

Subject Industrial Emissions Licensing - BATC for common waste water- Pfizer Ireland Pharmaceuticals

(Ringaskiddy)

**Date** 06 September 2019 **Job No/Ref** 267677-00

# **Attachment D.2 – Baseline Report**

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# Pfizer Ireland (Ringaskiddy)

Soil and Groundwater Baseline **Assessment** 

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Project reference: PR-423449

PR-423449\_ACM\_RP\_EN\_001

01 October 2019

Pfizer Ireland Pharmaceuticals Ringaskiddy API Plant Ringaskiddy Co. Cork

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The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between 08 July 2019 and 02 August 2019 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

The exploratory holes carried out during the fieldwork, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The comments made and recommendations given in this Report are based on the ground conditions apparent at the site of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this Report.

The comments made on groundwater conditions are based on observations made during site work and the on-going monitoring programme. It should be noted that groundwater levels might vary owing to seasonal or other effects.

The opinions expressed in this Report concerning any contamination found and the risks arising there from are based on current good practice simple statistical assessment and comparison with available soil guideline values, AECOM generic assessment criteria and other guidance values.

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Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Reference to historical Ordnance Survey (OS) maps and/or data provides invaluable information regarding the land use history of a site. However, it should be noted that historical evidence will be incomplete for the period pre-dating the first edition and between the release of successive maps and/or data.

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#### 1. Introduction

### 1.1 Project Background

Pfizer Ireland Pharmaceuticals (Pfizer Ringaskiddy) operate a pharmaceutical manufacturing plant at Ballintaggart, Ringaskiddy, Co. Cork (the site) under Industrial Emissions Licence (IEL) P0013-04 granted by the Environmental Protection Agency (EPA). AECOM understands that Pfizer Ringaskiddy are required to make amendments to the site's Waste Water Treatment Plant (WWTP) to ensure compliance with applicable BAT-AELs as specified in the Commission Implementing Decision [CID] 2016/902.

The issue of the CID 2016/902 has obliged the site to complete a limited review of the IEL to ensure compliance with applicable BAT-AELs. As part of the IEL review application, Pfizer Ringaskiddy are obliged to produce a Baseline report. Pfizer Ringaskiddy appointed AECOM Ireland Limited (AECOM) to assist in the production of this Baseline Report.

A site location map and site layout are presented in Appendix A as Figures 1 and 2, respectively.

#### 1.2 Baseline Assessment

When the European Union Directive on Industrial Emissions<sup>1</sup> came into force, it became necessary for licensees to consider baseline conditions with regard to soil and groundwater contamination when activity on the site involves the use, production or release of relevant hazardous substances, under either of the following scenarios:

- When applying for an IEL to operate a new installation; and,
- When revising the permit for an existing license installation.

Under the Industrial Emissions Directive, a Referent Hazardous Substance is a raw material, product, intermediary, by-product, emission or waste which, as a result of hazardousness, mobility, persistence and biodegradability (as well as other characteristics), is capable of contaminating soil or groundwater.

# 1.3 Project Objective

The main objective of the project is to complete a baseline assessment for the site in support of the limited licence review as specified above.

# 1.4 Scope of Work

The aim of baseline assessment is to generate a report which, on cessation of the licensed activity, will allow for direct comparison to determine if contamination has been added in the course of the licensed activity since the baseline was established.

The Official Journal of the European Union has issued guidance<sup>2</sup> on the stages to be completed and the scope of content for baseline reports. In total there are eight stages to be completed, as listed below:

- Stage 1 Identification of hazardous substances used;
- Stage 2 Identification of relevant hazardous substances used;
- Stage 3 Assessment of the site-specific pollution possibility;
- Stage 4 Site history;

<sup>&</sup>lt;sup>1</sup> Industrial Emissions Directive, Directive 2010/75/EU

<sup>&</sup>lt;sup>2</sup> European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014)

- Stage 5 Environmental setting;
- Stage 6 Site characterisation;
- Stage 7 Site investigation; and,
- Stage 8 Production of the baseline report.

#### 1.5 References

#### 1.5.1 Reports

In preparation of this report, the following reports have been reviewed as prepared by AECOM and legacy AECOM companies Dames & Moore (D&M) and URS:

- Dames & Moore, 1995: Phase III Groundwater Investigation and February 1995 Groundwater Monitoring Results for the Ringaskiddy, Cork Facility on Behalf of Pfizer Pharmaceuticals, report reference 17717-018-401, dated 15 May 1995;
- Dames & Moore, 1996: Additional Investigations at OSP1 and of Groundwater Methanol Levels, letter report reference 17717-028-447, dated 22 October 1996;
- Dames & Moore, 1998: OSP4 Trial Pit Investigation Pfizer Pharmaceuticals Ringaskiddy, Co. Cork, report reference 17717-040, dated 26 March 1998;
- Dames & Moore, 1998: OSP4 Groundwater Investigation Pfizer Pharmaceuticals Ringaskiddy,
   Co. Cork, report reference 17717-041, dated 02 April 1998;
- Dames & Moore, 1998: Results Of May/June Groundwater Monitoring Programme Including Underground Storage Tank Farm Area, letter report reference 17717\042, dated 14 July 1998;
- Dames & Moore, 1998: Remedial Investigation Product Recovery And May June 1998
   Groundwater Quality Results, report reference 17717-045, dated 20 November 1998;
- Dames & Moore, 1999: 1998 Groundwater Programme, letter report reference 17717\043\1998, dated 15 February 1999;
- Dames & Moore, 1999: Soil Treatment Bed Sample Results, June 1999, letter report reference 17717\048, dated 22 July 1999;
- URS, 2004: Results of June 2004 Soil Sampling next to Boiler House, letter report reference 17717\153-447, dated 11 August 2004;
- URS, 2004: Soil Sampling From Soils Excavated For The Construction Of An OSP1 Elevator Shaft At The Pfizer, Ringaskiddy Facility, report reference 17717-153-Soil Sampling February 2004, dated 11 March 2004;
- URS, 2004: Results of March 2004 Soil Sampling, letter report reference 17717-153-Soil Sampling March 2004, dated 02 April 2004;
- URS, 2004: Results of Sampling Following the WWTP Pipe Overflow, Ringaskiddy API, 23 April 2004, letter report reference 17717-153-447 WWTP Sampling, dated 12 May 2004;
- URS, 2005: Shallow Limestone Characterisation Programme And Product Recovery System Design Southern UST Farm, report reference 17717-075, dated 05 May 2005;
- URS, 2006: Pfizer Ringaskiddy Controlled Water Quantitative Risk Assessment, report reference 45078513/CKRP0001 Issue 2, dated 12 October 2006;
- URS, 2006: Feasibility Report on Decommissioning of RC Wells Pfizer Ringaskiddy, report reference 4617688/CKRP0002 Issue 1, dated 31 May 2006;
- AECOM, Pfizer Ringaskiddy Groundwater Remediation Assessment 2014, AECOM report reference 47092735/CKRP0001, February 2015; and,

In addition, groundwater monitoring reports prepared by AECOM and predecessor companies between 1997 and 2019 were also reviewed with the most recent results summarised in:

 AECOM, 2019: Pfizer Ringaskiddy Groundwater Monitoring Round 1 (May) 2019 IEL Report, report reference PR-412276\_ACM\_RP\_EN\_001.

#### 1.5.2 Online References

- Site sensitivity research, including geology, hydrology, hydrogeology, areas of ecological significance and a review of potentially polluting activities in the area, from:
  - Geological Survey of Ireland (GSI) website http://www.gsi.ie, accessed 24 July 2019 (for Public Viewer and Groundwater Web Maps); and,
  - Environmental Protection Agency (EPA) website http://www.epa.ie, accessed 24 July 2019 (for Map Viewer).
- Flood risk data (as available), from: Office of Public Works (OPW) National Flood Hazard Mapping tool http://www.floodinfo.ie, accessed 26 July 2019.

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# 2. Identification of Hazardous Substances (Stage 1)

The first stage in preparing a baseline assessment is to identify the hazardous substances that are used, produced or released at the site.

Substances were classified as hazardous if:

- 1. They were identified as 'Hazardous' by the EPA in the document *Classification of Hazardous and Non- Hazardous Substances in Groundwater* (2010)<sup>3</sup>;
- 2. If they have a relevant hazard statement on the European Chemicals Agency website<sup>4</sup>. A total of 14 relevant environmental hazard statements have been identified:
  - H340 May cause genetic defects
  - H341 Suspected of causing genetic defects
  - H350 May cause cancer
  - H351 Suspected of causing cancer
  - H360D May damage unborn child
  - H360F May damage fertility
  - H361 Suspected of damaging fertility or the unborn child
  - H400 Very toxic to aquatic life
  - H401 Toxic to aquatic life
  - H402 Harmful to aquatic life
  - H410 Very toxic to aquatic life with long lasting effects
  - H411 Toxic to aquatic life with long lasting effects
  - H412 Harmful to aquatic life with long lasting effects
  - H413 May cause long lasting harmful effects to aquatic life

In addition, the safety data sheet for the fire fighting foam used and stored on site was reviewed to ascertain whether it contains per/poly-fuorinated alkyl substances (PFAS). PFAS is an emerging group of environmentally persistent compounds known to have been commonly used in aqueous film forming foams (AFFF) such as those used in firefighting. The supplier of the firefighting foam used at Pfizer Ringaskiddy confirmed that the foam used and stored at site at present and historically has been PFAS free.

Several final products and intermediaries are also stored on site. Where relevant hazard statements cannot be assessed, these substances were not screened out in Stage 1.

A list of the hazardous substances identified in Stage 1 are listed in Appendix B, Table 1.

 $<sup>^{3}\ \</sup>underline{\text{http://www.epa.ie/pubs/reports/water/ground/classificationofhazardousandnon-hazardoussubstancesingroundwater.html}$ 

<sup>4</sup> http://echa.europa.eu/

# Identification of 'Relevant Hazardous Substances' 3. (Stage 2)

Stage 2 screens the hazardous substances identified following Stage 1 for potential pollution risk due to their chemical or physical properties.

This risk-based assessment screens the list of substances given in Appendix B Table 1 in consideration of:

- The physical state of substances that will be used and stored on site, e.g. solids and gases can be removed from the list as part of the screening process; and,
- The overall quantity used on site. The EU Guidance states that "where very small quantities are used, produced or released on the site of the installation then the possibility of contamination is likely to be insignificant for the purpose of producing a baseline report".

A planned annual usage of >250 L (or >250 kg) was used as the threshold above which substances used on site were considered in this assessment. Those substances that will be used/stored in small quantities on site have not been considered, for example substances used in laboratories or in the canteen.

Fifty Relevant Hazardous Substances were identified in Stage 2.

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# 4. Assessment of Site-Specific Pollution Possibility (Stage 3)

In Stage 3, the hazardous substances taken forward from Stage 2 were considered in the context of the site to determine whether circumstances exist which may result in the potential release of a substance in sufficient quantities to pose a pollution risk. Specific circumstances include:

- The quantity of each hazardous substance or groups of similar hazardous substances;
- How and where hazardous substances are stored and used on site;
- How the hazardous substances are transported around the installation; and,
- In case of existing installations, the measures that have been adopted to ensure that it is impossible in practice for contamination of soil or groundwater to take place (including the presence and integrity of containment mechanisms, condition of site drainage, etc.).

For the list of on-site relevant hazardous substances derived at Stage 2, AECOM assessed the storage arrangement of each chemical substance, together with its associated handling procedures.

At Pfizer Ringaskiddy, the storage and handling of process materials is undertaken in accordance with the EPA Guidance Document *IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities*, EPA 2004<sup>5</sup>. Details on the site containment systems were obtained from the site's Environmental Liabilities Risk Assessment Update 2018/2019 prepared by AECOM<sup>6</sup> and from the Pfizer Ringaskiddy Environment Team.

Brief details of the storage arrangements of the planned on-site elevant hazardous chemical substances and associated containment measures for each of the hazardous substances are provided in Appendix B Table 2.

Based on the information provided by Pfizer Ringaskiddy to AECOM, it is expected that, as a result of current storage, containment and handling practices, the likelihood of possible significant impact to soils and groundwater from the on-site hazardous substances is low. However, areas of soil and groundwater impacts are known to exist on site from historic losses.

The following sections detail specific storage arrangements for relevant hazardous substances (or groups of substances) assessed at Stage 3.

#### 4.1 Benzene

Benzene is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Benzene is no longer stored on site but was historically stored in single-skinned underground storage tanks (USTs) in the former northern and southern tank farms (prior to 1999/2000). Benzene-impacted material was also used as fill during the reclamation of Monkstown Creek creating a secondary source area in the north east of the site.

Benzene is currently analysed for during biannual groundwater monitoring as part of the Volatile Organic Compound (VOC) suite and has been reported as detected in groundwater from wells 7, 205, 404, 501 and C1 and is still reported as detected in the majority of these wells, though at declining concentrations.

As benzene is reported as detected in groundwater it is considered a Relevant Hazardous Substance.

<sup>&</sup>lt;sup>5</sup> http://www.epa.ie/pubs/advice/licensee/guidancetostorageandtransferofmaterialsforscheduledactivities.html

<sup>&</sup>lt;sup>6</sup> AECOM (2019) PR-261839-ACM-RP-EN-001-3- Pfizer Ireland Pharmaceuticals Environmental Liabilities Risk Assessment Update 2018/2019

#### 4.2 Chloroform

Chloroform is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Chloroform is no longer stored on site but was historically stored in single-skinned USTs in the former northern and southern tank farms (prior to 1999/2000).

Chloroform is currently analysed for during biannual groundwater monitoring as part of the VOC suite and is intermittently reported as detected in groundwater from wells 409 and 702.

As chloroform is occasionally reported as detected in groundwater it is considered a Relevant Hazardous Substance.

# 4.3 Dichloromethane (DCM)

Dichloromethane (DCM) is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Bulk DCM is currently stored in bunded above ground storage tanks (ASTs) in the tank farm. The DCM AST and bund have been designed to the appropriate engineering standards for solvent storage. In the event of a loss of DCM from primary and secondary containment, the tank farm area drains through the weak effluent system to the WWTP providing tertiary containment.

Bulk DCM is conveyed to its point of use through above ground pipelines. All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drains to the weak effluent system to the WWTP. In the event of a leak or spill during transport, DCM will not be able to enter soil and groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the continuous pH and/or Total Organic Carbon (TOC) meter and be diverted to the storm water retention pond, where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of DCM entering soil and/or groundwater from contemporary sources is considered low. However, DCM was historically stored in single-skinned USTs in the former northern and southern tank farms (prior to 1999/2000). In addition, DCM is currently analysed for during biannual groundwater monitoring as part of the VOC suite and has been intermittently reported as detected.

As DCM is intermittently reported as detected in groundwater it is considered a Relevant Hazardous Substance.

#### 4.4 Diesel

Diesel is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Diesel is stored in eight bunded ASTs close to its points of use. Diesel tanks are primarily used to store fuel for on-site trucks and forklifts. Diesel is also used to provide power for the emergency generators and fire pumps on site.

Diesel is delivered to site by tanker. Diesel bunds have been designed for a minimum 110% capacity of the diesel tank volume. The diesel tanks and bunds have been designed to the appropriate engineering standards for diesel storage.

The diesel tank, delivery system, supply pipework to the generators and the generators are all on a rigorous preventative maintenance system and are visually inspected by shift personnel during routine plant walkdowns. In the event of a spill and release from secondary containment diesel will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

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Diesel is not currently analysed for as part of biannual groundwater monitoring suite, however key components of diesel (such as naphthalene and trimethylbenzene) are analysed for as part of the VOC suite.

The risk of diesel entering soil and/or groundwater is considered low, however as diesel is stored in bulk it is considered a Relevant Hazardous Substance. Specific analysis for diesel hydrocarbons will be added to the biannual groundwater monitoring analytical suite.

# 4.5 1,2-Dichlorobenzene

1,2-Dichlorobenzene is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. 1,2-Dichlorobenzene is not currently stored on site however, it was historically stored in single-skinned USTs in the former northern and southern tank farms (prior to 1999/2000). 1,2-Dichlorobenzene is currently analysed for during biannual groundwater monitoring as part of the VOC suite and has not been reported as detected in groundwater during routine monitoring.

As 1,2-dichlorobenzene has not been reported as detected in groundwater and as it is no longer stored on site, it is not considered a Relevant Hazardous Substance.

## 4.6 Dimethylacetamide

Dimethylacetamide is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Dimethylacetamide is not currently stored on site however, it was historically stored on site and it is possible that it may have been stored in bulk. Dimethylacetamide is not analysed for in routine groundwater monitoring.

As dimethylacetamide has potentially been stored in bulk on site historically, it is considered a Relevant Hazardous Substance.

Dimethylacetamide will be added to the analytical suite (as a VOC tentatively identified compound (TIC)) for biannual groundwater monitoring, however, as it is no longer stored on site, if it is not reported as detected in two consecutive biannual groundwater monitoring rounds then its removal from further sampling events should be agreed with the EPA.

#### 4.7 Dowtherm J

Dowtherm J (diethyl benzenes) is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Dowtherm J is used as a cooling liquid within Organic Synthesis Plant (OSP) 3 and is stored in a bunded AST in OSP3. The Dowtherm J AST and bund have been designed to the appropriate engineering standards. In the event of a loss from primary and secondary containment, OSP3 drains through the weak effluent system via a weak effluent tank in OSP3 which pumps on level control to the WWTP which acts as tertiary containment.

Bulk Dowtherm J is conveyed to its point of use through above ground pipelines within OSP 3. All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. Should Dowtherm J be lost during transfer it will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Dowtherm J has not been historically stored in bulk in areas without secondary and tertiary containment.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of Dowtherm J entering soil and/or groundwater is considered very low and it is not considered a Relevant Hazardous Substance.

# 4.8 2,2,4-Trimethylpentane

2,2,4-Trimethylpentane is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground.

2,2,4-Trimethylpentane is no longer used or stored on site, however it was historically stored in single-skinned USTs in the former northern and southern tank farms. 2,2,4-Trimethylpentane is not analysed for in routine groundwater monitoring.

As 2,2,4-trimethylpentane has been historically stored without secondary containment it is considered a Relevant Hazardous Substance.

As 2,2,4-trimethylpentane is no longer stored on site, if it is not reported as detected (as a VOC TIC) in two consecutive biannual groundwater monitoring rounds then its removal from further sampling events should be agreed with the EPA.

#### 4.9 Sodium Bromate

Sodium bromate is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground.

Sodium bromate is no longer stored on site however, it was historically stored in single-skinned USTs in the former northern and southern tank farms and bromate is not regularly analysed for during groundwater monitoring, so sodium bromate is considered a Relevant Hazardous Substance.

As sodium bromate is no longer stored on site and if it is not reported as detected (analysed as bromate in groundwater) in the two consecutive biannual groundwater monitoring rounds then its removal from further sampling events should be agreed with the EPA.

#### 4.10 n-Hexane

n-Hexane is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. n-Hexane is stored in bulk in burded ASTs in the tank farm. The n-hexane AST and bund have been designed to the appropriate engineering standards for solvent storage. Should bulk n-hexane primary and secondary containment fail, the tank farm area drains through the weak effluent system to the WWTP providing tertiary treatment. Bulk n-hexane is conveyed to its point of use through above ground pipelines.

All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drains to the weak effluent system. In the event of a leak or spill during transport n-hexane will not be able to enter soil and groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of n-hexane entering soil and/or groundwater from contemporary sources is considered low. However, n-hexane was historically stored in pure and spent forms in single-skinned USTs in the northern and southern tank farms.

n-Hexane is not currently analysed for during biannual groundwater monitoring. As n-hexane is stored in bulk and has been historically stored without secondary containment it is considered a Relevant Hazardous Substance. n-Hexane will be added to future analytical suites (as a VOC TIC) for biannual groundwater monitoring.

# 4.11 Cyclohexane

Cyclohexane is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Cyclohexane is stored in pure and spent form in bulk and in drums. Bulk cyclohexane

is stored in bunded ASTs in the tank farm. The cyclohexane AST and bund have been designed to the appropriate engineering standards for solvent storage. Should bulk cyclohexane primary and secondary containment fail, the tank farm area drains through the weak effluent system to the WWTP providing tertiary containment. Bulk cyclohexane is conveyed to its point of use through above ground pipelines.

All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drain to the weak effluent system to the WWTP. In the event of a leak or spill during transport, cyclohexane will not be able to enter soil or groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the contained and subsequently treated in the WWTP.

In addition, cyclohexane will also be stored in smaller quantities in drums located within the covered drum store. A loss from a drum would be of limited quantity and will drain to the weak effluent system. The drums are transported to its point of use by forklift. The forklifts travel over areas of hard standing only. In the event of a leak or spill during transport, cyclohexane will not be able to enter soil or groundwater. It will either enter the weak effluent system where it can be contained or the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of cyclohexane entering soil and/or groundwater from contemporary sources is considered low.

However, cyclohexane was historically stored in pure and spent forms in single-skinned USTs in the former northern and southern tank farms and is intermittently reported as detected during biannual groundwater monitoring as part of the extended accord and acetate suite. Therefore, cyclohexane is considered a Relevant Hazardous Substance.

# 4.12 Tetrahydrofuran (THE

Tetrahydrofuran (THF) is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. THE is stored in pure and spent form in bulk and in drums. Bulk THF is stored in bunded ASTs in the tank farm. The THF AST and bund have been designed to the appropriate engineering standards for solvent storage. Should bulk THF primary and secondary containment fail, the tank farm area drains through the weak effluent system to the WWTP providing tertiary containment. Bulk THF is conveyed to its point of use through above ground pipelines.

All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drains to the weak effluent system.

In addition, THF will also be stored in smaller quantities in drums located within the covered drum store. A loss from a drum would be of limited quantity and will drain to the weak effluent system. The drums are transported to its point of use by forklift. The forklifts travel over areas of hard standing only. In the event of a leak or spill during transport THF will not be able to enter soil or groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of THF entering soil and/or groundwater from contemporary sources is considered low.

However, THF was historically stored in pure and spent forms in single-skinned USTs in the former northern and southern tank farms. THF is currently analysed for during biannual groundwater monitoring as part of the extended alcohol and acetate suite, and is regularly reported as detected in groundwater. Therefore, THF is considered a Relevant Hazardous Substance.

#### 4.13 Toluene

Toluene is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Toluene is stored in pure and spent form in bulk and in drums. Bulk toluene is stored in bunded ASTs in the tank farm. The toluene AST and bund have been designed to the appropriate engineering standards for solvent storage. Should bulk toluene primary and secondary containment fail, the tank farm area drains through the weak effluent system to the WWTP providing tertiary treatment. Bulk toluene is conveyed to its point of use through above ground pipelines.

All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drains to the weak effluent system.

In addition, toluene will also be stored in smaller quantities in drums located within the covered drum store. A loss from a drum would be of limited quantity and will drain to the weak effluent system. The drums are transported to its point of use by forklift. The forklifts travel over areas of hard standing only. In the event of a leak or spill during transport toluene will not be able to enter soil or groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of toluene entering soft and/or groundwater from contemporary sources is considered low.

However, toluene was historically stored in pure and spent forms in single-skinned USTs in the former northern and southern tank farm. Toluene is currently analysed for during biannual groundwater monitoring as part of the standard VOC suite and is regularly reported as detected. Therefore, toluene is considered a Relevant Hazardous Substance.

# 4.14 Xylene

Xylene is a liquid at room temperature and has the potential to impact soil and/or groundwater if lost to ground. Xylene is stored in pure and spent form in bulk and in drums. Bulk xylene is stored in bunded ASTs in the tank farm. The xylene AST and bund have been designed to the appropriate engineering standards for solvent storage. Should bulk xylene primary and secondary containment fail, the tank farm area drains through the weak effluent system to the WWTP providing tertiary treatment. Bulk xylene is conveyed to its point of use through above ground pipelines.

All tanks, bunds, sumps and drains are on a rigorous preventative maintenance system and bunds are integrity tested on a three-year cycle. The solvent loading and unloading areas are located on impervious hardstanding which drains to the weak effluent system.

In addition, xylene is also be stored in smaller quantities in drums located within the covered drum store. A loss from a drum would be of limited quantity and will drain to the weak effluent system. The drums are transported to its point of use by forklift. The forklifts travel over areas of hard standing only. In the event of a leak or spill during transport xylene will not be able to enter soil or groundwater. It will either enter the weak effluent system where it can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) of the storm water drainage system where it would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where it would be contained. The material can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Given the above design and operational mitigation measures and documented procedures on material use and storage, the risk of xylene entering soil and/or groundwater from contemporary sources is considered low.

However, xylene was historically stored in pure and spent forms in single-skinned USTs in the former northern and southern tank farms. Xylene is currently analysed for during biannual groundwater monitoring as part of the standard VOC suite and reported as detected regularly. Due to historic losses, most notably in 1998 from these former USTs, xylene is considered a Relevant Hazardous Substance.

#### 4.15 Products and Intermediaries

Several substances that might be considered hazardous to the environment are produced on site. These substances and their intermediaries are processed and handled using highly controlled procedures and processes due to the value of the substances.

These substances are not stored in bulk, but rather in drums of up to approximately 200 L capacity. They are produced in the OSP buildings. In the event of a spill within the OSP buildings, liquids would drain through the weak effluent system to in the WWTP. Drums may also be stored within the covered drum store. A loss from a drum would be of limited quantity and will drain to the weak effluent system.

Due to highly controlled processes and procedures and the storage methods used on site, the likelihood of products and intermediaries entering soil and/or groundwater is considered very low and products and intermediary substances have been screened out as a Relevant Hazardous Substance.

# 4.16 Utility and Maintenance Chemicals Office Shell Diala Bo Spectrus NYCCC

Shell Diala Bg, Spectrus NX1101, Spectrus OX1203, Diagodic DN2301, Esso Zerice 100 and Esso Zerice 68 are lubricants, insulating oils, corrosion intributors or biocides considered together as utility and maintenance chemicals. These are not stored in bulk. They are stored in small quantities, typically 200 L drums or less and are stored in bunds close to their point of use or in the oil store. A loss from a drum would be of limited quantity and would drain to the weak effluent system. The drums are transported to their point of use by forklift. The forklifts travel over areas of hard standing only.

In the event of a leak or spill during transport these chemicals will not be able to enter soil or groundwater. They will enter the weak effluent system where they can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where they would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where they would be contained. These materials can then be managed by off-site treatment or treatment in the WWTP if deemed suitable for treatment in the WWTP.

Due to the small storage quantities and engineered containment systems, the risk of these utility and maintenance chemicals entering soil and/or groundwater is considered very low and they have been screened out as Relevant Hazardous Substances.

# 4.17 Non-bulk Storage Materials

Several potential hazardous substances are currently stored on site in smaller containers. These are:

- 1,2 Dimethoxyethane;
- 1,8-Diazabicyclo[5.4.0]undec-7-ene;
- Ammonium hydroxide;
- Chloroacetyl chloride;
- Cyclohexylmagnesium chloride in THF;
- Cyclopentylamine;
- Dimethyl aniline;
- Dimethylformamide;

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- Hydroxylamine solution;
- Isopropylmagnesium chloride in THF;
- Lithium Hexamethyldisilazide (20% in THF);
- · Methyl iodide;
- Methyl(5R)-3-cyano-5-methyloctanoate;
- n-Heptane;
- n-Methyl pyrrolidone;
- Sodium hypochlorite;
- Tert-butylmagnesium chloride in THF; and
- Triethylsilane.

These substances are all liquids at room temperature and have the potential to impact soil and/or groundwater if lost to ground. These substances are stored in small quantities in drums, or cylinders located within the covered drum store. The containers are transported to their point of use by forklift. The forklifts travel over areas of hard standing only. In the event of a leak or spill during transport these substances will not be able to enter soil or groundwater. They will either enter the weak effluent system where they can be contained / treated in the WWTP (if deemed suitable for treatment in the WWTP) or the storm water drainage system where they would be reported as detected by the continuous pH and/or TOC meter and be diverted to the storm water retention pond where they will be contained and subsequently treated in the WWTP.

Due to the small size of the containers used and the provision of engineered containment systems, the risk of these substances entering soil and/or groundwater is considered very low and they all have been screened out as Relevant Hazardous Substances.

In addition, bromine and formaldehyde were historically stored on site in small containers. These substances have similar physical properties to current non-bulk hazardous materials and were stored and transported in a similar manner.

Due to the small size of the containers used and the provision of engineered containment systems, the risk of these historic substances having entered soil and/or groundwater is considered very low and they have been screened out as Relevant Hazardous Substances.

# 5. Site History (Stage 4)

# 5.1 Site Development

The parcel of land which includes the current Pfizer Ringaskiddy facility was a greenfield site until 1969, when construction work on the Pfizer Ringaskiddy citric acid plant began to the west of the current pharmaceutical plant. Pfizer Ringaskiddy began citric acid production at the site in 1971 (the citric acid plant was later sold to Archer Daniels Midlands (ADM) in 1990 and continued operating until 2005).

Pharmaceutical production at Ringaskiddy commenced in 1972 in OSP1. Since then, there has been on-going development of the plant, with the construction of new buildings and expansion of existing buildings, up-grading of facilities and addition of new facilities. Three major expansion projects, completed in 1984 (OSP2), 1994 (OSP3), and 2001 (OSP4), added significantly to pharmaceutical production capacity at the site.

Towards the end of 2007, Pfizer Ringaskiddy ceased manufacturing activities in OSP2, as part of a business rationalisation plan to eliminate excess production capacity. The physical building infrastructure has been retained and a section of it has been refurbished as the New Product Technology Laboratory (NPTL), which was officially opened in May 2014.

The former ADM facility was located immediately to the west of the Pfizer Ringaskiddy plant and was acquired, decommissioned and dismantled by Corrin MDA in 2006-2007. The IPPC licence for the ADM site (P0053-01, which was held by Corrin MDA) was surrendered in September 2007, following completion of the site decommissioning and a successful exit audit carried out by the EPA.

Pfizer (Pfizer Biotechnology Ireland, PBI) subsequently acquired the property and constructed a small-scale biologics facility in the previously-undeveloped western portion of the former ADM facility. The PBI facility was separate from the pre-existing site and operated under a separate IEL, P0864-01. In 2011, the PBI facility was sold to BioMarin Manufacturing Ireland, now known as BioMarin International Limited, and underwent significant expansion in 2016/17.

#### 5.2 Historic Incidents

Previous reports consulted, and communications with site personnel, indicate that there are three historic incidents of potential environmental concern on site:

- Former Northern and Southern UST Farms;
- Monkstown Creek Reclamation; and,
- Weak Effluent Leak.

#### 5.2.1 Northern and Southern Underground Storage Tank Farms

Losses of organic solvents to ground have been reported to have occurred historically at the site in the former northern and southern UST farm areas (pre-2000). These historical leaks form the primary source area.

The process of replacing the USTs with bunded ASTs began in 1996. In total sixteen new ASTs and associated infrastructure were installed between 1996 and 1998. (D&M, 1998 letter 17717z043z1998 Report).

In early 1998 a mixture of solvents and aqueous wastes leaked from UST FA432 and in October 1998 a mixture of methanol and xylene was lost following overfilling at UST FA445.

The first three USTs were removed from the northern tank farm in November 1998, impacted soil and fill from around the tanks were excavated and treated on-site using ex-situ remediation.

Recovery wells were installed in the UST farm area in response to the 1998 losses. Pumping from the limestone aquifer continued in recovery well R6 using a total fluid pump until September 1999,

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following which wells R2, R5 and R6 were abandoned in advance of excavation of the southern UST farm area.

The six multi compartment USTs in the southern UST farm were removed in 1999. The final three USTs in the northern tank farm were removed in 2000.

A series of recovery wells (RC1 to RC6) were installed in the former southern UST farm area during July 2000. The locations of these historic wells are shown in Appendix A Figure 3. Dissolved phase solvent recovery commenced using two total fluids pumps during August 2000. Groundwater abstraction from the RC-wells on-site ceased in May 2005 and the wells were decommissioned in August 2007.

#### 5.2.2 Monkstown Creek Reclamation

Benzene and THF have been reported as detected in groundwater wells installed in the north-eastern part of the site. The wells were installed in fill material used to reclaim part of Monkstown Creek. The fill material was impacted prior to placement and does not indicate a loss of hazardous materials in the north-eastern part of the site. This area of fill acts as a secondary source of impact on site.

#### 5.2.3 Weak Effluent Leak

Prior to significant inspection and upgrade works, which started in 1995 the weak effluent system was known as an on-going source of impact. A regular three-yearly inspection schedule was implemented to prevent further impact, (D&M, 1998 report 17717-018-41). In 2015, leaks were identified in two weak effluent manholes CS116 and CS124 located in the primary source area during routine testing. Repairs to the manholes were completed in February 2016, with both manholes passing EN1610 pressure testing.

# **5.3** Historic Site Investigations

# 5.3.1 1993 – 1994 Ove Arup and Dance's & Moore Site Investigation

The OVE Arup, and D&M 1993 and 1994 site investigations were summarised in the 2006 URS CWQRA report. An initial nine groundwater wells (wells 1-9) were installed in the drift overburden by OVE Arup in 1993. Results of groundwater sampling and analysis from well 4, located east of OSP1, identified dissolved phase VOCs in the groundwater.

D&M conducted further site investigations in 1994. A soil gas survey was completed to identify locations of VOC vapours in the shallow unsaturated zone from what were considered to be potential source areas of the dissolved phase impact identified in well 4. These potential source areas included the solvent recovery area, the northern and southern UST farms and OSP1. Results of the soil vapour survey were used to refine the locations of a number of narrow diameter soil sampling boreholes.

Soil samples were obtained from a maximum depth of 4.0 m. Analytical results of the soil samples taken identified concentrations of many VOCs. The suite of compounds reported as detected was dominated by BTEX<sup>7</sup> hydrocarbons and cyclohexane, which have low solubilities, and alcohols, which are miscible.

Well 4 was re-sampled and the presence of dissolved phase impact was confirmed. Expansion of the groundwater monitoring network was recommended, together with preliminary testing of aquifer parameters and tidal response.

#### 5.3.2 1994 Dames & Moore Investigation

The above recommendations were carried out by D&M in 1994 (D&M report 17717-015-401). Eleven 200-series groundwater monitoring wells were installed across the site, installed into the shallow drift and deeper limestone gravel (broken limestone bedrock). Pumping tests were conducted and hydraulic aquifer parameters were estimated for both the drift and underlying fractured limestone. Impacted soils in the UST farm area were identified as a significant source, as at this location the

<sup>&</sup>lt;sup>7</sup> BTEX: benzene, toluene, ethyl benzene and xylenes.

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limestone aguifer is unconfined and there is no barrier to migration of impacts down into the limestone aguifer. It was found that groundwater from within the fractured limestone aguifer was more impacted than that within the drift. The analytical results inferred the presence of Light Non-Aqueous Phase Liquids (LNAPL), i.e. a floating layer of organic solvents, on the water table within the limestone.

The direction of groundwater flow within limestone was identified as being toward the east. It was expected to enter the harbour beneath the ADM jetty. As the drift deposits became thicker to the east no monitoring wells were installed into the limestone, therefore the extent of impact within the limestone aquifer to the east was not identified. It was recommended that the network of groundwater monitoring wells be extended to the east.

#### 5.3.3 1995 Dames & Moore Investigation

In 1995, eight additional groundwater-monitoring wells (400-series) were installed, primarily in limestone and primarily in the east of the site. The objectives of the investigation were to determine shallow geology and groundwater flow regime in the eastern section of the site, to evaluate the limestone aguifer rock properties and to assess the magnitude and extent of groundwater impact in the shallow bedrock aguifer (D&M report 17717-018-401).

Two of the boreholes were cored and selected cores were laboratory tested for porosity, hydraulic permeability, dry bulk density and fraction of organic carbon.

It was found that the groundwater flow direction became more northerly below the former storm water retention pond (current drum storage area). It was also found that an upward hydraulic gradient from the limestone to the drift was present in the east of the site. The lower contaminant concentrations reported as detected in the 400-series wells confirmed in-situ degradation to be an effective process of attenuation.

It was recommended that hydraulic containment be adopted to prevent dissolved phase plume migration off-site. Following completion of these three sparate phases of site investigation and characterisation, abstraction wells C1 - C3 were drifted and the hydraulic containment system was spection ioned in February 1996.

1996 Dames & Moore Methaniol Investigation commissioned in February 1996.

#### 5.3.4

During the June 1996 groundwater monitoring round, methanol concentrations were noted downgradient of the known UST farm source area. In addition, well 4 located in the source area was found to be unusable due to collapse of the standpipe.

Well 501 was installed as a direct replacement for well 4. Well 502 was installed immediately downgradient of OSP1 to assesses if the area has been affected by the loss of solvent on the production area.

A groundwater sampling round conducted in August 1996 at wells 204, 205, 208, 404, C1 and C2 returned relatively low methanol concentrations in all sampled wells except well 204 located downgradient of the UST source area. The report (D&M, report 17717-028-447) concluded that the concentrations reported as detected in June 1996 were most likely due to laboratory error.

#### 1998 Dames & Moore OSP4 Soil Investigation

In February 1998, D&M excavated sixteen trial pits in the OSP4 area. Samples were screened using a handheld photoionisation detector (PID). A total of thirteen soil samples were collected including one duplicate.

D&M reported (report 17717\040) that the site is underlain by a variable thickness of filled material consisting of reworked soils containing scrap metal, cabling, plastic, bricks and tarmac materials. All field headspace testing returned a result of zero. Laboratory results indicated that the fill did not contain concentrations of VOCs, alcohols, pesticides, polychlorinated biphenyl (PCBs), total petroleum hydrocarbons (TPHs), metals or other inorganics.

#### 5.3.6 1998 Dames & Moore OSP4 Groundwater Investigation

In February 1998 boreholes 701 to 704 were installed near OSP4. Borehole 702 was redrilled as groundwater was not encountered at the original location. The majority of the OPS4 area was found to be underlain with grey crystalline limestone with grey and brown shale noted under the southern section of the area.

Groundwater was found to flow in a northern to north-easterly direction towards Cork Harbour. No production-related VOCs, alcohols or metals were recorded in groundwater samples taken in March 1998.

#### 5.3.7 1998 Dames & Moore 1998 Groundwater Programme

The 1998 groundwater report (D&M report 17717\043\1998 Report) states that remediation works were carried out in 1998 during which the first three tanks in the northern UST farm were removed. Surrounding made ground and fill was excavated and remediated on site by ex-situ bioremediation.

#### 5.3.8 1998 Dames & Moore Remedial Investigation Product Recovery

In 1998, Pfizer reported a loss of aqueous waste and solvent waste from UST FA432 in the southern UST farm to D&M. The conclusions of the subsequent investigation were reported in D&M letter report 17717\042\EPA Report.

URS drilled a series of shallow holes (801 – 807) around the USTs. Six product recovery wells (R1 – R6) were drilled. A total fluids product recovery system was installed in wells R2 and R3. Free-product was removed to an interceptor before the remaining groundwater was pumped to the WWTP. Collected product was stored in an existing on-site UST prior to disposal off-site.

The report states that unlike in the northern UST farm, where a clay/silt layer was observed beneath the tanks, the southern UST farm tanks rested directly on the limestone bedrock or on a thin bed of fill above the bedrock.

Increasing VOC concentrations between June and December 1997 indicated that a gradual release prior to a sudden failure in 1998 resulted in the release of the solvent mixture. The presence of xylene, which was not contained within the tailed tank was reported as being from another nearby tank which had been overfilled.

The report concluded that losses of solvent infiltrated the limestone bedrock though a complicated, steeply-inclined fracture network. Only limited lateral migration of miscible and dissolved phase immiscible solvents were noted. Free-phase product appears to have been trapped in the source area by the hydraulic transition from unconfined to confined conditions in the limestone aquifer.

#### 5.3.9 2000 Dames & Moore Investigation

Between May 2000 and September 2000 following the removal of the remaining USTs, a series of recovery wells (RC1 to RC6) were installed in the former southern UST farm area. Rock coring at all six locations allowed detailed mapping of the bedrock fracture network beneath the former UST farm. Dissolved phase solvent recovery commenced using two total fluids pumps during August 2000. Two bedrock monitoring wells (601 and 602) were installed in the tank farm area in May 2000. Well 601 was screened deeper (total depth of 16 m bgl) within the limestone aquifer than the other wells in this area to assess deeper groundwater quality beneath the former southern UST farm (between recovery wells RC1 and RC6, which had the highest dissolved phase contaminant concentrations of the RC wells). Monitoring well 602 was installed within the area where the two eastern-most USTs in the northern UST tank farm had been situated.

#### 5.3.10 2004 URS OSP1 Soil Stockpile Sampling

In February 2004, URS retrieved six composite samples from a stockpile of excavated material. The material was excavated to allow installation of a new lift shaft in OSP1. The purpose of the investigation was to assess if soils excavated during the works required specialist disposal. Samples were analysed for VOCs, SVOCS, PAHs, heavy metals and pH. URS concluded (letter report 17717-

153/Soil Sampling February 2004) that VOCs, SVOCs, metals and PAHs were not reported as detected at levels considered to be of environmental concern.

#### 5.3.11 2004 URS Storm Water Pipe Soil Stockpile Sampling

In March 2004, Pfizer noted water entering the firewater retention pond. As storm water was not being diverted to the retention pond at this time it was suspected that groundwater was entering the pipe. The soil surrounding the pipe was excavated to allow repair works to take place. The pipe was found to be below groundwater level. The area was dewatered to allow access to the pipe. URS took one sample from the base of the excavation and a composite sample from the stockpile of excavated material. Samples were analysed for VOCs, SVOCs and heavy metals. URS concluded (letter report 17717-153-447/Soil Sampling March 2004) that VOCs, SVOCs and metals were not reported as detected at levels considered to be of environmental concern.

#### 5.3.12 2004 URS Boiler House Soil Sampling

In March 2004, Pfizer retrieved four soil samples prior to the expansion of the boiler house. The purpose of the investigation was to assess if soils excavated during planned construction works required specialist disposal. Samples were analysed for VOCs and Diesel Range Organics (DRO). Pfizer asked URS to assess the results of the soil sampling. URS concluded (letter report 17717-447/Soil Sampling March 2004) that VOCs and DRO were not reported as detected at levels considered to be of environmental concern.

#### 5.3.13 2004 URS WWTP Soil and Groundwater Sampling

In April 2004, when pumping water from the firewater retention pend to the WWTP a blockage occurred in the pipe causing water and sludge to escape through a manhole and enter a recently opened soil excavation.

URS took a soil sample from the soil excavation. Groundwater samples were retrieved from nearby wells C2, 210 and 407. Laboratory results presented in URS letter report 17717-153-447/WWTP did not indicate any immediate adverse effects on groundwater or soil quality as a result of the overflow.

# 5.3.14 2006 URS Decommissioning of RC Series Wells

In 2006, Pfizer Ringaskiddy requested that URS review the potential impact of decommissioning the six RC-series wells and well 602 prior to construction works taking place in the area. All seven wells were located within the footprint of the former southern UST tank farm. Mass recovery in the RC wells had decreased over time from up to 2,132 kg of solvent between November 2000 and May 2001 to 0.3 kg between November 2003 and May 2004. Pumping ceased in May 2006 with EPA approval. URS concluded that, as containment wells C1 and C2 will continue to operate, hydraulic containment provided by these wells will continue to prevent off-site migration of impacted groundwater from the site.

#### **Environmental Setting (Stage 5)** 6.

# **Site Setting and Topography**

The Pfizer Ringaskiddy landholding comprises approximately 21 hectares on the southern shore of Monkstown Creek in Cork Harbour, approximately 11 km south-east of Cork City, see Appendix A Figure 1.

The site has a relatively steep topographic gradient, with ground on the western portion of the site (OSP1) at approximately 15 metres above Ordnance Datum (m OD) sloping towards Monkstown Creek (<5 m OD) and the greater Cork Harbour area (~400 – 500 m away) to the north and east.

Land use in the vicinity of the site is a mix of industrial and agricultural, as summarised below:

- North and East Monkstown Creek (an inlet of Cork Harbour and a proposed national heritage area (pNHA)) and the greater Cork Harbour area (a designated special protection area (SPA)) are located north and east of the site. Ringaskiddy Port and Deep Water Terminal borders the site to the east, with Ringaskiddy village some 800 m south-east of the site.
- South The N28 national primary road runs east-west along the southern site boundary. IDAowned land, currently in agricultural use, is present to the south of the N28, with Janssen Biologics (formerly Centocor) located 470 m to the south of Pfizer OSP4 building and with the Novartis (former Sandoz) Ringaskiddy Limited active pharmaceutical ingredient facility 750 m to the south.
- West BioMarin International Limited, with the Raffeen Creek Sports Club lands (owned by Pfizer) further to the west. Shanbally village is located 750m west of the site boundary.

6.2 Hydrology

The site is located in the Owenboy[Cork] sub catchment (Water Framework Directive (WFD) subcatchment code Owenboy[Cork] SC 010) which forms part of the Lee, Cork Harbour and Youghal Bay Hydrometric Area (HA09) 8.

The site is bounded to the north and east by an estuary known as Monkstown Creek, which is a tidal inlet located on the western side of Cork Harbour. Coastal and estuarine water quality in Cork Harbour (code IE SW 060 0000) is classified as 'Good' by the EPA. The risk status of the Cork Harbour Waterbody of not maintaining 'Good' status is currently under review9.

AECOM reviewed the OPW (Office of Public Works) flood mapping system for a record of previous flooding events on the site. The flood map for the area indicates that there have been no flood events recorded on the site.

#### 6.3 Geology

Geological Survey of Ireland (GSI) data<sup>10</sup> indicate that the bedrock geology underlying the site consists of Waulsortian Limestone. This massive, fine grained, unbedded limestone is Carboniferous in age. Two fault lines traverse the site, the first runs almost parallel with the site's southern boundary and the second, in the eastern section of the site, runs in a north to south orientation.

Older Carboniferous marine interbedded grey/brown sandstone, siltstone and mudstones, referred to as the Cuskinny Formation of the Kinsale Group (Lower Carboniferous age), occur to the south of the southern fault.

According to the GSI, subsoil consists of made ground across the majority of the site, with bedrock outcropping in places. Previous AECOM field studies have identified two separate geological units

<sup>8</sup> www.epa.ie - accessed 24 July 2019

<sup>9</sup> www.epa.ie - accessed 24 July 2019

<sup>&</sup>lt;sup>10</sup> www.gsi.ie – accessed 10 June 2019

beneath the site, which include relatively low permeability subsoil deposits (comprising of soft, grey to greenish brown silts, with some fine sand and gravel) overlying Carboniferous Limestone bedrock.

Subsoil thickness varies considerably across the site, with a thickness east of OSP1 of 4.3 m and increasing to 11.8 m north of the wastewater treatment plant. These silty subsoils thicken in an inferred infilled glacial channel (roughly co-incident with the mapped north-south fault line), in the area north of the nature pond. Eastward from this point the subsoils decrease in thickness again until limestone bedrock outcrops at points along the site's eastern boundary.

