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Annual Groundwater Monitoring Report - 2020

SK biotek Facility, Watery Lane, Swords, Co. Dublin (P0014-04)

Prepared for

Bristol-Myers Squibb
3551 Lawrenceville Rd
Princeton, New Jersey 08648
USA

Prepared by

Geosyntec Consultants Ltd
Innovation House
DCU Alpha
Old Finglas Road
Dublin D11 KXN4

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	Name	Signature	Date	Position
Prepared by	Sonya O'Loughlin		January 2021	Hydrogeologist
Checked & Approved by	Graham Webb		January 2021	Project Director

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1 INTRODUCTION

1.1 GENERAL INTRODUCTION

Geosyntec Consultants Ltd. (Geosyntec) was retained by Bristol-Myers Squibb to undertake the groundwater monitoring programme for the SK biotek Ireland facility at Watery Lane, Swords ("the site") during 2020. This annual groundwater monitoring report presents the results and findings of the fourth quarterly monitoring round for 2020 and places the results in the context of the Conceptual Site Model (CSM) for the site. This report also reviews trends in groundwater quality at the site over the past 12 months.

As a result of site assessment work completed during 2011 and 2012, a detailed understanding of the CSM for the site was developed. These studies also resulted in a substantial expansion of the groundwater monitoring well network. Following on from this work, the design of the site groundwater monitoring programme mandated under the facility's Industrial Emissions (IE) licence (register number P0014-04) was altered with the Environmental Protection Agency's (EPA's) approval in March 2013. A network comprising 24 groundwater monitoring wells was agreed (see Figure 1). Changes to the analytical schedule were also agreed (refer to Section 1.3).

In addition, monitoring of water quality is required on a quarterly basis at three former groundwater collection sumps located along the northern portion of the eastern site boundary. The results from analysis of these samples are also included in this report.

The 2020 monitoring programme was directed by Graham Webb, who has approximately 30 years' experience in contaminated land and groundwater assessment and remediation. The monitoring programme was managed by Sonya O'Loughlin, a hydrogeologist based in Geosyntec's Dublin office. The groundwater samples were analysed by Element Materials Technology in Deeside, UK, a UKAS accredited laboratory.

1.2 BACKGROUND INFORMATION

1.2.1 Site Setting

The facility is located in a semi-urban setting approximately 300 metres north of Swords town centre. The site is mainly occupied by production plant, associated buildings and infrastructure. Ground surfaces are generally covered by concrete or asphalt. There are a number of small areas with soft landscaping adjacent to the administrative buildings in the northern part of the site and in some other peripheral areas of the facility. The site layout is illustrated in Figure 1.

Land uses close to the site include residential, commercial and recreational use. The site is bounded by the Ward River to the east, with an area of public parkland beyond. To the north and north-west, the site is bounded by Watery Lane with commercial

properties beyond. To the west and south-west, land use is generally residential. Immediately adjacent to the site to the south there is a neighbouring industrial facility, which was formerly operated by Arch Chemicals, B.V. (now owned by Lonza). The Lonza facility closed in May 2013 and decommissioning of the facility is understood to have taken place during the second half of 2013. It is further understood that a remedial excavation to partially remove impacted soils from the Lonza site was completed during the second half of 2017.

Ground elevations across the SK biotek site range from approximately 17.7 m (south-western perimeter) to 11.6 m (north-eastern corner) above Ordnance Datum (AOD – Malin Head Datum) with a moderate easterly and north-easterly topographic gradient towards the Ward River.

1.2.2 Site History

The subject facility commenced operations in 1964. An Integrated Pollution Control (IPC) licence was first granted by the EPA in December 1995. The current IE licence was granted by the EPA in September 2007.

1.2.3 Geology

The site is underlain by Lower Carboniferous bedrock, specifically the Malahide Limestone Formation, which in the Swords area is fine-grained and thinly to coarsely-bedded. Observations from bedrock cores recovered during past investigations at the site and from outcrops of this formation within the bed of the Ward River show this unit to be thinly to medium-bedded (spacing of ~100-300mm) with jointing, fracturing and faults.

Borehole records generated from intrusive investigations at the site indicate a weathered zone of limestone at the interface with the overlying Quaternary deposits. This has been observed as angular gravel and cobbles, grading to thinly-bedded more competent bedrock. There was also evidence of some clay matrix within the gravel/cobble band and clayey infilling of wider bedding plane features from the unconsolidated soil and rock cores recovered during investigation of the site. The competent bedrock has closely-to-widely spaced fractures and occasional thin marly bands. Rock cores and exposures in the Ward River bed indicate a shallow 10-20^{o} bedrock dip in a northerly direction.

Depth to bedrock across the site has been observed to vary between approximately 1.9 m and 5.5 m, with a typical depth to bedrock of 3 – 4 m.

Glacial till has been observed overlying the limestone bedrock across the majority of the site. This has been described as ranging from silty clay to sandy gravel. Whilst the silty clay strata predominate across the majority of the site area, sandy and gravelly granular soils are particularly prevalent in the area to the north of the P2/P5 production building.

The glacial till is typically overlain by a variable thickness of Made Ground, which is frequently composed of reworked glacial till. In the vicinity of the P2 tank farm and Solvent Recovery Unit tank farm, a more extensive Made Ground deposit was

encountered. The Made Ground beneath the site typically comprises concrete or asphalt pavement underlain by layers of clayey and gravelly fill material. In the vicinity of the P2 tank farm, the Made Ground was observed to be predominantly granular. The base of this coarse granular fill was observed to extend to depths of up to 4.8 m and locally to directly overlie bedrock.

1.2.4 Hydrogeology

Groundwater is encountered in both the shallow Made Ground/overburden and in the underlying bedrock at depths typically ranging from about 0.2m to 2m below ground level (bgl).

The groundwater flow regime in the intermediate bedrock across the site is assessed biannually as part of the IE licence groundwater monitoring programme. This was most recently completed at the start of the Q3 2020 monitoring round. The groundwater flow regime illustrated by Figure 2 has been inferred from water table elevations calculated from the depth-to-groundwater measurements collected from intermediate bedrock wells.

The inferred lateral groundwater flow directions based on measured groundwater elevations are generally towards the north-east, trending in a more easterly direction close to the Ward River (eastern site boundary). During the summer of 2018, an easterly component of groundwater flow in the vicinity of the P2/P5 building was noted for the first time. This has persisted in the interpretation of data from subsequent monitoring events. This general flow pattern is observed both for the overburden and the underlying limestone bedrock (Figure 2).

The bedrock aquifer beneath the site is classified by the Geological Survey of Ireland (GSI) as '*Locally Important - moderately productive only in local zones*'. On a regional scale, groundwater is assumed to flow generally in an east-north-easterly direction towards the Broad Meadow Estuary.

The weathered zone towards the top of the limestone bedrock is thought to be a significant horizon for groundwater flow. As would be expected, the granular fill and granular glacial till strata appear to be reasonably conductive to groundwater flow. Conversely, the cohesive fill and cohesive drift deposits are indicated to have permeabilities one or two orders of magnitude less than the granular drift and weathered limestone, respectively. Hydraulic conductivity values for the underlying competent bedrock indicate that below the weathered horizon the bedrock groundwater flux is likely to be relatively modest.

The low to moderate permeability and thickness of the glacial till is likely to retard lateral contaminant migration within the shallow soils, and also retard downward movement to the limestone bedrock. However, preferential pathways may exist, via natural gravel lenses and man-made gravel backfill material, which locally extend close to, and/or directly overlie the bedrock. There are also in-ground structures such as tank farm vaults and shallow groundwater containment barriers, which affect shallow groundwater flow

in some sections of the site. The weathered bedrock horizon is considered to act as a sink for shallow groundwater discharge from the site. The inferred distribution of strata beneath the site and vertical components of the groundwater flow regime are illustrated by the Conceptual Site Model presented as Figure 3.

1.2.5 Hydrology

The Ward River lies approximately 5-10 m from the eastern site boundary and flows towards the north. The elevation of the river bed varies from 11.0 m above Ordnance Datum (AOD) near the southern end of the site to 8.1 m AOD at the northern end. As such, the river bed is approximately three metres below the ground surface elevation of the site at its eastern boundary. Shallow groundwater has been observed seeping out of the bank of the Ward River from close to the upper bedrock surface at around four locations adjacent to the site. As described above and illustrated by Figure 3, there is also expected to be an element of groundwater base flow from the bedrock into the river.

The Ward River has a relatively low flow and is not tidal in the vicinity of the site. Previous reports estimated an average flow rate of approximately 40,000 m^3/day (0.5 m^3/s) in the vicinity of the site. The confluence of the Ward River with the Broad Meadow River is approximately 1.5 km to the north/north-east of the site (at Balheary). From there, the combined river flows east into Broad Meadow Estuary and the Irish Sea.

1.2.6 Past Corrective Action

Condition 10 of the site's current IE licence requires the site to prepare a "Contaminated Land Investigation, Assessment & Remediation Plan (CLIARP)". The condition requires remedial targets to be established that are based on a quantitative risk assessment. In 2011, Geosyntec was retained by Bristol-Myers Squibb (who owned and operated the site at the time) to prepare a CLIARP that met this licence requirement. The results of the risk assessment completed as part of the CLIARP concluded that the primary Constituents of Potential Concern (COPCs) in groundwater at the time were dichloromethane (DCM), methyl tert-butyl ether (MTBE), its breakdown product tert-butyl alcohol (TBA), and for one area tetrahydrofuran (THF). A number of other organic compounds were detected in groundwater at the time the risk assessment was completed; however, these were found not to pose a significant risk to on-site or off-site receptors.

Three active groundwater remediation works programmes have been completed at the site over recent years under the CLIARP. These have included remediation of COPCs in the intermediate and deep groundwater in PSA 4 (located in the vicinity of the P2/P5 building - ceased in late 2015) and at PSA 6 (located in the vicinity of the Solvent Recovery Unit - ceased in December 2014). In addition, remediation of COPCs in the intermediate groundwater in PSA 3 (located in the southern area of the site) was completed in July 2018.

No further remedial action is required for PSA 6 (agreed with the EPA in 2016) or in PSA 3 (agreed with the EPA in July 2018). A programme of monitored natural attenuation (MNA) is in progress in relation to residual groundwater impact (primarily by DCM) in the western portion of PSA 4, the results of which are reported to the EPA separately. This MNA programme is close to completion and recommendations to that effect have been made.

Investigations were completed in the eastern portion of PSA 4 into a suspected source of groundwater impact by MTBE during 2017. Following on from these investigations and a subsequent bench-scale testing programme, a remediation works programme was developed based on In-situ Chemical Oxidation (ISCO). Three chemical injection events were completed within the inferred MTBE source area, in July/August 2018, March/April 2019 and July/August 2019. Analysis is currently underway to assess the viability of transitioning this remediation programme to MNA.

The previous corrective action at PSA 3 comprised the extraction of groundwater from a single well and treatment of this using the site wastewater treatment system. As indicated above, this achieved the risk based remedial targets by early 2018 and the EPA agreed to cessation of further groundwater extraction in July 2018.

2-Chloropyridine (2PCl) is also present in groundwater in some areas of the site. It is understood that 2PCl has never been used or stored at the SK biotek, Swords site and is migrating onto the facility from the adjacent Lonza property. As such, 2PCl is not a COPC at the SK biotek site. With the agreement of BMS and SK biotek, groundwater samples and water levels are being collected from a number of agreed wells on the site on a quarterly basis in support of Lonza's 2PCl remediation programme. These samples are being passed to Lonza's consultants for subsequent 2PCl analysis. It is understood that Lonza is reporting these results directly to the EPA.

1.3 PROJECT OBJECTIVES & SCOPE OF WORKS

The objectives of the 2020 groundwater monitoring programme were to satisfy the requirements of the site's IE licence with regard to groundwater monitoring and to prepare an Annual Groundwater Monitoring Report for submission to the EPA.

As indicated above, the groundwater monitoring programme comprises quarterly sampling and analysis of groundwater from a network 24 monitoring wells. Groundwater quality is also monitored at three former groundwater collection sumps located along the northern section of the eastern site boundary. The locations of the 27 monitoring points are illustrated by Figure 1. The groundwater monitoring network include shallow ("S" series) wells installed into the overburden/weathered bedrock, as well as a limited number of intermediate ("I" series) wells and deep ("D" series) wells, which are installed within the underlying bedrock. The shallow wells are generally installed to depths of up to 6 m, the intermediate wells to depths of up to 12 m and the deep wells to depths of up to 25 m. Borehole and well construction logs for these wells are included in Appendix A.

Specific objectives of the groundwater monitoring programme are:

- To assess groundwater quality down-gradient of potential source areas at the site (e.g. production buildings, tank farms, storage areas). Wells in these areas have been selected primarily to confirm that substances used in site processes are not impacting groundwater quality. Only shallow overburden wells have been selected for monitoring in these areas, as it is in this depth zone (specifically within granular Made Ground/glacial drift and the relatively permeable weathered layer at the top of bedrock) that any losses of substances to ground are likely to be first observed in the event of a release.
- To monitor groundwater quality down-gradient of PSAs where corrective action has been completed. This element of the monitoring programme seeks to assess if key COPCs in the overburden continue to be attenuated.

The scope of works undertaken during 2020 to fulfil the project objectives included:

- The inspection, purging and sampling (using low flow sampling techniques) of the 24 monitoring wells and 3 former groundwater collection sumps on a quarterly basis (refer to Table 1). Prior to purging, water level measurements were taken in all wells. During purging, wellhead parameters including pH, oxidation reduction potential (ORP), dissolved oxygen and electrical conductivity were measured. The wells were purged, wellhead parameters data recorded, and samples collected using sample tubing dedicated to each well, a battery-powered peristaltic pump, a flow-through cell and a calibrated YSI multi-meter;
- The collected samples were labelled and packed in cool boxes and were sent by overnight courier to the subcontracted laboratory accompanied by chain-of-custody documentation. In all cases, the samples were received at the laboratory within the recommended holding times;
- Analysis of groundwater samples was completed by Element Materials Technology in Deeside, UK for a volatile organic compound (VOC) suite and a semi-volatile organic compound (SVOC) suite (in both cases including specific analysis for organic compounds used in site processes), an alcohols/acetates suite, nitrate, ammoniacal nitrogen, chloride, fluoride and chemical oxygen demand (COD); and
- Preparation of this report on the findings of the 2020 groundwater monitoring programme[1].

Samples for the IE licence groundwater monitoring programme were collected on the following dates during 2020:

[1] Interim reports were also submitted to the EPA following completion of the Q1, Q2 and Q3 IE groundwater monitoring rounds.

- Q1: 12th – 17th February
- Q2: 12th – 14th May
- Q3: 12th – 17th August
- Q4: 16th – 18th November

For AGW22-S, groundwater samples could not be collected during any of the monitoring rounds in 2020 as there was an insufficient depth of water in the well at the time of sampling. Nearby shallow well AGW23-S was monitored in the place of AGW22-S.

In Q4 2020, groundwater samples were collected for laboratory analysis from all 27 monitoring locations. A sample inventory is provided as Table 1. A blind duplicate sample was taken at well AGW08-S (labelled AGW808-S) and was analysed to assess the quality assurance and control of the laboratory testing.

2 2020 RESULTS & TRENDS

Results from the Q4 2020 groundwater monitoring event are presented in Tables 2 – 4 and are discussed in the following sections of this report. The results from the Q1, Q2 and Q3 2020 monitoring rounds were presented in interim reports submitted to the EPA following completion of each monitoring event. Reference is made below to data contained in the interim reports where relevant.

Laboratory data for organic compounds detected in site groundwater from 2016 to 2020 inclusive is tabulated in Appendix B. Time series data for key COPCs at the site over recent years is also presented graphically in Appendix B for monitoring wells in the vicinity of PSA 3, PSA 4 and PSA 6.

It should be noted that there are varying start dates indicated on these graphs for different well/compound combinations. This is because some wells in the monitoring network have been installed and monitored over a longer period than others; additionally, some compounds (including TBA) have not been monitored for as long as others.

2.1 FIELD-MEASURED PARAMETERS

The groundwater flow regime across the site inferred from depth-to-groundwater measurements in intermediate-depth monitoring wells is assessed biannually as part of the IE licence ground water monitoring programme. A piezometric contour map indicating the inferred intermediate zone groundwater flow regime based on Q3 2020 monitoring data is illustrated by Figure 2. The inferred groundwater flow direction across the site is generally between east-north-east and north-east towards the Ward River. This is broadly consistent with the groundwater flow regime inferred for the site in recent years.

Measurements of wellhead parameters from the Q4 monitoring round are presented in Table 2. Observations for wellhead parameter results over the four quarterly monitoring rounds completed during 2020 can be summarised as follows:

- Groundwater pH readings were mostly in the range 5.8 – 7.8 and were generally consistent over the four monitoring events.
- Electrical conductivity (EC) readings were higher than the Groundwater Threshold Value (GTV[2]) of 1,875 µS/cm in a number of wells during 2020, with the highest reading of 9,614 µS/cm recorded in well AGW22-I in Q3 2020. EC readings exceeded the GTV in 8 wells in Q1, 11 wells in Q2, 10 wells in Q3 and 6 wells in Q4, indicating a relatively stable trend in the prevalence of higher conductivity groundwater at the site. Elevated conductivity readings in groundwater at the site are typically coincident with reducing groundwater chemistries leading to higher dissolved iron and manganese concentrations and also areas where DCM degradation is occurring leading to elevated chloride concentrations.
- Consistent with previous years, ORP and dissolved oxygen readings were generally low, indicating that reduced groundwater conditions are prevalent across much of the site. ORP readings were generally negative, with quarterly averages ranging between -85 mV and – 53 mV;
- Dissolved oxygen (DO) readings across the site were generally in the range 0.2 – 2 mg/l during 2020. Most DO readings were below 1 mg/l indicating relatively anaerobic conditions in groundwater, as is typical for the site. The distribution of anaerobic conditions is broadly consistent with the degradation of organic compounds taking place in groundwater in certain areas of the site targeted by the monitoring well network. Higher DO readings were recorded in up-gradient well AGW10-S in Q3 (4.75 mg/l) and Q4 (8.8 mg/l), and in sump GCN in Q2 (2.15 mg/l) and Q4 (6.4 mg/l). One of the two DO probes used during the Q4 2020 was found to be defective and as a result, DO readings are not available for all sampling locations for this monitoring event.

2.2 LABORATORY RESULTS

The analytical results from the Q4 2020 groundwater monitoring round for inorganic parameters (including COD) are summarised in Table 3 and the results for VOCs and alcohols/acetates are presented in Table 4. Only the results for compounds that were detected above their respective laboratory limits of detection as well as the data for solvents used in site processes, are listed in Table 4. Time-series data for selected VOCs in groundwater are tabulated, and the data is presented graphically in Appendix B. The laboratory analysis certificates are included in Appendix C.

[2] SI No. 9, 2010; European Communities Environmental Objectives (Groundwater) Regulations.

The analytical results of the primary and blind duplicate (labelled as AGW808-S) samples from well AGW08-S were assessed by calculating relative percent differences (RPDs) for selected parameters, as shown in Table 5. The RPDs for most analysed parameters fell within the acceptance criteria of ±20% with the exception of tert butyl alcohol (TBA) which had a higher RPD of 28.6%. The higher RPD is attributed to the relatively low concentrations reported for this parameter (close to the detection limit) and is considered acceptable.

2.2.1 Major Ions including Nitrogen Species & COD

The inorganic analyses of groundwater samples included chloride, fluoride, nitrate, ammoniacal nitrogen and COD.

Chloride concentrations in groundwater across the site were generally stable throughout 2020, with results greater than the GTV of 187.5 mg/l in approximately half of the wells monitored. As outlined earlier, the presence of elevated chloride concentrations in groundwater in the shallow and intermediate monitoring wells at the site tends to correlate with areas where DCM has been detected historically. Previous investigations have demonstrated substantial microbial degradation of DCM in the site groundwater and this is thought to be the source of the localised instances of elevated chloride in groundwater at the site. By comparison, chloride concentrations in up-gradient well AGW01-S were in the range 33 mg/l to 63 mg/l during 2020.

In Q4 2020, chloride results ranged from 21 mg/l (AGW28-S located in the northern area of the site) to 4,310 mg/l (AGW22-I located down-gradient of PSA 6).

Fluoride concentrations detected in groundwater across the site were similar to past years, and typically below the EPA's draft Interim Guideline Value (IGV) of 1 mg/l. The IGV was exceeded in AGW22-I in Q1 2020 at 3.3 mg/l. There were two minor exceedances in wells AGW24-D (Q2 – 1.3 mg/l) and AGW35-D (Q3 – 1.1 mg/l) where the results were slightly greater than the IGV. There were no exceedances of the IGV for fluoride in Q4 2020.

The presence of elevated ammoniacal nitrogen concentrations in groundwater at the site is consistent with areas where the processes of microbially-mediated organic compound degradation are believed to be ongoing. During biodegradation of organic contaminants in a low DO environment, nitrate as an 'electron acceptor' is progressively reduced to nitrite and ammoniacal nitrogen. Ammoniacal nitrogen was detected above the GTV of 0.175 mg/l in most monitoring wells across the site during 2020, the exceptions being up-gradient wells AGW01-S and AGW10-S, and wells AGW03-S, AGW04-S and AGW05-S, located in the western area of the site.

The highest concentrations of ammoniacal nitrogen detected during 2020 were typically in AGW25-S, AGW25-I and AGW35-I, which are located down-gradient of PSA 4, and in AGW14-S, AGW16-S and AGW19-S, which are located in the P2 tank farm area. In both these areas, residual impacts by a range of organic solvents are being biodegraded.

