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Quarterly Monitoring Report Update – June 2019

for the Environmental Protection Agency

(July 2019)

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LIMITATION

This report represents the results of the site monitoring and remediation works conducted at the above referenced site. Best practice was followed at all times and within the limitations stated. This report is the property of Verdé Environmental Consultants Limited (Verdé) and cannot be used, copied or given to any third party without the explicit prior approval or agreement of Verdé.

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EXECUTIVE SUMMARY

The June 2019 quarterly monitoring round consisted of sampling 19 bedrock and six perched groundwater monitoring wells together with the compliance point on the foreshore to the north.

The remediation objectives in relation to solvent/alcohol contamination incident were to remediate the perched groundwater in the subsoils and underlying bedrock aquifer in the vicinity of the source area identified at Production Building 6. This groundwater pump & treat work has been successful in remediating the bedrock aquifer of solvent/alcohol contamination with no exceedance of the applicable Remedial Target Concentrations (RTCs) in June 2019. There was a localised toluene exceedance in perched groundwater in well MW204.

Currently six of the remediation wells on-site are being used to assist in the remediation of elevated ammonium in the northern region of the site, four of which were operation in June 2019.

Following a meeting a EPA office in May 2019 it was agreed that the groundwater remediation programme in relation to ammonium going forward is to focus on long term pump & treat operation of the existing remediation wells on-site and discontinue the ORC advanced in-situ trial. A water level mass balance is being prepared to examine the effectiveness of the active pump & treat groundwater containment system operating on-site.

The 2018 sampling works indicate that the background ammonium concentrations in the harbour waters are similar to or more elevated than the concentration being detected at the compliance point.

In June 2019 there was no detection of THF above the RTC value. Currently there are slightly elevated THF concentrations in the bedrock monitoring wells AGW16 (0.617mg/l) and in the perched groundwater of MW204 (0.166mg/l). Both AGW16 and MW204 are showing an overall continuous decline from more elevated 2016 concentrations.

In June 2019 there was an anomalously high detection of THF (1.271mg/l) in the bedrock monitoring well AGW5 at a level which had not been detected in this well previously. Further sampling on 19th June (1.006mg/l) and 10th July 2019 (0.969mg/l) showed a declining trend. As this is an active pumping well further decrease is likely given that there is no known new source of THF in the area.

Statistical analysis of the ammonium concentrations in the monitoring and remediation wells on-site shows a largely stable to decreasing trend for ammonium across the site. The most elevated ammonium concentrations on-site are present in the downgradient region of the Bioplant in remediation wells AGW19 & AGW20. This is thought to be related to a historical source in the area from former ammonia scrubbers in this area of the site.

If capacity allows, it is recommended that remediation wells AGW5, AGW14, AGW16, AGW17, AGW19 and AGW20 should maintain operation as part of the ammonium remediation programme.

It is recommended to undertake the following works based on this report:

1. Further groundwater monitoring of ammonium and electrical conductivity on the most contaminated remediation well AGW20 at both high and low tidal ranges to assess if the abstraction rate from this well can be increased without causing saline intrusion effects in this northern area of the site.
2. A water mass balance for the GSK site and implement a programme of monitoring sustainable abstraction rates from the remediation wells.
3. Obtain a further groundwater sample from AGW5 in August 2019 to confirm the declining trend in THF in this monitoring well.

	EPA Contaminated Land & Groundwater Risk Assessment Methodology	Report Reference	Report Date	Status
	STAGE 1: SITE CHARACTERISATION & ASSESSMENT			
1.1	**PRELIMINARY SITE ASSESSMENT**	Preliminary Report, Verdé, Ref: 50982	10th March 2016	Final
1.2	**DETAILED SITE ASSESSMENT**	Detailed Report, Verdé, Ref: 50982	10th June 2016	Final
1.3	**QUANTITATIVE RISK ASSESSMENT**	Quantitative RA Report, Verdé, Ref: 50982	15th June 2016	Final
	STAGE 2: CORRECTIVE ACTION FEASIBILITY & DESIGN			
2.1	**OUTLINE CORRECTIVE ACTION STRATEGY**	Corrective Action Report, Verdé, Ref: 50982	28th June 2016	Final
2.2	**FEASIBILITY STUDY & OUTLINE DESIGN**			
2.3	**DETAILED DESIGN**			
2.4	**FINAL STRATEGY & IMPLEMENTATION PLAN**			
	STAGE 3: CORRECTIVE ACTION IMPLEMENTATION & AFTERCARE			
3.1	**ENABLING WORKS**	Quarterly Monitoring Report June 2019 Verdé Ref: 51823	28th July 2019	Final
3.2	**CORRECTIVE ACTION IMPLEMENTATION & VERIFICATION**			
3.3	**AFTERCARE**			

1. INTRODUCTION

Verdé Environmental Consultants Ltd., (Verdé) was commissioned by GlaxoSmithKline (GSK) to undertake a quarterly programme to include the following as agreed with the Environmental Protection Agency (EPA):

- Undertake a full dip round of all wells and check on pump & treat system operation and flow rates to provide updated groundwater contour maps for the bedrock and perched aquifers to ensure hydraulic containment is being maintained;
- Sampling of 17 No. bedrock and three available perched groundwater monitoring wells together with the compliance seepage point on the foreshore to the north of the site and duplicate sample for quality assurance;
- The newly installed bedrock remediation wells (AGW19 & AGW20) and three new perched groundwater monitoring wells in the Bioplant area were also included by GSK in the June 2019 quarterly groundwater monitoring programme.

The EPA have requested that the above works are undertaken to confirm the overall declining trend and to confirm stable plume conditions in the source area together with confirmation of no adverse impact to the perimeter wells and downgradient receptor.

A sample inventory of the historical and on-going monitoring programme is presented in Table 1. A site location map is presented in Figure 1, bedrock groundwater contour map (Figure 2), perched groundwater contour map (Figure 3), and a conceptual site model for the site in Figure 4.

Various phases of ground investigation, monitoring and risk assessments have been completed at the site to assess and delineate soil and groundwater contamination associated with various spill events, which are thought to date back to early 2015 and early 2016. Of these, elevated concentrations of Methanol, Ethanol, Iso-propanol (IPA), Tetrahydrofuran (THF), Toluene and Dichloromethane (DCM) were locally identified within the near surface soils and underlying karstic groundwater within the vicinity of Production Buildings No. 2 and No. 6.

A Detailed Quantitative Risk Assessment (DQRA) for the above solvent and alcohols completed for the site in June 2016 provided site specific Remedial Target Concentrations (RTC) for the Contaminants of Concern (CoC) on site

A Corrective Action Feasibility & Design Report completed in June 2016 outlined the basis of the remediation program on site. This included a series of bedrock wells and perched groundwater wells which are actively abstracting contaminated groundwater on-site as part of a pump & treat remediation programme. The remediation pump & treat wells were switched off in October 2017 to monitor for potential rebound effects from COC that maybe trapped in fractures or unsaturated zone around pumping wells. In March 2018 the declining trend in COC in the source area has shown there is no rebound effect and the remediation wells were successful in remediating the alcohol/solvent contaminants. It was recommended to use all remediation wells on-site to assist in the remediation of elevated ammonium in the northern region of the site.

In early 2018, Verde engaged the services of groundwater remediation specialist Regenesis to develop an aerobic bioremediation trial for the GSK site in relation to ammonium. Given the large area of the site where elevated ammonium is present historically it was proposed to use monitoring well AGW11 (50mm diameter and 14m deep with water table ~6m below ground level) to undertake a trial for ammonium remediation.

This ammonium groundwater remediation trial commenced in March 2018 when Oxygen

Release Compound (ORC) remediation application and installation of ORC socks were placed in this monitoring well. During the June 2018 quarterly monitoring of this well an anomalous elevated detection of THF and ammonium were observed. As part of precautionary works, Verde recommended that the wells in the vicinity of AGW11 were sampled weekly to monitor for a potential new ammonium/THF source in this area of the site. The subsequent weekly monitoring included two monitoring rounds of key wells (AGW3, AGW4, AGW14 and compliance point) which are included in this report.

Verde carried out the initial ammonia DQRA for the site in March 2016. Since then a series of further site investigations have been undertaken on-site in the perched groundwater and underlying bedrock aquifer with monitoring and remediation wells installed. This provides more information together with additional groundwater quality data to allow the initial DQRA to be updated. The EPA requested that the DQRA on ammonium be updated as "it is not appropriate to refer to the outcome of this report in the assessment of the impact of the current concentration and trends on-site".

A suspected source of ammonium was detected in the vicinity of the bioplant in June 2018 and there was a site investigation consequently conducted in the suspected source area which involved the drilling of boreholes, soil sampling, monitoring well installations and groundwater sampling. Results indicated that there was some localised shallow ammonium contamination in the vicinity of the bioplant. The DQRA on ammonium was subsequently revised in September 2018 with respect to current ammonium concentrations and trends on-site.

The revised ammonium DQRA concluded that the flux of ammonium is extremely low and the actual ammonium seepage concentrations and DQRA predicted concentrations at point of entry to the Cork Harbour waters are within the range of actual concentrations in the Cork Harbour waters. Furthermore, ammonium does not bio-accumulate and will be vulnerable to biodegradation. Therefore the actual level of impact on the receiving water body will be very low.

Ammonium concentrations in the pumping wells are showing a general stable or gradual declining trend. Further groundwater monitoring and corresponding monitoring of the compliance seepage points will provide data to develop trends from which further analysis on the timeframe can be made.

The overall groundwater remediation programme and timeline in relation to the historical ammonium beneath the northern region of the GSK site was discussed in a meeting at EPA offices on 10th May 2019 between GSK, Verde and Geosyntec (EPA independent consultants). The following actions were agreed at the meeting;

- Maintain the quarterly monitoring programme to include the groundwater and perched groundwater monitoring wells with field water quality readings and groundwater analysis as per previous rounds.
- Discontinue the ORC advanced sock trial and maintain the current pump & treat operations form the existing remediation wells to reduce the elevated ammonium concentrations.
- Investigate the feasibility of further determining groundwater migration beyond the site boundary into Cork Harbour. Currently GSK do not own the land on the foreshore outside the boundary fence making drilling in this area not feasible in the short term and GSK are undertaking further investigation into obtaining access which is also part of Cork Harbour special protection area (SPA) and will require consultation with the National Park & Wildlife Service (NPWS).
- Carry out a water level and mass balance assessment in relation to the effectiveness of the active pump & treat groundwater containment system operating on-site.

1.1 Scope of Works

In order to meet the objective of the brief the following scope of works was completed:

- Ongoing groundwater abstraction from bedrock remediation wells: AGW5, AGW14, AGW16, and AGW17 together with new remediation wells AGW19 and AGW20.
- Quarterly monitoring of all groundwater monitoring wells on-site together with downgradient compliance point on the foreshore.
- Continued monitoring of all pumping wells to assess the effectiveness of pump & treat works on the ammonium groundwater concentrations in the northern portion of the GSK site.

2. DETAILS OF CONSTRUCTION/ENABLING WORKS

2.1 Pump and Treat Operations

In August 2016 the majority of the proposed groundwater abstraction wells on-site were commissioned as part of active pump & treat remediation of the contaminated solvent/alcohol perched groundwater around Building 6 and in the underlying limestone bedrock aquifer in the identified source area of the central region of the site. Currently the aim of the remediation wells is primarily in relation to remediating the elevated ammonium the northern region of the GSK site. Two further proposed remediation wells (AGW19 and AGW20) were commissioned in November 2018.

The details on the groundwater pump & treat remediation works are outlined in Table 2.1 below.

Table 2.1 Groundwater Pump & Treat Remediation Wells

Well ID	Maximum Sustainable Pumping Rate from pumping tests (m^3/day)	Proposed Maximum Pumping Rate (m^3/day)
AGW16	100	25
AGW5	20	15
AGW14	70	20
AGW17	50	30
AGW19	150	30
AGW20	150	30
	Total	**150**

Currently the operation of the remediation pumps is controlled based on the ability of the on-site wastewater treatment systems to handle groundwater quantity. All remediation wells are fitted with manual flowmeters to enable discharge volumes to be recorded.

Groundwater levels from all wells were taken on 11th June 2019, as presented in Table 18 from which a groundwater contour map was created for the bedrock monitoring wells in Figure 2 and perched groundwater in the source area in Figure 3. The influence of the remediation pumping wells on-site in relation to the ammonium can be seen in Figure 2 where an effective capture zone is created around the pumping wells in order to reduce the elevated ammonium in the northern region of the GSK site, as presented in conceptual site model in Figure 4.

The perched groundwater in the overburden in June 2019 is seen to flow in an easterly to north-easterly flow direction following site topography, as presented in Figure 3.

2.2 Sampling and Monitoring

Prior to sampling works groundwater levels are recorded from a reference point of the top of the well standpipes. A minimum of three well volumes were purged prior to sampling. For pumping wells groundwater samples are obtained directly from sample taps on the discharge pipes.

During purging, groundwater quality readings are obtained using a YSI multimeter. Readings are obtained following parameter stabilisation. Samples are obtained from either dedicated sampling bailers or tubing. Details of the sampling and field readings from each well and down-gradient compliance point sampled on 11th June 2019 are presented in the sampling logs in Appendix A.

All water samples were collected in laboratory supplied containers with VOC/alcohol parameters collected in glass vials with septa to prevent any headspace loss. Samples were stored in cool boxes prior to dispatch to Element Materials Technology Group Limited in the UK for chemical analysis with analysis requirements outlined in chain of custody documentation forms. Samples for ammonia were obtained in plastic bottles with sulphuric acid preservative. Samples were stored in chilled coolboxes (<9°C) and dispatched overnight to the laboratory.

The detail of the groundwater sampling inventory is presented in Table 1. Quarterly groundwater analytical results are presented in Tables 2-17 for the June 2019 monitoring round with laboratory certificates in Appendix B.

3. GROUNDWATER MONITORING RESULTS

3.1 Groundwater Reference Criteria

Comparisons between concentrations of the analytical parameters and industry-recognised benchmark criteria have been made to highlight the range of concentrations observed. The inorganic water quality results have been compared to the following:

- Parametric Value (PV) under S.I. 122 of 2014;
- Groundwater Regulation Threshold Values under S.I. 9 of 2010 & S.I. 366 of 2016;
- Environmental Protection Agency (EPA) Interim Guideline Values;
- Previous sampling rounds;
- Remedial Target Concentrations (RTCs) for solvents/alcohols & ammonia.

The RTCs are used as an initial benchmark to remediate the source area followed by further remediation works to try to achieve pre-contamination incident concentrations in the bedrock aquifer beneath the site.

3.2 Analytical Parameters

3.2.1 Toluene

Toluene was not detected in all of the bedrock monitoring wells in the June 2019 monitoring round. Overall it can be seen that toluene is remediated successfully on-site in the bedrock aquifer.

Perched groundwater well MW204, located adjacent to Building 6, shows a slight increase from the previous March 2019 monitoring round but an overall decrease from June 2018. A concentration of 24,407mg/l was detected in June 2019 which is above the RTC for this compound. Currently the pump in this well is not operating due to poor groundwater recovery rates. The well was fitted with ORC remediation socks in March 2018 which are removed prior to sampling. In June 2019 these ORC socks were not submerged in the perched groundwater due to a kink in the standpipe. They were removed from the standpipe, as agreed with the EPA.

3.2.2 Dichloromethane (DCM)

DCM was undetected in the bedrock and perched groundwater wells during the June 2019 quarterly monitoring round, which is similar to the previous monitoring round. Overall it shows that this previously elevated contaminant in the Building 6 area has been remediated on-site.

3.2.3. 1,2-Dichloroethane

1,2-Dichloroethane was undetected in the 2019 quarterly monitoring rounds in the bedrock monitoring wells which is similar to the previous monitoring round. Trace levels of 1,2-Dichloroethane were detected in the perched monitoring well MW204 in June 2019 which is just above the laboratory limit of detection of 2ug/l as detected in this well historically. The compound was undetected in all other perched monitoring wells in June 2019. Overall it shows that this previously detected contaminant has been remediated on-site.

3.2.4 Benzene, Xylene & Ethylbenzene

Benzene exceeded the IGV, TSV and Groundwater Regulations value in the bedrock and perched groundwater wells of AGW14 and MW-204 in June 2019, which shows a very slight increase in this COC from the previous monitoring round.

Ethylbenzene was not detected in the bedrock wells in June 2019 which shows an improvement from the previous monitoring round. Trace levels of ethylbenzene were detected in MW204 and MW301. The IGV for p/m xylene was exceeded in the perched groundwater of MW204 similar to recent monitoring rounds with no detection in the bedrock wells on site in June 2019, with the exception of AGW16 which had trace levels of o-xylenes.

3.2.5 Vinyl Chloride

Vinyl Chloride was undetected in June 2019 in all bedrock monitoring wells which is similar to the previous March 2019 monitoring round. Trace levels of Vinyl Chloride were detected in the perched monitoring well MW204 at 1ug/l which is just above the laboratory limit of detection.

3.2.6 Methyl Tertiary Butyl Ether (MTBE)

In June 2019 there was trace levels of MTBE detected in most monitoring wells on-site but none exceeding the IGV standard of 30µg/L, similar to the previous monitoring rounds. Very low concentrations of MTBE are present across the site and are not thought to be associated with the 2016 Building 6 solvent/alcohol contamination incident.

3.2.7 Speciated Phenols

There was no detection of phenols in any of the bedrock or perched groundwater samples taken on site during the June 2019 monitoring round with the exception of AGW3 and MW204 which contained trace levels of Resorcinol in AGW3 and low levels of Phenol, m/p-cresol, o-cresol and total cresols in MW204. The levels of Resorcinol detected in AGW3 are just above the laboratory limit of detection and levels of Speciated Phenols have fluctuated in MW204 historically. Overall there is an improvement in groundwater quality at the site with respect to concentrations of Speciated Phenols.

3.2.8 Alcohols

The DQRA completed for the site provided site specific calculated RTC value of 1,000mg/l for alcohol concentrations. Since monitoring in February 2016 there was no exceedance of the calculated RTC for alcohol compounds on-site.

In June 2019 alcohols were undetected in the bedrock wells similar to recent monitoring rounds.

Alcohols were undetected in all of the perched groundwater monitoring wells in June 2019, which shows a decrease from the previous 2018 monitoring rounds.

The historical alcohol groundwater contamination is therefore largely remediated on-site, as presented in the table trend graphs for the pumping wells.

3.2.9 Tetrahydrofuran (THF)

An RTC of 9,310µg/l was calculated for THF, which has been added to the analytical suite since May 2016. Overall when comparing the THF concentrations from the site wide monitoring round in May 2016 to June 2019 it can be seen that the THF contamination plume is largely decreasing in the bedrock aquifer in and outside the source area, showing pump & treat operations are an effective containment and remediation measure.

In June 2019 there was no detection of THF above the RTC value. Reported concentrations of THF parameter in active pumping wells AGW14 and AGW17 decreased from June 2018 with levels below the groundwater regulation standard from September 2018 to March 2019.

Currently there are slightly elevated THF concentrations in the bedrock monitoring well AGW16 (0.617mg/l) and in the perched groundwater of MW204 (0.166mg/l). Both AGW16 and MW204 are showing an overall continuous decline from the more elevated 2016 concentrations as presented in the table trend graphs.

In June 2019 there was an anomalously high detection of THF (1.271mg/l) in the bedrock monitoring well AGW5 at a level which had not been detected in this well at these concentrations previously. AGW5 was resampled for THF on 19th June 2019 (1.006mg/l) and 10th July 2019 (0.969mg/l) and results showed that there was a declining trend but it remains slightly more elevated than detected in this well historically. This well is currently an active groundwater remediation well and therefore ongoing pumping is expected to continue this declining trend as there is no known new THF source. Pumping will also help to contain the localised THF groundwater contamination in this area of the site.

3.2.10 Ammonium

Ammoniacal Nitrogen concentrations were converted to ammonium for comparison with the groundwater quality standards. In the June 2019 monitoring round elevated ammonium concentrations were detected in most groundwater wells on-site apart from wells AGW1(a), AGW6 and AGW8 which are located downgradient of the production area on-site. This is a similar trend to recent groundwater monitoring rounds.

Elevated concentrations were detected in all wells in the northern region of the site at pumping wells AGW5, AGW14, AGW16, AGW19 and AGW20 and monitoring wells AGW3, AGW4, AGW11(a) and AGW12.

In order to assess the long-term trends on the ammonium concentrations the groundwater monitoring data from 2005 to 2019 was run using the Mann Kendal statistical analysis tool for the historical and more recently installed monitoring and remediation wells, as presented in Appendix C. The summary findings of the statistical analysis trends are presented in Table 3.2.10 below and presented in Figure 5.

Table 3.2.10 Groundwater Ammonium Mann-Kendall Trend Analysis

Mann-Kendall Trend Analysis		
GSK Ammonium Groundwater Results from 2005 to 2019		
Well ID	**Long-term Trend**	**Short-term Trend**
AGW1a	Decreasing	Decreasing
AGW2	Decreasing	Increasing
AGW3	Increasing	Decreasing
AGW4	Increasing	Stable
AGW5	No Trend	Stable
AGW6	No Trend	Decreasing
AGW8	No Trend	No Trend
AGW9	Decreasing	Stable
AGW10	Decreasing	Stable
AGW11a	Increasing	Stable
AGW12	Increasing	Decreasing
AGW13	No trend	Decreasing
AGW14	Increasing	Stable
AGW16	Decreasing	Stable
AGW17	Decreasing	Decreasing
AGW18	No Trend	No Trend
AGW19	N/A	Probably Decreasing
AGW20	N/A	Decreasing
MW204	No Trend	Stable
MW227	Decreasing	Decreasing
MW228	Stable	Decreasing
MW301	N/A	Stable
MW304	N/A	No Trend
MW305	N/A	No Trend
CP	No Trend	No Trend

Overall the groundwater ammonium concentrations show elevated concentrations that have long term decreasing, increasing or no trend. However, when examining the more recent data from 2016 to mid 2019 the concentrations show more fluctuations due to more data being available but also likely to be related to the pumping of up to eight groundwater wells in the bedrock aquifer beneath the site. The recent monitoring results show a stable to decreasing trend for ammonium across the site which shows an improvement in the historically elevated ammonium concentrations across the north of the site. Elevated concentrations in the northern

region of the Bioplant are related to a suspected leak in mid 2018 together with historical use of ammonia scrubbers in the area near AGW20.

Remediation well AGW17 was installed in the suspected possible source of historical ammonium ground contamination. This well was not operation in June 2019 due to an electrical connection fault which was fixed on 10th July 2019. Remediation wells AGW19 and AGW20 were commissioned on-site in October 2018 in the area downgradient of this suspected historical ammonium source area. Recent investigations by GSK revealed that there were ammonia scrubbers in operation in the area west of AGW20 between 1995 and 2001.

AGW14 was installed in August 2016 to determine if abstraction in the bedrock would reduce the groundwater ammonia concentrations. The other groundwater abstraction wells AGW13 and AGW16 were used to remediate the 2016 solvent/alcohol contamination which is largely remediated in the bedrock aquifer with no current rebound observed since the turning off of pumps in October 2017. AGW5 was a historical remediation well which has been activated to assist in reducing ammonium concentrations historically.

In June 2018 there was an anomalous elevated detection of THF (7.603mg/l) and ammonium in AGW11 (57.88mg/l) and an increase in ammonium (23.68mg/l) in pumping well AGW14. Verde understand a suspected potential source of ammonia in the groundwater in the northern region of the site maybe from the Biological Treatment Plant (Tank 1805B), which contains mostly water containing ammonium chloride and THF in low concentrations and is adjacent to AGW11. Verde recommended that a series of weekly monitoring rounds of wells in the area were undertaken to confirm the potential source from the Bioplant together with a site investigation which involved the drilling of boreholes, soil sampling, monitoring well installations and groundwater sampling. Results indicated that there was some localised shallow ammonium contamination in the vicinity of the bioplant. The DQRA on ammonium was subsequently revised in September 2018 with respect to current ammonia concentrations and trends on-site.

Wells surrounding the bioplant including; AGW3, AGW4, AGW14 and compliance point were sampled a further two times in June 2018 as presented in the attached tables. Ammonium remains elevated in these pumping wells at concentrations seen previously with a decrease observed in the compliance point. Sampling works of the background ammonium concentrations in the harbour waters are similar to or more elevated than those being detected at the compliance point.

3.3 Perimeter Wells & Downgradient Compliance Point Results Summary

In June 2019, THF was undetected in perimeter monitoring wells namely: AGW1(a), AGW2, and AGW18 to the west, AGW6 and AGW8 to the south.

To the north of the site, trace levels of THF were detected in AGW3 and AGW4 in the June 2019 quarterly monitoring round.

There was no detection of VOCs or alcohols in the downgradient compliance point similar to previous monitoring rounds.

3.4 Field Water Quality Readings

Field water quality readings of pH and temperature were within the normal ranges for what is usually detected as part of the IE groundwater monitoring programme on-site. The EC readings have increased in the downgradient monitoring wells AGW3 and AGW4 since operation of the pumping from these wells. Both of these wells are likely to be abstracting more brackish groundwater given their location near the coastline. In June 2019 the EC in

monitoring well AGW11a remained elevated. EC readings were also elevated in the new pumping wells AGW19 & AGW20 which are influenced by brackish groundwater influence in this area of the site. The low to negative redox readings and low dissolved oxygen concentrations indicate reducing groundwater conditions in the bedrock aquifer.

4. SUMMARY & CONCLUSIONS

The June 2019 quarterly monitoring round consisted of sampling 19 bedrock and six perched groundwater monitoring wells together with the compliance point on the foreshore to the north of the site and a duplicate, as agreed with the EPA. This includes monitoring of bedrock remediation wells (AGW19 & AGW20) in the Bioplant area. Recent investigations by GSK revealed that there were ammonia scrubbers in operation in the area west of AGW20 between 1995 and 2001 and therefore a likely source of historical ammonium contamination.

The remediation objectives in relation to solvent/alcohol contamination incident were to remediate the perched groundwater in the subsoils and underlying bedrock aquifer in the vicinity of the source area identified at Production Building 6. This groundwater pump & treat work has been successful in remediating the bedrock aquifer with no exceedance of the applicable RTCs in June 2019. There was a localised toluene exceedance in perched groundwater in well MW204.

Currently six of the remediation wells on-site are being used to assist in the remediation of elevated ammonium in the northern region of the site.

Following a meeting a EPA office in May 2019 it was agreed that the groundwater remediation programme in relation to ammonium going forward is to focus on long term pump & treat operation of the existing remediation wells on-site and discontinue the ORC advanced in-situ trial. A water level mass balance is being prepared to examine the effectiveness of the active pump & treat groundwater containment system operating on-site.

The 2018 sampling works of the background ammonium concentrations in the harbour waters are similar to or more elevated than the concentrations being detected at the compliance point.

Toluene was undetected in the bedrock monitoring wells in June 2019. There was elevated toluene detected in the localised overburden perched groundwater of MW204 as seen historically in this well.

Alcohols remain undetected in all bedrock aquifer wells and perched groundwater monitoring wells on site. The source of these alcohols is therefore remediated across the site.

In June 2019 there was no detection of THF above the RTC value. Currently there are slightly elevated THF concentrations in the bedrock monitoring wells AGW16 (0.617mg/l) and in the perched groundwater of MW204 (0.166mg/l). Both AGW16 and MW204 are showing an overall continuous decline from more elevated 2016 concentrations.

In June 2019 there was an anomalously high detection of THF (1.271mg/l) in the bedrock monitoring well AGW5 at a level which had not been detected in this well previously. Further sampling in June and July 2019 showed a declining trend. As this is an active pumping well further decrease is likely given that there is no known new source of THF in the area.

In the June 2019 monitoring round elevated ammonium concentrations were detected in most groundwater wells on-site apart from wells: AGW1(a), AGW6 and AGW8 which are located downgradient of the production area on-site.

Statistical analysis of the ammonium concentrations in the monitoring and remediation wells

on-site shows a largely stable to decreasing trend for ammonium across the site. The most elevated ammonium concentration on-site are present in the downgradient region of the Bioplant in remediation wells AGW19 & AGW20. This is thought to be related to a historical source in the area from former ammonia scrubbers in this area of the site.

5. RECOMMENDATIONS

- Continue with operation of groundwater remediation wells (AGW5, AGW14, AGW16, AGW17, AGW19 and AGW20) and monitor trends in the ammonium on-site via routine groundwater monitoring works.

- Implement measures to allow more accurate logging of flow rates and pumping regime from the six remediation wells on-site to ensure effective operation. Sustainable pumping rates as obtained from pumping tests on the abstraction wells should be maintained to avoid over abstraction and potential saline intrusion impacts to the bedrock aquifer.

- Complete the water mass balance of water input (recharge) and output (remediation wells) from the perched and bedrock aquifers beneath the GSK site to determine long term abstraction sustainability as agreed with the EPA.

- Undertake further groundwater monitoring of ammonium and electrical conductivity on the most contaminated remediation well AGW20 at both high and low tidal ranges to assess if the abstraction rate from this well can be increased without causing saline intrusion effects in this northern area of the site.

- Continue with quarterly monitoring of groundwater monitoring and remediation wells together with selected perched groundwater monitoring wells.

- Obtain a further groundwater sample from AGW5 in July and August 2019 to confirm the declining trend in THF in this monitoring well.

FIGURES


BALLYFOULOO
COBH
HAULBOWLINE ISLAND
R610
N
LEGEND
Site Location
SPIKE ISLAND
BALLINTAGGART
Pfizer
To Cork City
N28
Janssen Biologics
Ringaskiddy
PORT OF CORK
SHANBALLY
RINGASKIDDY
BARNAHELY
RAHEENS
Novartis
Cork Harbour
R613
GSK
COOLMORE
CURRAGHBINNY
R612
Crosshaven
0 0.2 0.4 0.6 0.8 1 2
Scale 1:25,000 (at A4 size)
Kilometres
Verdé
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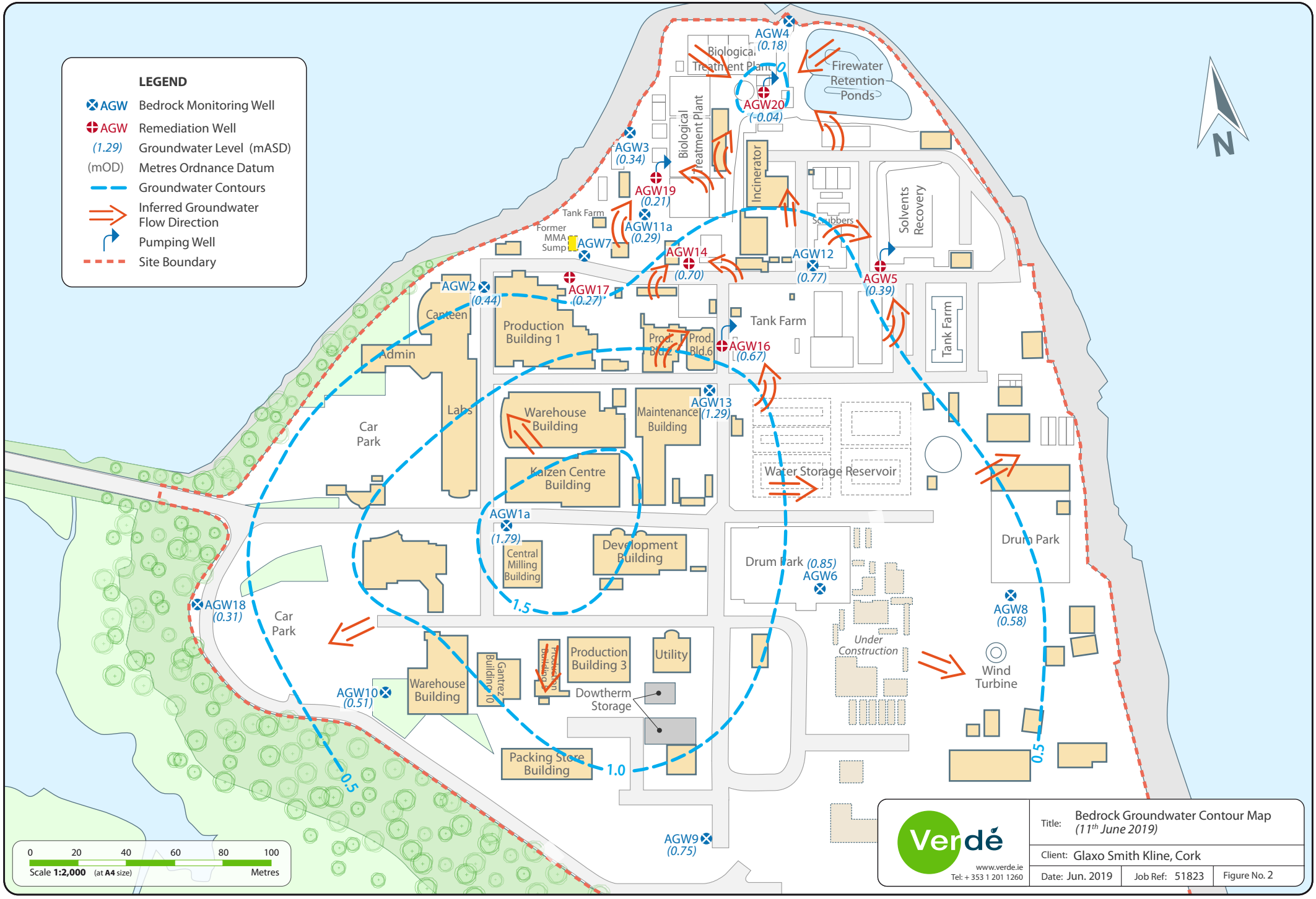
Tel: + 353 1 201 1260
Title: Site Location Map
Client: Glaxo Smith Kline, Cork
Date: June 2019
Job Ref: 50521
Figure No. 1


LEGEND
AGW Bedrock Monitoring Well
AGW Remediation Well
(1.29) Groundwater Level (mASD)
(mOD) Metres Ordnance Datum
Groundwater Contours
Inferred Groundwater Flow Direction
Pumping Well
Site Boundary
N
AGW4 (0.18)
AGW20 (-0.04)
AGW3 (0.34)
AGW19 (0.21)
AGW11a (0.29)
AGW7
AGW14 (0.70)
AGW12 (0.77)
AGW5 (0.39)
AGW2 (0.44)
AGW17 (0.27)
AGW16 (0.67)
AGW13 (1.29)
AGW1a (1.79)
AGW18 (0.31)
AGW10 (0.51)
AGW9 (0.75)
AGW6 (0.85)
AGW8 (0.58)
Biological Treatment Plant
Firewater Retention Ponds
Incinerator
Solvents Recovery
Scrubbers
Tank Farm
Former MMA Sump
Canteen
Admin
Labs
Car Park
Production Building 1
Prod. Bld.2
Prod. Bld.6
Warehouse Building
Maintenance Building
Kaizen Centre Building
Water Storage Reservoir
Central Milling Building
Development Building
Drum Park
Production Building 2
Gantrez Building 10
Production Building 3
Utility
Dowtherm Storage
Packing Store Building
Under Construction
Wind Turbine
0.5
1.0
1.5
0 20 40 60 80 100
Scale 1:2,000 (at A4 size) Metres
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Tel: + 353 1 201 1260
Title: Bedrock Groundwater Contour Map (11th June 2019)
Client: Glaxo Smith Kline, Cork
Date: Jun. 2019
Job Ref: 51823
Figure No. 2


LEGEND
AGW Bedrock Monitoring Well
AGW Pumping Wells
AGW Well Decommissioned
AGW Proposed Pumping Wells
BH/MW Boreholes/Monitoring Well (3 series)
BH/MW Boreholes/Monitoring Well (2 series)
Pumping Well
1.0 Groundwater Contour
Groundwater Flow Direction
(mASD) Metres above Site Datum
(1.32) Groundwater Level (mASD)
C.P.
N
AGW-4
BH-306
BH/MW-305 (0.85)
Biological Treatment Plant
Firewater Retention Ponds
AGW-20
Clarifier
Biological Treatment Plant
Biological Treatment Plant
Rebricking Facility
0.5
AGW-3
BH/MW-304 (0.33)
Pump House
AGW-19
BH/MW-303
BH302
Incinerator No.1
Solvent Recovery
Ammonia Chiller Building
AGW-11
Scrubbers
Former MMA Sump
BH/MW-301
Incinerator No.3
1.0
Chemical Storage Building
M.C.C. Building
P.S.A. Building
Tanker Bay
AGW-12
Electrical Building 1931
Electrical Building 1601
AGW-7
AGW-14
AGW-5
AGW-2
AGW-17
Deluge Control Building
Electrical Building 108
MW-227 (0.91)
Tank
Tank Farm
AGW-15
Canteen
Production Building 1
(1.32) MW-204
BH212
BH/MW217
Production Building 3
Production Building 2
AGW-16
Tank Farm
Waste Management Building
Compressor Room
MW-228 (0.82)
BH201
AGW-13
Water Storage Reservoir
Dispensary
Pallet Wash blg
Maintenance Building 105
1.0
0.5
0 10 20 30 40 50 60 70 80 90 100
Scale 1:1,250 (at A4 size)
Metres
Verdé
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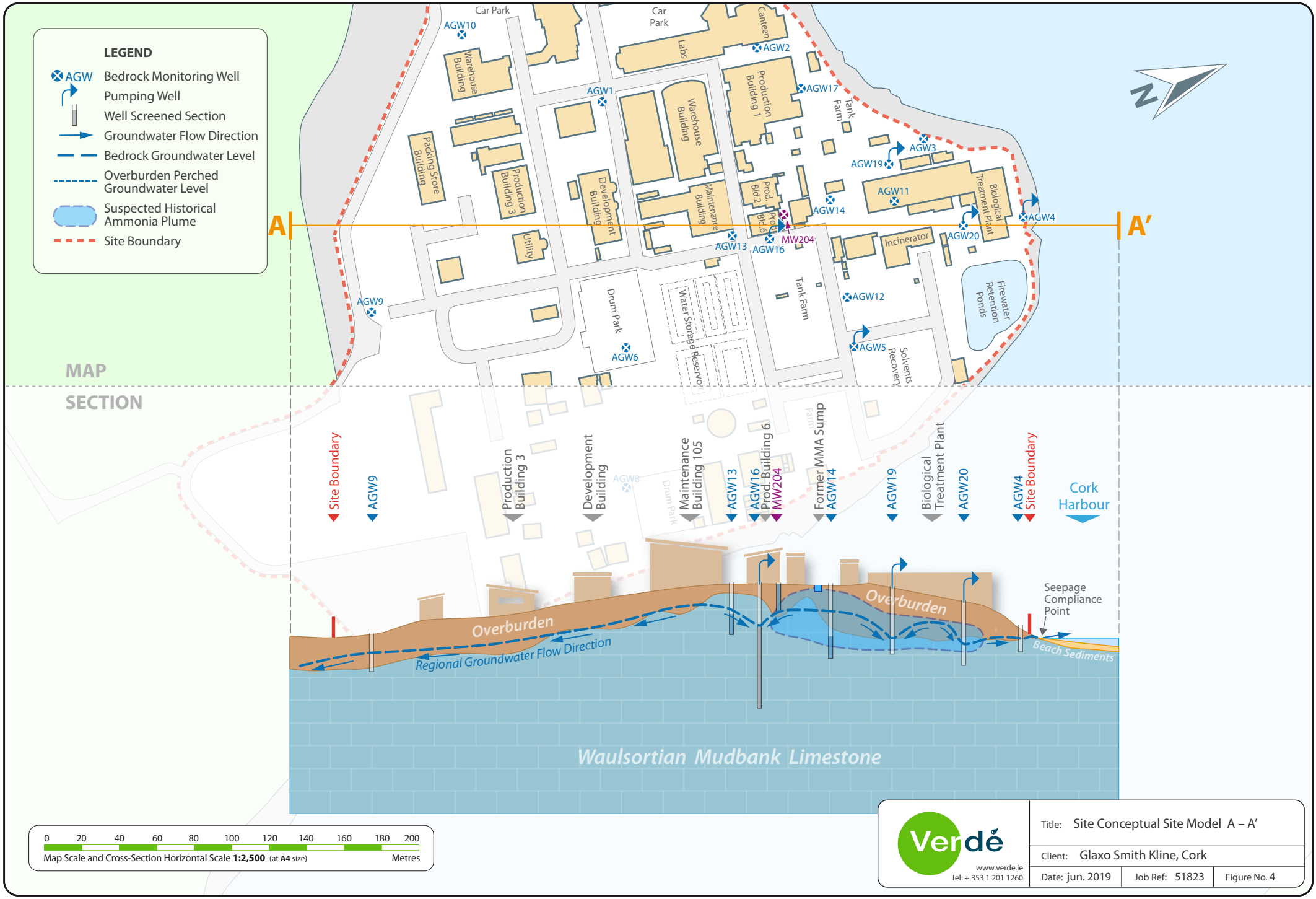
Title: Perched Groundwater Contour Map (11th June 2019)
Client: Glaxo Smith Kline, Cork
Date: Jun. 2019
Job Ref: 51823
Figure No. 3