Pale grey to bluish grey, fine grained, crystalline limestone, often weathered to varying depths, lies beneath the subsoils. This fractured rock is considered to have a relatively high hydraulic conductivity. Geological logging of the bedrock (D&M, 1995 report 17717-018-401/MF/pl) indicated the limestone aquifer is complex, with a characteristic upper-weathered zone, the lower horizons of which are brecciated or fractured to the point of being gravelly in nature, and with three distinct joint orientations (one vertical). The bedrock porosity was found to be between 1% and 3%, with weathered bedrock porosity estimated to be an average value of 15% (estimations due to variability of weathered limestone). Caves and karstic voids are reported in the limestone bedrock on or in the vicinity of the site.

Depths to the top of competent (i.e. intact) bedrock range between <3.3 m (east of the containment wells) and 16.7 m bgl (north of the containment wells).

# 6.4 Hydrogeology

According to the GSI website, the bedrock aquifer beneath the site is classified as a "Locally important aquifer – Karstified (Lk)". Due to the fractured nature of bedrock beneath the site identified in previous investigations, the aquifer is considered to be relatively productive in this area. The GSI's classification of vulnerability of the underlying aquifer is "Higherto "Extreme" vulnerability, with bedrock locally exposed at the surface.

Hydrogeological conditions at the site (groundwater flow direction, dilution and degradation of contaminants) have been examined in several investigations since 1993.

General depths to groundwater range from about 1 m to 11 m below casing top (m bct) across the site.

Ultimately, groundwater in the limestone is interpreted to flow in an easterly direction under normal groundwater conditions (natural gracient). However, when this flow reaches the infilled glacial channel in the eastern portion of the site, it swings northward to discharge to Monkstown Creek on the site's northern boundary.

A hydraulic containment system has been in operation since February 1996, comprising two active abstraction wells, C1 and C2. This system alters natural gradient conditions and hydraulically contains groundwater within an area north of the nature pond (see Appendix A Figure 4) and is designed to prevent groundwater with low concentrations of VOCs from reaching the northern site boundary.

In previous site investigations in the mid- to late-1990s, an upward hydraulic gradient was identified between the subsoil and bedrock aquifers, suggesting groundwater confined in the bedrock aquifer was being forced up into the subsoils above.

The groundwater contour map for the overburden aquifer in May 2019 is illustrated in Appendix A Figure 5 and is typical of previous contour maps for the overburden aquifer.

#### 6.4.1 Wells and Springs

A search of the GSI well database identified four wells within 1000 m of the site.

Wells C1, C2 and C3 are the three site abstraction wells but are incorrectly recorded in the GSI database as being located approximately 100 m to the west of the site (GSI well references: 1705NWW078, 1705NWW077 and 1705NWW079). These wells are recorded as being drilled in 1995 and between 23 m and 25 m in total depth.

Project reference: PR-423449

A fourth well is noted in the database at a distance of 0.9 km west of the site, well reference 1705NWW014. It was reportedly drilled to a depth of 49.7 m for industrial use, the yield was reported as being excellent, 1374.7 m<sup>3</sup>/d. This well is one of network of six water supply wells installed by Pfizer on lands it owned to the west of the Raffeen Creek Golf Course prior to 1976. The well network (increased to twenty-three wells by later expansions further to the north and west) was used for the site water supply prior to the provision of a greatly enlarged public mains water supply in the late 1970s/early 1980s. These wells are all redundant and no surface trace of well 1705NWW014 remains.

No springs are recorded in the GSI well database within 1 km of the site. A spring, marked as 'foreshore spring', is noted in historic groundwater reports (see Figure 3).

There are no drinking water supply source protection areas mapped within a 5 km radius of the site.

#### 6.5 **Biodiversity**

Special Areas of Conservation (SAC) are habitats and species which must be protected under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna).

Special Protection Areas (SPA) are designated under the Birds Directive (Council Directive 2009/147/EC on the Conservation of Wild Birds) to protect a range of bird populations.

Together, SAC and SPA form a pan-European network of so-called European sites for nature conservation (also known as Natura 2000 sites).

One European site has been identified down-gradient of the site \*\* Cork Harbour SPA (code 004030)

Monkstown Creek has also been classed as a proposed Natural Heritage Area (pHNA, 001979).

# 6.6

# Site Drainage Systems Storm Water Runoff Drains Becking Systems sive storm water deci

An extensive storm water drainage network currently serves the entire site and conveys rainwater run-off by gravity from all areas of the site to a single monitored location (Storm Water Outfall) prior to discharge into the Monkstown Creek which is located directly to the north of the site.

At the Storm Water Outfall surface water is continuously monitored for pH and TOC. There is an upstream and down-stream chamber with pH and TOC continuously monitored in both. In the event of a spill from into the storm water system, the storm water drainage system will be diverted using an automated diversion valve to the firewater containment pond. Water in the firewater containment pond may then be transferred to the WWTP for treatment, if suitable, or be removed for off-site disposal.

#### 6.6.2 Weak Effluent System

The weak effluent drainage network drains water collected in floor sumps located within the internal production areas, the external production services area, the drum pad, the AST farm and loading/unloading areas. The weak effluent lines are located underground and convey liquids to the WWTP equalisation tanks. All underground lines are integrity tested on a rolling three-year cycle as required by the site's IEL.

#### 6.6.3 **Strong Effluent Line**

Strong effluent lines, consisting of waste streams from manufacturing convey effluent to a holding tank in the WWTP system. Strong effluent lines are all located above ground level. A loss of effluent from the strong effluent line would result in escaped substances entering the weak effluent system, where they would be contained within the WWTP system or the storm water system, where they would be contained in the storm water retention pond. Escaped strong effluent stored in the storm

<sup>11</sup> https://gis.epa.ie/EPAMaps/ - Accessed 24 July 2019

water retention pond would be transferred to the WWTP for treatment or sent for off-site disposal. In the WWTP, weak effluent in the equalisation tank is mixed with strong effluent which is transferred at a controlled rate from the strong effluent holding tank depending on the loading.

# 6.7 Storage and Containment

Bulk chemicals are stored at the site in a series of bulk ASTs located in the tank farm area. All relevant tanks are locally bunded with a minimum retention capacity of 110% of the largest tanks. Bunds are tested over a three-year cycle in accordance with Condition 6.9 of the site's IE licence and are inspected regularly as part of the site's preventative maintenance program.

Drummed materials, including raw materials and waste, are stored in the covered drum pad. The drum pad includes two dedicated loading areas which drain to the weak effluent system in the event of a spill. The former drum storage yard, located west of the NPTL, acted as the main storage yard until 1984. Drum storage areas, OSP buildings, the AST farm and production areas all drain to the weak effluent system.

# 6.8 Loading and Unloading Areas

Chemicals, solvents and oil are delivered to site on a daily basis. Loading and unloading of any substances dangerous to the environment takes place in designated contained areas. In the event of a loss from primary containment during loading and unloading, the material will drain to the weak effluent system and drain to the WWTP. Where possible, the materials will be treated in the WWTP. Unsuitable substances will be removed and treated by off-site incineration.

In the event of a loss of a hazardous substance on-site prior to arrival at the loading point the substance will be contained on hardstanding and enter the site's main stormwater drainage system. The automated diversion valve will be triggered by the continuous monitoring system or by alarm. The impacted material in the drainage system will be diverted to the firewater retention pond providing remote secondary containment.

#### 6.9 Permitted Activities

The site is licensed for Classes 5.16, 11.2 (E), 11.4(a)(i) and 11.6 of listed activities in the First Schedule of the EPA Act 1992 (as amended) defined as requiring an IE Licence:

- 5.16 The production of pharmaceutical products including intermediates (production means the production on an industrial scale by chemical or biological processing)
- 11.2 (e) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving solvent reclamation or regeneration
- 11.4 (a)(i) Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving one or more of the following activities: biological treatment
- 11.6 Temporary storage of hazardous waste, (other than waste referred to in paragraph 11.5) pending any of the activities referred to in paragraph 11.2, II.3, 11.5 or 1 I. 7 with a total capacity exceeding 50 tonnes, other than temporary storage, pending collection, on the site where the waste is generated

# 7. Site Characterisation (Stage 6)

Potential pollutant linkages are considered viable where there is a source of impact on site which can migrate via a defined pathway to identified receptors. Receptors can be either environmental or human, and located either within or outside the site boundary.

#### 7.1 Sources

Since 1993, the main impacted source area identified during site investigations was located in the former southern UST farm, north of OSP1.

Other source zones (of smaller extent) were identified in areas to the north and north-west of the containment wells (see Appendix A Figure 2). The controlled water quantitative risk assessment (AECOM, 2016) concluded that, in the event of containment wells C1 and C2 being turned off, impacted groundwater from the identified source areas would not pose a significant risk to Monkstown Creek.

Historically, VOCs have been reported as detected in groundwater from the site, most notably: BTEX hydrocarbons, alcohols and THF. Alcohol detections are intermittent, while BTEX and THF tend to persist, though with long-term declining concentration trends being apparent.

# 7.2 Pathways

As noted in Section 5.2, there is one area of impact and one lesser area of impact on site associated with historic activities.

Potential pathways to human receptors include ingestion of soils or groundwater, dermal contact with impacted soils and water or inhalation of indoor or outer vapours from residual impact in the subsurface.

Potential pathways to controlled waters would be though lateral migration from the source areas through the weathered upper portion of the timestone bedrock. Given that the UST's previously located within the former southern UST tank farm rested directly on the limestone bedrock, it is considered that historic leaks from USTs would not be restricted by the silt/clay overburden found in the northern UST tank farm.

The hydraulic containment system—was installed in 1996 (wells C1 and C2) to contain impacted groundwater on site and reduce the mass of dissolved phase VOCs migrating off-site to Cork Harbour. To this end, groundwater is abstracted from wells C1 and C2 on a continuous basis. The mass of solvent recovered through operation of the hydraulic containment system is estimated from pumping rates and analytical data from biannual monitoring. Assessment of containment system efficiency and the need for rehabilitation works is incorporated in biannual monitoring reports.

Since the hydraulic containment system was commissioned, dissolved phase VOC and THF concentrations have reduced further.

A review of remedial options for the site was conducted in 2014 and 2015 (AECOM 2015 report 47092735/CKRP0001). It was concluded that the benefits of any scheme, over and above the mass recovery obtained with the current hydraulic containment system, are likely to be limited in nature due to the difficulties in effectively targeting any treatment within the source zone and given the uncertainty of contaminant mass distribution within the complex limestone bedrock aquifer and/or the silty-sandy gravel drift unit directly overlying it. Practicality issues, particularly relating to access in the ATEX-rated operational solvent recovery and solvent tank farm areas, together with health and safety requirements, are likely to limit the effectiveness of the design of any scheme for enhancing mass recovery from the source area. The benefits of any of the options assessed are considered likely to be outweighed by low sustainability.

# 7.3 Receptors

Given the site's coastal setting and the fact that groundwater in this area is likely to be brackish, it is unlikely that wells for potable use are/will be located in the vicinity of the site, the main potential receptor of contaminants to ground at the site is identified as Monkstown Creek, which is in direct hydraulic continuity with groundwater from the site. The weathered upper portion of the limestone bedrock is considered to represent the most sensitive pathway. Monkstown Creek is considered the only potential controlled waters receptor for the site.

The mass of dissolved contaminants in groundwater migrating laterally through the bedrock aquifer from the source area towards Monkstown Creek is considered low. Two hydraulic containment wells capture groundwater with dissolved contamination. In addition, dissolved phase organic contaminants are being significantly attenuated along the groundwater flow path (through sorption, insitu degradation, dilution and dispersion).

Human health receptors are on-site and off-site workers and, in particular, workers undertaking subsurface works. The potential for ingestion of impacted soil/dust and groundwater is low. The former northern and southern UST farms, key source areas for impacted soil and groundwater, were removed in 1998 and 1999 (along with associated impacted soils, which were bio-remediated on site), respectively, reducing contaminant concentrations in groundwater. On-site personnel do not have routine contact with either soil or groundwater. Similarly, the potential for dermal contact with impacted soil/dust and groundwater is low, for the reasons outlined above.

The potential for indoor inhalation of contaminant vapours on site is low, as the nearest occupied building in the vicinity of the source area is up-topographical and hydraulic gradient (OSP1). Outdoor inhalation of volatile compounds emanating from impacted soil and groundwater is also considered low, as impacted soil and groundwater in the source areas have been remediated to an acceptable level with regard to exposure to human health via vapour inhalation.

The potential for indoor/outdoor inhalation of contaminant vapours by workers on off-site properties is considered negligible, as there are no occupied properties down-gradient of the site and impacted groundwater is either captured by the containment wells or discharges to Monkstown Creek from the site.

There is a potential for on-site workers to be exposed to low level impact in the source area of the site if redevelopment requiring excavation is indertaken. However, if such works were to be undertaken, then project-specific additional health and safety procedures would be put in place to protect site workers (e.g. permit system, air monitoring with action levels, PPE, etc.).

# 7.4 Potential Pollutant Linkages

A summary of potential Source-Pathway-Receptor (SPR) linkages is outlined in the table below.

#### **Potential SPR Linkages**

Sources	Pathways	Potential Receptors	
O4 Desidual insurant namericina	Human Health		
<b>\$1</b> Residual impact remaining beneath the former southern underground storage tank	P1 Ingestion of soil/dust, groundwater and/or surface water	Human Health	
(UST) farm area – BTEX, alcohols and THF	<b>P2</b> Dermal contact with soil/ dust, groundwater and/or surface water	<b>\$1</b> On-site workers <b>\$2</b> Off-site workers	
S2 Residual impact remaining below ground in the area north of the containment wells – BTEX, THF and cyclohexane	P3 Inhalation of indoor and outdoor contaminant vapours which can arise directly from residual contaminants in the unsaturated overburden itself and indirectly via the dissolved phase in groundwater	S3 Workers on-site undertaking subsurface works	

#### Potential SPR Linkages

Sources	Pathways	<b>Potential Receptors</b>	
<b>S3</b> Residual impact remaining below ground in the area		Controlled Waters	
north-west of the containment wells –MTBE	Controlled Waters P4 Lateral migration of contaminants through the bedrock aquifer	<b>S4</b> Monkstown Creek (pNHA 001979)	
		<b>S5</b> Cork Harbour (SPA 004030)	



# 8. Site Investigation (Stage 7)

# 8.1 Groundwater Investigation

#### 8.1.1 Introduction

Biannual groundwater monitoring is conducted from a series of seven wells located across the site, most recently in May 2019 (AECOM 2019, PR-412276 ACM RP EN 001).

The wells sampled as part of the biannual round are: 7, 205, 404, 409, 501, 702 and C1.

Groundwater trends relating to relevant hazardous substances are discussed below.

#### 8.1.2 Relevant Hazardous Substances Long Term Trends

Groundwater monitoring data is available for the site dating back over twenty years (to 1994/5). Historically, VOCs have been reported as detected in groundwater from the site. In general, dissolved organic compound concentrations across the site have decreased significantly since the mid-1990s. This is due to a combination of factors, including:

- Engineering upgrades;
- UST removal in the northern and southern UST farms north of OSP1;
- Biodegradation and sorption of organic compounds in-situ; and;
- Impacted groundwater recovery and continued operation of the hydraulic containment system.

Recent trends (~10 years) in VOC concentrations in the source area (well 501) have followed a declining trend. VOC concentrations reported as detected in the IEL monitoring wells in May 2019 are among the lowest on record for the site. Trend tables for VOCs and alcohols are presented in Appendix C.

# 8.1.3 Assessment Guidelines

Results of laboratory analysis of groundwater samples are compared with a range of generic groundwater assessment criteria, specifically the EPA Interim Guideline Values (IGVs), the Groundwater Threshold Values (GTVs) and the Dutch Intervention Values (DIVs).

IGVs were developed by the EPA using a number of existing water quality guidelines in use in Ireland, including existing national environmental quality standards, proposed common indicators for the new groundwater directive, drinking water standards and Geological Survey of Ireland trigger values.

GTVs are defined in Irish law in Statutory Instrument No. 366 of 2016, European Union Environmental Objectives (Groundwater) (Amendment) Regulations, 2016. The GTVs are regulatory guidelines, which were developed to give effect to the EU Groundwater Directive. Exceedance of a threshold value triggers further investigation to confirm whether a "Poor" groundwater chemical status for the groundwater body as a whole is indicated.

DIVs represent concentrations above which there may be a risk to human receptors and above which more detailed site-specific risk assessment or remediation may be required in The Netherlands. These guidelines have no legal standing in Ireland but are included as they have historically been used as a screening tool for contaminants at the Ringaskiddy site since 1994/5.

#### 8.1.3.1 **Benzene**

Benzene is sampled as part of the standard VOC suite. Benzene has not been reported as detected in wells 409 and 702 since records began.

Benzene has been historically reported as detected at wells 7, 205, 404 in excess of the GTV (0.00075 mg/L), IGV (0.001 mg/L) and DIV (0.03 mg/L).

Benzene was last reported as detected in groundwater from well 7 in May 2006 (0.026 mg/L) and in well 205 in November 2016 (0.002 mg/L).

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Benzene is intermittently reported as detected in groundwater from well 404. Benzene was most recently reported as detected in excess of the IGV and GTV in November 2017 (0.017 mg/L).

Benzene has been reported as detected in groundwater from well 501 in every round since May 2009 at a concentration ranging between 0.003 mg/L (May 2017) and 0.081 mg/L (May 2009).

Benzene has been reported as detected in groundwater from well C1 in the majority of sampling rounds since June 1996 at a concentration above the assessment criteria ranging between 0.026 mg/L (May 2017) and 6.5 mg/L (June 1996).

Benzene concentrations generally follow a declining trend (see Appendix A Figures 6.1 and 6.2).

#### 8.1.3.2 Chloroform

Chloroform is sampled as part of the standard VOC suite. Chloroform has not been reported as detected in groundwater from wells 7, 205, 404, 501 and C1 since records began.

Chloroform was reported as detected in groundwater from well 702 in May 2019 at a concentration of 0.007 mg/L below the IGV (0.012 mg/L) and DIV (0.4 mg/L). There is no GTV defined for chloroform. Well 702 is located near OSP4 and is cross gradient to the former UST farms where chloroform would have been stored historically. Reported detections of chloroform at well 702 in November 2018 (0.018 mg/L) and May 2019 are considered to be input from chlorinated mains supply rather than from a loss of solvent.

Chloroform is intermittently reported as detected in groundwater from well 409 at concentrations ranging between 0.001 mg/L and 0.022 mg/L. The majority of detections remained below relevant assessment criteria with the exception of one detection in November 2007 (0.022 mg/L). The results of groundwater analysis on site since 1995 do not indicate significant impact from chloroform. As this substance is no longer used on site there is unlikely to be significant future impact caused by chloroform.

#### 8.1.3.3 Dichloromethane (DCM)

DCM is sampled as part of the standard VOC suite. DCM has not been reported as detected at well 702 since records began. DCM was reported as detected at least once, but at a concentration which did not exceed the IGV (0.010 mg/L), GTV (0.015 mg/L) or DIV (1 mg/L) in groundwater from wells 7, 409 and C1.

DCM has remained below the MDL in groundwater from well 205 in all but two rounds since records began in July 1994. DCM was reported as detected in May 2008 (0.002 mg/L) and November 2008 (0.011 mg/L). The November 2008 result exceeded the IGV but not the GTV or DIV.

DCM has been reported as detected intermittently in groundwater from well 404 since November 2008. DCM exceeded the IGV and GTV in November 2008 (0.12 mg/L) and May 2010 (8.98 mg/L). DCM was last reported as detected at well 404 in November 2018 (0.077 mg/L).

DCM has been reported as detected intermittently in groundwater from well 501 since June 1997. Where reported as detected, the concentration has exceeded the IGV, GTV and DIV with concentrations ranging between 0.048 mg/L (November 2015) and 8.1 mg/L (June 1997). DCM was last reported as detected in November 2015.

DCM detections are reported intermittently and do not indicate an on-going source of impact on site.

#### 8.1.3.4 **Diesel**

Diesel has not been analysed for directly, however constituents of diesel such as trimethylbenzenes are analysed for as part of the standard VOC suite.

- 1,2,4-Trimethylbenzene has been reported as detected in groundwater from well 501 since November 2014 at declining concentrations with the concentration decreasing from 0.036 mg/L in November 2014 to 0.004 mg/L in May 2019. There are no assessment criteria defined for 1,2,4-trimethylbenzene.
- 1,3,5-Trimethylbenzene has followed the same trend in groundwater from well 501 with the concentration decreasing from 0.044 mg/L in November 2014 to below the MDL in May 2019. There are no assessment criteria defined for 1,3,5-trimethylbenzene.

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1,2,4-Trimethylbenzene and 1,3,5-trimethylbenzene detections since November 2014 are unlikely to indicate diesel losses as diesel is not stored or used within the ATEX zone surrounding well 501.

#### 8.1.3.5 Dimethylacetamide

Dimethylacetamide has not been included in biannual IEL groundwater monitoring analytical suite to date.

#### 8.1.3.6 n-Hexane

n-Hexane has not been included in biannual IEL groundwater monitoring analytical suite to date.

#### 8.1.3.7 Sodium Bromate

Sodium bromate has not been included in biannual IEL groundwater monitoring analytical suite to date.

#### 8.1.3.8 2,2,4-Trimethylpentane

2,2,4-Trimethylpentane has not been included in biannual IEL groundwater monitoring analytical suite to date.

#### 8.1.3.9 **Toluene**

Toluene is analysed as part of the standard VOC suite. Toluene has not been reported as detected in groundwater from well 409 since records began.

Toluene has been intermittently reported as detected at wells 7, 702 and C1. Toluene was last reported as detected in excess of the IGV (0.01 mg/L) in May 2009 (0.035 mg/L, May 2011 (0.036 mg/L) and November 2009 (0.100 mg/L) at wells 7, 702 and £1, respectively.

Historically toluene was regularly reported as detected in groundwater in excess of assessment criteria from wells 205 and 404 until November 2001 and November 2002, respectively. Toluene was last reported as detected in groundwater from well 205 in excess of the IGV in November 2009 (0.027 mg/L) and from well 404 in May 2010 (2.321 mg/L).

Toluene has been reported as detected in every found from well 501 since records began in December 1996. Toluene had been following a decreasing trend, with concentrations declining from 270 mg/L (September 1998) to 0.029 mg/L (May 2017).

Toluene concentrations generally follow a declining trend (see Appendix A Figures 7.1 and 7.2).

#### 8.1.3.10 Xylene

Xylene is analysed as part of the standard VOC suite. Xylene has not been reported as detected in groundwater from well 409 since records began.

Xylene has been intermittently reported as detected in excess of the IGV and DIV at wells 7, 205, 404, 702 and C1. Most recent xylene detections reported for wells 7, 205, 404, 702 and C1 have been in May 2009 (0.035 mg/L), November 2013 (0.033 mg/L), May 2011 (0.036 mg/L) and May 2019 (0.031 mg/L), respectively.

Xylene has been reported as detected in every round in groundwater from well 501 since records began in December 1996. Xylene had been following a decreasing trend, with concentrations ranging between 160 mg/L (May 1998) and 0.576 mg/L (May 2019).

Xylene detections have been reportedly less frequently over time and at lower concentrations. Xylene is now consistently reported as detected over relevant assessment criteria in the source area only.

Xylene concentrations generally follow a declining trend (see Appendix A Figures 8.1 and 8.2).

#### 8.1.3.11 Tetrahydrofuran (THF)

THF is analysed as part of the extended alcohol and acetate suite. THF has not been reported as detected in groundwater from well 702 since records began.

Historically THF has been regularly reported as detected in excess of the GTV (0.115 mg/L) and occasionally above the DIV (0.300 mg/L) in groundwater from wells 7 and 205 until November 2002 and November 2010, respectively. Since then, THF has been reported as detected intermittently in

excess of assessment criteria. THF was last reported as detected in excess of the GTV at well 7 in May 2009 (0.23 mg/L) and at well 205 in November 2010 (0.19 mg/L).

THF has been reported as detected at well 404 since records began in February 1995. THF has been regularly reported as detected in excess of the GTV and DIV with concentrations ranging from 84 mg/L (May 2009) down to 0.017 mg/L (May and November 2014). THF was last reported as detected at well 404 in excess of the GTV in May 2016 (0.140 mg/L) and in excess of the DIV in November 2011 (0.54 mg/L).

THF was reported as detected at well 409 once in excess of the GTV at a concentration of 0.21 mg/L in May 2009.

THF has been reported as detected at well 501 since records began in December 1996. THF has been regularly reported as detected in excess of the GTV and DIV with concentrations ranging from 3,230 mg/L (May 1998) down to 0.002 mg/L (May 2019). THF was last reported as detected in excess of the GTV and DIV in November 2015 (2.1 mg/L) in groundwater from well 501.

THF has been reported as detected at well C1 since records began in June 1996. THF has been regularly reported as detected in excess of the GTV and DIV with concentrations ranging from 13 mg/L (November 1999) down to 0.073 mg/L (May 2015). THF was last reported as detected in well C1 in excess of the GTV in May 2017 (0.14 mg/L) and the DIV in November 2009 (0.72 mg/L).

THF concentrations in other wells have generally remained low, other than occasional detections prior to 2016 (see Appendix A Figures 9.1 and 9.2).

#### 8.1.3.12 Cyclohexane

Cyclohexane is analysed as part of the extended alcohol and acetate suite. Cyclohexane has not been reported as detected in groundwater from wells 409 and 702 since records began. The DIV (15 mg/L) has not been exceeded in any of the groundwater wells sampled on site. There is no IGV or GTV defined.

Historically cyclohexane was widely reported as detected (excluding the OSP4 area). Concentrations in groundwater have decreased over time and are now only regularly reported as detected in the primary source area.

Cyclohexane had been reported as detected prior to 2010 in groundwater from wells 7, 205 and C1.

Cyclohexane is reported as detected intermittently at wells 404 and 501, most recently in May 2018 (0.130 mg/L) and May 2019 (0.114 mg/L) respectively.

Cyclohexane concentrations generally follow a declining trend (see Appendix A Figures 10.1 and 10.2).

#### 8.1.4 Groundwater Conclusions

Several relevant hazardous substances (benzene, DCM, cyclohexane, THF, toluene and xylene) are reported as detected in groundwater, albeit following decreasing concentration trends.

Chloroform is reported as detected intermittently at the site but it likely derived from chlorinated mains water rather than from historic losses.

n-Hexane and diesel are currently stored on the site but have not been included in groundwater monitoring to date and should be included in future rounds.

Sodium bromate, dimethylacetamide and 2,2,4-trimethylpentane have not been included in groundwater monitoring to date, but are no longer stored on site. These should be analysed for in the next two groundwater rounds, as bromate and as VOC TICs, respectively. If not reported as detected they should be removed (with EPA agreement), as there is no potential for further contamination from these substances.

# 8.2 Shallow Soil Investigation

## 8.2.1 Introduction

An intrusive shallow soil investigation was completed by AECOM in July 2019 as part of the baseline investigation. A total of 65 soil/fill samples were taken from the 27 soil bores advanced across the site.

The sample locations were chosen based on a combination of targeted and non-targeted sampling, with the aim of both obtaining areal coverage of the site and targeting known source areas of historic impact across the site. Analytical results are presented in Appendix D.

Soil bores were advanced by Causeway Geotech (Causeway) using a small track-mounted direct push-type drilling rig. Drilling logs are presented in Appendix E.

## 8.2.2 Objectives

The objective of this site investigation was to evaluate current soil conditions with respect to relevant hazardous substances as part of the Baseline report.

The objective was achieved by:

- Drilling soil boreholes across the site and close to source area of historic impact to assess soil conditions beneath the site;
- Analysing soil samples for a range of potential substances relating to historical chemical and materials use on the site.

# 8.2.3 Scope of Works

Drilling and soil sampling works were undertaken at the site between 22 July and 30 July 2019.

The site investigation was conducted in line with \$\mathbb{S}\$ 10175:2011+A2:2017 Code of Practice for Investigation of Potentially Impacted Sites in Site Investigations (LR11 and by taking into account BS5930 (2015) Code of Practice for Site Investigations (where applicable). Sampling was carried out with techniques suitable to the conditions and materials encountered on site and logged in accordance with BS5930.

#### 8.2.3.1 Health and Safety

A site-specific Safety, Health & Environment (SHE) Plan was prepared for the works, which covered all elements of the site works undertaken by AECOM.

The SHE Plan outlined the nature of the works and included a hazard assessment, along with mitigation measures, so that the works were undertaken in a safe and controlled manner from both a health and safety and environmental perspective. The document included staff roles, staff training and competency requirements, method statements, risk assessments and emergency procedures, as well as site-specific information.

The SHE plan for the site investigation works specifically addressed precautions in terms of the borehole drilling and soil sampling.

The SHE Plan was made available to all AECOM staff and to Pfizer staff prior to the site works and was a 'live' document which was updated and amended on-site as part of ongoing dynamic risk assessment.

#### 8.2.3.2 Service Clearance

In accordance with the AECOM subsurface clearance protocol, utility clearance of the proposed borehole locations was completed prior to intrusive works commencing on-site, which included the following tasks:

 Review of available service plans to support the identification and location of relevant underground services;

- On-site utility survey of each proposed borehole location for underground utilities by specialist surveyors (Murphy Surveys Limited) using a Cable Avoidance Tool (CAT) and Ground Penetrating Radar (GPR); and
- Hand digging of all borehole locations to a depth to 1.2 m below ground level (bgl) prior to drilling to prove the absence of live underground services.

An AECOM field scientist supervised the on-site utility clearance works. A total of 28 drilling locations were cleared for utilities by Murphy Surveys Limited between 08 July and 11 July 2019.

Borehole BH15 was removed from the drilling schedule due to a high concentration of utilities shown by the geophysical utility surveys to be present across the proposed area.

A 150 mm ribbed yellow plastic pipe, not identified by the utility survey, was encountered at a depth of 0.85 m bgl, but not damaged, during the hand dig at location BH26. The hand dug excavation at BH26 was extended away from the uncovered service, as per standard procedure. A further 150 mm black plastic pipe, also not identified by the utility survey, was then encountered, also at 0.85 m bgl but not damaged. Location BH26 was not advanced further due to the presence of a large concrete kerb and mapped utilities in the area, which limited any further lateral extension of the hand-dug excavation.

A 100 mm black plastic pipe, not identified by the utility survey, was encountered at a depth of 0.80 m bgl, but not damaged, during the hand dig at location BH27. The excavation at BH27 was extended away from the uncovered service and was dug to a depth of 1.2 m bgl without encountering any further underground utilities.

No other underground services were encountered during the intrusive site works.

## 8.2.3.3 Drilling and Soil Sampling

#### Site Establishment

At the outset of the drilling works Causeway established an equipment laydown area in an area of the site that would cause no impact to the site's daily operations. A decontamination area was made available to Causeway in the WWTP to the north east of the site.

The equipment decontamination / wash-down area was located in the WWTP in a bunded area. All drilling equipment was pressure washed before arrival to site, prior to use and between each borehole location.

Prior to drilling at each location, a that works permit (if necessary) and a permit to work were obtained from the relevant Pfizer area supervision personnel. Prior to receiving the permit to work, each permit issuer received a copy of the health and safety documentation, information on the scope of works and the exact location for each borehole.

Temporary barriers were erected around each borehole location to cordon-off the area during the hand dig and subsequent drilling and soil sampling.

#### **Shallow Soil Drilling**

The twenty-seven (27) shallow soil drilling locations are listed below and illustrated in Appendix A Figure 11.

Name	Location	Rationale		
BH1-BH4 Former ADM Site		Spatial coverage		
BH5	Spatial coverage			
BH6	BH6 South of the Kilo Lab (201)			
BH7	East of Tanker Unloading Bay (198)	Spatial coverage		

Name	Location	Rationale		
BH8	West of Deluge House No.2/North of Solvent Recovery	Former source area		
BH9	East of WWTP (175)	Spatial coverage		
BH10	Southwest of TOC Monitoring House No.3	Spatial coverage		
BH11	North-East of Drum Storage (165)	Spatial coverage		
BH12	Contractor Area, east of gate of track to NHA woodland	Spatial coverage		
BH13	East of API Milling Facility (185)	Spatial coverage		
BH14	South of API Milling Facility (185)	Spatial coverage		
BH16	Eastern Car Park	Spatial coverage		
BH17	South West of OSP4 (190)	Spatial coverage		
BH18	East of Fire Station/Project Stores (184)	Spatial coverage		
BH19	Open area east of OSP3 (178)	Spatial coverage		
BH20	South of Drum Store (465)	Spatial coverage		
BH21	Between OSP3 (178) and solvent tanks to north	Spatial coverage		
BH22	East of OSP3 (1788) and Hydrog.2 (168)	Former source area		
BH23	East of OSP3 (178) and Hydrog.1 (167)	Former source area		
BH24	South of Solvent Recovery Area 162	Former source area		
BH25	South of OSP1 (163) and Labs & Offices	Former source area		
BH26	South of OSP3 (178), south east of NPTL (170)	Spatial coverage		
BH27	On south side of Maintenance Stores (169)	Spatial coverage		
BH28	West of API Milling Facility (185), north of ponded area	Spatial coverage		

At each borehole location, the underlying material was removed during the hand dig using insulated hand tools to a depth of 1.2 m bgl, to minimise the risk of damaging potential underground services.

The following issues were encountered:

- BH1, BH2 and BH25 concrete slabs were cored using a diamond coring drill before the hand dig.
- BH2 the concrete slab was cored to the maximum depth attainable with the core barrel (0.60 m), however, the floor slab was not penetrated. Other suitable locations were advance in close proximity to the original BH2 location, however the concrete slab could also not be

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penetrated at these locations. Therefore, location BH2 was not completed and a sample was collected from the soil material encountered above the concrete slab.

• BH26 only advanced by hand digging to a depth of 0.85 m bgl due to the presence of multiple underground services.

The remaining 25 borehole locations were all drilled to a depth of 2 m bgl.

An experienced AECOM field engineer supervised all drilling works. Geological logs were recorded noting major and minor grain size, colour, moisture content and field evidence of impact (i.e., colour, staining, ambient odour and photoionisation detector (PID) headspace readings).

Groundwater was not encountered in any of the 27 shallow soil bores and they were not installed as monitoring wells. On completion, the bores were backfilled to ground level with arisings and, where appropriate, concrete.

Borehole logs including descriptions of materials encountered during the drilling and reinstatement details are provided in Appendix E.

## **Sampling and Analysis**

Excavated material was inspected for visual or olfactory evidence of impact. To assess the presence of VOCs, field headspace testing using a calibrated PID was undertaken on soil samples retrieved at approximately 1 m intervals during excavation or drilling. Soil samples were placed in plastic zip-lock bags and allowed to equilibrate prior to on-site headspace testing.

Two composite soil samples were taken at each location at nominal depth intervals of 0-1 m bgl and 1-2 m bgl. Soil samples were analysed for VOCs including TICs, semi-volatile organic compounds (SVOCs) including TICs, total petroleum hydrocarbons – criteria working group (TPH-CWG) and heavy metals. Where impacted zones of soil were apparent during drilling, an extra soil sample was taken of the impacted material.

Soil samples were collected into laboratory-supplied sample containers appropriate to the intended analysis. The sample containers were labelled with a unique sample name and were stored on-site in a chilled cool box and refrigerated overnight at an off-site AECOM storage facility pending transport to the laboratory.

The AECOM field scientists wore single-use disposable nitrile gloves, which were changed at each sampling location and depth to avoid gross-contamination of soil samples.

Soil samples were shipped to the Element Materials Technology Laboratories in the UK for analysis. All soil samples were transported to the contract analytical laboratory by overnight courier in cooler boxes with frozen, laboratory-supplied ice packs and appropriate chain-of-custody documentation.

### 8.2.4 Field Observations

#### 8.2.4.1 Geological Observations

Geological logs are presented in Appendix E, with a summary provided below.

Bedrock and groundwater were not encountered during drilling at any of the shallow soil bores across the site.

Name	Dominant Material
BH1-BH4	MADEGROUND & Sandy, Gravelly CLAY
BH5-BH8	MADEGROUND (Gravels & Clays)
BH9	SANDS, GRAVELS & Gravelly CLAY
BH10-BH12	MADEGROUND & Gravelly CLAY

Name	Dominant Material		
BH13	Gravelly, Sandy CLAY		
BH14	MADEGROUND & Gravelly CLAY		
BH16	Sandy, Silty GRAVEL		
BH17-18	MADEGROUND & Gravelly CLAY		
BH19-BH20	MADEGROUND & Gravelly CLAY		
BH21	MADEGROUND & Gravelly CLAY		
BH22-BH24	MADEGROUND (Gravels)		
BH25	MADEGROUND & Gravelly, Silty CLAY		
BH26	MADEGROUND (Gravels)		
BH27	MADEGROUND & Gravelly CLAY		
BH28	MADEGROUND (Clays)		
	O' A		

#### 8.2.4.2 Field Evidence of Soil Impact

Evidence of soil impact in the form of odours or discolouration was noted only at BH22 at a depth of 1.6 m bgl. A PID soil headspace reading of 8.9 ppm was recorded at this depth.

The maximum PID soil headspace reading was 1000 ppm (BH8 at 1.0 -2.0 m bgl) but no obvious odours or discolouration were noted during drilling and subsequent sampling of BH8.

PID soil headspace readings above ppm were recorded from the deeper samples at BH11, BH20, BH21, BH22, BH23, BH24 and BH28 ranging from 5.4 ppm (BH20) to 70.3 ppm (BH21).

No obvious odours or discolouration were noted in any other soil samples retrieved for laboratory analysis and all other field PID soil headspace readings were less than 5 ppm.

# 8.2.5 Soil Analytical Results

A detailed sample inventory is presented in Appendix D Table 1.

## 8.2.5.1 Soil Screening Criteria

In accordance with the guidance presented in CLR 11<sup>12</sup> for impacted land risk assessment, the soil laboratory results were compared with Generic Assessment Criteria (GACs).

The GAC are conservative screening criteria protective of human health (assuming on-going commercial / industrial use of the site) and controlled waters (groundwater and surface waters). Separate GAC are given for human health and controlled waters.

For an assessment of the potential risk to human health and controlled waters, AECOM's in-house Stage 2 GAC for Commercial / Industrial land use was chosen.

Soil analytical results were compared against these GAC and if concentrations were less than the GAC, then the risks to human health or controlled waters were considered negligible. Conversely, if

<sup>&</sup>lt;sup>12</sup> UK DEFRA and EA, 2002, CLR 11 - 'Model Procedures for the Management of Land Contamination.'

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concentrations were identified above the GAC, a potential risk to human health or controlled waters was identified.

AECOM considers that the GAC are consistent with the principles of human health protection in guidance from the Irish Environmental Protection Agency, UK DEFRA and UK Environment Agency.

If reported concentrations are below both sets of GAC, then the risks to human health and controlled waters are considered negligible. However, if reported concentrations are above GAC, then there is a potential risk to the relevant receptor. It is possible for a result to be reported above the GAC for one receptor and not the other, e.g. to exceed the human health GAC but not controlled waters GAC, and vice versa.

It should be noted that the GAC protective of human health assumes a continued industrial end use and does not consider short-term exposure pathways to construction workers during redevelopment works. An assessment of impacts to construction workers is outside the current scope of work.

#### 8.2.5.2 Soil Results

The results of laboratory analysis of soil samples are presented in Appendix D Tables 2 – 7.

Soil laboratory certificates are presented as Appendix F.

## **Volatile Organic Compounds (VOCs)**

Soil VOC results are presented in Appendix D Table 2.

Benzene was reported as detected at a concentration of 9.0 µg/kg in soil sampled from BH21\_1.0-2.0 m bgl. This detection marginally exceeds the Controlled Waters GAC for benzene (8.7 µg/kg).

p/m-Xylene was reported as detected in soil sampled from \$\text{BH2}\_0.6 \text{ m bgl } (9.0 \text{ µg/kg}), \$BH4\_1.0-2.0 \text{ m bgl } (16 \text{ µg/kg}), \$BH21\_1.0-2.0 \text{ m bgl } (3.73 \text{ µg/kg}) and \$BH22\_0.0-1.6 \text{ m bgl } (6.0 \text{ µg/kg}). \$Only the p/m-xylene concentration at BH21 exceeded the Controlled Water GAC for p/m-xylene (67 \text{ µg/kg}). o-Xylene was also reported as detected in soil samples BH2\_0.6 \text{ m bgl } (4.0 \text{ µg/kg}), \$BH4\_1.0-2.0 \text{ m bgl } (14 \text{ µg/kg}).

Naphthalene was reported at 73 μg/kg from \$501 at BH4\_1.0-2.0 m bgl, exceeding the Controlled Waters GAC for naphthalene (19 μg/kg).

All other soil VOCs reported as detected above laboratory method detection limits (MDLs) from the remaining soil samples did not exceed the relevant GAC, where applicable.

#### **VOC Tentatively Identified Compounds (TICs)**

Soil VOC TIC results are presented in Appendix D Table 3 and summarised below.

VOC TICs were reported as detected above a 90% confidence in 7 of the 65 soil samples. No relevant assessment criteria were available for the VOC TICs reported as detected.

None of the reported as detected VOC TICs were identified as site-related relevant hazardous substances.

## Semi Volatile Organic Compounds (SVOCs)

Soil SVOC results are presented in Appendix D Table 4 and summarised below.

Phenol was reported as detected in soil from BH28\_1.0-2.0 m bgl (214  $\mu$ g/kg) which exceeded the Controlled Water GAC of 4.1  $\mu$ g/kg for phenol. Phenol was not reported as detected in any other soil sample analysed.

PAHs were below laboratory method detection limits (MDLs) at 19 of the 27 borehole locations.

Concentrations of naphthalene in soil from BH24\_1.0-2.0 m bgl (47  $\mu$ g/kg) and BH16\_0.0-1.0 m bgl (21  $\mu$ g/kg) exceeded the Controlled Water GAC of 19  $\mu$ g/kg for naphthalene.

Anthracene was reported in soil from BH9\_1.0-2.0 m bgl (24  $\mu$ g/kg) and BH22\_0.6 m bgl (107  $\mu$ g/kg) which exceeded the Controlled Water GAC 8.2  $\mu$ g/kg for anthracene.

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Reported detections of fluoranthene in soil from BH9\_1.0-2.0m bgl (153  $\mu$ g/kg), BH21\_0.0-1.0 m bgl (16  $\mu$ g/kg), BH27\_0.0-1.0 m bgl (24  $\mu$ g/kg) and BH28\_0.0-1.0 m bgl (12  $\mu$ g/kg) were the only ones which exceeded the Controlled Water GAC of 1.7  $\mu$ g/kg for fluoranthene.

Benzo(a)pyrene was reported as detected in soil from BH9\_1.0-2.0 m bgl (72  $\mu$ g/kg), BH14\_1.0-2.0 m bgl (14  $\mu$ g/kg), BH21\_0.0-1.0 m bgl (14  $\mu$ g/kg) and BH27\_0.0-1.0 m bgl (15  $\mu$ g/kg) which exceeded the Controlled Water GAC of 0.32  $\mu$ g/kg for benzo(a)pyrene.

Phthalates were below MDLs at 25 of the 27 borehole locations.

Di-n-butyl phthalate was only reported as detected above the Controlled Water GAC of 202  $\mu$ g/kg in soil from BH1\_0.0-1.0 m bgl (1,475  $\mu$ g/kg).

Other SVOCs were only reported as detected above their respective MDLs in soil from BH22\_1.6 m bgl. No relevant assessment criteria were available for these detections.

### **SVOC TICs**

Soil SVOC TIC results are presented in Appendix D Table 5 and summarised below.

SVOC TICs were reported as detected above a 90% confidence in 10 of the 65 soil samples. No relevant assessment criteria were available for the SVOC TICs reported as detected. All SVOC TICs reported as detected were not identified as site-related relevant hazardous substances.

### **Total Petroleum Hydrocarbons (TPHs)**

Soil TPH results are presented in Appendix D Table 6.

Speciated hydrocarbons were reported as detected above the MDL in soils from BH2\_0.6 m bgl, BH4\_1.0-2.0 m bgl, BH4\_1.0-2.0 m bgl, BH21\_1.0-2.0 m bgl, BH21\_1.0-2.0 m bgl, BH22\_1.6 m bgl, BH22\_1.0-2.0 m bgl, BH23\_1.0-2.0 m bgl, BH24\_1.0-2.0 m bgl and BH28\_1.0-2.0 m bgl. All reported detections fell below the relevant assessment criteria for speciated hydrocarbons, where applicable.

#### **Metals**

Soil metal results are presented in Appendix D Table 7.

Chromium VI and mercury were not reported as detected above the MDL in any of the 65 soil samples analysed.

Arsenic was reported in all 65 soil samples with concentrations ranging between 1.0 mg/kg (BH24\_1.0-2.0 m bgl) and 44.0 mg/kg (BH7\_1.0-2.0 m bgl). Results for a total of 33 out of the 65 soil samples exceeded the Controlled Water GAC of 10 mg/kg for arsenic. Reported soils arsenic results other than sample BH1\_1.0-2.0 m bgl (40 mg/kg) and BH7\_1.0-2.0 m bgl (44 mg/kg) were below 22 mg/kg.

Barium was reported in all 65 soil samples with concentrations ranging between 15 mg/kg (BH22\_0.0-1.0 m bgl and BH23\_1.0-2.0 m bgl) and 77 mg/kg (BH17\_1.0-2.0 m bgl). All reported barium detections fell below the relevant assessment criteria, where applicable.

Beryllium was reported in 54 of the 65 soil samples and concentrations ranging between 0.5 mg/kg (BH11\_1.0-2.0 m bgl and BH18\_0.0-1.0 m bgl) and 2.4 mg/kg (BH25\_1.0-2.0 m bgl). All reported beryllium soil results are below relevant assessment criteria, where applicable.

Cadmium was reported in 53 of the 65 soil samples, where reported as detected concentrations ranged between 0.1 mg/kg (BH3\_0.0-1.0m bgl) and 3.6 mg/kg (BH17\_1.0-2.0m bgl). All 53 reported detections of cadmium were in excess of the Controlled Waters GAC of 0.02 mg/kg.

Chromium III was reported in all 65 soil samples above the MDL with concentrations ranging between 13 mg/kg (BH24\_1.0-2.0 m bgl) and 68 mg/kg (BH2\_0.6 m bgl). No reported detections of chromium III exceeded the relevant assessment criteria, where applicable.

Copper was reported in all 65 soil samples with concentrations ranging between 4 mg/kg (BH22 0.0-1.0 m bgl) and 43 mg/kg (BH2 0.6 m bgl). All reported detections exceed the Controlled Waters GAC of 0.50 mg/kg for copper.

