphenol	mg/l	0.01	3	0	0.01	0.01	0.01	<1.6 mg/l	0
Cell 3/4 Sump	4-Methylphenol	mg/l	0.02	1	0	0.02	0.02	0.02	<1.6 mg/l	0
Cell 5 Sump	4-Methylphenol	mg/l	0.01	3	0	0.01	0.01	0.01	<0.126 mg/l	0
Cell 5 Sump	4-Methylphenol	mg/l	0.02	1	0	0.02	0.02	0.02	<0.126 mg/l	0
Cell 6 Sump	4-Methylphenol	mg/l	0.01	2	0	0.01	0.01	0.01	<0.126 mg/l	0
Cell 6 Sump	4-Methylphenol	mg/l	0.02	2	0	0.02	0.02	0.02	<0.126 mg/l	0



Quarterly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 7 Sump	4-Methylphenol	mg/l	0.01	2	0	0.01	0.01	0.01	<0.126 mg/l	0
Cell 7 Sump	4-Methylphenol	mg/l	0.02	2	0	0.02	0.02	0.02	<0.126 mg/l	0
Leachate Holding Lagoon	4-Methylphenol	mg/l	0.01	3	0	0.01	0.01	0.01		0
Leachate Holding Lagoon	4-Methylphenol	mg/l	0.02	1	1	0.1	0.1	0.1		0
Cell 1/2 Sump	Cadmium (filtered)	mg/l	0.00008	2	2	0	0.000522	0.000586	<0.105 mg/l	0
Cell 1/2 Sump	Cadmium (filtered)	mg/l	0.0008	2	0	0	0.0008	0.0008	<0.105 mg/l	0
Cell 3/4 Sump	Cadmium (filtered)	mg/l	0.00008	3	3	0	0.000225	0.000418	<0.105 mg/l	0
Cell 3/4 Sump	Cadmium (filtered)	mg/l	0.0008	1	0	0	0.0008	0.0008	<0.105 mg/l	0
Cell 5 Sump	Cadmium (filtered)	mg/l	0.00008	3	3	0	0.000254	0.000361	<0.105 mg/l	0
Cell 5 Sump	Cadmium (filtered)	mg/l	0.0008	1	0	0	0.0008	0.0008	<0.105 mg/l	0
Cell 6 Sump	Cadmium (filtered)	mg/l	0.00008	2	1	0	0.00008	0.000145	<0.105 mg/l	0
Cell 6 Sump	Cadmium (filtered)	mg/l	0.0008	2	0	0	0.0008	0.0008	<0.105 mg/l	0
Cell 7 Sump	Cadmium (filtered)	mg/l	0.00008	2	1	0	0.00008	9.34E-05	<0.105 mg/l	0
Cell 7 Sump	Cadmium (filtered)	mg/l	0.0008	2	0	0	0.0008	0.0008	<0.105 mg/l	0
Leachate Holding Lagoon	Cadmium (filtered)	mg/l	0.00008	4	3	0	0.00008	0.000237		0
Leachate Holding Lagoon	Cadmium (filtered)	mg/l	0.0008	1	0	0	0.0008	0.0008		0
Cell 1/2 Sump	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003	<0.033 mg/l	0
Cell 3/4 Sump	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003	<0.033 mg/l	0

Quarterly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 5 Sump	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003	<0.066 mg/l	0
Cell 6 Sump	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003	<0.066 mg/l	0
Cell 7 Sump	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003	<0.066 mg/l	0
Leachate Holding Lagoon	Dichloromethane	mg/l	0.003	4	0	0	0.003	0.003		0
Cell 1/2 Sump	Diethyl phthalate	mg/l	0.01	3	0	0.01	0.01	0.01	<0.44 mg/l	0
Cell 1/2 Sump	Diethyl phthalate	mg/l	0.02	1	0	0.02	0.02	0.02	<0.44 mg/l	0
Cell 3/4 Sump	Diethyl phthalate	mg/l	0.01	3	0	0.01	0.01	0.01	<0.44 mg/l	0
Cell 3/4 Sump	Diethyl phthalate	mg/l	0.02	1	0	0.02	0.02	0.02	<0.44 mg/l	0
Cell 5 Sump	Diethyl phthalate	mg/l	0.01	3	0	0.01	0.01	0.01	<0.36 mg/l	0
Cell 5 Sump	Diethyl phthalate	mg/l	0.02	1	0	0.02	0.02	0.02	<0.36 mg/l	0
Cell 6 Sump	Diethyl phthalate	mg/l	0.01	2	0	0.01	0.01	0.01	<0.36 mg/l	0
Cell 6 Sump	Diethyl phthalate	mg/l	0.02	2	0	0.02	0.02	0.02	<0.36 mg/l	0
Cell 7 Sump	Diethyl phthalate	mg/l	0.01	2	0	0.01	0.01	0.01	<0.36 mg/l	0
Cell 7 Sump	Diethyl phthalate	mg/l	0.02	2	0	0.02	0.02	0.02	<0.36 mg/l	0
Leachate Holding Lagoon	Diethyl phthalate	mg/l	0.01	3	0	0.01	0.01	0.01		0
Leachate Holding Lagoon	Diethyl phthalate	mg/l	0.02	1	0	0.02	0.02	0.02		0
Cell 1/2 Sump	Mecoprop	mg/l	0.004	3	3	0.09	0.0625	0.0996	<0.071 mg/l	2
Cell 1/2 Sump	Mecoprop	mg/l	0.008	1	0	0.01	0.008	0.008	<0.071 mg/l	0

Quarterly Monitoring										
Borehole	Determinand	Units	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	N > CL
Cell 3/4 Sump	Mecoprop	mg/l	0.004	2	2	0.02	0.0162	0.0179	<0.071 mg/l	0
Cell 3/4 Sump	Mecoprop	mg/l	0.008	2	2	0.03	0.0238	0.0391	<0.071 mg/l	0
Cell 5 Sump	Mecoprop	mg/l	0.004	2	2	0.02	0.0177	0.0294	<0.14 mg/l	0
Cell 5 Sump	Mecoprop	mg/l	0.008	2	2	0.03	0.0237	0.0451	<0.14 mg/l	0
Cell 6 Sump	Mecoprop	mg/l	0.004	2	1	0	0.004	0.00548	<0.14 mg/l	0
Cell 6 Sump	Mecoprop	mg/l	0.008	2	2	0.01	0.00867	0.0166	<0.14 mg/l	0
Cell 7 Sump	Mecoprop	mg/l	0.004	3	2	0.01	0.004	0.0234	<0.14 mg/l	0
Cell 7 Sump	Mecoprop	mg/l	0.008	1	1	0.02	0.0196	0.0196	<0.14 mg/l	0
Leachate Holding Lagoon	Mecoprop	mg/l	0.004	3	3	0.02	0.0157	0.0197		0
Leachate Holding Lagoon	Mecoprop	mg/l	0.008	1	1	0.02	0.0236	0.0236		0

Table notes: N denotes 'Number of Results' and CL denotes 'Compliance Limit'

Table 4-3 - Summary of Compliance Monitoring, Site Surface Waters, 2021

Monthly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW201	Ammoniacal Nitrogen as N mg/l	12	3	0.39	0.2	1.48		0
SW202	Ammoniacal Nitrogen as N mg/l	12	4	0.36	0.2	1.24		0
SW203	Ammoniacal Nitrogen as N mg/l	11	2	1.17	0.2	9.23		0
SW204	Ammoniacal Nitrogen as N mg/l	12	0	0.2	0.2	0.2		0
SW205a	Ammoniacal Nitrogen as N mg/l	12	4	0.25	0.2	0.548	<1.0 mg/l	0
SW206	Ammoniacal Nitrogen as N mg/l	12	0	0.2	0.2	0.2	<1.0 mg/l	0
SW207	Ammoniacal Nitrogen as N mg/l	12	5	0.31	0.2	0.82		0
SW201	Chloride mg/l	12	12	21.41	9.5	36.7		0
SW202	Chloride mg/l	12	12	24.65	14.9	32.5		0
SW203	Chloride mg/l	11	11	25.42	4.2	65.7		0
SW204	Chloride mg/l	12	12	22.27	11.9	55.7		0
SW205a	Chloride mg/l	12	12	25.78	12.4	38.1	<150 mg/l	0
SW206	Chloride mg/l	12	12	17.53	9.2	50.8	<150 mg/l	0
SW207	Chloride mg/l	12	12	21.38	11.5	36		0
SW201	Electrical conductivity @20°C (lab) µS/cm	12	12	322.75	185	552		0
SW202	Electrical conductivity @20°C (lab) µS/cm	12	12	370.58	271	550		0
SW203	Electrical conductivity @20°C (lab) µS/cm	11	11	311.32	33.5	558		0
SW204	Electrical conductivity @20°C (lab) µS/cm	12	12	402.17	301	534		0



Monthly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW205a	Electrical conductivity @20°C (lab) µS/cm	12	12	423.42	312	522		0
SW206	Electrical conductivity @20°C (lab) µS/cm	12	12	310.58	229	477		0
SW207	Electrical conductivity @20°C (lab) µS/cm	12	12	339.5	299	406		0
SW201	pH (lab) pH units	11	11	7.96	7.44	8.25		0
SW202	pH (lab) pH units	11	11	7.96	7.53	8.22		0
SW203	pH (lab) pH units	10	10	7.82	7.17	8.18		0
SW204	pH (lab) pH units	11	11	7.95	7.84	8.2		0
SW205a	pH (lab) pH units	11	11	8.04	7.65	8.3	6 to 9 pH units	0
SW206	pH (lab) pH units	11	11	8.01	7.63	8.25	6 to 9 pH units	0
SW207	pH (lab) pH units	11	11	8.07	7.79	8.23		0
SW201	Total Suspended solids mg/l	5	4	7.43	2	17.4		0
SW201	Total Suspended solids mg/l	4	3	14.9	4	45.6		0
SW201	Total Suspended solids mg/l	2	0	9	9	9		0
SW202	Total Suspended solids mg/l	5	4	5.35	2	8.75		0
SW202	Total Suspended solids mg/l	4	3	11.1	4	26.2		0
SW202	Total Suspended solids mg/l	2	0	9	9	9		0
SW203	Total Suspended solids mg/l	5	4	10.06	2	31.3		0
SW203	Total Suspended solids mg/l	3	2	4.69	4	5.82		0
SW203	Total Suspended solids mg/l	2	0	9	9	9		0

Monthly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW204	Total Suspended solids mg/l	6	5	25.53	2	121		0
SW204	Total Suspended solids mg/l	3	2	8.25	4	15.8		0
SW204	Total Suspended solids mg/l	2	1	11.7	9	14.4		0
SW205a	Total Suspended solids mg/l	3	2	4.45	2	6.8	<70 mg/l	0
SW205a	Total Suspended solids mg/l	6	5	8.88	4	17	<70 mg/l	0
SW205a	Total Suspended solids mg/l	2	0	9	9	9	<70 mg/l	0
SW206	Total Suspended solids mg/l	5	3	4.18	2	9.75	<50 mg/l	0
SW206	Total Suspended solids mg/l	4	3	15.48	4	47.8	<50 mg/l	0
SW206	Total Suspended solids mg/l	2	0	9	9	9	<50 mg/l	0
SW207	Total Suspended solids mg/l	5	4	4.66	2	7.45		0
SW207	Total Suspended solids mg/l	4	3	6.44	4	8.14		0
SW207	Total Suspended solids mg/l	2	1	27.15	9	45.3		0

Table notes: N denotes 'Number of Results'

Quarterly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW201	4-Methylphenol mg/l	3	0	0	0.001	0.001		0
SW201	4-Methylphenol mg/l	1	0	0	0.002	0.002		0
SW202	4-Methylphenol mg/l	3	0	0	0.001	0.001		0

Quarterly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW202	4-Methylphenol mg/l	1	0	0	0.002	0.002		0
SW203	4-Methylphenol mg/l	3	0	0	0.001	0.001		0
SW204	4-Methylphenol mg/l	3	0	0	0.001	0.001		0
SW204	4-Methylphenol mg/l	1	0	0	0.002	0.002		0
SW205a	4-Methylphenol mg/l	3	0	0	0.001	0.001	<0.001 mg/l	0
SW205a	4-Methylphenol mg/l	1	0	0	0.002	0.002	<0.001 mg/l	1
SW206	4-Methylphenol mg/l	4	0	0	0.001	0.001	<0.001 mg/l	0
SW207	4-Methylphenol mg/l	4	0	0	0.001	0.001		0
SW201	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008		0
SW202	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008		0
SW203	Cadmium (filtered) mg/l	3	0	0	0.00008	0.00008		0
SW204	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008		0
SW205a	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008	<0.0001 mg/l	0
SW206	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008	<0.0001 mg/l	0
SW207	Cadmium (filtered) mg/l	4	0	0	0.00008	0.00008		0
SW201	Dichloromethane mg/l	4	0	0	0.003	0.003		0
SW202	Dichloromethane mg/l	4	0	0	0.003	0.003		0
SW203	Dichloromethane mg/l	3	0	0	0.003	0.003		0
SW204	Dichloromethane mg/l	4	0	0	0.003	0.003		0

Quarterly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW205a	Dichloromethane mg/l	4	0	0	0.003	0.003	<0.002 mg/l	4
SW206	Dichloromethane mg/l	4	0	0	0.003	0.003	<0.002 mg/l	4
SW207	Dichloromethane mg/l	4	0	0	0.003	0.003		0
SW201	Diethyl phthalate mg/l	3	0	0	0.001	0.001		0
SW201	Diethyl phthalate mg/l	1	0	0	0.002	0.002		0
SW202	Diethyl phthalate mg/l	3	0	0	0.001	0.001		0
SW202	Diethyl phthalate mg/l	1	0	0	0.002	0.002		0
SW203	Diethyl phthalate mg/l	3	0	0	0.001	0.001		0
SW204	Diethyl phthalate mg/l	3	0	0	0.001	0.001		0
SW204	Diethyl phthalate mg/l	1	0	0	0.002	0.002		0
SW205a	Diethyl phthalate mg/l	3	0	0	0.001	0.001	<0.003 mg/l	0
SW205a	Diethyl phthalate mg/l	1	0	0	0.002	0.002	<0.003 mg/l	0
SW206	Diethyl phthalate mg/l	4	0	0	0.001	0.001	<0.003 mg/l	0
SW207	Diethyl phthalate mg/l	4	0	0	0.001	0.001		0
SW201	Mecoprop mg/l	2	0	0	0.00004	0.00004		0
SW201	Mecoprop mg/l	2	0	0	0.00008	0.00008		0
SW202	Mecoprop mg/l	2	0	0	0.00004	0.00004		0
SW202	Mecoprop mg/l	2	0	0	0.00008	0.00008		0
SW203	Mecoprop mg/l	1	0	0	0.00004	0.00004		0

Quarterly Monitoring								
Monitoring point	Determinand	N	N > LOD	Mean	Min	Max	Compliance Limit	N>CL
SW203	Mecoprop mg/l	2	0	0	0.00008	0.00008		0
SW204	Mecoprop mg/l	3	0	0	0.00004	0.00004		0
SW204	Mecoprop mg/l	1	0	0	0.00008	0.00008		0
SW205a	Mecoprop mg/l	3	0	0	0.00004	0.00004	<0.000055 mg/l	0
SW205a	Mecoprop mg/l	1	0	0	0.00008	0.00008	<0.000055 mg/l	1
SW206	Mecoprop mg/l	2	0	0	0.00004	0.00004	<0.000055 mg/l	0
SW206	Mecoprop mg/l	2	0	0	0.00008	0.00008	<0.000055 mg/l	2
SW207	Mecoprop mg/l	2	0	0	0.00004	0.00004		0
SW207	Mecoprop mg/l	2	0	0	0.00008	0.00008		0

Table notes: N denotes 'Number of Results' and CL denotes 'Compliance Limit'

Table 4-4 - Groundwater Elevations in Perimeter Boreholes, 2021

Borehole	Cover Elevation (mAOD)	Groundwater Elevation (mAOD)											
		04/01/2021	08/02/2021	08/03/2021	19/04/2021	18/05/2021	14/06/2021	26/07/2021	10/08/2021	13/09/2021	18/10/2021	09/11/2021	03/12/2021
BH208	124.00	123.79	123.69	123.69	123.77	123.66	123.68	123.95	123.73	123.68	123.88	123.81	123.79
BH3/1	137.99	137.17	137.22	136.89	136.66	137.01	137.65	134.79	135.21	135.2	136.4	136.91	136.6
BH3/10	144.54	143.56	143.61	143.59	143.39	143.48	143.6	141.21	139.38	138.42	143.51	143.84	143.39
BH3/11	139.88	138.88	138.97	138.51	138.14	138.74	138.51	136.73	135.78	135.29	138.03	138.59	138.28
BH3/2	142.41	140.43	141.27	139.92	139.46	140.92	140.01	138.33	137.06	136.41	141.94	139.98	139.78
BH3/3	146.85	ART	ART	ART	146.37	ART	ART	ART	142.64	141.95	146.73	ART	ART
BH3/4	138.12	137.01	137.05	137	136.8	136.9	137.08	136.53	135.96	135.57	136.45	136.78	136.96
BH3/5	141.1	ART	138.93	138.8	138.32	138.44	138.5	136.87	136.55	138.94	138.07	138.72	139.15
BH3/6	140.53	137.58	137.81	136.77	136.35	136.87	138.37	134.98	134.24	133.74	135.53	135.53	135.89
BH3/8	139.79	138.96	139	139.09	138.35	138.94	138.97	136.54	136.04	135.79	139.07	138.92	138.84
BH3/9	143.24	140.99	141.15	140.63	139.74	140.57	140.4	137.54	139.49	136.11	140.03	140.35	140.14
BH5/02	126.50	124.65	124.69	124.63	124.63	124.58	124.61	124.54	124.4	124.28	124.32	124.4	124.48
NACW201	135.50	133.14	133.22	133.13	132.89	132.75	133.01	132.23	132.43	131.54	132.06	133.05	132.9
NACW202	135.10	132.9	132.85	132.77	132.47	132.44	132.63	131.98	132.06	131.1	131.45	132.64	132.7
NACW203	133.60	133.3	133.56	133.29	133.17	133.2	133.14	133.19	133.15	133.04	132.79	133.46	133.36
NACW204	133.10	131.02	131.1	131.06	130.8	130.8	130.96	130.64	130.45	130.33	130.4		131.13
NACW205	130.20	129.43	129.29	129.36	129.33	129.67	129.68	129.1	129.24	129.2	129.38	129.36	129.48
NACW212	119.80	118.77	118.8	118.6	118.48	118.65	118.67	118.47	118.45	118.41	118.84	118.48	118.7
NACW213	122.30	120.6	120.71	120.38	120.27	120.71	120.24	119.89	119.69	119.56	120.39	120.01	120.01
NACW215	132.50	129.6	132.5	129.23	129.13	128.8	128.9	128.78	128.46	128.53	128.27	128.64	128.7
NACW216	N/A												
NACW219	133.10	128.48	128.42	128.24	128.07	128.17	123.13	127.76	127.33	127.15	127.58	129.07	129
NACW227	134.80	DRY	DRY	130.23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
NACW228	134.80	130.41	130.52	130.6	130.46	130.24	130.44	129.7	129.15	129.4	129.16	130.21	130.28
NACW229	135.00	134.18	134.18	134.47	134.08	134.35	134.3	133.5	134.1	133.67	133.96	133.7	133.95
NACW230	134.10	133.12	133.59	133.64	133.18	133.03	133.87	132.6	131.4	131.27	131.17	132.4	132.56

Table notes: ART – artesian, i.e. above ground elevation,

Where blank – no record provided by field team

Table 4-5 - Summary of Compliance Monitoring, Site Groundwater, 2021

Monthly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
BH208	Ammoniacal Nitrogen as N mg/l	0.2	12	2	0.23	0.2	0.417	<5.5 mg/l	0
BH3/2	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH3/3	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH3/4	Ammoniacal Nitrogen as N mg/l	0.2	12	1	0.2	0.2	0.212	<5.5 mg/l	0
BH3/5	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH3/6	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH3/8	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH3/9	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
BH5/02	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW203	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW205	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW212	Ammoniacal Nitrogen as N mg/l	0.2	11	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW219	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW228	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
NACW229	Ammoniacal Nitrogen as N mg/l	0.2	4	0	0.2	0.2	0.2	<5.5 mg/l	0
UD1	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
UD3	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0

Monthly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD4	Ammoniacal Nitrogen as N mg/l	0.2	12	5	0.35	0.2	0.871	<5.5 mg/l	0
UD5	Ammoniacal Nitrogen as N mg/l	0.2	12	0	0.2	0.2	0.2	<5.5 mg/l	0
BH208	Chloride mg/l	2	12	12	16.08	13.1	17.5	<150 mg/l	0
BH3/2	Chloride mg/l	2	4	4	16.73	9.4	35.2	<150 mg/l	0
BH3/3	Chloride mg/l	2	4	4	12.42	8.2	17.6	<150 mg/l	0
BH3/4	Chloride mg/l	2	12	12	13.08	8.6	49.5	<150 mg/l	0
BH3/5	Chloride mg/l	2	4	4	18.2	10.3	40.6	<150 mg/l	0
BH3/6	Chloride mg/l	2	4	4	12.6	8.2	16.9	<150 mg/l	0
BH3/8	Chloride mg/l	2	4	4	25	13.8	47.6	<150 mg/l	0
BH3/9	Chloride mg/l	2	4	4	19.02	10.1	37.5	<150 mg/l	0
BH5/02	Chloride mg/l	2	12	12	22.67	21	30.8	<150 mg/l	0
NACW203	Chloride mg/l	2	12	12	32.56	25.3	41.5	<150 mg/l	0
NACW205	Chloride mg/l	2	12	12	34.6	31.2	37.9	<150 mg/l	0
NACW212	Chloride mg/l	2	11	11	16.91	13.6	19.5	<150 mg/l	0
NACW219	Chloride mg/l	2	4	4	16.77	11.8	21.9	<150 mg/l	0
NACW228	Chloride mg/l	2	12	12	22.57	10.1	64.9	<150 mg/l	0
NACW229	Chloride mg/l	2	4	4	30.85	17.5	58	<150 mg/l	0
UD1	Chloride mg/l	2	12	12	45.72	44.3	48.3	<150 mg/l	0



Monthly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD3	Chloride mg/l	2	12	12	17.14	16	19.7	<150 mg/l	0
UD4	Chloride mg/l	2	12	12	16.24	10.5	35.8	<150 mg/l	0
UD5	Chloride mg/l	2	12	12	21.87	11.1	53.8	<150 mg/l	0
BH208	Electrical conductivity @20°C (lab) µS/cm	20	12	12	328.63	82	456		0
BH3/2	Electrical conductivity @20°C (lab) µS/cm	20	4	4	169.75	136	206		0
BH3/3	Electrical conductivity @20°C (lab) µS/cm	20	4	4	184.5	118	295		0
BH3/4	Electrical conductivity @20°C (lab) µS/cm	20	12	12	237.25	137	393		0
BH3/5	Electrical conductivity @20°C (lab) µS/cm	20	4	4	193.5	134	247		0
BH3/6	Electrical conductivity @20°C (lab) µS/cm	20	4	4	169.3	64.2	364		0
BH3/8	Electrical conductivity @20°C (lab) µS/cm	20	4	4	321	118	650		0
BH3/9	Electrical conductivity @20°C (lab) µS/cm	20	4	4	243.25	113	515		0
BH5/02	Electrical conductivity @20°C (lab) µS/cm	20	12	12	456.67	439	483		0
NACW203	Electrical conductivity @20°C (lab) µS/cm	20	12	12	420.25	201	621		0
NACW205	Electrical conductivity @20°C (lab) µS/cm	20	12	12	507.08	487	549		0
NACW212	Electrical conductivity @20°C (lab) µS/cm	20	11	11	259.82	205	375		0
NACW219	Electrical conductivity @20°C (lab) µS/cm	20	4	4	225.25	113	360		0
NACW228	Electrical conductivity @20°C (lab) µS/cm	20	12	12	323.75	108	515		0
NACW229	Electrical conductivity @20°C (lab) µS/cm	20	4	4	481.25	442	510		0

Monthly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD1	Electrical conductivity @20°C (lab) µS/cm	20	12	12	559.33	532	585		0
UD3	Electrical conductivity @20°C (lab) µS/cm	20	12	12	386.17	361	448		0
UD4	Electrical conductivity @20°C (lab) µS/cm	20	12	12	431.17	309	638		0
UD5	Electrical conductivity @20°C (lab) µS/cm	20	12	12	391.17	302	535		0

Table notes: N denotes 'Number of Results' and CL denotes 'Compliance Limit'

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
BH208	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
BH3/2	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/3	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/4	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
BH3/5	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/6	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/8	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/9	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
BH5/02	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
NACW203	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
NACW205	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
NACW212	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
NACW219	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001		0
NACW228	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
NACW229	4-Methylphenol mg/l	0.001	3	0	0.001	0.001	0.001		0
NACW229	4-Methylphenol mg/l	0.002	1	0	0.002	0.002	0.002		0
UD1	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
UD3	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD4	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
UD5	4-Methylphenol mg/l	0.001	4	0	0.001	0.001	0.001	<0.001 mg/l	0
BH208	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
BH3/2	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
BH3/3	Cadmium (filtered) mg/l	0.00008	4	1	0.00008	0.00008	8.02E-05		0
BH3/4	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
BH3/5	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
BH3/6	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
BH3/8	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
BH3/9	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
BH5/02	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
NACW203	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
NACW205	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
NACW212	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
NACW219	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
NACW228	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
NACW229	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008		0
UD1	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD3	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
UD4	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
UD5	Cadmium (filtered) mg/l	0.00008	4	0	0.00008	0.00008	0.00008	<0.0001 mg/l	0
BH208	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
BH3/2	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH3/3	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH3/4	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
BH3/5	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH3/6	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH3/8	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH3/9	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
BH5/02	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
NACW203	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
NACW205	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
NACW212	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
NACW219	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0
NACW228	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
NACW229	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003		0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD1	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
UD3	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
UD4	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
UD5	Dichloromethane mg/l	0.003	4	0	0.003	0.003	0.003	<0.002 mg/l	4
BH208	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
BH3/2	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/3	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/4	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
BH3/5	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/6	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/8	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH3/9	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
BH5/02	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
NACW203	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
NACW205	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
NACW212	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
NACW219	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001		0
NACW228	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
NACW229	Diethyl phthalate mg/l	0.001	3	0	0.001	0.001	0.001		0
NACW229	Diethyl phthalate mg/l	0.002	1	0	0.002	0.002	0.002		0
UD1	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
UD3	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
UD4	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
UD5	Diethyl phthalate mg/l	0.001	4	0	0.001	0.001	0.001	<0.003 mg/l	0
BH208	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
BH208	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008	<0.000055 mg/l	2
BH3/2	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004		0
BH3/2	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008		0
BH3/3	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004		0
BH3/3	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008		0
BH3/4	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
BH3/4	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008	<0.000055 mg/l	1
BH3/5	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004		0
BH3/5	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008		0
BH3/6	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004		0
BH3/6	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008		0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
BH3/8	Mecoprop mg/l	0.00004	4	0	0.00004	0.00004	0.00004		0
BH3/9	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004		0
BH3/9	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008		0
BH5/02	Mecoprop mg/l	0.00004	2	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
BH5/02	Mecoprop mg/l	0.00008	2	0	0.00008	0.00008	0.00008	<0.000055 mg/l	2
NACW203	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
NACW203	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008	<0.000055 mg/l	1
NACW205	Mecoprop mg/l	0.00004	4	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
NACW212	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
NACW212	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008	<0.000055 mg/l	1
NACW219	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004		0
NACW219	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008		0
NACW228	Mecoprop mg/l	0.00004	1	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
NACW228	Mecoprop mg/l	0.00008	3	1	0.00009	0.00008	9.95E-05	<0.000055 mg/l	3
NACW229	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004		0
NACW229	Mecoprop mg/l	0.00008	1	1	0.00011	0.000107	0.000107		0
UD1	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
UD1	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008	<0.000055 mg/l	1



Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
UD3	Mecoprop mg/l	0.00004	1	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
UD3	Mecoprop mg/l	0.00008	3	0	0.00008	0.00008	0.00008	<0.000055 mg/l	3
UD4	Mecoprop mg/l	0.00004	4	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
UD5	Mecoprop mg/l	0.00004	3	0	0.00004	0.00004	0.00004	<0.000055 mg/l	0
UD5	Mecoprop mg/l	0.00008	1	0	0.00008	0.00008	0.00008	<0.000055 mg/l	1
BH208	Nickel (filtered) mg/l	0.0004	4	2	0.00068	0.0004	0.00139	<0.02 mg/l	0
BH3/2	Nickel (filtered) mg/l	0.0004	4	3	0.00268	0.0004	0.00926		0
BH3/3	Nickel (filtered) mg/l	0.0004	4	2	0.00067	0.0004	0.0014		0
BH3/4	Nickel (filtered) mg/l	0.0004	4	3	0.0008	0.0004	0.00171	<0.02 mg/l	0
BH3/5	Nickel (filtered) mg/l	0.0004	4	3	0.00082	0.0004	0.00125		0
BH3/6	Nickel (filtered) mg/l	0.0004	4	2	0.00067	0.0004	0.00142		0
BH3/8	Nickel (filtered) mg/l	0.0004	4	3	0.00064	0.0004	0.00101		0
BH3/9	Nickel (filtered) mg/l	0.0004	4	3	0.00104	0.0004	0.00215		0
BH5/02	Nickel (filtered) mg/l	0.0004	4	1	0.00042	0.0004	0.000462	<0.02 mg/l	0
NACW203	Nickel (filtered) mg/l	0.0004	4	1	0.00043	0.0004	0.000529	<0.02 mg/l	0
NACW205	Nickel (filtered) mg/l	0.0004	4	2	0.0005	0.0004	0.000728	<0.02 mg/l	0
NACW212	Nickel (filtered) mg/l	0.0004	4	3	0.00493	0.0004	0.0175	<0.037 mg/l	0
NACW219	Nickel (filtered) mg/l	0.0004	4	2	0.00144	0.0004	0.00249		0

Quarterly Monitoring									
Borehole	Determinand	LOD	N	N > LOD	Mean	Min	Max	Compliance Limit	No. of Exceedances
NACW228	Nickel (filtered) mg/l	0.0004	4	4	0.00242	0.000583	0.00613	<0.02 mg/l	0
NACW229	Nickel (filtered) mg/l	0.0004	4	4	0.00132	0.000538	0.00206		0
UD1	Nickel (filtered) mg/l	0.0004	4	2	0.00063	0.0004	0.000967	<0.02 mg/l	0
UD3	Nickel (filtered) mg/l	0.0004	4	0	0.0004	0.0004	0.0004	<0.02 mg/l	0
UD4	Nickel (filtered) mg/l	0.0004	4	1	0.00084	0.0004	0.00214	<0.02 mg/l	0
UD5	Nickel (filtered) mg/l	0.0004	4	3	0.0011	0.0004	0.002	<0.02 mg/l	0

Table notes: N denotes 'Number of Results' and CL denotes 'Compliance Limit'

Table 4-6 - Summary of Monthly Perimeter Gas Monitoring for Methane, 2021

Borehole	Min	Max	N > 0	Limit	Number of exceedances
BH3/1	0	0	0	<1% v/v above background	0
BH3/10	0	0	0		0
BH3/11	0	0	0		0
BH3/2	0	0	0		0
BH3/3	0	0	0		0
BH3/4	0	0	0		0
BH3/5	0	0	0		0
BH3/6	0	0	0		0
BH3/8	0	0	0		0
BH3/9	0	0	0		0
NACW201	0	0.1	1		0
NACW202	0	0	0		0
NACW203	0	0	0		0
NACW204	0	0	0		0
NACW205	0	0	0		0
NACW212	0	0	0		0
NACW213	0	0	0		0
NACW215	0	0	0		0
NACW216	0	0	0		0
NACW219	0	0	0		0
NACW227	0	0	0		0
NACW228	0	0	0		0
NACW229	0	0	0		0
NACW230	0	0	0		0

Table notes: N denotes 'Number of Results'

Table 4-7 – Summary of Monthly Perimeter Gas Monitoring for Carbon Dioxide 2021

Borehole	Min	Max	N > 0	Limit	Number of exceedances
BH3/1	0.1	2.1	12	<3.5% v/v	0
BH3/10	0.1	3.3	12		0
BH3/11	0.1	2.7	12		0
BH3/2	0.1	3	12		0
BH3/3	0.6	2.5	4		0
BH3/4	0.4	3.2	12		0
BH3/5	1.1	3.2	11		0
BH3/6	0.1	0.7	12		0
BH3/8	0.1	3.1	12		0
BH3/9	0.1	1.2	12		0
NACW201	0.1	3.3	12		0
NACW202	0.1	3	12		0
NACW203	0.1	0.3	12		0
NACW204	0.2	3.2	12		0
NACW205	1	1.8	12		0
NACW212	0.2	3.2	12		0
NACW213	0.7	2.4	12		0
NACW215	0.1	3.1	12		0
NACW216	0.1	2.2	11		0
NACW219	0.1	2.7	12		0
NACW227	0.2	2.9	12		0
NACW228	0.1	2.8	12		0
NACW229	0.1	2.2	12		0
NACW230	0.1	1.3	12		0

Table notes: N denotes 'Number of Results'

Table 4-8 - Summary of Monthly Perimeter Gas Monitoring for Oxygen 2021

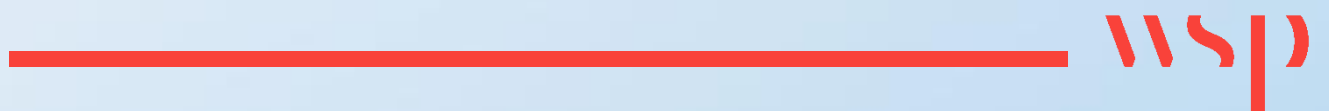
Borehole	Min	Max	N > 0	Limit	Number of exceedances
BH3/1	20.2	22.1	12	None Set	0
BH3/10	18.2	21.7	12		0
BH3/11	18.1	22.2	12		0
BH3/2	15.7	22.2	12		0
BH3/3	18	20.7	4		0
BH3/4	17.6	20.7	12		0
BH3/5	15.9	21.7	11		0
BH3/6	20.5	22.8	12		0
BH3/8	14.8	22	12		0
BH3/9	17.6	21.9	12		0
NACW201	18.7	21	12		0
NACW202	18	21.5	12		0
NACW203	20.7	22.2	12		0
NACW204	18.4	22.4	12		0
NACW205	18.7	20.3	12		0
NACW212	19.3	21.7	12		0
NACW213	20.2	21.7	12		0
NACW215	16.5	20.6	12		0
NACW216	18.7	22.3	11		0
NACW219	18.2	25.2	12		0
NACW227	18.1	20.9	12		0
NACW228	17.6	21.9	12		0
NACW229	17.1	22.8	12		0
NACW230	20.2	22.8	12		0

Table notes: N denotes 'Number of Results'

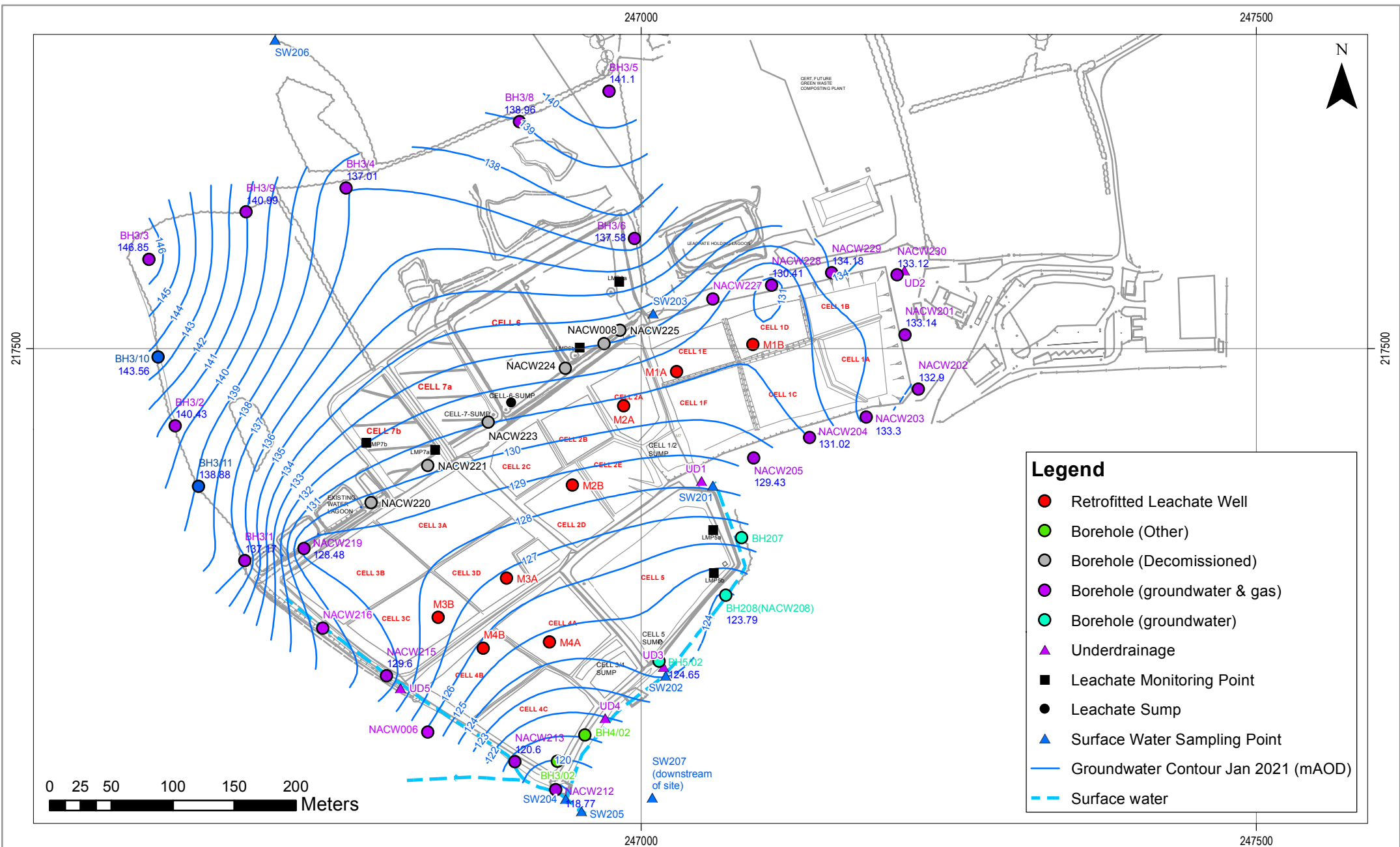
Table 4-9 - Schedule 6 Notices Issued in 2021

Date	Monitoring Location	Determinand	Recorded Concentration (mg/l)	Statutory Limit (mg/l)	Reason for Breach	Action taken
15/01/2021 20/10/2021	Cell 1/2 Sump	Mecoprop	Q1 0.0996 Q4 0.0993	0.071	Unknown	Continued surveillance of Mecoprop concentrations in successive monitoring rounds, including in underdrainage and surface water. Leachates are continually pumped out into the lagoon whereupon they are removed for treatment offsite. Suggest short review of recent Mecoprop in different locations for the site to look for any trends.
09/08/2021	NACW228	Mecoprop	Q3. 0.0995	0.055	Unknown	Continued surveillance of Mecoprop concentrations in successive monitoring rounds, including in underdrainage and surface water. Leachates are continually pumped out into the lagoon whereupon they are removed for treatment offsite. Suggest short review of recent Mecoprop in different locations for the site to look for any trends.

FIGURES



FIGURES



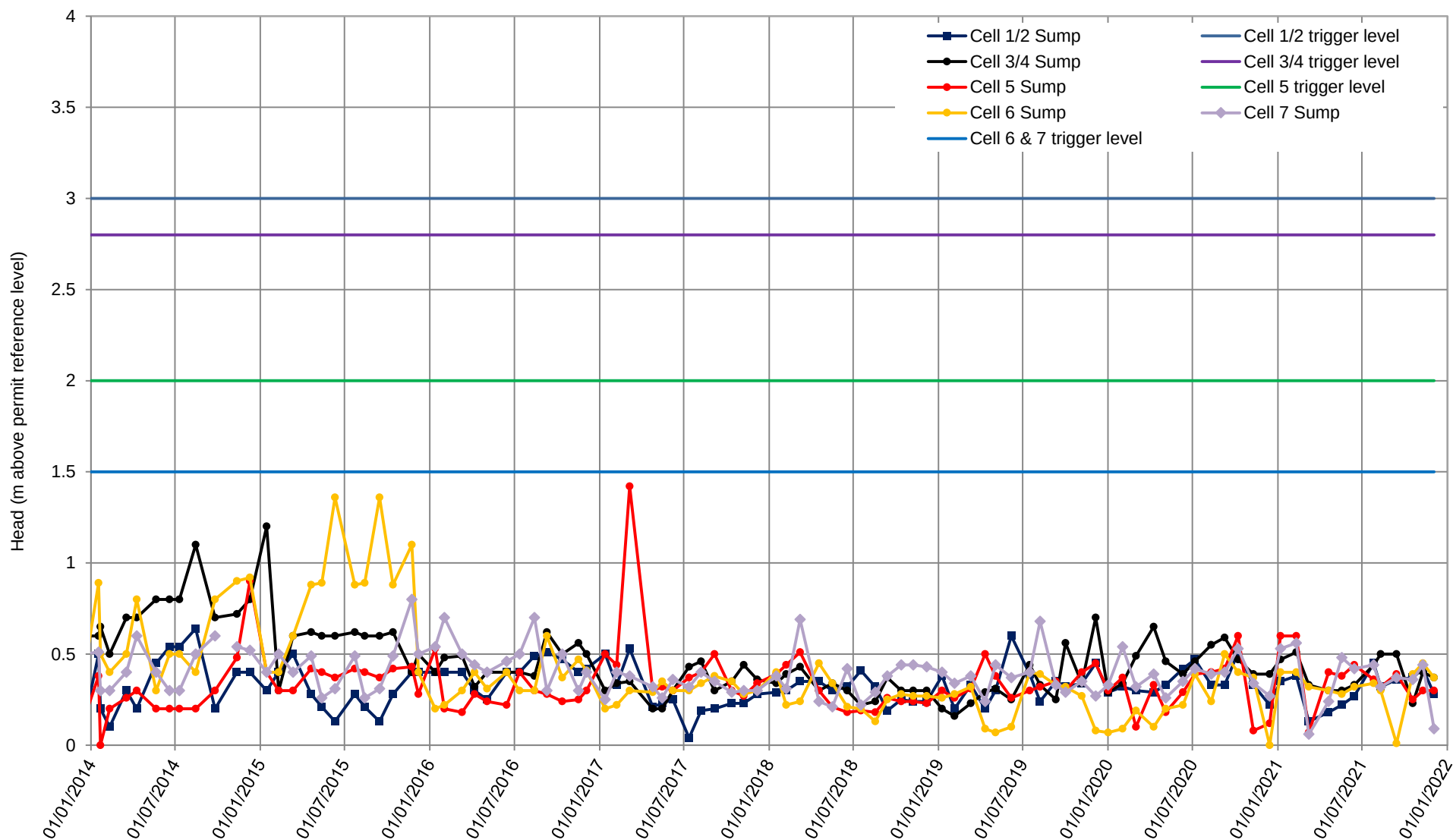
Contains Ordnance Survey data © Crown copyright and database right 2022.

Datum: OSGB 1936
Scale 1:4,000 at A4



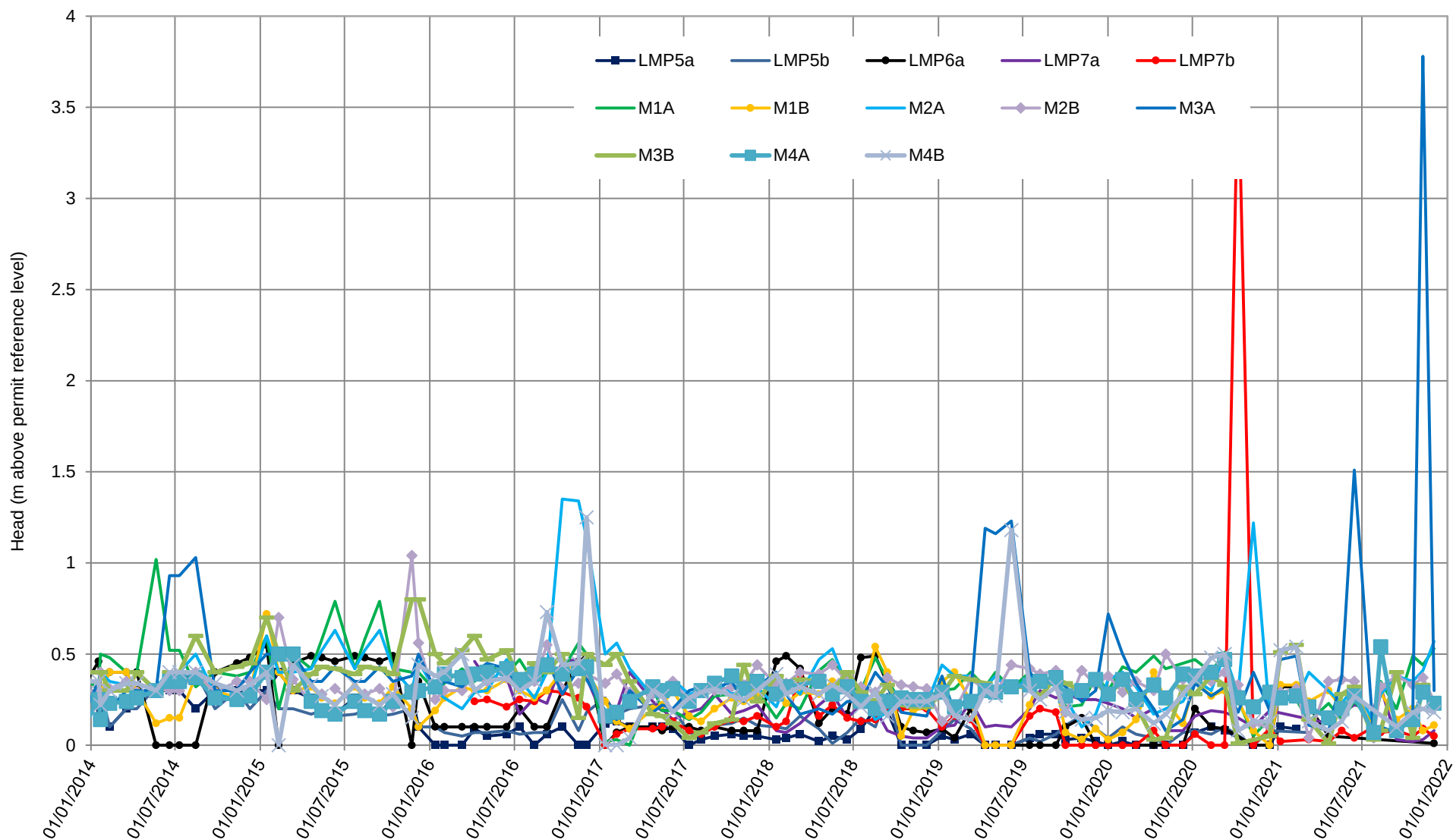
Groundwater configuration - January 2021

PROJECT:	Nantycaws Landfill	PROJECT NUMBER:	70071624
CLIENT:	CWM Environmental	DRAWING NUMBER	Figure 1
DRAWN:	ZK	CHECKED:	MC
		January 2022	



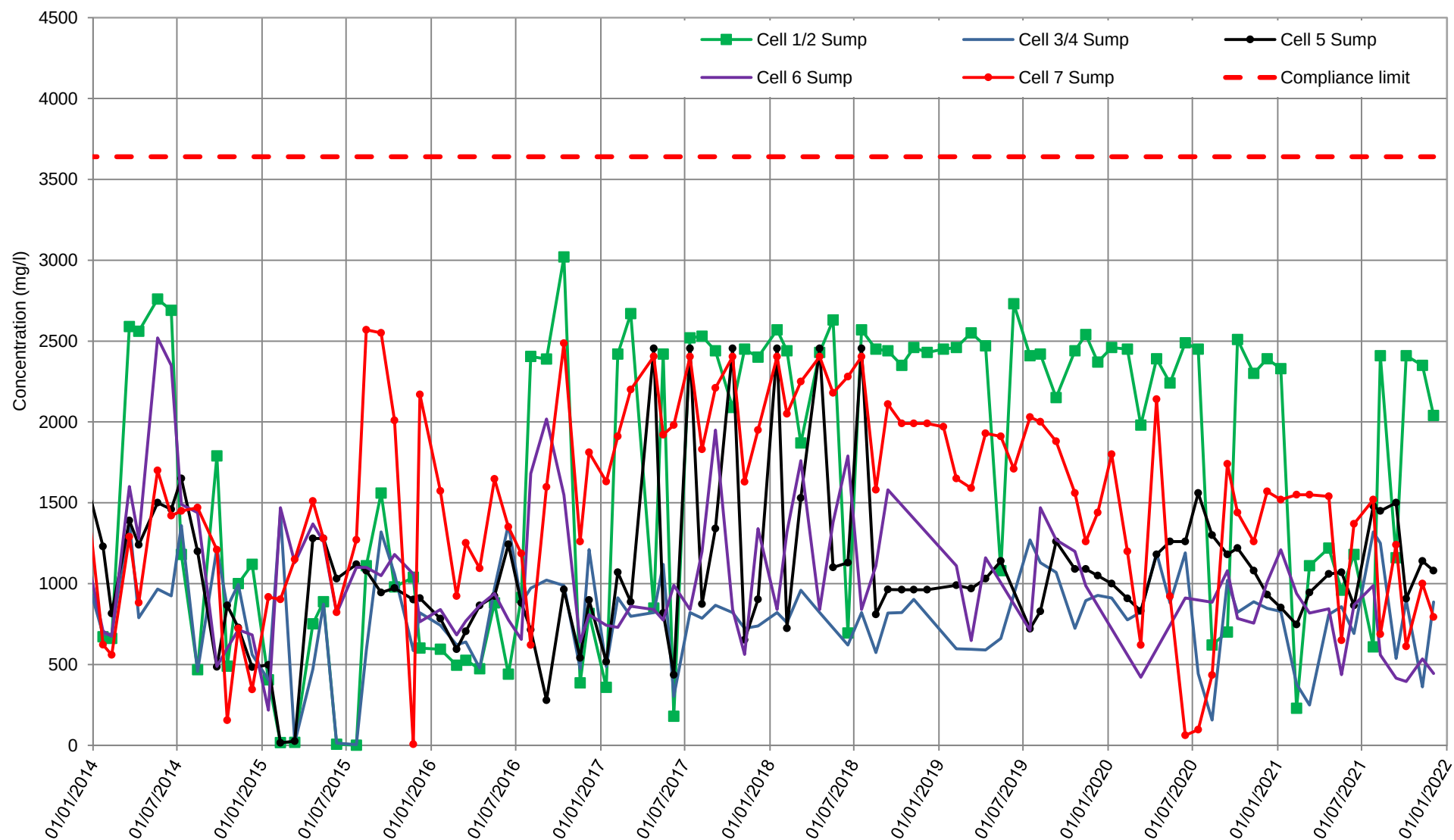
Observed Leachate Heads, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	2



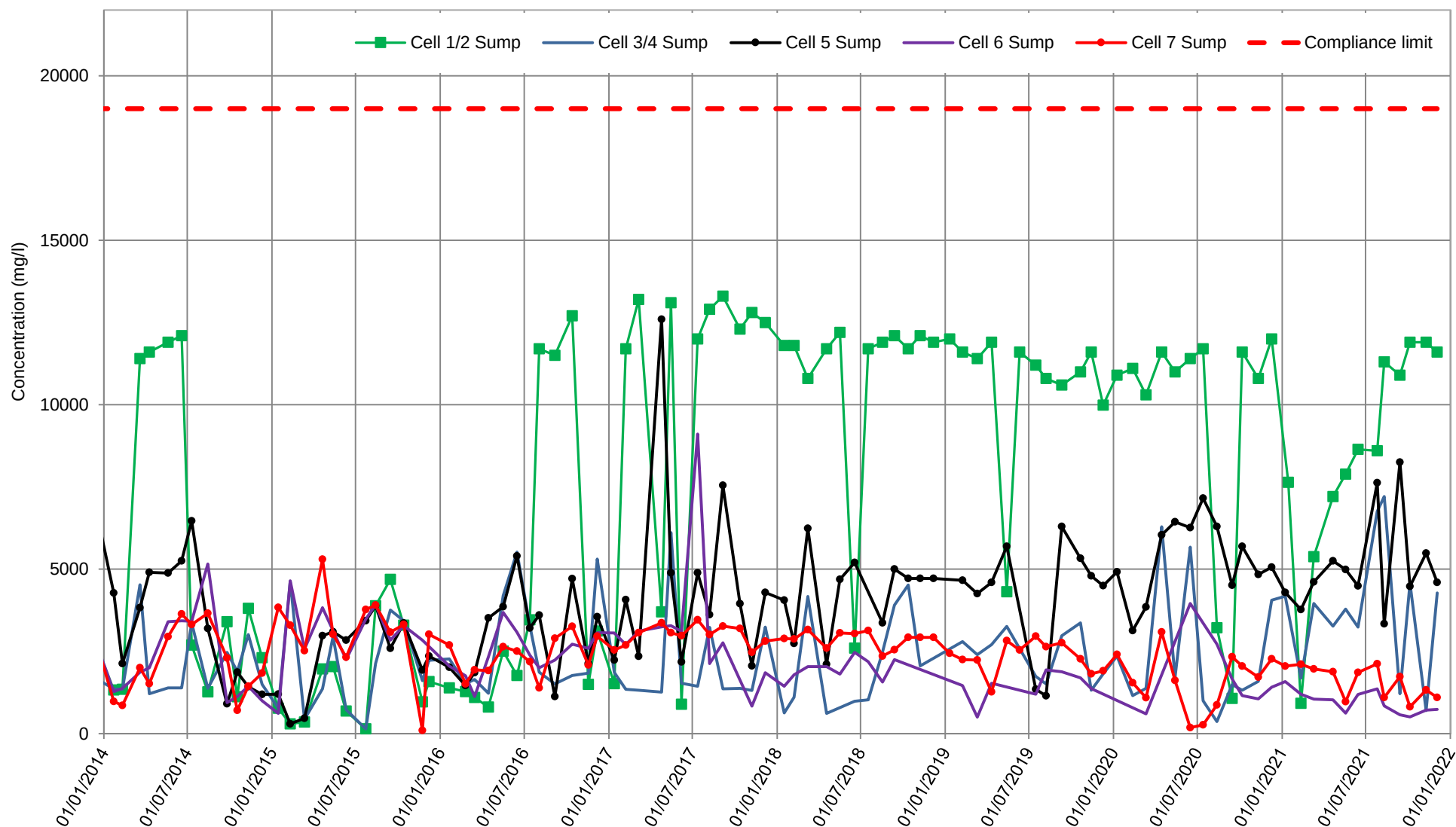
Leachate Heads above Base of In-waste Boreholes, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	3



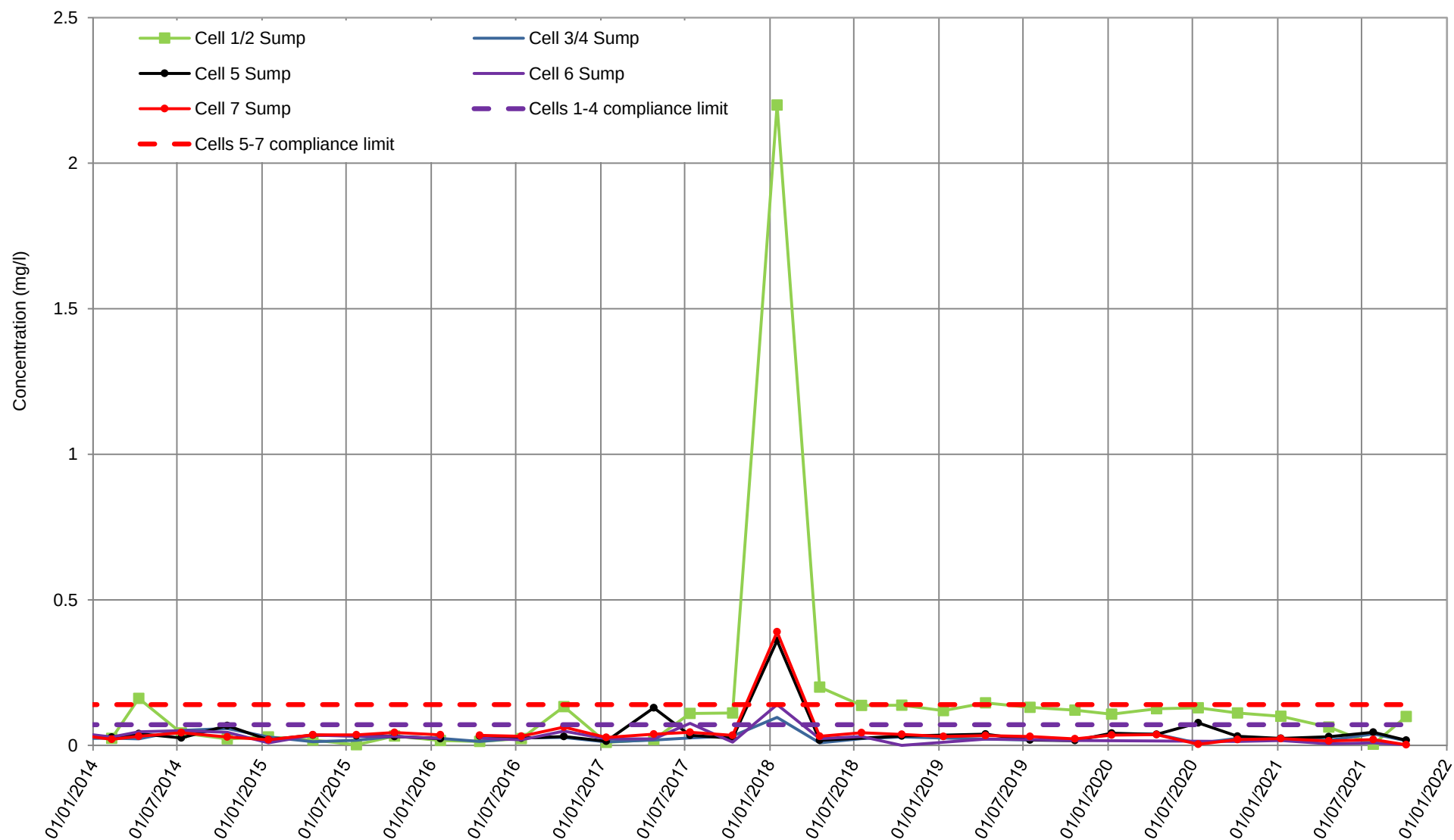
Recorded Concentrations of Ammoniacal Nitrogen in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	4



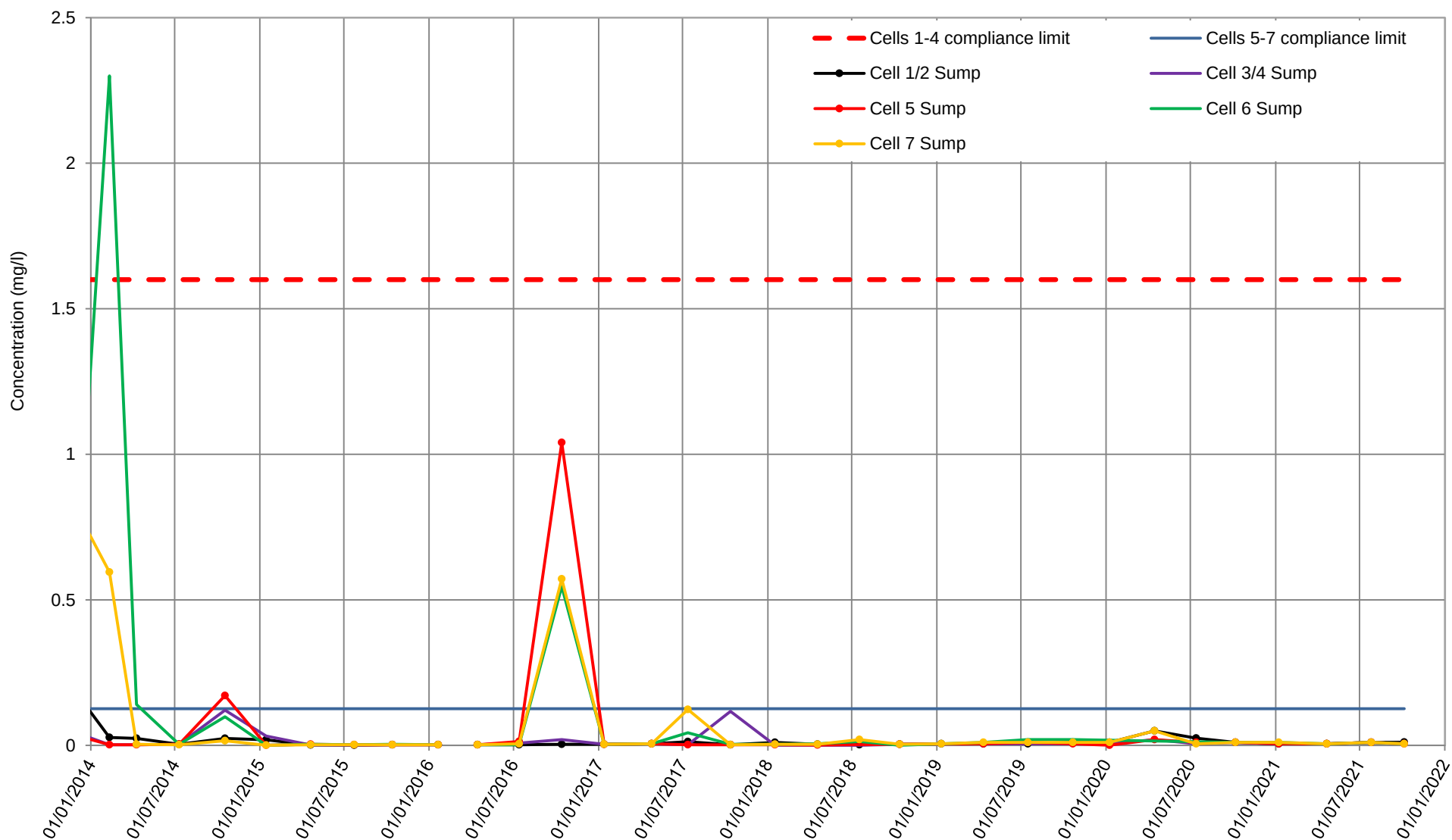
Recorded Concentrations of Chloride in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	5



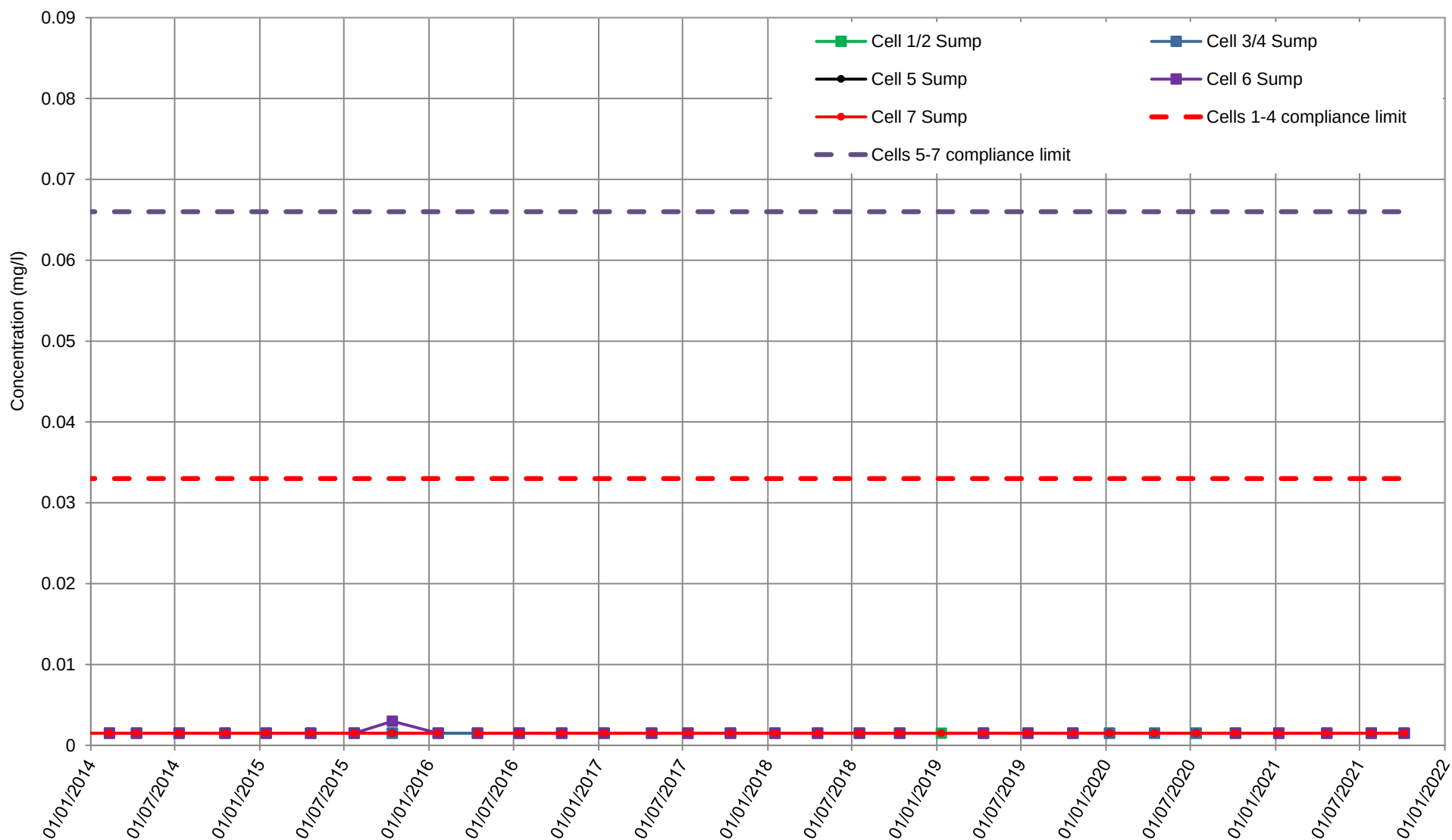
Recorded Concentrations of Mecoprop in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	6



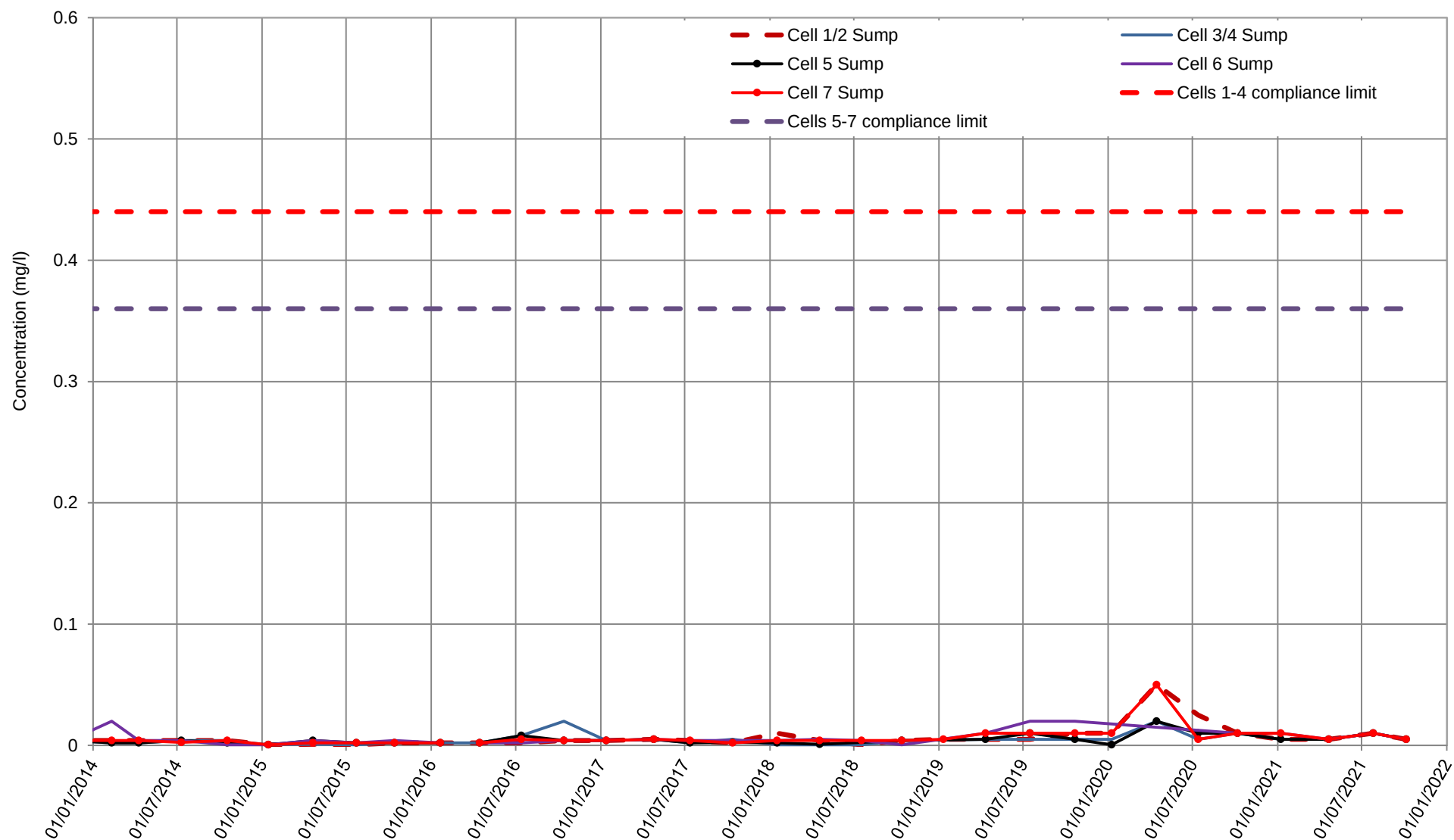
Recorded Concentrations of 4-methylphenol in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	7



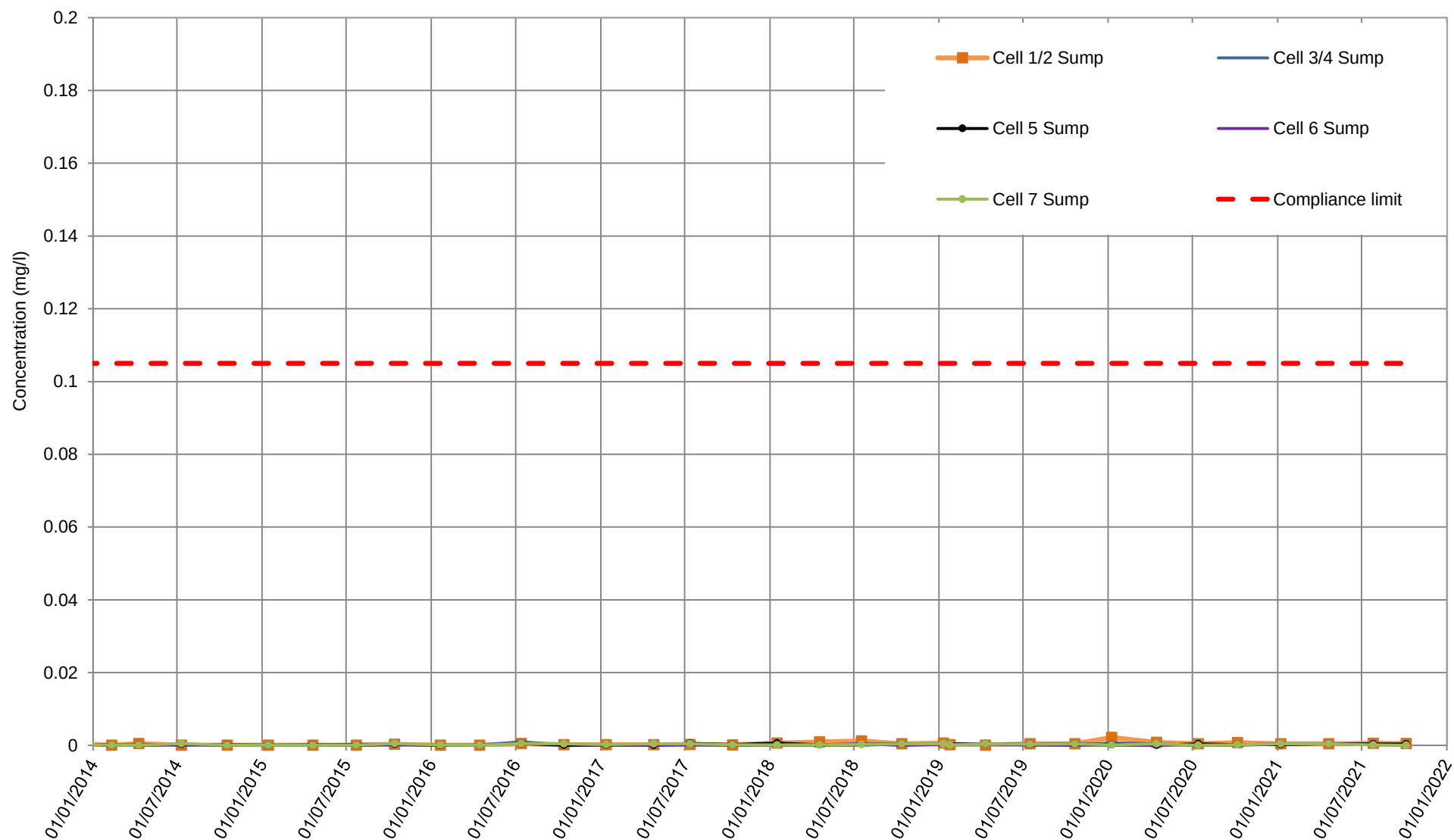
Recorded Concentrations of Dichloromethane in Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	8



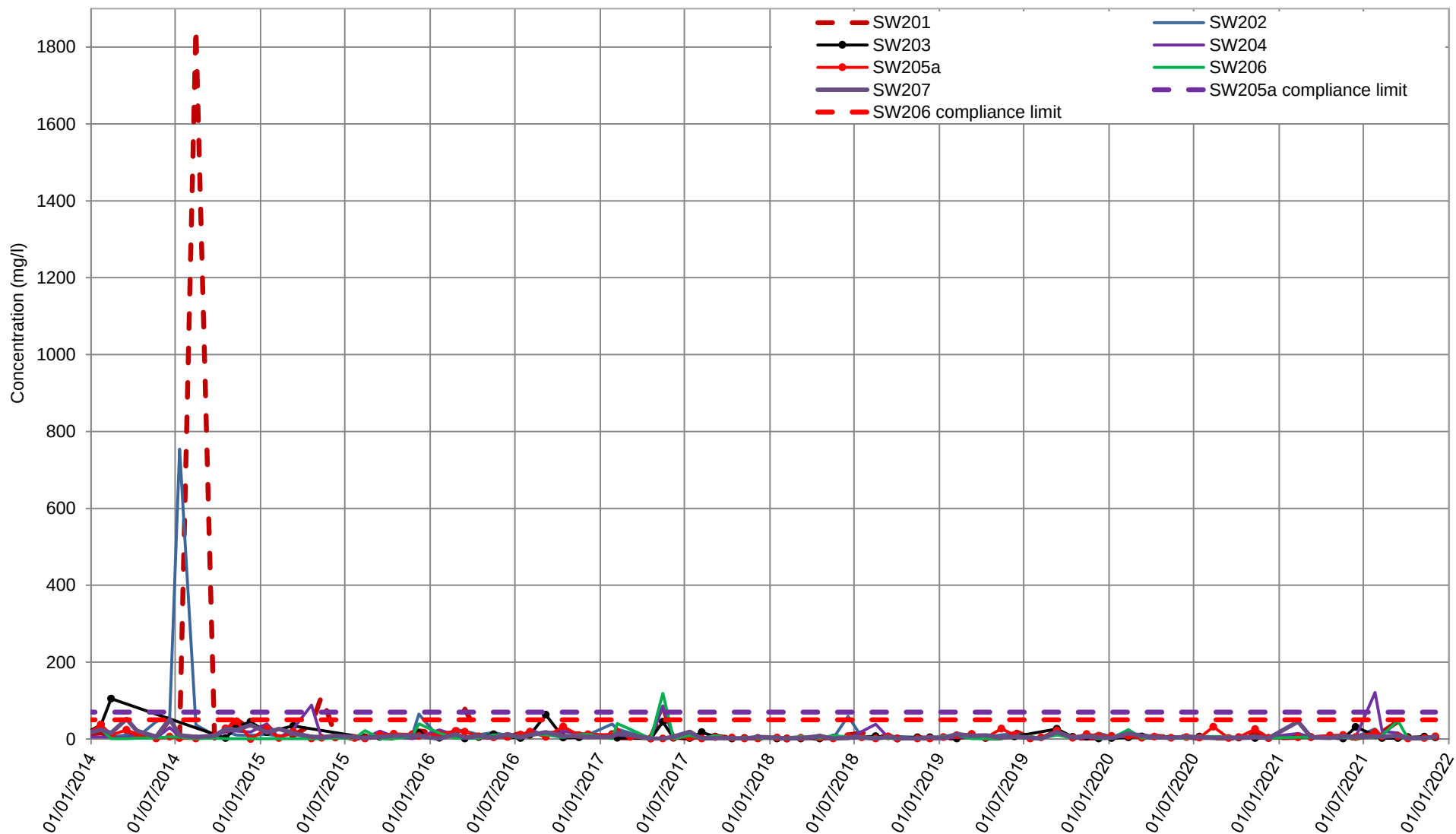
Recorded Concentrations of Diethylphthalate in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	9



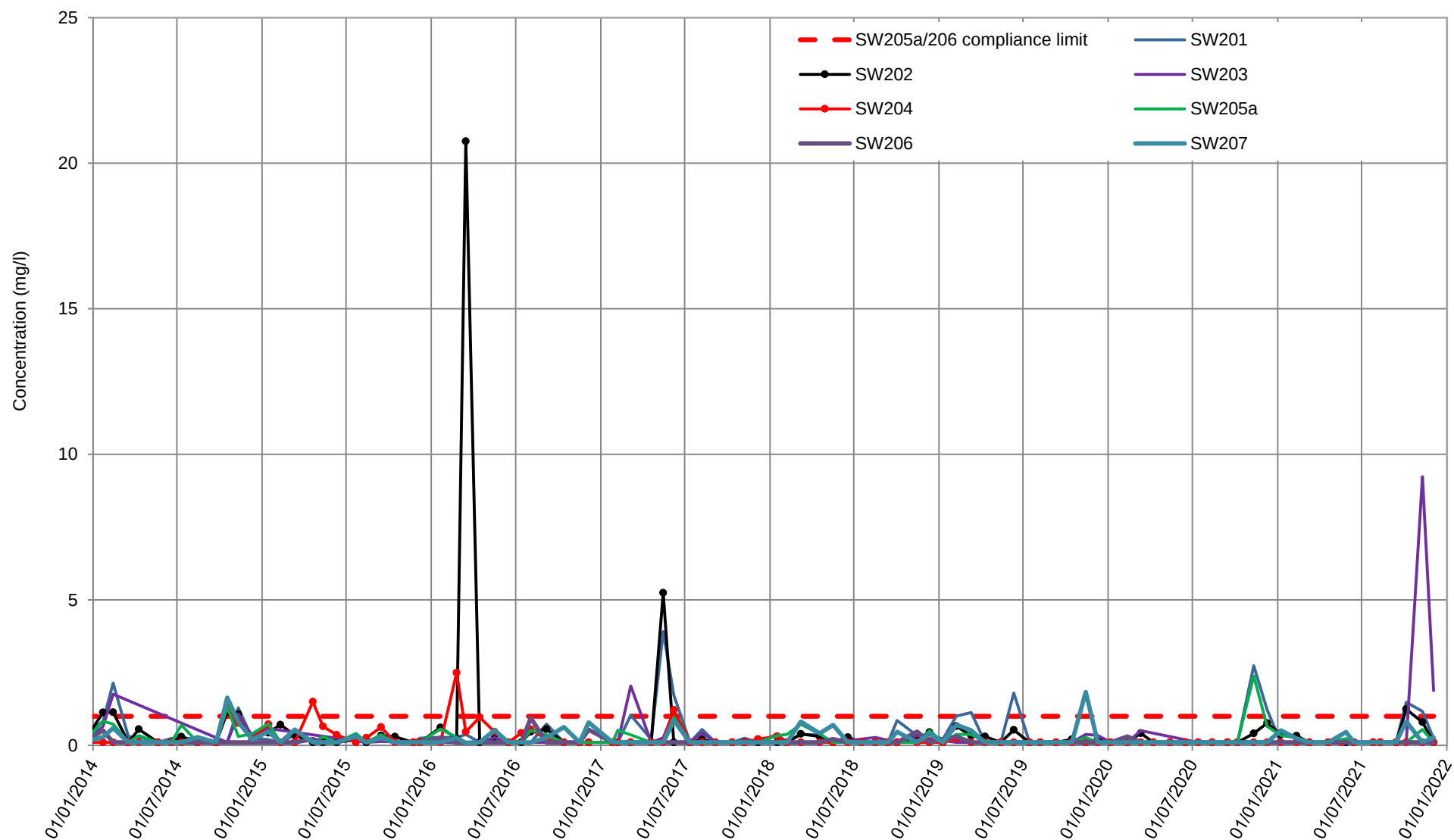
Recorded Concentrations of Cadmium in Site Leachates, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021	
PROJ. NO:	70071624 R1	DRAWN:	ZK	CHECKED: SMcG
DATE:	January 2022	FIGURE:	10	



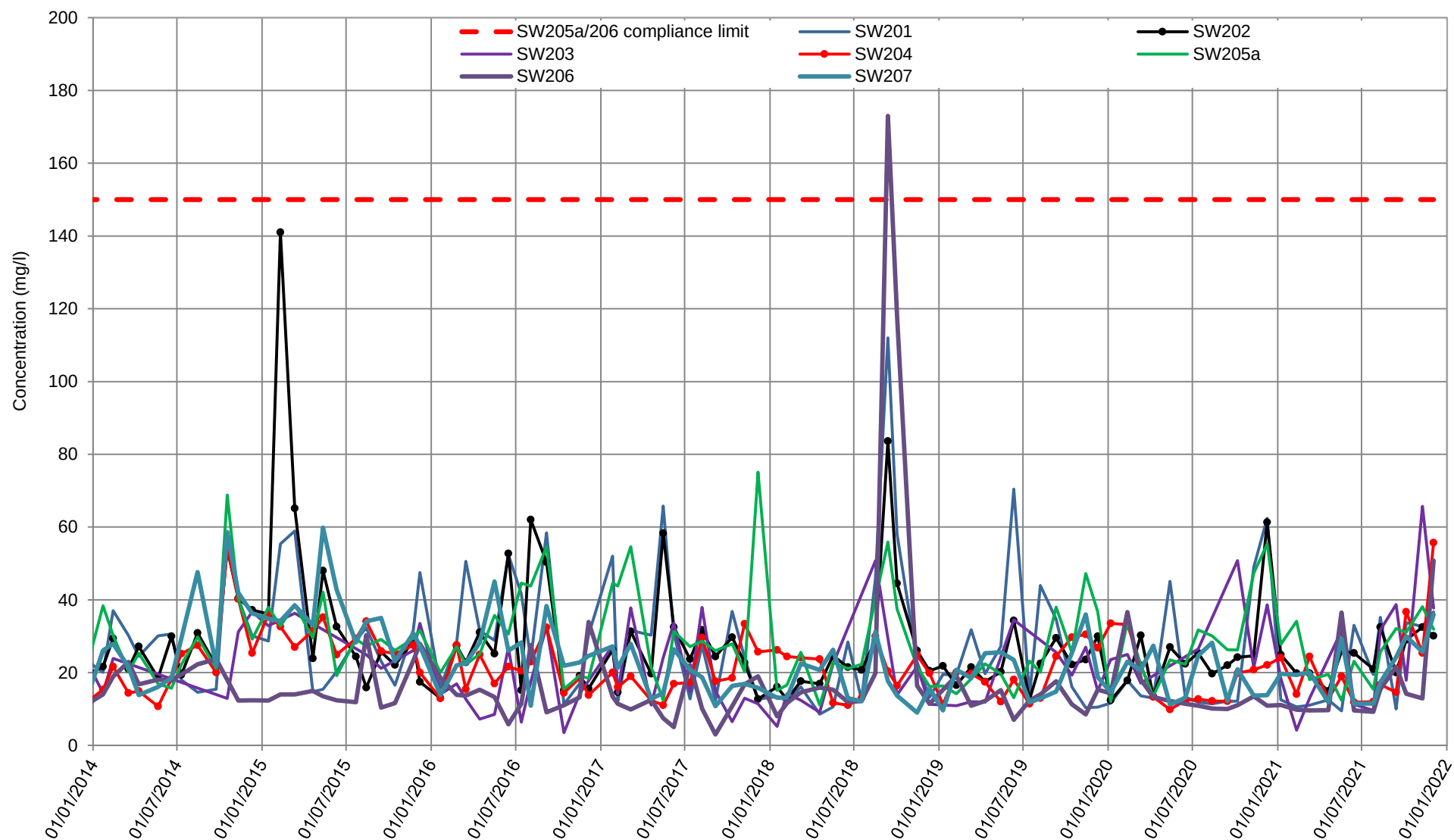
Recorded Concentrations of Suspended Solids in Surface Waters, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	11



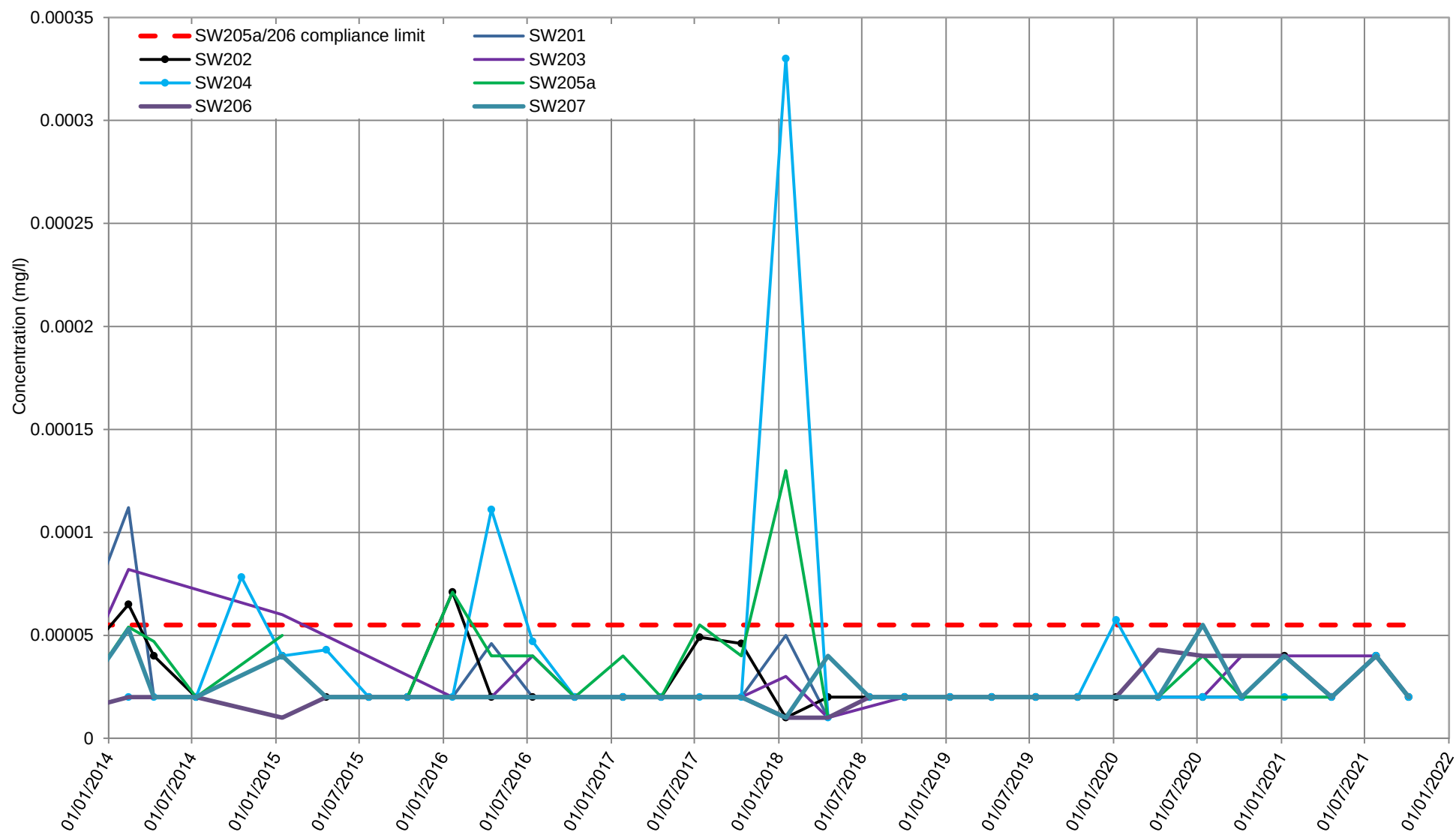
Recorded Concentrations of Ammoniacal Nitrogen in Surface Waters, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	12



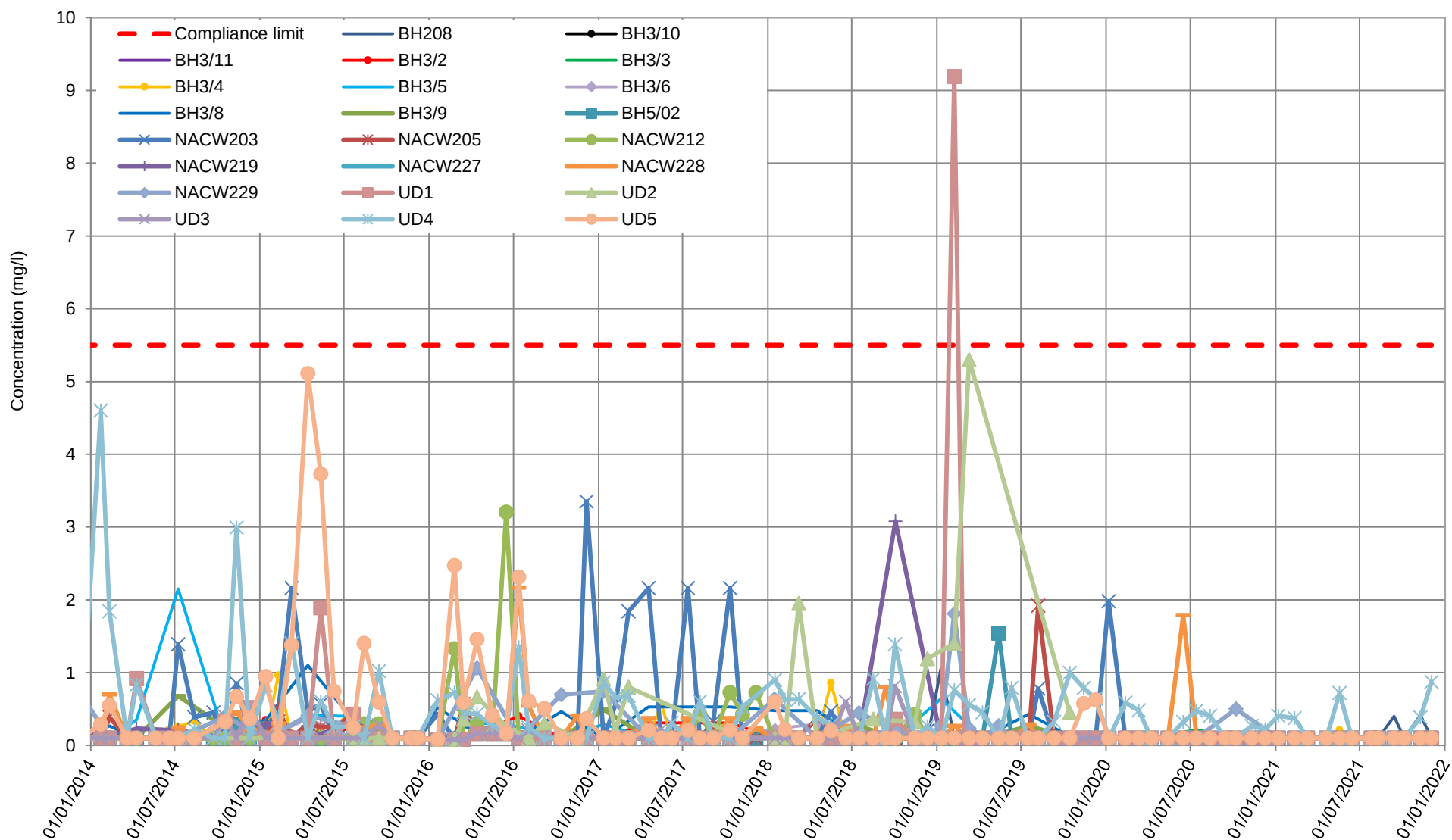
Recorded Concentrations of Chloride in Surface Water, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	13