There has been a decline in ammoniacal nitrogen concentrations in these wells over recent years.

The groundwater COD during 2020 was generally low and comparable to that observed over recent years, with results typically less than 90 mg/l. The exceptions to this were in well AGW22-I where readings ranged from 117 mg/l to 247 mg/l in Q2, Q3, and Q4 2020. Wells AGW19-S and AGW21-I also recorded elevated COD results in Q4 2020 (223 mg/l and 112 mg/l respectively).

2.2.2 Volatile Organic Compounds & Alcohols

The concentrations of volatile organic compounds and alcohols detected in groundwater samples collected across the IE licence monitoring well network during the 2020 monitoring events were generally low and consistent with the results recorded over recent years. The exceptions to this were in the Q4 2020 samples where elevated concentrations of DCM, THF, isopropyl alcohol (IPA) and acetone were detected in wells AGW19-S and AGW23-S, and THF in wells AGW21-S and AGW21-I. We understand that SK biotek has identified defects in the process effluent drainage system that are suspected to have been the source of the detections of these solvents, and that they have put corrective measures in place to prevent further losses of effluent from these sources.

The results are discussed below for each COPC. Graphs showing concentrations of COPCs over time for PSA 3, PSA 4 and PSA 6 are provided in Appendix B.

DCM

Consistent with the results from recent years' monitoring, DCM was not detected in the groundwater samples collected during the Q1, Q2 and Q3 2020 monitoring events.

In Q4 2020, elevated concentrations of DCM were detected in the samples from wells AGW19-S (11,770 µg/l) and AGW23-S (6,180 µg/l). These detections have been linked to a suspected release of process effluent to ground that is thought to have resulted from a malfunctioning level control switch in a process effluent sump located adjacent to well AGW19-S. Well AGW23-S is located down-gradient of this area. SK biotek has stated that the defective switch has since been replaced. SK biotek is understood to be carrying out additional monitoring to assess the potential impacts of this suspected release.

DCM was not detected above the detection limit of 5 µg/l in any of the other samples collected during the Q4 2020 monitoring round.

MTBE & TBA

During 2020, MTBE was detected at low-to-trace concentrations in most wells on the IE licence network and in all cases less than 100 µg/l. In Q4 2020, MTBE was reported above the detection limit of 0.1 µg/l in 23 of the 27 samples analysed.

TBA was detected on one or more occasions in 15 of the 27 IE licence wells during Q4 2020. In the wells where TBA was detected, concentrations were consistently reported at low-to-trace levels. The highest concentrations were recorded in AGW29-S (up to 115 µg/l in Q4).

THF

THF is not a COPC for the site; however, it was previously a COPC in the PSA 3 area. The corrective action programme for this area was closed out with the EPA's agreement in 2018.

In recent years, THF has only been detected consistently in well AGW14-S, at low concentrations. This well is located in the P2 tank farm area (Figure 1). During 2019, THF concentrations detected in this well were in the range 39 – 180 µg/l, mostly below the GTV of 115 µg/l. During 2020, similar THF concentrations were detected in this well, up to a maximum of 128 µg/l in the Q2 sample.

In Q4 2020, THF was detected at elevated concentrations in the following wells:

- AGW19-S: 22,100 µg/l
- AGW23-S: 5,580 µg/l
- AGW21-S: 45,200 µg/l
- AGW21-I: 2,400 µg/l

THF has generally not been detected in these wells over the past three years.

The detection of THF in wells AGW19-S and AGW23-S in Q4 2020 has been linked to the suspected release of process effluent to ground close to AGW19-S referred to earlier. The detection of THF in wells AGW-21-S and AGW21-I has been linked to a separate suspected release of process effluent, which appears to have taken place close to a process effluent sump adjacent to the P4 production building. In this case, a defective pump is understood to have resulted in process effluent backing up in the process effluent drainage system, which in turn is suspected to have resulted in process effluent being released to ground. The defective pump is reported by SK biotek to have been repaired. SK biotek is understood to be carrying out additional monitoring to assess the potential impacts of this suspected release.

Isopropyl Alcohol and Acetone

In addition to DCM and THF, elevated concentrations of isopropyl alcohol (IPA) and acetone were detected in the Q4 2020 samples collected from wells AGW19-S and AGW23-S, which appear to be linked to the same suspected source. IPA was detected at concentrations of 20,800 µg/l and 182 µg/l, and acetone was detected at 7,260 µg/l and 4,790 µg/l, in wells AGW19-S and AGW23-S, respectively.

Former Groundwater Containment Sumps

Three former groundwater containment sumps (INSC, GCN and GCS) are located along the north-eastern boundary of the site (Figure 1). The three sumps are located along the up-gradient side of a shallow groundwater containment wall/grout curtain, the extent of which is also indicated in Figure 1.

Consistent with the results from recent years, water quality was generally good at these three locations. The only detections of site COPCs in the former containment sumps were for MTBE, which was detected at trace-to-low levels during 2020 (within the range 0.5–19 µg/l).

2.2.3 Semi-Volatile Organic Compounds

SVOC analysis was completed on samples collected from all 24 IE licence monitoring wells in Q4 2020. Wells in the vicinity of the P2 tank farm (AGW14-S, AGW16-S, AGW19-S and AGW23-S) were also monitored for SVOCs as part of the Q1, Q2 and Q3 monitoring events.

In Q4 2020, standard suite SVOCs were not detected in any of the samples analysed except in wells AGW16-S and AGW19-S. A trace concentration of di-n-butyl phthalate (1.8 µg/l) was detected in well AGW16-S, and a trace concentration of 4-methylphenol (5 µg/l) was detected in well AGW19-S.

The Q4 2020 samples were also analysed for non-standard suite SVOCs as TICs. n-Methyl-2-pyrrolidone was detected at an estimated concentration of 385 µg/l in the sample from AGW19-S. This compound was not detected in well AGW19-S during other monitoring rounds in 2020 or in previous years, and may be linked to the suspected recent release of process effluent close to this well.

3 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The results of the 2020 groundwater monitoring programme were mostly consistent with the results from recent years. However, the Q4 2020 results indicate that there may have been recent releases of process effluent to ground in two areas of the site.

- Results from wells AGW19-S and AGW23-S indicate there may have been a release of process effluent to ground from a process effluent sump located close to well AGW19-S. The organic compounds detected at elevated concentrations in these two wells in Q4 2020 included DCM, THF, IPA and acetone.
- Results from wells AGW21-S and AGW21-I indicate there may have been a release of process effluent to ground from a process effluent sump located adjacent to the P4 production building and close to well AGW21-S. THF was detected at elevated concentrations in these two wells in Q4 2020:

SK biotek is understood to have implemented measures to prevent further losses from these areas. Other than these two instances, there were no indications from the 2020 groundwater monitoring programme of recent releases to ground of organic solvents used in site processes.

With regard to the three key COPCs for the site, DCM, MTBE and TBA:

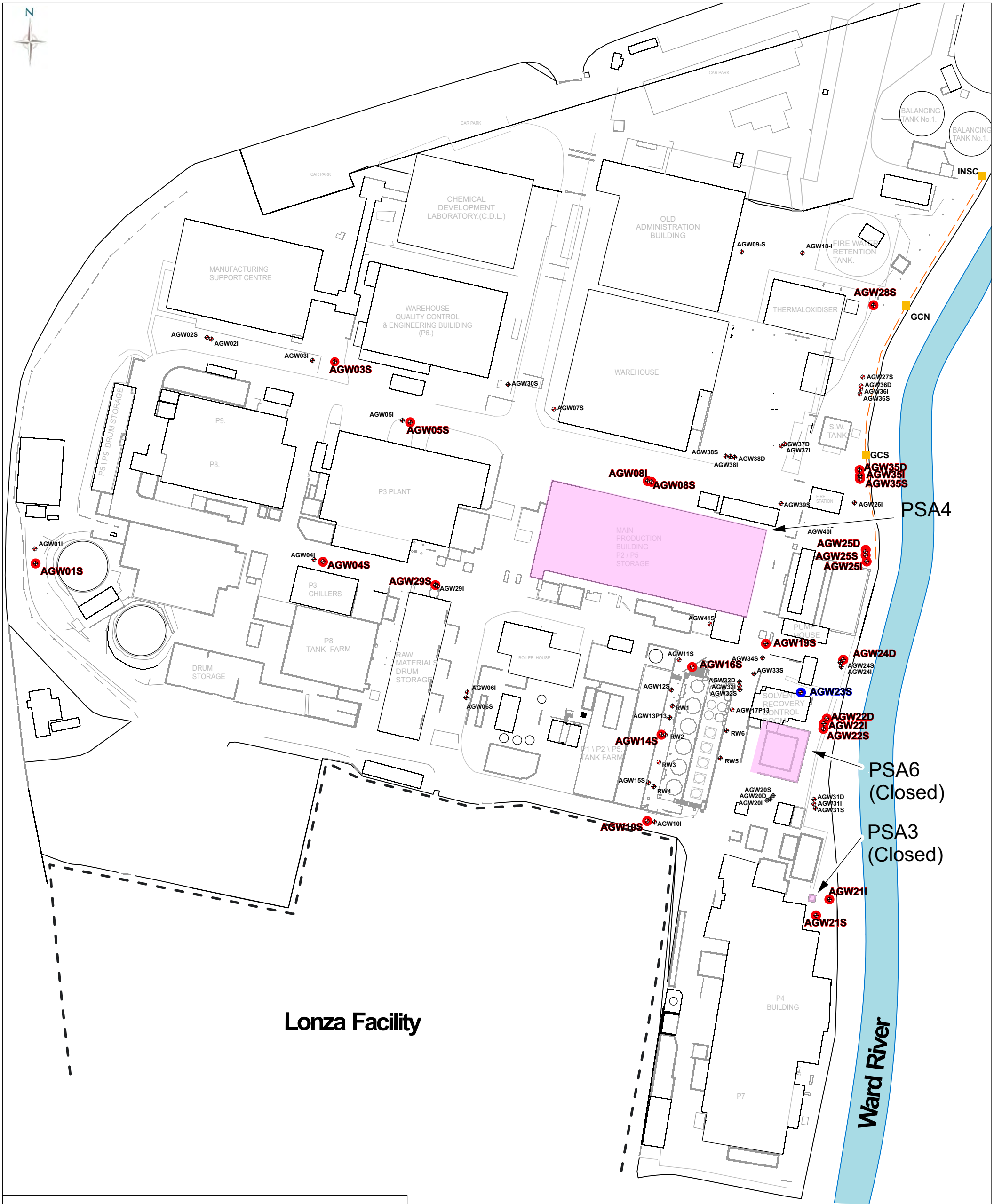
- Other than the two detections referred to above in Q4 2020, DCM was not detected in the IE licence wells during 2020.
- MTBE concentrations exceeding the GTV of 10 µg/l are present in some areas of the site. A declining trend in concentrations is evident in wells located down-gradient of PSA 4, which was targeted by the remediation works programme completed in the eastern portion of the P2/P5 production building during 2018 and 2019.
- TBA is a breakdown product of MTBE and is present in groundwater in some areas of the site, mostly at relatively low concentrations (<0.1 mg/l). TBA concentrations either remained relatively stable or declined in 2020. TBA concentrations in the vicinity of PSA 4 remained well below the RBTV for this area of the site of 200 µg/l.

Groundwater is in a reduced state across much of the site, with typically negative ORP readings and low DO concentrations. ORP readings in 2020 were generally similar across the site (including in up-gradient wells) compared to those recorded during recent years.

Chloride concentrations were stable in key wells during 2020. A key source of chloride ions in groundwater at the site is the natural attenuation of chlorinated solvents (primarily DCM) in groundwater.

* * * * * * *

FIGURES

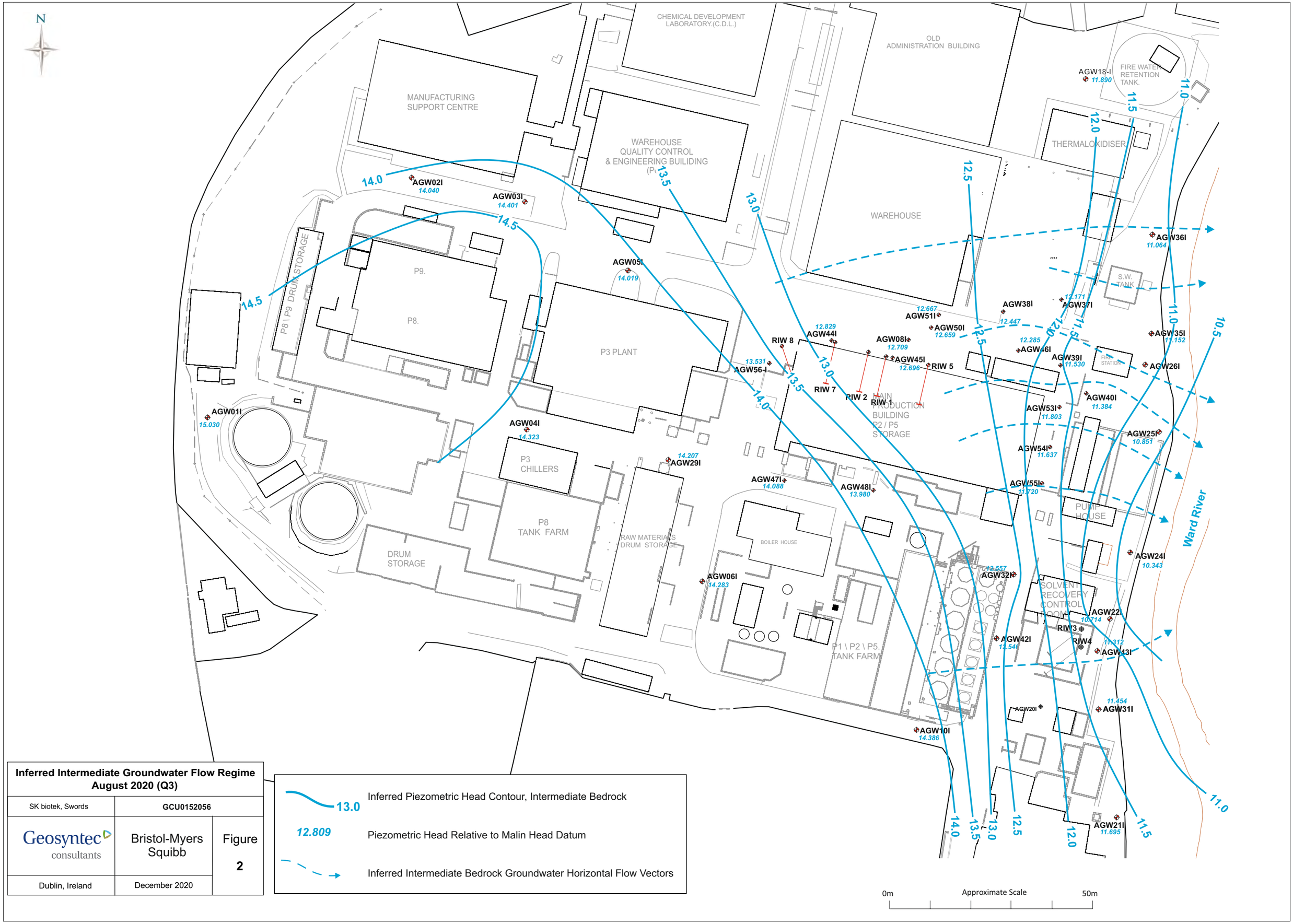


Lonza Facility

Key:

- Groundwater Monitoring Well
- Decommissoned Monitoring Well
- IE Licence Groundwater Monitoring Well
- Additional IE Licence Groundwater Monitoring Well
- Sump
- Potential Source Area (PSA)

Site Layout & IE Licence Groundwater Monitoring Network		
SK biotek, Swords	GCU0152056	
Geosyntec consultants	Bristol-Myers Squibb	Figure 1
Dublin, Ireland	December 2020	



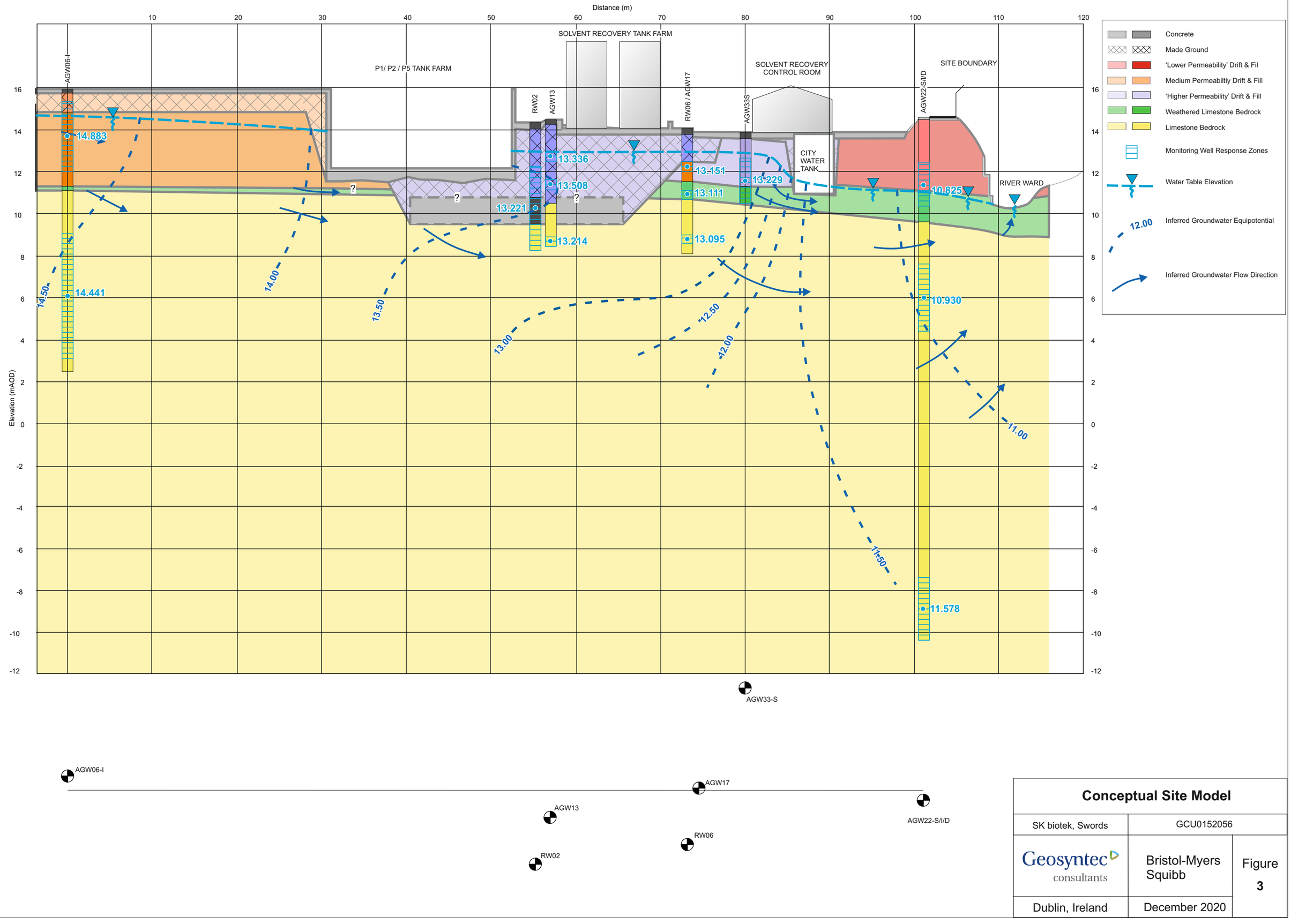
Inferred Intermediate Groundwater Flow Regime August 2020 (Q3)

SK biotek, Swords	GCU0152056	
Geosyntec consultants	Bristol-Myers Squibb	Figure 2
Dublin, Ireland	December 2020	

13.0 Inferred Piezometric Head Contour, Intermediate Bedrock

12.809 Piezometric Head Relative to Malin Head Datum

Inferred Intermediate Bedrock Groundwater Horizontal Flow Vectors



Conceptual Site Model		
SK biotek, Swords	GCU0152056	
Geosyntec consultants	Bristol-Myers Squibb	Figure 3
Dublin, Ireland	December 2020	

TABLES

Table 1 - Sample Inventory; Q4 2020
SK biotek, Swords

Sample Location	AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S	AGW21-S	AGW21-I	AGW22-S	AGW22-I	Total
Analytical Suite															
VOC + TICs	x	x	x	x	x	x	x	x	x	x	x	x		x	13
Alcohols/Acetates	x	x	x	x	x	x	x	x	x	x	x	x		x	13
t-Butanol (TBA)	x	x	x	x	x	x	x	x	x	x	x	x		x	13
SVOC + TICs	x	x	x	x	x	x	x	x	x	x	x	x		x	13
COD	x	x	x	x	x	x	x	x	x	x	x	x		x	13
Ions	x	x	x	x	x	x	x	x	x	x	x	x		x	13
Site Specific Solvents	x	x	x	x	x	x	x	x	x	x	x	x		x	13

Sample Location	AGW22-D	AGW23-S	AGW24-D	AGW25-S	AGW25-I	AGW25-D	AGW28-S	AGW29-S	AGW35-S	AGW35-I	AGW35-D	INSC	GCN	GCS	Total
Analytical Suite															
VOC + TICs	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
Alcohols/Acetates	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
t-Butanol (TBA)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14
SVOC + TICs	x	x	x	x	x	x	x	x	x	x	x				11
COD	x	x	x	x	x	x	x	x	x	x	x				11
Ions	x	x	x	x	x	x	x	x	x	x	x				11
Site Specific Solvents	x	x	x	x	x	x	x	x	x	x	x	x	x	x	14