Lead was reported in 63 of the 65 soil samples with concentrations ranging between 5 mg/kg (BH23 0.0-1.0 m bgl) and 220 mg/kg (BH3 0.0-1.0 m bgl). All reported detections of lead exceeded the Controlled Waters GAC of 3.5 mg/kg.

Nickel was reported in all 65 soil samples with concentrations ranging between 3.4 mg/kg (BH23 1.0-2.0 m bgl) and 236 mg/kg (BH2 0.6 m bgl). Nickel concentrations in soil from 63 of the 65 samples exceeded the Controlled Waters GAC of 4.3 mg/kg.

Selenium was reported in 17 of the 65 soil samples, with concentrations ranging between 1.0 mg/kg (various) and 3.0 mg/kg (BH12 0.0-1.0 m bgl). The reported detections of selenium did not exceed the relevant assessment criteria, where applicable.

Vanadium was reported in all 65 soil samples with concentrations ranging between 2.0 mg/kg (BH23 1.0-2.0 m bgl) and 31 mg/kg (BH25 1.0-2.0 m bgl).

Water soluble boron was reported in all 65 soil samples with concentrations ranging between 0.1 mg/kg (BH22\_0.0-1.0 m bgl, BH23\_1.0-2.0 m bgl and BH 24\_0.0-1.0 m bgl) and 2.3 mg/kg (BH14 1.0-2.0 m bgl). No reported detections of water soluble boron exceed the relevant assessment criteria.

Zinc was reported in all 65 soil samples in excess of the Controlled Waters GAC of 1.5 mg/kg. Soil sample concentrations ranged between 20 mg/kg (BH16 1.0-2.0 m bgl and BH23 1.0-2.0 m bgl) and Screening of Soil Analytical Results of the Human Health 275 mg/kg (BH25 1.0-2.0 m bgl).

# 8.2.6

#### 8.2.6.1 Human Health

No soil results for any of the 65 soil samples exceeded the Stage 2 GAC protective of human health receptors on-site under an Industrial / Commercial scenario.

### 8.2.6.2 Controlled Waters

Several soil VOCs, SVOCs and metals were reported as detected above the Stage 2 GAC protective of controlled waters receptors.

Results are summarised below:

## SOIL VOC RESULTS ABOVE STAGE 2 GAC PROTECTIVE OF CONTROLLED WATERS

Parameter	Range (μg/kg)	GAC (μg/kg)	Samples > GAC-CW
Benzene	<3 – 9	8.7	<b>BH21_</b> 1.0-2.0 m bgl
p/m-Xylene	<6 – 313	67	<b>BH21</b> _1.0-2.0 m bgl
Naphthalene	<27 – 73	19	<b>BH4_</b> 1.0-2.0 m bgl

#### SOIL SVOC RESULTS ABOVE STAGE 2 GAC PROTECTIVE OF CONTROLLED WATERS

Parameter	Range (μg/kg)	GAC (μg/kg)	Samples > GAC-CW
Phenol	<10 – 214	4.1	<b>BH28_</b> 1.0-2.0 m bgl
Naphthalene (PAH)	<10 – 47	19	<b>BH24</b> _1.0-2.0 m bgl <b>BH16</b> _0.0-1.0 m bgl
Anthracene	<10 – 107	8.2	<b>BH9</b> _1.0-2.0 m bgl <b>BH22</b> _0.6 m bgl

#### SOIL VOC RESULTS ABOVE STAGE 2 GAC PROTECTIVE OF CONTROLLED WATERS

Fluoranthene	<10 – 153	1.7	<b>BH9</b> _1.0-2.0 m bgl <b>BH21</b> _0.0-1.0 m bgl <b>BH27</b> _0.0-1.0 m bgl <b>BH28</b> _0.0-1.0 m bgl
Benzo(a)pyrene	<10 – 72	0.32	BH9_1.0-2.0 m bgl BH14_1.0-2.0 m bgl BH21_0.0-1.0 m bgl BH27_0.0-1.0 m bgl
Di-n-butyl phthalate	<100 – 1,475	202	<b>BH1</b> _0.0-1.0 m bgl

# SOIL METAL RESULTS ABOVE STAGE 2 GAC PROTECTIVE OF CONTROLLED WATERS

Parameter	Range (mg/kg)	Typical Soil Concentrations - Ringaskiddy area (mg/kg)	GAC (mg/kg)	Samples >GAC-CW
Arsenic	<1 – 44	9-12	10	33/65 soil samples
Cadmium	<0.1 – 3.6	0.21-0.4	0.0 <b>2</b> er 15e	53/65 soil samples
Copper	<4.0 – 43	0.21-0.4  20-25  20-40  20-40  20-40  20-40  20-40	0.5	All 65 soil samples
Lead	<5.0 – 220	20-40 ching red	3.5	All 65 soil samples
Nickel	<3.4 – 236	22,00,7	4.3	63/65 soil samples
Vanadium	<2.0 – 31	<b>7</b> 5-90+	1.3	All 65 soil samples
Zinc	<20 – 275	60-80	1.5	All 65 soil samples

Note - Typical soil values derived (where available) from maps in Teagasc "Soil Geochemical Atlas of Ireland" 2007

The estimated soil GAC for heavy metals are calculated using conservative soil:water partitioning coefficients and result in theoretical soil leaching values for metals that are likely to be very conservative. Typical concentration ranges for particular metals in soil data from Teagasc for the Ringaskiddy area are generally higher than the soil GAC. Therefore, greater reliance is placed by AECOM on actual, site-specific, measured concentrations of these substances in groundwater, if available, to assess the potential risks to controlled waters in the vicinity of the site.

Given that these parameters, with the exception of arsenic, were not reported in groundwater above the respective GACs, AECOM concludes that the reported soil concentrations do not post an unacceptable risk to human health or the environment.

The source of these trace arsenic detections in groundwater is considered to be from naturally-occurring metallic minerals in the underlying limestone bedrock. Arsenic solubility increases under anaerobic groundwater conditions, such as those found beneath the site.

There are no appropriate assessment criteria for the tentatively identified compounds.

# 8.2.7 Duplicate Sampling

Six blind duplicate samples (Dup01-Dup06) were taken as a QA/QC check on the laboratory analysis. The purpose of duplicate sampling is to assess the reproducibility of sample preparation.

Primary Sample	Duplicate
BH8	DUP01
BH11	DUP02
BH13	DUP03
BH16	DUP04
BH6	DUP05
BH3	DUP06

Relative percentage differences (RPDs) calculated between the primary and duplicate samples are typically higher when detections are at lower concentrations (i.e. close to the detection limit) in the samples. A higher RPD is acceptable when the reported as detected concentrations are not 'significantly' above (taken as ten times) the MDL for a particular analyte.

There was generally a good correlation between primary and duplicate results from all samples for, VOC, SVOC and alcohol analyses performed.

There was generally good correlation for TPHs in metals in the majority of samples. However, an RPD of between 44% and 52% is noted for Chromium between primary and duplicate samples at BH16\_1.0-2.0m bgl, BH6\_0.0-1.0m bgl, BH6\_1.0-2.0m bgl and BH3\_1.0-2.0m bgl. Elevated RPDs are noted for several analytes between primary and duplicate samples BH11\_1.0-2.0m bgl and BH3\_0.0-1.0m bgl.

Differences in concentrations between primary and duplicate samples are likely due to heterogeneity in the composite soil samples.

## 8.3 Relevant Hazardous Substances in Soils

In total, eleven relevant hazardous substances were identified from the screening process.

Of these, chloroform, DCM, n-hexane, 2,2,4-trimethylpentane, THF and cyclohexane were not reported as detected in soil samples above their respective MDLs.

#### 8.3.1 Benzene

Benzene was reported as detected in one soil sample BH21\_1.0-2.0 m bgl at a concentration of 9.0  $\mu$ g/kg in excess of the Controlled Waters GAC (8.7  $\mu$ g/kg). Benzene was below the MDL (3  $\mu$ g/kg) in the remaining samples.

## 8.3.2 Diesel

TPH was reported as detected in several soil samples across the site at low concentrations which do not exceed assessment criteria.

#### 8.3.3 Sodium Bromate

Bromate was not directly analysed, but bromide was reported as detected in 3 of the 55 samples at a maximum concentration of 0.7 mg/kg. There are no assessment criteria defined for bromide.

#### 8.3.4 Toluene

Toluene was not reported as detected in any of the 55 samples above the Controlled Waters GAC (31  $\mu$ g/kg) or Human Health GAC 28,000,000  $\mu$ g/kg.

## 8.3.5 Xylenes

Total xylenes were reported as detected in one soil sample BH21\_1.0-2.0 m bgl at a concentration of 313.0  $\mu$ g/kg in excess of the Controlled Waters GAC (67  $\mu$ g/kg). Total xylenes were below the assessment criteria in the remaining samples.

# 8.4 Shallow Soil Site Investigation Conclusions

The majority of relevant hazardous substances were either below laboratory MDLs or below relevant assessment criteria across site. Benzene and xylene were both reported as detected above the Controlled Waters GAC at BH21 located down-gradient of the former source area, where historic solvent losses have been reported (see Section 5.2.1) and known groundwater impact is hydraulically captured and treated via two groundwater abstraction wells, C1 and C2.

Metal concentrations were reported as detected above the Controlled Waters GAC in every bore on site, however, metal concentrations, with the exception of arsenic, are generally similar to typical soil concentrations from the area and are below their respective MDLs in groundwater. The source of the trace arsenic detections in groundwater is considered to be from naturally-occurring metallic minerals in the underlying limestone bedrock.

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#### **Production of Baseline Report (Stage 8)** 9\_

Stage 8 of the baseline process is preparation of this report summarising the information gathered in Stages 1-7 of the process.

#### 9.1 Stage 1 - Identification of Hazardous Substances

In Stage 1 an inventory of raw materials, products, intermediaries, by-products, emissions and wastes which was provided by Pfizer was screened to identify hazardous substances used on site, as described in Section 2 of this report.

#### 9.2 Stage 2 – Identification of 'Relevant Hazardous Substances'

Hazardous substances identified during Stage 1 were screened to identify 'Relevant Hazardous Substances'.

Fifty substances were identified at Stage 2 of the screening process as described in Section 3 of this report.

#### 9.3 Stage 3 – Assessment of Site Specific Pollution Possibility

The relevant hazardous substances identified in Stage 2 were assessed based on their:

Review of secondary containment systems and procedures.

completion of the screening process in Stage 3 as do ving twelve relevant hazardous substage.

3 enzene After completion of the screening process in Stage 3 as described in Section 4 of this report, the stance stance For ping Consent of conding following twelve relevant hazardous substances were identified:

- Chloroform
- **DCM**
- Sodium Bromate
- Cyclohexane
- n-Hexane
- 2,2,4-Trimethylpentane
- THF
- Toluene
- **Xylene**
- Diesel
- Dimethylacetamide

However, it is noted that sodium bromate, dimethylacetamide and 2,2,4-trimethylpentane are no longer used or stored on site and they were not analysed for during the 2019 shallow soils investigation. They should be included (as bromate and as a VOC TICs, respectively) in the two subsequent biannual groundwater monitoring rounds. If they are not reported as detected, then their removal from further sampling events should be agreed with the EPA.

# 9.4 Stage 4 – Site History

The site history, including information on historical incidents which resulted in losses to ground and a description of historical site investigations and monitoring, is summarised in Sections 5 and 8 of this report.

# 9.5 Stage 5 - Environmental Setting

The existing environment, including, topology, geology, hydrogeology, land use and drainage systems are assessed in Section 6 of this report.

# 9.6 Stage 6 - Site Characterisation

The site characterisation is presented in Section 7 of this report.

# 9.7 Stage 7 – Site Investigation

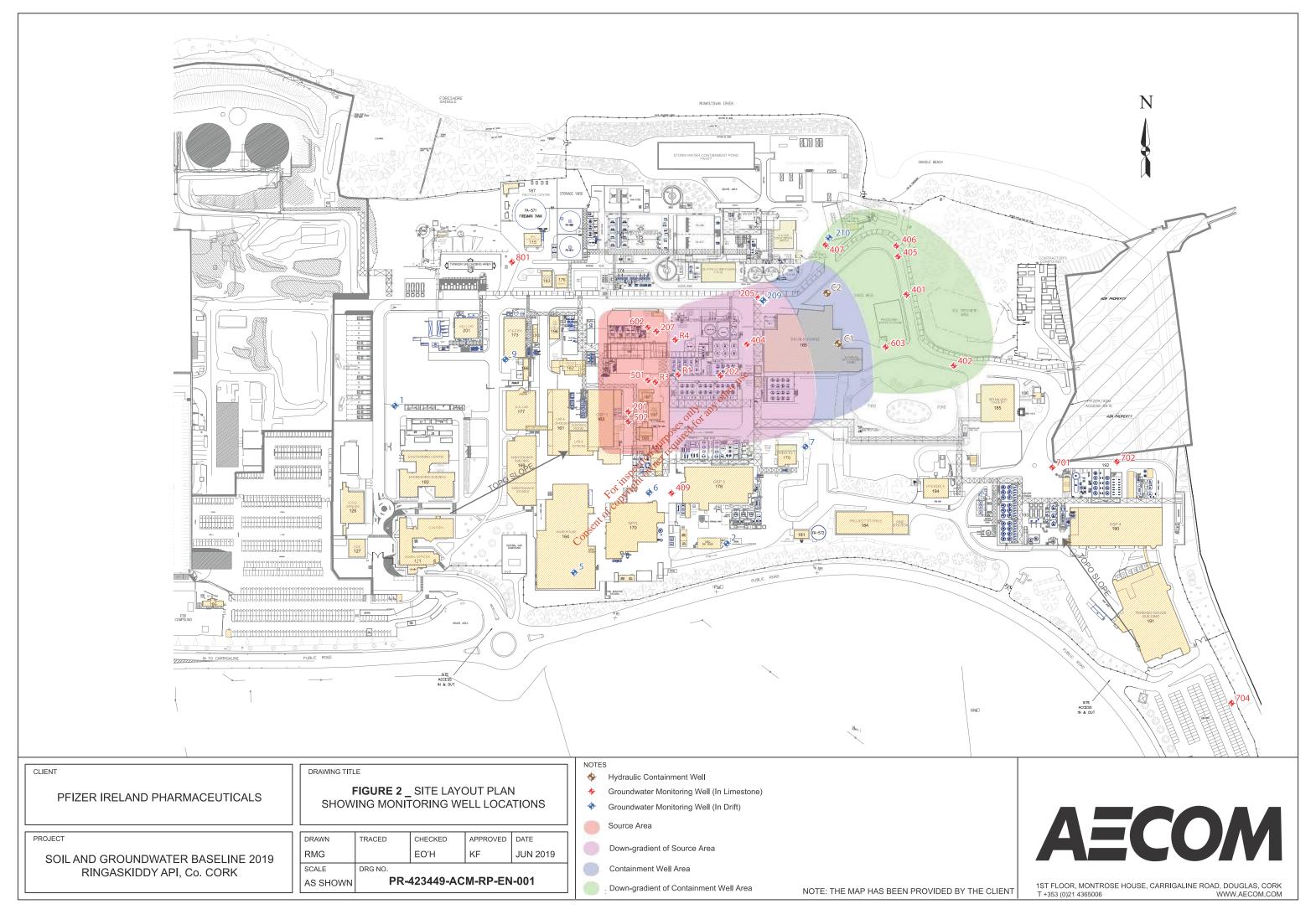
A groundwater site investigation was not needed as sufficient information is available from historic site investigations to characterise the site. A shallow soils investigation was completed in July 2019. Groundwater monitoring results and the results of the 2019 soils investigation are presented in Section 8 of this report.

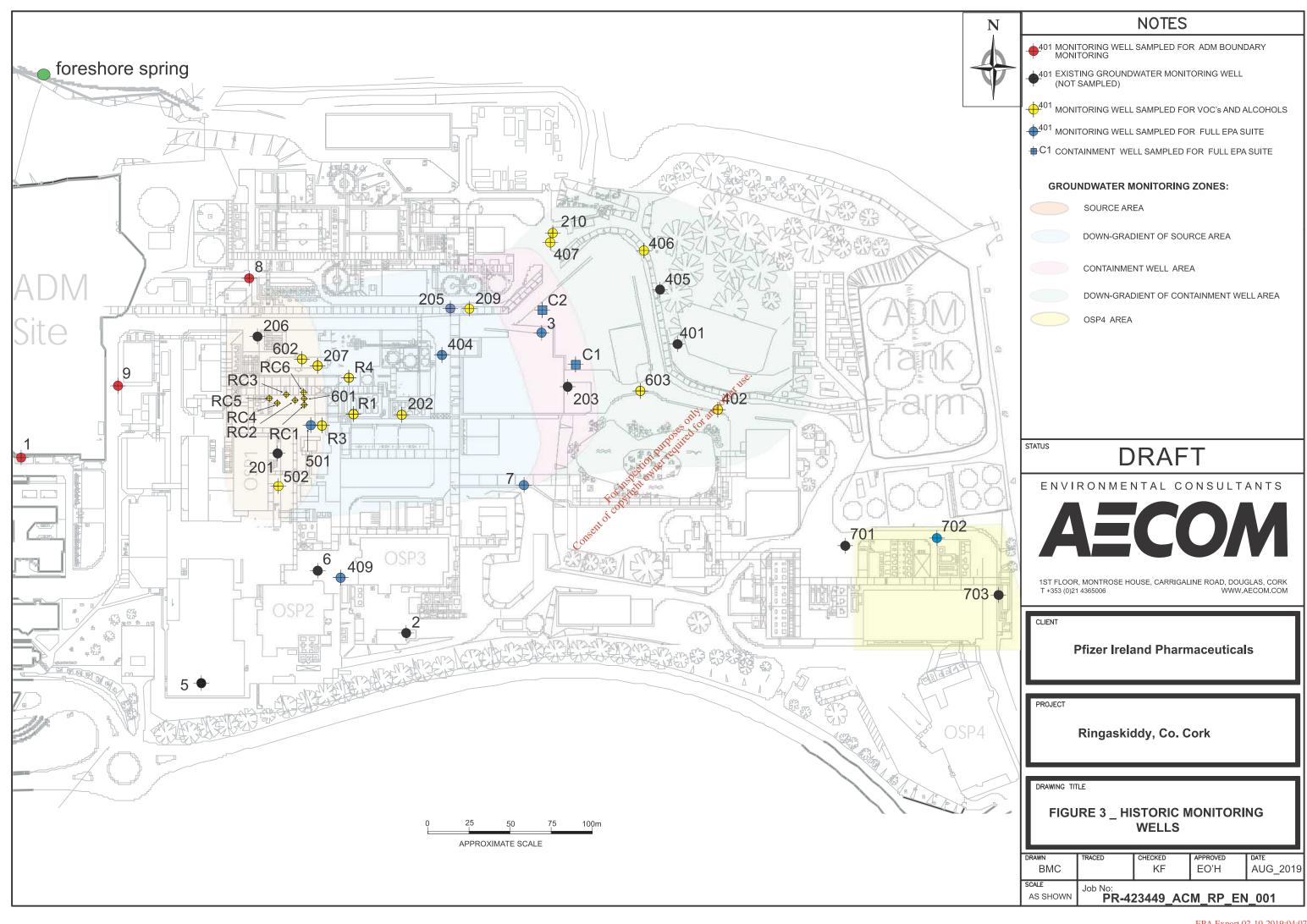
Five of the identified relevant hazardous substances were reported as detected in soil samples with concentrations of benzene and xylenes exceeding relevant GACs in several samples. Benzene and xylenes are reported as detected in groundwater beneath the site which is addressed through a hydraulic containment system to limit migration to Monkstown Greek and Cork Harbour.

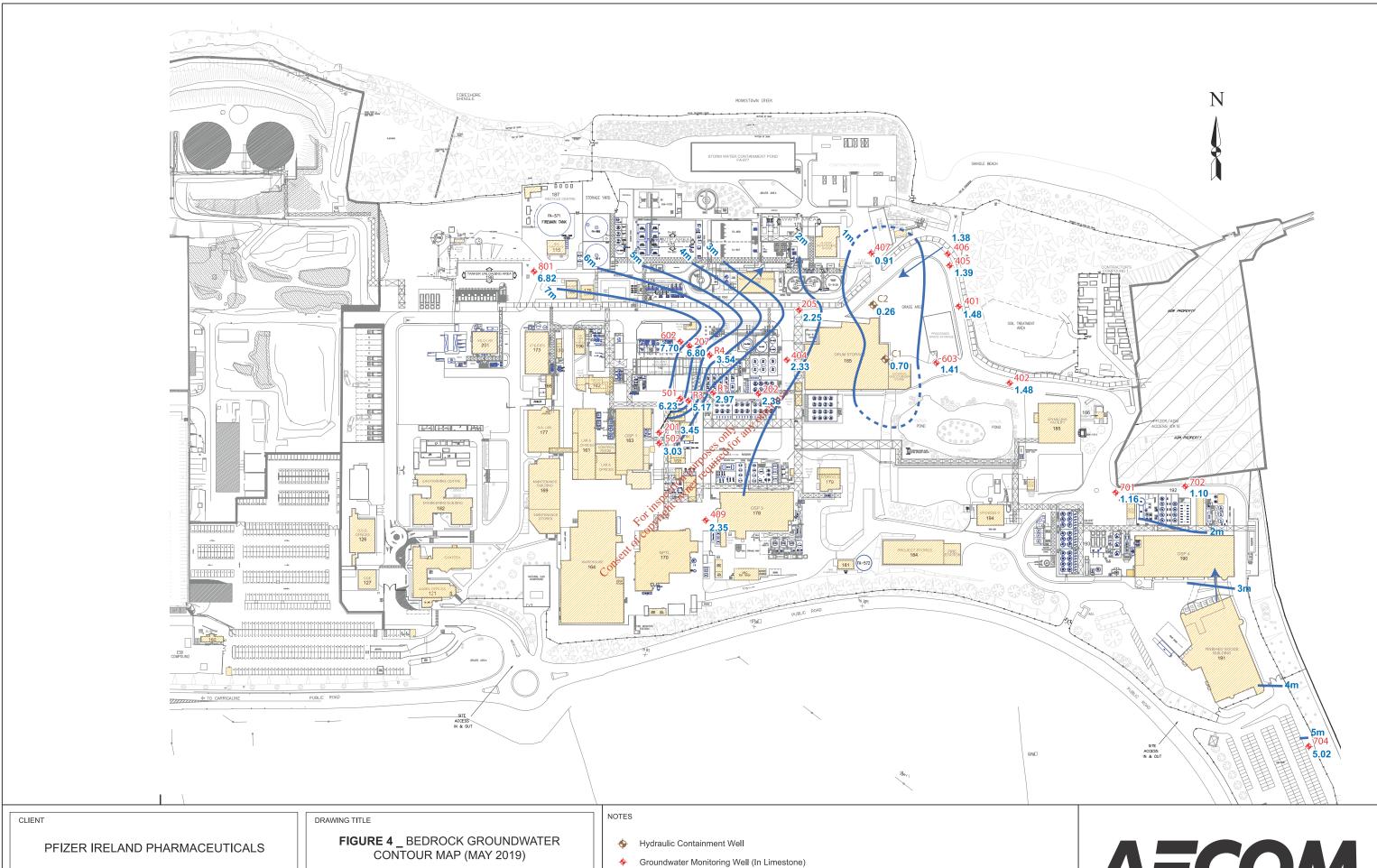
# **Appendix A Figures**

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PROJECT

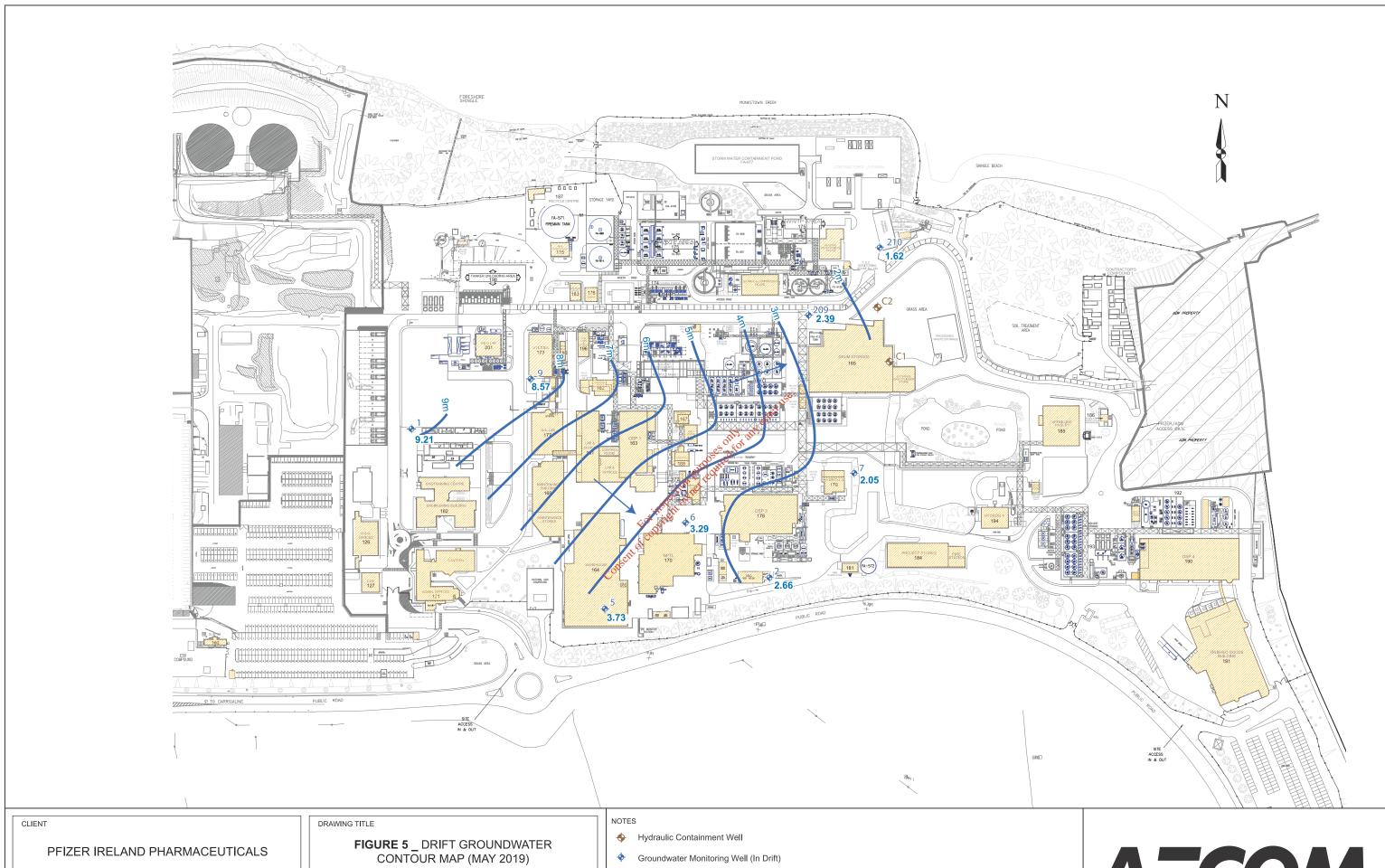
SOIL AND GROUNDWATER BASELINE 2019 RINGASKIDDY API, Co. CORK

DRAWN	TRACED	CHECKED	ECKED APPROVED DATE			
ВМС		EO'H	KF	AUG 2019		
SCALE	DRG NO.		•			
AS SHOWN	VN PR-423449 ACM RP EN 001					

- Groundwater Equipotential in Limestone (m AOD)
- Inferred Groundwater Equipotential
- Groundwater Flow Direction (Predicted) in Limestone

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SOIL AND GROUNDWATER BASELINE 2019 RINGASKIDDY API, Co. CORK

DRAWN	TRACED	CHECKED	APPROVED DATE	
вмс		EO'H	KF	MAY 2019
SCALE	DRG NO.			
AS SHOWN	PR-42	3449 ACN	I RP EN	001

- Groundwater Equipotential in Drift (m AOD)
- Groundwater Flow Direction (Predicted) in Drift

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1ST FLOOR, MONTROSE HOUSE, CARRIGALINE ROAD, DOUGLAS, CORK T +353 (0)21 4365006 WWW.AECOM.COM

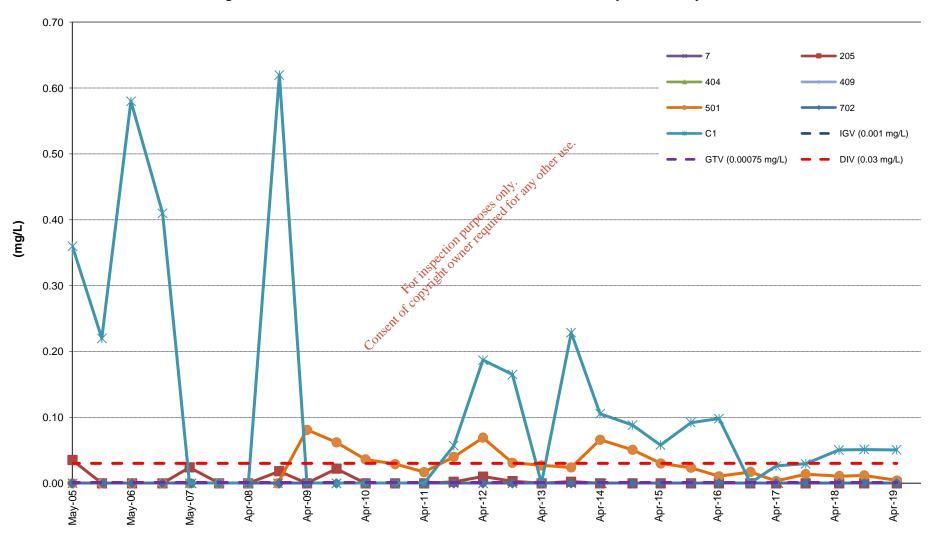


Figure 6.1: Benzene Concentration Trends in IEL Wells from May 2005 to May 2019

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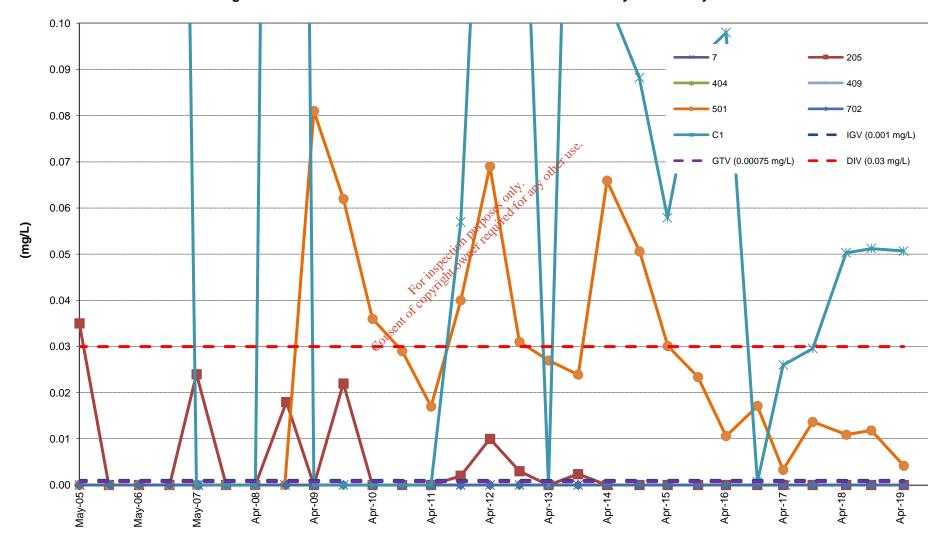


Figure 6.2: Benzene Concentration Trends in IEL Wells from May 2005 to May 2019

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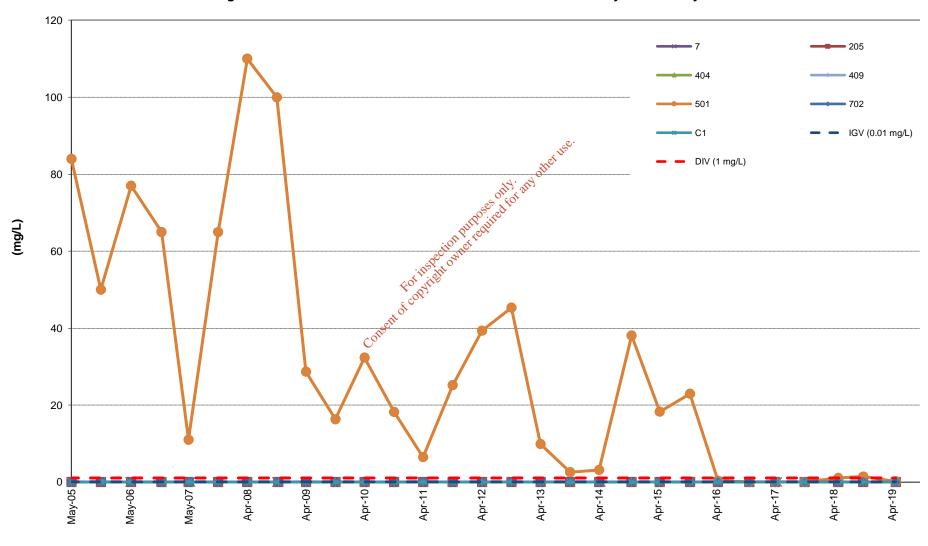


Figure 7.1: Toluene Concentration Trends in IEL Wells from May 2005 to May 2019

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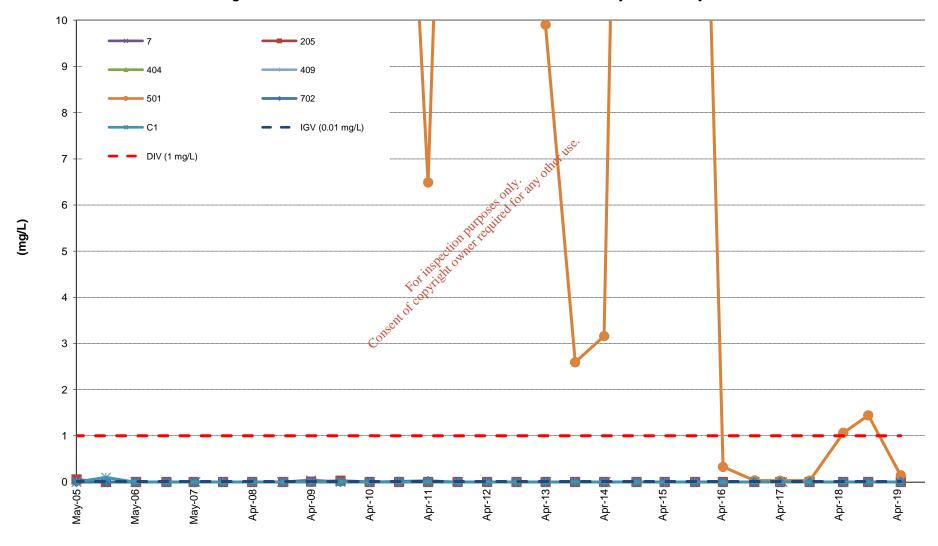


Figure 7.2: Toluene Concentration Trends in IEL Wells from May 2005 to May 2019

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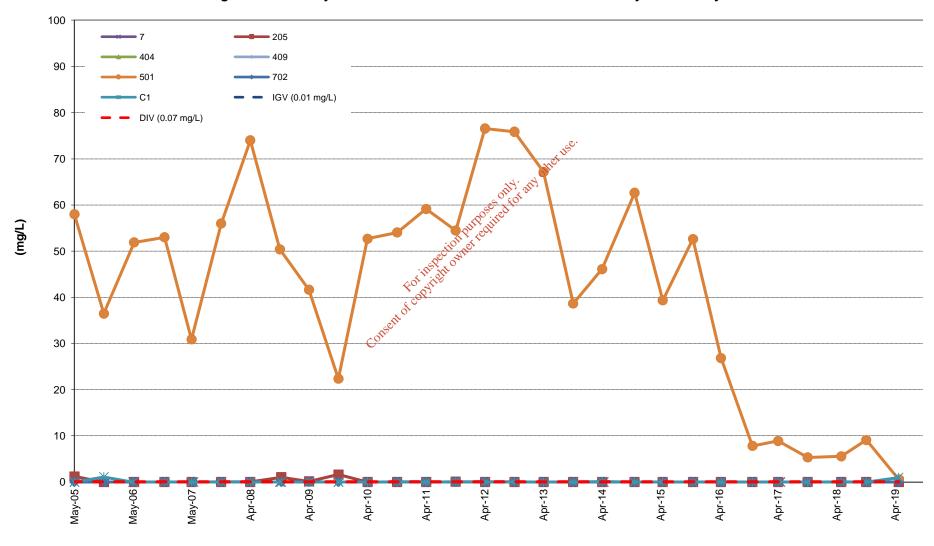


Figure 8.1: Total Xylene Concentration Trends in IEL Wells from May 2005 to May 2019

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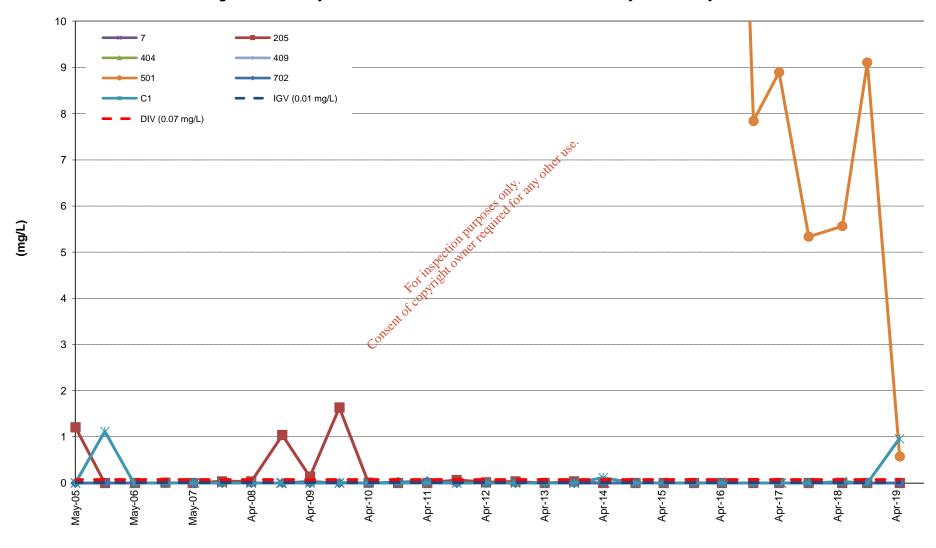


Figure 8.2 Total Xylene Concentration Trends in IEL Wells from May 2005 to May 2019

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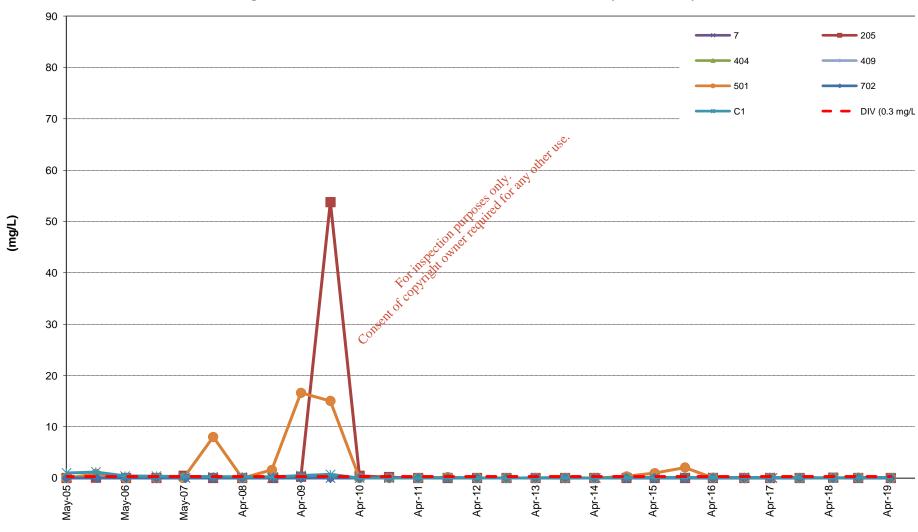


Figure 9.1: THF Concentration Trends in IEL Wells from May 2005 to May 2019

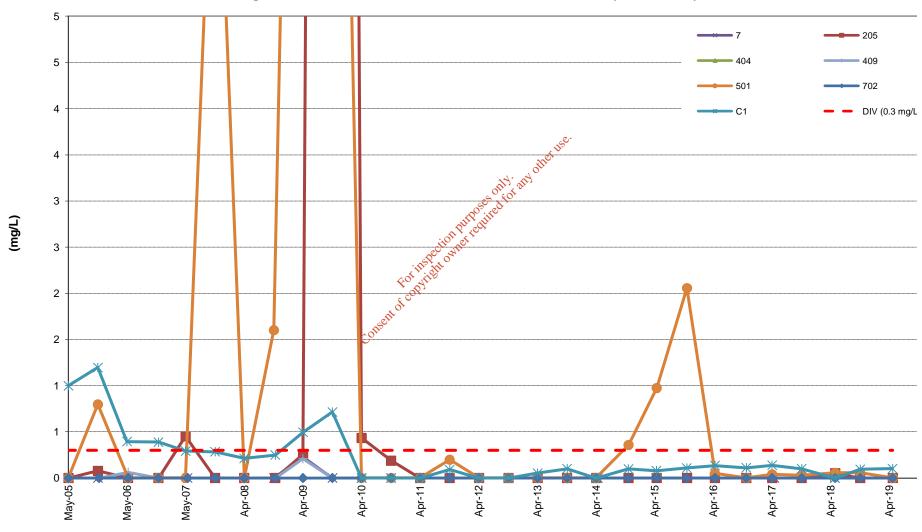


Figure 9.2: THF Concentration Trends in IEL Wells from May 2005 to May 2019

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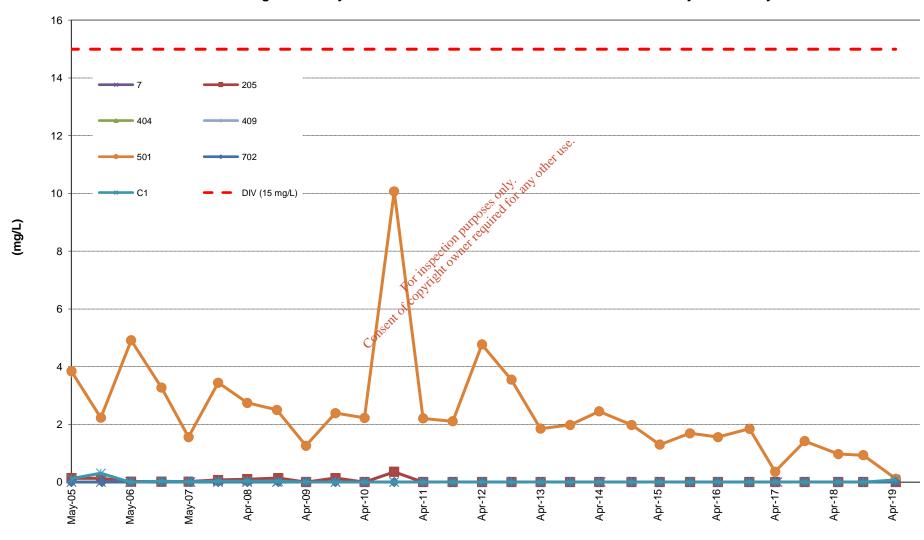


Figure 10.1: Cyclohexane Concentration Trends in IEL Wells from May 2005 to May 2019

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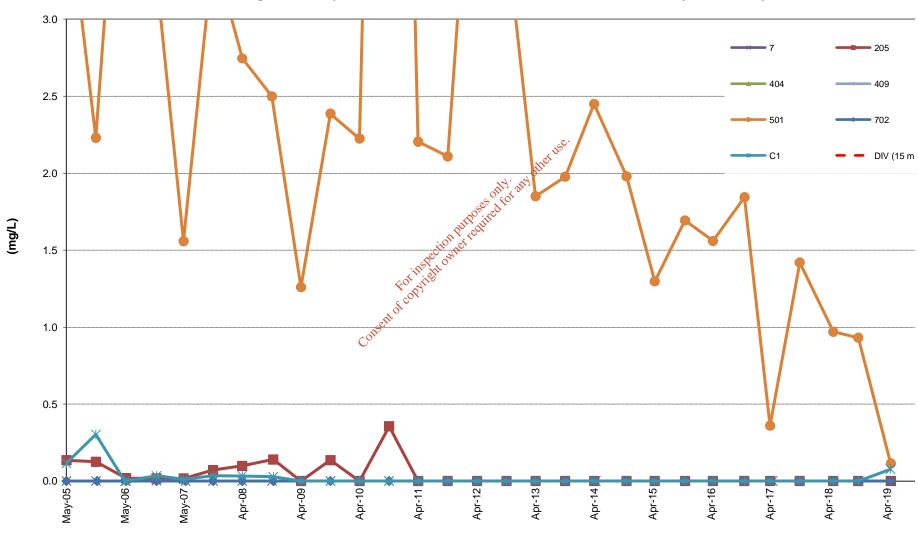
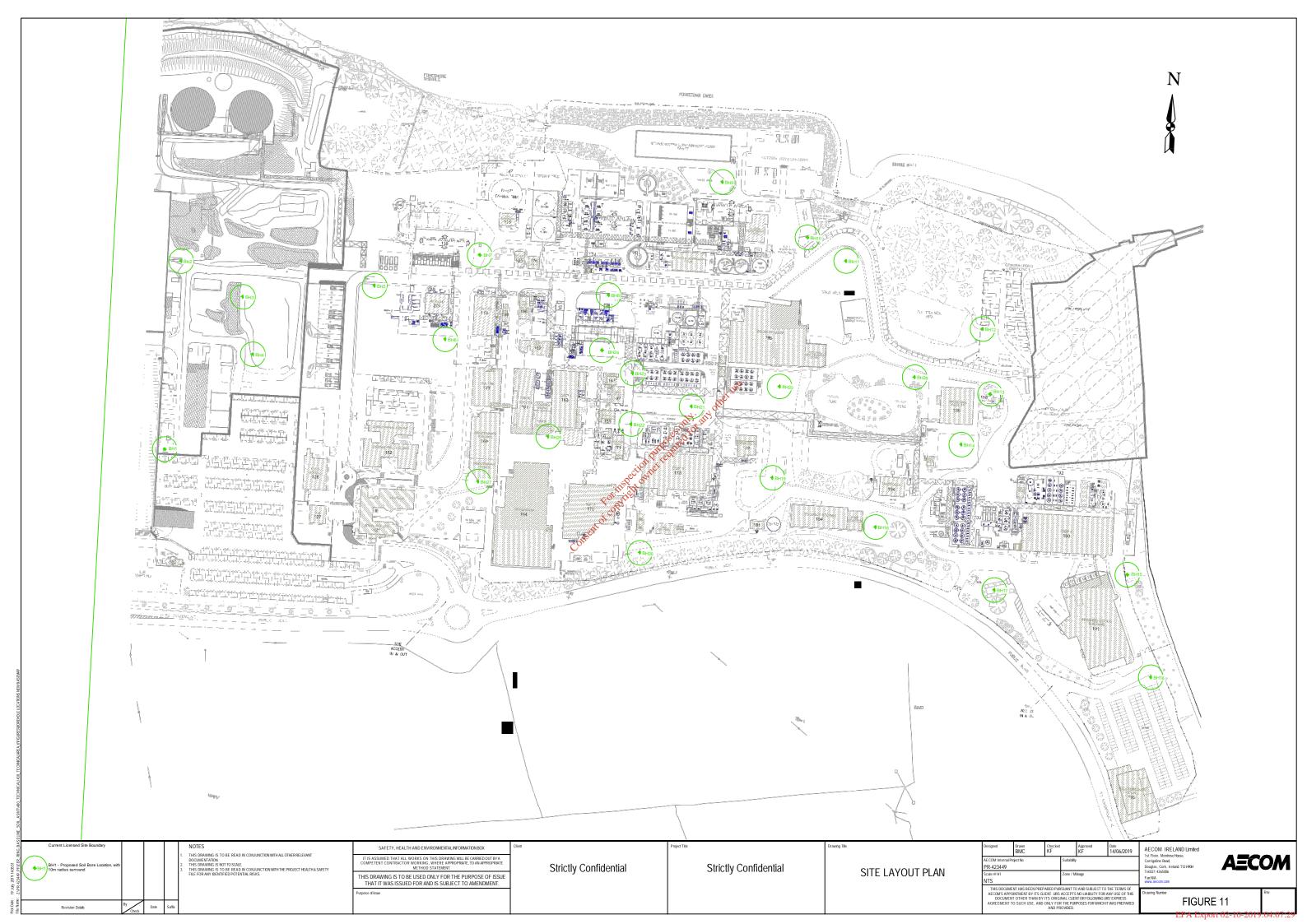