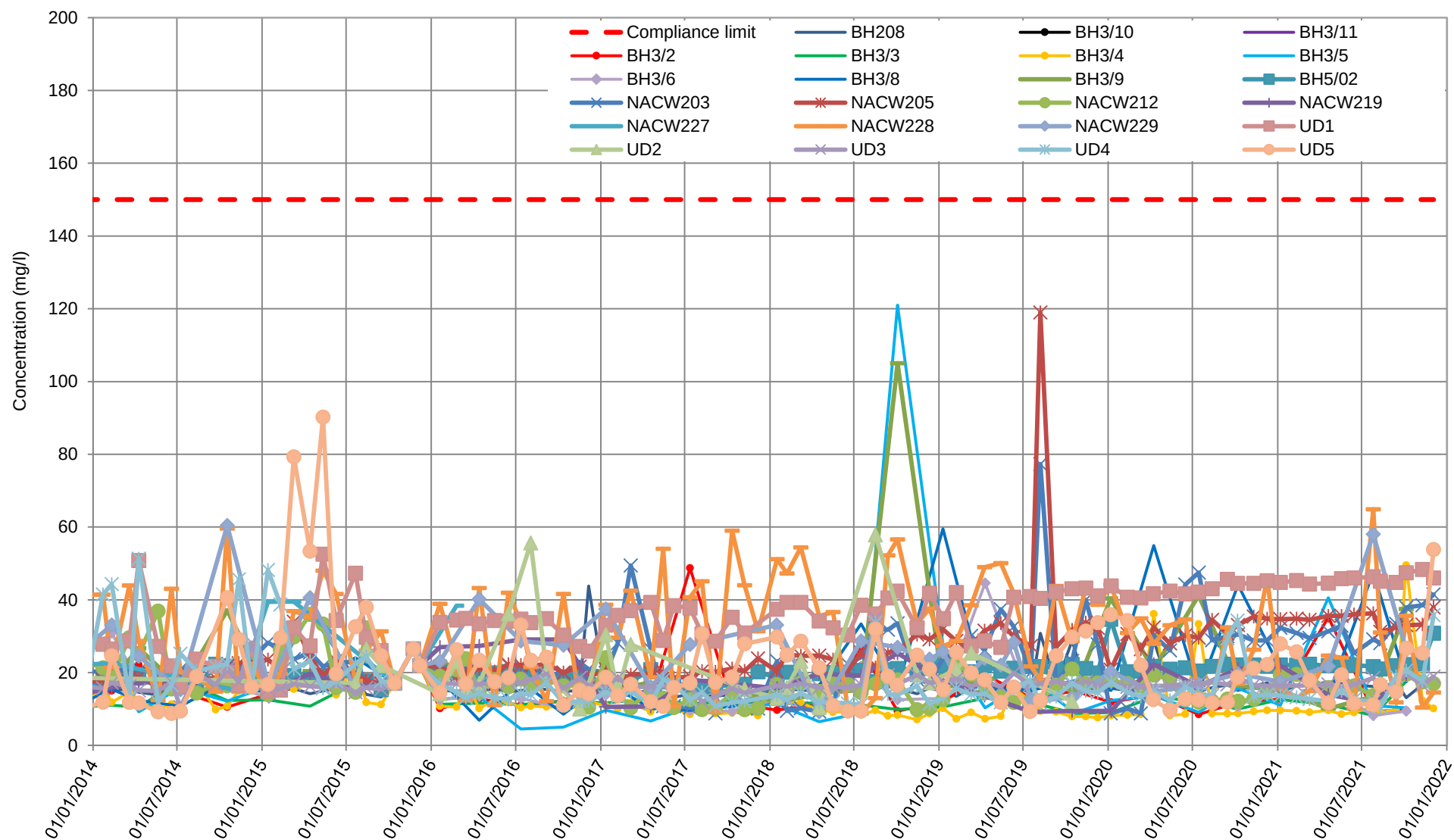
Recorded Concentrations of Mecoprop in Surface Waters, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	14



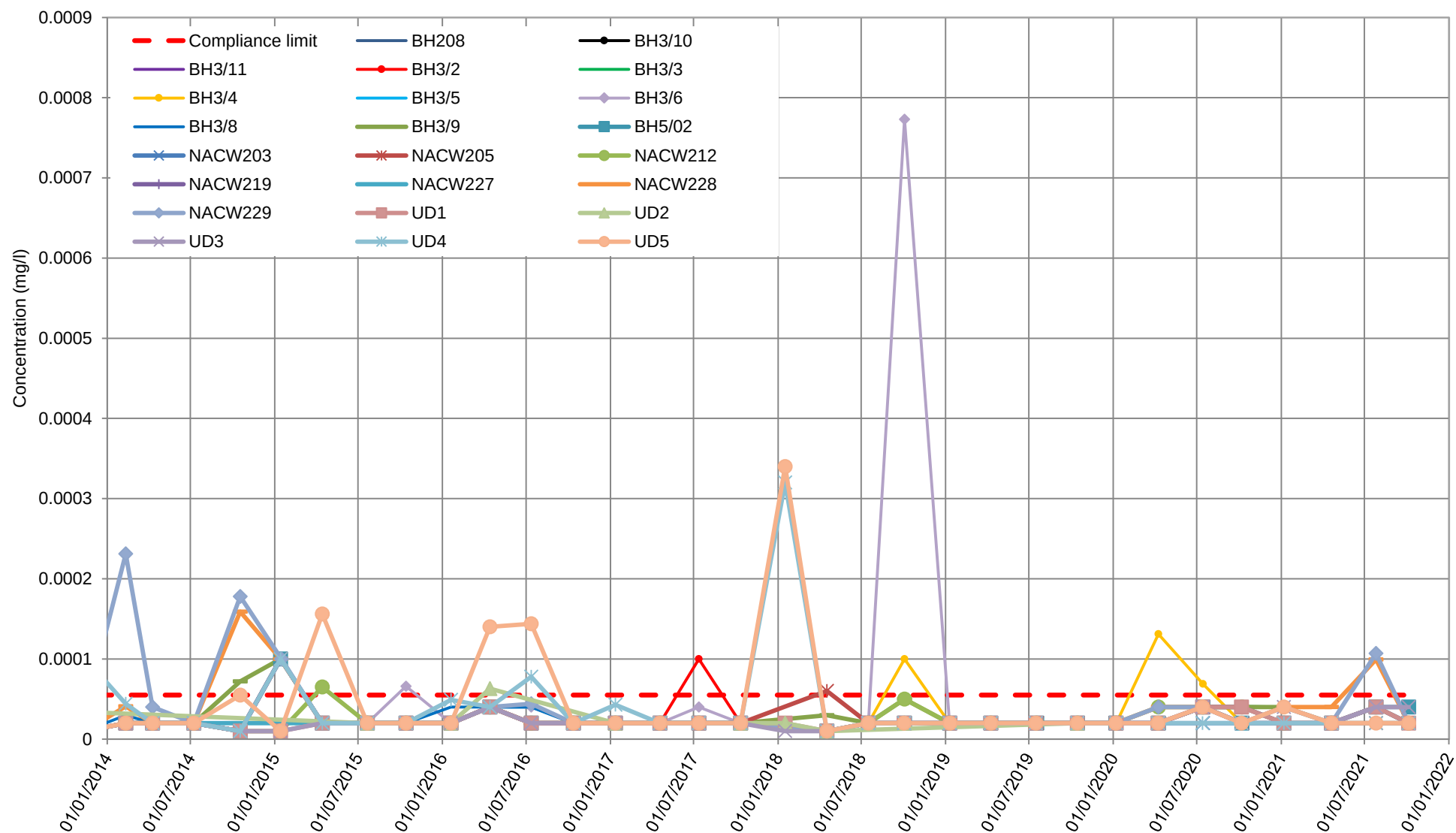
Recorded Concentrations of Ammoniacal Nitrogen in Groundwater and Under-drainage, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	15



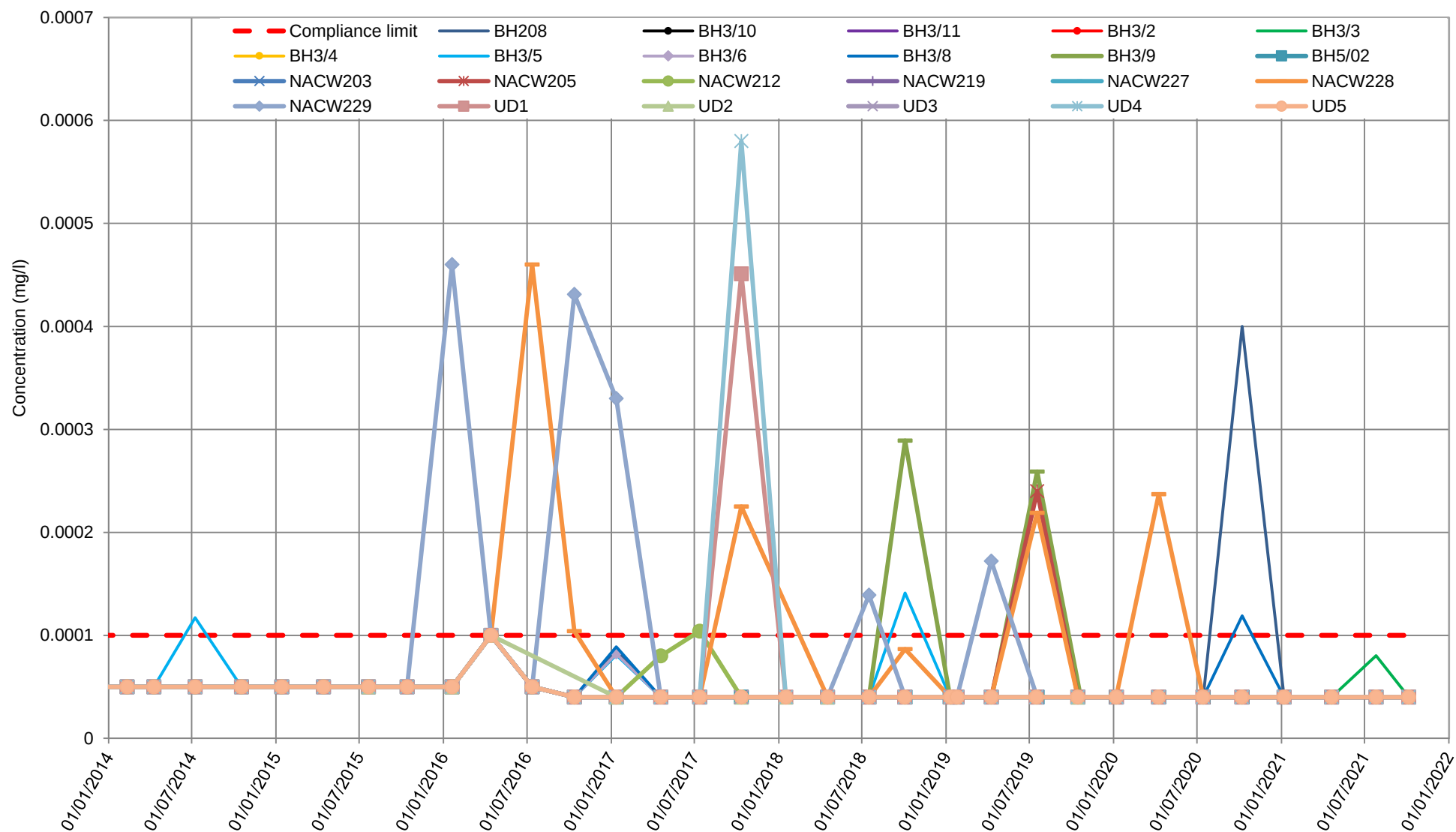
Recorded Concentrations of Chloride in Groundwater and Under-drainage,
January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	16



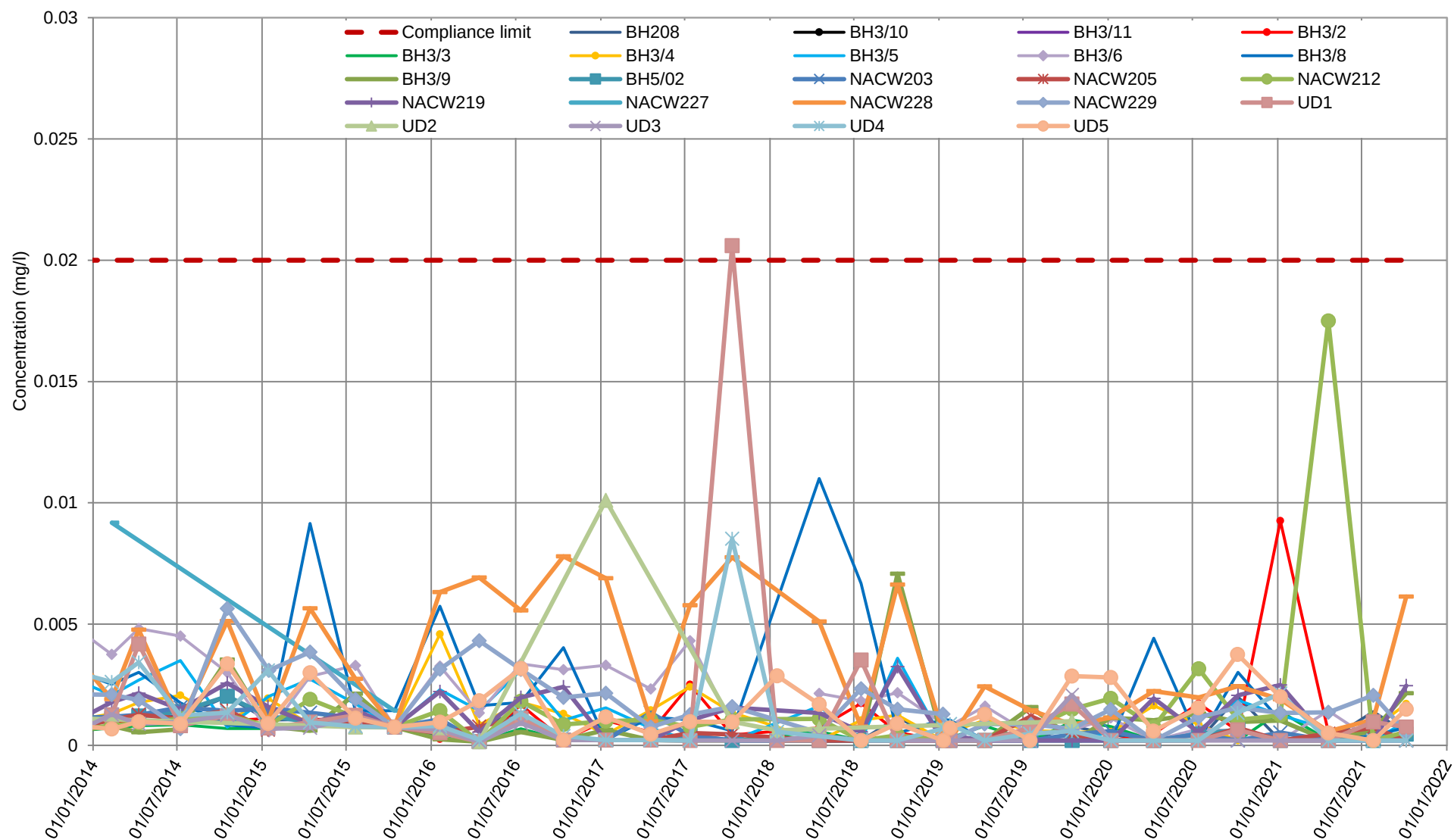
Recorded Concentrations of Mecoprop in Groundwater and Under-drainage, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021	
PROJ. NO:	70071624 R1	DRAWN:	ZK	CHECKED: SMcG
DATE:	January 2022	FIGURE:	17	



Recorded Concentrations of Cadmium in Groundwaters January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021
PROJ. NO:	70071624 R1	DRAWN:	ZK
DATE:	January 2022	CHECKED:	SMcG
		FIGURE:	18

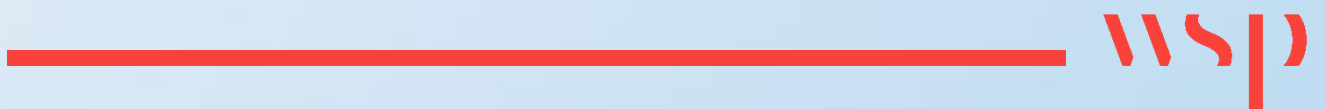


Recorded Concentrations of Nickel in Groundwaters and Under-drainage, January 2014 to December 2021

CLIENT:	CWM Environmental Ltd	PROJECT:	Annual report 2021	
PROJ. NO:	70071624 R1	DRAWN:	ZK	CHECKED: SMcG
DATE:	January 2022	FIGURE:	19	

Appendix A

**LABORATORY CERTIFICATES
(MONTHLY AND QUARTERLY
MONITORING SUITES)**





Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 20 January 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210114-37
Your Reference:
Location: Nantycaws Landfill
Report No: 583813

We received 2 samples on Thursday January 14, 2021 and 2 of these samples were scheduled for analysis which was completed on Wednesday January 20, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-37
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583813
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23540408	CELL 1.2 SUMP			13/01/2021
23540409	LEACHETE HOLDING LAGOON			13/01/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG:	210114-37	Client Reference:		Report Number:	583813
Location:	Nantycaws Landfill	Order Number:	001194	Superseded Report:	

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

23540408

23540409

Customer Sample Reference

CELL 1.2 SUMP

LEACHATE HOLDING LAGOON

AGS Reference

Depth (m)

Container

0.5l glass bottle (ALE227)

0.5l glass bottle (ALE227)

Sample Type

LE

LE

Anions by Kone (w)

All

NDPs: 0
Tests: 1

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-37
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583813
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210114-37
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583813
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23540408	23540409
Customer Sample Ref.	CELL 1.2 SUMP	LEACHETE HOLDIN G LAGOON
AGS Ref.		
Depth		
Type	Land Leachate	Land Leachate
Anions by Kone (w)	20-Jan-2021	
Dissolved Metals by ICP-MS		16-Jan-2021
Nitrite by Kone (w)	19-Jan-2021	



CERTIFICATE OF ANALYSIS

SDG:	210114-37	Client Reference:		Report Number:	583813
Location:	Nantycaws Landfill	Order Number:	001194	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 19 January 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210106-35
Your Reference:
Location: Nantyclaws Landfill
Report No: 583624

We received 21 samples on Wednesday January 06, 2021 and 19 of these samples were scheduled for analysis which was completed on Tuesday January 19, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35 **Client Reference:** **Report Number:** 583624
Location: Nantycaws Landfill **Order Number:** 001194 **Superseded Report:**

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23502182	BH3/2			05/01/2021
23502187	BH3/3			05/01/2021
23502193	BH3/4			05/01/2021
23502181	BH3/5			05/01/2021
23502184	BH3/6			05/01/2021
23502185	BH3/8			05/01/2021
23502186	BH3/9			05/01/2021
23502195	BH208			05/01/2021
23502194	BH5/02			05/01/2021
23502191	NACW203			05/01/2021
23502192	NACW205			05/01/2021
23502190	NACW212			05/01/2021
23502179	NACW219			05/01/2021
23502188	NACW227			
23502189	NACW228			05/01/2021
23502180	NACW229			05/01/2021
23502196	UD1			05/01/2021
23502197	UD2			
23502198	UD3			05/01/2021
23502200	UD4			05/01/2021
23502201	UD5			05/01/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583624
Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container										Sample Type
				0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	
23502181	BH3/5			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502193	BH3/4			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502187	BH3/3			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502182	BH3/2			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 19		X					X				X	X
Alkalinity as CaCO3	All	NDPs: 0 Tests: 19			X				X				X	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19				X				X			X	
Anions by Kone (w)	All	NDPs: 0 Tests: 19		X					X				X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 19		X					X				X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19				X				X			X	
Nitrite by Kone (w)	All	NDPs: 0 Tests: 19				X					X		X	
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 19		X					X				X	X
VOC MS (W)	All	NDPs: 0 Tests: 19				X					X		X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35 Client Reference: Report Number: 583624
Location: Nantycaws Landfill Order Number: 001194 Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type																																																																																																																																																																																																																																																																																																																																																																																																																																		
							NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)



CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35 Client Reference: Report Number: 583624
Location: Nantycaws Landfill Order Number: 001194 Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container										Sample Type
				H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	
23502189	NACW228			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502180	NACW229			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502196	UD1			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
23502198	UD3			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 19				X						X		
Alkalinity as CaCO3	All	NDPs: 0 Tests: 19					X							X
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19												
Anions by Kone (w)	All	NDPs: 0 Tests: 19												
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 19												
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19												
Nitrite by Kone (w)	All	NDPs: 0 Tests: 19												
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 19												
VOC MS (W)	All	NDPs: 0 Tests: 19												



CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35 **Client Reference:** **Report Number:** 583624
Location: Nantycaws Landfill **Order Number:** 001194 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210106-35
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583624
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23502195	23502182	23502187	23502193	23502181	23502184	23502185	23502186	23502194	23502191
Customer Sample Ref.	BH208	BH3/2	BH3/3	BH3/4	BH3/5	BH3/6	BH3/8	BH3/9	BH5/02	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	19-Jan-2021
Alkalinity as CaCO3	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021
Ammoniacal Nitrogen	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021
Anions by Kone (w)	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021
Conductivity (at 20 deg.C)	11-Jan-2021	07-Jan-2021	11-Jan-2021	11-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	11-Jan-2021	11-Jan-2021
Dissolved Metals by ICP-MS	08-Jan-2021	11-Jan-2021	08-Jan-2021	08-Jan-2021	11-Jan-2021	11-Jan-2021	08-Jan-2021	11-Jan-2021	08-Jan-2021	08-Jan-2021
Nitrite by Kone (w)	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021
SVOC MS (W) - Aqueous	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
VOC MS (W)	08-Jan-2021	07-Jan-2021	07-Jan-2021	08-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	08-Jan-2021	08-Jan-2021

Lab Sample No(s)	23502192	23502190	23502179	23502189	23502180	23502196	23502198	23502200	23502201
Customer Sample Ref.	NACW205	NACW212	NACW219	NACW228	NACW229	UD1	UD3	UD4	UD5
AGS Ref.									
Depth									
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021
Alkalinity as CaCO3	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021	09-Jan-2021
Ammoniacal Nitrogen	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021
Anions by Kone (w)	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021
Conductivity (at 20 deg.C)	11-Jan-2021	11-Jan-2021	07-Jan-2021	11-Jan-2021	07-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
Dissolved Metals by ICP-MS	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021
Nitrite by Kone (w)	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021	07-Jan-2021
SVOC MS (W) - Aqueous	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
VOC MS (W)	08-Jan-2021	07-Jan-2021	08-Jan-2021	07-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021



CERTIFICATE OF ANALYSIS

SDG:	210106-35	Client Reference:		Report Number:	583624
Location:	Nantycaws Landfill	Order Number:	001194	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



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

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 17 February 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210210-42
Your Reference:
Location: Nantyclaws Landfill
Report No: 587087

We received 26 samples on Wednesday February 10, 2021 and 24 of these samples were scheduled for analysis which was completed on Wednesday February 17, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210210-42 Client Reference: Report Number: 587087
Location: Nantycaws Landfill Order Number: POR001648 Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23697505	BH3/4			09/02/2021
23697507	BH208			09/02/2021
23697506	BH5/02			09/02/2021
23697526	CELL 5			09/02/2021
23697527	CELL6			09/02/2021
23697519	CELL 7			09/02/2021
23697525	CELL 3/4			09/02/2021
23697524	CELL 1/2 SWAMP			09/02/2021
23697520	LHL			09/02/2021
23697502	NACW203			09/02/2021
23697503	NACW205			09/02/2021
23697501	NACW212			09/02/2021
23697498	NACW227			09/02/2021
23697499	NACW228			09/02/2021
23697515	SW201			09/02/2021
23697516	SW202			09/02/2021
23697517	SW203			09/02/2021
23697518	SW204			09/02/2021
23697521	SW205			09/02/2021
23697522	SW206			09/02/2021
23697523	SW207			09/02/2021
23697508	UD1			09/02/2021
23697509	UD3			09/02/2021
23697510	UD4			09/02/2021
23697511	UD4			09/02/2021
23697514	UD5			09/02/2021

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

23697523	SW207			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697522	SW206			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697521	SW205			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697518	SW204			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697517	SW203			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697516	SW202			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697515	SW201			H2SO4 (ALE244)	SW	X						
				125ml Plastic	SW							
23697499	NACW228			H2SO4 (ALE244)	GW	X						
				125ml Plastic	GW							
23697501	NACW212			H2SO4 (ALE244)	GW	X						
				125ml Plastic	GW							
23697503	NACW205			H2SO4 (ALE244)	GW	X						
				125ml Plastic	GW							
23697502	NACW203			H2SO4 (ALE244)	GW	X						
				125ml Plastic	GW							



CERTIFICATE OF ANALYSIS

Validated

SDG: 210210-42
Location: Nantycaws Landfill

Client Reference:
Order Number: POR001648

Report Number: 587087
Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Results Legend	Lab Sample No(s)		23697508		23697509		23697510		23697514	
	Customer Sample Reference		UD1		UD3		UD4		UD5	
	AGS Reference									
	Depth (m)									
	Container		125ml Plastic	H2SO4 (ALE244)	125ml Plastic	H2SO4 (ALE244)	125ml Plastic	H2SO4 (ALE244)	125ml Plastic	H2SO4 (ALE244)
	Sample Type		GW	GW	GW	GW	GW	GW	GW	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 24		X		X		X		X
Anions by Kone (w)	All	NDPs: 0 Tests: 24	X		X		X		X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 24	X		X		X		X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 210210-42 **Client Reference:** **Report Number:** 587087
Location: Nantycaws Landfill **Order Number:** POR001648 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



Validated

CERTIFICATE OF ANALYSIS

SDG: 210210-42
Location: Nantycaws LandfillClient Reference:
Order Number: POR001648Report Number: 587087
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23697507	23697505	23697506	23697527	23697526	23697519	23697525	23697524	23697520	23697502
Customer Sample Ref.	BH208	BH3/4	BH502	CELL6	CELL 5	CELL 7	CELL 3/4	CELL 1/2 SWAMP	LHL	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	16-Feb-2021	16-Feb-2021	16-Feb-2021	17-Feb-2021	17-Feb-2021	17-Feb-2021	17-Feb-2021	16-Feb-2021	17-Feb-2021	16-Feb-2021
Anions by Kone (w)	15-Feb-2021	15-Feb-2021	15-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	15-Feb-2021
Conductivity (at 20 deg.C)	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	17-Feb-2021	12-Feb-2021

Lab Sample No(s)	23697503	23697501	23697499	23697515	23697516	23697517	23697518	23697521	23697522	23697523
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021
Anions by Kone (w)	15-Feb-2021	15-Feb-2021	15-Feb-2021	16-Feb-2021	15-Feb-2021	15-Feb-2021	15-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021
Conductivity (at 20 deg.C)	17-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021	17-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021
pH Value				15-Feb-2021	15-Feb-2021	15-Feb-2021	15-Feb-2021	15-Feb-2021	15-Feb-2021	15-Feb-2021
Suspended Solids				15-Feb-2021	15-Feb-2021	16-Feb-2021	15-Feb-2021	16-Feb-2021	16-Feb-2021	15-Feb-2021

Lab Sample No(s)	23697508	23697509	23697510	23697514
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	16-Feb-2021	16-Feb-2021	16-Feb-2021	16-Feb-2021
Anions by Kone (w)	16-Feb-2021	16-Feb-2021	15-Feb-2021	16-Feb-2021
Conductivity (at 20 deg.C)	12-Feb-2021	12-Feb-2021	12-Feb-2021	12-Feb-2021



CERTIFICATE OF ANALYSIS

SDG:	210210-42	Client Reference:		Report Number:	587087
Location:	Nantycaws Landfill	Order Number:	POR001648	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 17 March 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210310-48
Your Reference:
Location: Nantyclaws Landfill
Report No: 590896

We received 26 samples on Wednesday March 10, 2021 and 24 of these samples were scheduled for analysis which was completed on Wednesday March 17, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210310-48 Client Reference: Report Number: 590896
Location: Nantycaws Landfill Order Number: POR002007 Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23869184	BH 3/4			09/03/2021
23869179	BH 208			09/03/2021
23869180	BH 5/02			09/03/2021
23869172	CELL 5 SUMP			09/03/2021
23869174	CELL 6 SUMP			09/03/2021
23869176	CELL 7 SUMP			09/03/2021
23869170	CELL 1/2 SUMP			09/03/2021
23869171	CELL 3/4 SUMP			09/03/2021
23869168	LEACHATE HOLDING LAGOON			09/03/2021
23869177	NACW 203			09/03/2021
23869178	NACW 205			09/03/2021
23869182	NACW 212			09/03/2021
23869183	NACW 227			09/03/2021
23869185	NACW 228			09/03/2021
23869160	SW201			09/03/2021
23869161	SW202			09/03/2021
23869162	SW203			09/03/2021
23869163	SW204			09/03/2021
23869165	SW205			09/03/2021
23869166	SW206			09/03/2021
23869167	SW207			09/03/2021
23869186	UD1			09/03/2021
23869187	UD2			09/03/2021
23869188	UD3			09/03/2021
23869190	UD4			09/03/2021
23869191	UD5			09/03/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210310-48 Client Reference: Report Number: 590896
Location: Nantycaws Landfill Order Number: POR002007 Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
23869177	NACW 203			H2SO4 (ALE244)	GW
23869168	LEACHATE HOLDING LAGOON			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869171	CELL 3/4 SUMP			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869170	CELL 1/2 SUMP			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869176	CELL 7 SUMP			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869174	CELL 6 SUMP			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869172	CELL 5 SUMP			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	LE
23869180	BH 5/02			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	GW
23869179	BH 208			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	GW
23869184	BH 3/4			STL24 (125ml) unfiltered (ALS) H2SO4 (ALE244)	GW
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 24			
Anions by Kone (w)	All	NDPs: 0 Tests: 24			
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 24			
pH Value	All	NDPs: 0 Tests: 7			
Suspended Solids	All	NDPs: 0 Tests: 7			

23869167	SW207			STL24 (125m) unfiltered (ALS)	SW			X	X	X	X		
				H2SO4 (ALE244)	SW	X							
23869166	SW206			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869165	SW205			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869163	SW204			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869162	SW203			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869161	SW202			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869160	SW201			STL24 (125m) unfiltered (ALS)	SW			X					
				H2SO4 (ALE244)	SW	X						X	
23869185	NACW 228			STL24 (125m) unfiltered (ALS)	GW			X					
				H2SO4 (ALE244)	GW	X							
23869182	NACW 212			STL24 (125m) unfiltered (ALS)	GW			X					
				H2SO4 (ALE244)	GW	X							
23869178	NACW 205			STL24 (125m) unfiltered (ALS)	GW			X					
				H2SO4 (ALE244)	GW	X							
23869177	NACW 203			STL24 (125m) unfiltered (ALS)	GW			X					
				H2SO4 (ALE244)	GW	X							



CERTIFICATE OF ANALYSIS

Validated

SDG: 210310-48
Location: Nantycaws Landfill

Client Reference:
Order Number: POR002007

Report Number: 590896
Superseded Report:

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 24

X

X

X

X

Anions by Kone (w)

All

NDPs: 0
Tests: 24

X

X

X

X

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 24

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 210310-48 **Client Reference:** **Report Number:** 590896
Location: Nantycaws Landfill **Order Number:** POR002007 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210310-48
Location: Nantycaws Landfill

Client Reference:
Order Number: POR002007

Report Number: 590896
Superseded Report:

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23869179	23869184	23869180	23869172	23869174	23869176	23869170	23869171	23869168	23869177
	BH 208	BH 3/4	BH 5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW 203
	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	15-Mar-2021	11-Mar-2021	12-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021
Anions by Kone (w)	12-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	12-Mar-2021
Conductivity (at 20 deg.C)	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23869178	23869182	23869185	23869160	23869161	23869162	23869163	23869165	23869166	23869167
	NACW 205	NACW 212	NACW 228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	12-Mar-2021	15-Mar-2021	12-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	12-Mar-2021
Anions by Kone (w)	12-Mar-2021	12-Mar-2021	15-Mar-2021	15-Mar-2021	12-Mar-2021	12-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021
Conductivity (at 20 deg.C)	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	11-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021
pH Value				15-Mar-2021	12-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021	15-Mar-2021
Suspended Solids				13-Mar-2021	11-Mar-2021	13-Mar-2021	13-Mar-2021	13-Mar-2021	13-Mar-2021	13-Mar-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	23869186	23869188	23869190	23869191
	UD1	UD3	UD4	UD5
	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	11-Mar-2021	12-Mar-2021	15-Mar-2021	12-Mar-2021
Anions by Kone (w)	12-Mar-2021	12-Mar-2021	12-Mar-2021	15-Mar-2021
Conductivity (at 20 deg.C)	17-Mar-2021	17-Mar-2021	17-Mar-2021	17-Mar-2021



CERTIFICATE OF ANALYSIS

SDG:	210310-48	Client Reference:		Report Number:	590896
Location:	Nantycaws Landfill	Order Number:	POR002007	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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

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



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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 15 January 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210107-18
Your Reference:
Location: Nantyclaws Landfill
Report No: 583261

We received 13 samples on Thursday January 07, 2021 and 13 of these samples were scheduled for analysis which was completed on Thursday January 14, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210107-18
Location: Nantycaws Landfill

Client Reference:
Order Number: 001194

Report Number: 583261
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
23506845	CELL 5			06/01/2021
23506846	CELL 6			06/01/2021
23506848	CELL 7			06/01/2021
23506842	CELL 1/2			06/01/2021
23506844	CELL 3/4			06/01/2021
23506841	LEACHATE HOLDING LAGOON			06/01/2021
23506834	SW 201			06/01/2021
23506835	SW 202			06/01/2021
23506836	SW 203			06/01/2021
23506837	SW 204			06/01/2021
23506838	SW 205			06/01/2021
23506839	SW 206			06/01/2021
23506840	SW 207			06/01/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210107-18 Client Reference: Report Number: 583261
Location: Nantycaws Landfill Order Number: 001194 Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type													
						23506845	23506846	23506848	23506842	CELL 5	CELL 6	CELL 7	CELL 1/2	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)
						LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE	LE
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 13				X				X							X	
Alkalinity as CaCO3	All	NDPs: 0 Tests: 13																
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 13																
Anions by Kone (w)	All	NDPs: 1 Tests: 12																
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 13																
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 13																
Nitrite by Kone (w)	All	NDPs: 0 Tests: 13																
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 13																
VOC MS (W)	All	NDPs: 0 Tests: 13																



CERTIFICATE OF ANALYSIS

Validated

SDG: 210107-18 Client Reference: Report Number: 583261
Location: Nantycaws Landfill Order Number: 001194 Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type													
						NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)
23508635	SW 202				SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
23508636	SW 203				SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
23508637	SW 204				SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
23508638	SW 205				SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 13																
Alkalinity as CaCO3	All	NDPs: 0 Tests: 13																
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 13																
Anions by Kone (w)	All	NDPs: 1 Tests: 12																
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 13																
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 13																
Nitrite by Kone (w)	All	NDPs: 0 Tests: 13																
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 13																
VOC MS (W)	All	NDPs: 0 Tests: 13																



CERTIFICATE OF ANALYSIS

Validated

SDG:	210107-18	Client Reference:		Report Number:	583261
Location:	Nantycaws Landfill	Order Number:	001194	Superseded Report:	

Notification of NDPs (No determination possible)

Date Received : 07/01/2021 07:19:39

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
23506842	CELL 1/2		Anions by Kone (w)	Sample too coloured



CERTIFICATE OF ANALYSIS

Validated

SDG: 210107-18 **Client Reference:** **Report Number:** 583261
Location: Nantycaws Landfill **Order Number:** 001194 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

SDG: 210107-18
Location: Nantycaws LandfillClient Reference:
Order Number: 001194Report Number: 583261
Superseded Report:

Test Completion Dates

Lab Sample No(s)	23506845	23506846	23506848	23506842	23506844	23506841	23506834	23506835	23506836	23506837
Customer Sample Ref.	CELL 5	CELL 6	CELL 7	CELL 1/2	CELL 3/4	LEACHATE HOLDIN G LAGOON	SW 201	SW 202	SW 203	SW 204
AGS Ref.										
Depth										
Type	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Surface Water	Surface Water	Surface Water	Surface Water
Acid Herbicides by GCMS	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021	14-Jan-2021
Alkalinity as CaCO ₃	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
Ammoniacal Nitrogen	12-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
Anions by Kone (w)	08-Jan-2021	08-Jan-2021	08-Jan-2021		08-Jan-2021	08-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021
Conductivity (at 20 deg.C)	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
Dissolved Metals by ICP-MS	13-Jan-2021	13-Jan-2021	13-Jan-2021	13-Jan-2021	13-Jan-2021	12-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021
Nitrite by Kone (w)	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021
SVOC MS (W) - Aqueous	11-Jan-2021	12-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	11-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021	12-Jan-2021
VOC MS (W)	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021	08-Jan-2021

Lab Sample No(s)	23506838	23506839	23506840
Customer Sample Ref.	SW 205	SW 206	SW 207
AGS Ref.			
Depth			
Type	Surface Water	Surface Water	Surface Water
Acid Herbicides by GCMS	14-Jan-2021	14-Jan-2021	14-Jan-2021
Alkalinity as CaCO ₃	11-Jan-2021	11-Jan-2021	11-Jan-2021
Ammoniacal Nitrogen	11-Jan-2021	11-Jan-2021	11-Jan-2021
Anions by Kone (w)	12-Jan-2021	12-Jan-2021	12-Jan-2021
Conductivity (at 20 deg.C)	11-Jan-2021	11-Jan-2021	11-Jan-2021
Dissolved Metals by ICP-MS	11-Jan-2021	12-Jan-2021	12-Jan-2021
Nitrite by Kone (w)	08-Jan-2021	08-Jan-2021	08-Jan-2021
SVOC MS (W) - Aqueous	12-Jan-2021	12-Jan-2021	12-Jan-2021
VOC MS (W)	08-Jan-2021	08-Jan-2021	08-Jan-2021



CERTIFICATE OF ANALYSIS

SDG:	210107-18	Client Reference:		Report Number:	583261
Location:	Nantycaws Landfill	Order Number:	001194	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

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Tel: (01244) 528700

Fax: (01244) 528701

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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 28 April 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210421-84
Your Reference:
Location: Nantyclaws Landfill
Report No: 595842

We received 21 samples on Wednesday April 21, 2021 and 19 of these samples were scheduled for analysis which was completed on Wednesday April 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24116896	BH3/2			20/04/2021
24116897	BH3/3			20/04/2021
24116887	BH3/4			20/04/2021
24116899	BH3/5			20/04/2021
24116900	BH3/6			20/04/2021
24116902	BH3/8			20/04/2021
24116903	BH3/9			20/04/2021
24116889	BH208			20/04/2021
24116888	BH5/02			20/04/2021
24116885	NACW203			20/04/2021
24116886	NACW205			20/04/2021
24116884	NACW212			20/04/2021
24116904	NACW219			20/04/2021
24116882	NACW227			20/04/2021
24116883	NACW228			20/04/2021
24116905	NACW229			20/04/2021
24116890	UD1			20/04/2021
24116891	UD2			20/04/2021
24116893	UD3			20/04/2021
24116894	UD4			20/04/2021
24116895	UD5			20/04/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container										Sample Type
				0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	
24116896	BH3/2			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116897	BH3/3			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116887	BH3/4			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116899	BH3/5			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS														
All		NDPs: 0 Tests: 19		X			X						X	
Alkalinity as CaCO3														
All		NDPs: 0 Tests: 19			X								X	
Ammoniacal Nitrogen														
All		NDPs: 0 Tests: 19				X					X			
Anions by Kone (w)														
All		NDPs: 0 Tests: 19		X									X	
Conductivity (at 20 deg.C)														
All		NDPs: 0 Tests: 19		X									X	
Dissolved Metals by ICP-MS														
All		NDPs: 0 Tests: 19				X					X		X	
Nitrite by Kone (w)														
All		NDPs: 0 Tests: 19					X			X			X	
SVOC MS (W) - Aqueous														
All		NDPs: 0 Tests: 19		X									X	
VOC MS (W)														
All		NDPs: 0 Tests: 19						X					X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container										Sample Type
				NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	GW
24116893	BH3/9			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116889	BH208			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116888	BH5/02			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116885	NACW203			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 19		X						X				
Alkalinity as CaCO3	All	NDPs: 0 Tests: 19			X						X			
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19				X							X	
Anions by Kone (w)	All	NDPs: 0 Tests: 19			X					X			X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 19			X					X			X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19				X							X	
Nitrite by Kone (w)	All	NDPs: 0 Tests: 19		X			X							X
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 19								X			X	
VOC MS (W)	All	NDPs: 0 Tests: 19		X						X			X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container										Sample Type
				H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	
24116883	NACW228			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116905	NACW229			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116890	UD1			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
24116893	UD3			GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 19				X						X		
Alkalinity as CaCO3	All	NDPs: 0 Tests: 19					X							X
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19												
Anions by Kone (w)	All	NDPs: 0 Tests: 19												
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 19												
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19												
Nitrite by Kone (w)	All	NDPs: 0 Tests: 19												
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 19												
VOC MS (W)	All	NDPs: 0 Tests: 19												



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-84
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595842
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24116889	24116896	24116897	24116887	24116899	24116900	24116902	24116903	24116888	24116885
Customer Sample Ref.	BH208	BH3/2	BH3/3	BH3/4	BH3/5	BH3/6	BH3/8	BH3/9	BH5/02	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
Alkalinity as CaCO ₃	26-Apr-2021	27-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	28-Apr-2021	28-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
Ammoniacal Nitrogen	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021
Anions by Kone (w)	26-Apr-2021	28-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
Conductivity (at 20 deg.C)	27-Apr-2021	26-Apr-2021	27-Apr-2021	26-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
Dissolved Metals by ICP-MS	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
Nitrite by Kone (w)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
SVOC MS (W) - Aqueous	27-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	28-Apr-2021	28-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
VOC MS (W)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	26-Apr-2021	26-Apr-2021

Lab Sample No(s)	24116886	24116884	24116904	24116883	24116905	24116890	24116893	24116894	24116895
Customer Sample Ref.	NACW205	NACW212	NACW219	NACW228	NACW229	UD1	UD3	UD4	UD5
AGS Ref.									
Depth									
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
Alkalinity as CaCO ₃	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	27-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021
Ammoniacal Nitrogen	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021	28-Apr-2021
Anions by Kone (w)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	28-Apr-2021	26-Apr-2021
Conductivity (at 20 deg.C)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	27-Apr-2021	26-Apr-2021
Dissolved Metals by ICP-MS	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
Nitrite by Kone (w)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
SVOC MS (W) - Aqueous	28-Apr-2021	27-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	27-Apr-2021	28-Apr-2021
VOC MS (W)	26-Apr-2021	26-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021



CERTIFICATE OF ANALYSIS

SDG:	210421-84	Client Reference:	Report Number:	595842
Location:	Nantycaws Landfill	Order Number:	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 28 April 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210421-109
Your Reference:
Location: Nantyclaws Landfill
Report No: 595829

We received 6 samples on Wednesday April 21, 2021 and 6 of these samples were scheduled for analysis which was completed on Wednesday April 28, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-109
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595829
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24117766	SW201			20/04/2021
24117769	SW202			20/04/2021
24117770	SW204			20/04/2021
24117772	SW205			20/04/2021
24117774	SW206			20/04/2021
24117776	SW207			20/04/2021

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



CERTIFICATE OF ANALYSIS

SDG: 210421-109
Location: Nantycaws LandfillClient Reference:
Order Number:Report Number: 595829
Superseded Report:

Results Legend			Customer Sample Ref.		SW201	SW202	SW204	SW205	SW206	SW207
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
M	mCERTS accredited.				20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
Subcontracted - refer to subcontractor report for accreditation status.										
% 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*5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Ionic balance	% Diff	Calulation			0.566	1.8	0.888	-1.59	1.75	-0.0756
Suspended solids, Total	<2 mg/l	TM022			4.5	8.75	3.35	8.79	2.7	2.6
					#	#	#	#	#	#
Alkalinity, Total as CaCO3	<2 mg/l	TM043			145	147	151	181	147	151
					#	#	#	#	#	#
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043			145	140	146	185	143	150
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043			145	140	146	185	143	150
Organic Carbon, Total	<3 mg/l	TM090			4.05	4.73	<3	<3	<3	3.25
					#	#	#	#	#	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
					#	#	#	#	#	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120			0.309	0.316	0.325	0.392	0.303	0.315
					#	#	#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
					#	#	#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152			<1	<1	<1	<1	<1	<1
					#	#	#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152			0.917	6.77	1.05	8.71	6.4	0.84
					#	#	#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152			0.307	0.689	0.273	0.95	0.25	0.337
					#	#	#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152			32.5	79.2	46.1	86.1	9.37	21.9
					#	#	#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152			0.566	0.765	0.486	0.598	0.748	0.52
					#	#	#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152			4.54	10.1	8.5	9.58	7.4	4.89
					#	#	#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152			8.51	9.14	6.93	9.32	7.47	8.38
					#	#	#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152			4.85	5.14	4.23	6.11	4.4	4.75
					#	#	#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152			0.919	3	3.88	4.11	1.16	1.39
					#	#	#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152			55.2	55.1	57	68.3	56.4	56.2
					#	#	#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152			0.378	0.382	0.114	0.2	0.0419	0.243
					#	#	#	#	#	#
Nitrite as NO2	<0.05 mg/l	TM184			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
					#	#	#	#	#	#
Sulphate	<2 mg/l	TM184			5.8	8.5	9.1	11.2	8	6.8
					#	#	#	#	#	#
Chloride	<2 mg/l	TM184			12.5	14.9	12.7	19.5	9.7	11.9
					#	#	#	#	#	#
Nitrate as NO3	<0.3 mg/l	TM184			8.39	7.59	3.77	5.19	6.72	7.64
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184			1.91	1.72	0.857	1.18	1.52	1.74
					#	#	#	#	#	#
pH	<1 pH Units	TM256			8.09	8.06	8.1	8.1	8.25	8.23
					#	#	#	#	#	#
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04



CERTIFICATE OF ANALYSIS

Validated

SDG: 210421-109
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595829
Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
Calculation		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

SDG: 210421-109
Location: Nantycaws Landfill

Client Reference:
Order Number:

Report Number: 595829
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24117766	24117769	24117770	24117772	24117774	24117776
Customer Sample Ref.	SW201	SW202	SW204	SW205	SW206	SW207
AGS Ref.						
Depth						
Type	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Acid Herbicides by GCMS	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
Alkalinity as CaCO ₃	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
Alkalinity Filtered as CaCO ₃	28-Apr-2021	28-Apr-2021	27-Apr-2021	28-Apr-2021	27-Apr-2021	28-Apr-2021
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pH Value	23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021	23-Apr-2021
Suspended Solids	27-Apr-2021	27-Apr-2021	27-Apr-2021	26-Apr-2021	26-Apr-2021	27-Apr-2021
SVOC MS (W) - Aqueous	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021
Total Organic and Inorganic Carbon	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021	27-Apr-2021
VOC MS (W)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021



CERTIFICATE OF ANALYSIS

SDG:	210421-109	Client Reference:	Report Number:	595829
Location:	Nantycaws Landfill	Order Number:	Superseded Report:	

Appendix

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3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 09 May 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210422-54
Your Reference:
Location: Nantyclaws Landfill
Report No: 597126

This report has been revised and directly supersedes 595675 in its entirety.

We received 6 samples on Thursday April 22, 2021 and 6 of these samples were scheduled for analysis which was completed on Sunday May 09, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG:	210422-54	Client Reference:		Report Number:	597126
Location:	Nantycaws Landfill	Order Number:	POR002646	Superseded Report:	595675

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24122597	CELL 5 SUMP			21/04/2021
24122600	CELL 6 SUMP			21/04/2021
24122601	CELL 7 SUMP			21/04/2021
24122594	CELL 1/2 SUMP			21/04/2021
24122595	CELL 3/4 SUMP			21/04/2021
24122593	LEACHATE HOLDING LAGOON			21/04/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210422-54
Location: Nantycaws Landfill

Client Reference:
Order Number: POR002646

Report Number: 597126
Superseded Report: 595675

Results Legend

X Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	24122594		CELL 1/2 SUMP						H2SO4 (ALE244)		500ml Plastic (ALE208)	LE
	24122601		CELL 7 SUMP						0.5l glass bottle (ALE227)		250ml BOD (ALE212)	LE
	24122600		CELL 6 SUMP						Vial (ALE297)		H2SO4 (ALE244)	LE
	24122597		CELL 5 SUMP						Vial (ALE297)		500ml Plastic (ALE208)	LE
									0.5l glass bottle (ALE227)		250ml BOD (ALE212)	LE
									H2SO4 (ALE244)		500ml Plastic (ALE208)	LE
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 6	X						X			
Alkalinity as CaCO3	All	NDPs: 0 Tests: 6										
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 6										
Anions by Kone (w)	All	NDPs: 0 Tests: 6										
BOD True Total	All	NDPs: 0 Tests: 6										
COD Unfiltered	All	NDPs: 0 Tests: 6										
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 6										
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6										
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 6										
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 6										
VOC MS (W)	All	NDPs: 0 Tests: 6										



CERTIFICATE OF ANALYSIS

Validated

SDG:	210422-54	Client Reference:		Report Number:	597126
Location:	Nantycaws Landfill	Order Number:	POR002646	Superseded Report:	595675

Table of Results - Appendix

Method No	Reference	Description
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

SDG: 210422-54
Location: Nantycaws Landfill**Client Reference:**
Order Number: POR002646**Report Number:** 597126
Superseded Report: 595675

Test Completion Dates

Lab Sample No(s)	24122597	24122600	24122601	24122594	24122595	24122593
Customer Sample Ref.	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON
AGS Ref.						
Depth						
Type	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate
Acid Herbicides by GCMS	06-May-2021	05-May-2021	05-May-2021	05-May-2021	05-May-2021	05-May-2021
Alkalinity as CaCO3	05-May-2021	05-May-2021	06-May-2021	05-May-2021	05-May-2021	05-May-2021
Ammoniacal Nitrogen	26-Apr-2021	27-Apr-2021	27-Apr-2021	26-Apr-2021	27-Apr-2021	27-Apr-2021
Anions by Kone (w)	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021
BOD True Total	08-May-2021	08-May-2021	08-May-2021	08-May-2021	08-May-2021	08-May-2021
COD Unfiltered	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021	07-May-2021
Conductivity (at 20 deg.C)	26-Apr-2021	26-Apr-2021	26-Apr-2021	26-Apr-2021	23-Apr-2021	26-Apr-2021
Dissolved Metals by ICP-MS	06-May-2021	06-May-2021	06-May-2021	06-May-2021	06-May-2021	06-May-2021
SVOC MS (W) - Aqueous	04-May-2021	04-May-2021	04-May-2021	04-May-2021	04-May-2021	04-May-2021
Total Organic and Inorganic Carbon	09-May-2021	09-May-2021	09-May-2021	09-May-2021	09-May-2021	09-May-2021
VOC MS (W)	06-May-2021	06-May-2021	06-May-2021	06-May-2021	06-May-2021	06-May-2021



CERTIFICATE OF ANALYSIS

SDG:	210422-54	Client Reference:		Report Number:	597126
Location:	Nantycaws Landfill	Order Number:	POR002646	Superseded Report:	595675

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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

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



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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 26 May 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210519-68
Your Reference:
Location: Nantyclaws Landfill
Report No: 599403

We received 25 samples on Wednesday May 19, 2021 and 23 of these samples were scheduled for analysis which was completed on Wednesday May 26, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210519-68
Location: Nantycaws Landfill

Client Reference:
Order Number: POR002983

Report Number: 599403
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24296196	BH3/4			18/05/2021
24296199	BH208			18/05/2021
24296197	BH5/02			18/05/2021
24296220	CELL 5 SUMP			18/05/2021
24296221	CELL 6 SUMP			18/05/2021
24296222	CELL 7 SUMP			18/05/2021
24296218	CELL 1/2 SUMP			18/05/2021
24296219	CELL 3/4 SUMP			18/05/2021
24296217	LAGOON			18/05/2021
24296193	NACW203			18/05/2021
24296195	NACW205			18/05/2021
24296192	NACW212			18/05/2021
24296191	NACW228			18/05/2021
24296209	SW201			18/05/2021
24296210	SW202			18/05/2021
24296212	SW203			18/05/2021
24296213	SW204			18/05/2021
24296214	SW205			18/05/2021
24296215	SW206			18/05/2021
24296216	SW207			18/05/2021
24296201	UD1			18/05/2021
24296203	UD2			18/05/2021
24296205	UD3			18/05/2021
24296206	UD4			18/05/2021
24296208	UD5			18/05/2021

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

24296201	UD1			H2SO4 (ALE244)	GW	X						
				250ml plastic (ALE212)	GW							
24296216	SW207			H2SO4 (ALE244)	SW	X		X		X		
				250ml plastic (ALE212)	SW							
24296215	SW206			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296214	SW205			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296213	SW204			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296212	SW203			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296210	SW202			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296209	SW201			H2SO4 (ALE244)	SW	X						
				250ml plastic (ALE212)	SW							
24296191	NACW228			H2SO4 (ALE244)	GW	X						
				250ml plastic (ALE212)	GW							
24296195	NACW205			H2SO4 (ALE244)	GW	X						
				250ml plastic (ALE212)	GW							
24296193	NACW203			H2SO4 (ALE244)	GW	X						
				250ml plastic (ALE212)	GW							



CERTIFICATE OF ANALYSIS

SDG: 210519-68
Location: Nantycaws LandfillClient Reference:
Order Number: POR002983Report Number: 599403
Superseded Report:

Results Legend



Test

No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 23

Anions by Kone (w)

All

NDPs: 0
Tests: 23

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 23

24296205

24296206

24296208

UD3

UD4

UD5

H2SO4 (ALE212)
250ml plastic
(ALE212)H2SO4 (ALE244)
250ml plastic
(ALE212)H2SO4 (ALE244)
250ml plastic
(ALE212)H2SO4 (ALE244)
250ml plastic
(ALE212)H2SO4 (ALE244)
250ml plastic
(ALE212)

GW

GW

GW

GW

GW

GW

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 210519-68 **Client Reference:** **Report Number:** 599403
Location: Nantycaws Landfill **Order Number:** POR002983 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

SDG: 210519-68
Location: Nantycaws LandfillClient Reference:
Order Number: POR002983Report Number: 599403
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24296199	24296196	24296197	24296220	24296221	24296222	24296219	24296218	24296217	24296193
Customer Sample Ref.	BH208	BH3/4	BH502	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 3/4 SUMP	CELL 1/2 SUMP	LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	26-May-2021	26-May-2021	26-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	26-May-2021
Anions by Kone (w)	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021
Conductivity (at 20 deg.C)	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021

Lab Sample No(s)	24296195	24296191	24296209	24296210	24296212	24296213	24296214	24296215	24296216	24296201
Customer Sample Ref.	NACW205	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207	UD1
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water
Ammoniacal Nitrogen	26-May-2021	26-May-2021	26-May-2021	26-May-2021	25-May-2021	26-May-2021	25-May-2021	26-May-2021	26-May-2021	26-May-2021
Anions by Kone (w)	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021	25-May-2021
Conductivity (at 20 deg.C)	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021
pH Value			20-May-2021	20-May-2021	20-May-2021	20-May-2021	20-May-2021	20-May-2021	20-May-2021	
Suspended Solids			21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	21-May-2021	

Lab Sample No(s)	24296205	24296206	24296208
Customer Sample Ref.	UD3	UD4	UD5
AGS Ref.			
Depth			
Type	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	26-May-2021	25-May-2021	26-May-2021
Anions by Kone (w)	25-May-2021	25-May-2021	25-May-2021
Conductivity (at 20 deg.C)	21-May-2021	21-May-2021	21-May-2021



CERTIFICATE OF ANALYSIS

SDG:	210519-68	Client Reference:		Report Number:	599403
Location:	Nantycaws Landfill	Order Number:	POR002983	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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

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



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email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation:	04 June 2021
Customer:	CWM Environmental Ltd
Sample Delivery Group (SDG):	210529-25
Your Reference:	
Location:	Nantyclaws Landfill
Report No:	600601

We received 4 samples on Saturday May 29, 2021 and 4 of these samples were scheduled for analysis which was completed on Friday June 04, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager



CERTIFICATE OF ANALYSIS

Validated

SDG: 210529-25
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003109

Report Number: 600601
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24364447	SW 202			28/05/2021
24364448	SW 203			28/05/2021
24364449	SW 205			28/05/2021
24364450	SW 207			28/05/2021

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



Validated

CERTIFICATE OF ANALYSIS

SDG: 210529-25
Location: Nantycaws LandfillClient Reference:
Order Number: POR003109Report Number: 600601
Superseded Report:

Results Legend



Test

No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

24364447
24364448
24364449
24364450Customer
Sample ReferenceSW 202
SW 203
SW 205
SW 207

AGS Reference

Depth (m)

Container

H2SO4 (ALE244)
250ml BOD
(ALE212)
H2SO4 (ALE244)
H2SO4 (ALE244)

Sample Type

UNL
UNL
UNL
UNL

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 3X
X
X

pH Value

All

NDPs: 0
Tests: 1

X



CERTIFICATE OF ANALYSIS

Validated

SDG:	210529-25	Client Reference:		Report Number:	600601
Location:	Nantycaws Landfill	Order Number:	POR003109	Superseded Report:	

Table of Results - Appendix

Method No	Reference	Description
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210529-25
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003109

Report Number: 600601
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24364447	24364448	24364449	24364450
Customer Sample Ref.	SW 202	SW 203	SW 205	SW 207
AGS Ref.				
Depth				
Type	Unspecified Liq	Unspecified Liq	Unspecified Liq	Unspecified Liq
Ammoniacal Nitrogen	04-Jun-2021		04-Jun-2021	04-Jun-2021
pH Value		02-Jun-2021		



CERTIFICATE OF ANALYSIS

SDG:	210529-25	Client Reference:		Report Number:	600601
Location:	Nantycaws Landfill	Order Number:	POR003109	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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

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



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Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 22 June 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210615-37
Your Reference:
Location: Nantyclaws Landfill
Report No: 602820

We received 25 samples on Tuesday June 15, 2021 and 25 of these samples were scheduled for analysis which was completed on Tuesday June 22, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210615-37
Location: Nantycaws Landfill

Client Reference:
Order Number: POR 003332

Report Number: 602820
Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24445457	BH3/4			14/06/2021
24445459	BH208			14/06/2021
24445458	BH502			14/06/2021
24445450	CELL 5 SUMP			14/06/2021
24445451	CELL 6 SUMP			14/06/2021
24445452	CELL 7 SUMP			14/06/2021
24445448	CELL 1/2 SUMP			14/06/2021
24445449	CELL 3/4 SUMP			14/06/2021
24445447	LEACHATE HOLDING LAGOON			14/06/2021
24445455	NACW203			14/06/2021
24445456	NACW205			14/06/2021
24445454	NACW212			14/06/2021
24445453	NACW228			14/06/2021
24445440	SW201			14/06/2021
24445441	SW202			14/06/2021
24445442	SW203			14/06/2021
24445443	SW204			14/06/2021
24445444	SW205			14/06/2021
24445445	SW206			14/06/2021
24445446	SW207			14/06/2021
24445460	UD1			14/06/2021
24445461	UD2			14/06/2021
24445462	UD3			14/06/2021
24445463	UD4			14/06/2021
24445464	UD5			14/06/2021

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

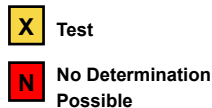


CERTIFICATE OF ANALYSIS

Validated

SDG: 210615-37 Client Reference: Report Number: 602820
Location: Nantycaws Landfill Order Number: POR 003332 Superseded Report:

Results Legend



Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
	24445447	LEACHATE HOLDING LAGOON			H2SO4 (ALE244)	LE
	24445449	CELL 3/4 SUMP			250ml BOD (ALE212)	LE
	24445448	CELL 1/2 SUMP			H2SO4 (ALE244)	LE
	24445452	CELL 7 SUMP			250ml BOD (ALE212)	LE
	24445451	CELL 6 SUMP			H2SO4 (ALE244)	LE
	24445450	CELL 5 SUMP			250ml BOD (ALE212)	LE
24445458	BH502			H2SO4 (ALE244)	GW	
24445459	BH208			250ml BOD (ALE212)	GW	
24445457	BH3/4			H2SO4 (ALE244)	GW	
				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)	GW	
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				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)	GW	
				250ml BOD (ALE212)		

24445446	SW207			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW							
24445445	SW206			H2SO4 (ALE244)	SW	X		X	X	X	X	X
				250ml BOD (ALE212)	SW			X	X	X	X	X
24445444	SW205			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW			X	X	X	X	X
24445443	SW204			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW			X	X	X	X	X
24445442	SW203			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW			X	X	X	X	X
24445441	SW202			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW			X	X	X	X	X
24445440	SW201			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW			X	X	X	X	X
24445453	NACW228			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW			X	X	X		
24445454	NACW212			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW			X	X	X		
24445456	NACW205			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW			X	X	X		
24445455	NACW203			H2SO4 (ALE244)	GW	X						



CERTIFICATE OF ANALYSIS

Validated

SDG: 210615-37
Location: Nantycaws Landfill

Client Reference:
Order Number: POR 003332

Report Number: 602820
Superseded Report:

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Results Legend	Lab Sample No(s)		24445460		24445462		24445463		24445464	
	Customer Sample Reference		UD1		UD3		UD4		UD5	
	AGS Reference									
	Depth (m)									
	Container		250ml BOD (ALE212)		250ml BOD (ALE212)		H2SO4 (ALE244)		H2SO4 (ALE244)	
	Sample Type		GW		GW		GW		GW	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 24		X		X		X		X
Anions by Kone (w)	All	NDPs: 0 Tests: 24	X		X		X		X	
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 24	X		X		X		X	



CERTIFICATE OF ANALYSIS

Validated

SDG: 210615-37
Location: Nantycaws Landfill

Client Reference:
Order Number: POR 003332

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Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210615-37
Location: Nantycaws Landfill

Client Reference:
Order Number: POR 003332

Report Number: 602820
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24445459	24445458	24445457	24445450	24445451	24445452	24445448	24445449	24445447	24445455
Customer Sample Ref.	BH208	BH502	BH3/4	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	18-Jun-2021	18-Jun-2021	18-Jun-2021	21-Jun-2021	21-Jun-2021	21-Jun-2021	21-Jun-2021	21-Jun-2021	21-Jun-2021	22-Jun-2021
Anions by Kone (w)	16-Jun-2021	21-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021
Conductivity (at 20 deg.C)	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021

Lab Sample No(s)	24445456	24445454	24445453	24445440	24445441	24445442	24445443	24445444	24445445	24445446
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	17-Jun-2021	18-Jun-2021	18-Jun-2021	17-Jun-2021	18-Jun-2021	18-Jun-2021	22-Jun-2021	18-Jun-2021	22-Jun-2021	18-Jun-2021
Anions by Kone (w)	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	21-Jun-2021	21-Jun-2021	16-Jun-2021	21-Jun-2021	16-Jun-2021	21-Jun-2021
Conductivity (at 20 deg.C)	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021
pH Value				17-Jun-2021	17-Jun-2021	17-Jun-2021	17-Jun-2021	17-Jun-2021	17-Jun-2021	17-Jun-2021
Suspended Solids				19-Jun-2021	19-Jun-2021	19-Jun-2021	19-Jun-2021	17-Jun-2021	19-Jun-2021	19-Jun-2021

Lab Sample No(s)	24445460	24445462	24445463	24445464
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	22-Jun-2021	17-Jun-2021	22-Jun-2021	22-Jun-2021
Anions by Kone (w)	16-Jun-2021	16-Jun-2021	21-Jun-2021	21-Jun-2021
Conductivity (at 20 deg.C)	16-Jun-2021	16-Jun-2021	16-Jun-2021	16-Jun-2021



CERTIFICATE OF ANALYSIS

SDG:	210615-37	Client Reference:		Report Number:	602820
Location:	Nantycaws Landfill	Order Number:	POR 003332	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 05 August 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210727-35
Your Reference:
Location: Nantyclaws Landfill
Report No: 608277

This report has been revised and directly supersedes 607938 in its entirety.

We received 32 samples on Tuesday July 27, 2021 and 32 of these samples were scheduled for analysis which was completed on Thursday August 05, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24697325	BH 3/2			26/07/2021
24697326	BH 3/3			26/07/2021
24697339	BH 3/4			26/07/2021
24697327	BH 3/5			26/07/2021
24697328	BH 3/6			26/07/2021
24697329	BH 3/8			26/07/2021
24697331	BH 3/9			26/07/2021
24697341	BH 208			26/07/2021
24697340	BH 5/02			26/07/2021
24697321	CELL 5 SUMP			26/07/2021
24697322	CELL 6 SUMP			26/07/2021
24697324	CELL 7 SUMP			26/07/2021
24697319	CELL 1/2 SUMP			26/07/2021
24697320	CELL 3/4 SUMP			26/07/2021
24697318	LEACHATE HOLDING LAGOON			26/07/2021
24697337	NACW 203			26/07/2021
24697338	NACW 205			26/07/2021
24697335	NACW 212			26/07/2021
24697332	NACW 219			26/07/2021
24697334	NACW 228			26/07/2021
24697333	NACW 229			26/07/2021
24697308	SW201			26/07/2021
24697309	SW202			26/07/2021
24697310	SW203			26/07/2021
24697311	SW204			26/07/2021
24697314	SW205			26/07/2021
24697315	SW206			26/07/2021
24697316	SW207			26/07/2021
24697342	UD 1			26/07/2021
24697343	UD 3			26/07/2021
24697344	UD 4			26/07/2021
24697345	UD 5			26/07/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Acid Herbicides by GCMS

All

NDPs: 0
Tests: 32

X

X

X

X

Alkalinity as CaCO3

All

NDPs: 0
Tests: 32

X

X

X

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 32

X

X

X

Anions by Kone (w)

All

NDPs: 0
Tests: 32

X

X

X

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 32

X

X

X

Dissolved Metals by ICP-MS

All

NDPs: 0
Tests: 32

X

X

X

Nitrite by Kone (w)

All

NDPs: 0
Tests: 26

X

X

X

SVOC MS (W) - Aqueous

All

NDPs: 0
Tests: 32

X

X

X

X

VOC MS (W)

All

NDPs: 0
Tests: 32

X

X

X

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type												
							HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 32																
Alkalinity as CaCO3	All	NDPs: 0 Tests: 32																
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 32																
Anions by Kone (w)	All	NDPs: 0 Tests: 32																
BOD True Total	All	NDPs: 0 Tests: 6																
COD Unfiltered	All	NDPs: 0 Tests: 6																
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 32																
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 32																
Nitrite by Kone (w)	All	NDPs: 0 Tests: 26																
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32																
Total Organic Carbon*	All	NDPs: 0 Tests: 13																
VOC MS (W)	All	NDPs: 0 Tests: 32																



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container												Sample Type
				500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	
24697310	SW203			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
24697309	SW202			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
24697308	SW201			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
24697333	NACW 229			SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 32														
Alkalinity as CaCO3	All	NDPs: 0 Tests: 32														
Alkalinity Filtered as CaCO3	All	NDPs: 0 Tests: 7														
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 32														
Anions by Kone (w)	All	NDPs: 0 Tests: 32														
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 32														
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 32														
Ionic Balance	All	NDPs: 0 Tests: 7														
Nitrite by Kone (w)	All	NDPs: 0 Tests: 26														
pH Value	All	NDPs: 0 Tests: 7														
Suspended Solids	All	NDPs: 0 Tests: 7														
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32														
Total Organic Carbon*	All	NDPs: 0 Tests: 13														
VOC MS (W)	All	NDPs: 0 Tests: 32														

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Results Legend

- X** Test
N No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	24697315	24697316	24697342	24697343
						SWZ06	SWZ07	UD 1	UD 3
						Vial (ALE297)	500ml Plastic (ALE208)	0.5l glass bottle (ALE227)	Vial (ALE297)
						SW	SW	SW	GW
Acid Herbicides by GCMS	All	NDPs: 0 Tests: 32							
Alkalinity as CaCO ₃	All	NDPs: 0 Tests: 32							
Alkalinity Filtered as CaCO ₃	All	NDPs: 0 Tests: 7							
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 32							
Anions by Kone (w)	All	NDPs: 0 Tests: 32							
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 32							
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 32							
Ionic Balance	All	NDPs: 0 Tests: 7							
Nitrite by Kone (w)	All	NDPs: 0 Tests: 26							
pH Value	All	NDPs: 0 Tests: 7							
Suspended Solids	All	NDPs: 0 Tests: 7							
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32							
Total Organic Carbon*	All	NDPs: 0 Tests: 13							
VOC MS (W)	All	NDPs: 0 Tests: 32							



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Results Legend			Customer Sample Ref.		NACW 219	NACW 228	NACW 229	SW201	SW202	SW203
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
M	mCERTS accredited.				26/07/2021	26/07/2021	26/07/2021	26/07/2021	26/07/2021	26/07/2021
aq	Aqueous / settled sample.							00:00:00		
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
Subcontracted - refer to subcontractor report for accreditation status.										
% 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*5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Ionic balance	% Diff	Calulation						-0.36	-0.673	-3.33
Total Organic Carbon, as C*	<0.7 mg/l	SUB						1.3	0.8	1.3
Suspended solids, Total	<2 mg/l	TM022						10.9	26.2	9.65
								#	#	#
Alkalinity, Total as CaCO3	<2 mg/l	TM043			58.7	78.5	86	182	185	153
					#	#	#	#	#	#
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043						175	185	165
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043						175	185	165
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
					#	#	#	#	#	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120			0.135	0.515	0.495	0.359	0.348	0.304
					#	#	#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
					#	#	#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152			<1	<1	<1	<1	<1	<1
					#	#	#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152			<0.3	<0.3	<0.3	0.839	1.43	1.49
					#	#	#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152			0.208	1.69	2.24	1.19	1.71	1.9
					#	#	#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152			13.1	12.4	13.7	58.8	67.3	39.9
					#	#	#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152			<0.4	1.06	2.06	<0.4	0.452	0.613
					#	#	#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152			2	11.3	15.8	3.52	6.04	7.86
					#	#	#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152			8.4	25.4	22.9	9.18	9.71	7.65
					#	#	#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152			3.11	18.7	18.4	12.5	11.6	4.74
					#	#	#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152			0.454	1.71	1.98	2.87	2.91	1.43
					#	#	#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152			18.6	71.2	67.6	58.2	63.5	56.8
					#	#	#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152			0.0361	0.0783	0.0951	0.171	0.23	0.285
					#	#	#	#	#	#
Nitrite as NO2	<0.05 mg/l	TM184			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
					#	#	#	#	#	#
Sulphate	<2 mg/l	TM184			5.1	132	115	11.2	11.7	8.3
					#	#	#	#	#	#
Chloride	<2 mg/l	TM184			11.8	64.9	58	19.5	21	9.6
					#	#	#	#	#	#
Nitrate as NO3	<0.3 mg/l	TM184			<0.3	3.19	4.47	9.39	9.11	5.94
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184			<0.1	0.725	1.01	2.13	2.06	1.35
					#	#	#	#	#	#
pH	<1 pH Units	TM256						8.22	8.12	8.15
								#	#	#
Mecoprop	<0.04 µg/l	TM411			<0.08	0.0995	0.107	<0.08	<0.08	<0.08



CERTIFICATE OF ANALYSIS

SDG: 210727-35
Location: Nantycaws LandfillClient Reference:
Order Number: POR003924Report Number: 608277
Superseded Report: 607938

Results Legend			Customer Sample Ref.		SW204	SW205	SW206	SW207	UD 1	UD 3
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				26/07/2021	26/07/2021	26/07/2021	26/07/2021	26/07/2021	26/07/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.									
..	% 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*5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Ionic balance	% Diff	Calulation			-4.63	-2.74	-3.3	-0.39		
Total Organic Carbon, as C*	<0.7 mg/l	SUB			1	1.7	0.9	2.3		
Suspended solids, Total	<2 mg/l	TM022			121	17	4.45	7.45		
					#	#	#	#		
Alkalinity, Total as CaCO3	<2 mg/l	TM043			150	145	152	167	240	181
					#	#	#	#	#	#
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043			165	155	160	170		
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043			165	155	160	170		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
					#	#	#	#	#	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120			0.301	0.323	0.298	0.309	0.554	0.371
					#	#	#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
					#	#	#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152			<1	<1	<1	<1	<1	<1
					#	#	#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152			0.593	2.52	0.382	1.3	1.52	<0.3
					#	#	#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152			0.442	3.7	<0.2	0.73	0.509	<0.2
					#	#	#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152			135	63.9	11.1	82.2	35.4	11
					#	#	#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152			<0.4	0.569	<0.4	<0.4	0.967	<0.4
					#	#	#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152			2.39	10.4	3.36	5.46	8.85	2.19
					#	#	#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152			6.62	8.39	7.26	8.62	13.4	12.3
					#	#	#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152			4.33	8.68	4.61	5.67	11.7	7.8
					#	#	#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152			2.57	2.62	1.03	2.49	1.65	1.04
					#	#	#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152			57.3	50	55.6	61.9	99.9	64.9
					#	#	#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152			0.222	0.243	0.0438	0.12	0.0512	<0.019
					#	#	#	#	#	#
Nitrite as NO2	<0.05 mg/l	TM184			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
					#	#	#	#	#	#
Sulphate	<2 mg/l	TM184			9.6	9.5	8.2	8.8	14	12.1
					#	#	#	#	#	#
Chloride	<2 mg/l	TM184			12	15.4	9.2	11.5	46.3	18.5
					#	#	#	#	#	#
Nitrate as NO3	<0.3 mg/l	TM184			4.8	7.13	6.57	7.33	9.78	6.21
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184			1.09	1.62	1.49	1.67	2.22	1.41
					#	#	#	#	#	#
pH	<1 pH Units	TM256			7.86	8.19	8.2	8.17		
					#	#	#	#		
Mecoprop	<0.04 µg/l	TM411			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35 Client Reference: Report Number: 608277
Location: Nantycaws Landfill Order Number: POR003924 Superseded Report: 607938

Results Legend			Customer Sample Ref.	UD 4	UD 5			
#	ISO17025 accredited.							
M	mCERTS accredited.		Depth (m) Sample Type Date Sampled Sample Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 26/07/2021 27/07/2021 210727-35 24697344	Ground Water (GW) 26/07/2021 27/07/2021 210727-35 24697345			
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Alkalinity, Total as CaCO3	<2 mg/l	TM043						
			#	#				
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	<0.2				
			#	#				
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.367	0.302				
			#	#				
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	<0.08				
			#	#				
Chromium (diss.filt)	<1 µg/l	TM152	<1	<1				
			#	#				
Copper (diss.filt)	<0.3 µg/l	TM152	<0.3	<0.3				
			#	#				
Lead (diss.filt)	<0.2 µg/l	TM152	0.298	<0.2				
			#	#				
Manganese (diss.filt)	<3 µg/l	TM152	26.4	41.7				
			#	#				
Nickel (diss.filt)	<0.4 µg/l	TM152	<0.4	<0.4				
			#	#				
Zinc (diss.filt)	<1 µg/l	TM152	8.68	2.2				
			#	#				
Sodium (Dis.Filt)	<0.076 mg/l	TM152	9.08	6.77				
			#	#				
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	5.26	4.39				
			#	#				
Potassium (Dis.Filt)	<0.2 mg/l	TM152	1.01	2.58				
			#	#				
Calcium (Dis.Filt)	<0.2 mg/l	TM152	75.6	57.1				
			#	#				
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.287	0.0671				
			#	#				
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	<0.05				
			#	#				
Sulphate	<2 mg/l	TM184	10.6	9.5				
			#	#				
Chloride	<2 mg/l	TM184	12	11.1				
			#	#				
Nitrate as NO3	<0.3 mg/l	TM184	4.69	4.73				
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.07	1.07				
			#	#				
Mecoprop	<0.04 µg/l	TM411	<0.04	<0.04				



CERTIFICATE OF ANALYSIS

Validated

SDG:	210727-35	Client Reference:		Report Number:	608277
Location:	Nantycaws Landfill	Order Number:	POR003924	Superseded Report:	607938

Table of Results - Appendix

Method No	Reference	Description
Calculation		
SUB		Subcontracted Test
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210727-35
Location: Nantycaws Landfill

Client Reference:
Order Number: POR003924

Report Number: 608277
Superseded Report: 607938

Test Completion Dates

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	24697341	24697325	24697326	24697339	24697327	24697328	24697329	24697331	24697340	24697321
	BH 208	BH 3/2	BH 3/3	BH 3/4	BH 3/5	BH 3/6	BH 3/8	BH 3/9	BH 5/02	CELL 5 SUMP
	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Land Leachate
Acid Herbicides by GCMS	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	05-Aug-2021	05-Aug-2021	05-Aug-2021	05-Aug-2021	30-Jul-2021
Alkalinity as CaCO3	28-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021
Ammoniacal Nitrogen	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	30-Jul-2021
Anions by Kone (w)	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	28-Jul-2021
BOD True Total										02-Aug-2021
COD Unfiltered										30-Jul-2021
Conductivity (at 20 deg.C)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Dissolved Metals by ICP-MS	28-Jul-2021	28-Jul-2021	30-Jul-2021	30-Jul-2021	28-Jul-2021	30-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	30-Jul-2021
Nitrite by Kone (w)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	
SVOC MS (W) - Aqueous	28-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021
Total Organic Carbon*										30-Jul-2021
VOC MS (W)	28-Jul-2021	27-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	27-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	27-Jul-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	24697322	24697324	24697319	24697320	24697318	24697337	24697338	24697335	24697332	24697334
	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW 203	NACW 205	NACW 212	NACW 219	NACW 228
	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	05-Aug-2021	29-Jul-2021	29-Jul-2021	05-Aug-2021
Alkalinity as CaCO3	28-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	28-Jul-2021
Ammoniacal Nitrogen	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Anions by Kone (w)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021
BOD True Total	02-Aug-2021	03-Aug-2021	03-Aug-2021	02-Aug-2021	02-Aug-2021					
COD Unfiltered	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021					
Conductivity (at 20 deg.C)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Dissolved Metals by ICP-MS	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	30-Jul-2021
Nitrite by Kone (w)						28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
SVOC MS (W) - Aqueous	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021
Total Organic Carbon*	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021					
VOC MS (W)	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	27-Jul-2021	28-Jul-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	24697333	24697308	24697309	24697310	24697311	24697314	24697315	24697316	24697342	24697343
	NACW 229	SW201	SW202	SW203	SW204	SW205	SW206	SW207	UD 1	UD 3
	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water
Acid Herbicides by GCMS	29-Jul-2021	30-Jul-2021	30-Jul-2021	29-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	29-Jul-2021
Alkalinity as CaCO3	28-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021	28-Jul-2021
Alkalinity Filtered as CaCO3		29-Jul-2021	29-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021		
Ammoniacal Nitrogen	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Anions by Kone (w)	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021
Conductivity (at 20 deg.C)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Dissolved Metals by ICP-MS	30-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
Ionic Balance		29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021		
Nitrite by Kone (w)	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021
pH Value		28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021		
Suspended Solids		28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021	28-Jul-2021		
SVOC MS (W) - Aqueous	29-Jul-2021	29-Jul-2021	28-Jul-2021	28-Jul-2021	29-Jul-2021	29-Jul-2021	29-Jul-2021	28-Jul-2021	29-Jul-2021	28-Jul-2021
Total Organic Carbon*		30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021	30-Jul-2021		
VOC MS (W)	28-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	27-Jul-2021	28-Jul-2021	28-Jul-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	24697344	24697345
	UD 4	UD 5
	Ground Water	Ground Water
Acid Herbicides by GCMS	05-Aug-2021	05-Aug-2021
Alkalinity as CaCO3	28-Jul-2021	28-Jul-2021
Ammoniacal Nitrogen	28-Jul-2021	28-Jul-2021
Anions by Kone (w)	29-Jul-2021	29-Jul-2021
Conductivity (at 20 deg.C)	28-Jul-2021	28-Jul-2021
Dissolved Metals by ICP-MS	28-Jul-2021	28-Jul-2021
Nitrite by Kone (w)	28-Jul-2021	28-Jul-2021
SVOC MS (W) - Aqueous	28-Jul-2021	28-Jul-2021
VOC MS (W)	28-Jul-2021	28-Jul-2021



ALS Environmental Ltd
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www.alsenvironmental.co.uk

Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill CV4 9GU

30 July 2021

Test Report: COV/2172493/2021

Dear Subcon Results

Analysis of your sample(s) received on 28 July 2021 is now complete and we have pleasure in enclosing the appropriate test report(s).

An invoice for the analysis carried out will be sent under separate cover.

Should you have any queries regarding this report(s) or any part of our service, please contact Customer Services on +44 (0)24 7642 1213 who will be happy to discuss your requirements.

If you would like to arrange any further analysis, please contact Customer Services. To arrange container delivery or sample collection, please call the Couriers Department directly on 024 7685 6562.

Thank you for using ALS Environmental Ltd and we look forward to receiving your next samples.

Yours Sincerely,

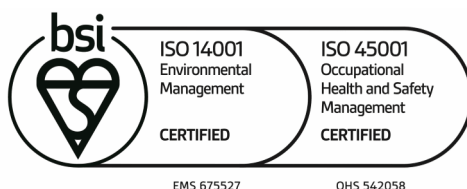
Signed:

Name:

P. Patel

Title:

Inorganics Chemistry Manager



This communication has been sent to you by ALS Environmental Ltd. Registered in England and Wales. Registration No.02148934. Registered Office: ALS Environmental Limited, Torrington Avenue, Coventry, CV4 9GU.

Report Summary

Hawarden Subcon Results
ALS Life Sciences Limited
Torrington Avenue
Tile Hill
CV4 9GU



ANALYSED BY



Date of Issue: **30 July 2021**

Report Number: **COV/2172493/2021**

Issue **1**

This issue replaces
all previous issues

Job Description: 2021 Analysis

Job Location: 210727-35

Number of Samples
included in this report **13**

Job Received: **28 July 2021**

Number of Test Results
included in this report **13**

Analysis Commenced: **29 July 2021**

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd was not responsible for sampling unless otherwise stated.

Information on the methods of analysis and performance characteristics are available on request.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. The results relate only to the items tested and where relevant sampled.

Tests marked 'Not UKAS Accredited' in this Report/Certificate are not included in the UKAS Accreditation Schedule for our laboratory.

This test report is not a statement of conformity to any specification or standard.

This communication has been sent to you by ALS Environmental Ltd. Registered in England and Wales. Registration No. 02148934. Registered Office: ALS Environmental Limited, Torrington Avenue, Coventry, CV4 9GU.

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685333**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700351**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **CELL 1/2 SUMP**

Issue **1**
Sample **1** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	476	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685333: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685334**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700142**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **CELL 3/4 SUMP**

Issue **1**
Sample **2** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	443	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685334: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685335**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700022**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **CELL 5 SUMP**

Issue **1**
Sample **3** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	484	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685335: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Certificate of Analysis

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685336**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700069**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **CELL 6 SUMP**

Issue **1**
Sample **4** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	400	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685336: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685337**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700007**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **CELL 7 SUMP**

Issue **1**
Sample **5** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	632	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685337: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Certificate of Analysis

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685338**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700346**
Sample Matrix: **Land Leachate**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **LEACHATE HOLDING LAGOON**

Issue **1**
Sample **6** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	402	mg/l	29/07/2021	Y Cov	WAS005

Analyst Comments for 20685338: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685339**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700236**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW201**

Issue **1**
Sample **7** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	1.3	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685339: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Certificate of Analysis

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685340**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700356**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW202**

Issue **1**
Sample **8** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	0.8	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685340: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Certificate of Analysis

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Report Number: **COV/2172493/2021**
Laboratory Number: **20685341**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700413**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW203**

Issue **1**
Sample **9** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	1.3	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685341: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685342**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700175**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW204**

Issue **1**
Sample **10** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	1.0	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685342: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
Tel:+44 (0)24 7642 1213 Fax:+44 (0)24 7685 6575

Page 11 of 17

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685343**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700211**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW205**

Issue **1**
Sample **11** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	1.7	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685343: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

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Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685344**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700151**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW206**

Issue **1**
Sample **12** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	0.9	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685344: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

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Page 13 of 17

Certificate of Analysis

ANALYSED BY



Report Number: **COV/2172493/2021**
Laboratory Number: **20685345**
Sample Source: **ALS Life Sciences Limited**
Sample Point Description:
Sample Description: **24700225**
Sample Matrix: **Surface Water**
Sample Date/Time: **26 July 2021**
Sample Received: **28 July 2021**
Analysis Complete: **30 July 2021**
SDG: **210727-35**
Sample Reference: **SW207**

Issue **1**
Sample **13** of **13**

Test Description	Result	Units	Analysis Date	Accreditation	Method
TOC as C	2.3	mg/l	29/07/2021	N Cov	WAS005

Analyst Comments for 20685345: No Analyst Comment

This issue replaces all previous issues

Accreditation Codes: Y = UKAS / ISO17025 Accredited, N = Not UKAS / ISO17025 Accredited, M = MCERTS.

Analysed at: CHE = Chester(CH5 3US), COV = Coventry(CV4 9GU), OTT = Otterbourne(SO21 2RU), S = Subcontracted, TRB = Subcontracted to Trowbridge(BA14 0XD), WAK = Wakefield(WF5 9TG), F = Data supplied by customer.

For Microbiological determinands 0 or ND=Not Detected, For Legionella ND=Not Detected in volume of sample filtered.

I/S=Insufficient sample For soil/sludge samples: AR=As received, DW=Dry weight.

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**

ALS Environmental Ltd

Torrington Avenue, Coventry, CV4 9GU
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ANALYST COMMENTS FOR REPORT COV/2172493/2021

Issue 1

This issue replaces
all previous issues

Date of Issue: **30 July 2021**

Sample No	Analysis Comments
20685333	
20685334	
20685335	
20685336	
20685337	
20685338	
20685339	
20685340	
20685341	
20685342	
20685343	
20685344	
20685345	

Signed:

Name: **P. Patel**

Date: **30 July 2021**

Title: **Inorganics Chemistry Manager**



DETERMINAND COMMENTS FOR REPORT COV/2172493/2021

ISSUE 1

This issue replaces
all previous issues

Date of Issue: 30 July 2021

Sample No	Description	Determinand	Comments

Signed: 	Name: P. Patel	Date: 30 July 2021
	Title: Inorganics Chemistry Manager	

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CERTIFICATE OF ANALYSIS

SDG:	210727-35	Client Reference:		Report Number:	608277
Location:	Nantycaws Landfill	Order Number:	POR003924	Superseded Report:	607938

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.
Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

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

CERTIFICATE OF ANALYSIS

Date of report Generation: 18 August 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 210811-70
Your Reference:
Location: Nantyclaws Landfill
Report No: 609724

We received 24 samples on Wednesday August 11, 2021 and 24 of these samples were scheduled for analysis which was completed on Wednesday August 18, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

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

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210811-70 Client Reference: Report Number: 609724
Location: Nantycaws Landfill Order Number: POR004124 Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24785500	BH3/4			10/08/2021
24785502	BH208			10/08/2021
24785501	BH5/02			10/08/2021
24785522	CELL 5 SUMP			10/08/2021
24785523	CELL 6 SUMP			10/08/2021
24785524	CELL 7 SUMP			10/08/2021
24785519	CELL 1/2 SUMP			10/08/2021
24785521	CELL 3/4 SUMP			10/08/2021
24785518	LEACHATE HOLDING LAGOON			10/08/2021
24785498	NACW203			10/08/2021
24785499	NACW205			10/08/2021
24785497	NACW212			10/08/2021
24785496	NACW228			10/08/2021
24785508	SW201			10/08/2021
24785509	SW202			10/08/2021
24785510	SW203			10/08/2021
24785511	SW204			10/08/2021
24785513	SW205			10/08/2021
24785515	SW206			10/08/2021
24785517	SW207			10/08/2021
24785503	UD1			10/08/2021
24785504	UD3			10/08/2021
24785505	UD4			10/08/2021
24785506	UD5			10/08/2021

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

24785517	SW207			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW							
24785515	SW206			H2SO4 (ALE244)	SW	X			X	X		X
				500ml Plastic (ALE208)	SW				X	X		
24785513	SW205			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW				X	X		X
24785511	SW204			H2SO4 (ALE244)	SW	X			X	X		X
				500ml Plastic (ALE208)	SW				X	X		
24785510	SW203			H2SO4 (ALE244)	SW	X			X	X		X
				500ml Plastic (ALE208)	SW				X	X		
24785509	SW202			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW				X	X		X
24785508	SW201			H2SO4 (ALE244)	SW	X						
				500ml Plastic (ALE208)	SW				X	X		X
24785496	NACW228			H2SO4 (ALE244)	GW	X						
				500ml Plastic (ALE208)	GW				X	X		
24785497	NACW212			H2SO4 (ALE244)	GW	X						
				500ml Plastic (ALE208)	GW				X	X		
24785499	NACW205			H2SO4 (ALE244)	GW	X			X	X		
				500ml Plastic (ALE208)	GW				X	X		
24785498	NACW203			H2SO4 (ALE244)	GW	X						
				500ml Plastic (ALE208)	GW				X	X		



CERTIFICATE OF ANALYSIS

SDG: 210811-70
Location: Nantycaws LandfillClient Reference:
Order Number: POR004124Report Number: 609724
Superseded Report:

Results Legend



Test

No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 24

Anions by Kone (w)

All

NDPs: 0
Tests: 24

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 24

24785503

24785504

24785505

24785506

UD1

UD3

UD4

UD5

500ml Plastic
(ALE208)
H2SO4 (ALE244)500ml Plastic
(ALE208)
H2SO4 (ALE244)500ml Plastic
(ALE208)
H2SO4 (ALE244)500ml Plastic
(ALE208)
H2SO4 (ALE244)500ml Plastic
(ALE208)
H2SO4 (ALE244)500ml Plastic
(ALE208)
H2SO4 (ALE244)

H2SO4 (ALE244)

GW

GW

GW

GW

GW

GW

GW

X

X

X

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 210811-70 **Client Reference:** **Report Number:** 609724
Location: Nantycaws Landfill **Order Number:** POR004124 **Superseded Report:**

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

SDG: 210811-70
Location: Nantycaws LandfillClient Reference:
Order Number: POR004124Report Number: 609724
Superseded Report:

Test Completion Dates

Lab Sample No(s)	24785502	24785500	24785501	24785522	24785523	24785524	24785519	24785521	24785518	24785498
Customer Sample Ref.	BH208	BH3/4	BH502	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	16-Aug-2021	16-Aug-2021	12-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021
Anions by Kone (w)	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021
Conductivity (at 20 deg.C)	15-Aug-2021	15-Aug-2021	15-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	15-Aug-2021

Lab Sample No(s)	24785499	24785497	24785496	24785508	24785509	24785510	24785511	24785513	24785515	24785517
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021
Anions by Kone (w)	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021
Conductivity (at 20 deg.C)	15-Aug-2021	15-Aug-2021	15-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021
pH Value				13-Aug-2021	13-Aug-2021	13-Aug-2021	13-Aug-2021	13-Aug-2021	12-Aug-2021	13-Aug-2021
Suspended Solids				16-Aug-2021	13-Aug-2021	13-Aug-2021	16-Aug-2021	16-Aug-2021	13-Aug-2021	16-Aug-2021

Lab Sample No(s)	24785503	24785504	24785505	24785506
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	12-Aug-2021	16-Aug-2021	16-Aug-2021	16-Aug-2021
Anions by Kone (w)	18-Aug-2021	18-Aug-2021	18-Aug-2021	18-Aug-2021
Conductivity (at 20 deg.C)	15-Aug-2021	15-Aug-2021	15-Aug-2021	15-Aug-2021



CERTIFICATE OF ANALYSIS

SDG:	210811-70	Client Reference:		Report Number:	609724
Location:	Nantycaws Landfill	Order Number:	POR004124	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

General

17. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

18. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

19. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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

Visual Estimation Of Fibre Content

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

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung. Standing Committee of Analysts, *The Quantification of Asbestos in Soil* (2017).

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.



CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

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

CERTIFICATE OF ANALYSIS

Date of report Generation:	21 September 2021
Customer:	CWM Environmental Ltd
Sample Delivery Group (SDG):	210914-26
Your Reference:	
Location:	Nantyclaws Landfill
Report No:	613934
Order Number:	POR004655

We received 26 samples on Tuesday September 14, 2021 and 26 of these samples were scheduled for analysis which was completed on Tuesday September 21, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 210914-26
Client Ref.:

Report Number: 613934
Location: Nantycaws Landfill

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
24969724	BH3/4			13/09/2021
24969726	BH208			13/09/2021
24969725	BH5/02			13/09/2021
24969742	CELL 5 SUMP			13/09/2021
24969743	CELL 6 SUMP			13/09/2021
24969744	CELL 7 SUMP			13/09/2021
24969740	CELL 1/2 SUMP			13/09/2021
24969741	CELL 3/4 SUMP			13/09/2021
24969739	LEACHATE HOLDING LAGOON			13/09/2021
24969722	NACW203			13/09/2021
24969723	NACW205			13/09/2021
24969721	NACW212			13/09/2021
24969719	NACW227			13/09/2021
24969720	NACW228			13/09/2021
24969732	SW201			13/09/2021
24969733	SW202			13/09/2021
24969734	SW203			13/09/2021
24969735	SW204			13/09/2021
24969736	SW205			13/09/2021
24969737	SW206			13/09/2021
24969738	SW207			13/09/2021
24969727	UD1			13/09/2021
24969728	UD2			13/09/2021
24969729	UD3			13/09/2021
24969730	UD4			13/09/2021
24969731	UD5			13/09/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 210914-26

Report Number: 613934

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type	24969722	24969739	24969741	24969740	24969744	24969743	24969742	24969725	24969726	24969724	
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 24															
Anions by Kone (w)	All	NDPs: 0 Tests: 24															
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 24															
pH Value	All	NDPs: 0 Tests: 7															
Suspended Solids	All	NDPs: 0 Tests: 7															

24969738	SW207			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW							
24969737	SW206			H2SO4 (ALE244)	SW	X			X			X
				250ml BOD (ALE212)	SW				X			
24969736	SW205			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
24969735	SW204			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
24969734	SW203			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
24969733	SW202			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
24969732	SW201			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
24969720	NACWZ28			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
24969721	NACWZ12			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
24969723	NACWZ05			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
24969722	NACWZ03			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			



CERTIFICATE OF ANALYSIS

Validated

SDG: 210914-26

Report Number: 613934

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 24

Anions by Kone (w)

All

NDPs: 0
Tests: 24

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 24

24969727

24969729

24969730

24969731

UD1

UD3

UD4

UD5

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

GW

GW

GW

GW

GW

GW

GW

GW

X

X

X

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 210914-26
Client Ref.:

Report Number: 613934
Location: Nantycaws Landfill

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 210914-26
Client Ref.:

Report Number: 613934
Location: Nantycaws Landfill

Superseded Report:

Test Completion Dates

Lab Sample No(s)	24969726	24969724	24969725	24969742	24969743	24969744	24969740	24969741	24969739	24969722
Customer Sample Ref.	BH208	BH3/4	BH502	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	17-Sep-2021	17-Sep-2021	20-Sep-2021	21-Sep-2021	21-Sep-2021	21-Sep-2021	21-Sep-2021	21-Sep-2021	21-Sep-2021	20-Sep-2021
Anions by Kone (w)	18-Sep-2021	18-Sep-2021	18-Sep-2021	20-Sep-2021	20-Sep-2021	20-Sep-2021	20-Sep-2021	20-Sep-2021	20-Sep-2021	18-Sep-2021
Conductivity (at 20 deg.C)	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021

Lab Sample No(s)	24969723	24969721	24969720	24969732	24969733	24969734	24969735	24969736	24969737	24969738
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	20-Sep-2021	20-Sep-2021	20-Sep-2021	17-Sep-2021	17-Sep-2021	17-Sep-2021	17-Sep-2021	17-Sep-2021	17-Sep-2021	17-Sep-2021
Anions by Kone (w)	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021
Conductivity (at 20 deg.C)	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021
pH Value				15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021
Suspended Solids				19-Sep-2021	18-Sep-2021	18-Sep-2021	19-Sep-2021	18-Sep-2021	19-Sep-2021	18-Sep-2021

Lab Sample No(s)	24969727	24969729	24969730	24969731
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	20-Sep-2021	17-Sep-2021	20-Sep-2021	17-Sep-2021
Anions by Kone (w)	18-Sep-2021	18-Sep-2021	18-Sep-2021	18-Sep-2021
Conductivity (at 20 deg.C)	15-Sep-2021	15-Sep-2021	15-Sep-2021	15-Sep-2021



CERTIFICATE OF ANALYSIS

SDG:	210914-26	Client Reference:		Report Number:	613934
Location:	Nantycaws Landfill	Order Number:	POR004655	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

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

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

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.



Unit 7-8 Hawarden Business Park
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Hawarden
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email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation: 20 October 2021
Customer: CWM Environmental Ltd
Sample Delivery Group (SDG): 211006-49
Your Reference:
Location: Nantyclaws Landfill
Report No: 617848
Order Number: POR004980

This report has been revised and directly supersedes 617061 in its entirety.