Notes:

Ions = fluoride, chloride, nitrate and ammoniacal nitrogen

VOC = Volatile Organic Compound

TICs = Tentatively Identified Compounds

SVOC = Semivolatile Organic Compound

COD = Chemical Oxygen Demand

Site Specific Solvents are as listed in Table 4. n-methyl-2-pyrrolidone (NMPO) is also a site solvent, which is analysed as an SVOC TIC

AGW22-S was not sampled as it was dry (AGW23-S was sampled instead)

Table 2 - Groundwater Field Parameters and Observations, Q4 2020
SK biotek, Swords

Piezometer	DTGW (mbct)	Casing Top Elevation (mAOD)	Groundwater Elevation (mAOD)	Temp (°C)	Dissolved Oxygen (mg/l)	Specific Conductivity (µS/cm)	Field pH	ORP (mV)	Observations
AGW01-S	3.935	19.217	15.282	12.8	3.92	846	6.75	98	Clear. NVO.
AGW03-S	0.785	14.665	13.880	14.2	2.60	**1941**	7.33	86	Clear. NVO.
AGW04-S	0.565	15.014	14.449	13.1	3.60	**2075**	7.17	-6	Clear. NVO.
AGW05-S	0.925	14.791	13.866	14.100	2.010	998.000	6.980	-119.100	Clear with white particulates. Slight H2S odour.
AGW08-S	1.180	14.049	12.869	12.7	2.77	808	6.78	-106	Clear with orange particulates. Strong solvent odour
AGW08-I	1.165	14.069	12.904	12.7	2.06	1198	6.54	-115	Clear with occasional black particulates. Strong solvent odour.
AGW10-S	1.540	15.047	13.507	12.5	8.80	717	7.40	-123	Clear. NVO.
AGW14-S	1.446	14.348	12.902	11.9	0.20	1395	7.01	-136	Clear. Solvent odour.
AGW16-S	1.066	13.607	12.541	11.9	0.34	1825	6.67	-83	Clear. Slight solvent odour.
AGW19-S	0.773	13.801	13.028	13.7	2.07	1195	6.87	-153	Clear with frequent black particulates. Strong
AGW21-S	1.395	14.958	13.563	14.8	2.06	983	7.19	-66	Clear. NVO.
AGW21-I	2.435	14.993	12.558	13.4	1.89	1028	7.17	-107	Clear. H2S odour.
AGW22-I	3.407	14.389	10.982	12.7	2.43	**2559**	5.88	-60	Clear. Slight solvent odour.
AGW22-D	3.082	14.593	11.511	12.8	3.12	1023	7.12	-114	Clear. Slight H2S dour.
AGW23-S	1.518	14.042	12.524	12.1	2.43	1037	6.83	4	Clear. Strong solvent odour.
AGW24-D	3.025	14.361	11.336	12.8	2.96	**2192**	6.52	-88	Clear. Slight solvent odour.
AGW25-S	3.100	14.125	11.025	13.0	0.27	540	7.07	-142	Clear. Solvent odour.
AGW25-I	3.132	14.141	11.009	13.0	0.38	694	6.98	-122	Clear. Solvent odour.
AGW25-D	3.146	14.193	11.047	13.2	0.34	1405	6.98	-131	Clear. Slight solvent odour.
AGW28-S	2.415	13.675	11.260	14.0	0.20	487.1	7.18	-137	Clear NVO.
AGW29-S	0.530	15.006	14.476	12.9	2.85	**2694**	6.86	-111	Clear. Slight solvent odour.
AGW35-S	2.728	14.048	11.320	13.4	0.32	532	7.24	-121.6	Slightly cloudy. Slight solvent odour.
AGW35-I	2.822	14.048	11.226	13.4	0.30	1425	7.00	-111	Clear. Solvent odour.
AGW35-D	3.004	14.182	11.178	13.3	0.24	**2005**	7.34	-113	Clear. NVO.
INSC	2.408	-	-	13.7	0.47	557	7.19	-98	Clear. NVO.
GCN	3.125	-	-	13.0	6.40	954	7.22	-47	Cloudy. NVO.
GCS	2.915	-	-	12.9	0.36	467.2	7.23	-84	Clear. Slight solvent odour.

Notes:

µS/cm: micro Siemens per centimetre

mAOD: metres above Ordnance Datum

mbct: metres below casing top

DTGW: depth to groundwater

ORP: Oxidation-Reduction Potential

DO probe defective at time of sampling

NVO: No visual or olfactory evidence of contamination

"-" : Not measured

mg/l: milligrams per litre

mV: millivolts

°C: degrees Celsius

Table 3 - Ions & COD in Groundwater, Q4 2020, SK biotek, Swords

Analyte	Units	Fluoride	Chloride	Nitrate as NO_3	Ammoniacal Nitrogen as N	COD
IGV	mg/l	1	30	25	0.065	-
GTV	mg/l	-	187.5	37.5	0.175	-
Sample ID						
AGW01-S	mg/l	<0.3	32.6	5.7	0.04	<7
AGW03-S	mg/l	<0.3	**636**	<0.2	<0.03	20
AGW04-S	mg/l	<0.3	**553**	0.6	0.07	27
AGW05-S	mg/l	<0.3	128	<0.2	0.86	10
AGW08-S	mg/l	0.6	102	2.8	**0.49**	8
AGW08-I	mg/l	0.5	**596**	<0.2	**3.72**	64
AGW10-S	mg/l	<0.3	69.6	5	<0.03	<7
AGW14-S	mg/l	<0.3	**233**	<0.2	**5.01**	16
AGW16-S	mg/l	<0.3	182	<0.2	**4.82**	26
AGW19-S	mg/l	0.3	**266**	3.4	**3.63**	223
AGW21-S	mg/l	0.6	128	<0.2	0.13	112
AGW21-I	mg/l	0.3	130	<0.2	**0.78**	14
AGW22-I	mg/l	<0.3	**4310**	0.3	**0.25**	173
AGW22-D	mg/l	0.8	**225**	<0.2	**0.24**	<7
AGW23-S	mg/l	0.4	139	6.1	**0.27**	64
AGW24-D	mg/l	0.5	**998**	<0.2	**0.33**	28
AGW25-S	mg/l	0.5	32.9	<0.2	**1.94**	9
AGW25-I	mg/l	0.5	47.4	<0.2	**3.47**	16
AGW25-D	mg/l	1	**339**	<0.2	**0.43**	13
AGW28-S	mg/l	0.5	21	<0.2	**0.59**	10
AGW29-S	mg/l	<0.3	**779**	<0.2	**2.71**	34
AGW35-S	mg/l	0.6	27.7	<0.2	**1.06**	<7
AGW35-I	mg/l	0.5	**209**	0.3	**4.04**	18
AGW35-D	mg/l	0.8	**530**	6.3	**0.26**	22

Notes:

100 Concentration exceeds GTV

" - " = No parameter available

COD = Chemical Oxygen Demand

mg/l: milligrams per litre

IGV: Interim guideline value

"<" = Compound not detected above corresponding laboratory method limit of detection

GTV: Groundwater threshold value

ns: not sampled (well inaccessible)

Table 4 - Volatile Non-purgeable Organic Compounds in Groundwater, Q4 2020 (ug/L)
SK biotek, Swords

Analyte	Sample ID		AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S	AGW21S	AGW21I	AGW22I	AGW22D	AGW23-S	AGW24D	AGW25S	AGW25-I	AGW25-D	AGW28-S	AGW29-S	AGW35-S	AGW35-I	AGW35-D	INSC	GCN	GCS
	GTV	LOD																											
VOC MS																													
Methyl Tertiary Butyl Ether (MTBE)	10	<0.1		1.4	0.4	4.7	7.1	**54.5**		**16.2**	**10.6**	**20.3**	1.3	2.4	1.3		5.7		9.8	**27.1**	0.3	2.6	**60.3**	5.6	**52.6**	0.2	4.4	0.7	2.7
Chloromethane	-	<3																											
Vinyl Chloride	0.375	<0.1																											
Dichloromethane (DCM)	15	<5										**11770**					**6180**												
Chloroform	-	<2															5												
Benzene	0.75	<0.5								0.7		**1.5**			**0.8**			**1**											
Bromodichloromethane	-	<2																											
Toluene	525	<5										46					13												
Ethylbenzene	-	<0.5										49																	
p/m-Xylene	-	<1										152																	
o-Xylene	-	<0.5										19																	
total Xylene	-	-																											
Isopropylbenzene	-	<3																											
Site Solvents*																													
Acetone	-	<50										7260					4790												
Acetonitrile	-	<100																											
Cyclohexane	-	<50																											
Dimethylacetamide (DMA)	-	<100																											
Dimethylformamide (DMF)	-	<100																											
Diethyl ether	-	<2				14																	41						
Heptane	-	<100																											
Pyridine	-	<100																											
Triethylamine	-	<100																											
Trimethylsilanol	-	<100																											
Triethylsilane (TES)	-	<100																											
Tetrahydrofuran (THF)	115	<10				12				73		**22100**	**45200**	**2400**			**5580**												
Alcohols/Acetates																													
Methyl Alcohol	-	<500																											
Ethyl Alcohol	-	<500																											
i-Propyl Alcohol (IPA)	-	<100										20800					182												
n-Propyl Alcohol		<100																											
n-Butyl Alcohol	-	<100																											
Tert Butyl Alcohol (TBA)	-	<2			4	28	4	32		20	25	61	8	42	16		24	7		3			115		2				
Methyl Acetate	-	<100																											
Ethyl Acetate	-	<100																											
Isopropyl Acetate	-	<100																											

Notes

GTV : Groundwater Threshold Value

10 Result Exceeds GTV

"-" : No parameter available

LOD : Limit of Detection

< : less than

Blank cell : not detected above limit of detection

NA: Not Analysed

* Site solvents not included in standard analytical suites

Table 5 - Duplicate Groundwater Sample Analysis - Q4 2020
SK biotek, Swords

Analyte			AGW08S	AGW808-S (Duplicate)	RPD	Comment
Ions	**Units**	**LOD**				
Fluoride	mg/l	<0.3	NS	NS	NS	
Chloride	mg/l	<0.3	NS	NS	NS	
Ammoniacal Nitrogen as NH3	mg/l	<0.03	NS	NS	NS	
COD	mg/l	<7	NS	NS	NS	
VOCs						
Methyl Tertiary Butyl Ether (MTBE)	ug/l	<0.1	7.1	7.3	-2.8%	
Benzene	ug/l	<0.5	<0.5	<0.5	0.0%	
Ethylbenzene	ug/l	<1	<1	<1	0.0%	
p/m-Xylene	ug/l	<2	<2	<2	0.0%	
Alcohols/Acetates						
Tert Butyl Alcohol (TBA)	ug/l	<2	4.0	3.0	28.6%	Duplicate results close to LOD, so high RPD acceptable

Notes:
RPD = Relative Percentage Difference
mg/l = Milligrams per litre
ug/l = Micrograms per litre
"<" = Compound not detected above corresponding laboratory method limit of detection
NS = not sampled

APPENDIX A:

Borehole Logs

(IE Licence Well Network)

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 03/09/1992
Logged By: ERA Maptec
Driller: ERA Maptec

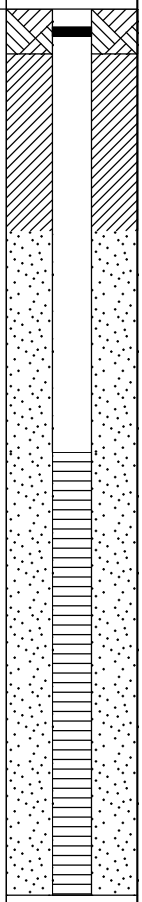
Borehole Elevation: 19.2165
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Borehole Reference:

AGW01-S

Coordinates: 717905.305,747198.987

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Topsoil			
0.30		Brown soft silty CLAY with pebbles			
3.00		Grey clayey SILT with pebbles			
2					
4					
6					



Notes: Former location ID GW10D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 03/09/1992
Logged By: ERA Maptec
Driller: ERA Maptec

Borehole Elevation: 19.2165
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Coordinates: 717905.305,747198.987

Borehole Reference:

AGW01-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
		Grey clayey SILT with pebbles			
6.40		Dark grey shaley LIMESTONE bedrock			
6.70					
8					
10					
12					

Notes: Former location ID GW10D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 03/09/1992
Logged By: ERA Maptec
Driller: ERA Maptec

Borehole Elevation: 14.6649
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Coordinates: 717989.305,747255.623

Borehole Reference:

AGW03-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: brown clayey soil with pebbles and cobbles.			
4.00		Bedrock. Pale grey fine grained limestone with argillaceous partings.			
4.50					

Notes: Former location ID GW02S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 21/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigations

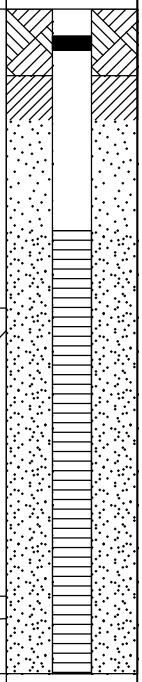
Borehole Elevation: 15.0141
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 717985.949,747199.413

Borehole Reference:

AGW04-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete	NVO		
0.30		MADE GROUND , loose Brown clayey sandy rounded Gravel	Standing water below concrete, NVO. Oily sheen on water surface, NVO.		21.2 ppm
3.00					4.7 ppm



Notes: Vac Ex to 1.2m/Window sampling to top of rock at 3m. Refusal at 3.0m (pressured bedrock), finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW31S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 19/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigation

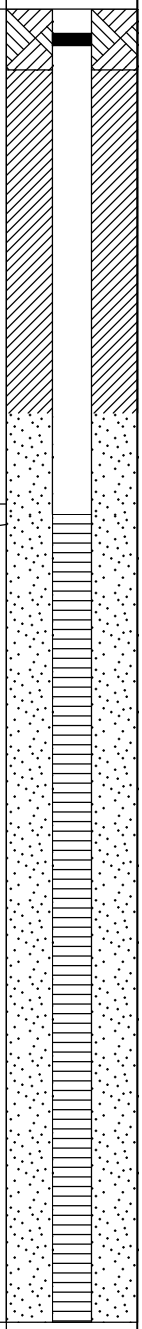
Borehole Elevation: 14.7911
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718010.475,747238.636

Borehole Reference:

AGW05-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete	NVO		
0.30		MADE GROUND: Firm Clay with fine to coarse angular gravel, gravel has a small fraction of medium angular gravel	NVO		0 ppm
3.30		Hard competent Limestone Bedrock (Malahide Formation)	NVO		
6.50					



Notes: Vac Ex to 1.2m/Window sampling to top of rock at 3.3m / Rotary Air Hammer to base, No noticeable water strikes. Finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW28S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 20/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigations

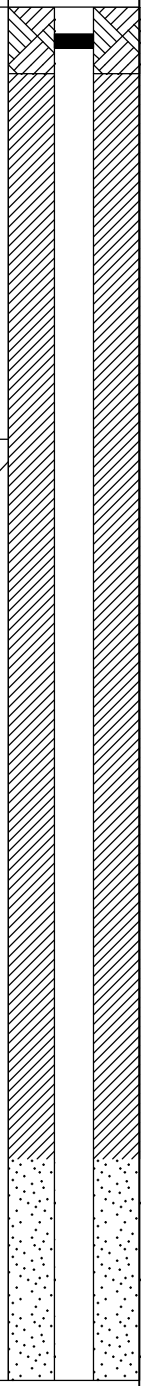
Borehole Elevation: 14.0688
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718077.12,747222.136

Borehole Reference:

AGW08-I

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND , Brown slightly clayey coarse rounded cobbles with fine to coarse angular gravel	NVO		
1.50		Soft clayey silty medium sized rounded gravels, water in at 2.5m	Groundwater ingress at 2.5, Strong organic odour, no sheen		10.9 ppm
3.40		Medium dense clayey silty medium rounded gravel	Strong organic odour		
4.10		Very Strong limestone bedrock (Malahide Formation)	Slight organic odour		



Notes: Vac Ex to 1.2m/Window sampling to top of rock 4.1m / Rotary Air Hammer to base, Strong odour at 1.5 onwards. Well finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW27D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 20/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigations

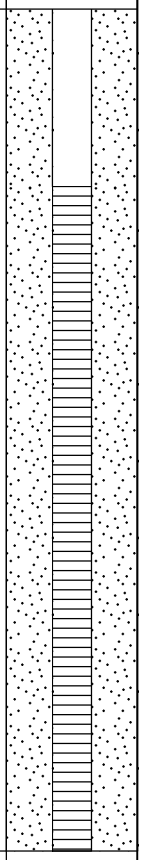
Borehole Elevation: 14.0688
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718077.12,747222.136

Borehole Reference:

AGW08-I

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
8		Very Strong limestone bedrock (Malahide Formation)	Slight organic odour		
10	10.00				
12					



Notes: Vac Ex to 1.2m/Window sampling to top of rock 4.1m / Rotary Air Hammer to base, Strong odour at 1.5 onwards. Well finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW27D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 20/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigation

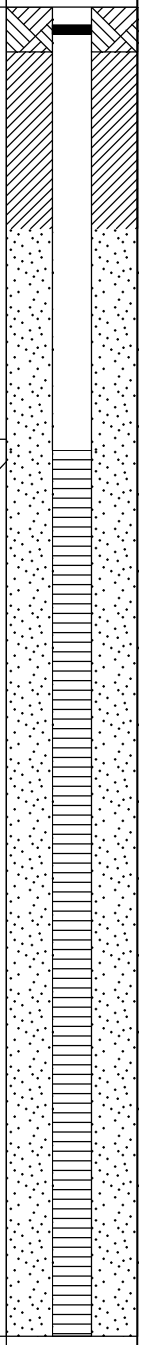
Borehole Elevation: 14.049
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718078.199,747221.915

Borehole Reference:

AGW08-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete	NVO		
0.30		MADE GROUND , Firm brown sandy clayey sub-rounded medium to coarse gravel with occasional small cobbles	NVO		
2					18.4 ppm
2.30		Brown sandy clayey sub-rounded to angular medium to coarse GRAVEL with occasional small cobbles	Groundwaterr ingress at 2.5m. Strong organic odour		
4					
4.10		Very Strong limestone bedrock (Malahide Formation)	Odour, no sheen		
6					
6.00					



Notes: Vac Ex to 1.2m/Window sampling to top of rock 4.1m / Rotary Air Hammer to base, finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW26S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 18/08/1994
Logged By: ERA Maptec
Driller: ERA Maptec

Borehole Elevation: 15.0465
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Coordinates: 718076.99,747126.679

Borehole Reference:

AGW10-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete.			
0.15		Medium brown clay with pebbles/cobbles			
1.80		Gravelly material in a clay matrix.			
3.30		Soft broken back LIMESTONE.			
4.30					
2					
4					
6					

Notes: Former location ID GW09S

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 04/06/1998 Logged By: Minerex Env. Ltd Driller: SJM	Borehole Elevation: 14.3479 Borehole Diameter: Installation Diameter: Slot Size: Method:	Borehole Reference: **AGW14-S**
Coordinates: 718081.001,747150.932		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Limestone hardcore.			
0.30		Fill			
1.20		MADE GROUND: Brown/grey clayey fill, cobble sized			
2					
3.00		MADE GROUND: brown/grey clayey fill, gravel & cobble sized			
3.70		Firm medium brown clay limestone till. Refusal at 4.0m.			
4.00					
4					
6					

Notes: Former location ID GW07C

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 10/09/1992
Logged By: ERA Maptec
Driller: ERA Maptec

Borehole Elevation: 13.6068
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Coordinates: 718089.625,747169.929

Borehole Reference:

AGW16-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Bro0wn clayey soil.			
2.10		Light grey argillaceuos LIMESTONE.			
3.40					
4					
6					

Notes: Former location ID GW05S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 10/11/2011
Logged By: PB
Driller: Glover Site Investigation