Figure 10.2: Cyclohexane Concentration Trends in IEL Wells from May 2005 to May 2019



# **Appendix B Relevant Hazardous Substances Tables**

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Appendix B Table 1 - Stages 1 and 2 Page 1 of

Stage 1				Stage 2			2		
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous Substances	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored On-Site	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance
1,2 Dimethoxyethane	110-71-4	Not Listed	H360D, H360F	Yes	Yes	Liquid	3,570	L	Yes - Relevant Hazard Statement (H360D and H360F)
1,2-Dichlorobenzene	95-50-1	Hazardous	H400, H410	Yes	Yes	Liquid	33,000	L	Yes - Relevant Hazard Statements (H400 and H410)
1,3-Dibromo-5,5-dimethylhydantoin	77-48-5	Not Listed	H400, H410	Yes	Yes	Solid	25,700	kg	No - Material is a Solid
1,8-Diazabicyclo[5.4.0]undec-7-ene	6674-22-2	Not Listed	H412	Yes	Yes	Liquid	760	L	Yes - Relevant Hazard Statement (H412)
1-Naphthol	90-15-3	Undetermined	-	No	Yes	Solid	3,500	kg	No - Material is a Solid
2-(Dicyclohexylphosphino) biphenyl	247940-06-3	Not Listed	H413	Yes	Yes	Solid	700	kg	No - Material is a Solid
2,2,4-Trimethylpentane	540-84-1	Not Listed	H400, H410	Yes	Yes	Liquid	32,000	L	Yes - Relevant Hazard Statements (H400 and H410)
2-Amino pyridine	504-29-0	Not Listed	H411	Yes	Yes	Solid	1,600	kg	No - Material is a Solid
2-Butanol	78-92-2	Undetermined	-	No	Yes	Liquid	8,750	L	No - not classified as hazardous and no
2-Hydroxyethyl Hydrazine	109-84-2	Not Listed	H351	Yes	No	Liquid	<250	L	relevant hazard statement  No - Quantity below 250 L / 250 kg
2-Methyl-2,4-Pentanediol	107-41-5	Undetermined		No	No	Liquid	<250	L	No - not classified as hazardous and no
2-Vinylpyridine	100-69-6	Not Listed	H411	Yes	No	Liquid	<250	L	relevant hazard statement  No - Quantity below 250 L / 250 kg
4-Chloroaniline	106-47-8	Hazardous	H350, H400, H410	Yes	Yes	Solid	5,600	kg	No - Material is a Solid
4-Chlorophenyl isocyanate	104-12-1	Not Listed	H410	Yes	No.	Solid	<250	kg	No - Material is a Solid
4-Dimethylaminopyridine	1122-58-3	Not Listed	H411	Yes	Yes	Solid	350	kg	No - Material is a Solid
5%-10% or greater Palladium on Carbon	440-05-3	Not Listed	H413	Yes	Yes	Solid	1.300	kg	No - Material is a Solid
5-Chlorooxindole			H412				2.000		
5-Chlorooxindole 6-Chlorooxindole	17630-75-0 56341-37-8	Not Listed  Not Listed		Yes	Yes	Solid Solid	2,000 <250	kg	No - Material is a Solid
6-Cniorooxindole			H410	Yes	No			kg	No - Material is a Solid  No - not classified as hazardous and no
Acetic Acid	64-19-7	Undetermined	-	No	Yes	Liquid	50,000	L	relevant hazard statement  No - not classified as hazardous and no
Acetone	67-64-1	Undetermined	-	No	Yes	Liquid	60,000	L	relevant hazard statement  No - not classified as hazardous and no
Acetone (Recovered, Spent)	67-64-1	Undetermined	-	No	Yes	Liquid	50,000	L	relevant hazard statement
AG1859 Step 1	Unknown	Unknown	Unknown	Yes	Yes	Solid	862	kg	No - Material is a Solid
AG1859 Step 2	Unknown	Unknown	Unknown	Yes	Yes	Solid	1,136	kg	No - Material is a Solid
AG1859 Step 3	Unknown	Unknown	Unknown	Yes	Yes	Solid	953	kg	No - Material is a Solid
Airhitone A452	106-24-1	Not Listed	H410, H411 ,H412	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
Alatrofloxacin step 1	Unknown	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
Alatrofloxacin step 2	Unknown	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
Alatrofloxacin step 2R	Unknown	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
Alcoseal 3-6%	107-41-5	Undetermined	-	No	Yes	Gas	3,000	L	No - Material is a Gas
Allylamine	107-11-9	Not Listed	H411	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
Aminoguanidine Bicarbonate	2582-30-1	Not Listed	H360, H411	Yes	No thei	Solid	6,000	kg	No - Material is a Solid
Amlodipine Step 2	88150-62-3	Not Listed	H413		Yes O'COT Yes	Solid	5.000	ka	No - Material is a Solid
Amlodipine Step 3	88150-62-3	Not Listed	H413	Yes	Of Yes	Solid	4,000	kg	No - Material is a Solid
Amlodipine Step 4	88150-42-9	Not Listed	H410, H400	Vac S	Yes	Solid	3.000	kg	No - Material is a Solid
Amlodipine Step 5	111470-99-6		H400, H410, H411,	Yes	Yes Yes No	Solid	.,	-	
Amoupine Step 5		Not Listed	H361DF	2000	res No		3,000 <250	kg L	No - Material is a Solid
Ammonia Anhydrous (Refrigeration)	7664-41-7	Non-Hazardous	H400, H410	citoliyes Yes	NO NO	Gas			No - Material is a Gas
Ammonia gas	7664-41-7	Non-Hazardous	H400	Cr Was	Yes	Gas	2,000	L	No - Material is a Gas
Ammonium Hydroxide	1336-21-6	Not Listed	AV.	Yes		Liquid	2,500	L	Yes- Relevant Hazard Statement (H400)
Ammonium Trifluoroacetate	3336-58-1	Not Listed	H408	Yes	Yes	Solid	4,000	kg	No - Material is a Solid
Asenapine	85650-56-2	Not Listed	H400, H410, H413	Yes	Yes	Solid	282	kg	No - Material is a Solid
Atorvastatin Diketone	125971-96-2	Not Listed	61418	Yes	Yes	Solid	3,600	kg	No - Material is a Solid
Atorvastatin Lactone	125995-03-1	Not Listed	H413	Yes	Yes	Solid	1,500	kg	No - Material is a Solid
Atorvastatin TCA	125971-57-5	Not Listed	H411	Yes	Yes	Solid	2,000	kg	No - Material is a Solid
Axitinib (AG-013736)	319460-85-0	Not Listed	H341, H361, H400	Yes	Yes	Solid	5,000,000	kg	No - Material is a Solid
Axitinib 5	319460-85-0a	Not Listed	H341, H410	Yes	No	Solid	<250	kg	No - Material is a Solid
Axitinib API	319460-85-0b	Not Listed	H341, H361FD, H410, H373	Yes	No	Solid	<250	kg	No - Material is a Solid
Azithromycin Step 4	83905-01-5	Not Listed	H400, H410, H413	Yes	Yes	Solid	3,500	kg	No - Material is a Solid
Azobisisobutyronitrile (AIBN)	78-67-1	Not Listed	H412	Yes	Yes	Solid	500	kg	No - Material is a Solid
									Yes- Classified as 'Hazardous', Relevant
Benzene	71-43-2	Hazardous	H340, H350	Yes	No	Liquid	<250	L	Hazard Statements (H340 and H350) and Historic Groundwater Contamination
BETZ 415	2809-21-4	Hazardous	H413	Yes	Yes	Liquid	<250	L	No - Quantity below 250 L / 250 kg
BIBEA	125971-57-5	Not Listed	H411	Yes	Yes	Solid	3,000	kg	No - Material is a Solid
Bis Triphenyl phosphine Palladium (II) C	13965-03-2	Not Listed	H413	Yes	Yes	Solid	2,000	kg	No - Material is a Solid
Bosutnib API (WAY-173606)	918639-08-4	Not Listed	H410	Yes	No	Solid	<250	kg	No - Material is a Solid
Bromine	7726-95-6	Undetermined	H400	Yes	No	Liquid	-	L	No - No longer used or stored on site
Butyl Vinyl Ether	111-34-2	Not Listed	H412	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
Butylated Hydroxy Toluene (BHT)	128-37-0	Not Listed Not Listed	H410, H400, H413	Yes	No No	Solid	<250	kg	No - Quantity below 250 L / 250 kg
Calcium Oxide (Quicklime)	1305-78-8	Undetermined	H410, H400, H413	No No	Yes	Solid	30,000	-	No - Material is a Solid
Carbon Activated	7440-44-0	Undetermined  Not Listed	- H412		Yes	Solid	30,000	kg	No - Material is a Solid  No - Material is a Solid
				Yes			.,	kg	
Chloroacetyl Chloride	79-04-9	Not Listed	H400	Yes	Yes	Liquid	710	L	Yes- Relevant Hazard Statement (H400)
Chloroform	67-66-3	Hazardous	-	Yes	Yes	Liquid	-	L	Yes - Classified as 'Hazardous'
Chlorotirmethylsilane	75-77-4	Not Listed	H351	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
Citric Acid	77-92-9	Undetermined	-	No	Yes	Solid	7,000	kg	No - Material is a Solid
Copper Chloride	7758-89-6	Not Listed	H400, H410	Yes	Yes	Solid	4,000	kg	No - Material is a Solid
Copper Iodide	7681-65-4	Not Listed	H400, H410, H411	Yes	No	Solid	<250	kg	No - Material is a Solid
Copper sulphate pentahydrate	7758-99-8	Not Listed	H410	Yes	No	Solid	<250	kg	No - Material is a Solid
Cortrol IS3000 -GE BETZ	7631-90-5	Undetermined	-	No	Yes	Liquid	270	L	No - not classified as hazardous and no relevant hazard statement
CP-611,831-08	Unknown	Unknown	Unknown	Yes	Yes	Solid	850	kg	No - Material is a Solid
CP-690,550-10 Step 2 (CP-703,058-01	Unknown	Unknown	Unknown	Yes	Yes	Solid	1,800	kg	No - Material is a Solid
CP-690,550-10 Step 3	540737-29-9	Not Listed	H360	Yes	Yes	Solid	3,000	kg	No - Material is a Solid
CP-703,458	Unknown	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid
CP-74,972-1	4274-38-8	Not Listed	H400	Yes	Yes	Solid	800	kg	No - Material is a Solid
CP-759,970-01 (CP-690,550-10 - RSM)	Unknown	Unknown	Unknown	Yes	Yes	Solid	2,500	kg	No - Material is a Solid
		I STATIONIT	- Cimilowii	.00	L	- 3110	2,500	- v9	The initiational to a confu

Appendix B Table 1 - Stages 1 and 2 Page 2 of 6

		Stage 1						Stage 2		
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous Substances	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored On-Site	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance	
CP-80,087	122665-86-5	Not Listed	H412	Yes	Yes	Solid	840	kg	No - Material is a Solid	
CP-945,598	Unknown	Unknown	Unknown	Yes	Yes	Solid	10,000	kg	No - Material is a Solid	
CP-945,598-01	Unknown	Unknown	Unknown	Yes	Yes	Solid	10,000	kg	No - Material is a Solid	
Crizotinib 2	877399-52-5	Not Listed	H411	Yes	Yes	Solid	500	kg	No - Material is a Solid	
Crizotinib API	877399-52-5	Not Listed	H400	Yes	No	Solid	<250	kg	No - Material is a Solid	
Crizotinib Step 2 (PF-00968604)										
. , , ,	-	Not Listed	H341, H400	Yes	Yes	Solid	4,100	kg	No - Material is a Solid	
Cumene Hydroperoxide	80-15-9	Not Listed	H411	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg	
Cyclohexane	110-82-7	Not Listed	H410	Yes	Yes	Liquid	30,000	L	Yes - Relevant Hazard Statement (H410)	
Cyclohexylmagnesium chloride/THF	109-99-9	Not Listed	H351	Yes	Yes	Liquid	14,500	L	Yes - Relevant Hazard Statement (H351)	
Cyclopentylamine	1003-03-8	Not Listed	H412	Yes	Yes	Liquid	1,600	L	Yes - Relevant Hazard Statement (H412)	
Dacomitinib Step 2 (PF-05201372-03)	1110813-31-4	Not Listed	H400, H410	Yes	Yes	Solid	1,700	kg	No - Material is a Solid	
Dacomitinib Step 2R (PF-05201372-03)	1110813-31-4	Not Listed	H400, H410	Yes	Yes	Solid	1,400	kg	No - Material is a Solid	
Dacomitinib Step 3 (PF-00299804-03)	1110813-31-4	Not Listed	H400, H410	Yes	Yes	Solid	640	kg	No - Material is a Solid	
Dacomitinib Step 3R (PF-00299804-03)	1110813-31-4	Not Listed	H400, H410	Yes	Yes	Solid	640	kg	No - Material is a Solid	
Danofloxacin 6N	93107-30-3	Not Listed	H412	Yes	Yes	Solid	2,500	kg	No - Material is a Solid	
Danofloxacin 7(Base)	112398-08-0	Not Listed	H412	Yes	Yes	Solid	3.000	kg	No - Material is a Solid	
Danofloxacin 8(Mesylate)	119478-55-6	Not Listed	H412	Yes	Yes	Solid	3,000		No - Material is a Solid	
								kg	No - Material is a Solid	
Darifenacin step 1	-	Not Listed	H400, H410	Yes	Yes	Solid	1,000	kg		
Darifenacin step 2	252317-48-9	Not Listed	H400, H410	Yes	Yes	Solid	450	kg	No - Material is a Solid	
Darifenacin step 3	-	Not Listed	H400, H410	Yes	Yes	Solid	490	kg	No - Material is a Solid	
Darifenacin step 3Rx	-	Not Listed	H400, H410	Yes	Yes	Solid	490	kg	No - Material is a Solid	
Darifenacin step 5(Hydrobromide)	133099-07-7	Not Listed	H400, H410	Yes	Yes	Solid	380	kg	No - Material is a Solid	
Darifenacin step 5R	133099-07-7	Not Listed	H400, H410	Yes	Yes	Solid	380	kg	No - Material is a Solid	
Daunorubicin Hydrochloride	23541-50-6	Not Listed	H351, H360FD, H341	Yes	Yes	Solid	345	kg	No - Material is a Solid	
Desvenlafaxine Step 1	93413-69-5	Not Listed	H360FD, H411	Yes	Yes	Solid	10,000	kg	No - Material is a Solid	
Desvenlafaxine Step 2	93413-62-8	Not Listed	H411	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
Desveniafaxine Step 3	386750-22-7	Not Listed	H411	Yes	Yes	Solid	1,300	kg	No - Material is a Solid	
• •			H411						No - not classified as hazardous and no	
Dianodic DN2108 - GE BETZ	1310-58-3	Undetermined	-	No	Yes	Liquid	800	L	relevant hazard statement Yes - Relevant Hazard Statements (H400	
Dianodic DN2301 -GE BETZ	55965-84-9	Not Listed	H400, H410	Yes	Yes	Liquid	400	L	and H410)	
Dichloromethane	75-09-2	Hazardous	H351	Yes	Yes Yes	Liquid	20,000	L	Yes - Relevant Hazard Statement (H351)	
Dichloromethane	74-87-3	Not Listed	H351	Yes	Yes	Liquid	1,500	L	Yes - Relevant Hazard Statement (H351)	
Diesel Oil	68334-30-5	Not Listed	H351	Yes	only was	Liquid	8,895	L	Yes - Relevant Hazard Statement (H351)	
Dimebon Step 1	3613-73-8	Not Listed	H413	Yes	Yes Yes	Solid	37,000	kg	No - Material is a Solid	
Dimebon Step 2/2R	Unknown	Unknown	Unknown	Yes 205	Yes	Solid	37,000	kg	No - Material is a Solid	
Dimethyl Aniline	121-69-7	Not Listed	H351, H411	Kelify (1)	Yes	Liquid	700	L	Yes - Relevant Hazard Statements (H351	
Dimethylacetamide	127-19-5	Not Listed	H360D	OYes, TOO	Yes	Liquid	14,000	L	and H411)  Yes - Relevant Hazard Statement (H360D)	
Dimethylformamide	68-12-2	Not Listed	H360D	do de	Yes	Liquid	14.000	L	Yes - Relevant Hazard Statement (H360D)	
·			HOOD HOOF HA	Yes Yes Yes Yes Yes Yes Yes	V		,		,,	
Dofetlide API	155256-11-6	Not Listed	H360D, H360F, H417	Yes Yes		Solid	500	kg	No - Material is a Solid	
Dofetilide step 1	115287-37-1	Not Listed	\$0, 20		No	Solid	<250	kg	No - Material is a Solid	
Dofetilide step 1 Rx	115287-37-1	Not Listed	H380FD	Yes	No	Solid	<250	kg	No - Material is a Solid	
Dofetilide step 2	115256-13-8	Not Listed	H660FD	Yes	No	Solid	<250	kg	No - Material is a Solid	
Dofetilide step 3	115256-11-6	Not Listed	#860FD, H411	Yes	No	Solid	<250	kg	No - Material is a Solid	
Dofetilide step 4	115256-11-6	Not Listed	H360FD, H411	Yes	No	Solid	<250	kg	No - Material is a Solid	
Dofetilide step 5	115256-11-6	Not Listed	H360FD, H411	Yes	No	Solid	<250	kg	No - Material is a Solid	
Dowtherm J	25340-17-4	Not Listed	H400, H410, H411	Yes	V		45.000		Yes - Relevant Hazard Statements H400,	
Doxazosin Mesylate	77883-43-3				Yes	Liquid		L		
Doxazosin Step 4		Not Listed	, .,		Yes	Solid	.,		H410 and H411	
		Not Listed	H411, H413	Yes	Yes	Solid	550	kg	H410 and H411 No - Material is a Solid	
Dovucucline Carrageanate	70918-74-0	Not Listed	H411, H413 H411	Yes Yes	Yes Yes	Solid Solid	550 600	kg kg	H410 and H411  No - Material is a Solid  No - Material is a Solid	
Doxycycline Carrageenate	70918-74-0	Not Listed Not Listed	H411, H413 H411 H360D	Yes Yes Yes	Yes Yes Yes	Solid Solid Solid	550 600 500	kg kg kg	H410 and H411  No - Material is a Solid  No - Material is a Solid  No - Material is a Solid	
Doxycycline Hyclate	70918-74-0	Not Listed  Not Listed  Not Listed	H411, H413 H411 H360D H360D, H400	Yes Yes Yes Yes	Yes Yes Yes	Solid Solid Solid Solid	550 600 500 6,000	kg kg kg	H410 and H411 No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate	70918-74-0 - 24390-14-5 17086-28-1	Not Listed  Not Listed  Not Listed  Not Listed	H411, H413 H411 H360D H360D, H400 H360D	Yes Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000	kg kg kg	H410 and H411  No - Material is a Solid	
Doxycycline Hyclate	70918-74-0	Not Listed  Not Listed  Not Listed	H411, H413 H411 H360D H360D, H400	Yes Yes Yes Yes	Yes Yes Yes	Solid Solid Solid Solid	550 600 500 6,000	kg kg kg	H410 and H411 No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate	70918-74-0 - 24390-14-5 17086-28-1	Not Listed  Not Listed  Not Listed  Not Listed	H411, H413 H411 H360D H360D, H400 H360D	Yes Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000	kg kg kg kg	H410 and H411  No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9	Not Listed Not Listed Not Listed Not Listed Not Listed Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H411 H351, H410, H360F	Yes Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Solid Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000 8,000	kg kg kg kg kg	H410 and H411  No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate Doxycycline SSA Drotoxifene Step 1 Drotoxifene Step 2	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H411 H351, H410, H360F H351, H400, H410,	Yes Yes Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes No	Solid Solid Solid Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000 8,000 <250	kg kg kg kg kg kg kg kg	H410 and H411  No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate Doxycycline SSA	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H411 H351, H410, H360F	Yes	Yes Yes Yes Yes Yes Yes No No	Solid	550 600 500 6,000 4,000 8,000 <250	kg kg kg kg kg kg kg kg kg	H410 and H411  No - Material is a Solid	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase)	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H3611 H351, H410, H360F H351, H400, H410, H300F	Yes	Yes Yes Yes Yes Yes Yes No No	Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250	kg	H410 and H411  No - Material is a Solid	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 38(Freebase)	70918-74-0 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1	Not Listed	H411, H413 H411 H360D H400 H360D H400 H360D H460 H360D H411 H351, H410, H360F H351, H400, H410, H360F H351, H410, H410, H360F	Yes	Yes Yes Yes Yes Yes Yes No No No No No	Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 <250	kg k	H410 and H411  No - Material is a Solid	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate	70918-74-0 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 143322-58-1	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H360F H371, H400, H410, H370F H37	Yes	Yes Yes Yes Yes Yes Yes No No No No No No Yes	Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 20,220	kg k	H410 and H411  No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H300F H412 H412 H411 H412 H411	Yes	Yes Yes Yes Yes Yes Yes No No No No No No Yes	Solid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410	kg k	H410 and H411  No - Material is a Solid  Yes - Relevant Hazard Statement (H413)	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 143322-58-1 217087-09-7 68081-77-6	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H360F H371, H400, H410, H371, H412 H412 H411, H412	Yes	Yes Yes Yes Yes Yes Yes No No No No No No Yes Yes Yes	Solid Liquid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410 410	kg k	H410 and H411 No - Material is a Solid Yes - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413)	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H300F H412 H412 H411 H412 H411	Yes	Yes Yes Yes Yes Yes Yes No No No No No No Yes	Solid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410	kg k	H410 and H411  No - Material is a Solid  Ver - Material is a Solid  No - Material is a Solid  No - Material is a Solid  No - Material is a Solid  Ves - Relevant Hazard Statement (H413)  Yes - Relevant Hazard Statement (H413)  No - not classified as hazardous and no relevant hazard statement	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 143322-58-1 217087-09-7 68081-77-6	Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H412 H412 H413 H413	Yes	Yes Yes Yes Yes Yes Yes No No No No No No Yes Yes Yes	Solid Liquid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410 410	kg k	H410 and H411 No - Material is a Solid Yes - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413) No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6 68-177-6 64-17-5	Not Listed Undetermined	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H412 H412 H413 H413	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes	Solid Liquid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410 410 40,000	kg k	H410 and H411  No - Material is a Solid  Yes - Relevant Hazard Statement (H413)  Yes - Relevant Hazard Statement (H413)  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6 68-17-5 141-43-5	Not Listed Undetermined Undetermined	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H300F H412 H412 H413 H413 H413 -	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes	Solid Liquid Liquid Liquid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 410 410 40,000 700	kg k	H410 and H411  No - Material is a Solid  Yes - Relevant Hazard Statement (H413)  Yes - Relevant Hazard Statement (H413)  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esome	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6 64-17-5 141-43-5 107-21-1	Not Listed Unclusted Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H411 H351, H410, H360F H351, H400, H410, H300F H412 H412 H413 H413	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes Yes Yes	Solid Liquid Liquid Liquid Liquid Liquid Liquid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 <250 410 410 40,000 700 40,000	kg k	H410 and H411 No - Material is a Solid Ves - Material is a Solid Solid No - Material is a Solid No - Total August is a Solid No - Material is a Solid No - Total Hazard Statement (H413) No - Tot classified as hazardous and no relevant hazard statement No - Tot classified as hazardous and no relevant hazard statement No - Tot classified as hazardous and no relevant hazard statement	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylenedaminetetraacetic acid, potassium Fesoterordine Base (Step 4/4R)	70918-74-0	Not Listed Uncertained Undetermined Undetermined Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H412 H412 H413 H413 H413 H413 H413 H413 H413	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes	Solid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 20,220 410 410 40,000 700 40,000 <250	kg L L L kg	H410 and H411 No - Material is a Solid Ves - Material is a Solid Ves - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413) No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylenedaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R)	70918-74-0  24390-14-5  17086-28-1  35689-59-9  57999-49-2  82413-20-5  82413-20-5  143322-58-1  217087-09-7  68081-77-6  64-17-5  141-43-5  107-21-1  2001-94-7	Not Listed Uncertained Undetermined Undetermined Not Listed Not Listed Undetermined Undetermined Not Listed Not Listed Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H411 H351, H410, H360F H351, H400, H410, H360F H412 H412 H413 H413 H413 H413 H414 H412 H414 H414 H418 H419 H419 H419 H419 H419 H419 H419 H419	Yes	Yes Yes Yes Yes Yes Yes Yes No No No No No Yes	Solid Liquid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 410 410 40,000 700 40,000 <250 50,000 25,000	kg L L L kg kg	H410 and H411  No - Material is a Solid  Ves - Relevant Hazard Statement (H413)  Ves - Relevant Hazard Statement (H413)  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - Material is a Solid  No - Material is a Solid  No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylenediaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R) Fesoterodine Chiral Acid Fesoterodine Mandelate (Step 3)	70918-74-0  24390-14-5  17086-28-1  35689-59-9  57999-49-2  82413-20-5  82413-20-5  143322-58-1  217087-09-7  68081-77-6  64-17-5  141-43-5  107-21-1  2001-94-7	Not Listed Undetermined Undetermined Undetermined Not Listed Not Listed Not Listed Not Listed Undetermined Undetermined Undetermined Not Listed Not Listed Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H361 H361 H361, H410, H360F H351, H400, H410, H360F H412 H412 H411, H412 H413 H413 H413 H419 H419 H419 H410 H410 H410 H410 H410 H410 H410 H410	Yes	Yes Yes Yes Yes Yes Yes No No No No No So Yes	Solid Liquid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000 -250 -250 -250 -250 -250 -250 -250 -	kg k	H410 and H411  No - Material is a Solid  Yes - Relevant Hazard Statement (H413)  Yes - Relevant Hazard Statement (H413)  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylenediaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R) Fesoterodine Chiral Acid Fesoterodine Mandelate (Step 3) Fesoterodine Methyl Ester (Step 4)	70918-74-0  24390-14-5  17086-28-1  35689-59-9  57999-49-2  82413-20-5  143322-58-1  143322-58-1  217087-09-7  68081-77-6  64-17-5  141-43-5  107-21-1  2001-94-7	Not Listed Undetermined Undetermined Undetermined Undetermined Not Listed Not Listed Not Listed Not Listed Undetermined Undetermined Undetermined Undetermined Not Listed Not Listed Not Listed Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H361 H361 H361, H410, H360F H351, H410, H360F H412 H412 H411, H412 H413 H413 H413 H413 H413 H413 H414 H410 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes Yes Yes No	Solid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000 -250 -250 -250 -250 -250 -250 -250 -	kg k	H410 and H411 No - Material is a Solid Yes - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413) No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylene Glycol Ethylene Glycol Fesoterodine Base (Step 4/4R) Fesoterodine Mandelate (Step 3) Fesoterodine Mandelate (Step 4) Fesoterodine Methyl Ester (Step 4) Fesoterodine Racemate (Step 2)	70918-74-0 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 143322-58-1 143322-58-1 217087-09-7 68081-77-6 684-17-5 141-43-5 107-21-1 2001-94-7	Not Listed Londetermined Undetermined Undetermined Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H361 H361 H361, H410, H360F H351, H400, H410, H360F H412 H412 H411, H412 H413 H413 H413 H413 H413 H410 H4102 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes Yes No	Solid Liquid Liquid Liquid Liquid Solid Solid Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000 8,000 -250 -250 -250 -250 -250 -250 -250 -	kg k	H410 and H411 No - Material is a Solid Yes - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413) No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylene Glycol Ethylenediaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 2) Fluconazole Step 4	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6 64-17-5 141-43-5 107-21-1 2001-94-7	Not Listed Undetermined Undetermined Undetermined Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H4111 H351, H400, H410, H360F H412 H412 H411, H412 H413 H413 H413 H413 H4102 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes No No Yes Yes No No Yes Yes No Yes	Solid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000   4,000 8,000   4250   4250   4250   4250   40,000   40,000   40,000   50,000   25,000   30,000   4250   40,000	kg k	H410 and H411 No - Material is a Solid No - not classified as hazaradous and no relevant hazard Statement No - not classified as hazaradous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylenediaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R) Fesoterodine Chiral Acid Fesoterodine Mandelate (Step 3)	70918-74-0 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 143322-58-1 143322-58-1 217087-09-7 68081-77-6 684-17-5 141-43-5 107-21-1 2001-94-7	Not Listed Londetermined Undetermined Undetermined Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H361 H361 H361, H410, H360F H351, H400, H410, H360F H412 H412 H411, H412 H413 H413 H413 H413 H413 H410 H4102 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes Yes No	Solid Liquid Liquid Liquid Liquid Solid Solid Solid Solid Solid Solid Solid Solid	550 600 500 6,000 4,000 8,000 -250 -250 -250 -250 -250 -250 -250 -	kg k	H410 and H411 No - Material is a Solid Yes - Relevant Hazard Statement (H413) Yes - Relevant Hazard Statement (H413) No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - not classified as hazardous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hydate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 68 Ethanol/IMS Ethanolamine Ethylene Glycol Ethylene Glycol Ethylenediaminetetraacetic acid, potassium Fesoterodine Base (Step 4/4R) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 2) Fluconazole Step 4	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 217087-09-7 68081-77-6 64-17-5 141-43-5 107-21-1 2001-94-7	Not Listed Undetermined Undetermined Undetermined Not Listed	H411, H413 H411 H360D H360D, H400 H360D H360D H360D H4111 H351, H400, H410, H360F H412 H412 H411, H412 H413 H413 H413 H413 H4102 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yes Yes No No Yes Yes No No Yes Yes No Yes	Solid Liquid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000   4,000 8,000   4250   4250   4250   4250   40,000   40,000   40,000   50,000   25,000   30,000   4250   40,000	kg k	H410 and H411 No - Material is a Solid No - not classified as hazaradous and no relevant hazard Statement No - not classified as hazaradous and no relevant hazard statement No - Material is a Solid	
Doxycycline Hyclate Doxycycline Monohydrate Doxycycline Monohydrate Doxycycline SSA Droloxifene Step 1 Droloxifene Step 2 Droloxifene Step 3 (Freebase) Eletriptan step 3 (Freebase) Eletriptan step 3R(Freebase) Eletriptan step 3R(Freebase) Esomeprazole Magnesium Trihydrate Esso Zerice 100 Esso Zerice 18 Ethanol/IMS Ethanol/IMS Ethanolamine Ethylene Glycol Ethylene Glycol Ethylene Glycol Fesoterodine Base (Step 4/4R) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 4) Fesoterodine Mandelate (Step 4) Fesoterodine Racemate (Step 2) Fluconazole Step 4 Fluconazole Step 5	70918-74-0 - 24390-14-5 17086-28-1 35689-59-9 57999-49-2 82413-20-5 82413-20-5 143322-58-1 143322-58-1 217087-09-7 68081-77-6 64-17-5 141-43-5 107-21-1 2001-94-7	Not Listed Undetermined Undetermined Undetermined Not Listed	H411, H413 H411 H360D H400 H360D, H400 H360D H360D H360D H411 H351, H400, H412 H412 H412 H411, H412 H413 H413 H413 H4102 (final product) H402 (final product) H402 (final product) H402 (final product) H402 (final product)	Yes	Yes Yes Yes Yes Yes Yes Yes No No No No No Yes Yes Yes Yes Yes Yos Yes No No Yes Yes Yes No Yes	Solid Liquid Liquid Liquid Solid	550 600 500 6,000 4,000 8,000 <250 <250 <250 <250 <250 <250 410 410 40,000 700 40,000 50,000 25,000 30,000 <280 <250 4,000 7,367	kg k	H410 and H411  No - Material is a Solid  Yes - Relevant Hazard Statement (H413)  Yes - Relevant Hazard Statement Tho - not classified as hazardous and no relevant hazard statement  No - not classified as hazardous and no relevant hazard statement  No - Material is a Solid  No - Material is a Solid	

Appendix B Table 1 - Stages 1 and 2 Page 3 of 6

		Stage 1						Stage 2			
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous Substances	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored On-Site	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance		
Gabapentin Step 4	133481-10-4	Not Listed	H412	Yes	Yes	Solid	11,600	kg	No - Material is a Solid		
Gabapentin Step 5	133481-09-1	Not Listed	H412	Yes	Yes	Solid	10,000	kg	No - Material is a Solid		
Gabapentin Step 6	60142-96-3	Not Listed	H360, H351	Yes	Yes	Solid	6,000	kg	No - Material is a Solid		
Gabapentin Step 6R	60142-96-3	Not Listed	H360, H351	Yes	Yes	Solid	5,400	kg	No - Material is a Solid		
Glycerol (85%)	56-81-5	Undetermined	-	No	Yes	Liquid	5,000	L	No - not classified as hazardous and no relevant hazard statement		
Glycerol (99%)	56-81-5	Undetermined	-	No	Yes	Liquid	5,000	L	No - not classified as hazardous and no relevant hazard statement		
Hydrochloric Acid HCL / Isopropanol IPA	67-63-0 (IPA)	Undetermined	-	No	Yes	Liquid	50,000	L	No - not classified as hazardous and no relevant hazard statement		
Hydrochloric Acid HCL\Ethanol 4M Solution	64-17-5	Undetermined	-	No	Yes	Liquid	50,000	L	No - not classified as hazardous and no relevant hazard statement		
Hydrobromic acid	10035-10-6	Undetermined	-	No	Yes	Liquid	10,000	L	No - not classified as hazardous and no relevant hazard statement		
Hydroxylamine Solution	7803-49-8	Not Listed	H351, H400	Yes	Yes	Liquid	520	L	Yes - Relevant Hazard Statements (H351 and H400)		
Imagabalin Step 1	Unknown	Unknown	Unknown	Yes	Yes	Solid	19,300	kg	No - Material is a Solid		
Imidazole	288-32-4	Not Listed	H360D	Yes	No	Solid	<250	kg	No - Material is a Solid		
lodine	7553-56-2	Non-Hazardous	H400	Yes	Yes	Solid	14,000	kg	No - Material is a Solid		
Isopropanol IPA (Recovered, Spent)	67-63-0	Undetermined	_	No	Yes	Liquid	50,000	L	No - not classified as hazardous and no		
Isopropanol IPA	67-63-0	Undetermined	-	No	Yes	Liquid	50,000	L	relevant hazard statement No - not classified as hazardous and no		
Isopropylmagnesium chloride/THF	109-99-9 (THF)	Not Listed	H351	Yes	Yes	Liquid	20.000	L	relevant hazard statement  Yes - Relevant Hazard Statement (H351)		
Lasofoxifene	190791-29-8	Not Listed	H360, H410	Yes	No	Solid	<250	kg	No - Material is a Solid		
Latanoprost API	130209-82-4	Not Listed	H360D, H413	Yes	No	Solid	<250		No - Material is a Solid		
Linezolid	165800-03-3	Not Listed Not Listed	,		No No	Solid	<250	kg			
Lithium Hexamethyldisilazide (20% in THF)			H411	Yes				kg	No - Material is a Solid		
` ` ` `	109-99-9 (THF)	Not Listed	H351	Yes	Yes	Liquid	2,000	L	Yes - Relevant Hazard Statements (H351)		
Magnesium	7439-95-4	Undetermined	-	No	No	Solid	<250	kg	No - Material is a Solid		
Magnesium Sulphate, Heptahydrate	10034-99-8	Undetermined	-	No	Yes	Solid	4,932	kg	No - Material is a Solid		
Meglumine	6284-40-8	Not Listed	H351, H360	Yes	No	Solid	<250	kg	No - Material is a Solid		
Meldrum's Acid	2033-24-1	Not Listed	H400, H411	Yes	Yes	Solid	2,000	kg	No - Material is a Solid		
Methoxycetate	839705-03-2	Not Listed	H412	Yes	Yes	Solid	3,000	kg	No - Material is a Solid		
Methyl ethyl ketone MEK	78-93-3	Undetermined	-	No	Yes	Liquid	555,000	L	No - not classified as hazardous and no relevant hazard statement		
Methyl iodide	74-88-4	Not Listed	H351	Yes	Yes	Liquid	3,000	L	Yes - Relevant Hazard Statement (H351)		
Methyl(5R)-3-cyano-5-methyloctanoate	-	Unknown	Unknown	Yes	Yes	Liquid	139,000	L	Yes - Hazard Statements and Classification are not known		
Nafoxidine HCI	1847-63-8	Not Listed	H351	Yes	Yes	Solid	300	kg	No - Material is a Solid		
n-Butyl-di-tertbutyl phosphonium tetrafluoroborate	1816254-91-7	Not Listed	H401	Yes	No their	Solid	<250	kg	No - Material is a Solid		
N-Chlorosuccinimide	128-09-6	Not Listed	H412	Yes	Yes, Other	Solid	4,000	kg	No - Material is a Solid		
n-Heptane	142-82-5	Not Listed	H400, H410	Yes	only was	Liquid	400,000	L	Yes - Relevant Hazard Statements (H400		
n-Hexane	110-54-3	Not Listed	H411	Yes	SOT Yes	Liquid	320	L	and H410) Yes - Relevant Hazard Statement (H411)		
Nitric Acid	7697-37-2	Undetermined	-	No SS	No No	Liquid	<250	L	No - Quantity below 250 L / 250 kg		
N-Methyl Pyrrolidone	872-50-4	Not Listed	H360D	waith i	Yes	Liquid	103.000	L	Yes - Relevant Hazard Statement (H360D)		
N-Pentane (Not used - too hazardous)	109-66-0	Not Listed	H411	25 CO.	Yes	Liquid	5,000	L	Yes - Relevant Hazard Statement (H3005)		
			11054	HOVEL !	Tes No.						
N-Trifluoroacetyldaunomycinone	51996-45-3	Not Listed	H351	Yes Yes Yes No N	No	Solid	<250	kg	No - Material is a Solid		
Oxytetracycline Base	79-57-2	Not Listed	H360D, H400, H446	Yes	Yes	Solid	7,000	kg	No - Material is a Solid		
Oxytetracycline HCI	2058-46-0	Non-Hazardous	H410 H341, N411 (Final	res	Yes	Solid	3,000	kg	No - Material is a Solid		
Palbociclib Step 2 (PF-00266998)	-	Not Listed	Product	Yes	Yes	Solid	4,500	kg	No - Material is a Solid		
Palbociclib Step 3 (PD-00332991)	571190-30-2	Not Listed	H360D	Yes	Yes	Solid	4,500	kg	No - Material is a Solid		
Palladium acetate	3375-31-3	Not Listed	H400, H410, H413	Yes	Yes	Solid	990	kg	No - Material is a Solid		
Parecoxib 3	181695-72-7	Not Listed	H411	Yes	Yes	Solid	500	kg	No - Material is a Solid		
Parecoxib Sodium API; Parecoxib Step	198470-85-8	Not Listed	H360	Yes	Yes	Solid	1,100	kg	No - Material is a Solid		
Parecoxib Step 3	181695-72-7	Not Listed	H410	Yes	Yes	Solid	1,150	kg	No - Material is a Solid		
PD 0332334 (PD-332,334 Step 4/4R)	-	Unknown	Unknown	Yes	Yes	Solid	1,200	kg	No - Material is a Solid		
PD-0326503	281214-27-5	Unknown	Unknown	Yes	Yes	Solid	400	kg	No - Material is a Solid		
PD-348292	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid		
Pearlman's Catalyst (PdOH on C)	12135-22-7	Not Listed	H413	Yes	No	Solid	<250	kg	No - Material is a Solid		
PF 0110529 (PD-332,334 Step 2)	-	Unknown	Unknown	Yes	Yes	Liquid	3,000	L	Yes - Hazard Statements and Classification are not known		
PF 0137611 (PD-332,334 Step 3)	-	Unknown	Unknown	Yes	Yes	Liquid	2,100	L	Yes - Hazard Statements and Classification are not known		
PF 04579767	-	Unknown	Unknown	Yes	Yes	Liquid	3,500	L	Yes - Hazard Statements and Classification are not known		
PF-00087132	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid		
PF-00146786	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid		
PF-00172516 (Palbociclib RSM)	-	Unknown	Unknown	Yes	Yes	Solid	3,500	kg	No - Material is a Solid		
PF-00248529	-	Unknown	Unknown	Yes	Yes	Solid	25,000	kg	No - Material is a Solid		
PF-00477380 (Palbo Sidechain RSM PrN/A	-	Unknown	Unknown	Yes	Yes	Solid	2,600	kg	No - Material is a Solid		
PF-00483932	_	Unknown	Unknown	Yes	No.	Solid	<250	-	No - Material is a Solid		
PF-00483932 PF-00610355	-				No No	Solid	<250	kg			
PF-00868554	-	Unknown	Unknown	Yes	Yes	Solid		kg	No - Material is a Solid		
		Unknown	Unknown	Yes			20,000	kg	No - Material is a Solid Yes - Hazard Statements and		
PF-00995664	-	Unknown	Unknown	Yes	Yes	Liquid	2,000	L	Classification are not known		
PF-01663710 (Palbociclib RSM)	-	Unknown	Unknown	Yes	Yes	Solid	3,700	kg	No - Material is a Solid		
PF-02575329 (Crizotinib - RSM)	-	Unknown	Unknown	Yes	Yes	Solid	3,200	kg	No - Material is a Solid		
	-	Unknown	Unknown	Yes	Yes	Solid	40,000	kg	No - Material is a Solid		
PF-02872822-15	_	Unknown	Unknown	Yes	Yes	Solid	40,000	kg	No - Material is a Solid		
PF-02872822-15 PF-03018341	-		Unknown	Yes	Yes	Solid	3,500	kg	No - Material is a Solid		
	874208-98-7	Unknown	Unknown								
PF-03018341		Unknown	Unknown	Yes	Yes	Solid	40,000	kg	No - Material is a Solid		
PF-03018341 PF0346643 (PD-332,334 Step 1)	874208-98-7	-		Yes Yes	Yes Yes	Solid	40,000	kg kg	No - Material is a Solid No - Material is a Solid		
PF-03018341 PF0346643 (PD-332,334 Step 1) PF-048003280	874208-98-7	Unknown	Unknown								
PF-03018341 PF0346643 (PD-332,334 Step 1) PF-048003280 PF-04803284	874208-98-7	Unknown	Unknown	Yes	Yes	Solid	40,000	kg	No - Material is a Solid		
PF-03018341 PF0346643 (PD-332,334 Step 1) PF-048003280 PF-04803284 PF-04850741	874208-98-7	Unknown Unknown Unknown	Unknown Unknown Unknown	Yes Yes	Yes Yes	Solid Solid	40,000 40,000	kg kg	No - Material is a Solid No - Material is a Solid		
PF-03018341 PF0346643 (PD-332,334 Step 1) PF-048003280 PF-04803284 PF-04850741 PF-04881286-15	874208-98-7 - -	Unknown Unknown Unknown Unknown	Unknown Unknown Unknown Unknown	Yes Yes Yes	Yes Yes Yes	Solid Solid Solid	40,000 40,000 40,000	kg kg kg	No - Material is a Solid No - Material is a Solid No - Material is a Solid		
PF-03018341 PF0346643 (PD-332,334 Step 1) PF-04800380 PF-04803284 PF-0485741 PF-04881286-15 PF-04905420	874208-98-7	Unknown Unknown Unknown Unknown Unknown	Unknown Unknown Unknown Unknown Unknown	Yes Yes Yes Yes	Yes Yes Yes Yes	Solid Solid Solid Solid	40,000 40,000 40,000 40,000	kg kg kg kg	No - Material is a Solid  No - Material is a Solid  No - Material is a Solid  No - Material is a Solid		