We received 33 samples on Wednesday October 06, 2021 and 32 of these samples were scheduled for analysis which was completed on Wednesday October 20, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25098840	BH 3/2			05/10/2021
25098841	BH 3/3			05/10/2021
25098820	BH3/4			05/10/2021
25098842	BH 3/5			05/10/2021
25098843	BH 3/6			05/10/2021
25098844	BH 3/8			05/10/2021
25098846	BH 3/9			05/10/2021
25098822	BH208			05/10/2021
25098821	BH5/02			05/10/2021
25098837	CELL 5 SUMP			05/10/2021
25098838	CELL 6 SUMP			05/10/2021
25098839	CELL 7 SUMP			05/10/2021
25098835	CELL 1/2 SUMP			05/10/2021
25098836	CELL 3/4 SUMP			05/10/2021
25098834	LEACHATE HOLDING LAGOON			05/10/2021
25098818	NACW203			05/10/2021
25098819	NACW205			05/10/2021
25098817	NACW212			05/10/2021
25098847	NACW 219			05/10/2021
25098815	NACW227			
25098816	NACW228			05/10/2021
25098848	NACW 229			05/10/2021
25098827	SW201			05/10/2021
25098828	SW202			05/10/2021
25098829	SW203			05/10/2021
25098830	SW204			05/10/2021
25098831	SW205			05/10/2021
25098832	SW206			05/10/2021
25098833	SW207			05/10/2021
25098823	UD1			05/10/2021
25098824	UD3			05/10/2021
25098825	UD4			05/10/2021
25098826	UD5			05/10/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types - S - Soil/Solid UNS - Unspecified Solid GW - Ground Water SW - Surface Water LE - Land Leachate PL - Prepared Leachate PR - Process Water SA - Saline Water TE - Trade Effluent TS - Treated Sewage US - Untreated Sewage RE - Recreational Water DW - Drinking Water Non-regulatory UNL - Unspecified Liquid SL - Sludge G - Gas OTH - Other</div>	Lab Sample No(s)		25098840												25098841												25098820											
	Customer Sample Reference		BH 3/2												BH 3/3												BH3/4											
	AGS Reference																																					
	Depth (m)																																					
	Container		Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	
	Sample Type		GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
	Acid Herbicides by GCMS	All	NDPs: 0 Tests: 32	X												X																						
Alkalinity as CaCO3	All	NDPs: 0 Tests: 32			X								X														X											
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 32				X								X														X										
Anions by Kone (w)	All	NDPs: 1 Tests: 31			X								X														X											
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 32			X								X														X											
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 32					X											X										X										
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 25	X							X																		X										
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 25	X							X																		X										
GRO by GC-FID (W)	All	NDPs: 0 Tests: 25							X									X																			X	
Nitrite by Kone (w)	All	NDPs: 0 Tests: 26					X											X																X				
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26	X							X																		X										
Phenols by ms (w)	All	NDPs: 0 Tests: 32		X									X														X											
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32	X							X																												
TPH CWG (W)	All	NDPs: 0 Tests: 25	X							X																	X											
VOC MS (W)	All	NDPs: 0 Tests: 32							X									X																			X	



CERTIFICATE OF ANALYSIS

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SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type										
						NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	1000ml glass bottle (ALE220)	1l plastic (ALE221)	1l plastic (ALE221)	H2SO4 (ALE244)	HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)
25098844	BH 3/8				GW										
25098846	BH 3/9				GW										
25098822	BH208				GW										
25098821	BH5/02				GW										
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 6													
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 6													
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 6													
Phenols by ms (w)	All	NDPs: 0 Tests: 32													
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32													
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 13													
TPH CWG (W)	All	NDPs: 0 Tests: 25													
VOC MS (W)	All	NDPs: 0 Tests: 32													

25098819	NACW205			H2SO4 (ALE244)	GW														
				1ipastic (ALE221)	GW														
				1000ml glass bottle (ALE220)	GW														
				0.5l glass bottle (ALE227)	GW														
				Vial (ALE297)	GW														
				NaOH (ALE245)	GW														
				HNO3 Filtered (ALE204)	GW														
				H2SO4 (ALE244)	GW														
				1ipastic (ALE221)	GW														
				1000ml glass bottle (ALE220)	GW														
25098818	NACW203			0.5l glass bottle (ALE227)	GW														
				Vial (ALE297)	LE														
				NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														
				H2SO4 (ALE244)	LE														
				250ml BOD (ALE212)	LE														
				1ipastic (ALE221)	LE														
				1000ml glass bottle (ALE220)	LE														
				0.5l glass bottle (ALE227)	LE														
				Vial (ALE297)	LE														
25098834	LEACHATE HOLDING LAGOON			NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														
				H2SO4 (ALE244)	LE														
				250ml BOD (ALE212)	LE														
				1ipastic (ALE221)	LE														
				1000ml glass bottle (ALE220)	LE														
				0.5l glass bottle (ALE227)	LE														
				Vial (ALE297)	LE														
				NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		25098819										25098817										25098847										25098816																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Customer Sample Reference		NACW205										NACW212										NACW 219										NACW228																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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	Depth (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	Container		HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	1000ml glass bottle (ALE220)	1000ml glass bottle (ALE221)	1000ml glass bottle (ALE222)	1000ml glass bottle (ALE223)	1000ml glass bottle (ALE224)	1000ml glass bottle (ALE225)	1000ml glass bottle (ALE226)	1000ml glass bottle (ALE227)	1000ml glass bottle (ALE228)	1000ml glass bottle (ALE229)	1000ml glass bottle (ALE230)	1000ml glass bottle (ALE231)	1000ml glass bottle (ALE232)	1000ml glass bottle (ALE233)	1000ml glass bottle (ALE234)	1000ml glass bottle (ALE235)	1000ml glass bottle (ALE236)	1000ml glass bottle (ALE237)	1000ml glass bottle (ALE238)	1000ml glass bottle (ALE239)	1000ml glass bottle (ALE240)	1000ml glass bottle (ALE241)	1000ml glass bottle (ALE242)	1000ml glass bottle (ALE243)	1000ml glass bottle (ALE244)	1000ml glass bottle (ALE245)	1000ml glass bottle (ALE246)	1000ml glass bottle (ALE247)	1000ml glass bottle (ALE248)	1000ml glass bottle (ALE249)	1000ml glass bottle (ALE250)	1000ml glass bottle (ALE251)	1000ml glass bottle (ALE252)	1000ml glass bottle (ALE253)	1000ml glass bottle (ALE254)	1000ml glass bottle (ALE255)	1000ml glass bottle (ALE256)	1000ml glass bottle (ALE257)	1000ml glass bottle (ALE258)	1000ml glass bottle (ALE259)	1000ml glass bottle (ALE260)	1000ml glass bottle (ALE261)	1000ml glass bottle (ALE262)	1000ml glass bottle (ALE263)	1000ml glass bottle (ALE264)	1000ml glass bottle (ALE265)	1000ml glass bottle (ALE266)	1000ml glass bottle (ALE267)	1000ml glass bottle (ALE268)	1000ml glass bottle (ALE269)	1000ml glass bottle (ALE270)	1000ml glass bottle (ALE271)	1000ml glass bottle (ALE272)	1000ml glass bottle (ALE273)	1000ml glass bottle (ALE274)	1000ml glass bottle (ALE275)	1000ml glass bottle (ALE276)	1000ml glass bottle (ALE277)	1000ml glass bottle (ALE278)	1000ml glass bottle (ALE279)	1000ml glass bottle (ALE280)	1000ml glass bottle (ALE281)	1000ml glass bottle (ALE282)	1000ml glass bottle (ALE283)	1000ml glass bottle (ALE284)	1000ml glass bottle (ALE285)	1000ml glass bottle (ALE286)	1000ml glass bottle (ALE287)	1000ml glass bottle (ALE288)	1000ml glass bottle (ALE289)	1000ml glass bottle (ALE290)	1000ml glass bottle (ALE291)	1000ml glass bottle (ALE292)	1000ml glass bottle (ALE293)	1000ml glass bottle (ALE294)	1000ml glass bottle (ALE295)	1000ml glass bottle (ALE296)	1000ml glass bottle (ALE297)	1000ml glass bottle (ALE298)	1000ml glass bottle (ALE299)	1000ml glass bottle (ALE300)	1000ml glass bottle (ALE301)	1000ml glass bottle (ALE302)	1000ml glass bottle (ALE303)	1000ml glass bottle (ALE304)	1000ml glass bottle (ALE305)	1000ml glass bottle (ALE306)	1000ml glass bottle (ALE307)	1000ml glass bottle (ALE308)	1000ml glass bottle (ALE309)	1000ml glass bottle (ALE310)	1000ml glass bottle (ALE311)	1000ml glass bottle (ALE312)	1000ml glass bottle (ALE313)	1000ml glass bottle (ALE314)	1000ml glass bottle (ALE315)	1000ml glass bottle (ALE316)	1000ml glass bottle (ALE317)	1000ml glass bottle (ALE318)	1000ml glass bottle (ALE319)	1000ml glass bottle (ALE320)	1000ml glass bottle (ALE321)	1000ml glass bottle (ALE322)	1000ml glass bottle (ALE323)	1000ml glass bottle (ALE324)	1000ml glass bottle (ALE325)	1000ml glass bottle (ALE326)	1000ml glass bottle (ALE327)	1000ml glass bottle (ALE328)	1000ml glass bottle (ALE329)	1000ml glass bottle (ALE330)	1000ml glass bottle (ALE331)	1000ml glass bottle (ALE332)	1000ml glass bottle (ALE333)	1000ml glass bottle (ALE334)	1000ml glass bottle (ALE335)	1000ml glass bottle (ALE336)	1000ml glass bottle (ALE337)	1000ml glass bottle (ALE338)	1000ml glass bottle (ALE339)	1000ml glass bottle (ALE340)	1000ml glass bottle (ALE341)	1000ml glass bottle (ALE342)	1000ml glass bottle (ALE343)	1000ml glass bottle (ALE344)	1000ml glass bottle (ALE345)	1000ml glass bottle (ALE346)	1000ml glass bottle (ALE347)	1000ml glass bottle (ALE348)	1000ml glass bottle (ALE349)	1000ml glass bottle (ALE350)	1000ml glass bottle (ALE351)	1000ml glass bottle (ALE352)	1000ml glass bottle (ALE353)	1000ml glass bottle (ALE354)	1000ml glass bottle (ALE355)	1000ml glass bottle (ALE356)	1000ml glass bottle (ALE357)	1000ml glass bottle (ALE358)	1000ml glass bottle (ALE359)	1000ml glass bottle (ALE360)	1000ml glass bottle (ALE361)	1000ml glass bottle (ALE362)	1000ml glass bottle (ALE363)	1000ml glass bottle (ALE364)	1000ml glass bottle (ALE365)	1000ml glass bottle (ALE366)	1000ml glass bottle (ALE367)	1000ml glass bottle (ALE368)	1000ml glass bottle (ALE369)	1000ml glass bottle (ALE370)	1000ml glass bottle (ALE371)	1000ml glass bottle (ALE372)	1000ml glass bottle (ALE373)	1000ml glass bottle (ALE374)	1000ml glass bottle (ALE375)	1000ml glass bottle (ALE376)	1000ml glass bottle (ALE377)	1000ml glass bottle (ALE378)	1000ml glass bottle (ALE379)	1000ml glass bottle (ALE380)	1000ml glass bottle (ALE381)	1000ml glass bottle (ALE382)	1000ml glass bottle (ALE383)	1000ml glass bottle (ALE384)	1000ml glass bottle (ALE385)	1000ml glass bottle (ALE386)	1000ml glass bottle (ALE387)	1000ml glass bottle (ALE388)	1000ml glass bottle (ALE389)	1000ml glass bottle (ALE390)	1000ml glass bottle (ALE391)	1000ml glass bottle (ALE392)	1000ml glass bottle (ALE393)	1000ml glass bottle (ALE394)	1000ml glass bottle (ALE395)	1000ml glass bottle (ALE396)	1000ml glass bottle (ALE397)	1000ml glass bottle (ALE398)	1000ml glass bottle (ALE399)	1000ml glass bottle (ALE400)	1000ml glass bottle (ALE401)	1000ml glass bottle (ALE402)	1000ml glass bottle (ALE403)	1000ml glass bottle (ALE404)	1000ml glass bottle (ALE405)	1000ml glass bottle (ALE406)	1000ml glass bottle (ALE407)	1000ml glass bottle (ALE408)	1000ml glass bottle (ALE409)	1000ml glass bottle (ALE410)	1000ml glass bottle (ALE411)	1000ml glass bottle (ALE412)	1000ml glass bottle (ALE413)	1000ml glass bottle (ALE414)	1000ml glass bottle (ALE415)	1000ml glass bottle (ALE416)	1000ml glass bottle (ALE417)	1000ml glass bottle (ALE418)	1000ml glass bottle (ALE419)	1000ml glass bottle (ALE420)	1000ml glass bottle (ALE421)	1000ml glass bottle (ALE422)	1000ml glass bottle (ALE423)	1000ml glass bottle (ALE424)	1000ml glass bottle (ALE425)	1000ml glass bottle (ALE426)	1000ml glass bottle (ALE427)	1000ml glass bottle (ALE428)	1000ml glass bottle (ALE429)	1000ml glass bottle (ALE430)	1000ml glass bottle (ALE431)	1000ml glass bottle (ALE432)	1000ml glass bottle (ALE433)	1000ml glass bottle (ALE434)	1000ml glass bottle (ALE435)	1000ml glass bottle (ALE436)	1000ml glass bottle (ALE437)	1000ml glass bottle (ALE438)	1000ml glass bottle (ALE439)	1000ml glass bottle (ALE440)	1000ml glass bottle (ALE441)	1000ml glass bottle (ALE442)	1000ml glass bottle (ALE443)	1000ml glass bottle (ALE444)	1000ml glass bottle (ALE445)	1000ml glass bottle (ALE446)	1000ml glass bottle (ALE447)	1000ml glass bottle (ALE448)	1000ml glass bottle (ALE449)	1000ml glass bottle (ALE450)	1000ml glass bottle (ALE451)	1000ml glass bottle (ALE452)	1000ml glass bottle (ALE453)	1000ml glass bottle (ALE454)	1000ml glass bottle (ALE455)	1000ml glass bottle (ALE456)	1000ml glass bottle (ALE457)	1000ml glass bottle (ALE458)	1000ml glass bottle (ALE459)	1000ml glass bottle (ALE460)	1000ml glass bottle (ALE461)	1000ml glass bottle (ALE462)	1000ml glass bottle (ALE463)	1000ml glass bottle (ALE464)	1000ml glass bottle (ALE465)	1000ml glass bottle (ALE466)	1000ml glass bottle (ALE467)	1000ml glass bottle (ALE468)	1000ml glass bottle (ALE469)	1000ml glass bottle (ALE470)	1000ml glass bottle (ALE471)	1000ml glass bottle (ALE472)	1000ml glass bottle (ALE473)	1000ml glass bottle (ALE474)	1000ml glass bottle (ALE475)	1000ml glass bottle (ALE476)	1000ml glass bottle (ALE477)	1000ml glass bottle (ALE478)	1000ml glass bottle (ALE479)	1000ml glass bottle (ALE480)	1000ml glass bottle (ALE481)	1000ml glass bottle (ALE482)	1000ml glass bottle (ALE483)	1000ml glass bottle (ALE484)	1000ml glass bottle (ALE485)	1000ml glass bottle (ALE486)	1000ml glass bottle (ALE487)	1000ml glass bottle (ALE488)	1000ml glass bottle (ALE489)	1000ml glass bottle (ALE490)	1000ml glass bottle (ALE491)	1000ml glass bottle (ALE492)	1000ml glass bottle (ALE493)	1000ml glass bottle (ALE494)	1000ml glass bottle (ALE495)	1000ml glass bottle (ALE496)	1000ml glass bottle (ALE497)	1000ml glass bottle (ALE498)	1000ml glass bottle (ALE499)	1000ml glass bottle (ALE500)	1000ml glass bottle (ALE501)	1000ml glass bottle (ALE502)	1000ml glass bottle (ALE503)	1000ml glass bottle (ALE504)	1000ml glass bottle (ALE505)	1000ml glass bottle (ALE506)	1000ml glass bottle (ALE507)	1000ml glass bottle (ALE508)	1000ml glass bottle (ALE509)	1000ml glass bottle (ALE510)	1000ml glass bottle (ALE511)	1000ml glass bottle (ALE512)	1000ml glass bottle (ALE513)	1000ml glass bottle (ALE514)	1000ml glass bottle (ALE515)	1000ml glass bottle (ALE516)	1000ml glass bottle (ALE517)	1000ml glass bottle (ALE518)	1000ml glass bottle (ALE519)	1000ml glass bottle (ALE520)	1000ml glass bottle (ALE521)	1000ml glass bottle (ALE522)	1000ml glass bottle (ALE523)	1000ml glass bottle (ALE524)	1000ml glass bottle (ALE525)	1000ml glass bottle (ALE526)	1000ml glass bottle (ALE527)	1000ml glass bottle (ALE528)	1000ml glass bottle (ALE529)	1000ml glass bottle (ALE530)	1000ml glass bottle (ALE531)	1000ml glass bottle (ALE532)	1000ml glass bottle (ALE533)	1000ml glass bottle (ALE534)	1000ml glass bottle (ALE535)	1000ml glass bottle (ALE536)	1000ml glass bottle (ALE537)	1000ml glass bottle (ALE538)	1000ml glass bottle (ALE539)	1000ml glass bottle (ALE540)	1000ml glass bottle (ALE541)	1000ml glass bottle (ALE542)	1000ml glass bottle (ALE543)	1000ml glass bottle (ALE544)	1000ml glass bottle (ALE545)	1000ml glass bottle (ALE546)	1000ml glass bottle (ALE547)	1000ml glass bottle (ALE548)	1000ml glass bottle (ALE549)	1000ml glass bottle (ALE550)	1000ml glass bottle (ALE551)	1000ml glass bottle (ALE552)	1000ml glass bottle (ALE553)	1000ml glass bottle (ALE554)	1000ml glass bottle (ALE555)	1000ml glass bottle (ALE556)	1000ml glass bottle (ALE557)	1000ml glass bottle (ALE558)	1000ml glass bottle (ALE559)	1000ml glass bottle (ALE560)	1000ml glass bottle (ALE561)	1000ml glass bottle (ALE562)	1000ml glass bottle (ALE563)	1000ml glass bottle (ALE564)	1000ml glass bottle (ALE565)	1000ml glass bottle (ALE566)	1000ml glass bottle (ALE567)	1000ml glass bottle (ALE568)	1000ml glass bottle (ALE569)	1000ml glass bottle (ALE570)	1000ml glass bottle (ALE571)	1000ml glass bottle (ALE572)	1000ml glass bottle (ALE573)	1000ml glass bottle (ALE574)	1000ml glass bottle (ALE575)	1000ml glass bottle (ALE576)	1000ml glass bottle (ALE577)	1000ml glass bottle (ALE578)	1000ml glass bottle (ALE579)	1000ml glass bottle (ALE580)	1000ml glass bottle (ALE581)	1000ml glass bottle (ALE582)	1000ml glass bottle (ALE583)	1000ml glass bottle (ALE584)	1000ml glass bottle (ALE585)	1000ml glass bottle (ALE586)	1000ml glass bottle (ALE587)	1000ml glass bottle (ALE588)	1000ml glass bottle (ALE589)	1000ml glass bottle (ALE590)	1000ml glass bottle (ALE591)	1000ml glass bottle (ALE592)	1000ml glass bottle (ALE593)	1000ml glass bottle (ALE594)	1000ml glass bottle (ALE595)	1000ml glass bottle (ALE596)	1000ml glass bottle (ALE597)	1000ml glass bottle (ALE598)	1000ml glass bottle (ALE599)	1000ml glass bottle (ALE600)	1000ml glass bottle (ALE601)	1000ml glass bottle (ALE602)	1000ml glass bottle (ALE603)	1000ml glass bottle (ALE604)	1000ml glass bottle (ALE605)	1000ml glass bottle (ALE606)	1000ml glass bottle (ALE607)	1000ml glass bottle (ALE608)	1000ml glass bottle (ALE609)	1000ml glass bottle (ALE610)	1000ml glass bottle (ALE611)	1000ml glass bottle (ALE612)	1000ml glass bottle (ALE613)	1000ml glass bottle (ALE614)	1000ml glass bottle (ALE615)	1000ml glass bottle (ALE616)	1000ml glass bottle (ALE617)	1000ml glass bottle (ALE618)	1000ml glass bottle (ALE619)	1000ml glass bottle (ALE620)	1000ml glass bottle (ALE621)	1000ml glass bottle (ALE622)	1000ml glass bottle (ALE623)	1000ml glass bottle (ALE624)	1000ml glass bottle (ALE625)	1000ml glass bottle (ALE626)	1000ml glass bottle (ALE627)	1000ml glass bottle (ALE628)	1000ml glass bottle (ALE629)	1000ml glass bottle (ALE630)	1000ml glass bottle (ALE631)	1000ml glass bottle (ALE632)	1000ml glass bottle (ALE633)	1000ml glass bottle (ALE634)	1000ml glass bottle (ALE635)	1000ml glass bottle (ALE636)	1000ml glass bottle (ALE637)	1000ml glass bottle (ALE638)	1000ml glass bottle (ALE639)	1000ml glass bottle (ALE640)	1000ml glass bottle (ALE641)	1000ml glass bottle (ALE642)	1000ml glass bottle (ALE643)	1000ml glass bottle (ALE644)	1000ml glass bottle (ALE645)	1000ml glass bottle (ALE646)	1000ml glass bottle (ALE647)	1000ml glass bottle (ALE648)	1000ml glass bottle (ALE649)	1000ml glass bottle (ALE650)	1000ml glass bottle (ALE651)	1000ml glass bottle (ALE652)	1000ml glass bottle (ALE653)	1000ml glass bottle (ALE654)	1000ml glass bottle (ALE655)	1000ml glass bottle (ALE656)	1000ml glass bottle (ALE657)	1000ml glass bottle (ALE658)	1000ml glass bottle (ALE659)	1000ml glass bottle (ALE660)	1000ml glass bottle (ALE661)	1000ml glass bottle (ALE662)	1000ml glass bottle (ALE663)	1000ml glass bottle (ALE664)	1000ml glass bottle (ALE665)	1000ml glass bottle (ALE666)	1000ml glass bottle (ALE667)	1000ml glass bottle (ALE668)	1000ml glass bottle (ALE669)	1000ml glass bottle (ALE670)	1000ml glass bottle (ALE671)	1000ml glass bottle (ALE672)	1000ml glass bottle (ALE673)	1000ml glass bottle (ALE674)	1000ml glass bottle (ALE675)	1000ml glass bottle (ALE676)	1000ml glass bottle (ALE677)	1000ml glass bottle (ALE678)	1000ml glass bottle (ALE679)	1000ml glass bottle (ALE680)	1000ml glass bottle (ALE681)	1000ml glass bottle (ALE682)	1000ml glass bottle (ALE683)	1000ml glass bottle (ALE684)	1000ml glass bottle (ALE685)	1000ml glass bottle (ALE686)	1000ml glass bottle (ALE687)	1000ml glass bottle (ALE688)	1000ml glass bottle (ALE689)	1000ml glass bottle (ALE690)	1000ml glass bottle (ALE691)	1000ml glass bottle (ALE692)	1000ml glass bottle (ALE693)	1000ml glass bottle (ALE694)	1000ml glass bottle (ALE695)	1000ml glass bottle (ALE696)	1000ml glass bottle (ALE697)	1000ml glass bottle (ALE698)	1000ml glass bottle (ALE699)	1000ml glass bottle (ALE700)	1000ml glass bottle (ALE701)	1000ml glass bottle (ALE702)	1000ml glass bottle (ALE703)	1000ml glass bottle (ALE704)	1000ml glass bottle (ALE705)	1000ml glass bottle (ALE706)	1000ml glass bottle (ALE707)	1000ml glass bottle (ALE708)	1000ml glass bottle (ALE709)	1000ml glass bottle (ALE710)	1000ml glass bottle (ALE711)	1000ml glass bottle (ALE712)	1000ml glass bottle (ALE713)	1000ml glass bottle (ALE714)	1000ml glass bottle (ALE715)	1000ml glass bottle (ALE716)	1000ml glass bottle (ALE717)	1000ml glass bottle (ALE718)	1000ml glass bottle (ALE719)	1000ml glass bottle (ALE720)	1000ml glass bottle (ALE721)	1000ml glass bottle (ALE722)	1000ml glass bottle (ALE723)	1000ml glass bottle (ALE724)	1000ml glass bottle (ALE725)	1000ml glass bottle (ALE726)	1000ml glass bottle (ALE727)	1000ml glass bottle (ALE728)	1000ml glass bottle (ALE729)	1000ml glass bottle (ALE730)	1000ml glass bottle (ALE731)	1000ml glass bottle (ALE732)	1000ml glass bottle (ALE733)	1000ml glass bottle (ALE734)	1000ml glass bottle (ALE735)	1000ml glass bottle (ALE736)	1000ml glass bottle (ALE737)	1000ml glass bottle (ALE738)	1000ml glass bottle (ALE739)	1000ml glass bottle (ALE740)	1000ml glass bottle (ALE741)	1000ml glass bottle (ALE742)	1000ml glass bottle (ALE743)	1000ml glass bottle (ALE744)	1000ml glass bottle (ALE745)	1000ml glass bottle (ALE746)	1000ml glass bottle (ALE747)	1000ml glass bottle (ALE748)	1000ml glass bottle (ALE749)	1000ml glass bottle (ALE750)	1000ml glass bottle (ALE751)	1000ml glass bottle (ALE752)	1000ml glass bottle (ALE753)	1000ml glass bottle (ALE754)	1000ml glass bottle (ALE755)	1000ml glass bottle (ALE756)	1000ml glass bottle (ALE757)	1000ml glass bottle (ALE758)	1000ml glass bottle (ALE759)	1000ml glass bottle (ALE760)	1000ml glass bottle (ALE761)	1000ml glass bottle (ALE762)	1000ml glass bottle (ALE763)	1000ml glass bottle (ALE764)	1000ml glass bottle (ALE765)	1000ml glass bottle (ALE766)	1000ml glass bottle (ALE767)	1000ml glass bottle (ALE768)	1000ml glass bottle (ALE769)	1000ml glass bottle (ALE770)	1000ml glass bottle (ALE771)	1000ml glass bottle (ALE772)	1000ml glass bottle (ALE773)	1000ml glass bottle (ALE774)	1000ml glass bottle (ALE775)	1000ml glass bottle (ALE776)	1000ml glass bottle (ALE777)	1000ml glass bottle (ALE778)	1000ml glass bottle (ALE779)	1000ml glass bottle (ALE780)	1000ml glass bottle (ALE781)	1000ml glass bottle (ALE782)	1000ml glass bottle (ALE783)	1000ml glass bottle (ALE784)	1000ml glass bottle (ALE785)	1000ml glass bottle (ALE786)	1000ml glass bottle (ALE787)	1000ml glass bottle (ALE788)	1000ml glass bottle (ALE789)	1000ml glass bottle (ALE790)	1000ml glass bottle (ALE791)	1000ml glass bottle (ALE792)	1000ml glass bottle (ALE793)	1000ml glass bottle (ALE794)	1000ml glass bottle (ALE795)	1000ml glass bottle (ALE796)	1000ml glass bottle (ALE797)	1000ml glass bottle (ALE798)	1000ml glass bottle (ALE799)	1000ml glass bottle (ALE800)	1000ml glass bottle (ALE801)	1000ml glass bottle (ALE802)	1000ml glass bottle (ALE803)	1000ml glass bottle (ALE804)	1000ml glass bottle (ALE805)	1000ml glass bottle (ALE806)	1000ml glass bottle (ALE807)	1000ml glass bottle (ALE808)	1000ml glass bottle (ALE809)	1000ml glass bottle (ALE810)	1000ml glass bottle (ALE811)	1000ml glass bottle (ALE812)	1000ml glass bottle (ALE813)	1000ml glass bottle (ALE814)	1000ml glass bottle (ALE815)	1000ml glass bottle (ALE816)	1000ml glass bottle (ALE817)	1000ml glass bottle (ALE818)	1000ml glass bottle (ALE819)	1000ml glass bottle (ALE820)	1000ml glass bottle (ALE821)	1000ml glass bottle (ALE822)	1000ml glass bottle (ALE823)	1000ml glass bottle (ALE824)	1000ml glass bottle (ALE825)	1000ml glass bottle (ALE826)	1000ml glass bottle (ALE827)	1000ml glass bottle (ALE828)	1000ml glass bottle (ALE829)	1000ml glass bottle (ALE830)	1000ml glass bottle (ALE831)	1000ml glass bottle (ALE832)	1000ml glass bottle (ALE833)	1000ml glass bottle (ALE834)	1000ml glass bottle (ALE835)	1000ml glass bottle (ALE836)	1000ml glass bottle (ALE837)	1000ml glass bottle (ALE838)	1000ml glass bottle (ALE839)	1000ml glass bottle (ALE840)	1000ml glass bottle (ALE841)	1000ml glass bottle (ALE842)	1000ml glass bottle (ALE843)	1000ml glass bottle (ALE844)	1000ml glass bottle (ALE845)	1000ml glass bottle (ALE846)	1000ml glass bottle (ALE847)	1000ml glass bottle (ALE848)	1000ml glass bottle (ALE849)	1000ml glass bottle (ALE850)	1000ml glass bottle (ALE851)	1000ml glass bottle (ALE852)	1000ml glass bottle (ALE853)	1000ml glass bottle (ALE854)	1000ml glass bottle (ALE855)	1000ml glass bottle (ALE856)	1000ml glass bottle (ALE857)	1000ml glass bottle (ALE858)	1000ml glass bottle (ALE859)	1000ml glass bottle (ALE860)	1000ml glass bottle (ALE861)	1000ml glass bottle (ALE862)	1000ml glass bottle (ALE863)	1000ml glass bottle (ALE864)	1000ml glass bottle (ALE865)	1000ml glass bottle (ALE866)	1000ml glass bottle (ALE867)	1000ml glass bottle (ALE868)	1000ml glass bottle (ALE869)	1000ml glass bottle (ALE870)	1000ml glass bottle (ALE871)	1000ml glass bottle (ALE872)	1000ml glass bottle (ALE873)	1000ml glass bottle (ALE874)	1000ml glass bottle (ALE875)	1000ml glass bottle (ALE876)	1000ml glass bottle (ALE877)	1000ml glass bottle (ALE878)	1000ml glass bottle (ALE879)	1000ml glass bottle (ALE880)	1000ml glass bottle (ALE881)	1000ml glass bottle (ALE882)	1000ml glass bottle (ALE883)	1000ml glass bottle (ALE884)	1000ml glass bottle (ALE885)	1000ml glass bottle (ALE886)	1000ml glass bottle (ALE887)	1000ml glass bottle (ALE888)	1000ml glass bottle (ALE889)	1000ml glass bottle (ALE890)	1000ml glass bottle (ALE891)	1000ml glass bottle (ALE892)	1000ml glass bottle (ALE893)	1000ml glass bottle (ALE894)	1000ml glass bottle (ALE895)	1000ml glass bottle (ALE896)	1000ml glass bottle (ALE897)	1000ml glass bottle (ALE898)	1000ml glass bottle (ALE899)	1000ml glass bottle (ALE900)	1000ml glass bottle (ALE901)	1000ml glass bottle (ALE902)	1000ml glass bottle (ALE903)	1000ml glass bottle (ALE904)	1000ml glass bottle (ALE905)	1000ml glass bottle (ALE906)	1000ml glass bottle (ALE907)	1000ml glass bottle (ALE908)	1000ml glass bottle (ALE909)	1000ml glass bottle (ALE910)	1000ml glass bottle (ALE911)	1000ml glass bottle (ALE912)	1000ml glass bottle (ALE913)	1000ml glass bottle (ALE914)	1000ml glass bottle (ALE915)	1000ml glass bottle (ALE916)



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend



Test



No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Suspended Solids

SVOC MS (W) - Aqueous

Total Organic and Inorganic Carbon

TPH CWG (W)

VOC MS (W)

All

All

All

All

All

NDPs: 0
Tests: 7

NDPs: 0
Tests: 32

NDPs: 0
Tests: 13

NDPs: 0
Tests: 25

NDPs: 0
Tests: 32

25098819

NACW205

NaOH (ALE245)
HNO3 Filtered
(ALE204)

GW

25098817

NACW212

NaOH (ALE245)
HNO3 Filtered
(ALE204)

GW

25098847

NACW219

NaOH (ALE245)
HNO3 Filtered
(ALE204)

GW

25098816

NACW228

NaOH (ALE245)
HNO3 Filtered
(ALE204)

GW

H2SO4
(ALE244)

GW

1000ml glass
bottle (ALE220)

GW

0.5l glass bottle
(ALE227)

GW

Vial (ALE297)

GW

NaOH (ALE245)

GW

HNO3 Filtered
(ALE204)

GW

H2SO4
(ALE244)

GW

1000ml glass
bottle (ALE220)

GW

0.5l glass bottle
(ALE227)

GW

Vial (ALE297)

GW

NaOH (ALE245)

GW

HNO3 Filtered
(ALE204)

GW

H2SO4
(ALE244)

GW

1000ml glass
bottle (ALE220)

GW

0.5l glass bottle
(ALE227)

GW

Vial (ALE297)

GW

X

X

X

X

X

X

X

X

X

25098828	SW202			1000ml glass bottle (ALE220)	SW							
25098827	SW201			0.5l glass bottle (ALE227)	SW							
				Vial (ALE297)	SW			X				
				NaOH (ALE245)	SW							X
				HNO3 Filtered (ALE204)	SW							
				H2SO4 (ALE244)	SW				X			
				1l plastic (ALE221)	SW		X					
				1000ml glass bottle (ALE220)	SW							
				0.5l glass bottle (ALE227)	SW							
				Vial (ALE297)	SW		X					
				NaOH (ALE245)	SW							X
25098848	NACW 229			HNO3 Filtered (ALE204)	GW							
				H2SO4 (ALE244)	GW							
				1l plastic (ALE221)	GW							
				1000ml glass bottle (ALE220)	GW							
				0.5l glass bottle (ALE227)	GW							
				Vial (ALE297)	GW							
				NaOH (ALE245)	GW							
				HNO3 Filtered (ALE204)	GW							
				H2SO4 (ALE244)	GW							
				1l plastic (ALE221)	GW							
25098816	NACW228			1000ml glass bottle (ALE220)	GW							
				0.5l glass bottle (ALE227)	GW							
				Vial (ALE297)	GW		X					
				NaOH (ALE245)	GW							
				HNO3 Filtered (ALE204)	GW							X

25098833	SW207			Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
				0.5l glass bottle (ALE227)	SW		
				Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
25098832	SW206			H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
				0.5l glass bottle (ALE227)	SW		
				Vial (ALE297)	SW		
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
25098831	SW205			Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		25098823												25098824												25098825																				
	Customer Sample Reference		UD1												UD3												UD4																				
	AGS Reference																																														
	Depth (m)																																														
	Container		Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	11plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)			
	Sample Type		GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW	GW
	Acid Herbicides by GCMS	All	NDPs: 0 Tests: 32	X							X																																				
Alkalinity as CaCO3	All	NDPs: 0 Tests: 32			X								X																																		
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 32																																													
Anions by Kone (w)	All	NDPs: 1 Tests: 31																																													
Conductivity (at 20 deg.C)	All	NDPs: 0 Tests: 32																																													
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 32																																													
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 25	X																																												
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 25	X																																												
GRO by GC-FID (W)	All	NDPs: 0 Tests: 25																																													
Nitrite by Kone (w)	All	NDPs: 0 Tests: 26																																													
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 26			X																																										
Phenols by ms (w)	All	NDPs: 0 Tests: 32			X																																										
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32	X																																												
TPH CWG (W)	All	NDPs: 0 Tests: 25	X																																												
VOC MS (W)	All	NDPs: 0 Tests: 32																																													



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/2	BH 3/3	BH3/4	BH 3/5	BH 3/6	BH 3/8
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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									
1-4-5-6	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO ₃	<2 mg/l	TM043	93.9	#	125	#	144	#	125	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#	<0.2	#	<0.2	#	<0.2	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.206	#	0.295	#	0.393	#	0.135	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#	<0.08	#	<0.08	#	<0.08	#
Chromium (diss.filt)	<1 µg/l	TM152	<1	#	<1	#	<1	#	<1	#
Copper (diss.filt)	<0.3 µg/l	TM152	1.19	#	1.35	#	4.63	#	0.826	#
Lead (diss.filt)	<0.2 µg/l	TM152	0.219	#	0.311	#	0.39	#	0.699	#
Manganese (diss.filt)	<3 µg/l	TM152	27.7	#	4.71	#	933	#	65.1	#
Nickel (diss.filt)	<0.4 µg/l	TM152	0.503	#	<0.4	#	1.71	#	0.466	#
Zinc (diss.filt)	<1 µg/l	TM152	4.01	#	1.02	#	8.56	#	1.43	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	7.1	#	8.09	#	8.85	#	3.97	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	4.07	#	5.27	#	7.74	#	3.11	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.621	#	1.1	#	1.18	#	0.379	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	32.5	#	50.7	#	62.9	#	21.1	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.129	#	0.076	#	0.154	#	0.125	#
Nitrite as NO ₂	<0.05 mg/l	TM184	<0.05	#	<0.05	#	0.149	#	<0.05	#
Sulphate	<2 mg/l	TM184	6.8	#	16.2	#	13.8	#	3.5	#
Chloride	<2 mg/l	TM184	9.6	#	17.6	#	49.5	#	9.4	#
Nitrate as NO ₃	<0.3 mg/l	TM184	<0.3	#	17.2	#	<0.3	#	3.52	#
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1	#	3.9	#	<0.1	#	0.798	#
Phenol	<0.5 µg/l	TM205	<1	#	<1	#	<1	#	<1	#
2-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
3-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2-chlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,6-dichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-Chlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4-dichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2-nitrophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4,6-trichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/2	BH 3/3	BH3/4	BH 3/5	BH 3/6	BH 3/8
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098840	25098841	25098820	25098842	25098843	25098844
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205			<9	<9	<9	<9	<9	<9
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<20	<20	<20
Dinitro-o-cresol	<0.1 µg/l	TM411			1.35	0.47	15.7	<0.1	0.512	5.55
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO3	<2 mg/l	TM043	75	#	19.1	#	220	#	4030	#
BOD, unfiltered	<1 mg/l	TM045		#		#		#	58.3	#
Organic Carbon, Total	<3 mg/l	TM090		#		#		#	34.5	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#	<0.2	#	<0.2	#	382	#
COD, unfiltered	<7 mg/l	TM107		#		#		#	203	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.515	#	0.082	#	0.452	#	907	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#	<0.08	#	<0.08	#	395	#
Chromium (diss.filt)	<1 µg/l	TM152	1.47	#	<1	#	<1	#	612	#
Copper (diss.filt)	<0.3 µg/l	TM152	1.48	#	1.74	#	1.59	#	1390	#
Lead (diss.filt)	<0.2 µg/l	TM152	0.201	#	0.431	#	0.378	#	738	#
Manganese (diss.filt)	<3 µg/l	TM152	127	#	7.03	#	18.6	#	1070	#
Nickel (diss.filt)	<0.4 µg/l	TM152	2.15	#	0.511	#	0.462	#	17	#
Zinc (diss.filt)	<1 µg/l	TM152	7.8	#	6.88	#	5.1	#	4.69	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	24.5	#	5.95	#	9.96	#	7.14	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	8.64	#	1.06	#	8.61	#	0.339	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	4.77	#	3.35	#	1.38	#	<0.08	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	73.8	#	5.26	#	76.6	#	55.9	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.204	#	0.0408	#	0.243	#	82.3	#
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#	<0.05	#	<0.05	#	21.5	#
Sulphate	<2 mg/l	TM184	157	#	<2	#	12.6	#	2.95	#
Chloride	<2 mg/l	TM184	37.5	#	13.1	#	22.2	#	2.26	#
Nitrate as NO3	<0.3 mg/l	TM184	12.1	#	4.8	#	10.3	#	9.24	#
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	2.75	#	1.09	#	2.35	#	1.65	#
PCB congener 28	<0.015 µg/l	TM197		#		#		#	1.97	#
PCB congener 52	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 101	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 118	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 138	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 153	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 180	<0.015 µg/l	TM197		#		#		#	1.65	#
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		#		#		#	1.65	#
PCB congener 77	<0.015 µg/l	TM197		#		#		#	1.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PCB congener 81	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 105	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 114	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 123	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 126	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 156	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 157	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 167	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 169	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 189	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
Phenol	<0.5 µg/l	TM205			<1	<1	<1	<2.5	<5	<2.5
2-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
3-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2-chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4-dimethylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<5	<10	<5
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<6	<2.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<6	<2.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<62.5	<125	<62.5
DNOC	<3 µg/l	TM205			<9	<9	<9	<60	<120	<60
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<20	<40	<20
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<100	<200	<100
Cyanide, Total	<0.05 mg/l	TM227						<0.05 #	<0.05 #	<0.05 #
Trifluralin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.	BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
alpha-HCH	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Endrin	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
o,p'-DDT	<0.01 µg/l	TM343					<0.02	<0.02	<0.02
p,p'-DDD (TDE)	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343					<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343					<0.02	<0.02	<0.02
o,p'-Methoxychlor	<0.01 µg/l	TM343					<0.02	<0.02	<0.02
p,p'-Methoxychlor	<0.01 µg/l	TM343					<0.02	<0.02	<0.02
Endosulphan Sulphate	<0.02 µg/l	TM343					<0.02	<0.02	<0.02
Permethrin I	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343					<0.01	<0.01	<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
Hexachlorobutadiene	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
Dichlorvos	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
Dichlobenil	<0.01 µg/l	TM344					<0.05	<0.02	<0.05
Mevinphos	<0.01 µg/l	TM344					<0.05	<0.02	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
(F)	Trigger breach confirmed				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
1-4+5@	Sample deviation (see appendix)				25098846	25098822	25098821	25098337	25098838	25098839
Component	LOD/Units	Method								
Tecnazene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Hexachlorobenzene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Demeton-S-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Phorate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Diazinon	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triallate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Atrazine	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Simazine	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Disulfoton	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Propetamphos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorpyrifos-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Dimethoate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Pirimiphos-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorpyrifos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Methyl Parathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Malathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Fenthion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Fenitrothion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triadimefon	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Pendimethalin	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Parathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorfenvinphos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
trans-Chlordane	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
cis-Chlordane	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Ethion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Carbophenothion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triazophos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Phosalone	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Azinphos methyl	<0.02 µg/l	TM344						<0.2	<0.08	<0.2
Azinphos ethyl	<0.02 µg/l	TM344						1.67	<0.04	<0.1
Etridiazole	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Pentachlorobenzene	<0.01 µg/l	TM345						<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Propachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Quintozene (PCNB)	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Omethoate	<0.01 µg/l	TM345						<0.2	<0.2	<0.2
Propazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Propyzamide	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Alachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Prometryn	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Telodrin	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Terbutryn	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Chlorothalonil	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Etriphos	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Metazachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Cyanazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Trietazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Coumaphos	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Phosphamidon I	<0.01 µg/l	TM345						<0.2	<0.2	<0.2
Phosphamidon II	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Dinitro-o-cresol	<0.1 µg/l	TM411			2.23	2.22	1.08	<10	<10	<10
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.08	<4	<4	<4
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.08	17.7	<4	<4
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.08	<4	<4	<4
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.2	<10	<10	<10
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.2	<10	<10	<10
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.2	<10	<10	<10
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.1	<5	<5	<5
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.08	<4	<4	<4
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.08	<4	<4	<4



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO3	<2 mg/l	TM043	9320		4080		5280	184	237	171
			#		#		#	#	#	#
BOD, unfiltered	<1 mg/l	TM045	>198		49.4		74			
			#		#		#			
Organic Carbon, Total	<3 mg/l	TM090	861		376		539			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	2410		897		1200	<0.2	<0.2	<0.2
							#	#	#	#
COD, unfiltered	<7 mg/l	TM107	3280		1440		1720			
			#		#		#			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	38.5		17.4		19.3	0.45	0.503	0.375
			#		#		#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.522		0.225		0.237	<0.08	<0.08	<0.08
			#		#		#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152	164		65.5		110	<1	<1	<1
			#		#		#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152	21.9		13.9		8.17	<0.3	0.936	4.06
			#		#		#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152	12.6		2.81		5.26	<0.2	0.322	0.625
			#		#		#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152	112		1300		976	8.24	23.5	24.1
			#		#		#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152	302		116		142	<0.4	<0.4	0.562
			#		#		#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152	102		84.4		79.9	<1	3.96	14.4
			#		#		#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	4900		2120		2220	14	9.64	9.16
			#		#		#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	62.3		78.2		82.6	9.71	8.31	6.4
			#		#		#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	3180		1460		1430	1.23	1.16	3.06
			#		#		#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	33.9		120		110	75.4	89.4	62.3
			#		#		#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	5.5		12.4		3.21	0.0265	0.0405	0.12
			#		#		#	#	#	#
Nitrite as NO2	<0.05 mg/l	TM184						<0.05	<0.05	<0.05
								#	#	#
Sulphate	<2 mg/l	TM184	<20		53.7			23.1	11.8	19.5
								#	#	#
Chloride	<2 mg/l	TM184	11900		4580			37.9	33	19.5
								#	#	#
Nitrate as NO3	<0.3 mg/l	TM184						7.31	10.1	6.98
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<2		9.91			1.65	2.29	1.59
								#	#	#
PCB congener 28	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 52	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 101	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 118	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 180	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105		<0.105		<0.105			
PCB congener 77	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PCB congener 81	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 105	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 114	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 123	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 126	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 156	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 157	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 167	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 169	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
PCB congener 189	<0.015 µg/l	TM197			<0.015	<0.015	<0.015			
Phenol	<0.5 µg/l	TM205			13	<5	47.8	<1.5	<1	<1
2-methylphenol	<0.5 µg/l	TM205			19.4	<5	42.5	<0.5	<0.5	<0.5
3-methylphenol	<0.5 µg/l	TM205			7.97	<5	34.1	<0.5	<0.5	<0.5
4-methylphenol	<0.5 µg/l	TM205			<11.5	<5	21.4	<0.5	<0.5	<0.5
2-chlorophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
2,4-dimethylphenol	<0.5 µg/l	TM205			<1.5	<5	9.99	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205			<3.5	<5	<5	<0.5	<0.5	<0.5
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<1	<5	<5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<5	<5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<10	<10	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<2.5	<5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<2.5	<5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<62.5	<125	<12.5	<12.5	<12.5
DNO	<3 µg/l	TM205			<12	<60	<120	<12	<9	<12
Pentachlorophenol	<2 µg/l	TM205			<4	<40	<40	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<100	<200	<20	<20	<20
Chloride	<0.08 mg/l	TM226					4550			
Sulphate	<0.1 mg/l	TM226					17.7			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Total Oxidised Nitrogen as N	<0.02 mg/l	TM226					0.191			
Cyanide, Total	<0.05 mg/l	TM227			0.06 #	<0.05 #	<0.05 #			
Trifluralin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
alpha-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Heptachlor	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Aldrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
beta-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Isodrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
delta-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Heptachlor epoxide	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDE	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endosulphan I	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
trans-Chlordane	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
cis-Chlordane	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
p,p'-DDE	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Dieldrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDT	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
p,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endosulphan II	<0.02 µg/l	TM343			<0.1	<0.02	<0.1			
p,p'-DDT	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
o,p'-Methoxychlor	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
p,p'-Methoxychlor	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
Endosulphan Sulphate	<0.02 µg/l	TM343			<0.1	<0.02	<0.1			
Permethrin I	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Permethrin II	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4&5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Dichlorvos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Dichlobenil	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Mevinphos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Tecnazene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Demeton-S-methyl	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Phorate	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Diazinon	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Triallate	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Atrazine	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Simazine	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Disulfoton	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Propetamphos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Chlorpyrifos-methyl	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Dimethoate	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Pirimiphos-methyl	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Chlorpyrifos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Methyl Parathion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Malathion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Fenthion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Fenitrothion	<0.01 µg/l	TM344			<0.1	2.06	<0.1			
Triadimefon	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Pendimethalin	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Parathion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Chlorfenvinphos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
trans-Chlordane	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
cis-Chlordane	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Ethion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Carbophenothion	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Triazophos	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Phosalone	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Azinphos methyl	<0.02 µg/l	TM344			<0.4	<0.2	<0.4			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4&5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Azinphos ethyl	<0.02 µg/l	TM344			<0.2	<1.6	<0.2			
Etridiazole	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Pentachlorobenzene	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Propachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Quintozone (PCNB)	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Omethoate	<0.01 µg/l	TM345			<0.2	<0.2	<0.2			
Propazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Propyzamide	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Alachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Prometryn	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Telodrin	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Terbutryn	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Chlorothalonil	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Etrimphos	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Metazachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Cyanazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Trietazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Coumaphos	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Phosphamidon I	<0.01 µg/l	TM345			<0.2	<0.2	<0.2			
Phosphamidon II	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Dinitro-o-cresol	<0.1 µg/l	TM411			<10	<10	<10	0.194	0.784	0.881
Clpyralid	<0.04 µg/l	TM411			<4	<4	<4	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411			99.3	16.2	19.7	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411			<4	<4	<4	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Dichlorprop	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		NACW 219	NACW228	NACW 229	SW201	SW202	SW203
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Ionic balance	% Diff	Calculation						5.74	2.56	-4.69
Suspended solids, Total	<2 mg/l	TM022						<2 #	<2 #	4.95 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043	175 #		83.1 #		211 #	127 #	127 #	62.1 #
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043						130	125	65
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043						130	125	65
Organic Carbon, Total	<3 mg/l	TM090						14.9 #	12.7 #	8.79 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #		<0.2 #		<0.2 #	1.48 #	1.24 #	<0.2 #
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.36 #		0.451 #		0.442 #	0.385 #	0.349 #	0.222 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #		<0.08 #		<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	1.28 #		<1 #		<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	3.9 #		2.33 #		1.02 #	4.46 #	3.35 #	2.82 #
Lead (diss.filt)	<0.2 µg/l	TM152	1.4 #		2.6 #		0.569 #	0.571 #	0.317 #	0.676 #
Manganese (diss.filt)	<3 µg/l	TM152	355 #		394 #		97 #	25.8 #	19.4 #	29.1 #
Nickel (diss.filt)	<0.4 µg/l	TM152	2.46 #		6.13 #		0.538 #	2.26 #	1.65 #	1.6 #
Zinc (diss.filt)	<1 µg/l	TM152	2.68 #		10.2 #		4.29 #	7.4 #	6.05 #	11.2 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152	11.2 #		17.5 #		11.7 #	15.1 #	13 #	6.47 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	6.4 #		13.8 #		9.23 #	5.67 #	5.06 #	2.42 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.901 #		1.14 #		1.26 #	28.9 #	21.9 #	7.94 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	75 #		60.5 #		78.8 #	61.1 #	54.5 #	29.7 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	18.1 #		0.297 #		0.142 #	0.132 #	0.0984 #	0.14 #
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #		<0.05 #		<0.05 #	0.69 #	0.507 #	<0.05 #
Sulphate	<2 mg/l	TM184	17.2 #		127 #		16.3 #	37.8 #	33.3 #	25.9 #
Chloride	<2 mg/l	TM184	19.5 #		35.6 #		26.2 #	33.7 #	29 #	17.9 #
Nitrate as NO3	<0.3 mg/l	TM184	0.758 #		2.19 #		10.2 #	8.35 #	7.56 #	2.12 #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	0.173 #		0.507 #		2.32 #	2.1 #	1.86 #	0.489 #
Phenol	<0.5 µg/l	TM205	<1 #		<1.5 #		<1 #	<1 #	<1 #	<1 #
2-methylphenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #
3-methylphenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #
4-methylphenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #
2-chlorophenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5 #		<0.5 #		<0.5 #	<0.5 #	<0.5 #	<0.5 #



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		NACW 219	NACW228	NACW 229	SW201	SW202	SW203
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098847	25098816	25098848	25098827	25098828	25098829
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205			<9	<12	<9	<12	<12	<12
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<20	<20	<20
pH	<1 pH Units	TM256						7.99 #	7.94 #	7.65 #
Dinitro-o-cresol	<0.1 µg/l	TM411			1.3	2.71	2.9	0.883	1.19	1.88
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend		Customer Sample Ref.	SW204	SW205	SW206	SW207	UD1	UD3
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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						
Ionic balance	% Diff	Calculation	-3.41	-3.56	-4.1	-5.75		
Suspended solids, Total	<2 mg/l	TM022	<2 #	<2 #	<2 #	2 #		
Alkalinity, Total as CaCO3	<2 mg/l	TM043	158 #	134 #	101 #	113 #	245 #	203 #
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043	160	135	100	115		
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043	160	135	100	115		
Organic Carbon, Total	<3 mg/l	TM090	14.6 #	10.7 #	7.4 #	13.7 #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #	<0.2 #	0.82 #	<0.2 #	<0.2 #
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.49 #	0.415 #	0.24 #	0.358 #	0.585 #	0.448 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	4.19 #	3.6 #	2.76 #	4.59 #	0.478 #	0.853 #
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 #	0.25 #	0.35 #	0.686 #	<0.2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152	42.2 #	37.9 #	14.1 #	24.7 #	50 #	17 #
Nickel (diss.filt)	<0.4 µg/l	TM152	1.86 #	1.39 #	0.842 #	1.87 #	0.752 #	<0.4 #
Zinc (diss.filt)	<1 µg/l	TM152	2.95 #	6.86 #	5.55 #	9.01 #	3.74 #	3.9 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152	11.3 #	10.4 #	7.23 #	11.2 #	11.6 #	11.5 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	5.57 #	4.82 #	2.88 #	4.03 #	10.4 #	7.41 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152	19.9 #	17.1 #	2.71 #	16.2 #	1.62 #	5.09 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	79.9 #	64.2 #	40.3 #	46.2 #	95.2 #	70.9 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.134 #	0.124 #	0.151 #	0.231 #	0.0491 #	<0.019 #
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #	0.052 #	<0.05 #	0.373 #	<0.05 #	<0.05 #
Sulphate	<2 mg/l	TM184	72.6 #	56 #	16 #	33.3 #	14.1 #	19.3 #
Chloride	<2 mg/l	TM184	36.7 #	31.1 #	14.2 #	30 #	47.4 #	19.7 #
Nitrate as NO3	<0.3 mg/l	TM184	5.24	4.89	7.71	12.1	10.1	6.22
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.19 #	1.12 #	1.75 #	2.86 #	2.29 #	1.41 #
Phenol	<0.5 µg/l	TM205	<1	<1	<1	<1	<1	<1
2-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorophenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		SW204	SW205	SW206	SW207	UD1	UD3
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
(F)	Trigger breach confirmed				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
1-4-5@	Sample deviation (see appendix)				25098830	25098831	25098832	25098833	25098823	25098824
Component	LOD/Units	Method								
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205			<12	<12	<12	<12	<9	<9
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<20	<20	<20
pH	<1 pH Units	TM256			7.89	7.87	7.84	7.87		
Dinitro-o-cresol	<0.1 µg/l	TM411			0.777	2.43	1.13	2.77	0.215	0.871
Clpyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend		Customer Sample Ref.	UD4	UD5			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% 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					
Alkalinity, Total as CaCO3	<2 mg/l	TM043	211 #	163 #			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.436 #	0.463 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #			
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #			
Copper (diss.filt)	<0.3 µg/l	TM152	1.39 #	4.45 #			
Lead (diss.filt)	<0.2 µg/l	TM152	0.228 #	0.311 #			
Manganese (diss.filt)	<3 µg/l	TM152	20.3 #	54.8 #			
Nickel (diss.filt)	<0.4 µg/l	TM152	<0.4 #	1.49 #			
Zinc (diss.filt)	<1 µg/l	TM152	6.62 #	5.69 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	10.8 #	9.79 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	7.92 #	5.06 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	3.47 #	19.9 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	72.9 #	73.8 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.0411 #	0.178 #			
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #	<0.05 #			
Sulphate	<2 mg/l	TM184	16.5 #	67.3 #			
Chloride	<2 mg/l	TM184	20.6 #	26.7 #			
Nitrate as NO3	<0.3 mg/l	TM184	8.3 #	4.45 #			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.88 #	1.01 #			
Phenol	<0.5 µg/l	TM205	<1 #	<1 #			
2-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
3-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2-chlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,6-dichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-Chlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4-dichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2-nitrophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4,6-trichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		UD4	UD5			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)			
M	mCERTS accredited.				05/10/2021	05/10/2021			
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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				06/10/2021	06/10/2021			
(F)	Trigger breach confirmed				211006-49	211006-49			
1-4+5@	Sample deviation (see appendix)				25098825	25098826			
Component	LOD/Units	Method							
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
4-nitrophenol	<0.5 µg/l	TM205			<1	<1			
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5			
DNOC	<3 µg/l	TM205			<9	<9			
Pentachlorophenol	<2 µg/l	TM205			<4	<4			
Dinoseb	<4 µg/l	TM205			<20	<20			
Dinitro-o-cresol	<0.1 µg/l	TM411			0.796	2.09			
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04			
MCPA	<0.05 µg/l	TM411			<0.05	<0.05			
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04			
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04			
MCPB	<0.05 µg/l	TM411			<0.05	<0.05			
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05			
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1			
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05			
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05			
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04			
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04			
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05			
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04			
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1			

SDG: 211006-49

Report Number: 617848

Superseded Report: 617061

Client Ref.:

Location: Nantycaws Landfill

PAH Spec MS - Aqueous (W)

[illegible]



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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									
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dimethylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176						<10	<10	<10
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Chloronaphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Chlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2-Methylnaphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Methylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
2-Nitroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
2-Nitrophenol (aq)	<1 µg/l	TM176						<10	<10	<10
3-Nitroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
4-Bromophenylphenylether (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chloroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176						<10	<10	<10
4-Methylphenol (aq)	<1 µg/l	TM176	<1	#	<1	#	<1	#	<10	<10
4-Nitroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
4-Nitrophenol (aq)	<1 µg/l	TM176						<10	<10	<10
Azobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Acenaphthylene (aq)	<1 µg/l	TM176						<10	<10	<10
Acenaphthene (aq)	<1 µg/l	TM176						<10	<10	<10
Anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176						<20	<20	<20
Butylbenzyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Benzo(a)anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(a)pyrene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176						<10	<10	<10
Carbazole (aq)	<1 µg/l	TM176						<10	<10	<10
Chrysene (aq)	<1 µg/l	TM176						<10	<10	<10
Dibenzofuran (aq)	<1 µg/l	TM176						<10	<10	<10
n-Dibutyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10
Diethyl phthalate (aq)	<1 µg/l	TM176			<1 #	<1 #	<1 #	<10	<10	<10
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
Dimethyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10
n-Dioctyl phthalate (aq)	<5 µg/l	TM176						<50	<50	<50
Fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Fluorene (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorobutadiene (aq)	<1 µg/l	TM176						<10	<10	<10
Pentachlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
Phenol (aq)	<1 µg/l	TM176						<10	<10	<10
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachloroethane (aq)	<1 µg/l	TM176						<10	<10	<10
Nitrobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Naphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
Isophorone (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176						<10	<10	<10
Phenanthrene (aq)	<1 µg/l	TM176						<10	<10	<10
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176						<10	<10	<10
Pyrene (aq)	<1 µg/l	TM176						<10	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10	<10	13.7			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<10	<10			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Chlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Methylphenol (aq)	<1 µg/l	TM176		20	<10	38.9			
2-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Nitrophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
3-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Methylphenol (aq)	<1 µg/l	TM176		11.1	<10	<10	<1 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
Azobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Acenaphthylene (aq)	<1 µg/l	TM176		<10	<10	<10			
Acenaphthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		92.3	<20	<20			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAGOON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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			211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed			25098835	25098836	25098834	25098818	25098819	25098817
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<10	<10	<10			
Carbazole (aq)	<1 µg/l	TM176		<10	<10	<10			
Chrysene (aq)	<1 µg/l	TM176		<10	<10	<10			
Dibenzofuran (aq)	<1 µg/l	TM176		<10	<10	<10			
n-Butyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			
Diethyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10	<1 #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<50	<50	<50			
Fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Fluorene (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<10	<10	<10			
Pentachlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
Phenol (aq)	<1 µg/l	TM176		21.3	<10	32.8			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachloroethane (aq)	<1 µg/l	TM176		<10	<10	<10			
Nitrobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Naphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
Isophorone (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<10	<10	<10			
Phenanthrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend		Customer Sample Ref.	BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Land Leachate (LE) 05/10/2021	Land Leachate (LE) 05/10/2021	Land Leachate (LE) 05/10/2021
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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						
Dibromofluoromethane**	%	TM208				118	127	123
Toluene-d8**	%	TM208				114	116	114
4-Bromofluorobenzene**	%	TM208				112	114	112
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 #	<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-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 #	1.76 #	1 #	2.2 #
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 #	<1 #	1.05 #	2.88 #
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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098846	25098822	25098821	25098337	25098838	25098839
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
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 #	2.13 #	<1 #	5.42 #		
m,p-Xylene	<1 µg/l	TM208	<1 #	<1 #	<1 #	1.89 #	3.88 #	8.84 #		
o-Xylene	<1 µg/l	TM208	<1 #	<1 #	<1 #	2.61 #	3.35 #	5.79 #		
Styrene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
Bromoform	<1 µg/l	TM208				<1 #	<1 #	<1 #		
Isopropylbenzene	<1 µg/l	TM208				1.3 #	<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 #	1.08 #		
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				1.33 #	1.32 #	2.78 #		
sec-Butylbenzene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
4-iso-Propyltoluene	<1 µg/l	TM208				<1 #	2.19 #	4.25 #		
1,3-Dichlorobenzene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208				1.05 #	<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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.	mCERTS accredited.							
M	aq	diss.filt	tot.unfilt	*	**	(F)	1-4-5@		
Aqueous / settled sample.			Depth (m)						
Dissolved / filtered sample.			Sample Type						
Total / unfiltered sample.			Date Sampled						
Subcontracted - refer to subcontractor report for accreditation status.			Sampled Time						
% 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			Date Received						
Trigger breach confirmed			SDG Ref						
Sample deviation (see appendix)			Lab Sample No.(s)						
			AGS Reference						
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM208	118	127	121				
Toluene-d8**	%	TM208	114	115	113				
4-Bromofluorobenzene**	%	TM208	111	114	114				
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 #	1.99 #				
Dichloromethane	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #	<1 #	<1 #				
1,1-Dichloroethane	<1 µg/l	TM208	1.04 #	<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	2.98 #	2.26 #	14.6 #	<1 #	<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	36.5 #	<1 #	6.12 #	<1 #	<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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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			06/10/2021 211006-49 25098835	06/10/2021 211006-49 25098836	06/10/2021 211006-49 25098834	06/10/2021 211006-49 25098818	06/10/2021 211006-49 25098819	06/10/2021 211006-49 25098817
(F)	Trigger breach confirmed								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
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		5.58 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		17.1 #	2.25 #	5.04 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		38.3 #	2.19 #	3.87 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		25.5 #	2.76 #	3.38 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	2.86 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	1.06 #	<1 #			
1,1,1,2-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		3.1 #	<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		7.26 #	1.79 #	2.12 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	1.88 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		3.5 #	1.29 #	<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		4.87 #	<1 #	1.28 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Notification of NDPs (No determination possible)

Date Received : 06/10/2021 07:01:23

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
25098834	LEACHATE HOLDING LAGOON		Anions by Kone (w)	Sample too coloured



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Table of Results - Appendix

Method No	Reference	Description
Calculation		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM205		Determination of Phenols in Waste Waters using Solid Phase Extraction, Acetylation, Gas Chromatography and Mass Selective Detection
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Test Completion Dates

Lab Sample No(s)	25098822	25098840	25098841	25098842	25098843	25098844	25098846	25098820	25098821	25098837
Customer Sample Ref.	BH208	BH 3/2	BH 3/3	BH 3/5	BH 3/6	BH 3/8	BH 3/9	BH3/4	BH5/02	CELL 5 SUMP
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Land Leachate
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO3	11-Oct-2021	11-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021
BOD True Total										13-Oct-2021
COD Unfiltered										09-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Cyanide Comp/Free/Total/Thiocyanate										11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
GRO by GC-FID (W)	11-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	
PAH Spec MS - Aqueous (W)	13-Oct-2021	11-Oct-2021	11-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	
PCB Congeners - Aqueous (W)										12-Oct-2021
Pesticides (Suite I) by GCMS										12-Oct-2021
Pesticides (Suite II) by GCMS										12-Oct-2021
Pesticides (Suite III) by GCMS										13-Oct-2021
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	08-Oct-2021	08-Oct-2021	13-Oct-2021	11-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	13-Oct-2021	08-Oct-2021
Total Organic and Inorganic Carbon										09-Oct-2021
TPH CWG (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
VOC MS (W)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021

Lab Sample No(s)	25098838	25098839	25098835	25098836	25098834	25098818	25098819	25098817	25098816	25098847
Customer Sample Ref.	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW203	NACW205	NACW212	NACW228	NACW 219
AGS Ref.										
Depth										
Type	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO3	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by ion Chromatography					20-Oct-2021					
Anions by Kone (w)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
BOD True Total	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021					
COD Unfiltered	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021					
Conductivity (at 20 deg.C)	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Cyanide Comp/Free/Total/Thiocyanate	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021					
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021
Nitrite by Kone (w)						12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)						14-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021
PCB Congeners - Aqueous (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021					
Pesticides (Suite I) by GCMS	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021					
Pesticides (Suite II) by GCMS	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	12-Oct-2021					
Pesticides (Suite III) by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021					
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	08-Oct-2021	08-Oct-2021	11-Oct-2021	08-Oct-2021	11-Oct-2021	11-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Total Organic and Inorganic Carbon	11-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021					
TPH CWG (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
VOC MS (W)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	25098848	25098827	25098828	25098829	25098830	25098831	25098832	25098833	25098823	25098824
	NACW 229	SW201	SW202	SW203	SW204	SW205	SW206	SW207	UD1	UD3
	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Alkalinity Filtered as CaCO ₃		11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021		
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	12-Oct-2021								11-Oct-2021	11-Oct-2021
Ionic Balance		13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021		
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)	14-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021
pH Value		10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021		
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Suspended Solids		09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021		
SVOC MS (W) - Aqueous	13-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	08-Oct-2021	08-Oct-2021	11-Oct-2021	11-Oct-2021
Total Organic and Inorganic Carbon		09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021		
TPH CWG (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
VOC MS (W)	11-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	25098825	25098826
	UD4	UD5
	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	11-Oct-2021	11-Oct-2021
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)	14-Oct-2021	13-Oct-2021
Phenols by ms (w)	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	11-Oct-2021
TPH CWG (W)	13-Oct-2021	13-Oct-2021
VOC MS (W)	13-Oct-2021	11-Oct-2021



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

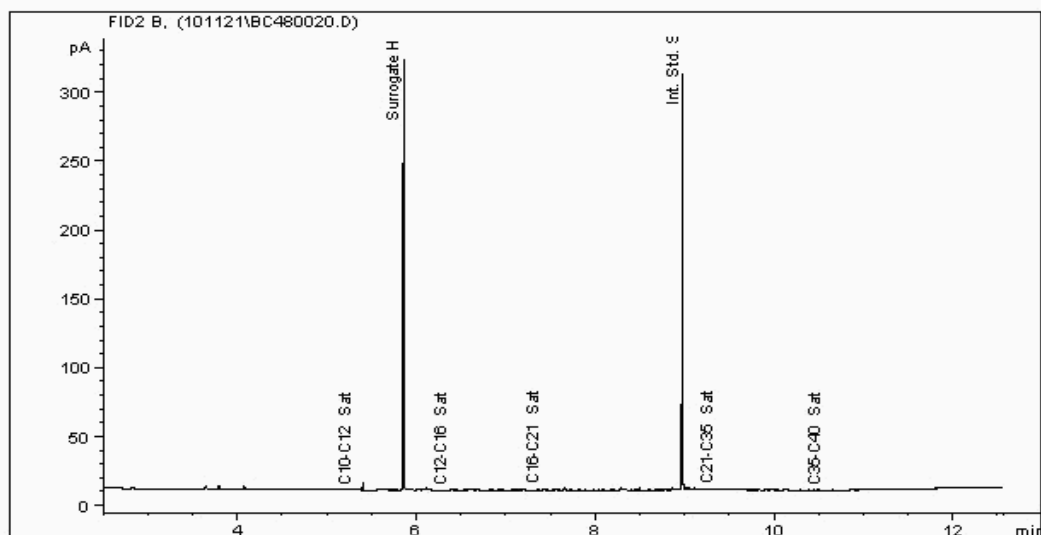
Sample No : 25107107
Sample ID : CELL 5 SUMP

Depth :

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

Sample Identity: 23470281-
Date Acquired : 11/10/2021 20:27:09 PM
Units : ppb
Dilution : SE CELL 5 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	232.5	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	5.7	0.005
5	Int. Std. S	249.2	0.250
6	C21-C35 Sat	22.3	0.023
7	C35-C40 Sat	0.0	0.000
Total Peak Area		509.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

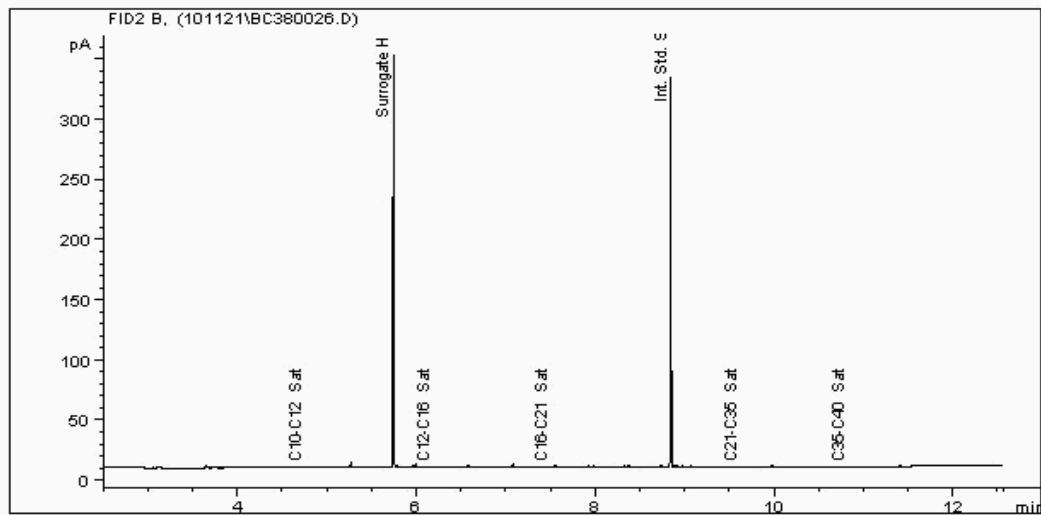
Sample No : 25107126
Sample ID : BH 3/3

Depth :

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23470395-
Date Acquired : 11/10/21 20:01:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	229.2	0.211
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	256.3	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
Total Peak Area		485.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

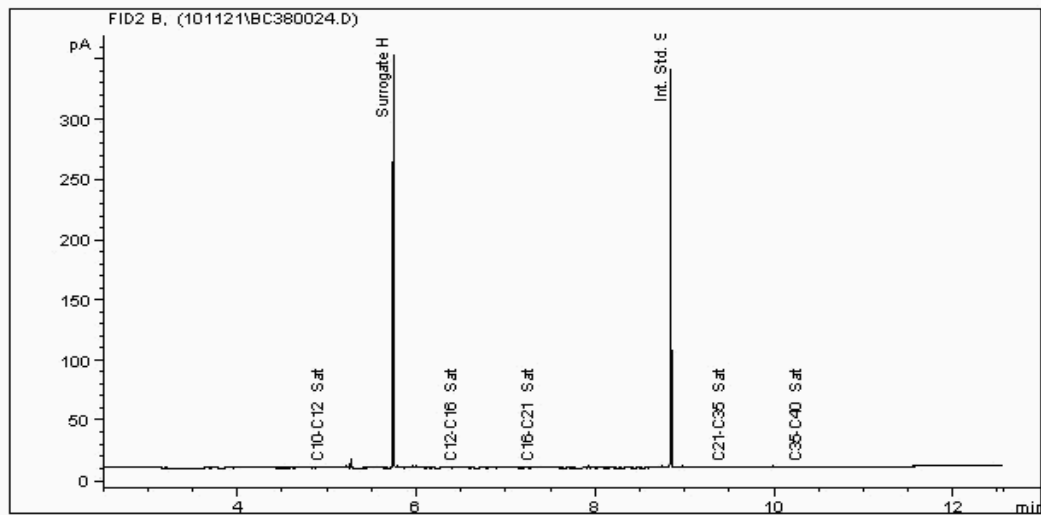
Sample No : 25107154
Sample ID : BH 3/2

Depth :

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23470357-
Date Acquired : 11/10/21 19:15:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	234.3	0.211
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	262.1	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
Total Peak Area		496.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

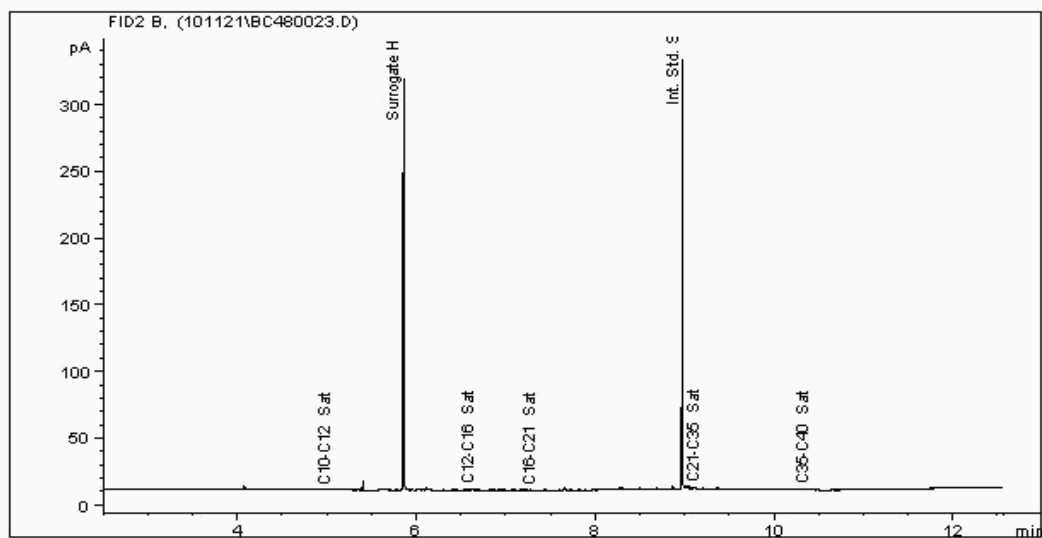
Sample No : 25111423
Sample ID : LEACHATE HOLDING LAGOC

Depth :

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

Sample Identity: 23470200-
Date Acquired : 11/10/2021 21:36:25 PM
Units : ppb
Dilution : SE LEACHATE HOLDIN[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	236.3	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	247.1	0.250
6	C21-C35 Sat	63.4	0.066
7	C35-C40 Sat	0.0	0.000
Total Peak Area		546.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

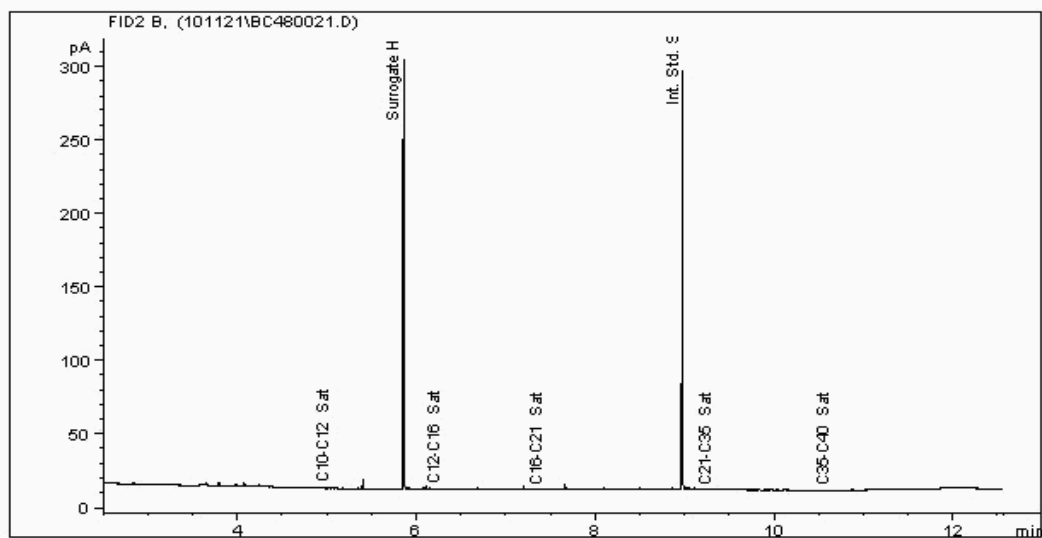
Sample No : 25112906
Sample ID : CELL 3/4 SUMP

Depth :

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

Sample Identity: 23470254-
Date Acquired : 11/10/2021 20:50:26 PM
Units : ppb
Dilution : SE CELL 3/4 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.8	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	241.0	0.250
6	C21-C35 Sat	7.3	0.008
7	C35-C40 Sat	0.0	0.000
Total Peak Area		474.1	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

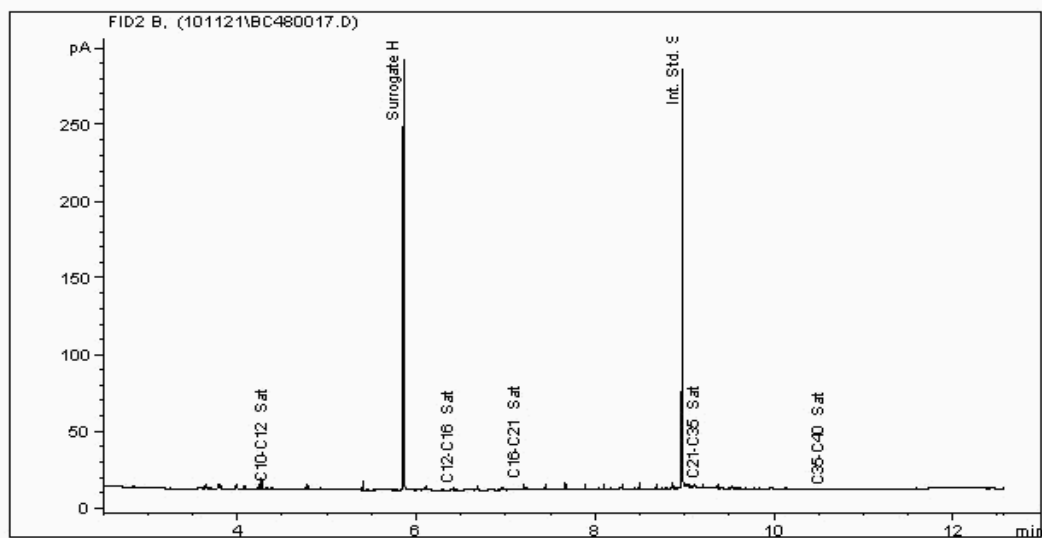
Sample No : 25112933
Sample ID : CELL 1/2 SUMP

Depth :

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

Sample Identity: 23470227-
Date Acquired : 11/10/2021 18:44:51 PM
Units : ppb
Dilution : SE CELL 1/2 SUMP[1] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	19.6	0.018
2	Surrogate H	214.0	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	37.6	0.036
5	Int. Std. S	228.7	0.250
6	C21-C35 Sat	178.5	0.202
7	C35-C40 Sat	13.2	0.017
Total Peak Area		691.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

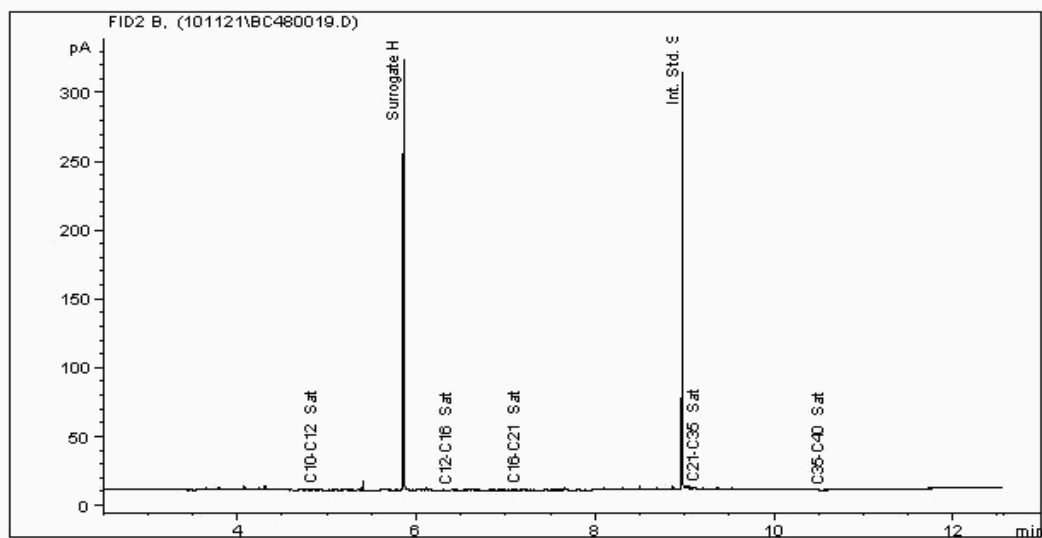
Sample No : 25112951
Sample ID : CELL 7 SUMP

Depth :

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

Sample Identity: 23470335-
Date Acquired : 11/10/2021 20:04:06 PM
Units : ppb
Dilution : SE CELL 7 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	7.5	0.006
2	Surrogate H	237.9	0.202
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	9.2	0.008
5	Int. Std. S	250.0	0.250
6	C21-C35 Sat	90.5	0.094
7	C35-C40 Sat	3.6	0.004
Total Peak Area		598.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

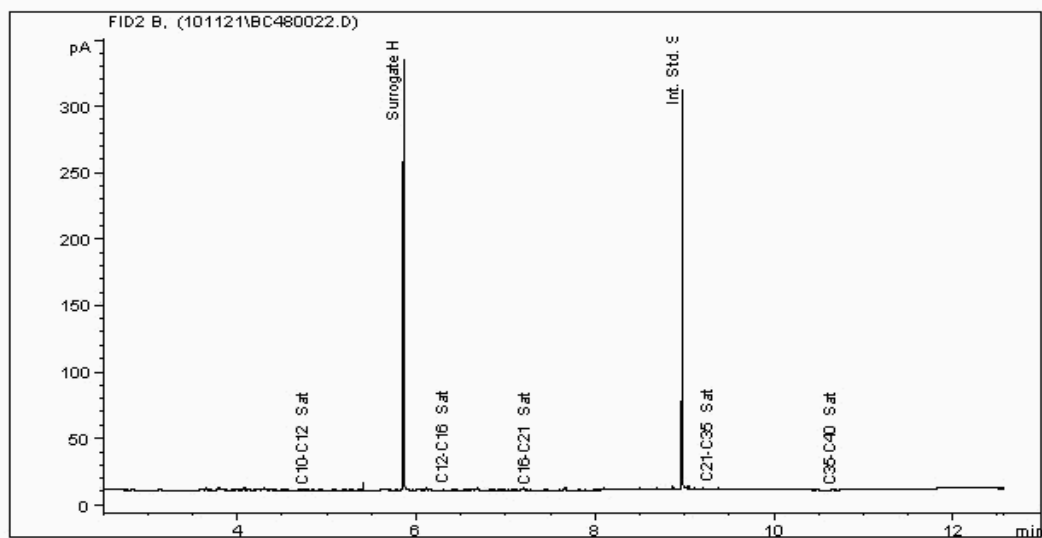
Sample No : 25112965
Sample ID : CELL 6 SUMP

Depth :

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

Sample Identity: 23470308-
Date Acquired : 11/10/2021 21:13:25 PM
Units : ppb
Dilution : SE CELL 6 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	3.8	0.003
2	Surrogate H	239.5	0.205
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	6.0	0.005
5	Int. Std. S	248.2	0.250
6	C21-C35 Sat	57.5	0.060
7	C35-C40 Sat	0.0	0.000
Total Peak Area		555.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

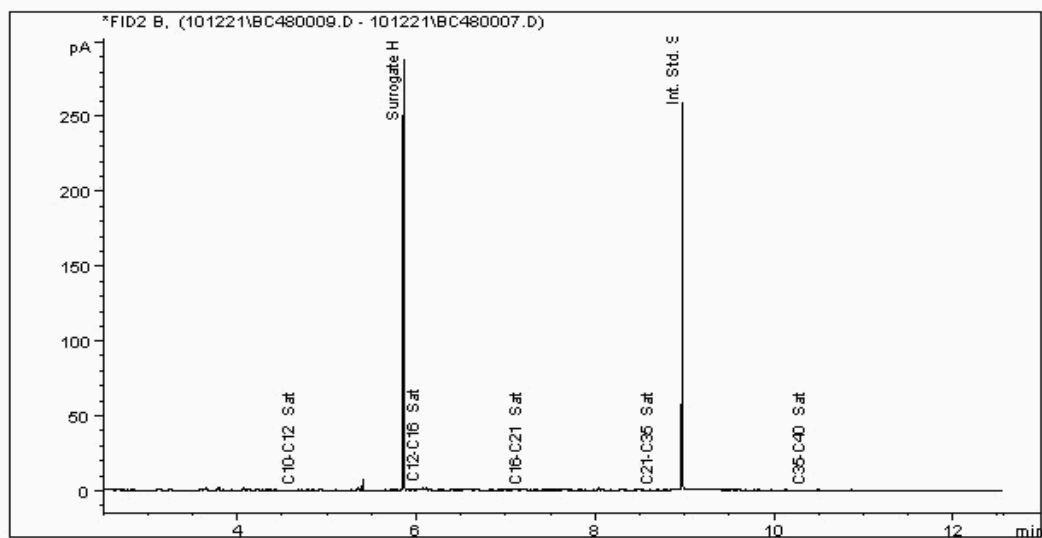
Sample No : 25116723
Sample ID : NACW203

Depth :

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

Sample Identity: 23469583-
Date Acquired : 12/10/2021 18:47:07 PM
Units : ppb
Dilution : SE NACW203[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	220.7	0.257
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	206.5	0.283
7	C35-C40 Sat	0.0	0.000
Total Peak Area		427.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

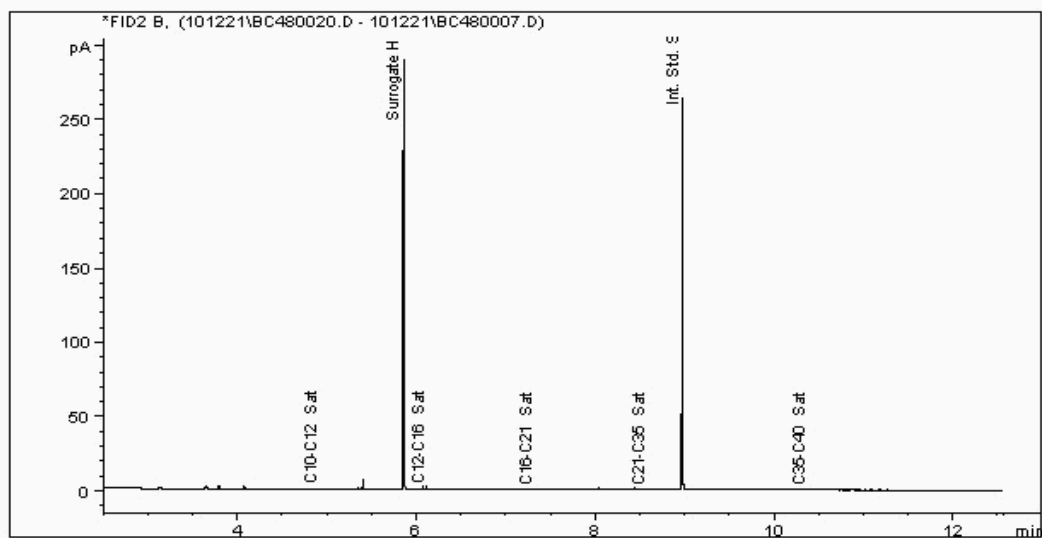
Sample No : 25116740
Sample ID : NACW205

Depth :

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

Sample Identity: 23469721-
Date Acquired : 12/10/2021 23:01:51 PM
Units : ppb
Dilution : SE NACW205[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	221.0	0.249
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	208.7	0.276
7	C35-C40 Sat	0.0	0.000
Total Peak Area		429.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

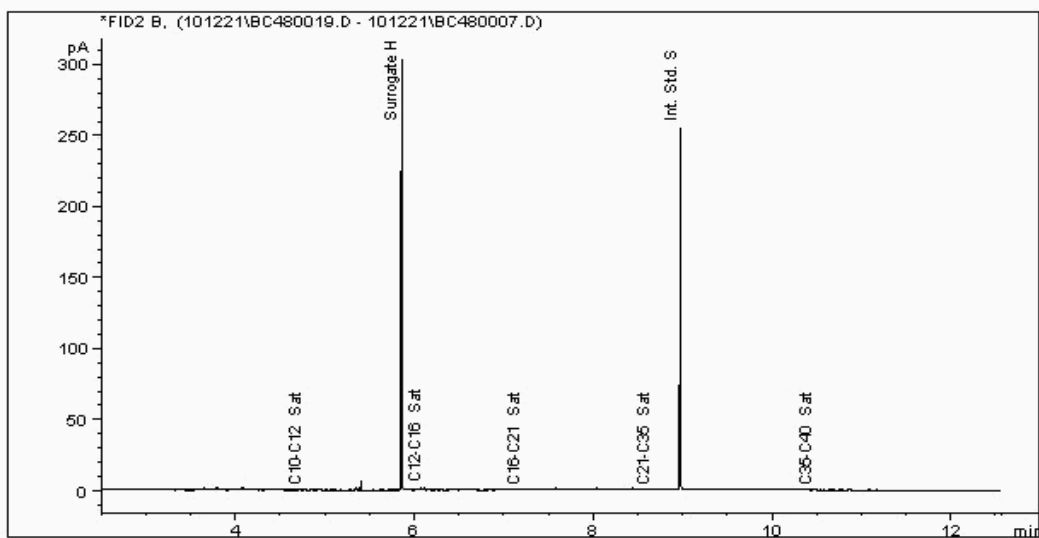
Sample No : 25116748
Sample ID : BH3/4

Depth :

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

Sample Identity: 23469800-
Date Acquired : 12/10/2021 22:38:22 PM
Units : ppb
Dilution : SE BH3/4[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	224.7	0.249
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	208.9	0.272
7	C35-C40 Sat	0.0	0.000
Total Peak Area		433.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

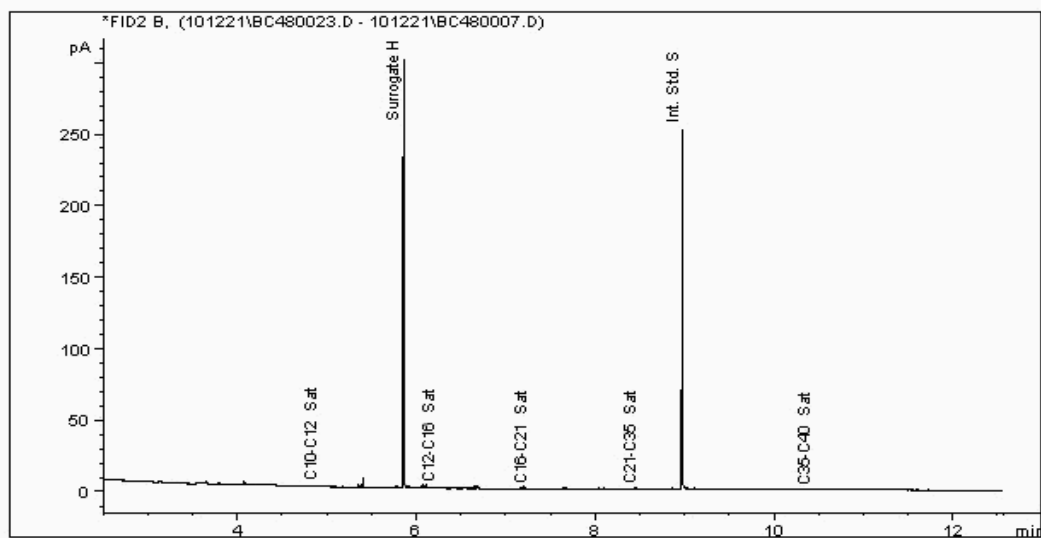
Sample No : 25116756
Sample ID : BH5/02

Depth :

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

Sample Identity: 23469877-
Date Acquired : 13/10/2021 00:11:23 PM
Units : ppb
Dilution : SE BH5/02[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	222.3	0.258
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	202.8	0.276
7	C35-C40 Sat	0.0	0.000
Total Peak Area		425.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

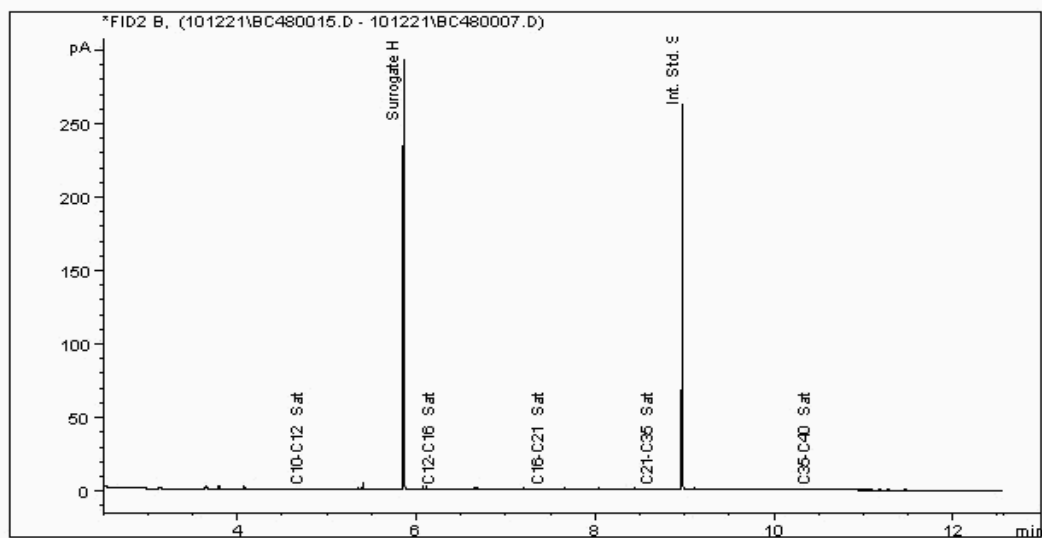
Sample No : 25116764
Sample ID : NACW212

Depth :

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

Sample Identity: 23469518-
Date Acquired : 12/10/2021 21:05:48 PM
Units : ppb
Dilution : SE NACW212[1] ->
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	226.3	0.235
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	214.9	0.262
7	C35-C40 Sat	0.0	0.000
Total Peak Area		441.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