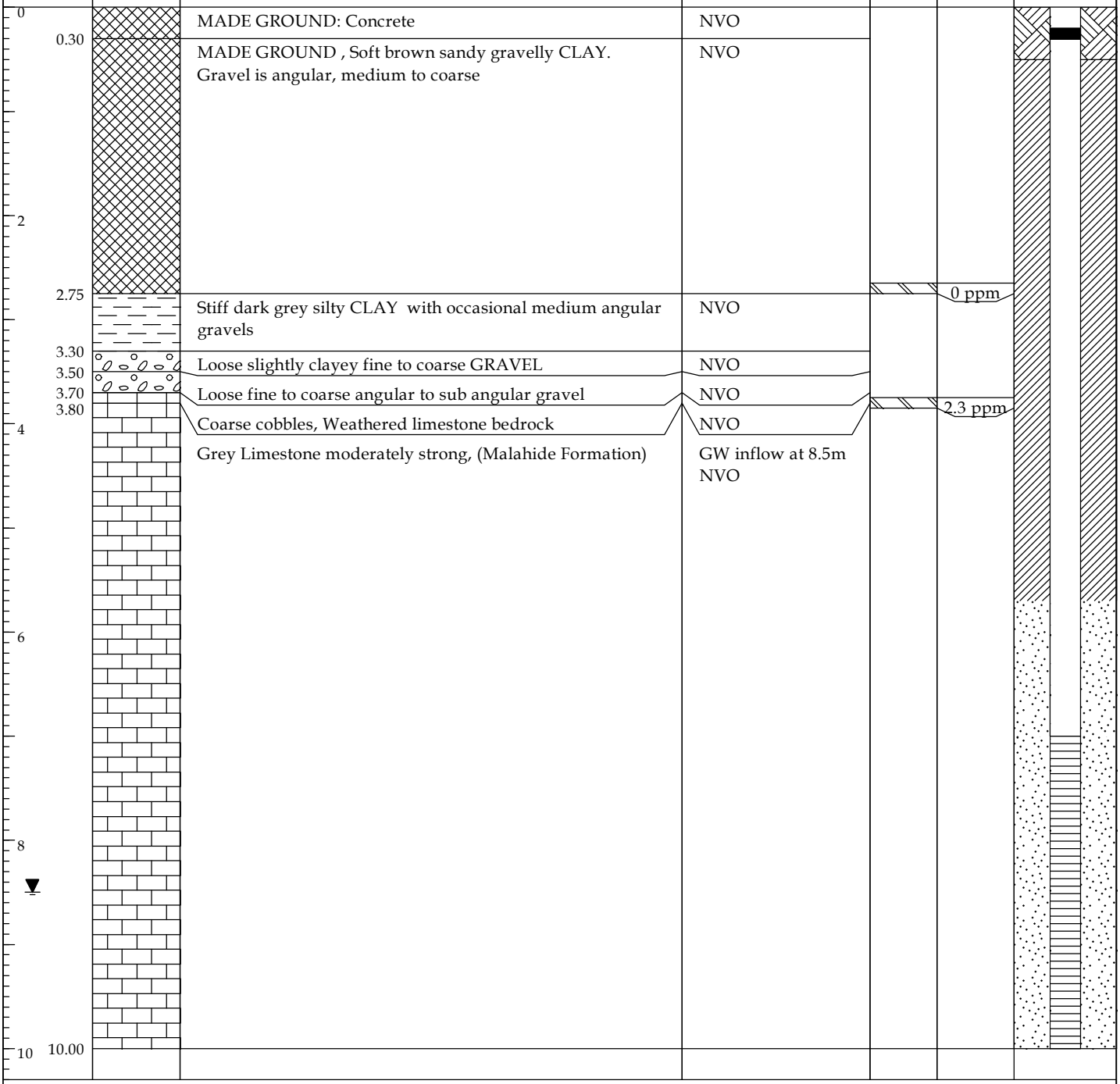
Borehole Elevation: 14.9929
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718129.536,747104.614

Borehole Reference:

AGW21-I

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete	NVO		
0.30	MADE GROUND , Soft brown sandy gravelly CLAY. Gravel is angular, medium to coarse	NVO		
2.75	Stiff dark grey silty CLAY with occasional medium angular gravels	NVO		0 ppm
3.30	Loose slightly clayey fine to coarse GRAVEL	NVO		
3.50	Loose fine to coarse angular to sub angular gravel	NVO		
3.70	Coarse cobbles, Weathered limestone bedrock	NVO		2.3 ppm
3.80	Grey Limestone moderately strong, (Malahide Formation)	GW inflow at 8.5m NVO		
10.00				



Notes: Vac Ex to 1.2m/Window sampling to top of rock 3.8m/ Rotary Air Hammer to base, Water inflow at 8.5m, finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW21D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 10/12/2011
Logged By: PB
Driller: Glover Site Investigation

Borehole Elevation: 14.9584
Borehole Diameter: 100mm Hammer
Installation Diameter: 100mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718124.447,747100.477

Borehole Reference:

AGW21-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete	NVO		
0.30		MADE GROUND: Dense coarse angular gravel with slightly clayey fine to medium gravel.	NVO		
1.20		MADE GROUND, Dense clayey silty angular fine /medium to coarse gravel	NVO		
2					
2.50		Clayey, silty, rounded/subrounded fine to medium gravel	NVO		
4					3.1 ppm
4.30		Weathered limestone bedrock, (Malahide Formation)	NVO		2.6 ppm
4.60		Grey Limestone moderately strong, (Malahide Formation)	GW inflow during rotary drilling. NVO		
6					
6.00					

Notes: Vac Ex to 1.2m/Window sampling to top of rock 4.6m / Rotary Air Hammer to base, high water yield during drilling. Well finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination. Well originally installed with 50mm (ID) standpipe. Replaced with 100mm standpipe April 2012.
Former location ID GW20S

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 29/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.5926 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction Window sampling/Air hammer	Borehole Reference: **AGW22-D**
Coordinates: 718127.39,747155.364		

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0				
0.10	MADE GROUND: Coarse limestone gravel hardcore.			
	Soft brown slightly sandy, slightly gravelly CLAY. Gravel is fine sub-rounded.			11.7/0.0; 10.6/0.0
1.20	Stiff brown slightly silty, slightly gravelly CLAY. Gravel is fine sub-angular to sub-rounded.			11.7/0.0; 10.6/0.0
1.80	Stiff grey slightly gravelly , silty CLAY. Gravel is coarse, sub-angular limestone.			
2				
3.00	Soft grey gravelly SILT. Gravel is fine sub-rounded.			11.7/0.0; 10.6/0.3
3.20	Dense black clayey SAND and GRAVEL. Gravel is fine to medium with some sub-angular limestone cobbles (weathered bedrock).			11.7/0.0; 10.6/0.3
3.50	Dark grey SAND and GRAVEL (weathered bedrock). Gravel is fine to coarse sub-angular limestone.			
4				11.7/0.0; 10.6/0.0
5.00	Light grey competent limestone bedrock.	Dry.		
6				
6.00				

Notes: Window sampling refusal at 3.5 m.
Air hammer from 3.5 m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 29/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.5926 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction Window sampling/Air hammer	Borehole Reference: **AGW22-D**
Coordinates: 718127.39,747155.364		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
		Strong thinly laminated grey LIMESTONE. Fresh, heavily weathered fractures at 6.6 - 6.7 m, with clay deposits. Closely spaced between 6.6 - 6.9 m., horizontal to 10° with ferrous staining.	FI=3, IF 0.08-0.7m, TCR=100%, SCR=100%, RQD=95%		
7.50		Strong thinly laminated grey LIMESTONE. Fresh, medium spaced fractures with ferrous deposits, horizontal.	FI=4, IF=0.2-0.8m, TCR=100%, SCR=100% RQD=100%		
8					
9.00		Strong thinly laminated grey LIMESTONE. Fresh, medium spaced fractures with ferrous deposits, 70°.	FI=2, IF=0.2-0.6m, TCR=100%, SCR=73% RQD=100%		
10					
10.50		Strong thinly laminated grey LIMESTONE. Fresh with closely spaced fractures between 10.5-10.9m, widely spaced from 10.9, 40° with ferrous staining.	FI=4, IF=0.05/1.1m, TCR=100%, SCR=87% RQD=83%		
12					
12.00		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures, 45° with ferrous staining.			

Notes: Window sampling refusal at 3.5 m.
Air hammer from 3.5 m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 29/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.5926 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction Window sampling/Air hammer	Borehole Reference: **AGW22-D**
Coordinates: 718127.39,747155.364		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures, 45° with ferrous staining.	FI=3, IF=0.05-0.95m, TCR=100%, SCR=100% RQD=97%		
13.50					
14		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures, 45° with ferrous staining.	FI=3, IF=0.3-0.9m, TCR=100%, SCR=100% RQD=97%		
15.00		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures at 15.5m with clay deposits, dip 20° and ferrous staining.	FI=1, IF=0.5m, TCR=100%, SCR=100% RQD=100%		
16					
16.50		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fracture at 17m, horizontal with ferrous staining and clay deposits.	FI=1, IF=0.5-1.0m, TCR=100%, SCR=100% RQD=100%		
18	18.00	Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures at 18.5m, 45° with ferrous staining.	FI=1, IF=0.75m, TCR=100%, SCR=100% RQD=100%		

Notes: Window sampling refusal at 3.5 m.
Air hammer from 3.5 m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 29/02/2012
Logged By: PD
Driller: Tor Drilling

Borehole Elevation: 14.5926
Borehole Diameter: 150mm
Installation Diameter:
Slot Size:
Method: Vacuum extraction
Window sampling/Air hammer

Coordinates: 718127.39,747155.364

Borehole Reference:

AGW22-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
		Strong thinly laminated grey LIMESTONE. Fresh with moderately spaced fractures at 18.5m, 45° with ferrous staining.	FI=1, IF=0.75m, TCR=100%, SCR=100% RQD=100%		
19.50		Strong thinly laminated grey LIMESTONE. Fresh with closely spaced fractures at 19.75m, dip horizontal at 19.5m and subvertical at 19.9. Ferrous staining	FI=2, IF=0.2m, TCR=100%, SCR=80% RQD=100%		
20 20.00		Competent LIMESTONE bedrock.			
22					
24					

Notes: Window sampling refusal at 3.5 m.
Air hammer from 3.5 m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 29/02/2012
Logged By: PD
Driller: Tor Drilling

Borehole Elevation: 14.5926
Borehole Diameter: 150mm
Installation Diameter:
Slot Size:
Method: Vacuum extraction
Window sampling/Air hammer

Coordinates: 718127.39,747155.364

Borehole Reference:

AGW22-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
25.00		Competent LIMESTONE bedrock.			
26					
28					
30					

Notes: Window sampling refusal at 3.5 m.
Air hammer from 3.5 m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 10/12/2011
Logged By: P. Breheny
Driller: Glover Site Investigation

Borehole Elevation: 14.3889
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718126.599,747154.036

Borehole Reference:

AGW22-I

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND: Concrete	NVO		
0.30	MADE GROUND , Stiff brown CLAY with much angular coarse gravel	NVO		
1.20	MADE GROUND , Stiff CLAY, with fine, medium to coarse gravel and occasional cobbles	Slightly damp, NVO		
2.55	Stiff brown gravelly Clay, gravel is angular fine to medium	Damp		
2.70	Grey stiff Clay becoming black with occasional angular gravel	Slight organic odour. Damp		0 ppm
2.85	Dark Grey sandy GRAVEL with cobbles (weathered limestone bedrock)	Slight organic odour		0 ppm
4.00	Moderately strong weathered limestone bedrock, (Malahide Formation)	Slight organic odour		1.3 ppm
5.50	Light Grey strong Limestone, (Malahide Formation)	Slight organic odour		

Notes: Vac Ex to 1.2m/Window sampling to top of rock 4m / Rotary Air Hammer to base, finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW23D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 10/12/2011
Logged By: P. Breheny
Driller: Glover Site Investigations

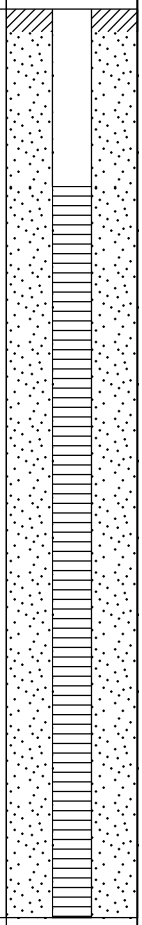
Borehole Elevation: 14.3889
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718126.599,747154.036

Borehole Reference:

AGW22-I

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
8		Light Grey strong Limestone, (Malahide Formation)	Slight organic odour		
10					
10.30					
12					



Notes: Vac Ex to 1.2m/Window sampling to top of rock 4m / Rotary Air Hammer to base, finished with flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW23D

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 29/07/2011
Logged By: PB
Driller: Tor Drilling

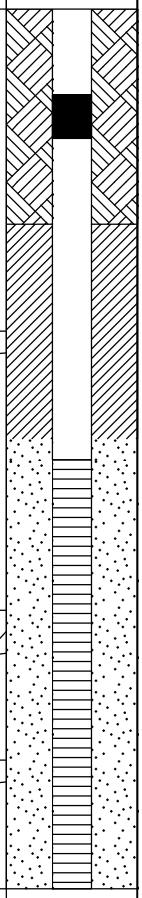
Borehole Elevation: 14.4057
Borehole Diameter: 115mm
Installation Diameter: 50mm
Slot Size: 1.0mm
Method: Rotary

Coordinates: 718126.446,747152.556

Borehole Reference:

AGW22-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Stiff brown CLAY with fine to coarse angular gravel	NVO		0 ppm
2.00		Brown silty CLAY	NVO		
2.80		Stiff slightly gravelly silty CLAY. Gravel is fine and angular.	Wet. Black staining (2.85 - 3m). Soil sample for laboratory testing (2.9 - 3.0m).		14.7 ppm
3.00		Brown slightly gravelly, sandy CLAY. Gravel is angular, sand is coarse to medium.			
3.30		Black, slightly gravelly, sandy CLAY. Gravel is angular, medium to coarse, sand is fine to medium.	Saturated		0 ppm
3.80		Weathered LIMESTONE (Malahide Limestone Formation) with cobbles	Black staining NVO		
4.10					
6					



Notes: Window sampler to rock then rotary coring. Low water yield below clay band (3.2-3.3m), well collapsing at 4m. NVO = No visual or olfactory evidence of contamination.
Former location ID GW17S

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 20/09/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.3612 Borehole Diameter: Installation Diameter: Slot Size: Method: Vacuum Excavation Air Hammer	Borehole Reference: **AGW24-D**
Coordinates: 718132.043,747171.981		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Hardcore gravel of limestone.			
0.10		Stiff brown slightly sandy, gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded.			
1.90		Loose brown medium SAND.			
2					
2.60		Stiff brown slightly sandy gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded. From 3.9-4.0m: Cobble.			
4					
4.00		Dense grey SAND and GRAVEL. Gravel is medium to coarse (weakened limestone).			
5.60		Dark grey LIMESTONE bedrock.			
6					

Notes: Window sample refusal at base of vac-ex hole (1.2m). ODEX with casing to top of the limestone bedrock at 5.6m. Open hole air hammer to completion at 20m. No samples able to be collected.
Former location ID GW22S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 20/09/2012
Logged By: PD
Driller: Tor Drilling

Borehole Elevation: 14.3612
Borehole Diameter:
Installation Diameter:
Slot Size:
Method: Vacuum Excavation
Air Hammer

Coordinates: 718132.043,747171.981

Borehole Reference:

AGW24-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
8		Dark grey LIMESTONE bedrock.			
10					
12					

Notes: Window sample refusal at base of vac-ex hole (1.2m). ODEX with casing to top of the limestone bedrock at 5.6m. Open hole air hammer to completion at 20m. No samples able to be collected.
Former location ID GW22S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 20/09/2012
Logged By: PD
Driller: Tor Drilling

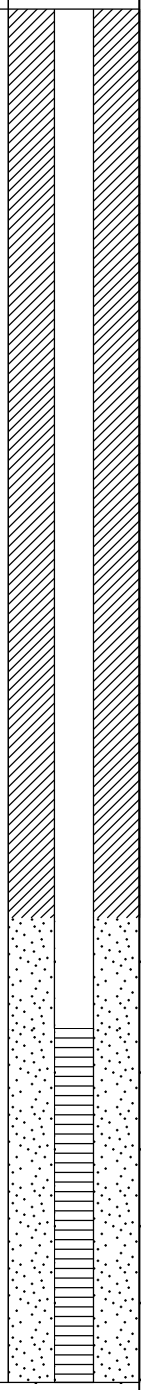
Borehole Elevation: 14.3612
Borehole Diameter:
Installation Diameter:
Slot Size:
Method: Vacuum Excavation
Air Hammer

Coordinates: 718132.043,747171.981

Borehole Reference:

AGW24-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
14		Dark grey LIMESTONE bedrock.			
16					
18					



Notes: Window sample refusal at base of vac-ex hole (1.2m). ODEX with casing to top of the limestone bedrock at 5.6m. Open hole air hammer to completion at 20m. No samples able to be collected.
Former location ID GW22S

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 20/09/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.3612 Borehole Diameter: Installation Diameter: Slot Size: Method: Vacuum Excavation Air Hammer	Borehole Reference: **AGW24-D**
Coordinates: 718132.043,747171.981		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result	
20 20.00		Dark grey LIMESTONE bedrock.				
22						
24						

Notes: Window sample refusal at base of vac-ex hole (1.2m). ODEX with casing to top of the limestone bedrock at 5.6m. Open hole air hammer to completion at 20m. No samples able to be collected.
Former location ID GW22S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 14/03/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 14.1928
Borehole Diameter: 150mm
Installation Diameter: 50
Slot Size:
Method: Window sampling/

Coordinates: 718138.279,747202.275

Borehole Reference:

AGW25-D

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	Very loose light grey coarse SAND and GRAVEL.			
0.20	Dense reddish slightly sandy gravelly clayey SILT. Gravel is angular to sub-rounded.			10.6/0.0; 11.7/0.0
2				10.6/0.4; 11.7/0.0
2.90	Dense dark grey slightly gravelly silty SAND. Gravel is medium and rounded.			10.6/2.1; 11.7/0.0
3.70	Very loose black slightly silty, sandy fine to medium, rounded GRAVEL.			10.6/0.8; 11.7/0.0
4				
4.30	Strong LIMESTONE bedrock.			
6				

Notes: Refusal at 4.4m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 14/03/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 14.1928
Borehole Diameter: 150mm
Installation Diameter: 50
Slot Size:
Method: Window sampling/

Coordinates: 718138.279,747202.275

Borehole Reference:

AGW25-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
8		Strong LIMESTONE bedrock.			
10					
12					

Notes: Refusal at 4.4m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 14/03/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 14.1928
Borehole Diameter: 150mm
Installation Diameter: 50
Slot Size:
Method: Window sampling/

Coordinates: 718138.279,747202.275

Borehole Reference:

AGW25-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
14		Strong LIMESTONE bedrock.			
16					
18					

Notes: Refusal at 4.4m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 14/03/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 14.1928
Borehole Diameter: 150mm
Installation Diameter: 50
Slot Size:
Method: Window sampling/

Coordinates: 718138.279,747202.275

Borehole Reference:

AGW25-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
20		Strong LIMESTONE bedrock.			
22					
24					

Notes: Refusal at 4.4m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 14/03/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 14.1928
Borehole Diameter: 150mm
Installation Diameter: 50
Slot Size:
Method: Window sampling/

Coordinates: 718138.279,747202.275

Borehole Reference:

AGW25-D

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
25.00		Strong LIMESTONE bedrock.			
26					
28					
30					

Notes: Refusal at 4.4m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 14/03/2012 Logged By: PB Driller: Tor	Borehole Elevation: 14.141 Borehole Diameter: 150 Installation Diameter: 50 Slot Size: Method: Window sample/ Down Hole Hammer	Borehole Reference: **AGW25-I**
Coordinates: 718138.6,747199.535		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		Very loose light grey coarse SAND AND GRAVEL.			
0.20		Dense red slightly sandy, slightly clayey, gravelly SILT. Gravel is angular to sub-rounded.			10.6/0.0; 11.7/0.0
2					
2.90		Dense dark grey slightly gravelly, silty SAND. Gravel is medium, rounded.			10.6/4; 11.7/0.4
3.70		Very loose black slightly silty, sandy fine to medium, rounded GRAVEL. Refusal at 4.3m.			10.6/0.0; 11.7/0.0
4					
4.30		Strong LIMESTONE bedrock.			10.6/0.0; 11.7/0.0
6					

Notes:

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 14/03/2012 Logged By: PB Driller: Tor	Borehole Elevation: 14.141 Borehole Diameter: 150 Installation Diameter: 50 Slot Size: Method: Window sample/ Down Hole Hammer	Borehole Reference: **AGW25-I**
Coordinates: 718138.6,747199.535		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result	
8		Strong LIMESTONE bedrock.				
10 10.00						
12						

Notes:

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 13/10/2011
Logged By: P. Breheny
Driller: Glover Site Investigation

Borehole Elevation: 14.125
Borehole Diameter: 100mm Hammer
Installation Diameter: 50mm (ID)
Slot Size: 1.0mm
Method: Window sampling/ Air hammer

Coordinates: 718138.311,747201.277

Borehole Reference:

AGW25-S

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0	MADE GROUND , Stiff brown CLAY with medium to coarse angular gravels	NVO		
1.40	Stiff brown CLAY with occasional fine to medium rounded, sub-rounded gravels	NVO		
1.65	Stiff grey/green damp CLAY with occasional angular medium gravels	NVO		
2				
2.55	Firm black damp slightly silty CLAY with occasional rounded gravels	NVO		
2.70	Firm dark grey damp slightly sandy, slightly silty CLAY	NVO		15.2 ppm
3.20	Sandy fine to coarse GRAVEL (weathered bedrock)	NVO		
3.85				0.5 ppm
4	Limestone bedrock, small fracture zone at 3.9m with clay infilling of fracture.	Groundwater ingress at 4.0m.		
4.00	Strong light grey limestone bedrock	NVO NVO		
6				
6.00				

Notes: Vac Ex to 1.2m/Window sampling to top of rock 3.85m / Rotary Air Hammer to base, flush traffic rated steel cover. NVO = No visual or olfactory evidence of contamination.
Former location ID GW24S

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled:
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 13.675
Borehole Diameter:
Installation Diameter:
Slot Size:
Method:

Coordinates: 718140.504,747271.49

Borehole Reference:

AGW28-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Soil and rubble.			
2.00		Dark CLAY with pebbles			
4.60		Bedrock			
5.20					
6					

Notes: Former location ID GW06N

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 25/04/2012
Logged By: PB
Driller: Tor Drilling

Borehole Elevation: 15.006
Borehole Diameter: 150mm
Installation Diameter: 50mm
Slot Size: 1mm
Method: Window sampling
DHH

Coordinates: 718017.008,747192.925

Borehole Reference:

AGW29-S

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		MADE GROUND: Concrete			
0.30		Firm brown gravelly, sandy CLAY with occasional cobbles.			10.6eV = 0.0,11.7eV=3.1
2					10.6eV = 0.0,11.7eV=8.6
2.40					
2.50		Dense black coarse sand with occasional fine angular gravel.	Refusal at 2.9m		10.6eV = 0.0,11.7eV=0.0
2.90		Firm brown gravelly, sandy CLAY.			
3.00		Weathered LIMESTONE BEDROCK			10.6eV = 0.0,11.7eV=0.0
4					
6					

Notes:

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 28/02/2012
Logged By: PD
Driller: Tor Drilling

Borehole Elevation: 14.1816
Borehole Diameter: 150mm
Installation Diameter:
Slot Size:
Method: Vacuum extraction/ Window sampling/ Air hammer

Coordinates: 718136.627,747225.234

Borehole Reference:

AGW35-D

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
0				
0.10	MADE GROUND: coarse grey sub-angular limestone gravel hardcore, underlain by geomembrane.			
	Firm brown slightly sandy, slightly gravelly CLAY. Frequent round and sub-rounded cobbles. Gravel is sub-angular to sub-rounded, fine to coarse.			11.7/0.0; 10.6/0.0
1.00				
1.10	Dense, coarse gravel and cobbles of sub-angular limestone (weathered bedrock).			
	Stiff reddish brown slightly sandy, gravelly CLAY. Gravel is fine, sub-angular and sub-rounded (weathered bedrock).			11.7/0.0; 10.6/0.0
2				
2.80	Stiff grey slightly silty, gravelly CLAY. Gravel is fine sub-angular and sub-rounded (weathered bedrock).			11.7/0.0; 10.6/0.0
3.40	Stiff dark grey clayey GRAVEL. Gravel is coarse sub-angular limestone (weathered bedrock).			11.7/ 2.6ppm; 10.6/5.9/ 2.6ppm
4				
4.70	Stiff dark grey slightly clayey limestone bedrock.	Sweet solvent odour from 4 - 4.3 m.		
5.50				
5.60	Dark grey competent limestone bedrock.	Wet.		
	Strong thinnly laminated grey LIMESTONE. Slightly weathered , water bearing fractures with orangey brown clay deposits. Closely spaced fractures dip 40°, planar, smooth, open with ferrous deposits.	FI=10, IF=0.1-0.15m, TCR=100% SCR=9% RQD=9%		
6				

Notes: Vacuum extraction refusal at 1.1m. Window sampling refusal at 3.4m. Air hammer 3.4 - 5.6m. Hammer struggled from 4.7 - 5.5m due to clay content. Sacrificial casing and cement grout installed. Grout rise in casing to 1.7m. Rotary core from 5.6 to 20m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 28/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.1816 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction/ Window sampling/ Air hammer	Borehole Reference: **AGW35-D**
Coordinates: 718136.627,747225.234		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
6.75		Strong thinnly laminated grey LIMESTONE. Slightly weathered, with orangey brown clay deposits in fractures. Closely spaced fractures dip 20-50°, planar, smooth, open with some ferrous deposits.	FI=7, IF=0.05-0.1m, TCR=100% SCR=77% RQD=47%		
7.50		Strong thinnly laminated grey LIMESTONE. Slightly weathered with orangey brown clay deposits in some fractures. Closely spaced fractures dip 20°. From 7.9-8.2, vertical undulating. From 8.4-9.0m: smooth with ferrous staining.	FI=4, IF=0.2m, TCR=100% SCR=60% RQD=92%		
8					
9.00		Strong thinnly laminated grey LIMESTONE. Slightly weathered with clay deposits in some fractures. Closely spaced fractures, vertical from 9-9.35m, 20° from 9.35-10.50m. Smooth with ferrous staining.	FI=6, IF=0.2-0.4m, TCR=100% SCR=80% RQD=10%		
10					
10.50		Strong thinnly laminated grey LIMESTONE. Slightly weathered. Closely spaced fractures with vertical dips from 10.4-10.7m, 60° from 10.7m and horizontal at 11.7m. Irregular 10.4-10.7m, planar from 10.7m. Smooth with ferrous staining.	FI=7, IF=0.15-0.25m, TCR=100% SCR=67% RQD=47%		
12					
12.00		Rock rolling, no recovery.			
12.30					

Notes: Vacuum extraction refusal at 1.1m. Window sampling refusal at 3.4m. Air hammer 3.4 - 5.6m. Hammer struggled from 4.7 - 5.5m due to clay content. Sacrificial casing and cement grout installed. Grout rise in casing to 1.7m. Rotary core from 5.6 to 20m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 28/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.1816 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction/ Window sampling/ Air hammer	Borehole Reference: **AGW35-D**
Coordinates: 718136.627,747225.234		

Depth (m)	Description	Observations	Sample	Sample / Field Test Result
	Strong thinnly laminated grey LIMESTONE. Slightly weathered, closely spaced fractures horizontal to 20° with little ferrous staining.	FI=2, IF=0.3-0.55m, TCR=100% SCR=92% RQD=92%		
13.50				
14	Strong thinnly laminated grey LIMESTONE. Slightly weathered to 14m, moderately weathered from 14.0-14.7m. Closely spaced fractures (0.1-0.2m) at 20°, vertical from 14.0-14.7m. Little ferrous staining in fractures.	FI=4, IF=0.1-0.15m, TCR=75% SCR=42% RQD=42%		
14.70	Strong thinnly laminated grey LIMESTONE.	FI=0, TCR=67% SCR=100% RQD=100%		
15.50	Strong thinnly bedded grey LIMESTONE. Moderately weathered from 15.5-15.7m, becoming slightly weathered from 15.7m. 0.1m of clay deposits in fracture at 15.6m. Closely spaced fractures dip 40-50° with ferrous staining.	FI=7, IF=0.05-0.15m TCR=100% SCR=100% RQD=76%		
16				
17.00	Very strong thinnly bedded grey LIMESTONE. One fracture at 17.65m, dip 60°, smooth with ferrous staining.	FI=1, IF=0.75m TCR=100% SCR=100% RQD=100%		
18				
18.50				

Notes: Vacuum extraction refusal at 1.1m. Window sampling refusal at 3.4m. Air hammer 3.4 - 5.6m. Hammer struggled from 4.7 - 5.5m due to clay content. Sacrificial casing and cement grout installed. Grout rise in casing to 1.7m. Rotary core from 5.6 to 20m.

Geosyntec consultants

Client: BMS Project Number: GCU0152-013 Location: Swords Laboratories Date Drilled: 28/02/2012 Logged By: PD Driller: Tor Drilling	Borehole Elevation: 14.1816 Borehole Diameter: 150mm Installation Diameter: Slot Size: Method: Vacuum extraction/ Window sampling/ Air hammer	Borehole Reference: **AGW35-D**
Coordinates: 718136.627,747225.234		

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result	
20		Very strong thinnly bedded grey LIMESTONE. Slightly weathered fracture at 19.7m with clay deposits, dip 50°, smooth with ferrous staining.	FI=1, IF=0.75m TCR=100% SCR=100% RQD=100%			
20.00						
22						
24						

Notes: Vacuum extraction refusal at 1.1m. Window sampling refusal at 3.4m. Air hammer 3.4 - 5.6m. Hammer struggled from 4.7 - 5.5m due to clay content. Sacrificial casing and cement grout installed. Grout rise in casing to 1.7m. Rotary core from 5.6 to 20m.

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 09/03/2012
Logged By: PD
Driller: Tor Drilling

Borehole Elevation: 14.0479
Borehole Diameter:
Installation Diameter:
Slot Size:
Method: Vacuum Excavation/ODEX Down Hole Hammer

Coordinates: 718136.721,747223.666

Borehole Reference:

AGW35-I

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		nEED TO SEE VAC EX LOG			
1.00		Firm grey gravelly CLAY. Gravel is rounded to sub-rounded.			10.6/0.0; 11.7/0.0
2					10.6/0.0; 11.7/0.0
3.10		Dense grey slightly clayey, sandy Gravel of weathered limestone.	Wet		10.6/3.2; 11.7/0.4
3.30		Weathered LIMESTONE bedrock.			
4					
5.50		Competent LIMESTONE bedrock			
6					

Notes:

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 09/03/2012
Logged By: PD
Driller: Tor Drilling

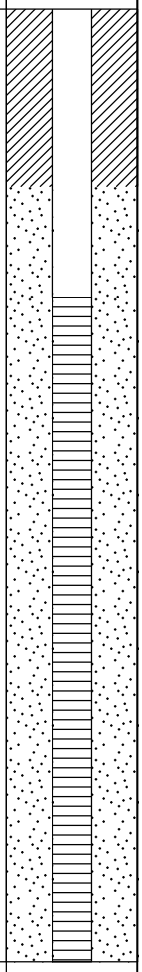
Borehole Elevation: 14.0479
Borehole Diameter:
Installation Diameter:
Slot Size:
Method: Vacuum Excavation/ODEX Down Hole Hammer

Coordinates: 718136.721,747223.666

Borehole Reference:

AGW35-I

Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
8		Competent LIMESTONE bedrock			
10					
10.50					
12					



Notes:

Geosyntec consultants

Client: BMS
Project Number: GCU0152-013
Location: Swords Laboratories
Date Drilled: 09/03/2012
Logged By: PB
Driller: Tor Drilling

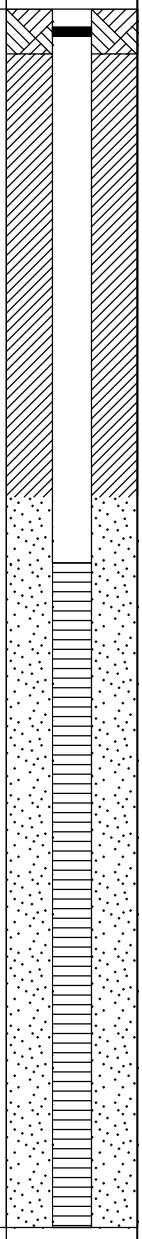
Borehole Elevation: 14.0479
Borehole Diameter:
Installation Diameter:
Slot Size:
Method: Vacuum Excavation

Coordinates: 718136.711,747222.737

Borehole Reference:

AGW35-S

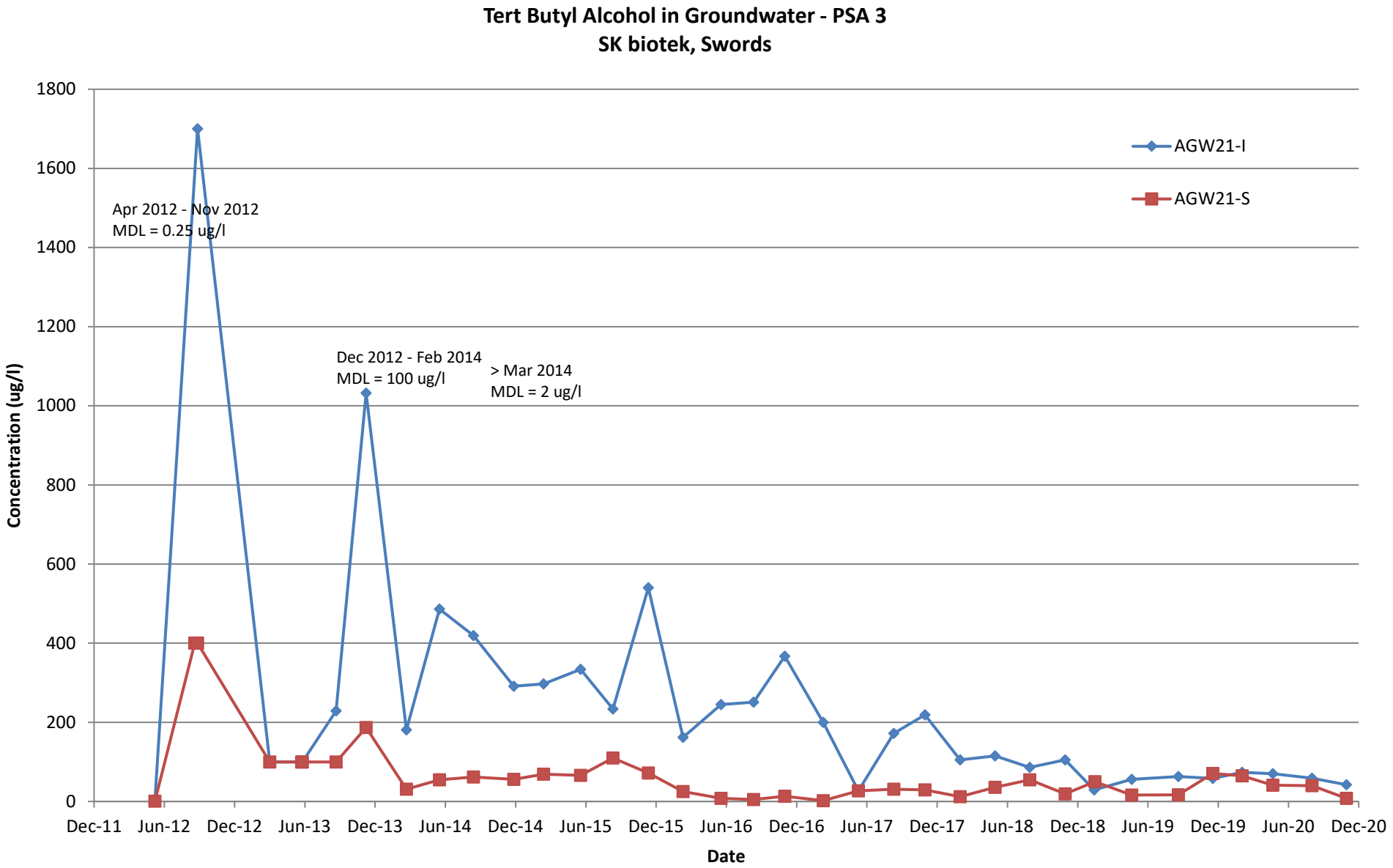
Depth (m)	Legend	Description	Observations	Sample	Sample / Field Test Result
0		nEED TO SEE VAC EX LOG			
1.00		Firm grey gravelly CLAY. Gravel is rounded to sub-rounded.			
3.10		Dense grey slightly clayey, sandy Gravel of weathered limestone.			
3.30		Weathered LIMESTONE bedrock.			
5.50					

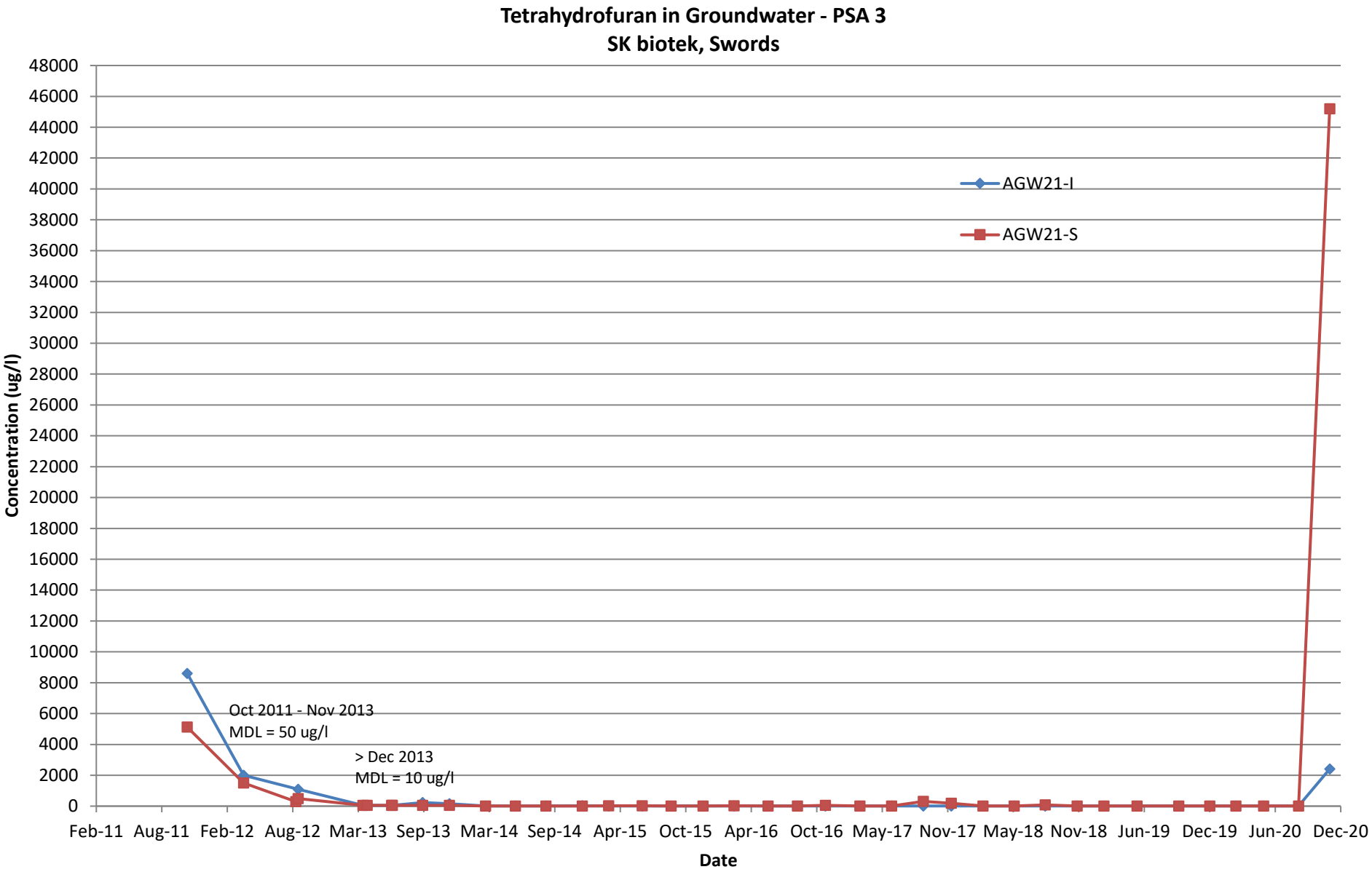


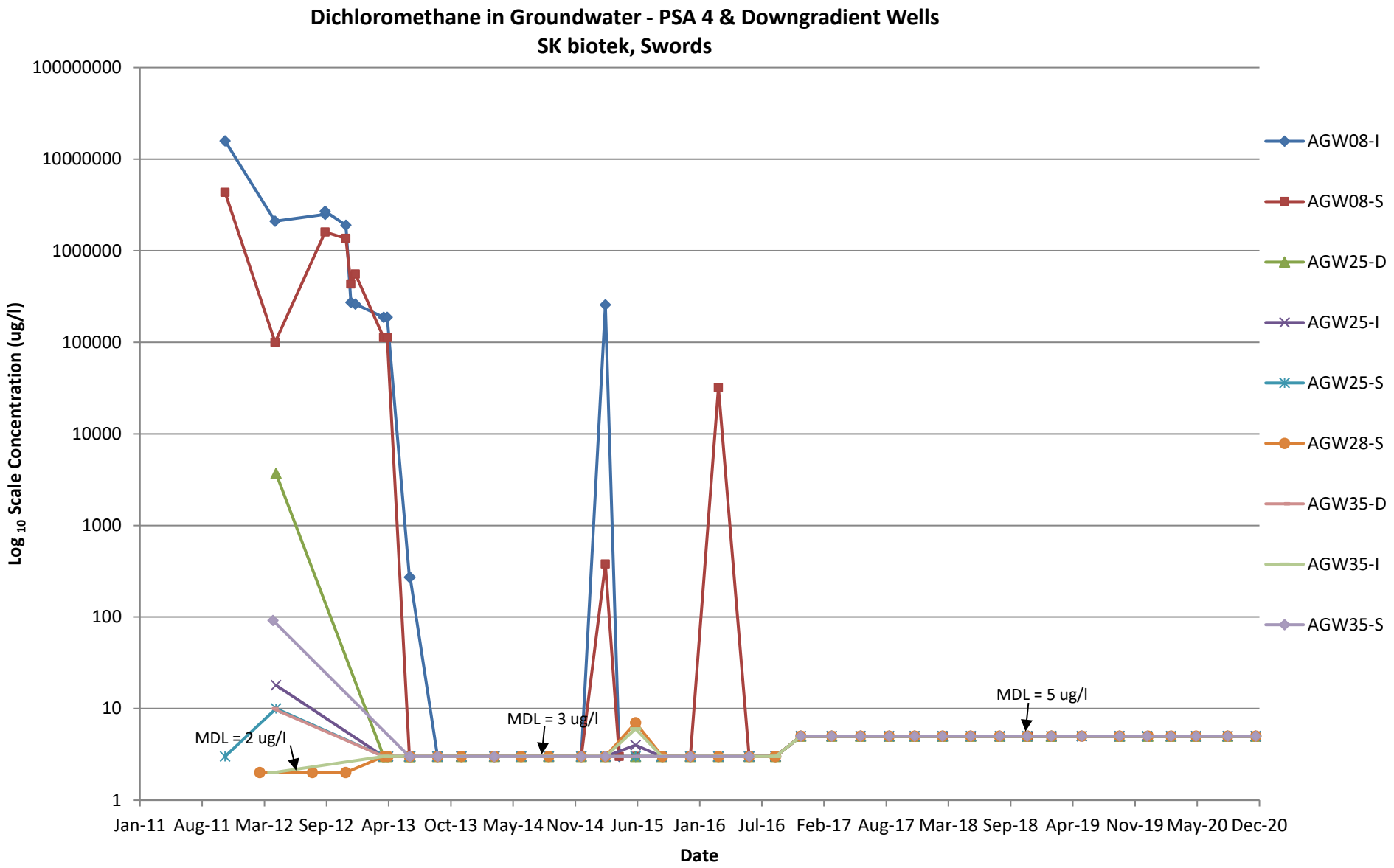
Notes: Window sample refusal at base of vac-ex hole (1.2m). ODEX and casing used to advance to 5.5m