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		Stage 1				Stage 2				
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance	
PF-04965842 Step 3 (PF-0705579)		Substances Unknown			Yes	On-Site Solid		lea .	No - Material is a Solid	
PF-04965842 Step 4 (PF-03817968-09)N/A		Unknown	Unknown	Yes Yes	Yes	Solid	3,522	kg	No - Material is a Solid	
PF-04965842 Step 5 (PF-04965842-01)N/A					Yes	Solid	.,	kg		
PF-04965842 Step 6 (PF-04965842)		Unknown	Unknown	Yes Yes	Yes	Solid	4,320	kg	No - Material is a Solid  No - Material is a Solid	
PF-05150152 (Crizotinib - RSM)	-	Unknown	Unknown	Yes	Yes	Solid	4,100	kg kg	No - Material is a Solid	
PF-06238566 (JAK1 - PF-04965842 RSN/A		Unknown	Unknown	Yes	Yes	Solid	4,100	-	No - Material is a Solid	
PF-06425000-13	-	Unknown	Unknown	Yes	Yes	Solid	15,500	kg kg	No - Material is a Solid	
PF-06428297	1298086-15-3	Unknown				Solid	7.200	-	No - Material is a Solid	
	1298086-15-3		Unknown	Yes	Yes		,	kg		
PF-06460201-02 Trisodium Salt (RivipaNot Availal	-	Unknown	Unknown	Yes	Yes	Solid	300	kg	No - Material is a Solid	
PF-06460259-01 (Rivipansel Step 3)	-	Unknown	Unknown	Yes	Yes	Solid	1,900	kg		
PF-06460260 (Rivipansel Step 4)	-	Unknown	Unknown	Yes	Yes	Solid	1,700	kg	No - Material is a Solid	
PF-06460270 Crude (Rivipansel Step 6)N/A	-	Unknown	Unknown	Yes	Yes	Solid	700	kg	No - Material is a Solid	
PF-06460270 Zwitterion (Rivipansel SteN/A	-	Unknown	Unknown	Yes	Yes	Solid	700	kg	No - Material is a Solid	
PF-06478031-01 (Lorlatinib RSM)	1643141-20-1	Unknown	Unknown	Yes	Yes	Solid	1,300	kg	No - Material is a Solid	
PF-06668559;	-	Unknown	Unknown	Yes	Yes	Solid	2,340	kg	No - Material is a Solid	
PF-06684137 t-Amyl alcohol solvate	-	Unknown	Unknown	Yes	Yes	Solid	6,000	kg	No - Material is a Solid	
PF-06739408	-	Unknown	Unknown	Yes	Yes	Solid	11,000	kg	No - Material is a Solid	
PF-06811569 (Lorlatinib RSM)	1803573-19-4	Unknown	Unknown	Yes	Yes	Solid	1,600	kg	No - Material is a Solid	
PF-06841215 (Lorlatinib RSM)	1803573-21-8	Unknown	Unknown	Yes	Yes	Solid	3,500	kg	No - Material is a Solid	
PF-06961030 (Crisaborole Step 1)	-	Unknown	Unknown	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
PF-3315293	-	Unknown	Unknown	Yes	Yes	Solid	35,000	kg	No - Material is a Solid	
PF-6463922;	-	Unknown	Unknown	Yes	Yes	Solid	500	kg	No - Material is a Solid	
PF-982,260	-	Unknown	Unknown	Yes	Yes	Solid	18,400	kg	No - Material is a Solid	
PHA-404620	-	Unknown	Unknown	Yes	Yes	Solid	850	kg	No - Material is a Solid	
PHA-728669F	-	Unknown	Unknown	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
PHA-84176	364068-16-6	Unknown	Unknown	Yes	Yes	Solid	865	kg	No - Material is a Solid	
Phosphoric acid	7664-38-2	Non-Hazardous	-	No	Yes	Liquid	26,000	L	No - not classified as hazardous and no relevant hazard statement	
Pickling Paste	7697-37-2	Undetermined	-	No	No	Paste	<250	kg	No - Material is a Solid	
Piperazine dihydrochloride/ dihydrobromide	142-64-3	Not Listed	H412	Yes	Yes	Solid	1,300	kg	No - Material is a Solid	
Piroxicam	36322-90-4	Not Listed	H360D	Yes	Yes the	Solid	3,500	kg	No - Material is a Solid	
Potassium acetate	127-08-2	Undetermined	-	No	Yes offer	Solid	530	kg	No - Material is a Solid	
Potassium dihydrogen Phosphate	7778-77-0	Non-Hazardous	-	No	V 1 0/00	Solid	740	kg	No - Material is a Solid	
Potassium hydroxide	1310-58-3	Undetermined	-	No o	Yes Yes	Solid	1,300	kg	No - Material is a Solid	
Potassium permanganate	7722-64-7	Not Listed	H400, H410	Yes 205	Yes	Solid	1,400	kg	No - Material is a Solid	
Prazosin 4	-	Unknown	Unknown	Yell? (1)	Yes	Solid	1,000	kg	No - Material is a Solid	
Pregabalin Cyanodiester	186038-82-4	Not Listed	H411	Offres, To	Yes Yes Yes	Solid	400	kg	No - Material is a Solid	
Pregabalin Cyanomonoester	181289-17-8	Unknown	Unknown		Yes	Solid	700	kg	No - Material is a Solid	
Propylene Glycol	57-55-6	Undetermined	- Unknown	No	No	Liquid	<250	L	No - not classified as hazardous and no relevant hazard statement	
PSSK+ (PF-06047089 20% Aq Soln)	-	Unknown	Unknown	Yes	Yes	Liquid	800	L	Yes - Hazard Statements and Classification are not known	
Raney Nickel Catalyst	7440-02-0	Not Listed	H351, H412	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Rapamycin Crystal Crude (Process II)	53123-88-9	Not Listed	<b>£</b> 1351	Yes	No	Solid	<250	kg	No - Material is a Solid	
Reboxetine Methane Sulfonate API	98769-84-7	Not Listed	H360	Yes	Yes	Solid	1,800	kg	No - Material is a Solid	
Reboxetine Methane Sulfonate Step 6	98769-76-6	Unknown	Unknown	Yes	Yes	Solid	4,500	kg	No - Material is a Solid	
Rhodium trichloride	10049-07-7	Not Listed	H413	Yes	No	Solid	<250	kg	No - Material is a Solid	
Rhodium/C Catalyst	7440-16-6	Not Listed	H413	Yes	No	Solid	<250	kg	No - Material is a Solid	
Ribavirin Step 1	897977-67-1	Unknown	Unknown	Yes	Yes	Solid	10,000	kg	No - Material is a Solid	
Ribavirin Step 5	39925-11-6	Unknown	Unknown	Yes	Yes	Solid	15.000	kg	No - Material is a Solid	
Ribavirin Step 6	36791-04-5	Not Listed	H341, H360	Yes	Yes	Solid	8,000	kg	No - Material is a Solid	
Ribavirin Step 7	36791-04-5	Not Listed	H341, H360	Yes	Yes	Solid	7.000	kg	No - Material is a Solid	
Rivipansel Sodium (PF-06460031-02)	1189037-60-2	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Roclean 3	50-00-0	Non-Hazardous	H350	Yes	No	Liquid	<250	L L	No - Quantity below 250 L / 250 kg	
Sertraline HCI	79559-97-0	Not Listed	H400	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
Sertraline Step 2 mandelate	79617-97-3	Not Listed	H400, H410	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
Sertraline Step 3 mandelate	79617-97-3	Not Listed	H400, H410	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
Shell Diala BG	64742-53-6	Not Listed Not Listed	H400, H410	Yes	Yes	Liquid	400	kg L	Yes - Relevant Hazard Statement (H350)	
Sildenafii Ester (PF-01209642)	304435-84-5	Not Listed Unknown	H350 Unknown	Yes	Yes	Solid			Yes - Relevant Hazard Statement (H350)  No - Material is a Solid	
Sildenafii Ester (PF-01209642) Sildenafii step 1	JUN#30-84-0				Yes	Solid	15,000 950	kg		
	- 	Unknown	Unknown	Yes				kg	No - Material is a Solid	
	755-83-2 (as f300-	Not Listed	H412	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Sildenafil steps 2/2R	139755-83-2	Not Listed	H412	Yes	Yes	Solid	830	kg	No - Material is a Solid	
Sodium Bisulphite	7631-90-5	Undetermined	-	No	No	Solid	<250	kg	No - Material is a Solid	
Sodium Borohydride	16940-66-2	Not Listed	H360	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Sodium Bromate	7789-38-0	Not Listed	H350	Yes	Yes	Liquid	4,511	L	Yes - Relevant Hazard Statement (H350)	
Sodium Bromide	7647-15-6	Not Listed	H360	Yes	Yes	Solid	263	kg	No - Material is a Solid	
Sodium Carbonate	497-19-8	Undetermined	-	No	Yes	Solid	3,500	kg	No - Material is a Solid	
	141-53-7	Undetermined	-	No	No	Solid	<250	kg	No - Material is a Solid  Ves - Relevant Hazard Statements (H400)	
Sodium Formate		Non-Hazardous	H400, H410	Yes	Yes	Liquid	240,000	L	Yes - Relevant Hazard Statements (H400 and H410)	
Sodium Hypochlorite	7681-52-9			Yes	No	Solid	<250	kg	No - Material is a Solid	
Sodium Hypochlorite Sodium Iodide	7681-82-5	Not Listed	H400							
Sodium Hypochlorite		Not Listed Undetermined	H400 -	No	Yes	Solid	14,000	kg	No - Material is a Solid	
Sodium Hypochlorite Sodium Iodide	7681-82-5				Yes Yes	Solid Solid	14,000 10,000	kg kg	No - Material is a Solid No - Material is a Solid	
Sodium Hypochlorite Sodium Iodide Sodium Metabisulphite	7681-82-5 7681-57-4	Undetermined	-	No			,			
Sodium Hypochlorite Sodium Iodide Sodium Metabisulphite Sodium Mitrite	7681-82-5 7681-57-4 7632-00-0	Undetermined Not Listed	- H400	No Yes	Yes	Solid	10,000	kg	No - Material is a Solid	
Sodium Hypochlorite Sodium Iodide Sodium Metabisulphite Sodium Nitrite Sodium Sulphide	7681-82-5 7681-57-4 7632-00-0 1313-82-2	Undetermined  Not Listed  Not Listed	- H400 H400	No Yes Yes	Yes Yes	Solid Solid	10,000	kg kg	No - Material is a Solid	

Appendix B Table 1 - Stages 1 and 2 Page 5 of 6

		Stage 1				l		Stage 2		
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous Substances	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored On-Site	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance	
Spectrus NX1101 -GE BETZ	52-51-7	Hazardous	H401, H411	Yes	Yes	Liquid	400	L	Yes - Relevant Hazard Statement (H401 and H411)	
Spectrus OX1203 -GE BETZ	32718-18-6	Hazardous	H400	Yes	Yes	Liquid	350	L	Yes- Relevant Hazard Statement (H400)	
Succinic Acid	110-15-6	Not Listed	H340, H350	Yes	Yes	Solid	700	kg	No - Material is a Solid	
Sulphuric acid (conc)	7664-93-9	Undetermined	11040, 11000	No	Yes	Liquid	17.000	L	No - not classified as hazardous and no	
Sunitinib Malate							,,,,,		relevant hazard statement	
	341031-54-7	Not Listed	H360	Yes	Yes	Solid	400	kg	No - Material is a Solid	
Sunitnib Malate API	341031-54-7a	Not Listed	H360D, H410	Yes	No	Solid	<250	kg	No - Material is a Solid	
Sunitnib Malate Crude	341031-54-7b	Not Listed	H360D, H410	Yes	No	Solid	<250	kg	No - Material is a Solid	
Superscent 'B'	-	Unknown	Unknown	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg	
Tafamidis API Meglumine Salt / Tafamidi	951396-08-7	Not Listed	H360D	Yes	No	Solid	<250	kg	No - Material is a Solid	
Tafamidis Free Acid API / Tafamidis Ste	594839-88-0	Not Listed	H360	Yes	No	Solid	<250	kg	No - Material is a Solid	
Tafamidis Step 1	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Talazoparib Step 2A (PF-06946658-27)1322616-3	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Talazoparib Step 2B (PF-06946658)	1322616-36-1	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Talazoparib Step 3 (PF-06946657-GF)	1872214-59-9	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Talazoparib Step 4 / 4R (PF-06946657)	373329-52-2	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
	3/3329-32-2							-		
t-BAUS (Pregabalin Asymmetric RM)	•	Unknown	Unknown	Yes	Yes	Solid	3,780	kg	No - Material is a Solid	
TBC 11251 (Sitaxsentan Step 4)	210421-74-2	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
TBC 3656 (5-Amino-4-Chloro-3-Methylis166964-0	-	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
TBC 3657 (Methyl 3-chlorosulfonylthioph	59337-92-7	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
TBC 3658 (Sitaxsentan Step 1)	184040-72-2	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
TBC 3659 (Sitaxsentan Step 2)	210421-71-9	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
TBC 3661 (5-(Chloromethyl)-6-methyl-1,	117661-72-0	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
TEMSIROLIMUS 1 (WAY-188318)	839720-26-7	Not Listed	H360D, H360F, H410	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg	
TEMSIROLIMUS API (PARENTERAL)	162635-04-3	Not Listed	H360D, H360F, H410	Yes	No	Solid	<250	kg	No - Material is a Solid	
Temsirolimus Step 1 (WAY-188318)										
, , , , ,	839720-61-5	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid	
Tenidap 1	10059-06-2	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Tenidap 2/2R	10059-27-7	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Tenidap 3/4	10059-27-7	Unknown	Unknown	Yes	Yes	Solid	800	kg	No - Material is a Solid	
Tert-Butylmagnesium Chloride in THF	109-99-9 (THF)	Not Listed	THF (H351)	Yes	Yes	Liquid	1,000	L	Yes - Relevant Hazard Statement (H351)	
Tetrahydrofuran (THF)	109-99-9	Not Listed	H351	Yes	Yes VC	Liquid	760,000	L	Yes - Relevant Hazard Statement (H351)	
Tetralone	79560-19-3	Not Listed	H410	Yes	Yes Yes	Solid	4,500	kg	No - Material is a Solid	
Tetralone, crude	79560-19-3	Not Listed	H410	Yes	14.10	Solid	5,000	kg	No - Material is a Solid	
Tetra-N-butyl ammonium bromide	1643-19-2	Not Listed	H412	Ves	Yes No	Solid	<250	kg	No - Material is a Solid	
Tetra-N-Butyl-Ammonium hydrogen sulphate	32503-27-8	Not Listed	H412	Ym (S	Yes	Solid	500	kg	No - Material is a Solid	
			H412	vail o	NO 168			-		
Tigeycline API	220620-09-7	Not Listed	H360D, H400, H411	20,000	No	Solid	<250	kg	No - Material is a Solid	
Tigecycline Step 1	-	Unknown	Unknown	TOTY YEST	Yes	Solid	481	kg	No - Material is a Solid	
Tigecycline Step 3	-	Unknown	Unknown	Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes	No	Solid	<250	kg	No - Material is a Solid	
Tigecycline Step 4, Crude	220620-09-7	Not Listed	H360 H36	Yes	No	Solid	<250	kg	No - Material is a Solid	
Tigecycline Step 5	220620-09-7	Not Listed	H366	Yes	No	Solid	<250	kg	No - Material is a Solid	
Tioconazole 7N	65899-73-2	Not Listed	H410	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
Tioconazole 6	65899-73-2	Not Listed	\$1410	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
Tioconazole 7R	65899-73-2	Not Listed	H410	Yes	Yes	Solid	2,000	kg	No - Material is a Solid	
Tolterodine L-Tartrate	124937-52-6	Not Listed	H411	Yes	Yes	Solid	508	kg	No - Material is a Solid	
Tolterodine Tartrate API	124937-52-6	Not Listed	H360D, H411	Yes	Yes	Solid	500	kg	No - Material is a Solid	
							***			
Tolterodine Tartrate Step 1	40546-94-9	Not Listed	H412	Yes	Yes	Solid	800	kg	No - Material is a Solid	
Toluene	108-88-3	Hazardous	-	Yes	Yes	Liquid	1,200,000	L	Yes - Classified as 'Hazardous'	
Torcetrapib Step 1	-	Unknown	Unknown	Yes	Yes	Solid	16,000	kg	No - Material is a Solid	
Torcetrapib Step 2	667937-05-5	Unknown	Unknown	Yes	Yes	Solid	1,600	kg	No - Material is a Solid	
Torcetrapib Step 4	-	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Torcetrapib Step 5	-	Unknown	Unknown	Yes	Yes	Solid	1,000	kg	No - Material is a Solid	
Tributylamine	102-82-9	Not Listed	H412	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg	
Triethylsilane	617-86-7	Not Listed	H400, H410, H412	Yes	Yes	Liquid/Gas	425	L	Yes - Relevant Hazard Statements (H400,	
Trifluoroacetic Acid	76-05-1	Not Listed	H412	Yes	Yes	Gas	3,500	L	H410 and H412) No - Material is a Gas	
Trimethyl Borate	121-43-7	Not Listed	H360D H360E	Yes	No		<250	L	No - Quantity below 250 L / 250 kg	
,						Liquid			, ,	
Triphenylphosphine	603-35-0	Not Listed	H413	Yes	Yes	Solid	700	kg	No - Material is a Solid	
Tris(2,3-epoxypropyl) isocyanurate (TGI	2541-62-9	Unknown	Unknown	Yes	Yes	Solid	24,200	kg	No - Material is a Solid	
Triton Rx/100	9036-19-5	Undetermined	H411, H412	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg	
Trovafloxacin 1	-	Unknown	Unknown	Yes	Yes	Solid	900	kg	No - Material is a Solid	
Trovafloxacin 1S	151860-15-0	Not Listed	H512	Yes	Yes	Solid	750	kg	No - Material is a Solid	
Trovafloxacin 2S	-	Unknown	Unknown	Yes	Yes	Solid	1,500	kg	No - Material is a Solid	
TrovAfloxacin 4S	151860-18-3	Unknown	Unknown	Yes	Yes	Solid	600	kg	No - Material is a Solid	
Trovafloxacin 5S	134677-60-4	Unknown	Unknown	Yes	Yes	Solid	360	kg	No - Material is a Solid	
Trovafloxacin Nucleus	100491-29-0	Not Listed	H411	Yes	Yes	Solid	660	kg	No - Material is a Solid	
UK-103,442	137234-87-8	Not Listed Not Listed	H411 H410			Solid	10.000	-	No - Material is a Solid  No - Material is a Solid	
				Yes	Yes		-,	kg		
UK-103,442 (Voriconazole RSM)	137234-87-8	Not Listed	H400, H410	Yes	No	Solid	<250	kg	No - Material is a Solid	
UK-111,975 (Eletriptan RSM)	143322-57-0	Not Listed	H410	Yes	No	Solid	<250	kg	No - Material is a Solid	
UK-111,975(Eletriptan RS)	143322-57-0	Not Listed	H400, H410	Yes	Yes	Solid	300	kg	No - Material is a Solid	
UK-143,108 (Sildenafil RSM)	194602-23-8	Unknown	Unknown	Yes	Yes	Solid	800	kg	No - Material is a Solid	
UK-292,679	-	Unknown	Unknown	Yes	Yes	Solid	400	kg	No - Material is a Solid	
	-	Unknown	Unknown	Yes	Yes	Solid	400	kg	No - Material is a Solid	
UK-294,193						l				
UK-294,193 UK-338,003	210538-44-6	Unknown	Unknown	Yes	Yes	Solid	400	kg	No - Material is a Solid	
UK-338,003	210538-44-6							kg ka		
		Unknown Unknown Unknown	Unknown Unknown Unknown	Yes Yes Yes	Yes Yes Yes	Solid Solid Solid	400 400 500	kg kg	No - Material is a Solid  No - Material is a Solid  No - Material is a Solid	

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	I	I	Stage	1		l		Stage 2	
Material/Substance	CAS Number	EPA's Classification of Hazardous and Non-hazardous Substances	Relevant Hazard Statement	Hazardous Substance	Annual Usage greater than 250 L / 250 kg	Physical State of Chemical Stored On-Site	Annual Usage (approximate)	Unit	Considered a Relevant Hazardous Substance
UK-365,147	-	Unknown	Unknown	Yes	Yes	Solid	600	kg	No - Material is a Solid
UK-369,003	-	Unknown	Unknown	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-369,003-26	-	Unknown	Unknown	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-372,484	-	Unknown	Unknown	Yes	Yes	Solid	600	kg	No - Material is a Solid
UK-382,048	-	Unknown	Unknown	Yes	Yes	Solid	300	kg	No - Material is a Solid
UK-385,204	-	Unknown	Unknown	Yes	Yes	Solid	300	kg	No - Material is a Solid
UK-390,957	364321-71-1	Unknown	Unknown	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-408,026	376348-65-1	Not Listed	H412	Yes	Yes	Solid	750	kg	No - Material is a Solid
UK-408,027-15	-	Unknown	Unknown	Yes	Yes	Solid	800	kg	No - Material is a Solid
UK-427,857	376348-65-1	Not Listed	H412	Yes	Yes	Solid	810	kg	No - Material is a Solid
UK-440,106	-	Unknown	Unknown	Yes	Yes	Solid	570	kg	No - Material is a Solid
UK-444,120	13054-81-4	Not Listed	H410	Yes	Yes	Solid	415	kg	No - Material is a Solid
UK-453,059	79370-78-8	Not Listed	H412	Yes	Yes	Solid	350	kg	No - Material is a Solid
UK-453,061	473924-12-9	Unknown	Unknown	Yes	Yes	Solid	800	kg	No - Material is a Solid
UK-453,453	-	Unknown	Unknown	Yes	Yes	Solid	580	kg	No - Material is a Solid
UK-453,464	376348-76-4	Not Listed	H412	Yes	Yes	Solid	750	kg	No - Material is a Solid
UK-453,465	-	Unknown	Unknown	Yes	Yes	Solid	580	kg	No - Material is a Solid
UK-458,143	473924-01-5	Unknown	Unknown	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-464,748	-	Unknown	Unknown	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
UK-471,138-40	-	Unknown	Unknown	Yes	Yes	Solid	1,200	kg	No - Material is a Solid
UK-66,418-15	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
UK-67,787-1 (Dofetilide RSM)	166943-39-1	Not Listed	H411	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-73,689	69999-16-2	Unknown	Unknown	Yes	Yes	Solid	260	kg	No - Material is a Solid
UK-8,793	3383-72-0	Not Listed	H412	Yes	No	Solid	<250	kg	No - Material is a Solid
UK-8,793 (Dofetilide RSM)	3383-72-0	Not Listed	H411	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-81,786-57	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
UK-84,440 139	756-01-7	Not Listed	H412	Yes	Yes	Solid	500	kg	No - Material is a Solid
UK-88,861-04	-	Unknown	Unknown	Yes	Yes	Solid	460	kg	No - Material is a Solid
Urea	57-13-6	Undetermined	-	No	Yes	Liquid	14,000	L	No - not classified as hazardous and no relevant hazard statement
Varenicline Step 2	-	Unknown	Unknown	Yes	Yes Ver	Solid	2,000	kg	No - Material is a Solid
Varenicline Step 4	-	Unknown	Unknown	Yes	Yes Yes	Solid	2,000	kg	No - Material is a Solid
Varenicline Tartrate API	375815-87-5	Not Listed	H410	Yes Yes Yes Yes Yes Yes Yes Yes Yes	ally and	Solid	<250	kg	No - Material is a Solid
Voriconazole Step 1 (UK-103,444)	137237-74-3	-	H400, H410	Yes	Yes Yes	Solid	10,000	kg	No - Material is a Solid
Voriconazole Step 2	137234-87-8	-	H400, H410	Yes 205	Yes	Solid	38,000	kg	No - Material is a Solid
Voriconazole Step 2 (UK-134,821)	78-67-1	Not Listed	H412	Yell? (1)	Yes	Solid	15,000	kg	No - Material is a Solid
Voriconazole Step 3 (UK-103,446-01)	188416-20-8	Not Listed	H360	OTYes, Te	Yes	Solid	17,000	kg	No - Material is a Solid
Voriconazole Step 4	-	Unknown	Unknown	CITAR	Yes	Solid	800	kg	No - Material is a Solid
Voriconazole Step 5	-	Unknown	Unknown	Yes	Yes	Solid	800	kg	No - Material is a Solid
Voriconazole Step 6	137234-62-9	Not Listed	H351, H400, H412	Yes	Yes	Solid	800	kg	No - Material is a Solid
Walphos SL-W001-2	849925-17-3	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
WAY 317 Step 1	-	Unknown	Uliknown	Yes	No	Solid	<250	kg	No - Material is a Solid
WAY 317 Step 1R	-	Unknown	Unknown	Yes	No	Solid	<250	kg	No - Material is a Solid
WAY-186478 (PF-05296712)	846023-24-3	Unknown	Unknown	Yes	Yes	Solid	690	kg	No - Material is a Solid
WAY-188471 (Bosutinib RSM)	92878-95-0	Not Listed	H411	Yes	Yes	Solid	500	kg	No - Material is a Solid
WAY-188471 (PF-0529677)	92878-95-10	Unknown	Unknown	Yes	Yes	Solid	880	kg	No - Material is a Solid
WAY189172 (step 3)	92878-95-10	Unknown	Unknown	Yes	Yes	Solid	1,298	kg	No - Material is a Solid
Xylene	1330-20-7	Hazardous	-	Yes	Yes	Liquid	137,000	L	Yes - Classified as 'Hazardous'
Xylene (Recovered, Spent)	1330-20-7	Hazardous	H412	Yes	Yes	Liquid	137,000	L	Yes - Relevant Hazard Statement (H412)
Zinc Dust	7440-66-6	Non-Hazardous	H410	Yes	Yes	Solid	18,000	kg	No - Material is a Solid
Ziprasidone 1S	118307-04-3	Unknown	Unknown	Yes	Yes	Solid	600	kg	No - Material is a Solid
Ziprasidone 2	118289-55-7	Not Listed	H410	Yes	No	Solid	<250	kg	No - Material is a Solid
Ziprasidone 2S	118289-55-7	Not Listed	H400, H410	Yes	Yes	Solid	600	kg	No - Material is a Solid
Ziprasidone 4 Mesylate	-	Unknown	Unknown	Yes	No	Liquid	<250	L	No - Quantity below 250 L / 250 kg
Ziprasidone Nucleus	87691-88-1	Not Listed	H410	Yes	No	Solid	<250	kg	No - Material is a Solid
Zopolrestat Step 1	-	Unknown	Unknown	Yes	Yes	Liquid	1,400	L	Yes - Hazard Statements and Classification are not known
Zopolrestat Step 2 / 3	110703-94-1	Not Listed	H413	Yes	Yes	Liquid	1,400	L	Yes - Relevant Hazard Statement (H413)

			Stage 3		
Material/Substance	Storage Location	Transportation Method	Containment Measures	Likelihood of Release to Open Ground	To be Monitored as a Relevant Hazardous Substance - Rationale
1,2 Dimethoxyethane	Stored in drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
1,2-Dichlorobenzene	No longer used on site, historically held in USTs in the Northern and Southern UST Tank Farm	No longer used or stored on site	No longer used or stored on site	No longer used or stored on site	No - No longer used on site and has not been detected during site investigation
1,8- Diazabicyclo[5.4.0]undec-7- ene	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
2,2,4-Trimethylpentane	No longer used on site, historically held in USTs in the Northern and Southern UST Tank Farm	No longer used or stored on site	No longer used or stored on site	No longer used or stored on site	Yes - As VOC TIC, historically stored without secondary containment and has not been sampled as part of groundwater suite
Ammonium Hydroxide	Stored in 50 kg drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Benzene	No longer used on site, historically held in USTs in the former Northern and Southern UST Farms	No longer used or stored on site	No longer used on site	Very Low - No longer used or stored on site	Yes - Has been detected in routine groundwater monitoring
Bromine	No longer used on site, historically held in 200 litre drums located in the Drum Store	No longer used or stored on site	No onge used or stored on site	No longer used or stored on site	No - No longer stored on site, historically stored in small quantities only
Chloroacetyl Chloride	Stored in 50 kg drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small contained with the covered drum pad. A leak would be limited to the quantity of the drum. The Drimpad drains through the weak effluent system to the WWTP. Transported to point you get by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water stepfion pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Chloroform	No longer used on site, historically held in USTs in the former Northern and Southern UST Farms	No longer used or stored on site	storm water-telephon pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  No longer used or stored on site  Storage lank is bunded providing secondary containment. Bund contents may be discharged.	Very Low - No longer used or stored on site	Yes - Has been detected in routine groundwater monitoring
Cyclohexane	Stored in bulk AST in the Main Tank Farm and 200 litre drums located in the Drum Store. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines. Drums transported by forklith	through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water outfall diverting the pullage to the storm water retaining one. The spillage can then be bandled by official	Low - Suitable containment measures in place	Yes - Has been detected in routine groundwater monitoring
Cyclohexylmagnesium chloride in THF	Cylinder	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Cyclopentylamine	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Dianodic DN2301 -GE BETZ	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only

			Stage 3		
Material/Substance	Storage Location	Transportation Method	Containment Measures	Likelihood of Release to Open Ground	To be Monitored as a Relevant Hazardous Substance - Rationale
Dichloromethane	Stored in bulk AST in the Main Tank Farm and 200 litre drums located in the Drum Store. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines. Drums transported by forklift	Storage tank is bunded providing secondary containment. Bund contents may be discharged through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Has been detected in routine groundwater monitoring
Diesel (Low Sulphur Fuel)	Diesel is stored in eight bunded ASTs located across site near it's point of use	Delivered to site by tanker. Transported across site and to point of use though pipelines	Storage tank is bunded providing secondary containment. Bund contents may be discharged through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water ortifuld diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Stored in bulk
Dimethyl Aniline	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Dimethylacetamide	No longer stored on site	No longer stored on site	No longer stored on site	Very Low - No longer used or stored on site	Yes - As VOC TIC, may have been stored in bulk historically
Dimethylformamide	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spit entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can that be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Dowtherm J	Stored in a bulk AST within OSP 3	Delivered to site by tanker. Transported to points of use within OSP 3 though pipelines	Storage tank is bunded providing secondary containment. OSP3 drains to the weak effluent line providing remote tertiary containment in the event of a loss from primary and secondary containment. Losses from pipework will enter the weak effluent line.	Very Low - Secondary and tertiary containment provided	No - Secondary and tertiary containment in place
Esso Zerice 100	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpa drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention point. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Esso Zerice 68	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to boint of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Fluconazole Step 5	Stored in 50 kg drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the granitity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
Formaldehyde (37%)	No longer used on site, historically held in 200 litre drums located in the Drum Store	No longer used or stored on site	No longer used or stored on site	No longer used or stored on site	No - No longer stored on site, historically stored in small quantities only
Hydroxylamine Solution	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
lsopropylmagnesium chloride/THF	Stored in cylinders located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Lithium Hexamethyldisilazide (20% in THF)	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only

			Stage 3		
Material/Substance	Storage Location	Transportation Method	Containment Measures	Likelihood of Release to Open Ground	To be Monitored as a Relevant Hazardous Substance - Rationale
Methyl iodide	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Methyl(5R)-3-cyano-5- methyloctanoate	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
n-Heptane	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
n-Hexane	Stored in bulk AST in the Main Tank Farm. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines	Storage tank is bunded providing secondary containment. Bund contents may be discharged through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water ortall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Stored in bulk, and historically in single-skinned USTs
n-Methyl Pyrrolidone	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drup pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment or the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment or the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or the spillage can then be handled by off-site treatment or the spillage can then be a spillage to the spillage	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
PF 0110529 (PD-332,334 Step 2)	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The prumed drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention bond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
PF 0137611 (PD-332,334 Step 3)	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small ontainers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
PF 04579767	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
PF-00995664	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
PSSK+ (PF-06047089 20% Aq Soln)	Stored in drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only, product/intermediary
Shell Diala BG	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only

			Stage 3		
Material/Substance	Storage Location	Transportation Method	Containment Measures	Likelihood of Release to Open Ground	To be Monitored as a Relevant Hazardous Substance - Rationale
Sodium Bromate	No longer used on site, historically held in USTs in the Northern and Southern UST Farms	No longer used or stored on site	No longer used or stored on site	Very Low - No longer used or stored on site	Yes - As bromate, historically stored without secondary containment and has not been analysed as part of groundwater suite
Sodium Hypochlorite	Stored in IBCs located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Spectrus NX1101 -GE BETZ	205 I drum and 1,000 I IBC located in the drum store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Spectrus OX1203 -GE BETZ	Stored in 200 litre drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Tert-Butylmagnesium Chloride in THF	Stored in 25 kg drums located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pact. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Transported to point of use by drum. In the event of spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Tetrahydrofuran (Pure and Spent)	Stored in bulk AST in the Main Tank Farm and 200 litre drums located in the Drum Store. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines. Drums transported by forklift	Storage tank is bunded providing secondary containment. Bund contents may be discharged through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water outfall diverting the spillage to the storm water reportion pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Has been detected in routine groundwater monitoring
Toluene (pure and spent)	Stored in bulk AST in the Main Tank Farm and 200 litre drums located in the Drum Store. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines. Drums transported by forklift	Storage tank is builded providing secondary containment. Bund contents may be discharged through the week effluent system to the WWTP. In the event of a spill entering the storm water drainage spalem the diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Has been detected in routine groundwater monitoring
Triethylsilane	Stored in 90 kg cylinders located in the Drum Store	Transported across site by forklift in small quantities	Stored in small containers within the covered drum pad. A leak would be limited to the quantity of the drum. The Drumpad drains through the weak effluent system to the WWTP. Teinsported to point of use by drum. In the event of a spill entering the storm water system the automatic diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.	Very Low - stored, used and transported in small quantities	No - Stored in small quantities only
Xylene (Pure and Spent)	Stored in bulk AST in the Main Tank Farm. Historically stored in UST in the Northern and Southern UST Farms	Delivered to site by tanker. Transported across site and to point of use though pipelines	Storage tank is bunded providing secondary containment. Bund contents may be discharged through the weak effluent system to the WWTP. In the event of a spill entering the storm water drainage system the diversion valve will close to the storm water outfall diverting the spillage to the storm water retention pond. The spillage can then be handled by off-site treatment or treatment in the WWTP.  All pipework is located above ground.	Low - Suitable containment measures in place	Yes - Has been detected in routine groundwater monitoring
Zopolrestat Step 1	No longer stored on site	No longer stored on site	No longer stored on site	Very Low - No longer used or stored on site	No - No longer used on site, was a product/intermediary
Zopolrestat Step 2 / 3	No longer stored on site	No longer stored on site	No longer stored on site	Very Low - No longer used or stored on site	No - No longer used on site, was a product/intermediary

# **Appendix C Groundwater Trend Tables**

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Volatile Organic Compound	DIV	IGV	GTV								Drift							
Oldersenders				Dec-95	Jun-96	Dec-96	Jun-97	Dec-97	May-98	Jun-98	Jul-98	Nov-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	•	-	-	•	-	-	-	•	-	-	•	
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichloromethane	1	0.01	0.015	-	-	-	-	-	0.005	0.005	0.005	-	-	-	-	-	-	-
Acetone				0.83	-	-	-	-	0.053	0.053	0.053	-	-	-	-	-	-	0.028
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01	]		-		-					-	-				-		-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-		-			-	-	-			-		
cis-1,2-Dichloroethene	0.02		0.000375	-	-	-		-	-		-	-	-	-	-	-		-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	·6)*	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-		-	-		113	-	-			-		-
Butanone(MEK)				-	-	-	-	-	-	- 0	V -	-	-	-	-	-	-	-
1.1.1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	- 50	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-		-	14.	60.	-	-	-	-	-	-		-
4-Methyl-2-Pentanone(MIBK)						-		-	all)	· O ·	_	-	_			-	-	-
1,2-Dichloropropane				_	-	_		_	20'00	-	_	-	_	_	-	-	-	-
cis-1,3-Dichloropropene					_	-		- 0	<del>07 2 }</del>	-	_	_				_		_
Trichloroethene	0.5	0.01	0.0075					00				l				_		_
Tetrachloroethene	0.04	0.01	0.0075		-	-		JIP C	777			-				-		-
Dibromochloromethane	0.04	0.01	0.0075	-	-	-	-	2.5	<del>,</del> .	_	_	-	-	_	_	-	-	-
1,1,2-Trichloroethane		1			-	-	(	D 37 60		-	-	-				-		
Benzene	0.03	0.001	0.00075	6.7	1.9	1.6	1.3-	-8.77			-	11	-	0.12	0.005	0.19	0.017	0.037
trans-1,3-Dichloropropene	0.03	0.001	0.00073		<u>1.5</u>			37 -	-		-				0.003	<u>0.13</u>		
2-Hexanone(MBK)					-	-	ASP X	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane					-		100,100	-			-					-	-	-
Toluene	1	0.01	0.525		-		1,000	-			-	0.016		-		0.003		-
	0.18	0.001	0.525		-	ŶO,	3	-	-		-	0.016				0.003		-
Chlorobenzene												-						
Ethylbenzene	0.15	0.01		0.61	-	- <u>,</u> 0		-	-	-	-	-	-	-	-	-	-	-
Styrene	0.3			- 0.47	-	N 000	-	- 0.00	-	-	-	-	-	-	-	- 0.004	-	-
Xylenes(meta and para)		ļ		0.47	0.048	0.068	-	0.26	-	-	-	-	-	-	-	0.031		-
o-Xylene						OV -	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01		0.47	0.048	0.068	-	0.26	-	-	-	-	-	-	-	0.031	-	-
Freon 113		<b> </b>		-	_6	-	-	-		-	-	-	-	-	-	-	-	-
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	0.004	1.0	2.0	-	0.003	0.003	0.001	0.006	0.006	0.004
Vinyl Acetate				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX				7.8	1.9	1.7	1.3	1.0	-	-	-	1.1	-	0.12	0.005	0.22	0.017	0.037
Total VOCs		<u> </u>		8.6	1.9	1.7	1.3	1.0	0.062	1.1	2.1	1.1	0.003	0.12	0.006	0.23	0.023	0.069
Alcohols and VOA																		
Compounds																		
Methanol				-	-	-		-	-		-	2.2	-	-	-	-		-
Ethanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iso-Propanol				1.5	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115	0.88	0.24	0.19	0.21	0.31	0.083	0.083	0.083	0.21	0.064	0.46	0.053	2.3	0.31	0.051
Cyclohexane	15			0.040	0.030	0.040	-	-	0.018	0.018	0.018	-	0.021	0.016	-	0.110	0.734	0.128
Ethyl Acetate				-	-	-	-	-	-	-	-	-	-	-	_	-	-	-
		·						·				·				·		

											7							
Volatile Organic Compound	DIV	IGV	GTV	1400	Nov-02	1400	N 00	1404	N 04		Drift	1400	N 00	L M 07	L No. 07	L M 00	N 00	
Chloromethane				May-02	NOV-02	May-03	Nov-03	May-04	Nov-04	May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-		_		-	-		-	-		-	-	_	-	-
p-Isopropyltoluene					-	_	-	-		-	_	-					-	_
Bromomethane				-	_	-	_	_	_	_	_	-	_	-	-	_	_	-
Vinyl Chloride	0.005		0.000375	-	-	_	-	-		-	_	_		_	_	_	-	_
Isopropylbenzene	0.000		0.000070	-		-	-		-		-	-	-	-	-	-		-
Propylbenzene				-		<u> </u>			-	-	-	l	l	-	-	-		_
Chloroethane				-	-	_	-	-	-	-	-	-		-	-	_	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	-
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	0.007
Acetone	- '	0.01	0.013			-			-	-	0.01	-	0.01	0.014	0.012	-		0.007
Carbon Disulphide				0.009	-	-	-	-	-	-	-	-	-	-		-	-	-
1.1-Dichloroethane	0.9			0.003						-		-	-					-
1.1-Dichloroethene	0.9	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1.2-Dichloroethene		0.03				-		-	-	-	-	<del></del>	-	-	-	-		-
cis-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-		-	-	-	-	-	-	-	-		-
Bromoform		l	l	-		-			-	-	-	-	-	-	-	-		
Chloroform	0.4	0.012				-						_	_				-	
1,2-Dichloroethane	0.4	0.012	0.00225	-		-		-	-	-	100.	-	-	-	-	-	- :	-
Butanone(MEK)	0.4	0.003	0.00225					-			C.		-		-			-
		0.5		-	-	-	-		-	- 🚜	<u> </u>	-		-		-	-	
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	Olli	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-		-	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	77.	20	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-	-	-	-	-	0111	.0 .	-	-	-	-	-	-	-	na
1,2-Dichloropropane				-	-	-	-	-	S - XO	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	•	-	-	- ~	5 0	-	-	-	-	-	-	-	•	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	- 200	:10	-	-	-	-	-	-	-		-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	Jill's	<u>ν</u> .	-	-	-	-	-	-	-	-	-
Dibromochloromethane				-	-	-	-	25-50	٠ -	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	کین -	Dr of	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	0.004	<u>0.064</u>	0.026	-,0	700	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-		-	200	4	-	-	-	-	-	-	-	-		-
2-Hexanone(MBK)				-	-		1210	-	-	-	-	-	-	-	-	-		na
1,1,2,2-Tetrachloroethane				-			y. 62	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-	<b>₹</b> 0'	200	-	-	-	-	-	-	-	-	-	-	0.035
Chlorobenzene	0.18	0.001		-	-	.*	Q	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01				ى -			-	-	-	-	-		-	-		0.007
Styrene	0.3					O.			-	-	-	-	-	-	-	-		-
Xylenes(meta and para)						N.			-	-	-	-	-		-	-	•	0.027
o-Xylene					-	OV -			-	-	-	-	-	-	-	-		0.008
Total Xylene	0.07	0.01			- 3	-	-		-	-	-	-	-	-	-	-		0.035
Freon 113						-			-	-	-		-	-	-	-		na
Methyl t-butyl ether		0.03	0.01	0.002	0.003	0.004	0.002	-	-	-	0.002	0.001	-	-	-	-	-	-
Vinyl Acetate						-			-	-	-	-	-	-	-	-		na
Total BTEX				0.004	0.064	0.026	-	-	-	-	-	-	-	-	-	-	-	0.077
Total VOCs				0.015	0.067	0.030	0.002		-	-	0.012	0.001	0.010	0.014	0.012	0.002		0.084
Alcohols and VOA		l —																
Compounds		l				1			1	l		1	1					
Methanol		İ	İ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol		i e	1			-			-	-	-	-	-	-	-	-	-	-
iso-Propanol		i	l	-		-		-	-	-	-	-	-		-	-		-
Tetrahydrofuran	0.3	l	0.115	-	0.072	-		-	-	-	-	-	-	-	-	-	-	0.23
Cyclohexane	15	l	00	0.055	0.054	0.134	0.008	-	-	-	-	-	0.002	-	-	-	-	-
Ethyl Acetate	10	l	l	0.000	0.034	0.134	0.000	<b>—</b> .		-		<b>.</b>	0.002	<b>.</b>		<b>.</b>		
Luiyi / iociaic		·																

		1												,									
Volatile Organic Compound	DIV	IGV	GTV										Dr	ift									
Volatile Organic Compound	DIV	101	GIV	Nov-09	May-10	Nov-10	May-11	Nov-11	May-12	Nov-12	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	May-16	Nov-16	May-17	Nov-17	May-18	Nov-18	May-19
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene					-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane					-	-	-	-	-	-		-	-		-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	٠			٠		-	-	٠		-		-	-		-	-	-	-		-
Isopropylbenzene				٠			٠	-	-	-	٠	٠	-		-	-	-	-	-	-	-	-	-
Propylbenzene					-			-	-	-			-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015		-	-		-	-	-			-	-	-	-	-	-	-	-	-	-	-
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide							٠	-	-	-			-		-	-	-	na	na	na	na	na	na
1,1-Dichloroethane	0.9				-	-		-	-	-			-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01							-	-			-	-	-	-	-	-	-	-	-	-		-
trans-1,2-Dichloroethene	0.02	0.03	0.000375			-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000373		-	-			-	-		-	-		-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	-	-	0	· -	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225		-	-			-	-		-	112	-	-	-	-	-	-	-	-		-
Butanone(MEK)				٠			٠		-	-	٠		01		-	-		na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	-	-	-	Me	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01				-	-			-	-		- 4	0		-	-	-	-	-	-	-		-
Bromodichloromethane				٠			٠		-	-	٠	74.0	-		-	-		-	-	-	-		-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na	na	na	na 💍	pa	na										
1,2-Dichloropropane				-	-	-	-	-	-	-	-5	KOz	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				٠				-	-	-	) S	<b>\</b> ' -	-		-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-	-	-	20.26	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	-	-		11,411	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane				-	-	-	-	-	-	~~		-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	-	-	-	· OV	Ç * -	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	-	-	-	-	10 W	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-	-	-	-	-	- 🗸	0	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				na	na	na	na	na	na 🤝	na	na	na	na	na	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	-	-	-	$\mathcal{L}^{\mathcal{N}_{i}}$	Q.	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-	-	-	-	\$05 TC	_	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	0.18	0.001		-	-	-	-	-	1 20,	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		-	-	-	-	-	ر کی ع	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	0.3							-	ð ·				-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)				-	-	-	-	~~~	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene				-	-	-	-	COV.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01		-	-			all'	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Freon 113				na	na	na	na (	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	-	-	-	-	0.0003	-	-	-	-	-	-	0.0005	0.0002	0.0008	0.0018
Vinyl Acetate				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total VOCs				•	-	•	-	-	-	-	ē		-		-	-	-	-	-	0.0005	0.0002	0.0008	0.002
Alcohols and VOA																							
Compounds													l						ļ	ļ			ļ
Methanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol								-	-			-	-	-	-	-	-	-	-	-	-	-	-
iso-Propanol								-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115					-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Cyclohexane	15				-	-		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate						-		-	-	-		-	-	-		-	-	-	-	-	-		-

- Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV

Indicates result above IG
Indicates result above GTV

											205							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
				Jul-94	Feb-95	Dec-95	Jun-96	Dec-96	Jun-97	Dec-97	May-98	Sep-98	Nov-98	May-99	Nov-01	May-02	Nov-02	May-03
Chloromethane					-	-	0.24	-	-		-		-	-	-	-		
1,2,4-Trimethylbenzene				-		-		-			-		-		-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-		-		-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-		-		-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-		-		-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichloromethane	1	0.01	0.015	-		-		-	-	-	-	-	-	-	-	-	-	-
Acetone				33	32	220	110	100	-	54	-	-	-	-	-	-	-	-
Carbon Disulphide				-		-	-	-	-		-		-		-	-	-	
1,1-Dichloroethane	0.9			-	-	-	-	-		-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-		-	. يون	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	112	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	2.4	-	- 200	· -	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-		-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-		10.	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	77.	SO.	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				2.8	2.6	-	-	2.0	office	.0 .	-	-	-	-	-	-	-	-
1,2-Dichloropropane				-	-	-		-	S - XO	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	- 6	500	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	- 300	ite	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	Ollin	Ø' -	-	-			-	-	-	-	-
Dibromochloromethane 1,1,2-Trichloroethane			<b> </b>	-	-	-	(	9 x 10		-	-		-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-		-	- 3	0° 19			-				0.093	-	0.17	0.075
trans-1,3-Dichloropropene	0.03	0.001	0.00075	-	-	-		70.19	-		-				2.000	-		
2-Hexanone(MBK)					-	-	AST X	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane					-		150 . ST		-		-	-			-	-		-
Toluene	1	0.01	0.525	46	30	72,0	358	59	67	130	100	33	81	79	0.49	-	5.0	-
Chlorobenzene	0.18	0.001	0.525	40	-		0 -	33	-	-	-	33	01	13	0.49		5.0	
Ethylbenzene	0.15	0.001		12	7.2	8.4	10	6.5	4.3	3.8	3.0	3.0	3.6	4.5	2.7	2.0	2.7	1.3
Styrene	0.15	0.01		0.37	1.2	8.4 0	-	0.26	4.3	3.0	3.0	3.0	3.0	4.0	2.1	2.0	2.1	1.3
Xylenes(meta and para)	0.3			58	33	335	49	31	20	20	19	19	17	26	14	10	15	7.7
o-Xylene				13	8.9	27 11	11	7.7	4.3	5.1	4.0	3.6	3.3	6.0	0.25	-	1.7	7.7
Total Xylene	0.07	0.01		71	42	46	60	39	24	25	23	23	20	32	14	10	17	7.7
Freon 113	0.07	0.01		//	<del>- 42</del>	40	-	33	24	20	- 23	20	20	- 32	14	10	- 17	7.7
Methyl t-butyl ether		0.03	0.01	-		-	-				-	-		-	-	-		
Vinyl Acetate		0.03	0.01	0.23		-	-				-			-	-	-		-
Total BTEX				129	79	126	128	104	96	159	126	59	105	116	18	12	25	9.1
Total VOCs				165	114	346	238	209	96	213	126	59	105	116	18	12	25	9.1
Alcohols and VOA				100	117	040	200	200	- 30	210	120	- 55	100	110	- 10	12		3.1
Compounds															l			
Methanol				-	-	-	315	_	14	-	6.8	-	_	_	-	-	-	
Ethanol						-	-		14	8.5	1.9			-	-	-		-
iso-Propanol				141	183	-	77	57	6.4	35	6.8			1.3	-		- :	
Tetrahydrofuran	0.3		0.115	0.99	2.3	-	0.060	- 57	1.7	- 35	52	13	49	56	2.1	-	1.9	-
Cyclohexane	15		0.113	8.4	1.9	0.63	0.000	0.63	0.30		- 52	-	-	-	0.99	0.76	0.51	0.32
Ethyl Acetate	10	<b>.</b>		- 0.4	1.9	0.03	0.92	0.03	0.30		-			-	0.99	0.76	0.51	0.32
Luiyi Aceldle		1		-	•	-	•	-	•	•	-	•	-	•	<u> </u>	-	-	-