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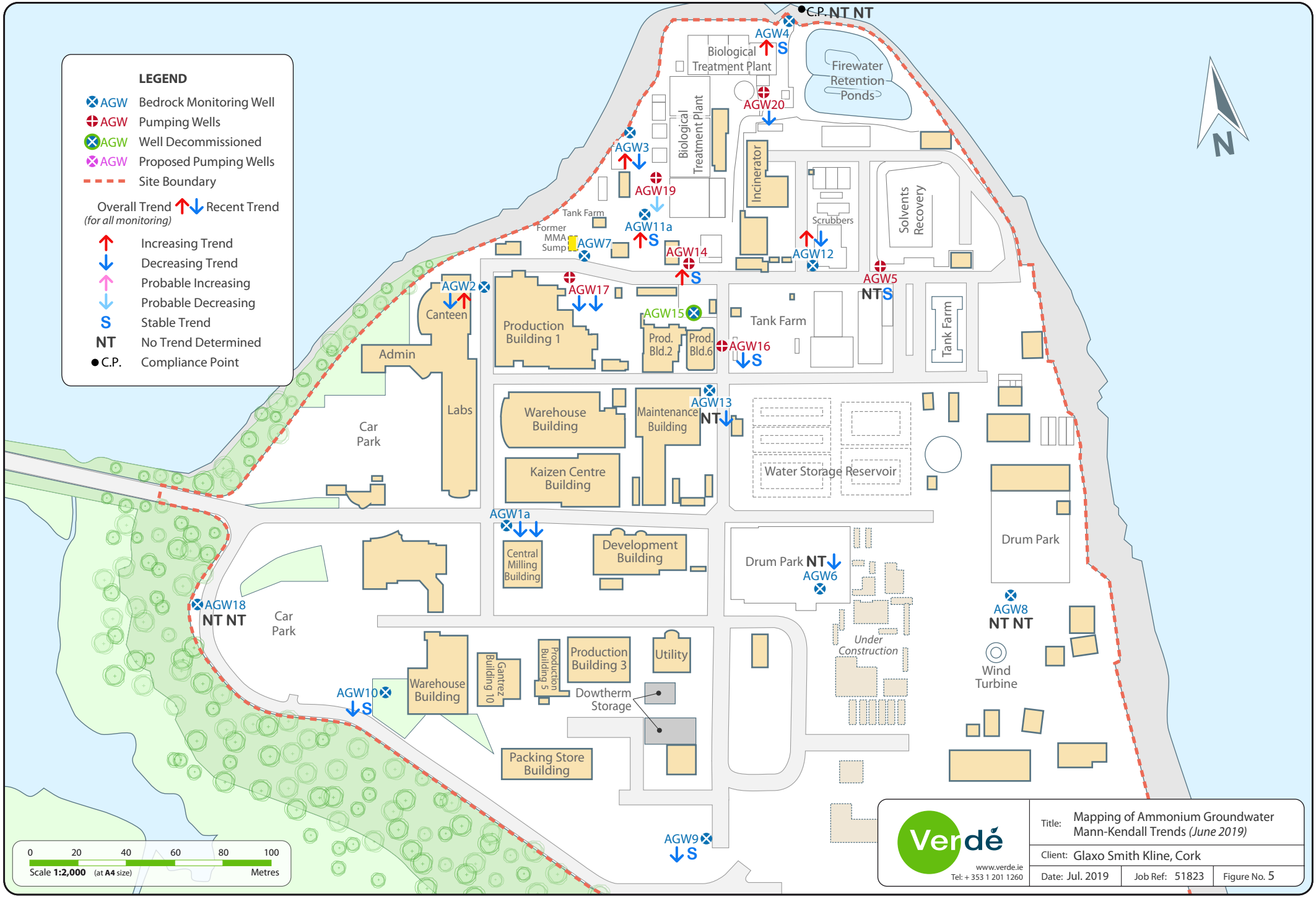
Title: Site Conceptual Site Model A – A'

Client: Glaxo Smith Kline, Cork

Date: jun. 2019 | Job Ref: 51823 | Figure No. 4


LEGEND
AGW Bedrock Monitoring Well
AGW Pumping Wells
AGW Well Decommissioned
AGW Proposed Pumping Wells
Site Boundary
Overall Trend ↑↓ Recent Trend
(for all monitoring)
Increasing Trend
Decreasing Trend
Probable Increasing
Probable Decreasing
S Stable Trend
NT No Trend Determined
C.P. Compliance Point
C.P. NT NT
AGW4 S
Biological Treatment Plant
Firewater Retention Ponds
AGW20
AGW3
AGW19
AGW11a S
Tank Farm
Former MMA Sump
AGW7
AGW14 S
Incinerator
Scrubbers
AGW12
Solvents Recovery
AGW5 NT S
AGW2
Canteen
AGW17
Production Building 1
AGW15
Prod. Bld.2
Prod. Bld.6
AGW16 S
Tank Farm
Admin
Labs
Car Park
Warehouse Building
Maintenance Building
AGW13 NT
Kaizen Centre Building
Water Storage Reservoir
AGW1a
Central Milling Building
Development Building
Drum Park NT
AGW6
Drum Park
AGW18 NT NT
Car Park
AGW8 NT NT
Under Construction
Wind Turbine
AGW10 S
Warehouse Building
Gantrez Building 10
Production Building 5
Production Building 3
Utility
Dowtherm Storage
Packing Store Building
AGW9 S
N
0 20 40 60 80 100
Scale 1:2,000 (at A4 size) Metres
Verdé
www.verde.ie
Tel: + 353 1 201 1260
Title: Mapping of Ammonium Groundwater Mann-Kendall Trends (June 2019)
Client: Glaxo Smith Kline, Cork
Date: Jul. 2019
Job Ref: 51823
Figure No. 5

TABLES

Table 1: GSK - Additional Groundwater and Surface Water Sample Analysis Inventory

Sampling Date	Groundwater Well Name	VOCs + TICs	SVOCs + TICs	Alcohols	THF	Full IED Suite	Ammonia	Phenols by HPLC	Metals & Ions	Hydrocarbons	Carbon Disulphide	Faecal Coliforms & E.Coli
6th January 16	AGW13	x	x									
25th January	AGW13	x										
15th February	AGW13	x										
24th February	AGW13	x		x								
24th February	AGW5 & 14						x					
29th February	AGW1, 2, 5, 6, 7, 12, 13, 14	x		x								
29th February	AGW5 & 14						x					
15th March	AGW1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	x	x	x		x	x					
22nd March	AGW1, 13, 14	x	x	x								
22nd March	AGW5, AGW13 & 14						x					
31st March	AGW1, 13, 14, Sump, Seep1		x	x			x					
31st March	Seep 2, Outfall, Harbour						x					
1st April	MW208 (Perched Gw)	x	x	x			x					
7th April	AGW1, 13, 14 (Perched Gw MW204)	x	x	x			x					
14th April	AGW1, 13, 14	x	x	x			x					
21st April	AGW1, 14 (Perched Gw MW215, 217)	x	x	x			x					
21st April	AGW13 (Perched Gw MW215, 217)							x				
28th April	AGW1, 13, 14, 15 (AGW5 ammonia)	x	x	x			x	x				
4th May	AGW1, 13, 14 (AGW5, 14 ammonia)	x	x	x			x	x				
4th May	AGW16, 17	x	x	x			x	x	x	x		
13th May	AGW1, 13, 14 (ammonia in AGW14 only)	x	x	x			x	x				
18th May	Full monitoring round of 4 perched and 18 bedrock wells	x	x	x	x		x	x				
19th May		x	x	x	x		x	x				
26th May	AGW1, 13, 14 (ammonia in AGW14 only)	x	x	x	x		x	x				
2nd June	AGW1, 13, 14 (ammonia in AGW14 only)	x	x	x	x		x	x				
10th June	AGW1, 13, 14 (ammonia in AGW14 only)	x	x	x	x		x	x				
15th June	AGW1, 13, 14 (ammonia in AGW14 only)	x	x	x	x		x	x				
23th June	AGW1, 13, 14, (ammonia in AGW14 only)	x	x	x	x		x	x				
24th June	AGW16	x	x	x	x		x	x				
1st July	AGW1, 13, 14, 16 (ammonia in AGW14 only)	x	x	x	x		x	x				
7th July	AGW1, 13, 16, (AGW9 TPH only)	x		x	x			x		x		
14th July	AGW1, 13, 14, 16, (ammonia in AGW14 only)	x		x	x		x	x				
24th July	AGW1, 13, 14, 16 (ammonia in AGW14 only)	x		x	x		x	x				
27th July	Full monitoring round of 2 perched, 17 bedrock wells and seepage point + duplicate	x	x	x	x		x	x				
28th July		x	x	x	x		x	x				
5th August	AGW1, 13, 14, 16	x		x	x			x				
11th August	AGW1, 13, 14, 16	x		x	x			x				
18th August	AGW1, 13, 14, 16	x		x	x			x			x	
25th August	Full monitoring round of 4 perched, 17 bedrock wells and seepage point + duplicate	x		x	x			x				
26th August 16		x		x	x			x				

Table 1: GSK - Additional Groundwater and Surface Water Sample Analysis Inventory

Sampling Date	Groundwater Well Name	VOCs + TICs	SVOCs + TICs	Alcohols	THF	Full IED Suite	Ammonia	Phenols by HPLC	Metals & Ions	Hydrocarbons	Carbon Disulphide	Faecal Coliforms & E.Coli
2nd September	AGW1, 13, 14, 16	x		x	x			x				
9th September	AGW1, 13, 14, 16	x		x	x			x				
16th September	AGW1, 13, 14, 16	x		x	x			x				
23rd September	AGW1, 13, 14, 16	x		x	x			x				
29th September	Full monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate	x	x	x	x	x	x	x				x
13th October	Foul Drain near AGW13	x		x	x							
13th October	AGW1, 13, 14, 16 (Bacti AGW13, 16)	x		x	x			x				x
27th October	Full monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
27th October	Foul Drain near AGW13	x		x	x							
10th November	AGW1, 13, 14, 16	x		x	x			x				
23rd November	Full monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
14th December	Full monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate	x		x	x		x	x				
16th January 2017	Full monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
15th February 2017	Full monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
14th March 2017	Full monitoring round of 3 perched, 17 bedrock wells and seepage point +	x	x	x	x	x	x	x				x
19th April 2017	Reduced monitoring round of 1 perched & 3 bedrock wells	x		x	x		x	x				
22nd May 2017	Reduced monitoring round of 1 perched, 3 bedrock wells and seepage point + duplicate	x		x	x		x	x				
6th/7th June 2017	Quarterly monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
10th July 2017	Reduced monitoring round of 1 perched, 3 bedrock wells and seepage point + duplicate	x		x	x		x	x				
14th August 2017	Reduced monitoring round of 1 perched, 3 bedrock wells and seepage point + duplicate	x		x	x		x	x				
12th/14th September 2017	Quarterly monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate	x		x	x		x	x				
24th October 2017	Reduced monitoring round of 1 perched, 3 bedrock wells and seepage point + duplicate	x		x	x		x	x				
15th/20th November 2017	Quarterly monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate + (TPH AGW4 & Bacti AGW10)	x		x	x		x	x		x		x
7th March 2018	Quarterly monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate	x		x	x		x	x		x		
5th/ 6th June 2018	Quarterly monitoring round of 3 perched, 16 bedrock wells and seepage point + duplicate	x		x	x		x	x		x		
18th June 2018	Weekly monitoring of AGW3, 4, 14 and compliance point			x	x		x					
28th June 2018	Weekly monitoring of AGW3, 4, 14 and compliance point			x	x		x					
28th September 2018	Quarterly monitoring round of 3 perched, 17 bedrock wells and seepage point + duplicate	x		x	x		x	x				
3rd/4th December 2018	Quarterly monitoring round of 6 perched, 19 bedrock wells and seepage point + duplicate	x		x	x		x	x				
12th/13th March 2019	Quarterly monitoring round of 6 perched, 19 bedrock wells and seepage point + duplicate	x		x	x		x	x				
11th June 2019	Quarterly monitoring round of 6 perched, 19 bedrock wells and seepage point + duplicate	x		x	x		x	x				
21st June 2019	AGW5 - Repeat sample for THF				x							
10th July 2019	AGW5 - Repeat sample for THF				x							

Table 2: Additional Groundwater Analytical Results for GSK Well AGW1 (January 2016 to June 2019)

	Groundwater Results (ug/l)																							RTC	IGV	TSV	Gw Regs.
	AGW1																										
VOC (ug/l)	29/02/16	15/03/16	22/03/16	31/03/16	07/04/16	14/04/16	21/04/16	28/04/16	04/05/16	13/05/16	18/05/16	26/05/16	02/06/16	10/06/16	15/06/16	23/06/16	01/07/16	07/07/16	14/07/16	21/07/16	27/07/16	05/08/16	11/08/16				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	<	0.1	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	30	30	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	***1,623***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	12	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	**14**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
TICs																											
Tetrahydrofuran (THF)	<	*3598*	*3581*	<	*1777*	*1568*	*1579*	*1530*	*1028*	*1156*	*1286*	*1096*	*1109*	<	*1391*	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (ug/l)																											
2-Methylphenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-		<			-	-	-	-
4-Methylphenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-		<			-	-	-	-
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-		<			20,600	0.5	-	-
Phenols (mg/l)																											
Phenol								<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC								<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (ug/l)																											
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	441	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)											*16205*	*12957*	*17899*	*21332*	*19184*	*17310*	*11867*	*11334*	*9424*	*10327*	*9564*	*8254*	*7329*	9,310	-	-	115
Field Water Quality Readings																											
pH	7.49	7.59	7.75	7.67	8.08	7.79	7.72	8.2	8.64	7.33	7.94	-	8.05	7.88	7.3	7.55	8.16	7.7	7.3	7.74	8.21	8.24	7.41	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	13.3	13.1	13.2	14	13	-	12.9	12.7	12.9	13.3	13.1	-	13	14.2	13.4	14.1	13.7	16	13.4	14.6	16.5	15.3	14.7	-	25	-	-
EC (uS/cm)	714	503	514	663	515	664	571	570	564	596	503	-	491	525	501	571	550	545	501	501	581	488	582	-	1000	2500	800-1875
DO (mg/l)	-	-	-	4.38	-	-	7.52	6.22	9.71	3.63	-	-	9.42	-	1.62	-	-	2.29	1.62	-	-	-	-	-	-	-	-
Redox (mV)	-	-40.5	-62	-58	-20	-	-38	-80	-72.6	105	42	-	20	117	501	993	-33	-87	-47	-42	-90.2	-13.5	-24	-	-	-	-
Observations	Cloudy, grey, slight chemical	Brown silty water, no odour	Brown silty water, no odour	Brown silty water, no odour	Brown silty water, no odour	Brown silty, slight organic odour	Brown silty, slight organic odour	Brown silty, slight organic odour	Brown silty, slight chemical/ organic odour	Brown silty water, no odour	Brown silty water, no odour	Brown silty water, no odour	Brown silty water, no odour	Cloudy light brown/ slight solvent odour	Clear/slight organic odour	Clear, mild organic odour	Clear, no odour	Clear, mild organic & chemical odour	Clear, slight organic odour	Clear, no odour	Clear, no odour	Clear, slight organic odour	Clear, slight organic/ chemical odour	N/A	N/A	N/A	N/A

	Groundwater Results (ug/l)																							RTC	IGV	TSV	Gw Regs.
	AGW1																										
VOC (ug/l)	18/08/16	26/08/16	02/09/16	09/09/16	16/09/16	23/09/16	28/09/16	13/10/16	27/10/16	10/11/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	19/04/17	22/05/17	07/06/17	10/07/17	14/08/17	14/09/17	24/10/17	20/11/17				
Methyl Tertiary Butyl Ether (MTBE)	6.1	<	<	0.2	1.2	0.3	0.2	<	0.2	<	<	<	0.2	<	1.7	<	<	<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
TICs (ug/l)																											
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Benzene, pentafluoro-	<	<	<	<	810	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<				
SVOCs (ug/l)																											
2-Methylphenol							<								<									-	-	-	-
4-Methylphenol							<								<									-	-	-	-
Phenol							<								<									20,600	0.5	-	-
Phenols (mg/l)																											
Phenol	0.01	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (ug/l)																											
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*5496*	*3493*	*1494*	*250*	*1781*	*1292*	*724*	*528*	*157*	63	<	7	7	5	2	34	<	<	86	<	<	<	<	9,310	-	-	115
Field Water Quality Readings																											
pH	7.93	8.65	8.26	8.51	8.33	7.08	7.38	7.17	7.44	7.57	8.62	8.48	7.22	7.62	6.85	7.55	7.73	7.9	7.24	8.06	7.34	7.48	7.47	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.5	15.1	14.9	14.9	15.1	15	15	14.7	14.8	13.7	11.2	13.4	14.1	13.8	14.1	13.3	13.1	13.2	14.8	14.7	14	14.4	14.4	-	25	-	-
EC (uS/cm)	422	375.3	404	623	563	615	576	498	538	468	188	415.6	690	633	479.9	754	632	596	361	388	279	620	239	-	1000	2500	800-1875
DO (mg/l)	-	-	-	1.83	3.38	-	7.4	3.95	4.9	8.19	11.9	6.63	0.93	1.37	1.36	5.07	4.99	4.43	7.44	5.12	5.05	6.63	6.63	-	-	-	-
Redox (mV)	40.1	-16.9	9.3	-12.5	-109	-	-66	-64	-81	28	-25	28.5	-44.5	-67	34.1	32.8	-154.9	-64.8	59.0	102.0	-33.0	146.0	-8.7	-	-	-	-
Observations	Clear, mild organic odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Silty light brown, no odour	Light brown, no odour	Cloudy white, very slight chemical odour	Clear, very slight chemical odour	Clear, No odour	Clear, No odour	Cloudy, grey/ brown, no odour	Grey/ brown, no odour	Grey/ brown tint, slight organic odour	Grey/ brown tint, no odour	Silty brown, no odour	Silty brown, slight organic odour	Brown tint, no odour	Brown tint, no odour	N/A	N/A	N/A	N/A

	Groundwater Results (ug/l)						RTC	IGV	TSV	Gw Regs.
	AGW1		AGW1a							
VOC (ug/l)	07/03/18	06/06/18	28/09/18	03/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	3	<	<	<	<	<	-	-	-	-
TICs (ug/l)										
Tetrahydrofuran (THF)	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	-	-	-	-
Benzene, pentafluoro-	<	<	<	<	<	<				
SVOCs (ug/l)										
2-Methylphenol	<		<				-	-	-	-
4-Methylphenol	<		<				-	-	-	-
Phenol	<		<				20,600	0.5	-	-
Phenols (mg/l)										
Phenol	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	-	-	-	-
Alcohols (ug/l)										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	<	<	<	<	<	<	9,310	-	-	115
Field Water Quality Readings										
pH	7.75	8.29	8.41	7.86	7.59	7.5	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	15	13	14.2	14	12.5	14.9	-	25	-	-
EC (uS/cm)	591	432	939	424.5	549	562	-	1000	2500	800-1875
DO (mg/l)	5.66	5.87	3.52	7.83	7.6	-	-	-	-	-
Redox (mV)	38.3	-15.1	71.4	-65.2	-77.8		-	-	-	-
Observations	Brown tint, no odour	Brown, slightly silty, no odour	Brown, very silty, no odour	Brown, very silty, no odour	Brown, silty, no odour	Brown, silty, mild organic odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value

TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value

Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations

Results are marked in brown where they exceeded the RTC

Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

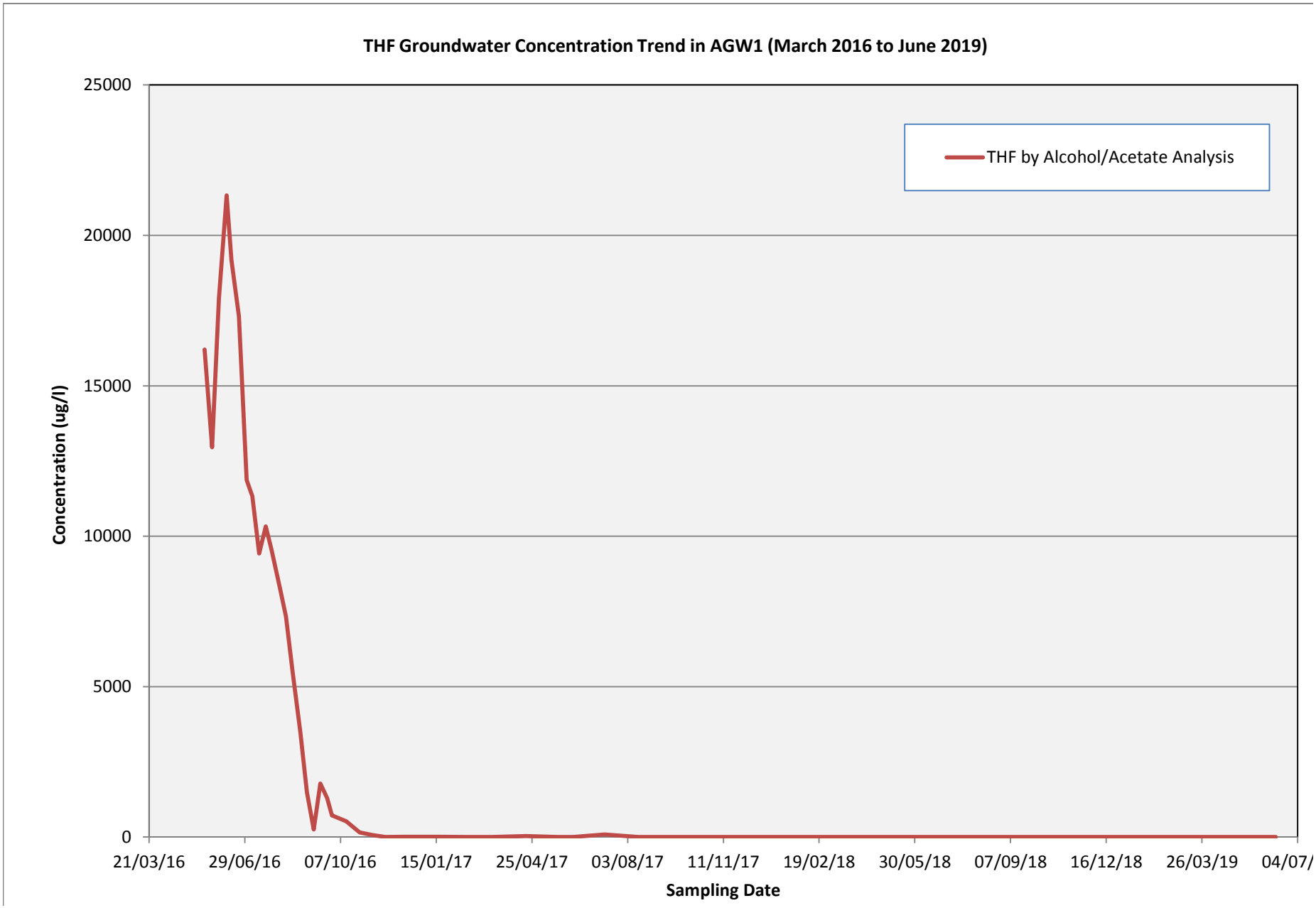

THF Groundwater Concentration Trend in AGW1 (March 2016 to June 2019)
THF by Alcohol/Acetate Analysis
Concentration (ug/l)
25000
20000
15000
10000
5000
0
21/03/16
29/06/16
07/10/16
15/01/17
25/04/17
03/08/17
11/11/17
19/02/18
30/05/18
07/09/18
16/12/18
26/03/19
04/07/
Sampling Date

Table 3: Additional Groundwater Analytical Results for GSK Wells AGW2 and AGW3 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																						RTC	IGV	TSV	Gw Regs.
	AGW2			Dup	AGW2																					
	29/02/16	15/03/16	18/05/16		27/07/16	25/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02//17	14/03/17	07/06/17	12/09/17	20/11/17	07/03/18	06/06/18	28/09/18	03/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	0.2	0.3	<	0.6	<	<	<	<	<	<	<	<	<	2.7	3.3	<	2.9	<	0.9	1.4	3.6	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol		<	<	<	<								<		<		<		<		<		-	-	-	-
4-Methylphenol		<	<	<	<								<		<		<		<		<		-	-	-	-
Phenol		<	<	<	<								<		<		<		<		<		20,600	0.5	-	-
Phenols (mg/l)																										
Phenol			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		20.6	0.0005	-	-
Catechol			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Total Speciated Phenols HPLC			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		1,000,000	-	-	-
Ethyl Alcohol (Ethanol)		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		1,000,000	-	-	-
Isopropyl Alcohol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		1,000,000	-	-	-
n-Propyl Alcohol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Tetrahydrofuran (THF)			30	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		9,310	-	-	115
Field Water Quality Readings																										
pH	6.89	7.15	7.67		7.89	8.48	7.43	6.81	7.73	8.35	7.62	7.58	7	7.28	6.5	6.68	7.28	7.82	8.49	7.28	6.89	7	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	15.9	12.6	14.6		15.8	15.9	15.7	15	12.7	14.3	13.7	13.2	13.7	13.9	14.4	14.8	12.4	14.2	14.7	14.2	13.1	15.3	-	25	-	-
EC (µS/cm)	384.9	255	314		400.6	541	433	460	483	342.9	382	566	337.2	423.6	664	1080	369.1	520	1212.1	710	586	1462	-	1000	2500	800-1875
DO (mg/l)	-	-	8.57		-	-	8.23	3.1	3.49	5.63	2.68	3.14	2.18	2.29	-102	3.53	3.93	3.45	3.9	3.66	2.89	-	-	-	-	-
Redox (mV)	-	78	-65		-101.1	-88.1	-100	-85	-68	-58.5	-62.3	-69.6	-46.3	-105	3.27	-81	-2.3	-34.3	85.4	-84.3	-42.2	-	-	-	-	-
Observations	Cloudy, black, no odour	Clear, slight organic odour	Clear, slight organic odour		Clear, slight organic	Clear water, slight organic odour	Clear water, slight organic odour	Grey tint, some silt, no odour	Grey tint, some silt, slight organic	Grey tint, some silt, some silt, slight organic odour	Grey tint, some silt, slight organic odour	Grey tint, some silt, some silt, slight organic odour	Grey tint, some silt, some silt, slight organic odour	Grey tint, some silt, some silt, slight organic odour	Grey tint, slight organic odour	Grey tint, moderate organic odour	Grey tint, slight organic odour	Grey tint, mild organic/chemical odour	Grey tint, moderate organic odour	Grey tint, mild organic/chemical odour	Grey/brown tint, mild organic odour	Grey tint, cloudy , moderate organic/chemical odour	N/A	N/A	N/A	N/A

	Groundwater Results (ug/l)																						RTC	IGV	TSV	Gw Regs.
	AGW3																									
	15/03/16	18/05/16	27/07/16	25/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	12/09/17	20/11/17	07/03/18	05/06/18	18/06/18	28/06/18	28/09/18	03/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	2	<	4.7	5.9	4.2	1.6	2.9	2	2.3	1.6	2.3	2.6	2.8	3.7	1.9	2.2			1.7	1.4	1.2	1.9	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	2.0	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	1.2	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	3	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol	<	<	<								<		<		<				<		<		-	-	-	-
4-Methylphenol	<	<	<								<		<		<				<		<		-	-	-	-
Phenol	<	<	<								<		<		<				<		<		20,600	0.5	-	-
Phenols (mg/l)																										
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	20.6	0.0005	-	-
Catechol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	1322	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		<	<	<	<	11	<	<	<	13	<	6	<	11	<	6	<	5	<	3	3	2	9,310	-	-	115
Field Water Quality Readings																										
pH	7.02	7.04	7.52	8.04	7.5	6.63	7.38	7.55	6.82	6.64	6.29	7.13	6.48	6.87	7.43	7.71	7.47	7.75	7.89	7.71	6.49	6.52	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	12.3	13.4	15.7	15.4	14	14.1	10.7	14.4	14.2	13.8	15.4	14.6	15	14.2	11.9	14.6	15.1	15.3	14.7	14.6	11.7	15.4	-	25	-	-
EC (µS/cm)	***2195***	***2199***	***2860***	***2962***	***3820***	***3384***	***3713***	***4849***	***6493***	***7293***	***7171***	***8906***	***6524***	***10406***	***4607***	***10091***	***8626***	***12530***	***18756***	***10091***	***14627***	***8209***	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	4.94	1.7	16.22	10.38	1.12	0.52	1.93	3.33	-77	1.89	4.44	3.81	3.8	3.59	1.83	3.81	4.16	6.53	-	-	-	-
Redox (mV)	-98	-73	-89.9	-86.4	-80	-83	-20	-71.5	-69.8	-83.1	-18.7	-102	3.34	182	19.5	98.6	89	102	169.3	98.6	-3.1	94.4	-	-	-	-
Observations	Clear, slight chemical odour	Clear, slight organic odour	Slightly cloudy, slight chemical odour	Slightly cloudy, slight chemical odour	Clear, moderate organic odour (8.5l/min)	Clear, moderate organic odour (8.5l/min)	Cloudy, moderate organic (not pumping)	Slightly cloudy, moderate organic odour	Slightly cloudy, slight organic odour	Clear, Slight organic odour	Clear, Slight organic odour	Clear, Slight organic odour	Clear, slight organic odour, pumping 6.9l/min	Clear, slight organic odour, pumping 6.5l/min	Clear, moderate chemical odour	Clear, moderate, organic/chemical odour	Clear, slight chemical odour	Clear, moderate chemical odour	Clear, moderate organic odour	Clear, moderate organic odour	Grey tint, moderate organic/chemical odour	Clear, slight fizz, no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value

TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value

Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations

Results are marked in brown where they exceeded the RTC

Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 4: Additional Groundwater Analytical Results for GSK Wells AGW4 and AGW5 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																						RTC	IGV	TSV	Gw Regs.
	AGW4																									
	15/03/16	18/05/16	27/07/16	25/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	14/09/17	15/11/17	07/03/18	06/06/18	18/06/18	28/06/18	28/09/18	03/12/18	12/03/19	11/06/19	29/02/16				
Methyl Tertiary Butyl Ether (MTBE)	7.9	<	7.2	8.8	10.8	13.4	5.9	5.8	6.9	5.6	8.6	8.6	1.2	21.5	10.9	7.2			16.5	20	0.3	14.4	3.4	-	30	-	10
Benzene	<	<	<	<	<	0.5	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol		<	<								<		<		<				<		<			-	-	-	-
4-Methylphenol		<	<								<		<		<				<		<			-	-	-	-
Phenol		<	<								<		<		<				<		<			20,600	0.5	-	-
Phenols (mg/l)																										
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<		20.6	0.0005	-	-
Catechol		<	<	<	<	<	<	<	0.01	<	0.02	0.01	<	<	<	<			<	<	<	<		-	-	-	-
Total Speciated Phenols HPLC		<	<	<	<	0.01	<	<	<	<	<	<	<	<	<	<			<	<	<	<		-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-	-
Tetrahydrofuran (THF)		22	<	<	<	<	<	<	<	<	<	<	16	<	<	52	<	<	<	<	4	2		9,310	-	-	115
Field Water Quality Readings																										
pH	7.23	6.81	7.7	8.01	7.19	6.5	7.41	7.39	6.9	6.84	5.99	7.5	7.04	7.11	7.53	7.77	8.4	8.6	7.7	6.97	7.16	6.79	7.29	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	12.4	12.8	14.9	15.7	14.8	14.9	11.2	14.7	15	14.7	14.9	14.9	16.8	14.9	13.3	14.2	15	15.9	15.2	13.8	11.15	13.9	12.8	-	25	-	-
EC (µS/cm)	***1901***	***5920***	***3100***	***2666***	***2599***	***3186***	***2885***	***3725***	***2104***	***3945***	**1850**	**5873**	**5494**	**4082**	**7512**	**7103**	**4260**	**6142**	**8049**	**7614**	**9324**	**19935**	919	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	5.06	5.0	8.7	8.12	1.46	5.59	0.36	1.77	-150	1.74	4.14	2.58	2.26	1.56	1.84	2.92	8.91	7.48	-	-	-	-	-
Redox (mV)	-112	-18	-108.9	-83.2	-98	-63	-37	-62	-54	-52.8	-21.4	-115	0.67	-100	-28.6	115.1	10.8	130	135.4	142.3	138.4	181.3	-	-	-	-	-
Observations	Clear, slight chemical odour	Clear, slight chemical odour	Clear, slight chemical	Clear, slight chemical odour	Clear, moderate organic odour	Clear, moderate organic odour (8.5l/min)	Clear, moderate organic odour (8l/min)	Clear, moderate organic odour	Clear, strong/moderate organic odour	Clear, Strong/moderate chemical odour	Clear, Moderate chemical odour	Clear, Moderate chemical odour	Black tint, brackish odour, Pump not operating	Clear, brackish odour	Clear with abundance of organic matter, brackish odour	Clear, moderate organic odour	Clear, moderate chemcial/ organic odour	Clear, mild organic odour	Clear, brackish odour	Clear, mild organic odour	Clear, moderate organic/chemical odour	Clear, brackish odour	Clear, slight organic odour	N/A	N/A	N/A	N/A

VOC (µg/l)	Groundwater Results (ug/l)																						RTC	IGV	TSV	Gw Regs.
	AGW5																									
	15/03/16	18/05/16	27/07/16	25/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	12/09/17	15/11/17	07/03/18	05/06/18	28/09/18	03/12/18	12/03/19	11/06/19	19/06/19	10/07/19				
Methyl Tertiary Butyl Ether (MTBE)	3.9	<	5.2	5.2	2	1.6	1.5	1.5	1.5	0.7	1.2	1.2	2.4	8.7	1.5	4.6	3.4	3.6	2.2	6			-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	10	-	-
O-Xylene	0.9	<	1.1	0.7	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			13,900	10	-	15
2-Chlorotoluene	16	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	6	<	5			-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol	<	<	<								<				<		<		<				-	-	-	-
4-Methylphenol	<	<	<								<				<		<		<				-	-	-	-
Phenol	<	<	<								<				<		<		<				20,600	0.5	-	-
Phenols (mg/l)																										
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			20.6	0.0005	-	-
Catechol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Total Speciated Phenols HPLC		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		*404*	*414*	*131*	*168*	<	<	<	<	<	<	<	37	3	16	*680*	*73*	<	<	*1271*	*1006*	*969*	9,310	-	-	115
Field Water Quality Readings																										
pH	7.29	7.48	7.26	7.47	7.76	6.68	7.46	8	7.01	6.9	6.4	7.26	6.68	6.92	7.25	6.81	7.9	7.25	6.71	7.28		7.72	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	11.6	15.4	15.3	15.6	13.8	15.6	13.8	13.1	13.6	13.8	14.1	15.3	15.2	13.9	11.2	16.2	15.3	14.6	12.8	17		13.2	-	25	-	-
EC (µS/cm)	518		**1130**	***2148***	***2919***	***3063***	***3630***	***2842***	***4418***	***4357***	**2268**	**4492**	**1942**	**1575**	651	**1173**	**5955**	**3214**	**761**	**1993**		**1112**	-	1000	2500	800-1875
DO (mg/l)	-	6.71	-	-	4.76	3.31	3.98	6.87	4.31	4.93	1.27	1.77	-115	1.9	3.45	1.63	2.62	2.17	2.12	2.04		3.89	-	-	-	-
Redox (mV)	-114	31	-115.9	-92.7	-70	-38	-65	-70.1	-89.4	-91.5	-26.9	-113.8	1.67	-82	34.2	145.2	126.9	-79.1	103.4	-44.3		-52	-	-	-	-
Observations	Clear, very mild organic odour	Clear, very mild organic odour	Clear, very mild organic odour	Clear, very mild organic odour	Clear, very mild organic odour (12l/min)	Clear, very mild organic odour (12.5 l/min)	Clear, very mod organic odour (not pumping)	Clear, moderate organic odour	Clear, moderate organic odour	Clear, Moderate organic odour	Clear, Slight organic odour	Clear, Moderate organic odour	Clear, mild organic odour, not pumping	Clear, mild organic odour	Clear, moderate organic/chemical odour	Clear, mild organic/chemcial odour	Clear, moderate organic/chemical odour	Clear, mild organic/chemcial odour	Clear, moderate organic odour	Clear, moderate organic/chemical odour		Clear, moderate organic odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value

TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value

Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations

Results are marked in brown where they exceeded the RTC

Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 5: Additional Groundwater Analytical Results for GSK Well AGW6 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																					RTC	IGV	TSV	Gw Regs.
	AGW6																								
	29/02/16	15/03/16	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	07/06/17	14/09/17	20/11/17	07/03/18	06/06/18	28/09/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs																									
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																									
2-Methylphenol	-	<	<	<								<		<		<		<		<		-	-	-	-
4-Methylphenol	-	<	<	<								<		<		<		<		<		-	-	-	-
Phenol	-	<	<	<								<		<		<		<		<		20,600	0.5	-	-
Phenols (mg/l)																									
Phenol			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																									
Methyl Alcohol (Methanol)	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Field Water Quality Readings																									
pH	8.05	8.25	7.92	8.5	8.53	8.05	7.71	8.19	8.33	8.07	8.12	7.18	8.26	8.06	8.61	8.27	8.73	8.96	7.39	7.84	8.10	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	12.8	12.8	13.2	14	13.5	14.7	13.7	13.3	12.6	13.2	13	13.4	13	13.6	13.9	12.7	15.1	13.6	12.4	11.9	14.7	-	25	-	-
EC (µS/cm)	***450***	445	400	429.2	289	**1486**	446	488	495	419	401	338	385	222	342	272.7	269.3	389.6	396.6	264	572	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	-	7.4	8.03	8.71	9.58	6.01	7.29	7.67	5.64	2.2	5.27	7.25	6.54	6.12	8.37	6.71	6.42	-	-	-	-
Redox (mV)	-	-94	19	52.2	44.2	18.6	-15.6	-13	-19.9	20.1	-29	63	-6.7	5.64	41	70.7	59.3	51.2	93	-19.9	-16.7	-	-	-	-
Observations	Cloudy, orange-brown, no odour	Cloudy light brown, no odour	Cloudy light brown, no odour	Cloudy, light brown, No odour	Cloudy, light brown, no odour	Brown silty, no odour.	Brown silty, no odour.	Brown silty, no odour.	Cloudy, reddish brown, no odour	Cloudy, reddish/ brown, no odour	Cloudy, Reddish/ brown, No odour	Cloudy, Reddish/ brown, No odour	Cloudy, Reddish/ brown, No odour	Cloudy light red/brown, no odour	Cloudy light red/brown, no odour	Cloudy borown colour and no odour	Brown, silty with no odour	Cloudy brown colour and no odour	Cloudy brown colour and no odour	Cloudy brown colour and no odour	Cloudy brown colour, slightly silty, very slight organic odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 6: Additional Groundwater Analytical Results for GSK Well AGW8 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																		RTC	IGV	TSV	Gw Regs.
	AGW8																					
	15/03/16	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	07/06/17	14/09/17	20/11/17	07/03/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs																						
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																						
2-Methylphenol	<	<	<								<		<		<		<	<	-	-	-	-
4-Methylphenol	<	<	<								<		<		<		<	<	-	-	-	-
Phenol	<	<	<								<		<		<		<	<	20,600	0.5	-	-
Phenols (mg/l)																						
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																						
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Field Water Quality Readings																						
pH	7.57	7.92	8.25	8.49	8.36	7.51	7.35	8.66	7.86	7.2	7.07	8.04	7.81	7.32	8.13	8.06	7.66	8.13	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	11.8	12.8	14.4	14.2	14.4	13.5	11.3	13.2	12.7	12.4	17.7	12.9	13.5	13.1	12.2	12	11.8	14.7	-	25	-	-
EC (µS/cm)	760	627	630	445.2	762	945	728	753	721	**1057**	778	755	440	593	504	710	486	803	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	10.95	10.91	9.4	7.56	5.92	6.91	2.99	6.13	6.04	5.48	6.86	9.1	3.73	-	-	-	-	-
Redox (mV)	234	30	37.2	24.2	-25	-39	-56	-11	0.1	-61.2	106.2	19.3	-15	37	63.7	7.3	-13.8	-	-	-	-	-
Observations	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour	Clear, no odour, purged dry	Clear, no odour, purged dry	Clear, no odour, purged dry	Clear, no odour, Purged dry	Clear, no odour, Purged dry	Clear, No odour, Purged dry	Clear, No odour, Purged dry	Clear, No odour, Purged dry	Clear, no odour, purging dry	Clear, no odour, purging dry	Clear with no odour	Clear with no odour	Clear with no odour	Clear with no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 7: Additional Groundwater Analytical Results for GSK Well AGW9 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																			RTC	IGV	TSV	Gw Regs.
	AGW9																						
	15/03/16	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	07/06/17	14/09/17	20/11/17	07/03/18	06/06/18	28/09/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	0.2	<	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.2	<	0.3	0.2	0.5	<	<	0.3	0.4	<	0.3	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**12**	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	2	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs																								
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																								
2-Methylphenol	<	<	<								<				<		<		<		-	-	-	-
4-Methylphenol	<	<	<								<				<		<		<		-	-	-	-
Phenol	<	<	<								<				<		<		<		20,600	0.5	-	-
Phenols (mg/l)																								
Phenol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																								
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		<	<	<	<	<	<	1	<	<	<	<	<	<	19	1	<	2	1	<	9,310	-	-	115
Field Water Quality Readings																								
pH	7.76	8.12	8.35	8.36	8.08	7.42	7.9	8.38	7.82	7.28	6.97	8.27	7.77	7.42	7.97	8.58	8.8	7.84	7.75	8.11	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	11.9	14.4	13.7	13.6	14.1	14	13.2	13.5	13.5	13	13.6	12.9	13.8	13.9	14.2	13.8	14.3	13.2	11.9	16	-	25	-	-
EC (µS/cm)	581	674	685	455.4	749	720	736	652	747	**1150**	643	850	465	620	443.6	423.9	762	773	495.7	1324	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	2.37	2.96	7.5	6.62	2.92	2.18	3.21	2.27	-70	3.03	2.94	3.56	3.69	6.67	2.87	-	-	-	-	-
Redox (mV)	96	493	-45.3	-41.2	-76	-104	40	-5.8	-51.2	-73	161.4	-125.2	3.25	-12	75.7	19.3	76.9	81.5	-9.2	-	-	-	-	-
Observations	Brown, silty, no odour	Cloudy grey, no odour	Brown, silty, no odour	Brown, silty, no odour	Brown, silty, no odour	Brown, silty, no odour	Brown tint, no odour	Brown tint, no odour	Brown tint, no odour	Brown tint, No odour	Brown tint, No odour	Brown tint, No odour	Grey/ brown silty, slight organic	Grey/ brown silty, slight organic	Grey/brown tint, with no odour	Grey/brown tint, no odour	Grey/brown tint, no odour	Grey/brown tint, no odour	Cloudy, no odour	Slight grey tint, slightly cloudy, no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 8: Additional Groundwater Analytical Results for GSK Well AGW10 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																			RTC	IGV	TSV	Gw Regs.
	AGW10																						
	15/03/16	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	07/06/17	14/09/17	15/09/17	07/03/18	06/06/18	28/09/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	0.3	<	0.5	0.5	0.2	<	0.2	<	0.2	0.1	<	0.2	0.2	0.7	<	<	0.4	0.3	<	0.3	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	*20*	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs																								
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																								
2-Methylphenol	<	<	<								<				<		<		<		-	-	-	-
4-Methylphenol	<	<	<								<				12		<		<		-	-	-	-
Phenol	<	<	<								<				<		<		<		20,600	0.5	-	-
Phenols (mg/l)																								
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Total Speciated Phenols HPLC		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																								
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		65	23	25	106	101	31	25	22	37	26	98	100	31	11	4	7	3	<	6	9,310	-	-	115
Field Water Quality Readings																								
pH	7.18	7.88	8.01	8.11	7.37	7.08	7.69	8.14	7.62	7.17	6.51	7.5	7.04	7.08	7.44	8.11	8.66	7.22	7.1	7.65	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	13.1	13.4	13.7	14.1	14.3	14.3	12	13.2	13.7	13.6	13.9	13.2	13.6	14.1	12.7	13.5	13.9	12.9	11.8	15.7	-	25	-	-
EC (µS/cm)	903	811	847	573	954	949	927	819	956	939	7.85	996	589	932	626	653	1013	782	592	1063	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	6.62	4.67	9.22	8.06	3.48	3.87	1.62	3.47	3.73	3.41	2.5	3.73	4.35	5.43	4	-	-	-	-	-
Redox (mV)	-34	-7	-42.3	-44.4	-36	-69	-2	43.9	-6.3	-34.7	18.6	-68.8	-74	-65	86.8	18.3	86.5	95	16.3	-	-	-	-	-
Observations	Brown, silty, no odour	Brown, silty, no odour	Clear, brown tint, no odour	Clear, brown tint, no odour	Grey/ brown silty, no odour	Grey/ brown silty, no odour	Brown tint, slight organic odour	Brown tint, no odour	Brown tint, slight organic odour	Brown tint, No odour	Brown tint, Slightly silty, No odour	Brown tint, Slightly silty, No odour	Brown tint, no odour	Grey/ brown tint, no odour	Grey/brown tint, no odour	Brown tint, no odour	Grey/ brown tint, no odour	Cloudy, Grey/brown tint, no odour	Orange tint, no odour	Light brown tint, no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 9: Additional Groundwater Analytical Results for GSK Wells AGW11a (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																				RTC	IGV	TSV	Gw Regs.
	AGW11																AGW11a							
	15/03/16	18/05/16	27/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	14/09/17	15/11/17	07/03/18	05/06/18	28/09/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	0.9	<	6	6.8	3	2.1	3.3	2.8	2.8	2.5	2.6	4.3	4	5	2.9	4.8	2.3	1.5	1	1.5	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs																								
Tetrahydrofuran (THF)	<	*134*	<	<	<	<	<	<		<	17	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																								
2-Methylphenol	<	<	<								<		<	<	<		<		<		-	-	-	-
4-Methylphenol	<	<	<								<		<	<	<		<		<		-	-	-	-
Phenol	<	<	<								<		<	<	<		<		<		20,600	0.5	-	-
Phenols (mg/l)																								
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Resorcinol		<	<	<	<	<	<	<	0.01	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Catechol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																								
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		*3078*	*1972*	*2277*	*212*	*155*	*256*	29	<	*376*	17	*449*	<	*120*	<	*7603*	28	*1*	<	<	9,310	-	-	115
Field Water Quality Readings																								
pH	6.96	-	7.07	7.78	7.75	6.35	7.49	8.08	7.21	7.44	6.63	7.24	6.62	6.53	7.16	7.91	7.82	7.47	6.8	6.85	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	15.1	17.4	17.7	17.7	17.6	17.4	17.4	12.6	17.2	17.4	17.1	18.3	17.1	17.5	16.9	19.1	18.3	15.4	17	19.2	-	25	-	-
EC (µS/cm)	869	977	**1013**	698	974	929	**1168**	949	**1116**	**1171**	830	***2961***	***3966***	***6434***	***3374***	***>4000***	***7657***	***4600***	***2265***	***4330***	-	1000	2500	800-1875
DO (mg/l)	-	0.79	-	-	4.3	8.04	4.07	4.31	1.54	1.27	0.86	1.64	-107	0.76	1.06	-	1.56	2.77	4.42	4.86	-	-	-	-
Redox (mV)	-92	-82	-111.5	-82.1	-107	-95	-69	-85.8	-44.1	-79	-54.1	-137.8	2.31	-91	-30.4	-	131.8	-57.4	-21.9	40	-	-	-	-
Observations	Clear, slight chemical odour	Brown, silty, slight organic odour	Clear, slight chemical/organic odour	Grey tint, moderate chemical odour	Dark grey, slight/ mod organic / chemical odour	Cream, mod organic / chemical odour	Cream, mod organic / chemical odour	Clear, mod chemical/organic odour	Grey, slightly cloudy, moderate chemical/organic odour	Grey, slightly cloudy, Mild chemical/organic odour	Very slightly cloudy, Mild chemical/organic odour	Grey, cloudy, mild chemical/organic odour	Grey tint, moderate organic odour	Clear, mild organic odoour	Grey tint, moderate organic/chemical odour	Grey tint, moderate organic odour	Grey tint, mild organic/chemical odour	Grey tint, organic odour	Brown tint, mild organic odour	Orange/brown, silty, no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 10: Additional Groundwater Analytical Results for GSK Well AGW12 (January 2016 to June2019)

VOC (µg/l)	Groundwater Results (ug/l)																					RTC	IGV	TSV	Gw Regs.
	AGW12																								
	29/02/16	15/03/16	18/05/16	27/07/16	25/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	14/09/17	20/11/17	07/03/18	05/06/18	28/09/18	03/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	3	2.9	5.0	5	5.2	1.9	5.3	2.9	3.1	3.4	1.9	3.0	2.9	3.8	5.5	4.4	7	5.3	5.1	3.8	4.5	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	10	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	0.5	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	8	3	4	<	11	11	10		-	-	-
TICs																									
Tetrahydrofuran (THF)	<	*116*	*532*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																									
2-Methylphenol		<	<	<								<		<		<		<		<		-	-	-	-
4-Methylphenol		<	<	<								<		<		<		<		<		-	-	-	-
Phenol		<	<	<								<		<		<		<		<		20,600	0.5	-	-
Phenols (mg/l)																									
Phenol			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		20.6	0.0005	-	-
Resorcinol			<	<	<	<	<	<	<	<	<	0.03	0.05	<	0.06	<	0.03	<	<	<	<		-	-	-	-
Catechol			<	<	<	<	<	<	<	0.07	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Total Speciated Phenols HPLC			0.1	<	<	<	<	0.02	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Alcohols (µg/l)																									
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)			*9596*	*8830*	*3903*	32	<	<	2	<	<	<	2	<	<	<	<	<	5	<	<	9,310	-	-	115
Field Water Quality Readings																									
pH	7.19	7.2	7.51	7.44	7.73	7.76	6.98	7.54	8.14	7.7	6.66	7.42	7.28	7.14	7.24	7.43	7.44	8.21	7.51	7.34	7.21	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	12.0	12.5	14.3	13.4	13.8	14.8	13.7	12.3	13.1	12	12	13.8	13	14.2	13.9	11.5	14.9	15.4	13.5	12.5	13.2	-	25	-	-
EC (µS/cm)	950	940	500	814	***1001***	***1310***	***1474***	***1819***	***1573***	***2768***	***2368***	***1962***	***2344***	**1617**	**1368**	**1832**	**1179**	**2150**	**1729**	**1266**	**1494**	-	1000	2500	800-1875
DO (mg/l)	-	-	10.24	-	-	6.7	4.73	6.07	4.36	2.92	1.87	2.44	1.96	-119	3.61	6.09	3.5	4.08	5.26	2.5	3.92	-	-	-	-
Redox (mV)	-	-86	18	-98.1	-62.9	-65	-106	-21	-85	-56.1	-72.2	101.6	-81.3	4.65	-60	-3.1	75.3	84.4	-67.7	-25.9	26.4	-	-	-	-
Observations	Clear, moderate chemical odour	Clear, slight chemical odour	Clear, slight chemical odour	Clear, slight chemical odour	Cloudy, slight chemical odour	Orange tint, slight chemical odour, poor recovery	Clear, mod organic odour	Coudy, slight organic.	Cloudy, slight organic odour	Cloudy, slight organic odour	Clear, Slight organic odour	Clear, Moderate chemical odour	Grey/brown tint, moderate organic odour	Grey/ brown tint, slight organic/ chemical odour	Grey/ brown tint, slight organic odour	Clear with slight organic smell	Slight grey tint, mild organic/chemical odour	Clear with slight organic odour	Clear, mild organic/chemical odour	Clear, moderate organic/chemical odour	Grey tint, moderate organic/chemical	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value

TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value

Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations

Results are marked in brown where they exceeded the RTC

Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 11: Additional Groundwater Analytical Results for GSK Well AGW13 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																										RTC	IGV	TSV	Gw Regs.
	AGW13																									Dup				
	06/01/16	25/01/16	15/02/16	24/02/16	29/02/16	15/03/16	22/03/16	31/03/16	07/04/16	14/04/16	21/04/16	28/04/16	04/05/16	13/05/16	18/05/16	26/05/16	02/06/16	10/06/16	15/06/16	23/06/16	01/07/16	07/07/16	14/07/16	21/07/16	27/07/16	27/07/16				
Methyl Tertiary Butyl Ether (MTBE)	1.3	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	<	619	241	57	137	133	-	30	-	10
Benzene	<	<	<	<	<	0.7	0.5	<		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	4,871	5,880	3,084	5,314	8,569	8,654	8,826	11,374	5,279	10,805	10,596	5,250	4608	4302	3233	3104	1625	1448	1218	4566	543	172	262	159	2461	2868	16600	10	-	525
Xylenes (meta & para)	5	4	<	<	<	2	2	<	2	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	0.7	0.5	<	10.3	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	1.1	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	640	57	162	<	17	<	<	<	7	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	278	518	418	675	1956	341	23920	42811	42534	15606	10308	4086	12175	<	<	20334	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	5	17	3	4	6	7	6	28	28	<	<	<	7	<	<	<	<	<	<	-	12	-	-
1,1-Dichloroethene (1,1 DCE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	11	11	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Carbon Disluphide																											-	-	-	-
TICs																														
Tetrahydrofuran (THF)	113		144895	144867	<	<	113178	<	2194	4459	<	<	<	<	<	1241	<	<	611	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<		173	2,159	<	1,677	833	239	<	1305	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Acentonitrile	<		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<				
Dimethyl sulfide	<		<	<	<	215	912	<	<	<	<	<	<	<	<	<	<	<	<	<	271	<	<	<	<	<	-	-	-	-
Sulfur	<		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	204	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<		<	<	<	1860	2115	2033	487	644	820	1501	492	<	<	530	<	2117	708	543	1641	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<		<	<	<	<	<	166	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<		<	<	<	<	<	100	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Diisopropylethylamine	<		<	<	<	<	<	<	295	<	<	<	<	<	1541	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,4-diethyl-	<		<	<	<	<	<	<	<	237	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,3-diethyl-	<		<	<	<	<	<	<	<	<	<	205	118	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,2-diethyl-	<		<	<	<	<	<	<	<	<	<	<	<	124	<	<	<	<	<	<	<	<	175	<	<	<	-	-	-	-
Isopropyl Alcohol (IPA)	<		<	<	<	<	<	<	<	<	<	<	<	854	<	330	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
TERT-Butyldimethylsilanol	<		<	<	<	<	<	<	<	<	<	<	<	139	187	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<		<	<	<	<	<	<	<	<	<	<	<	140	188	<	179	<	<	<	<	<	<	<	161	264	-	-	-	-
N,N-Dimethylpivalamide	<		<	<	<	<	<	<	<	<	<	<	<	<	633	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																														
2-Methylphenol	31					60	45.2	35	12.4	18.6	28.6	17.9	8.3	17.9	<	15.2	<	13.2	47	27	7				28	29	-	-	-	-
4-Methylphenol	24					101	60	43	18	16	40	21	11	14	2	23	<	98	47	18	10				47	49	-	-	-	-
Phenol	281					403	111	14000	9120	15543	5350	3386	11741	11289	236	1167	<	989	449	118	70				243	238	20600	0.5	-	-
Phenols (mg/l)																														
Phenol											17.45	19.36	12.27	42.17	30.10	4.09	4.70	3.26	2.51	0.68	0.31	0.33	0.31	0.16	0.78	0.75	20.6	0.0005	-	-
Resorcinol											<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<				
Total Cresols											<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<				
Total Speciated Phenols HPLC											17.5	19.4	12.3	42.2	30.3	4.2	4.8	3.4	2.7	0.8	0.3	0.3	0.3	0.2	0.9	0.8	-	-	-	-
Alcohols (µg/l)																														
Methyl Alcohol (Methanol)				<	21,884	34,064	60,293	81,502	213,522	318,135	473,311	416,094	295,630	69,606	76,660	77,671	<	<	<	72,895	44,746	531	<	<	338,837	356,885	1000000	-	-	-
Ethyl Alcohol (Ethanol)				<	<	<	114769	<	132181	<	547	9056	4353	14217	256451	57739	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol (IPA)				2086	8815	169965	118721	130199	151799	84585	160253	59506	37137	51659	30754	16931	1653	291	490	6114	636	826	<	<	16046	16655	1000000	-	-	-
n-Propyl Alcohol					<	<	205	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
n-Butyl Alcohol					<	<	<	<	112	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Acetate					<	<	<	<	<	<	14505	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)															29238	11878	16416	16971	13394	5882	10899	6101	5897	11050	26817	26799	9310	-	-	115
Field Water Quality Readings																														
pH	7.08	-	-	-	6.19	7.47	9.42	8.58	9.88	9.66	6.88	9.52	10.43	10	10.91	-	7.47	8.18	7.44	8.04	8.13	-	7.44	7.61	9.04	-	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	16.9	-	-	-	17.4	15	15.4	15.4	15.4	-	15	15.5	15.2	15.5	-	-	-	16	16	16.5	16.3	-	16	16.2	16.4	-	-	25	-	-
EC (µS/cm)	687	-	-	-	1876	1960	2421	1106	1296	1246	1396	1238	1374	703	3311	-	1120	984	1035	949	653	-	1035	728	1326	-	-	1000	2500	800-1875
DO (mg/l)	6.7	-	-	-	-	-	-	1.98	-	-	2.22	1.73	2.4	4.53	4.53	-	-	-	1.93	-	-	-	1.93	-	-	-	-	-	-	-
Redox (mV)	-	-	-	-	-	-199	-280	-214	-184	-	-126	-230	-145		-107	-	-	-195.4	-202	-35	-112	-	-202	-159.8	-154.5	-	-	-	-	-
Observations	Grey tint, slight organic odour	Grey tint, slight organic odour	Grey tint, strong solvent odour	Grey tint, moderate organic odour	Cloudy, grey, mild H_2S odour	Black colour, moderate solvent odour	Black colour, strong solvent odour	Clear, strong organic odour	Black tint, moderate sweet odour	Black tint, moderate solvent odour	Grey tint, moderate chemical odour	Grey/black tint, moderate chemical odour	Grey/black tint, moderate chemical odour	Clear, moderate chemical odour	Degrading solvent odour	Degrading solvent odour	Dark grey, mod/strong chemcial odour	Clear/ Strong organic odour	Clear with black s.s./mod chem-org. odour	Yellow tint, mod organic odour	Yellow tint, strong organic odour	-	Clear with light black tint, moderate organic & chemical odour	Dark grey tint, moderate organic odour	Black, moderate solvent odour	-	N/A	N/A	N/A	N/A

Table 11: Additional Groundwater Analytical Results for GSK Well AGW13 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																														
	AGW13																													RTC	IGV	TSV	Gw Regs.
	05/08/16	11/08/16	18/08/16	26/08/16	02/09/16	09/09/16	16/09/16	23/09/16	28/09/16	13/10/16	27/10/16	10/11/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	Blank	19/04/17	22/05/17	07/06/17	10/07/17	14/08/17	14/09/17	24/10/17	15/11/17				
Methyl Tertiary Butyl Ether (MTBE)	***39.2***	*12.0*	*22*	*12.4*	6.5	4.1	5.4	7.8	4.7	5.7	8.5	<	2.7	2.2	4.9	1.6	3.4	<	2.6	3.1	2.1	4.8	3.9	1.9	5.1	7.1		-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	1.0	1.0	0.75
Toluene	**370**	**205**	***4703***	***4226***	***2520***	***633***	***680***	***594***	**470**	**321**	**233**	**117**	**50**	**12**	**127**	**<**	**<**	**<**	**<**	**<**	**<**	**<**	**<**	<	<	<		**16600**	10	-	525
Xylenes (meta & para)	<	<	1	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	3	3	<	<	<		-	10	-	-
O-Xylene	<	<	0.6	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	3	3	<	<	<		-	-	-	-
Ethylbenzene	<	<	0.6	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	2	2	<	<	<		-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Dichloromethane (DCM)	<	<	***98***	***2402***	***513***	***47***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		**13900**	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Chloroform	<	<	<	4	**497**	**33**	<	<	<	<	<	<	<	<	<	<	<	**13**	<	<	<	<	<	<	<	<		-	12	-	-
1,1-Dichloroethene (1,1 DCE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Carbon Disulphide			<																									-	-	-	-
TICs (ug/l)																															
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	*3702*	*2376*	<	<	<	<	<	<	<	<	<		**9310**	-	-	115
Acetone	<	<	3305	4499	5548	2889	4562	5014	13865	11882	4384	3300	387	<	<	<	<	<	<	<	<	<	<	<	<	<		**1000000**	-	-	-
Acentonitrile	<	<	<	<	521	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Dimethyl sulfide	<	<	<	<	<	220	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Benzene, 1,4-diethyl-	<	<	<	<	577	<	133	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Benzene, 1,3-diethyl-	107	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Benzene, 1,2-diethyl-	<	<	<	<	<	<	<	121	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Silanol, trimethyl-	<	<	236	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
SVOCs (µg/l)																															
2-Methylphenol									6								<	<						<	<	<		-	-	-	-
4-Methylphenol									<								<	<						<	<	<		-	-	-	-
Phenol									**38**								<	<						<	<	<		**20600**	0.5	-	-
Phenols (mg/l)																															
Phenol	**0.08**	**0.04**	**0.49**	**0.30**	**0.18**	**0.07**	**0.08**	**0.06**	**0.11**	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	<		**20.6**	0.0005	-	-
Resorcinol	<	<	<	<	<	<	<	<	0.43	<	<	<	<	<	<	<	<	<	0.02	0.01	0.01	0.05	0.01	<	<	<		-	-	-	-
Total Cresols	<	<	<	<	<	<	<	<	<	0.12	0.06	0.15	<	0.03	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Total Speciated Phenols HPLC	0.2	0.2	0.7	0.3	0.2	0.07	0.08	0.06	0.7	0.12	0.06	0.2	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Alcohols (µg/l)																															
Methyl Alcohol (Methanol)	<	<	2,004	2,127	41,738	916	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		**1000000**	-	-	-
Ethyl Alcohol (Ethanol)	<	<	196393	8,767	9,510	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		**1000000**	-	-	-
Isopropyl Alcohol (IPA)	<	<	522,468	613,247	467,054	297,853	314,947	671,785	508,262	397,307	336,567	86,955	14,247	211	<	<	<	<	<	<	<	<	<	<	<	<		**1000000**	-	-	-
n-Propyl Alcohol	<	<	<	254	1,223	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
n-Butyl Alcohol	<	<	<	<	248	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Methyl Acetate	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-	-
Tetrahydrofuran (THF)	*9517*	*11685*	*11351*	*16196*	*46124*	*25800*	*18457*	*22544*	*18293*	*15554*	*12393*	*9246*	*7770*	*6574*	*5083*	*3702*	*2376*	<	*1188*	*788*	*218*	*307*	*2150*	*261*	2	4		**9310**	-	-	115
Field Water Quality Readings																															
pH	7.85	7.62	7.81	7.35	7.22	7.84	8.12	7.48	8.16	6.85	6.97	6.86	-	-	-	6.85	8.05		7.17	7.39	7.34	6.96	7.36	-	7.2	7.05		-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	16.6	16.9	16.8	17	16.5	16.7	18	16.6	16.5	16.3	16.5	17	-	-	-	15.4	17		-	-	-	-	-	-	-	15.3		-	25	-	-
EC (µS/cm)	826	**1080**	920	789	809	**1031**	802	976	869	858	1309	899	-	-	-	**1647**	**1099**		**1167**	**1250**	**1430**	**1800**	**1929**	-	**1094**	895		-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	-	6.38	2.74	-	4.71	2.22	10.3	2.34	-	-	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-
Redox (mV)	-138.8	-176	-151.5	-199.8	-76	-129	-257	-	-153	-100	-66	-52	-	-	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-
Observations	Black tint, moderate organic/ chemical odour	Dark grey, moderate organic/ chemical odour	Dark grey, moderate solvent/org anic odour	Black, moderate solvent odour	Strong organic/ chemical odour. Brown tint.	Dark grey, moderate chemical odour	Dark grey, moderate organic chemical odour	Mod/ strong organic/ chemical odour, clear. 4.8l/min	Clear, mod chemical/ organic odour.	Strong organic/ chemical odour, clear.	Strong organic/ chemical odour, cloudy.	Mod organic/ chemical odour, yellow tint	Strong organic/ chemical odour, cloudy.	Cloudy, strong organic/che mical odour	Clear, black suspended solids, strong organic/che mical odour	Cloudy, strong organic/che mical odour	Cloudy, Moderate organic/chemical odour		Cloudy, very mild organic/che mical odour	Clear, fizzy, moderate organic/che mcial odour	Clear, moderate organic/che mical odour	Clear, fizzy, moderate organic/che mical odour	Clear, moderate organic/ chemical odour	Clear, moderate chemical/o rganic odour, pumping 5l/min	Clear, moderate organic/ chemical odour	Clear, slight organic/ chemical odour		N/A	N/A	N/A	N/A

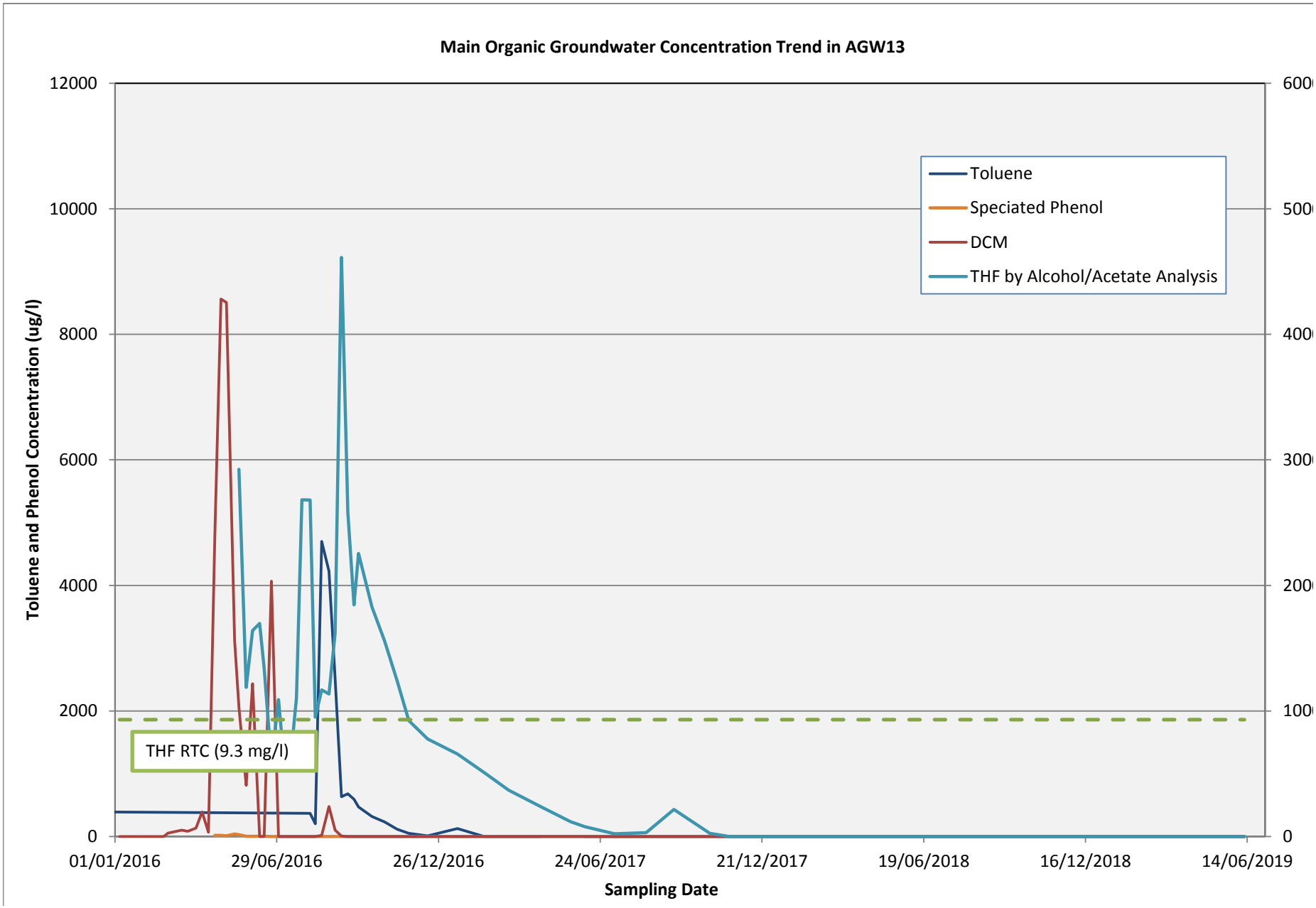
Table 11: Additional Groundwater Analytical Results for GSK Well AGW13 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l) AGW13							RTC	IGV	TSV	Gw Regs.
	07/03/18	Duplicate	06/06/18	28/09/18	03/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	1.0	1.0	2.7	1.4	1.1	0.5	1	-	30	-	10
Benzene	<	<	<	<	<	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	**16600**	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	**13900**	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	-	12	-	-
1,1-Dichloroethene (1,1 DCE)	<	<	<	<	<	<	<	-	-	-	-
Carbon Disulphide								-	-	-	-
TICs (µg/l)											
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	**9310**	-	-	115
Acetone	<	<	<	<	<	<	<	**1000000**	-	-	-
Acentonitrile	<	<	<	<	<	<	<	-	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,4-diethyl-	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,3-diethyl-	<	<	<	<	<	<	<	-	-	-	-
Benzene, 1,2-diethyl-	<	<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)											
2-Methylphenol	<	<				<		-	-	-	-
4-Methylphenol	<	<				<		-	-	-	-
Phenol	<	<				<		**20600**	0.5	-	-
Phenols (mg/l)											
Phenol	<	<	<	<	<	<	<	**20.6**	0.0005	-	-
Resorcinol	<	<	0.02	<	<	<	<	-	-	-	-
Total Cresols	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)											
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	**1000000**	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	**1000000**	-	-	-
Isopropyl Alcohol (IPA)	<	<	<	<	<	<	<	**1000000**	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	-	-	-	-
n-Butyl Alcohol	<	<	<	<	<	<	<	-	-	-	-
Methyl Acetate	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	<	<	9	3	<	<	<	**9310**	-	-	115
Field Water Quality Readings											
pH	7.58		8.51	8.2	8.12	7.86	7.59	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.9		16.1	15.5	-	-	17.3	-	25	-	-
EC (µS/cm)	**1026**		724	937	943	**1006**	**1139**	-	1000	2500	800-1875
DO (mg/l)	-		2.09	-	-	-	-	-	-	-	-
Redox (mV)	-		81.2	-	-	-	-	-	-	-	-
Observations	Clear, fizzy with moderate organic/chemical odour		Clear, mild organic/chemical odour	Dark grey tint, moderate organic/chemical odour	Dark grey tint, mild to moderate organic/chemical odour	Dark grey tint, moderate organic/chemical odour	Dark grey tint, moderate organic/chemical odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016


Main Organic Groundwater Concentration Trend in AGW13
Toluene and Phenol Concentration (ug/l)
12000
10000
8000
6000
4000
2000
0
600
500
400
300
200
100
0
Toluene
Speciated Phenol
DCM
THF by Alcohol/Acetate Analysis
THF RTC (9.3 mg/l)
01/01/2016
29/06/2016
26/12/2016
24/06/2017
21/12/2017
19/06/2018
16/12/2018
14/06/2019
Sampling Date

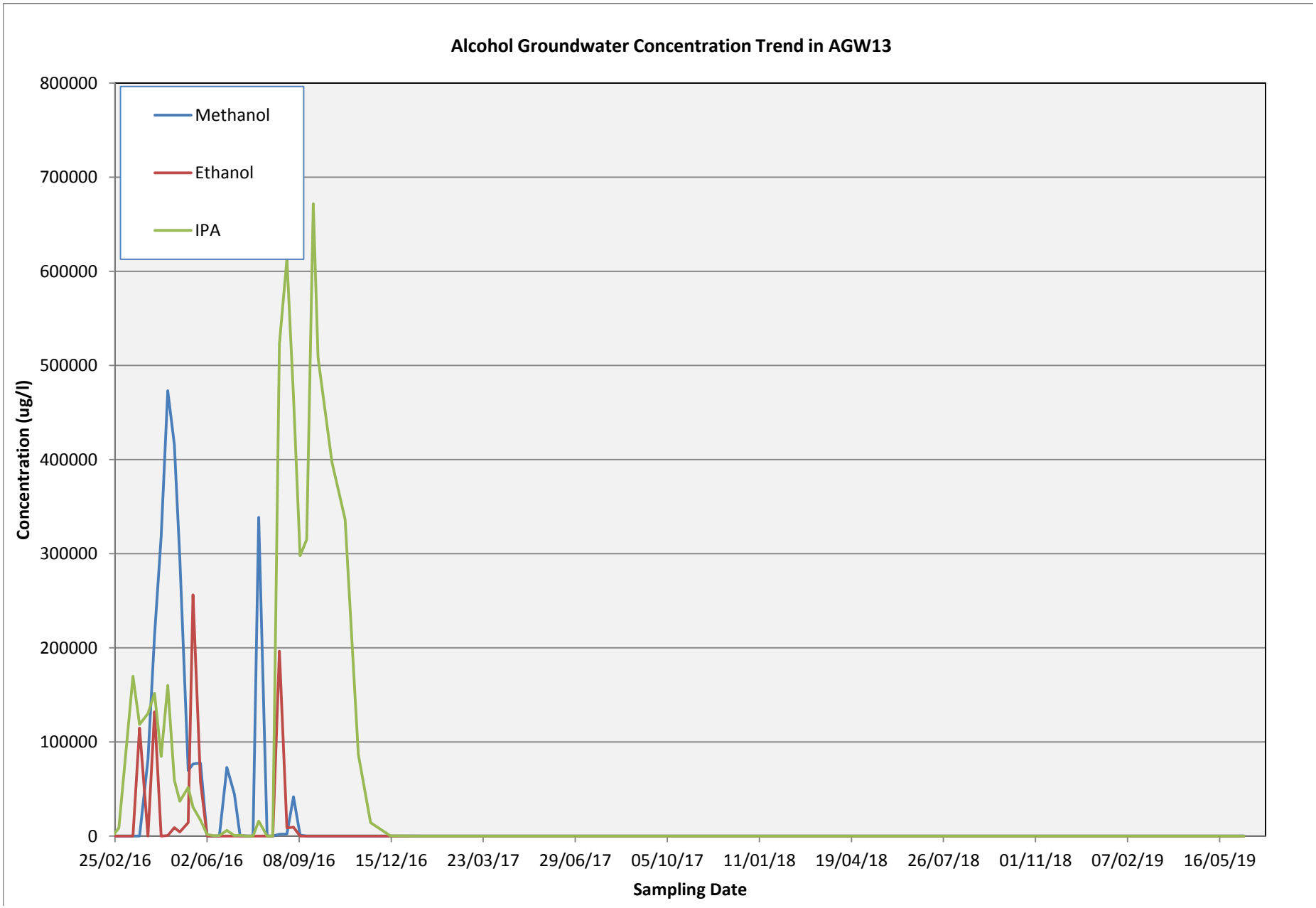

Alcohol Groundwater Concentration Trend in AGW13
Methanol
Ethanol
IPA
800000
700000
600000
500000
400000
300000
200000
100000
0
Concentration (ug/l)
25/02/16
02/06/16
08/09/16
15/12/16
23/03/17
29/06/17
05/10/17
11/01/18
19/04/18
26/07/18
01/11/18
07/02/19
16/05/19
Sampling Date

Table 12: Additional Groundwater Analytical Results for GSK Well AGW14 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																						RTC	IGV	TSV	GW Regs.
	AGW14																									
	29/02/16	15/03/16	22/03/16	31/03/16	07/04/16	14/04/16	21/04/16	28/04/16	04/05/16	13/05/16	18/05/16	26/05/16	02/06/16	10/06/16	15/06/16	23/06/16	01/07/16	14/07/16	21/07/16	27/07/16	05/08/16	11/08/16				
Methyl Tertiary Butyl Ether (MTBE)	1.5	3	4.7	4.3	6.6	6.6	6.6	6.1	8.8	6	7.9	9	8.7	7.1	6.7	9	6.1	5	2.6	7.4	7.1	4.5	-	30	-	10
Benzene	***7.4***	***2.8***	<	<	<	***3.1***	***3.2***	<	<	***1.7***	***2.2***	***1.4***	***1.6***	<	0.5	<	***2.6***	***2.8***	**2.9**	<	<	<	-	1.0	1.0	0.75
Toluene	***7,711***	**296**	<	<	<	**58**	<	<	<	<	<	<	**20**	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	3	2	<	<	3	2	2	<	<	1	2	<	3	1	<	2	3	6	<	2	<	<	-	10	-	-
O-Xylene	1	1.7	<	<	2.6	<	2.2	0.5	0.6	1.1	1.9	1.10	2.6	1.1	1.2	1.6	0.9	1.7	0.8	1.8	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	0.6	<	<	<	0.6	1.7	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**<**	**<**	**<**	13900	10	-	15
2-Chlorotoluene	<	4	<	<	<	<	6	<	<	4	<	4	<	<	3	4	<	4	3	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	4	<	3	<	<	<	<	<	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
Naphthalene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	-	-
Carbon Dislulphide																							-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	361	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	210	<	<	-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol		1.2	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	-	-	-	-
4-Methylphenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	-	-	-	-
Phenol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	20600	0.5	-	-
Phenols (mg/l)																										
Phenol								<	<	**0.01**	<	<	**0.45**	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
o-cresol								<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols								<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC								<	<	<	<	<	0.6	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)		<	1,036	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	728	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)		<	847	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol		<	507	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate		<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)											*862*	*533*	*849*	*739*	*612*	*676*	*259*	104	*476*	*681*	*539*	*515*	9310	-	-	115
Field Water Quality Readings																										
pH	6.93	7.21	7.28	6.9	7.93	7.55	6.91	7.14	7.4	7.67	7.44	-	7.43	7.5	6.59	6.75	7.16	6.59	7.29	7.15	8.02	7.82	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.7	14.5	14.6	15.8	14.9	-	15.2	14.5	14.6	17.3	15	-	14.7	15.7	16.3	15	14.8	16.3	15.3	15.2	15.1	15.1	-	25	-	-
EC (µS/cm)	985	**1107**	**1169**	**1235**	**1005**	**1230**	**1111**	**1176**	**1116**	**1024**	992	-	**1031**	**1054**	**1050**	**1127**	**1017**	**1050**	834	**1017**	**1009**	**1231**	-	1000	2500	800-1875
DO (mg/l)	-	-	-	3.45	-	-	7.08	7.92	9.54	3.19	6.65	-	11.75	-	1.83	-	-	1.83	-	-	-	-	-	-	-	-
Redox (mV)	-	-111	-109	-94	-136	-	-81	-76	-77	-102	-83	-	-54	-79.4	-75	-95	-77	-75	-96.7	-108.3	-114.5	-97	-	-	-	-
Observations	Mild solvent & H_2S odour	Clear, slight solvent odour	Clear, H2S odour	Strong organic/ waste odour	Clear, mild solvent odour	Clear, moderate organic odour	Clear, moderate organic odour	Clear, moderate organic odour	Clear, moderate organic odour	Clear, moderate organic odour	Clear, mild solvent odour	Clear, mild solvent odour	Clear, mod organic odour	Clear/very slight solvent/ organic odour	Clear/ Slight organic odour	Clear, mild solvent odour	Slight organic/chemical odour	Clear, slight organic odour	Clear, moderate organic odour	Clear, slight solvent odour	Clear, moderate organic/chemical odour	Clear, moderate organic/ chemical odour	N/A	N/A	N/A	N/A