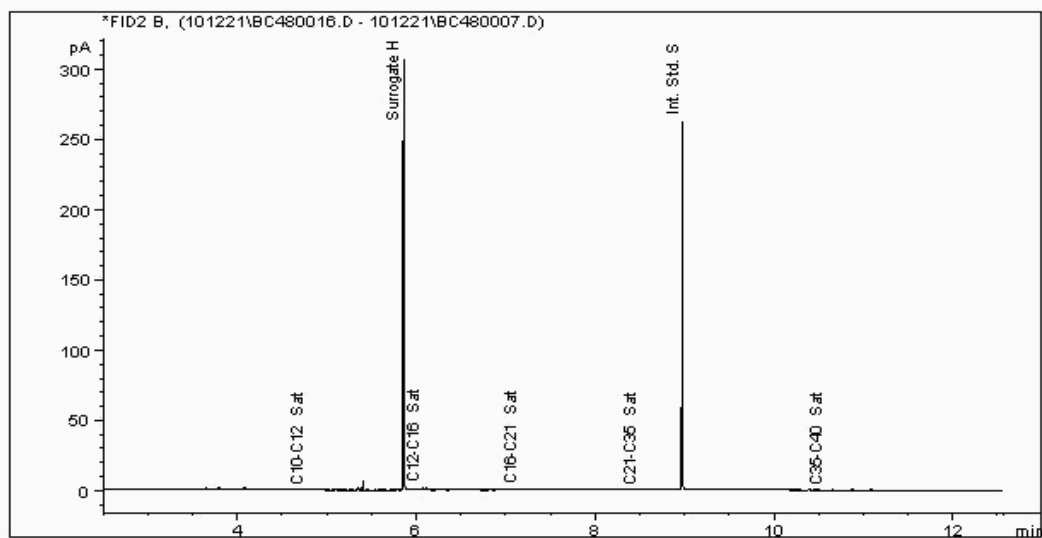
Sample No : 25116780
Sample ID : NACW228

Depth :

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

Sample Identity: 23469425-
Date Acquired : 12/10/2021 21:28:55 PM
Units : ppb
Dilution : SE NACW228[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	227.8	0.244
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	214.9	0.270
7	C35-C40 Sat	0.0	0.000
Total Peak Area		442.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

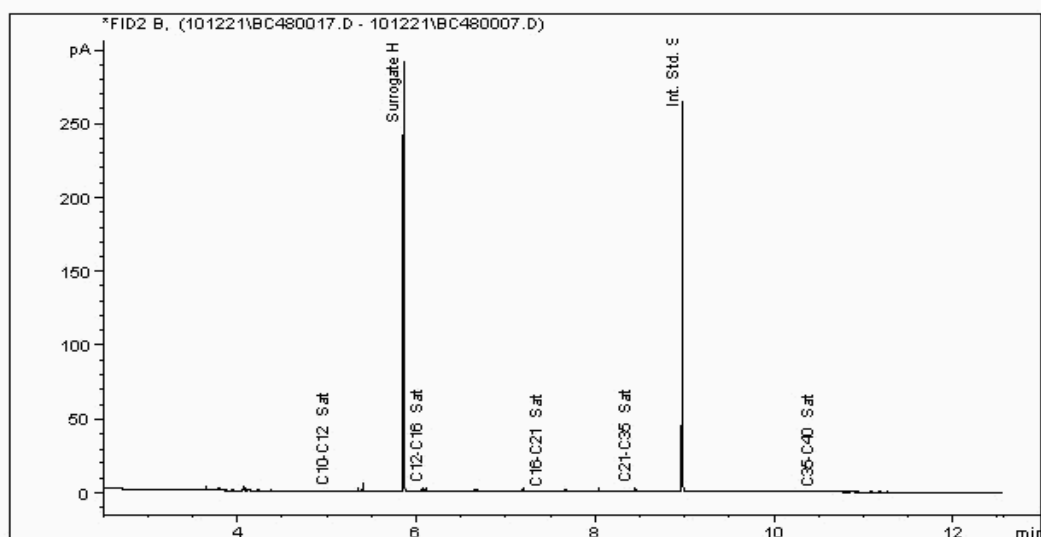
Sample No : 25116783
Sample ID : UD5

Depth :

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

Sample Identity: 23470033-
Date Acquired : 12/10/2021 21:52:10 PM
Units : ppb
Dilution : SE UD5[1] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	223.1	0.275
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	205.5	0.298
7	C35-C40 Sat	0.0	0.000
Total Peak Area		428.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

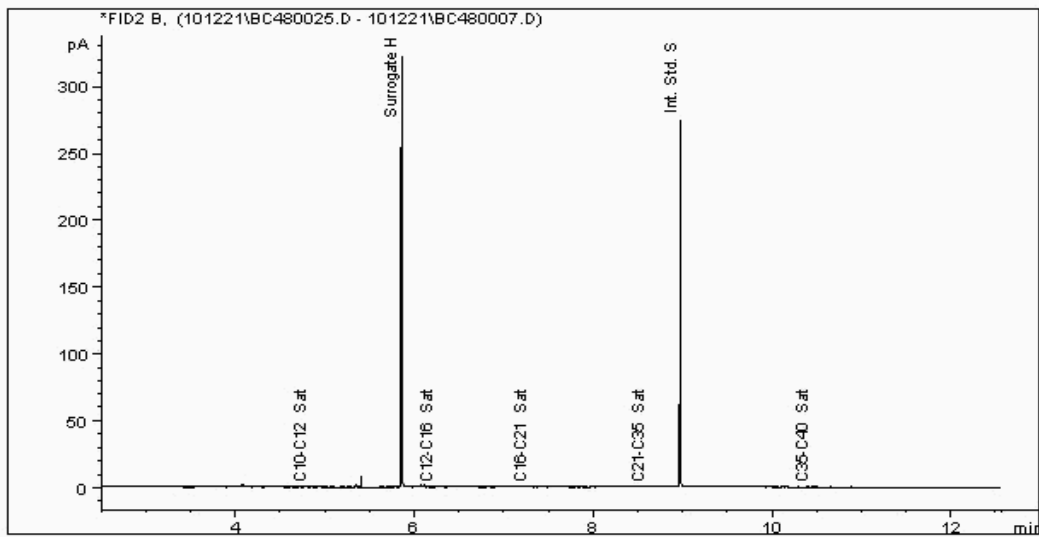
Sample No : 25116802
Sample ID : UD4

Depth :

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

Sample Identity: 23470013-
Date Acquired : 13/10/2021 00:56:58 PM
Units : ppb
Dilution : SE UD4[] ->
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	238.6	0.240
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	217.2	0.256
7	C35-C40 Sat	0.0	0.000
Total Peak Area		455.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

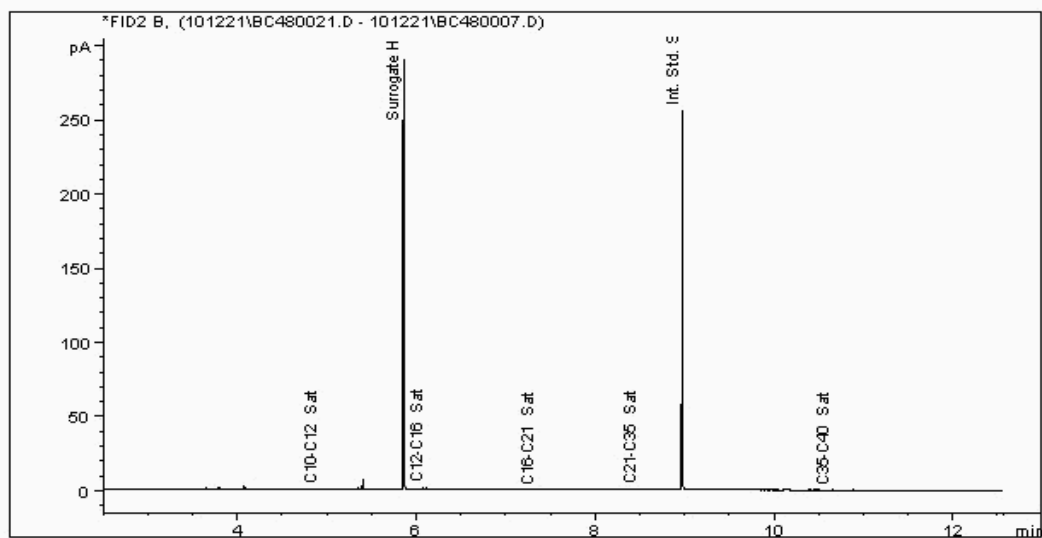
Sample No : 25116835
Sample ID : UD3

Depth :

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

Sample Identity: 23469979-
Date Acquired : 12/10/2021 23:25:08 PM
Units : ppb
Dilution : SE UD3[] ->
CF : 1
Multiplier : 0.029

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.2	0.269
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	209.2	0.294
7	C35-C40 Sat	0.0	0.000
Total Peak Area		434.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

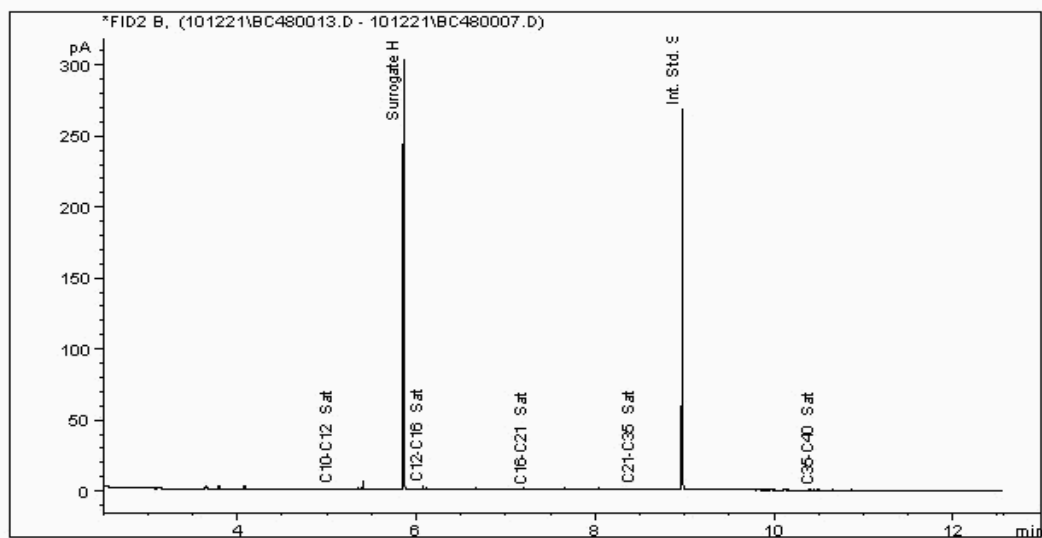
Sample No : 25116927
Sample ID : UD1

Depth :

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

Sample Identity: 23469945-
Date Acquired : 12/10/2021 20:19:25 PM
Units : ppb
Dilution : SE UD1[] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	234.1	0.272
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	217.9	0.298
7	C35-C40 Sat	0.0	0.000
Total Peak Area		452.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

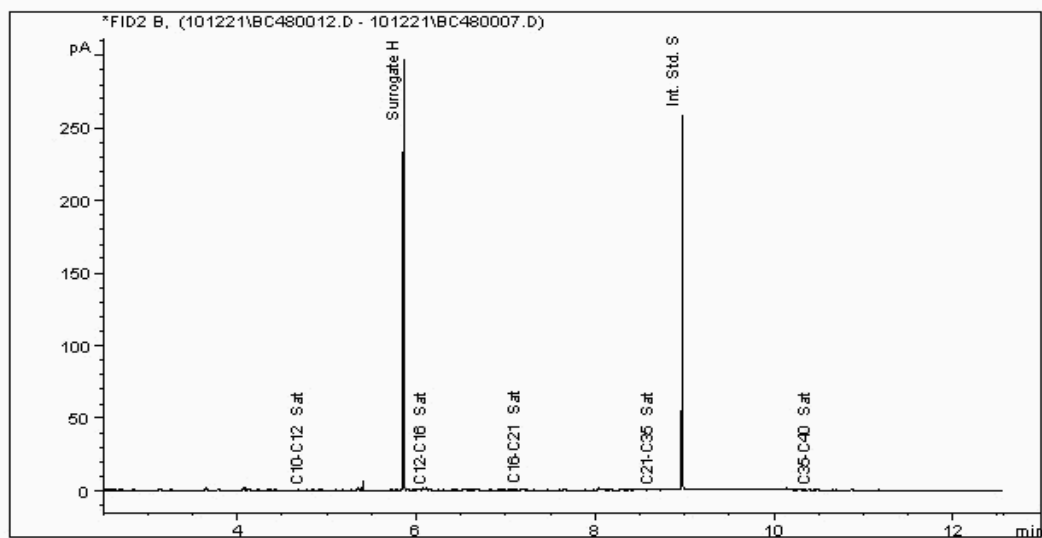
Sample No : 25116985
Sample ID : BH208

Depth :

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

Sample Identity: 23469923-
Date Acquired : 12/10/2021 19:56:27 PM
Units : ppb
Dilution : SE BH208[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	217.5	0.243
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	205.6	0.270
7	C35-C40 Sat	0.0	0.000
Total Peak Area		423.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

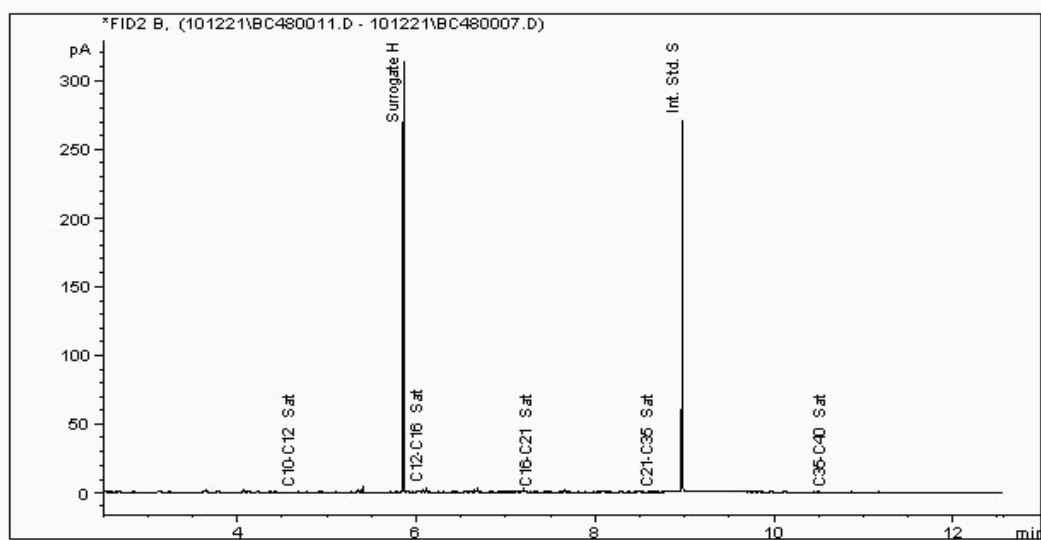
Sample No : 25117215
Sample ID : NACW 229

Depth :

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

Sample Identity: 23470630-
Date Acquired : 12/10/2021 19:33:27 PM
Units : ppb
Dilution : SE NACW 229[] ->
CF : 1
Multiplier : 0.029

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	229.8	0.259
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	215.6	0.286
7	C35-C40 Sat	0.0	0.000
Total Peak Area		445.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

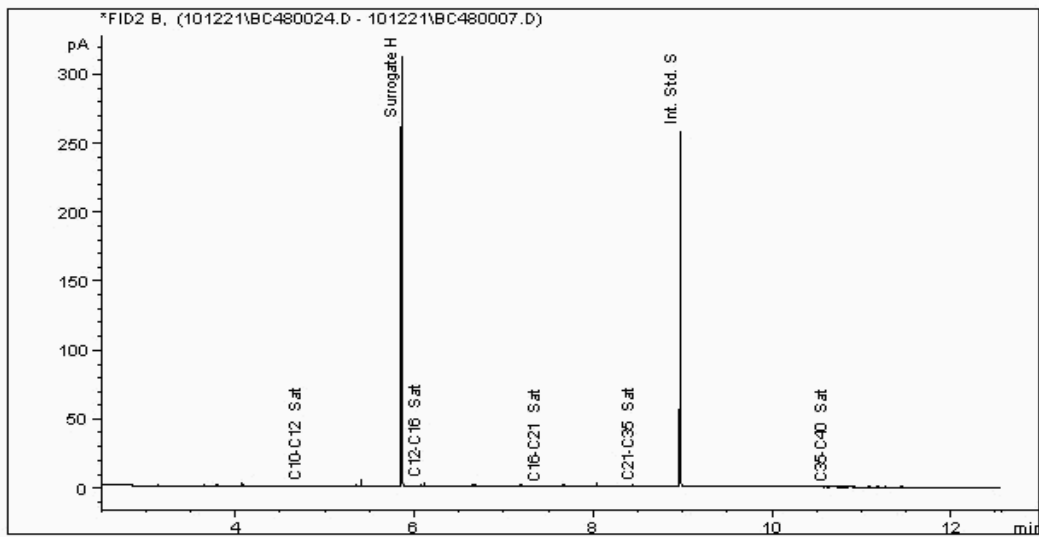
Sample No : 25117233
Sample ID : NACW 219

Depth :

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

Sample Identity: 23470606-
Date Acquired : 13/10/2021 00:34:10 PM
Units : ppb
Dilution : SE NACW 219[] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	230.8	0.254
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.4	0.272
7	C35-C40 Sat	0.0	0.000
Total Peak Area		441.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

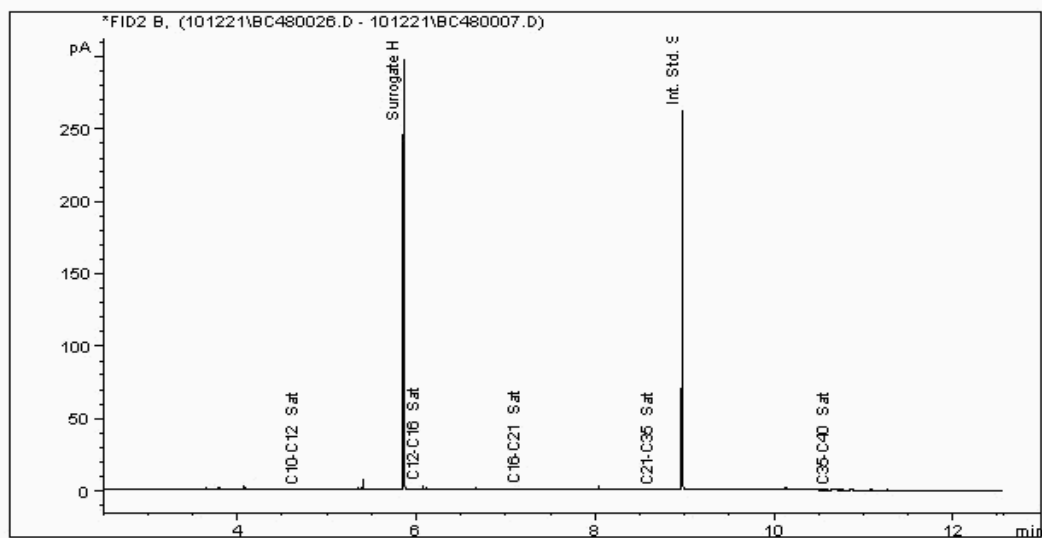
Sample No : 25117479
Sample ID : BH 3/9

Depth :

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

Sample Identity: 23470561-
Date Acquired : 13/10/2021 01:20:34 PM
Units : ppb
Dilution : SE BH 3/9[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	228.7	0.256
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.9	0.278
7	C35-C40 Sat	0.0	0.000
Total Peak Area		439.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

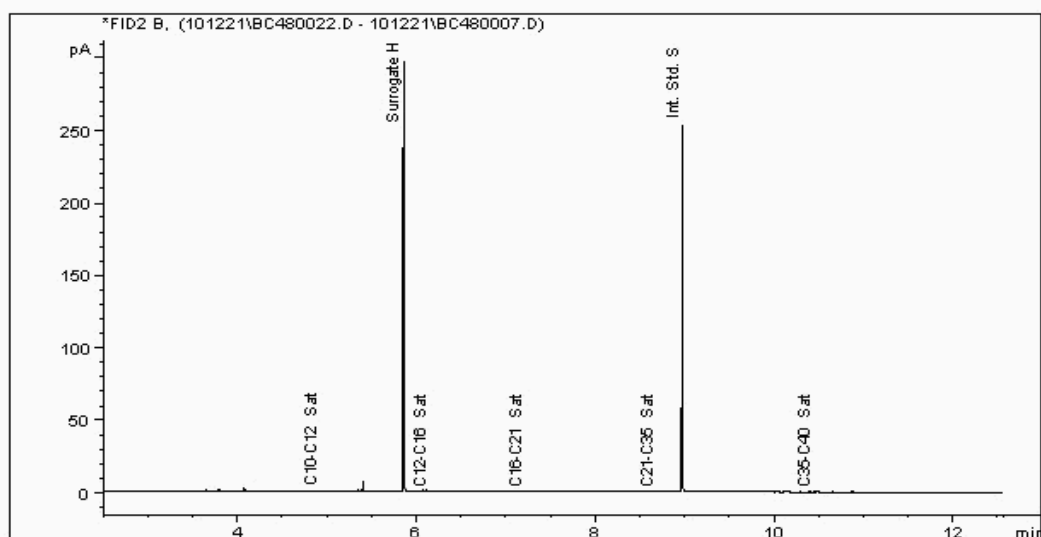
Sample No : 25117505
Sample ID : BH 3/8

Depth :

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

Sample Identity: 23470512-
Date Acquired : 12/10/2021 23:47:52 PM
Units : ppb
Dilution : SE BH 3/8[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	222.8	0.260
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	204.8	0.281
7	C35-C40 Sat	0.0	0.000
Total Peak Area		427.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

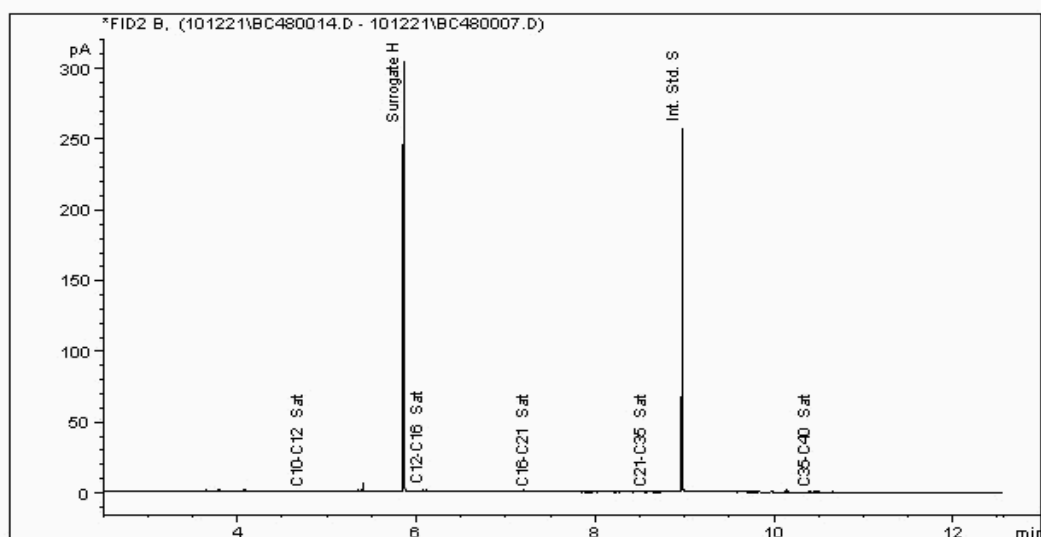
Sample No : 25117562
Sample ID : BH 3/6

Depth :

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

Sample Identity: 23470475-
Date Acquired : 12/10/2021 20:42:39 PM
Units : ppb
Dilution : SE BH 3/6[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.7	0.256
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.9	0.281
7	C35-C40 Sat	0.0	0.000
Total Peak Area		436.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

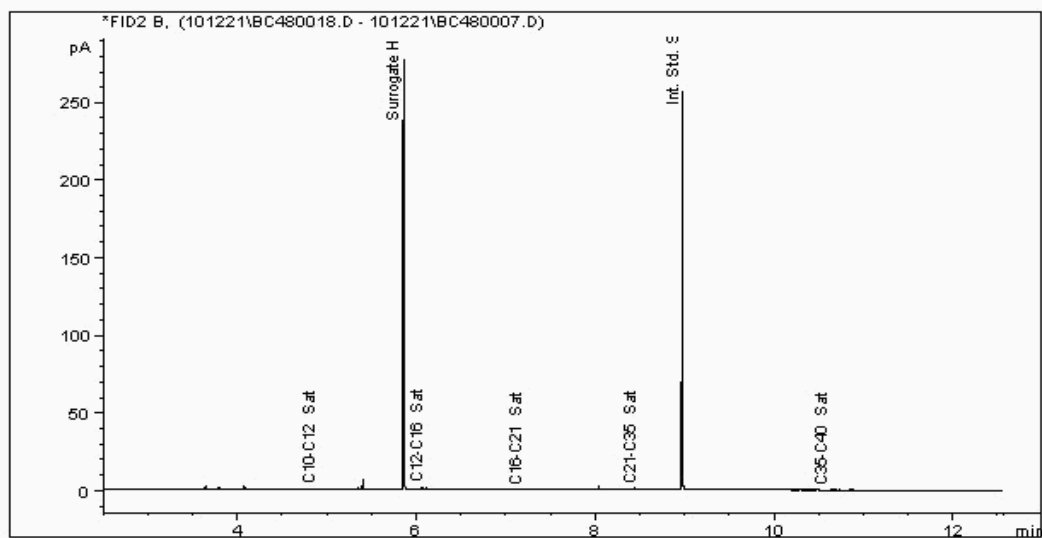
Sample No : 25117594
Sample ID : BH 3/5

Depth :

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

Sample Identity: 23470425-
Date Acquired : 12/10/2021 22:15:09 PM
Units : ppb
Dilution : SE BH 3/5[1] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	211.9	0.254
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	212.5	0.299
7	C35-C40 Sat	0.0	0.000
Total Peak Area		424.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

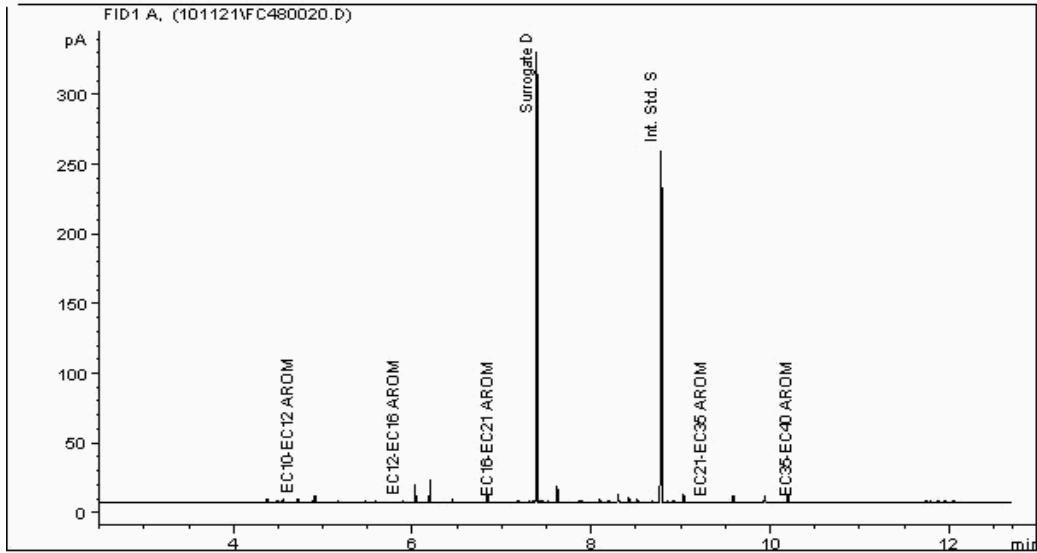
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25107107
Sample ID : CELL 5 SUMP

Depth :

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

Sample Identity: 23470282-
Date Acquired : 11/10/2021 20:27:09 PM
Units : ppb
Dilution : SE CELL 5 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

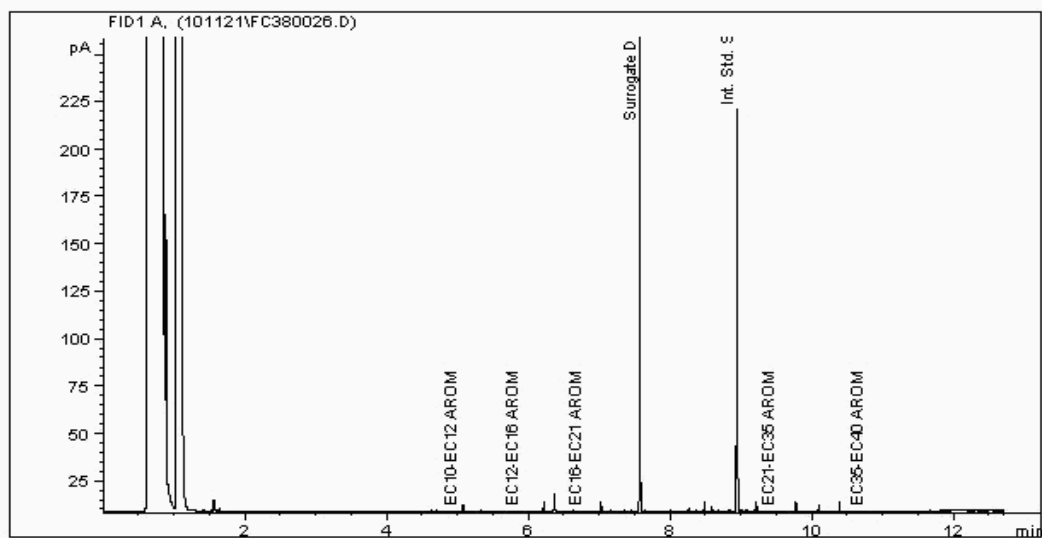
Sample No : 25107126
Sample ID : BH 3/3

Depth :

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23470396-
Date Acquired : 11/10/21 20:01:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	159.6	0.228
5	Int. Std. S	166.0	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
Total Peak Area		325.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

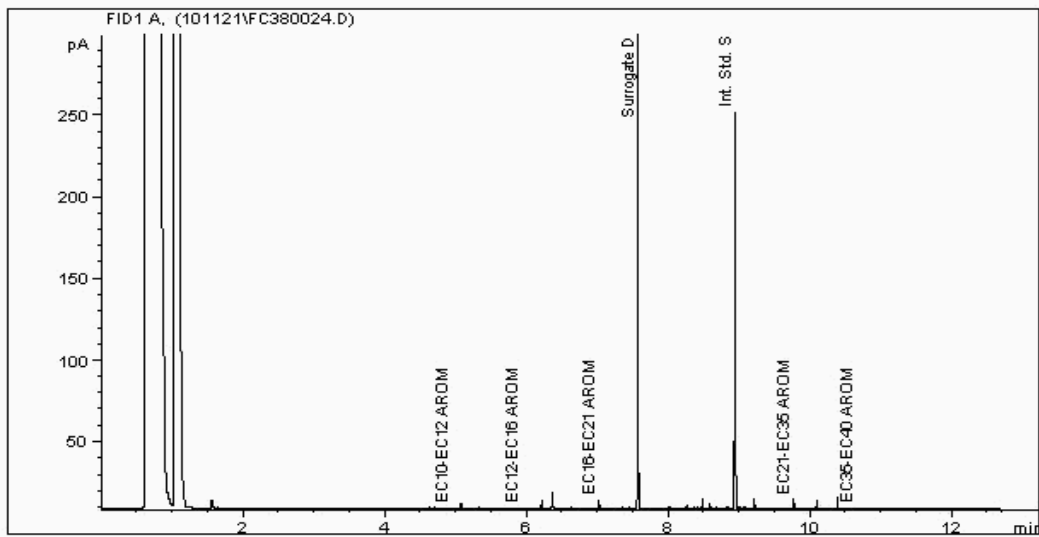
Sample No : 25107154
Sample ID : BH 3/2

Depth :

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23470358-
Date Acquired : 11/10/21 19:15:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	181.9	0.224
5	Int. Std. S	192.6	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
Total Peak Area		374.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

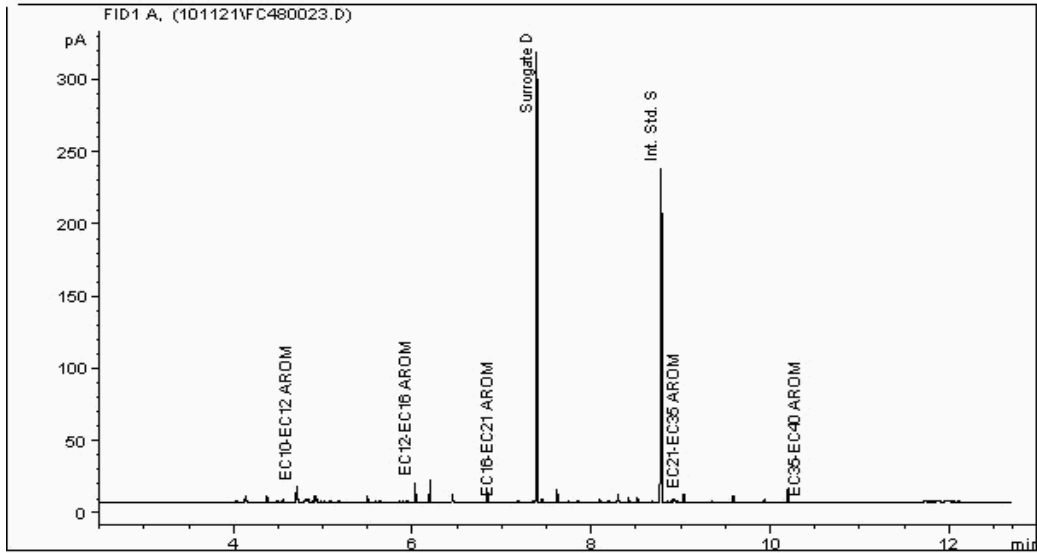
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25111423
Sample ID : LEACHATE HOLDING LAGOC

Depth :

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

Sample Identity: 23470201-
Date Acquired : 11/10/2021 21:36:25 PM
Units : ppb
Dilution : SE LEACHATE HOLDIN[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

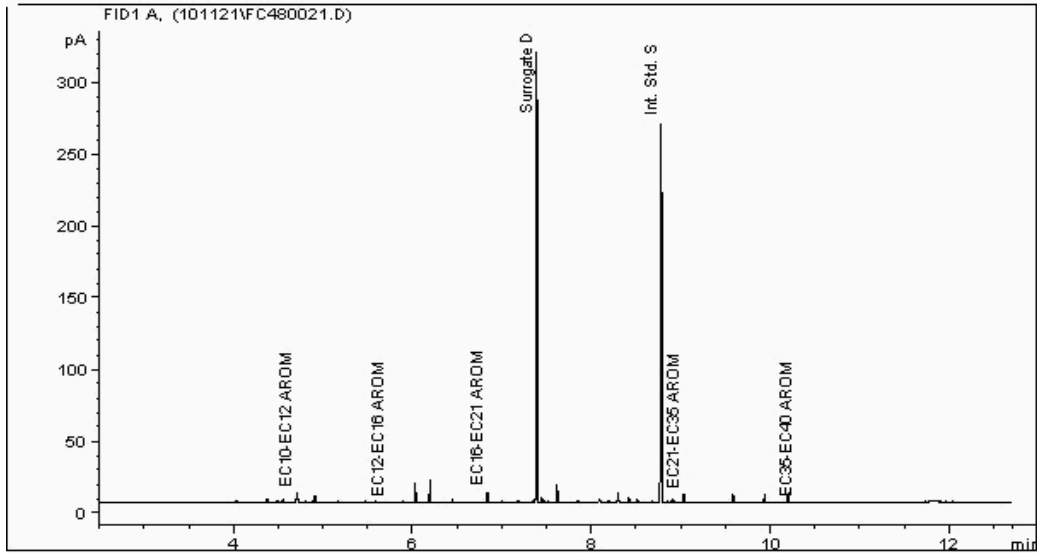
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112906
Sample ID : CELL 3/4 SUMP

Depth :

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

Sample Identity: 23470255-
Date Acquired : 11/10/2021 20:50:26 PM
Units : ppb
Dilution : SE CELL 3/4 SUMP[1] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

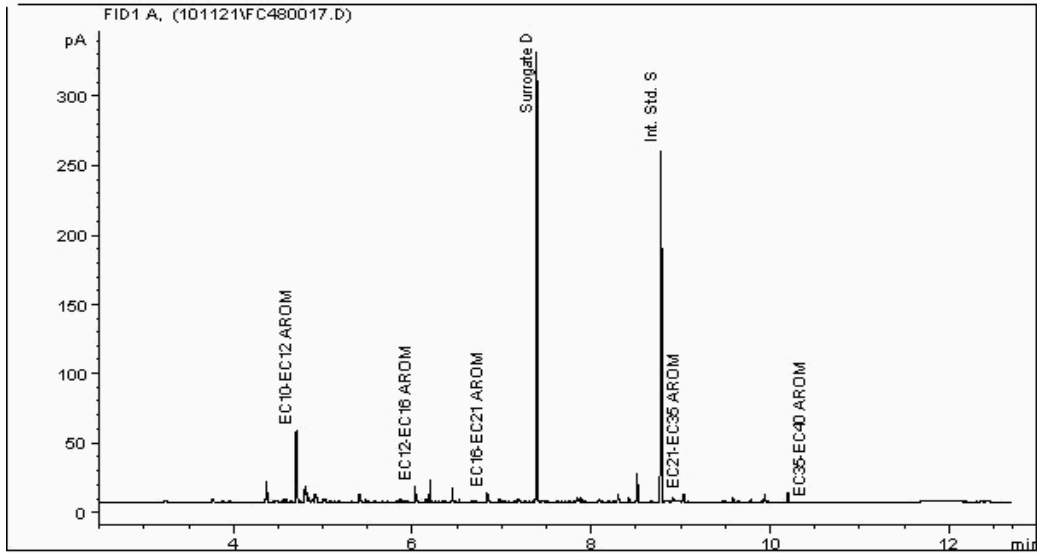
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112933
Sample ID : CELL 1/2 SUMP

Depth :

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

Sample Identity: 23470228-
Date Acquired : 11/10/2021 18:44:52 PM
Units : ppb
Dilution : SE CELL 1/2 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

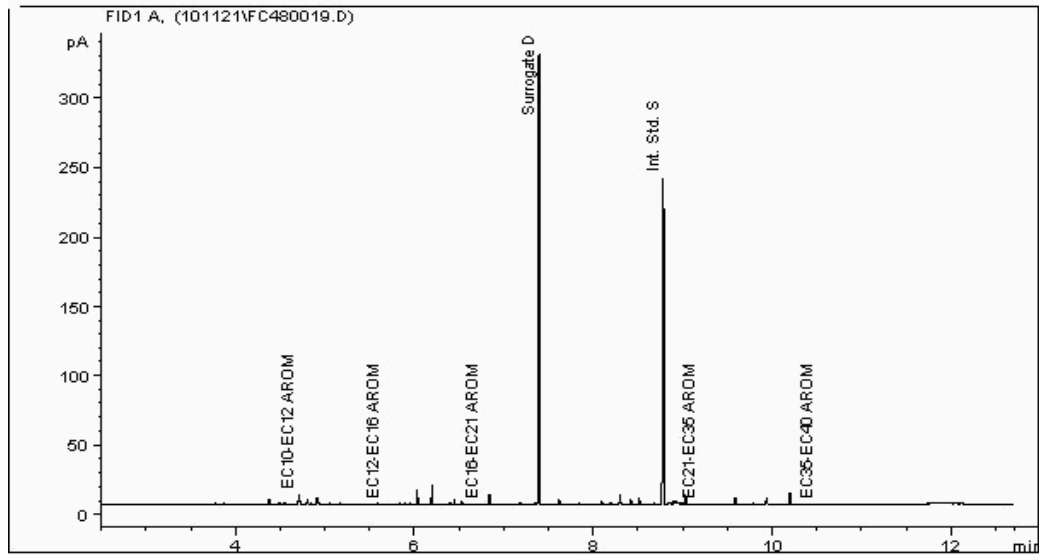
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112951
Sample ID : CELL 7 SUMP

Depth :

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

Sample Identity: 23470336-
Date Acquired : 11/10/2021 20:04:07 PM
Units : ppb
Dilution : SE CELL 7 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

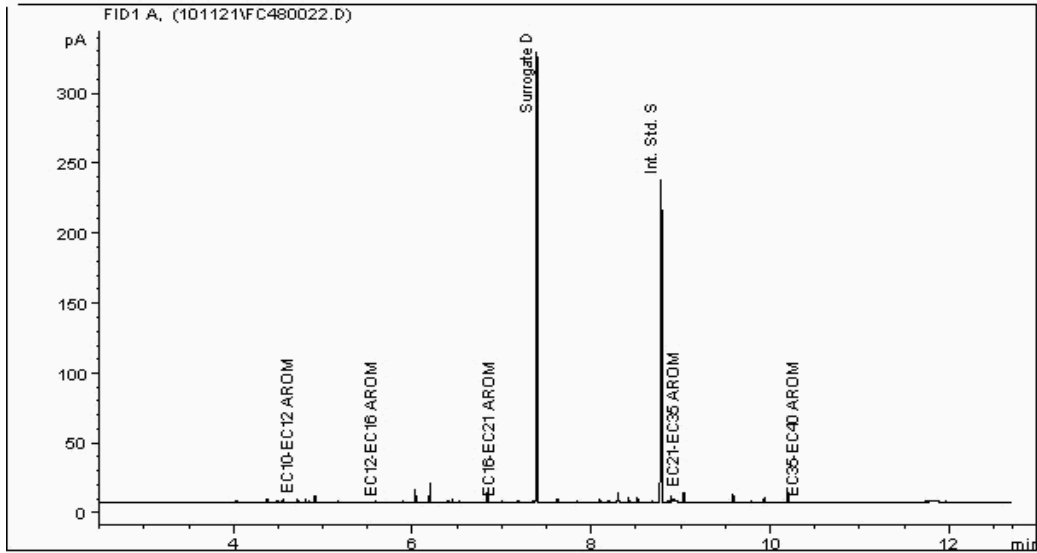
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112965
Sample ID : CELL 6 SUMP

Depth :

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

Sample Identity: 23470309-
Date Acquired : 11/10/2021 21:13:25 PM
Units : ppb
Dilution : SE CELL 6 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

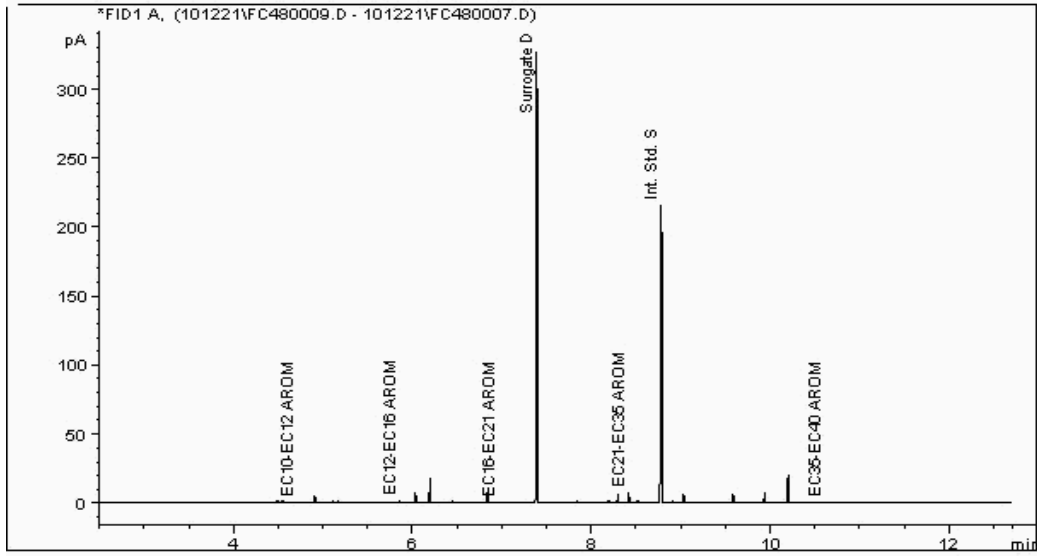
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116723
Sample ID : NACW203

Depth :

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

Sample Identity: 23469584-
Date Acquired : 12/10/2021 18:47:06 PM
Units : ppb
Dilution : SE NACW203[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

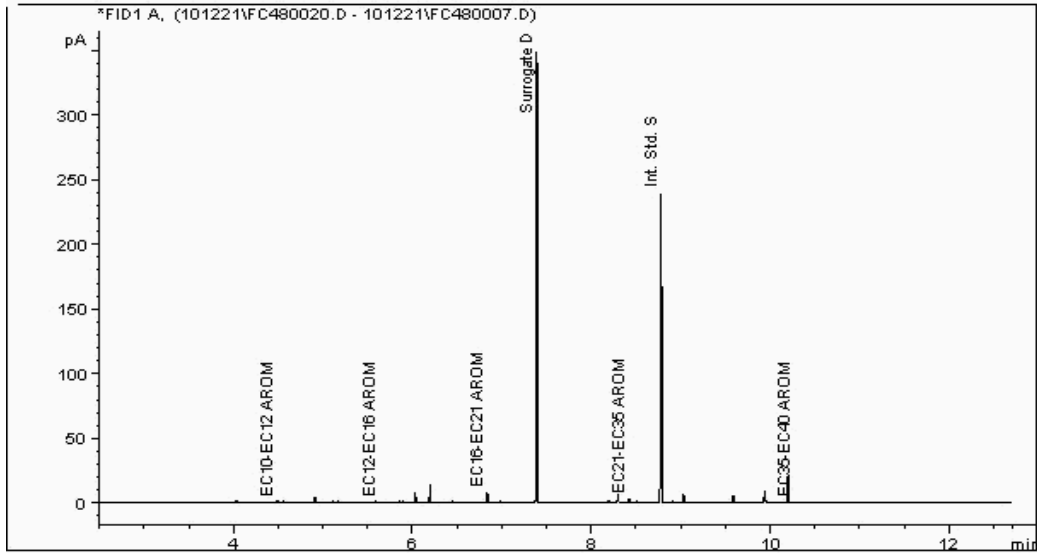
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116740
Sample ID : NACW205

Depth :

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

Sample Identity: 23469722-
Date Acquired : 12/10/2021 23:01:51 PM
Units : ppb
Dilution : SE NACW205[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

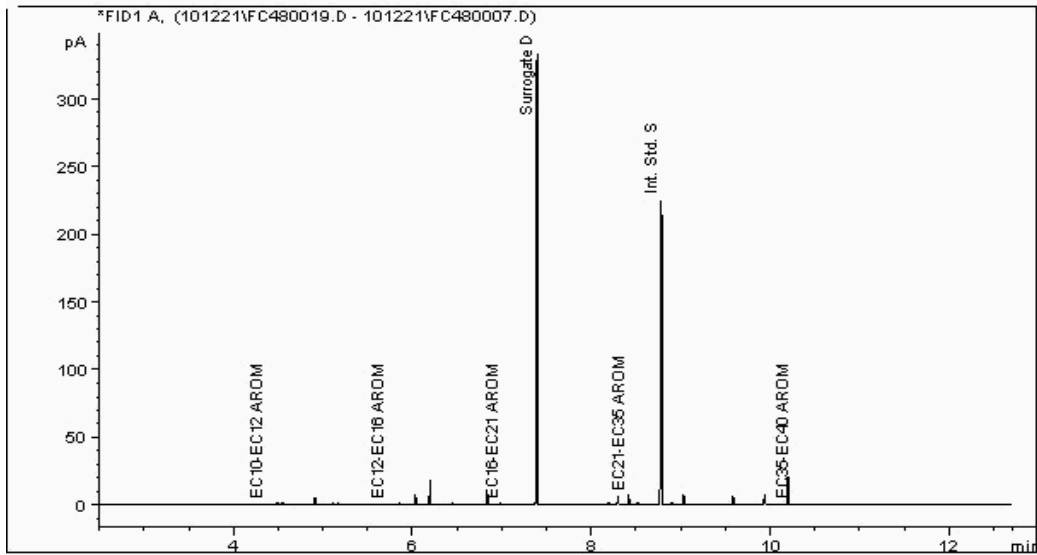
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116748
Sample ID : BH3/4

Depth :

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

Sample Identity: 23469801-
Date Acquired : 12/10/2021 22:38:22 PM
Units : ppb
Dilution : SE BH3/4[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

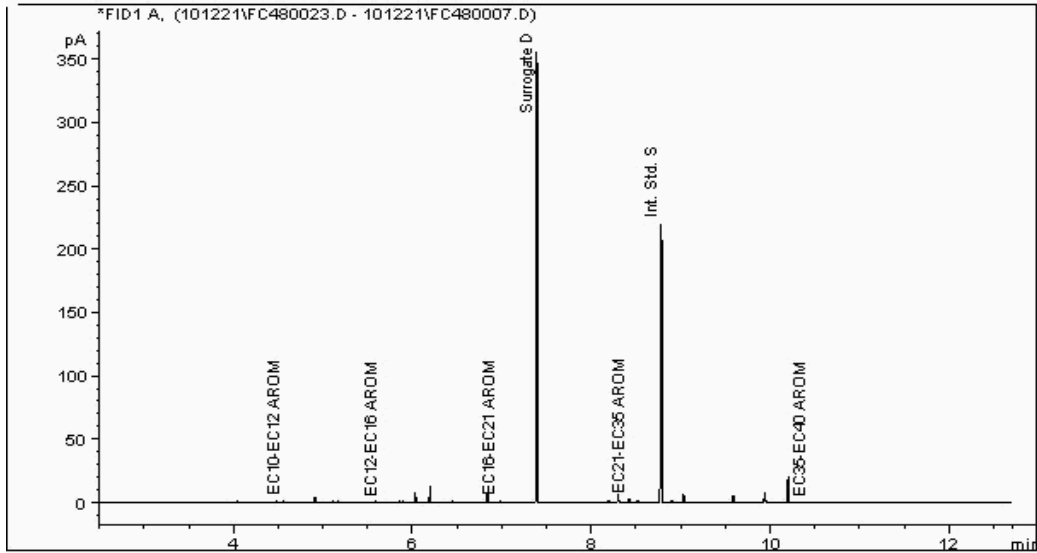
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116756
Sample ID : BH5/02

Depth :

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

Sample Identity: 23469878-
Date Acquired : 13/10/2021 00:11:23 PM
Units : ppb
Dilution : SE BH5/02[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

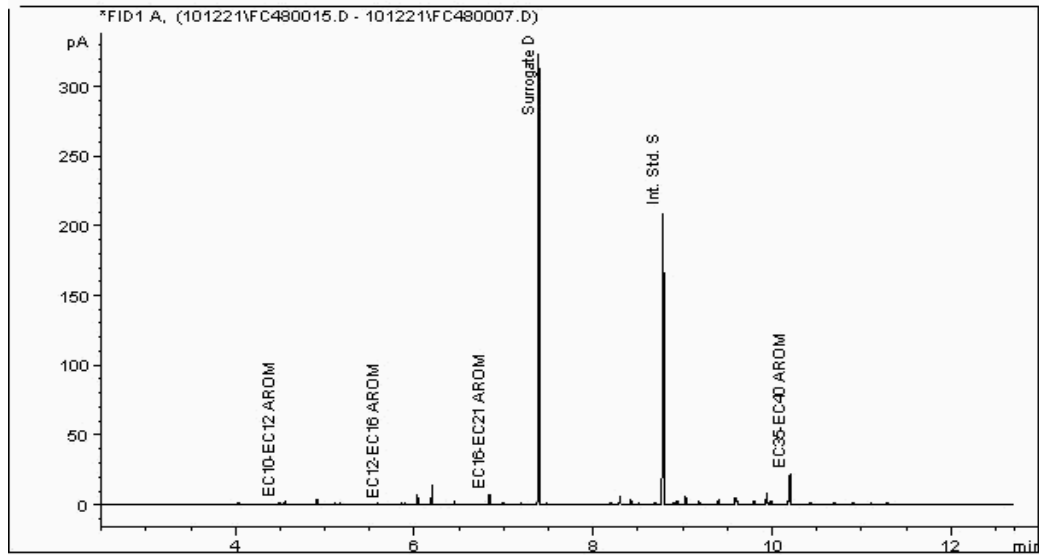
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116764
Sample ID : NACW212

Depth :

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

Sample Identity: 23469519-
Date Acquired : 12/10/2021 21:05:47 PM
Units : ppb
Dilution : SE NACW212[1] ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

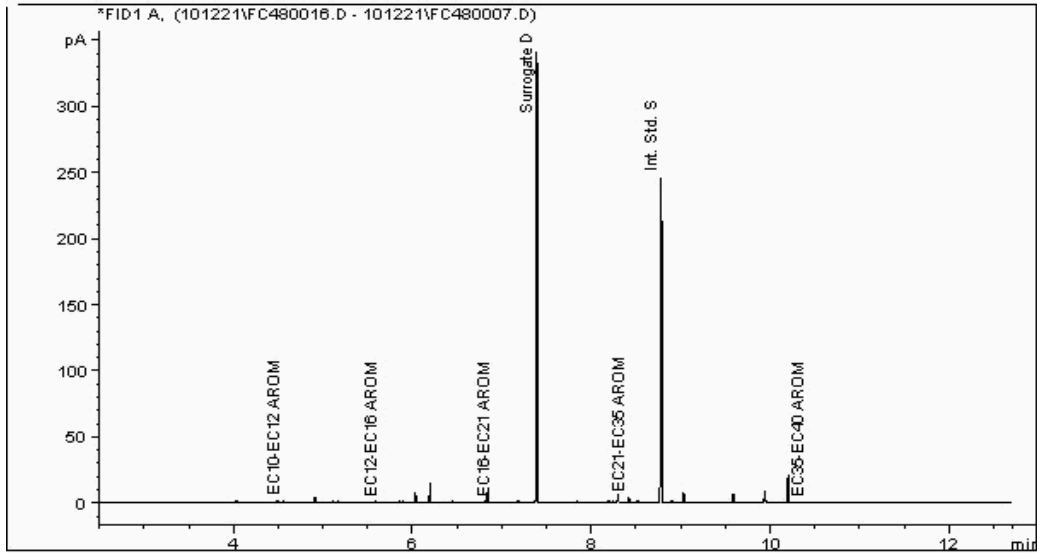
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116780
Sample ID : NACW228

Depth :

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

Sample Identity: 23469426-
Date Acquired : 12/10/2021 21:28:56 PM
Units : ppb
Dilution : SE NACW228[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

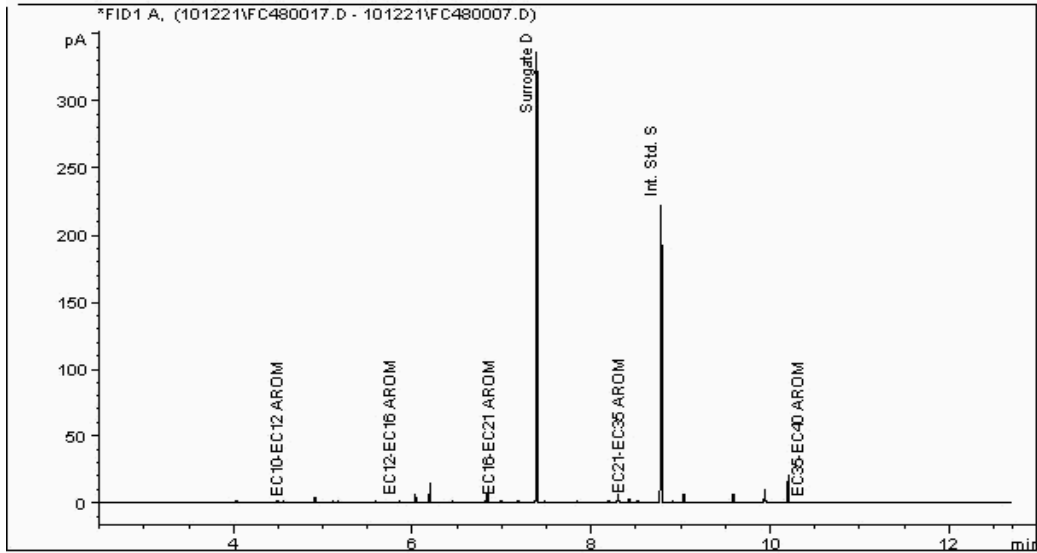
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116783
Sample ID : UD5

Depth :

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

Sample Identity: 23470034-
Date Acquired : 12/10/2021 21:52:09 PM
Units : ppb
Dilution : SE UD5[1] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

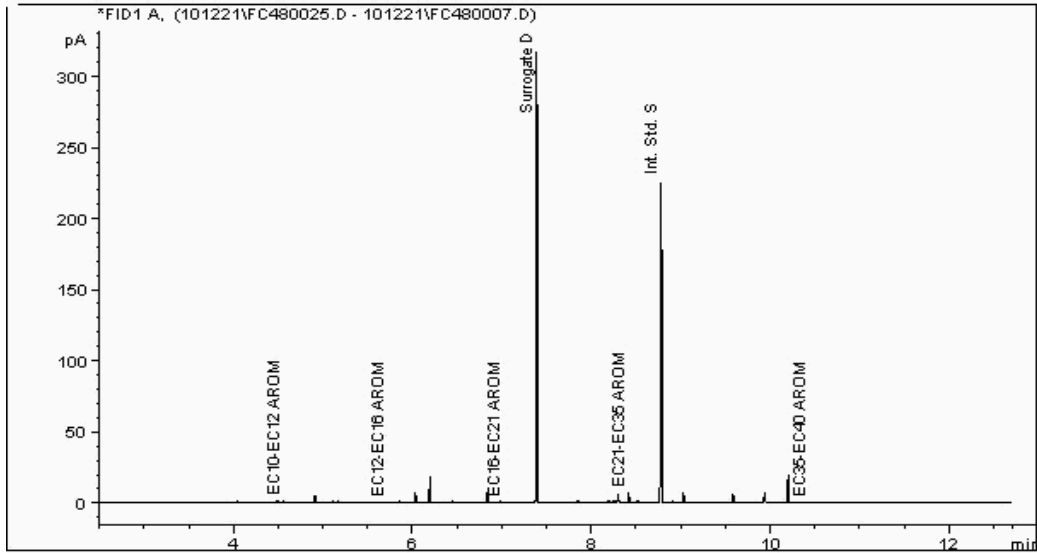
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116802
Sample ID : UD4

Depth :

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

Sample Identity: 23470014-
Date Acquired : 13/10/2021 00:56:58 PM
Units : ppb
Dilution : SE UD4[] ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

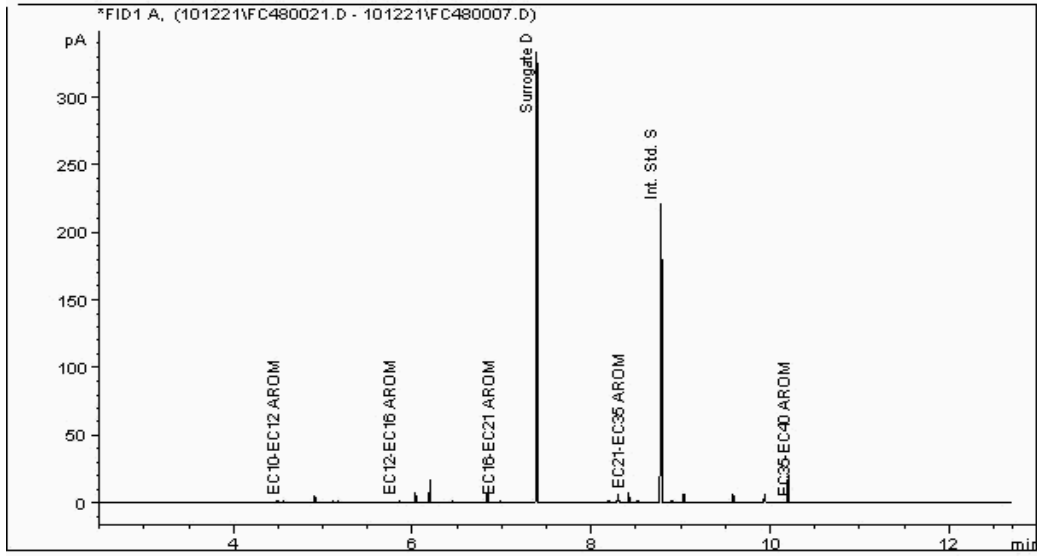
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116835
Sample ID : UD3

Depth :

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

Sample Identity: 23469980-
Date Acquired : 12/10/2021 23:25:08 PM
Units : ppb
Dilution : SE UD3[1] ->
CF : 1
Multiplier : 0.029





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

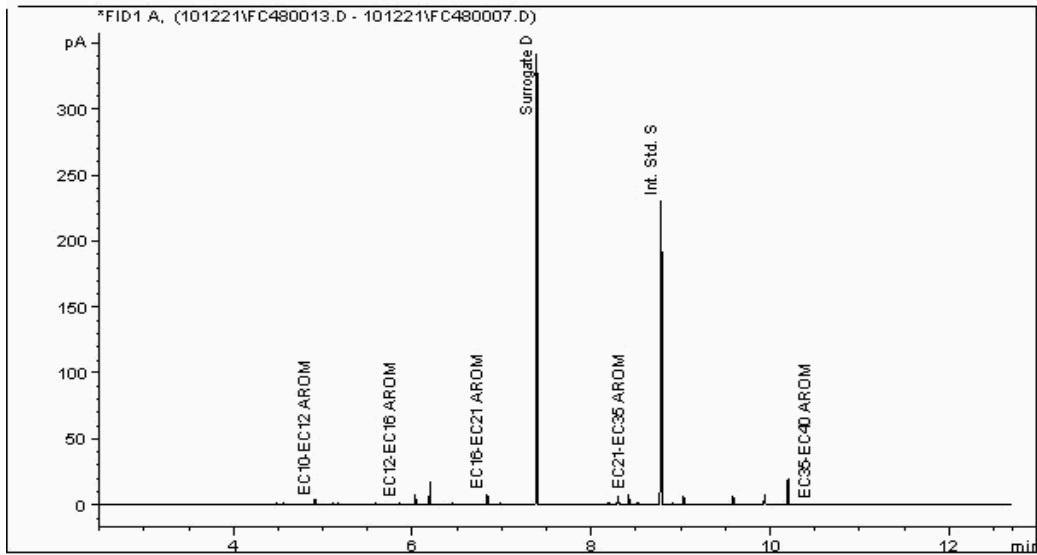
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116927
Sample ID : UD1

Depth :

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

Sample Identity: 23469946-
Date Acquired : 12/10/2021 20:19:25 PM
Units : ppb
Dilution : SE UD1[] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

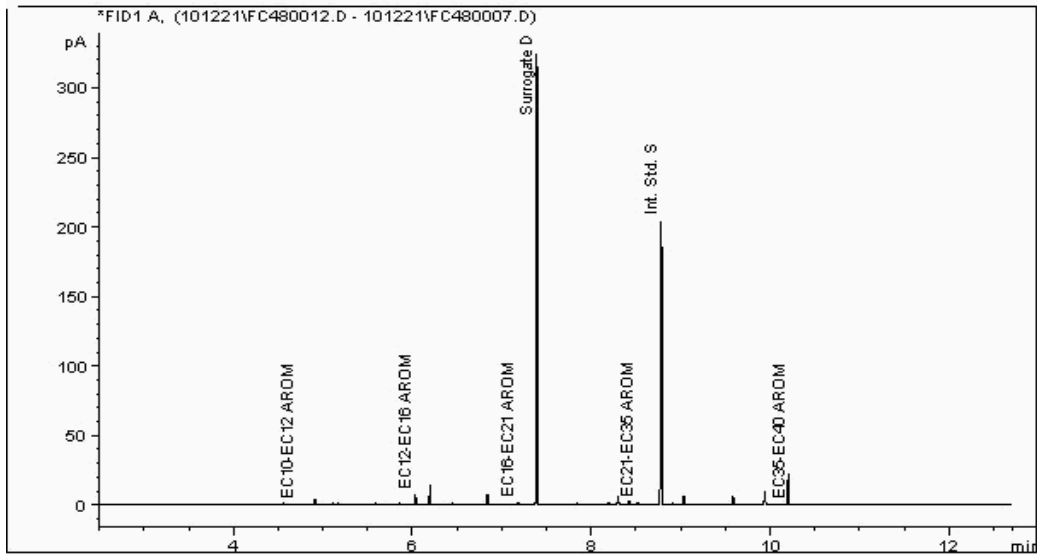
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116985
Sample ID : BH208

Depth :

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

Sample Identity: 23469924-
Date Acquired : 12/10/2021 19:56:26 PM
Units : ppb
Dilution : SE BH208[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

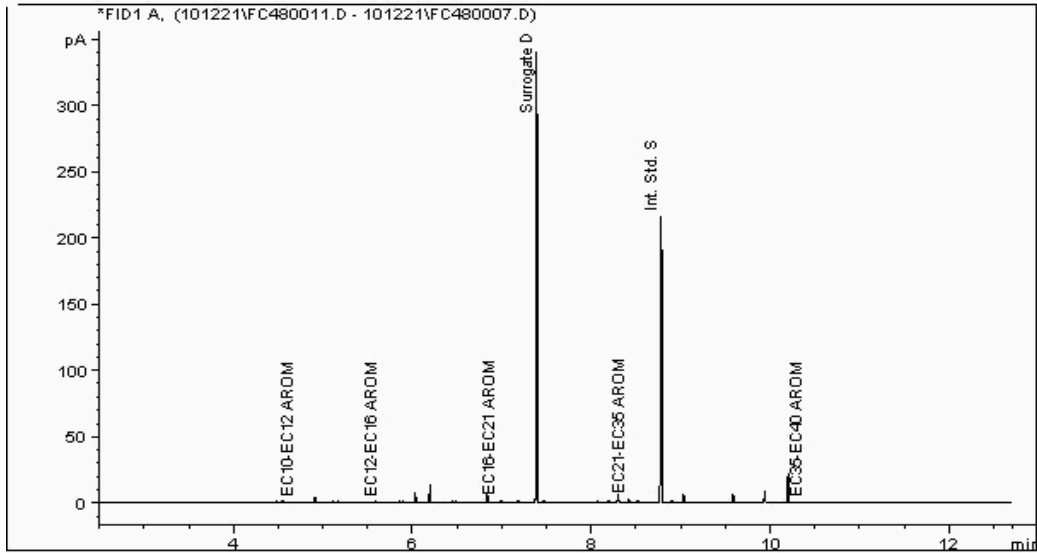
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117215
Sample ID : NACW 229

Depth :

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

Sample Identity: 23470631-
Date Acquired : 12/10/2021 19:33:27 PM
Units : ppb
Dilution : SE NACW 229[1] ->
CF : 1
Multiplier : 0.029





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

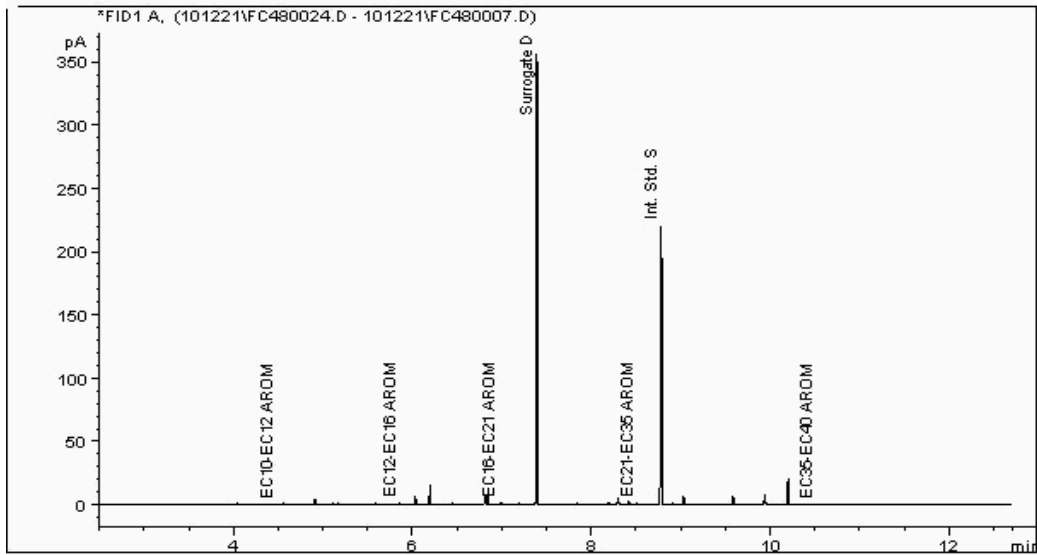
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117233
Sample ID : NACW 219

Depth :

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

Sample Identity: 23470607-
Date Acquired : 13/10/2021 00:34:10 PM
Units : ppb
Dilution : SE NACW 219[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

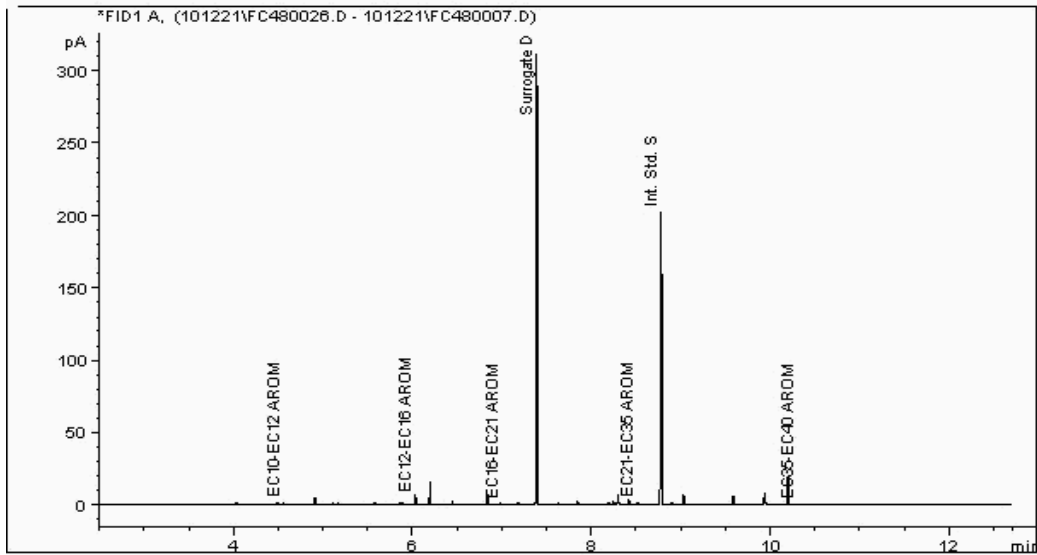
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117479
Sample ID : BH 3/9

Depth :

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

Sample Identity: 23470562-
Date Acquired : 13/10/2021 01:20:34 PM
Units : ppb
Dilution : SE BH 3/9[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

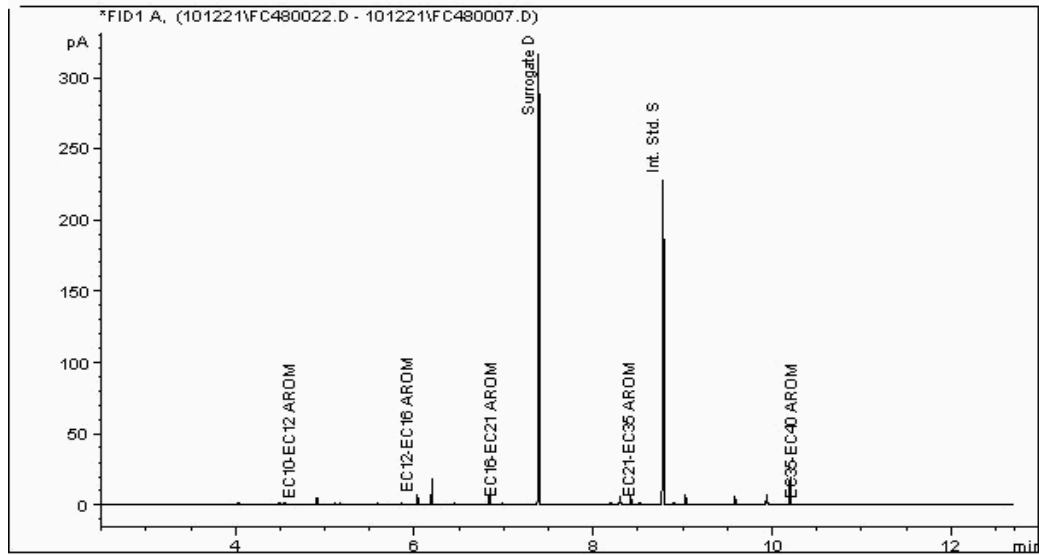
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117505
Sample ID : BH 3/8

Depth :

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

Sample Identity: 23470513-
Date Acquired : 12/10/2021 23:47:51 PM
Units : ppb
Dilution : SE BH 3/8[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

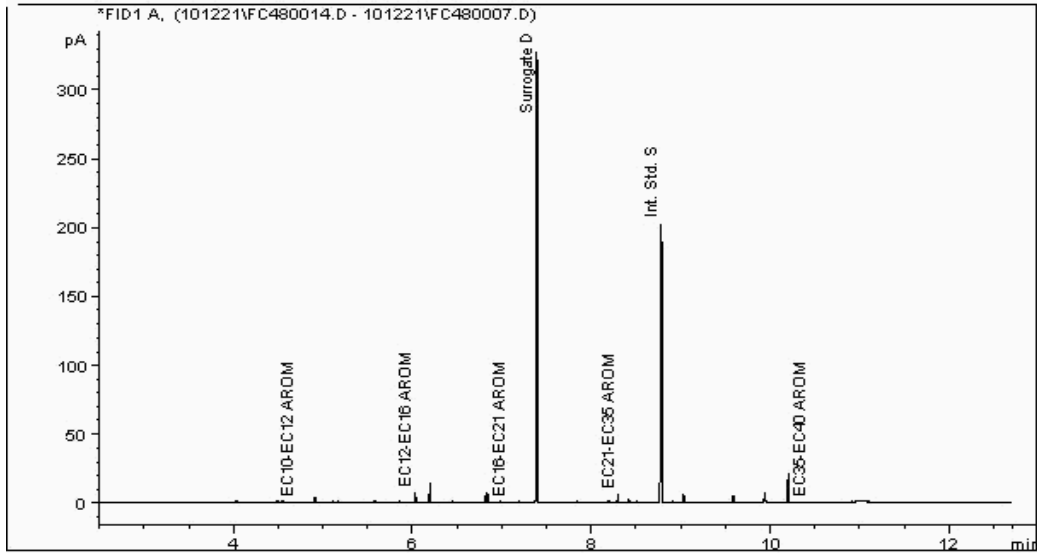
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117562
Sample ID : BH 3/6

Depth :

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

Sample Identity: 23470476-
Date Acquired : 12/10/2021 20:42:38 PM
Units : ppb
Dilution : SE BH 3/6[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

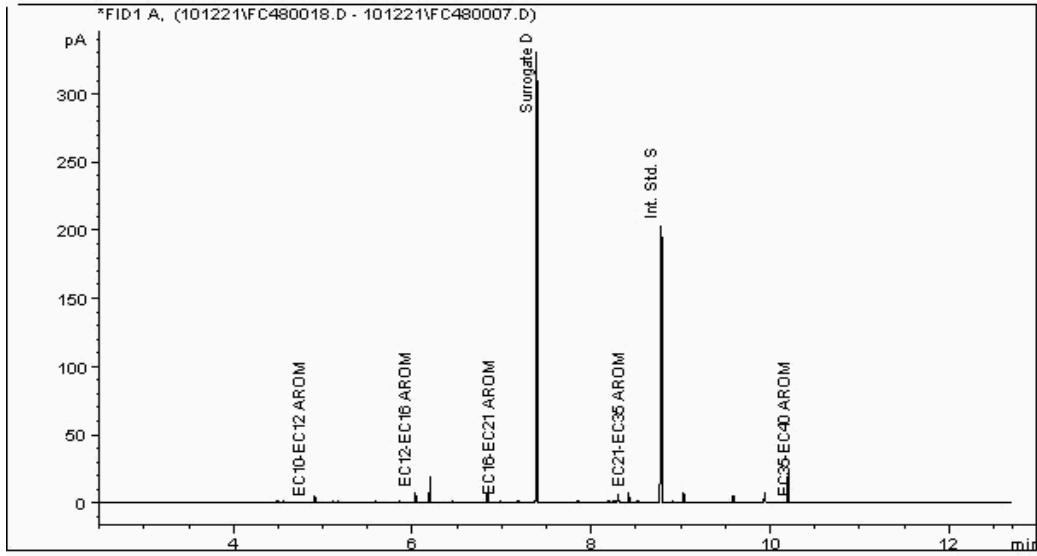
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117594
Sample ID : BH 3/5

Depth :

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

Sample Identity: 23470426-
Date Acquired : 12/10/2021 22:15:09 PM
Units : ppb
Dilution : SE BH 3/5[1] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

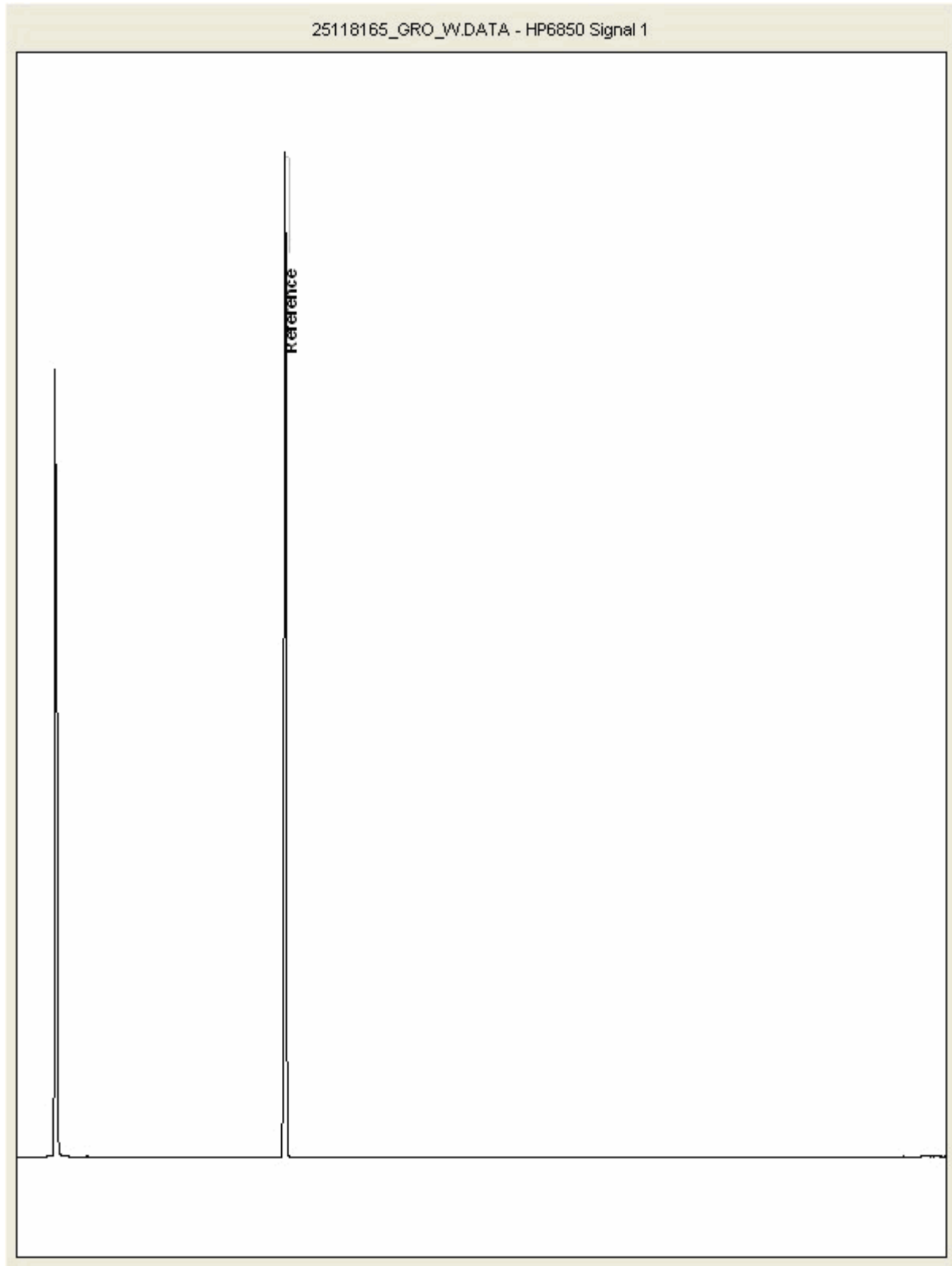
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118165
Sample ID : UD5

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

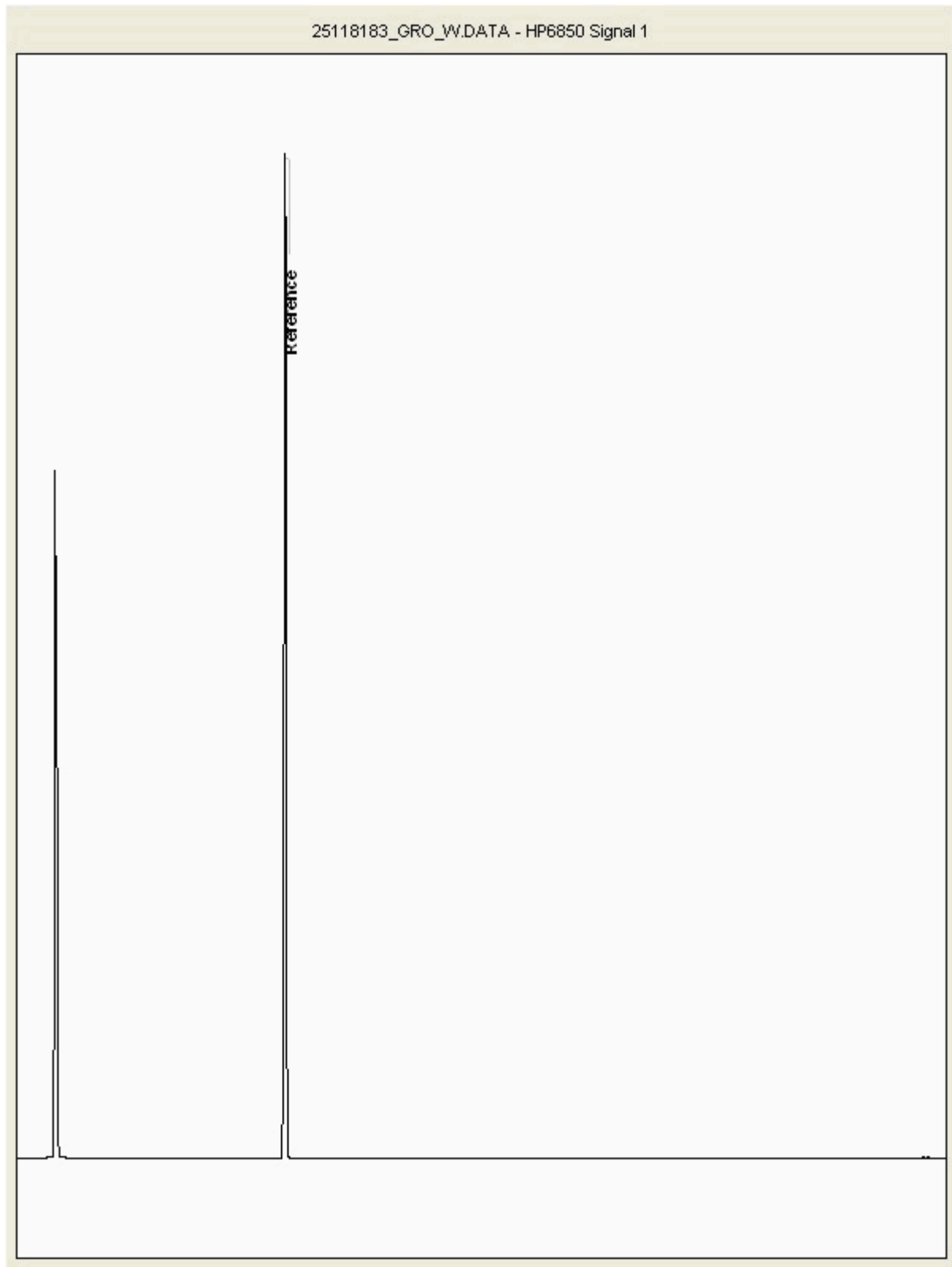
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118183
Sample ID : UD3

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

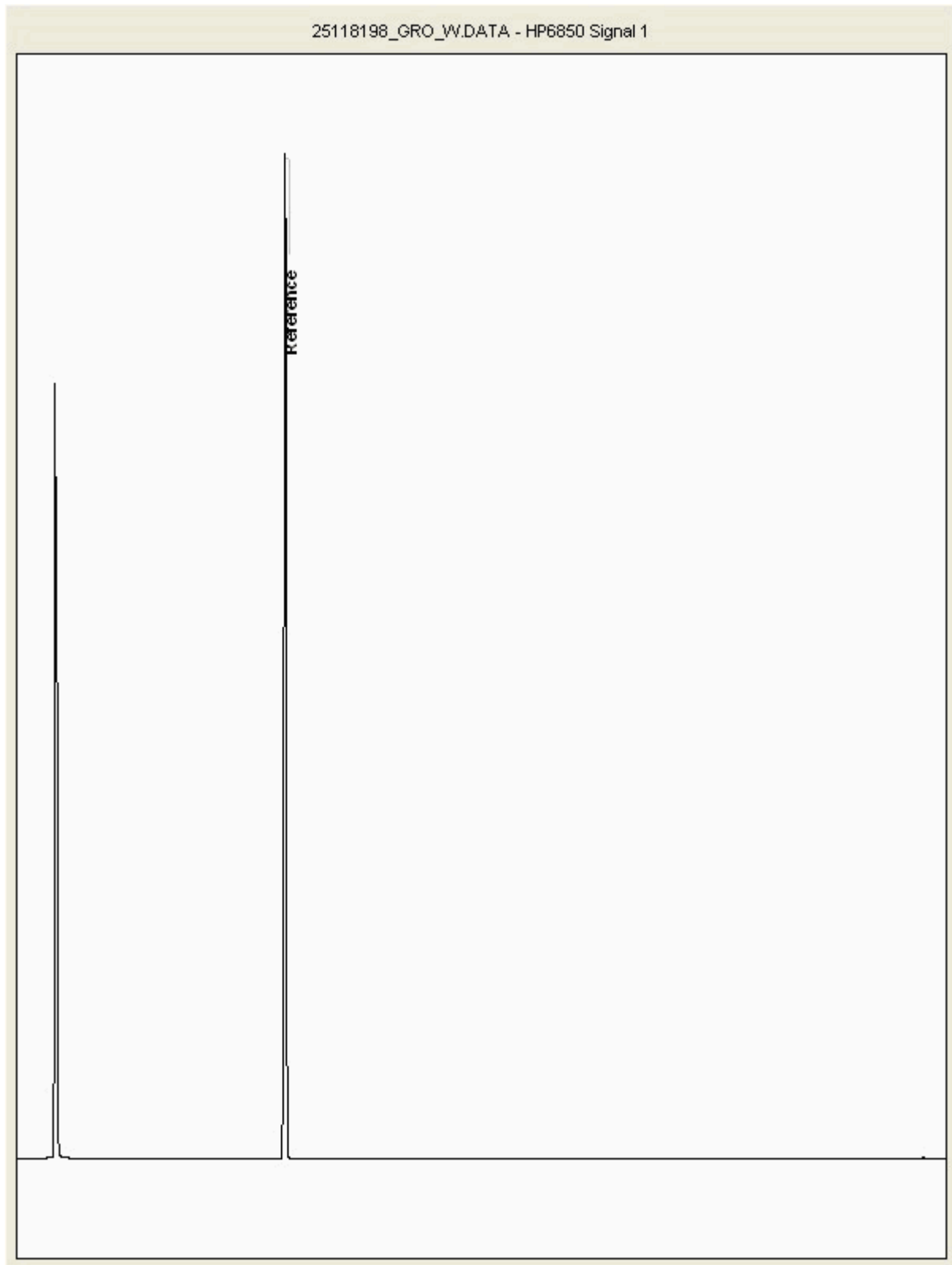
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118198
Sample ID : BH5/02

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

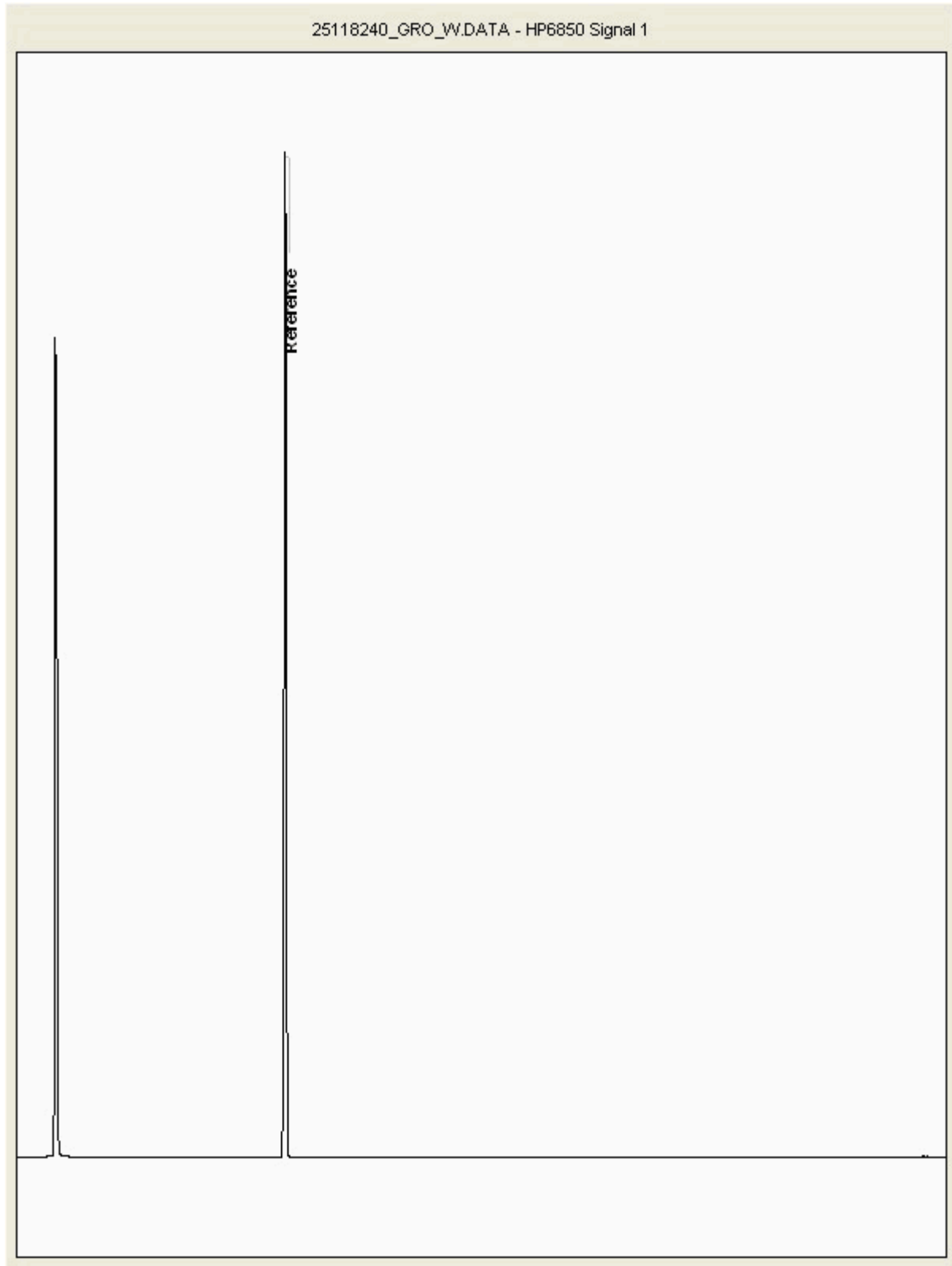
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118240
Sample ID : NACW228

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

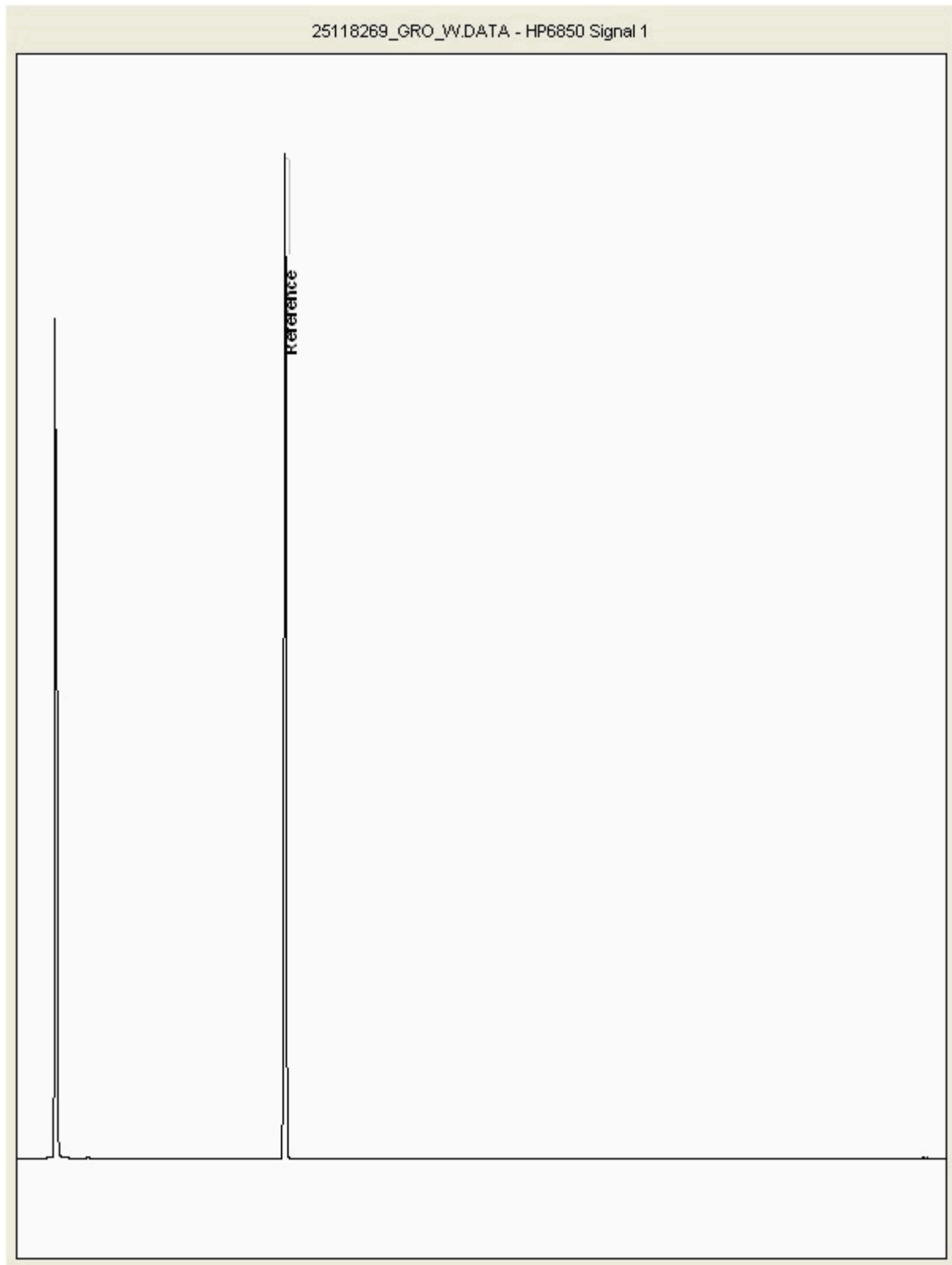
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118269
Sample ID : UD1