			1								205							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
				Nov-03	May-04	Nov-04	May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09	May-10	Nov-10
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-		-
p-Isopropyltoluene				-	-	-	-		-	-	-	-	-	-	-	-		-
Bromomethane				-	-	-	-		-	-	-	-	-	-	-	-		-
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-	•		•		-		-		-	-	-	-		-
Propylbenzene				-	-	-	-		-	-	-	-	-	-	-	-		-
Chloroethane				-	-	-	-	-	0.002	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	-			-
Dichloromethane	1	0.01	0.015	-	-	-	-		-	-	-	-	0.002	0.011	-	-		-
Acetone				-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-		-	-	-	-	-	-	-	-		-
1,1-Dichloroethane	0.9			-	-	-	-		-	-	-	-	-	-	-	-		-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		5.000075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform								-	-	-	-	-	-	-	-	-		-
Chloroform	0.4	0.012		-					-	-	<u>ر</u> ق.	-	-	-	-	-		-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	112	-	-	-	-	-	-	-
Butanone(MEK)					-	-	-	-	-	- 0	-	-	-	0.013	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5				-			-	10	-	-	-	-	-	-		-
Carbon Tetrachloride	0.01				-	-	-	-	-	10	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	74.	0	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-		-			Office &	· O -	-	-	-	-	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	- 50 KO	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	- 0	S8.	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-		-		.00	.16	-	-	-	-	-	-	-		-
Tetrachloroethene	0.04	0.01	0.0075	-		-		- III'	72	-	-	-	-	-	-	-		-
Dibromochloromethane				-	-	-	-	~ R0	· -	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane							(	Dr. Ch	-		-		-	-	-	-		-
Benzene	0.03	0.001	0.00075	0.030	-	0.023	0.035	100	-	-	0.024	-	-	0.018	-	0.022	-	-
trans-1,3-Dichloropropene					-	-	Se Co	7	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				-		-	VSX X	-	-	-	-	-	-	-	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	- 2	V. 69	-	-	-		-	-	-	-	-	-	-
Toluene	1	0.01	0.525	0.016		0.045	0.055		-	-	0.002	-	-	-	0.007	0.027	0.005	-
Chlorobenzene	0.18	0.001		-	-		6 -	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		0.088	-	0.034	0.095	-	-	-	-	-	-	0.20	0.003	0.084	-	-
Styrene	0.3	0.0.		-	-	0.00.0	-		-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)			1	1.0		1.9	1.1		-	-	-	0.035	-	0.97	0.13	1.6	0.006	-
o-Xylene				0.043	0.004	0.16	0.11		-	0.006	-	0.004	0.035	0.069	0.007	0.037	-	-
Total Xylene	0.07	0.01		1.0	0.004	2.1	1.2		-	0.006	-	0.039	0.035	1.0	0.14	1.6	0.006	-
Freon 113	0.07	0.01		-	6.00	-	-	-	_	-	-	-	-	-	na	na	na	na
Methyl t-butyl ether		0.03	0.01	-	0.071	0.072	0.036	-	0.03	0.026	-	0.046	0.078	0.15	1.8	14	9.2	4.9
Vinvl Acetate		0.00	0.01	-	-	- 0.0.2	-		-	0.020	-			0.10	na	na	na	na
Total BTEX				1.2	0.004	2.2	1.4		-	0.006	0.026	0.039	0.035	1.3	0.15	1.8	0.011	-
Total VOCs				1.2	0.075	2.2	1.4	0.015	0.032	0.032	0.026	0.085	0.115	1.4	1.9	16	9.2	4.9
Alcohols and VOA				1.2	0.070		1.7	0.010	0.002	0.002	0.020	0.000	0.110	1.7	1.5		J.2	7.5
Compounds									1	l		l						
Methanol			1		_	-	_	_	_	_	_	_		_	_	_	_	_
Ethanol									-	-	-	-	-	-	-	-	-	-
			<b> </b>	-	-	-	-	-			-	-	-		-	-	-	-
iso-Propanol	0.3		0.115	0.099	-	-	-	0.078	-	-	0.45			-	0.25	- 54		
Tetrahydrofuran			0.115									- 0.070	-				0.43	0.19
Cyclohexane	15			-	0.045	0.17	0.14	0.13	0.019	0.018	0.017	0.072	0.099	0.14	-	0.14	-	0.36
Ethyl Acetate				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Volatile Organic Compound  Chloromethane 1,2,4-Trimethylbenzene	DIV	IGV	GTV									205								
			GIV									Limestone								
				May-11	Nov-11	May-12	Nov-12	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	May-16	Nov-16	May-17	Nov-17	May-18	Nov-18	May-19
1 2 4-Trimethylhenzene					-			-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015	-		-	-	-	-		-	-	-	-	-	-	-	-		
Acetone				0.61			-	-	-				-	-	-	-				
Carbon Disulphide	0.0				-	- :	-	-	-	-	-	-	-	-	na	na	na	na	na	na
1,1-Dichloroethane	0.9				-		-	-	-	-	-		-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01	0.00		- :			-		-		-	-			-	-	-	-		-
trans-1,2-Dichloroethene cis-1,2-Dichloroethene	0.02	0.03	0.000375	-				-	-		-	-				-	-	-		-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	-	æ.	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-		-	-	-	-	112.	-	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	-	-	-	e	-	-	-	na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	-	-777	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-		-		-	-	-	70.	-	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	-	77.	- CO	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na	na	of a	o na	na	na	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	-	<u> </u>	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	-	چې - د	ر م	-	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-		110	-	-	-	-	•	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	-	JIL Y	δ	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane				-	-	-	-	-	6 1 SO	, -	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	0.03	0.001	0.00075	-	0.002	- 0.040	0.003	- isc	0,002	-	-	-	-		-	-	-	-	-	-
Benzene	0.03	0.001	0.00075		0.002	<u>0.010</u>	0.003	7600	0.002							-	-			-
trans-1,3-Dichloropropene 2-Hexanone(MBK)				na	na na	na	na .	Shax		na	- na	- na	na		na	na	na	- na	na	na
1,1,2,2-Tetrachloroethane				IId -	IId -	IId -	IId .		na -	IId -	IId -	IId -	IId -	na -	IId -	IId -	IId -	IId -	IId -	IId -
Toluene	1	0.01	0.525		-	-	\$0°	177	-	-	-	-			-	-	-	-	-	
Chlorobenzene	0.18	0.001	0.323		-	-	- V	3			-	-	-		-	-	-	-		
Ethylbenzene	0.15	0.001					- 0	Χ.	0.001		-	-	-	-	-	-		-		
Styrene	0.15	0.01			-	-	8	-	0.001		-	-			-	-	-	-	-	
Xylenes(meta and para)	0.5			-	0.065	0.019	0.033	-	0.054		-	-	0.005	-	-	-	-	-	-	-
o-Xylene				-	-	0.013	-	-	0.002		-	-	- 0.003			-	-	-		-
Total Xylene	0.07	0.01			0.065	0.019	0.033	-	0.002		-		0.005					-		
Freon 113	5.01	0.01		na	na	na,	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	0.59	0.23	0.31	0.24	0.15	0.11	0.40	0.11	0.058	0.29	0.081	0.027	0.018	0.024	0.016	0.021	0.069
Vinyl Acetate		0.00	0.01	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX				-	0.067	0.029	0.036	-	0.037	-	-	-	0.005	-	-	-	-	-	-	-
Total VOCs				1.2	0.30	0.34	0.28	0.15	0.17	0.40	0.11	0.058	0.29	0.081	0.027	0.018	0.024	0.016	0.021	0.069
Alcohols and VOA																				
Compounds								l	l		l	1				1		l		
Methanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iso-Propanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.052	-	-
Cyclohexane	15			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV

Indicates result above IGV
Indicates result above GTV

											404							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
				Feb-95	Nov-95	Jun-96	Dec-96	Jun-97	Dec-97	May-98	Jun-98	Sep-98	Nov-98	May-99	Nov-99	May-00	Nov-00	May-01
Chloromethane						-			-	-	-		-		-	-		-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-		-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-		-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na							
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone				42	210	36	130	21	81	70	32	-	-	76	200	-	-	0.22
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-		-				-	-		-		-	-		-
1,1-Dichloroethene	0.01					-				-	-				-			
trans-1,2-Dichloroethene	0.02	0.03	0.000375			-					-		-		-	-		-
cis-1,2-Dichloroethene	0.02		0.000375			-	-		-	-	-	-	-	-	-	-		-
Bromoform				-	-	-	-	-	-		-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-		-		୍ଦ ୯୦.	-	-	-	-	-		-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	113	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	-	-	- 0	S -	-	-	-	27	-	-	-
1,1,1-Trichloroethane	0.3	0.5				-		-	-	10	-	-	-		-	-		-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	14.	2	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				5.9		-		-	all,	· 20	-		-		-	-		-
1,2-Dichloropropane				-	-	-	-	-	~ 50°	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-		-		- 0	©, ∑,		-		-		-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	- 20	.,	-	-	-	-	-	-	-		-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	-iito	Dr		-	-	-	-	-	-		-
Dibromochloromethane			0.00.0	-	-	-	-	2 .0	· .	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane					-	-	(	D 3 7	-	_	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	0.57		_	- (\$)	Wer -	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene			0.000.0	-	-	-	200	7	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				-		-	~37 ×		-	-	-	-	-		-	-	-	-
1,1,2,2-Tetrachloroethane				-			V. 650	-	-	-	-	-	_	-	-	-	-	_
Toluene	1	0.01	0.525	52	110	61	352	81	150	130	110	67	99	110	110	130	130	0.31
Chlorobenzene	0.18	0.001	0.020		-		07 -	-	-	-	-	-	-		-	-	-	- 0.01
Ethylbenzene	0.15	0.01		13	14	11 0	7.2	3.3	4.7	3.0	3.4	4.3	3.3	4.8	6.8	3.4	4.2	0.033
Styrene	0.13	0.01		10	0.51	6	- 1.2	0.0	7.7	0.0	0.4	7.0	0.0	7.0	0.0	0.4	7.2	0.000
Xylenes(meta and para)	0.0			58	65	348	31	17	23	19	16	20	23	26	30	15	19	0.15
o-Xylene				15	16	12	9.1	3.9	6.0	4.6	3.7	4.4	4.4	6.1	6.9	3.6	4.2	0.025
Total Xylene	0.07	0.01	<del>                                     </del>	73	81	60	40	21	29	24	20	24	27	32	37	19	23	0.025
Freon 113	0.01	0.01		-	60	-	-		-	- 2-7	-	- 2-7	-	-	-	-	-	-
Methyl t-butyl ether		0.03	0.01			-					-	-		-	-	-		
Vinyl Acetate		0.03	0.01	-	-	-	-		-	-	-			-	-	-		
Total BTEX				139	205	132	99	105	184	157	133	96	130	147	154	152	157	0.52
Total VOCs		<b>-</b>		186	416	168	229	126	265	227	165	96	130	223	381	152	157	0.32
Alcohols and VOA				100	410	100	223	120	200	221	100	30	130	223	301	102	101	0.74
											1				l			
Compounds						744		45	0.0	F 4	<b> </b>		F 0		<b> </b>	<b> </b>		
Methanol				-	-	711		15	9.2	5.4	-		5.0	-	-	-	-	-
Ethanol				-	1.2				38	19				-	-		-	-
iso-Propanol	0.0		0.445	161	43	175	109	13	69	84	31	-	-	69	-	6.9	-	24
Tetrahydrofuran	0.3		0.115	1.0		-	-	2.0	46	-	69	17	-	83	-	-	3.1	0.058
Cyclohexane	15			3.2	1.4	1.2	1.6	0.25		-	0.36	-	-	-	-	-	2.6	0.015
Ethyl Acetate				na	-	-	-	-	294	164	-	-	-	-	-	-	-	-

											404							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
,			_	Nov-01	Nov-01	May-02	May-02	Nov-02		May-03	Nov-03	Nov-03	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Nov-04
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-		-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-		-		-	-		-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375			-	٠		٠		-	٠	-			-		
Isopropylbenzene				٠	-	-	٠		٠		-		-	-		-		-
Propylbenzene				-		-		-	-		-	-	-	-	-	-	-	-
Chloroethane						-	٠		٠		-	٠	-			-		
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichloromethane	1	0.01	0.015	-		-		-	-		-	-	-	-	-	-	-	
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9				-	-					-		-	-		-		-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000275	-	-	-	-	-		-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02	l	0.000375	-	-	-			-		-		-	-	-	-		-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	*رح.	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225		-	-	-	-		-	1180	-	-	-	-	-	-	-
Butanone(MEK)			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-	-	-	-	-	-	- 0	<u>,                                     </u>	-	-	-	-	-	-	-
1.1.1-Trichloroethane	0.3	0.5		-	_	_	-	-	_	- 50		-	_		_	_	-	_
Carbon Tetrachloride	0.01	0.0		-	-	-		-	-	1.0	_	-	_	-	-	-	-	-
Bromodichloromethane				_	-	-	-	-	14.	TO.	-	-		-		-	-	-
4-Methyl-2-Pentanone(MIBK)				-		-	-	-	all)	· O ·	_		_				-	
1,2-Dichloropropane						_	-		20,00	-	_	-	_		-	_		
cis-1,3-Dichloropropene					-	-	-	- 0	<del>\$\frac{1}{2}\frac{1}{</del>	-	-					-	-	
Trichloroethene	0.5	0.01	0.0075															
Tetrachloroethene	0.04	0.01	0.0075		-	-		-iito	777		-		-					-
Dibromochloromethane	0.04	0.01	0.0073	-	-	-	_	~ Q e	<del>~</del> _	_	_				-	-	-	-
1,1,2-Trichloroethane		1		-	-	-	(	10 × 10	-	-	-		-		-		-	-
Benzene	0.03	0.001	0.00075	-	0.070	0.092	0.092	.0.14	0.15	0.13	-						-	0.016
trans-1,3-Dichloropropene	0.03	0.001	0.00073	-		<u>0.032</u>		7 .			-				-			
2-Hexanone(MBK)				-	-	-	Valor.		-	-	-	-	-		-	-	-	-
1,1,2,2-Tetrachloroethane		l	-	-	-		10.00		-		-			<del></del>		-		-
Toluene	-	0.01	0.525	0.81	0.77	0.23	0.16	5.8	0.063		-	-	-		-	-		-
Chlorobenzene	0.18	0.01	0.525	0.81	0.77	0.23	Q -	5.6	0.063		-		-	- :		-		-
		0.001		2.5				2.0	0.62	0.55					-			-
Ethylbenzene	0.15	0.01	l	2.5	2.3	2.1	2.1	2.0	0.02	0.55	-				-:-	-		-
Styrene Vulence(mete and pare)	0.3			13	11	311	11	14	15	13	1.8	1.8	3.1	4.1	5.1	6.1	7.1	0.40
Xylenes(meta and para)		-											3.1	4.1	5.1	6.1	7.1	0.40
o-Xylene	0.07	0.04		1.0	0.91	0.67	0.64	2.5	0.12	0.10	0.025	0.025						
Total Xylene	0.07	0.01		14	12	12	12	17	15	13	1.8	1.8	3.1	4.1	5.1	6.1	7.1	0.40
Freon 113					60				-									-
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
Vinyl Acetate		<b> </b>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX		<b> </b>		17	15	14	14	24	16	14	1.8	1.8	3.1	4.1	5.1	6.1	7.1	0.42
Total VOCs		<u> </u>		17	15	14	14	24	16	14	1.8	1.8	3.1	4.1	5.1	6.1	7.1	0.43
Alcohols and VOA					l	l												l
Compounds																		
Methanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol				-		-					-		-			-		
iso-Propanol					-	-	٠	•		٠	-	٠	-	-		-	•	-
Tetrahydrofuran	0.3		0.115	1.8	1.6	0.88	0.71	3.4	1.2	1.1	-	-	-	-	-	-		0.88
Cyclohexane	15			0.97	1.3	0.94	0.82	0.63	0.70	0.61	0.40	0.40	-	1.52	2.52	3.52	4.52	0.35
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			1								404							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
				May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09	May-10	Nov-10	May-11	Nov-11	May-12
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	•	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	-	-	0.077		-	-	-
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	0.12	0.007	-	8.977	-	-	-	-
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-		-		-	-	-	.ون	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	112	-	-	-	-	-	-	-
Butanone(MEK)				-		-		-	-	0	0.16	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	70	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	73.	0	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-	-	-	-	-	Otto V	.0-	-	na	na	na	na	na	na	na
1,2-Dichloropropane						-		-	3 50	-	-		-	-	-	-		-
cis-1,3-Dichloropropene						-		- 0		-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-00	.10	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075			-		- William	<u> </u>	-	-		-	-	-	-		-
Dibromochloromethane				-	-	-	-	2 30	· -	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	(	Dr. of	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	0.009	-	-	0	100	-	-	0.081	-	0.008	<u>0.14</u>	-	-	<u>0.065</u>	<u>0.052</u>
trans-1,3-Dichloropropene				-	-	-	200	4	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				-	-		SIX	-	-	-	-	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-		- 2	V.6V	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-		\$\long\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot	100	-	-	-	-	0.014	-	2.321	-	-	-	-
Chlorobenzene	0.18	0.001		-	-	. *	6	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01	i	-	-	- C		-	-	-	-	0.006	0.006	0.15	-	-	-	-
Styrene	0.3			-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)			İ	1.9	0.072	NO.	-	-	-	-	-	0.016	0.32	2.4	-	-	0.013	0.064
o-Xylene				-	- /	0 ·	-	-	-	-	-	0.003	-	0.014	-	-	-	0.004
Total Xylene	0.07	0.01		1.9	0.072			-	-	-	-	0.019	0.32	2.5	-	-	0.013	0.068
Freon 113	0.0.	0.01		-	E	-	-	-	-	-	-	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	-		0.001	0.001	-	0.004	0.99	0.84	3.3	17	17	15	4.2	4.2	2.1
Vinvl Acetate		0.00	0.01	-		0.001	-		0.004	-	-	na	na	na	na	na	na	na
Total BTEX				1.9	0.072	-		-	-	-	0.081	0.039	0.33	5.1	-		0.078	0.12
Total VOCs				1.9	0.072	0.001	0.001	-	0.004	0.99	1.2	3.3	17	31	15	4.2	4.3	2.2
Alcohols and VOA				1.5	0.012	0.001	0.001	<u> </u>	0.004	0.33	1.4	3.3		31	- 13	7.2	7.5	2.2
Compounds						1		1		l		l			1			
Methanol			1	-	-	-	-	_	_	_	_	_	_	_	_	_		_
			1		-								-		-	-		-
Ethanol						-	-	-	-	-	-	-		-			-	
iso-Propanol	0.0		0.445	-	-	-	-	-	-	-	-	-	-		-	-	-	-
Tetrahydrofuran	0.3		0.115	3.2	0.39	0.54	- 0.004	-	1.0	4.0	14	84	71	0.75	1.3	0.13	0.54	-
Cyclohexane	15			0.36	0.19	0.052	0.081	0.14	0.27	0.11	0.14	0.11	0.13	0.32	0.75	-	-	0.29
Ethyl Acetate				-		-		-	-		-		-	-	-	-	-	-

										4	04						
Volatile Organic Compound	DIV	IGV	GTV								stone						
Chloromethane				Nov-12	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	May-16	Nov-16	May-17	Nov-17	May-18	Nov-18	May-19
1,2,4-Trimethylbenzene					-	-	0.004	-	_		0.005	-		-	_		-
1,3,5-Trimethylbenzene					-	_	-	_	_	-	-	-	-	_	-	-	_
p-Isopropyltoluene					-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane					-	-	-	-	-		-	-	-	-	-		-
Vinyl Chloride	0.005		0.000375		-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	0.000		0.000010	-	-	-	0.005	-	-	0.003	0.024	-	-	0.003	-	-	<u> </u>
Propylbenzene				-	-	0.013	-	-	_	-	0.007	-	-	-	_		-
Chloroethane					-	0.004	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015		-	-	-	-	-	-	-	-	-	-	-	0.077	-
Acetone	-				-	-	-	-	-	-	-	0.14		-	-	12	-
Carbon Disulphide				-	-	-	-	-	-	-	-	na	na	na	na	na	na
1.1-Dichloroethane	0.9				-	-	-	-	-	-	-	-	-	-	-	-	-
1.1-Dichloroethene	0.01				-	-	-	-	-	-	-	-		-	-	-	-
trans-1.2-Dichloroethene		0.03		-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000375		-	-		-	-		-	-		-	-		
Bromoform					-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	0		-	-	-	-	-	-
1.2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	118	-	-	-	-	-	-	-
Butanone(MEK)	0.1	0.000	0.00220		-	-	-	-	-	25	-	na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	100	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01	0.0			-	-	-	-		3 <sup>-</sup> -	-	-	-	-	-	-	-
Bromodichloromethane					-	-	-	-	14.14	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na 🔏	na	na	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	-	-	ں ہے۔	50	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	ج ''گ	· ·	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075		-	-	-	20. CO	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075		-	-	- 4	21/21/2/A	-	-	-	-		-	-	-	-
Dibromochloromethane			0.00.0		-	-	- 2	,e05	-	-	-	-		-	-	-	-
1,1,2-Trichloroethane				-	-	-	900:	· ·	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	0.036	-	0.023	0.007	0.014	0.009	0.012	0.062	-	-	0.017	-	-	0.0006
trans-1,3-Dichloropropene					-		C 24	-	-	-	-	-	-	-	-		-
2-Hexanone(MBK)				na	na	na S	x na	na	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	. Y. G	<u> </u>	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	0.18	0.001		-	-	( 000)	-	-	-	-	-	-		-	-		-
Ethylbenzene	0.15	0.01		-	-	- (0)	0.0012	-	-	-	1.45	-	-	-	-	-	-
Styrene	0.3				- (	· ·	-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)				0.080	- 🔊	0.005	1.5	0.003	0.003	-	10	-		0.016	0.44		-
o-Xylene				0.005	cer.	-	-	-	-	-	0.005	-	-	0.002	-	-	-
Total Xylene	0.07	0.01		0.085	200	0.005	1.5	0.003	0.003	-	10	-	-	0.018	0.44	-	-
Freon 113				na (	na	na	na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	0.85	0.38	0.27	0.18	0.10	0.066	0.55	0.14	0.031	0.017	0.031	0.038	0.031	0.023
Vinvl Acetate				na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX				0.121	-	0.029	1.531	0.017	0.012	0.012	11.89	-		0.035	0.440		0.001
Total VOCs				0.969	0.377	0.318	1.723	0.115	0.078	0.570	12.06	0.170	0.017	0.068	0.478	11.739	0.023
Alcohols and VOA																	
Compounds						l	l			l		l			l		
Methanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol					-	-	-	-	-	-	-	-	-	-	-	-	-
iso-Propanol					-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115	-	0.053	-	-	0.017	0.017	0.057	0.140	0.062	0.052	-	0.040	0.040	0.024
Cyclohexane	15	l		0.199	0.129	0.081	0.230	-	-	-	0.174	0.137	-	-	0.130	-	-
Ethyl Acetate		l	1	555		0.001	-	-	-	-		0.107	-	-	-	-	<u> </u>
Z.i.y. / iSoluto																	

Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interin Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV

Indicates result above GTV

											409							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
				May-04	Nov-04	May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09	May-10	Nov-10	May-11
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-		-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	-	-	-	0.005	-	-	-	-
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000373		-	-		-		-	-		-	-	-	-	-	-
Bromoform					-	-		-		-	-		-		,	-	-	-
Chloroform	0.4	0.012		0.001	-	0.001	0.007	0.005	0.008	0.009	0.022	0.007	0.003	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-			112		-	-	-	-		-
Butanone(MEK)				-	-	-	-	-	-	- 0	· -	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	- 10	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	0.014	-	-	-	-
Bromodichloromethane				-	-	-	-	-	14.	02	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-	-	-	-	-	all,	.03.	-	-	-	-	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	SO 80	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	c	O. Y.	-	-		-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075			-		-20	.,,		-		-	-	-		-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	airpo	2	-	-	-	-	-	-	-	-	-
Dibromochloromethane					-	-	-	- 2- e	· .	-	-		-	-	-	-	-	-
1.1.2-Trichloroethane						-	(	10 x 10			-		-	-	-			-
Benzene	0.03	0.001	0.00075	-	-	-	- 🚫	1 No.	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-	-	-	200	7	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)						-	ASY X	-			-		-	-	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-		V. 60	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	_	<b>∆</b> Ô	100	-	-	-	-	-	-	_	-	_	-	-
Chlorobenzene	0.18	0.001	0.020	-	_	×-	<del>6</del> -	-		-	_	-	-	-	-	_	-	-
Ethylbenzene	0.15	0.01		-	-	0	× .	-	-	-	_	-	-		-	-	-	_
Styrene	0.13	0.01	1	_	_	2	_	-	_	-	_	_	-	-	-	_	-	-
Xylenes(meta and para)	0.0	l			-	X		-		-	-		-			-	-	
o-Xylene				-	-	est.		-		-	-		-		-	-	-	_
Total Xylene	0.07	0.01			0			-			-		-			-	-	
Freon 113	0.01	0.01		-	60	-	-	-		-	-		-	-	na	na	na	na
Methyl t-butyl ether		0.03	0.01		0.014	0.008		-		-	-		-		- IIa	-	-	0.002
Vinvl Acetate		0.03	0.01		0.014	-		-					-		na	na	na	na
Total BTEX		<del> </del>		-	-	-	-	-		-	-		-	-	IId -	IId.	-	IId -
Total VOCs		<u> </u>		0.001	0.014	0.009	0.007	0.005	0.008	0.009	0.022	0.007	0.003	0.019		<u> </u>	-	0.002
Alcohols and VOA				0.001	0.014	0.003	0.007	0.003	0.000	0.003	0.022	0.007	0.003	0.013			<u> </u>	0.002
Compounds					l			1								l	l	
Methanol		<b>l</b>	1	-	_	_		_		_	_		-	-	-	_		_
Ethanol		<del> </del>		-	-	-	-	-		-	-	-	-	-		-	-	-
		<b> </b>	<b> </b>		-		-	-	-	-		-	-			-		-
iso-Propanol	0.3	<del> </del>	0.115	-		-		0.062			-			-	-		-	
Tetrahydrofuran	0.3		0.115	-	-	-	-		-	-	-	-	-	0.21	-	-	-	-
Cyclohexane	15	<b> </b>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate		l	l	-		-		-		-	-	-	-	-	-		-	

				1							40	09							
Volatile Organic Compound	DIV	IGV	GTV								Lime	stone							
O				Nov-11	May-12	Nov-12	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	May-16	Nov-16	May-17	Nov-17	May-18	Nov-18	May-19
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015	-	-	-			-	-	-	-	-	-	-	-	-	-	-
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	na	na	na	na	na	na
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		0.002	-	-	0.004	-	-	-	0	0.002	-	-	0.002	0.004	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-		-		- 1/2	-	-	-	-	-	-	-	-
Butanone(MEK)					-	-		٠	-		0	-	-	na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	-	Me	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	- A	0.	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-		14.0	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na	na 💍	na	na	na	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	-60	805	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	-	250.5	y -	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-	20,10	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	- 3	17,00	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane				-	-	-	-	26	100x	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-		:07.7	7		-	-	-	-	-		-	-	-
Benzene	0.03	0.001	0.00075	-	-	-	-	CD-10	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-	-	-		2 3h	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				na	na	na	na S	na	na	na	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	-	- N. C	<u> </u>	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-		60°-10	<del>0</del> .	-	-	-	-	-	-	-		-	-	-
Chlorobenzene	0.18	0.001		-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Styrene	0.3			-	-	- (	7	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)				-	-	- 🔊	-		-	-		-	-	-	-	-	-	-	-
o-Xvlene		l		-	-	cer	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xvlene	0.07	0.01		_	_	100	-	_	-	-	_	_	_	_	_		_	_	_
Freon 113	0.07	0.01		na	na (	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	0.002	-		-	-	0.001	-	-	-	-	-	-	0.0003	0.0003	0.0002	0.0003
Vinyl Acetate		0.00	0.01	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Total BTEX				-	-	-	-	-	-	-	-	- 114	-	-	-	- 110	-	-	iiu
Total VOCs		1		0.004	<del>                                     </del>		0.004		0.001			0.002		<del>                                     </del>	0.002	0.004	0.0003	0.0002	0.0003
Alcohols and VOA				0.004	1		0.004		0.001			0.002		1	0.002	0.004	0.0000	0.0002	0.0000
Compounds									l			l						l	1
Methanol		l		-	-	-		_	_	_	-	_	-	-	-	_	-	_	-
Ethanol		l		-	-	-	-	-	-		-	-	-		-		-	-	-
iso-Propanol		<b>l</b>	-	-		-			-		-	-	-	1	-		-	-	-
Tetrahydrofuran	0.3		0.115	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		<del> </del>	0.115																
Cyclohexane	15	<b> </b>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate		l	ĺ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interin Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV

Indicates result above GTV

			1								501							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
Volatile Organic Compound	DIV	101	GIV	Dec-96	Jun-97	Dec-97	May-98	May-98	Jul-98	Sep-98	Nov-98	Feb-99	May-99	May-00	Nov-00	May-01	Nov-01	May-02
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2.4-Trimethylbenzene				-	-	-	-	-		-	-	-	-	-		-		-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-		-		-
Vinyl Chloride	0.005		0.000375		-	-	-	-		-	-	-	-	-	-	-		-
Isopropylbenzene					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-		-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-		-	-	-	-	-	-	-	-	-	-
Dichloromethane	1	0.01	0.015	-	8.1	-	-	-	-	-	5.5	-	-	-		-		-
Acetone				-	-	-	-	-	-	37	-	-	100	-	-	53	-	-
Carbon Disulphide					-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01				-	-	-	-		-	-	-	-	-	-	-		-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012			-	-	-	-	-	-	٠٠.	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	112	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	-	-	- 0	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	- 50	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	,	-	10	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	Ally.	-07	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-		-	-		Off.	.00	-	-	-	-	-	-	-	-
1,2-Dichloropropane						-	-	-	S 50	-	-		-	-	٠	-		-
cis-1,3-Dichloropropene				٠	-	-	-	٠,		-	-	-	-	-		-		-
Trichloroethene	0.5	0.01	0.0075		-	-	-	8		-	-	-	-	-		-		-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	- Jilly	Ø, -	-	-	-	-	-	-	-	-	-
Dibromochloromethane				٠	-	-	-	2 .ev		-	-	-	-	-		-		-
1,1,2-Trichloroethane					-	-		Mei's	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	-		100	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-	-	-	200	4	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)					-		asky,	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane				-	-		y. 67	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	65	140	220.0	320	190	210	270	210	180	150	230	200	72	58	83
Chlorobenzene	0.18	0.001		-	-	- >	Ø -	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		7.0	7.3	7.3	25		9.7	14	8.4	13	7.3	6.6	8.1	3.4	4.9	7.3
Styrene	0.3				-	_0		-	-	-	-	-	-	-	-	-		-
Xylenes(meta and para)				34	36	33	120	60	42	62	50	68	35	29	40	17	25	33
o-Xylene				9.9	9.7	9.6	40	16	12	17	12	17	9.5	7.4	11	4.2	5.7	8.8
Total Xylene	0.07	0.01		44	46 💉	43	160	76	54	79	62	85	45	36	51	21	31	42
Freon 113		1		-	$-\epsilon^{o}$	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl t-butyl ether		0.03	0.01		-	-		-	-	-	-	-	-	-	-	-		-
Vinyl Acetate				-	-	-	-	-	-	-	-	-	-	-		-		-
Total BTEX		1		116	193	270	405	266	274	363	280	278	202	273	259	97	94	132
Total VOCs				116	201	270	405	266	274	400	286	278	302	273	259	150	94	132
Alcohols and VOA																		
Compounds																		
Methanol				154	609	594	61	347	80	165	83	371	61	6.8		-	,	-
Ethanol				342	141	542	57	353	114	194	-	9.3	-	45		-		-
iso-Propanol				276	161	347	399	630	61	159	31	27	304	135	15	226	-	1.5
Tetrahydrofuran	0.3		0.115	-	3.0	-	284	3,230	32	65	-	66	62	-	24	-		-
Cyclohexane	15			7.4	3.0	-	-	-	-	-	-	-	-	-	7.4	1.8	3.3	4.0
Ethyl Acetate				2.0		-	2,040	2,430			-	-	-	-	•	-		-

		1	1								501							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
Volatile Organie Compound	D.11		0.1	Nov-02	May-03	Nov-03	May-04	Nov-04	May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2.4-Trimethylbenzene				-	-	-	-	-			-		-		-	-		-
1,3,5-Trimethylbenzene				-	-	-	-	-	-		-	-	-		-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-	-	-	-	-			-	-	-		-	-	-	-
Vinyl Chloride	0.005		0.000375		-	-	-	-			-		-		-	-		-
Isopropylbenzene					-	-	-	-		-	-	-	-	-	-	-		-
Propylbenzene				-	-	-	-	-	-		-	-	-		-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				٠	-	-	-	-			-	٠	-		-	-		-
Dichloromethane	1	0.01	0.015	2.2	-	-	-		-		-	-	-		1.0	0.68	0.31	-
Acetone				-	-	-	-	,	-	-	-	-		0.42	3.2	-	71	12
Carbon Disulphide				-	-	-	-		-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-		-	-		-		-	-	-		-	-	-	-
1,1-Dichloroethene	0.01			-	-	-	-	-	-		-	-	-		-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375		-	-	-	-			-		-		-	-		-
cis-1,2-Dichloroethene	0.02		0.000375	-	-	-	-	-	-		-		-		-	-	-	-
Bromoform						-	-	-	٠		-	٠	-		-	-		-
Chloroform	0.4	0.012		-	-	-	-		-	-	ر ا	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-		-	-	-	-		SI		-		-	-	-	-
Butanone(MEK)						-	-	-	٠	-	-	٠	-		-	1.9		-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	- 50	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane						-	-	-	Ald.	Ġ	-	٠	-		-	-		-
4-Methyl-2-Pentanone(MIBK)					-	-	-	-	OT .		-		-		-	-	na	na
1,2-Dichloropropane				-	-	-	-	-	0) کو کو	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	- 29	80° S'	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	.00	:00	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	- VIII A	Ø, -	-	-	-	-		-	-	-	-
Dibromochloromethane				-	-	-	-	~ V . W	-		-		-		-	-	-	-
1,1,2-Trichloroethane				-	-	-	ىن -	Mert	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	-	-,0		-	-	-	-	-	-	-	-	<u>0.081</u>	<u>0.062</u>
trans-1,3-Dichloropropene				-	-	-	و محمد	4	-		-		-	-	-	-	-	-
2-Hexanone(MBK)				-	-		12,10	-	-	-	-	-	-	-	-	-	na	na
1,1,2,2-Tetrachloroethane				-	-		$\mathbf{y}_{\cdot,\delta}\mathbf{y}$	-	-	-	-	-	-		-	-		-
Toluene	1	0.01	0.525	87	120	85,0	179	69	84	50	77	65	11	65	110	100	29	16
Chlorobenzene	0.18	0.001		-	-	. >	Q -	-	-	-	-	-	-	-	-	-	0.022	-
Ethylbenzene	0.15	0.01		7.2	7.1	6.7	12	11	11	6.3	9.2	9.4	3.2	8.4	11	8.5	11	6.4
Styrene	0.3			-	-	<u> </u>	-	-	-	-	-	-	-	- 45	-	-	- 07	-
Xylenes(meta and para)				32	32	31	52	49	46	29	42	42	27	45	60	41	27	15
o-Xylene			<b>—</b>	8.3	7.5	7.5	12	12	12	7.5	9.9	11	3.9	11	14	9.4	14	7.4
Total Xylene	0.07	0.01		40	40	39	64	61	58	37	52	53	31	56	74	50	42	22
Freon 113				-	60	-	-	-	-	-	-	-	-	-	-	-	na	na
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28	0.44
Vinyl Acetate		<b> </b>		- 405	- 407	- 420	-	-	- 450	93	- 420	- 407	- 45	129	-	- 450	na na	na
Total BTEX		<del>                                     </del>		135	167	130	155	141	153		138	127	45		195	159	81	45
Total VOCs		<u> </u>		137	167	130	155	141	153	93	138	127	45	130	199	161	153	58
Alcohols and VOA															l			
Compounds		1			<b> </b>							3.6			<b> </b>			
Methanol		<b> </b>		-	-	-	-	-	-	-	-		-	-	-	-	-	0.47
Ethanol		<del> </del>		-	-	-	-	-	-	- 0.50	-	- 0.00	-	-	-	-	-	
iso-Propanol	0.3	1	0.115	2.8	2.6	-	-	-	-	0.50	-	0.30	-	- 0.0	-	- 16	99	11
Tetrahydrofuran	0.3	<b>}</b>	0.115	3.5	-	-	-	-	-	0.80	-	-	- 1.0	8.0	- 0.7	1.6	17	15
Cyclohexane	15	<del> </del>		2.8	2.3	3.9	5.0	-	3.8	2.2	4.9	3.3	1.6	3.4	2.7	2.5	1.3	2.4
Ethyl Acetate		1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

														501									
Volatile Organic Compound	DIV	IGV	GTV	May-10	Nov-10	May-11	Nov-11	May-12	Nov-12	May-13	Nov-13	May-14	Lim Nov-14	estone May-15	Nov-15	May-16	Nov-16	May-17	v-17	Nov-17	May-18	Nov-18	May-19
Chloromethane			<b>-</b>	- Iviay-10	1404-10	iviay-11	1100-11	iviay-12	-	iviay-15	1404-13	iviay-14	1100-14	iviay-13	1404-13	iviay-10	1404-10	IVIAY-17		1404-17	Iviay-10	1404-10	iviay-13
1,2,4-Trimethylbenzene				-	-	-		-	-		-	-	0.036	0.020	0.014	0.027	0.018	0.017		0.028	0.011	0.016	0.004
1,3,5-Trimethylbenzene				-	-	-			-	-			0.036	0.020	0.014	0.027	0.010	0.017		0.028	0.006	0.006	0.004
p-Isopropyltoluene				-	-	-		-		-		-	0.044	0.021	0.011	0.022	0.010	0.013		0.011	0.006	0.006	-
		-	1	-	-	-	- :		-	-	-		-	-		-						-	-
Bromomethane Vinvl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
,	0.005		0.000375	-	-	-		-	-	-	-	-	0.163	0.117	0.068	0.114	0.013	0.018	040	0.081	0.041	0.061	0.010
Isopropylbenzene												<b>-</b>											
Propylbenzene				-	-	-	-	-	-	-	-	-	0.038	0.031	0.012	0.031	-	-		0.020	0.010	0.019	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	-	-	-	-	0.048	-	-	-	-	-	-	-	-
Acetone				-	-	-	4.756	-	-	-	-	-	0.081	8.180	4.718	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	na	na	na	na	na	na	na
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375		-	•			-	•						-	-	-		-	-	-	-
cis-1,2-Dichloroethene	0.02		2.000070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	-	-	-	و٠ -	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	-	-	- 3	, D	-	-	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	-	-	-	-	-	0	-	-	-	na	na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	-	-	-	The	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	-		-	,0	-	-	-	-	-	-				-
Bromodichloromethane				-	-	-	-	-	-	-	-	14.0	3	-	-	-	-	-	-				-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na	na	na	na	na 'v	na	na	na	na	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	-	-	- ح	603	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	-	-	-	300	S'-		-	-	-	-	-	-		-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-	-	-	200.30	<u> </u>	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	-			11/11	-	-		-	-		-	-		-	-	-
Dibromochloromethane				-	-	-	-	-		~~	₹ ,600	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	-	-	-	:01	X 4	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	0.036	0.029	0.017	0.040	0.069	0.031	0.027	0.024	0.066	0.051	0.030	0.023	0.011	0.017	0.003	003	0.014	0.011	0.012	0.004
trans-1,3-Dichloropropene				-	-	-	-	-	-	00 m	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				na	na	na	na	na	na 🔨	na	na	na	na	na	na	-	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	-	-	-	. 7	67-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	32.365	18.202	6.489	25.178	39.327	45.338	9.903	2.594	3.161	38.098	18.312	22.960	0.330	0.035	0.029	029	0.031	1.068	1.446	0.147
Chlorobenzene	0.18	0.001		-	-	-	-	-	30.	-	-	-	-		-	-		-	-				-
Ethylbenzene	0.15	0.01	l	8.894	5.073	3.116	9.960	26.79	14:101	9.897	7.170	8.985	7.469	5.776	2.795	2.990	0.615	1.075	075	0.632	1.000	1.074	0.090
Styrene	0.3			-	-	-	-	-	ð.	-	-	1.6	1.6	-	-	-	0.010	-	-	0.006	-	-	-
Xylenes(meta and para)			l	39	43	46	44	63	62	58	33	40	53	34	44	25	7.6	8.5	3.5	5.2	4.6	7.6	0.46
o-Xylene			1	14	11	13	10	140	13	9.4	5.5	6.4	9.4	5.8	8.8	1.9	0.28	0.44		0.18	1.0	1.5	0.11
Total Xvlene	0.07	0.01		52.7	54.0	59.2	54.5	Z6.5	75.9	67.2	38.7	46.1	62.7	39.4	52.6	26.9	7.8	8.9		5.3	5.6	9.1	0.576
Freon 113			1	na	na	na	na	Cha	na	na	na	na	na	na	na	na	na	na		na	na	na	na
Methyl t-butyl ether		0.03	0.01	0.035	0.029	-	0.146	-	0.019	0.006	-	0.074	0.256	0.036	4.769	0.176	0.107	0.008		-	0.054	0.023	0.005
Vinyl Acetate		0.00	0.01	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na		na	na	na	na
Total BTEX			1	94.01	77.35	68.77	89.64	142.71	135.33	86.99	48.47	58.34	108.28	63.49	78.41	30.19	8.51	10.00		6.01	7.64	11.64	0.82
Total VOCs			1	94.04	77.37	68.77	94.55	142.71	135.34	87.00	48.47	59.99	110.47	71.89	88.05	30.56	8.66	10.06		6.16	7.77	11.76	0.84
Alcohols and VOA		-	I I	57.07	, ,,,,,,	00.77	57.55	174.71	100.04	07.00	70.77	55.55	110.77	7 1.00	00.00	00.00	0.00	10.00		0.10		11.70	0.04
			I	1						1								l					1
Compounds Methanol			-	_	-	-	_	-	-	_	-	-	-	96	_	-	_	-		-	-		
			1	-										86						-		-	
Ethanol			1		-	-	-	-	-	-	-	-	-	-	- 4.0	-	-	-		-	2.5	-	-
iso-Propanol	0.0		0.445	-	-	-	3.3	-	-	-	-	-	- 0.00	2.2	1.9	- 0.040	-	- 0.000		- 0.007	- 0.050	- 0.050	- 0.000
Tetrahydrofuran	0.3		0.115	- 0.004	- 40.075	- 0.005	0.20	4.700	- 0.540	- 4 050	- 4 077	- 0.450	0.36	0.98	2.1	0.048	-	0.039		0.027	0.056	0.058	0.002
Cyclohexane	15		<b> </b>	2.224	10.075	2.205	2.109	4.768	3.548	1.850	1.977	2.450	1.979	1.297	1.693	1.560	1.844	0.360	360	1.420	0.970	0.931	0.114
Ethyl Acetate			I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

- Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTY: Groundwater Threshold Value Indicates result above DIV

Indicates result above GTV

											702							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
Volatile Organic Compound	D.,		0.1	Feb-98	May-00	Dec-00	May-01	Nov-01	May-02	Nov-02	May-03	Nov-03	May-04	Nov-04	May-05	Nov-05	May-06	Nov-06
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-		-		-	-	-	-		-	-	-	-
1,3,5-Trimethylbenzene				-	-	-		-		-	-	-	-		-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-		-	-	-	-
Bromomethane				-	-	-		-		-	-	-	-		-	-	-	-
Vinyl Chloride	0.005		0.000375		-	-		-		-	-	-	-		-	-	-	-
Isopropylbenzene					-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-		-		-	-	-	-		-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichloromethane	1	0.01	0.015	-		-		-			-	-	-		-	-	-	-
Acetone						-	٠		٠		-		-		-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-				-	-	-	-		-	-	-	-
1,1-Dichloroethene	0.01			-	-	-				-	-	-	-		-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375		-	-				-	-	-	-		-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000375	-	-	-				-	-	-	-		-	-	-	-
Bromoform					-	-				-	-	-	-		-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	്മ.	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-		-		-			112	-	-		-	-	-	-
Butanone(MEK)						-	٠		٠	- 0			-		-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	50	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane						-	٠		ally.	0	-		-		-	-	-	-
4-Methyl-2-Pentanone(MIBK)					-	-			Off.	·& _	-	-	-		-	-	-	-
1,2-Dichloropropane				-	-	-	-	-	ا کا کا ک	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				٠	-	-	٠	٠,		-	-	-	-		-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-,00	:100	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	- Ill's	Ø, -	-	-	-	-		-	-	-	-
Dibromochloromethane				-	-	-	-	~ V . v	· -	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	کن -	Mert	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	-	0		-	-	-	-	-		-	-	-	-
trans-1,3-Dichloropropene				-	-	-	200	4	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				-	-		De to	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane				-	-		V. 6V	-	-	-	-	-	-		-	-	-	-
Toluene	1	0.01	0.525	-	-	ψ,O'	VIVO	-		-	-	-	-		-	-	-	-
Chlorobenzene	0.18	0.001		-	-	•	<u>0</u> -	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		-	-	ک چ	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	0.3			-	-	_ 6	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)				-	-	X-2	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene				-		OV -	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01		-	- O	-	-	-	-	-	-	-	-	-	-	-	-	-
Freon 113				-	$\epsilon_{0}$	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	0.006	-
Vinyl Acetate				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total BTEX				-	-	-	-	-	-	-	-	-	-		-	-	-	-
Total VOCs				-	-	-	-	-	-	-	-	-	-		-	-	-	-
Alcohols and VOA																		
Compounds											1							
Methanol				-		-				-	-	-	-	-	-	-	-	-
Ethanol				-		-					-	-	-		-			-
iso-Propanol				-	-	-				-	-	-	-		-	-	-	-
Tetrahydrofuran	0.3		0.115	-		-				-	-	-	-		-	-	-	-
Cyclohexane	15			-	-	-				-	-	-	-		-	-	-	-
Ethyl Acetate				-	-						-		-			-		-