Table 12: Additional Groundwater Analytical Results for GSK Well AGW14 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																					RTC	IGV	TSV	Gw Regs.
	AGW14																								
	18/08/16	25/08/16	02/09/16	09/09/16	16/09/16	23/09/16	28/09/16	13/10/16	27/10/16	10/11/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	12/09/17	15/11/17	07/03/18	05/06/18	18/06/18	28/06/18				
Methyl Tertiary Butyl Ether (MTBE)	*13.9*	7	3.8	3.2	3	2.8	0.9	2.7	2.3	1.3	1.8	2	3.5	2.4	4.2	3.3	5.3	6.6	2.2	4.8			-	30	-	10
Benzene	<	**2.1**	**2.8**	**2.9**	**3.3**	**3.4**	**2.1**	***2.7***	***2.1***	***2.5***	***1.1***	***3.1***	***4.8***	***3.4***	***2.9***	***1.7***	***1***	***1.2***	***1.3***	0.6			-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	6	<	**92**	**4015**	<			16600	10	-	525
Xylenes (meta & para)	2	<	1	1	2	2	<	<	2	<	<	<	<	<	<	<	<	<	<	<			-	10	-	-
O-Xylene	1.3	<	1.3	1.1	1.4	1.3	<	0.5	1.3	<	<	<	1	<	<	1	<	1	<	<			-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			13900	10	-	15
2-Chlorotoluene	<	<	6	<	6	<	<	3	6	3	3	<	4	<	3	<	<	4	<	3			-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	0.5	0.375
Naphthalene	<	<	<	<	<	<	<	<	**3**	<	<	<	<	<	<	<	<	<	<	<			-	1	-	-
Carbon Dislulphide	<																						-	-	-	-
TICs																										
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	*276*	*223*	<	<	<	<	<			9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Triethylamine	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
SVOCs (µg/l)																										
2-Methylphenol							<								<		<	<	31.1				-	-	-	-
4-Methylphenol							<								<		<	<	38				-	-	-	-
Phenol							<								<		<	<	<				20600	0.5	-	-
Phenols (mg/l)																										
Phenol	0.01	<	<	<	<	<	<	**0.01**	**0.02**	<	<	<	**0.01**	**0.04**	**0.01**	**0.02**	<	<	<	<			20.6	0.0005	-	-
o-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0	<			-	-	-	-
Total cresols	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0	<			-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			-	-	-	-
Alcohols (µg/l)																										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	907	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	4037	<	<	<	<	30753	2136	654	391	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*476*	*183*	*182*	*138*	*299*	*370*	*187*	*374*	67	43	<	68	*253*	*276*	*223*	*353*	35	33	*161*	14	*116*	33	9310	-	-	115
Field Water Quality Readings																										
pH	7.8	6.18	7.23	7.73	7.35	7.19	7.64	6.93	7.35	7.16	7.9	8.35	7.07	7	7.1	7.49	6.8	6.81	7	7.64	7.51	7.87	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.8	15.1	15.1	15.1	15.1	15.5	15.5	15.5	15.7	15.7	13.8	16.2	16.2	16.3	16.8	15	15.2	15.2	13.8	21.8	21.3	17.2	-	25	-	-
EC (µS/cm)	**1386**	**1115**	568	920	798	935	719	802	699	812	775	761	1101	**1211**	897	1361	1771	**2719**	**1602**	**2956**	**2786**	**3217**	-	1000	2500	800-1875
DO (%/mg/l)	-	-	-	25.5	10.65	-	4.69	3.21	4.93	5.29	8.63	6.15	0.76	1.12	0.4	3.18	4	1.64	4.47	4.21	4.78	4.38	-	-	-	-
Redox (mV)	-97.4	225.1	-60	-80.1	-47	-	-74	-75	-80	-87	-60	-76.7	-80.6	-72.4	-20.6	-118	-98	-65	21.5	48.4	-51	20	-	-	-	-
Observations	Clear, moderate chemical odour	Clear, slight solvent odour	Clear, moderate organic odour	Clear, mild organic odour	Clear, slight chemical odour	Clear, slight organic odour (26l/min)	Clear, slight organic odour (24l/min)	Clear, strong organic odour (19.5l/min)	Clear, slight organic odour (21l/min)	Clear, slight organic odour (14l/min)	Clear, slight organic odour (not pumping)	Clear, very slight solvent odour	Clear, slight organic odour	Clear, Rare suspended solids, Slight organic odour	Clear, Yeloow tint, Moderate chemical odour	Clear, fizzy, moderate chemical odour	Brown tint, slight organic/ chemcial odour, pumping 43l/min	Clear, slight chemical odour, pumping 39.5l/min	Clear, bubbles, moderate organic/chemical odour	Grey tint, fizzy, moderate organic/ chemical odour	Clear, fizzy, moderate organic/ chemical odour. Pumping	Clear, moderate organic odour	N/A	N/A	N/A	N/A

Table 12: Additional Groundwater Analytical Results for GSK Well AGW14 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)						RTC	IGV	TSV	Gw Regs.
	AGW14									
	28/09/18	03/12/18	12/03/19	Duplicate	11/06/19	Duplicate				
Methyl Tertiary Butyl Ether (MTBE)	3.9	2.7	1.7	1.7	2.9	2.8	-	30	-	10
Benzene	0.7	0.8	1	1	2.3	2.6	-	1.0	1.0	0.75
Toluene	<	**18**	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	-	-	-	-
Chloromethane	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	4	4	4	<	3	-	-	-	-
Chloroform	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	-	-	0.5	0.375
Naphthalene	<	<	<	<	<	<	-	1	-	-
Carbon Dislulphide							-	-	-	-
TICs										
Tetrahydrofuran (THF)	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)										
2-Methylphenol	<		<	<			-	-	-	-
4-Methylphenol	<		<	<			-	-	-	-
Phenol	<		<	<			20600	0.5	-	-
Phenols (mg/l)										
Phenol	<	<	<	<	<	<	20.6	0.0005	-	-
o-cresol	<	<	<	<	<	<	-	-	-	-
Total cresols	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)										
Methyl Alcohol (Methanol)	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	13	19	8	7	<	<	9310	-	-	115
Field Water Quality Readings										
pH	7.95	7.6	6.69		7.09		-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	15.8	15.8	14.8		19.7		-	25	-	-
EC (µS/cm)	**3990**	**2953**	**1917**		**2668**		-	1000	2500	800-1875
DO (%/mg/l)	4.03	3.92	51.1		3.01		-	-	-	-
Redox (mV)	110.4	-84.6	-13.7		-0.2		-	-	-	-
Observations	Clear, moderate organic/ chemical odour.	Clear, slight fizz, moderate organic/ chemical odour.	Clear, moderate organic/chemical odour		Clear, slight fizz, moderate organic/ chemical odour.		N/A	N/A	N/A	N/A

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 13: Additional Groundwater Analytical Results for GSK Wells AGW15, AGW17 and AGW18 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																															RTC	IGV	TSV	Gw Regs.
	AGW15											AGW17																							
	28/04/16	18/05/16	28/07/16	25/08/16	28/09/16	27/10/16	23/11/16	16/01/17	15/02/17	14/03/17	07/06/17	04/05/16	19/05/16	28/07/16	25/08/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	14/09/17	15/11/17	07/03/18	05/06/18	28/09/18	03/12/18	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	2.7	3.4	5.0	5.6	2.6	5.9	2.8	3.9	2.5	2.6	2.9	*27*	*16.8*	*12.4*	*21.3*	6.8	7.7	1.5	*12.0*	4.6	9.8	6.2	5.3	11.4	6.9	7.5	8.5	*13.5*	*11.7*	-	30	-	10
Benzene	<	<	<	<	<	<	***6.5***	***7.0***	<	***7.6***	***4.9***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		1	1.0	0.75
Toluene	**131**	**170**	**297**	**341**	**237**	**356**	**236**	**187**	**181**	**189**	**105**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	5	**20**	**23**	**21**	**10**	**28**	**18**	**21**	**17**	**24**	**14**	3	<	1	2	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	2.5	11.2	12	11.3	4.7	13.6	8.3	10.0	7	9	7	2.4	1.6	1.2	1.3	<	0.6	<	1.0	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	1.2	4.6	5.5	5.6	3.1	6.8	4.6	4.0	4	4	3	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
Dichloromethane (DCM)	<	***18***	***26***	**11**	***20***	***20***	**10**	<	<	**12**	<	<	***18***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	5	4	3	<	<	<	<	2.0	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	***50***	***45***	***41***	***46***	<	***43***	***32***	***34***	***35***	***36***	***26***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Naphthalene	<	<	<	<	<	3	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	-	-
Vinyl Chloride (VC)	<	*2.1*	*4.8*	*5.1*	*2.8*	*6.2*	*2.9*	*4.0*	*3.3*	*3.9*	*3.2*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
TICs																																	
Tetrahydrofuran (THF)	*140*	*127*	<	<	<	<	<	<	*143*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	722	414	361	565	427	340	425	1188	<	1116	796	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	127	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	148	210	269	222	119	<	184	138	<	103	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																																	
2-Methylphenol	<	<	<		<							<	<	<											<					-	-	-	-
4-Methylphenol	<	<	8		<							<	<	<											<					-	-	-	-
Phenol	<	<	<		**2**							<	<	<											<					20600	0.5	-	-
Phenols (mg/l)																																	
Phenol	<	**0.02**	**0.09**	**0.09**	**0.11**	**0.08**	**0.06**	**0.09**	**0.09**	**0.08**	**0.12**	<	**0.02**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Resorcinol	<	<	<	<	<	<	<	<	<	<	<	<	0.01	<	<	<	<	<	<	<	<	0.01	0.02	<	<	<	<	<	<	<	-	-	-	-
Catechol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0.02	<	<	0.02	<	0.02	<	0.01	0.01	<	<	<	<	<	-	-	-	-
m/p-cresol	<	<	<	0.2	0.34	0.18	0.18	0.28	0.18	0.17	0.30	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	0.22	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols	<	0.22	0.31	0.2	0.34	0.18	0.18	0.28	0.18	0.17	0.30	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	0.3	0.4	0.3	0.5	0.3	0.2	0.4	0.3	0.3	0.4	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (ug/l)																																	
Methyl Alcohol (Methanol)	1643	3061	3646	1786	7372	595	1084	4713	3116	<	5740	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	13822	31535	46112	28966	51910	29932	30375	27994	20495	7995	22830	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	214	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		*2161*	*3791*	*3794*	*3996*	*4974*	*4511*	*4803*	*5234*	*4154*	3686		<	<	<	<	*247*	70	<	*193*	<	26	*904*	<	<	*124*	<	<	<	9310	-	-	115
Field Water Quality Readings																																	
pH	**12.19**	**12.01**	**12.14**	**12.1**	**13**	n/m	n/m	12.01	11.83	12.25	11.74	7.19	7.68	7.29	7.6	7.17	7.85	8.38	7.34	7.15	7.03	7.23	6.84	6.86	7.22	7.57	7.98	7.28	7.21	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	11.3	-	-	-	15			-	13.6	14.5	-	14.9	15.2	-	14.7	14.6	12.3	13.5	13.8	14.6	14.8	15.1	14.2	15	13.3	15.5	15.6	14.3	15.6	-	25	-	-
EC (µS/cm)	***5013***	***6707***	***6427***	***6213***	***6674***			***6287***	***<3000***	***<4000***	***6179***	**1118**	**1030**	**1085**	920	954	921	748	1111	**1414**	**1019**	**2080**	**1986**	**3470**	**2845**	**2541**	**4859**	**4041**	**2512**	-	1000	2500	800-1875
DO (mg/l)	9.81	-	-	-	4.42			-	-	-	-	3.46	0.83	-	-	4.65	4.7	6.47	1.36	0.69	0.53	1.06	0.42	0.8	1.86	2.31	1.13	3.22	2.3	-	-	-	-
Redox (mV)	-25	-	-	-	-160			-	-	-	-	-110	-106	-	-67.2	-108	-75	-82.9		-71.8	-3.2	-122.7	-120	-26	-42.7	-32.6	111.6	-27.6	-43.7	-		-	-
Observations	Brown, slight chemical/ organic odour	Brown, strong solvent odour, poor recovery	Cloudy, slight orange tint, moderate solvent odour	Cloudy, slight orange tint, moderate solvent odour	Grey/ orange tint, mod chemical odour	Grey/ orange tint, mod organic/che mical odour	Brown tint, strong organic/che mical odour	Light brown/ora nge tint, strong organic/che mical odour	Light brown/ora nge tint, strong organic/che mical odour	Light brown/ora nge tint, strong organic/che mical odour	Light brown/ora nge tint, strong organic/che mical odour	Brown tint, slight chemical odour	Clear water. Moderate organic odour	Clear, orange tint	Clear, moderate solvent odour	Clear, moderate solvent odour. 36l/min	Clear, moderate organic odour	Clear, mod solvent odour	Clear, moderate solvent odour	Clear, Moderate organic odour	Clear, Moderate organic odour	Clear, Moderate organic odour	Clear, slight chemcial odour. Pumping 14l/min	Clear, slight chemcial odour. Pumping 14l/min	Clear, mild organic/che mical odour	clear, slightly fizzy, mild organic/che mical odour	Clear, mild organic/che mical odour	Clear, mild organic/che mical odour	Clear, mild organic/che mical odour	N/A	N/A	N/A	N/A

Table 13: Additional Groundwater Analytical Results for GSK Wells AGW15, AGW17 and AGW18 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																		RTC	IGV	TSV	Gw Regs.
	AGW18																					
	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/06/17	14/09/17	15/09/17	07/03/18	06/06/18	28/09/18	04/12/18	12/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	2.7	2.8	2.8	1.3	1.7	1.7	<	2.2	1.3	1.3	1.7	2.1	3.9	2.1	2.6	2.8	3.2	1.6	2.2	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Naphthalene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
TICs																							
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	*143*	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	<	<	<	<	138	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																							
2-Methylphenol	<	<																		-	-	-	-
4-Methylphenol	<	<																		-	-	-	-
Phenol	<	<																		20600	0.5	-	-
Phenols (mg/l)																							
Phenol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Resorcinol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Catechol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
m/p-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																							
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	1.0	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Field Water Quality Readings																							
pH	7.6	8.03	8.15	7.98	7.31	8.08	8.4	7.35	7.18	7	7.36	6.37	6.8	7.46	7.98	8.4	7.39	6.79	7.4	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	13.9	12.8	13	15.2	14.6	10	12.3	11.7	12.3	14.8	12.2	13	12.9	13.3	13.1	13.5	12.3	11.4	13.5	-	25	-	-
EC (µS/cm)	**1372**	**1314**	930	**1620**	**1579**	**1517**	**1347**	**1717**	**2066**	**1849**	**1724**	**1096**	**1596**	**2213**	**1252**	**1814**	**1943**	**1419**	**1932**	-	1000	2500	800-1875
DO (%/mg/l)	-	-	-	9.26	7.32	10	9.3	3.25	4.68	4.22	3.54	-16	1.39	1.79	1.14	4.07	7.2	4.56	-	-	-	-	-
Redox (mV)	-48	-76.5	-55.6	-54	-62	-25	-54.2	-26.8	-28.4	111.1	-79.5	4.11	-11	-16.7	36.6	96.8	44.7	196.4	-	-	-	-	-
Observations	Cloudy grey, no odour	Brown, silty, very slight organic odour	Brown, silty, very slight organic odour	Cloudy, slight organic odour	Cloudy, slight organic odour	Cloudy, slight organic odour	Cloudy, brown tint, slight organic odour	Light brown/grey tint, moderate organic odour	Cloudy, Light brown/grey tint, Moderate organic odour	Cloudy, Light brown/grey tint, Moderate organic odour	Cloudy, Light brown/grey tint, Moderate organic odour	Brown tint, moderate organic odour	Brown tint, moderate organic odour	Milky white, slight brackish odour	Grey/brown tint with slight organic odour	Milky white, slight brackish odour	Grey/brown tint with organic odour	Grey tint, mild organic odour	Very slight brown tint, strong organic odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value

TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value

Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations

Results are marked in brown where they exceeded the RTC

Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 14: Additional Groundwater Analytical Results for GSK Well AGW16 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																									RTC	IGV	TSV	Gw Regs.
	AGW16																												
	04/05/16	13/05/16	19/05/16	24/06/16	01/07/16	07/07/16	14/07/16	21/07/16	27/07/16	05/08/16	11/08/16	18/08/16	26/08/16	Duplicate	02/09/16	09/09/16	16/09/16	23/09/16	28/09/16	13/10/16	27/10/16	Duplicate	10/11/16	23/11/16	Duplicate				
Methyl Tertiary Butyl Ether (MTBE)	<	0.2	0.3	<	1.3	***45.5***	***39.2***	*17.6*	*20.7*	*11.3*	5.1	*11.8*	8.5	9	14.7	6.5	6.9	6.4	5.3	3.5	3.1	2.9	2.6	2.3	2.2	-	30	-	10
Benzene	0.5	0.7	<	<	<	<	0.6	<	<	<	<	<	<	<	<	<	0.6	0.5	1.1	0.5	<	<	<	<	<	-	1	1.0	0.75
Toluene	***3,926***	***3,875***	***3,292***	***785***	**271**	**170**	**64**	<	**54**	<	<	<	15	<	**276**	**52**	**169**	**71**	**118**	**114**	**106**	**108**	**60**	**29**	**28**	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	2	3	2	2	4	4	2	4	4	4	4	5	5	6	6	3	4	3	3	3	3	-	10	-	-
O-Xylene	<	<	<	<	1	1.3	0.8	<	1.8	1.9	<	2.2	2.4	2.4	2	2.9	3.1	3.8	3.6	2	1.9	1.8	1.6	2.3	2.2	-	-	-	-
Ethylbenzene	<	<	<	<	0.8	1.1	0.7	<	0.6	<	<	<	<	<	1.3	<	1.8	1	2.1	1.9	2	1.9	1.8	1.7	1.6	-	10	-	-
Chloromethane	17	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	***28336***	***773***	***190***	***1397***	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	5	5	3	<	<	<	10	10	11	10	10	13	12	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	0.2	0.2	0.3	0.2	<	0.2	<	0.2	<	<	<	<	<	<	<	<	<	0.1	<	<	<	<	<	<	-	-	0.5	0.375
TICs																													
Tetrahydrofuran (THF)	*2084*	*2560*	*2790*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	131	<	<	<	<	<	<	<	<	<	<	<	417	451	1557	988	1882	1707	2433	2290	3554	3608	710	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	1042	2290	<	271	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Sulfur	<	375	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																													
2-Methylphenol	19.3	16.5	61.2	3.5	3.1	<			<										2							-	-	-	-
4-Methylphenol	31	27	40	8	2	<			<										<							-	-	-	-
Phenol	**16930**	**6497**	**5545**	**47**	**3**	<			<										<							20600	0.5	-	-
Phenols (mg/l)																													
Phenol	**44.55**	**5.66**	**4.42**	**0.38**	**0.06**	**0.05**	**0.01**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Resorcinol	<	0.65	0.33	0.03	0.27	0.29	0.33	<	<	<	0.22	0.52	0.02	0.02	0.34	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Catechol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0.05	<	<	-	-	-	-
Total cresols	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0.03	0.03	0.05	<	<	-	-	-	-
Total Speciated Phenols HPLC	44.6	6.3	4.8	0.4	0.3	0.3	0.3	<	<	0.3	0.2	0.5	<	<	0.3	<	<	<	<	<	<	<	0.05	<	<	-	-	-	-
Alcohols (µg/l)																													
Methyl Alcohol (Methanol)	40645	<	<	<	3267	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	28214	1470	789	208	127	<	<	<	152	<	<	137975	105962	120703	187408	199252	153048	350811	257286	321323	127921	112945	17331	2099	2132	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		*25692*	*29362*	*27564*	*23734*	*21217*	*21022*	*26269*	*25781*	*21026*	*23598*	*20008*	*18100*	*17912*	*19665*	*17413*	*14035*	*16564*	*14615*	*13445*	*11193*	*9585*	*8335*	*6916*	*6819*	9310	-	-	115
Field Water Quality Readings																													
pH	7.86	-	7.98	7.79	8.08	7.64	-	7.88	8.27	8.06	7.95	7.98	8.08		7.95	7.88	7.83	7.66	8.08	6.37	7.25		6.91	7.9		-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.4	-	14.9	14.7	15.2	16	-	14.7	14.7	15.1	14.8	14.4	14.7		14.7	14.8	14.2	14.5	14.2	13.9	13.9		13.8	11.8		-	25	-	-
EC (µS/cm)	**1238**	-	**1034**	**1010**	**1002**	906	-	880	910	937	**1074**	**1080**	682		671	**1108**	**1143**	**1486**	**1247**	**1221**	**1757**		**1349**	**1537**		-	1000	2500	800-1875
DO (mg/l)	6.85	-	2.45	-	-	1.7	-	-	-	-	-	-	-		-	5.27	8.23	-	4.51	6.9	5.21		4.48	4.33		-	-	-	-
Redox (mV)	-105	-	-113	-121	-4.5	-123	-	-136.7	-138.5	-154.8	-138	-117.6	-112.8		-85	-106	-70	-	-88	-60	-48		-97	-74		-		-	-
Observations	Black tint, strong chemical odour	-	Black colour, froth, strong organic odour	Brown tint, mod-strong organic odour	Grey tint, moderate organic odour. Pumping 52l/min	Clear, moderate roganic & chemical odour	-	Clear, fizzy. Mild organic odour	Clear, fizzy, moderate organic odour	Clear, fizzy, moderate organic/ chemical odour	Clear, fizzy, moderate organic/ chemical odour	Clear, fizzy, moderate organic/ chemical odour	Clear, fizzy, moderate organic odour		Clear, fizzy, moderate organic odour	Clear, fizzy, moderate organic/ chemical odour	Clear, fizzy, slight chemical odour	Moderate organic odour, fizzy, clear (68l/min)	Clear, moderate chemical odour, (68l/min)	Clear, moderate chemical odour, (68l/min)	Clear, mild chemical odour, (68l/min)		Clear, mild organic odour, (69l/min)	Clear, no odour, (pumping 67l/min)		N/A	N/A	N/A	N/A

Table 14: Additional Groundwater Analytical Results for GSK Well AGW16 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l)																								RTC	IGV	TSV	Gw Regs.
	AGW16																											
	14/12/16	Duplicate	16/01/17	Duplicate	15/02/17	Blank	14/03/17	19/04/17	22/05/17	Duplicate	07/06/17	Duplicate	10/07/17	Duplicate	14/08/17	Duplicate	14/09/17	24/10/17	Duplicate	15/11/17	Duplicate	07/03/18	05/06/18	Duplicate				
Methyl Tertiary Butyl Ether (MTBE)	1.9	2	2.4	2.6	1.3	<	1.4	1.9	2.2	2.2	1.9	2.0	3.4	3.6	2.4	2.4	1.4	1.9	1.9	2.5	2.4	1.8	2.1	2.1	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	2	2	4.0	4.0	2	<	2	2	2	2	<	<	3	3	3	3	<	<	<	<	<	<	<	2	-	10	-	-
O-Xylene	2	2	3.0	3.0	1	<	1	2	2	2	2	2	4	4	3	3	<	2	2	2	2	<	2	2	-	-	-	-
Ethylbenzene	1	<	2.0	2.0	1	<	1	1	2	2	1	1	2	2	1	1	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	9	10	13.0	13.0	9	<	<	10	11	11	11	11	18	18	15	16	15	10	10	9	9	<	12	12	-	-	-	-
Chloroform	<	<	<	<	<	13	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
TICs																												
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																												
2-Methylphenol																									-	-	-	-
4-Methylphenol																									-	-	-	-
Phenol																									20600	0.5	-	-
Phenols (mg/l)																												
Phenol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**1.24**	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
Resorcinol	<	<	<	<	<	<	0.02	0.05	0.05	0.05	<	0.05	0.13	0.14	0.13	0.13	<	<	<	<	<	<	0.07	0.07	-	-	-	-
Catechol	<	<	<	0.05	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	0.1	0.1	0.1	1.4	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																												
Methyl Alcohol (Methanol)	<	<	<	<	<	<	1269	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*6263*	*6348*	*6979*	*6324*	*4921*	<	*3737*	*3324*	*2279*	*2270*	*2732*	*2695*	*2709*	*2790*	*2307*	*2286*	*1831*	*1203*	*1235*	*730*	*743*	*210*	*1070*	*1044*	9310	-	-	115
Field Water Quality Readings																												
pH	7.72		7.26		7.53		6.79	7.48	7.6		7.84		7.63		8.07		7.54	8.25	8.3	7.5		7.76	7.97		-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	13.9		13.9		14		14.3	15.2	15.5		14.4		15		14		14	-	-	14.1		13.2	16.1		-	25	-	-
EC (µS/cm)	**1547**		***2114***		**1830**		**1483**	**1917**	**2362**		**2189**		1175		1167		940	753	886	**1127**		962	**1106**		-	1000	2500	800-1875
DO (mg/l)	4.12		7.3		1.41		1.32	2.01	1.17		1.39		1.56		2.31		1.67	-	-	1.93		1.63	1.24		-	-	-	-
Redox (mV)	-101.1		-98.2		-91.2		163.2	33.2	-159.4		-147.2		-147.6		-153		-145	-	-	-89		-5.6	55.1		-		-	-
Observations	Clear, fizzy, slight solvent odour		Clear, fizzy, mild chemical odour		Clear, Fizzy		Clear, No odour	Clear, No odour	Clear, fizzy, no odour		Clear, fizzy, mild chemical odour		Clear, fizzy, slight solvent odour		Clear, slight solvent odour		Clear, slight organic/ chemical odour,	Clear, slight organic/chemical odour		Clear, moderate solvent odour		Clear, bubbles with slight organic/chemical odour	Clear fizzy, moderate organic / chemical odour		N/A	N/A	N/A	N/A

Table 14: Additional Groundwater Analytical Results for GSK Well AGW16 (January 2016 to June 2019)

VOC (µg/l)	Groundwater Results (ug/l) AGW16				RTC	IGV	TSV	Gw Regs.
	03/12/18	Duplicate	13/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	1.6		1	1.4	-	30	-	10
Benzene	<	<	<	<	-	1	1.0	0.75
Toluene	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	-	10	-	-
O-Xylene	2	2	1	1	-	-	-	-
Ethylbenzene	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	13900	10	-	15
2-Chlorotoluene	10	10	4	5	-	-	-	-
Chloroform	<	<	<	<	-	12	-	-
1,2 Dichloroethane	<	<	<	<	-	3	3	2.25
Isopropylbenzene	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	<	<	<	-	-	0.5	0.375
TICs								
Tetrahydrofuran (THF)	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	-	-	-	-
Sulfur	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	-	-	-	-
Triethylamine	<	<	<	<	-	-	-	-
SVOCs (µg/l)								
2-Methylphenol					-	-	-	-
4-Methylphenol					-	-	-	-
Phenol					20600	0.5	-	-
Phenols (mg/l)								
Phenol	<	<	<	<	20.6	0.0005	-	-
Resorcinol	<	<	<	<	-	-	-	-
Catechol	<	<	<	<	-	-	-	-
o-cresol	<	<	<	<	-	-	-	-
Total cresols	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	-	-	-	-
Alcohols (µg/l)								
Methyl Alcohol (Methanol)	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	-	-	-	-
Ethyl acetate	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*508*	*507*	*514*	*617*	9310	-	-	115
Field Water Quality Readings								
pH	7.81		7.4	7.49	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	14.5		8.9	19.4	-	25	-	-
EC (µS/cm)	**1515**		922	**1556**	-	1000	2500	800-1875
DO (mg/l)	4.47		2.54	2.45	-	-	-	-
Redox (mV)	-12.8		90.9	61.7	-		-	-
Observations	Clear fizzy, moderate organic / chemical odour		clear, slight fizz, moderate organic/chemical odour	clear, slight fizz, moderate organic/chemical odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

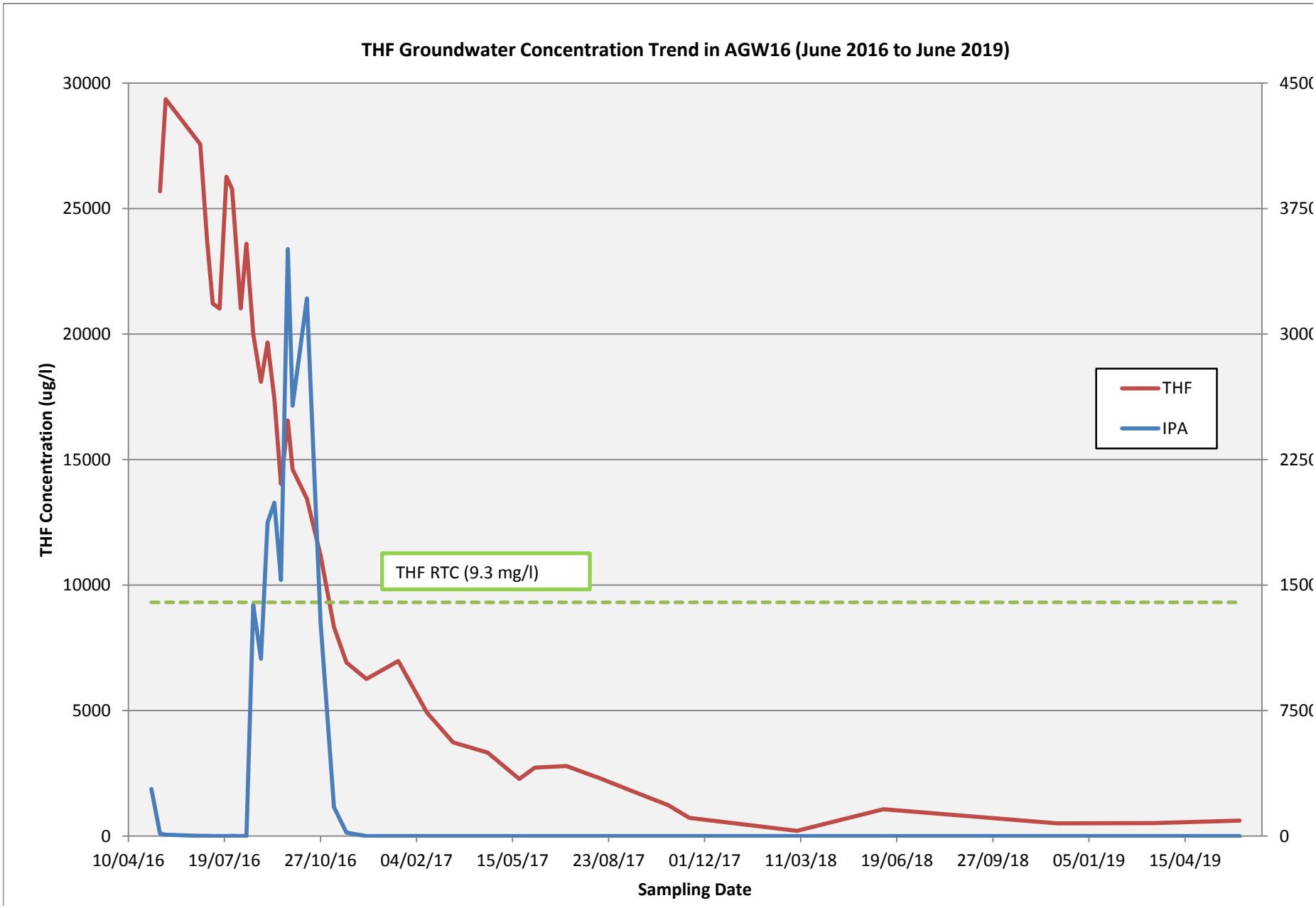

THF Groundwater Concentration Trend in AGW16 (June 2016 to June 2019)
THF Concentration (ug/l)
30000
25000
20000
15000
10000
5000
0
4500
3750
3000
2250
1500
750
0
THF RTC (9.3 mg/l)
THF
IPA
10/04/16
19/07/16
27/10/16
04/02/17
15/05/17
23/08/17
01/12/17
11/03/18
19/06/18
27/09/18
05/01/19
15/04/19
Sampling Date

Table 15: Additional Perched Groundwater Analytical Results for GSK (January 2016 to June 2019)

VOC (µg/l)	Perched Groundwater Results (ug/l)																													RTC	IGV	TSV	Gw Regs.
	MW204																										MW208	MW215	MW217						
	01/04/16	18/05/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	19/04/17	22/05/17	07/06/17	10/07/17	14/08/17	14/09/17	24/10/17	15/11/17	07/03/18	06/06/18	28/09/18	03/12/18	13/03/19	11/06/19	07/04/16	21/04/16	21/04/16	18/05/16	26/08/16				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	0.6	<	<	<	<	<	4.3	5.7	4.4	2.3	2.2	5.0	1.2	2.2	2.8	<	<	<		<		<		<	<	<	-	30	-	10
Benzene	***82.7***	***42.1***	***25.1***	***24.6***	***19.7***	***13.6***	***21.1***	***20.4***	***25.1***	***21.2***	***23.1***	***27.5***	***20.5***	***22.3***	***27.7***	***21.5***	***27.4***	***30***	***19***	***20.8***	***21.8***	***23.5***	***22.6***	***15.2***	***31.6***	***23.6***	***169.4***	***111.3***	***111.1***	-	1	1.0	0.75
Toluene	***19,212***	***18,721***	***20,392***	***32,630***	***25,167***	***12,247***	***30,382***	***15,293***	***25,293***	***18,699***	***15,278***	***23,436***	***19,190***	***21,403***	***17,261***	***16,617***	***27,371***	***7395***	***13408***	***31790***	***24791***	***16596***	***22925***	***24407***	***14.319***	***67,667***	***114,176***	***19,597***	***38,717***	16600	10	-	525
Xylenes (meta & para)	**59**	**33**	**24**	**55**	**34**	**32**	**27**	**34**	**46**	**46**	**36**	**34**	**29**	**33**	**55**	**30**	**29**	**30**	**12**	**26**	**20**	**20**	**22**	**19**	**26**	**139**	<	4	<	-	10	-	-
O-Xylene	5.8	3.3	3.2	6.3	3.2	4.1	3.0	4.0	6.0	6.0	4.0	4.0	4.0	5.0	11	7	5	5	2	4	3	3	3	3	3.5	17.1	<	<	<	-	-	-	-
Ethylbenzene	<	5	4.4	**10.9**	5.1	4.7	5	6.0	8	8	5	5	5	5	11	7	5	6	3	5	3	3	4	4	7.5	**26.9**	<	2	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	6.0	<	<	<	<	<	**20**	**15**	<	<	<	<	<	<	***5708***	***18***	***17***	***<***	***<***		<	<	<	<	<	13900	10	-	15
1,2-Dichloroethane	<	<	<	<	<	<	<	***8.0***	<	<	***4.0***	***10.0***	<	<	***35***	<	<	9	<	<	7	<	<	2	<	<	<	<	<	-	3	3	2.25
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		<	<	<	<	<	-	-	-	-
Vinyl Chloride (VC)	<	<	0.3	<	<	*0.4*	*1.7*	*0.5*	*0.4*	*0.4*	0.3	*0.6*	*0.4*	0.3	1.8	3.4	0.5	0.5	<	<	<	<	<	0.1	<	<	<	<	<	-	-	0.5	0.375
TICs																																	
Tetrahydrofuran (THF)	*1248*	*1133*	<	<	<	<	<	<	<	*5302*	<	<	<	<	<	<	<	<	<	<	<	<	<	<	*1571*	*2729*	<	<	<	9310	-	-	115
Acetone	124	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	366	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	167	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																																	
2-Methylphenol	415	740		<												<					<		<		298	325	162	3200		-	-	-	-
4-Methylphenol	345	720		<												<					<		<		272	314	200	2900		-	-	-	-
Phenol	4	<		<						<						<					<		<		25	<	<	**420**		20600	0.5	-	-
Phenols (mg/l)																																	
Phenol		<	<	0.02	0.03	<	<	<	**0.02**	<	**0.01**	<	0.15	**0.07**	**0.07**	**0.07**	**0.02**	**0.04**	<	**0.06**	**0.08**	<	<	**0.02**		<	<	<	**0.01**	20.6	0.0005	-	-
m/p-cresol		0.71	1.97	0.41	1.2	0.97	1.48	2.02	0.87	0.87	4.33	12.44	9.02	5.86	<	3.01	1.65	2.4	1.36	3.45	1.34	0.95	<	1.04		0.55	0.42	6.68	18.23	-	-	-	-
o-cresol		0.66	1.87	0.41	1.44	1.09	1.92	2.31	1.06	0.97	6.01	17.24	11.53	11.06	<	4.39	3.31	3.6	2.21	6.96	8.75	5.33	<	6.68		0.46	0.33	6.28	20.04	-	-	-	-
Total cresols[#]		1.37	-	0.82	2.64	2.06	3.4	4.33	1.93	1.84	10.34	29.68	20.55	16.92	<	7.4	4.96	6	3.57	10.41	9.91	6.28	<	7.72		1.01	0.75	12.96	-	-	-	-	-
Total Speciated Phenols HPLC		1.4	3.8	0.8	2.7	2.1	3.4	4.3	2	1.8	10.4	30.5	20.8	17	0.2	7.5	5.0	6	3.6	10.5	10.0	6.3	<	7.7		1.00	0.80	13.00	38	-	-	-	-
Alcohols (µg/l)																																	
Methyl Alcohol (Methanol)	2,244	558	5,736	<	3,404	562	981	<	<	<	3,847	1,259	<	<	<	<	<	<	***1,020,717***	761	826	<	<	<	145,752	1,131	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	4,966	<	<	<	<	<	<	<	622	<	<	<	<	<	<	<	<	4,278	<	<	<	<	823	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	11,451	4,100	1,655	1,864	703	1,081	1,425	1,818	1,608	461	152	<	190	212	187	144	341	194	<	587	<	<	<	<	75,934	957	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)		*13271*	*4576*	*13801*	*3595*	*3793*	*3742*	*4047*	*8142*	*5302*	*4579*	*3534*	*5620*	*4404*	*4914*	*2596*	*3599*	*4444*	*1279*	*1627*	*286*	*532*	*235*	*166*				*520*	*1443*	9310	-	-	115
Field Water Quality Readings																																	
pH	-	7.36	6.93	-	-	-	-	6.84	7.6	6.65	6.69	6.85	6.88	6.91	6.93	6.48	6.97	6.89	7.34	6.73	-	7.34	7.31	7.24	-	7.22	6.79	7.13	7.16		≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	-	-	-	-	-	-	-	-	13.5	14.8	-	-	-	-	-	-	-	-	11.2	14.1	-	-	-	13.9	-	-	-		-	-	25		-
EC (uS/cm)	-	923	750	-	-	-	-	1047	**1213**	**1576**	**1379**	**1295**	**1119**	993	1309	1235	**1185**	**1088**	866	**1103**	**-**	**1002**	**925**	**778**	-	900	**1127**	886	**1134**	-	1000	2500	800-1875
DO (mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
Redox (mV)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
Observations	Very Strong organic odour, silty	Silty, black, mod to strong solvent odour	Grey/ orange tint, strong solvent odour	Silty, grey, mod to strong solvent odour	Brown, silty, strong solvent odour	Silty grey, slight organic/ solvent odour	Grey/brown, strong chemical odour	Grey, silty, moderate solvent odour	Clear, Moderate solvent odour	Clear, Moderate solvent odour	Dary grey, cloudy, moderate solvent odour	Dark grey, moderate solvent odour	Clear, moderate solvent odour	Dark grey, silty, moderate solvent odour	Dark grey, silty, moderate solvent odour	Dark grey, silty, strong solvent odour	Brown tint, silty, moderate solvent odour	Grey silty, strong solvent odour	Clear with strong solvent odour	Brown, silty, strong solvent odour	Orange tint, strong solvent odour	Orange/brown tint, moderate to strong solvent odour	Grey/orange tint, moderate solvent odour	Brown, silty, strong solvent odour	Silty, black, mod to strong solvent odour	Silty, brown, moderate solvent odour	Silty, black, very strong solvent odour	Silty, grey/black, strong solvent odour	Grey, silty, moderate solvent odour	N/A	N/A	N/A	N/A