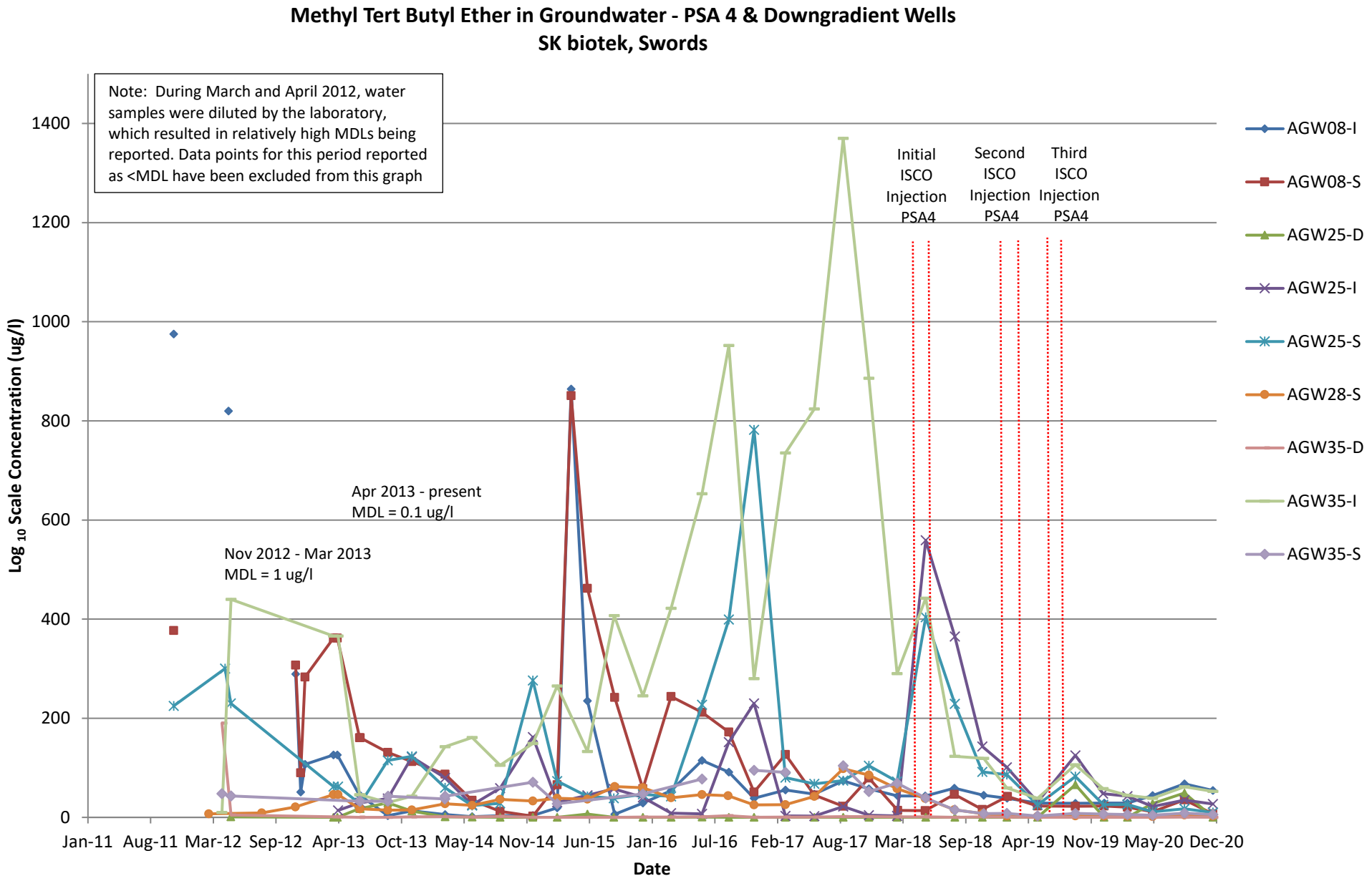
APPENDIX B

Time-Series Plots of COPC Concentrations in Groundwater

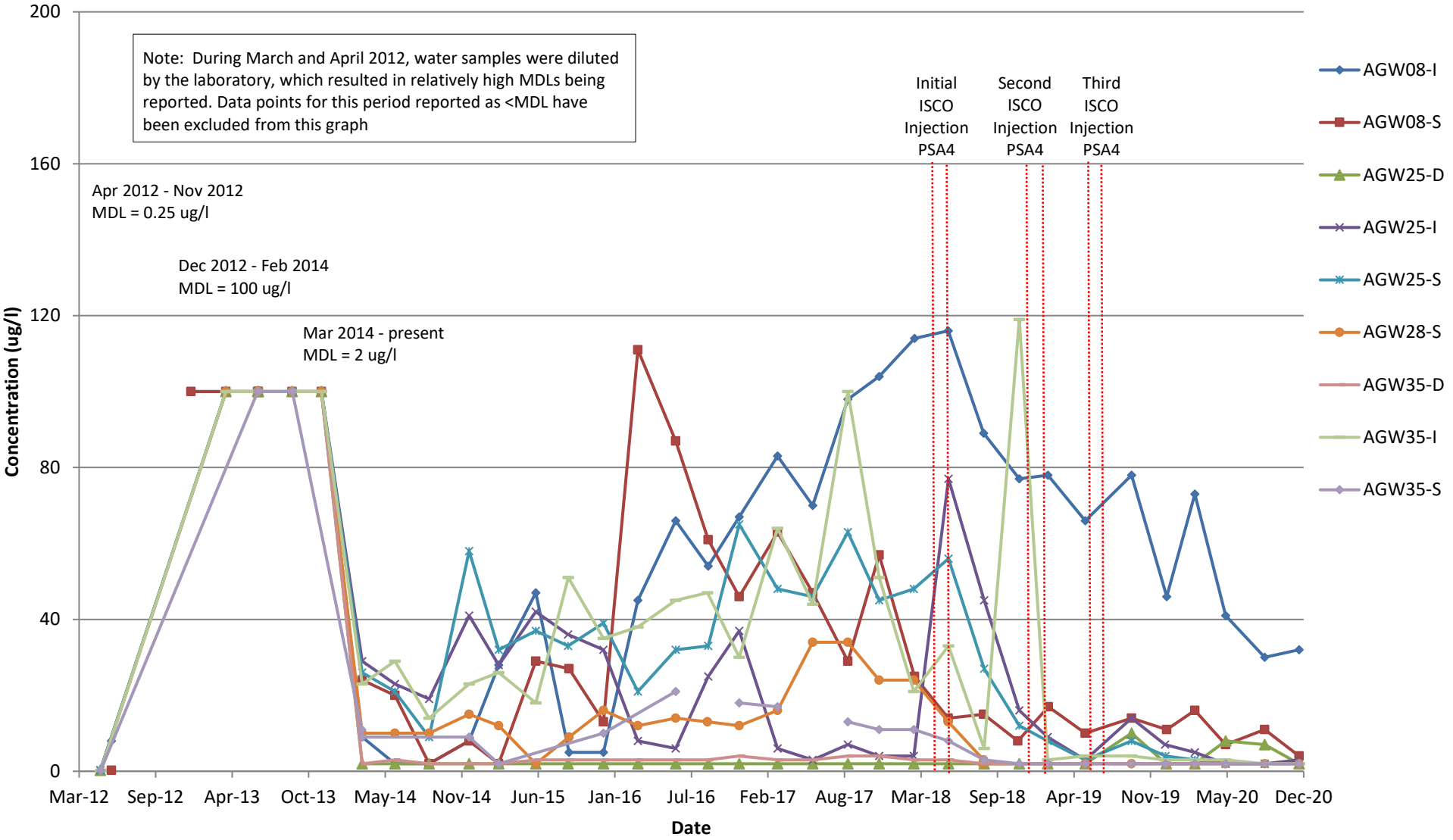

Tert Butyl Alcohol in Groundwater - PSA 3
SK biotek, Swords
AGW21-I
AGW21-S
Apr 2012 - Nov 2012
MDL = 0.25 ug/l
Dec 2012 - Feb 2014
MDL = 100 ug/l
> Mar 2014
MDL = 2 ug/l
Concentration (ug/l)
Date
1800
1600
1400
1200
1000
800
600
400
200
0
Dec-11
Jun-12
Dec-12
Jun-13
Dec-13
Jun-14
Dec-14
Jun-15
Dec-15
Jun-16
Dec-16
Jun-17
Dec-17
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Dec-20


Tetrahydrofuran in Groundwater - PSA 3
SK biotek, Swords
Concentration (ug/l)
48000
46000
44000
42000
40000
38000
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
AGW21-I
AGW21-S
Oct 2011 - Nov 2013
MDL = 50 ug/l
> Dec 2013
MDL = 10 ug/l
Feb-11
Aug-11
Feb-12
Aug-12
Mar-13
Sep-13
Mar-14
Sep-14
Apr-15
Oct-15
Apr-16
Oct-16
May-17
Nov-17
May-18
Nov-18
Jun-19
Dec-19
Jun-20
Dec-20
Date

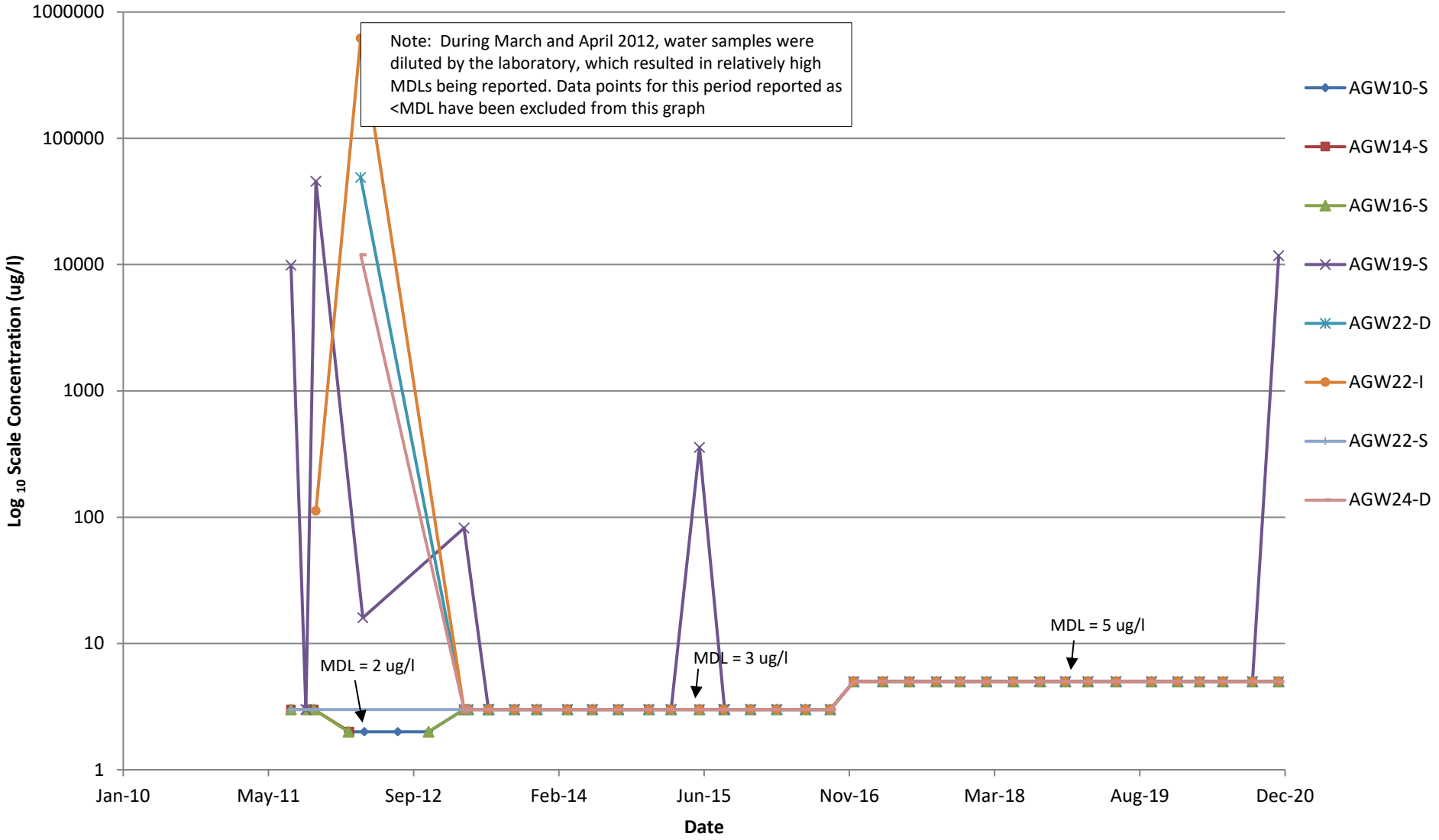

Dichloromethane in Groundwater - PSA 4 & Downgradient Wells
SK biotek, Swords
Log 10 Scale Concentration (ug/l)
100000000
10000000
1000000
100000
10000
1000
100
10
1
Jan-11
Aug-11
Mar-12
Sep-12
Apr-13
Oct-13
May-14
Nov-14
Jun-15
Jan-16
Jul-16
Feb-17
Aug-17
Mar-18
Sep-18
Apr-19
Nov-19
May-20
Dec-20
Date
MDL = 2 ug/l
MDL = 3 ug/l
MDL = 5 ug/l
AGW08-I
AGW08-S
AGW25-D
AGW25-I
AGW25-S
AGW28-S
AGW35-D
AGW35-I
AGW35-S

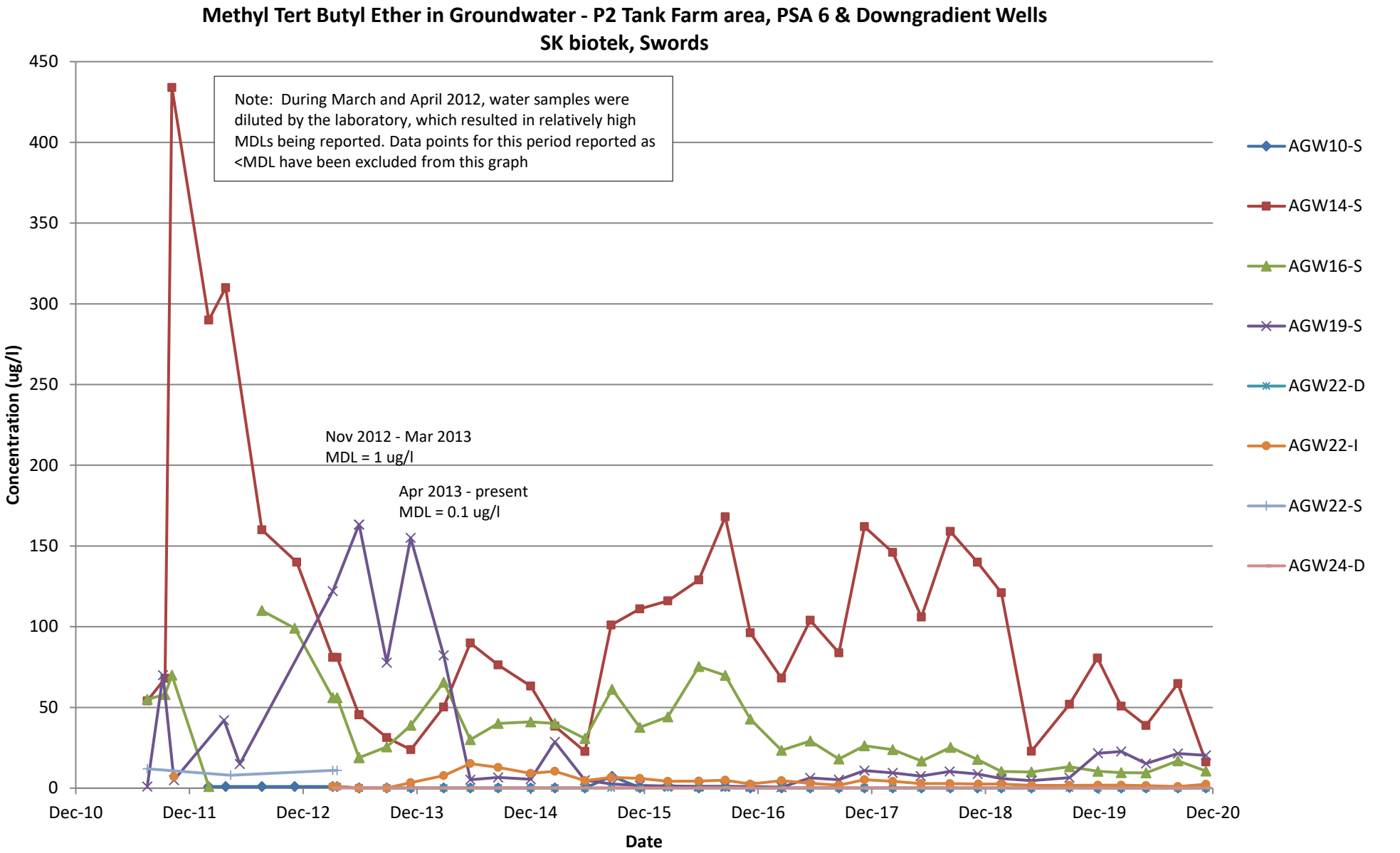

Methyl Tert Butyl Ether in Groundwater - PSA 4 & Downgradient Wells
SK biotek, Swords
Note: During March and April 2012, water samples were diluted by the laboratory, which resulted in relatively high MDLs being reported. Data points for this period reported as <MDL have been excluded from this graph
Initial ISCO Injection PSA4
Second ISCO Injection PSA4
Third ISCO Injection PSA4
Apr 2013 - present
MDL = 0.1 ug/l
Nov 2012 - Mar 2013
MDL = 1 ug/l
Log 10 Scale Concentration (ug/l)
0
200
400
600
800
1000
1200
1400
Jan-11
Aug-11
Mar-12
Sep-12
Apr-13
Oct-13
May-14
Nov-14
Jun-15
Jan-16
Jul-16
Feb-17
Aug-17
Mar-18
Sep-18
Apr-19
Nov-19
May-20
Dec-20
Date
AGW08-I
AGW08-S
AGW25-D
AGW25-I
AGW25-S
AGW28-S
AGW35-D
AGW35-I
AGW35-S

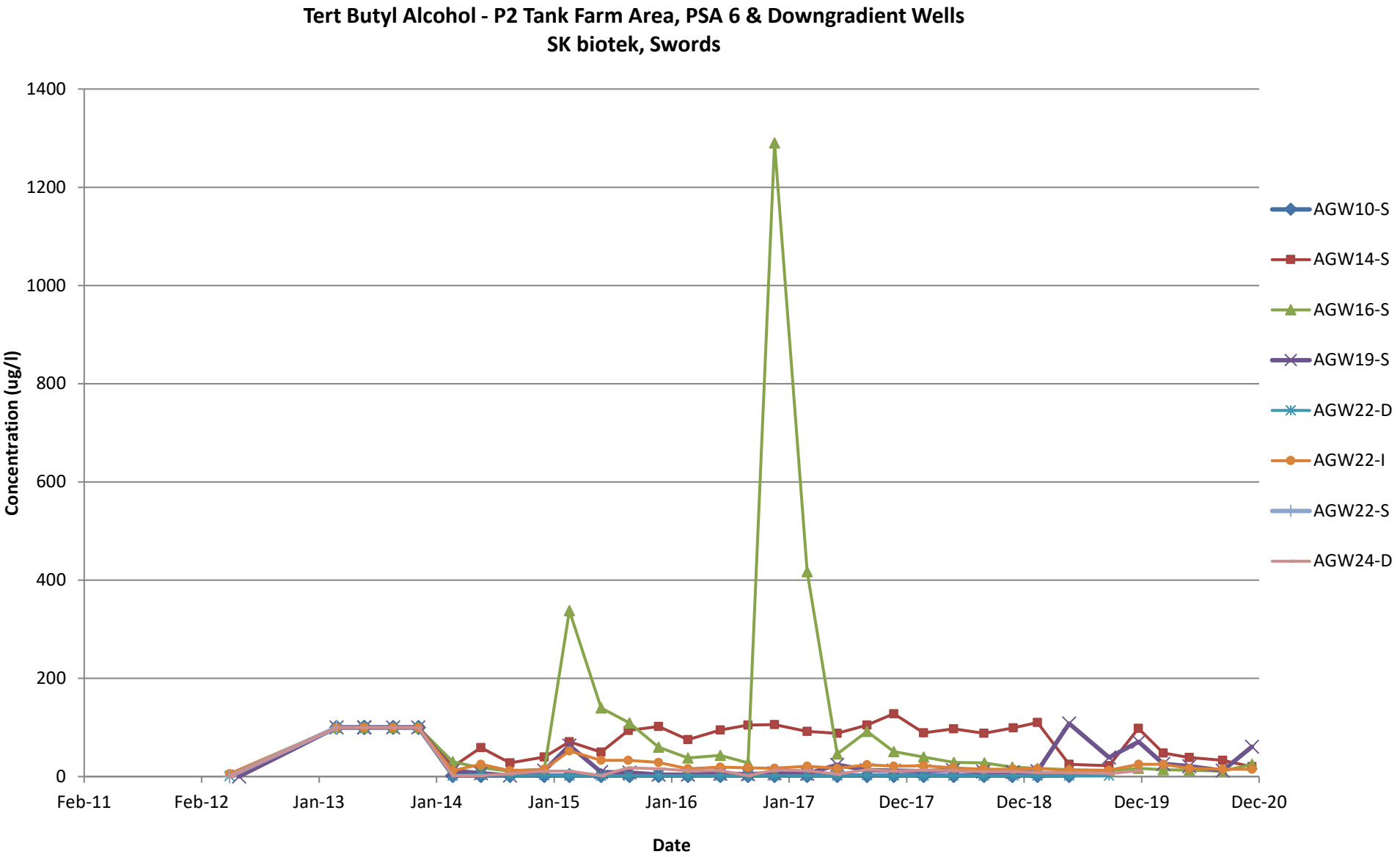
Tert Butyl Alcohol in Groundwater - PSA 4 & Downgradient Wells
SK biotek, Swords