											702							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
Volutile Organie Compound	D.1.		0.1	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09	May-10	Nov-10	May-11	Nov-11	May-12	Nov-12	May-13	Nov-13	May-14
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene						-				-	-			-	-	-		-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				-		-		-		-	-	-	-	-	-	-		-
Vinyl Chloride	0.005		0.000375			-		-		-	-		-	-	-	-		-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylbenzene				-	-	-		-		-	-	-	-	-	-	-	-	-
Chloroethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane				na	na	na	na		٠	-	-	٠		-	-	-		-
Dichloromethane	1	0.01	0.015	-		-		-		-	-	-	-	-	-	-	-	-
Acetone				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-		-		-		-	-		-	-	-	-	-	-
1,1-Dichloroethene	0.01			-		-				-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000375	-		-				-	-			-	-	-		-
Bromoform						-				-	-			-	-	-		-
Chloroform	0.4	0.012		-		-	-	-	-	-	്മ.	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-		-		-		-	112		-	-		-	-	-
Butanone(MEK)				-	-	-	-	-	-	- 0	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	- 90	1 -	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	14.	.07	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-		-		na	da .	na na	na	na	na	na	na	na	na	na
1,2-Dichloropropane						-	٠		3 50	-	-	٠		-		-		-
cis-1,3-Dichloropropene				-	-	-	-	- 0	S - S	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-		-		Ś	Ž,	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075			-	٠	- III	<u> </u>		-	٠		-		-		-
Dibromochloromethane				٠		-		2 30		-	-	٠		-	-	-		-
1,1,2-Trichloroethane						-		Mert		-	-		-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	-		100	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				-	-	-		4	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)					-		OS LAN	na	na	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	- 4	V. 6V	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-	<b>₽</b> 0'	The	0.003	-	-	0.009	0.022	-	-	-	-	-	-
Chlorobenzene	0.18	0.001		-	-	. •	0	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		-		C)				-	0.003	0.006		-	-	-	-	-
Styrene	0.3					· 0				-	-			-	-	-	-	-
Xylenes(meta and para)				-	-	X-	-	-	-	-	0.018	0.031	-	-	-	-	-	-
o-Xylene				-		67.				-	0.004	0.005		-	-	-	-	-
Total Xylene	0.07	0.01			200	- ۲		-		-	0.022	0.036		-	-	-	-	-
Freon 113				-	O	-		na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01		).	-		-		-	-			-	-	-	-	-
Vinyl Acetate				-		-		na	na	na	na	na	na	na	na	na	na	na
Total BTEX				-		-		0.003		-	0.034	0.064		-	-	-	-	-
Total VOCs				•	-	-	ē	0.003	ē	-	0.034	0.064	•		-	-	-	-
Alcohols and VOA																		
Compounds																		
Methanol				-		-	-		-	-	-	-	-	-	-	-	-	-
Ethanol						-				-	-			-	-	-		-
iso-Propanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115			-	-	-	-	-	-	-	-	-	-	-		-
Cyclohexane	15			-		-	-		-	-	-	-	-	-	-	-	-	-
Ethyl Acetate			1	-		-	-	-	-	-	-	-	-	-	-	-	-	-

									02				
Volatile Organic Compound	DIV	IGV	GTV	Nov-14	May-15	Nov-15	May-16	Lime Nov-16	stone May-17	Nov-17	May-18	Nov-18	May-19
Chloromethane				NOV-14	iviay-15	- 1007-15	iviay-16	- 1007-10	iviay-17	- INOV-17	iviay-18	- NOV-18	iviay-19
1,2,4-Trimethylbenzene				-		-	-		-	_		-	
1,3,5-Trimethylbenzene				-	-	_	-	-		-	-	-	-
p-Isopropyltoluene				-	-		-	-	-		-		-
Bromomethane				-	_	-	-	_	_	_	_	_	_
Vinyl Chloride	0.005		0.000375	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	0.005		0.000373	-	-	-	-	-	_	_	-	_	-
Propylbenzene				-		-	-	-	-	_	-	_	-
Chloroethane				-	-	-	-	-			-		
Trichlorofluoromethane					-	-	-	-	_	_	-	_	_
Dichloromethane	1	0.01	0.015	-	-	-	-	-			-		
Acetone		0.01	0.015	-	-	-	-	-	-		-		
Carbon Disulphide				-	-	-	-	na	na	na	na	na	na
1.1-Dichloroethane	0.0			-									
1,1-Dichloroethane 1.1-Dichloroethene	0.9		-		-	-	-	-	-	-	-	-	-
trans-1.2-Dichloroethene	0.01	0.03	<del>                                     </del>	-	-	-	-	-	-	-	-	-	-
	0.02	0.03	0.000375				-	-					
cis-1,2-Dichloroethene				-	-	-		-	-	-	-	-	-
Bromoform			-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		•	•	•	-	ي -	)* -	•	-	0.018	0.007
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	112	-	-	-	-	-
Butanone(MEK)				-	-	-	-	, ga	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	The	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	- 4	0 -	-	-	-	-	-
Bromodichloromethane				-	-	-	13.0	-	-	-	-	0.009	-
4-Methyl-2-Pentanone(MIBK)				na	na	na 💍	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	ے۔	80,	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	يم الكي	, *	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-	-	20 . Lo	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	- 3	V1 101	-	-	-	-	-	-	-
Dibromochloromethane				-	~~	300	-	-	-	-	-	0.004	-
1,1,2-Trichloroethane				-	:000		-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	Ch The	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene				- 2	2	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				na S	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				X	<u> </u>	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	CO. 10	-	-	-	-	-	-	-	-	-
Chlorobenzene	0.18	0.001		100	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		1000 X	-	-	-	-	-	-	-	-	-
Styrene	0.3			<b>N</b>	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)			~~`	-	-	-	-	-		-	-	-	
o-Xylene			cer	-	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01	202	-	-	-	-	-	-	-	-	-	-
Freon 113			* <del>)</del>	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	-	-	-	-	-	-	-	-	-	0.0013
Vinyl Acetate		0.00	J.J.	na	na	na	na	na	na	na	na	na	na
Total BTEX			l	-	-	-	-	-	-	-	-	-	-
Total VOCs				-	-	-	-	-				0.031	0.008
Alcohols and VOA												0.00.	0.000
Compounds				1	l	1	l	l					
Methanol			<del>                                     </del>	_	-	_	-	_	_	_	-	_	-
Ethanol			l	-	-	-	-	-	-	-	-	-	-
			-		-	-		-	-			-	-
iso-Propanol	0.0		0.445	-			-			-	-		
Tetrahydrofuran	0.3		0.115	-	-	-	-	-	-	-	-	-	-
Cyclohexane	15		-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate			L						-	-	-	-	-

<sup>-</sup> Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV

Indicates result above GTV

											C1							
Volatile Organic Compound	DIV	IGV	GTV								Limestone							
Volatile Organic Compound	DIV	101	GIV	Jun-96	Dec-96	Jun-97	Dec-97	May-98	Sep-98	Nov-98	May-99	Nov-99	May-00	Nov-00	May-01	Nov-01	May-02	Nov-02
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2.4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.3.5-Trimethylbenzene						-	-	-	-	-	-	-	-		-	-	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-		-	-	-	-
Bromomethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.005		0.000375		-	-	-	-	-	-	-	-	-		-	-	-	-
Isopropylbenzene				-	-	-	-	-	-	-	-	-	-		-	-	-	-
Propylbenzene					-	-	-	-	-	-	-	-	-		-	-	-	-
Chloroethane					-	-	-	-	-	-	-	-	-		-	-	-	-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Dichloromethane	1	0.01	0.015		-	-	-	-	-	-	-	-	-		-	-	-	-
Acetone				1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	0.9			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.02		0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-		-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012		-	-	-	-	-	-	-	~e)*	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-		-	-	112	-	-	-	-	-	-	-
Butanone(MEK)					-	-	-	-	-	- 0		-	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	0.5			-	-	-	-	-	- 17	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	1.0	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	Alle.	0	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				-	0.083	-	-	-	Office &	· O -	-	-	-		-	-	-	-
1,2-Dichloropropane				-	-	-	-	-	35- KO	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	- 0	80.9	-	-	-	-	-	-	-	-	-
Trichloroethene	0.5	0.01	0.0075	-		-	-	Ś	.10	-	-	-	-		-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075			-	-	- III	Ø		-		-	٠	-	-	-	-
Dibromochloromethane				٠	-		-	2 30	· -		-	-	-		-	-	-	-
1,1,2-Trichloroethane					-			dr of t	-	-	-	-	-		-	-	-	-
Benzene	0.03	0.001	0.00075	<u>6.5</u>	<u>5.2</u>	<u>2.9</u>	2.9	<u>~2.8</u>	<u>2.1</u>	<u>3.0</u>	-	<u>3.2</u>	<u>3.5</u>	<u>2.7</u>	-	<u>1.2</u>	<u>3.1</u>	<u>1.6</u>
trans-1,3-Dichloropropene				-	-	-		4	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				-	-	-	OSKY,	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane				-	-	- 4	y. 6y	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	5.2	3.8	0.23	J:5	0.83	0.22	0.63	-	-	-	2.1	-	-	-	0.22
Chlorobenzene	0.18	0.001		-	-	٠,٧	Ø2 −	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		2.9	1.9	0.51	0.94	0.44	0.39	0.71	0.069	0.73	0.34	-	-	0.018	0.096	0.060
Styrene	0.3			- 40	- 7.0	-20	- 0.4	-	- 2.4	- 7.0	-	-	- 0.7	- 0.0	-	- 0.00	-	-
Xylenes(meta and para)				13	7.0	3.2	6.4	5.8	3.4	7.6	2.0	8.0	6.7	9.3	-	0.23	5.2	3.2
o-Xylene	0.07	0.04		2.1	1.4	0.43	0.81	0.62	0.27	0.58	0.10	0.40	- 67	0.74	-	- 0.22	- 50	0.14
Total Xylene	0.07	0.01		15	8.4	P 3.6	7.2	6.4	3.7	8.2	2.1	8.4	6.7	10	-	0.23	5.2	3.3
Freon 113		0.00	0.04	-	60	-	-		-	-	-	-	-	-	-	-	-	-
Methyl t-butyl ether		0.03	0.01	- :	-	-	-	-:-	-	-	-		-	-	-	-		
Vinyl Acetate Total BTEX				30	- 19	7.3	13	10	6.4	13	2.2	12	11	15	-	1.4	8.4	5.2
Total VOCs		-	-	31	19	7.3	13	10	6.4	13	2.2	12	11	15	-	1.4	8.4	5.2
Alcohols and VOA				31	19	1.3	13	10	0.4	13	2.2	12	11	15		1.4	0.4	5.2
							l		l						l		l	
Compounds Methanol				-	_	-	_		_	_	_	_	-	_	_	_	_	_
Ethanol																		
iso-Propanol				-	-	-	-		-	-	-	-	-	-	-	-	1.3	-
Tetrahydrofuran	0.3		0.115	2.2	0.9	0.68	1.4	1.6	1.6	1.1	4.6	13	8.6	12	1.9	4.8	1.3 3.9	1.6
Cyclohexane	15		0.115	0.11	0.10	0.68	1.4	7.6	7.6	7.7	4.6	- 13	8.6	0.66	0.069	0.054	0.80	0.56
	15			0.11	0.10	0.040		-:-	-		-		-	0.66	0.069	0.054	0.80	0.56
Ethyl Acetate		1	1	-	<u> </u>	-		-	<u> </u>		-					-		-

Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV Indicates result above GTV Indicates result above GTV

											C1							
Volatile Organic Compound	DIV	IGV	GTV			T		I	I	T	Limestone			T				
Chloromethane				May-03	Nov-03	May-04	Nov-04	May-05	Nov-05	May-06	Nov-06	May-07	Nov-07	May-08	Nov-08	May-09	Nov-09	May-10
1,2,4-Trimethylbenzene				-		-	-	-	-	-	-	-	-	-		-		-
1,3,5-Trimethylbenzene				-	- :	-	-	-	-	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene						-		-	-	-	-	-	-	-		-		
Bromomethane					-	-		-	-	-	-	-	-	-		-	-	-
Vinyl Chloride	0.005		0.000375	-	- :	-	-	-	-	-	-	-	-	-		-	-	-
Isopropylbenzene	0.003		0.000373			-			-	-	-	-		-				
Propylbenzene										-			-				-:-	
Chloroethane						-		-	-	-	-	-	-	-		-		-
Trichlorofluoromethane				na	na	na	na	na	na	na	na	na	na	na	na	-	-	_
Dichloromethane	1	0.01	0.015	-	-	-	-	-	-	-	-	-	-	-	0.010	-	-	_
Acetone	•	0.01	0.010	-	-	_	-	-		-	-	-	-		-	_		-
Carbon Disulphide				-	-	-	-	-	-	-	-	-	-	-	-	-		-
1.1-Dichloroethane	0.9			-		-	-		-		-		-	-	-	-	-	_
1.1-Dichloroethene	0.01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1.2-Dichloroethene		0.03		-	-	-	_	-	-	-	_	-	_	-	_	-	-	-
cis-1,2-Dichloroethene	0.02	2.00	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform					-	_	-			-	_	-	_		-	_	-	_
Chloroform	0.4	0.012		-		-	-	-	-	-	.01*	-	-	-	-	-		-
1.2-Dichloroethane	0.4	0.003	0.00225	-		_	-	_	_	-	1180	-	_	_	-	-	_	_
Butanone(MEK)	0.4	0.000	0.00225	-		-	-	-	-		× -	-		-	-	-	-	_
1,1,1-Trichloroethane	0.3	0.5		-		-		-	-	- 17			_	-		-		_
Carbon Tetrachloride	0.01	0.0		-		-		-	-	1.0	-	-	-	-	-	-		-
Bromodichloromethane	0.01			-	-	_	-	-	74.	3	-	-	_		-		-	_
4-Methyl-2-Pentanone(MIBK)				-		-	-	-	off)	· · · · ·	-	-	-	-	-	na	na	na
1,2-Dichloropropane				-		-		-	20'00	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-		-	-	- 0	6. Y		_		_	-	-	-		-
Trichloroethene	0.5	0.01	0.0075	-		-		-,00			_		_	-		_		_
Tetrachloroethene	0.04	0.01	0.0075	-		-		11/V	7). ·	-	-	-	-	-	-	-		-
Dibromochloromethane	0.01	0.01	0.0070	-	-	-	-	- 2 .e	· .	-	-	-	-	-	-	0.005	-	-
1,1,2-Trichloroethane				-		-	(	1 x 10	-	-	-	-	-	-	-	-		-
Benzene	0.03	0.001	0.00075	2.1	1.5	0.84	- 🚫	36	0.22	0.58	0.41	-	-	-	0.62	-		-
trans-1,3-Dichloropropene				-	-	-	200	7	-	-	-	-	-	-	-	-		-
2-Hexanone(MBK)				-	-	-	~87 × (	<del>-</del>	-	-	-	-	-	-	-	na	na	na
1,1,2,2-Tetrachloroethane				-			V. 650	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	-	\$0°	1000	-	0.10	-	-	-	-	-	-	0.004	0.01	-
Chlorobenzene	0.18	0.001	0.000	-	-	X.	<u>റ്റ് -</u>	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	0.15	0.01		-		0		-	0.15		-	-	-	-		-		-
Styrene	0.3			-		2	-	-		-	-	-	-	-	-	-	-	-
Xylenes(meta and para)			1	0.81	0.41	X.		0.008	0.88	-	-	-	-	-		-	0.012	-
o-Xylene				-	- ,	er-	-	-	0.24	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01		0.81	0.41	Ρ -	-	-	1.1	-	-	-	-	-	-	-	0.012	-
Freon 113				-	e O	-		-	-	-	-	-	-	-	-	na	na	na
Methyl t-butyl ether		0.03	0.01	-		-	0.002	0.002	-	-	0.019	0.013	0.007	0.018	0.016	0.053	0.29	0.023
Vinyl Acetate				-		-	-	-	-	-	-	-	-	-	-	na	na	na
Total BTEX				2.9	1.9	0.84	-	0.36	1.6	0.58	0.41	-	-	-	0.62	0.004	0.022	-
Total VOCs				2.9	1.9	0.84	0.002	0.37	1.6	0.58	0.43	0.013	0.007	0.018	0.65	0.062	0.32	0.023
Alcohols and VOA																		
Compounds						1		l	l	l		l		l				
Methanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
iso-Propanol			Ì	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrahydrofuran	0.3		0.115	2.8	1.4	0.8	0.4	1.0	1.2	0.40	0.39	0.29	0.28	0.21	0.25	0.50	0.72	-
Cyclohexane	15	1		0.37	0.51	0.14	0.032	0.12	0.30	-	0.034	0.011	0.036	0.033	0.028	-		-
Ethyl Acetate			1	-	-	-	-	-	-	-	-	-	-	-	-	-		-
										•		•						

Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV Indicates result above GTV Indicates result above GTV

													C1								
Volatile Organic Compound	DIV	IGV	GTV									11	mestone								
Volatile Organic Compound	DIV	101	GIV	Nov-10	May-11	Nov-11	May-12	Nov-12	May-13	Nov-13	May-14	Nov-14	May-15	Nov-15	May-16	Nov-16	May-17	Nov-17	May-18	Nov-18	May-19
Chloromethane				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>+</b> -	-	-
p-Isopropyltoluene				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane				_	_	-	_	_	_	_	_	_	-	_	_	_	-	-	<u> </u>	-	-
Vinyl Chloride	0.005		0.000375	_	-	_	_	_	-	-	_	_	-	-	_	_	-	-	_	-	-
Isopropylbenzene	0.000		0.000070	-	-	-	-	-		-	-	-	-	-	-	_	-		_	<u> </u>	0.007
Propylbenzene					_				_	_	_	_	_	_	_	_	_	_	1 .	-	0.007
Chloroethane					_	-		-	-	-	_	_	_	_	_	-	-	_		<del> </del> -	-
Trichlorofluoromethane					_			h .			<u> </u>	l .		_	<u> </u>	<u> </u>	-		+ -	+ -	-
Dichloromethane	1	0.01	0.015					-	-	-		-	-					<del>-</del>	+ -	<b>—</b> —	
Acetone		0.01	0.013		-	-	-		-	-	-				-			<del>-</del>	+ :	<del>+ -</del> -	<u> </u>
Carbon Disulphide				-	-	-		-			-	-					na				
	0.0			-						-				-		na		na	na	na	na
1,1-Dichloroethane	0.9	-		_	-	-	-	-	-		-	-	-	_	-	-	-	-	-	<del>                                     </del>	-
1,1-Dichloroethene	0.01	0.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	0.02	0.03	0.000375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene		ļ		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.4	0.012			•	-	•	•	•	•	•	•	ي	-	-	-	-	-	-	-	-
1,2-Dichloroethane	0.4	0.003	0.00225	-	-	-	-	-	-	-	-	- 4	72	-	-	-	-	-	-	-	-
Butanone(MEK)				-	-	-	-	-	-	-	-	^>	-	-	-	na	na	na	na	na	na
1,1,1-Trichloroethane	0.3	0.5		-	-	-	-	-	-	-	-	Me	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	0.01			-	-	-	-	-	-	-	-	10.	-	-	-	-	-	-	-	-	-
Bromodichloromethane				-	-	-	-	-	-	-	74.	67	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone(MIBK)				na	na	na	na	na	na	na	na '	na	na	na	na	na	na	na	na	na	na
1,2-Dichloropropane				-	-	-	-	-	-	- 4	200	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene				-	-	-	-	-	-	- 350	. 9.	-	-	-	-	-	-	-	-	-	
Trichloroethene	0.5	0.01	0.0075	-	-	-	-	-	-	· 60.	Ko.	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.04	0.01	0.0075	-	-	-	-	-	-	111,10	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane				-	-	-	-	-	- 0	6.00	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane				-	-	-	-	-	0	- X >	-	-	-	-	-	-	-	-	-	-	-
Benzene	0.03	0.001	0.00075	-	-	0.057	0.19	0.17	cV.	0.23	0.11	0.09	0.058	0.092	0.098	0.0007	0.026	0.030	0.050	0.051	0.051
trans-1,3-Dichloropropene				-	-	-	-	-	200 3	-	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone(MBK)				na	na	na	na	na .	Syna	na	na	na	na	na	na	na	na	na	na	na	na
1,1,2,2-Tetrachloroethane				-	-	-	-		. 6	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	1	0.01	0.525	-	0.004	-	-	(C)	100	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	0.18	0.001	0.020	-	-	-	-	¥ 5	3 -	-	-	-	-	-	-	-	-	-	<b>+</b> -	-	-
Ethylbenzene	0.15	0.01		-	-	-	-		-	-	0.016	-	-	-	0.007	-	-	-	-	-	0.004
Styrene	0.3			-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes(meta and para)				-	0.004		-	X	-	-	0.115	-	-	-	0.299	-	-	-	0.032	-	0.960
o-Xylene				-	-	-	0	N .	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Xylene	0.07	0.01		-	0.004	-	-03	-	-	-	0.12	-	-	-	-	-	-	-	0.032	-	0.960
Freon 113				na	na	na	ria	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Methyl t-butyl ether		0.03	0.01	0.015	0.83	0.47	0.12	0.043	0.020	0.045	0.010	0.009	0.017	0.034	0.049	0.022	0.018	0.066	0.044	0.058	0.031
Vinyl Acetate		0.00	0.0.	na	na	na	na	na	na	na	na	na	na	na	na	na na	na	na	na	na	na
Total BTEX		l		-	0.008	0.057	0.19	0.17	-	0.23	0.24	0.088	0.058	0.092	0.105	0.001	0.026	0.030	0.082	0.051	1.015
Total VOCs				0.015	0.84	0.53	0.31	0.21	0.020	0.27	0.25	0.097	0.074	0.13	0.45	0.023	0.044	0.096	0.13	0.109	1.052
Alcohols and VOA			i	0.0.0		0.00	V.V.		. 0.023		<u> </u>				0	0.020	1 0.0.7	1 0.000		1	<del></del>
Compounds								1	l	1	1				l	l			1	1	
Methanol		<del>                                     </del>			_	-	_			_	_	_		_	_	_		_	_	<b>-</b>	<u> </u>
Ethanol		<del>                                     </del>		-	-			-	-	-	-	-	-	-	-	-	-	<del>  -</del>	-	-	-
		<u> </u>		-	-	- :		-	-	-	-	-		-	-		-	<del>-</del>	-	-	-
iso-Propanol	0.3		0.115							0.10				0.11	0.14	0.11	0.14		_		0.103
Tetrahydrofuran		<b> </b>	0.115	-	-	0.092	-	-	0.054		-	0.099	0.079	0.11		0.11	0.14	0.10	-	0.095	
Cyclohexane	15	<b> </b>					-			-				-	-	-				+	0.077
Ethyl Acetate		l		-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-

- Indicates result below reporting limit DIV: Dutch Intervention Value IGV: EPA Interim Guideline Value GTV: Groundwater Threshold Value Indicates result above DIV Indicates result above IGV

Indicates result above GTV

# **Appendix D Shallow Soil Site Investigation Tables**

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## Table 7: Soil Heavy Metal and Miscellaneous Results Pfizer Pharmaceuticals Ireland - Ringaskiddy Baseline Soil Assessment - July 2019

Sampling	Location	Sample Depth	Sample			Lal	boratory Analy	sis		
Date	ID	m bgl	Matrix	VOCs + TICs	SVOCs + TICs	TPH-CWG	CLEA Metals	Cyclohexane	THF	Bromide
30/07/2019	BH1	0.0 - 1.0	S	Х	Х	Х	Х	Х	Х	Х
30/07/2018	Dill	1.0 - 2.0	S	X	Х	X	Х	X	Х	Х
30/07/2019	BH2	0.0 - 0.6	S	X	Х	Х	X	Х	X	Х
		~	~	~	~	~	~	~	~	~
30/07/2019	ВН3	0.0 - 1.0	S	X	X	X	X	X	X	X
		1.0 - 2.0	S	X	X	X	X	X	X	X
29/07/2019	BH4	0.0 - 1.0 1.0 - 2.0	S	X	X X	X	X	X	X	X
		0.0 - 1.0	S	X	X	X	X	X	X	X
29/07/2019	BH5	1.0 - 2.0	S	X	X	X	X	X	X	X
		0.0 - 1.0	S	X	X	X	X	X	X	X
29/07/2019	BH6	1.0 - 2.0	S	X	X	X	X	X	X	X
00.000.0010		0.0 - 1.0	S	X	X	X	X	X	X	X
29/07/2019	BH7	1.0 - 2.0	S	Х	Х	Х	X	Х	Х	Х
23/07/2019	BH8	0.0 - 1.0	S	Х	Х	Х	X	X	X	Х
23/07/2019	BH8	1.0 - 2.0	S	Х	Х	Х	X	X	X	Х
24/07/2019	BH9	0.0 - 1.0	S	Х	Х	Х	X	X	X	Х
24/01/2019	BUA	1.0 - 2.0	S	Х	Х	Х	Х	Х	Х	Х
24/07/2019	BH10	0.0 - 1.0	S	Х	Х	Х	Х	Х	Х	Х
	50	1.0 - 2.0	S	Х	Х	Х	X	Х	Х	Х
24/07/2019	BH11	0.0 - 1.0	S	X	Х	Х	X	Х	Х	Х
		1.0 - 2.0	S	X	Х	X	X	X	X	X
24/07/2019	BH12	0.0 - 1.0	S	X	X	X	X	X	X	Х
		1.0 - 2.0	S	X	X	X	X	X	X	X
25/07/2019	BH13	0.0 - 1.0 1.0 - 2.0	S	X	X X	X	X	X	X	X
					X		X		X	
25/07/2019	BH14	0.0 - 1.0	S	X		X	X	Xo.	X	X
		1.0 - 2.0 0.0 - 1.0	S	X	X X	X	X	XX	X	X
26/07/2019	BH16	1.0 - 2.0	S	X	X	X	X X	× ^	X	X
		0.0 - 1.0	S	X	X	X	x o	X	X	X
25/07/2019	BH17	1.0 - 2.0	S	X	X	X	· A	X	X	X
		0.0 - 1.0	S	X	X	X A	- OX	X	X	X
25/07/2019	BH18	1.0 - 2.0	S	X	X	XO,	→ X	X	X	X
22/07/2019	BH19	0.0 - 1.0	S	Х	Х	CX X	X	х	Х	Х
22/07/2019	внія	1.0 - 2.0	S	X	Х	O xel	X	X	X	Х
23/07/2019	BH20	0.0 - 1.0	S	Х	X X	2 3	X	Х	Х	Х
23/01/2019	BHZU	1.0 - 2.0	S	X	X	X	X	X	Х	Х
23/07/2019	BH21	0.0 - 1.0	S	X	X +	o x	X	X	Х	Х
20/01/2010	D.1.2.1	1.0 - 2.0	S	X	JOX OF	X	X	X	X	X
		0.0 - 1.0	S	X g	CV XIV	Х	X	Х	Х	Х
22/07/2019	BH22	1.6	S	× S	OX.	Х	X	Х	X	Х
		1.0 - 2.0	S	· Vigit	X	Х	Х	Х	Х	Х
23/07/2019	BH23	0.0 - 1.0	S	X X . 0	X	X	X	X	X	X
		1.0 - 2.0	S	SO, X C.	X	X	X	X	X	X
23/07/2019	BH24	0.0 - 1.0	S	× 30.	X	X	X	X	X	X
		1.0 - 2.0 0.0 - 1.0	S	X	X	X	X	X	X	X
22/07/2019	BH25	1.0 - 2.0	S	X	X	X	X	X	X	X
		0.0 - 0.8	031	X	X	X	X	X	X	X
25/07/2019	BH26	~	S	~	~	~	~	~	~	~
		0.0 - 1.0	S	X	X	X	X	X	X	X
26/07/2019	BH27	1.0 - 2.0	S	X	X	X	X	X	X	X
	B.1100	0.0 - 1.0	S	X	X	X	X	X	X	X
24/07/2019	BH28	1.0 - 2.0	S	X	X	X	X	X	X	X
23/07/2019	DUP 01	0.0 - 1.0	S	Х	Х	Х	Х	Х	Х	Х
23/01/2019	(BH8)	1.0 - 2.0	S	Х	Х	Х	Х	Х	Х	Х
24/07/2019	DUP 02	0.0 - 1.0	S	Х	Х	Х	Х	Х	Х	Х
_ ,,0,,2018	(BH11)	1.0 - 2.0	S	Х	Х	Х	Х	Х	Х	Х
25/07/2019	DUP 03	0.0 - 1.0	S	Х	Х	Х	Х	Х	Х	Х
	(BH13)	1.0 - 2.0	S	X	Х	Х	X	Х	Х	Х
26/07/2019	DUP 04	0.0 - 1.0	S	X	Х	X	X	X	X	Х
	(BH16)	1.0 - 2.0	S	X	X	X	X	X	X	X
29/07/2019	DUP 05	0.0 - 1.0	S	X	X	X	X	X	X	X
	(BH6)	1.0 - 2.0	S	X	X	X	X	X	X	X
30/07/2019	DUP 06 (BH3)	0.0 - 1.0 1.0 - 2.0	S	X	X	X	X	X	X	X
			S	X	X	. X	X	X	X	X

- Notes: S soil/subsoil

- S solfsubsoll
  mbg!-metres below ground level
  VOCs Vokalile Organic Compounds
  TCs Tentatively identified Compounds
  SVOCs Semi-Vokatile Organic Compounds
  SVOCs Semi-Vokatile Organic Compounds
  TPH-CVMS total petroleum hydrocarbons criteria working group (speciated hydrocarbons with aromatic/aliphatic split)
  CLEA Metals Antimony, Arsenic, Barium, Beryllium, Water Soluble Boron, Cadmium, Chromium, Chromium III, Chromium VI, Copper, Lead, Mercury, Nickel,
  Selenium, Vanadium and Zinc
  THF Tetrahydrofuron
- X analysis scheduled ~ analysis not scheduled

Sample Type	_	_					oil		Soil		oil		Soil		oil		Boil		iol		ioi
Sample Type Sample ID	4		Human Health GAC -		Max	B			H2	B			508 8H4		H5		SOI SHE			B	
Sample ID Sample Depth (m)	Units	MDL (MO <sup>(kg)</sup>	Commercial / Industrial	Controlled Waters GAC (mg/kg)	Concentration	0.0-1.0	1.0-2.0	0.0-0.6		0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled	4	(DO0)	(µg/kg)		(µg/kg)		72019		7/2019	30/07			7/2019		1.0-2.0		7/2019		1.0-2.0		72019
Parameter (Volatile Organic						300	12013	500	772013	300	2013	230	112019	230	12012	220	1,2019	140	12013	230	12013
Compounds)																					
Dichlorodifluoromethane	µg/kg	<2	nor	ner	-		-		-	-		-	-	-	-		-	-	-	-	-
Methyl Tertiary Butyl Ether	на/ка	-2	nor	ner	-			-	-		-	-		-	-	-	-	-	-	-	
Chloromethane Vinyl Chloride	µg/kg	- 3	480	nca	4	-	•	-	-		-	-		-	-	-	-	-	-	-	
Viryl Chonde Bromomethene	µg/kg		ner	rer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane Chloroethane	µg/kg	<1	nor	ner	-	- :	-		-					-	-	-	- :	-		-	
Trichlorofluoromethene	µg/kg µg/kg	-2	nor nor	rer					-		-							-			
1,1-Dichloroethene (1,1 DCE)	19/kg	-66	ner	rer		-	- :		-		- :	-	- :		-	-	- :	-	-		- :
Dichloromethane (DCM)	19/kg	<30	nor	rer	-	-			-	- :			-		- :	-	-	-			
trans-1-2-Dichloroethene	19 <sup>1</sup> 9	-3	nor	rer					_												
1,1-Dichloroethane	HQ/kQ	-3	ner	rer		-		-	-		-			-	-			-		-	
cis-1-2-Dichloroethene	yg/kg	- 3	nor	ner	-		-	-	-	-			-	-	-					-	-
2,2-Dichloropropane	µg/kg	-04	nor	rcr					-			-		-				-	-	-	
Bromochloromethane	19/kg	-3	ner	ner	-		-		-	-			-			-	-	-		-	-
Chloroform	19/kg	ব	ner	rer	-		-		-	-			-			-	-	-		-	-
1,1,1-Trichloroethane (1,1,1 TCA)	19/kg	-3	ner	ricr	-		-	-	-	-		-	-	-	-	-	-	-	-	-	-
1,1-Dichloropropene	µg/kg	-3	nor	rer	-		-	-	-	-	-	-	-	-	-		-	-	-	-	-
Carbon tetrachloride	19/kg	-04	ner	rer	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	µg/kg	-04	nor	rer	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-
Benzene	µg/kg	ය	12,000	8.7	9		-		-	-			-				-			-	-
Trichloroethene (TCE)	µ9/kg	ব	nor	ner			-		-	-			-				-	-		-	-
1,2-Dichloropropane	19 <sup>9</sup> 9	-6	ner	rer		- :		-	-	-	-	-		-	-		- :		-		
Dibromomethene Bromovifichtenomethene	µg/kg	-3	nor	ner	-	-	-	-	-	-			-			-		-	-	-	-
	µg/kg	<3	nor	ner	-	-		-	-		-	-		-	-	-		-	-	-	-
cis-1-3-Dichloropropene Toluene	µg/kg	- 64 - 63	nor 28,000,000	ner 31	- 11				-									-			
trans-1-3-Dichloropropene	yg/kg	ය ය	28,000,000	ner	- 11		-	-	-	-	- :		-	- :	-	-	-	-	-		-
1,1,2-Trichloroethane	19/kg 19/kg	- 3	nor	rer	-				-	- :			-		- :	-		-			
Tetrachloroethene (PCE)	19/49 19/49	-3	nor	rer					-												
1,3-Dichloropropane	19/kg	-3	ner	rer					_												
Dibromochioromethane	HQ/KQ	-3	ner	rer		-		-	-		-			-	-			-		-	
1,2-Dibromosthane	µg/kg	- 3	nor	rcr					-					-	-						-
Chlorobergene	µg/kg	ය	nor	ner					-									-			
1,1,1,2-Tetrachloroethane	F9/kg	-3	ner	rer	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-
Ethylbenzene	µg/kg	ය	2,700,000	132	5			-	-			-	5		-	-		-	-	-	
p/m-Xylene	µg/kg	6	2,900,000	67	313			9	-				16	Ø.			-	-		-	
o-Xylene	µg/kg	ය	3,100,000	67	14			4	-				14		-			-		-	-
Styrene	19/kg	ব	1,660,000	240	9	-	-	-	-	-	-	-	~ ~	-	-	-	-	-	-	-	-
Bromoform	на/ка	-3	nor	ner	-		-		-				- C.Y			-	· ·	-		-	-
Isopropylberzene	на/ка	ব	632,000	nca	6		-	-	-	-	-	-	6	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane Bromobersane	на/ка	- 3	nor	ner	<u> </u>	-		-	-		-		v	-	-	-	· ·		-		<u> </u>
1,2,3-Trichloropropane	19/kg	- 64	ner ner	ner	-	- :	- :		-	- :	- 44	. 4	-	-	- :		-:-	-	-		-
Propylberzene	19/kg 19/kg	- 04	1,880,000	nca	18	<del></del>	<u> </u>	-	-	<u> </u>	- 3	1. 30	18	<del></del>	<del></del>	-	<del>- : -</del>	<del></del>	-	-	
2-Chlorotoluene	19/40 19/40	- 3	1,080,000	nor	-	<u> </u>			-		- 60	1 CV	-			1	1	t - : -	-	1	
1,3,5-Trimethy/bergene	pg/kg pg/kg	- 3	1.500.000	noa	32				-		~ 0	13	32				<b>—</b> :	1			
4-Chlorotoluene	µg/kg	-3	ner	rer	-		-	-	-	-	07 1	₹ .	-	-	-	-	-	-	-	-	-
tert-Butylberizene	19/kg	-6	nor	ner	-		-	-	-		5 20	-	-	-	-	-			-	-	-
1,2,4-Trimethy/bergene	19/kg	-6	19,200	nca	253		-		-	- 00	·. 100		253			-		-		-	-
sec-Buty/berzene	µg/kg	-04	120,000,000	nca	19		-	-	-	1	N	-	18	-	-	-	-	-	-	-	-
4-Isopropyltoluene	19/kg	-04	nca	nca	28				-	200	7	-	28	-	-	-	-	-	-	-	-
1,3-Dichloroberzene	µg/kg	-04	ner	rer	-		-		-	2.0		-	-	-	-				-	-	-
1,4-Dichlorobenzene	µg/kg	-04	ner	rer	-		-		- 3	7.7			-	-	-						-
n-Buty/benzene	µg/kg	-04	58,000,000	nca	36				0	03		-	36	-	-		-		-	-	-
1,2-Dichlorobenzene	19/kg	-04	ner	rer	-	-	-	-	-CV	0	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane	19/kg	-04	ner	rer	-		-	-	20 3	7		-		-	-	-	-		-		-
1,2,4-Trichlorobergene	µg/kg	<7	nor	rer	-	-	-	-	O O	-		-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	19/kg	-04	nor	ner	-		-	`ھــــــــــــــــــــــــــــــــــــ	25.7	-	-	-	-	-	-	-	· ·		-	-	-
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1,2,3-Trichlorobergene	нд/ка	<7	ner	ner	<u> </u>	-		CO.	200	-	-	-	-	-	-	-	-	-	-	-	
Volatile Organic Compounds - Tentatively Identified Compounds	1				l				· ·	l		1	l	l	l	1	l	1	1	1	1
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Detected													Yes								

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

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Series						_																										
The property of the property o		_		Human Health GAC .		May							Soil					Soil		Soil		Soil	-								Soil	
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Symptom	Xylene			3,100,000	67	14		-	-	-	-	-	-			-	-						-	-	-		-	-	-	-		-
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13-0   13-0		μα/kg	<3						-						-	-		20	-										-	-		-
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Treatable principle Identified Compounds Treatable principle Identified Compou	olatile Organic Compounds -	- AND THE				1								VO. VA	_																	
None Annual Annu	entatively Identified Compounds	1			1	1	1	1	l	1			1	X 24.	1	1		1		1							1		1	1		
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Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

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Sample Type						Soil		loil	8	ol	8	ol	Soil	Soil	Soil		Soil		Soil	Si	ol	8	iol	Soil	
Sample ID		MDL	Human Health GAC -	Controlled Waters	Max	BH23		H24		125			BH27	BH28	DUP01		JP62		UP03		P64		P05	DUP06	
Sample Depth (m)	Units	(mg/kg)	Commercial / Industrial (pg/kg)	GAC (pg/kg)	Concentration (pg/kg)	0.0-1.0 1.0-2.0	0.0-1.0		0.0-1.0		0.0-0.8		1.0-2.0	0.0-1.0 1.0-2.0		0.0-1.0			1.0-2.0	0.0-1.0	1.0-2.0		1.0-2.0	0.0-1.0 1.1	1.0-2.0
Date Sampled			40.00		( <b>Ja</b> 9-14)	23/07/2019	23/07			7/2019	25/07		07/2019	24/07/2019	23/07/2019		7/2019		7/2019	26/07			7/2019	30/07/2019	
Parameter (Volatile Organic																									
Compounds) Dichlorodifluoromethene	µg/kg	-2	nor	nor	-			-																	$\overline{}$
Methyl Tertiary Butyl Ether	на/ка		nor	nor	-											-				-	-		-		_
Chloromethane	найа		480	nca	4																		-		-
Vinyl Chloride	нg/kg	-2	nor	nor	-		-	-				-	-	-		-		-	-	-	-		-		-
Bromomethane	на/ка	<1	nor	nor			-				-			-									-		-
Chloroethane	µg/kg	<2	nor	nor	-			-					-			-	-	-		-	-		-		-
Trichlorofluoromethane	найка	-2	nor	nor	-		-	-	-				-	-		-	-	-		-			-		•
1,1-Dichloroethene (1,1 DCE) Dichloromethane (DCM)	на/ка на/ка	<6 <30	nor	ner ner	-			-	-								-		-	-	-	-	-	-	<del>-</del>
trans-1-2-Dichlomethone	yg/kg yg/kg		ner	807			-										-		-		-		-		<del>-</del>
1.1-Dichloroethane	HB/KB HB/KB		nor	nor	-		-						-			+ :	-							-	÷
cis-1-2-Dichloroethene	нама		nor	nor	-											-				-	-		-		_
2,2-Dichloropropane	нама	<4	nor	nor				-	-			-	-							-			-		-
Bromochioromethane	наува	ය	ner	ner							-	-	-	-	-								-		-
Chloroform	µg/kg		nor	nor	-		-	-	-				-			-		-	-	-	-	-	-		-
1,1,1-Trichloroethane (1,1,1 TCA)	нажа		ner	nor	-		-	-	-							-	-	-		-		-	-		
1,1-Dichloropropene Carbon tetrachloride	µg/kg	<3 <4	ner	nor nor	-		<del>-</del>	-	-		-			-		-	<u> </u>	-	<del>                                     </del>	-	-	-	- 1	-	<del>-</del>
1,2-Dichloroethane	на/ка на/ка		ner	nor nor	-		1 - 1 -	-	-		-		+ :-		+ : + :	+ :-	1 :	-	1 1		1		:		<del>-</del>
Benzene	yg/kg yg/kg		12.000	8.7	9				-		-		<b>+</b> :			1			1 1	- :		-			
Trichloroethene (TCE)	ид/ка ид/ка		nor	nor	1			-					1			+ -				-					_
1,2-Dichloropropane	нама	<6	ner	nor	-			-								-	-	-		-	-				_
Dibromomethane	HB/kB	<3	nor	nor	-			-											-	-	-		-		-
Bromodichloromethane	наука	ය	nor	nor							-			-	-								-		-
cis-1-3-Dichloropropene	µg/kg	<4	nor	ner	-		-	-	-		-	-	-			-	-	-	-	-	-	-	-		
Toluene	µg/kg	ය	28,000,000	31	11		-					-					-		8				-		<u> </u>
trans-1-3-Dichloropropene 1.1.2-Trichloroethane	на/ка	-3	nor	nor nor			-	-	-	-			-		1 1	-	- :	-	-	- :	-			-	
Tetrachloroethene (PCE)	µg/kg	- 3	ner	nor	-		-	-	-	· ·			-	1 1		+-:-				-	-	-		-	<u> </u>
1,3-Dichloropropane	на/ка на/ка		nor	nor	- :		-	-	-		<del></del>		<u> </u>		1 1	-	-	-	- : -	- :	-	- :			÷
Dibromochloromethane	µg/kg		nor	nor							-												-		$\overline{}$
1,2-Dibromoethane	нама		nor	nor				-															-		-
Chlorobenzene	HB/KB	<3	nor	nor	-		-	-			-		-				-	-	-	-	-		-		-
1,1,1,2-Tetrachloroethane	најка	<3	nor	nor	-		-	-	-		-	-		-	-	-		-		-	-		-		
Ethylberzene	µg/kg	<3	2,700,000	132	5		-	-	-		-	-	-			-	-	-	-	-	-	-	-		
p/m-Xylene	найка		2,900,000	67	313 14			-					-		<u>ه</u> .	-		-		-		-	-	-	-
o-Xylene Styrene	на/ка на/ка		3,100,000 1,660,000	240	9		-	-	-	-			-		<b>y</b>	-		-	-	-		-	-		<u> </u>
Bromoform	Halka Halka		1,660,000	240	9		-	-	-		-		-		1 1	+-:-	-	-			-	-	-	-	÷
Iscoropy/benzene	на/ка на/ка		632,000	noa	- 6		-	-	-		<del></del>		-	170	1 1	-				-	-	- :		-	$\dot{-}$
1,1,2,2-Tetrachloroethane	HB/KB HB/KB	-3	nor	nor	-			-	-		-			0		-		-		-	-	-		-	_
Bromobenzene	нама		nor	nor	-			-	-		-		-			-		-		-		-	-		-
1,2,3-Trichloropropane	µg/kg	<4	nor	nor	-			-	-		-			7. 2					-			-	-		_
Propylberzene	нд/ка	<4	1,880,000	noa	18			-	-		-			2, 2,			-	-		-	-		-		
2-Chlorotoluene	на/ка	<3	ner	nor	-			-	-				0			-	-	-		-			-		
1,3,5-Trimethy/benzene 4-Chlorotoluene	нажа		1,500,000 nor	nca	32		1	-	-		-		جي ا	ξO? 5		-	-	-	<del>                                     </del>	-	-	-	- 1	-	
4-Chlorotoluene tert-Butylbenzene	на/ка на/ка	ය ර	ner	nor nor	<del>- : -</del>		<del></del>	<del></del> -	<del></del> -	1 - 1 - 1 -			ا الكاء ا	V' : :	<del>                                     </del>	+-:-	<del>- : -</del>	<del></del>	<del></del>	- :	<del>- : -</del>				÷
1.2.4-Trimethylbergene	yg/kg yg/kg	-6	19.200	noa	253				-		-		200°.760	- 17		1 -			1 1	- :		-			
sec-Butylberzene	ид/ка ид/ка		120,000,000	noa	19		-		-		-		N W			+ -	-		1 1			-			_
4-Isopropyltokene	HB/kB	-04	nca	nca	28			-	-				X (V)	- 6		-		-		-	-	-	-	-	_
1,3-Dichlorobenzene	нg/kg	-04	nor	nor	-			-	-	-		- 2	-C)					-		-	-	-		-	
1,4-Dichlorobergene	наува	<4	nor	nor	-			-	-	-	-	- N								-		-	-	-	
n-Buty/benzene	µg/kg		58,000,000	nca	36		-	-	-			. O. e	N .	- 8		-	-	-	-	-	-		-		-
1,2-Dichlorobenzene	нажа		ner	nor	-		-	-	-							-	-	-	-	-		-	-		
1,2-Dibromo-3-chloropropane	µg/kg	- 64	ner	ner	-		-	-	-	-		Sep 3N'	-			-	-	-	-	-	-	-	-	-	
1,2,4-Trichlorobergene Hexachlorobutadiene	HB/kB	<7	ner	ner ner	-		-	-	-	-	-	- 20 ° O .	<del>                                     </del>			-	-	-	<del>                                     </del>	-	-	-	- 1	-	
Hexachlorobutadiene Naphthalene	на/ка на/ка		nor 90,000	ncr 19	73		-	-	-			1931	+			+-:-		-	<b>+</b> : +	-	1	-	-		<del>-</del>
1,2,3-Trichlorobenzene	µg/kg µg/kg		90,000 ncr	19 nor	13		<del></del>	-	-			X X	<del></del>		<del>                                     </del>	+ :-	<del>- : -</del>	-	<del></del>	- :	<del></del>				÷
Volatile Organic Compounds -	Helefall.	- "					1				$\sim$	0 <del>7.00</del>				+	1		1						_
Tentatively Identified Compounds				1	l			1	1	1	~	OSIL.	1			1		1			1		1	1	
(TICs) Detected						- Yes		Yes		Yes		84	<u> </u>	- Yes	- Yes	1 -	Yes								
											_					_						_		_	