Table 15: Additional Perched Groundwater Analytical Results for GSK (January 2016 to June 2019)

VOC (µg/l)	Perched Groundwater Results (ug/l)																			RTC	IGV	TSV	Gw Regs.
	MW227																						
	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	06/07/17	12/09/17	15/11/17	07/03/18	05/06/18	28/09/18	03/12/18	13/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	1.0	0.75
Toluene	<	<	<	**113**	<	<	**2020**	<	<	<	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
TICs																							
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	33	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																							
2-Methylphenol	33	<								<						<		<		-	-	-	-
4-Methylphenol	10	<								<						<		<		-	-	-	-
Phenol	<	<								<						<		<		20600	0.5	-	-
Phenols (mg/l)																							
Phenol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
m/p-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols#	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																							
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*295*	*144*	*160*	78	10	<	48	34	9	33	<	<	21	14	1	<	<	<	<	9310	-	-	115
Field Water Quality Readings																							
pH		7.2	7.66	7.07	6.59	7.67	8.3	6.74	6.68	6.9	6.86	6.49	6.58	6.85	7.51	8.29	7.14	6.61	7.14		≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)		13.7	13.9	14.4	14.1	13.1	12.9	13.4	12.4	13	13.1	13.8	13.9	11.3	13.2	14.4	13.8	12.5	14.5	-	25		-
EC (µS/cm)		**1208**	**905**	**1533**	**1480**	**1528**	**1414**	**1541**	**2069**	**1279**	**1515**	**629**	**1252**	941	908	1705	1218	799	1359	-	1000	2500	800-1875
DO (%/mg/l)		-	-	4.74	4.84	7.32	7.17	5.58	2.16	3.7	2.54	4.43	4.19	5.06	4.73	4.7	4.95	4.11	-	-	-	-	-
Redox (mV)		-19.6	-27.8	-31	-57	-22	-0.2	-12.7	-13.6	31.7	-43.4	23.6	-26	76.3	-12.7	71.6	-7.6	63.3	-	-	-	-	-
Observations		Grey/brown, very silty, slight organic odour	Grey/brown, very silty, slight organic odour	Grey/ brown silty, no odour	Grey/ brown silty, no odour	Grey/ brown silty, no odour	Grey/brown, silty, no odour	Grey/brown, no odour	Grey/brown, No odour	Grey/ brown silty, No odour	Grey-brown, silty, no odour	Brown, silty, no odour	Brown, sandy, silty, mod chemical	Brown, silty with no odour	Grey/brown, silty, no odour	Brown, silty with no odour	Brown, silty with no odour	Brown, silty, no odour	Brown tint, silty, slight organic/chemical odour	N/A	N/A	N/A	N/A

Table 15: Additional Perched Groundwater Analytical Results for GSK (January 2016 to June 2019)

VOC (µg/l)	Perched Groundwater Results (ug/l)																			RTC	IGV	TSV	Gw Regs.
	MW228																						
	18/05/16	28/07/16	26/08/16	28/09/16	27/10/16	23/11/16	14/12/16	16/01/17	15/02/17	14/03/17	07/06/17	14/09/17	15/11/17	07/03/18	06/06/18	28/09/18	03/12/18	13/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	*156*	*19*	5.4	6.6	3.9	3.0	3.8	1.5	1.8	1.8	1.4	1.5	1.1	2.7	1.8	0.7	0.2	0.9	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	1	1.0	0.75
Toluene	***1,847***	***840***	***3,093***	**486**	**235**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	**505**	<	**62**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13900	10	-	15
1,2-Dichloroethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	3	3	2.25
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Chloroform	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	12	-	-
Vinyl Chloride (VC)			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	0.5	0.375
TICs																							
Tetrahydrofuran (THF)	*1343*	<	<	<	<	<	<	<	<	*2161*	<	<	<	<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	5741	28919	17255	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<	108	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																							
2-Methylphenol	245	11		<												<		<		-	-	-	-
4-Methylphenol	71	4		<												<		<		-	-	-	-
Phenol	***4500***	***16***		<												<		<		20600	0.5	-	-
Phenols (mg/l)																							
Phenol	**20.19**	**0.04**	**0.02**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	20.6	0.0005	-	-
m/p-cresol	<	<	<	<	0.23	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
o-cresol	<	0.1	0.03	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total cresols[#]	<	<	0.03	<	0.23	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Total Speciated Phenols HPLC	20.20	<	<	<	0.23	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Alcohols (µg/l)																							
Methyl Alcohol (Methanol)	<	1844	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	6849	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Isopropyl Alcohol	6487	1431	617182	871291	289404	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	*15635*	*17361*	*16475*	*23097*	*17499*	*13083*	*9320*	*5847*	*3300*	*2161*	85	14	14	<	<	<	<	<	<	9310	-	-	115
Field Water Quality Readings																							
pH		7.46	7.47	-	-	-	-	6.87	6.73	6.78	6.69	6.72	6.74	7.08	7.98	8.33	7.62	7.06	7.33		≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)		15.9	16.3	-	-	-	-	-	14.8	16.4	-	-	15.1	12.5	14.4	16.7	15	13.3	15	-	25		-
EC (µS/cm)		**832**	**705**	-	-	-	-	**1177**	**1016**	**1065**	**1276**	**1373**	786	731	638	1022	671	449.6	963	-	1000	2500	800-1875
DO (%/mg/l)		-	-	-	-	-	-	-	-	-	-	-	1.41	6.6	2.38	3.3	5.02	4.03	-	-	-	-	-
Redox (mV)		-119.2	-121.6	-	-	-	-	-	-	-	-	-	-54	146.4	75.5	85.4	-56	97	-	-	-	-	-
Observations		Grey/ brown, silty, slight organic odour	Grey/ brown, silty, moderate organic odour	Grey/ brown, silty, mod organic/ chemical odour	Grey/ brown, silty, slight organic/ chemical odour	Grey/ brown, silty, mod organic/ chemical odour	Grey/brown, very silty, mod organic/chemical odour	Grey/brown, very silty, mod organic/chemical odour	Grey/brown, Very silty, Mod organic/chemical odour	Grey/brown, Very silty, Mod organic/chemical odour	Grey/brown, Very silty, Mod organic/chemical odour	Brown, sandy, mod chemical odour	Sandy brown, mild solvent, mod organic odour	Sandy brown with no odour	Grey/brown, silty with slight organic odour	Sandy brown with no odour	Brown, silty with no odour	Red/brown sint, silty, no odour	Orange/brown tint, silty, no odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

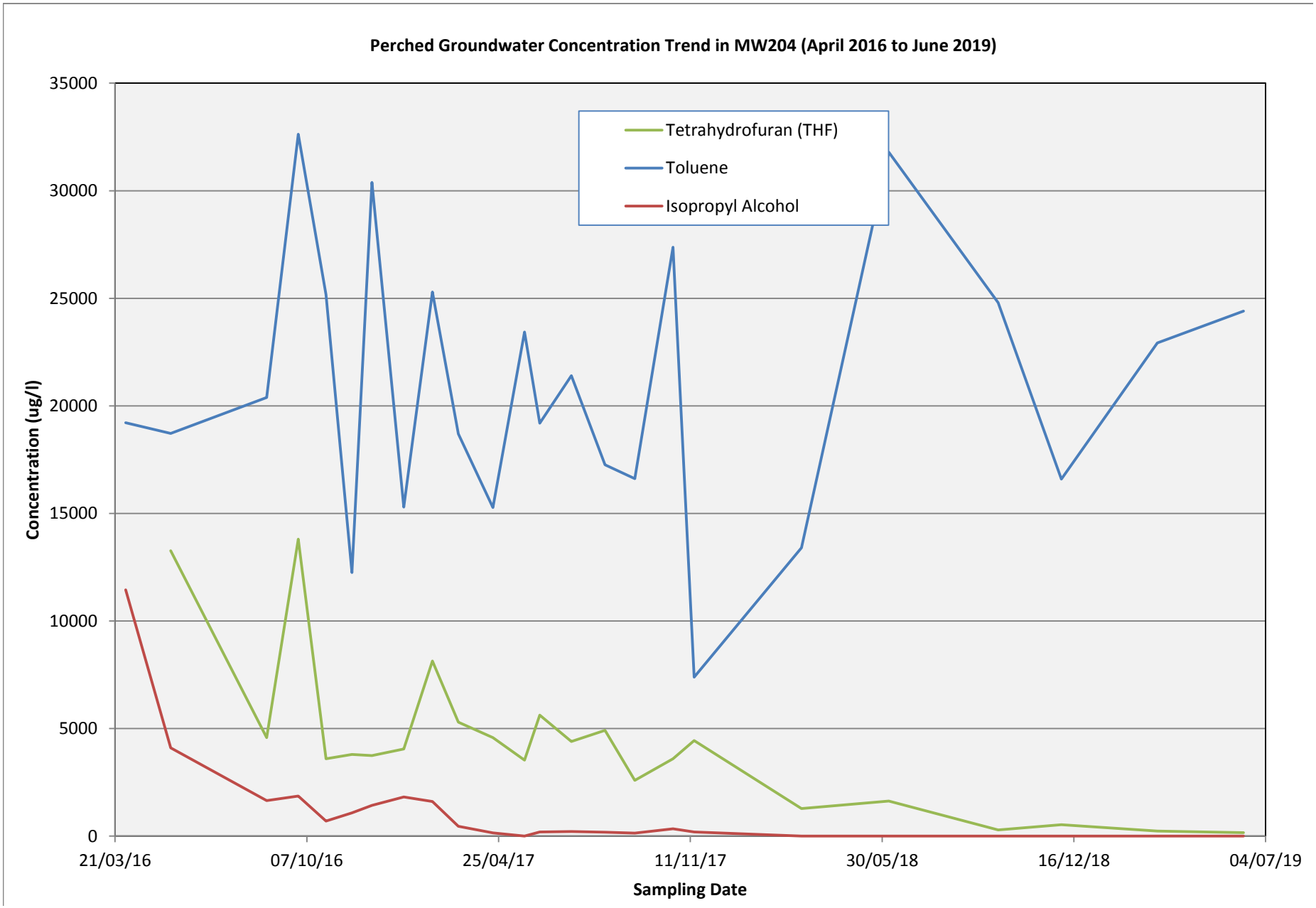

Perched Groundwater Concentration Trend in MW204 (April 2016 to June 2019)
Tetrahydrofuran (THF)
Toluene
Isopropyl Alcohol
Concentration (ug/l)
35000
30000
25000
20000
15000
10000
5000
0
21/03/16
07/10/16
25/04/17
11/11/17
30/05/18
16/12/18
04/07/19
Sampling Date

Table 16: Additional Other Water Analytical Results for GSK (January 2016 to June 2019)

VOC (µg/l)	Other Water Results (ug/l)																											RTC	IGV	TSV	Gw Regs.
	Process Drain	Compliance Point																										Foul Drain				
	31/03/16	31/03/16	25/06/16	27/07/16	28/07/16	27/10/16	23/11/16	15/12/16	16/01/17	15/02/17	14/03/17	22/05/17	06/06/17	10/07/17	14/08/17	12/09/17	24/10/17	14/11/17	05/06/18	18/06/18	28/06/18	28/09/18	03/12/18	13/03/19	11/06/19	13/10/16	27/10/16				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	1	1.0	0.75
Toluene	**89**	<	<	<	**19**	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	**38**	**37**	16600	10	-	525
Xylenes (meta & para)	1	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Ethylbenzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	10	-	-
Chloromethane	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	13900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Chloroform	**14**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	8	-	12	-	-
Vinyl Chloride (VC)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	0.5	0.375
TICs																															
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	9310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	1000000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Methyl Isobutyl Ketone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
Silanol, trimethyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
2-Pentanol, 4-methyl-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<	<	<	-	-	-	-
SVOCs (µg/l)																															
2-Methylphenol	<	<			<	<																						-	-	-	-
4-Methylphenol	<	<			<	<																						-	-	-	-
Phenol	<	<			<	<					<																	20600	0.5	-	-
Phenols (mg/l)																															
Catechol			<	<	<	<	<	<	<	<	<	<	<	<	0.38	<	<	<	<			<	<	<	<		<					
Phenol			<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<			<	<	<	<		1.01	20.6	0.0005	-	-	
m/p-cresol			<	<	<	<	<	<	<	<	<	0.11	<	<	<	<	<	<	<			<	<	<	<		1.37	-	-	-	-	
o-cresol			<	<	<	<	<	<	<	<	<	0.14	<	<	<	<	<	<	<			<	<	<	<		<	-	-	-	-	
Total cresols#			<	<	<	<	<	<	<	<	<	0.25	<	<	<	<	<	<	<			<	<	<	<		1.37	-	-	-	-	
Total Speciated Phenols HPLC			<	<	<	<	<	<	<	<	<	0.30	<	<	0.40	<	<	<	<			<	<	<	<		2.4	-	-	-	-	
Alcohols (µg/l)																															
Methyl Alcohol (Methanol)	1,260,025	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1000000	-	-	-
Ethyl Alcohol (Ethanol)	1784	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	631	544	1000000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	453	<	1000000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)			<	<	<	<	<	<	<	<	<	<	14	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9310	-	-	115
Field Water Quality Readings																															
pH	-		7.45	7.92	6.71	6.1	6.75	7.39	6.4	6.33	6.12	7.0	6.8	7.6	7.8	7.5	8.0	5.0	8.2	8.0	8.1	9.0	7.5	7.2	7.2	-	-	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	-		19	17.4	-	-	8.8	-	9.7	10.7	13.3	14.7	14.1	17.6	17.4	14.5	-	11.2	22	18.5	21.4	16	9.8	9.3	15.7	-	-	-	25	-	-
EC (µS/cm)	-	***31633***	***45360***	***37568***	***49446***	***40123***	***36714***	***43286***	***37505***	***37312***	***28726***	***22896***	***42561***	***24867***	***24314***	***23512***	***19731***	***42585***	***31075***	***30056***	***41029***	***37641***	***25078***	***19975***	***37712***	-	-	-	1000	2500	800-1875
DO (%/mg/l)	-	7.34	-	-	-	-	11.72	-	6.74	8.5	7.14	8.51	8.38	6.05	7.08	6.77	-	6.48	8.56	9.85	8.33	6.2	10.54	8.29	5.5	-	-	-	-	-	-
Redox (mV)	-	45	91.4	57.9	-	-	-40	-	39.7	1.1	99.1	262.5	286.4	16.7	103	-30	-	199	84.1	79	192	237.9	219.1	20.7	110.9	-	-	-	-	-	-
Observations	Very Strong organic odour, silty	Clear water, no odour	Clear, moderate organic odour	Clear, no odour	Clear, no odour	Clear, moderate organic odour	Clear, brackish odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear, brackish, no odour	Clear brackish	Clear brackish	Clear brackish	Clear brackish	Clear, no odour	Clear, brackish	Clear, brackish	Light brown colour	Light brown colour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 17: Additional Water Analytical Results for GSK (July 2018 to June 2019)

	Groundwater Results (ug/l)																				RTC	IGV	TSV	Gw Regs.
	BH/MW301				BH/MW304				BH/MW305				AGW19				AGW20							
VOC (µg/l)	12/07/18	04/12/18	13/03/19	11/06/19	12/07/18	04/12/18	13/03/19	11/06/19	12/07/18	04/12/18	13/03/19	11/06/19	14/08/18	04/12/18	13/03/19	11/06/19	14/08/18	04/12/18	13/03/19	11/06/19				
Methyl Tertiary Butyl Ether (MTBE)	<	<	<	<	1.7	<	<	<	0.2	<	<	<	6.7	4.6	4.1	*15.6*	*18.1*	*13.4*	8	5.1	-	30	-	10
Benzene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	0.5	<	0.6	<	<	-	1.0	1.0	0.75
Toluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	16,600	10	-	525
Xylenes (meta & para)	<	<	<	<	<	<	<	<	<	<	<	<	3	**12**	2	**<**	**13**	<	<	<	-	10	-	-
O-Xylene	<	<	<	<	<	<	<	<	<	<	<	<	<	3	<	<	7	<	<	<	-	-	-	-
Ethylbenzene	3	3	2	3	<	<	<	<	<	<	<	<	<	3	2	<	7	<	<	<	-	10	-	-
Isopropylbenzene	<	<	<	<	12	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Dichloromethane (DCM)	<	<	<	<	<	**13**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	13,900	10	-	15
2-Chlorotoluene	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<		-	-	-
TICs (µg/l)																								
Tetrahydrofuran (THF)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	9,310	-	-	115
Acetone	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Dimethyl sulfide	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Cyclic octaatomic sulfur	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Benzene, pentafluoro-	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<				
SVOCs (µg/l)																								
2-Methylphenol																					-	-	-	-
4-Methylphenol																					-	-	-	-
Phenol																					20,600	0.5	-	-
Phenols (mg/l)																								
Phenol	<	<	<	<		0.03	<	0.02	<	<	<	<		<	<	<		<	<	<	20.6	0.0005	-	-
m/p-cresol	<	<	<	<		0.37	<	0.11	<	<	<	<		<	<	<		<	<	<	-	-	-	-
o-cresol	<	<	<	<		<	<	<	<	<	<	<		<	<	<		<	<	<	-	-	-	-
Total cresols #	<	<	<	<		0.37	<	0.11	<	<	<	<		<	<	<		<	<	<	-	-	-	-
Catechol	<	0.07	<	<		<	<	<	<	<	<	<		<	<	<		<	<	<	-	-	-	-
Total Speciated Phenols HPLC	<	<	<	<		0.4	<	0.1	<	<	<	<		<	<	<		<	<	<	-	-	-	-
Alcohols (µg/l)																								
Methyl Alcohol (Methanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Ethyl Alcohol (Ethanol)	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
Isopropyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	1,000,000	-	-	-
n-Propyl Alcohol	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	-	-	-	-
Tetrahydrofuran (THF)	3	2	1	2	<	<	2	<	1	<	<	<	*14*	*650*	*12*	<	4	<	2	12	9,310	-	-	115
Field Water Quality Readings																								
pH	8.28	8.95	8.73	8.88	6.72	6.72	6.99	6.82	6.91	7.11	6.59	6.95	6.87	7.11	6.97	6.85	6.84	7.31	6.98	6.95	-	≥6.5-9.5≤	≥6.5-9.5≤	-
Temp (°C)	-	14.2	12.2	15.4	-	-	12.3	14.7	-	11.8	10.7	14.9	-	13.8	10.4	17.1	-	13.9	12.3	16.7	-	25	-	-
EC (µS/cm)	**1360**	**1039**	647	946	***2065***	***1886***	864	1594	***14680***	***18462***	***7605***	***17201***	**-**	***6963***	***4141***	***10228***	**-**	***5494***	***6447***	***6387***	-	1000	2500	800-1875
DO (%/mg/l)	-	7.44	3.81	-	-	-	1.96	-	-	6.22	6.37	-	-	3.26	2.18	2.3	-	1.92	2.2	5.36	-	-	-	-
Redox (mV)	-	30.4	76.7	-	-	-	-24	-	-	22.2	13.4	-	-	-73.9	45.1	-10.4	-	-98.5	-42.1	2.2	-	-	-	-
Observations	Greyish brown, organic odour	Green-grey tint,organic odour	Green/grey tint, mild organic/chemical odour	Slightly cloudy, slight organic/chemical	Greyish-brown, moderate organic/chemical and solvent odour	Darkgrey tint, foul odour	Dark grey tint, mild organic/chemical odour	Black, very silty, slight solvent/foul odour	Dark grey, mild organic/chemical and solvent odour	Dark grey tint, mild organic/chemical and solvent odour	Dark grey tint, mild organic/chemical odour	Dark grey tint, slightly silty, no odour	Clear, brackish/organic odour	Clear, moderate organic/chemical odour	Clear, mild organic/chemical odour	Clear, slight organic/chemical odour	Clear, brackish/organic odour	Clear, mild organic/chemical odour	Clear, mild organic/chemical odour	Clear, mild organic/chemical odour	N/A	N/A	N/A	N/A

Legend

IGV = EPA Interim Guideline Value
TSV = Groundwater EPA Threshold Screening Value or Drinking Water Parametric Value
Results are in **bold** where they exceed the EPA IGV

RTC - Remedial Target Concentations
Results are marked in brown where they exceeded the RTC
Results are italics where they exceed the TSV or Gw Regs SI 366 of 2016

Table 18: Groundwater Levels to Datum - 11th June 2019

Well ID	Easting (ITM)	Northing (ITM)	Datum Malin	Groundwater Level mbtoc (11th June 19)	Groundwater Level (mOD)
AGW1a	578109	562768	8.80	7.01	1.79
AGW2	578112	562890	7.03	6.59	0.44
AGW3	578195	562962	4.48	4.16	0.32
AGW4	578293	563006	3.35	3.17	0.18
AGW5	578320	562879	8.19	7.8	0.39
AGW6	578263	562719	8.87	8.02	0.85
AGW7	578173	562905	8.00	Dry	
AGW8	578367	562702	9.41	8.83	0.58
AGW9	578194	562586	6.55	5.8	0.75
AGW10	578041	562696	7.65	7.14	0.51
AGW11a	578214	562921	6.64	6.35	0.29
AGW12	578287	562885	7.92	7.15	0.77
AGW13	578225	562826	8.61	7.32	1.29
AGW14	578224	562895	7.70	7.00	0.70
AGW16	578235	562849	7.85	7.19	0.67
AGW17	578160	562896	7.74	7.47	0.27
AGW18	577943	562746	4.29	3.98	0.31
AGW19	-	-	5.57	5.36	0.21
AGW20	-	-	3.91	3.95	-0.04
MW204	578219	562863	7.78	6.46	1.32
MW208	578224	562863	8.03	Dry	
MW210	578210	562865	8.14	Dry	
MW215	578223	562873	7.88	Dry	
MW217	578216	562854	8.12	Dry	
MW227	578235	562874	7.83	6.92	0.91
MW228	578233	562836	8.06	7.24	0.82
MW230	578217	562871	7.91	Dry	
MW301	-	-	7.60	1.64	5.96
MW304	-	-	5.76	5.43	0.33
MW305	-	-	3.78	2.93	0.85
SEEP1	578329	563052	-0.16		-0.16

Notes:
mOD = metres above Ordnance Datum (Malin Head)
mbtoc = metres below top of casing
Well pumping at time of measurement

APPENDIX A
MONITORING SAMPLING LOGS

GROUNDWATER SITE LOG SHEET

Client:	GSK	**Job Ref:**	51823
Date:	11-Jun-19	**Log by:**	JOS/DMC/JC
Site:	Currabinny	**Weather:**	

Sample ID	pH	Temp (°C)	EC (µS/cm)	DO, mg/l	ORP, mV	Water Level, mBTOC	Well Depth, mBTOC	Purge Vol (L)	Recharge Notes	Sampling date	BH dia.	Odour	Visual Notes
AGW1a	Lab	14.9	562	-	-	7.01	8.42	8	Good	11/06/2019	50mm	Mild organic	Brown/red, very cloudy, some black suspended solids
AGW2	Lab	15.3	1462	-	-	6.59	8.58	12	Good	11/06/2019	50mm	Moderate organic/chemical	Grey tint, cloudy with black and brown suspended solids
AGW3	6.52	15.4	8209	6.53	94.4	4.16	14.95	65	Good	11/06/2019	50mm	None	Clear, slight fizz
AGW4	6.79	13.9	19935	7.48	181.3	3.17	7.44	26	Good	11/06/2019	50mm	Brackish	Clear water
AGW5	7.28	17.0	1993	2.04	-44.3	7.80	11	19	Pumping	11/06/2019	150mm	Moderate organic/chemical	Clear water
AGW6	8.10	14.7	572	6.42	-16.7	8.02	11.05	18	Poor, dry at 10L	11/06/2019	50mm	Very slight organic	Brown, cloudy, slightly silty
AGW8	Lab	14.7	803	-	-	8.83	15.9	42	Poor, dry at 20L	11/06/2019	50mm	None	Clear water
AGW9	Lab	16.0	1324	-	-	5.80	9.3	21	Good	11/06/2019	50mm	None	Slight grey tint, slightly cloudy
AGW10	Lab	15.7	1063	-	-	7.14	8.03	5	Moderae	11/06/2019	50mm	None	Light brown tint
AGW11a	6.85	19.2	4330	4.86	40.0	6.35	12.9	39	Good	11/06/2019	50mm	None	Orange/brown, silty
AGW12	7.21	13.2	1494	3.92	26.4	7.15	8.94	11	Moderae	11/06/2019	50mm	Moderate organic/chemical	Grey tint
AGW13	Lab	17.3	1139	-	-	7.32	13.6	38	Good	11/06/2019	50mm	Moderate organic/chemical	Dark grey tint with some black suspended soilds
AGW14 #	7.09	19.7	2668	3.01	-0.2	7.00	18.3	68	Pump turned on	11/06/2019	150mm	Moderate organic/chemical	Clear, slight fizz

= Duplicate taken on AGW 14 - AGW21 (15.4mBGL)

GROUNDWATER SITE LOG SHEET

Client:	GSK	**Job Ref:**	51823
Date:	11-Jun-19	**Log by:**	JOS/DMC/JC
Site:	Currabinny	**Weather:**	

Sample ID	pH	Temp (°C)	EC (µS/cm)	DO, mg/l	ORP, mV	Water Level, mBTOC	Well Depth, mBTOC	Purge Vol (L)	Recharge Notes	Sampling date	BH dia.	Odour	Visual Notes
AGW16	7.49	19.4	1556	2.45	61.7	7.185	24.5	104	Pumping	11/06/2019	150mm	Moderate organic/chemical	Clear, slight fizz
AGW17	7.21	15.6	2512	2.3	-43.7	7.47	18.4	66	Pump turned on	11/06/2019	150mm	Mild organic/chemical	Clear water
AGW18	Lab	13.5	1932	-	-	3.98	6.98	18	Good	11/06/2019	50mm	Strong organic	Clear water, very slight brown tint
AGW19	6.85	17.1	10228	2.3	-10.4	5.36	9.1	22	Pumping	11/06/2019	150mm	Slight organic/chemical	Clear water
AGW20	6.95	16.7	6387	5.36	2.2	3.95	8.88	30	Pumping	11/06/2019	150mm	Mild organic/chemical	Clear water
MW204	Lab	13.9	778	-	-	6.46	8.3	11	Good	11/06/2019	50mm	Strong solvent	Brown tint, cloudy, very slightly silty
MW227	Lab	14.5	1359	-	-	6.92	9.76	17	Moderate	11/06/2019	50mm	Slight organic/chemical	Brown tint, silty
MW228	Lab	15	963	-	-	7.24	8.15	5	Good	11/06/2019	50mm	None	Orange/brow tint, slightly silty
CP	7.15	15.7	37712	5.5	110.9	-	-	-	-	11/06/2019	50mm	Brackish	Clear water
MW301	Lab	15.4	946	-	-	1.64	3.04	8	Good	11/06/2019	50mm	Slight organic/chemical	Clear, very slightly cloudy
MW304	Lab	14.7	1594	-	-	5.43	5.63	1	Moderate	11/06/2019	50mm	Slight solvent/foul	Black, very silty
MW305	Lab	14.9	>4000	-	-	2.93	3.21	2	Moderate	11/06/2019	50mm	None	Dark grey tint, slightly silty

APPENDIX B

LABORATORY CERTIFICATES

For

Quarter 2 - 11th June 2019

Additional AGW5 – 21ST June 2019

Additional AGW5 – 10th July 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

Verde Environmental Consultants
Unit 3 Airport E.Business & Technology Park
Farmers Cross
Cork

Attention :	Donal Hogan
Date :	18th June, 2019
Your reference :	51823
Our reference :	Test Report 19/9561 Batch 1
Location :	
Date samples received :	13th June, 2019
Status :	Final report
Issue :	1

Twenty six samples were received for analysis on 13th June, 2019 of which twenty six 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.

Compiled By:

Bruce Leslie
Project Manager

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

Report : Liquid

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

EMT Sample No.	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48	49-54	55-60	LOD/LOR	Units	Method No.
Sample ID	AGW1a	AGW2	AGW3	AGW4	AGW5	AGW6	AGW8	AGW9	AGW10	AGW11			
Depth	8.42	8.58	14.95	7.44	11.00	11.05	15.90	9.30	8.03	12.90			
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G			
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019			
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	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019			
VOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM15/PM10
Resorcinol	<0.01	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Catechol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
m/p-cresol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/l	TM26/PM0
o-cresol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Total cresols #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	mg/l	TM26/PM0
Xylenols #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/l	TM26/PM0
1-naphthol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
2,3,5-trimethyl phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
2-isopropylphenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Total Speciated Phenols HPLC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/l	TM26/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
Tetrahydrofuran	<1	<1	2	2	1271 ++	<1	<1	<1	6	<1	<1	ug/l	TM83/PM10
Ammoniacal Nitrogen as NH4 #	0.05	4.78	17.92	18.48	7.69	<0.03	0.04	2.93	4.09	24.46	<0.03	mg/l	TM38/PM0
Electrical Conductivity @25C #	-	-	-	-	-	-	-	-	-	-	<2	uS/cm	TM76/PM0
pH #	7.50	7.00	-	-	-	-	8.13	8.11	7.65	-	<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

Report : Liquid

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

EMT Sample No.	61-66	67-72	73-78	79-84	85-90	91-96	97-102	103-108	109-114	115-120	LOD/LOR	Units	Method No.
Sample ID	AGW12	AGW13	AGW14	AGW16	AGW17	AGW18	AGW19	AGW20	AGW21	MW204			
Depth	8.94	13.60	18.30	24.50	18.40	6.98	9.10	8.88	15.40	8.30			
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G			
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019			
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	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019			
VOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM15/PM10
Resorcinol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Catechol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Phenol #	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	mg/l	TM26/PM0
m/p-cresol	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1.04	<0.02	mg/l	TM26/PM0
o-cresol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	6.68_{AA}	<0.01	mg/l	TM26/PM0
Total cresols #	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	7.72	<0.03	mg/l	TM26/PM0
Xylenols #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/l	TM26/PM0
1-naphthol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
2,3,5-trimethyl phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
2-isopropylphenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	mg/l	TM26/PM0
Total Speciated Phenols HPLC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7.7	<0.1	mg/l	TM26/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
Tetrahydrofuran	<1	<1	<1	617	<1	<1	<1	12	<1	166	<1	ug/l	TM83/PM10
Ammoniacal Nitrogen as NH4 #	22.44	6.75	21.25	16.66	26.13	4.98	51.64	26.21	20.96	5.25	<0.03	mg/l	TM38/PM0
Electrical Conductivity @25C #	-	-	-	-	-	-	-	-	-	-	<2	uS/cm	TM76/PM0
pH #	-	7.59	-	-	-	7.40	-	-	-	7.24	<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

Report : Liquid

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

EMT Sample No.	121-126	127-132	133-138	139-144	145-150	151-156					LOD/LOR	Units	Method No.
Sample ID	MW227	MW228	MW301	MW304	MW305	CP							
Depth	9.76	8.15	3.04	5.63	3.21								
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G							
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019							
VOC TICs	ND	ND	ND	ND	ND	ND						None	TM15/PM10
Resorcinol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Catechol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Phenol #	<0.01	<0.01	<0.01	0.02	<0.01	<0.01					<0.01	mg/l	TM26/PM0
m/p-cresol	<0.02	<0.02	<0.02	0.11	<0.02	<0.02					<0.02	mg/l	TM26/PM0
o-cresol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Total cresols #	<0.03	<0.03	<0.03	0.11	<0.03	<0.03					<0.03	mg/l	TM26/PM0
Xylenols #	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06					<0.06	mg/l	TM26/PM0
1-naphthol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
2,3,5-trimethyl phenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
2-isopropylphenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01					<0.01	mg/l	TM26/PM0
Total Speciated Phenols HPLC	<0.1	<0.1	<0.1	0.1	<0.1	<0.1					<0.1	mg/l	TM26/PM0
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500	<500	<500	<500	<500	<500					<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500	<500	<500	<500	<500	<500					<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
Methyl Acetate	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
Ethyl Acetate	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
i-Propyl Acetate	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Propyl Acetate	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
n-Butyl Acetate	<100	<100	<100	<100	<100	<100					<100	ug/l	TM83/PM10
Tetrahydrofuran	<1	<1	2	<1	<1	<1					<1	ug/l	TM83/PM10
Ammoniacal Nitrogen as NH4 #	1.82	5.85	9.48	9.11	4.12	0.73					<0.03	mg/l	TM38/PM0
Electrical Conductivity @25C #	-	-	-	-	17201	-					<2	uS/cm	TM76/PM0
pH #	7.14	7.33	8.88	6.82	6.95	-					<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

VOC Report : **Liquid**

EMT Sample No.	1-6	7-12	13-18	19-24	25-30	31-36	37-42	43-48	49-54	55-60	LOD/LOR	Units	Method No.
Sample ID	AGW1a	AGW2	AGW3	AGW4	AGW5	AGW6	AGW8	AGW9	AGW10	AGW11			
Depth	8.42	8.58	14.95	7.44	11.00	11.05	15.90	9.30	8.03	12.90			
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G			
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019			
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	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	3.6	1.9	14.4	6.0	<0.1	<0.1	0.3	0.3	1.5	<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	<0.5	<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	<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	5	<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	102	100	102	97	101	100	102	101	109	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	103	102	100	102	99	102	101	103	104	104	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

VOC Report : **Liquid**

EMT Sample No.	61-66	67-72	73-78	79-84	85-90	91-96	97-102	103-108	109-114	115-120	LOD/LOR	Units	Method No.
Sample ID	AGW12	AGW13	AGW14	AGW16	AGW17	AGW18	AGW19	AGW20	AGW21	MW204			
Depth	8.94	13.60	18.30	24.50	18.40	6.98	9.10	8.88	15.40	8.30			
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G	V H G			
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019			
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	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019			
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	4.5	1.0	2.9	1.4	11.7	2.2	15.6	5.1	2.8	<0.1	<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	2.3	<0.5	<0.5	<0.5	0.5	<0.5	2.6	15.2	<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	24407 ++	<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	4	<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	19	<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	1	<1	<1	<1	<1	<1	3	<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 #	10	<3	<3	5	<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	105	104	108	101	108	101	106	103	104	77	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	106	105	105	105	107	102	103	105	105	72	<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/9561

VOC Report : **Liquid**

EMT Sample No.	121-126	127-132	133-138	139-144	145-150	151-156					LOD/LOR	Units	Method No.
Sample ID	MW227	MW228	MW301	MW304	MW305	CP							
Depth	9.76	8.15	3.04	5.63	3.21								
COC No / misc													
Containers	V H G	V H G	V H G	V H G	V H G	V H G							
Sample Date	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019	11/06/2019							
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Surface Water							
Batch Number	1	1	1	1	1	1							
Date of Receipt	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019	13/06/2019							
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	0.9	<0.1	<0.1	<0.1	<0.1					<0.1	ug/l	TM15/PM10
Chloromethane #	<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	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5	<5	<5	<5	<5	<5					<5	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<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	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	<5	<5					<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1	3	<1	<1	<1					<1	ug/l	TM15/PM10
m/p-Xylene #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
o-Xylene #	<1	<1	<1	<1	<1	<1					<1	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	<4	<4					<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	<2	<2					<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	<3	<3					<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	96	98	98	99	97	96					<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	98	98	103	98	95					<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/9561						

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: 19/9561

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. 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.

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.

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.
++	Result outside calibration range, results should be considered as indicative only and are 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	x20 Dilution

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

EMT Job No: 19/9561

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 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM76	Modified US EPA method 120.1. Determination of Specific Conductance by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM83	Modified USEPA method 8260. Determination of Alcohols, Acetates, Acetone, Fuel Oxygenates, THF and Cyclohexane by Headspace GC-MS	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				

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Verde Environmental Consultants
Unit 3 Airport E.Business & Technology Park
Farmers Cross
Cork

Attention :	Donal Hogan
Date :	25th June, 2019
Your reference :	51823
Our reference :	Test Report 19/10059 Batch 1
Location :	
Date samples received :	21st June, 2019
Status :	Final report
Issue :	1

One sample was received for analysis on 21st June, 2019 of which one was 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.

Compiled By:

Lucas Halliwell
Project Co-ordinator

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/10059

Report : Liquid

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

EMT Sample No.	1-3												
Sample ID	AGW-5												
Depth													
COC No / misc													
Containers	V												
Sample Date	19/06/2019												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	21/06/2019												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500										<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500										<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100										<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100										<100	ug/l	TM83/PM10
Methyl Acetate	<100										<100	ug/l	TM83/PM10
Ethyl Acetate	<100										<100	ug/l	TM83/PM10
i-Propyl Acetate	<100										<100	ug/l	TM83/PM10
n-Propyl Acetate	<100										<100	ug/l	TM83/PM10
n-Butyl Acetate	<100										<100	ug/l	TM83/PM10
Tetrahydrofuran	1006										<1	ug/l	TM83/PM10

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/10059						

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: 19/10059

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. 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.

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.

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.
++	Result outside calibration range, results should be considered as indicative only and are 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

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

EMT Job No: 19/10059

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
TM83	Modified USEPA method 8260. Determination of Alcohols, Acetates, Acetone, Fuel Oxygenates, THF and Cyclohexane by Headspace GC-MS	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				

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Verde Environmental Consultants
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Cork

Attention :	Donal Hogan
Date :	12th July, 2019
Your reference :	51823
Our reference :	Test Report 19/11190 Batch 1
Location :	
Date samples received :	11th July, 2019
Status :	Final report
Issue :	1

One sample was received for analysis on 11th July, 2019 of which one was 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.