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

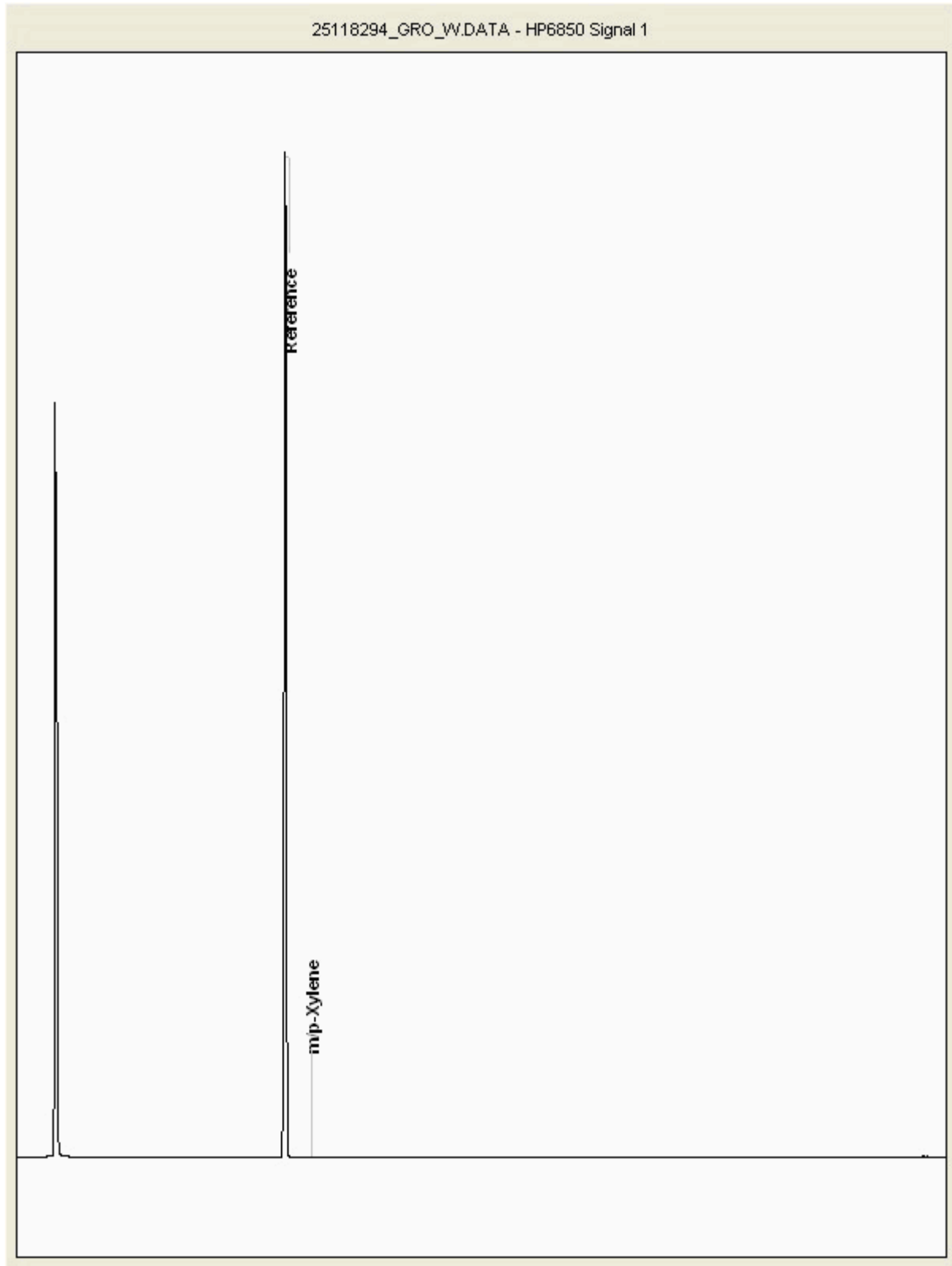
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118294
Sample ID : BH208

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

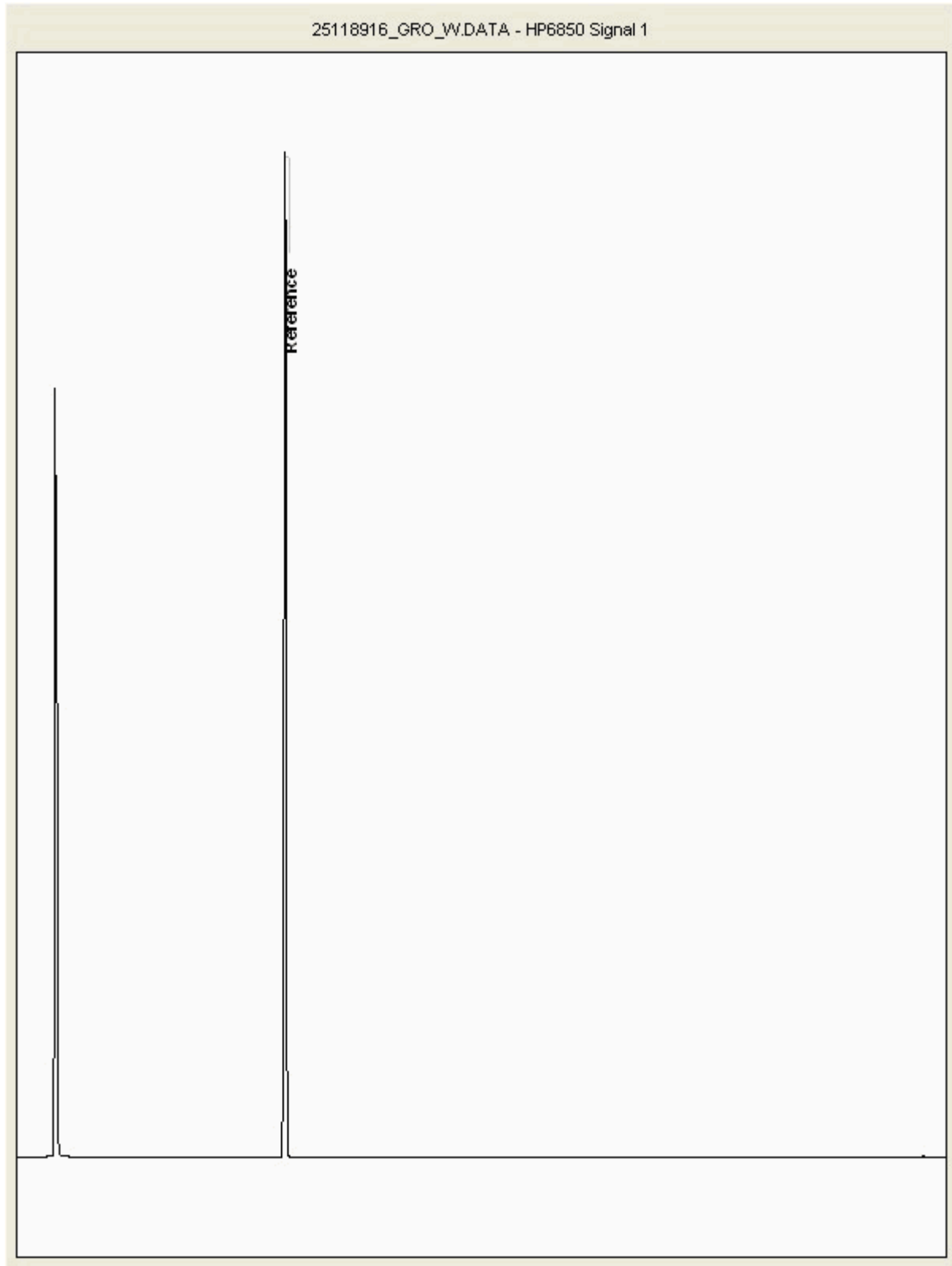
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118916
Sample ID : BH3/4

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

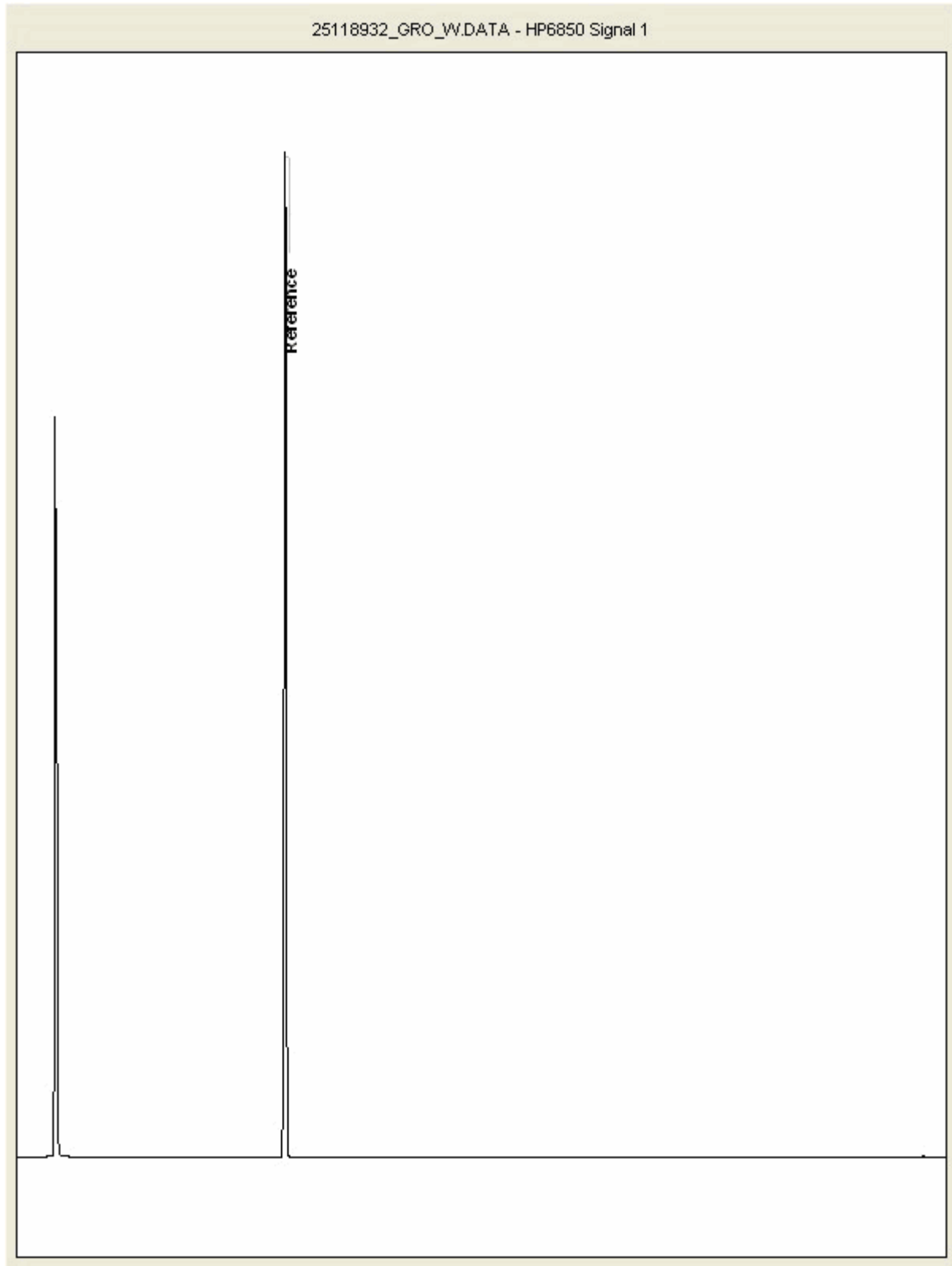
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118932
Sample ID : NACW205

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

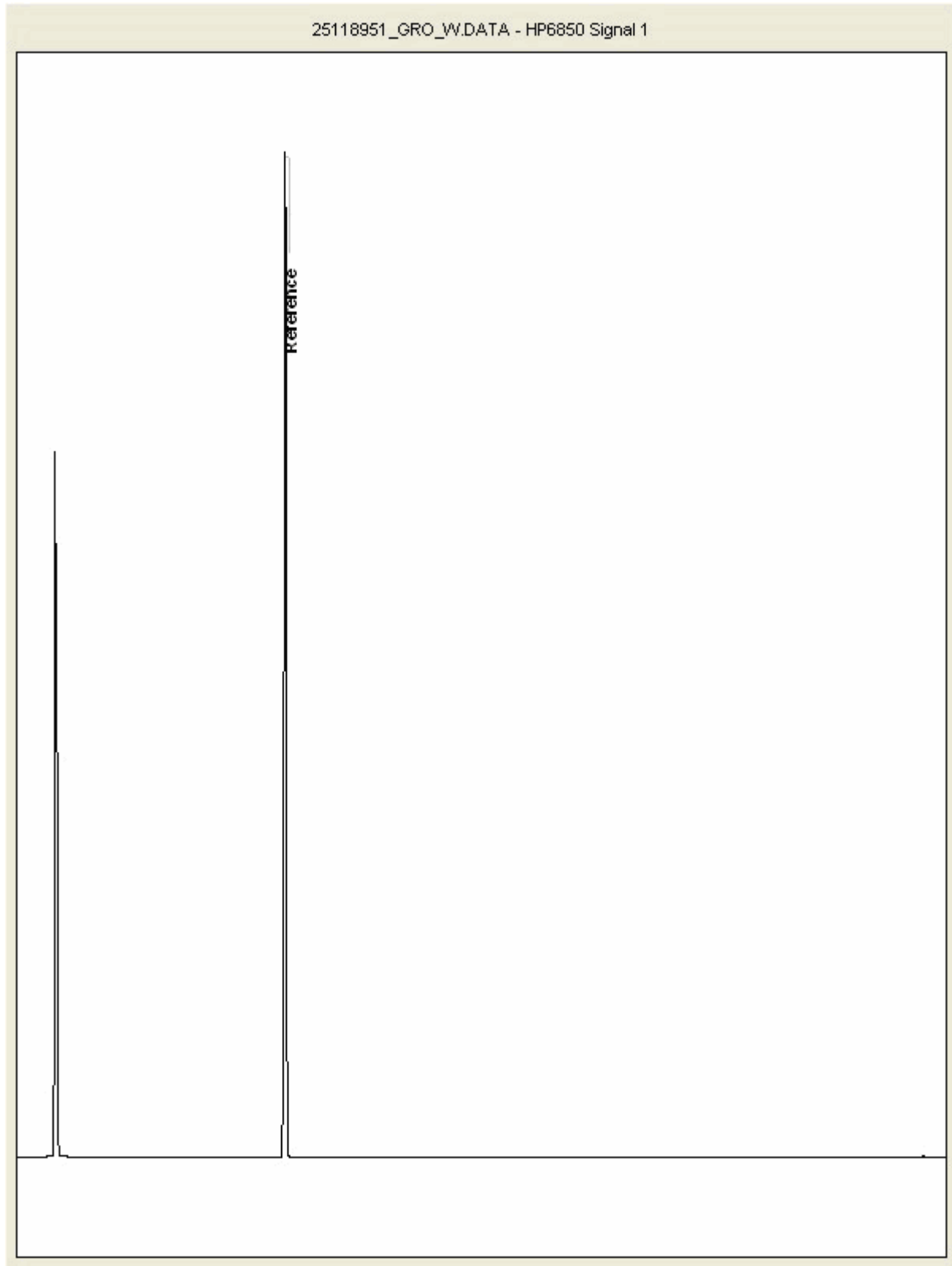
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118951
Sample ID : NACW203

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

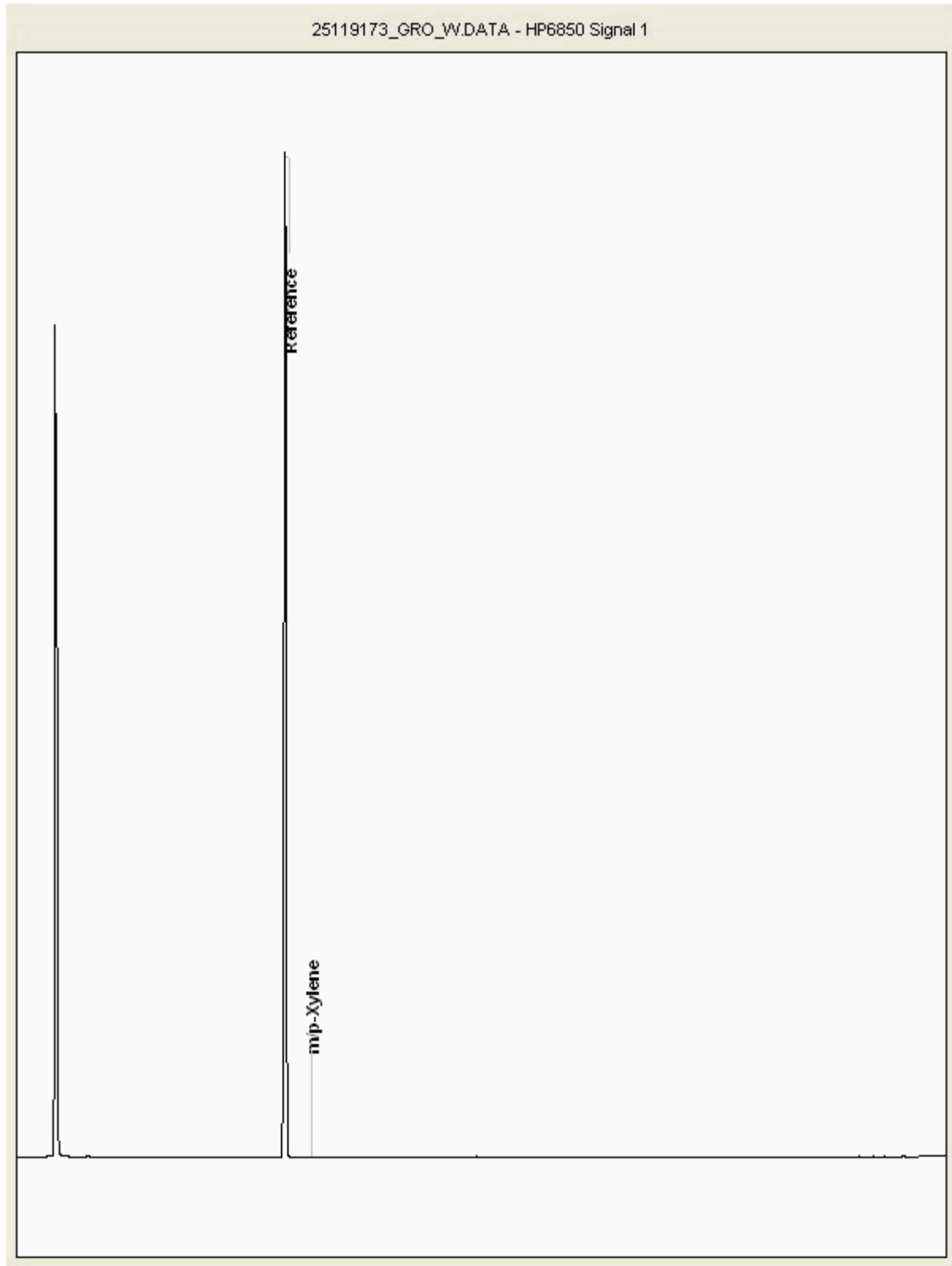
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25119173
Sample ID : NACW212

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

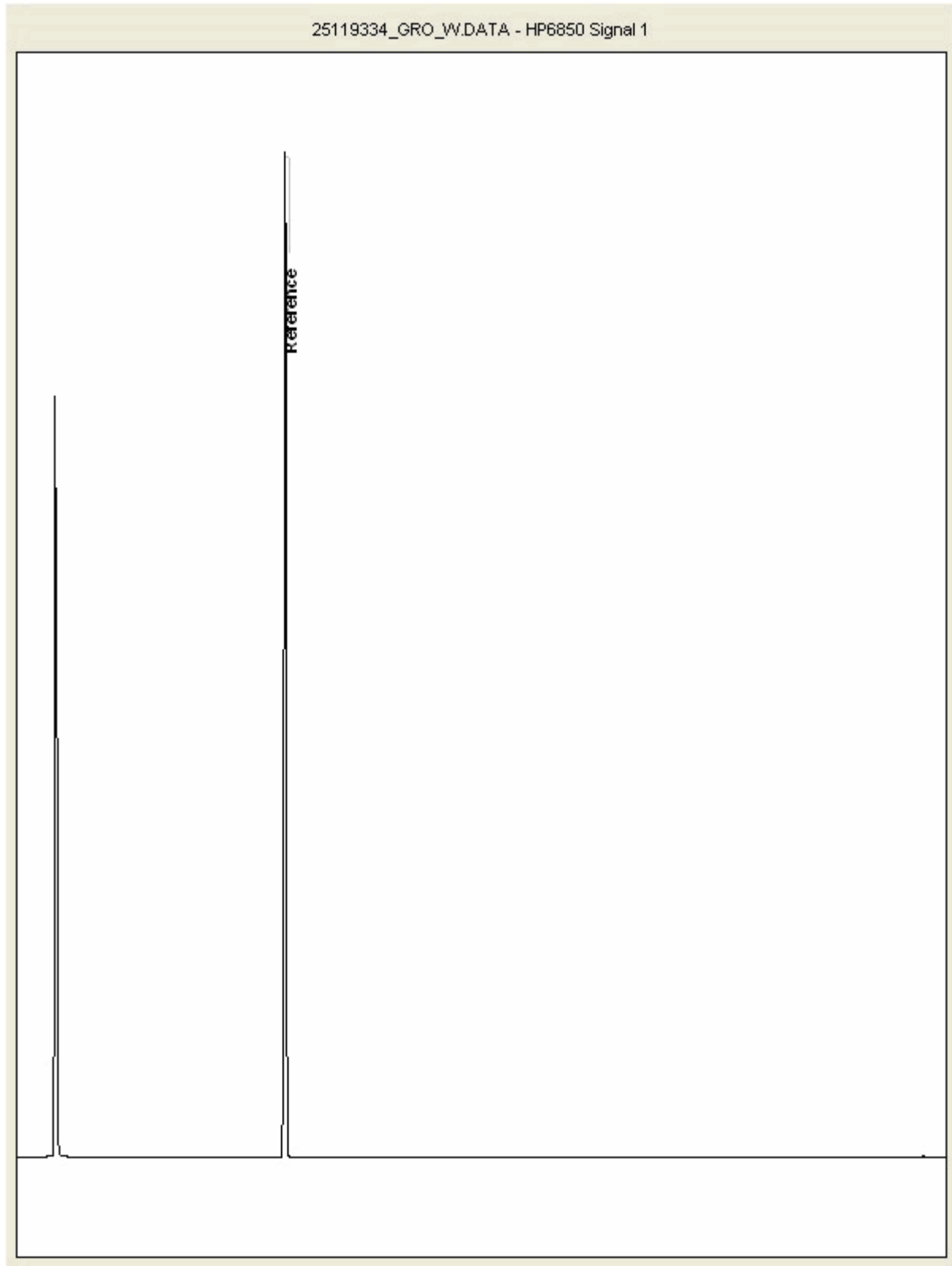
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25119334
Sample ID : UD4

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

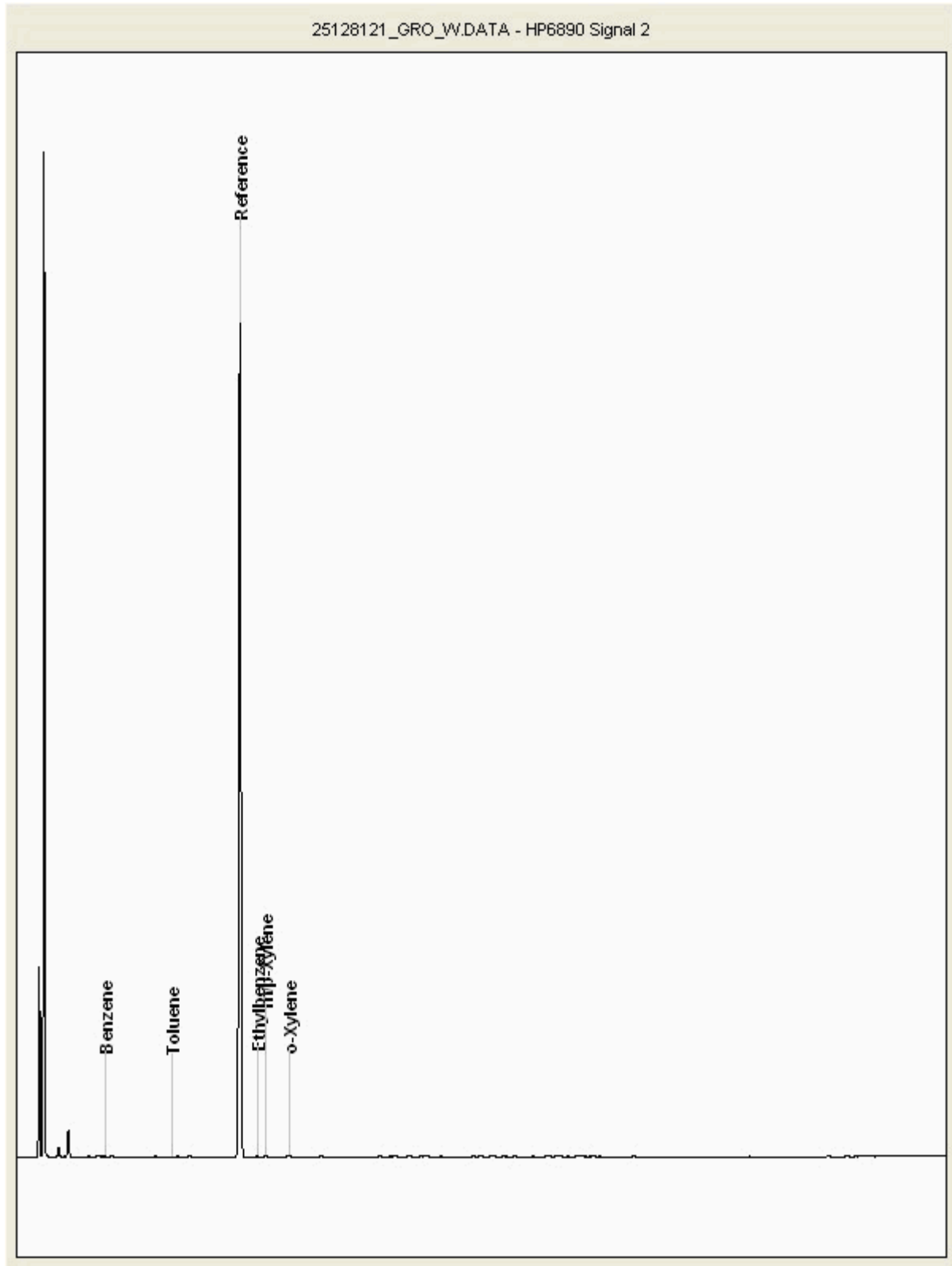
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128121
Sample ID : CELL 5 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

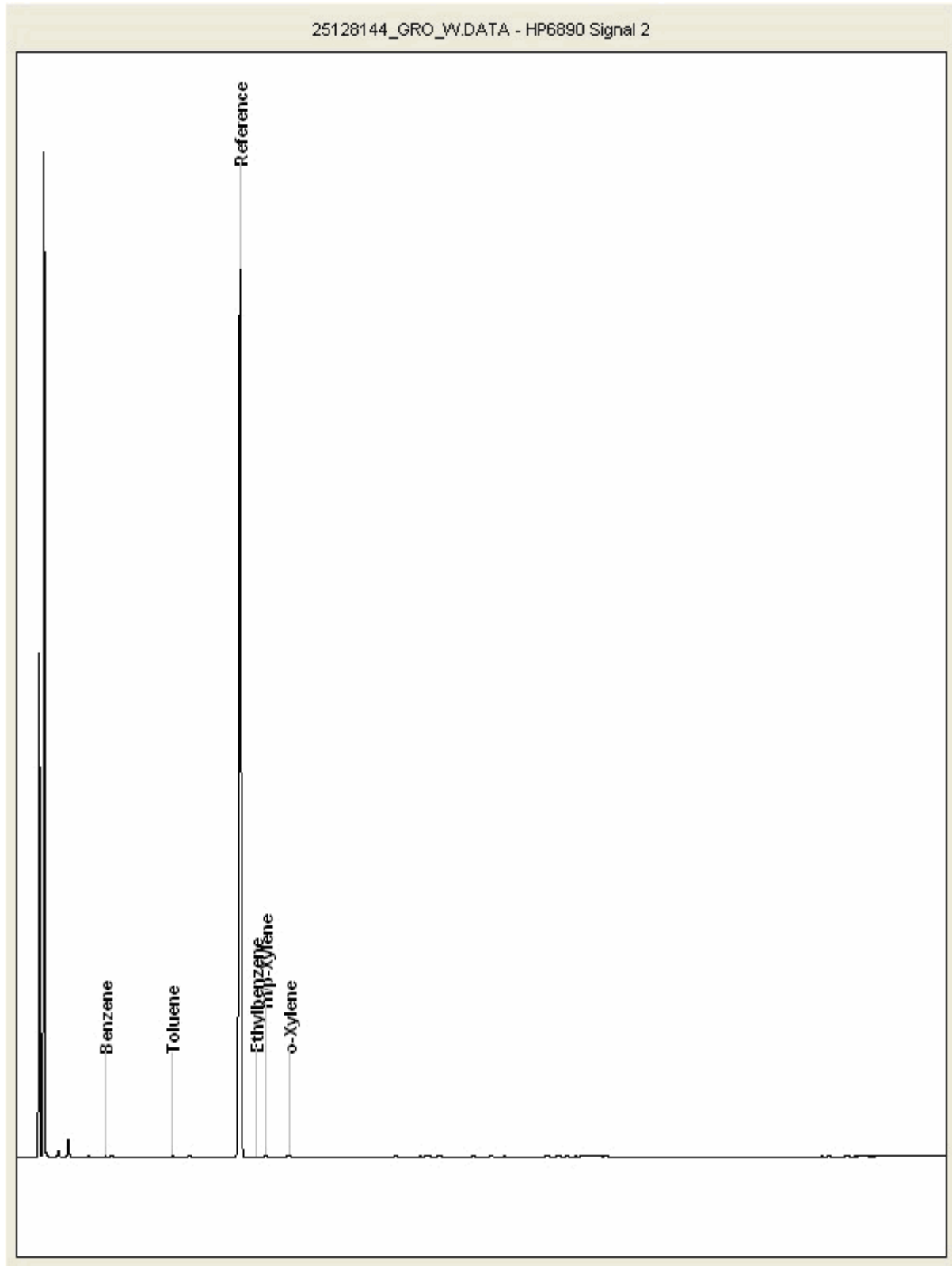
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128144
Sample ID : CELL 6 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

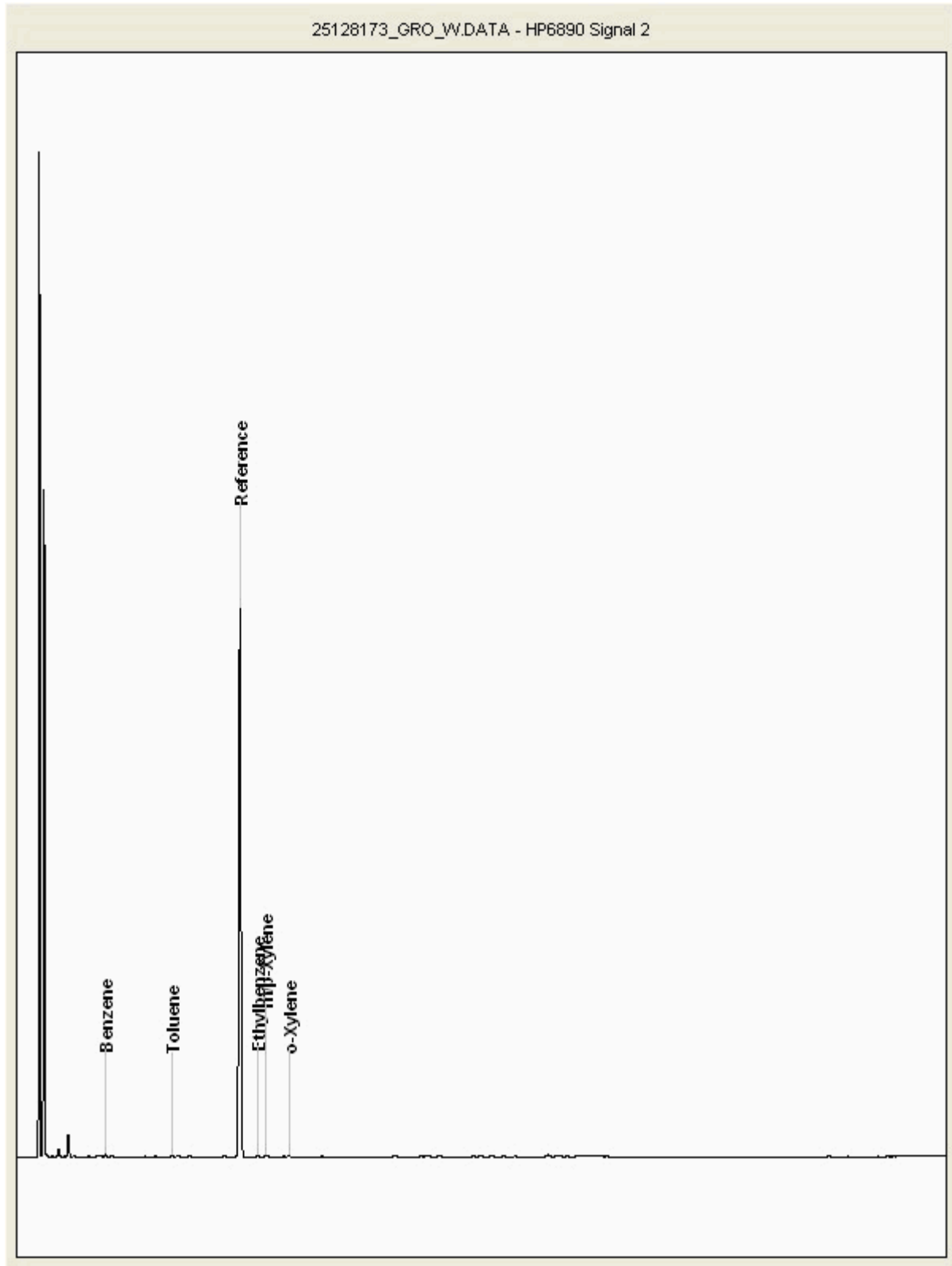
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128173
Sample ID : LEACHATE HOLDING LAGOC

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

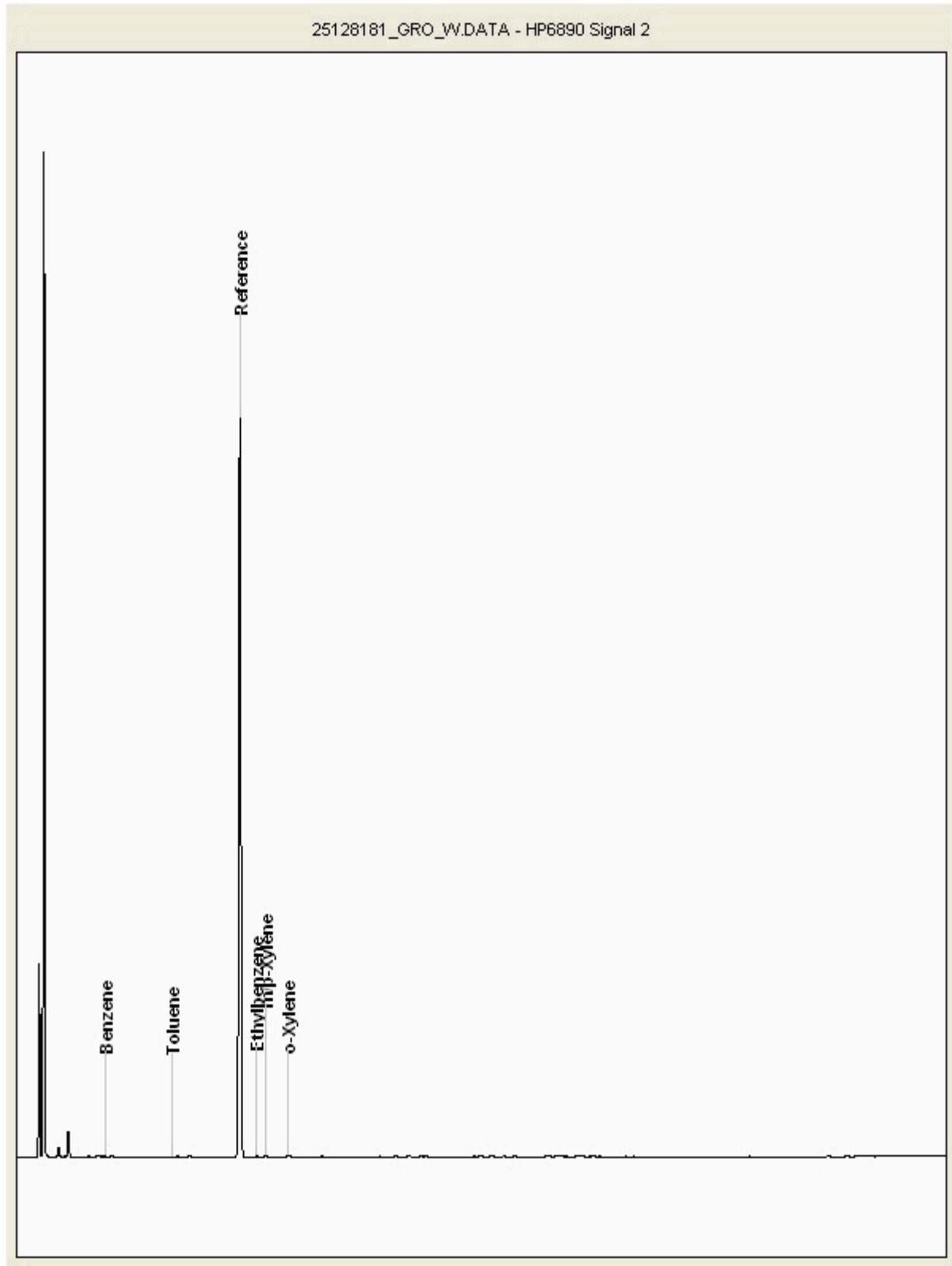
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128181
Sample ID : CELL 3/4 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

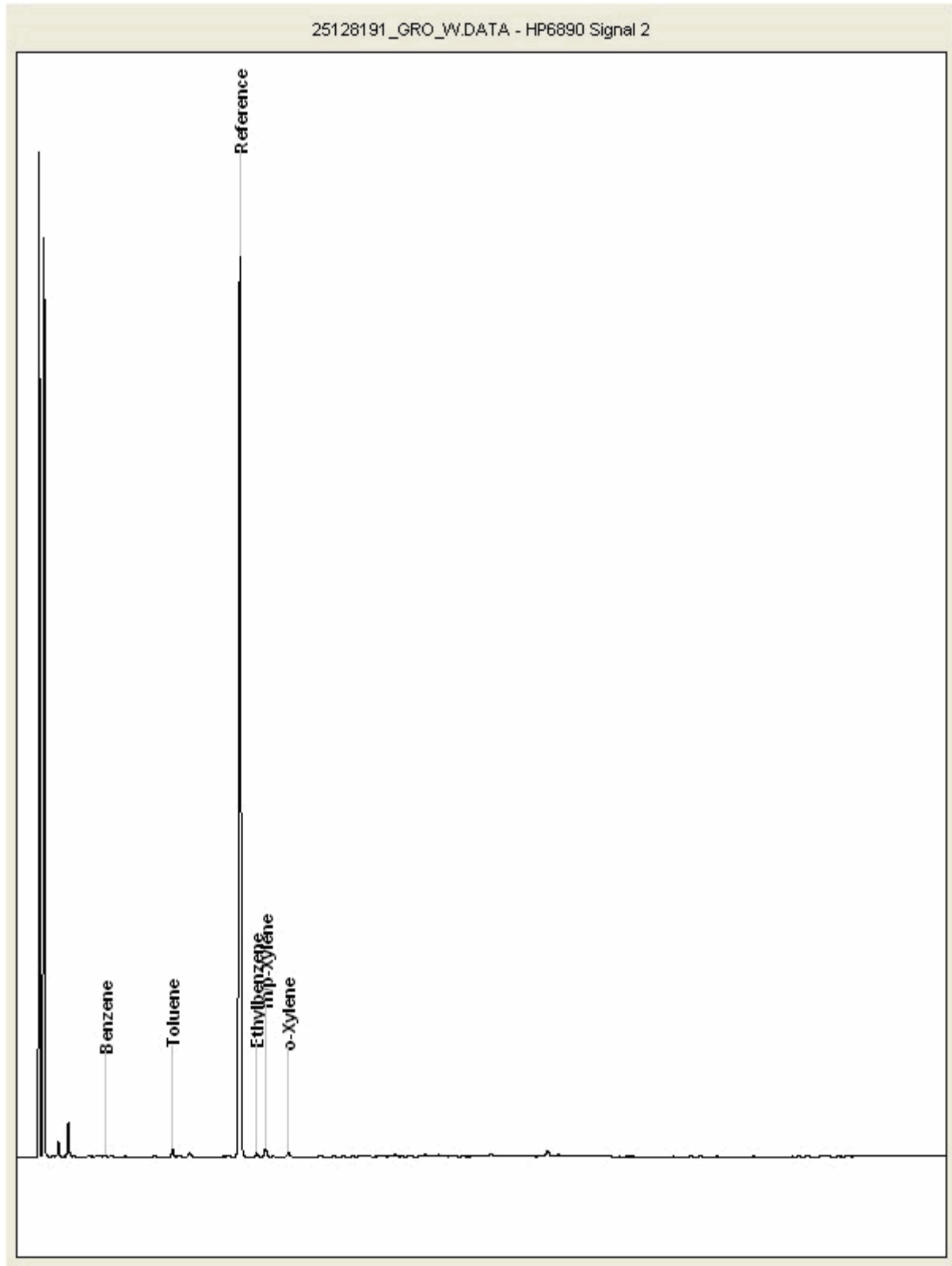
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128191
Sample ID : CELL 1/2 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

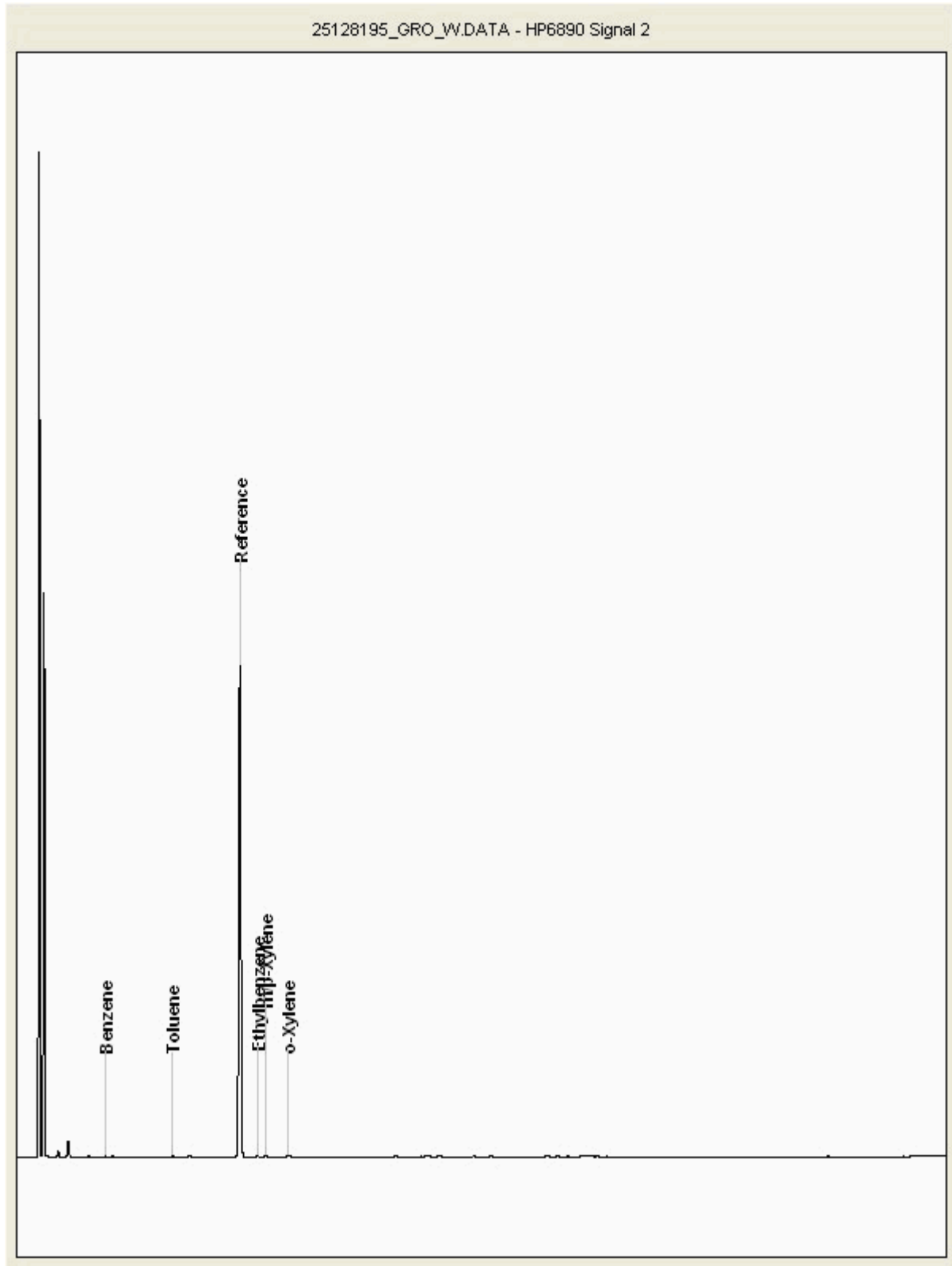
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128195
Sample ID : CELL 7 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

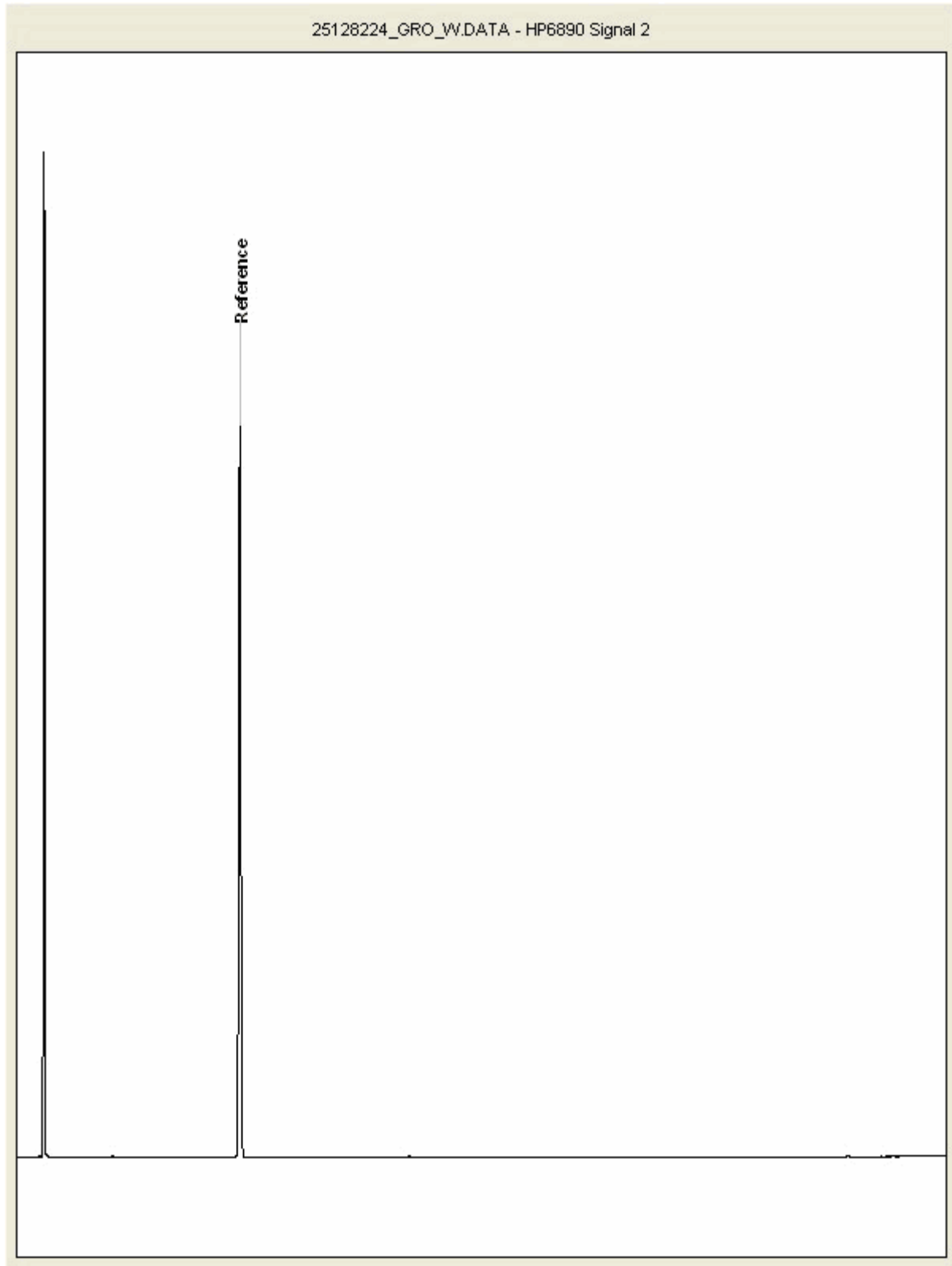
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128224
Sample ID : BH 3/2

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

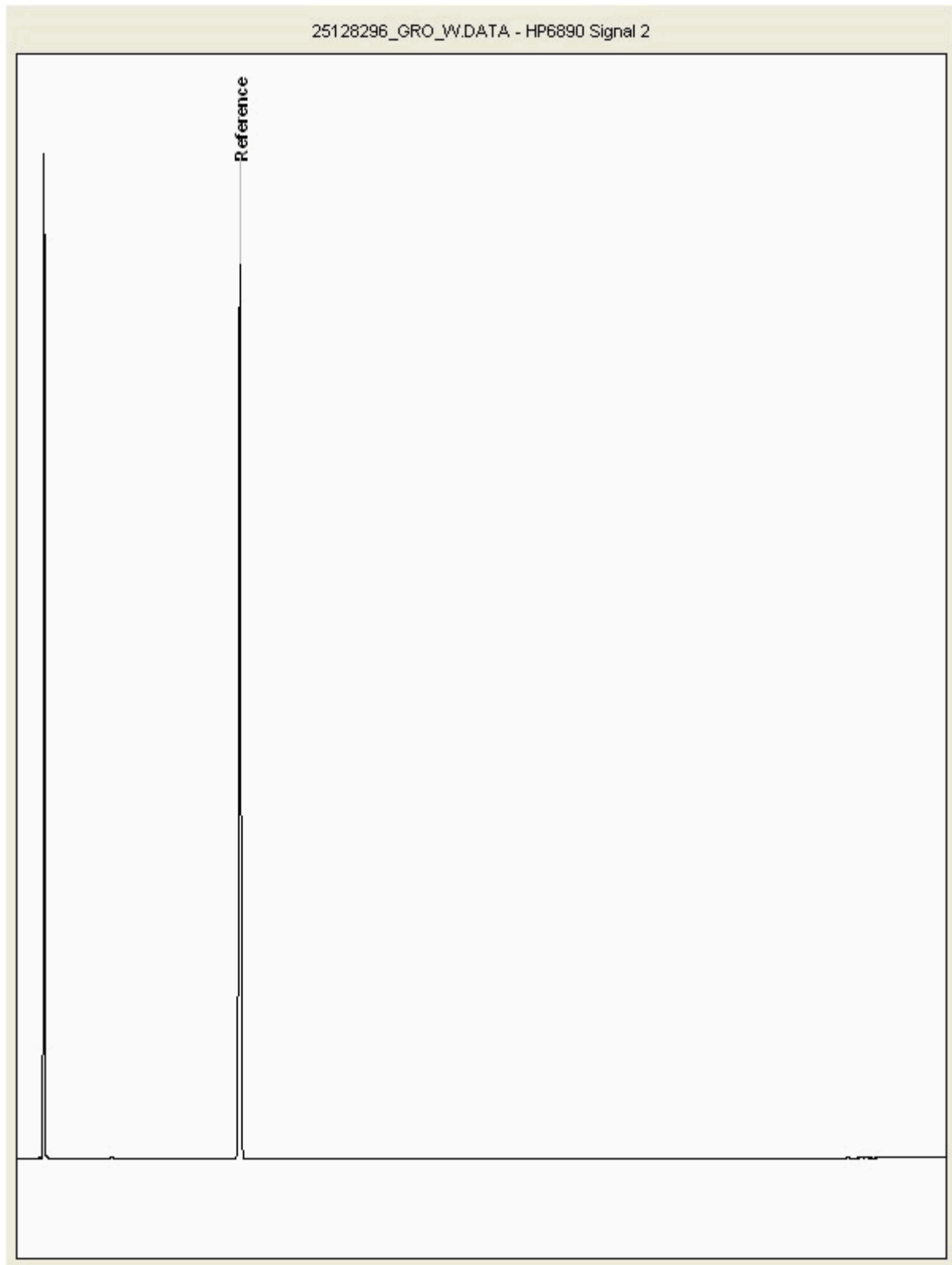
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128296
Sample ID : BH 3/3

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

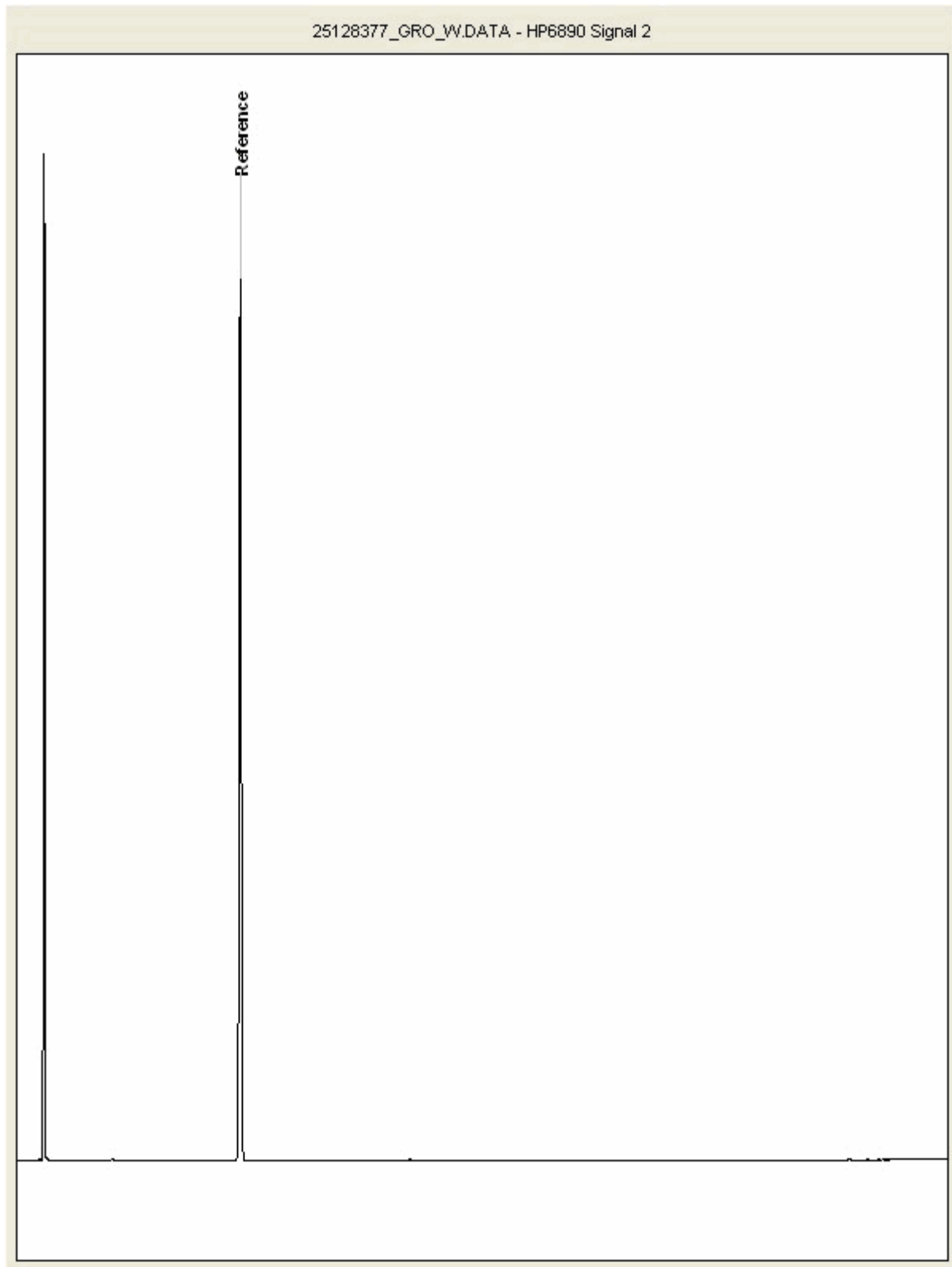
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128377
Sample ID : BH 3/5

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

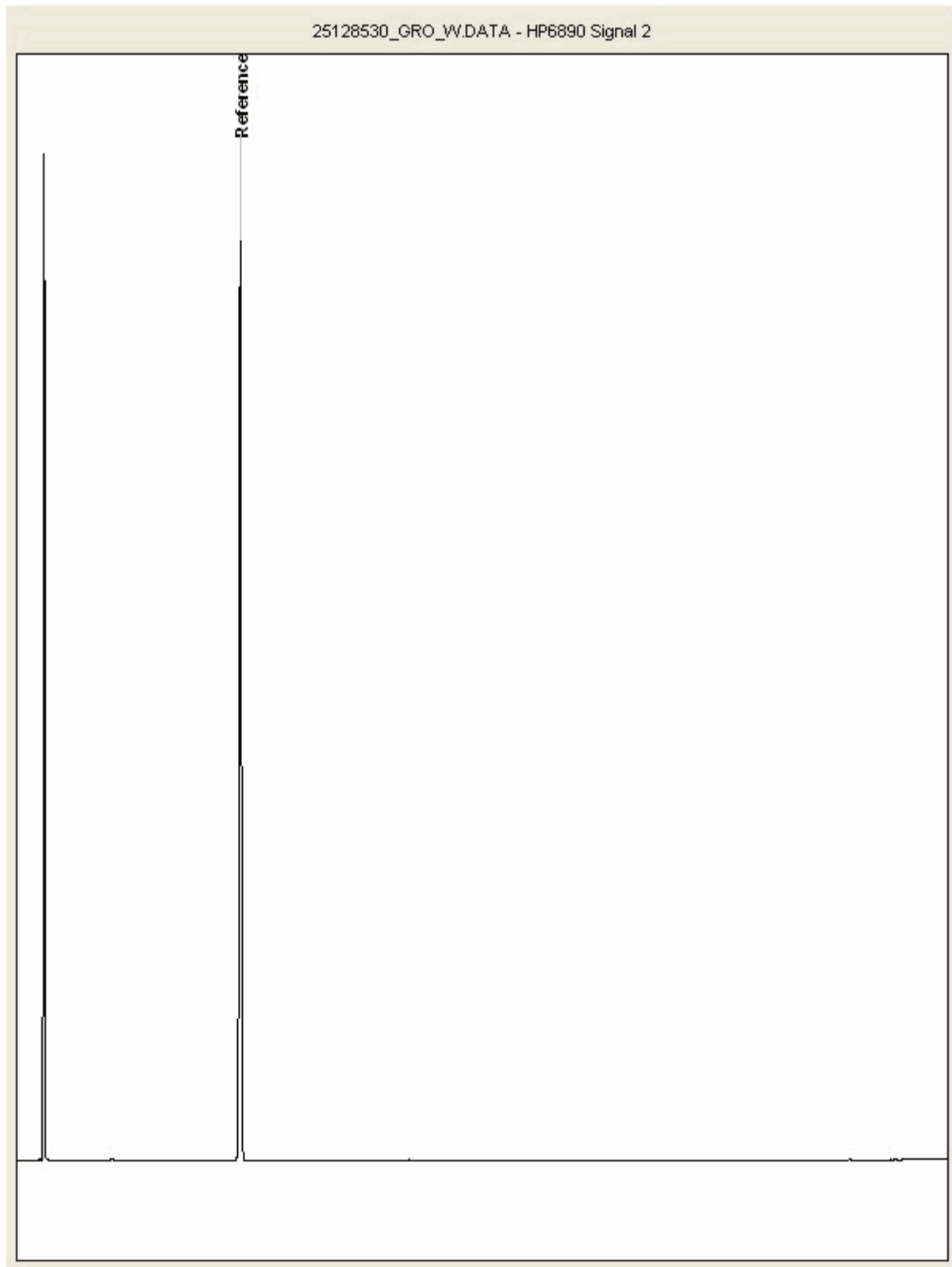
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128530
Sample ID : BH 3/6

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

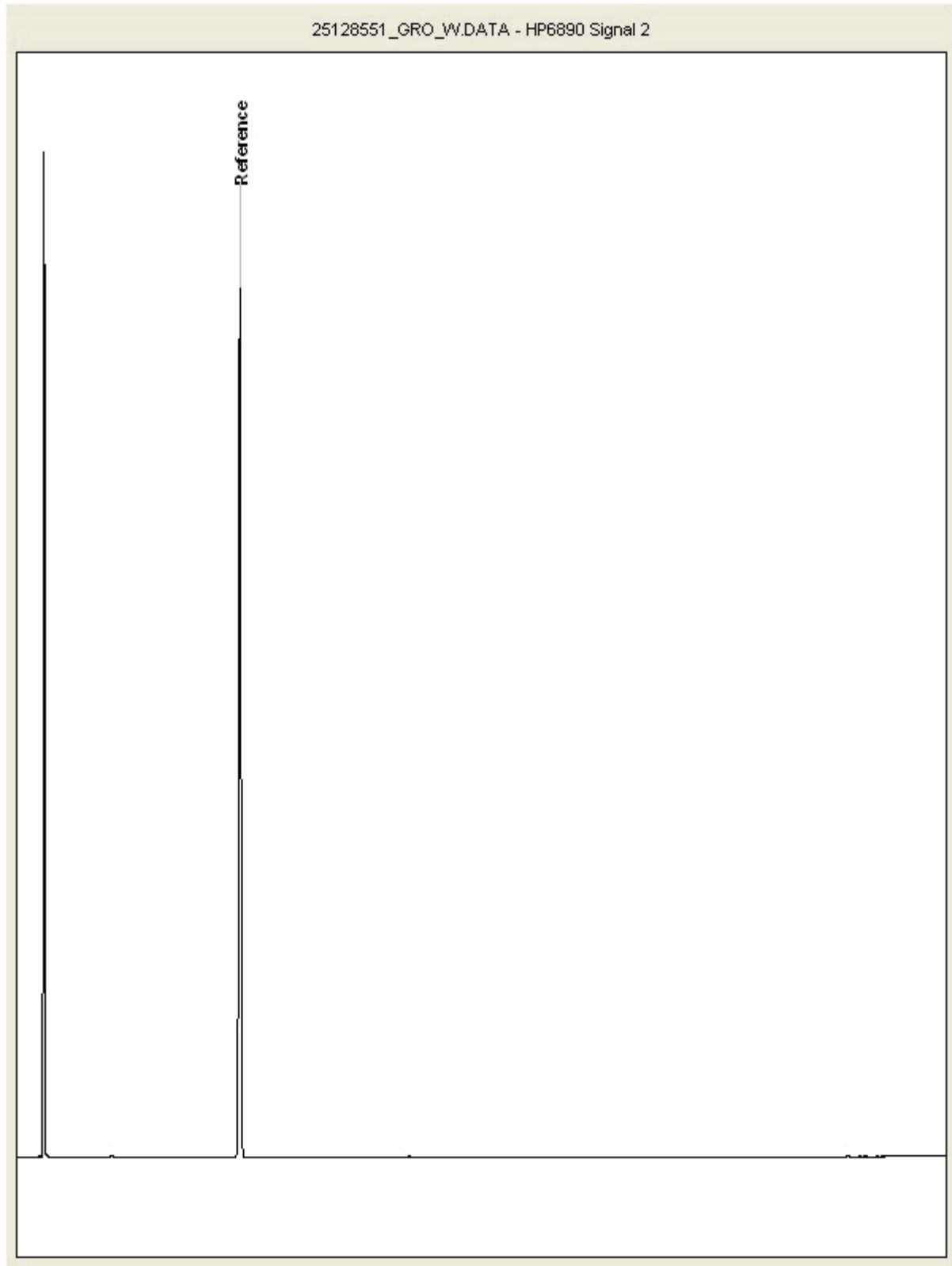
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128551
Sample ID : BH 3/8

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

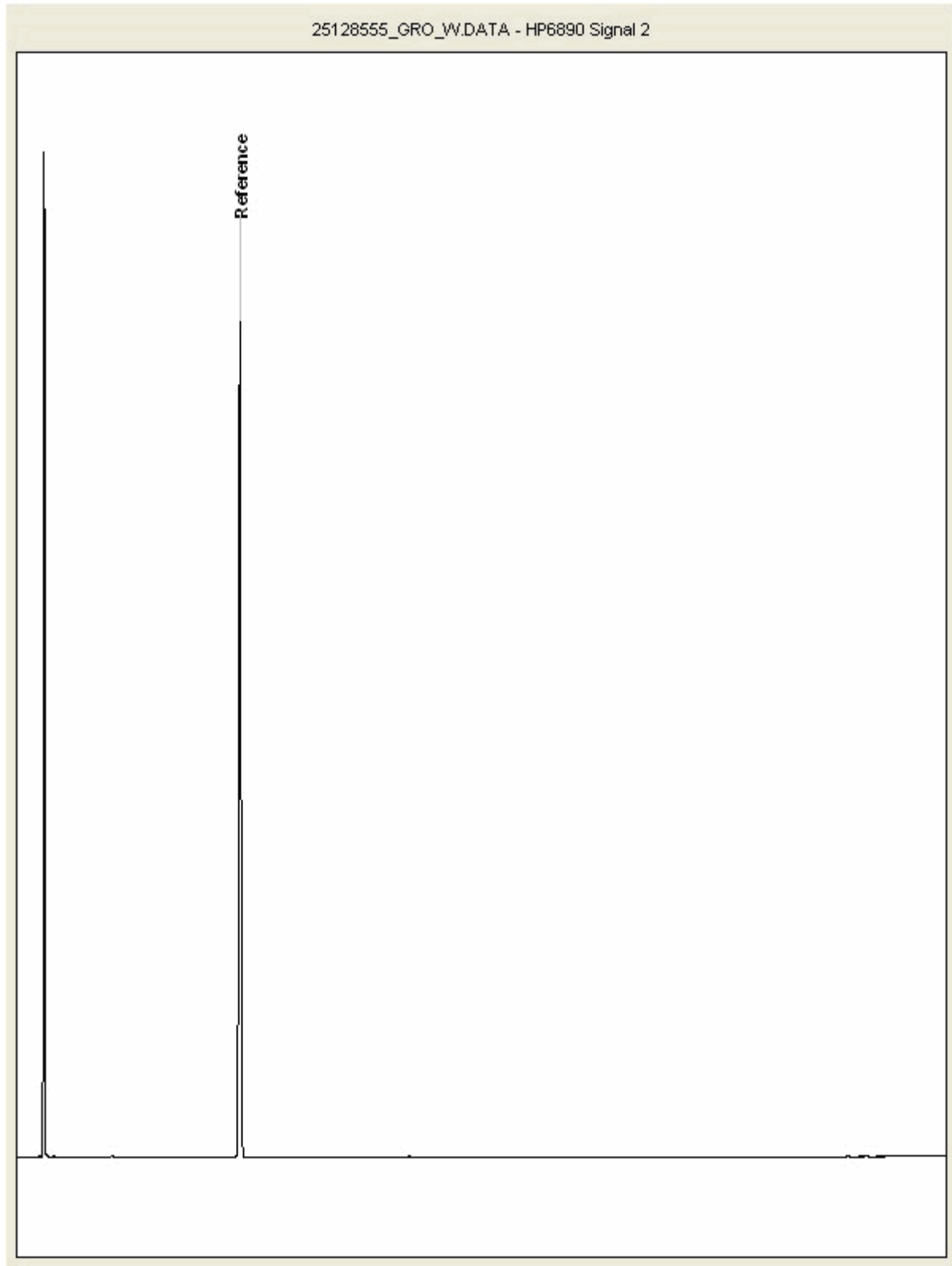
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128555
Sample ID : NACW 229

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

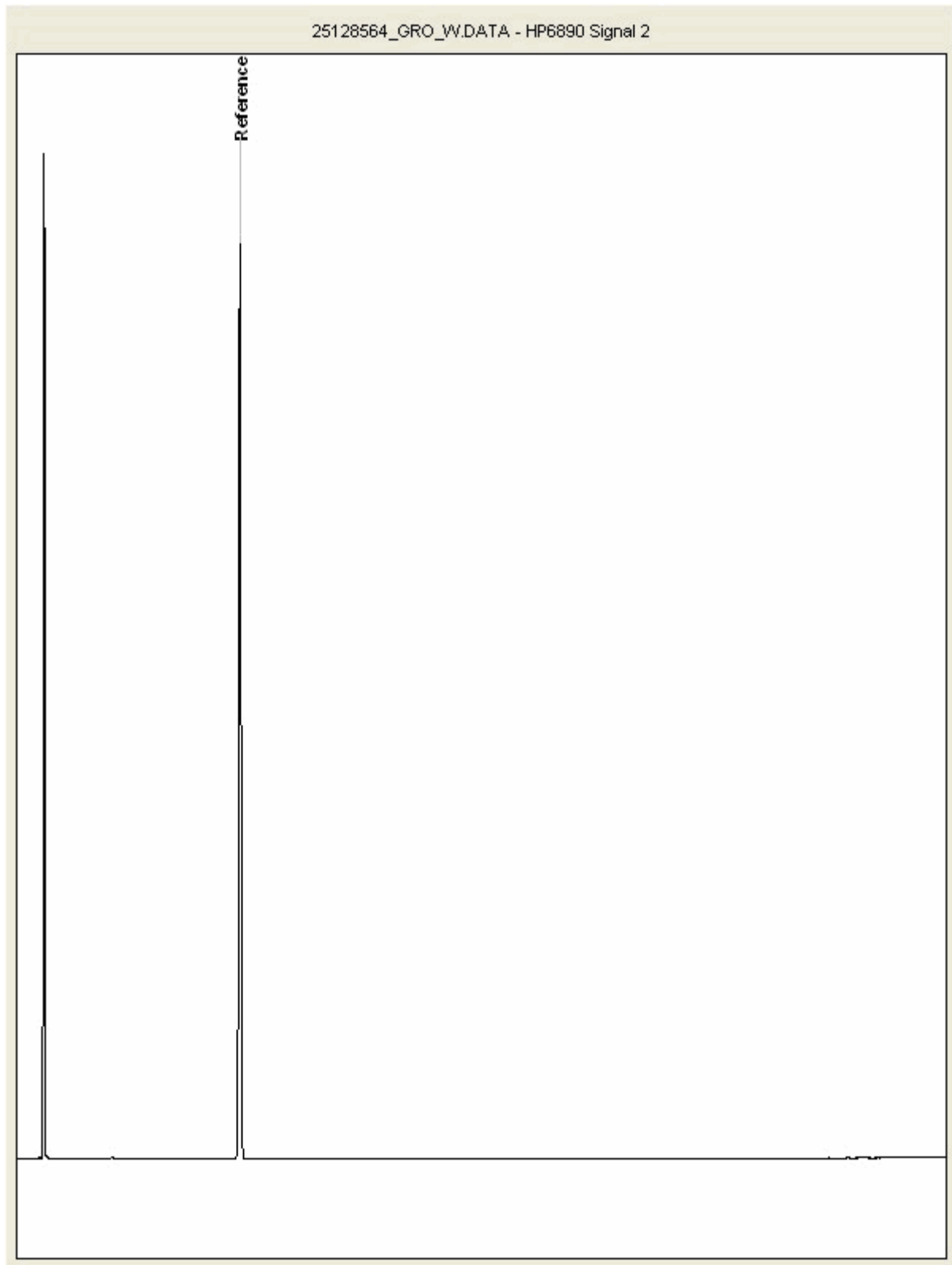
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128564
Sample ID : NACW 219

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

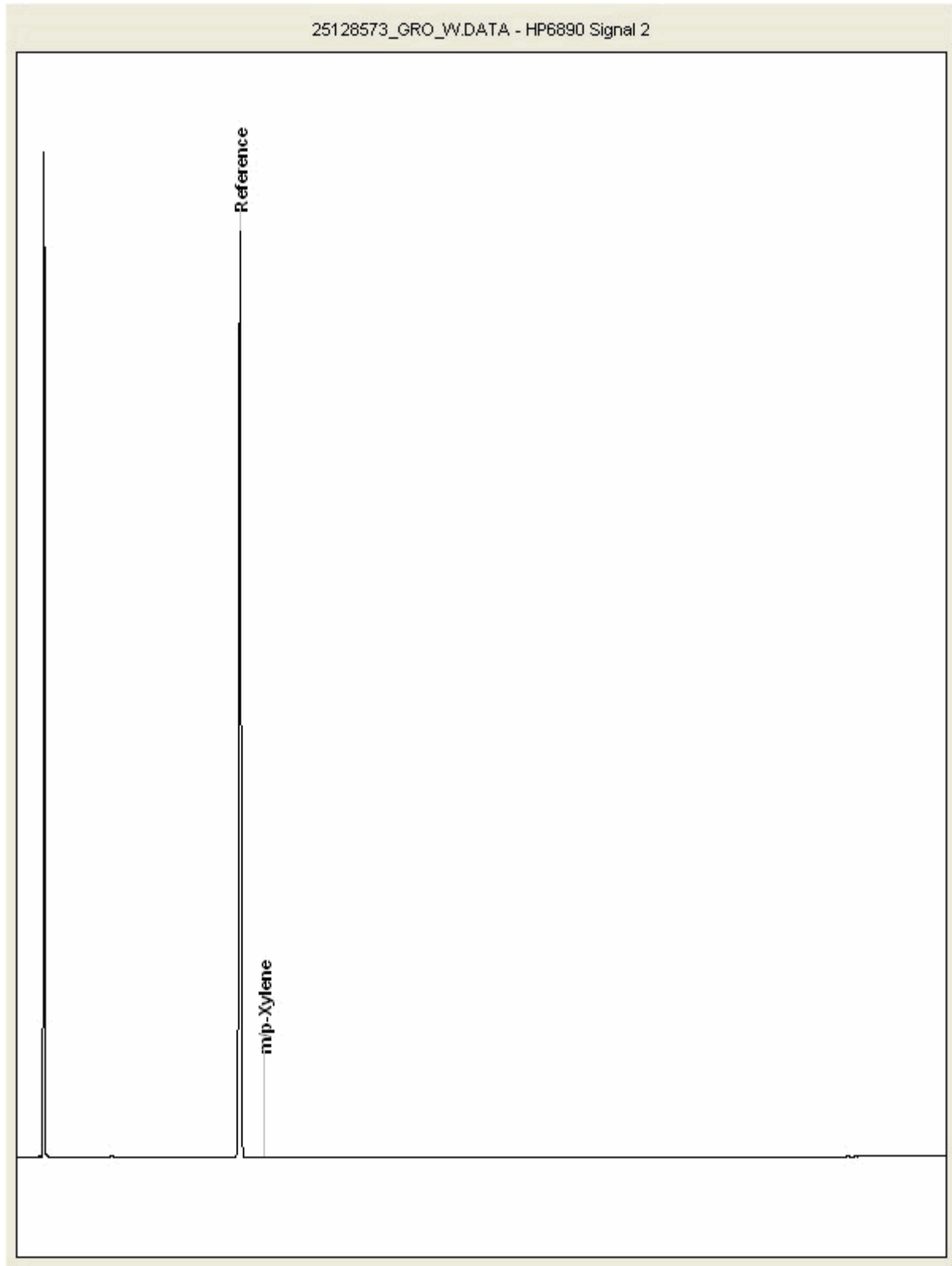
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128573
Sample ID : BH 3/9

Depth :





CERTIFICATE OF ANALYSIS

SDG:	211006-49	Client Reference:		Report Number:	617848
Location:	Nantycaws Landfill	Order Number:	POR004980	Superseded Report:	617061

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

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.



Unit 7-8 Hawarden Business Park

Manor Road (off Manor Lane)

Hawarden

Deeside

CH5 3US

Tel: (01244) 528700

Fax: (01244) 528701

email: hawardencustomerservices@alsglobal.com

Website: www.alsenvironmental.co.uk

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation:	18 November 2021
Customer:	CWM Environmental Ltd
Sample Delivery Group (SDG):	211110-77
Your Reference:	
Location:	Nantyclaws Landfill
Report No:	621595
Order Number:	POR005443

We received 26 samples on Wednesday November 10, 2021 and 24 of these samples were scheduled for analysis which was completed on Wednesday November 17, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211110-77
Client Ref.:

Report Number: 621595
Location: Nantycaws Landfill

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25306904	BH3/4			09/11/2021
25306906	BH208			09/11/2021
25306905	BH5/02			09/11/2021
25306896	CELL 5 SUMP			09/11/2021
25306897	CELL 6 SUMP			09/11/2021
25306898	CELL7 SUMP			09/11/2021
25306894	CELL 1/2 SUMP			09/11/2021
25306895	CELL 3/4 SUMP			09/11/2021
25306893	LEACHATE HOLDING LAGOON			09/11/2021
25306902	NACW203			09/11/2021
25306903	NACW205			09/11/2021
25306901	NACW212			09/11/2021
25306899	NACW227			09/11/2021
25306900	NACW228			09/11/2021
25306886	SW201			09/11/2021
25306887	SW202			09/11/2021
25306888	SW203			09/11/2021
25306889	SW204			09/11/2021
25306890	SW205			09/11/2021
25306891	SW206			09/11/2021
25306892	SW207			09/11/2021
25306907	UD1			09/11/2021
25306908	UD2			09/11/2021
25306909	UD3			09/11/2021
25306910	UD4			09/11/2021
25306911	UD5			09/11/2021

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

25306892	SW207			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW							
25306891	SW206			H2SO4 (ALE244)	SW	X			X			X
				250ml BOD (ALE212)	SW				X			
25306890	SW205			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
25306889	SW204			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
25306888	SW203			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
25306887	SW202			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
25306886	SW201			H2SO4 (ALE244)	SW	X						
				250ml BOD (ALE212)	SW				X			X
25306900	NACWZ28			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
25306901	NACWZ12			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
25306903	NACWZ05			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			
25306902	NACWZ03			H2SO4 (ALE244)	GW	X						
				250ml BOD (ALE212)	GW				X			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211110-77

Report Number: 621595

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 24

Anions by Kone (w)

All

NDPs: 0
Tests: 24

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 24

25306907

25306909

25306910

25306911

UD1

UD3

UD4

UD5

250ml BOD (ALE212)

H2SO4 (ALE244)

250ml BOD (ALE212)

H2SO4 (ALE244)

250ml BOD (ALE212)

H2SO4 (ALE244)

250ml BOD (ALE212)

H2SO4 (ALE244)

GW

GW

GW

GW

GW

GW

GW

GW

X

X

X

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211110-77

Report Number: 621595

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211110-77
Client Ref.:

Report Number: 621595
Location: Nantycaws Landfill

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25306906	25306904	25306905	25306896	25306897	25306894	25306895	25306898	25306893	25306902
Customer Sample Ref.	BH208	BH3/4	BH502	CELL 5 SUMP	CELL 6 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	CELL7 SUMP	LEACHATE HOLDIN G LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	17-Nov-2021	17-Nov-2021	17-Nov-2021	16-Nov-2021	16-Nov-2021	16-Nov-2021	16-Nov-2021	16-Nov-2021	16-Nov-2021	17-Nov-2021
Anions by Kone (w)	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021
Conductivity (at 20 deg.C)	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021

Lab Sample No(s)	25306903	25306901	25306900	25306886	25306887	25306888	25306889	25306890	25306891	25306892
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021
Anions by Kone (w)	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021
Conductivity (at 20 deg.C)	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021
pH Value				11-Nov-2021	11-Nov-2021	11-Nov-2021	11-Nov-2021	11-Nov-2021	11-Nov-2021	11-Nov-2021
Suspended Solids				12-Nov-2021	15-Nov-2021	14-Nov-2021	14-Nov-2021	15-Nov-2021	14-Nov-2021	14-Nov-2021

Lab Sample No(s)	25306907	25306909	25306910	25306911
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021
Anions by Kone (w)	17-Nov-2021	17-Nov-2021	17-Nov-2021	17-Nov-2021
Conductivity (at 20 deg.C)	15-Nov-2021	15-Nov-2021	15-Nov-2021	15-Nov-2021



CERTIFICATE OF ANALYSIS

SDG:	211110-77	Client Reference:		Report Number:	621595
Location:	Nantycaws Landfill	Order Number:	POR005443	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

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

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

11. 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.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

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

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



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Hawarden

Deeside

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CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation:	13 December 2021
Customer:	CWM Environmental Ltd
Sample Delivery Group (SDG):	211204-119
Your Reference:	
Location:	Nantyclaws Landfill
Report No:	625492
Order Number:	POR005723

We received 26 samples on Saturday December 04, 2021 and 24 of these samples were scheduled for analysis which was completed on Monday December 13, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211204-119
Client Ref.:

Report Number: 625492
Location: Nantycaws Landfill

Superseded Report:

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25459317	BH3/4			03/12/2021
25459319	BH208			03/12/2021
25459318	BH5/02			03/12/2021
25459335	CELL 5 SUMP			03/12/2021
25459336	CELL 6 SUMP			03/12/2021
25459337	CELL 7 SUMP			03/12/2021
25459333	CELL 1/2 SUMP			03/12/2021
25459334	CELL 3/4 SUMP			03/12/2021
25459332	LEACHATE HOLDING LAGOON			03/12/2021
25459315	NACW203			03/12/2021
25459316	NACW205			03/12/2021
25459314	NACW212			03/12/2021
25459312	NACW227			03/12/2021
25459313	NACW228			03/12/2021
25459325	SW201			03/12/2021
25459326	SW202			03/12/2021
25459327	SW203			03/12/2021
25459328	SW204			03/12/2021
25459329	SW205			03/12/2021
25459330	SW206			03/12/2021
25459331	SW207			03/12/2021
25459320	UD1			03/12/2021
25459321	UD2			03/12/2021
25459322	UD3			03/12/2021
25459323	UD4			03/12/2021
25459324	UD5			03/12/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211204-119

Report Number: 625492

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Results Legend



Test


No Determination
Possible

Sample Types -

S - Soil/Solid
 UNS - Unspecified Solid
 GW - Ground Water
 SW - Surface Water
 LE - Land Leachate
 PL - Prepared Leachate
 PR - Process Water
 SA - Saline Water
 TE - Trade Effluent
 TS - Treated Sewage
 US - Untreated Sewage
 RE - Recreational Water
 DW - Drinking Water Non-regulatory
 UNL - Unspecified Liquid
 SL - Sludge
 G - Gas
 OTH - Other

Results Legend	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type	
	25459315		NACW203						250ml BOD (ALE212)	GW		
	25459332		LEACHATE HOLDING LAGOON						H2SO4 (ALE244)	LE		
	25459334		CELL 3/4 SUMP						250ml BOD (ALE212)	LE		
	25459333		CELL 1/2 SUMP						H2SO4 (ALE244)	LE		
	25459337		CELL 7 SUMP						250ml BOD (ALE212)	LE		
	25459336		CELL 6 SUMP						H2SO4 (ALE244)	LE		
	25459335		CELL 5 SUMP						250ml BOD (ALE212)	LE		
	25459318		BH5/02						H2SO4 (ALE244)	GW		
	25459319		BH208						250ml BOD (ALE212)	GW		
	25459317		BH3/4						H2SO4 (ALE244)	GW		
									250ml BOD (ALE212)	GW		
Ammoniacal Nitrogen	All		NDPs: 0 Tests: 24									
Anions by Kone (w)	All		NDPs: 0 Tests: 24									
Conductivity (at 20 deg.C)	All		NDPs: 0 Tests: 24									
pH Value	All		NDPs: 0 Tests: 7									
Suspended Solids	All		NDPs: 0 Tests: 7									

25459331	SW207			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW		X		X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459329	SW205			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW				X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459328	SW204			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW				X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459327	SW203			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW				X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459326	SW202			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW				X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459325	SW201			H2SO4 (ALE244)	SW		X								
				250ml BOD (ALE212)	SW										
				H2SO4 (ALE244)	SW				X		X		X		X
				250ml BOD (ALE212)	SW				X		X		X		X
25459313	NACWZ28			H2SO4 (ALE244)	GW		X								
				250ml BOD (ALE212)	GW										
				H2SO4 (ALE244)	GW				X		X				
				250ml BOD (ALE212)	GW				X		X				
25459314	NACWZ12			H2SO4 (ALE244)	GW		X								
				250ml BOD (ALE212)	GW										
				H2SO4 (ALE244)	GW				X		X				
				250ml BOD (ALE212)	GW				X		X				
25459316	NACWZ05			H2SO4 (ALE244)	GW		X								
				250ml BOD (ALE212)	GW										
				H2SO4 (ALE244)	GW				X		X				
				250ml BOD (ALE212)	GW				X		X				
25459315	NACWZ03			H2SO4 (ALE244)	GW		X								
				250ml BOD (ALE212)	GW										
				H2SO4 (ALE244)	GW				X		X				
				250ml BOD (ALE212)	GW				X		X				



CERTIFICATE OF ANALYSIS

Validated

SDG: 211204-119

Report Number: 625492

Superseded Report:

Client Ref.:

Location: Nantycaws Landfill

Results Legend



Test



No Determination
Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

Lab Sample No(s)

Customer
Sample Reference

AGS Reference

Depth (m)

Container

Sample Type

Ammoniacal Nitrogen

All

NDPs: 0
Tests: 24

Anions by Kone (w)

All

NDPs: 0
Tests: 24

Conductivity (at 20 deg.C)

All

NDPs: 0
Tests: 24

25459320

25459322

25459323

25459324

UD1

UD3

UD4

UD5

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

250ml BOD
(ALE212)

H2SO4 (ALE244)

GW

GW

GW

GW

GW

GW

GW

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X



CERTIFICATE OF ANALYSIS

Validated

SDG: 211204-119
Client Ref.:

Report Number: 625492
Location: Nantycaws Landfill

Superseded Report:

Table of Results - Appendix

Method No	Reference	Description
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Life Sciences Ltd Hawarden.



CERTIFICATE OF ANALYSIS

Validated

SDG: 211204-119
Client Ref.:

Report Number: 625492
Location: Nantycaws Landfill

Superseded Report:

Test Completion Dates

Lab Sample No(s)	25459319	25459317	25459318	25459335	25459336	25459337	25459334	25459333	25459332	25459315
Customer Sample Ref.	BH208	BH3/4	BH502	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP	CELL 3/4 SUMP	CELL 1/2 SUMP	LEACHATE HOLDIN G LAGOON	NACW203
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water
Ammoniacal Nitrogen	10-Dec-2021	10-Dec-2021	10-Dec-2021	13-Dec-2021	13-Dec-2021	13-Dec-2021	13-Dec-2021	13-Dec-2021	13-Dec-2021	10-Dec-2021
Anions by Kone (w)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Conductivity (at 20 deg.C)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021

Lab Sample No(s)	25459316	25459314	25459313	25459325	25459326	25459327	25459328	25459329	25459330	25459331
Customer Sample Ref.	NACW205	NACW212	NACW228	SW201	SW202	SW203	SW204	SW205	SW206	SW207
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water
Ammoniacal Nitrogen	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	09-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021
Anions by Kone (w)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Conductivity (at 20 deg.C)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
pH Value				09-Dec-2021	09-Dec-2021	09-Dec-2021	09-Dec-2021	09-Dec-2021	09-Dec-2021	09-Dec-2021
Suspended Solids				08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021

Lab Sample No(s)	25459320	25459322	25459323	25459324
Customer Sample Ref.	UD1	UD3	UD4	UD5
AGS Ref.				
Depth				
Type	Ground Water	Ground Water	Ground Water	Ground Water
Ammoniacal Nitrogen	10-Dec-2021	10-Dec-2021	10-Dec-2021	10-Dec-2021
Anions by Kone (w)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021
Conductivity (at 20 deg.C)	08-Dec-2021	08-Dec-2021	08-Dec-2021	08-Dec-2021



CERTIFICATE OF ANALYSIS

SDG:	211204-119	Client Reference:		Report Number:	625492
Location:	Nantycaws Landfill	Order Number:	POR005723	Superseded Report:	

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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.

Respirable Fibres

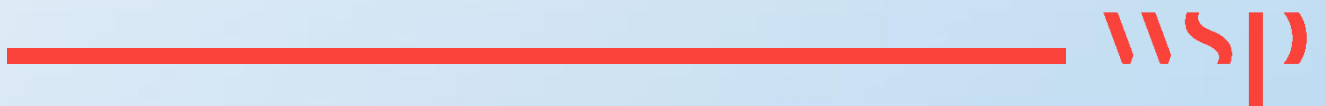
Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

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 B

NOTE ON ANNUAL MONITORING SUITES AND “PROPOSED LIST 1 SCREEN”



NANTYCAWS LANDFILL SITE
NOTE ON ANNUAL MONITORING SUITES AND PROPOSED 'LIST 1 SCREEN'

Introduction

The following note has been prepared by WSP on behalf of CWM Environmental (CWM). It proposes which parameters should be included within the 'List 1 screen' required to be undertaken at the monitoring locations at Nantycaws Landfill Site (the site) on an annual frequency. The recommendations made are based on review of the results of previous List 1 screens, undertaken annually between 2010 and 2021.

List I Screen

The existing Environmental Permit for the site (Ref CP3735PB v.004, 23 September 2009) states that a 'List I screen' is to be undertaken on an annual basis at all leachate, groundwater and surface water monitoring locations included within the permit. It further states that the analysis to be included within the List I screen is to be defined through liaison with the Environment Agency.

In 2021 the following parameter groupings were included within the List I screen as detailed below. These are based on the suites analysed by AlControl (now ALS), the existing certified laboratory:

Leachate and Underdrainage

- Metals (including cadmium);
- Petroleum hydrocarbons, comprising:
 - speciated total petroleum hydrocarbons (TPH); and
 - benzene, ethylbenzene, toluene and xylenes (BTEX);
- Semi-volatile organic compounds (SVOCs), including 4-methylphenol and speciated polycyclic aromatic hydrocarbons (PAH);
- Phenylurea herbicides;
- Phenoxyacid herbicides;
- Polychlorinated biphenyls (PCBs);
- Phenols (including 4-methylphenol);
- Volatile organic hydrocarbons (VOCs), including BTEX;
- Cyanides; and
- Organochlorine pesticides (OCPS).

Groundwater

- Metals (including cadmium);
- Petroleum hydrocarbons, comprising:
 - banded total petroleum hydrocarbons (TPH); and (if detected)
 - benzene, ethylbenzene, toluene and xylenes (BTEX);
- Speciated polycyclic aromatic hydrocarbons (PAH);
- Phenoxyacid herbicides;
- Phenols (including 4-methylphenol);
- BTEX(as a screen for VOCs) *

Surface water

- Metals (including cadmium);
- Benzene, ethylbenzene, toluene and xylenes (BTEX);
- Speciated polycyclic aromatic hydrocarbons (PAH);
- Phenoxyacid herbicides;
- Phenols (including 4-methylphenol);
- BTEX (as a screen for VOCs)*

* Should detections of any of the excluded suites in groundwater be recorded in any of the underdrainage samples, confirmatory analysis will be undertaken.

NANTYCAWS LANDFILL SITE
NOTE ON ANNUAL MONITORING SUITES AND PROPOSED 'LIST 1 SCREEN'

Proposed List I Screen

The following analytical suites are proposed for inclusion in the List I screen for 2022, based on review of the analytical results undertaken between 2010 and 2021. The results are summarised in Table 1 and Table 2 below.

This is identical to that undertaken in 2021.

NANTYCAWS LANDFILL SITE
NOTE ON ANNUAL MONITORING SUITES AND PROPOSED 'LIST 1 SCREEN'

Table 1 2021 monitoring suite

Suites	Leachate	Under drainage	Ground water / Surface water	Comment
Cyanides	Y	Y	N	Occasionally detected in source but not detected in underdrainage, groundwater or surface water since 2009.
Physiochemical Parameters	Y	Y	Y	Most physiochemical parameters to be kept with the exception of TOC and COD
Major ions / Nutrients	Y	Y	Y	Major ions to be kept as per current annual suite
Metals	Y	Y	Y	All metals to be kept as per current annual suite
Alkaline and alkali earth metals plus iron	Y	Y	Y	
Phenols	Y	Y	Y	Including 4-methylphenol, a COC. Included as List I screen for all media
Phenoxyacid herbicides	Y	Y	Y	Includes mecoprop, a COC. Included as List I screen for all media
Phenylurea herbicides	Y	Y	N	Substances commonly detected in leachate, however not detected as principal risk drivers. No detections of these substances in underdrainage, groundwater or surface water since 2009
PCBs	Y	Y	N	PCBs were detected in the leachate in 2011 and in 2013. PCBs are included in the revised HRA with PCB congener 28 as an indicator / surrogate No detections in 2014 but some detections in leachate in 2013.
SVOCs (inc PAH)	Y	Y	N*	SVOC suite TM176 to be included for leachates and underdrainage samples. *Groundwater samples to be run for PAHs (TM178) only. 4-methylphenol to be covered by phenol suite (TM205)
TPH	Y	Y	N*	Speciated TPH to be retained within List I suite for leachate provided no evidence of free phase is recorded. *Banded TPH to be used for groundwater, followed by BTEX analysis if detected.
VOC (Target List)	Y	Y	N*	Leachate and underdrainage to be analysed for full VOC suite (TM208). *Groundwater boreholes only to be analysed for BTEX (TM208) where TPH detections confirmed by banded TPH screen

Appendix C

LABORATORY CERTIFICATES (ANNUAL MONITORING)





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

CWM Environmental Ltd
Nantyclaws Landfill Site
Llanddarg Road
Carmarthen
Carmarthenshire
SA32 8BG

Attention: Darren Sanders

CERTIFICATE OF ANALYSIS

Date of report Generation:	20 October 2021
Customer:	CWM Environmental Ltd
Sample Delivery Group (SDG):	211006-49
Your Reference:	
Location:	Nantyclaws Landfill
Report No:	617848
Order Number:	POR004980

This report has been revised and directly supersedes 617061 in its entirety.