Dichloromethane in Groundwater - P2 Tank Farm Area, PSA 6 & Downgradient Wells
SK biotek, Swords




Methyl Tert Butyl Ether in Groundwater - P2 Tank Farm area, PSA 6 & Downgradient Wells
SK biotek, Swords
Note: During March and April 2012, water samples were diluted by the laboratory, which resulted in relatively high MDLs being reported. Data points for this period reported as <MDL have been excluded from this graph
Nov 2012 - Mar 2013
MDL = 1 ug/l
Apr 2013 - present
MDL = 0.1 ug/l
Concentration (ug/l)
Date
450
400
350
300
250
200
150
100
50
0
Dec-10
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
Dec-17
Dec-18
Dec-19
Dec-20
AGW10-S
AGW14-S
AGW16-S
AGW19-S
AGW22-D
AGW22-I
AGW22-S
AGW24-D


Tert Butyl Alcohol - P2 Tank Farm Area, PSA 6 & Downgradient Wells
SK biotek, Swords
Concentration (ug/l)
1400
1200
1000
800
600
400
200
0
Feb-11
Feb-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Dec-17
Dec-18
Dec-19
Dec-20
Date
AGW10-S
AGW14-S
AGW16-S
AGW19-S
AGW22-D
AGW22-I
AGW22-S
AGW24-D

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID	AGW01-S				AGW01-S				AGW01-S				AGW01-S				AGW01-S				AGW03-S				AGW03-S				AGW03-S				AGW03-S				AGW03-S			
		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1																				0.4			0.7	0.5	0.4			2.1	0.2	0.2	1.6	1.4	0.2	0.1	0.8	0.3	0.3	2.2	1.4
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2																																						
Benzene	0.75	<0.5																																						
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50																																						
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2																																						
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100													##																			##							
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10																																						
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																						
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100																																						
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2																				4													4				16		
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)

LOD = Limit of Detection

Blank cells = not detected above Limit of detection

GTV = Groundwater Threshold Value (2016)

10 Result Exceeds GTV

"-" = No GTV available

< = less than

NA = Not Analysed

= Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)

= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW04-S				AGW04-S				AGW04-S				AGW04-S				AGW04-S				AGW05-S				AGW05-S				AGW05-S				AGW05-S				AGW05-S			
	Monitoring round		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	1.9	2.1	1.8	0.9	0.8	0.8	2.8	1.4	2.1	1.6	1.2	1	1.4	0.3	1.4	0.9	0.7	0.7	0.7	0.4	7.2	9.7	11.6	5.8	3.5	6.4	9	8.2	9.5	7.6	11.5					6.7	5.1	8.6	4.7
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5												113																											
Chloroform	-	<2																																						
Benzene	0.75	<0.5																																						
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50																																						
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2					3			3	8	5			3	3				2	2				48	27			35	53	37						24	25	28	14
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100													107	##																								
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100															104																							
Tetrahydrofuran (THF)	115	<10													25400	703								50															12
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																						
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100																																						
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2	6	11	7	14	14	8	16	11	16	16	11	7	14	9	10		8	8	6	4	74	99	113	67	66	89	120	66	61	76	79					54	45	53	28
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW08-S				AGW08-S				AGW08-S				AGW08-S				AGW08-S				AGW08-I				AGW08-I				AGW08-I				AGW08-I				AGW08-I			
			2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																								
VOC MS																																										
Methyl Tertiary Butyl Ether	10	<0.1	244	212	172	51.2	127	45	22.4	79.3	14.2	13.7	46.3	16	42.5	22.8	22.6	22.8	20.4	11.5	35.2	7.1	53.9	115	91.5	38.4	55.3	46.9	73.7	57.6	43.1	43.2	58.9	44.4	38.6	29.1	28.2	29.1	28.9	44.3	67.6	54.5
Chloromethane	-	<3	13																										0.1													
Vinyl Chloride	0.375	<0.1	0.8	1.3	0.6	0.3	0.3	0.2		0.1																		0.1		0.2	0.2		0.1	0.1	0.1		0.1					
Dichloromethane (DCM)	15	<5	31900																																							
Chloroform	-	<2																																								
Benzene	0.75	<0.5	11.8	6.6	4	0.7	2.8	0.9		1.9														0.6					0.5	0.9													
Bromodichloromethane	-	<2																																								
Toluene	525	<5	1460	415																																						
Ethylbenzene	-	<0.5	121	24.9	2.4	12.1																																				
p/m-Xylene	-	<1	531	304	7	16																								3			4				4					
o-Xylene	-	<0.5	265	162	4.1	17.2																							1	2			2				2					
Total Xylene	-	-	796	466	11.1	33.2																							1	5			6				6					
Isopropylbenzene	-	<3																																								
Site Solvents																																										
Acetone	-	<50	1740																																							
Acetontirile	-	<100																																								
Cyclohexane	-	<50																																								
Dimethylacetamide (DMA)	-	<100																																								
Dimethylformamide (DMF)	-	<100																																								
Diethyl ether	-	<2																																								
Heptane	-	<100																																								
Pyridine	-	<100																																								
Triethylamine (TEA)	-	<100														##																				##							
Triethylsilane (TES)	-	<100																																									
Triethylsilanol	-	<100																																								
Tetrahydrofuran (THF)	115	<10	20	13																	36																					
Alcohols/ Acetates																																										
Methyl Alcohol	-	<500																																								
Ethyl Alcohol	-	<500																																								
i-Propyl Alcohol (IPA)	-	<100	4100																																							
n-Propyl Alcohol	-	<100																																								
n-Butyl Alcohol	-	<100																																								
Tert Butyl Alcohol (TBA)	-	<2	111	87	61	46	63	47	29	57	25	14	15	8	17	10	14	11	16	7	11	4	45	66	54	67	83	70	98	104	114	116	89	77	78	66	78	46	73	41	30	32
Methyl Acetate	-	<100																																								
Ethyl acetate	-	<100																																								
Isopropyl acetate	-	<100																																								

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID	AGW10-S																				AGW14-S																	
		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	1.7				0.2	0.2								0.4	0.2	0.3		0.1		116	129	168	96.2	68.2	104	83.8	162	146	106	159	140	121	22.8	51.9	80.6	50.8	38.8	64.7	16.2
Chloromethane	-	<3																									0.2	0.2												
Vinyl Chloride	0.375	<0.1																						0.3	0.2	0.2	0.2				0.3		0.2		0.2					
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2								7	10	7	6	5	11	10																								
Benzene	0.75	<0.5																				4.9	11.6	16.1	10.7	12.9	13.1		19.3	12		19.3	5.3	16	5.5			8.6	14.8		0.7
Bromodichloromethane	-	<2																																						
Toluene	525	<5																									48						10							
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																				6	2	3	2		5	2	3		3									
o-Xylene	-	<0.5																						0.7			2		1											
Total Xylene	-	-																				6	2	3.7	2		7	2	4		3									
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50								159																	141													
Acetonitrile	-	<100																									2640													
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2																																						
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100													##																				##					
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10																				160	272	288	362	467	443	611	320	616	545	348	236	180	39	58	101	104	128		73
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500								1,440																														
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100																																						
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2																				75	95	105	106	92	88	105	128	89	97	88	99	110	25	22	98	48	39	33	20
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
50 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW16-S				AGW16-S				AGW16-S				AGW16-S				AGW16-S				AGW19-S				AGW19-S				AGW19-S				AGW19-S				AGW19-S			
			2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	44.1	75.4	69.9	42.8	23.5	29.2	18	26.3	23.9	16.8	25.3	17.8	10.3	10	13.3	10.5	9.6	9.4	16.9	10.6	1.3	1.2	1.2	1.0	0.6	6.3	5.3	10.9	9.4	7.5	10.3	8.7	6	4.6	6.5	21.6	22.7	15.2	21.5	20.3
Chloromethane	-	<3																																							
Vinyl Chloride	0.375	<0.1																																							
Dichloromethane (DCM)	15	<5																																							11770
Chloroform	-	<2																																							
Benzene	0.75	<0.5	34.1	57.5	63.6	92.7	115	18.1		16.1	22.7	2	7.4	13.3	6.7	10.7	5.6	1	1.3	1.1			0.7			2.2							0.5	0.7		2.7		0.9	1.7		0.7	1.5
Bromodichloromethane	-	<2																																							
Toluene	525	<5				31	17																																	46
Ethylbenzene	-	<0.5	1.8	16.2	14.7	230	476	196							1			2	1				8.5			1.4							1	1		6		1	3			49
p/m-Xylene	-	<1	4	74	62	2030	3710	1530	183	94		3			3			4	4				177	31	4	246	12	2					6	4		22	3	159	21			152
o-Xylene	-	<0.5	1.2	1.3	20.2	21.4	22	2															2.2			1.3										210			1			19
Total Xylene	-	-	5.2	75.3	82.2	2051	3732	1532	183	94		3			3			4	5				179.2	31	4	247.3	12						6	4		232	3	159	25			
Isopropylbenzene	-	<3	4	16	7	27	16	7		4																															
Site Solvents																																								
Acetone	-	<50				23500	505																						792							339000						7260
Acetontirile	-	<100																																							
Cyclohexane	-	<50																																							
Dimethylacetamide (DMA)	-	<100																																							
Dimethylformamide (DMF)	-	<100																																							
Diethyl ether	-	<2																																							
Heptane	-	<100																																							
Pyridine	-	<100																																							
Triethylamine (TEA)	-	<100														##																				##						
Triethylsilane (TES)	-	<100																																							
Triethylsilanol	-	<100																																							
Tetrahydrofuran (THF)	115	<10				50	70	46	45																			53													22100
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																							
Ethyl Alcohol	-	<500																																							
i-Propyl Alcohol (IPA)	-	<100				20300																														10900						20800
n-Propyl Alcohol	-	<100																																							
n-Butyl Alcohol	-	<100																																							
Tert Butyl Alcohol (TBA)	-	<2	38	43	28	1290	417	113	92	51	40	29	28	19	17	14	12	17	14	13	11	25	4	6	5	7	6	24	13	12	11	13	10	9	11	108	39	71	26	21	12	61
Methyl Acetate	-	<100																																							
Ethyl acetate	-	<100																																							
Isopropyl acetate	-	<100																																							

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW21-S				AGW21-S				AGW21-S				AGW21-S				AGW21-S				AGW21-I				AGW21-I				AGW21-I				AGW21-I				AGW21-I			
	Monitoring round		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	GTV	LOD	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
VOC MS																																									
Methyl Tertiary Butyl Ether	10	<0.1	1.3	3.6	0.3			1.5	3.4	3.2	1.9	2.1	1.9	1.4	1.9	0.9	2.5	1.5	2.5	1.4	2.3	1.3	3.1	4.4	5.7	3.5	2.0	1.9	4.3	4.2	3.9	2.7	3.1	3.9	1.6	1.7	2.2	1.1	3	2	3.4	2.4
Chloromethane	-	<3																																								
Vinyl Chloride	0.375	<0.1																																								
Dichloromethane (DCM)	15	<5																																								
Chloroform	-	<2																																								
Benzene	0.75	<0.5																																								
Bromodichloromethane	-	<2																																								
Toluene	525	<5																																								
Ethylbenzene	-	<0.5																																								
p/m-Xylene	-	<1																																								
o-Xylene	-	<0.5																																								
Total Xylene	-	-																																								
Isopropylbenzene	-	<3																																								
Site Solvents																																									
Acetone	-	<50																																								
Acetontirile	-	<100																																								
Cyclohexane	-	<50																																								
Dimethylacetamide (DMA)	-	<100																																								
Dimethylformamide (DMF)	-	<100																																								
Diethyl ether	-	<2										5																															
Heptane	-	<100																																								
Pyridine	-	<100																																								
Triethylamine (TEA)	-	<100													796	##																				##							
Triethylsilane (TES)	-	<100																																									
Triethylsilanol	-	<100																																								
Tetrahydrofuran (THF)	115	<10	17						307	188			86									45200																			2400
Alcohols/ Acetates																																									
Methyl Alcohol	-	<500																																								
Ethyl Alcohol	-	<500																																								
i-Propyl Alcohol (IPA)	-	<100																																								
n-Propyl Alcohol	-	<100																																								
n-Butyl Alcohol	-	<100																																								
Tert Butyl Alcohol (TBA)	-	<2	25	8	5	13		27	31	29	12	36	55		50	16	17	71	65	41	40	8	162	245	251	367	200	27	172	219	105	115	86	105	29	56	63	58	74	70	59	42
Methyl Acetate	-	<100																																								
Ethyl acetate	-	<100																																								
Isopropyl acetate	-	<100																																								

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
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"-" = No GTV available
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NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID	AGW22-I				AGW22-I				AGW22-I				AGW22-I				AGW22-I				AGW22-D				AGW22-D				AGW22-D				AGW22-D				AGW22-D			
		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	4.2	4.4	4.9	2.6	4.6	3	3.1	5.2	4.3	2.9	2.9	2.6	2.5	1.7	1.7	1.9	1.5	1	2.4	1.3																		
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2																																						
Benzene	0.75	<0.5	2.2	1.8	2.7	1.4	2.9	1.5	1.9	2.2	1.5				1.1		1	1	0.8	0.8	1.3	0.8																				
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50																												84										
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2																																						
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100														##																		##							
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10																																						
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																						
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100																																						
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2	16	19	18	17	21	17	24	21	22	18	15	15	16	13	13	25	17	15	15	16	2	2	2		2	2	3	2	2	2								
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW23-S				AGW23-S				AGW23-S				AGW23-S				AGW23-S				AGW24-D				AGW24-D				AGW24-D				AGW24-D				AGW24-D			
			2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																								
VOC MS																																										
Methyl Tertiary Butyl Ether	10	<0.1	2	3.4	4.5	1.4	0.8	0.2	0.9	1.7	0.9	0.4	1.6	11.4	9.1	6.7	7.1	1.3		3.5	9.2	5.7			0.3					0.2	0.2		0.1									
Chloromethane	-	<3																																								
Vinyl Chloride	0.375	<0.1																							0.2	0.2	0.2	0.1												0.1		
Dichloromethane (DCM)	15	<5																				6180																				
Chloroform	-	<2								17	17	18						13	4			5																				
Benzene	0.75	<0.5																					3.1	2.1	3	2.2	1.5	1.3	2	2.9	1.8		0.8	0.9	0.6		1	1	1.3		1.6	1
Bromodichloromethane	-	<2									5	4				4.3		2																								
Toluene	525	<5																				13																				
Ethylbenzene	-	<0.5																																								
p/m-Xylene	-	<1																							1				2													
o-Xylene	-	<0.5																							0.6																	
Total Xylene	-	-																							1.6				2													
Isopropylbenzene	-	<3																																								
Site Solvents																																										
Acetone	-	<50																				4790																				
Acetontirile	-	<100																																								
Cyclohexane	-	<50																																								
Dimethylacetamide (DMA)	-	<100																																								
Dimethylformamide (DMF)	-	<100																																								
Diethyl ether	-	<2																																								
Heptane	-	<100																																								
Pyridine	-	<100																																								
Triethylamine (TEA)	-	<100														##																			##							
Triethylsilane (TES)	-	<100																																								
Triethylsilanol	-	<100																																								
Tetrahydrofuran (THF)	115	<10																				5580																				
Alcohols/ Acetates																																										
Methyl Alcohol	-	<500																																								
Ethyl Alcohol	-	<500																																								
i-Propyl Alcohol (IPA)	-	<100																				182																				
n-Propyl Alcohol	-	<100																																								
n-Butyl Alcohol	-	<100																																								
Tert Butyl Alcohol (TBA)	-	<2	3	5	5	10	5							16	15	14	19			10	10	24	12	12		13	12	5	14	11	13	12	10	10	8	8	6	12	8	7	7	7
Methyl Acetate	-	<100																																								
Ethyl acetate	-	<100																																								
Isopropyl acetate	-	<100																																								

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID	AGW25-D				AGW25-D				AGW25-D				AGW25-D				AGW25-D				AGW25-I				AGW25-I				AGW25-I				AGW25-I				AGW25-I				AGW25-I			
		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020							
	Monitoring round	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
	GTV	LOD																																										
VOC MS																																												
Methyl Tertiary Butyl Ether	10	<0.1		0.6	0.4	0.3	0.1	0.2	0.4	0.3	0.2	0.4	0.4		0.3	0.2	65.9	0.3	0.3	28.1	49.3	0.3	8.6	7.0	152	230	3.1	2.6	22.1	4.3	3.2	559.0	365	143	101	31.3	125	48	42.7	22.1	34.8	27.1
Chloromethane	-	<3																																										
Vinyl Chloride	0.375	<0.1																																										
Dichloromethane (DCM)	15	<5																																										
Chloroform	-	<2																																										
Benzene	0.75	<0.5																																										
Bromodichloromethane	-	<2																																										
Toluene	525	<5																																										
Ethylbenzene	-	<0.5																																										
p/m-Xylene	-	<1																																										
o-Xylene	-	<0.5																																										
Total Xylene	-	-																																										
Isopropylbenzene	-	<3																																										
Site Solvents																																												
Acetone	-	<50																																										
Acetontirile	-	<100																																										
Cyclohexane	-	<50																																										
Dimethylacetamide (DMA)	-	<100																																										
Dimethylformamide (DMF)	-	<100																																										
Diethyl ether	-	<2																																										
Heptane	-	<100																																										
Pyridine	-	<100																																										
Triethylamine (TEA)	-	<100										1340#			##																				##										
Triethylsilane (TES)	-	<100																																										
Triethylsilanol	-	<100																																										
Tetrahydrofuran (THF)	115	<10																																										
Alcohols/ Acetates																																												
Methyl Alcohol	-	<500																																										
Ethyl Alcohol	-	<500																																										
i-Propyl Alcohol (IPA)	-	<100																																										
n-Propyl Alcohol	-	<100																																										
n-Butyl Alcohol	-	<100																																										
Tert Butyl Alcohol (TBA)	-	<2														10			8	7		8	6	25	37	6	3	7	4	4	77	45	16	9	3	14	7	5	2	2	3
Methyl Acetate	-	<100																																										
Ethyl acetate	-	<100																																										
Isopropyl acetate	-	<100																																										

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW25-S				AGW25-S				AGW25-S				AGW25-S				AGW25-S				AGW28-S				AGW28-S				AGW28-S				AGW28-S				AGW28-S			
			2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	42.4	227	399	782	80.2	67.6	74.2	104	72.1	404	229	91.9	86.4	25.3	82.5	25.5	26.2	11.4	17.5	9.8	39.6	46	43.8	25	25.7	42.5	98.2	85.3	58.2	38.2	15.5	7.5	3.2	2.2	2.9	2.4	2.3	1.6	5	2.6
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2																																						
Benzene	0.75	<0.5																																						
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50																																						
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2																							17	8			31	24	16					3			3	
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100													##																217			##							
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10																																						
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																						
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100																																						
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2	21	32	33	65	48	46	63	45	48	56	27	12	8	3	5	4	3				12	14	13	12	18	16	34	24	24	13	3								
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
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NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW29-S				AGW29-S				AGW29-S				AGW29-S				AGW29-S				AGW35-D				AGW35-D				AGW35-D				AGW35-D				AGW35-D			
			2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	15.7	24.1	41.8	19.8	11.7	29.1	59.6	41.1	56	46.4	64.9	56.2	74.2	39.7	34.9	67.3	66.1	31.5	59.2	60.3	0.6	1.1	3.5	0.4	0.5	0.5	1.7	1.5	1.3	1.1		1	0.7	0.3	0.3	0.3	0.3		0.6	0.2
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2																																						
Benzene	0.75	<0.5																																						
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50							2150	45500																														
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2				3	6			22	34	25		27	17	30		71	36	18	34	41																		
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100													148	##														129#			##							
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10								25																														
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500																																						
Ethyl Alcohol	-	<500																																						
i-Propyl Alcohol (IPA)	-	<100								214000																														
n-Propyl Alcohol	-	<100																																						
n-Butyl Alcohol	-	<100																																						
Tert Butyl Alcohol (TBA)	-	<2	2	25	38	36	22	42	83	90	100	108	67	115	128	106	56	128	92	48	85	115	3	3	3	4	3	3	4	4	3	3		2	2							
Methyl Acetate	-	<100																																						
Ethyl acetate	-	<100																																						
Isopropyl acetate	-	<100																																						