Compiled By:

Lucas Halliwell
Project Co-ordinator

Element Materials Technology

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan
EMT Job No: 19/11190

Report : Liquid

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

EMT Sample No.	1-2												
Sample ID	AGW5												
Depth	7.80												
COC No / misc													
Containers	V												
Sample Date	10/07/2019												
Sample Type	Ground Water												
Batch Number	1												
Date of Receipt	11/07/2019												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Alcohols/Acetates													
Methyl Alcohol (Methanol)	<500										<500	ug/l	TM83/PM10
Ethyl Alcohol (Ethanol)	<500										<500	ug/l	TM83/PM10
i-Propyl Alcohol (Isopropanol)	<100										<100	ug/l	TM83/PM10
n-Propyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Butyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Pentyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Hexyl Alcohol	<100										<100	ug/l	TM83/PM10
n-Heptyl Alcohol	<100										<100	ug/l	TM83/PM10
Methyl Acetate	<100										<100	ug/l	TM83/PM10
Ethyl Acetate	<100										<100	ug/l	TM83/PM10
i-Propyl Acetate	<100										<100	ug/l	TM83/PM10
n-Propyl Acetate	<100										<100	ug/l	TM83/PM10
n-Butyl Acetate	<100										<100	ug/l	TM83/PM10
Tetrahydrofuran	969										<1	ug/l	TM83/PM10

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

Client Name: Verde Environmental Consultants
Reference: 51823
Location:
Contact: Donal Hogan

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 19/11190						

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.: 19/11190

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.
++	Result outside calibration range, results should be considered as indicative only and are 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

EMT Job No: 19/11190

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
TM83	Modified USEPA method 8260. Determination of Alcohols, Acetates, Acetone, Fuel Oxygenates, THF and Cyclohexane by Headspace GC-MS	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				

APPENDIX C

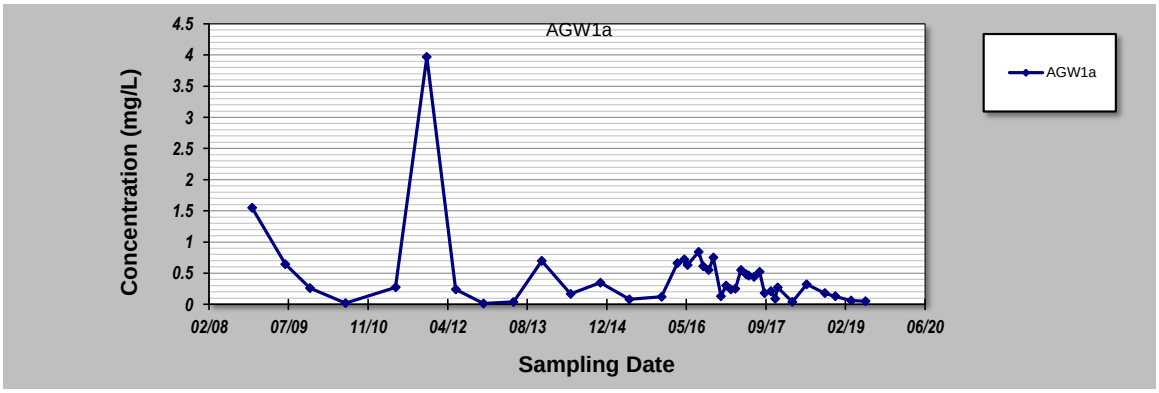
Mann Kendal Statistical Trend Analysis for Ammonium Concentrations

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW1a

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	19-Nov-08	1.5480
2	15-Jun-09	0.6450
3	18-Nov-09	0.2600
4	30-Jun-10	0.0200
5	10-May-11	0.2730
6	22-Nov-11	3.9700
7	22-May-12	0.2410
8	13-Nov-12	0.0150
9	20-May-13	0.0387
10	14-Nov-13	0.6966
11	14-May-14	0.1677
12	17-Nov-14	0.3483
13	18-May-15	0.0800
14	7-Dec-15	0.1200
15	15-Mar-16	0.6600
16	28-Apr-16	0.7200
17	18-May-16	0.6300
18	27-Jul-16	0.8400
19	25-Aug-16	0.6100
20	28-Sep-16	0.5500
21	27-Oct-16	0.7500
22	14-Dec-16	0.1300
23	16-Jan-17	0.3000
24	15-Feb-17	0.2400
25	14-Mar-17	0.2500
26	19-Apr-17	0.5500
27	22-May-17	0.4800
28	7-Jun-17	0.4600
29	10-Jul-17	0.4400
30	14-Aug-17	0.5200
31	14-Sep-17	0.1800
32	24-Oct-17	0.2100
33	20-Nov-17	0.0900
34	6-Dec-17	0.2700
35	7-Mar-18	0.0400
36	6-Jun-18	0.3200
37	28-Sep-18	0.1800
38	3-Dec-18	0.1290
39	12-Mar-19	0.0600
40	11-Jun-19	0.0500
Coefficient of Variation:		1.43
Mann-Kendall Statistic (S):		-174
Confidence Factor:		97.8%
Concentration Trend:		Decreasing



Notes:

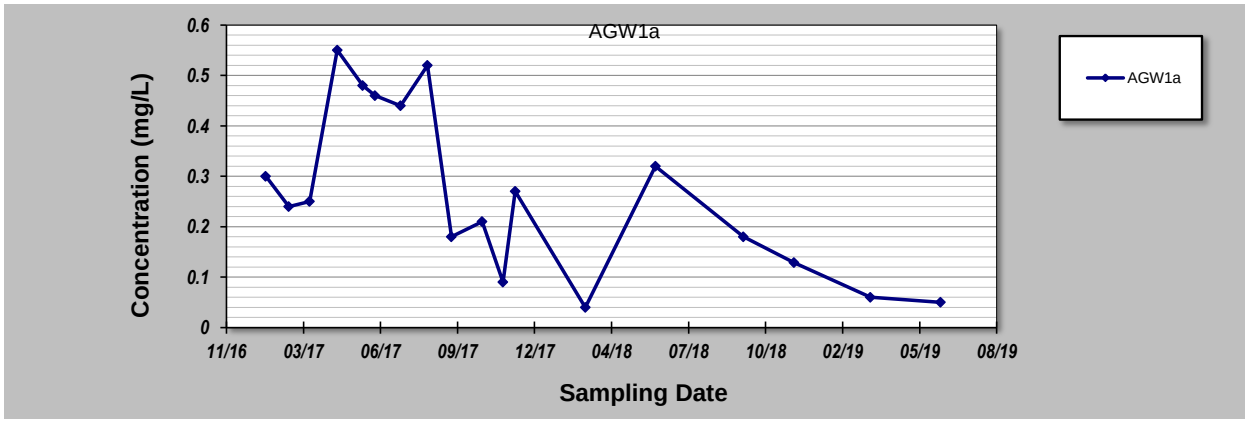
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: **AGW1a**

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	16-Jan-17	0.3000
2	15-Feb-17	0.2400
3	14-Mar-17	0.2500
4	19-Apr-17	0.5500
5	22-May-17	0.4800
6	7-Jun-17	0.4600
7	10-Jul-17	0.4400
8	14-Aug-17	0.5200
9	14-Sep-17	0.1800
10	24-Oct-17	0.2100
11	20-Nov-17	0.0900
12	6-Dec-17	0.2700
13	7-Mar-18	0.0400
14	6-Jun-18	0.3200
15	28-Sep-18	0.1800
16	3-Dec-18	0.1290
17	12-Mar-19	0.0600
18	11-Jun-19	0.0500
19		
20		
Coefficient of Variation:		0.63
Mann-Kendall Statistic (S):		-74
Confidence Factor:		99.8%
Concentration Trend:		Decreasing



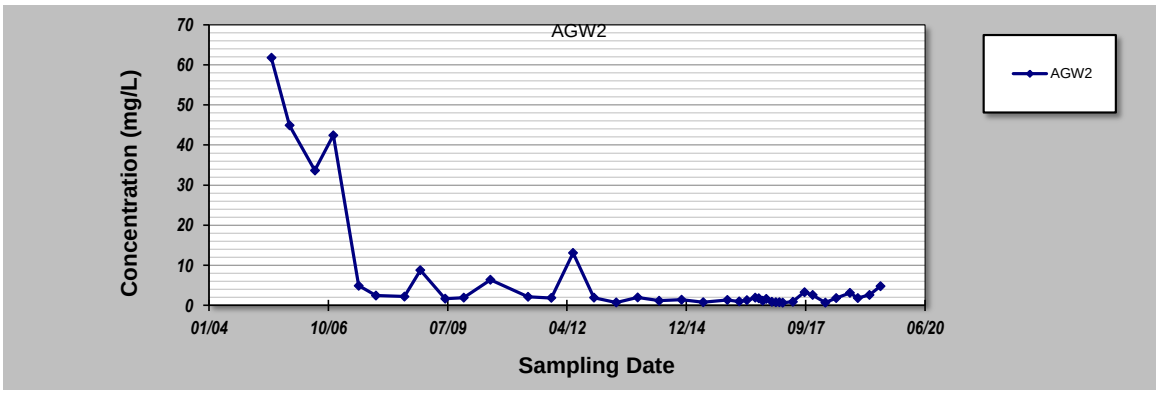
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW2		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Jun-05	61.7910
2	20-Nov-05	44.8920
3	20-Jun-06	33.6690
4	20-Nov-06	42.4410
5	21-Jun-07	4.9020
6	14-Nov-07	2.4510
7	9-Jul-08	2.1930
8	19-Nov-08	8.7720
9	15-Jun-09	1.6770
10	18-Nov-09	1.9400
11	30-Jun-10	6.4000
12	10-May-11	2.1100
13	22-Nov-11	1.8600
14	22-May-12	13.1000
15	13-Nov-12	1.9400
16	20-May-13	0.7353
17	14-Nov-13	1.9866
18	14-May-14	1.1481
19	17-Nov-14	1.4319
20	18-May-15	0.7600
21	7-Dec-15	1.3400
22	15-Mar-16	0.9700
23	18-May-16	1.2900
24	27-Jul-16	1.9400
25	25-Aug-16	1.7500
26	28-Sep-16	1.1600
27	27-Oct-16	1.6400
28	14-Dec-16	0.8700
29	16-Jan-17	0.7600
30	15-Feb-17	0.7600
31	14-Mar-17	0.6600
32	7-Jun-17	0.9100
33	14-Sep-17	3.3000
34	20-Nov-17	2.5800
35	7-Mar-18	0.6800
36	6-Jun-18	1.8000
37	28-Sep-18	3.1200
38	3-Dec-18	1.8447
39	12-Mar-19	2.6200
40	11-Jun-19	4.7800
Coefficient of Variation:		2.03
Mann-Kendall Statistic (S):		-272
Confidence Factor:		99.9%
Concentration Trend:		Decreasing



Notes:

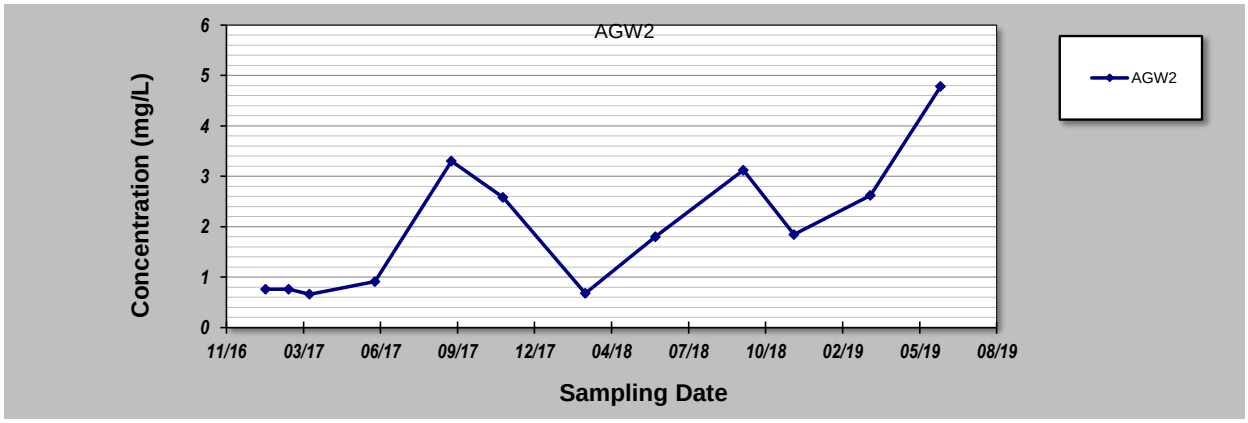
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	AGW2						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	16-Jan-17	0.7600						
2	15-Feb-17	0.7600						
3	14-Mar-17	0.6600						
4	7-Jun-17	0.9100						
5	14-Sep-17	3.3000						
6	20-Nov-17	2.5800						
7	7-Mar-18	0.6800						
8	6-Jun-18	1.8000						
9	28-Sep-18	3.1200						
10	3-Dec-18	1.8447						
11	12-Mar-19	2.6200						
12	11-Jun-19	4.7800						
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.67						
Mann-Kendall Statistic (S):		33						
Confidence Factor:		98.7%						
Concentration Trend:		Increasing						



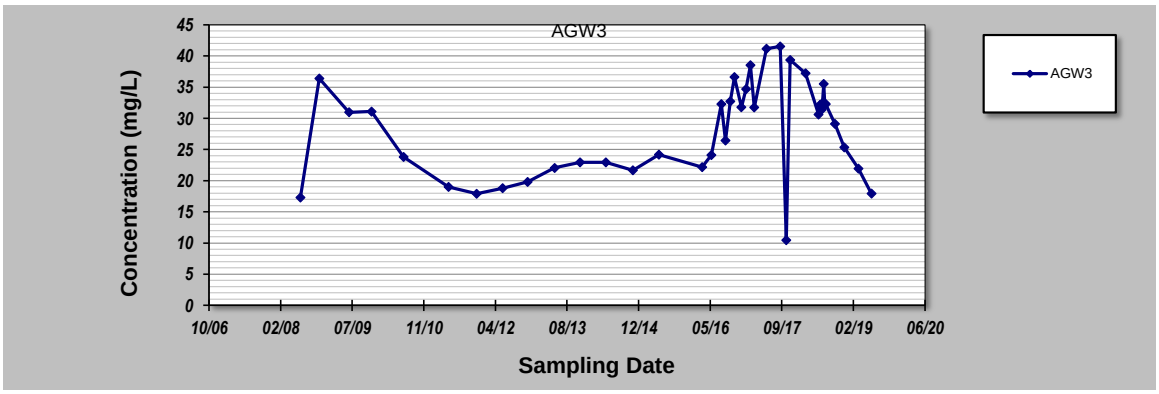
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW3		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	17.2860
2	19-Nov-08	36.3780
3	15-Jun-09	30.9600
4	18-Nov-09	31.0900
5	30-Jun-10	23.8000
6	10-May-11	19.0000
7	22-Nov-11	17.9000
8	22-May-12	18.8000
9	13-Nov-12	19.8000
10	20-May-13	22.0461
11	14-Nov-13	22.9233
12	13-May-14	22.9362
13	17-Nov-14	21.6720
14	18-May-15	24.1500
15	15-Mar-16	22.1500
16	18-May-16	24.1100
17	27-Jul-16	32.2600
18	25-Aug-16	26.4400
19	28-Sep-16	32.7000
20	27-Oct-16	36.6100
21	14-Dec-16	31.7600
22	16-Jan-17	34.6900
23	15-Feb-17	38.5100
24	14-Mar-17	31.7300
25	7-Jun-17	41.1600
26	12-Sep-17	41.5100
27	24-Oct-17	10.4600
28	20-Nov-17	39.3600
29	7-Mar-18	37.2100
30	6-Jun-18	30.6100
31	18-Jun-18	32.1700
32	28-Jun-18	31.3600
33	4-Jul-18	32.4300
34	12-Jul-18	35.5000
35	20-Jul-18	32.4200
36	27-Jul-18	32.2690
37	28-Sep-18	29.1000
38	3-Dec-18	25.3356
39	12-Mar-19	21.9400
40	11-Jun-19	17.9200
Coefficient of Variation:		0.27
Mann-Kendall Statistic (S):		192
Confidence Factor:		98.7%
Concentration Trend:		Increasing



Notes:

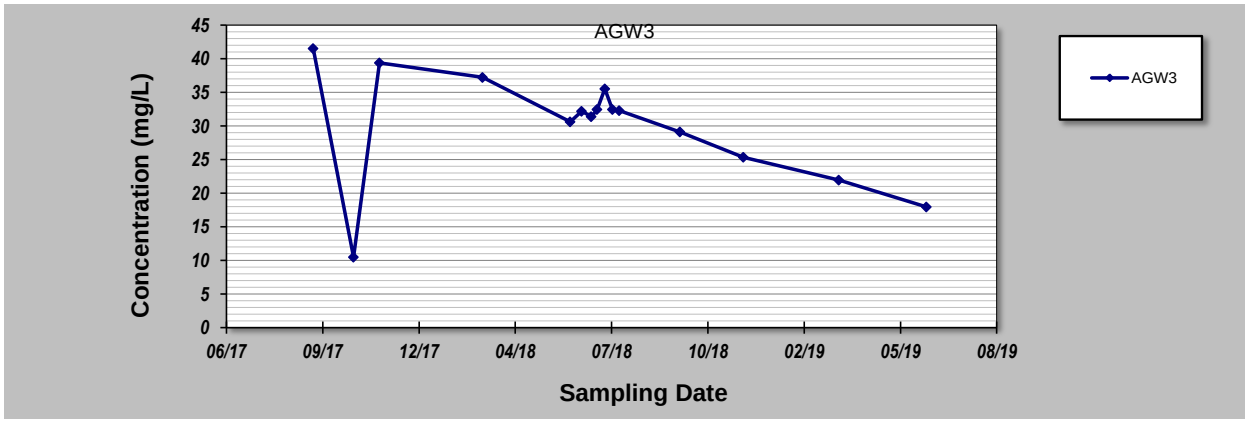
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW3

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	12-Sep-17	41.5100
2	24-Oct-17	10.4600
3	20-Nov-17	39.3600
4	7-Mar-18	37.2100
5	6-Jun-18	30.6100
6	18-Jun-18	32.1700
7	28-Jun-18	31.3600
8	4-Jul-18	32.4300
9	12-Jul-18	35.5000
10	20-Jul-18	32.4200
11	27-Jul-18	32.2690
12	28-Sep-18	29.1000
13	3-Dec-18	25.3356
14	12-Mar-19	21.9400
15	11-Jun-19	17.9200
16		
17		
18		
19		
20		
Coefficient of Variation:		0.27
Mann-Kendall Statistic (S):		-49
Confidence Factor:		99.2%
Concentration Trend:		Decreasing



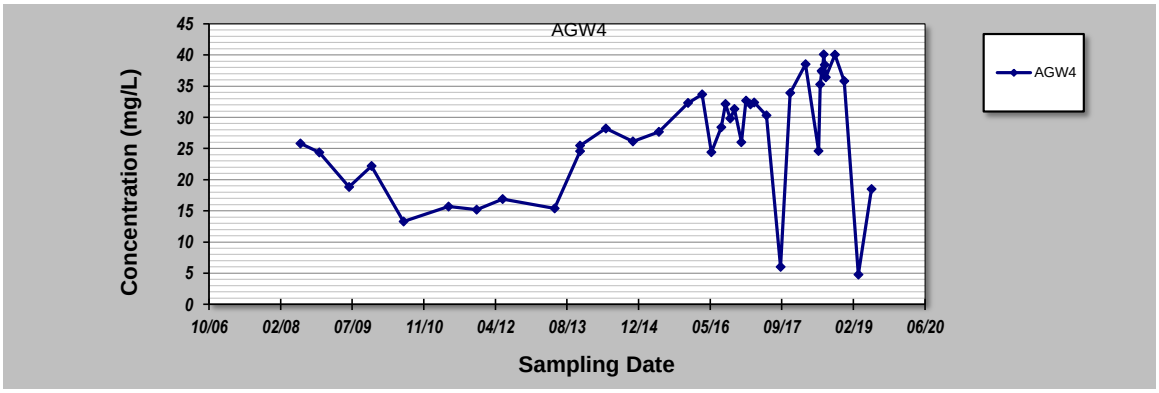
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW4		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	25.8000
2	19-Nov-08	24.3810
3	15-Jun-09	18.8340
4	18-Nov-09	22.1900
5	30-Jun-10	13.3000
6	10-May-11	15.7000
7	22-Nov-11	15.2000
8	22-May-12	16.9000
9	20-May-13	15.4000
10	14-Nov-13	24.5616
11	14-Nov-13	25.4775
12	13-May-14	28.2123
13	17-Nov-14	26.1483
14	18-May-15	27.6700
15	7-Dec-15	32.3100
16	15-Mar-16	33.6700
17	18-May-16	24.4000
18	27-Jul-16	28.4100
19	25-Aug-16	32.1400
20	28-Sep-16	29.7900
21	27-Oct-16	31.3300
22	14-Dec-16	26.0000
23	16-Jan-17	32.6900
24	15-Feb-17	32.0800
25	14-Mar-17	32.3800
26	7-Jun-17	30.3000
27	14-Sep-17	6.0200
28	20-Nov-17	33.9000
29	7-Mar-18	38.5100
30	6-Jun-18	24.6000
31	18-Jun-18	35.2700
32	28-Jun-18	37.4500
33	4-Jul-18	37.2500
34	12-Jul-18	40.0900
35	20-Jul-18	38.4200
36	27-Jul-18	36.4050
37	28-Sep-18	40.0600
38	3-Dec-18	35.7975
39	12-Mar-19	4.7900
40	11-Jun-19	18.4800
Coefficient of Variation:		0.33
Mann-Kendall Statistic (S):		368
Confidence Factor:		>99.9%
Concentration Trend:		Increasing



Notes:

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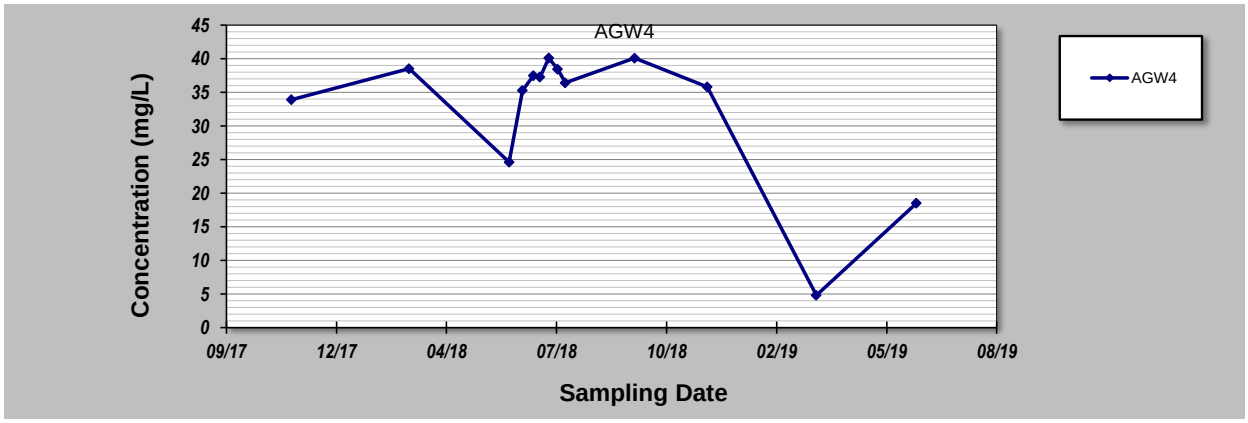
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW4

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Nov-17	33.9000
2	7-Mar-18	38.5100
3	6-Jun-18	24.6000
4	18-Jun-18	35.2700
5	28-Jun-18	37.4500
6	4-Jul-18	37.2500
7	12-Jul-18	40.0900
8	20-Jul-18	38.4200
9	27-Jul-18	36.4050
10	28-Sep-18	40.0600
11	3-Dec-18	35.7975
12	12-Mar-19	4.7900
13	11-Jun-19	18.4800
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.32
Mann-Kendall Statistic (S):		-8
Confidence Factor:		66.2%
Concentration Trend:		Stable



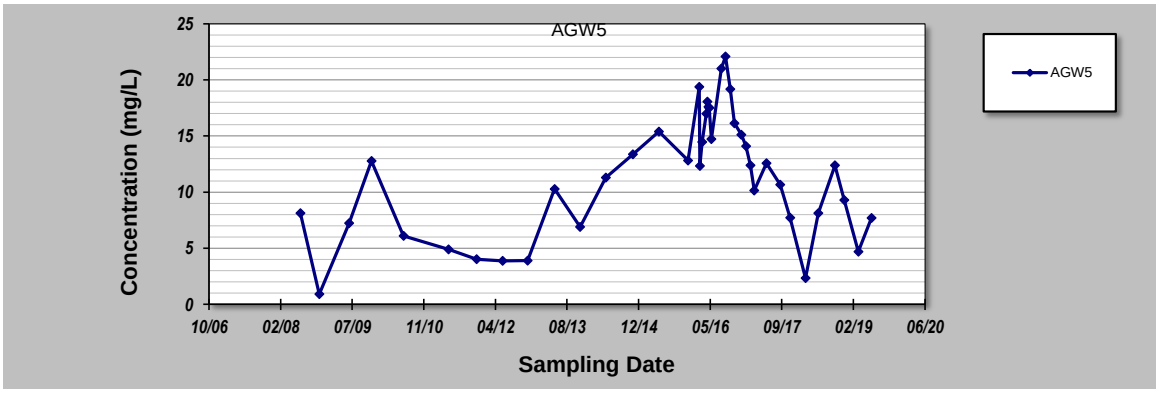
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW5		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	8.1270
2	19-Nov-08	0.9030
3	15-Jun-09	7.2240
4	18-Nov-09	12.7700
5	30-Jun-10	6.1000
6	10-May-11	4.9000
7	22-Nov-11	4.0300
8	22-May-12	3.8700
9	13-Nov-12	3.8900
10	20-May-13	10.2813
11	14-Nov-13	6.9015
12	13-May-14	11.2875
13	17-Nov-14	13.3644
14	18-May-15	15.4000
15	7-Dec-15	12.8200
16	24-Feb-16	19.3700
17	29-Feb-16	12.3400
18	15-Mar-16	14.4700
19	14-Apr-16	16.9800
20	21-Apr-16	18.0600
21	28-Apr-16	17.6000
22	4-May-16	17.5000
23	18-May-16	14.7300
24	27-Jul-16	21.0000
25	25-Aug-16	22.0900
26	28-Sep-16	19.1800
27	27-Oct-16	16.1300
28	14-Dec-16	15.1200
29	16-Jan-17	14.0900
30	15-Feb-17	12.3800
31	14-Mar-17	10.1500
32	7-Jun-17	12.5700
33	12-Sep-17	10.6700
34	20-Nov-17	7.7100
35	7-Mar-18	2.3300
36	5-Jun-18	8.1300
37	28-Sep-18	12.3800
38	3-Dec-18	9.2880
39	12-Mar-19	4.7000
40	11-Jun-19	7.6900
Coefficient of Variation:		0.47
Mann-Kendall Statistic (S):		77
Confidence Factor:		81.1%
Concentration Trend:		No Trend



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	AGW5						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	7-Jun-17	12.5700						
2	12-Sep-17	10.6700						
3	20-Nov-17	7.7100						
4	7-Mar-18	2.3300						
5	5-Jun-18	8.1300						
6	28-Sep-18	12.3800						
7	3-Dec-18	9.2880						
8	12-Mar-19	4.7000						
9	11-Jun-19	7.6900						
10								
11								
12								
13								
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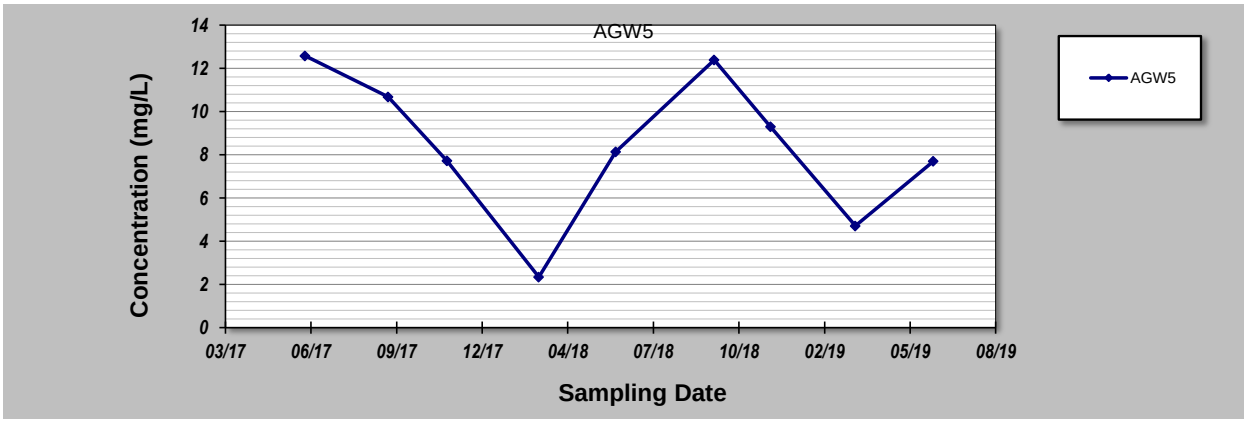
18								
19								
20								
Coefficient of Variation:		0.40						
Mann-Kendall Statistic (S):		-12						
Confidence Factor:		87.0%						
Concentration Trend:		Stable						



Notes:

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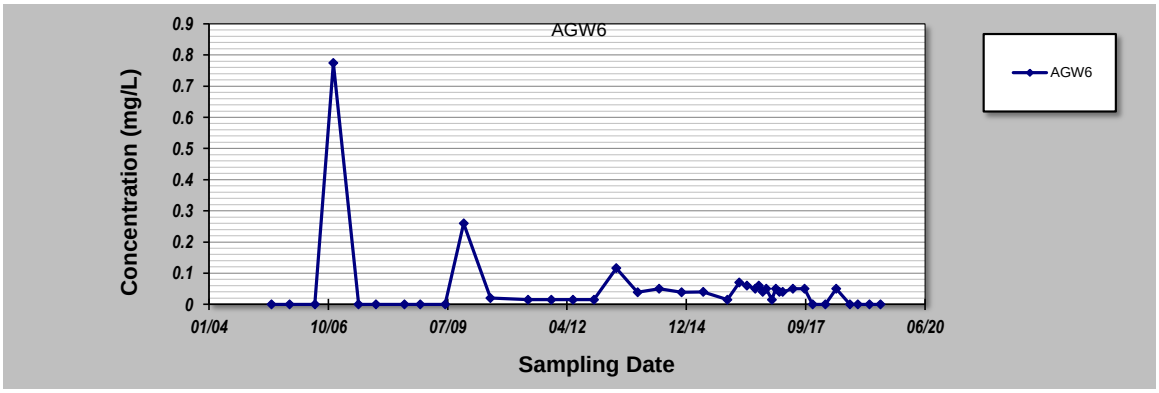
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW6		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Jun-05	0.0000
2	20-Nov-05	0.0000
3	20-Jun-06	0.0000
4	20-Nov-06	0.7740
5	20-Jun-07	0.0000
6	14-Nov-07	0.0000
7	9-Jul-08	0.0000
8	19-Nov-08	0.0000
9	15-Jun-09	0.0000
10	18-Nov-09	0.2600
11	30-Jun-10	0.0200
12	10-May-11	0.0150
13	22-Nov-11	0.0150
14	22-May-12	0.0150
15	13-Nov-12	0.0150
16	20-May-13	0.1161
17	14-Nov-13	0.0387
18	14-May-14	0.0500
19	17-Nov-14	0.0387
20	18-May-15	0.0400
21	7-Dec-15	0.0150
22	15-Mar-16	0.0700
23	18-May-16	0.0600
24	27-Jul-16	0.0500
25	25-Aug-16	0.0600
26	28-Sep-16	0.0400
27	27-Oct-16	0.0500
28	14-Dec-16	0.0150
29	16-Jan-17	0.0500
30	15-Feb-17	0.0400
31	14-Mar-17	0.0400
32	7-Jun-17	0.0500
33	14-Sep-17	0.0500
34	20-Nov-17	0.0000
35	7-Mar-18	0.0000
36	6-Jun-18	0.0500
37	28-Sep-18	0.0000
38	4-Dec-18	0.0000
39	12-Mar-19	0.0000
40	11-Jun-19	0.0000
Coefficient of Variation:		2.47
Mann-Kendall Statistic (S):		73
Confidence Factor:		79.8%
Concentration Trend:		No Trend



Notes:

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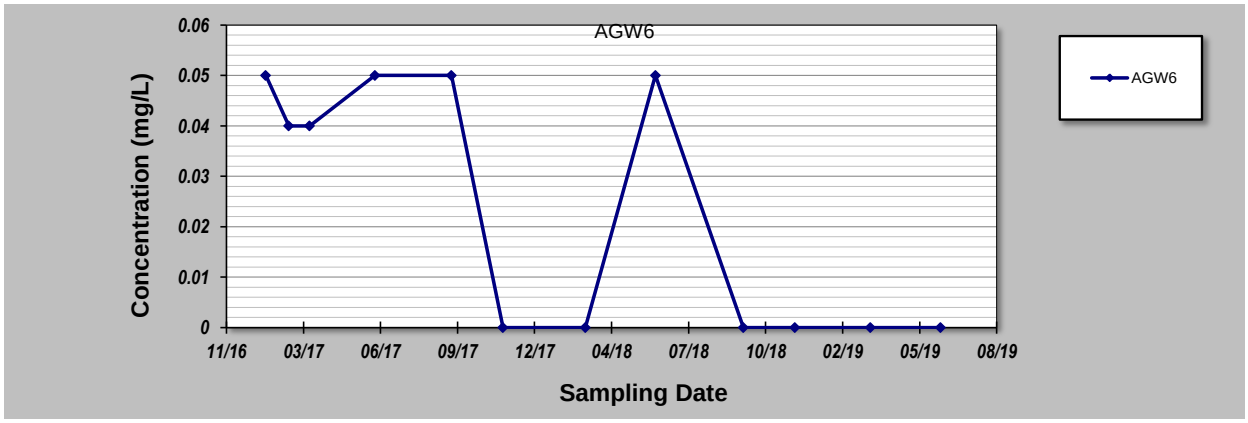
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW6

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	16-Jan-17	0.0500
2	15-Feb-17	0.0400
3	14-Mar-17	0.0400
4	7-Jun-17	0.0500
5	14-Sep-17	0.0500
6	20-Nov-17	0.0000
7	7-Mar-18	0.0000
8	6-Jun-18	0.0500
9	28-Sep-18	0.0000
10	4-Dec-18	0.0000
11	12-Mar-19	0.0000
12	11-Jun-19	0.0000
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.06
Mann-Kendall Statistic (S):		-28
Confidence Factor:		96.9%
Concentration Trend:		Decreasing



Notes:

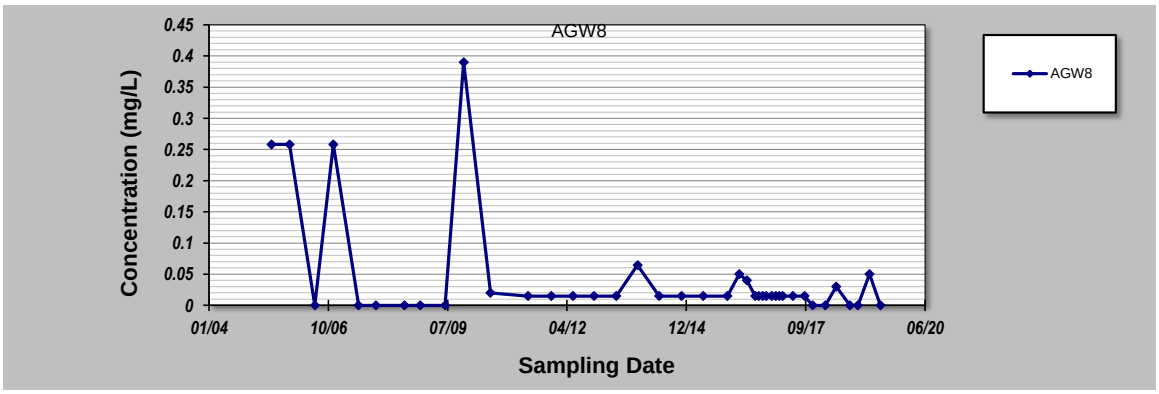
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW8

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Jun-05	0.2580
2	20-Nov-05	0.2580
3	20-Jun-06	0.0000
4	20-Nov-06	0.2580
5	20-Jun-07	0.0000
6	14-Nov-07	0.0000
7	9-Jul-08	0.0000
8	19-Nov-08	0.0000
9	15-Jun-09	0.0000
10	18-Nov-09	0.3900
11	30-Jun-10	0.0200
12	10-May-11	0.0150
13	22-Nov-11	0.0150
14	22-May-12	0.0150
15	13-Nov-12	0.0150
16	20-May-13	0.0150
17	14-Nov-13	0.0645
18	14-May-14	0.0150
19	17-Nov-14	0.0150
20	18-May-15	0.0150
21	7-Dec-15	0.0150
22	15-Mar-16	0.0500
23	18-May-16	0.0400
24	27-Jul-16	0.0150
25	25-Aug-16	0.0150
26	28-Sep-16	0.0150
27	27-Oct-16	0.0150
28	14-Dec-16	0.0150
29	16-Jan-17	0.0150
30	15-Feb-17	0.0150
31	14-Mar-17	0.0150
32	7-Jun-17	0.0150
33	14-Sep-17	0.0150
34	20-Nov-17	0.0000
35	7-Mar-18	0.0000
36	6-Jun-18	0.0300
37	28-Sep-18	0.0000
38	4-Dec-18	0.0000
39	12-Mar-19	0.0500
40	11-Jun-19	0,04
Coefficient of Variation:		2.01
Mann-Kendall Statistic (S):		-14
Confidence Factor:		56.2%
Concentration Trend:		No Trend



Notes:

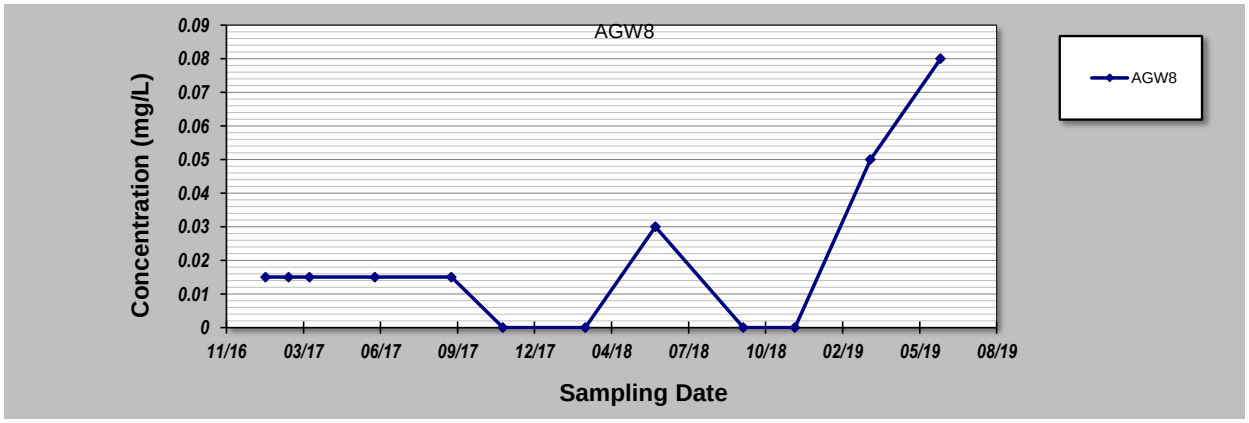
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW8