We received 33 samples on Wednesday October 06, 2021 and 32 of these samples were scheduled for analysis which was completed on Wednesday October 20, 2021. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

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

Chemical testing (unless subcontracted) performed at ALS Environmental Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.

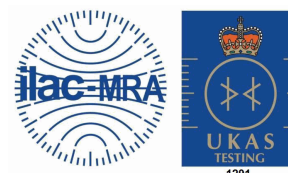
Incorrect sampling dates and/or sample information will affect the validity of results.

The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:

Sonia McWhan

Operations Manager





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
25098840	BH 3/2			05/10/2021
25098841	BH 3/3			05/10/2021
25098820	BH3/4			05/10/2021
25098842	BH 3/5			05/10/2021
25098843	BH 3/6			05/10/2021
25098844	BH 3/8			05/10/2021
25098846	BH 3/9			05/10/2021
25098822	BH208			05/10/2021
25098821	BH5/02			05/10/2021
25098837	CELL 5 SUMP			05/10/2021
25098838	CELL 6 SUMP			05/10/2021
25098839	CELL 7 SUMP			05/10/2021
25098835	CELL 1/2 SUMP			05/10/2021
25098836	CELL 3/4 SUMP			05/10/2021
25098834	LEACHATE HOLDING LAGOON			05/10/2021
25098818	NACW203			05/10/2021
25098819	NACW205			05/10/2021
25098817	NACW212			05/10/2021
25098847	NACW 219			05/10/2021
25098815	NACW227			
25098816	NACW228			05/10/2021
25098848	NACW 229			05/10/2021
25098827	SW201			05/10/2021
25098828	SW202			05/10/2021
25098829	SW203			05/10/2021
25098830	SW204			05/10/2021
25098831	SW205			05/10/2021
25098832	SW206			05/10/2021
25098833	SW207			05/10/2021
25098823	UD1			05/10/2021
25098824	UD3			05/10/2021
25098825	UD4			05/10/2021
25098826	UD5			05/10/2021

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend



Test



No Determination Possible

Sample Types -

S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

<div>Results Legend</div> <div><div><div>X</div>Test</div><div><div>N</div>No Determination Possible</div></div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		Customer Sample Reference		AGS Reference		Depth (m)		Container		Sample Type		25098821		25098822		25098846		25098844	
													HNO3 Filtered (ALE204)		HNO3 Filtered (ALE204)		HNO3 Filtered (ALE204)		HNO3 Filtered (ALE204)	
													H2SO4 (ALE244)		H2SO4 (ALE244)		H2SO4 (ALE244)		H2SO4 (ALE244)	
													1lplastic (ALE221)		1lplastic (ALE221)		1lplastic (ALE221)		1lplastic (ALE221)	
													1000ml glass bottle (ALE220)		1000ml glass bottle (ALE220)		1000ml glass bottle (ALE220)		1000ml glass bottle (ALE220)	
													0.5l glass bottle (ALE227)		0.5l glass bottle (ALE227)		0.5l glass bottle (ALE227)		0.5l glass bottle (ALE227)	
													Vial (ALE297)		Vial (ALE297)		Vial (ALE297)		Vial (ALE297)	
												NaOH (ALE245)		NaOH (ALE245)		NaOH (ALE245)		NaOH (ALE245)		
Pesticides (Suite I) by GCMS	All	NDPs: 0 Tests: 6																		
Pesticides (Suite II) by GCMS	All	NDPs: 0 Tests: 6																		
Pesticides (Suite III) by GCMS	All	NDPs: 0 Tests: 6																		
Phenols by ms (w)	All	NDPs: 0 Tests: 32							X											
SVOC MS (W) - Aqueous	All	NDPs: 0 Tests: 32																		
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 13																		
TPH CWG (W)	All	NDPs: 0 Tests: 25																		
VOC MS (W)	All	NDPs: 0 Tests: 32																		

25098819	NACW205			H2SO4 (ALE244)	GW														
				1ipastic (ALE221)	GW														
				1000ml glass bottle (ALE220)	GW														
				0.5l glass bottle (ALE227)	GW														
				Vial (ALE297)	GW														
				NaOH (ALE245)	GW														
				HNO3 Filtered (ALE204)	GW														
				H2SO4 (ALE244)	GW														
				1ipastic (ALE221)	GW														
				1000ml glass bottle (ALE220)	GW														
25098818	NACW203			0.5l glass bottle (ALE227)	GW														
				Vial (ALE297)	LE														
				NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														
				H2SO4 (ALE244)	LE														
				250ml BOD (ALE212)	LE														
				1ipastic (ALE221)	LE														
				1000ml glass bottle (ALE220)	LE														
				0.5l glass bottle (ALE227)	LE														
				Vial (ALE297)	LE														
25098834	LEACHATE HOLDING LAGOON			NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														
				H2SO4 (ALE244)	LE														
				250ml BOD (ALE212)	LE														
				1ipastic (ALE221)	LE														
				1000ml glass bottle (ALE220)	LE														
				0.5l glass bottle (ALE227)	LE														
				Vial (ALE297)	LE														
				NaOH (ALE245)	LE														
				HNO3 Filtered (ALE204)	LE														



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)		25098819		25098817										25098847		25098816																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	Container		HNO3 Filtered (ALE204)	NaOH (ALE245)	Vial (ALE297)	0.5l glass bottle (ALE227)	1000ml glass bottle (ALE220)	1000ml glass bottle (ALE221)	1000ml glass bottle (ALE222)	1000ml glass bottle (ALE223)	1000ml glass bottle (ALE224)	1000ml glass bottle (ALE225)	1000ml glass bottle (ALE226)	1000ml glass bottle (ALE227)	1000ml glass bottle (ALE228)	1000ml glass bottle (ALE229)	1000ml glass bottle (ALE230)	1000ml glass bottle (ALE231)	1000ml glass bottle (ALE232)	1000ml glass bottle (ALE233)	1000ml glass bottle (ALE234)	1000ml glass bottle (ALE235)	1000ml glass bottle (ALE236)	1000ml glass bottle (ALE237)	1000ml glass bottle (ALE238)	1000ml glass bottle (ALE239)	1000ml glass bottle (ALE240)	1000ml glass bottle (ALE241)	1000ml glass bottle (ALE242)	1000ml glass bottle (ALE243)	1000ml glass bottle (ALE244)	1000ml glass bottle (ALE245)	1000ml glass bottle (ALE246)	1000ml glass bottle (ALE247)	1000ml glass bottle (ALE248)	1000ml glass bottle (ALE249)	1000ml glass bottle (ALE250)	1000ml glass bottle (ALE251)	1000ml glass bottle (ALE252)	1000ml glass bottle (ALE253)	1000ml glass bottle (ALE254)	1000ml glass bottle (ALE255)	1000ml glass bottle (ALE256)	1000ml glass bottle (ALE257)	1000ml glass bottle (ALE258)	1000ml glass bottle (ALE259)	1000ml glass bottle (ALE260)	1000ml glass bottle (ALE261)	1000ml glass bottle (ALE262)	1000ml glass bottle (ALE263)	1000ml glass bottle (ALE264)	1000ml glass bottle (ALE265)	1000ml glass bottle (ALE266)	1000ml glass bottle (ALE267)	1000ml glass bottle (ALE268)	1000ml glass bottle (ALE269)	1000ml glass bottle (ALE270)	1000ml glass bottle (ALE271)	1000ml glass bottle (ALE272)	1000ml glass bottle (ALE273)	1000ml glass bottle (ALE274)	1000ml glass bottle (ALE275)	1000ml glass bottle (ALE276)	1000ml glass bottle (ALE277)	1000ml glass bottle (ALE278)	1000ml glass bottle (ALE279)	1000ml glass bottle (ALE280)	1000ml glass bottle (ALE281)	1000ml glass bottle (ALE282)	1000ml glass bottle (ALE283)	1000ml glass bottle (ALE284)	1000ml glass bottle (ALE285)	1000ml glass bottle (ALE286)	1000ml glass bottle (ALE287)	1000ml glass bottle (ALE288)	1000ml glass bottle (ALE289)	1000ml glass bottle (ALE290)	1000ml glass bottle (ALE291)	1000ml glass bottle (ALE292)	1000ml glass bottle (ALE293)	1000ml glass bottle (ALE294)	1000ml glass bottle (ALE295)	1000ml glass bottle (ALE296)	1000ml glass bottle (ALE297)	1000ml glass bottle (ALE298)	1000ml glass bottle (ALE299)	1000ml glass bottle (ALE300)	1000ml glass bottle (ALE301)	1000ml glass bottle (ALE302)	1000ml glass bottle (ALE303)	1000ml glass bottle (ALE304)	1000ml glass bottle (ALE305)	1000ml glass bottle (ALE306)	1000ml glass bottle (ALE307)	1000ml glass bottle (ALE308)	1000ml glass bottle (ALE309)	1000ml glass bottle (ALE310)	1000ml glass bottle (ALE311)	1000ml glass bottle (ALE312)	1000ml glass bottle (ALE313)	1000ml glass bottle (ALE314)	1000ml glass bottle (ALE315)	1000ml glass bottle (ALE316)	1000ml glass bottle (ALE317)	1000ml glass bottle (ALE318)	1000ml glass bottle (ALE319)	1000ml glass bottle (ALE320)	1000ml glass bottle (ALE321)	1000ml glass bottle (ALE322)	1000ml glass bottle (ALE323)	1000ml glass bottle (ALE324)	1000ml glass bottle (ALE325)	1000ml glass bottle (ALE326)	1000ml glass bottle (ALE327)	1000ml glass bottle (ALE328)	1000ml glass bottle (ALE329)	1000ml glass bottle (ALE330)	1000ml glass bottle (ALE331)	1000ml glass bottle (ALE332)	1000ml glass bottle (ALE333)	1000ml glass bottle (ALE334)	1000ml glass bottle (ALE335)	1000ml glass bottle (ALE336)	1000ml glass bottle (ALE337)	1000ml glass bottle (ALE338)	1000ml glass bottle (ALE339)	1000ml glass bottle (ALE340)	1000ml glass bottle (ALE341)	1000ml glass bottle (ALE342)	1000ml glass bottle (ALE343)	1000ml glass bottle (ALE344)	1000ml glass bottle (ALE345)	1000ml glass bottle (ALE346)	1000ml glass bottle (ALE347)	1000ml glass bottle (ALE348)	1000ml glass bottle (ALE349)	1000ml glass bottle (ALE350)	1000ml glass bottle (ALE351)	1000ml glass bottle (ALE352)	1000ml glass bottle (ALE353)	1000ml glass bottle (ALE354)	1000ml glass bottle (ALE355)	1000ml glass bottle (ALE356)	1000ml glass bottle (ALE357)	1000ml glass bottle (ALE358)	1000ml glass bottle (ALE359)	1000ml glass bottle (ALE360)	1000ml glass bottle (ALE361)	1000ml glass bottle (ALE362)	1000ml glass bottle (ALE363)	1000ml glass bottle (ALE364)	1000ml glass bottle (ALE365)	1000ml glass bottle (ALE366)	1000ml glass bottle (ALE367)	1000ml glass bottle (ALE368)	1000ml glass bottle (ALE369)	1000ml glass bottle (ALE370)	1000ml glass bottle (ALE371)	1000ml glass bottle (ALE372)	1000ml glass bottle (ALE373)	1000ml glass bottle (ALE374)	1000ml glass bottle (ALE375)	1000ml glass bottle (ALE376)	1000ml glass bottle (ALE377)	1000ml glass bottle (ALE378)	1000ml glass bottle (ALE379)	1000ml glass bottle (ALE380)	1000ml glass bottle (ALE381)	1000ml glass bottle (ALE382)	1000ml glass bottle (ALE383)	1000ml glass bottle (ALE384)	1000ml glass bottle (ALE385)	1000ml glass bottle (ALE386)	1000ml glass bottle (ALE387)	1000ml glass bottle (ALE388)	1000ml glass bottle (ALE389)	1000ml glass bottle (ALE390)	1000ml glass bottle (ALE391)	1000ml glass bottle (ALE392)	1000ml glass bottle (ALE393)	1000ml glass bottle (ALE394)	1000ml glass bottle (ALE395)	1000ml glass bottle (ALE396)	1000ml glass bottle (ALE397)	1000ml glass bottle (ALE398)	1000ml glass bottle (ALE399)	1000ml glass bottle (ALE400)	1000ml glass bottle (ALE401)	1000ml glass bottle (ALE402)	1000ml glass bottle (ALE403)	1000ml glass bottle (ALE404)	1000ml glass bottle (ALE405)	1000ml glass bottle (ALE406)	1000ml glass bottle (ALE407)	1000ml glass bottle (ALE408)	1000ml glass bottle (ALE409)	1000ml glass bottle (ALE410)	1000ml glass bottle (ALE411)	1000ml glass bottle (ALE412)	1000ml glass bottle (ALE413)	1000ml glass bottle (ALE414)	1000ml glass bottle (ALE415)	1000ml glass bottle (ALE416)	1000ml glass bottle (ALE417)	1000ml glass bottle (ALE418)	1000ml glass bottle (ALE419)	1000ml glass bottle (ALE420)	1000ml glass bottle (ALE421)	1000ml glass bottle (ALE422)	1000ml glass bottle (ALE423)	1000ml glass bottle (ALE424)	1000ml glass bottle (ALE425)	1000ml glass bottle (ALE426)	1000ml glass bottle (ALE427)	1000ml glass bottle (ALE428)	1000ml glass bottle (ALE429)	1000ml glass bottle (ALE430)	1000ml glass bottle (ALE431)	1000ml glass bottle (ALE432)	1000ml glass bottle (ALE433)	1000ml glass bottle (ALE434)	1000ml glass bottle (ALE435)	1000ml glass bottle (ALE436)	1000ml glass bottle (ALE437)	1000ml glass bottle (ALE438)	1000ml glass bottle (ALE439)	1000ml glass bottle (ALE440)	1000ml glass bottle (ALE441)	1000ml glass bottle (ALE442)	1000ml glass bottle (ALE443)	1000ml glass bottle (ALE444)	1000ml glass bottle (ALE445)	1000ml glass bottle (ALE446)	1000ml glass bottle (ALE447)	1000ml glass bottle (ALE448)	1000ml glass bottle (ALE449)	1000ml glass bottle (ALE450)	1000ml glass bottle (ALE451)	1000ml glass bottle (ALE452)	1000ml glass bottle (ALE453)	1000ml glass bottle (ALE454)	1000ml glass bottle (ALE455)	1000ml glass bottle (ALE456)	1000ml glass bottle (ALE457)	1000ml glass bottle (ALE458)	1000ml glass bottle (ALE459)	1000ml glass bottle (ALE460)	1000ml glass bottle (ALE461)	1000ml glass bottle (ALE462)	1000ml glass bottle (ALE463)	1000ml glass bottle (ALE464)	1000ml glass bottle (ALE465)	1000ml glass bottle (ALE466)	1000ml glass bottle (ALE467)	1000ml glass bottle (ALE468)	1000ml glass bottle (ALE469)	1000ml glass bottle (ALE470)	1000ml glass bottle (ALE471)	1000ml glass bottle (ALE472)	1000ml glass bottle (ALE473)	1000ml glass bottle (ALE474)	1000ml glass bottle (ALE475)	1000ml glass bottle (ALE476)	1000ml glass bottle (ALE477)	1000ml glass bottle (ALE478)	1000ml glass bottle (ALE479)	1000ml glass bottle (ALE480)	1000ml glass bottle (ALE481)	1000ml glass bottle (ALE482)	1000ml glass bottle (ALE483)	1000ml glass bottle (ALE484)	1000ml glass bottle (ALE485)	1000ml glass bottle (ALE486)	1000ml glass bottle (ALE487)	1000ml glass bottle (ALE488)	1000ml glass bottle (ALE489)	1000ml glass bottle (ALE490)	1000ml glass bottle (ALE491)	1000ml glass bottle (ALE492)	1000ml glass bottle (ALE493)	1000ml glass bottle (ALE494)	1000ml glass bottle (ALE495)	1000ml glass bottle (ALE496)	1000ml glass bottle (ALE497)	1000ml glass bottle (ALE498)	1000ml glass bottle (ALE499)	1000ml glass bottle (ALE500)	1000ml glass bottle (ALE501)	1000ml glass bottle (ALE502)	1000ml glass bottle (ALE503)	1000ml glass bottle (ALE504)	1000ml glass bottle (ALE505)	1000ml glass bottle (ALE506)	1000ml glass bottle (ALE507)	1000ml glass bottle (ALE508)	1000ml glass bottle (ALE509)	1000ml glass bottle (ALE510)	1000ml glass bottle (ALE511)	1000ml glass bottle (ALE512)	1000ml glass bottle (ALE513)	1000ml glass bottle (ALE514)	1000ml glass bottle (ALE515)	1000ml glass bottle (ALE516)	1000ml glass bottle (ALE517)	1000ml glass bottle (ALE518)	1000ml glass bottle (ALE519)	1000ml glass bottle (ALE520)	1000ml glass bottle (ALE521)	1000ml glass bottle (ALE522)	1000ml glass bottle (ALE523)	1000ml glass bottle (ALE524)	1000ml glass bottle (ALE525)	1000ml glass bottle (ALE526)	1000ml glass bottle (ALE527)	1000ml glass bottle (ALE528)	1000ml glass bottle (ALE529)	1000ml glass bottle (ALE530)	1000ml glass bottle (ALE531)	1000ml glass bottle (ALE532)	1000ml glass bottle (ALE533)	1000ml glass bottle (ALE534)	1000ml glass bottle (ALE535)	1000ml glass bottle (ALE536)	1000ml glass bottle (ALE537)	1000ml glass bottle (ALE538)	1000ml glass bottle (ALE539)	1000ml glass bottle (ALE540)	1000ml glass bottle (ALE541)	1000ml glass bottle (ALE542)	1000ml glass bottle (ALE543)	1000ml glass bottle (ALE544)	1000ml glass bottle (ALE545)	1000ml glass bottle (ALE546)	1000ml glass bottle (ALE547)	1000ml glass bottle (ALE548)	1000ml glass bottle (ALE549)	1000ml glass bottle (ALE550)	1000ml glass bottle (ALE551)	1000ml glass bottle (ALE552)	1000ml glass bottle (ALE553)	1000ml glass bottle (ALE554)	1000ml glass bottle (ALE555)	1000ml glass bottle (ALE556)	1000ml glass bottle (ALE557)	1000ml glass bottle (ALE558)	1000ml glass bottle (ALE559)	1000ml glass bottle (ALE560)	1000ml glass bottle (ALE561)	1000ml glass bottle (ALE562)	1000ml glass bottle (ALE563)	1000ml glass bottle (ALE564)	1000ml glass bottle (ALE565)	1000ml glass bottle (ALE566)	1000ml glass bottle (ALE567)	1000ml glass bottle (ALE568)	1000ml glass bottle (ALE569)	1000ml glass bottle (ALE570)	1000ml glass bottle (ALE571)	1000ml glass bottle (ALE572)	1000ml glass bottle (ALE573)	1000ml glass bottle (ALE574)	1000ml glass bottle (ALE575)	1000ml glass bottle (ALE576)	1000ml glass bottle (ALE577)	1000ml glass bottle (ALE578)	1000ml glass bottle (ALE579)	1000ml glass bottle (ALE580)	1000ml glass bottle (ALE581)	1000ml glass bottle (ALE582)	1000ml glass bottle (ALE583)	1000ml glass bottle (ALE584)	1000ml glass bottle (ALE585)	1000ml glass bottle (ALE586)	1000ml glass bottle (ALE587)	1000ml glass bottle (ALE588)	1000ml glass bottle (ALE589)	1000ml glass bottle (ALE590)	1000ml glass bottle (ALE591)	1000ml glass bottle (ALE592)	1000ml glass bottle (ALE593)	1000ml glass bottle (ALE594)	1000ml glass bottle (ALE595)	1000ml glass bottle (ALE596)	1000ml glass bottle (ALE597)	1000ml glass bottle (ALE598)	1000ml glass bottle (ALE599)	1000ml glass bottle (ALE600)	1000ml glass bottle (ALE601)	1000ml glass bottle (ALE602)	1000ml glass bottle (ALE603)	1000ml glass bottle (ALE604)	1000ml glass bottle (ALE605)	1000ml glass bottle (ALE606)	1000ml glass bottle (ALE607)	1000ml glass bottle (ALE608)	1000ml glass bottle (ALE609)	1000ml glass bottle (ALE610)	1000ml glass bottle (ALE611)	1000ml glass bottle (ALE612)	1000ml glass bottle (ALE613)	1000ml glass bottle (ALE614)	1000ml glass bottle (ALE615)	1000ml glass bottle (ALE616)	1000ml glass bottle (ALE617)	1000ml glass bottle (ALE618)	1000ml glass bottle (ALE619)	1000ml glass bottle (ALE620)	1000ml glass bottle (ALE621)	1000ml glass bottle (ALE622)	1000ml glass bottle (ALE623)	1000ml glass bottle (ALE624)	1000ml glass bottle (ALE625)	1000ml glass bottle (ALE626)	1000ml glass bottle (ALE627)	1000ml glass bottle (ALE628)	1000ml glass bottle (ALE629)	1000ml glass bottle (ALE630)	1000ml glass bottle (ALE631)	1000ml glass bottle (ALE632)	1000ml glass bottle (ALE633)	1000ml glass bottle (ALE634)	1000ml glass bottle (ALE635)	1000ml glass bottle (ALE636)	1000ml glass bottle (ALE637)	1000ml glass bottle (ALE638)	1000ml glass bottle (ALE639)	1000ml glass bottle (ALE640)	1000ml glass bottle (ALE641)	1000ml glass bottle (ALE642)	1000ml glass bottle (ALE643)	1000ml glass bottle (ALE644)	1000ml glass bottle (ALE645)	1000ml glass bottle (ALE646)	1000ml glass bottle (ALE647)	1000ml glass bottle (ALE648)	1000ml glass bottle (ALE649)	1000ml glass bottle (ALE650)	1000ml glass bottle (ALE651)	1000ml glass bottle (ALE652)	1000ml glass bottle (ALE653)	1000ml glass bottle (ALE654)	1000ml glass bottle (ALE655)	1000ml glass bottle (ALE656)	1000ml glass bottle (ALE657)	1000ml glass bottle (ALE658)	1000ml glass bottle (ALE659)	1000ml glass bottle (ALE660)	1000ml glass bottle (ALE661)	1000ml glass bottle (ALE662)	1000ml glass bottle (ALE663)	1000ml glass bottle (ALE664)	1000ml glass bottle (ALE665)	1000ml glass bottle (ALE666)	1000ml glass bottle (ALE667)	1000ml glass bottle (ALE668)	1000ml glass bottle (ALE669)	1000ml glass bottle (ALE670)	1000ml glass bottle (ALE671)	1000ml glass bottle (ALE672)	1000ml glass bottle (ALE673)	1000ml glass bottle (ALE674)	1000ml glass bottle (ALE675)	1000ml glass bottle (ALE676)	1000ml glass bottle (ALE677)	1000ml glass bottle (ALE678)	1000ml glass bottle (ALE679)	1000ml glass bottle (ALE680)	1000ml glass bottle (ALE681)	1000ml glass bottle (ALE682)	1000ml glass bottle (ALE683)	1000ml glass bottle (ALE684)	1000ml glass bottle (ALE685)	1000ml glass bottle (ALE686)	1000ml glass bottle (ALE687)	1000ml glass bottle (ALE688)	1000ml glass bottle (ALE689)	1000ml glass bottle (ALE690)	1000ml glass bottle (ALE691)	1000ml glass bottle (ALE692)	1000ml glass bottle (ALE693)	1000ml glass bottle (ALE694)	1000ml glass bottle (ALE695)	1000ml glass bottle (ALE696)	1000ml glass bottle (ALE697)	1000ml glass bottle (ALE698)	1000ml glass bottle (ALE699)	1000ml glass bottle (ALE700)	1000ml glass bottle (ALE701)	1000ml glass bottle (ALE702)	1000ml glass bottle (ALE703)	1000ml glass bottle (ALE704)	1000ml glass bottle (ALE705)	1000ml glass bottle (ALE706)	1000ml glass bottle (ALE707)	1000ml glass bottle (ALE708)	1000ml glass bottle (ALE709)	1000ml glass bottle (ALE710)	1000ml glass bottle (ALE711)	1000ml glass bottle (ALE712)	1000ml glass bottle (ALE713)	1000ml glass bottle (ALE714)	1000ml glass bottle (ALE715)	1000ml glass bottle (ALE716)	1000ml glass bottle (ALE717)	1000ml glass bottle (ALE718)	1000ml glass bottle (ALE719)	1000ml glass bottle (ALE720)	1000ml glass bottle (ALE721)	1000ml glass bottle (ALE722)	1000ml glass bottle (ALE723)	1000ml glass bottle (ALE724)	1000ml glass bottle (ALE725)	1000ml glass bottle (ALE726)	1000ml glass bottle (ALE727)	1000ml glass bottle (ALE728)	1000ml glass bottle (ALE729)	1000ml glass bottle (ALE730)	1000ml glass bottle (ALE731)	1000ml glass bottle (ALE732)	1000ml glass bottle (ALE733)	1000ml glass bottle (ALE734)	1000ml glass bottle (ALE735)	1000ml glass bottle (ALE736)	1000ml glass bottle (ALE737)	1000ml glass bottle (ALE738)	1000ml glass bottle (ALE739)	1000ml glass bottle (ALE740)	1000ml glass bottle (ALE741)	1000ml glass bottle (ALE742)	1000ml glass bottle (ALE743)	1000ml glass bottle (ALE744)	1000ml glass bottle (ALE745)	1000ml glass bottle (ALE746)	1000ml glass bottle (ALE747)	1000ml glass bottle (ALE748)	1000ml glass bottle (ALE749)	1000ml glass bottle (ALE750)	1000ml glass bottle (ALE751)	1000ml glass bottle (ALE752)	1000ml glass bottle (ALE753)	1000ml glass bottle (ALE754)	1000ml glass bottle (ALE755)	1000ml glass bottle (ALE756)	1000ml glass bottle (ALE757)	1000ml glass bottle (ALE758)	1000ml glass bottle (ALE759)	1000ml glass bottle (ALE760)	1000ml glass bottle (ALE761)	1000ml glass bottle (ALE762)	1000ml glass bottle (ALE763)	1000ml glass bottle (ALE764)	1000ml glass bottle (ALE765)	1000ml glass bottle (ALE766)	1000ml glass bottle (ALE767)	1000ml glass bottle (ALE768)	1000ml glass bottle (ALE769)	1000ml glass bottle (ALE770)	1000ml glass bottle (ALE771)	1000ml glass bottle (ALE772)	1000ml glass bottle (ALE773)	1000ml glass bottle (ALE774)	1000ml glass bottle (ALE775)	1000ml glass bottle (ALE776)	1000ml glass bottle (ALE777)	1000ml glass bottle (ALE778)	1000ml glass bottle (ALE779)	1000ml glass bottle (ALE780)	1000ml glass bottle (ALE781)	1000ml glass bottle (ALE782)	1000ml glass bottle (ALE783)	1000ml glass bottle (ALE784)	1000ml glass bottle (ALE785)	1000ml glass bottle (ALE786)	1000ml glass bottle (ALE787)	1000ml glass bottle (ALE788)	1000ml glass bottle (ALE789)	1000ml glass bottle (ALE790)	1000ml glass bottle (ALE791)	1000ml glass bottle (ALE792)	1000ml glass bottle (ALE793)	1000ml glass bottle (ALE794)	1000ml glass bottle (ALE795)	1000ml glass bottle (ALE796)	1000ml glass bottle (ALE797)	1000ml glass bottle (ALE798)	1000ml glass bottle (ALE799)	1000ml glass bottle (ALE800)	1000ml glass bottle (ALE801)	1000ml glass bottle (ALE802)	1000ml glass bottle (ALE803)	1000ml glass bottle (ALE804)	1000ml glass bottle (ALE805)	1000ml glass bottle (ALE806)	1000ml glass bottle (ALE807)	1000ml glass bottle (ALE808)	1000ml glass bottle (ALE809)	1000ml glass bottle (ALE810)	1000ml glass bottle (ALE811)	1000ml glass bottle (ALE812)	1000ml glass bottle (ALE813)	1000ml glass bottle (ALE814)	1000ml glass bottle (ALE815)	1000ml glass bottle (ALE816)	1000ml glass bottle (ALE817)	1000ml glass bottle (ALE818)	1000ml glass bottle (ALE819)	1000ml glass bottle (ALE820)	1000ml glass bottle (ALE821)	1000ml glass bottle (ALE822)	1000ml glass bottle (ALE823)	1000ml glass bottle (ALE824)	1000ml glass bottle (ALE825)	1000ml glass bottle (ALE826)	1000ml glass bottle (ALE827)	1000ml glass bottle (ALE828)	1000ml glass bottle (ALE829)	1000ml glass bottle (ALE830)	1000ml glass bottle (ALE831)	1000ml glass bottle (ALE832)	1000ml glass bottle (ALE833)	1000ml glass bottle (ALE834)	1000ml glass bottle (ALE835)	1000ml glass bottle (ALE836)	1000ml glass bottle (ALE837)	1000ml glass bottle (ALE838)	1000ml glass bottle (ALE839)	1000ml glass bottle (ALE840)	1000ml glass bottle (ALE841)	1000ml glass bottle (ALE842)	1000ml glass bottle (ALE843)	1000ml glass bottle (ALE844)	1000ml glass bottle (ALE845)	1000ml glass bottle (ALE846)	1000ml glass bottle (ALE847)	1000ml glass bottle (ALE848)	1000ml glass bottle (ALE849)	1000ml glass bottle (ALE850)	1000ml glass bottle (ALE851)	1000ml glass bottle (ALE852)	1000ml glass bottle (ALE853)	1000ml glass bottle (ALE854)	1000ml glass bottle (ALE855)	1000ml glass bottle (ALE856)	1000ml glass bottle (ALE857)	1000ml glass bottle (ALE858)	1000ml glass bottle (ALE859)	1000ml glass bottle (ALE860)	1000ml glass bottle (ALE861)	1000ml glass bottle (ALE862)	1000ml glass bottle (ALE863)	1000ml glass bottle (ALE864)	1000ml glass bottle (ALE865)	1000ml glass bottle (ALE866)	1000ml glass bottle (ALE867)	1000ml glass bottle (ALE868)	1000ml glass bottle (ALE869)	1000ml glass bottle (ALE870)	1000ml glass bottle (ALE871)	1000ml glass bottle (ALE872)	1000ml glass bottle (ALE873)	1000ml glass bottle (ALE874)	1000ml glass bottle (ALE875)	1000ml glass bottle (ALE876)	1000ml glass bottle (ALE877)	1000ml glass bottle (ALE878)	1000ml glass bottle (ALE879)	1000ml glass bottle (ALE880)	1000ml glass bottle (ALE881)	1000ml glass bottle (ALE882)	1000ml glass bottle (ALE883)	1000ml glass bottle (ALE884)	1000ml glass bottle (ALE885)	1000ml glass bottle (ALE886)	1000ml glass bottle (ALE887)	1000ml glass bottle (ALE888)	1000ml glass bottle (ALE889)	1000ml glass bottle (ALE890)	1000ml glass bottle (ALE891)	1000ml glass bottle (ALE892)	1000ml glass bottle (ALE893)	1000ml glass bottle (ALE894)	1000ml glass bottle (ALE895)	1000ml glass bottle (ALE896)	1000ml glass bottle (ALE897)	1000ml glass bottle (ALE898)	1000ml glass bottle (ALE899)	1000ml glass bottle (ALE900)	1000ml glass bottle (ALE901)	1000ml glass bottle (ALE902)	1000ml glass bottle (ALE903)	1000ml glass bottle (ALE904)	1000ml glass bottle (ALE905)	1000ml glass bottle (ALE906)	1000ml glass bottle (ALE907)	1000ml glass bottle (ALE908)	1000ml glass bottle (ALE909)	1000ml glass bottle (ALE910)	1000ml glass bottle (ALE911)	1000ml glass bottle (ALE912)	1000ml glass bottle (ALE913)	1000ml glass bottle (ALE914)	1000ml glass bottle (ALE915)	1000ml glass bottle (ALE916)	1000ml glass

25098828	SW202			1000ml glass bottle (ALE220)	SW							
25098827	SW201			0.5l glass bottle (ALE227)	SW							
				Vial (ALE297)	SW			X				
				NaOH (ALE245)	SW							X
				HNO3 Filtered (ALE204)	SW							
				H2SO4 (ALE244)	SW				X			
				1l plastic (ALE221)	SW		X					
				1000ml glass bottle (ALE220)	SW							
				0.5l glass bottle (ALE227)	SW							
				Vial (ALE297)	SW		X					
				NaOH (ALE245)	SW							X
25098848	NACW 229			HNO3 Filtered (ALE204)	GW							
				H2SO4 (ALE244)	GW							
				1l plastic (ALE221)	GW							
				1000ml glass bottle (ALE220)	GW							
				0.5l glass bottle (ALE227)	GW							
				Vial (ALE297)	GW							
				NaOH (ALE245)	GW							
				HNO3 Filtered (ALE204)	GW							
				H2SO4 (ALE244)	GW							
				1l plastic (ALE221)	GW							
25098816	NACW228			1000ml glass bottle (ALE220)	GW							
				0.5l glass bottle (ALE227)	GW							
				Vial (ALE297)	GW							
				NaOH (ALE245)	GW							
				HNO3 Filtered (ALE204)	GW							

25098833	SW207			Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
				0.5l glass bottle (ALE227)	SW		
				Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
25098832	SW206			H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
				0.5l glass bottle (ALE227)	SW		
				Vial (ALE297)	SW		
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		
25098831	SW205			Vial (ALE297)	SW	X	
				NaOH (ALE245)	SW		
				HNO3 Filtered (ALE204)	SW		
				H2SO4 (ALE244)	SW		
				1lpastic (ALE221)	SW		
				1000ml glass bottle (ALE220)	SW		



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

<div>Results Legend</div> <div><div>X</div> Test</div> <div><div>N</div> No Determination Possible</div> <div>Sample Types -</div> <div>S - Soil/Solid</div> <div>UNS - Unspecified Solid</div> <div>GW - Ground Water</div> <div>SW - Surface Water</div> <div>LE - Land Leachate</div> <div>PL - Prepared Leachate</div> <div>PR - Process Water</div> <div>SA - Saline Water</div> <div>TE - Trade Effluent</div> <div>TS - Treated Sewage</div> <div>US - Untreated Sewage</div> <div>RE - Recreational Water</div> <div>DW - Drinking Water Non-regulatory</div> <div>UNL - Unspecified Liquid</div> <div>SL - Sludge</div> <div>G - Gas</div> <div>OTH - Other</div>	Lab Sample No(s)																																																																																																																																																																																																																																																																																																																																																																																																																			
	Customer Sample Reference																																																																																																																																																																																																																																																																																																																																																																																																																			
	AGS Reference																																																																																																																																																																																																																																																																																																																																																																																																																			
	Depth (m)																																																																																																																																																																																																																																																																																																																																																																																																																			
	Container		Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filtered (ALE204)	H2SO4 (ALE244)	1l plastic (ALE221)	1000ml glass bottle (ALE220)	0.5l glass bottle (ALE227)	Vial (ALE297)	NaOH (ALE245)	HNO3 Filter



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/2	BH 3/3	BH3/4	BH 3/5	BH 3/6	BH 3/8
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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									
1-4-5-6	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO ₃	<2 mg/l	TM043	93.9	#	125	#	144	#	125	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#	<0.2	#	<0.2	#	<0.2	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.206	#	0.295	#	0.393	#	0.135	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#	<0.08	#	<0.08	#	<0.08	#
Chromium (diss.filt)	<1 µg/l	TM152	<1	#	<1	#	<1	#	<1	#
Copper (diss.filt)	<0.3 µg/l	TM152	1.19	#	1.35	#	4.63	#	0.826	#
Lead (diss.filt)	<0.2 µg/l	TM152	0.219	#	0.311	#	0.39	#	0.699	#
Manganese (diss.filt)	<3 µg/l	TM152	27.7	#	4.71	#	933	#	65.1	#
Nickel (diss.filt)	<0.4 µg/l	TM152	0.503	#	<0.4	#	1.71	#	0.466	#
Zinc (diss.filt)	<1 µg/l	TM152	4.01	#	1.02	#	8.56	#	1.43	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	7.1	#	8.09	#	8.85	#	3.97	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	4.07	#	5.27	#	7.74	#	3.11	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.621	#	1.1	#	1.18	#	0.379	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	32.5	#	50.7	#	62.9	#	21.1	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.129	#	0.076	#	0.154	#	0.125	#
Nitrite as NO ₂	<0.05 mg/l	TM184	<0.05	#	<0.05	#	0.149	#	<0.05	#
Sulphate	<2 mg/l	TM184	6.8	#	16.2	#	13.8	#	3.5	#
Chloride	<2 mg/l	TM184	9.6	#	17.6	#	49.5	#	9.4	#
Nitrate as NO ₃	<0.3 mg/l	TM184	<0.3	#	17.2	#	<0.3	#	3.52	#
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<0.1	#	3.9	#	<0.1	#	0.798	#
Phenol	<0.5 µg/l	TM205	<1	#	<1	#	<1	#	<1	#
2-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
3-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2-chlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,6-dichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
4-Chlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4-dichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2-nitrophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#
2,4,6-trichlorophenol	<0.5 µg/l	TM205	<0.5	#	<0.5	#	<0.5	#	<0.5	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/2	BH 3/3	BH3/4	BH 3/5	BH 3/6	BH 3/8
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098840	25098841	25098820	25098842	25098843	25098844
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205			<9	<9	<9	<9	<9	<9
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<20	<20	<20
Dinitro-o-cresol	<0.1 µg/l	TM411			1.35	0.47	15.7	<0.1	0.512	5.55
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO3	<2 mg/l	TM043	75	#	19.1	#	220	#	4030	#
BOD, unfiltered	<1 mg/l	TM045		#		#		#	58.3	#
Organic Carbon, Total	<3 mg/l	TM090		#		#		#	34.5	#
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2	#	<0.2	#	<0.2	#	382	#
COD, unfiltered	<7 mg/l	TM107		#		#		#	203	#
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.515	#	0.082	#	0.452	#	907	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08	#	<0.08	#	<0.08	#	395	#
Chromium (diss.filt)	<1 µg/l	TM152	1.47	#	<1	#	<1	#	612	#
Copper (diss.filt)	<0.3 µg/l	TM152	1.48	#	1.74	#	1.59	#	1390	#
Lead (diss.filt)	<0.2 µg/l	TM152	0.201	#	0.431	#	0.378	#	738	#
Manganese (diss.filt)	<3 µg/l	TM152	127	#	7.03	#	18.6	#	1070	#
Nickel (diss.filt)	<0.4 µg/l	TM152	2.15	#	0.511	#	0.462	#	17	#
Zinc (diss.filt)	<1 µg/l	TM152	7.8	#	6.88	#	5.1	#	4.69	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	24.5	#	5.95	#	9.96	#	7.14	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	8.64	#	1.06	#	8.61	#	0.339	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	4.77	#	3.35	#	1.38	#	<0.08	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	73.8	#	5.26	#	76.6	#	55.9	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.204	#	0.0408	#	0.243	#	82.3	#
Nitrite as NO2	<0.05 mg/l	TM184	<0.05	#	<0.05	#	<0.05	#	21.5	#
Sulphate	<2 mg/l	TM184	157	#	<2	#	12.6	#	2.95	#
Chloride	<2 mg/l	TM184	37.5	#	13.1	#	22.2	#	2.26	#
Nitrate as NO3	<0.3 mg/l	TM184	12.1	#	4.8	#	10.3	#	9.24	#
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	2.75	#	1.09	#	2.35	#	1.65	#
PCB congener 28	<0.015 µg/l	TM197		#		#		#	1.97	#
PCB congener 52	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 101	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 118	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 138	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 153	<0.015 µg/l	TM197		#		#		#	1.65	#
PCB congener 180	<0.015 µg/l	TM197		#		#		#	1.65	#
Sum of detected EC7 PCB's	<0.105 µg/l	TM197		#		#		#	1.65	#
PCB congener 77	<0.015 µg/l	TM197		#		#		#	1.65	#



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098846	25098822	25098821	25098337	25098338	25098339
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
PCB congener 81	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 105	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 114	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 123	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 126	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 156	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 157	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 167	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 169	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
PCB congener 189	<0.015 µg/l	TM197						<0.015	<0.015	<0.015
Phenol	<0.5 µg/l	TM205			<1	<1	<1	<2.5	<5	<2.5
2-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
3-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2-chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4-dimethylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<5	<2.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<5	<10	<5
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<6	<2.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<2.5	<6	<2.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<62.5	<125	<62.5
DNOC	<3 µg/l	TM205			<9	<9	<9	<60	<120	<60
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<20	<40	<20
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<100	<200	<100
Cyanide, Total	<0.05 mg/l	TM227						<0.05 #	<0.05 #	<0.05 #
Trifluralin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
alpha-HCH	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
gamma-HCH (Lindane)	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Heptachlor	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Aldrin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
beta-HCH	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Isodrin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
delta-HCH	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Heptachlor epoxide	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
o,p'-DDE	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Endosulphan I	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
trans-Chlordane	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
cis-Chlordane	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
p,p'-DDE	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Dieldrin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
o,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Endrin	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
o,p'-DDT	<0.01 µg/l	TM343						<0.02	<0.02	<0.02
p,p'-DDD (TDE)	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Endosulphan II	<0.02 µg/l	TM343						<0.02	<0.02	<0.02
p,p'-DDT	<0.01 µg/l	TM343						<0.02	<0.02	<0.02
o,p'-Methoxychlor	<0.01 µg/l	TM343						<0.02	<0.02	<0.02
p,p'-Methoxychlor	<0.01 µg/l	TM343						<0.02	<0.02	<0.02
Endosulphan Sulphate	<0.02 µg/l	TM343						<0.02	<0.02	<0.02
Permethrin I	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
Permethrin II	<0.01 µg/l	TM343						<0.01	<0.01	<0.01
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Hexachlorobutadiene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Dichlorvos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Dichlobenil	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Mevinphos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Tecnazene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Hexachlorobenzene	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Demeton-S-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Phorate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Diazinon	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triallate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Atrazine	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Simazine	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Disulfoton	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Propetamphos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorpyrifos-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Dimethoate	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Pirimiphos-methyl	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorpyrifos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Methyl Parathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Malathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Fenthion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Fenitrothion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triadimefon	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Pendimethalin	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Parathion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Chlorfenvinphos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
trans-Chlordane	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
cis-Chlordane	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Ethion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Carbophenothion	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Triazophos	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Phosalone	<0.01 µg/l	TM344						<0.05	<0.02	<0.05
Azinphos methyl	<0.02 µg/l	TM344						<0.2	<0.08	<0.2
Azinphos ethyl	<0.02 µg/l	TM344						1.67	<0.04	<0.1
Etridiazole	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Pentachlorobenzene	<0.01 µg/l	TM345						<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
(F)	Trigger breach confirmed				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
1-4+5@	Sample deviation (see appendix)				25098846	25098822	25098821	25098337	25098338	25098339
Component	LOD/Units	Method								
Propachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Quintozene (PCNB)	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Omethoate	<0.01 µg/l	TM345						<0.2	<0.2	<0.2
Propazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Propyzamide	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Alachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Prometryn	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Telodrin	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Terbutryn	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Chlorothalonil	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Etriphos	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Metazachlor	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Cyanazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Trietazine	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Coumaphos	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Phosphamidon I	<0.01 µg/l	TM345						<0.2	<0.2	<0.2
Phosphamidon II	<0.01 µg/l	TM345						<0.1	<0.1	<0.1
Dinitro-o-cresol	<0.1 µg/l	TM411	2.23		2.22	1.08	<10	<10	<10	<10
Clopyralid	<0.04 µg/l	TM411	<0.04		<0.04	<0.08	<4	<4	<4	<4
MCPA	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
Mecoprop	<0.04 µg/l	TM411	<0.04		<0.04	<0.08	17.7	<4	<4	<4
Dicamba	<0.04 µg/l	TM411	<0.04		<0.04	<0.08	<4	<4	<4	<4
MCPB	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
2,4-DB	<0.1 µg/l	TM411	<0.1		<0.1	<0.2	<10	<10	<10	<10
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
Dichlorprop	<0.1 µg/l	TM411	<0.1		<0.1	<0.2	<10	<10	<10	<10
Triclopyr	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
Fenoprop (Silvex)	<0.1 µg/l	TM411	<0.1		<0.1	<0.2	<10	<10	<10	<10
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411	<0.05		<0.05	<0.1	<5	<5	<5	<5
Bromoxynil	<0.04 µg/l	TM411	<0.04		<0.04	<0.08	<4	<4	<4	<4
Benazolin	<0.04 µg/l	TM411	<0.04		<0.04	<0.08	<4	<4	<4	<4



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Alkalinity, Total as CaCO3	<2 mg/l	TM043	9320		4080		5280	184	237	171
			#		#		#	#	#	#
BOD, unfiltered	<1 mg/l	TM045	>198		49.4		74			
			#		#		#			
Organic Carbon, Total	<3 mg/l	TM090	861		376		539			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	2410		897		1200	<0.2	<0.2	<0.2
							#	#	#	#
COD, unfiltered	<7 mg/l	TM107	3280		1440		1720			
			#		#		#			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	38.5		17.4		19.3	0.45	0.503	0.375
			#		#		#	#	#	#
Cadmium (diss.filt)	<0.08 µg/l	TM152	0.522		0.225		0.237	<0.08	<0.08	<0.08
			#		#		#	#	#	#
Chromium (diss.filt)	<1 µg/l	TM152	164		65.5		110	<1	<1	<1
			#		#		#	#	#	#
Copper (diss.filt)	<0.3 µg/l	TM152	21.9		13.9		8.17	<0.3	0.936	4.06
			#		#		#	#	#	#
Lead (diss.filt)	<0.2 µg/l	TM152	12.6		2.81		5.26	<0.2	0.322	0.625
			#		#		#	#	#	#
Manganese (diss.filt)	<3 µg/l	TM152	112		1300		976	8.24	23.5	24.1
			#		#		#	#	#	#
Nickel (diss.filt)	<0.4 µg/l	TM152	302		116		142	<0.4	<0.4	0.562
			#		#		#	#	#	#
Zinc (diss.filt)	<1 µg/l	TM152	102		84.4		79.9	<1	3.96	14.4
			#		#		#	#	#	#
Sodium (Dis.Filt)	<0.076 mg/l	TM152	4900		2120		2220	14	9.64	9.16
			#		#		#	#	#	#
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	62.3		78.2		82.6	9.71	8.31	6.4
			#		#		#	#	#	#
Potassium (Dis.Filt)	<0.2 mg/l	TM152	3180		1460		1430	1.23	1.16	3.06
			#		#		#	#	#	#
Calcium (Dis.Filt)	<0.2 mg/l	TM152	33.9		120		110	75.4	89.4	62.3
			#		#		#	#	#	#
Iron (Dis.Filt)	<0.019 mg/l	TM152	5.5		12.4		3.21	0.0265	0.0405	0.12
			#		#		#	#	#	#
Nitrite as NO2	<0.05 mg/l	TM184						<0.05	<0.05	<0.05
								#	#	#
Sulphate	<2 mg/l	TM184	<20		53.7			23.1	11.8	19.5
								#	#	#
Chloride	<2 mg/l	TM184	11900		4580			37.9	33	19.5
								#	#	#
Nitrate as NO3	<0.3 mg/l	TM184						7.31	10.1	6.98
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	<2		9.91			1.65	2.29	1.59
								#	#	#
PCB congener 28	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 52	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 101	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 118	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 138	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 153	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
PCB congener 180	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			
Sum of detected EC7 PCB's	<0.105 µg/l	TM197	<0.105		<0.105		<0.105			
PCB congener 77	<0.015 µg/l	TM197	<0.015		<0.015		<0.015			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
PCB congener 81	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 105	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 114	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 123	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 126	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 156	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 157	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 167	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 169	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
PCB congener 189	<0.015 µg/l	TM197		<0.015	<0.015	<0.015			
Phenol	<0.5 µg/l	TM205		13	<5	47.8	<1.5	<1	<1
2-methylphenol	<0.5 µg/l	TM205		19.4	<5	42.5	<0.5	<0.5	<0.5
3-methylphenol	<0.5 µg/l	TM205		7.97	<5	34.1	<0.5	<0.5	<0.5
4-methylphenol	<0.5 µg/l	TM205		<11.5	<5	21.4	<0.5	<0.5	<0.5
2-chlorophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
2,4-dimethylphenol	<0.5 µg/l	TM205		<1.5	<5	9.99	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205		<3.5	<5	<5	<0.5	<0.5	<0.5
2,6-dichlorophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205		<1	<5	<5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205		<0.5	<5	<5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205		<1	<10	<10	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205		<0.5	<2.5	<5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205		<0.5	<2.5	<5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205		<12.5	<62.5	<125	<12.5	<12.5	<12.5
DNO	<3 µg/l	TM205		<12	<60	<120	<12	<9	<12
Pentachlorophenol	<2 µg/l	TM205		<4	<40	<40	<4	<4	<4
Dinoseb	<4 µg/l	TM205		<20	<100	<200	<20	<20	<20
Chloride	<0.08 mg/l	TM226				4550			
Sulphate	<0.1 mg/l	TM226				17.7			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Total Oxidised Nitrogen as N	<0.02 mg/l	TM226					0.191			
Cyanide, Total	<0.05 mg/l	TM227			0.06 #	<0.05 #	<0.05 #			
Trifluralin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
alpha-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
gamma-HCH (Lindane)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Heptachlor	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Aldrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
beta-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Isodrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
delta-HCH	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Heptachlor epoxide	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDE	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endosulphan I	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
trans-Chlordane	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
cis-Chlordane	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
p,p'-DDE	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Dieldrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endrin	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
o,p'-DDT	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
p,p'-DDD (TDE)	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Endosulphan II	<0.02 µg/l	TM343			<0.1	<0.02	<0.1			
p,p'-DDT	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
o,p'-Methoxychlor	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
p,p'-Methoxychlor	<0.01 µg/l	TM343			<0.1	<0.01	<0.1			
Endosulphan Sulphate	<0.02 µg/l	TM343			<0.1	<0.02	<0.1			
Permethrin I	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
Permethrin II	<0.01 µg/l	TM343			<0.05	<0.01	<0.05			
1,3,5-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
Hexachlorobutadiene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
1,2,4-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			
1,2,3-Trichlorobenzene	<0.01 µg/l	TM344			<0.1	<0.1	<0.1			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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			211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed			25098835	25098836	25098834	25098818	25098819	25098817
1-4&5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Dichlorvos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Dichlobenil	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Mevinphos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Tecnazene	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Hexachlorobenzene	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Demeton-S-methyl	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Phorate	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Diazinon	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Triallate	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Atrazine	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Simazine	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Disulfoton	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Propetamphos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Chlorpyrifos-methyl	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Dimethoate	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Pirimiphos-methyl	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Chlorpyrifos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Methyl Parathion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Malathion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Fenthion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Fenitrothion	<0.01 µg/l	TM344		<0.1	2.06	<0.1			
Triadimefon	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Pendimethalin	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Parathion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Chlorfenvinphos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
trans-Chlordane	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
cis-Chlordane	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Ethion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Carbophenothion	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Triazophos	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Phosalone	<0.01 µg/l	TM344		<0.1	<0.1	<0.1			
Azinphos methyl	<0.02 µg/l	TM344		<0.4	<0.2	<0.4			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed				25098835	25098836	25098834	25098818	25098819	25098817
1-4&5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Azinphos ethyl	<0.02 µg/l	TM344			<0.2	<1.6	<0.2			
Etridiazole	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Pentachlorobenzene	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Propachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Quintozone (PCNB)	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Omethoate	<0.01 µg/l	TM345			<0.2	<0.2	<0.2			
Propazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Propyzamide	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Alachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Prometryn	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Telodrin	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Terbutryn	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Chlorothalonil	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Etrimphos	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Metazachlor	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Cyanazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Trietazine	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Coumaphos	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Phosphamidon I	<0.01 µg/l	TM345			<0.2	<0.2	<0.2			
Phosphamidon II	<0.01 µg/l	TM345			<0.1	<0.1	<0.1			
Dinitro-o-cresol	<0.1 µg/l	TM411			<10	<10	<10	0.194	0.784	0.881
Clpyralid	<0.04 µg/l	TM411			<4	<4	<4	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411			99.3	16.2	19.7	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411			<4	<4	<4	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Dichlorprop	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411			<10	<10	<10	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<5	<5	<5	<0.05	<0.05	<0.05



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend		Customer Sample Ref.	NACW 219	NACW228	NACW 229	SW201	SW202	SW203
#	ISO17025 accredited.		Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Surface Water (SW) 05/10/2021	Surface Water (SW) 05/10/2021	Surface Water (SW) 05/10/2021
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	06/10/2021 211006-49 25098847	06/10/2021 211006-49 25098816	06/10/2021 211006-49 25098848	06/10/2021 211006-49 25098827	06/10/2021 211006-49 25098828	06/10/2021 211006-49 25098829
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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+5@ Sample deviation (see appendix)								
Component	LOD/Units	Method						
Ionic balance	% Diff	Calulation				5.74	2.56	-4.69
Suspended solids, Total	<2 mg/l	TM022				<2 #	<2 #	4.95 #
Alkalinity, Total as CaCO3	<2 mg/l	TM043	175 #	83.1 #	211 #	127 #	127 #	62.1 #
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043				130	125	65
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043				130	125	65
Organic Carbon, Total	<3 mg/l	TM090				14.9 #	12.7 #	8.79 #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #	<0.2 #	1.48 #	1.24 #	<0.2 #
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.36 #	0.451 #	0.442 #	0.385 #	0.349 #	0.222 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	1.28 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	3.9 #	2.33 #	1.02 #	4.46 #	3.35 #	2.82 #
Lead (diss.filt)	<0.2 µg/l	TM152	1.4 #	2.6 #	0.569 #	0.571 #	0.317 #	0.676 #
Manganese (diss.filt)	<3 µg/l	TM152	355 #	394 #	97 #	25.8 #	19.4 #	29.1 #
Nickel (diss.filt)	<0.4 µg/l	TM152	2.46 #	6.13 #	0.538 #	2.26 #	1.65 #	1.6 #
Zinc (diss.filt)	<1 µg/l	TM152	2.68 #	10.2 #	4.29 #	7.4 #	6.05 #	11.2 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152	11.2 #	17.5 #	11.7 #	15.1 #	13 #	6.47 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	6.4 #	13.8 #	9.23 #	5.67 #	5.06 #	2.42 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152	0.901 #	1.14 #	1.26 #	28.9 #	21.9 #	7.94 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	75 #	60.5 #	78.8 #	61.1 #	54.5 #	29.7 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	18.1 #	0.297 #	0.142 #	0.132 #	0.0984 #	0.14 #
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #	<0.05 #	<0.05 #	0.69 #	0.507 #	<0.05 #
Sulphate	<2 mg/l	TM184	17.2 #	127 #	16.3 #	37.8 #	33.3 #	25.9 #
Chloride	<2 mg/l	TM184	19.5 #	35.6 #	26.2 #	33.7 #	29 #	17.9 #
Nitrate as NO3	<0.3 mg/l	TM184	0.758 #	2.19 #	10.2 #	8.35 #	7.56 #	2.12 #
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	0.173 #	0.507 #	2.32 #	2.1 #	1.86 #	0.489 #
Phenol	<0.5 µg/l	TM205	<1	<1.5	<1	<1	<1	<1
2-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorophenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.	NACW 219	NACW228	NACW 229	SW201	SW202	SW203
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
(F)	Trigger breach confirmed			211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
1-4-5@	Sample deviation (see appendix)			25098847	25098816	25098848	25098827	25098828	25098829
Component	LOD/Units	Method							
2,6-dichlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205		<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205		<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205		<9	<12	<9	<12	<12	<12
Pentachlorophenol	<2 µg/l	TM205		<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205		<20	<20	<20	<20	<20	<20
pH	<1 pH Units	TM256					7.99 #	7.94 #	7.65 #
Dinitro-o-cresol	<0.1 µg/l	TM411		1.3	2.71	2.9	0.883	1.19	1.88
Clopyralid	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPA	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mecoprop	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Dicamba	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
MCPB	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4-DB	<0.1 µg/l	TM411		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dichloroprop	<0.1 µg/l	TM411		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Triclopyr	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenoprop (Silvex)	<0.1 µg/l	TM411		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoxynil	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Benazolin	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ioxynil	<0.05 µg/l	TM411		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pentachlorophenol	<0.04 µg/l	TM411		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Fluoroxypyr	<0.1 µg/l	TM411		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend		Customer Sample Ref.	SW204	SW205	SW206	SW207	UD1	UD3
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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						
Ionic balance	% Diff	Calculation	-3.41	-3.56	-4.1	-5.75		
Suspended solids, Total	<2 mg/l	TM022	<2 #	<2 #	<2 #	2 #		
Alkalinity, Total as CaCO3	<2 mg/l	TM043	158 #	134 #	101 #	113 #	245 #	203 #
Alkalinity, Total as CaCO3 (diss.filt)	<2 mg/l	TM043	160	135	100	115		
Alkalinity, Bicarbonate as CaCO3 (diss.filt)	<2 mg/l	TM043	160	135	100	115		
Organic Carbon, Total	<3 mg/l	TM090	14.6 #	10.7 #	7.4 #	13.7 #		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #	<0.2 #	0.82 #	<0.2 #	<0.2 #
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.49 #	0.415 #	0.24 #	0.358 #	0.585 #	0.448 #
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #	<0.08 #
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Copper (diss.filt)	<0.3 µg/l	TM152	4.19 #	3.6 #	2.76 #	4.59 #	0.478 #	0.853 #
Lead (diss.filt)	<0.2 µg/l	TM152	<0.2 #	0.25 #	0.35 #	0.686 #	<0.2 #	<0.2 #
Manganese (diss.filt)	<3 µg/l	TM152	42.2 #	37.9 #	14.1 #	24.7 #	50 #	17 #
Nickel (diss.filt)	<0.4 µg/l	TM152	1.86 #	1.39 #	0.842 #	1.87 #	0.752 #	<0.4 #
Zinc (diss.filt)	<1 µg/l	TM152	2.95 #	6.86 #	5.55 #	9.01 #	3.74 #	3.9 #
Sodium (Dis.Filt)	<0.076 mg/l	TM152	11.3 #	10.4 #	7.23 #	11.2 #	11.6 #	11.5 #
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	5.57 #	4.82 #	2.88 #	4.03 #	10.4 #	7.41 #
Potassium (Dis.Filt)	<0.2 mg/l	TM152	19.9 #	17.1 #	2.71 #	16.2 #	1.62 #	5.09 #
Calcium (Dis.Filt)	<0.2 mg/l	TM152	79.9 #	64.2 #	40.3 #	46.2 #	95.2 #	70.9 #
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.134 #	0.124 #	0.151 #	0.231 #	0.0491 #	<0.019 #
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #	0.052 #	<0.05 #	0.373 #	<0.05 #	<0.05 #
Sulphate	<2 mg/l	TM184	72.6 #	56 #	16 #	33.3 #	14.1 #	19.3 #
Chloride	<2 mg/l	TM184	36.7 #	31.1 #	14.2 #	30 #	47.4 #	19.7 #
Nitrate as NO3	<0.3 mg/l	TM184	5.24	4.89	7.71	12.1	10.1	6.22
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.19 #	1.12 #	1.75 #	2.86 #	2.29 #	1.41 #
Phenol	<0.5 µg/l	TM205	<1	<1	<1	<1	<1	<1
2-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorophenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		SW204	SW205	SW206	SW207	UD1	UD3
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Surface Water (SW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
+	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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				06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
(F)	Trigger breach confirmed				211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
1-4-5@	Sample deviation (see appendix)				25098830	25098831	25098832	25098833	25098823	25098824
Component	LOD/Units	Method								
2,6-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	<0.5 µg/l	TM205			<1	<1	<1	<1	<1	<1
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
DNOC	<3 µg/l	TM205			<12	<12	<12	<12	<9	<9
Pentachlorophenol	<2 µg/l	TM205			<4	<4	<4	<4	<4	<4
Dinoseb	<4 µg/l	TM205			<20	<20	<20	<20	<20	<20
pH	<1 pH Units	TM256			7.89	7.87	7.84	7.87		
Dinitro-o-cresol	<0.1 µg/l	TM411			0.777	2.43	1.13	2.77	0.215	0.871
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
MCPA	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
MCPB	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Dichloroprop	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04	<0.04	<0.04	<0.04	<0.08
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1	<0.1	<0.1	<0.1	<0.2



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend		Customer Sample Ref.	UD4	UD5			
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference					
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	Subcontracted - refer to subcontractor report for accreditation status.						
**	% 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					
Alkalinity, Total as CaCO3	<2 mg/l	TM043	211 #	163 #			
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	<0.2 #			
Conductivity @ 20 deg.C	<0.02 mS/cm	TM120	0.436 #	0.463 #			
Cadmium (diss.filt)	<0.08 µg/l	TM152	<0.08 #	<0.08 #			
Chromium (diss.filt)	<1 µg/l	TM152	<1 #	<1 #			
Copper (diss.filt)	<0.3 µg/l	TM152	1.39 #	4.45 #			
Lead (diss.filt)	<0.2 µg/l	TM152	0.228 #	0.311 #			
Manganese (diss.filt)	<3 µg/l	TM152	20.3 #	54.8 #			
Nickel (diss.filt)	<0.4 µg/l	TM152	<0.4 #	1.49 #			
Zinc (diss.filt)	<1 µg/l	TM152	6.62 #	5.69 #			
Sodium (Dis.Filt)	<0.076 mg/l	TM152	10.8 #	9.79 #			
Magnesium (Dis.Filt)	<0.036 mg/l	TM152	7.92 #	5.06 #			
Potassium (Dis.Filt)	<0.2 mg/l	TM152	3.47 #	19.9 #			
Calcium (Dis.Filt)	<0.2 mg/l	TM152	72.9 #	73.8 #			
Iron (Dis.Filt)	<0.019 mg/l	TM152	0.0411 #	0.178 #			
Nitrite as NO2	<0.05 mg/l	TM184	<0.05 #	<0.05 #			
Sulphate	<2 mg/l	TM184	16.5 #	67.3 #			
Chloride	<2 mg/l	TM184	20.6 #	26.7 #			
Nitrate as NO3	<0.3 mg/l	TM184	8.3 #	4.45 #			
Total Oxidised Nitrogen as N	<0.1 mg/l	TM184	1.88 #	1.01 #			
Phenol	<0.5 µg/l	TM205	<1 #	<1 #			
2-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
3-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2-chlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4-dimethylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-chloro-3-methylphenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,6-dichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
4-Chlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4-dichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2-nitrophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			
2,4,6-trichlorophenol	<0.5 µg/l	TM205	<0.5 #	<0.5 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Results Legend			Customer Sample Ref.		UD4	UD5			
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)			
M	mCERTS accredited.				05/10/2021	05/10/2021			
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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				06/10/2021	06/10/2021			
(F)	Trigger breach confirmed				211006-49	211006-49			
1-4+5@	Sample deviation (see appendix)				25098825	25098826			
Component	LOD/Units	Method							
2,4,5-trichlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
4-nitrophenol	<0.5 µg/l	TM205			<1	<1			
2,3,5,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
2,3,4,6-tetrachlorophenol	<0.5 µg/l	TM205			<0.5	<0.5			
2,4-dinitrophenol	<2.5 µg/l	TM205			<12.5	<12.5			
DNOC	<3 µg/l	TM205			<9	<9			
Pentachlorophenol	<2 µg/l	TM205			<4	<4			
Dinoseb	<4 µg/l	TM205			<20	<20			
Dinitro-o-cresol	<0.1 µg/l	TM411			0.796	2.09			
Clopyralid	<0.04 µg/l	TM411			<0.04	<0.04			
MCPA	<0.05 µg/l	TM411			<0.05	<0.05			
Mecoprop	<0.04 µg/l	TM411			<0.04	<0.04			
Dicamba	<0.04 µg/l	TM411			<0.04	<0.04			
MCPB	<0.05 µg/l	TM411			<0.05	<0.05			
2,4-DB	<0.1 µg/l	TM411			<0.1	<0.1			
2,3,6-Trichlorobenzoic acid	<0.05 µg/l	TM411			<0.05	<0.05			
Dichlorprop	<0.1 µg/l	TM411			<0.1	<0.1			
Triclopyr	<0.05 µg/l	TM411			<0.05	<0.05			
Fenoprop (Silvex)	<0.1 µg/l	TM411			<0.1	<0.1			
2,4-Dichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05			
2,4,5-Trichlorophenoxyacetic acid	<0.05 µg/l	TM411			<0.05	<0.05			
Bromoxynil	<0.04 µg/l	TM411			<0.04	<0.04			
Benazolin	<0.04 µg/l	TM411			<0.04	<0.04			
Ioxynil	<0.05 µg/l	TM411			<0.05	<0.05			
Pentachlorophenol	<0.04 µg/l	TM411			<0.04	<0.04			
Fluoroxypyr	<0.1 µg/l	TM411			<0.1	<0.1			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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									
1-4-5-6	Sample deviation (see appendix)									
Component	LOD/Units	Method								
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dichlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dimethylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176						<10	<10	<10
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Chloronaphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Chlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
2-Methylnaphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
2-Methylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
2-Nitroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
2-Nitrophenol (aq)	<1 µg/l	TM176						<10	<10	<10
3-Nitroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
4-Bromophenylphenylether (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chloroaniline (aq)	<1 µg/l	TM176						<10	<10	<10
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176						<10	<10	<10
4-Methylphenol (aq)	<1 µg/l	TM176			<1	<1	<1	<10	<10	<10
4-Nitroaniline (aq)	<1 µg/l	TM176			#	#	#	<10	<10	<10
4-Nitrophenol (aq)	<1 µg/l	TM176						<10	<10	<10
Azobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Acenaphthylene (aq)	<1 µg/l	TM176						<10	<10	<10
Acenaphthene (aq)	<1 µg/l	TM176						<10	<10	<10
Anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176						<10	<10	<10
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176						<20	<20	<20
Butylbenzyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference		Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.									
dis.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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+5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
Benzo(a)anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(a)pyrene (aq)	<1 µg/l	TM176						<10	<10	<10
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176						<10	<10	<10
Carbazole (aq)	<1 µg/l	TM176						<10	<10	<10
Chrysene (aq)	<1 µg/l	TM176						<10	<10	<10
Dibenzofuran (aq)	<1 µg/l	TM176						<10	<10	<10
n-Dibutyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10
Diethyl phthalate (aq)	<1 µg/l	TM176	<1		<1		<1	<10	<10	<10
			#		#		#			
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176						<10	<10	<10
Dimethyl phthalate (aq)	<1 µg/l	TM176						<10	<10	<10
n-Dioctyl phthalate (aq)	<5 µg/l	TM176						<50	<50	<50
Fluoranthene (aq)	<1 µg/l	TM176						<10	<10	<10
Fluorene (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorobutadiene (aq)	<1 µg/l	TM176						<10	<10	<10
Pentachlorophenol (aq)	<1 µg/l	TM176						<10	<10	<10
Phenol (aq)	<1 µg/l	TM176						<10	<10	<10
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachloroethane (aq)	<1 µg/l	TM176						<10	<10	<10
Nitrobenzene (aq)	<1 µg/l	TM176						<10	<10	<10
Naphthalene (aq)	<1 µg/l	TM176						<10	<10	<10
Isophorone (aq)	<1 µg/l	TM176						<10	<10	<10
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176						<10	<10	<10
Phenanthrene (aq)	<1 µg/l	TM176						<10	<10	<10
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176						<10	<10	<10
Pyrene (aq)	<1 µg/l	TM176						<10	<10	<10



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference						
M	mCERTS accredited.								
aq	Aqueous / settled sample.								
diss.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.			Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
(F)	Trigger breach confirmed			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
1-4-5@	Sample deviation (see appendix)			211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
				25098835	25098836	25098834	25098818	25098819	25098817
Component	LOD/Units	Method							
1,2,4-Trichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,2-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,3-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
1,4-Dichlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4,5-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4,6-Trichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4-Dichlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2,4-Dimethylphenol (aq)	<1 µg/l	TM176		<10	<10	13.7			
2,4-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<10	<10			
2,6-Dinitrotoluene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Chloronaphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Chlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Methylnaphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Methylphenol (aq)	<1 µg/l	TM176		20	<10	38.9			
2-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
2-Nitrophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
3-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Bromophenylphenylether (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chloro-3-methylphenol (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chloroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Chlorophenylphenylether (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Methylphenol (aq)	<1 µg/l	TM176		11.1	<10	<10	<1 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg/l	TM176		<10	<10	<10			
4-Nitrophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
Azobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Acenaphthylene (aq)	<1 µg/l	TM176		<10	<10	<10			
Acenaphthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Chloroethyl)ether (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Chloroethoxy)methane (aq)	<1 µg/l	TM176		<10	<10	<10			
bis(2-Ethylhexyl) phthalate (aq)	<2 µg/l	TM176		92.3	<20	<20			
Butylbenzyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

SVOC MS (W) - Aqueous

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAGOON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
aq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
*	Subcontracted - refer to subcontractor report for accreditation status.			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021
**	% 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			211006-49	211006-49	211006-49	211006-49	211006-49	211006-49
(F)	Trigger breach confirmed			25098835	25098836	25098834	25098818	25098819	25098817
1-4+5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
Benzo(a)anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(b)fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(k)fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(a)pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Benzo(g,h,i)perylene (aq)	<1 µg/l	TM176		<10	<10	<10			
Carbazole (aq)	<1 µg/l	TM176		<10	<10	<10			
Chrysene (aq)	<1 µg/l	TM176		<10	<10	<10			
Dibenzofuran (aq)	<1 µg/l	TM176		<10	<10	<10			
n-Butyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			
Diethyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10	<1 #	<1 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg/l	TM176		<10	<10	<10			
Dimethyl phthalate (aq)	<1 µg/l	TM176		<10	<10	<10			
n-Dioctyl phthalate (aq)	<5 µg/l	TM176		<50	<50	<50			
Fluoranthene (aq)	<1 µg/l	TM176		<10	<10	<10			
Fluorene (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorobutadiene (aq)	<1 µg/l	TM176		<10	<10	<10			
Pentachlorophenol (aq)	<1 µg/l	TM176		<10	<10	<10			
Phenol (aq)	<1 µg/l	TM176		21.3	<10	32.8			
n-Nitroso-n-dipropylamine (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachloroethane (aq)	<1 µg/l	TM176		<10	<10	<10			
Nitrobenzene (aq)	<1 µg/l	TM176		<10	<10	<10			
Naphthalene (aq)	<1 µg/l	TM176		<10	<10	<10			
Isophorone (aq)	<1 µg/l	TM176		<10	<10	<10			
Hexachlorocyclopentadiene (aq)	<1 µg/l	TM176		<10	<10	<10			
Phenanthrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			
Pyrene (aq)	<1 µg/l	TM176		<10	<10	<10			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend		Customer Sample Ref.	BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Ground Water (GW) 05/10/2021	Land Leachate (LE) 05/10/2021	Land Leachate (LE) 05/10/2021	Land Leachate (LE) 05/10/2021
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	Subcontracted - refer to subcontractor report for accreditation status.							
**	% 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	211006-49 25098846	06/10/2021 211006-49 25098846	06/10/2021 211006-49 25098822	06/10/2021 211006-49 25098821	06/10/2021 211006-49 25098837	06/10/2021 211006-49 25098838	06/10/2021 211006-49 25098839
(F)	Trigger breach confirmed							
1-4*5@	Sample deviation (see appendix)							
Component	LOD/Units	Method						
Dibromofluoromethane**	%	TM208				118	127	123
Toluene-d8**	%	TM208				114	116	114
4-Bromofluorobenzene**	%	TM208				112	114	112
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 #	<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-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 #	1.76 #	1 #	2.2 #
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 #	<1 #	1.05 #	2.88 #
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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.		BH 3/9	BH208	BH5/02	CELL 5 SUMP	CELL 6 SUMP	CELL 7 SUMP
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference			Ground Water (GW)	Ground Water (GW)	Ground Water (GW)	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)
M	mCERTS accredited.				05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	
aq	Aqueous / settled sample.									
diss.filt	Dissolved / filtered sample.									
tot.unfilt	Total / unfiltered sample.									
*	Subcontracted - refer to subcontractor report for accreditation status.									
**	% 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									
1-4-5@	Sample deviation (see appendix)									
Component	LOD/Units	Method								
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 #	2.13 #	<1 #	5.42 #		
m,p-Xylene	<1 µg/l	TM208	<1 #	<1 #	<1 #	1.89 #	3.88 #	8.84 #		
o-Xylene	<1 µg/l	TM208	<1 #	<1 #	<1 #	2.61 #	3.35 #	5.79 #		
Styrene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
Bromoform	<1 µg/l	TM208				<1 #	<1 #	<1 #		
Isopropylbenzene	<1 µg/l	TM208				1.3 #	<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 #	1.08 #		
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				1.33 #	1.32 #	2.78 #		
sec-Butylbenzene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
4-iso-Propyltoluene	<1 µg/l	TM208				<1 #	2.19 #	4.25 #		
1,3-Dichlorobenzene	<1 µg/l	TM208				<1 #	<1 #	<1 #		
1,4-Dichlorobenzene	<1 µg/l	TM208				1.05 #	<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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.	mCERTS accredited.							
M	aq	diss.filt	tot.unfilt	Depth (m)	Sample Type	Date Sampled	Sampled Time	Date Received	SDG Ref
*	Total / unfiltered sample.			Subcontracted - refer to subcontractor report for accreditation status.			% 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		
**	Trigger breach confirmed			Sample deviation (see appendix)			AGS Reference		
(F)	1-4-5@								
Component	LOD/Units	Method							
Dibromofluoromethane**	%	TM208	118	127	121				
Toluene-d8**	%	TM208	114	115	113				
4-Bromofluorobenzene**	%	TM208	111	114	114				
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 #	1.99 #				
Dichloromethane	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 #	<1 #	<1 #				
1,1-Dichloroethane	<1 µg/l	TM208	1.04 #	<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	2.98 #	2.26 #	14.6 #	<1 #	<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	36.5 #	<1 #	6.12 #	<1 #	<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

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

VOC MS (W)

Results Legend			Customer Sample Ref.	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDING LAG OON	NACW203	NACW205	NACW212
#	ISO17025 accredited.		Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	Land Leachate (LE)	Land Leachate (LE)	Land Leachate (LE)	Ground Water (GW)	Ground Water (GW)	Ground Water (GW)
M	mCERTS accredited.			05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021	05/10/2021
sq	Aqueous / settled sample.								
dis.filt	Dissolved / filtered sample.								
tot.unfilt	Total / unfiltered sample.								
+	Subcontracted - refer to subcontractor report for accreditation status.								
**	% 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			06/10/2021 211006-49 25098835	06/10/2021 211006-49 25098836	06/10/2021 211006-49 25098834	06/10/2021 211006-49 25098818	06/10/2021 211006-49 25098819	06/10/2021 211006-49 25098817
(F)	Trigger breach confirmed								
1-4-5@	Sample deviation (see appendix)								
Component	LOD/Units	Method							
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		5.58 #	<1 #	<1 #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Ethylbenzene	<1 µg/l	TM208		17.1 #	2.25 #	5.04 #	<1 #	<1 #	<1 #
m,p-Xylene	<1 µg/l	TM208		38.3 #	2.19 #	3.87 #	<1 #	<1 #	<1 #
o-Xylene	<1 µg/l	TM208		25.5 #	2.76 #	3.38 #	<1 #	<1 #	<1 #
Styrene	<1 µg/l	TM208		<1 #	<1 #	2.86 #			
Bromoform	<1 µg/l	TM208		<1 #	<1 #	<1 #			
Isopropylbenzene	<1 µg/l	TM208		<1 #	1.06 #	<1 #			
1,1,1,2-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		3.1 #	<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		7.26 #	1.79 #	2.12 #			
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #	1.88 #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #	<1 #			
1,4-Dichlorobenzene	<1 µg/l	TM208		3.5 #	1.29 #	<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		4.87 #	<1 #	1.28 #			



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Notification of NDPs (No determination possible)

Date Received : 06/10/2021 07:01:23

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
25098834	LEACHATE HOLDING LAGOON		Anions by Kone (w)	Sample too coloured



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Table of Results - Appendix

Method No	Reference	Description
Calculation		
TM022	Method 2540D, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part120 1981;BS EN 872	Determination of total suspended solids in waters
TM043	Method 2320B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part109 1984	Determination of alkalinity in aqueous samples
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers
TM197	Modified: US EPA Method 8082.EA Method 174 and 5109631	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters
TM205		Determination of Phenols in Waste Waters using Solid Phase Extraction, Acetylation, Gas Chromatography and Mass Selective Detection
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate
TM245	By GC-FID	Determination of GRO by Headspace in waters
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter
TM343	EPA 8270D - Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of Selected Pesticides (Suite I) in Liquids by GCMS
TM344	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite II) by GCMS
TM345	EPA 8270D – Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of selected pesticides (Suite III) by GCMS
TM411	Acid_Herbs_GCMS	Acid Herbs in Water by GCMS

NA = not applicable.

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



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Test Completion Dates

Lab Sample No(s)	25098822	25098840	25098841	25098842	25098843	25098844	25098846	25098820	25098821	25098837
Customer Sample Ref.	BH208	BH 3/2	BH 3/3	BH 3/5	BH 3/6	BH 3/8	BH 3/9	BH3/4	BH5/02	CELL 5 SUMP
AGS Ref.										
Depth										
Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Land Leachate
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	11-Oct-2021	11-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021
BOD True Total										13-Oct-2021
COD Unfiltered										09-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Cyanide Comp/Free/Total/Thiocyanate										11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
GRO by GC-FID (W)	11-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	
PAH Spec MS - Aqueous (W)	13-Oct-2021	11-Oct-2021	11-Oct-2021	14-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	14-Oct-2021	
PCB Congeners - Aqueous (W)										12-Oct-2021
Pesticides (Suite I) by GCMS										12-Oct-2021
Pesticides (Suite II) by GCMS										12-Oct-2021
Pesticides (Suite III) by GCMS										13-Oct-2021
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	08-Oct-2021	08-Oct-2021	13-Oct-2021	11-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	13-Oct-2021	08-Oct-2021
Total Organic and Inorganic Carbon										09-Oct-2021
TPH CWG (W)	13-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
VOC MS (W)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021

Lab Sample No(s)	25098838	25098839	25098835	25098836	25098834	25098818	25098819	25098817	25098816	25098847
Customer Sample Ref.	CELL 6 SUMP	CELL 7 SUMP	CELL 1/2 SUMP	CELL 3/4 SUMP	LEACHATE HOLDIN G LAGOON	NACW203	NACW205	NACW212	NACW228	NACW 219
AGS Ref.										
Depth										
Type	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Land Leachate	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by ion Chromatography					20-Oct-2021					
Anions by Kone (w)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021		12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
BOD True Total	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021					
COD Unfiltered	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021					
Conductivity (at 20 deg.C)	07-Oct-2021	07-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Cyanide Comp/Free/Total/Thiocyanate	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021					
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	12-Oct-2021
Nitrite by Kone (w)						12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)						14-Oct-2021	14-Oct-2021	14-Oct-2021	14-Oct-2021	13-Oct-2021
PCB Congeners - Aqueous (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021					
Pesticides (Suite I) by GCMS	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021					
Pesticides (Suite II) by GCMS	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	12-Oct-2021					
Pesticides (Suite III) by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021					
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	08-Oct-2021	08-Oct-2021	11-Oct-2021	08-Oct-2021	11-Oct-2021	11-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Total Organic and Inorganic Carbon	11-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021					
TPH CWG (W)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
VOC MS (W)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	25098848	25098827	25098828	25098829	25098830	25098831	25098832	25098833	25098823	25098824
	NACW 229	SW201	SW202	SW203	SW204	SW205	SW206	SW207	UD1	UD3
	Ground Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Surface Water	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Alkalinity Filtered as CaCO ₃		11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021		
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021	11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	12-Oct-2021								11-Oct-2021	11-Oct-2021
Ionic Balance		13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021		
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)	14-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	12-Oct-2021	13-Oct-2021	13-Oct-2021
pH Value		10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021	10-Oct-2021		
Phenols by ms (w)	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021
Suspended Solids		09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021		
SVOC MS (W) - Aqueous	13-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	13-Oct-2021	11-Oct-2021	08-Oct-2021	08-Oct-2021	11-Oct-2021	11-Oct-2021
Total Organic and Inorganic Carbon		09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021	09-Oct-2021		
TPH CWG (W)	13-Oct-2021								13-Oct-2021	13-Oct-2021
VOC MS (W)	11-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	13-Oct-2021	12-Oct-2021	11-Oct-2021	11-Oct-2021

Lab Sample No(s)
Customer Sample Ref.