Notes

All results in micrograms per litre (ug/l)
LOD = Limit of Detection
Blank cells = not detected above Limit of detection
GTV = Groundwater Threshold Value (2016)
10 Result Exceeds GTV
"-" = No GTV available
< = less than
NA = Not Analysed
# = Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)
= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		AGW35-I				AGW35-I				AGW35-I				AGW35-I				AGW35-I				AGW35-S				AGW35-S				AGW35-S				AGW35-S				AGW35-S				AGW35-S			
	Monitoring round		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020							
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																							NS					NS															
VOC MS																																														
Methyl Tertiary Butyl Ether	10	<0.1	422	653	952	280	735	824	1370	886	290	442	123	119	59.4	38.7	106	58	44.4	38.5	61.8	52.6		77.5		95.2	91		104	51.9	69.3	39	14.9	7.6	8.1	2.8	7.9	6.7	5.9	4.3	8.7	5.6				
Chloromethane	-	<3																																											
Vinyl Chloride	0.375	<0.1																																											
Dichloromethane (DCM)	15	<5																																										
Chloroform	-	<2																																										
Benzene	0.75	<0.5																																										
Bromodichloromethane	-	<2																																										
Toluene	525	<5																																										
Ethylbenzene	-	<0.5																																										
p/m-Xylene	-	<1																																										
o-Xylene	-	<0.5																																										
Total Xylene	-	-																																										
Isopropylbenzene	-	<3																																										
Site Solvents																																													
Acetone	-	<50																																										
Acetontirile	-	<100																																										
Cyclohexane	-	<50																																										
Dimethylacetamide (DMA)	-	<100																																										
Dimethylformamide (DMF)	-	<100																																										
Diethyl ether	-	<2								2		3												3																				
Heptane	-	<100																																										
Pyridine	-	<100																																										
Triethylamine (TEA)	-	<100											135#			##																801#				##								
Triethylsilane (TES)	-	<100																																										
Triethylsilanol	-	<100																																										
Tetrahydrofuran (THF)	115	<10			2																																							
Alcohols/ Acetates																																													
Methyl Alcohol	-	<500																																										
Ethyl Alcohol	-	<500																																										
i-Propyl Alcohol (IPA)	-	<100																																										
n-Propyl Alcohol	-	<100																																										
n-Butyl Alcohol	-	<100																																										
Tert Butyl Alcohol (TBA)	-	<2	38	45	47	30	64	44	100	51	21	33	6		3	4	4	3	3	3		2		21		18	17		13	11	11	8	3											
Methyl Acetate	-	<100																																										
Ethyl acetate	-	<100																																										
Isopropyl acetate	-	<100																																										

Notes

All results in micrograms per litre (ug/l)

LOD = Limit of Detection

Blank cells = not detected above Limit of detection

GTV = Groundwater Threshold Value (2016)

10 Result Exceeds GTV

"-" = No GTV available

< = less than

NA = Not Analysed

= Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)

= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		GCN				GCN				GCN				GCN				GCN				GCS				GCS				GCS				GCS				GCS			
	Monitoring round		2016				2017				2018				2019				2020				2016				2017				2018				2019				2020			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																																						
VOC MS																																								
Methyl Tertiary Butyl Ether	10	<0.1	11.2	42.4	28.2	1.3	75.3	18.4	2.3	2.1	33.2	8.1	6.1	1.2	2.8	1	0.7	0.5	0.5	4.5	1.9	0.7	459	118	193	37.8	1760	725	1250	1590	1690	14.8	8	5	3.7	2.2	24.4	4.8	3.3	4	4.5	4.4
Chloromethane	-	<3																																						
Vinyl Chloride	0.375	<0.1																																						
Dichloromethane (DCM)	15	<5																																						
Chloroform	-	<2																																						
Benzene	0.75	<0.5																																						
Bromodichloromethane	-	<2																																						
Toluene	525	<5																																						
Ethylbenzene	-	<0.5																																						
p/m-Xylene	-	<1																																						
o-Xylene	-	<0.5																																						
Total Xylene	-	-																																						
Isopropylbenzene	-	<3																																						
Site Solvents																																								
Acetone	-	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Acetontirile	-	<100																																						
Cyclohexane	-	<50																																						
Dimethylacetamide (DMA)	-	<100																																						
Dimethylformamide (DMF)	-	<100																																						
Diethyl ether	-	<2		3								4																	5		2										
Heptane	-	<100																																						
Pyridine	-	<100																																						
Triethylamine (TEA)	-	<100														##																				##						
Triethylsilane (TES)	-	<100																																						
Triethylsilanol	-	<100																																						
Tetrahydrofuran (THF)	115	<10																																						
Alcohols/ Acetates																																								
Methyl Alcohol	-	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Ethyl Alcohol	-	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
i-Propyl Alcohol (IPA)	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
n-Propyl Alcohol	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
n-Butyl Alcohol	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Tert Butyl Alcohol (TBA)	-	<2	3	12	6		21	12	2		15	2											36	29	27		52	27	50	71	46	5										
Methyl Acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Ethyl acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Isopropyl acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA						NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					

Notes

All results in micrograms per litre (ug/l)

LOD = Limit of Detection

Blank cells = not detected above Limit of detection

GTV = Groundwater Threshold Value (2016)

10 Result Exceeds GTV

"-" = No GTV available

< = less than

NA = Not Analysed

= Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)

= Result not reported due to data quality issue

Appendix A - Organic Compounds in Groundwater, 2017 - 2020

Analyte	Sample ID		INSC 2016				INSC 2017				INSC 2018				INSC 2019				INSC 2020			
	Monitoring round		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	GTV	LOD																				
VOC MS																						
Methyl Tertiary Butyl Ether	10	<0.1	73.3	57	58.2	21.3	90.6	59.1	47.5	23.8	99.4	58.6	60.5	22.1	6.6	8.8	3.9	3.4	3.6	2	19.2	2.7
Chloromethane	-	<3																				
Vinyl Chloride	0.375	<0.1																				
Dichloromethane (DCM)	15	<5																				
Chloroform	-	<2																				
Benzene	0.75	<0.5																				
Bromodichloromethane	-	<2																				
Toluene	525	<5											7									
Ethylbenzene	-	<0.5																				
p/m-Xylene	-	<1																				
o-Xylene	-	<0.5																				
Total Xylene	-	-																				
Isopropylbenzene	-	<3																				
Site Solvents																						
Acetone	-	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Acetontirile	-	<100																				
Cyclohexane	-	<50																				
Dimethylacetamide (DMA)	-	<100																				
Dimethylformamide (DMF)	-	<100																				
Diethyl ether	-	<2		2						5				4			2	2		2	2	
Heptane	-	<100																				
Pyridine	-	<100																				
Triethylamine (TEA)	-	<100													423	##						
Triethylsilane (TES)	-	<100																				
Triethylsilanol	-	<100																				
Tetrahydrofuran (THF)	115	<10																				
Alcohols/ Acetates																						
Methyl Alcohol	-	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Ethyl Alcohol	-	<500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
i-Propyl Alcohol (IPA)	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
n-Propyl Alcohol	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
n-Butyl Alcohol	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Tert Butyl Alcohol (TBA)	-	<2	13	11	14		20	23	16	9	24	16	10	4								
Methyl Acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Ethyl acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					
Isopropyl acetate	-	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA					

Notes

All results in micrograms per litre (ug/l)

LOD = Limit of Detection

Blank cells = not detected above Limit of detection

GTV = Groundwater Threshold Value (2016)

10 Result Exceeds GTV

"-" = No GTV available

< = less than

NA = Not Analysed

= Result was not replicated in repeat analysis (TEA was not detected above the LOD of 100 ug/l in repeat test)

= Result not reported due to data quality issue

APPENDIX C

Laboratory Analysis Certificates

(Q4 2019)

Element Materials Technology
Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

P: +44 (0) 1244 833780
F: +44 (0) 1244 833781
W: www.element.com

Geosyntec Consulting
Innovation House
DCU Alpha
Old Finglas Road
Dublin
Ireland
D11 KXN4

Attention :	Graham Webb
Date :	2nd December, 2020
Your reference :	GCU0152056
Our reference :	Test Report 20/16320 Batch 1
Location :	SK Biotek - IEL
Date samples received :	20th November, 2020
Status :	Final report
Issue :	1

Twenty nine samples were received for analysis on 20th November, 2020 of which twenty nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Paul Boden BSc
Senior Project Manager

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70	LOD/LOR	Units	Method No.
Sample ID	AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S			
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	17/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020	16/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020			
VOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM15/PM10
Diethyl ether	<2	<2	<2	14	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	123	116	123	121	123	121	105	106	107	94	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	113	108	114	113	112	111	99	99	101	93	<0	%	TM15/PM10
Dimethylacetamide (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Heptane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Pyridine (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Triethylsilane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
DMF (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
SVOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM16/PM30
n-methyl-2-pyrrolidone (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	385	<100	ug/l	TM16/PM30
3-trifluoromethylbenzenamide (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM16/PM30
Fluoride	<0.3	<0.3	<0.3	<0.3	0.6	0.5	<0.3	<0.3	<0.3	0.3	<0.3	mg/l	TM173/PM0
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100	<100	<100	<100	<100	<100	<100	<100	<100	20800_{AB}	<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Methyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Ethyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
i-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Butyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Acetone	<50	<50	<50	<50	<50	<50	<50	<50	<50	7260_{AB}	<50	ug/l	TM83/PM10
Cyclohexane	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	ug/l	TM83/PM10
Methyl Ethyl Ketone (MEK)	<2	<2	<2	<2	<2	<2	<2	<2	<2	5	<2	ug/l	TM83/PM10
Tetrahydrofuran	<10	<10	<10	12	<10	<10	<10	73	<10	22100_{AB}	<10	ug/l	TM83/PM10
Chloride #	32.6	636	553	128	102	596	69.6	233	182	266	<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	5.7	<0.2	0.6	<0.2	2.8	<0.2	5.0	<0.2	<0.2	3.4	<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH3 #	0.04	<0.03	0.07	0.86	0.49	3.72	<0.03	5.01	4.82	3.63	<0.03	mg/l	TM38/PM0
Acetonitrile	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
Tert Butyl Alcohol (TBA)	<2	<2	4	28	4	32	<2	20	25	61	<2	ug/l	TM83/PM10
Triethylamine	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	ug/l	TM104/PM10
COD (Settled) #	<7	20	27	10	8	64	<7	16	26	223	<7	mg/l	TM57/PM0

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle

$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	71-77	78-84	85-91	92-98	99-105	106-112	113-119	120-126	127-133	134-140	LOD/LOR	Units	Method No.
Sample ID	AGW21-S	AGW21-I	AGW22-I	AGW22-D	AGW24-D	AGW25-S	AGW25-I	AGW25-D	AGW28-S	AGW29-S			
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	16/11/2020	16/11/2020	16/11/2020	16/11/2020	18/11/2020	16/11/2020	16/11/2020	16/11/2020	16/11/2020	17/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020			
VOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM15/PM10
Diethyl ether	<2	<2	<2	<2	<2	<2	<2	<2	<2	41	<2	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	102	104	91	106	109	105	106	99	99	112	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98	97	81	99	103	97	90	95	95	98	<0	%	TM15/PM10
Dimethylacetamide (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Heptane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Pyridine (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
Triethylsilane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
DMF (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM15/PM10
SVOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM16/PM30
n-methyl-2-pyrrolidone (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM16/PM30
3-trifluoromethylbenzenamide (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM16/PM30
Fluoride	0.6	0.3	<0.3	0.8	0.5	0.5	0.5	1.0	0.5	<0.3	<0.3	mg/l	TM173/PM0
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Methyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Ethyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
i-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
n-Butyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/l	TM83/PM10
Acetone	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	ug/l	TM83/PM10
Cyclohexane	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	ug/l	TM83/PM10
Methyl Ethyl Ketone (MEK)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM83/PM10
Tetrahydrofuran	45200$_{AC}$	2400$_{AA}$	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM83/PM10
Chloride #	128	130	4310	225	998	32.9	47.4	339	21.0	779	<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH3 #	0.13	0.78	0.25	0.24	0.33	1.94	3.47	0.43	0.59	2.71	<0.03	mg/l	TM38/PM0
Acetonitrile	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	ug/l	TM83/PM10
Tert Butyl Alcohol (TBA)	8	42	16	<2	7	<2	3	<2	<2	115	<2	ug/l	TM83/PM10
Triethylamine	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	ug/l	TM104/PM10
COD (Settled) #	112	14	173	<7	28	9	16	13	10	34	<7	mg/l	TM57/PM0

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	141-147	148-154	155-161	162-165	166-169	170-173	174-177	178-181	182-188		LOD/LOR	Units	Method No.
Sample ID	AGW35-S	AGW35-I	AGW35-D	INCS	GCN	GCS	AGW808-S	AGW404-S	AGW23-S				
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V	V	V	V	V	V H P G				
Sample Date	16/11/2020	16/11/2020	16/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020				
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020				
VOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND			None	TM15/PM10
Diethyl ether	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	112	113	112	113	111	115	116	117	116		<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	98	98	98	96	99	100	100	100		<0	%	TM15/PM10
Dimethylacetamide (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM15/PM10
Heptane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM15/PM10
Pyridine (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM15/PM10
Triethylsilane (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM15/PM10
DMF (TIC)	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM15/PM10
SVOC TICs	ND	ND	ND	-	-	-	-	-	ND			None	TM16/PM30
n-methyl-2-pyrrolidone (TIC)	<100	<100	<100	-	-	-	-	-	<100		<100	ug/l	TM16/PM30
3-trifluoromethylbenzenamide (TIC)	<100	<100	<100	-	-	-	-	-	<100		<100	ug/l	TM16/PM30
Fluoride	0.6	0.5	0.8	-	-	-	-	-	0.4		<0.3	mg/l	TM173/PM0
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500		<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500	<500	<500	<500	<500	<500	<500	<500	<500		<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100	<100	<100	<100	<100	<100	<100	<100	182		<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
Methyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
Ethyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
i-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Propyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
n-Butyl Acetate	<100	<100	<100	<100	<100	<100	<100	<100	<100		<100	ug/l	TM83/PM10
Acetone	<50	<50	<50	<50	<50	<50	<50	<50	4790$_{AA}$		<50	ug/l	TM83/PM10
Cyclohexane	<50	<50	<50	<50	<50	<50	<50	<50	<50		<50	ug/l	TM83/PM10
Methyl Ethyl Ketone (MEK)	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM83/PM10
Tetrahydrofuran	<10	<10	<10	<10	<10	<10	<10	<10	5580$_{AA}$		<10	ug/l	TM83/PM10
Chloride #	27.7	209	530	-	-	-	-	-	139		<0.3	mg/l	TM38/PM0
Nitrate as NO3 #	<0.2	0.3	6.3	-	-	-	-	-	6.1		<0.2	mg/l	TM38/PM0
Ammoniacal Nitrogen as NH3 #	1.06	4.04	0.26	-	-	-	-	-	0.27		<0.03	mg/l	TM38/PM0
Acetonitrile	<500	<500	<500	<500	<500	<500	<500	<500	<500		<500	ug/l	TM83/PM10
Tert Butyl Alcohol (TBA)	<2	2	<2	<2	<2	<2	3	4	24		<2	ug/l	TM83/PM10
Triethylamine	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		<1000	ug/l	TM104/PM10
COD (Settled) #	<7	18	22	-	-	-	-	-	64		<7	mg/l	TM57/PM0

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70			
Sample ID	AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	17/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020	16/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	LOD/LOR	Units	Method No.
SVOC MS													
Phenols													
2-Chlorophenol #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	5	<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	1.8	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70			
Sample ID	AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	17/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020	16/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	LOD/LOR	Units	Method No.
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	91	92	93	96	97	85	81	86	77	36 SV	<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	92	94	98	95	94	97	76	84	72	35 SV	<0	%	TM16/PM30

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	71-77	78-84	85-91	92-98	99-105	106-112	113-119	120-126	127-133	134-140	LOD/LOR	Units	Method No.
Sample ID	AGW21-S	AGW21-I	AGW22-I	AGW22-D	AGW24-D	AGW25-S	AGW25-I	AGW25-D	AGW28-S	AGW29-S			
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	16/11/2020	16/11/2020	16/11/2020	16/11/2020	18/11/2020	16/11/2020	16/11/2020	16/11/2020	16/11/2020	17/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020			
SVOC MS													
Phenols													
2-Chlorophenol #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	71-77	78-84	85-91	92-98	99-105	106-112	113-119	120-126	127-133	134-140	LOD/LOR	Units	Method No.
Sample ID	AGW21-S	AGW21-I	AGW22-I	AGW22-D	AGW24-D	AGW25-S	AGW25-I	AGW25-D	AGW28-S	AGW29-S			
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	16/11/2020	16/11/2020	16/11/2020	16/11/2020	18/11/2020	16/11/2020	16/11/2020	16/11/2020	16/11/2020	17/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020			
SVOC MS													
Other SVOCs													
1,2-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	83	80	79	87	36 SV	72	109	102	103	108	<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	88	80	84	83	36 SV	70	107	98	100	108	<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	141-147	148-154	155-161	182-188									
Sample ID	AGW35-S	AGW35-I	AGW35-D	AGW23-S									
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G									
Sample Date	16/11/2020	16/11/2020	16/11/2020	18/11/2020									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020									
SVOC MS											LOD/LOR	Units	Method No.
Phenols													
2-Chlorophenol #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10							<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1							<1	ug/l	TM16/PM30
PAHs													
2-Chloronaphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Naphthalene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Acenaphthylene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Acenaphthene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Fluorene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phenanthrene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Anthracene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Fluoranthene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Pyrene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(a)anthracene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Chrysene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(bk)fluoranthene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Benzo(a)pyrene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Indeno(123cd)pyrene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Dibenzo(ah)anthracene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Benzo(ghi)perylene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Phthalates													
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5							<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5	<1.5							<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1							<1	ug/l	TM16/PM30

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

SVOC Report : **Liquid**

EMT Sample No.	141-147	148-154	155-161	182-188									
Sample ID	AGW35-S	AGW35-I	AGW35-D	AGW23-S									
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G									
Sample Date	16/11/2020	16/11/2020	16/11/2020	18/11/2020									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020									
SVOC MS											LOD/LOR	Units	Method No.
Other SVOCs													
1,2-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5							<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1							<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	100	94	102	86							<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	97	91	101	83							<0	%	TM16/PM30

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

VOC Report : **Liquid**

EMT Sample No.	1-7	8-14	15-21	22-28	29-35	36-42	43-49	50-56	57-63	64-70			
Sample ID	AGW01-S	AGW03-S	AGW04-S	AGW05-S	AGW08-S	AGW08-I	AGW10-S	AGW14-S	AGW16-S	AGW19-S			
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	17/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020	16/11/2020	17/11/2020	17/11/2020	17/11/2020	16/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	1.4	0.4	4.7	7.1	54.5	<0.1	16.2	10.6	20.3	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	20	21	13	13	<5	<5	<5	<5	<5	11700$_{AC}$	<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	20	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1.5	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	46	<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	49	<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	152	<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	19	<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	123	116	123	121	123	121	105	106	107	94	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	113	108	114	113	112	111	99	99	101	93	<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

VOC Report : **Liquid**

EMT Sample No.	71-77	78-84	85-91	92-98	99-105	106-112	113-119	120-126	127-133	134-140	LOD/LOR	Units	Method No.
Sample ID	AGW21-S	AGW21-I	AGW22-I	AGW22-D	AGW24-D	AGW25-S	AGW25-I	AGW25-D	AGW28-S	AGW29-S			
Depth													
COC No / misc													
Containers	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G	V H P G			
Sample Date	16/11/2020	16/11/2020	16/11/2020	16/11/2020	18/11/2020	16/11/2020	16/11/2020	16/11/2020	16/11/2020	17/11/2020			
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	1.3	2.4	1.3	<0.1	<0.1	9.8	27.1	0.3	2.6	60.3	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	0.8	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	102	104	91	106	109	105	106	99	99	112	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	98	97	81	99	103	97	90	95	95	98	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb
EMT Job No: 20/16320

VOC Report : **Liquid**

EMT Sample No.	141-147	148-154	155-161	162-165	166-169	170-173	174-177	178-181	182-188				
Sample ID	AGW35-S	AGW35-I	AGW35-D	INCS	GCN	GCS	AGW808-S	AGW404-S	AGW23-S				
Depth										Please see attached notes for all abbreviations and acronyms			
COC No / misc													
Containers	V H P G	V H P G	V H P G	V	V	V	V	V	V H P G				
Sample Date	16/11/2020	16/11/2020	16/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020				
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020	20/11/2020		LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	5.6	52.6	0.2	4.4	0.7	2.7	7.3	0.4	5.7		<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5	<5	<5	<5	<5	<5	<5	<5	>>6180		<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2	24	<2	5		<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5	<5	<5	13		<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4	<4	<4	<4		<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2	<2	<2	<2		<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3	<3	<3	<3		<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	112	113	112	113	111	115	116	117	116		<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	98	98	98	96	99	100	100	100		<0	%	TM15/PM10

Client Name: Geosyntec Consulting
Reference: GCU0152056
Location: SK Biotek - IEL
Contact: Graham Webb

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 20/16320						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/16320

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x10 Dilution

AB	x50 Dilution
AC	x100 Dilution

EMT Job No: 20/16320

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260B v2:1996. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270D v5:2014. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM0	No preparation is required.	Yes			
TM57	Modified US EPA Method 410.4. (Rev. 2.0 1993) Comparable with ISO 15705:2002. Chemical Oxygen Demand is determined by hot digestion with Potassium Dichromate and measured spectrophotometerically.	PM0	No preparation is required.	Yes			
TM83	Modified USEPA method 8260B v2:1996. Determination of Alcohols, Acetates, Acetone, Fuel Oxygenates, THF and Cyclohexane by Headspace GC-MS	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM104	Determination of specific Amines by Headspace GC-MS.	PM10	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.				