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	16-Jan-17	0.0150
2	15-Feb-17	0.0150
3	14-Mar-17	0.0150
4	7-Jun-17	0.0150
5	14-Sep-17	0.0150
6	20-Nov-17	0.0000
7	7-Mar-18	0.0000
8	6-Jun-18	0.0300
9	28-Sep-18	0.0000
10	4-Dec-18	0.0000
11	12-Mar-19	0.0500
12	11-Jun-19	0.0800
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.22
Mann-Kendall Statistic (S):		6
Confidence Factor:		63.1%
Concentration Trend:		No Trend



Notes:

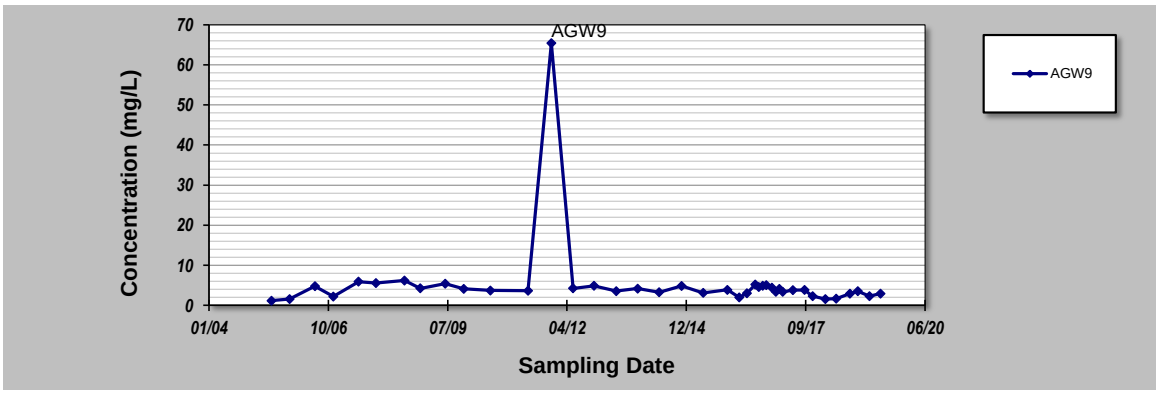
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW9

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Jun-05	1.1610
2	20-Nov-05	1.5480
3	20-Jun-06	4.7730
4	20-Nov-06	2.1930
5	20-Jun-07	5.9340
6	14-Nov-07	5.5470
7	9-Jul-08	6.1920
8	19-Nov-08	4.2570
9	15-Jun-09	5.4180
10	18-Nov-09	4.1300
11	30-Jun-10	3.7000
12	10-May-11	3.6200
13	22-Nov-11	65.4000
14	22-May-12	4.2500
15	13-Nov-12	4.8800
16	20-May-13	3.5604
17	14-Nov-13	4.1796
18	14-May-14	3.2800
19	17-Nov-14	4.8500
20	18-May-15	3.1100
21	7-Dec-15	3.8600
22	15-Mar-16	2.0000
23	18-May-16	3.0100
24	27-Jul-16	5.2100
25	25-Aug-16	4.6000
26	28-Sep-16	4.9000
27	27-Oct-16	5.0400
28	14-Dec-16	4.4000
29	16-Jan-17	3.3700
30	15-Feb-17	4.1000
31	14-Mar-17	3.3700
32	7-Jun-17	3.8200
33	14-Sep-17	3.8400
34	20-Nov-17	2.2700
35	7-Mar-18	1.5800
36	6-Jun-18	1.6700
37	28-Sep-18	2.9300
38	4-Dec-18	3.5346
39	12-Mar-19	2.3100
40	11-Jun-19	2.9300
Coefficient of Variation:		1.87
Mann-Kendall Statistic (S):		-204
Confidence Factor:		99.1%
Concentration Trend:		Decreasing



Notes:

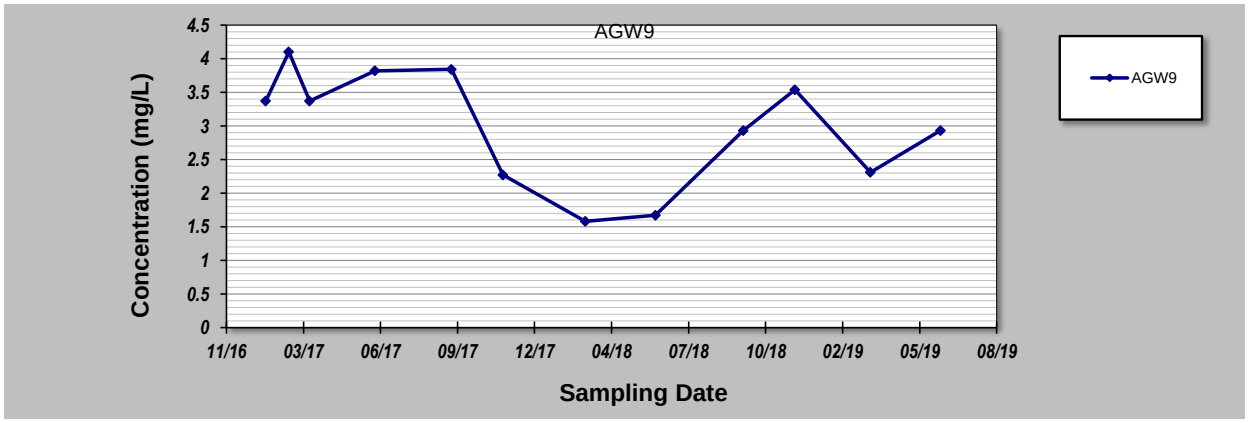
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	AGW9						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	16-Jan-17	3.3700						
2	15-Feb-17	4.1000						
3	14-Mar-17	3.3700						
4	7-Jun-17	3.8200						
5	14-Sep-17	3.8400						
6	20-Nov-17	2.2700						
7	7-Mar-18	1.5800						
8	6-Jun-18	1.6700						
9	28-Sep-18	2.9300						
10	4-Dec-18	3.5346						
11	12-Mar-19	2.3100						
12	11-Jun-19	2.9300						
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29						
Mann-Kendall Statistic (S):		-18						
Confidence Factor:		87.5%						
Concentration Trend:		Stable						



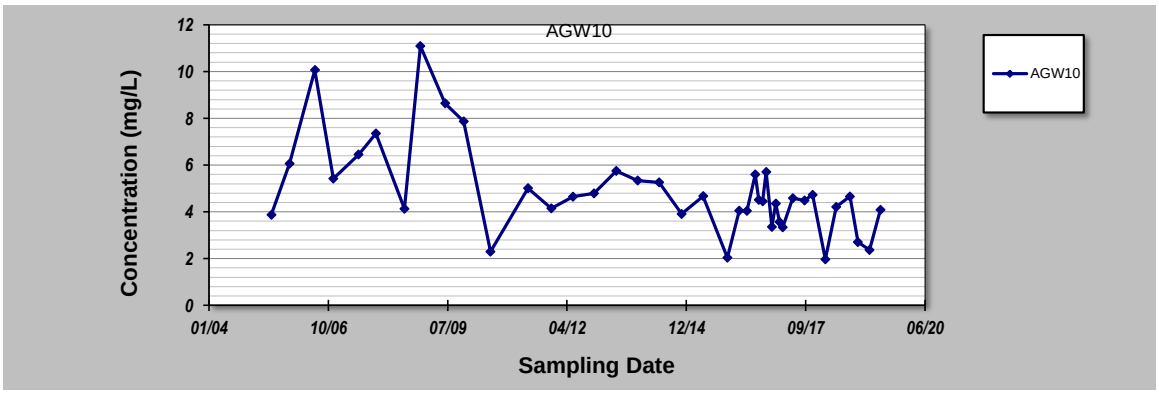
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW10		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	20-Jun-05	3.8700
2	20-Nov-05	6.0630
3	20-Jun-06	10.0620
4	20-Nov-06	5.4180
5	20-Jun-07	6.4500
6	14-Nov-07	7.3530
7	9-Jul-08	4.1280
8	19-Nov-08	11.0940
9	15-Jun-09	8.6430
10	18-Nov-09	7.8700
11	30-Jun-10	2.3000
12	10-May-11	5.0100
13	22-Nov-11	4.1500
14	22-May-12	4.6500
15	13-Nov-12	4.7900
16	20-May-13	5.7534
17	14-Nov-13	5.3406
18	14-May-14	5.2600
19	17-Nov-14	3.9100
20	18-May-15	4.6700
21	7-Dec-15	2.0400
22	15-Mar-16	4.0500
23	18-May-16	4.0400
24	27-Jul-16	5.6000
25	25-Aug-16	4.5100
26	28-Sep-16	4.4500
27	27-Oct-16	5.7100
28	14-Dec-16	3.3600
29	16-Jan-17	4.3500
30	15-Feb-17	3.5700
31	14-Mar-17	3.3400
32	7-Jun-17	4.5800
33	14-Sep-17	4.4900
34	20-Nov-17	4.7300
35	7-Mar-18	1.9700
36	6-Jun-18	4.2100
37	28-Sep-18	4.6600
38	4-Dec-18	2.7090
39	12-Mar-19	2.3700
40	11-Jun-19	4.0900
Coefficient of Variation:		0.40
Mann-Kendall Statistic (S):		-294
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



Notes:

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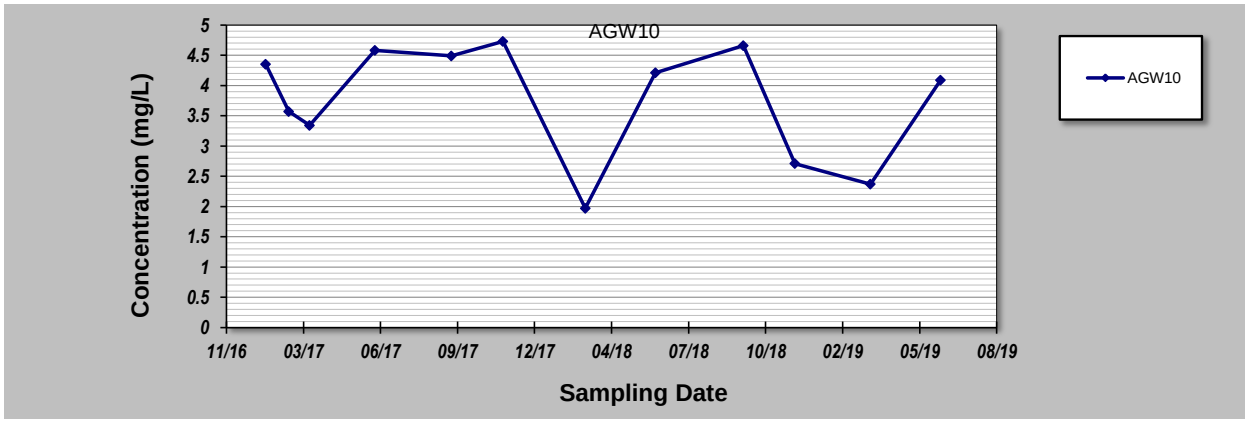
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW10

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	16-Jan-17	4.3500
2	15-Feb-17	3.5700
3	14-Mar-17	3.3400
4	7-Jun-17	4.5800
5	14-Sep-17	4.4900
6	20-Nov-17	4.7300
7	7-Mar-18	1.9700
8	6-Jun-18	4.2100
9	28-Sep-18	4.6600
10	4-Dec-18	2.7090
11	12-Mar-19	2.3700
12	11-Jun-19	4.0900
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.25
Mann-Kendall Statistic (S):		-10
Confidence Factor:		72.7%
Concentration Trend:		Stable



Notes:

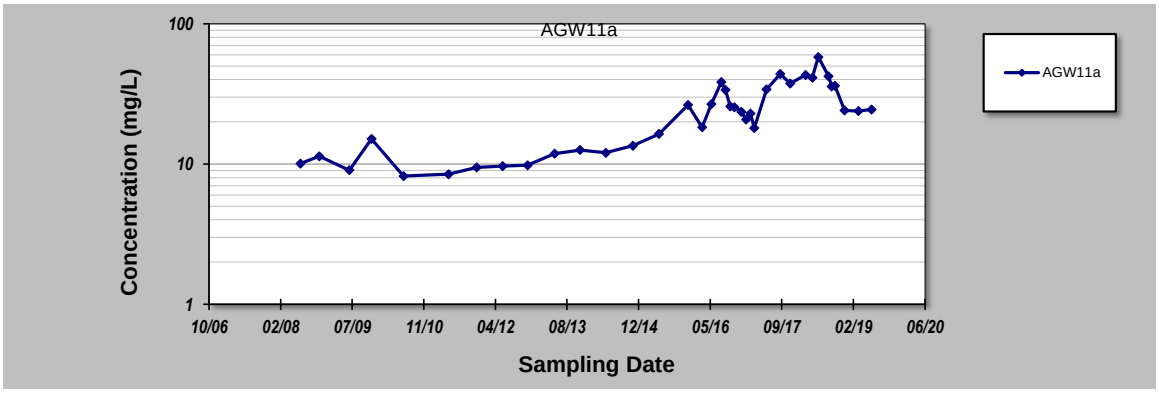
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: **AGW11a**

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	10.0620
2	19-Nov-08	11.3520
3	16-Jun-09	9.0432
4	18-Nov-09	15.0900
5	30-Jun-10	8.2000
6	10-May-11	8.4600
7	22-Nov-11	9.4600
8	22-May-12	9.6700
9	13-Nov-12	9.8000
10	20-May-13	11.8680
11	14-Nov-13	12.5904
12	13-May-14	12.0400
13	17-Nov-14	13.5192
14	18-May-15	16.3800
15	7-Dec-15	26.3800
16	15-Mar-16	18.3000
17	18-May-16	26.7700
18	27-Jul-16	38.3900
19	25-Aug-16	33.7500
20	28-Sep-16	25.7400
21	27-Oct-16	25.4400
22	14-Dec-16	23.5700
23	16-Jan-17	20.7500
24	15-Feb-17	22.9000
25	14-Mar-17	18.0300
26	7-Jun-17	34.0200
27	12-Sep-17	43.8100
28	20-Nov-17	37.5400
29	7-Mar-18	43.1400
30	24-Apr-18	41.2400
31	5-Jun-18	57.8800
32	14-Aug-18	42.2500
33	6-Sep-18	35.7200
34	28-Sep-18	36.1200
35	4-Dec-18	24.1359
36	12-Mar-19	23.9200
37	11-Jun-19	24.4600
38		
39		
40		
Coefficient of Variation:		0.54
Mann-Kendall Statistic (S):		398
Confidence Factor:		>99.9%
Concentration Trend:		Increasing



Notes:

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3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW11a

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	14-Mar-17	18.0300
2	7-Jun-17	34.0200
3	12-Sep-17	43.8100
4	20-Nov-17	37.5400
5	7-Mar-18	43.1400
6	24-Apr-18	41.2400
7	5-Jun-18	57.8800
8	14-Aug-18	42.2500
9	6-Sep-18	35.7200
10	28-Sep-18	36.1200
11	4-Dec-18	24.1359
12	12-Mar-19	23.9200
13	11-Jun-19	24.4600
14		
15		
16		
17		
18		
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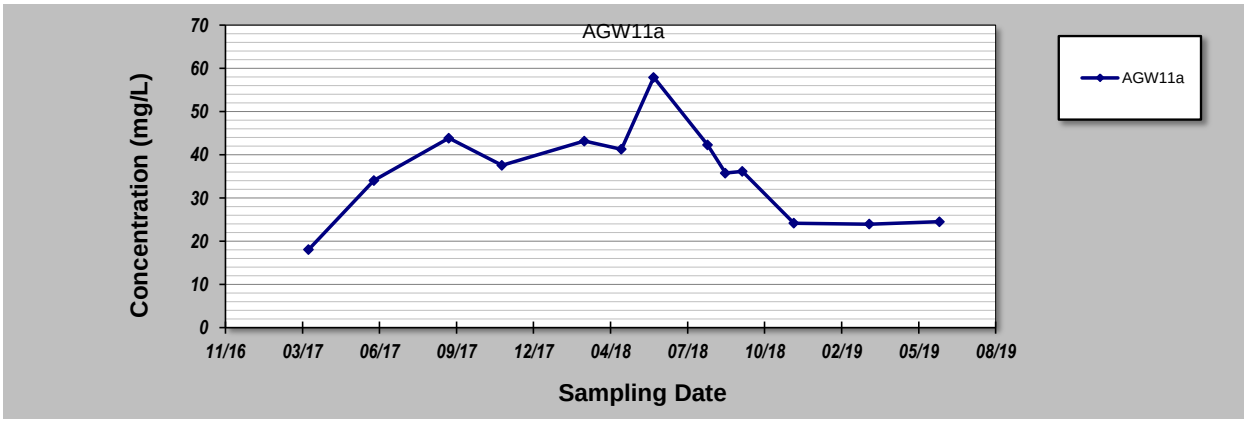
20		
Coefficient of Variation:		0.30
Mann-Kendall Statistic (S):		-16
Confidence Factor:		81.6%
Concentration Trend:		Stable



Notes:

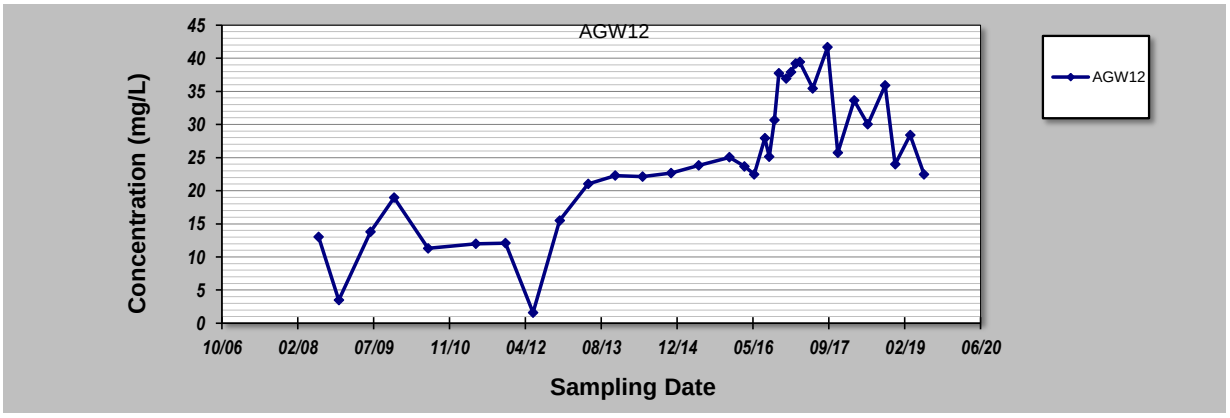
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW12

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	13.0290
2	19-Nov-08	3.4830
3	15-Jun-09	13.7902
4	18-Nov-09	18.9600
5	30-Jun-10	11.3000
6	10-May-11	12.0000
7	22-Nov-11	12.1000
8	22-May-12	1.5800
9	13-Nov-12	15.5000
10	20-May-13	21.0141
11	14-Nov-13	22.2912
12	13-May-14	22.1100
13	17-Nov-14	22.6524
14	18-May-15	23.8100
15	7-Dec-15	25.0500
16	15-Mar-16	23.6500
17	18-May-16	22.4700
18	27-Jul-16	27.9300
19	25-Aug-16	25.1100
20	28-Sep-16	30.6400
21	27-Oct-16	37.7300
22	14-Dec-16	36.9200
23	16-Jan-17	37.8800
24	15-Feb-17	39.1800
25	14-Mar-17	39.4200
26	7-Jun-17	35.4400
27	12-Sep-17	41.6500
28	20-Nov-17	25.7200
29	7-Mar-18	33.6300
30	5-Jun-18	30.0200
31	28-Sep-18	35.8900
32	3-Dec-18	23.9811
33	12-Mar-19	28.3900
34	11-Jun-19	22.4400
35		
Coefficient of Variation:		0.42
Mann-Kendall Statistic (S):		341
Confidence Factor:		>99.9%
Concentration Trend:		Increasing



Notes:

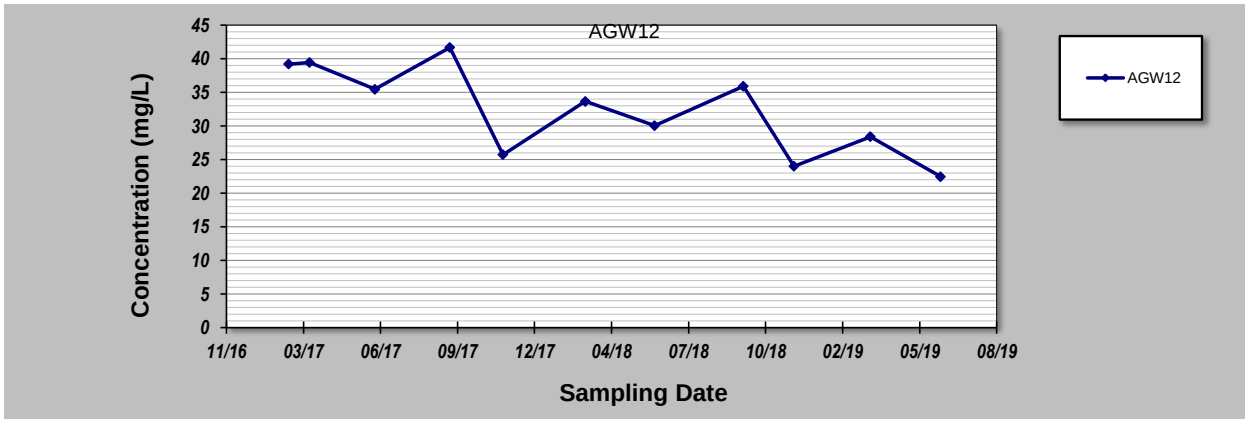
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW12

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	15-Feb-17	39.1800						
2	14-Mar-17	39.4200						
3	7-Jun-17	35.4400						
4	12-Sep-17	41.6500						
5	20-Nov-17	25.7200						
6	7-Mar-18	33.6300						
7	5-Jun-18	30.0200						
8	28-Sep-18	35.8900						
9	3-Dec-18	23.9811						
10	12-Mar-19	28.3900						
11	11-Jun-19	22.4400						
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.21						
Mann-Kendall Statistic (S):		-31						
Confidence Factor:		99.2%						
Concentration Trend:		Decreasing						



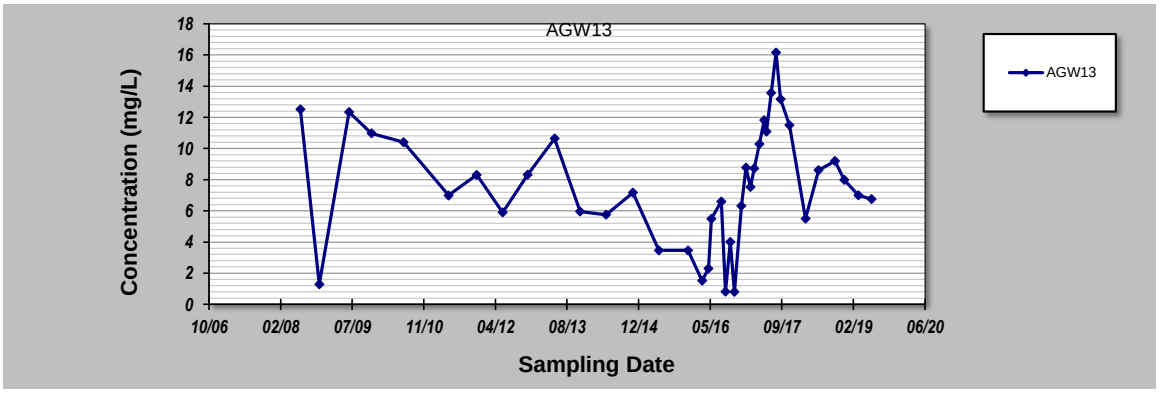
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW13		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	9-Jul-08	12.5130
2	19-Nov-08	1.2900
3	15-Jun-09	12.3428
4	18-Nov-09	10.9700
5	30-Jun-10	10.4000
6	10-May-11	6.9900
7	22-Nov-11	8.3100
8	22-May-12	5.9000
9	13-Nov-12	8.3200
10	20-May-13	10.6425
11	14-Nov-13	5.9598
12	14-May-14	5.7500
13	17-Nov-14	7.1724
14	18-May-15	3.4600
15	7-Dec-15	3.4600
16	15-Mar-16	1.5200
17	28-Apr-16	2.3000
18	18-May-16	5.4900
19	27-Jul-16	6.6000
20	25-Aug-16	0.8100
21	28-Sep-16	4.0000
22	27-Oct-16	0.8000
23	14-Dec-16	6.3200
24	16-Jan-17	8.7700
25	15-Feb-17	7.5300
26	14-Mar-17	8.7200
27	19-Apr-17	10.2800
28	22-May-17	11.8100
29	7-Jun-17	11.0800
30	10-Jul-17	13.5600
31	14-Aug-17	16.1500
32	14-Sep-17	13.1580
33	15-Nov-17	11.4900
34	7-Mar-18	5.5000
35	6-Jun-18	8.6100
36	28-Sep-18	9.2000
37	3-Dec-18	7.9851
38	12-Mar-19	7.0000
39	11-Jun-19	6.7500
40		
Coefficient of Variation:		0.49
Mann-Kendall Statistic (S):		62
Confidence Factor:		76.9%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW13

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	14-Aug-17	16.1500
2	14-Sep-17	13.1580
3	15-Nov-17	11.4900
4	7-Mar-18	5.5000
5	6-Jun-18	8.6100
6	28-Sep-18	9.2000
7	3-Dec-18	7.9851
8	12-Mar-19	7.0000
9	11-Jun-19	6.7500
10		
11		
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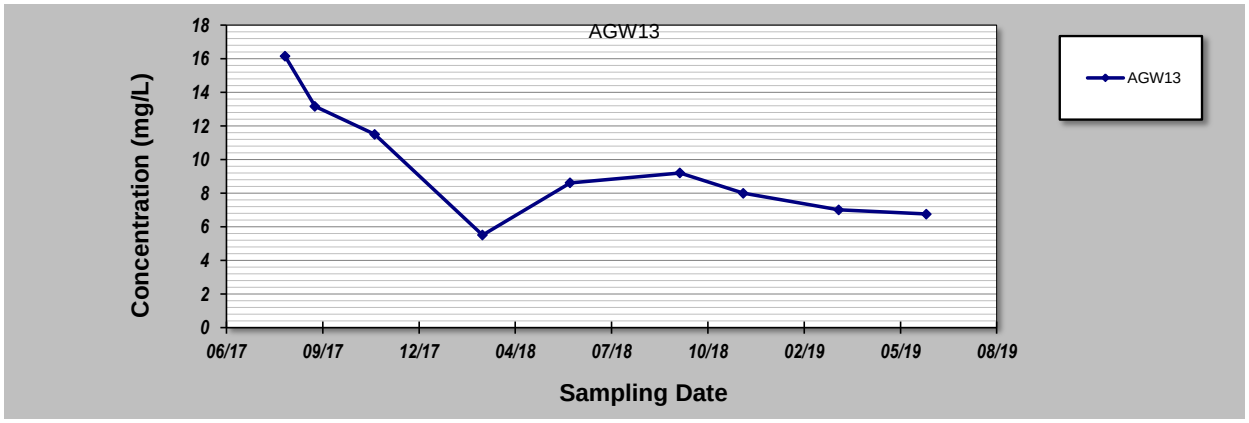
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.36
Mann-Kendall Statistic (S):		-24
Confidence Factor:		99.4%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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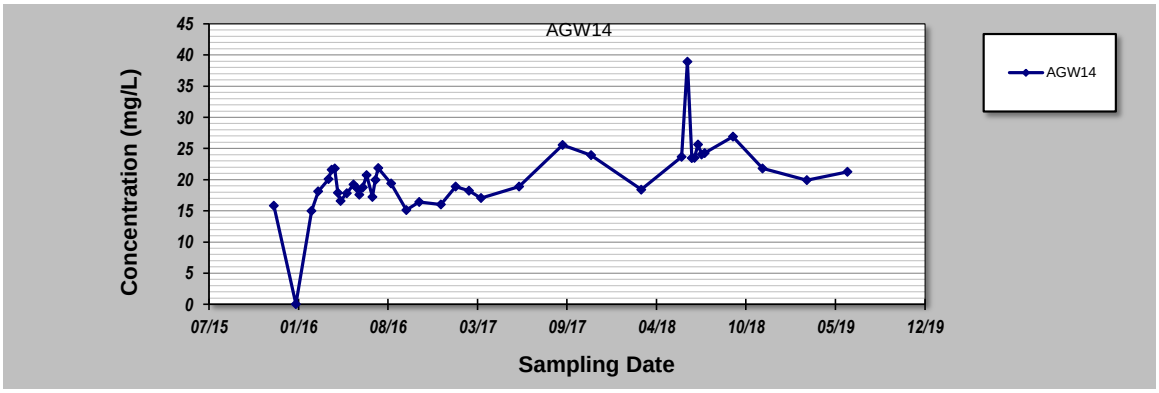
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW14		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	7-Dec-15	15.8300
2	25-Jan-16	0.0500
3	29-Feb-16	14.9900
4	15-Mar-16	18.1100
5	7-Apr-16	20.0800
6	14-Apr-16	21.6000
7	21-Apr-16	21.8000
8	28-Apr-16	17.9000
9	4-May-16	16.6000
10	18-May-16	17.8200
11	2-Jun-16	19.2200
12	10-Jun-16	18.6300
13	15-Jun-16	17.6000
14	23-Jun-16	18.7600
15	1-Jul-16	20.7300
16	14-Jul-16	17.2300
17	21-Jul-16	19.9600
18	27-Jul-16	21.8800
19	25-Aug-16	19.3800
20	28-Sep-16	15.1300
21	27-Oct-16	16.4300
22	14-Dec-16	16.0200
23	16-Jan-17	18.9100
24	15-Feb-17	18.2200
25	14-Mar-17	17.0500
26	7-Jun-17	18.9100
27	12-Sep-17	25.5800
28	15-Nov-17	23.9400
29	7-Mar-18	18.4000
30	5-Jun-18	23.6800
31	18-Jun-18	38.9300
32	28-Jun-18	23.4700
33	4-Jul-18	23.5000
34	12-Jul-18	25.6200
35	20-Jul-18	24.0400
36	27-Jul-18	24.2810
37	28-Sep-18	26.9000
38	3-Dec-18	21.8010
39	12-Mar-19	19.9300
40	11-Jun-19	21.2500
Coefficient of Variation:		0.27
Mann-Kendall Statistic (S):		325
Confidence Factor:		>99.9%
Concentration Trend:		Increasing



Notes:

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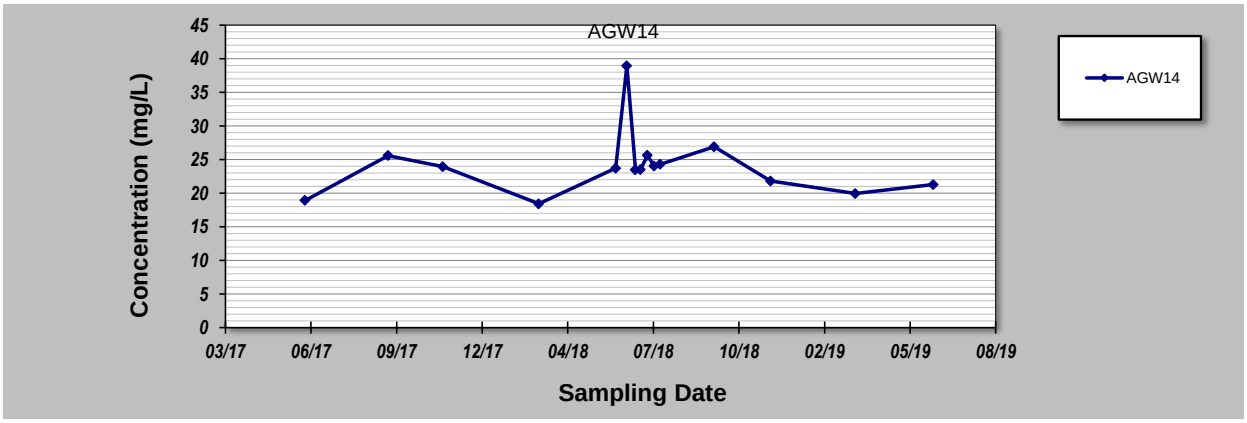
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW14

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	7-Jun-17	18.9100
2	12-Sep-17	25.5800
3	15-Nov-17	23.9400
4	7-Mar-18	18.4000
5	5-Jun-18	23.6800
6	18-Jun-18	38.9300
7	28-Jun-18	23.4700
8	4-Jul-18	23.5000
9	12-Jul-18	25.6200
10	20-Jul-18	24.0400
11	27-Jul-18	24.2810
12	28-Sep-18	26.9000
13	3-Dec-18	21.8010
14	12-Mar-19	19.9300
15	11-Jun-19	21.2500
16		
17		
18		
19		
20		
Coefficient of Variation:		0.19
Mann-Kendall Statistic (S):		-28
Confidence Factor:		84.4%
Concentration Trend:		Stable



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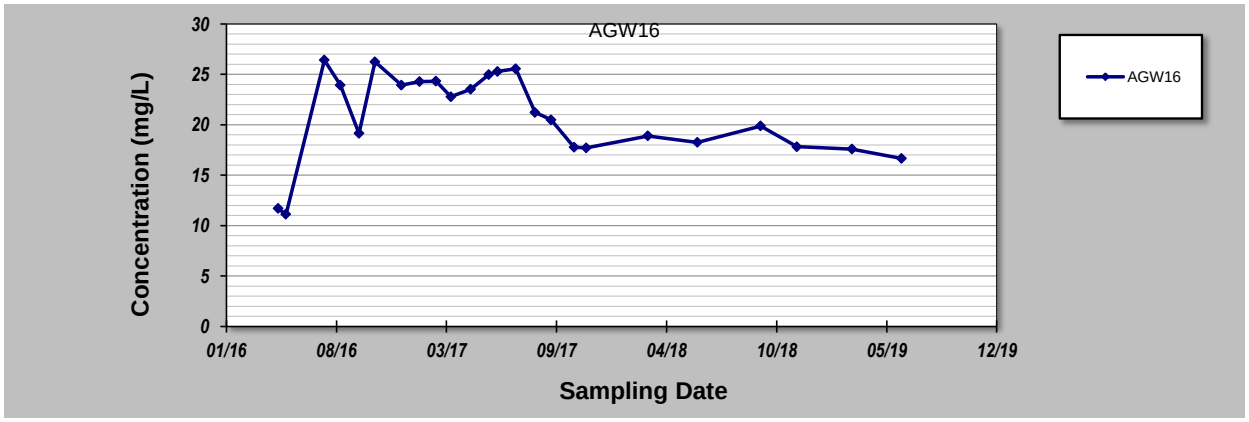
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW16

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	4-May-16	11.7000
2	18-May-16	11.1200
3	27-Jul-16	26.4100
4	25-Aug-16	23.9200
5	28-Sep-16	19.1500
6	27-Oct-16	26.2400
7	14-Dec-16	23.9200
8	16-Jan-17	24.2900
9	15-Feb-17	24.3300
10	14-Mar-17	22.7800
11	19-Apr-17	23.5300
12	22-May-17	24.9800
13	7-Jun-17	25.2900
14	10-Jul-17	25.5600
15	14-Aug-17	21.2200
16	12-Sep-17	20.4900
17	24-Oct-17	17.7700
18	15-Nov-17	17.7100
19	7-Mar-18	18.9000
20	5-Jun-18	18.2600
21	28-Sep-18	19.8800
22	3-Dec-18	17.8278
23	13-Mar-19	17.5956
24	11-Jun-19	16.6600
25		
26		
27		
28		
29		
30		
Coefficient of Variation:		0.19
Mann-Kendall Statistic (S):		-86
Confidence Factor:		96.2%
Concentration Trend:		Decreasing



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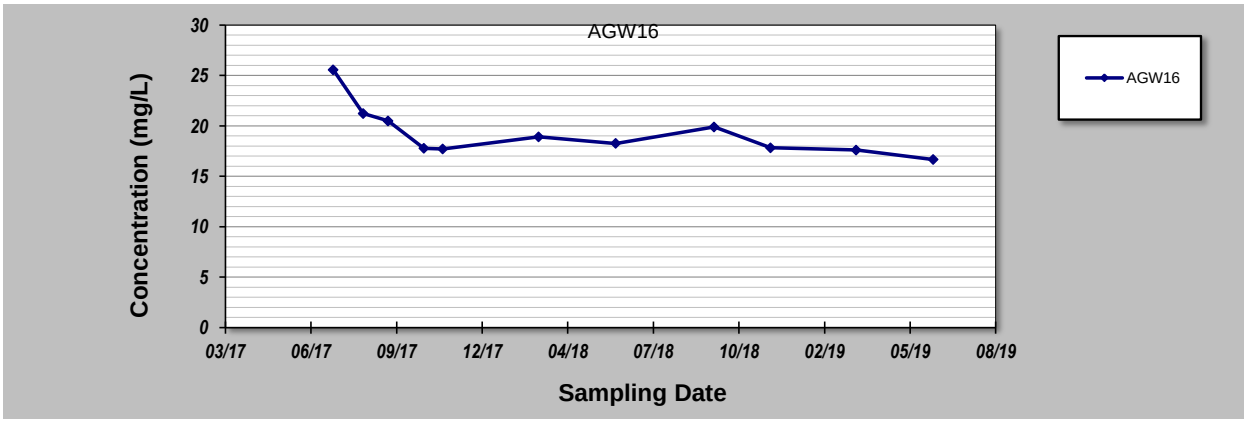
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	AGW16						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	10-Jul-17	25.5600						
2	14-Aug-17	21.2200						
3	12-Sep-17	20.4900						
4	24-Oct-17	17.7700						
5	15-Nov-17	17.7100						
6	7-Mar-18	18.9000						
7	5-Jun-18	18.2600						
8	28-Sep-18	19.8800						
9	3-Dec-18	17.8278						
10	13-Mar-19	17.5956						
11	11-Jun-19	16.6600						
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.12						
Mann-Kendall Statistic (S):		-13						
Confidence Factor:		74.1%						
Concentration Trend:		Stable						



Notes:

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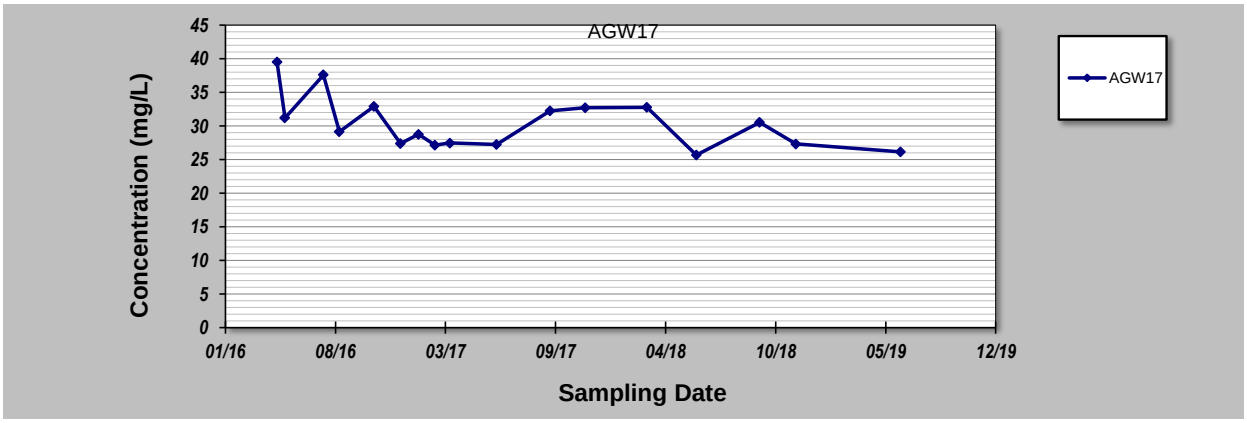
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW17		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	4-May-16	39.5000
2	18-May-16	31.2000
3	27-Jul-16	37.5800
4	25-Aug-16	29.1200
5	27-Oct-16	32.9000
6	14-Dec-16	27.3500
7	16-Jan-17	28.7400
8	15-Feb-17	27.1200
9	14-Mar-17	27.4400
10	7-Jun-17	27.2400
11	12-Sep-17	32.2200
12	15-Nov-17	32.7000
13	7-Mar-18	32.7600
14	5-Jun-18	25.6700
15	28-Sep-18	30.5200
16	3-Dec-18	27.3093
17	11-Jun-19	26.1300
18		
19		
20		
Coefficient of Variation:		0.13
Mann-Kendall Statistic (S):		-52
Confidence Factor:		98.3%
Concentration Trend:		Decreasing