AGS Ref.
Depth
Type

	25098825	25098826
	UD4	UD5
	Ground Water	Ground Water
Acid Herbicides by GCMS	13-Oct-2021	13-Oct-2021
Alkalinity as CaCO ₃	11-Oct-2021	11-Oct-2021
Ammoniacal Nitrogen	11-Oct-2021	11-Oct-2021
Anions by Kone (w)	12-Oct-2021	12-Oct-2021
Conductivity (at 20 deg.C)	11-Oct-2021	11-Oct-2021
Dissolved Metals by ICP-MS	13-Oct-2021	13-Oct-2021
EPH CWG (Aliphatic) Aqueous GC (W)	13-Oct-2021	13-Oct-2021
EPH CWG (Aromatic) Aqueous GC (W)	13-Oct-2021	13-Oct-2021
GRO by GC-FID (W)	11-Oct-2021	11-Oct-2021
Nitrite by Kone (w)	12-Oct-2021	12-Oct-2021
PAH Spec MS - Aqueous (W)	14-Oct-2021	13-Oct-2021
Phenols by ms (w)	13-Oct-2021	13-Oct-2021
SVOC MS (W) - Aqueous	11-Oct-2021	11-Oct-2021
TPH CWG (W)	13-Oct-2021	13-Oct-2021
VOC MS (W)	13-Oct-2021	11-Oct-2021



CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

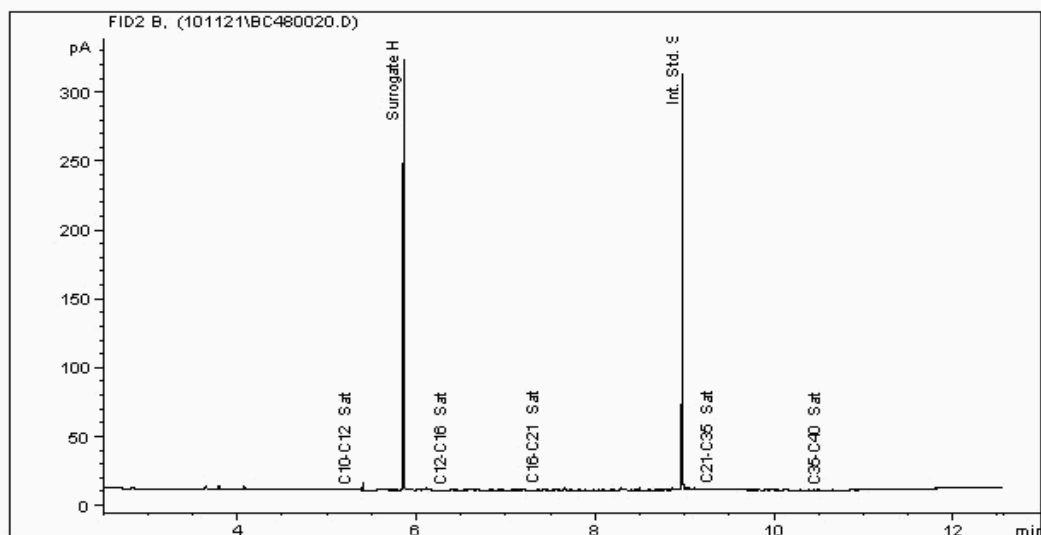
Sample No : 25107107
Sample ID : CELL 5 SUMP

Depth :

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

Sample Identity: 23470281-
Date Acquired : 11/10/2021 20:27:09 PM
Units : ppb
Dilution : SE CELL 5 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	232.5	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	5.7	0.005
5	Int. Std. S	249.2	0.250
6	C21-C35 Sat	22.3	0.023
7	C35-C40 Sat	0.0	0.000
Total Peak Area		509.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

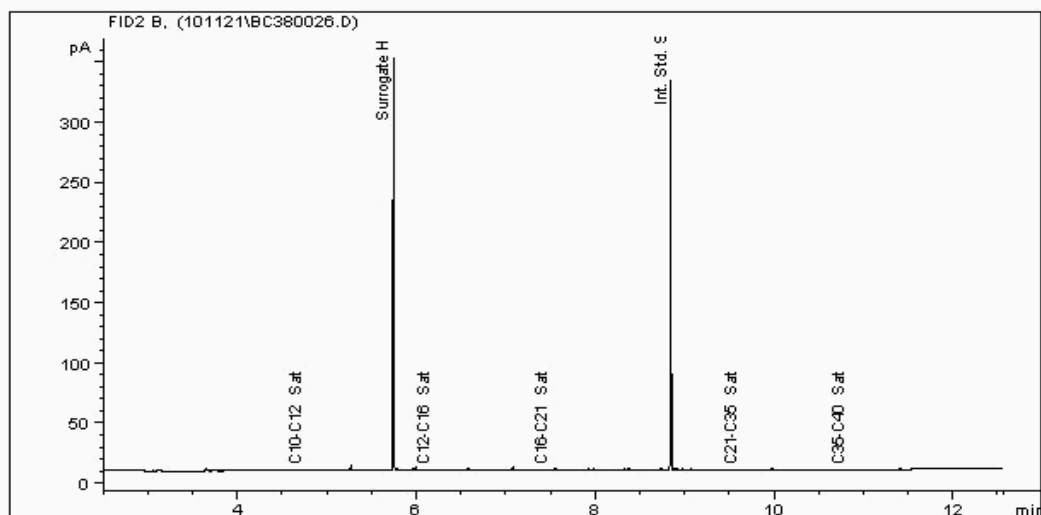
Sample No : 25107126
Sample ID : BH 3/3

Depth :

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23470395-
Date Acquired : 11/10/21 20:01:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	229.2	0.211
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	256.3	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
Total Peak Area		485.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

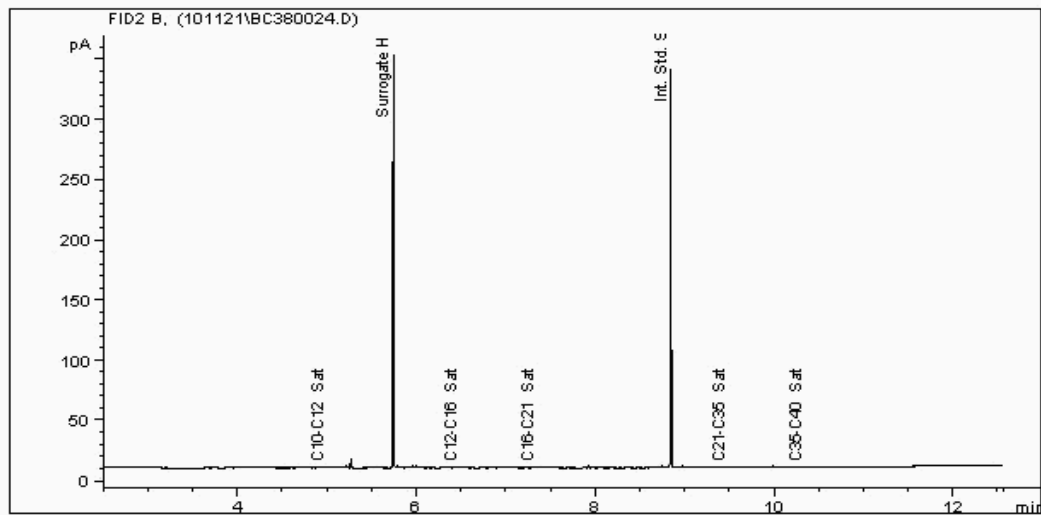
Sample No : 25107154
Sample ID : BH 3/2

Depth :

Speciated TPH - SATS (C12 - C40)

Sample Identity: 23470357-
Date Acquired : 11/10/21 19:15:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	234.3	0.211
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	262.1	0.250
6	C21-C35 Sat	0.0	0.000
7	C35-C40 Sat	0.0	0.000
Total Peak Area		496.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

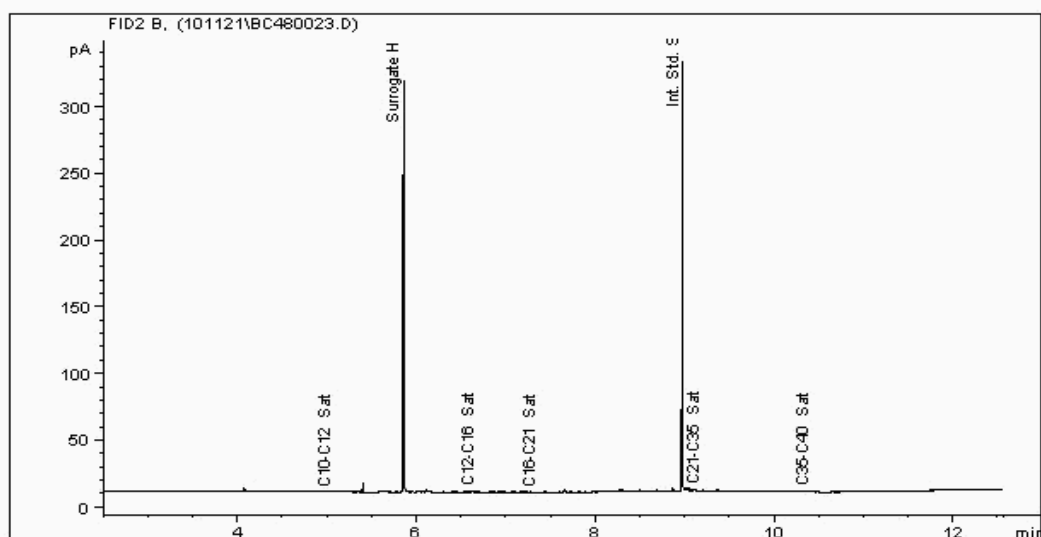
Sample No : 25111423
Sample ID : LEACHATE HOLDING LAGOC

Depth :

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

Sample Identity: 23470200-
Date Acquired : 11/10/2021 21:36:25 PM
Units : ppb
Dilution : SE LEACHATE HOLDIN[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	236.3	0.203
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	247.1	0.250
6	C21-C35 Sat	63.4	0.066
7	C35-C40 Sat	0.0	0.000
Total Peak Area		546.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

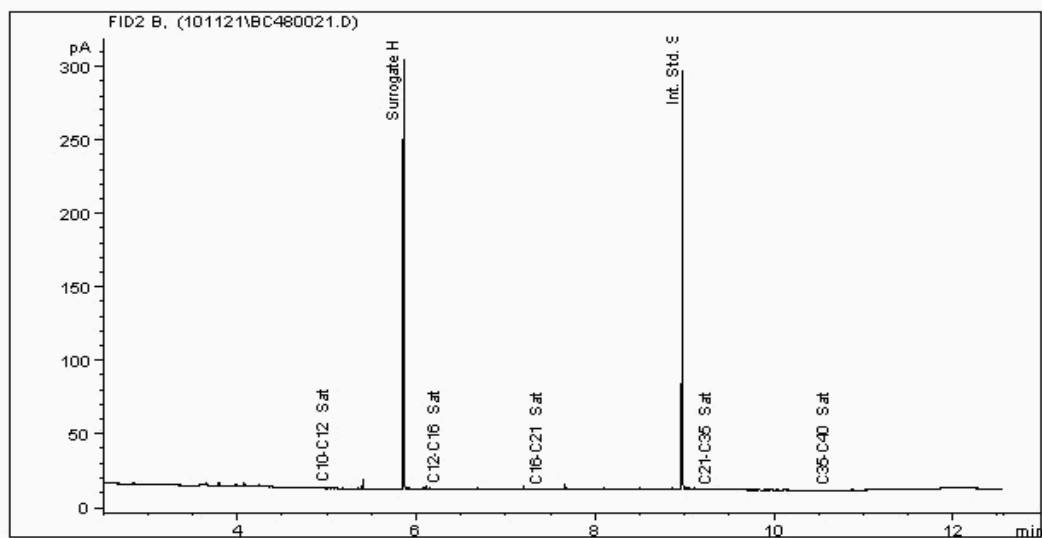
Sample No : 25112906
Sample ID : CELL 3/4 SUMP

Depth :

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

Sample Identity: 23470254-
Date Acquired : 11/10/2021 20:50:26 PM
Units : ppb
Dilution : SE CELL 3/4 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.8	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	Int. Std. S	241.0	0.250
6	C21-C35 Sat	7.3	0.008
7	C35-C40 Sat	0.0	0.000
Total Peak Area		474.1	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

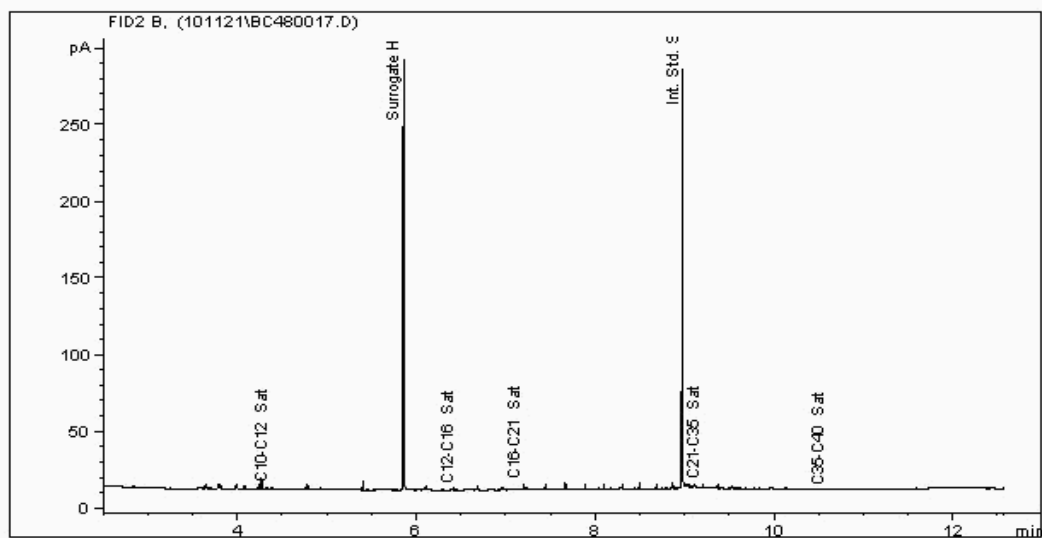
Sample No : 25112933
Sample ID : CELL 1/2 SUMP

Depth :

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

Sample Identity: 23470227-
Date Acquired : 11/10/2021 18:44:51 PM
Units : ppb
Dilution : SE CELL 1/2 SUMP[1] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	19.6	0.018
2	Surrogate H	214.0	0.199
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	37.6	0.036
5	Int. Std. S	228.7	0.250
6	C21-C35 Sat	178.5	0.202
7	C35-C40 Sat	13.2	0.017
Total Peak Area		691.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

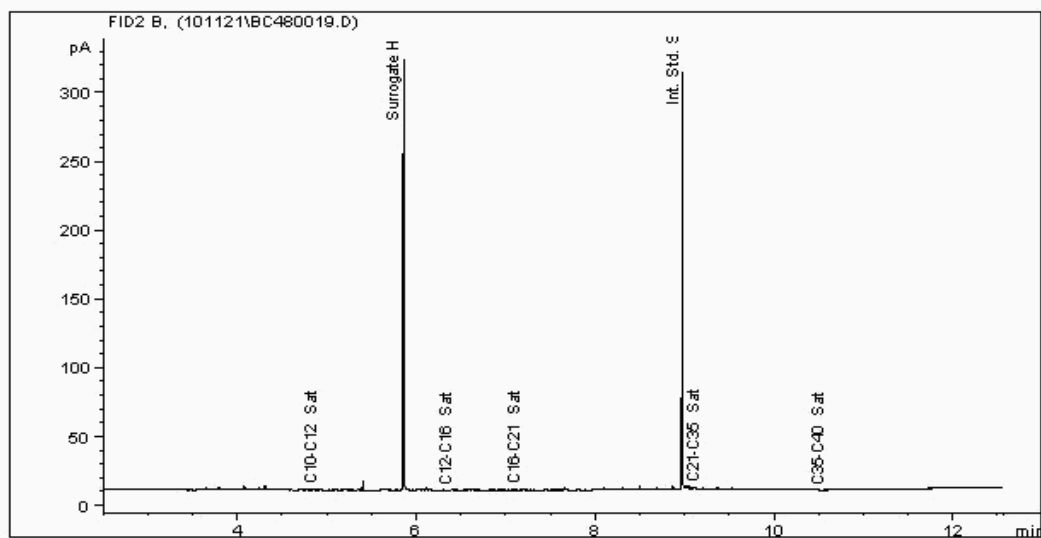
Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 25112951
Sample ID : CELL 7 SUMP

Depth :

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)Sample Identity: 23470335-
Date Acquired : 11/10/2021 20:04:06 PM
Units : ppb
Dilution : SE CELL 7 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	7.5	0.006
2	Surrogate H	237.9	0.202
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	9.2	0.008
5	Int. Std. S	250.0	0.250
6	C21-C35 Sat	90.5	0.094
7	C35-C40 Sat	3.6	0.004
Total Peak Area		598.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

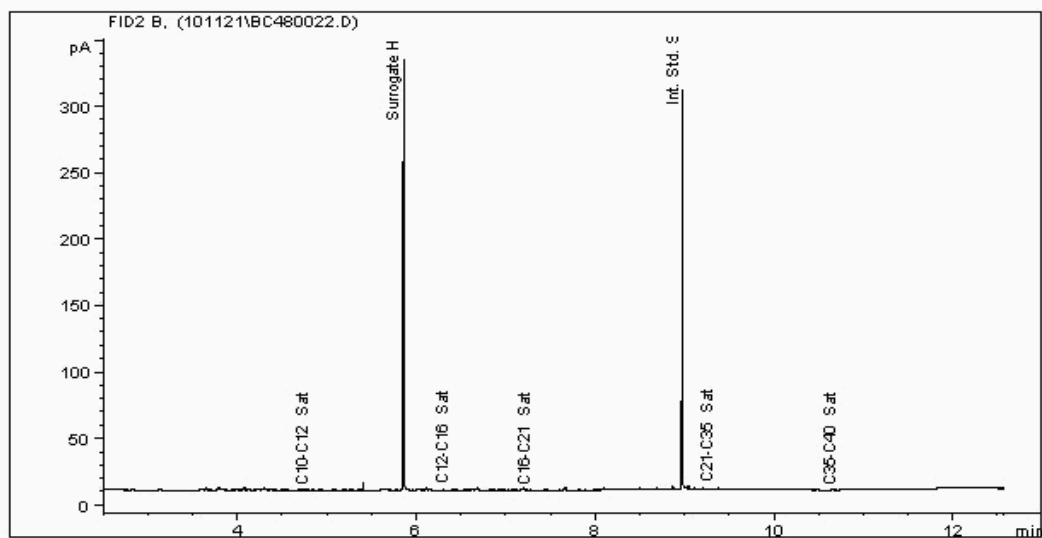
Sample No : 25112965
Sample ID : CELL 6 SUMP

Depth :

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

Sample Identity: 23470308-
Date Acquired : 11/10/2021 21:13:25 PM
Units : ppb
Dilution : SE CELL 6 SUMP[] ->
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	3.8	0.003
2	Surrogate H	239.5	0.205
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	6.0	0.005
5	Int. Std. S	248.2	0.250
6	C21-C35 Sat	57.5	0.060
7	C35-C40 Sat	0.0	0.000
Total Peak Area		555.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

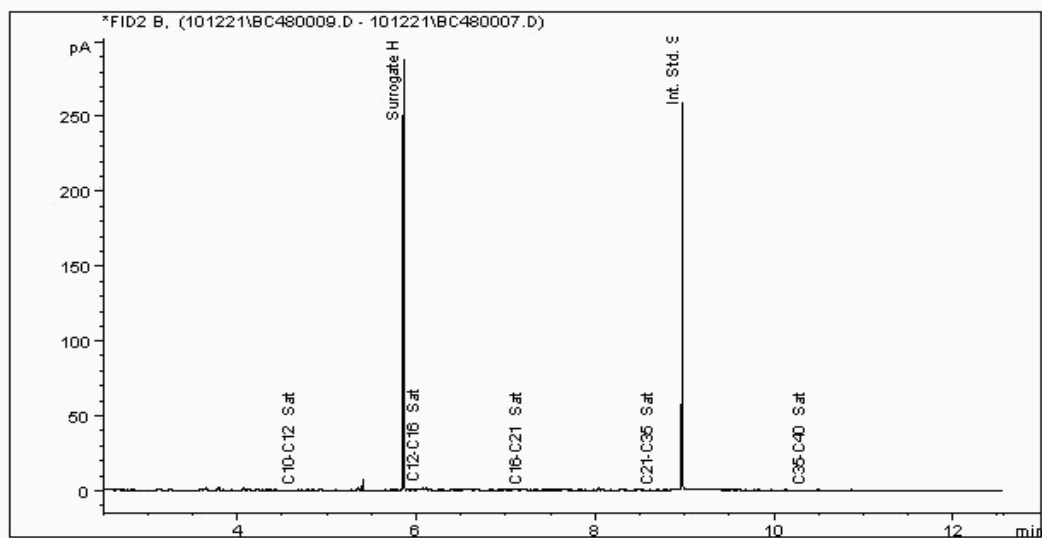
Sample No : 25116723
Sample ID : NACW203

Depth :

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

Sample Identity: 23469583-
Date Acquired : 12/10/2021 18:47:07 PM
Units : ppb
Dilution : SE NACW203[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	220.7	0.257
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	206.5	0.283
7	C35-C40 Sat	0.0	0.000
Total Peak Area		427.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

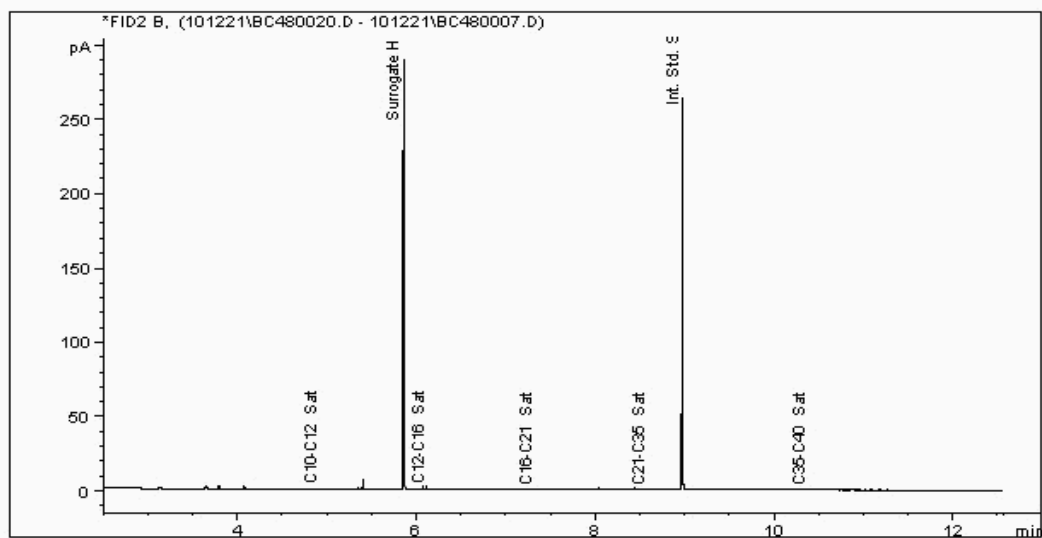
Sample No : 25116740
Sample ID : NACW205

Depth :

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

Sample Identity: 23469721-
Date Acquired : 12/10/2021 23:01:51 PM
Units : ppb
Dilution : SE NACW205[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	221.0	0.249
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	208.7	0.276
7	C35-C40 Sat	0.0	0.000
Total Peak Area		429.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

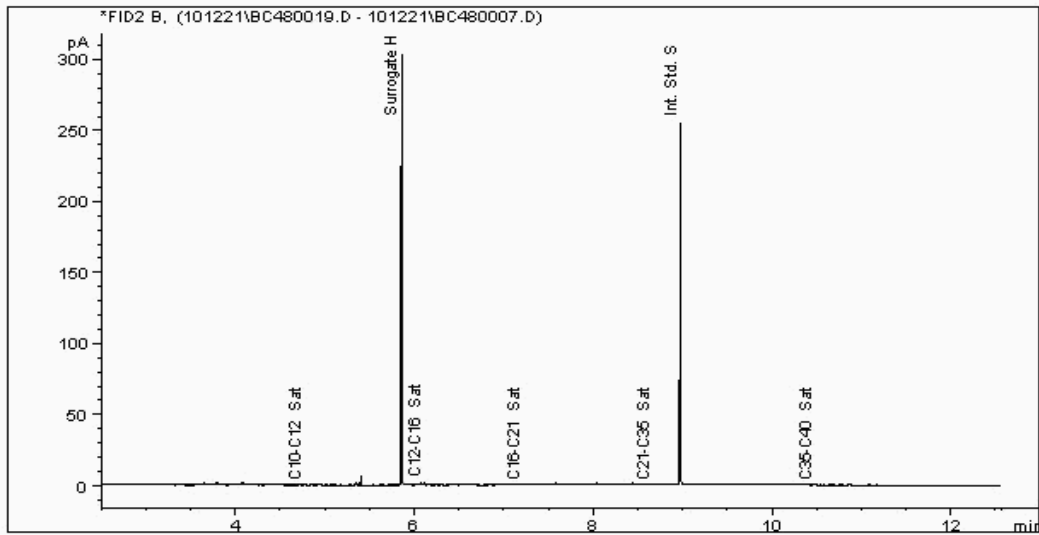
Sample No : 25116748
Sample ID : BH3/4

Depth :

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

Sample Identity: 23469800-
Date Acquired : 12/10/2021 22:38:22 PM
Units : ppb
Dilution : SE BH3/4[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	224.7	0.249
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	208.9	0.272
7	C35-C40 Sat	0.0	0.000
Total Peak Area		433.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

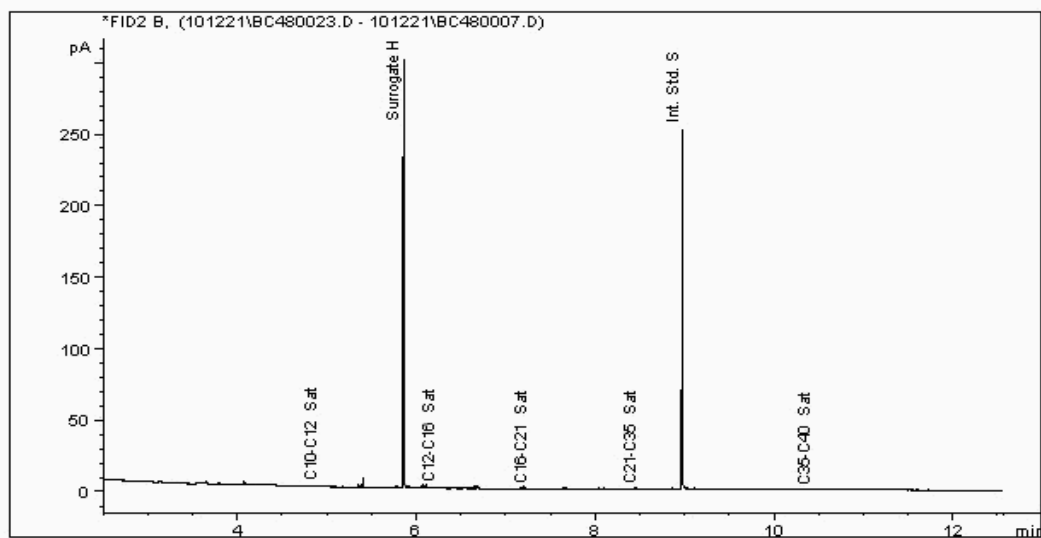
Sample No : 25116756
Sample ID : BH5/02

Depth :

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

Sample Identity: 23469877-
Date Acquired : 13/10/2021 00:11:23 PM
Units : ppb
Dilution : SE BH5/02[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	222.3	0.258
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	202.8	0.276
7	C35-C40 Sat	0.0	0.000
Total Peak Area		425.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

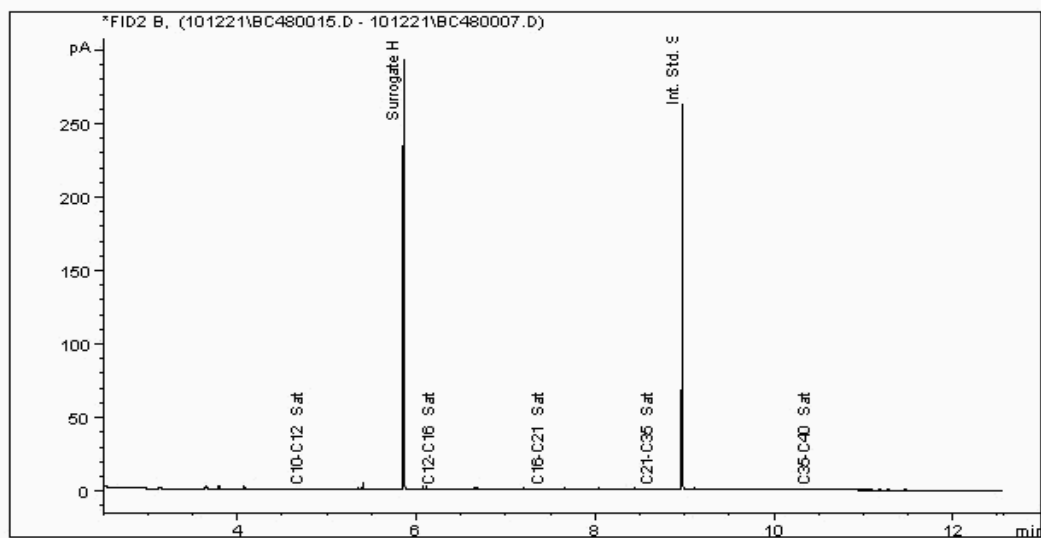
Sample No : 25116764
Sample ID : NACW212

Depth :

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

Sample Identity: 23469518-
Date Acquired : 12/10/2021 21:05:48 PM
Units : ppb
Dilution : SE NACW212[1] ->
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	226.3	0.235
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	214.9	0.262
7	C35-C40 Sat	0.0	0.000
Total Peak Area		441.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

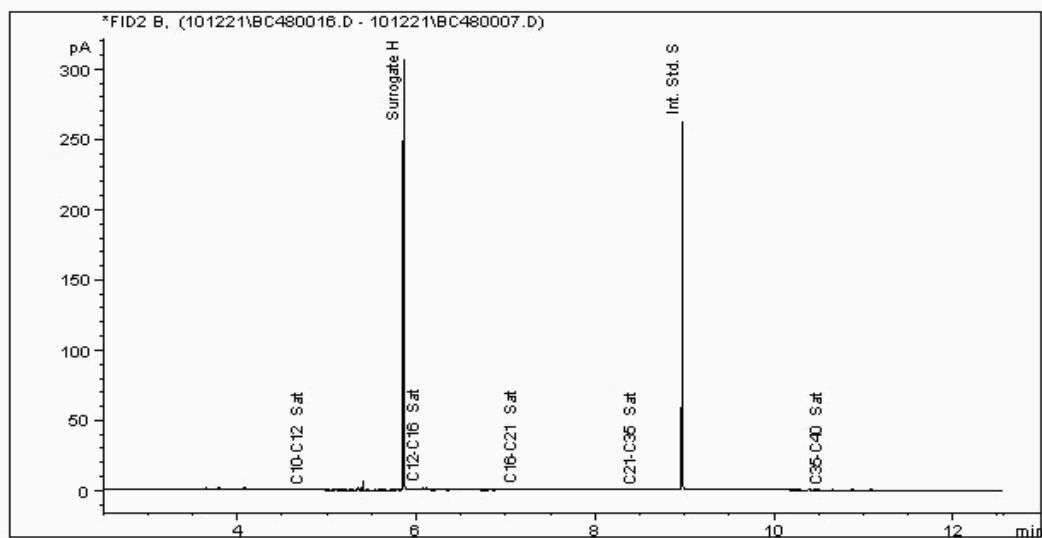
Sample No : 25116780
Sample ID : NACW228

Depth :

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

Sample Identity: 23469425-
Date Acquired : 12/10/2021 21:28:55 PM
Units : ppb
Dilution : SE NACW228[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	227.8	0.244
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	214.9	0.270
7	C35-C40 Sat	0.0	0.000
Total Peak Area		442.7	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

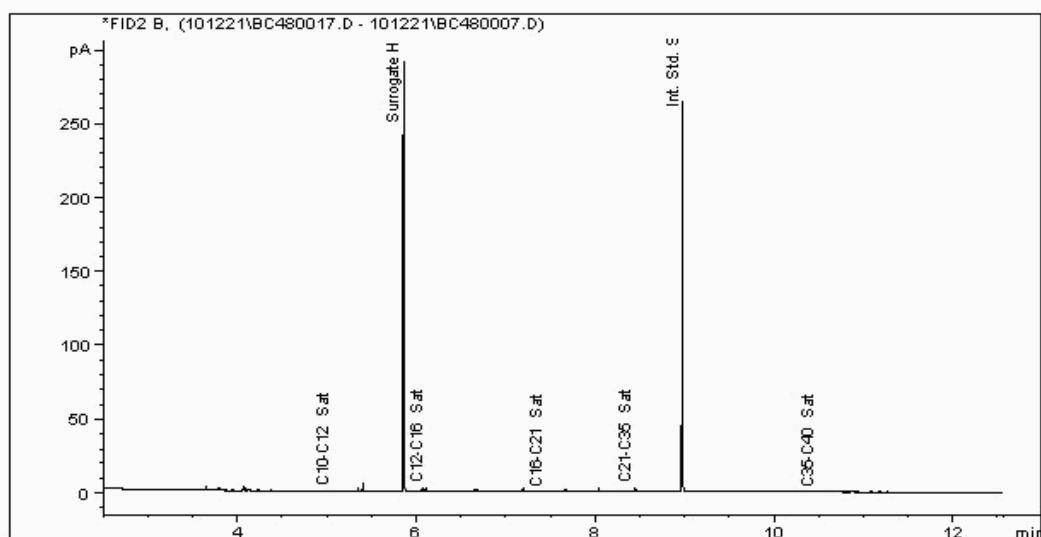
Sample No : 25116783
Sample ID : UD5

Depth :

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

Sample Identity: 23470033-
Date Acquired : 12/10/2021 21:52:10 PM
Units : ppb
Dilution : SE UD5[1] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	223.1	0.275
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	205.5	0.298
7	C35-C40 Sat	0.0	0.000
Total Peak Area		428.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

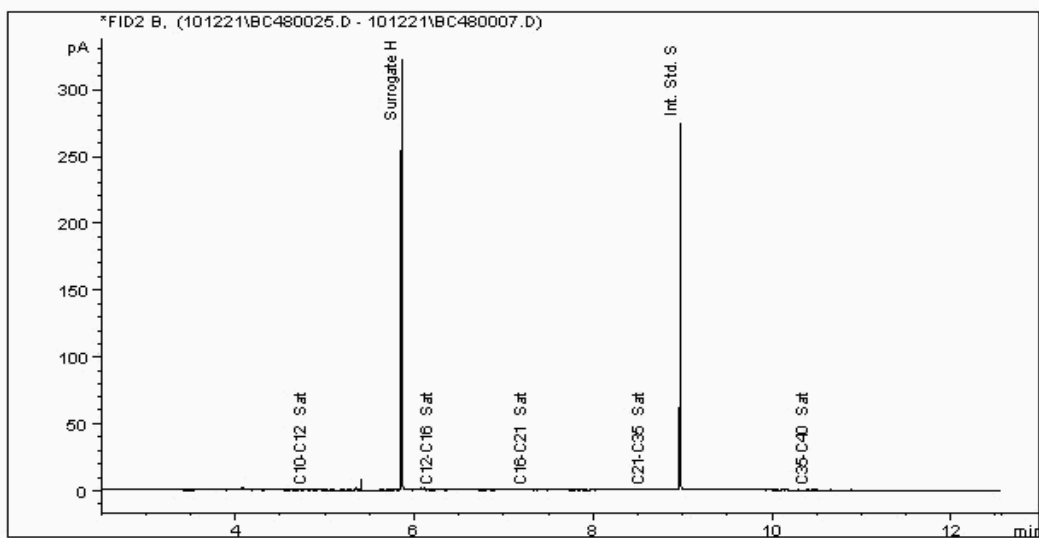
Sample No : 25116802
Sample ID : UD4

Depth :

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

Sample Identity: 23470013-
Date Acquired : 13/10/2021 00:56:58 PM
Units : ppb
Dilution : SE UD4[] ->
CF : 1
Multiplier : 0.026

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	238.6	0.240
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	217.2	0.256
7	C35-C40 Sat	0.0	0.000
Total Peak Area		455.8	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

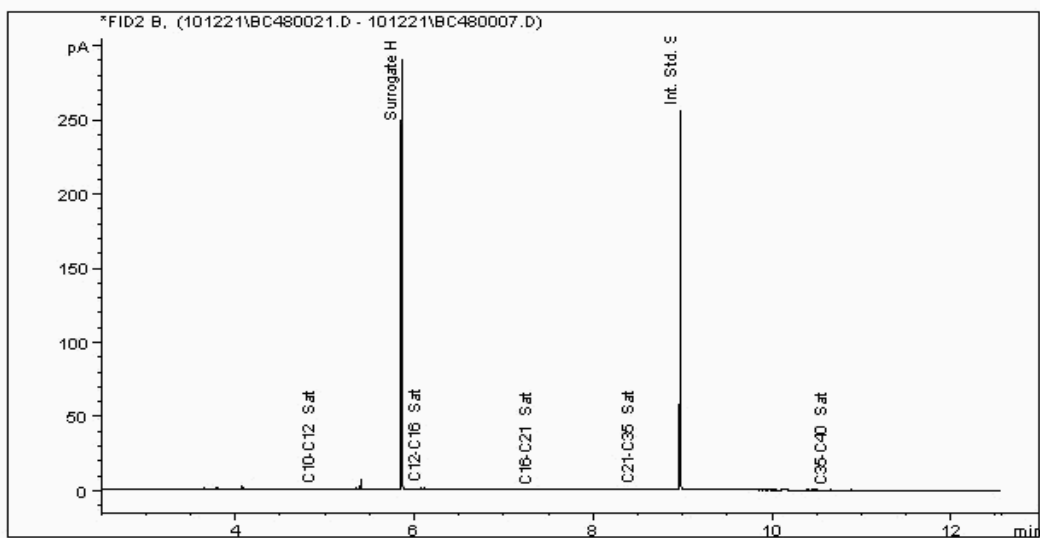
Sample No : 25116835
Sample ID : UD3

Depth :

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

Sample Identity: 23469979-
Date Acquired : 12/10/2021 23:25:08 PM
Units : ppb
Dilution : SE UD3[] ->
CF : 1
Multiplier : 0.029

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.2	0.269
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	209.2	0.294
7	C35-C40 Sat	0.0	0.000
Total Peak Area		434.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

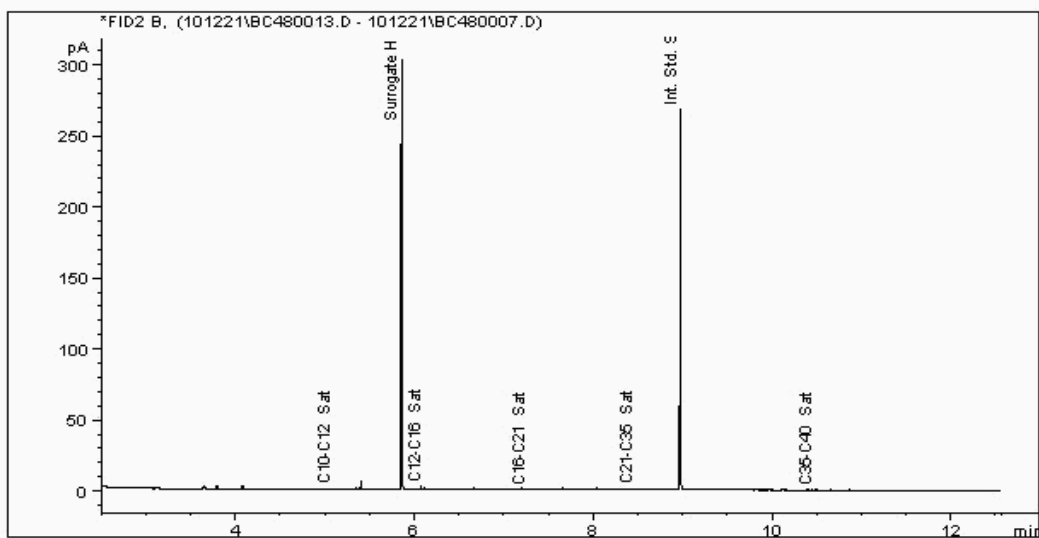
Sample No : 25116927
Sample ID : UD1

Depth :

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

Sample Identity: 23469945-
Date Acquired : 12/10/2021 20:19:25 PM
Units : ppb
Dilution : SE UD1[] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	234.1	0.272
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	217.9	0.298
7	C35-C40 Sat	0.0	0.000
Total Peak Area		452.0	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

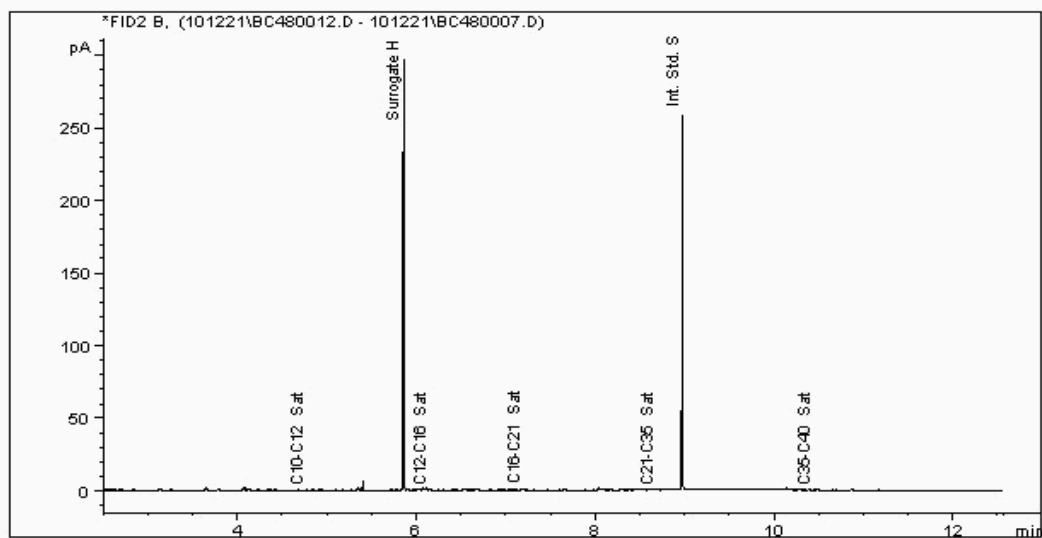
Sample No : 25116985
Sample ID : BH208

Depth :

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

Sample Identity: 23469923-
Date Acquired : 12/10/2021 19:56:27 PM
Units : ppb
Dilution : SE BH208[1] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	217.5	0.243
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	205.6	0.270
7	C35-C40 Sat	0.0	0.000
Total Peak Area		423.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

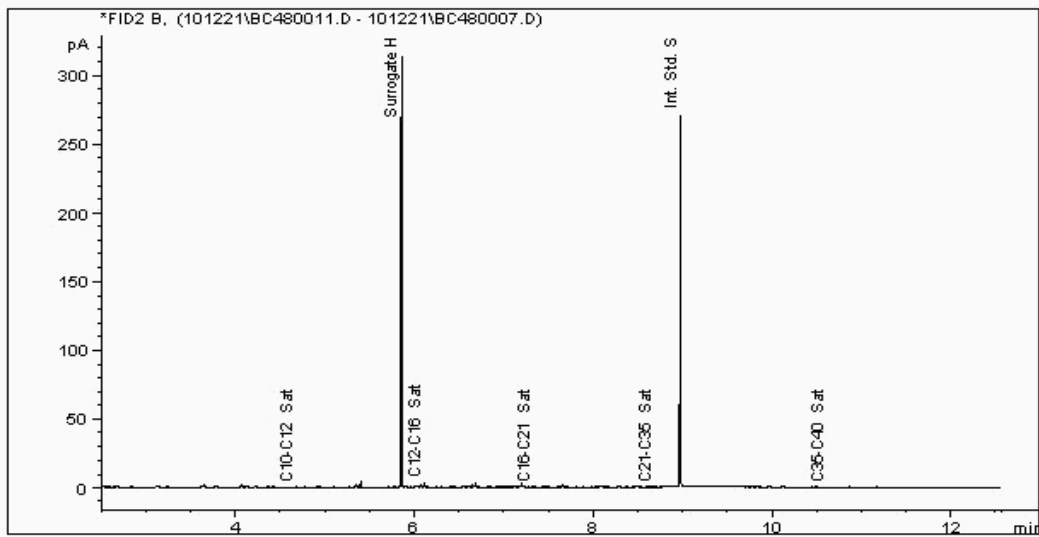
Sample No : 25117215
Sample ID : NACW 229

Depth :

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

Sample Identity: 23470630-
Date Acquired : 12/10/2021 19:33:27 PM
Units : ppb
Dilution : SE NACW 229[] ->
CF : 1
Multiplier : 0.029

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	229.8	0.259
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	215.6	0.286
7	C35-C40 Sat	0.0	0.000
Total Peak Area		445.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

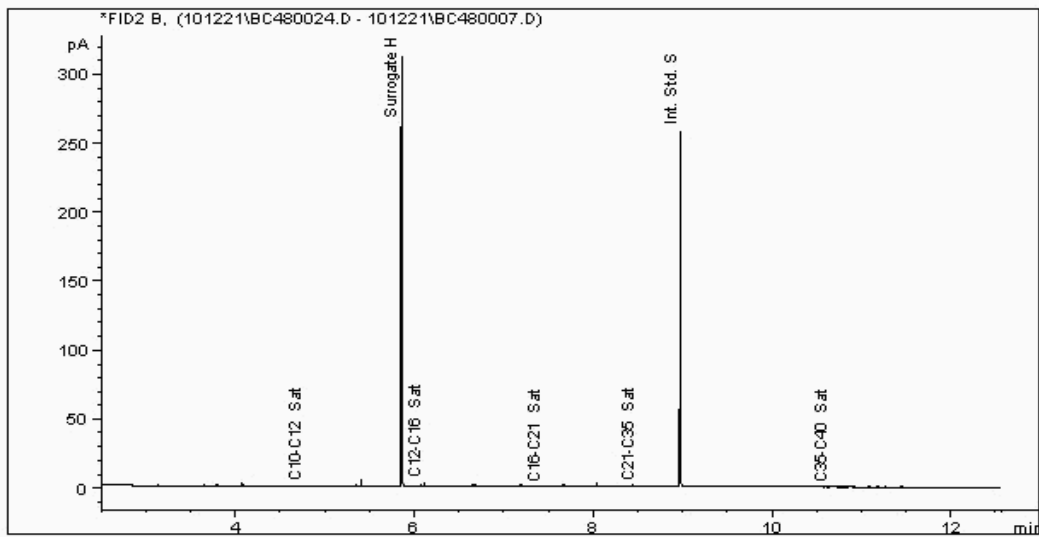
Sample No : 25117233
Sample ID : NACW 219

Depth :

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

Sample Identity: 23470606-
Date Acquired : 13/10/2021 00:34:10 PM
Units : ppb
Dilution : SE NACW 219[] ->
CF : 1
Multiplier : 0.027

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	230.8	0.254
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.4	0.272
7	C35-C40 Sat	0.0	0.000
Total Peak Area		441.2	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

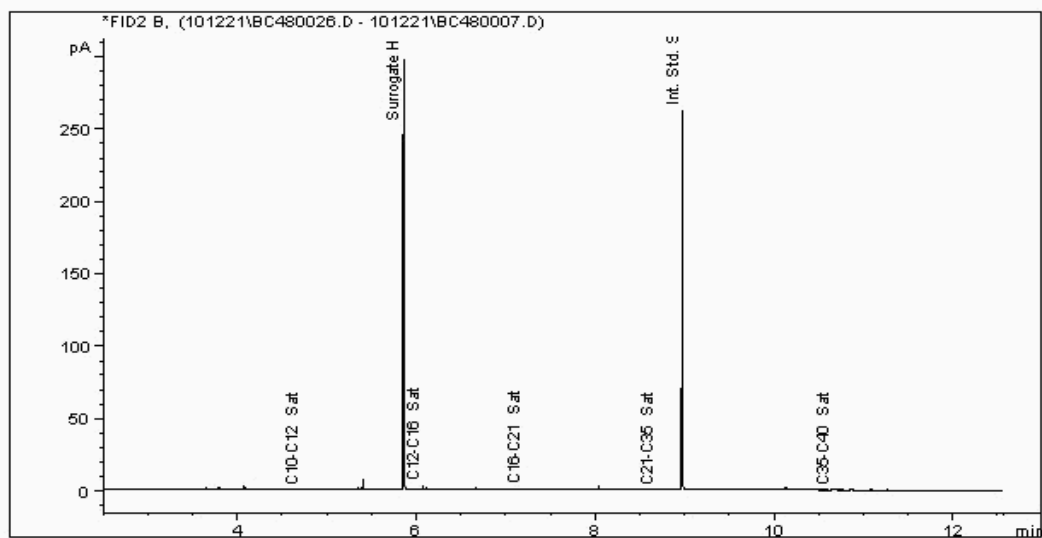
Sample No : 25117479
Sample ID : BH 3/9

Depth :

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

Sample Identity: 23470561-
Date Acquired : 13/10/2021 01:20:34 PM
Units : ppb
Dilution : SE BH 3/9[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	228.7	0.256
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.9	0.278
7	C35-C40 Sat	0.0	0.000
Total Peak Area		439.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

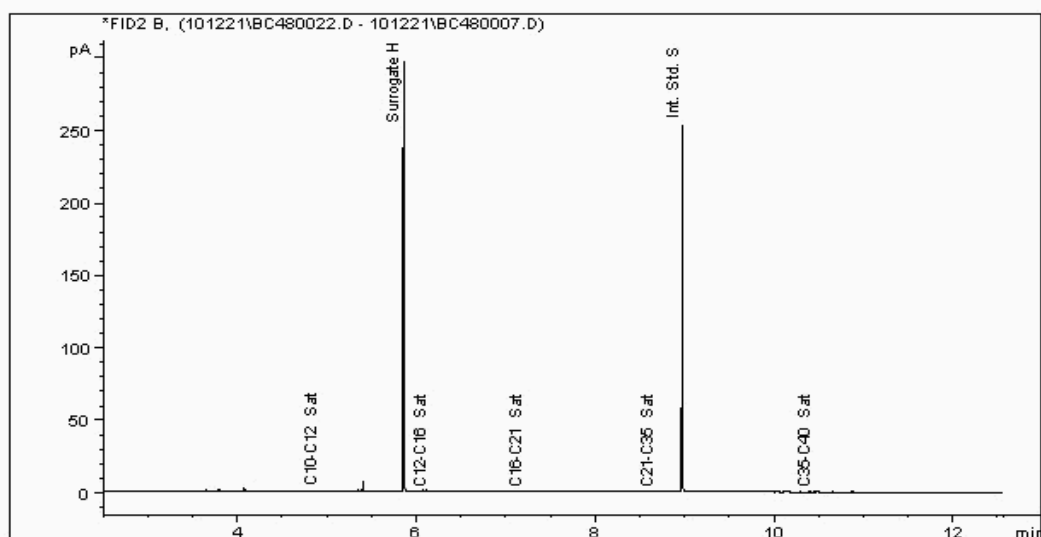
Sample No : 25117505
Sample ID : BH 3/8

Depth :

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

Sample Identity: 23470512-
Date Acquired : 12/10/2021 23:47:52 PM
Units : ppb
Dilution : SE BH 3/8[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	222.8	0.260
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	204.8	0.281
7	C35-C40 Sat	0.0	0.000
Total Peak Area		427.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

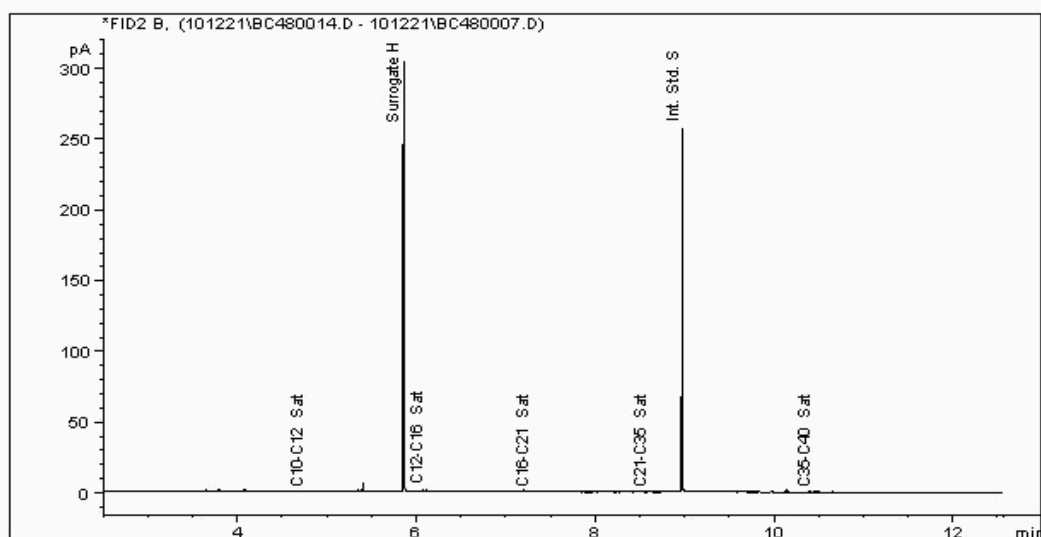
Sample No : 25117562
Sample ID : BH 3/6

Depth :

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

Sample Identity: 23470475-
Date Acquired : 12/10/2021 20:42:39 PM
Units : ppb
Dilution : SE BH 3/6[1] ->
CF : 1
Multiplier : 0.028

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	225.7	0.256
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	210.9	0.281
7	C35-C40 Sat	0.0	0.000
Total Peak Area		436.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

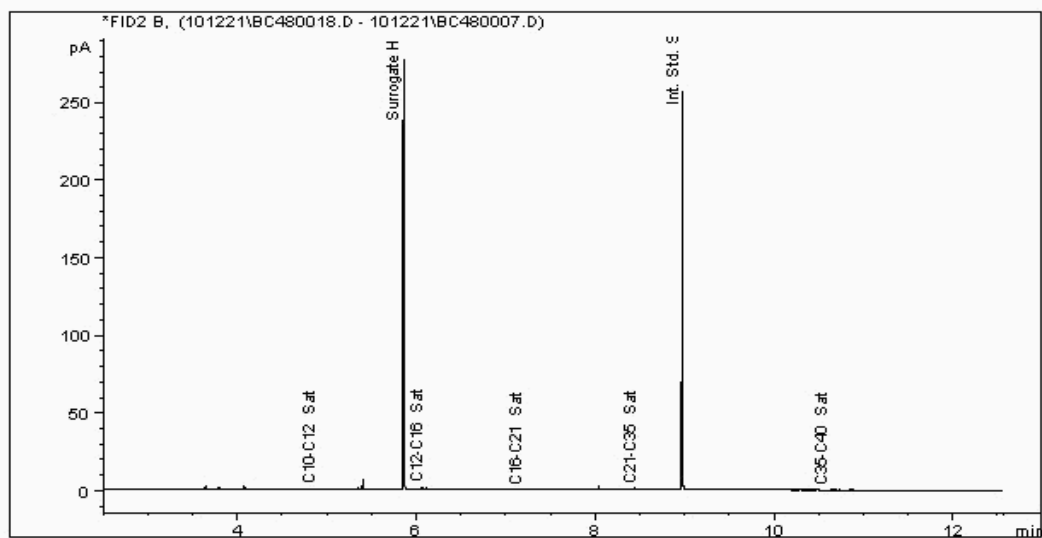
Sample No : 25117594
Sample ID : BH 3/5

Depth :

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

Sample Identity: 23470425-
Date Acquired : 12/10/2021 22:15:09 PM
Units : ppb
Dilution : SE BH 3/5[1] ->
CF : 1
Multiplier : 0.030

#	Compound Name	Main Peak Area	Amount
1	C10-C12 Sat	0.0	0.000
2	Surrogate H	211.9	0.254
3	C12-C16 Sat	0.0	0.000
4	C16-C21 Sat	0.0	0.000
5	C21-C35 Sat	0.0	0.000
6	Int. Std. S	212.5	0.299
7	C35-C40 Sat	0.0	0.000
Total Peak Area		424.4	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

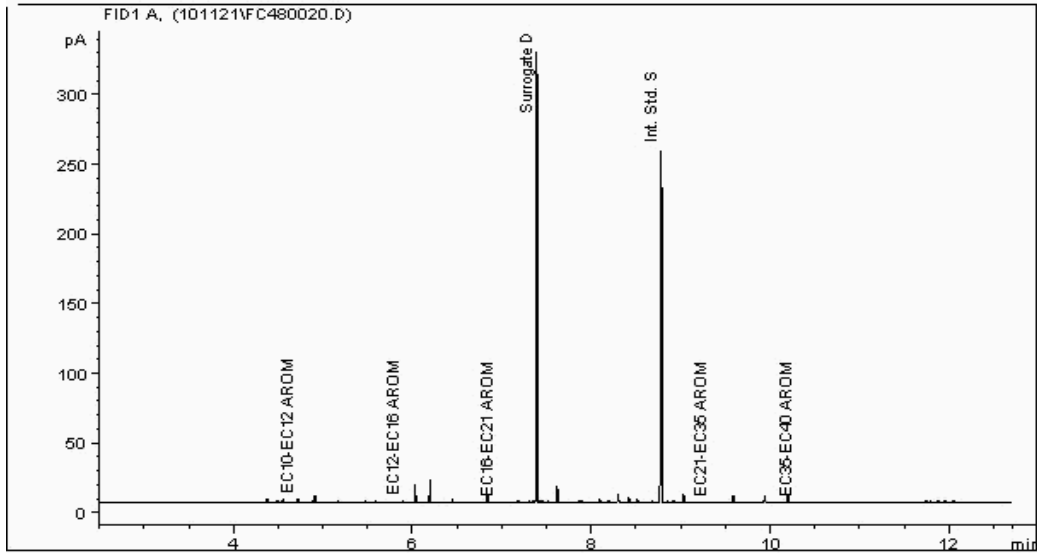
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25107107
Sample ID : CELL 5 SUMP

Depth :

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

Sample Identity: 23470282-
Date Acquired : 11/10/2021 20:27:09 PM
Units : ppb
Dilution : SE CELL 5 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

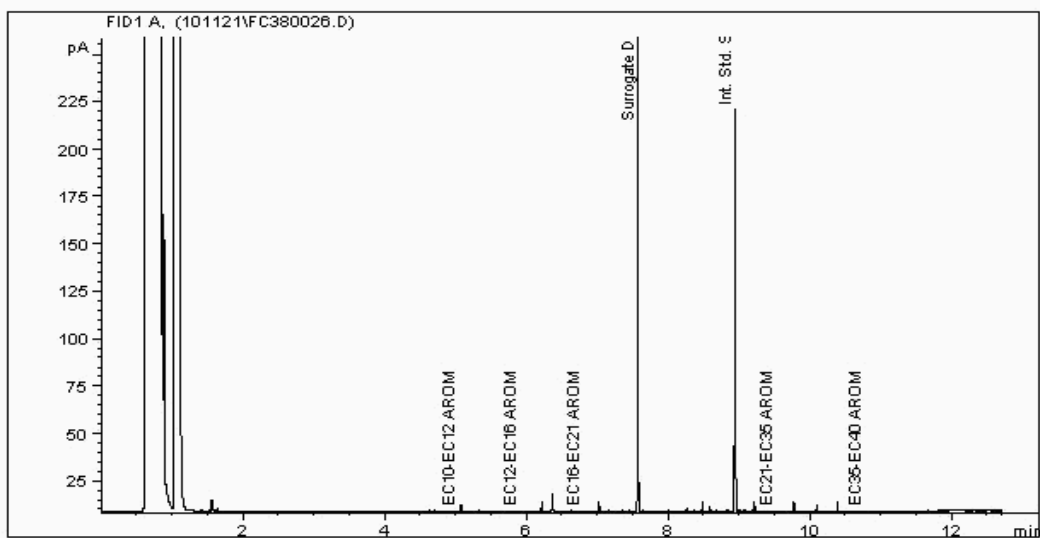
Sample No : 25107126
Sample ID : BH 3/3

Depth :

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23470396-
Date Acquired : 11/10/21 20:01:20 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	159.6	0.228
5	Int. Std. S	166.0	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
Total Peak Area		325.6	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

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

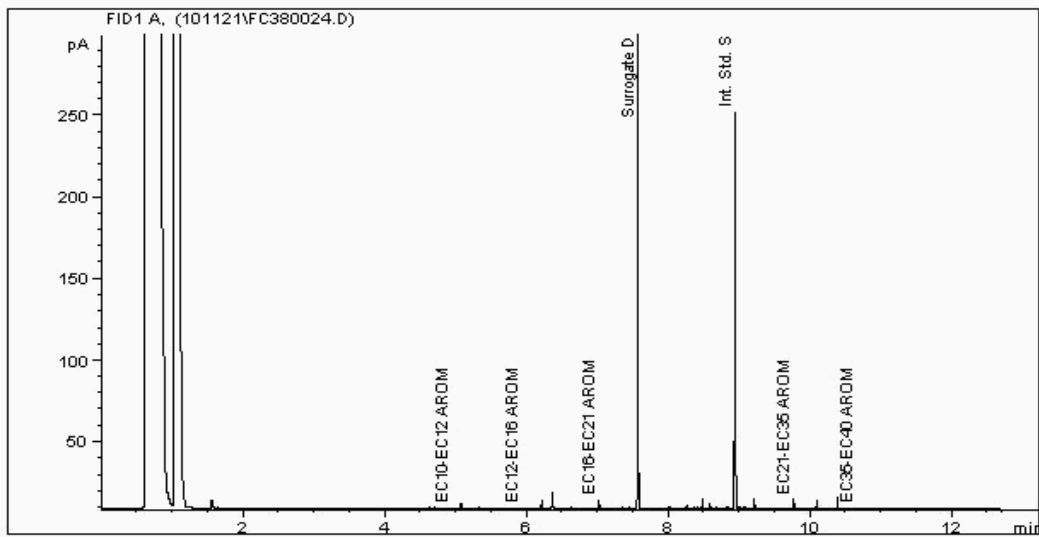
Sample No : 25107154
Sample ID : BH 3/2

Depth :

Speciated TPH - AROM (C12 - C40)

Sample Identity: 23470358-
Date Acquired : 11/10/21 19:15:43 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.025

#	Compound Name	Main Peak Area	Amount
1	EC10-EC12 AROM	0.0	0.000
2	EC12-EC16 AROM	0.0	0.000
3	EC16-EC21 AROM	0.0	0.000
4	Surrogate D	181.9	0.224
5	Int. Std. S	192.6	0.250
6	EC21-EC35 AROM	0.0	0.000
7	EC35-EC40 AROM	0.0	0.000
Total Peak Area		374.5	





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

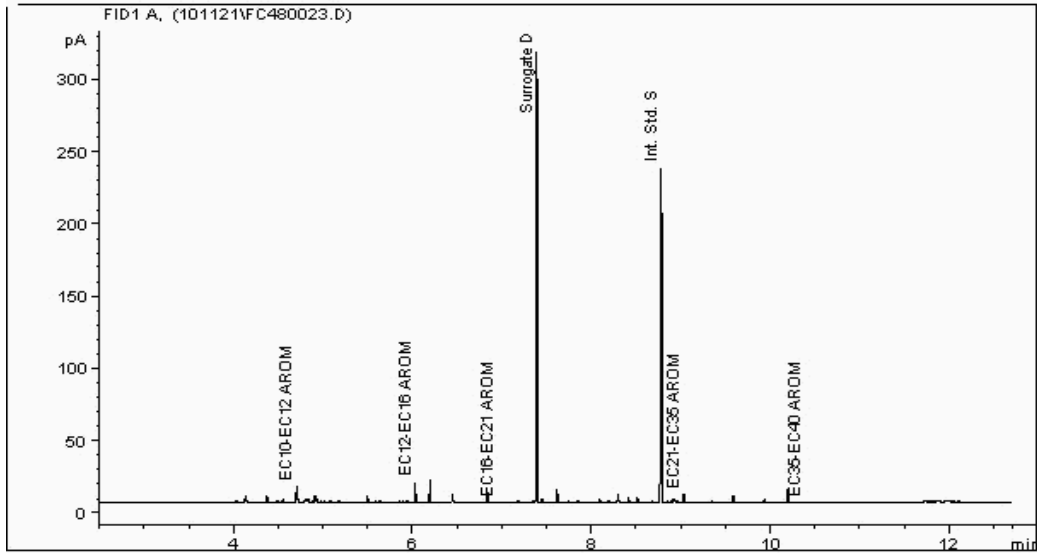
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25111423
Sample ID : LEACHATE HOLDING LAGOC

Depth :

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

Sample Identity: 23470201-
Date Acquired : 11/10/2021 21:36:25 PM
Units : ppb
Dilution : SE LEACHATE HOLDIN[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

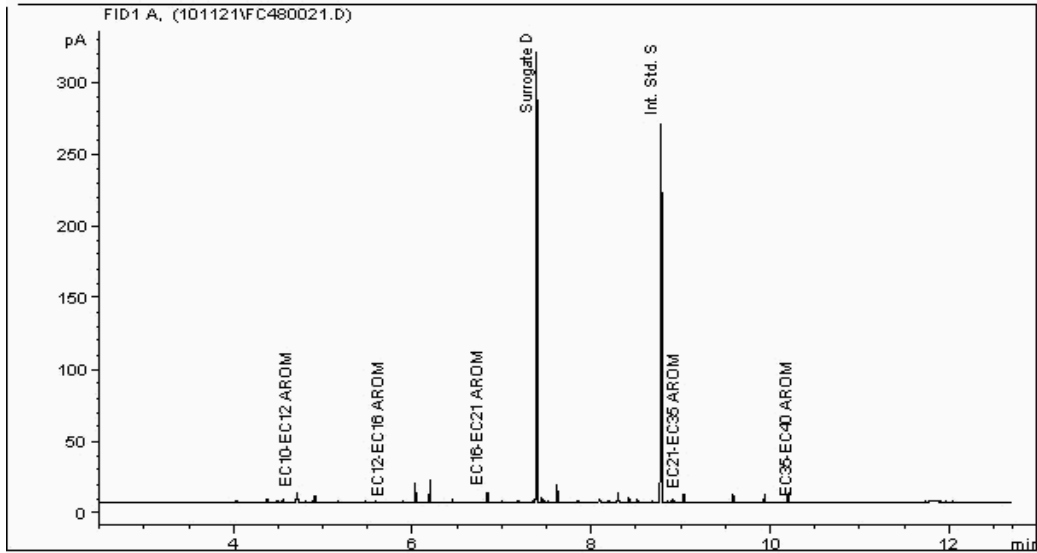
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112906
Sample ID : CELL 3/4 SUMP

Depth :

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

Sample Identity: 23470255-
Date Acquired : 11/10/2021 20:50:26 PM
Units : ppb
Dilution : SE CELL 3/4 SUMP[1] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

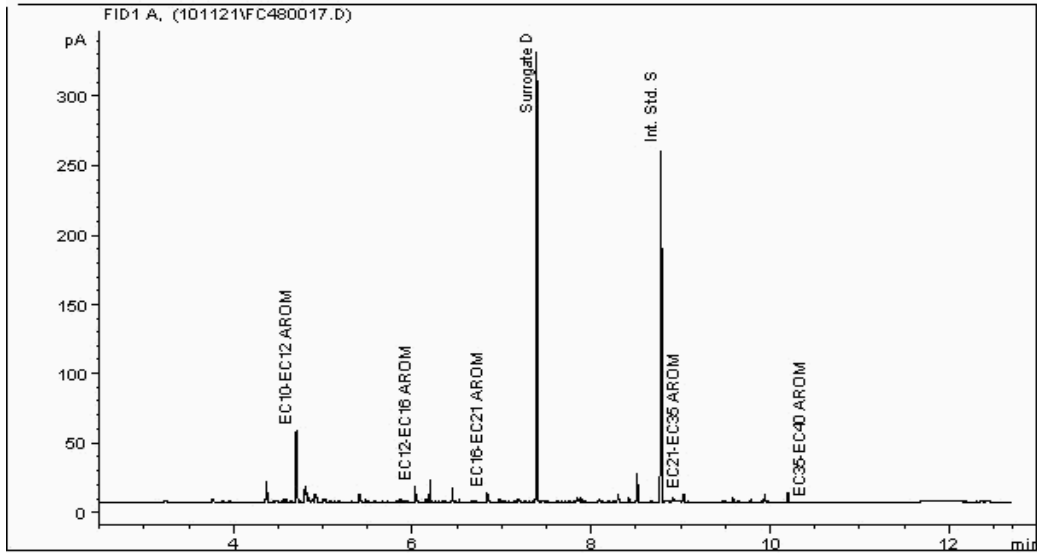
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112933
Sample ID : CELL 1/2 SUMP

Depth :

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

Sample Identity: 23470228-
Date Acquired : 11/10/2021 18:44:52 PM
Units : ppb
Dilution : SE CELL 1/2 SUMP[1] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

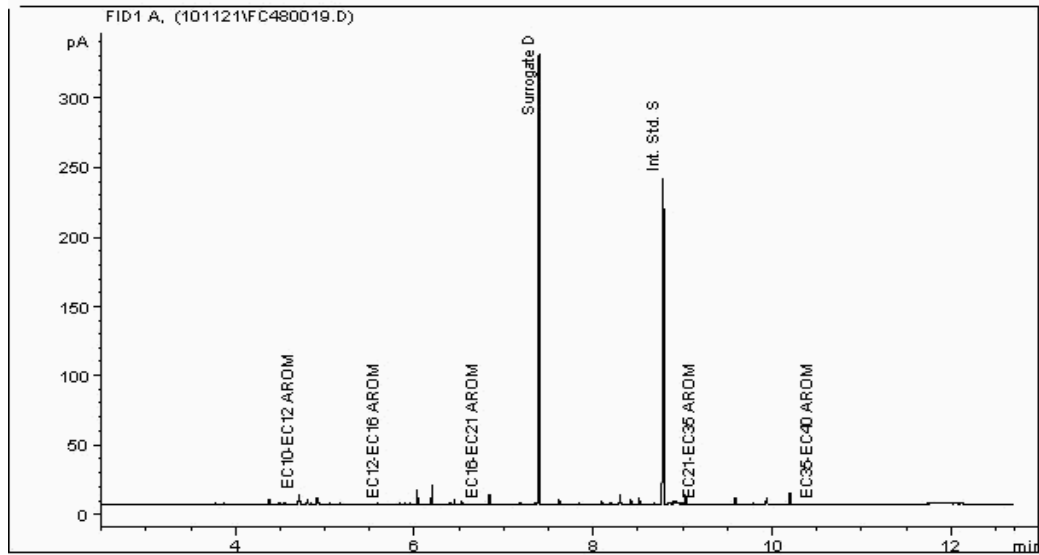
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112951
Sample ID : CELL 7 SUMP

Depth :

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

Sample Identity: 23470336-
Date Acquired : 11/10/2021 20:04:07 PM
Units : ppb
Dilution : SE CELL 7 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

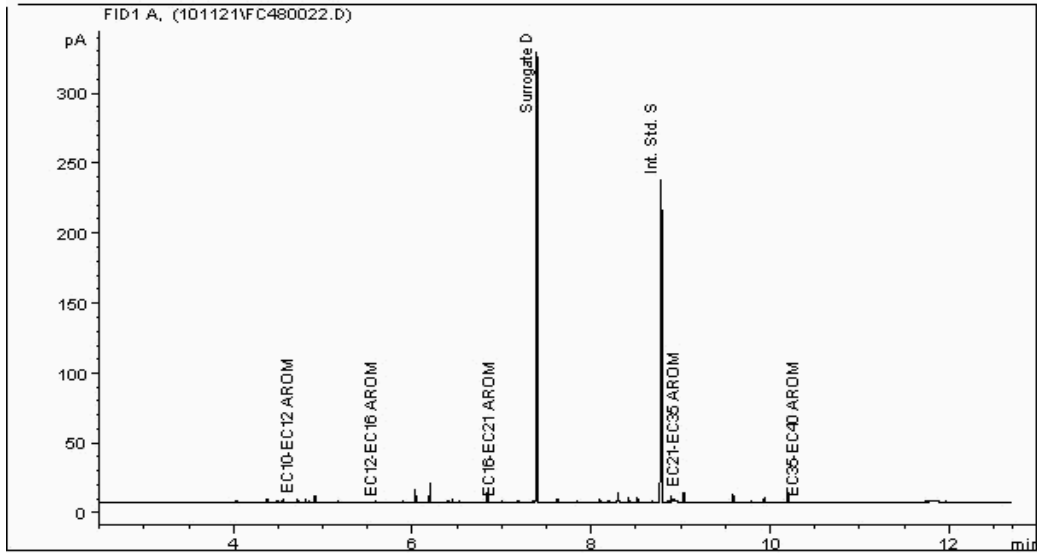
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25112965
Sample ID : CELL 6 SUMP

Depth :

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

Sample Identity: 23470309-
Date Acquired : 11/10/2021 21:13:25 PM
Units : ppb
Dilution : SE CELL 6 SUMP[] ->
CF : 1
Multiplier : 0.025





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

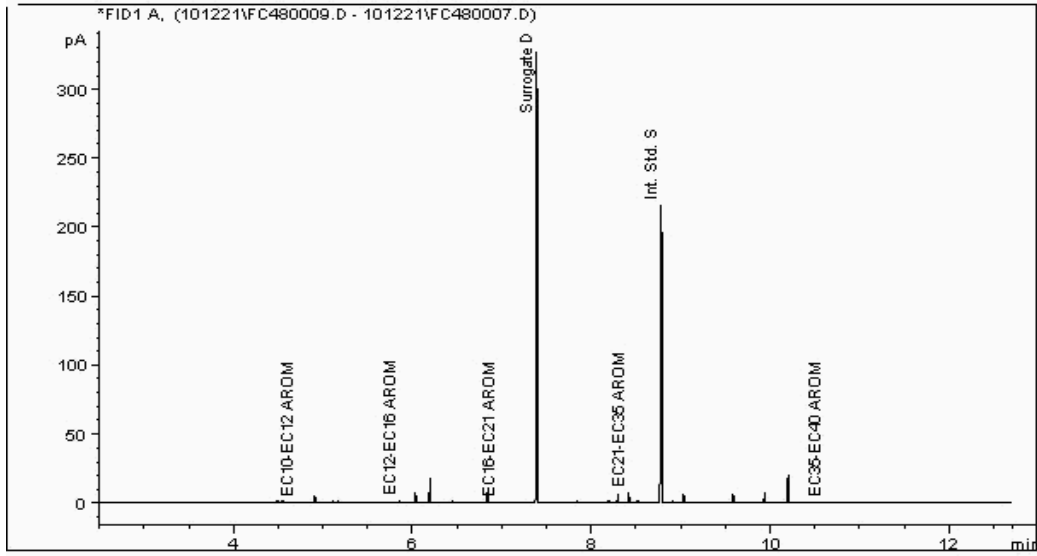
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116723
Sample ID : NACW203

Depth :

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

Sample Identity: 23469584-
Date Acquired : 12/10/2021 18:47:06 PM
Units : ppb
Dilution : SE NACW203[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

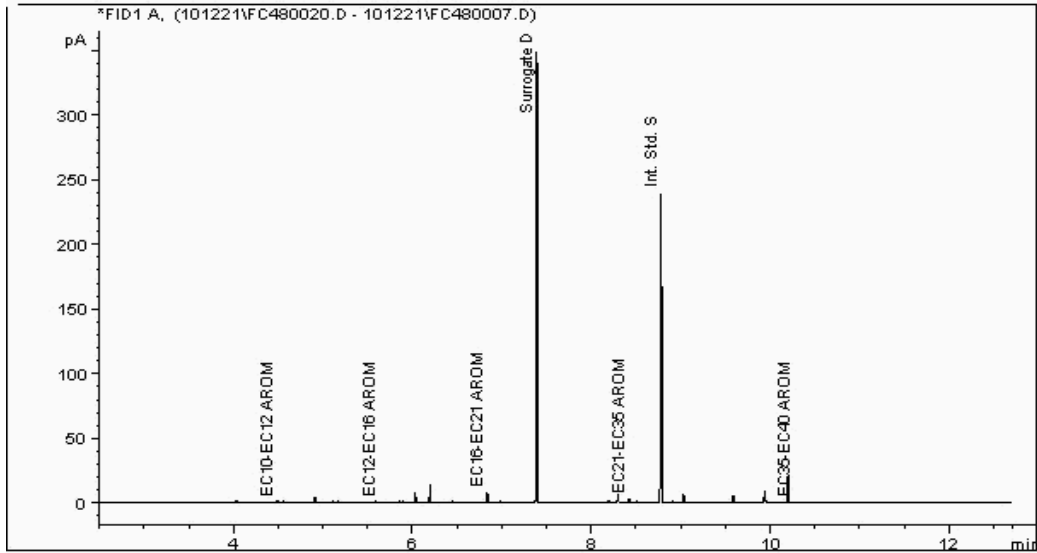
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116740
Sample ID : NACW205

Depth :

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

Sample Identity: 23469722-
Date Acquired : 12/10/2021 23:01:51 PM
Units : ppb
Dilution : SE NACW205[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

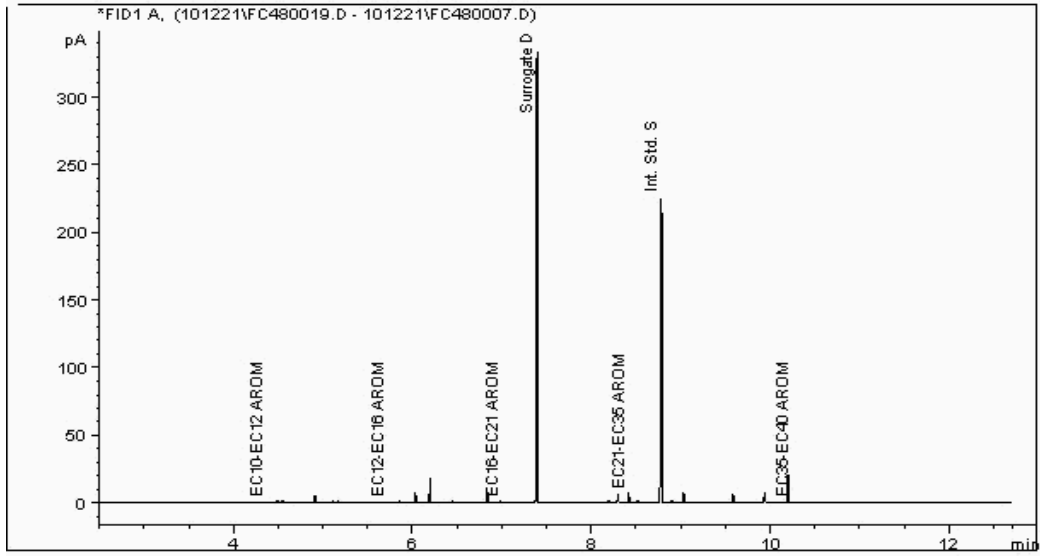
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116748
Sample ID : BH3/4

Depth :

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

Sample Identity: 23469801-
Date Acquired : 12/10/2021 22:38:22 PM
Units : ppb
Dilution : SE BH3/4[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

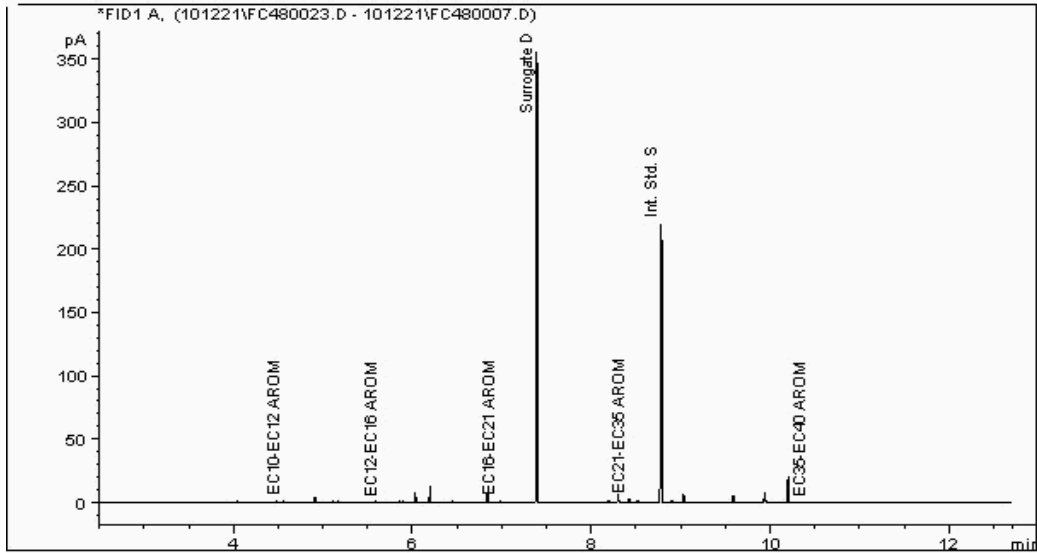
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116756
Sample ID : BH5/02

Depth :

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

Sample Identity: 23469878-
Date Acquired : 13/10/2021 00:11:23 PM
Units : ppb
Dilution : SE BH5/02[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

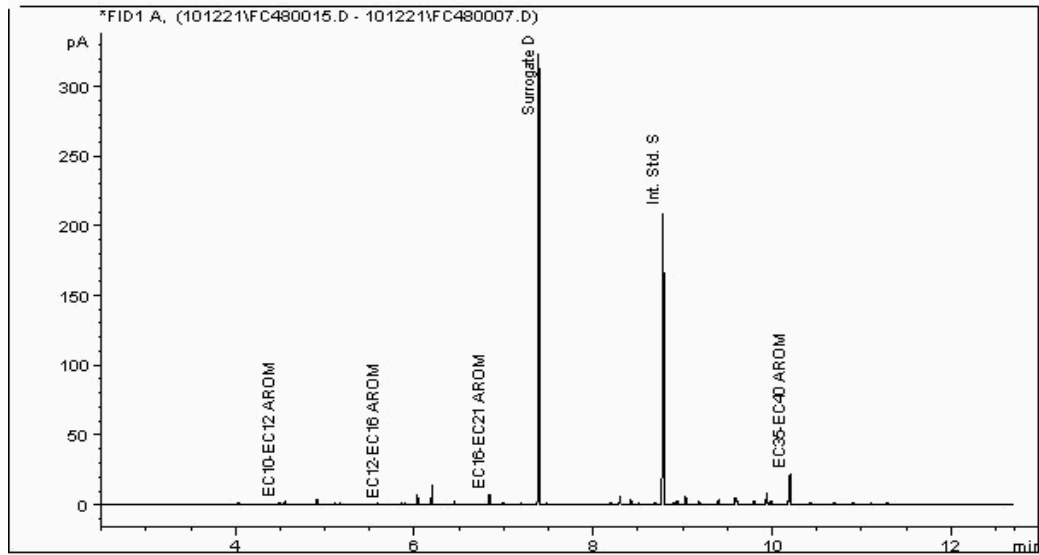
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116764
Sample ID : NACW212

Depth :

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

Sample Identity: 23469519-
Date Acquired : 12/10/2021 21:05:47 PM
Units : ppb
Dilution : SE NACW212[1] ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

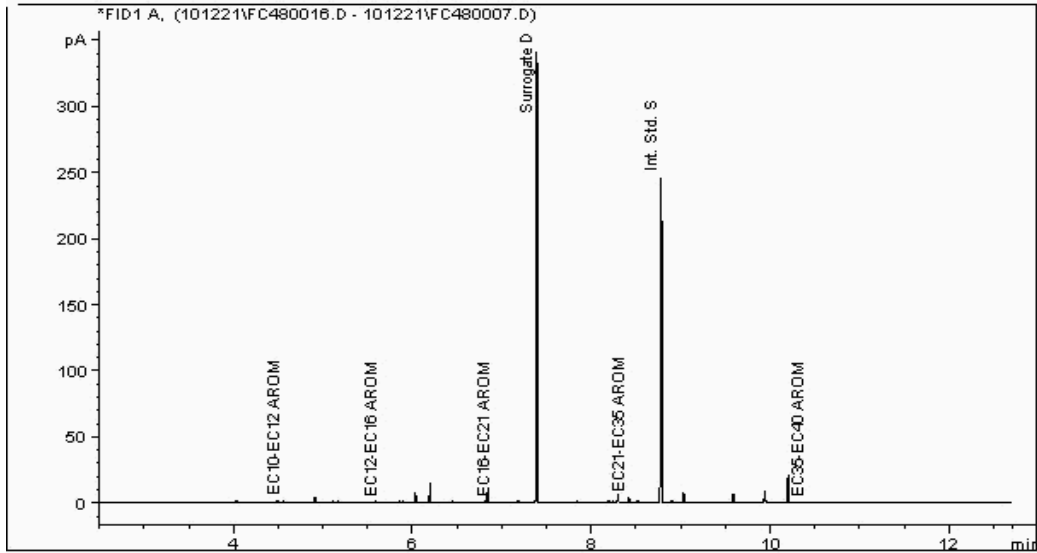
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116780
Sample ID : NACW228

Depth :

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

Sample Identity: 23469426-
Date Acquired : 12/10/2021 21:28:56 PM
Units : ppb
Dilution : SE NACW228[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

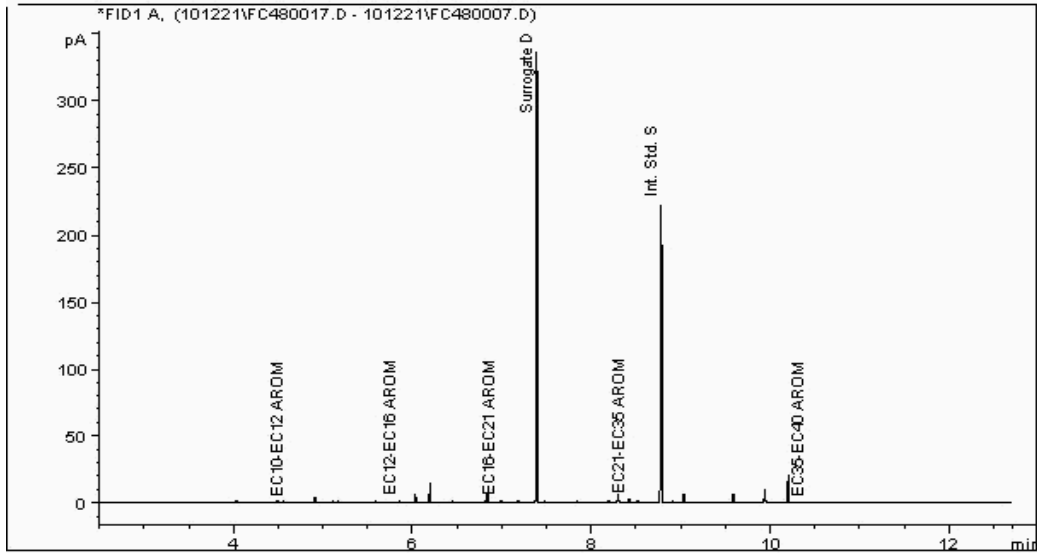
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116783
Sample ID : UD5

Depth :

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

Sample Identity: 23470034-
Date Acquired : 12/10/2021 21:52:09 PM
Units : ppb
Dilution : SE UD5[1] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

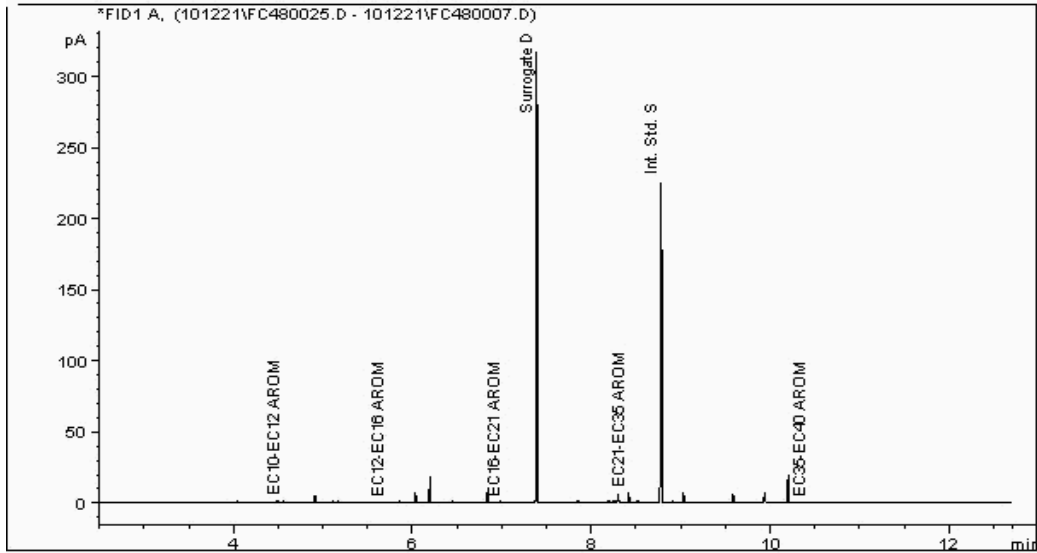
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116802
Sample ID : UD4

Depth :

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

Sample Identity: 23470014-
Date Acquired : 13/10/2021 00:56:58 PM
Units : ppb
Dilution : SE UD4[] ->
CF : 1
Multiplier : 0.026





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

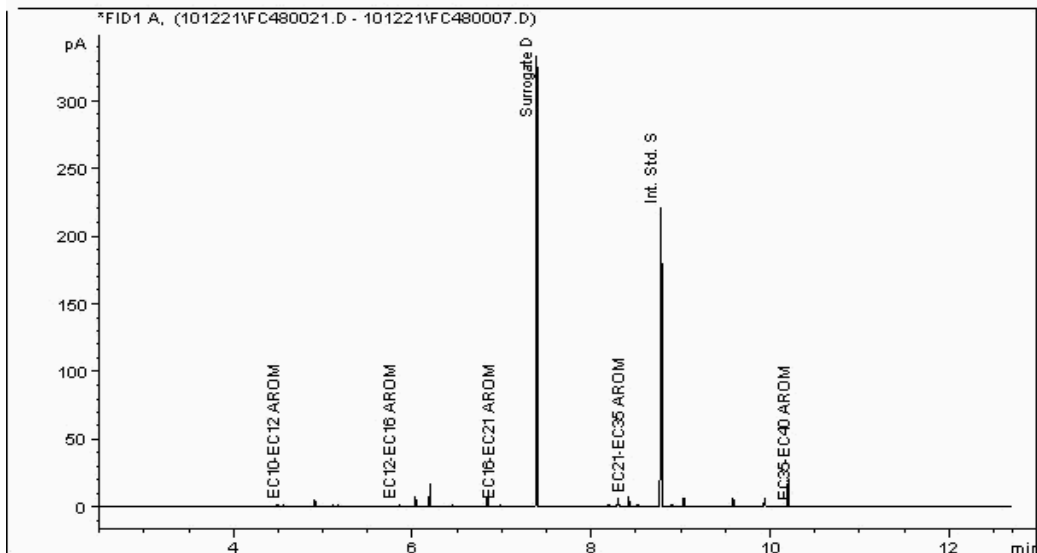
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116835
Sample ID : UD3

Depth :

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

Sample Identity: 23469980-
Date Acquired : 12/10/2021 23:25:08 PM
Units : ppb
Dilution : SE UD3[1] ->
CF : 1
Multiplier : 0.029





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

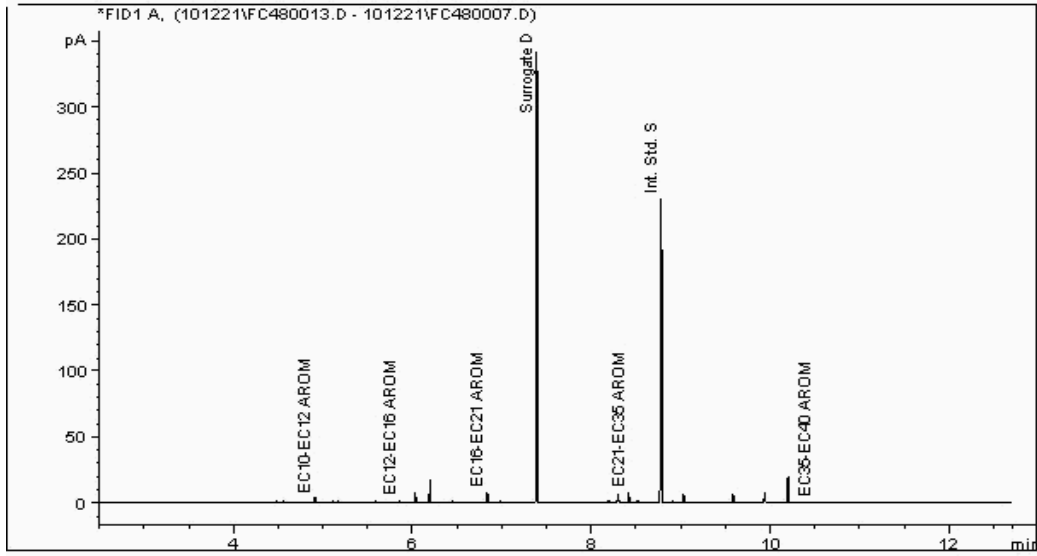
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116927
Sample ID : UD1

Depth :

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

Sample Identity: 23469946-
Date Acquired : 12/10/2021 20:19:25 PM
Units : ppb
Dilution : SE UD1[] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

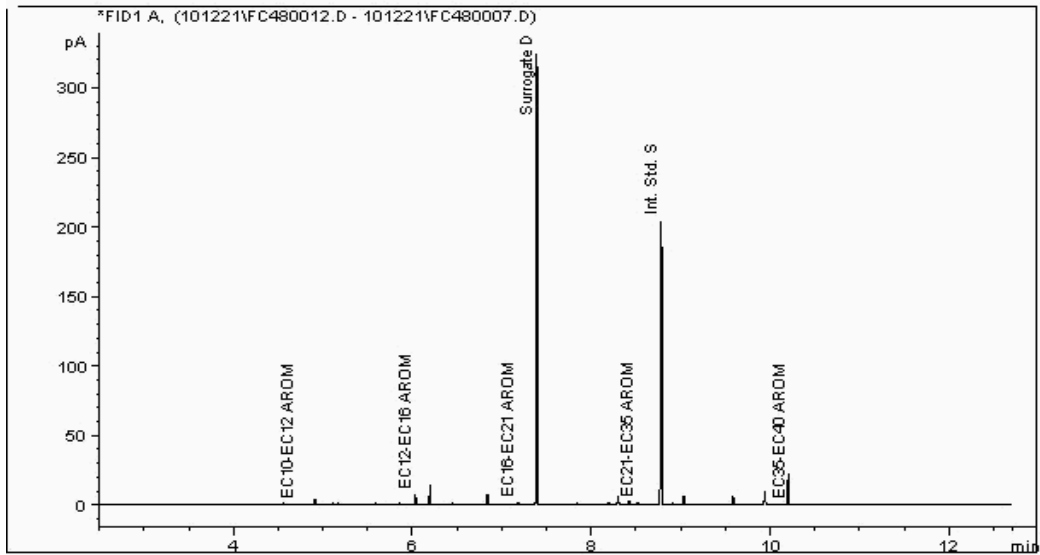
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25116985
Sample ID : BH208

Depth :

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

Sample Identity: 23469924-
Date Acquired : 12/10/2021 19:56:26 PM
Units : ppb
Dilution : SE BH208[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

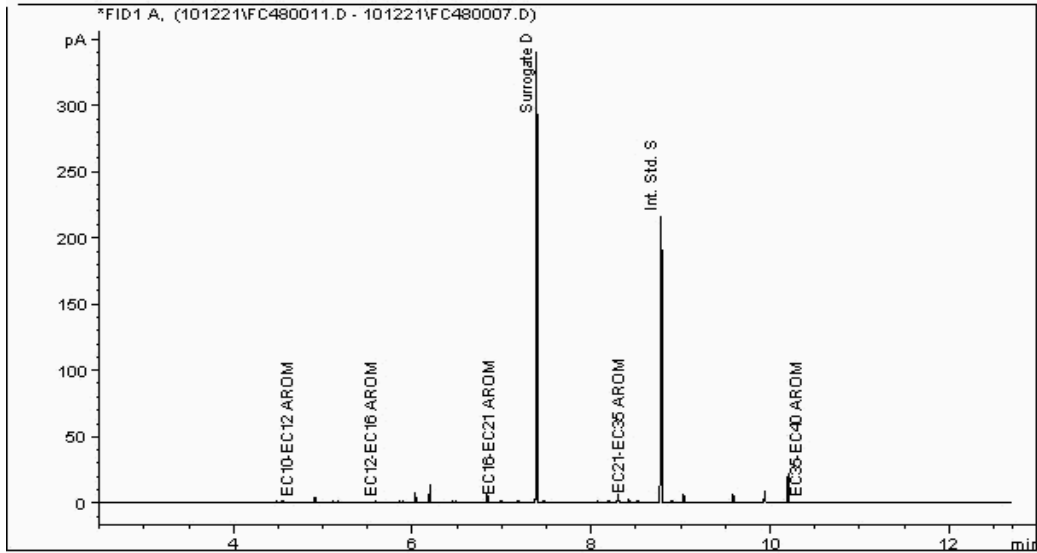
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117215
Sample ID : NACW 229

Depth :

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

Sample Identity: 23470631-
Date Acquired : 12/10/2021 19:33:27 PM
Units : ppb
Dilution : SE NACW 229[1] ->
CF : 1
Multiplier : 0.029





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

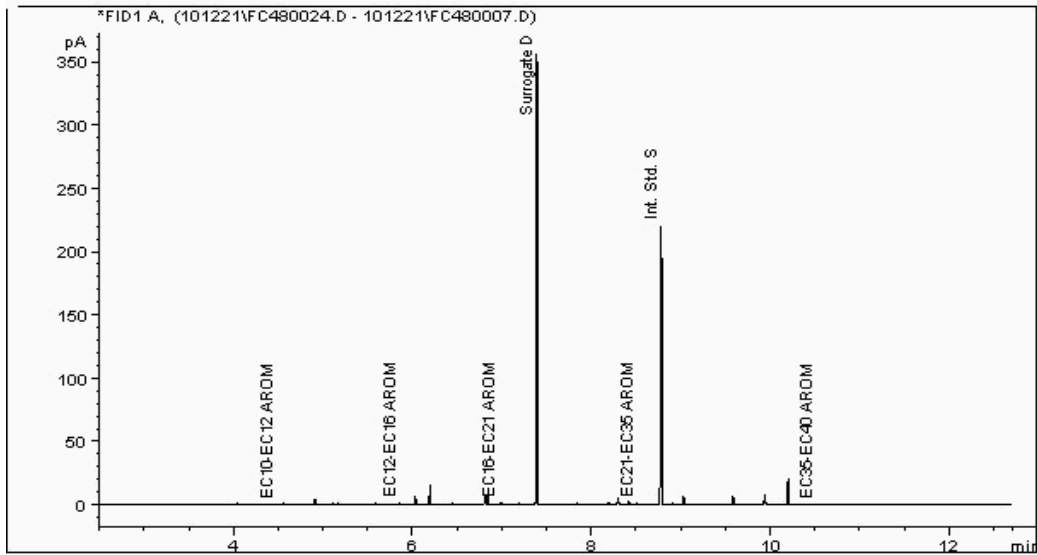
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117233
Sample ID : NACW 219

Depth :

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

Sample Identity: 23470607-
Date Acquired : 13/10/2021 00:34:10 PM
Units : ppb
Dilution : SE NACW 219[1] ->
CF : 1
Multiplier : 0.027





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

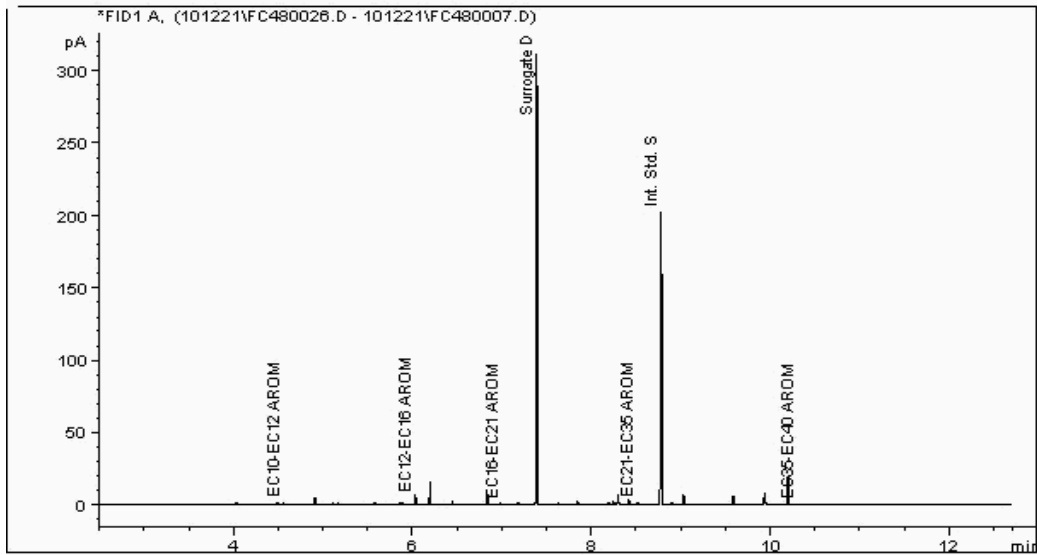
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117479
Sample ID : BH 3/9

Depth :

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

Sample Identity: 23470562-
Date Acquired : 13/10/2021 01:20:34 PM
Units : ppb
Dilution : SE BH 3/9[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

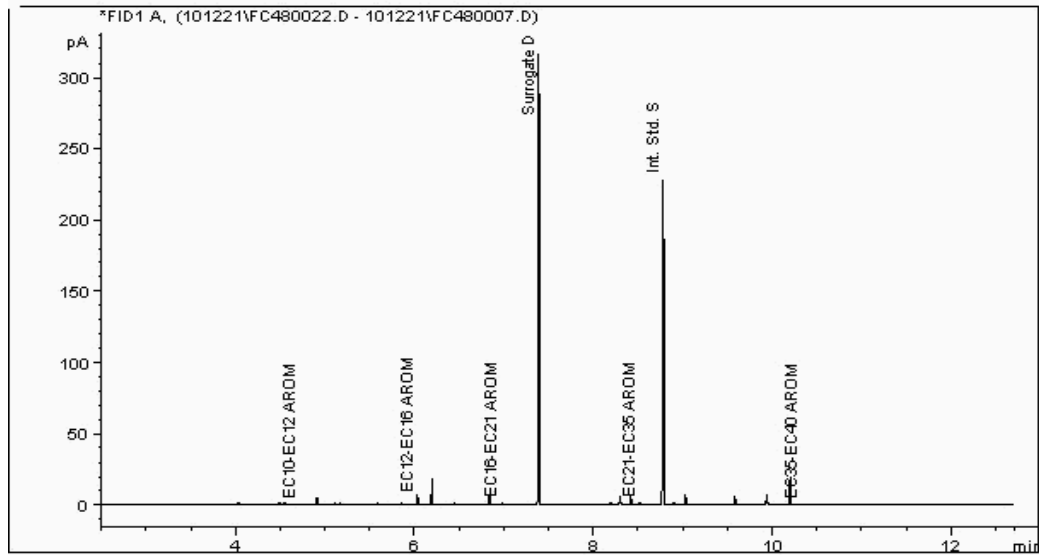
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117505
Sample ID : BH 3/8

Depth :

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

Sample Identity: 23470513-
Date Acquired : 12/10/2021 23:47:51 PM
Units : ppb
Dilution : SE BH 3/8[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

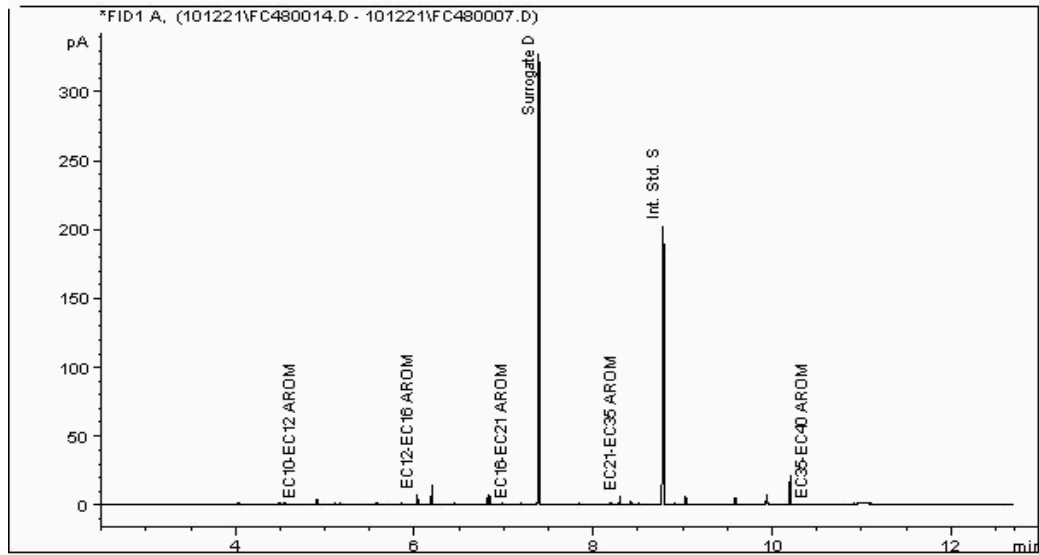
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117562
Sample ID : BH 3/6

Depth :

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

Sample Identity: 23470476-
Date Acquired : 12/10/2021 20:42:38 PM
Units : ppb
Dilution : SE BH 3/6[1] ->
CF : 1
Multiplier : 0.028





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

Superseded Report: 617061

Chromatogram

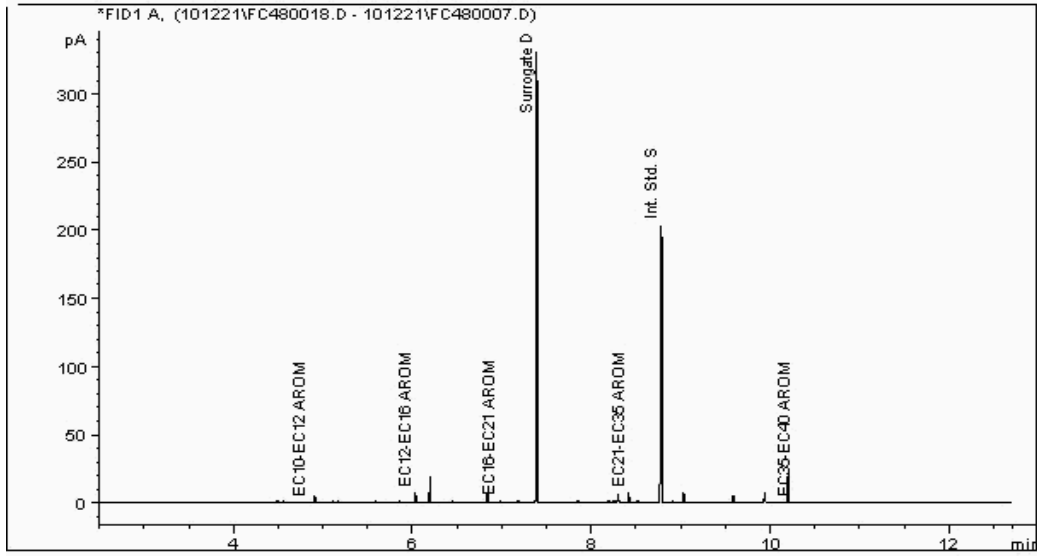
Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 25117594
Sample ID : BH 3/5

Depth :

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

Sample Identity: 23470426-
Date Acquired : 12/10/2021 22:15:09 PM
Units : ppb
Dilution : SE BH 3/5[1] ->
CF : 1
Multiplier : 0.030