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW17

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	7-Jun-17	27.2400
2	12-Sep-17	32.2200
3	15-Nov-17	32.7000
4	7-Mar-18	32.7600
5	5-Jun-18	25.6700
6	28-Sep-18	30.5200
7	3-Dec-18	27.3093
8	11-Jun-19	26.1300
9		
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12		
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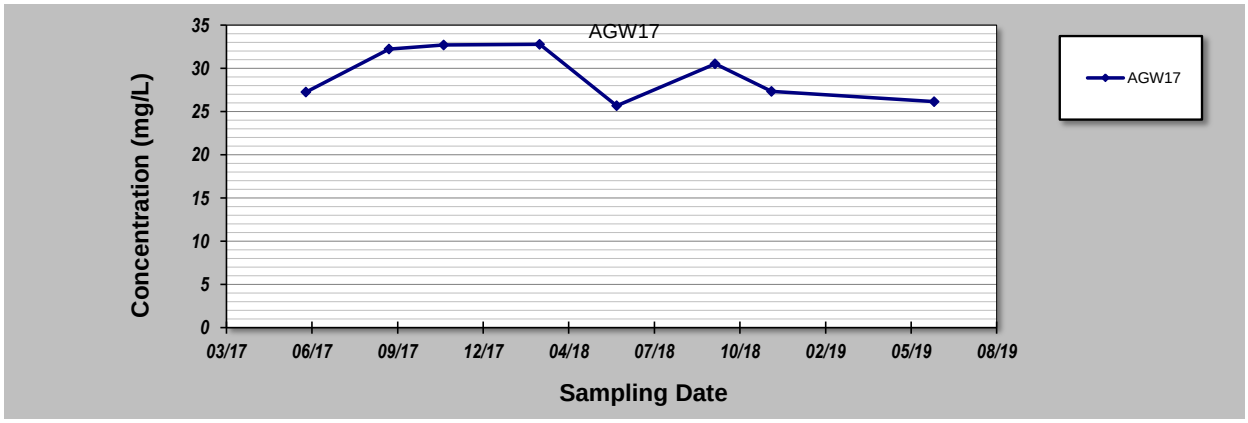
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.17
Mann-Kendall Statistic (S):		-31
Confidence Factor:		99.2%
Concentration Trend:		Decreasing



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L
Sampling Point ID:	AGW18		

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	18-May-16	5.4000
2	27-Jul-16	7.1700
3	25-Aug-16	6.1600
4	28-Sep-16	0.0400
5	27-Oct-16	8.3600
6	14-Dec-16	4.7800
7	16-Jan-17	5.9400
8	15-Feb-17	5.8200
9	14-Mar-17	5.8300
10	7-Jun-17	6.5000
11	12-Sep-17	6.5900
12	15-Nov-17	6.6700
13	7-Mar-18	6.2400
14	6-Jun-18	5.5600
15	28-Sep-18	5.8100
16	4-Dec-18	5.8050
17	13-Mar-19	4.9020
18	11-Jun-19	4.9800
19		
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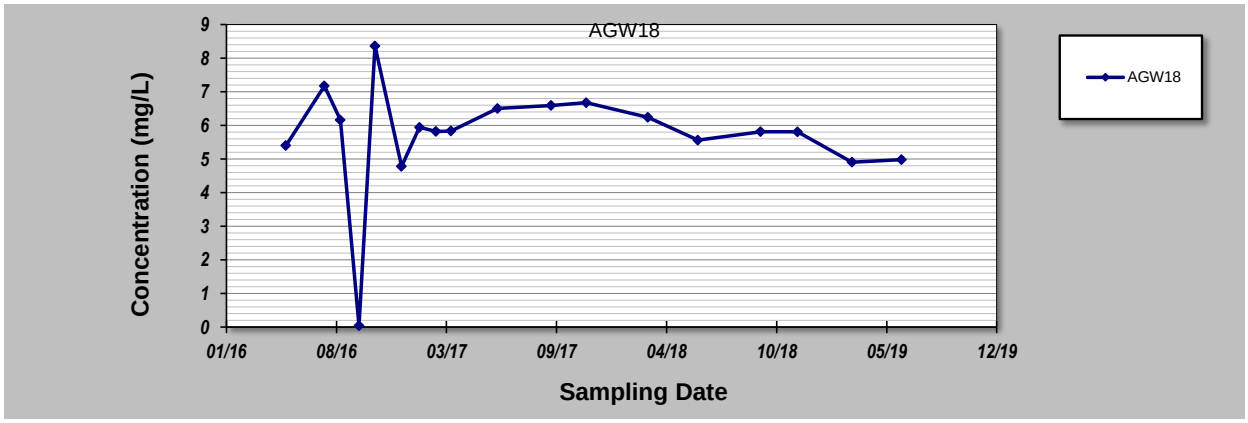
24		
25		
Coefficient of Variation:		0.72
Mann-Kendall Statistic (S):		28
Confidence Factor:		79.0%
Concentration Trend:		No Trend



Notes:

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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW18

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	7-Jun-17	6.5000
2	12-Sep-17	6.5900
3	15-Nov-17	6.6700
4	7-Mar-18	6.2400
5	6-Jun-18	5.5600
6	28-Sep-18	5.8100
7	4-Dec-18	5.8050
8	13-Mar-19	4.9020
9	11-Jun-19	4.9800
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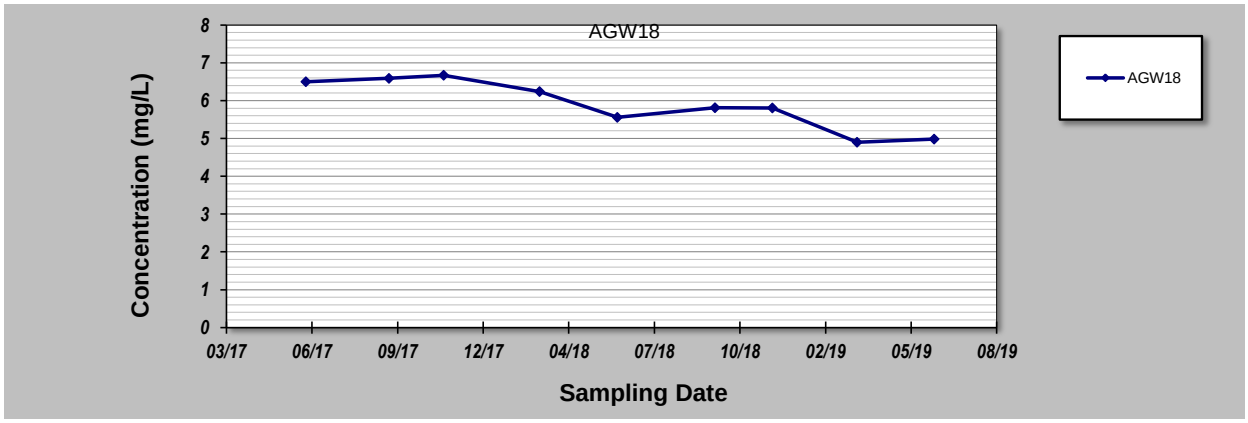
Coefficient of Variation:		0.71
Mann-Kendall Statistic (S):		2
Confidence Factor:		52.7%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	AGW19						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	14-Aug-18	51.5200						
2	6-Sep-18	30.4800						
3	3-Dec-18	38.7300						
4	13-Mar-19	30.6762						
5	11-Jun-19	51.6400						
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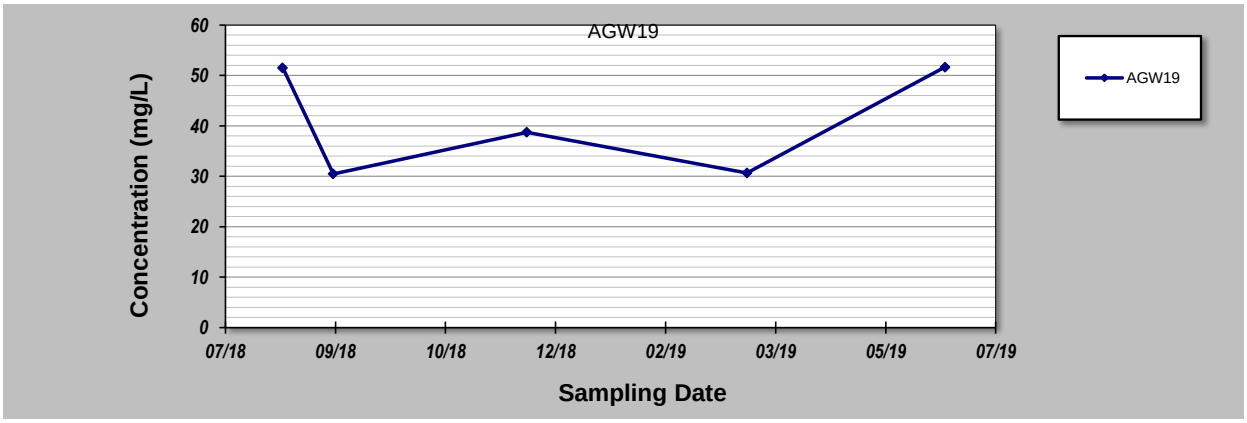
Coefficient of Variation:		0.39						
Mann-Kendall Statistic (S):		-14						
Confidence Factor:		94.6%						
Concentration Trend:		Prob. Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: AGW20

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	14-Aug-18	62.0600
2	6-Sep-18	36.5200
3	3-Dec-18	52.5800
4	13-Mar-19	53.5737
5	11-Jun-19	26.2100
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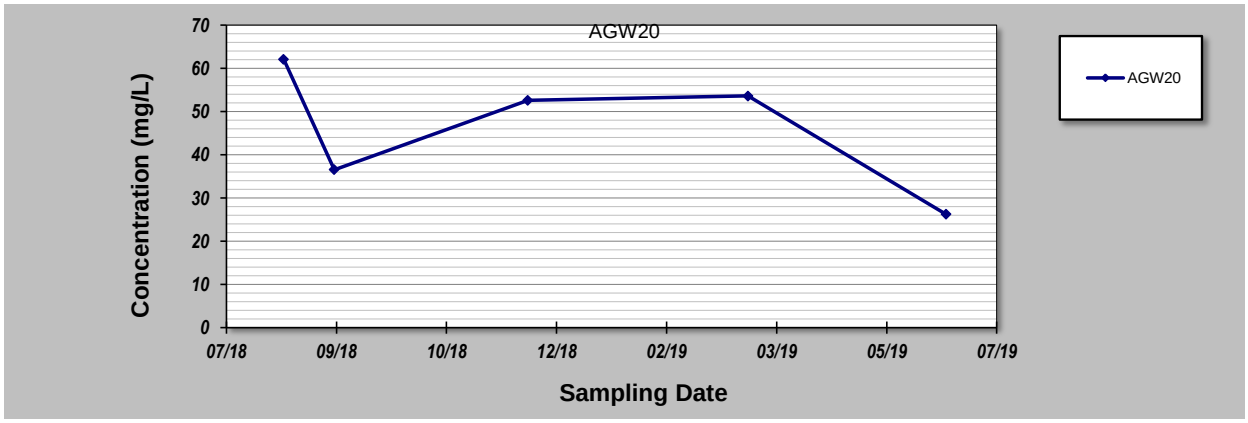
Coefficient of Variation:		0.46
Mann-Kendall Statistic (S):		-20
Confidence Factor:		99.3%
Concentration Trend:		Decreasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: MW204

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	18-May-16	10.0600
2	25-Aug-16	10.3800
3	28-Sep-16	4.8900
4	27-Oct-16	0.2300
5	14-Dec-16	11.2500
6	16-Jan-17	10.4200
7	15-Feb-17	27.6800
8	14-Mar-17	32.9000
9	19-Apr-17	16.9300
10	22-May-17	16.4500
11	7-Jun-17	16.5400
12	10-Jul-17	13.6300
13	14-Aug-17	17.0000
14	12-Sep-17	13.7000
15	24-Oct-17	11.4700
16	15-Nov-17	14.8900
17	7-Mar-18	5.2100
18	6-Jun-18	14.6700
19	28-Sep-18	8.8000
20	3-Dec-18	7.5078
21	13-Mar-19	5.5341
22	11-Jun-19	5.2500
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24		
25		
26		
27		
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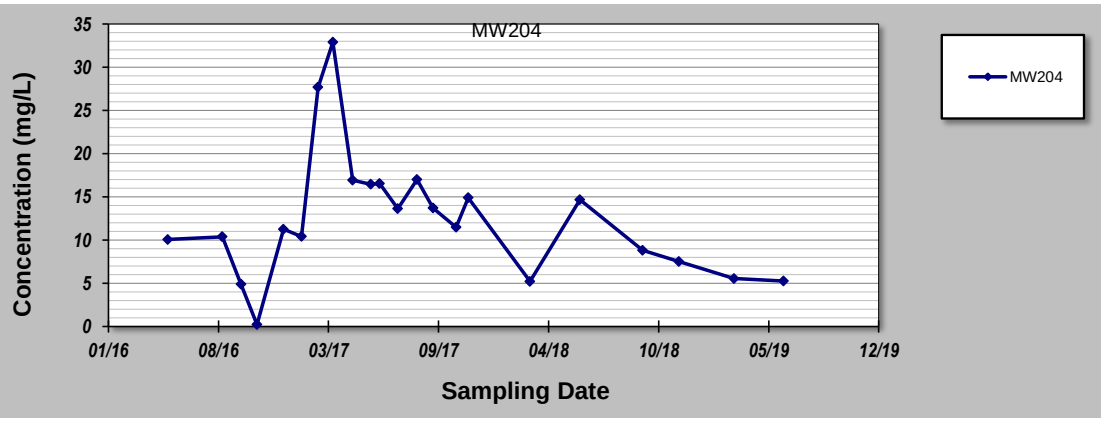
29		
30		
Coefficient of Variation:		0.55
Mann-Kendall Statistic (S):		28
Confidence Factor:		73.4%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW204						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	14-Mar-17	32.9000						
2	19-Apr-17	16.9300						
3	22-May-17	16.4500						
4	7-Jun-17	16.5400						
5	10-Jul-17	13.6300						
6	14-Aug-17	17.0000						
7	12-Sep-17	13.7000						
8	24-Oct-17	11.4700						
9	15-Nov-17	14.8900						
10	7-Mar-18	5.2100						
11	6-Jun-18	14.6700						
12	28-Sep-18	8.8000						
13	3-Dec-18	7.5078						
14	13-Mar-19	5.5341						
15	11-Jun-19	5.2500						
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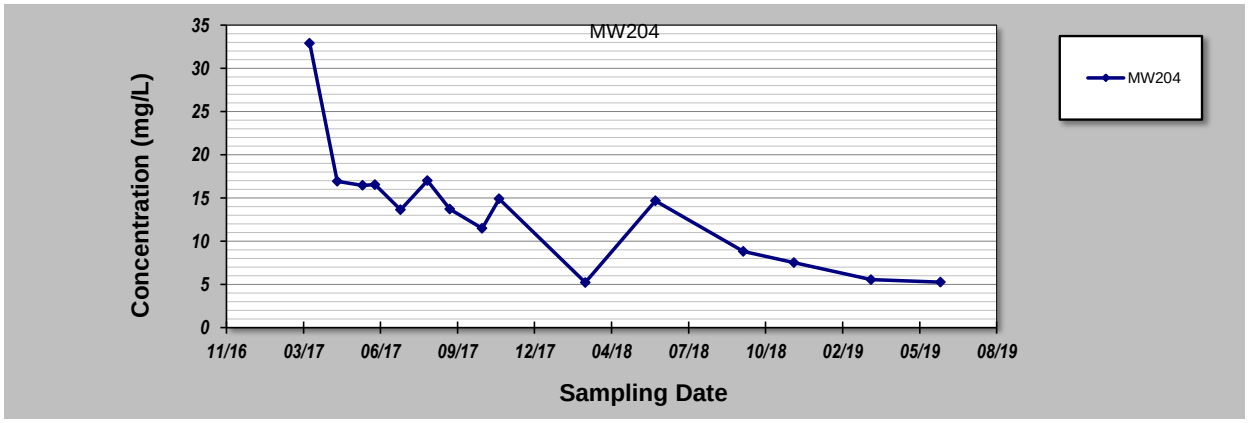
Coefficient of Variation:		0.48						
Mann-Kendall Statistic (S):		-33						
Confidence Factor:		88.5%						
Concentration Trend:		Stable						



Notes:

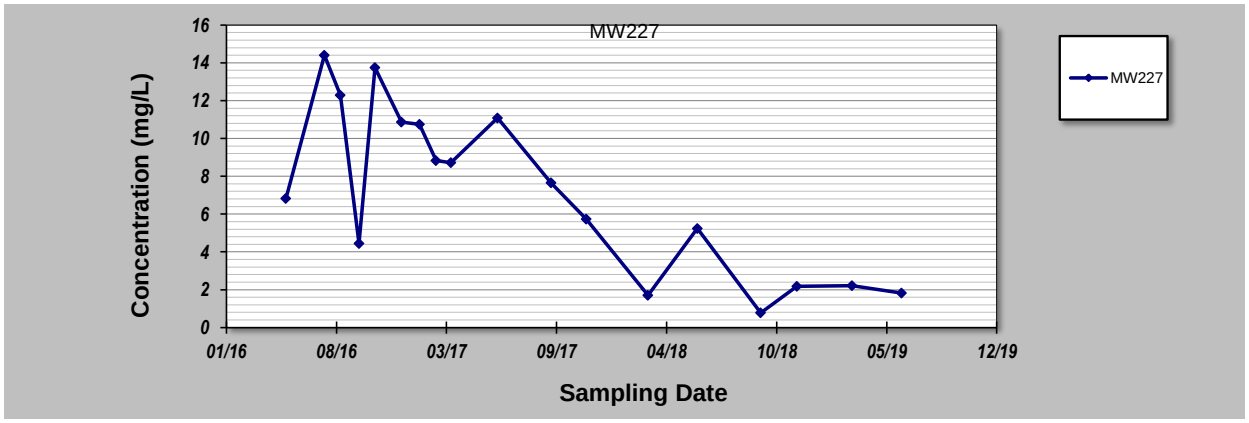
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW227						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	18-May-16	6.8300						
2	27-Jul-16	14.4000						
3	25-Aug-16	12.2900						
4	28-Sep-16	4.4400						
5	27-Oct-16	13.7500						
6	14-Dec-16	10.8600						
7	16-Jan-17	10.7500						
8	15-Feb-17	8.8300						
9	14-Mar-17	8.7200						
10	7-Jun-17	11.0800						
11	12-Sep-17	7.6500						
12	15-Nov-17	5.7300						
13	7-Mar-18	1.7000						
14	5-Jun-18	5.2400						
15	28-Sep-18	0.7800						
16	3-Dec-18	2.1801						
17	13-Mar-19	2.2185						
18	11-Jun-19	1.8200						
19								
20								
Coefficient of Variation:		0.61						
Mann-Kendall Statistic (S):		-91						
Confidence Factor:		>99.9%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: MW227

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	7-Jun-17	11.0800
2	12-Sep-17	7.6500
3	15-Nov-17	5.7300
4	7-Mar-18	1.7000
5	5-Jun-18	5.2400
6	28-Sep-18	0.7800
7	3-Dec-18	2.1801
8	13-Mar-19	2.1285
9	11-Jun-19	1.8200
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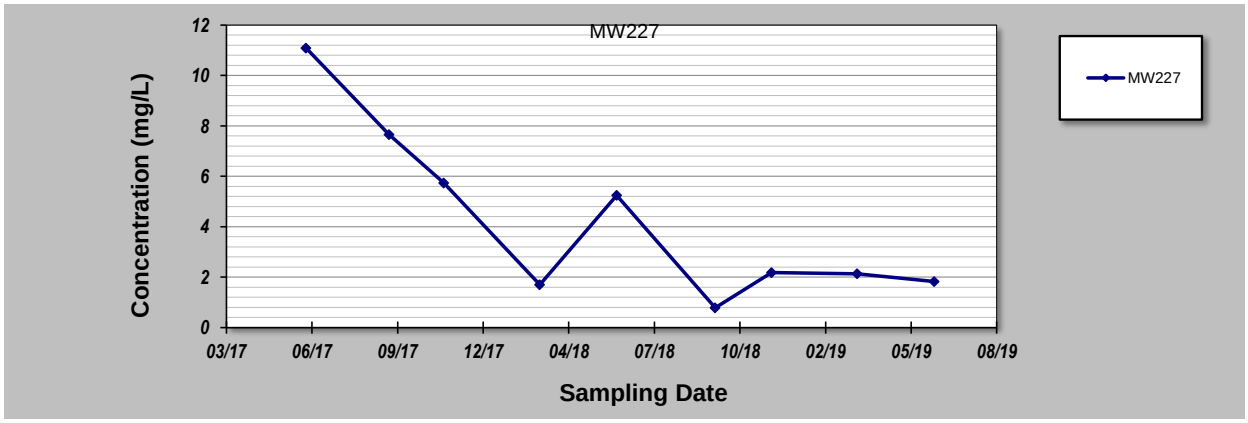
20		
Coefficient of Variation:		0.81
Mann-Kendall Statistic (S):		-22
Confidence Factor:		98.8%
Concentration Trend:		Decreasing



Notes:

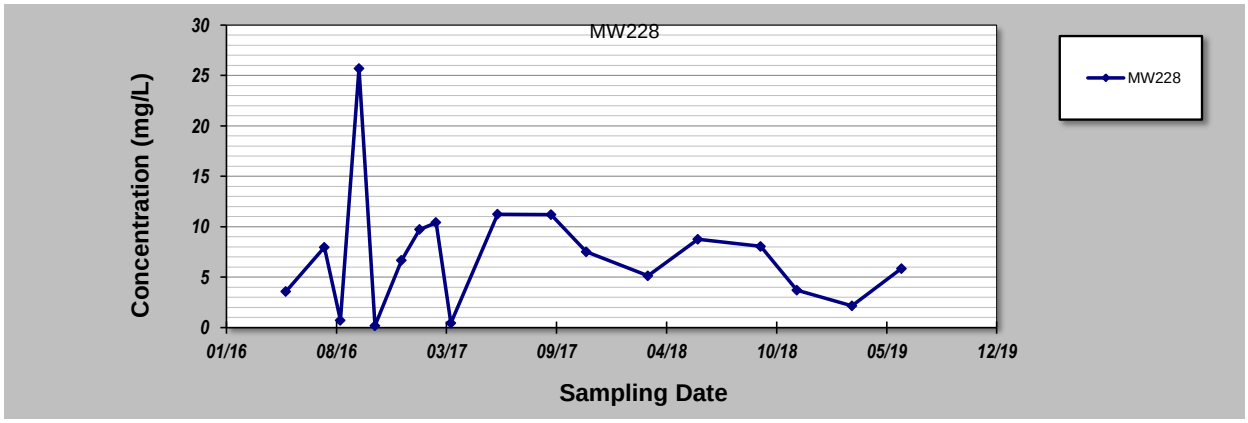
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW228						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	18-May-16	3.5800						
2	27-Jul-16	7.9500						
3	25-Aug-16	0.7100						
4	28-Sep-16	25.6900						
5	27-Oct-16	0.1700						
6	14-Dec-16	6.6700						
7	16-Jan-17	9.7200						
8	15-Feb-17	10.4100						
9	14-Mar-17	0.4400						
10	7-Jun-17	11.2300						
11	12-Sep-17	11.1900						
12	15-Nov-17	7.5100						
13	7-Mar-18	5.1200						
14	6-Jun-18	8.7500						
15	28-Sep-18	8.0400						
16	3-Dec-18	3.7023						
17	13-Mar-19	2.1543						
18	11-Jun-19	5.8500						
19								
20								
Coefficient of Variation:		0.82						
Mann-Kendall Statistic (S):		-5						
Confidence Factor:		55.9%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW228						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	7-Jun-17	11.2300						
2	12-Sep-17	11.1900						
3	15-Nov-17	7.5100						
4	7-Mar-18	5.1200						
5	6-Jun-18	8.7500						
6	28-Sep-18	8.0400						
7	3-Dec-18	3.7023						
8	13-Mar-19	2.1543						
9	11-Jun-19	5.8500						
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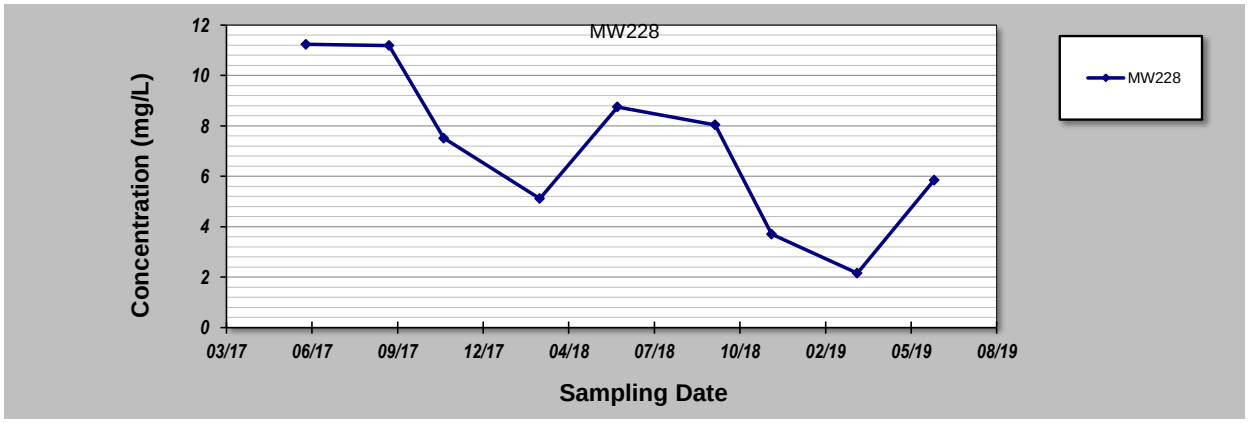
20								
Coefficient of Variation:		0.45						
Mann-Kendall Statistic (S):		-22						
Confidence Factor:		98.8%						
Concentration Trend:		Decreasing						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW301						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	12-Jul-18	14.0557						
2	4-Dec-18	7.8900						
3	13-Mar-19	9.2880						
4	11-Jun-19	9.4800						
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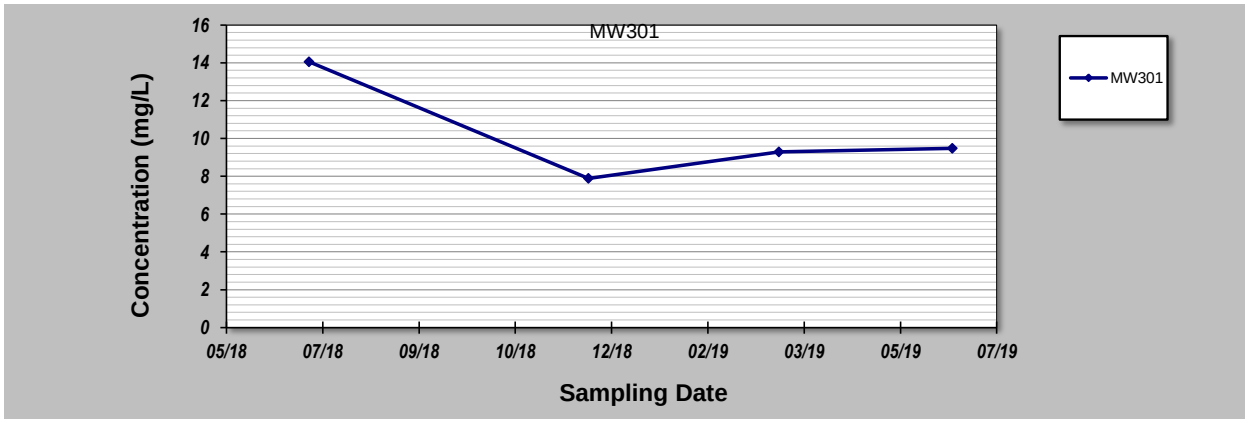
Coefficient of Variation:		0.26						
Mann-Kendall Statistic (S):		0						
Confidence Factor:		37.5%						
Concentration Trend:		Stable						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID: MW304

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)
1	12-Jul-18	18.9281
2	4-Dec-18	0.1200
3	13-Mar-19	0.0774
4	11-Jun-19	9.1100
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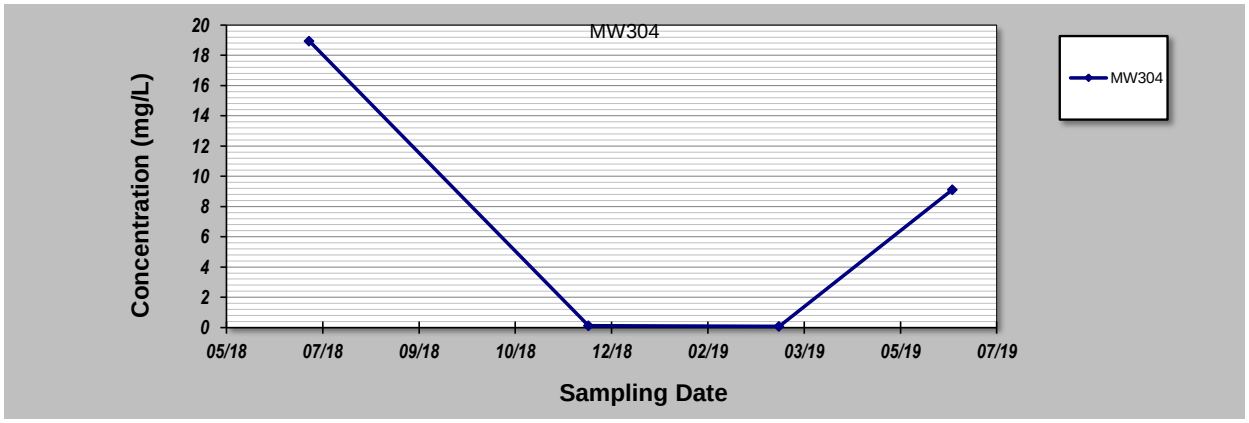
20		
Coefficient of Variation:		1.27
Mann-Kendall Statistic (S):		-2
Confidence Factor:		62.5%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	MW305						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	12-Jul-18	15.0831						
2	4-Dec-18	0.3400						
3	13-Mar-19	3.3153						
4	11-Jun-19	4.1200						
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7								
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9								
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12								
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14								
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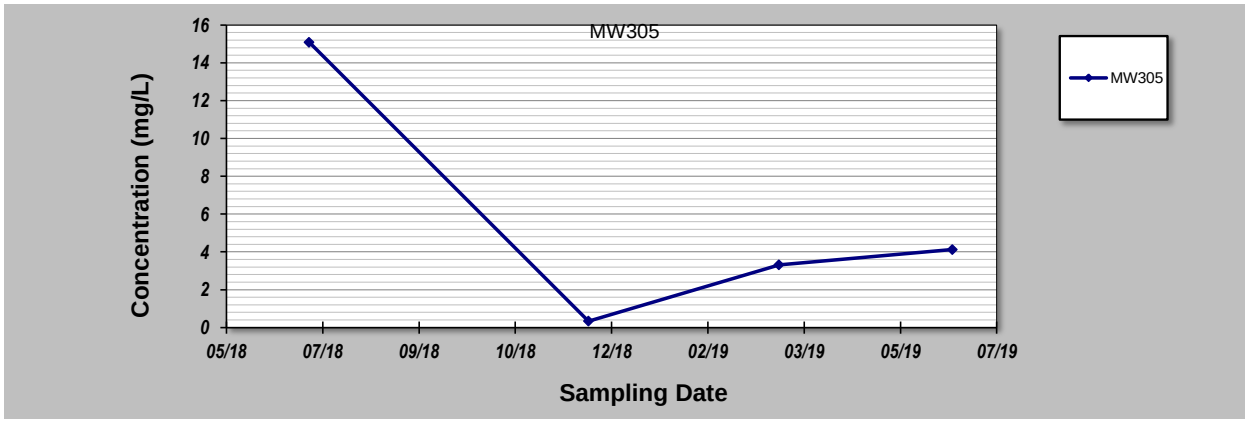
16								
17								
18								
19								
20								
Coefficient of Variation:		1.13						
Mann-Kendall Statistic (S):		0						
Confidence Factor:		37.5%						
Concentration Trend:		No Trend						



Notes:

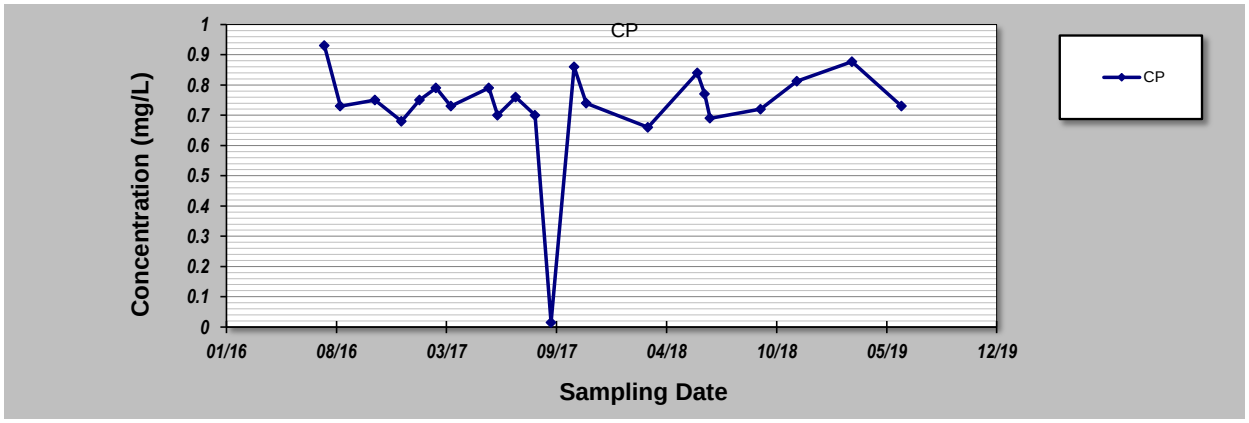
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	27-Jun-19	Job ID:	51823
Facility Name:	GSK Cork	Constituent:	Ammonium
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	CP						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	27-Jul-16	0.9300						
2	25-Aug-16	0.7300						
3	27-Oct-16	0.7500						
4	14-Dec-16	0.6800						
5	16-Jan-17	0.7500						
6	15-Feb-17	0.7900						
7	14-Mar-17	0.7300						
8	22-May-17	0.7900						
9	7-Jun-17	0.7000						
10	10-Jul-17	0.7600						
11	14-Aug-17	0.7000						
12	12-Sep-17	0.0150						
13	24-Oct-17	0.8600						
14	15-Nov-17	0.7400						
15	7-Mar-18	0.6600						
16	5-Jun-18	0.8400						
17	18-Jun-18	0.7700						
18	28-Jun-18	0.6900						
19	28-Sep-18	0.7200						
20	3-Dec-18	0.8127						
21	13-Mar-19	0.8772						
22	11-Jun-19	0.7300						
23								
24								
25								
Coefficient of Variation:		0.24						
Mann-Kendall Statistic (S):		3						
Confidence Factor:		52.2%						
Concentration Trend:		No Trend						



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

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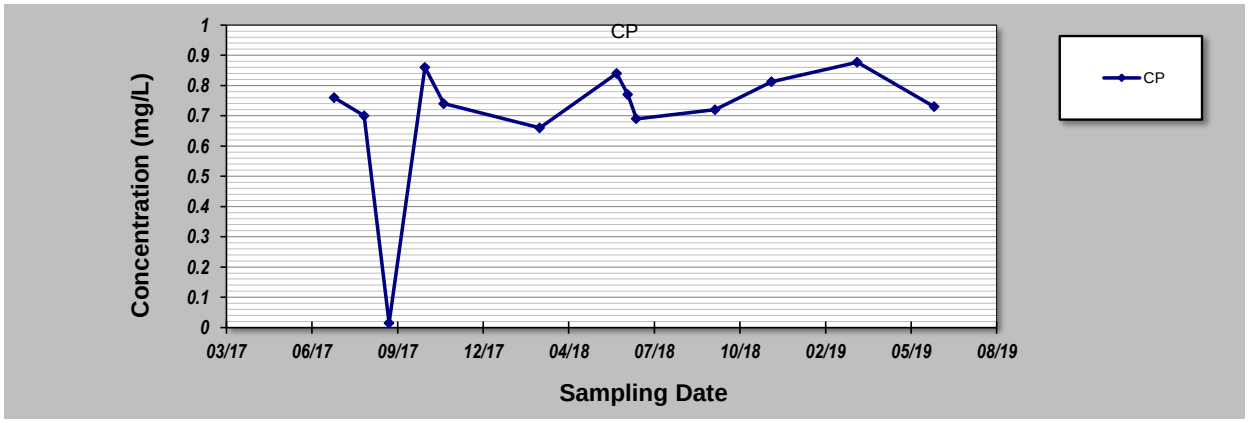
Conducted By:	Verde	Concentration Units:	mg/L

Sampling Point ID:	CP						

Sampling Event	Sampling Date	AMMONIUM CONCENTRATION (mg/L)						
1	10-Jul-17	0.7600						
2	14-Aug-17	0.7000						
3	12-Sep-17	0.0150						
4	24-Oct-17	0.8600						
5	15-Nov-17	0.7400						
6	7-Mar-18	0.6600						
7	5-Jun-18	0.8400						
8	18-Jun-18	0.7700						
9	28-Jun-18	0.6900						
10	28-Sep-18	0.7200						
11	3-Dec-18	0.8127						
12	13-Mar-19	0.8772						
13	11-Jun-19	0.7300						
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.31						
Mann-Kendall Statistic (S):		14						
Confidence Factor:		78.2%						
Concentration Trend:		No Trend						



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Mann-Kendall Trend Analysis		
GSK Ammonium Groundwater Results from 2005 to 2019		
Well ID	**Long-term Trend**	**Short-term Trend**
AGW1a	Decreasing	Decreasing
AGW2	Decreasing	Increasing
AGW3	Increasing	Decreasing
AGW4	Increasing	Stable
AGW5	No Trend	Stable
AGW6	No Trend	Decreasing
AGW8	No Trend	No Trend
AGW9	Decreasing	Stable
AGW10	Decreasing	Stable
AGW11a	Increasing	Stable
AGW12	Increasing	Decreasing
AGW13	No trend	Decreasing
AGW14	Increasing	Stable
AGW16	Decreasing	Stable
AGW17	Decreasing	Decreasing
AGW18	No Trend	No Trend
AGW19	N/A	Probably Decreasing
AGW20	N/A	Decreasing
MW204	No Trend	Stable
MW227	Decreasing	Decreasing
MW228	Stable	Decreasing
MW301	N/A	Stable
MW304	N/A	No Trend
MW305	N/A	No Trend
CP	No Trend	No Trend