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

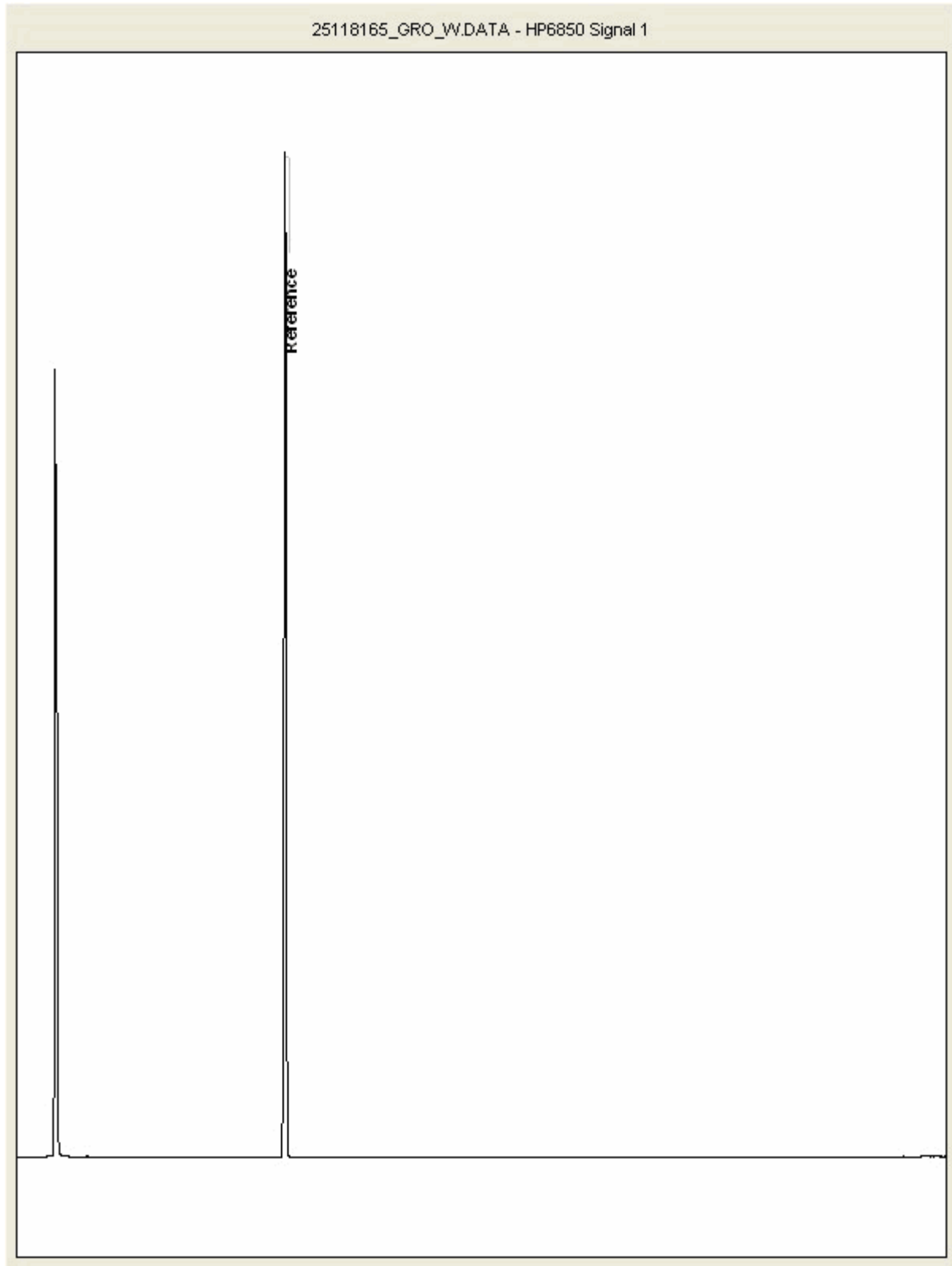
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118165
Sample ID : UD5

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

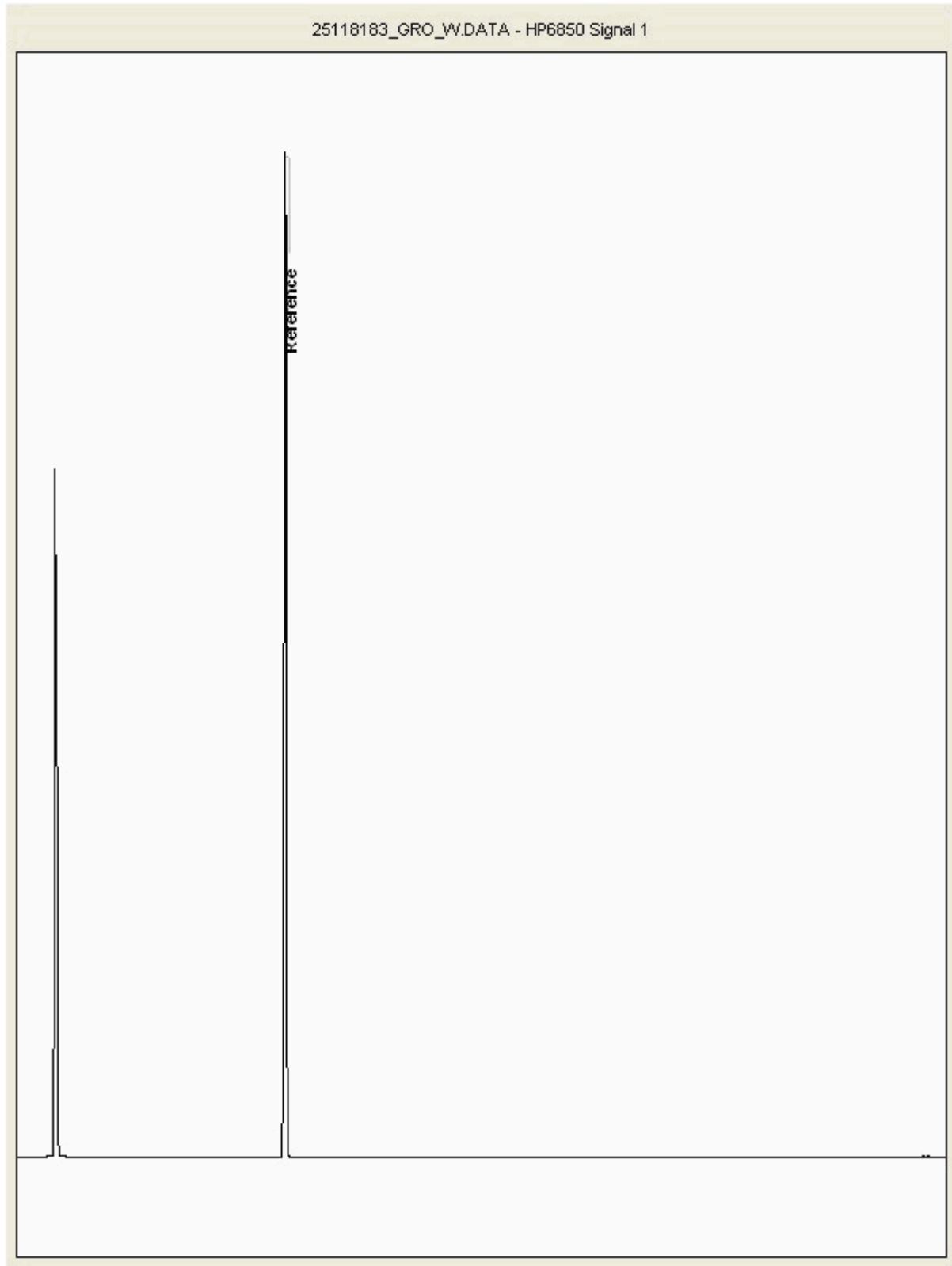
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118183
Sample ID : UD3

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

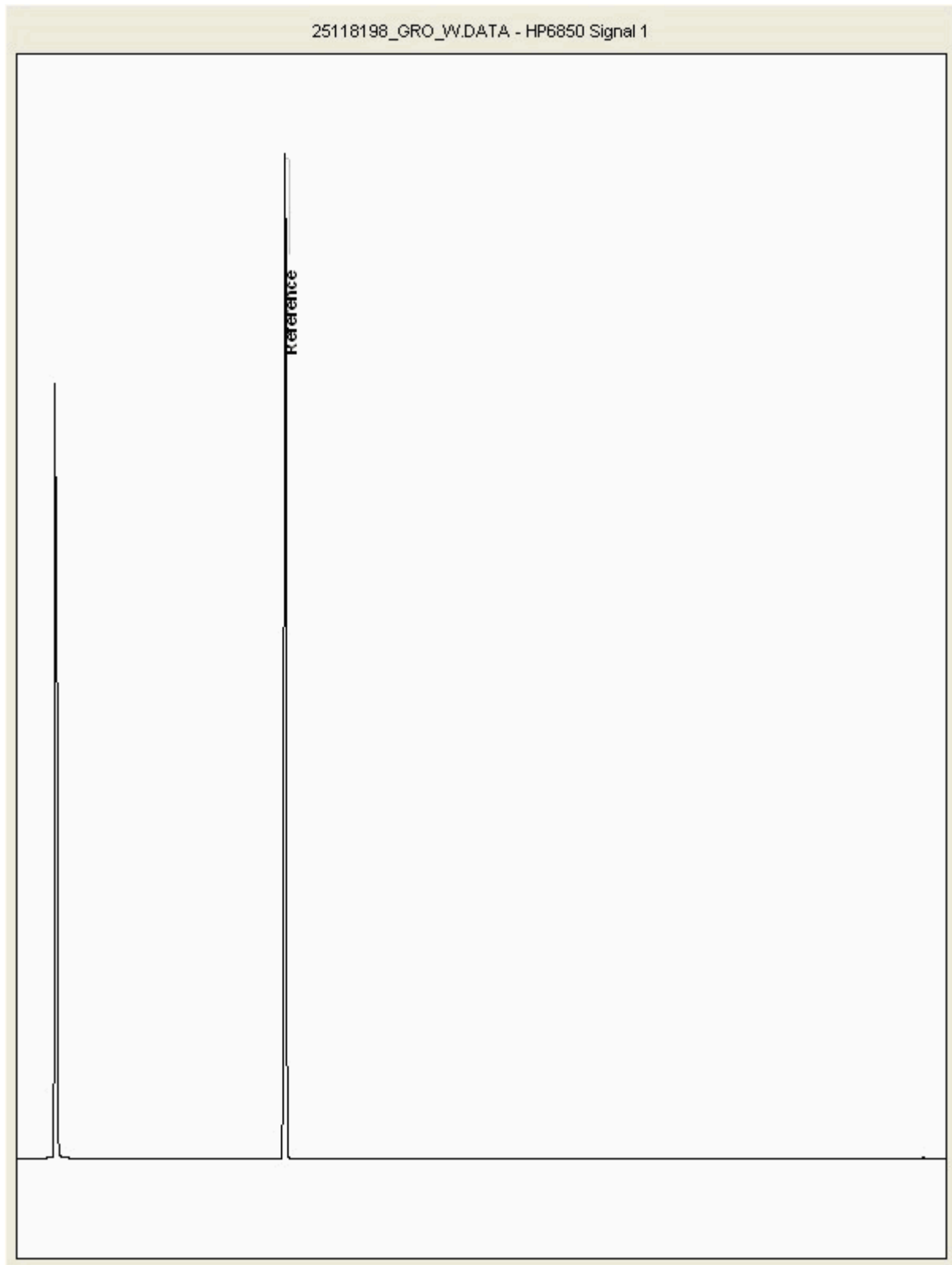
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118198
Sample ID : BH5/02

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

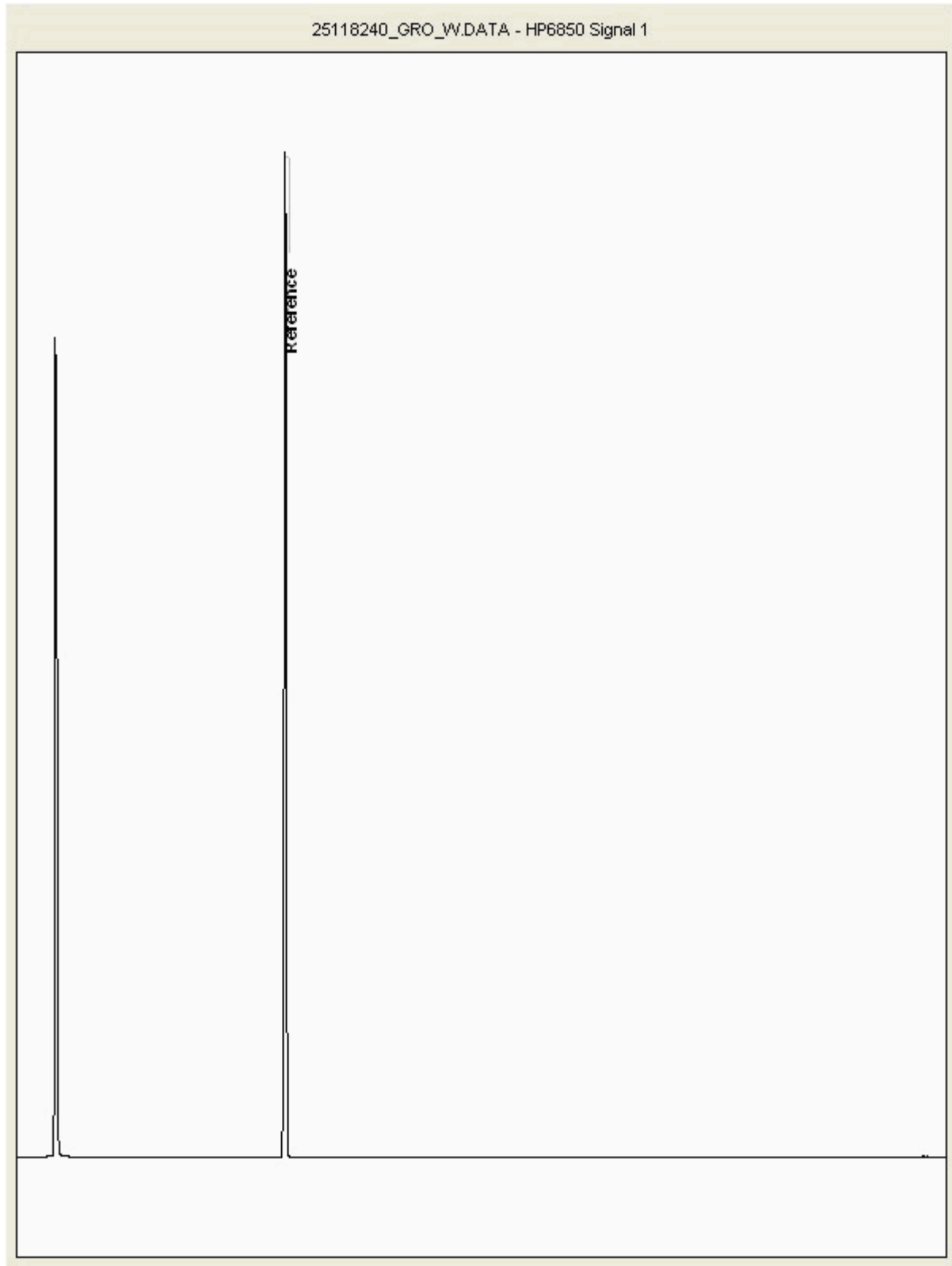
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118240
Sample ID : NACW228

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

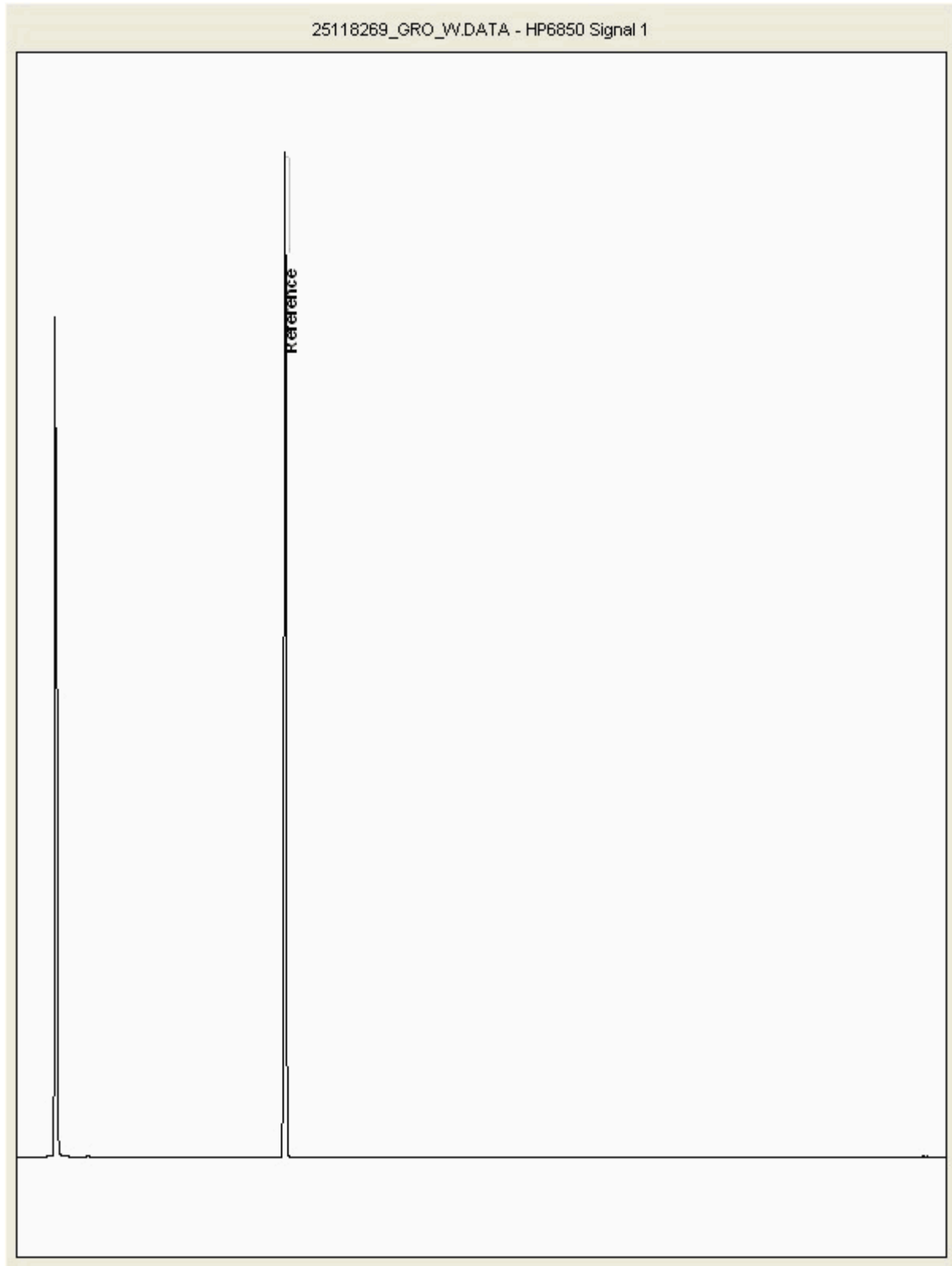
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118269
Sample ID : UD1

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

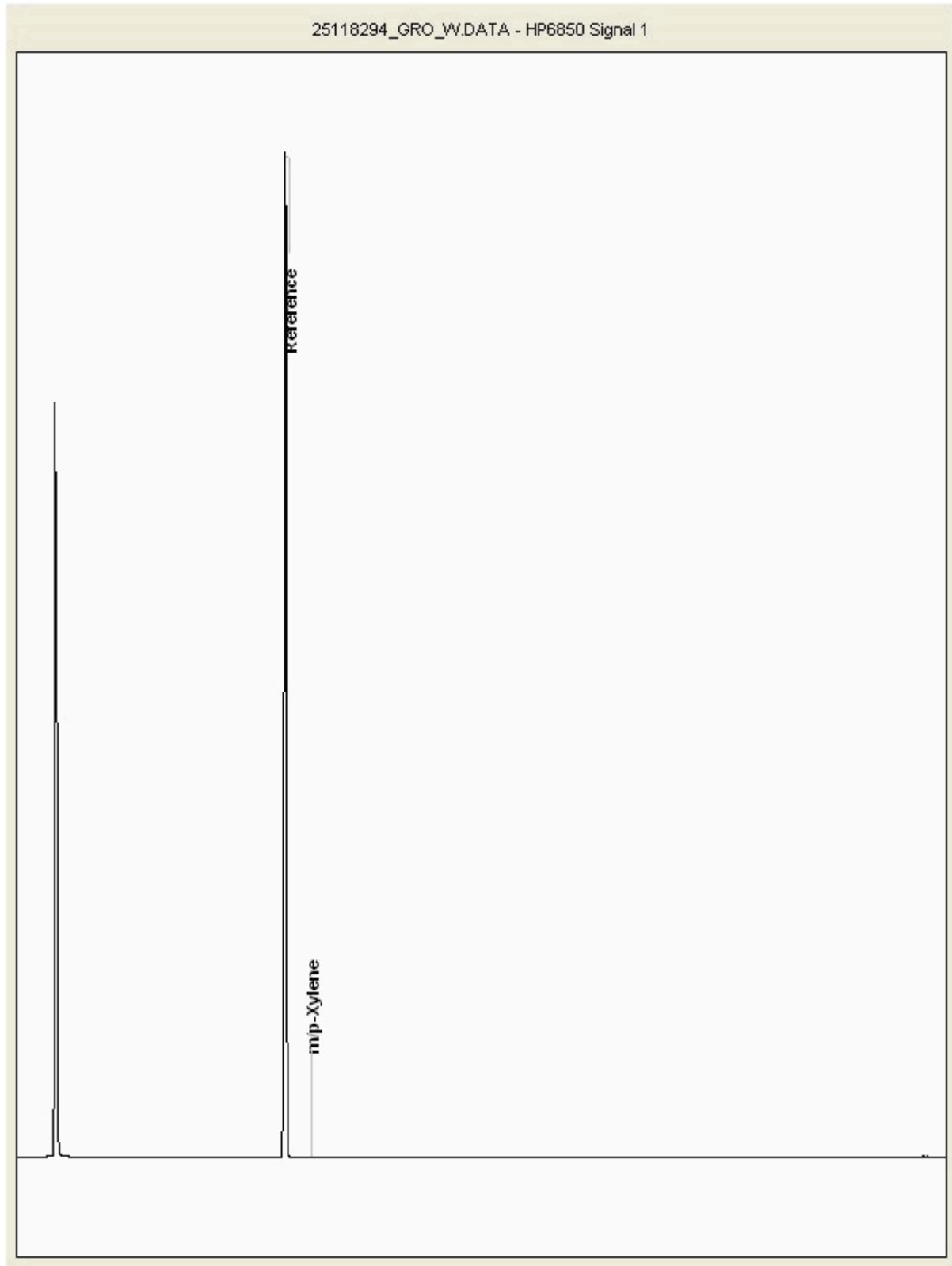
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118294
Sample ID : BH208

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

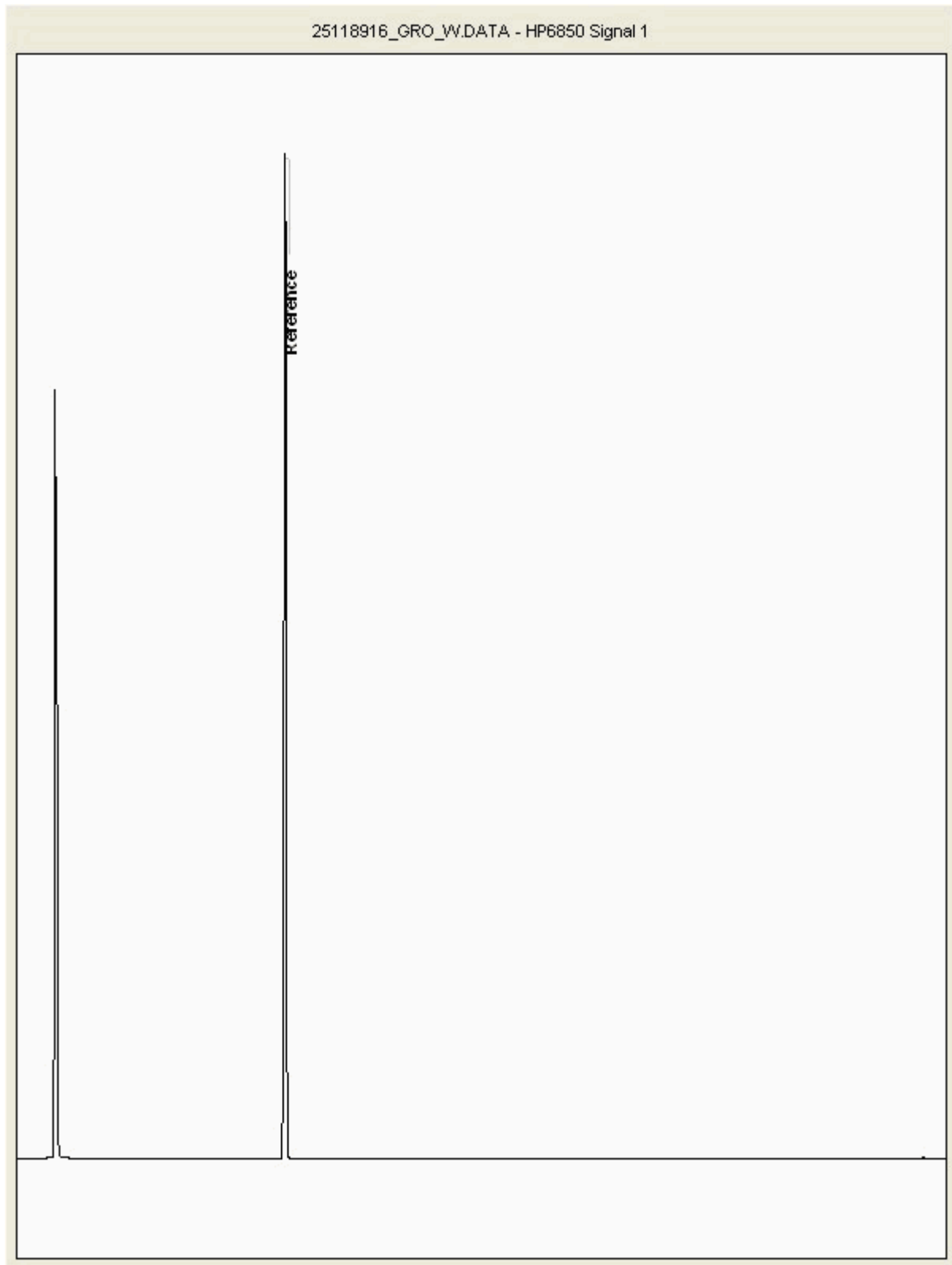
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118916
Sample ID : BH3/4

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

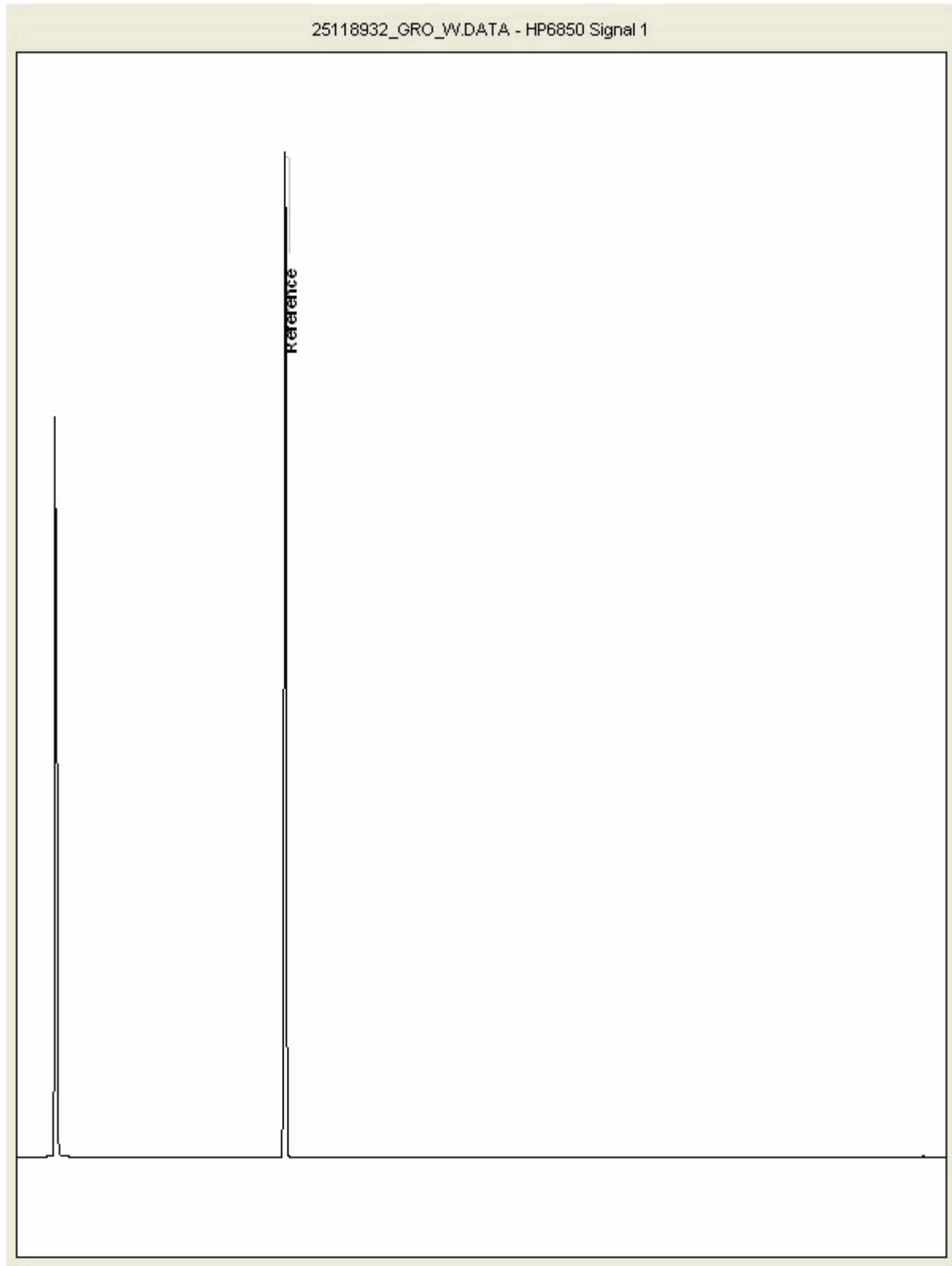
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118932
Sample ID : NACW205

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

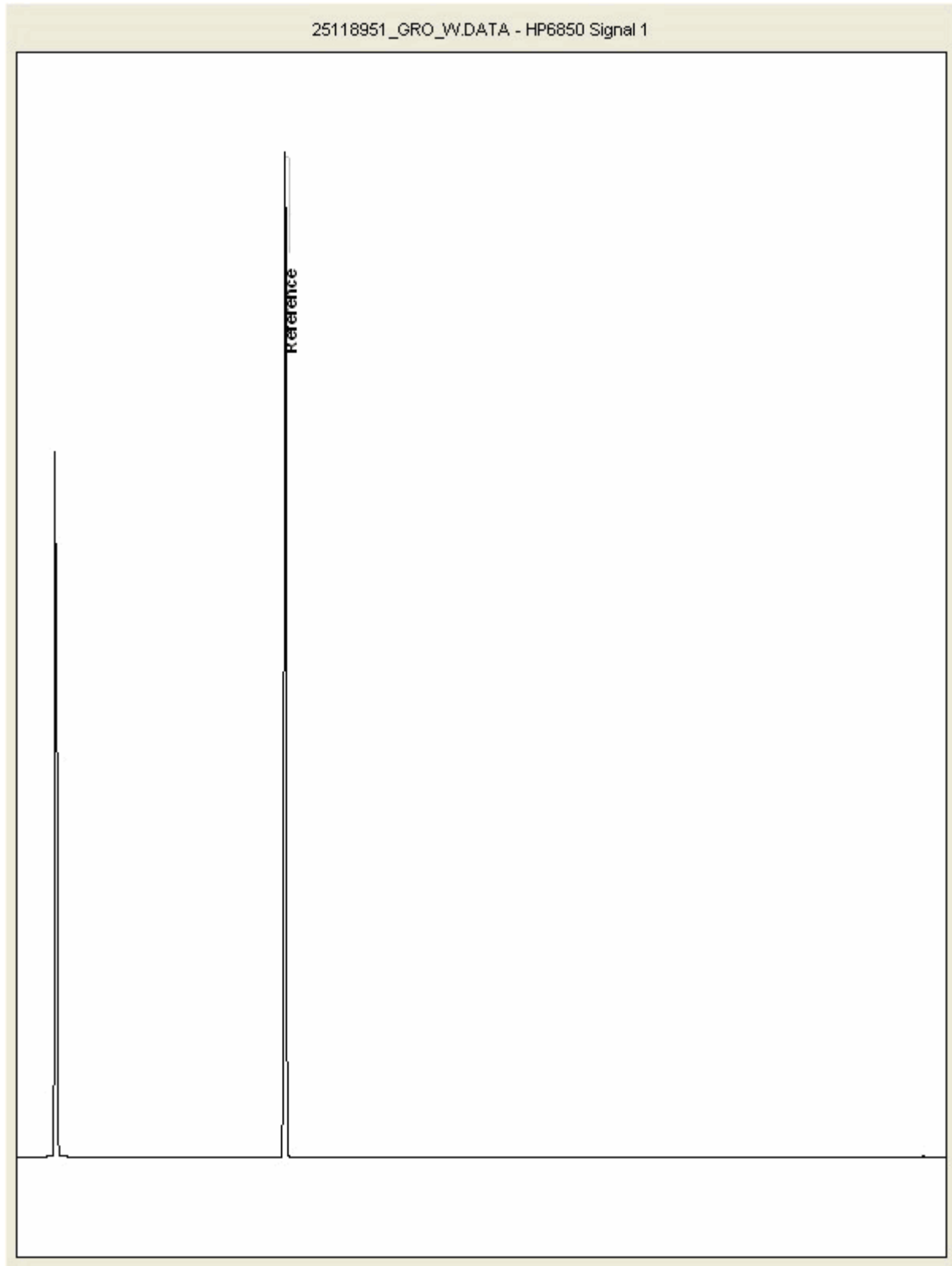
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25118951
Sample ID : NACW203

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

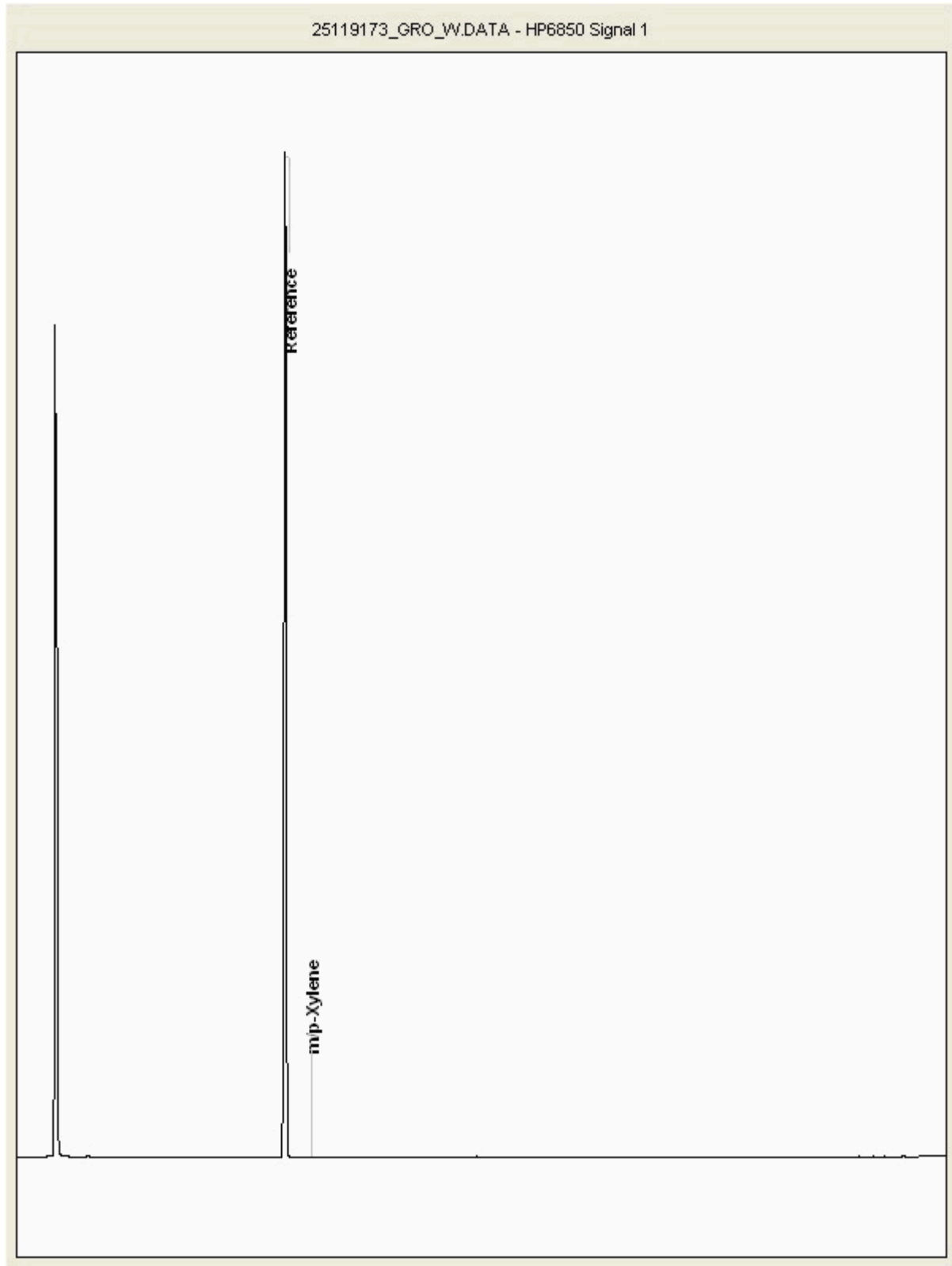
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25119173
Sample ID : NACW212

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

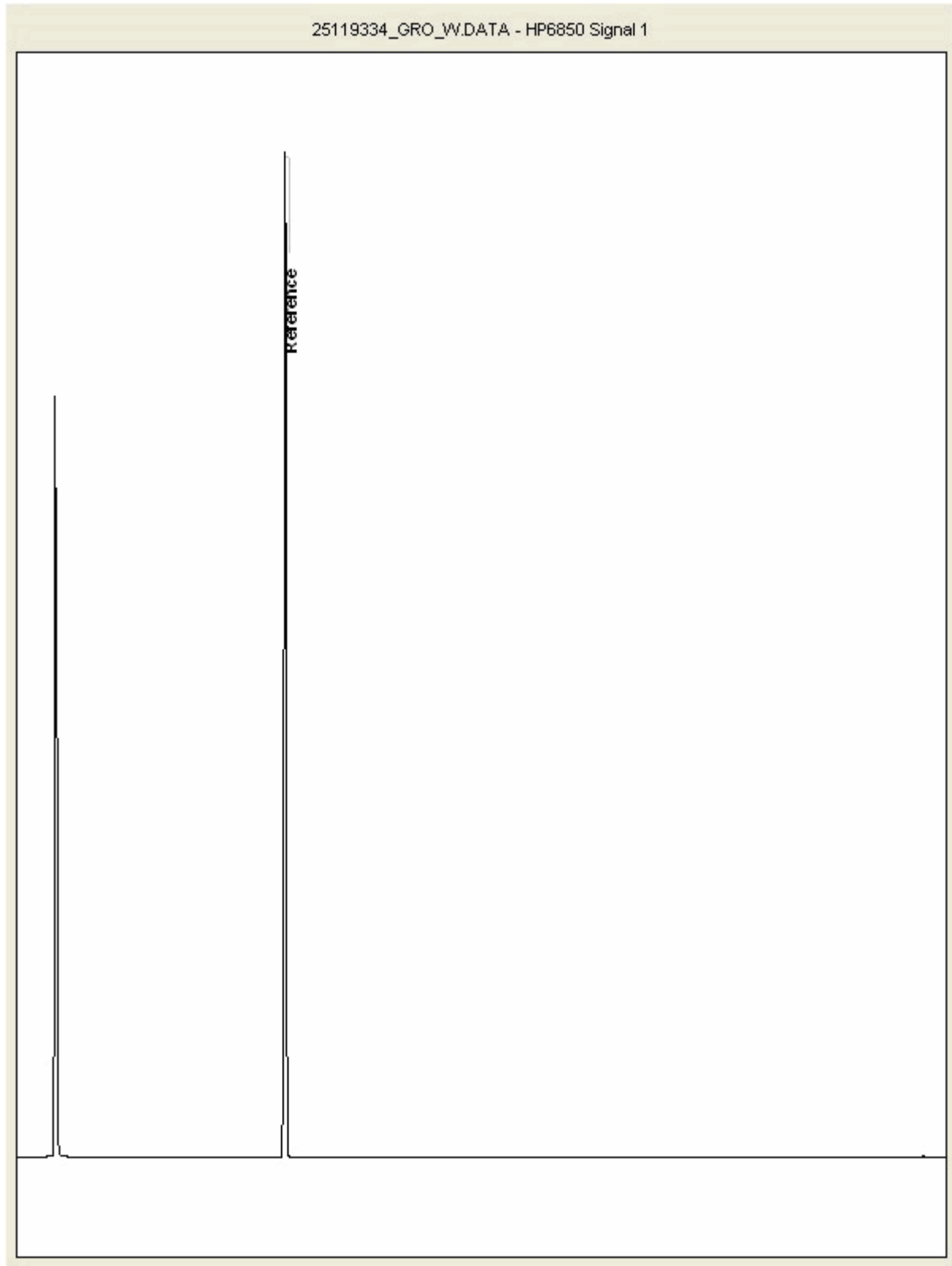
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25119334
Sample ID : UD4

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

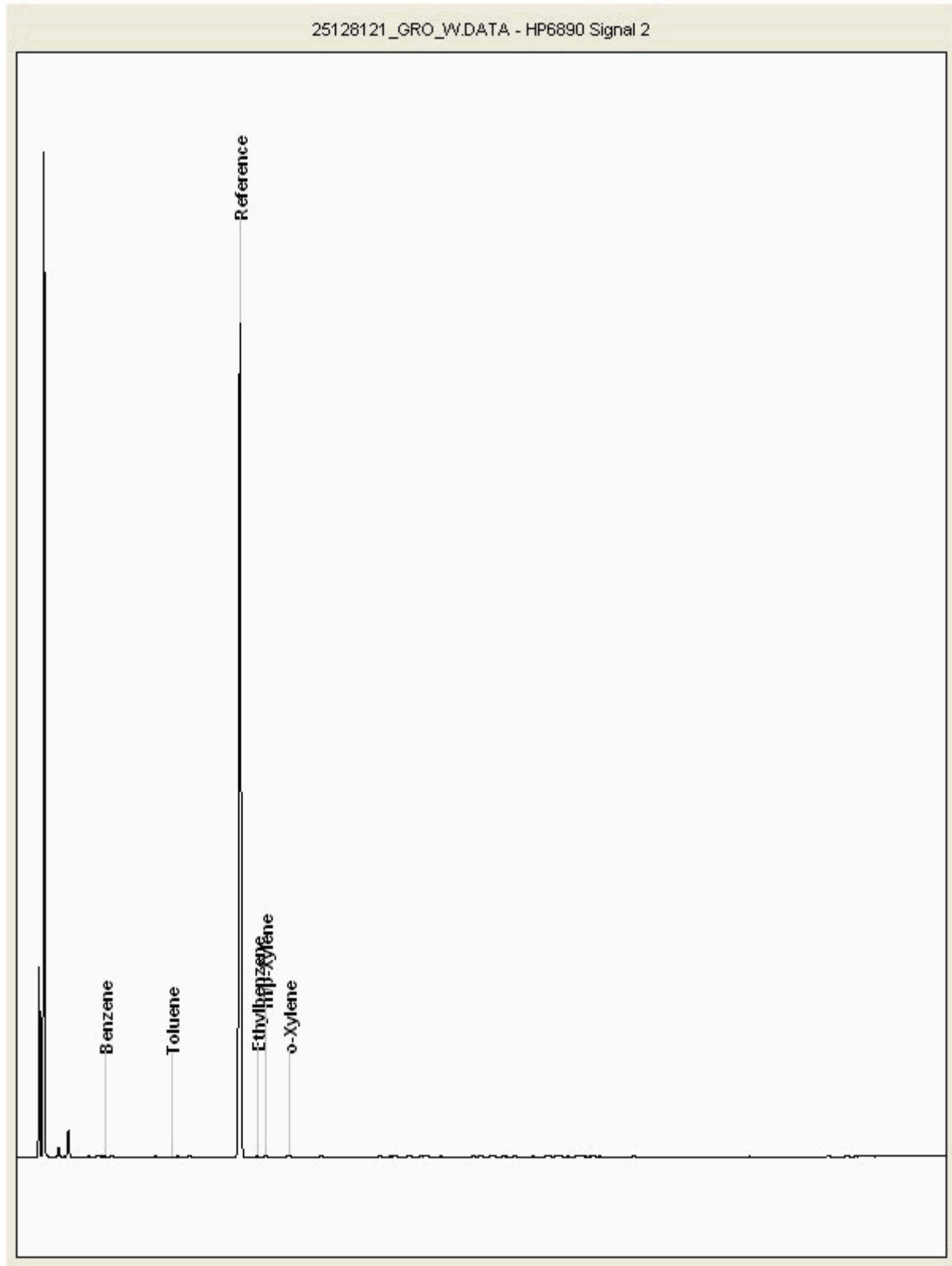
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128121
Sample ID : CELL 5 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

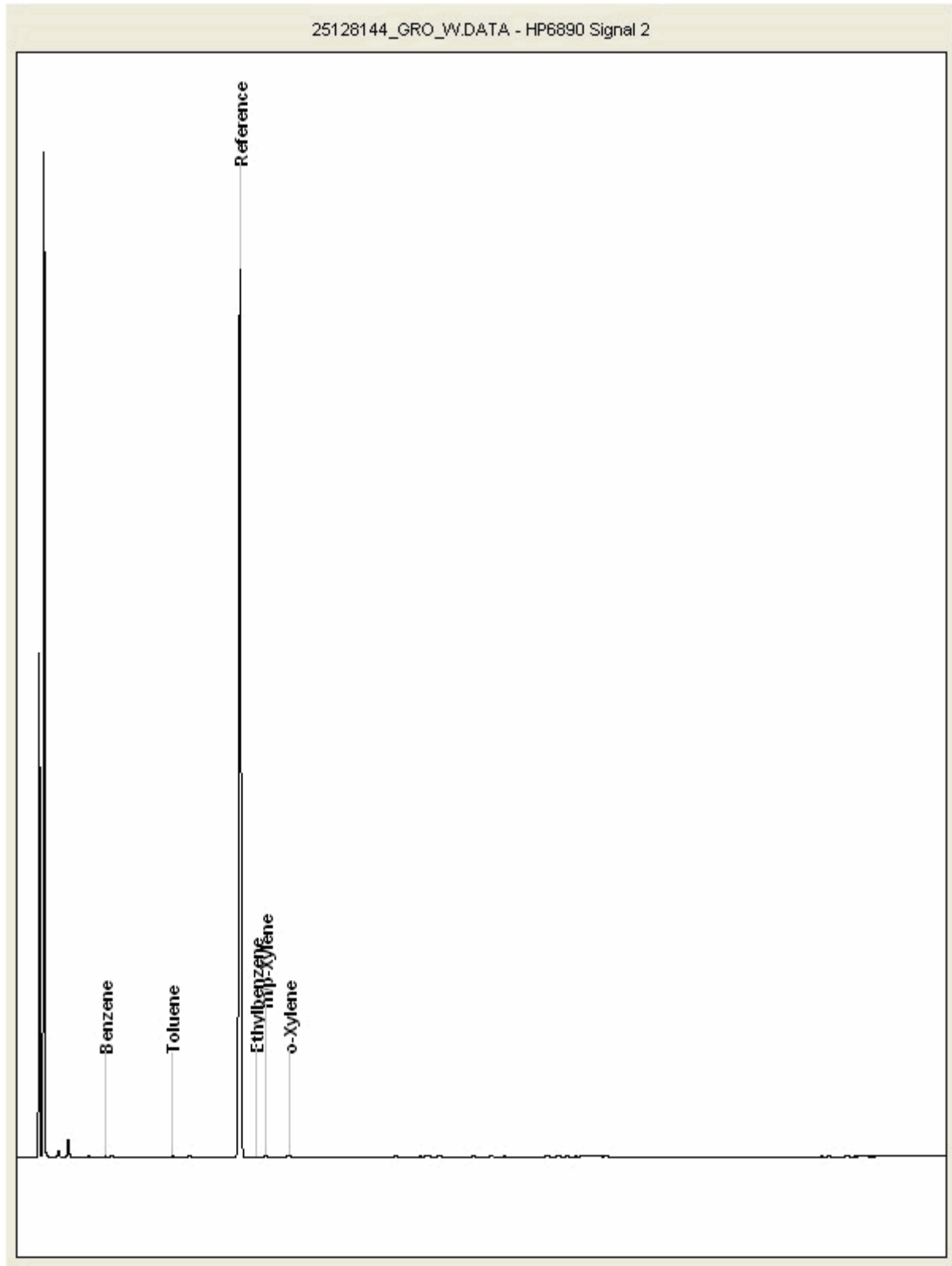
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128144
Sample ID : CELL 6 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

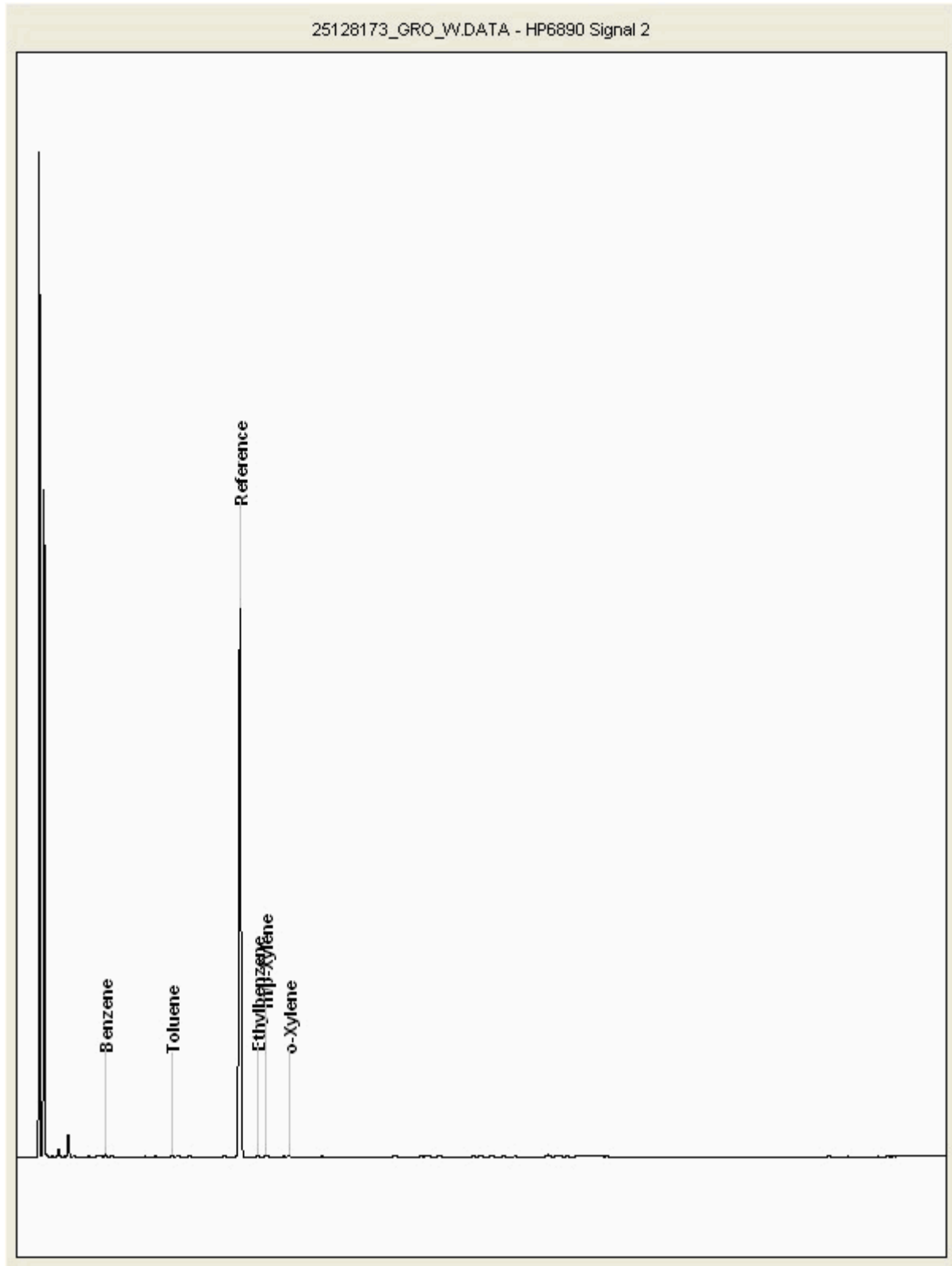
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128173
Sample ID : LEACHATE HOLDING LAGOC

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

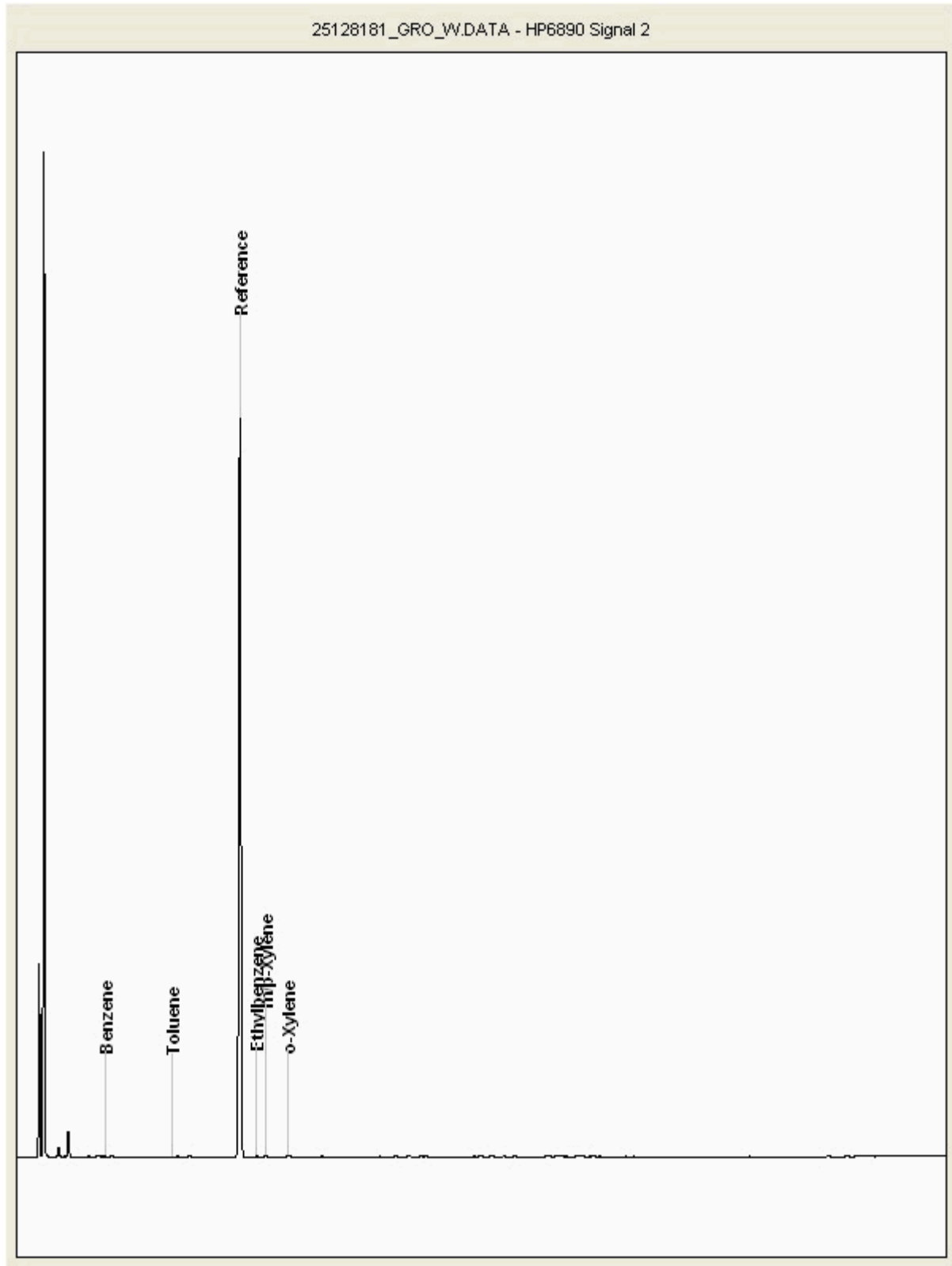
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128181
Sample ID : CELL 3/4 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

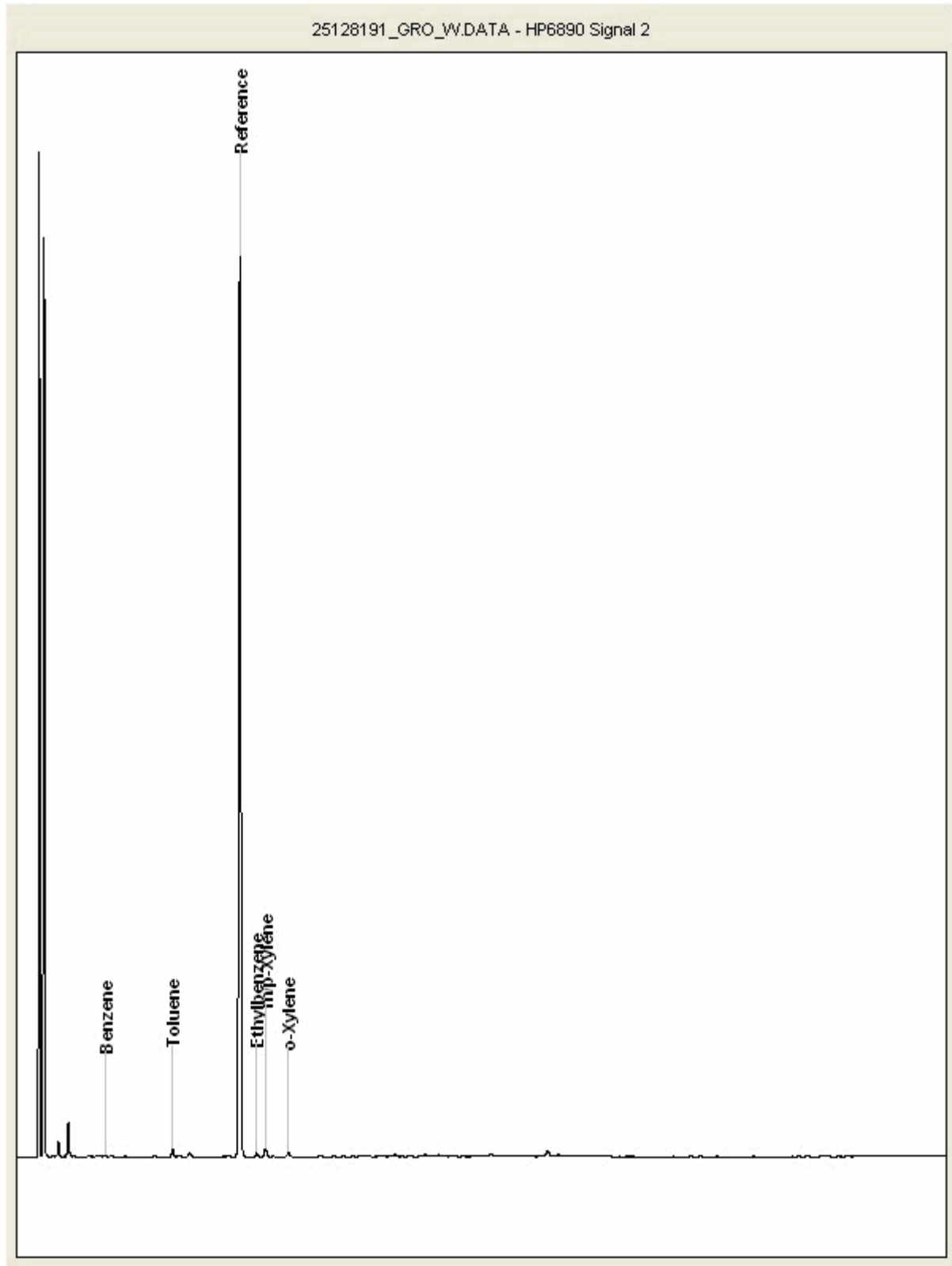
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128191
Sample ID : CELL 1/2 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

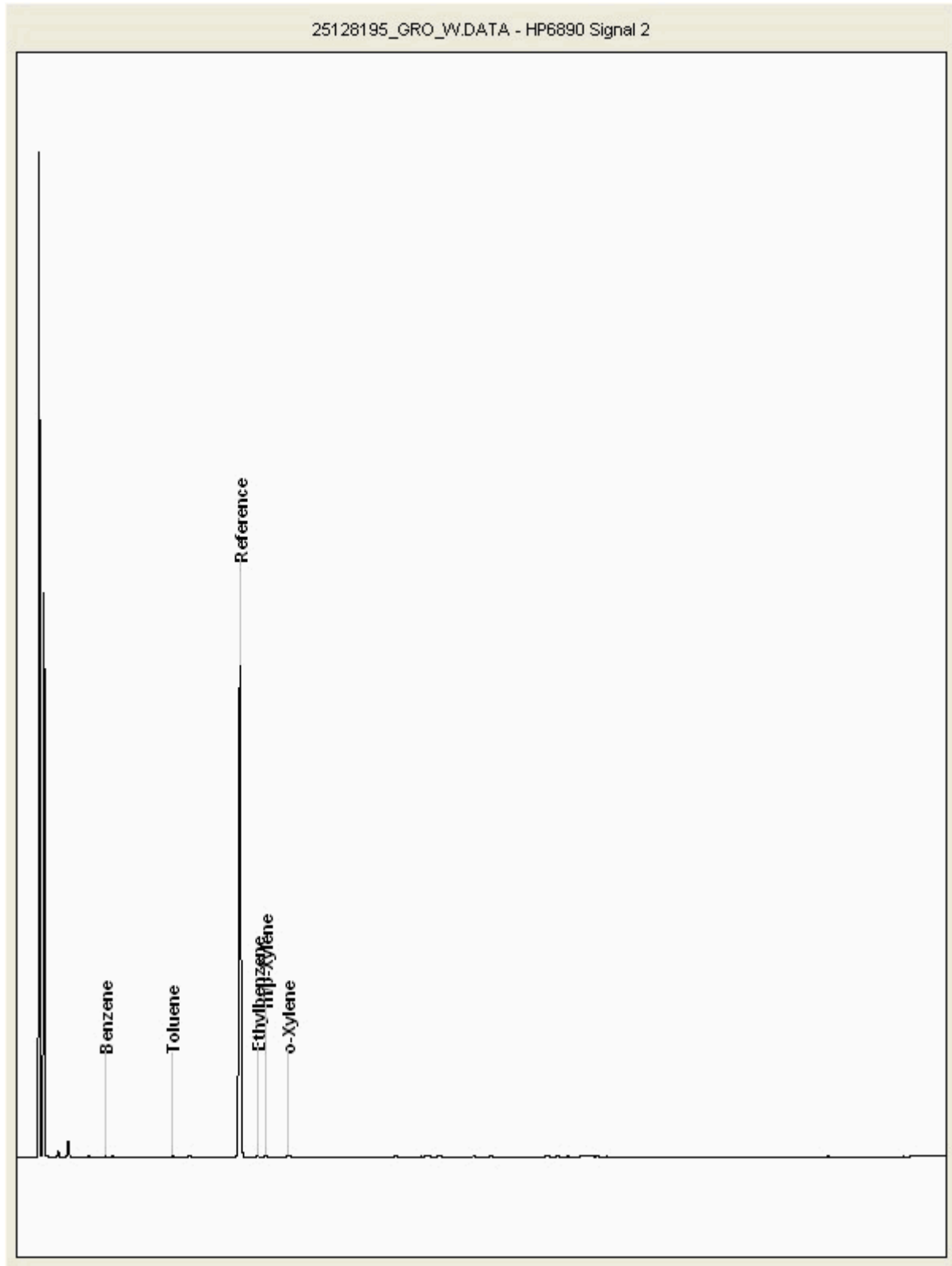
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128195
Sample ID : CELL 7 SUMP

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

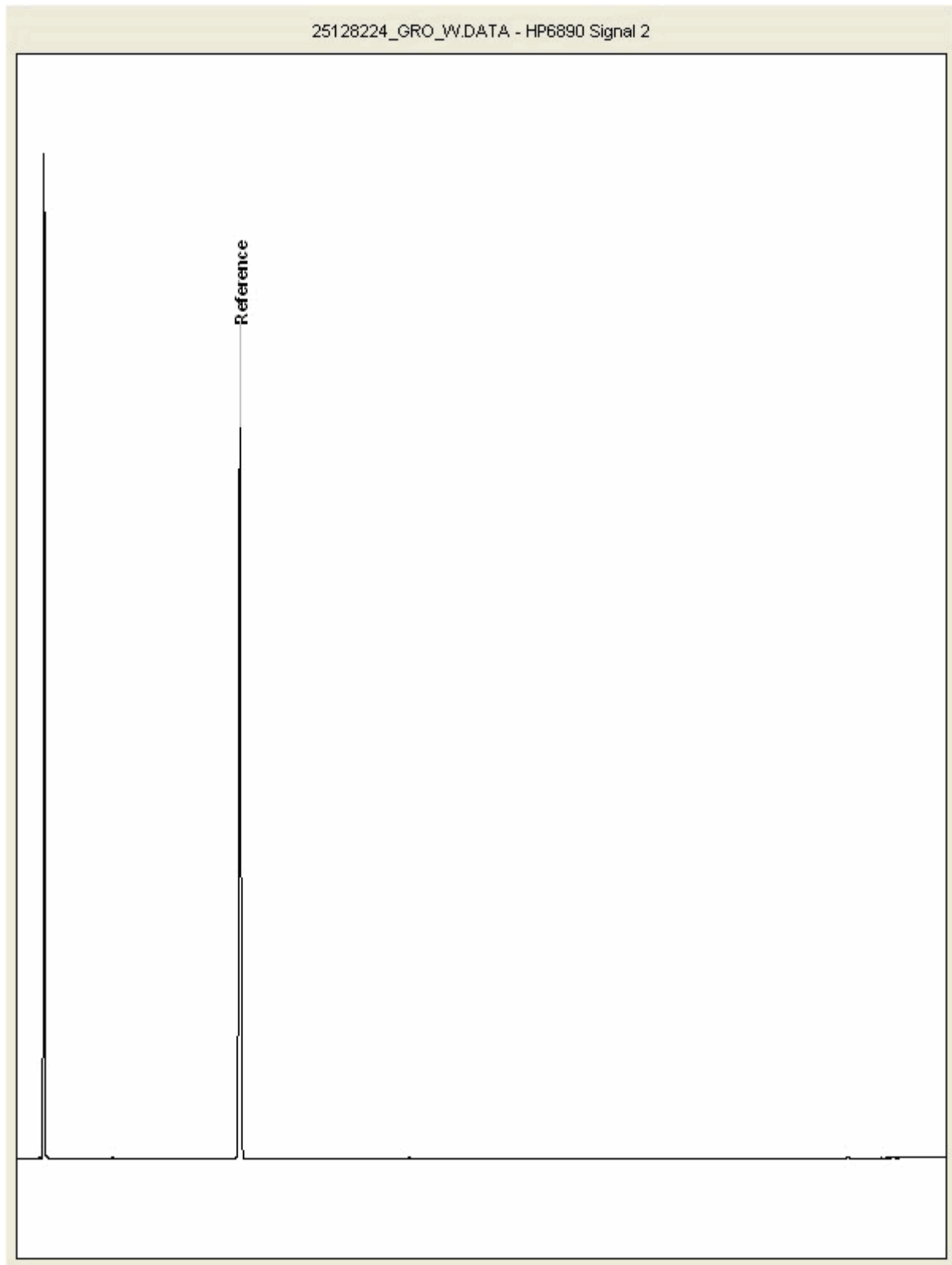
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128224
Sample ID : BH 3/2

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

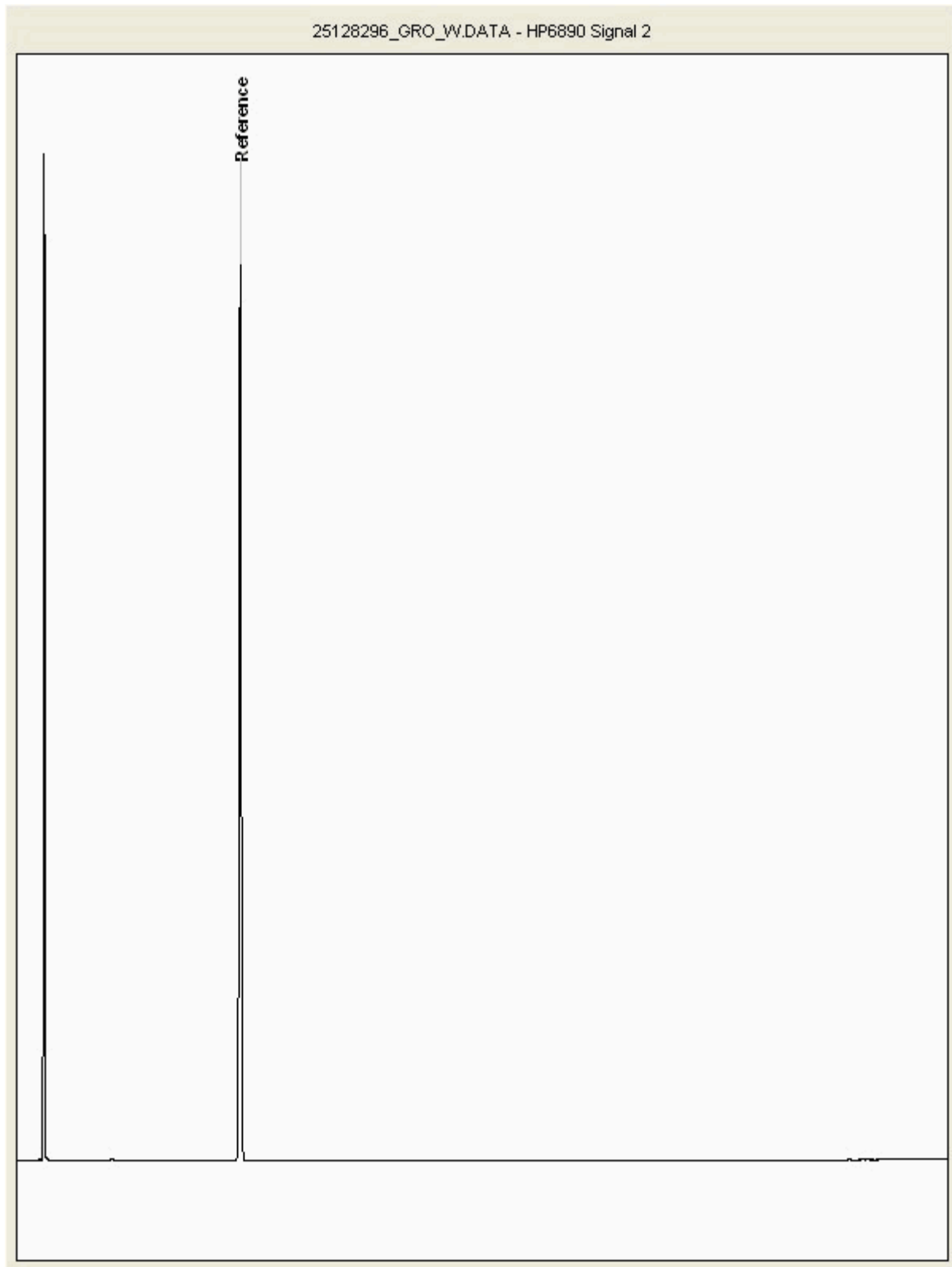
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128296
Sample ID : BH 3/3

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

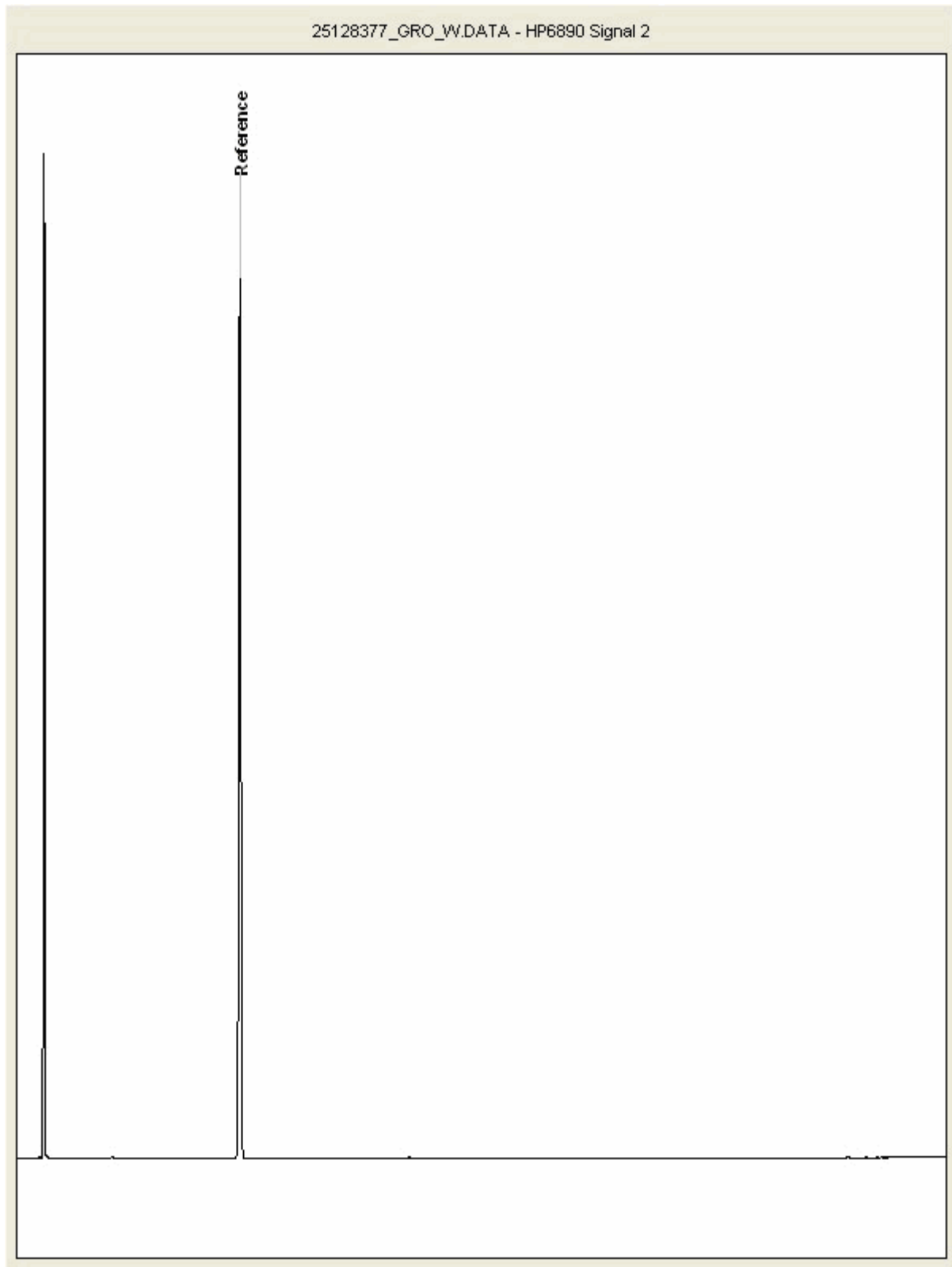
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128377
Sample ID : BH 3/5

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

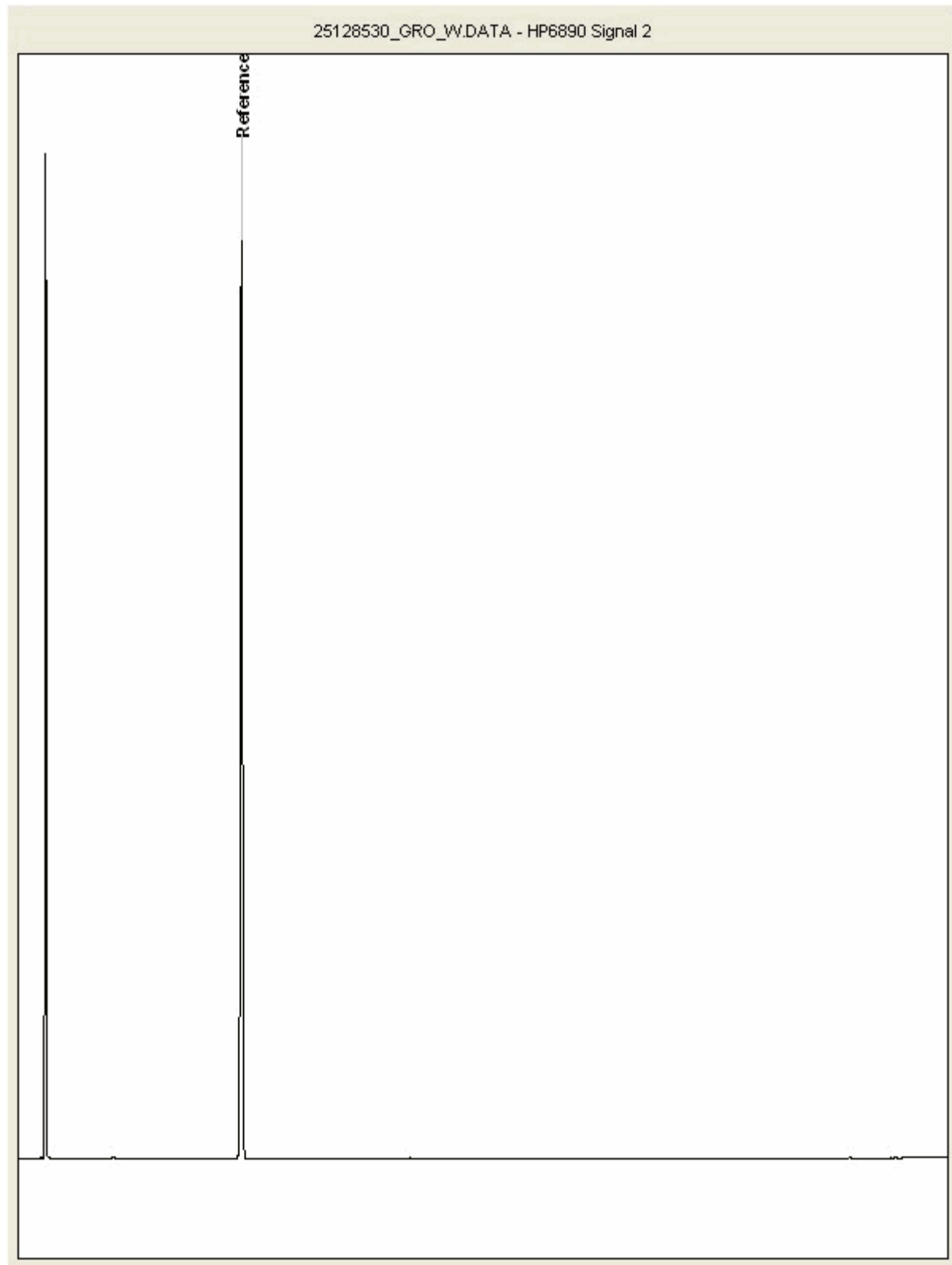
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128530
Sample ID : BH 3/6

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

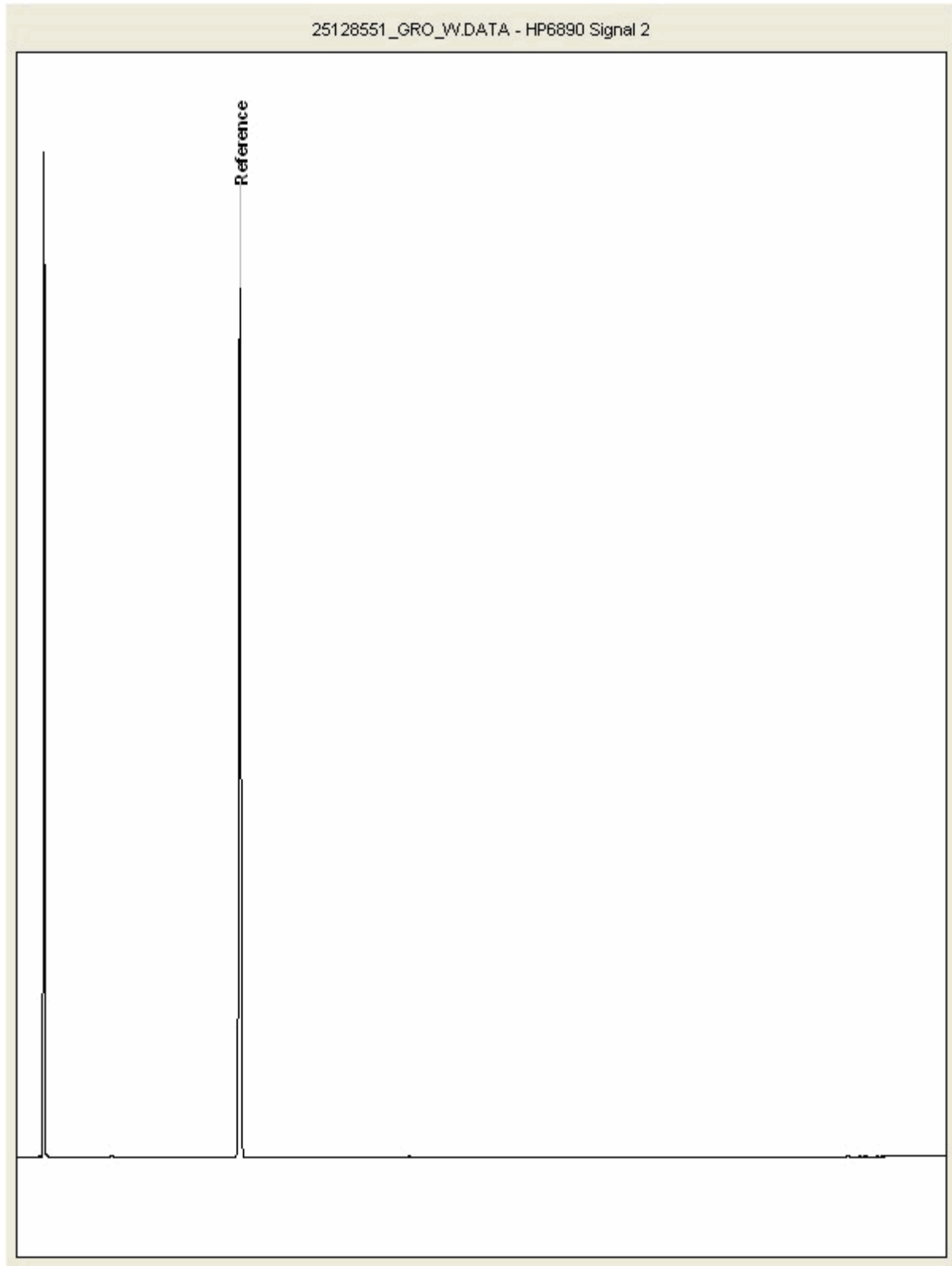
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128551
Sample ID : BH 3/8

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

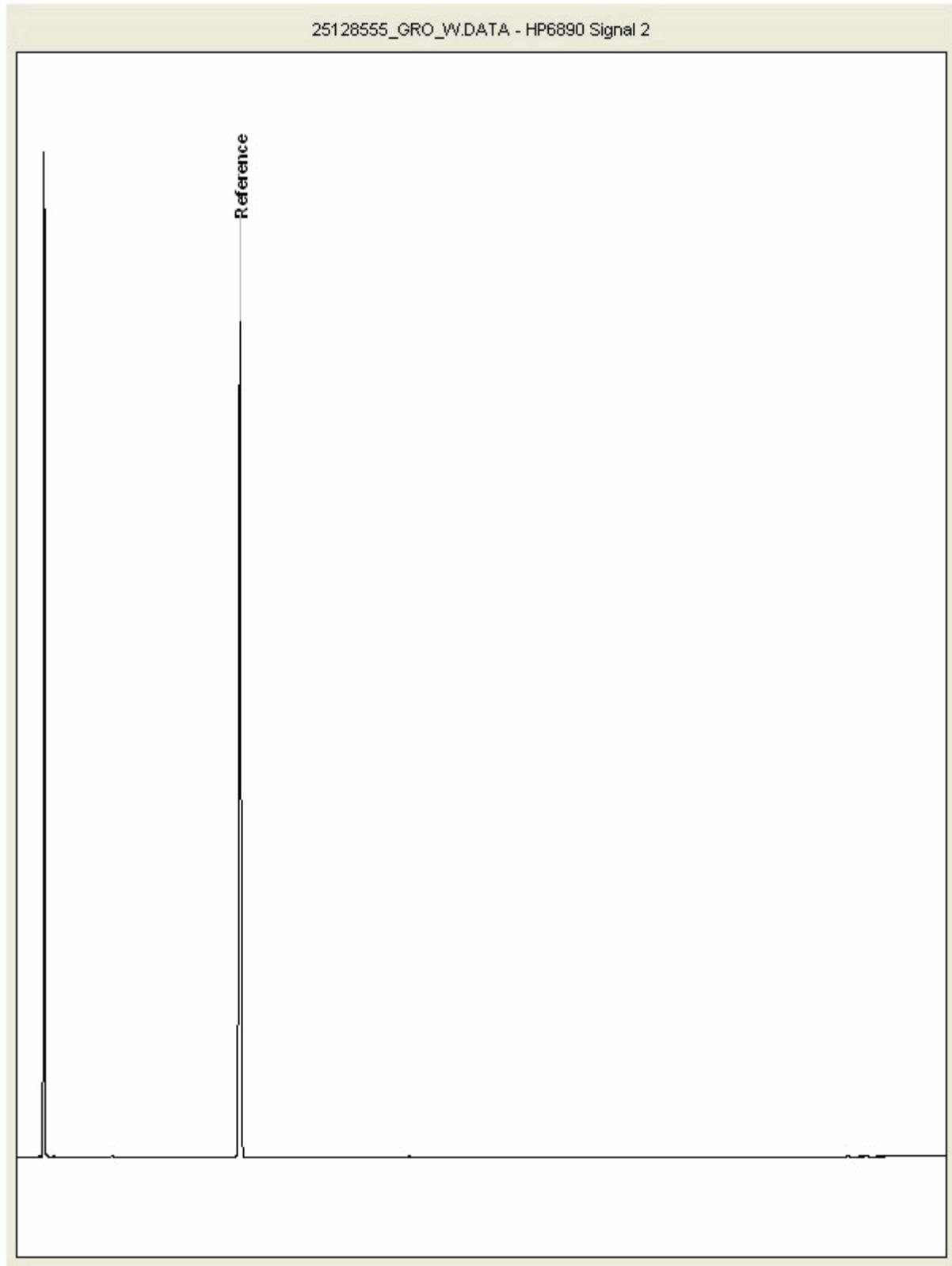
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128555
Sample ID : NACW 229

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

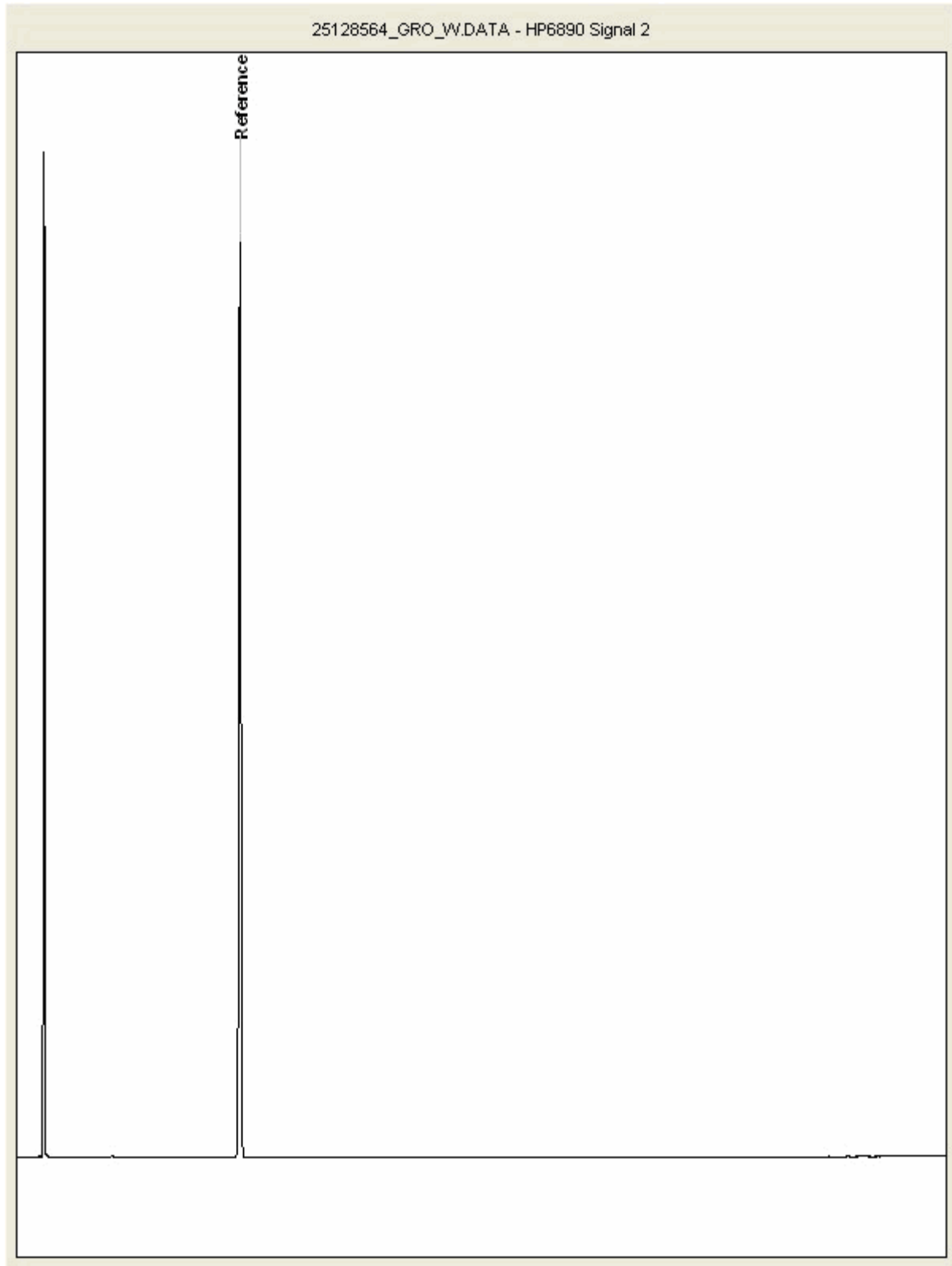
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128564
Sample ID : NACW 219

Depth :





CERTIFICATE OF ANALYSIS

Validated

SDG: 211006-49
Client Ref.:

Report Number: 617848
Location: Nantycaws Landfill

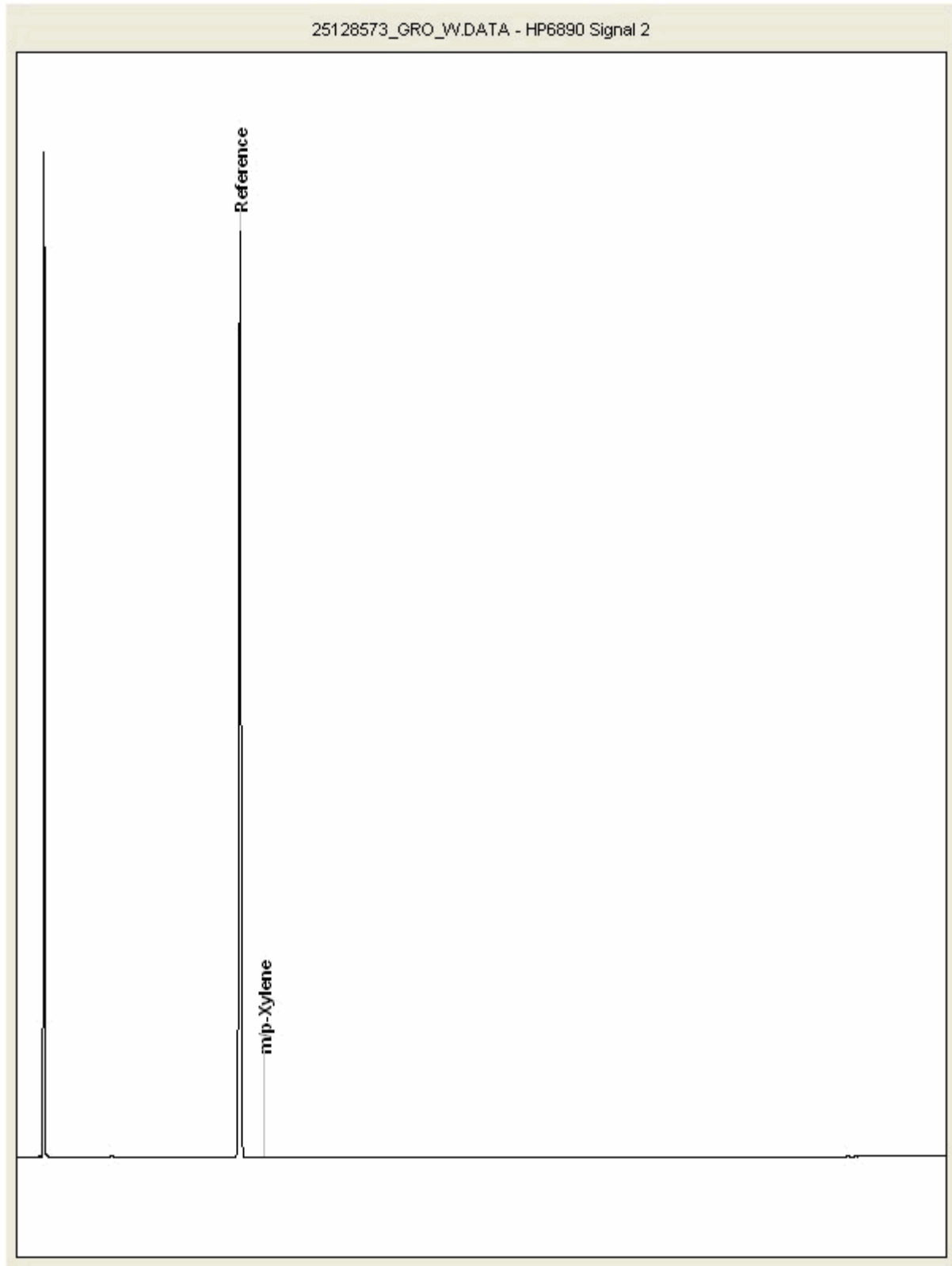
Superseded Report: 617061

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 25128573
Sample ID : BH 3/9

Depth :





CERTIFICATE OF ANALYSIS

SDG:	211006-49	Client Reference:		Report Number:	617848
Location:	Nantycaws Landfill	Order Number:	POR004980	Superseded Report:	617061

Appendix

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

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

3. 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.

4. 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.

5. 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.

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

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

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

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

11. 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.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. 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.

15. 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.

16. 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.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as "mixed hydrocarbons". Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. Sample Deviations

If a sample is classed as deviated then the associated results may be compromised.

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Matrix interference
◆	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to late arrival of instructions or samples
§	Sampled on date not provided

20. Asbestos

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

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

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

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.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

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 D

LIMITATIONS



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the Client.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated

REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.

17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.
20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

- 24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
- 25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

- 26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

- 27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
- 28. The data is presented and will be compared with assessment criteria.



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