Notes:

MDL - Method Detection Limit -- nikn - micrograms ner kilogram

- <MDL - No sample taken

nca - No criteria availa ncr - No criteria requin

ND - No TICs detected

xx Exceeds Human Health GAC - Commercial / Industrial

PR-42549\_JCM\_RP\_SENIO1 Apparent Daton

Sample Type						S	lioil	S	oil	S	oil		Soil
Sample ID	Units	MDL	Human Health GAC - Commercial / Industrial	Controlled Waters GAC	Max Concentration	В	H4	Bl	111	Bl	119	В	H23
Sample Depth (m)	Units	(µg/kg)	(μg/kg)	(μg/kg)	(µg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled			(459)		(#39)	29/07	7/2019	24/07	7/2019	22/07	7/2019	23/0	7/2019
Volatile Organic Compounds - Tentatively Identified Compounds (TICs)													
Cyclohexane, 1,2,4-trimethyl-	μg/kg		nca	nca	153	-	-	-	-	-	153	-	
Cyclopentane, butyl-	μg/kg		nca	nca	133	-	-		-	-	-	-	
Cyclohexene, 1-butyl-	μg/kg	-	nca	nca	213	-	-	-	-	-	-	-	-
Cyclohexanone, 2,3-dimethyl-	μg/kg		nca	nca					-	-	-	-	
Undecane	μg/kg		nca	nca	345	-	345	-	-	-	-	-	
1-Ethyl-3-methylcyclohexane (c,t)	μg/kg	-	nca	nca	131	-	-	-	-	-	-	-	
1-Ethyl-4-methylcyclohexane	μg/kg		nca	nca	141	-	-	-	-	-	141	-	
cis-1-Ethyl-3-methyl-cyclohexane	μg/kg	-	nca	nca	151	-	-	-	-	-	-	-	151
Pentalene, octahydro-2-methyl-	μg/kg		nca	nca	315	-	-	-	-	-	-	-	315
Decane, 3-methyl-	μg/kg	-	nca	nca	164	-	-	-	-	-	-	-	164
1H-Indene, octahydro-, cis-	μg/kg		nca	nca	137		-	-	131	-	137	-	
rans-Decalin, 2-methyl-	μg/kg	-	nca	nca	166	-	-	-	166	-	-	-	-
Benzene, 1-methyl-4-propyl-	μg/kg	-	nca	nca	135	-	135	-	-	-	-	-	-
Benzene, 2-ethyl-1,4-dimethyl-	μg/kg		nca	nca	229	-	229	-	-	-	-	-	
Benzene, 4-ethyl-1,2-dimethyl-	μg/kg	-	nca	nca	331	-	331	-	-	-	-	-	-
rans,trans-1,6-Dimethylspiro[4.5]decane	μg/kg		nca	nca	118	-	-	-	-	-	-	-	117
Dodecane	μg/kg		nca	nca	831	-	831	-	-	-	-	-	
o-Cymene	μg/kg		nca	nca	278	-	278	<u></u>	-	-	-	-	
rans-Decalin, 2-methyl-	μg/kg	-	nca	nca	552	-	-	150	-	-	-	-	-
cis-Decalin, 2-syn-methyl-	μg/kg		nca	nca	141	-	-	X	141	-	-	-	104
2(1H)-Naphthalenone, octahydro-, trans-	μg/kg	-	nca	nca	158	-	- 30	<del>.</del> .	-	-	-	-	
laphthalene, decahydro-2-methyl-	μg/kg		nca	nca	275	-	-10	-	-	-	-	-	164
Naphthalene, decahydro-, trans-	μg/kg	-	nca	nca	538	-	19.00		-	-	-	-	538
Naphthalene, decahydro-	μg/kg	-	nca	nca	268	- 6	1 S	-	268	-	-	-	
Naphthalene, decahydro-, cis-	μg/kg		nca	nca	533	د چې د	10.		-	-	207	-	216
<u> </u>						್ಯಾಂಕ್ ಕ	Ò						
TICs Detected <80% Match	-	-	-	-		10.0	Yes	-	Yes		Yes		Yes

### Notes:

MDL - Method Detection Limit

μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No sample taken

nca - No criteria available

ncr - No criteria required

ND - No TICs detected

Exceeds Human Health GAC - Commercial / Industrial

Exceeds Controlled Waters GAC - Commercial / Industrial

AECOM Ireland Limited PR-423449\_ACM\_RP\_EN\_001 Appendix D.xlsm

## Table 7: Soil Heavy Metal and Miscellaneous Results Pfizer Pharmaceuticals Ireland - Ringaskiddy Baseline Soil Assessment - July 2019

Sample Type						S	oil	Sc	oil	Si	oil	S	ioil	S	oil
Sample ID	T	MDL	Human Health GAC - Commercial / Industrial	Controlled Waters GAC	Max Concentration	Bi	124	ВН	125	BH	128	DU	IP01	DU	P02
Sample Depth (m)	Units	(µg/kg)	(μg/kg)	(μg/kg)	(μg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled			(49,49)		(49/19)	23/07	/2019	22/07	/2019	24/07	/2019	23/07	7/2019	24/07	/2019
Volatile Organic Compounds - Tentatively Identified Compounds (TICs)															
Cyclohexane, 1,2,4-trimethyl-	μg/kg	-	nca	nca	153		-	-	-	-		-	-	-	-
Cyclopentane, butyl-	μg/kg	-	nca	nca	133	-	-		-	-		-	-	-	133
Cyclohexene, 1-butyl-	μg/kg	-	nca	nca	213		-	-	-	-		-	-		213
Cyclohexanone, 2,3-dimethyl-	μg/kg		nca	nca	-		-			-		-	-	-	-
Undecane	μg/kg	-	nca	nca	345		-	-	-	-		-	-	-	-
1-Ethyl-3-methylcyclohexane (c,t)	μg/kg		nca	nca	131		-	-	-	-		-	-	-	131
1-Ethyl-4-methylcyclohexane	μg/kg	-	nca	nca	141		-	-	-	-		-	-	-	-
cis-1-Ethyl-3-methyl-cyclohexane	μg/kg	-	nca	nca	151		-	-	-	-	-	-	-		-
Pentalene, octahydro-2-methyl-	μg/kg	-	nca	nca	315		-	-	-	-		-	-	-	-
Decane, 3-methyl-	μg/kg	-	nca	nca	164		-	-	-	-	-	-	-		163
1H-Indene, octahydro-, cis-	μg/kg	-	nca	nca	137		-			-		-	-	-	-
trans-Decalin, 2-methyl-	μg/kg	-	nca	nca	166		-	-	-	-		-	-	-	-
Benzene, 1-methyl-4-propyl-	μg/kg	-	nca	nca	135		-		-	-		-	-		
Benzene, 2-ethyl-1,4-dimethyl-	μg/kg	-	nca	nca	229	-	-		125	-	125	-	-	-	-
Benzene, 4-ethyl-1,2-dimethyl-	μg/kg	-	nca	nca	331		-	-	-	-	-	-	-		-
trans,trans-1,6-Dimethylspiro[4.5]decane	μg/kg	-	nca	nca	118	-	-		-	-		-	-	-	118
Dodecane	μg/kg	-	nca	nca	831		-		150	-		-	-	-	-
o-Cymene	μg/kg	-	nca	nca	278	-	-		· .	-		-	-	-	-
trans-Decalin, 2-methyl-	μg/kg	-	nca	nca	552		316	-	150	-		-	174	-	552
cis-Decalin, 2-syn-methyl-	μg/kg	-	nca	nca	141		-		X .	-		-	-	-	118
2(1H)-Naphthalenone, octahydro-, trans-	μg/kg	-	nca	nca	158	-	-		116 -	-		-	-	-	158
Naphthalene, decahydro-2-methyl-	μg/kg	-	nca	nca	275	-	-	- 4		-	-	-	-	-	275
Naphthalene, decahydro-, trans-	μg/kg	-	nca	nca	538	-	-	19.00	-	-		-	161	-	-
Naphthalene, decahydro-	μg/kg	-	nca	nca	268	-	-	Official	-	-		-	-	-	-
Naphthalene, decahydro-, cis-	μg/kg	-	nca	nca	533		-	\$ 160	-	-		-	-	-	533
TICs Detected <80% Match							. 120	red			Yes				Yes

### Notes:

MDL - Method Detection Limit

μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No sample taken

nca - No criteria available

ncr - No criteria required

ND - No TICs detected

xx

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

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Commonweign   Commonweign	BH9	H8	ВН	H7	R	ue					+												
Tree Market North							В	H5	B	H4	В	H3	BH	H2	В	-11	BH	Max Concentration	Controlled Waters	Human Health GAC -	MDL	11-14-	Sample ID
Signature of the second of the		1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0									~				(µg/kg)			(µg/kg)	Units	
Camponing   1	24/07/2019	7/2019	23/07/:	7/2019	29/07	7/2019	29/07	7/2019	29/07	7/2019	29/07	7/2019	30/07	7/2019	30/07	/2019	30/07/		45 57				Date Sampled
Manual																							Parameter (Semi Volatile Organic
Scheduler   1965																							
STATEMENT   1981   101   102   102   102   103																					40		
Description   Color		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-					
Schoolsteeled   1919   1910	<del>                                     </del>		-			-		-	-	-			-	~	-			-					2-Metnylphenol 2-Nitronhenol
Accordanged   1969   20	<del>                                     </del>	-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-					
Section   Sect		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-	ncr	ncr	<10		
Content   Cont		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-	ncr	ncr			
Authorized   April   20		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-				μg/kg	
International   Company		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-					
Processor   Column		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	35					
Page   1985		-	-	-	-	-	-	-	-	-	-	-	-				-	-					
Page-page-page-page-page-page-page-page-p	<del>                                     </del>	-	-	-	-	-	-	-	-	-	-	-	-		-		-	214					
PABLE   1978																						PB 118	
Published   1985   198																							(PAHs)
Companies		H :-	-	<del>                                     </del>	-	<del>- : -</del>		-	- :	450	25		1 -		-			450					
Company   Comp		-			-	<del>                                     </del>	-	1					1 1		-					.,			
Proprietion		-																					
Provide		-	-	-	-	-	-	-	-	-	-	-	-	_	-	-	-	-					
Procedure   Color		-	- 1	-	-	-	-	-	-	53	1 -	-				-	-	190					
Americans	- 72	-	-	-	-	-	-	-	-	114	11	-	-	~	-	-	-	240	nca	22,000,000	<10		Phenanthrene
Promotion	- 24	-	-		-	-	-	-	-	-		-	-	~	-	-	-						
Part	- 153	-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-					μg/kg	
Depote   1984   10   300,000   10   17   1   1   1   1   1   1   1   1	- 128	-	-	-	-	-	-	-		-	-	-	-	~	-	-	-						
Paccolignment   Paccolignmen	- 94	-	-	-	-	-	-	-	6. ·	- 4	-	-	-		-	-	-						
Proceedings   Process	- 73 - 112	-	-	-	-	-	-	-	-		-	-	-		-	-	-						a,a
Description   19/19   10   51,000   Final   52	- 72				-		- 1	-				-	-										
Demonstration   1998   c10   3.500   rea   12	- 32	-	-	-		-	-	-	-		-						_						
Macade   1989   10   3.000,000   Final   36	- 12	-	-	-	-	-	-	-	-	4	. A •	-	-		-	-	-						
Part   Part	- 36	-	-	-	-	-	-	-	-			-	-	~	-		-						
Productions   Production   Pr	- 81	-	-	-	-	-	-	-	-	-	0,0	-	-	~	-	-	-	81	nca	44,000	<10	μg/kg	Benzo(b)fluoranthene
Bull-developed printables 1999 1 1100 rea 1 11	- 31	-	-	-	-	-	-	-	-	-	× 4 ×	- 0	-	~	-	-	-	31	nca	1,200,000	<10	μg/kg	
Dis-bully phthalise											0	-02											
De-holy phthaliable		-		-	-	-	-	-	-	-	110	- Q.			-	-	-	4616					
De-Cept pheniate	<del></del>	-		-	-	-	-	-	-	-	· ·	War Cl	-		-	-	1 475	4475					.,,
Deethy phalate	<del>                                     </del>	-	-	-	-	-	-	-	-	-	1	C . C.		_	-		1,475	1475					
2-Dichtoroberzone		-	-	-	-	-	-	-	-	-	-	202	- 20	~	-	-	-	-					
Capital Composition   Capital Composition		-	-	-	-	-	-	-	-	-	-	N/D	200	~	-	-	-	-					
2.4-Trichlorobenzane												*	2 O										Other SVOCs
1.5-Definition delenates		-	-	-	-	-	-	-	-	-	-	-	10:01		-	-	-	-		ncr		μg/kg	1,2-Dichlorobenzene
1.4 Detrochance		-	-	-	-	-	-	-	-	-	-	-	s y . 22		-	-	-	-					
2-Nointendule		-	-	-	-	-	-	-	-	-	-	-		-20	-	-	-	-					
2.6 Districtatione	<del></del>	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-					
25-Demonstration   19/18   4:10   ner   ner	<del>+ : + : -</del>			+	-	<del>                                     </del>	-	1			<del>                                     </del>	-	7	<del>√                                    </del>	-								
Selficionaline   1988   410   ncr   ncr   -   -   -   -   -   -   -   -   -	+ + + + + + + + + + + + + + + + + + + +	-	-	-	-	-	-	-	-	-	-	-	-	10			-	-					
#Bronce/percylether   yg/Ng   <10   ncr   ncr		-	- 1	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-					
ACHIORaniline         juglig         4-10         nor         nor         - <td></td> <td>-</td> <td></td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>ner</td> <td>ncr</td> <td>&lt;10</td> <td></td> <td>4-Bromophenylphenylether</td>		-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	ner	ncr	<10		4-Bromophenylphenylether
Automatina   19/16   410   nez   nez   nez   -   -   -   -   -   -   -   -   -		-	-	-	-	-	-	-	-	-	-	-	-	US	- 6	-	-	-				μg/kg	4-Chloroaniline
Azobenzane         µg/Ng         <10         ncr         ncr		-	-	-	-	-	-	-	-	-	-	-	-		٠.0		-						· omerophically production
BBSC-deforeship(whether 19/kg 4-10 ner ner ner		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-					
Bal2-chloroethyljether         splkg         <10	<del></del>	-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-					
Carbascrie         19/8 g         <10         nea         nea         106         -	<del></del>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Dibenzoluran   19kg   <10   ncr   nca   77	<del>                                     </del>	-		1	-	1	-	-		1	1 -	1	1	~	-	-		105					
	<del>                                     </del>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_						
	<del>                                     </del>	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-						
Hexachlorobutadiene   µg/kg   <10   ncr   ncr   -   -   -   -   -   -   -   -   -		-	- 1	-	-	-	-	-	-	-	-	-	-	~			-	-	ner	ncr	<10	μg/kg	Hexachlorobutadiene
Heisekhioroydopentadene jajkig <10 ncr ncr · · · · · · · · · · · · · · · · · · ·		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-	ner	ncr	<10		Hexachlorocyclopentadiene
Hexachloroethane µg/kg <10 ncr ncr		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-		ncr			
ыорharane µg/kg <10 ncr ncr		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-					
N-nitrosod-n-propylamine ug/kg <10 ncr ncr		-	-		-		-	-	-	-		-	-		-	-	-	-					
Natrobergane µg/kg <10 ncr ncr		-	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-	ncr	ncr	<10	μg/kg	Nitrobenzene
Semi Volatile Organic Compounds Tentatively Compounds Tentatively					1							1											Compounds - Tentatively
Identified Compounds (TICs)				<b></b>	<b></b>	<b></b>	1	1			<b>.</b>	<b></b>						ļ					Identified Compounds (TICs)
Detected Yes Yes		-	-	-	-	-	-	-	-	Yes	Yes	-	-	-	-	-	-	-	-	-	-	-	Detected

Notes: MDL - Method Detection Limit μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No samples taken nca - No criteria available

ncr - No criteria required

ND - No TICs detected

xx Exceeds Human Health GAC - Commercial / Industrial
xx Exceeds Controlled Waters GAC - Commercial / Industrial

### Table 7: Soil Heavy Metal and Miscellaneous Results Pfizer Pharmaceuticals Ireland - Ringaskiddy Baseline Soil Assessment - July 2019

Sample Type						S	oil	Soil		Soil		Soil	Soil	Soil	Soil	Soil
Sample ID	Units	MDL	Human Health GAC - Commercial /	Controlled Waters GAC - Commercial /	Max Concentration	BH	110	BH11		BH12		BH13	BH14	BH16	BH17	BH18
Sample Depth (m)	Units	(µg/kg)	Industrial (µg/kg)	Industrial (µg/kg)	(µg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0 1.0-2.0		0.0-1.0 1.0-2.0	0.0-1.0 1.0-2.0	0.0-1.0 1.0-2.0	0.0-1.0 1.0-2.0	0.0-1.0 1.0-2.0
Date Sampled				40.07		24/07	/2019	24/07/2019		24/07/2019		25/07/2019	25/07/2019	26/07/2019	25/07/2019	25/07/2019
Parameter (Semi Volatile Organic																
Compounds)																
Phenois																
2-Chlorophenol	μg/kg	<10	ncr	ncr		-	-	•	-							
2-Methylphenol	μg/kg	<10	ncr	ncr	-	-	-	-	-							
2-Nitrophenol	μg/kg	<10 <10	ner ner	ncr	-	-	-	-	-							
2,4-Dichlorophenol 2.4-Dimethylphenol	μg/kg	<10	ner	ner				-	-							1 1
2,4,5-Trichlorophenol	μg/kg	<10	ner	ner	-			-	-							
2,4,5-Trichlorophenol	μg/kg μg/kg	<10	ner	ner					-							
4-Chloro-3-methylphenol	μg/kg μg/kg	<10	ner	ncr	-	-	-		-							
4-Methylphenol	μg/kg	<10	82,000,000	nca	35		-	-	-							
4-Nitrophenol	μg/kg	<10	ner	ncr	-	-	-	-	-							
Pentachlorophenol	μg/kg	<10	ncr	ncr	-			-								
Phenol	μg/kg	<10	370,000	4.1	214	-	-	-	-				-			
Polyaromatic Hydrocarbons (PAHs)																
2-Chloronaphthalene	μg/kg	<10	ner	ner		-	_	-	-		-					<del>                                     </del>
2-Methylnaphthalene	μg/kg μg/kg	<10	3,000,000	nca	459	-	-	-			-			75 -		
Naphthalene	μg/kg	<10	90,000	19	47	-	-	-	-					21 -		
Acenaphthylene	μg/kg	<10	ner	ner	- 1	-	-	-	-							
Acenaphthene	μg/kg	<10	ncr	ncr	-		-	-	-						-	
Fluorene	μg/kg	<10	59,000,000	nca	190	-	-	-					-		-	
Phenanthrene	μg/kg	<10	22,000,000	nca	240		-	-						34 -		
Anthracene	μg/kg	<10	520,000,000	8.2	107	-	-	-	-							
Fluoranthene	μg/kg	<10	2,300,000	1.7	153	-	-	-	-		_		- 19			
Pyrene	μg/kg	<10	54,000,000	nca	128	-	-	-	•				- 18			
Benzo(a)anthracene	μg/kg	<10	170,000	nca	94	-	-	-	-			. 60.				
Chrysene Benzo(bk)fluoranthene	μg/kg	<10 <10	350,000 1,244,000	nca nca	73 112	-	-	-	-			30	- 24			
Benzo(a)pyrene	μg/kg	<10	35,000	0.32	72		-	-	-			- X6	- 14			
Indeno(123cd)pyrene	μg/kg μg/kg	<10	510,000	nca	32		-					O. C.				
Dibenzo(ah)anthracene	μg/kg μg/kg	<10	3,500	nca	12			-	-			. 4				
Benzo(ghi)perylene	μg/kg	<10	3,900,000	nca	36	-	-		-		77	3				
Benzo(b)fluoranthene	μg/kg	<10	44,000	nca	81		-	-	-		30)		- 17			
Benzo(k)fluoranthene	μg/kg	<10	1,200,000	nca	31	-	-	-	-	چ	7					
Phthalates										s Se	0					
Bis(2-ethylhexyl) phthalate	μg/kg	<100	nca	nca	4616	-	-	-	-	10° 10°	,		-			-
Butylbenzyl phthalate	μg/kg	<100	ncr	ncr	-	-	-	-	-	OIL SOLL						
Di-n-butyl phthalate	μg/kg	<100	15,400,000	202	1475	-	-		-							
Di-n-Octyl phthalate	μg/kg	<100	ncr	ncr	-	-		-	-	Oly A A	_					
Diethyl phthalate Dimethyl phthalate	μg/kg	<100 <100	ner	ner		-	-		-	attle new			· ·		1 1	
Other SVOCs	μg/kg	<100	ncr	ncr	-		-	-	-	0 0						
1,2-Dichlorobenzene	μg/kg	<10	ncr	ncr	-	-	-	-	.00	700	-					
1,2,4-Trichlorobenzene	μg/kg	<10	ner	ncr	-	-				QX.						
1,3-Dichlorobenzene	μg/kg	<10	ncr	ncr	-		-	- 4	CO, 12	<del>\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ </del>						
1,4-Dichlorobenzene	μg/kg	<10	ncr	ncr	-	-		-	× -07							
2-Nitroaniline	μg/kg	<10	ncr	ncr	-	-	-	-	- c04							
2,4-Dinitrotoluene	μg/kg	<10	ncr	ncr	-	-	-	- 1	7			-	-			
2,6-Dinitrotoluene	μg/kg	<10	ner	ner		-	-		<i>)</i>	-						
3-Nitroaniline	μg/kg	<10	ncr	ncr		-	-		-						-	
4-Bromophenylphenylether	μg/kg	<10	ncr	ncr	-	-	-	- <del>,</del>	-						-	
4-Chloroaniline	μg/kg	<10	ner	ncr	-	-	-	COIL	•		-					
4-Chlorophenylphenylether 4-Nitroaniline	μg/kg	<10 <10	ner	ner	<u> </u>	-	-	$\sim$	•	-	+				<del>                                     </del>	+ - +
4-Nitroaniline Azobenzene	μg/kg α/ka	<10	ner	ner	1 1			-	-		-+				1 1 1	+
Azobenzene Bis(2-chloroethoxy)methane	μg/kg μg/kg	<10	ner	ncr		-	-	-	-		-					
Bis(2-chloroethyl)ether	μg/kg μg/kg	<10	ner	ner		-	_	_	-		-					
Carbazole	μg/kg μg/kg	<10	nca	nca	105	-	-	-	-		_				1 - 1 -	1 - 1 - 1
Dibenzofuran	μg/kg	<10	ncr	nca	77	-	-	-								
Hexachlorobenzene	μg/kg	<10	ncr	ncr	-	-	-	-	-							
Hexachlorobutadiene	μg/kg	<10	ner	ner	-	-	-	-					e e			
Hexachlorocyclopentadiene	μg/kg	<10	ncr	ncr	-	-	-	-		-					-	
Hexachloroethane	μg/kg	<10	ncr	ncr	-		-	-		,					-	
Isophorone	μg/kg	<10	ner	ner	-	-		-	-		[					
N-nitrosodi-n-propylamine	μg/kg	<10	ncr	ncr	-	-	-	-	-	-						
Nitrobenzene	μg/kg	<10	ncr	ncr		-	-	-	•							
Semi Volatile Organic Compounds - Tentatively					1											
Identified Compounds (TICs)			1													
Detected			-	-	-		-	-	Yes	- Yes				Yes -		- Yes

Notes: MDL - Method Detection Limit μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No samples taken nca - No criteria available

ncr - No criteria required

ND - No TICs detected

XX Exceeds Human Health GAC - Commercial / Industrial
XX Exceeds Controlled Waters GAC - Commercial / Industrial

### Table 7: Soil Heavy Metal and Miscellaneous Results Pfizer Pharmaceuticals Ireland - Ringaskiddy Baseline Soil Assessment - July 2019

Sample Type						S	oil	S	oil	S	Soil		Soil		Si	oil		Soil	Si	oil	Si	oil
Sample ID	Unite	MDL	Human Health GAC -	Controlled Waters GAC - Commercial /	Max Concentration		119		120		H21	<b>—</b>	BH22		ВН			H24		125		126
Sample Depth (m)	Units	(µg/kg)	Commercial / Industrial (µg/kg)	Industrial (µg/kg)	(µg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0		0.0-1.0	1.60	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-0.8	
Date Sampled						22/07	/2019	23/07	/2019	23/07	7/2019		22/07/2019		23/07	/2019	23/0	7/2019	22/07	/2019	25/07	2019
Parameter (Semi Volatile Organic Compounds)																						ı
Phenols																						
2-Chlorophenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
2-Methylphenol	μg/kg	<10	ncr	ncr	-	-	-		-	-	-	-	-	-	-	-	-	-	-		-	~
2-Nitrophenol	μg/kg	<10	ner	ncr	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	~
2,4-Dichlorophenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
2,4-Dimethylphenol 2.4.5-Trichlorophenol	μg/kg	<10 <10	ner	ner	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	~
2,4,6-Trichlorophenol	μg/kg μg/kg	<10	ner	nor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Chloro-3-methylphenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Methylphenol	μg/kg	<10	82,000,000	nca	35	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Nitrophenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Pentachlorophenol Phenol	μg/kg	<10 <10	ncr 370,000	ncr 4.1	214	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Polyaromatic Hydrocarbons	μg/kg	×10	370,000	4.1	214	-	-		-	-	-		-	-	-	-		-	-	-	-	
(PAHs)																						<b></b>
2-Chloronaphthalene	μg/kg	<10	ncr 3,000,000	ncr	459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
2-Methylnaphthalene Naphthalene	μg/kg μg/kg	<10 <10	90,000	nca 19	459			-	-	-	-	-	-	-	-	-	-	-	1 -	-	-	~
Acenaphthylene	μg/kg μg/kg	<10	ner	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Acenaphthene	μg/kg	<10	ncr	ncr		-	-		-	-			-		-	-					-	~
Fluorene	μg/kg	<10	59,000,000	nca	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Phenanthrene	μg/kg	<10	22,000,000	nca	240	-	-	-	-	-	-	-	240	-	-	-	-	-	-	-	-	~
Anthracene Fluoranthene	μg/kg	<10 <10	520,000,000 2,300,000	8.2 1.7	107 153	-	-	-	-	16	-	-	107	-	-	-	-	-	-	-	-	~
Pyrene	μg/kg μg/kg	<10	54,000,000	nca	128			-	-	12	-	-	-	-	-	-	-	-	-	-	-	~
Benzo(a)anthracene	μg/kg μg/kg	<10	170,000	nca	94	-	-	-	-	33	-	-	٠٠ي٠	-	-	-	-	-	-	-	-	~
Chrysene	μg/kg	<10	350,000	nca	73	-	-		-	13	-	-	113	-	-	-	-	-	-	-	-	~
Benzo(bk)fluoranthene	μg/kg	<10	1,244,000	nca	112	-	-	-	-	20	-	-		-	-	-	-	-	-	-	-	~
Benzo(a)pyrene	μg/kg	<10	35,000	0.32	72	-	-	-	-	14	-	-	Mr.	-	-	-	-	-	-	-	-	~
Indeno(123cd)pyrene Dibenzo(ah)anthracene	μg/kg	<10 <10	510,000 3,500	nca nca	32 12	-	-	-	-	-	-	4 . 4	<b>0</b> -	-	-	-	-	-	-		-	~
Benzo(ghi)perylene	μg/kg μg/kg	<10	3,900,000	nca	36	-		-	-	-	-	17. 52x	-	-	-	-	-	-	-	-	-	~
Benzo(b)fluoranthene	μg/kg	<10	44,000	nca	81	-	-	-	-	14	-	07.35	-	-	-	-	-	-	-	-	-	~
Benzo(k)fluoranthene	μg/kg	<10	1,200,000	nca	31	-	-		-	-	دي .	10	-	-	-	-	-	-	-	-	-	~
Phthalates											-050	60										
Bis(2-ethylhexyl) phthalate Butvlbenzyl phthalate	μg/kg	<100 <100	nca ncr	nca ncr	4616	-	-		-	-	Marin.		4,616	206	-	-	-	-	-	-	-	~
Di-n-butyl phthalate	μg/kg μg/kg	<100	15,400,000	202	1475			-	-	-	OH ON	-	-	-	-	-	-	-	-	-	-	~
Di-n-Octyl phthalate	µg/kg	<100	ncr	ncr	-	-	-	-	-		V . C	-	-	-	-	-	-	-	-	-	-	~
Diethyl phthalate	μg/kg	<100	ncr	ncr	-	-	-		-	Ji C	~O^-	-	-	-	-	-	-	-	-		-	~
Dimethyl phthalate	μg/kg	<100	ncr	ncr	-	-	-	-	-	200	20	-	-	-	-	-	-	-	-	-	-	~
Other SVOCs 1 2-Dichlorobenzene		<10	ncr	ncr						~ 0												
1,2-Dichlorobenzene	μg/kg a/ka	<10	ner	ncr	-	-		-	-	His in	-	-	-	-	-	-	-	-	-	-	-	~
1,3-Dichlorobenzene	μg/kg μg/kg	<10	ner	nor	-	-	-	-	Δ.	Digg.	-	-	-	-	-	-	-	-	-	-	-	~
1,4-Dichlorobenzene	μg/kg	<10	ner	ncr		-			- \$C	-07			-			-					-	
2-Nitroaniline	μg/kg	<10	ner	ncr	-	-	-	-	0	ο× .	-	-		-	-	-	-	-	-	-	-	
2,4-Dinitrotoluene 2.6-Dinitrotoluene	μg/kg	<10	ner	ner	-	-	-	-	: 6	-	-	-	-	-	-	-	-	-	-	-	-	~
2,6-Dinitrotoluene 3-Nitroaniline	μg/kg μg/kg	<10 <10	ner	ncr	-			-	A	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Bromophenylphenylether	μg/kg μg/kg	<10	ner	nor	-	-	-	-	-CO.	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Chloroaniline	μg/kg	<10	ner	ncr	-	-	-		OD.	-	-	-	-	-	-	-	-			-	-	~
4-Chlorophenylphenylether	μg/kg	<10	ncr	ncr	-		-		<u> </u>	-	-	-	-	-	-	-	-	-	-	-	-	~
4-Nitroaniline	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Azobenzene Bis(2-chloroethoxy)methane	μg/kg	<10 <10	ner	ner	-	•	-	-	-	-	-	-		-	-	-	-	-	-	-	-	~
Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether	μg/kg μg/kg	<10	ner ner	ncr	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Carbazole	µg/kg	<10	nca	nca	105	-	-	-	-	-	-	-	105	-	-	-	-	-	-	-	-	~
Dibenzofuran	μg/kg	<10	ncr	nca	77	-	-	-	-	-	-	-	77	-	-	-	-	-	-	-	-	~
Hexachlorobenzene	μg/kg	<10	ner	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hexachlorobutadiene	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	~
Hexachlorocyclopentadiene Hexachloroethane	μg/kg a/ka	<10 <10	ner	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Hexachioroethane Isophorone	μg/kg μg/kg	<10	ner	ncr	1 -	<del></del>		-	-	-	1	1 -	1	1	<del>                                     </del>	-	1 -	<del>                                     </del>	1 -	-	-	~
N-nitrosodi-n-propylamine	µg/kg	<10	ncr	nor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Nitrobenzene	μg/kg	<10	ncr	ncr	-	-	=	-	-	-	-	-	-	-	-	-	-	-	-	-	-	~
Semi Volatile Organic Compounds - Tentatively																						1
Identified Compounds (TICs)															1							
Detected	1 -	-	-	-	-	Yes	Yes	Yes	-	<u> </u>	<u> </u>	1 -	Yes	Yes	1	-	1 -	-	<u> </u>	-	-	
Notes:																						

Notes: MDL - Method Detection Limit μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No samples taken nca - No criteria available

ncr - No criteria required

ND - No TICs detected

xx Exceeds Human Health GAC - Commercial / Industrial
xx Exceeds Controlled Waters GAC - Commercial / Industrial

### Table 7: Soil Heavy Metal and Miscellaneous Results Pfizer Pharmaceuticals Ireland - Ringaskiddy Baseline Soil Assessment - July 2019

						So	il	S	Soil	S	Soil		Soil	S	oil	S	oil	S	ioil	5	Soil
Sample Type Sample ID		MDL	Human Health GAC -	Controlled Waters	Max Concentration	BH:			H28		IP01		UP02	DU		DU			IP05		UP06
Sample Depth (m)	Units	(µg/kg)	Commercial / Industrial (µg/kg)	GAC - Commercial / Industrial (µg/kg)	(µg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled			ilidustriai (µg/kg)	ilidustriai (µg/kg)		26/07/	2019		7/2019		7/2019		07/2019	25/07	/2019		/2019		7/2019		07/2019
Parameter (Semi Volatile Organic																					
Compounds)																					
Phenois																					
2-Chlorophenol	μg/kg	<10	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylphenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Nitrophenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	μg/kg	<10 <10	ner	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	μg/kg	<10	ner	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol	μg/kg	<10	ncr	ner	•			-	-	-	-	-	-	-		-	-		-	-	
4-Chloro-3-methylphenol	μg/kg α/ka	<10	ner	ner				-		-	- 1		-	- 1		-			- 1		-
4-Methylphenol	µg/kg µg/kg	<10	82,000,000	nca	35				35	-		-	-			-					-
4-Nitrophenol	µg/kg	<10	ncr	ncr	-		-	-		-	-	-		-	-	-	_	-	-	_	
Pentachlorophenol	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	μg/kg	<10	370,000	4.1	214	-			214		-	-	-	-	-	-	-	-	-	-	-
Polyaromatic Hydrocarbons																					
(PAHs)																					
2-Chloronaphthalene 2-Methylnaphthalene	μg/kg	<10 <10	ncr 3.000.000	ner	459	-	-	-	242	-	-	-	-	-	-	-	-	-	-	-	-
	μg/kg	<10 <10	3,000,000	nca 10	459 47	-		-	242	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene Acenaphthylene	μg/kg	<10		19 ncr	- 4/	-	-	-	-	-	-	-	-	-	-	-		-	-	-	
Acenaphthene	μg/kg μα/kα	<10	ncr	ner				-		-	1	1	-	1	-	-	-	1	1	-	1 -
Fluorene	μg/kg μg/kg	<10	59,000,000	nca	190	-		-	190	-	-	-	-	-	-	-	-	<del>                                     </del>	-	-	+ -
Phenanthrene	μg/kg	<10	22,000,000	nca	240	-	-	-	199	-	-	-	-	-	-	16	-	-	-	-	-
Anthracene	μg/kg	<10	520,000,000	8.2	107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	μg/kg	<10	2,300,000	1.7	153	24	-	12	-	17	-	-	-	-	-	12	-	-	-	-	-
Pyrene	μg/kg	<10	54,000,000	nca	128	24	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	μg/kg	<10	170,000	nca	94	43	-	-	-	-	-	-	°€		-	-	-	-		-	-
Chrysene	μg/kg	<10	350,000	nca	73	17	*	*	-	*	-		100	-	-		-	-	-	-	-
Benzo(bk)fluoranthene	μg/kg	<10	1,244,000	nca	112	24	-		-	-	-	2	-	-	-	16	-	-	-	-	-
Benzo(a)pyrene	μg/kg	<10	35,000	0.32	72	15	-	-	-	-	-	alle .	-	-	-	-	-	-	-	-	-
Indeno(123cd)pyrene	μg/kg	<10	510,000	nca	32	-	-	-	-	-	-	. 0	-	-	-	-	-	-	-	-	-
Dibenzo(ah)anthracene	μg/kg	<10	3,500	nca	12	-	-	-	-	-	مدا.	(A)	-	-	-	-	-	-	-	-	-
Benzo(ghi)perylene	μg/kg	<10	3,900,000	nca	36	-	-	-	-	-	OU.	W.	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	μg/kg	<10	44,000	nca	81	17	-	-	-	-			-	-	-	12	-	-	-	-	-
Benzo(k)fluoranthene	μg/kg	<10	1,200,000	nca	31	-	-	-	-	-	62. XC	-	-	-	-	-	-	-	-	-	-
Phthalates Bis(2-ethylhexyl) phthalate		<100			4616						S. 60										
Butvlbenzvl phthalate	μg/kg	<100	nca	nca	4010	-	•	-	-	- ×	odjir.	-		-	-	-	-	-	-	-	-
Di-n-butyl phthalate	μg/kg	<100	15,400,000	202	1475	-		-	-	- 01	200	-	-	-	-	-	-	-	-	-	-
Di-n-Octyl phthalate	μg/kg μg/kg	<100	ncr	ncr	1475	-		-		-05	<u>e</u>	-	-	-	-	-			-	-	1 - 1
Diethyl phthalate	μg/kg	<100	ncr	ncr			-	-	-	ion of	-	-	-	-	-	-	-	-	-	_	
Dimethyl phthalate	μg/kg	<100	ncr	ncr	-	-	-	-	-	201 7/00	-	-	-	-	-	-	-	-	-	-	-
Other SVOCs	100									0											
1,2-Dichlorobenzene	μg/kg	<10	ncr	ner	-	-	-	-	:00	W -	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	μg/kg	<10	ncr	ner	-	-	-	-	X	62	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	μg/kg	<10	ncr	ncr	-	-	-	-	60,70		-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	μg/kg	<10	ncr	ner	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-
2-Nitroaniline	μg/kg	<10	ncr	ncr	-	-	-	-	- 504	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	μg/kg	<10	ncr	ncr	-	-	-	-	- X	-	-	-	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	μg/kg	<10	ncr	ncr	-	-	-	-	, O'	-	-	-	-	-	-	-	-	-	-	-	-
3-Nitroaniline	μg/kg	<10	ncr	ner	-	-	-	<u> :</u>	<u> </u>	-	-	-	-	-	-	-	-	-	-	-	-
4-Bromophenylphenylether 4-Chloroaniline	μg/kg	<10 <10	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chlorophenylphenylether	μg/kg	<10	ncr	ncr	-	-	•	COL	-	-	-	-		-	-	-	=	-	-	-	-
4-Chlorophenylphenylether 4-Nitroaniline	μg/kg α/ka	<10	ner	ner		1		U.	1 - 1 -		1	<del> </del>	+ :-	1			1	1 - 1	1	1	+ :-
4-Nitroaniline Azobenzene	μg/kg μα/kg	<10	ner	ner				-	1	-		1	-	-	-	-	-	1	-	-	1 -
Bis(2-chloroethoxy)methane	μg/kg μg/kg	<10	ner	ner	_	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bis(2-chloroethyl)ether	μg/kg μg/kg	<10	ner	ner	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 -
Carbazole	μg/kg	<10	nca	nca	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	μg/kg	<10	ncr	nca	77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	μg/kg	<10	ncr	ncr	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	μg/kg	<10	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	μg/kg	<10	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	μg/kg	<10	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isophorone	μg/kg	<10	ncr	ncr	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-nitrosodi-n-propylamine	μg/kg	<10	ncr	ner	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrobenzene	μg/kg	<10	ncr	ner		-		-	-	-	-	-	-	-		-	-		-	-	-
Semi Volatile Organic Compounds - Tentatively												1	1								
		1	1	l	l			1	1	1		1			l	1	1	1		l	1
Identified Compounds (TICs)  Detected									Yes	Yes											

Notes: MDL - Method Detection Limit μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL

~ No samples taken nca - No criteria available

ncr - No criteria required

ND - No TICs detected

XX Exceeds Human Health GAC - Commercial / Industrial

XX Exceeds Controlled Waters GAC - Commercial / Industrial

Sample 10 Units (MDL (MPR)) Sample 10 Units (MDL (MPR)) Sample 10 Units (MDL (MPR)) Sample 10 Units (MDL (MPR)) Semi Valsile Organic Compounds (MDL) Tertatively identified Compounds (MDL) Decame Units (MDL) Units (MDL) Units (MDL) Semi Valsile Organic Compounds (MDL) Decame Units (MDL) Decame Units (MDL) Units (MDL) Decame Units (MDL) Semi Valsile Organic Compounds (MDL) Semi Va					Sc	iil	So	il .	Sc	lio	Sc	il
Sample Depth (m)  Date Sampled  Sami Volatile Organic Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively learning Compounds Throatively Learning Compound	Human Health GAC -		Controlled Waters	Max Concentration	BH		BH1		BH		RH	
Date Sampled Semi Vollatile Organic Compounds (Ticha) - Envidolphenymethane - Envidolphe	Commercial /	Units (units)	GAC - Commercial /	(µg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Sam I Votalità Criganic Compounds - Tentatively Identified Compounds (Titoda)  Treatatively Identified Compounds (Titoda)  Decane   Individual Compounds   Indiv	Industrial (µg/kg)	., indu	Industrial (µg/kg)	7	29/07/		24/07/		24/07/		26/07/	
Tentatively Identified Compounds (TICs)  - Enhyddpentymethane - Leithyddpentymethane - Leithyddpentymethane - Leithyddpentymethane - Leithyddpentymethyl Leit		ganic Compounds -			20/01/	2010	24077	2010	2407	2010	20/01/	2010
α - Erhydighenylmethane         μο Na           Decame         μο Na           Undecame         μο Na           Lindecame         μο Na           Decame         μο Na           Lindecame         μο Na           Decame         μο Na           Benzone, 2.e-dimethyl-1-(benylmethyl-1-)         μο Na           Herzene, 2.e-dimethyl-1-(benylmethyl-1-)         μο Na           Halmority, Alphanylmethyl-1-(benylmethyl-1-)         μο Na           Naphrhalene, 1.e-dimethyl-1-         μο Na           Houdescare         μο Na           Bercaren, 1-methyl-4-(phenylmethyl-1-         μο Na           1-         μο Na           1-         1-           1-         μο Na           1-         1-           1-         1-           1-         μο Na           1-         1-           1-         1-           1-         1-           1-         1-           1-         1- <td></td> <td>ified Compounds</td> <td></td>		ified Compounds										
Undecane	nca	ethane µg/kg -	nca	322,183		-	-	-				-
Dodecane         pp/kg           Benzone, 2.6-denethyl-1-(phenylmethyl)-         pp/kg           Benzone, 1.6-denethyl-1-(phenylmethyl)-         pp/kg           Benzone, 2.6-denethyl-1-(pp/kg)         pp/kg           - Naphmaken, 4.6-denethyl-         pp/kg           Naphmaken, 1.6-denethyl-         pp/kg           Polyg         -           Polyg         -           Percentagen, 1.6-denethyl-         pp/kg           Polyg         -           Polyg         - <td>nca</td> <td>μg/kg -</td> <td>nca</td> <td>1,078</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td></td> <td>-</td> <td>-</td>	nca	μg/kg -	nca	1,078	-	-	-	-	-		-	-
Benzene, 16-dimethyl-1-(phenyimethyl)         pykg           1-Noradecene         pykg           Norphralene, 1.2-dimethyl-         pykg           Norphralene, 1.4-dimethyl-         pykg           Norphralene, 1.7-dimethyl-         pykg           Norphralene, 1.7-dimethyl-         pykg           Norphralene, 1.7-dimethyl-         pykg           1-Norphralene, 2.3-dimethyl-         pykg           Naphrhalene, 2.3-dimethyl-         pykg           Naphrhalene, 2.3-dimethyl-         pykg           Naphrhalene, 2.3-dimethyl-         pykg           Naphrhalene, 3.4-dimethyl-         pykg           Naphrhalene, 3.4-dimethyl-         pykg	nca	μg/kg -	nca	3,008	-	-	-	-	-		-	-
Benzens, 1-ethyk-3-phenylmentyly- 1-Norodscene   1-ph/g	nca		nca	4,178	-	3242	-	-	-	-	-	-
Benzens, 1-ethyk-3-phenylmentyly- 1-Norodscene   1-ph/g	nca	ethyl-1-(phenylmethyl)- µg/kg -	nca	22,271			-	-	-	-		-
1-Noradecene	nca		nca	249,499	-	-	-	-	-			-
4-Mednynaphtod (1.2-b)hisophene   19/kg	nca		nca	5,241	-	-	-	-	-		-	-
Naphmaken, decathydro-2-methyl- Naphmaken, 14-di-methyl- Naphmaken, 14-di-methyl- Naphmaken, 15-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 23-di-methyl- Naphmaken, 24-di-methyl- Naphmaken, 14-di-methyl- Naphmaken, 14-di-Nor- Naphmaken,	nca		nca	4,908	-		-	-	-	-	-	
Nephratisen, 1,4-dimethyl- logical processors of the control of th	nca		nca	934	-	-	-	-	-			-
Naphmaken, 1,4-dimethy-	nca	7	nca	1,863	-	-	-	-	-			-
Naphralanea, 1.7-dimethyl-  Doktadecane, 2.6-dimethyl-  Peacace, 1.7-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Peacace, 1.6-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Naphralanea, 2.3-dimethyl-  Peacace, 1.6-dimethyl-  Peacace, 1.6-dimethyl-  Peacace, 1.6-dimethyl-  Peacace, 2.8-dimethyl-  Peacace, 3.8-dimethyl-  Peacace, 3	nca		nca	0	-	-	-	-	-			-
Octadecane, 2.6-dimethyl-         pp/kg           Hexadecane         19/kg           Berczele, 1-methyl-(phenylmethyl-         19/kg           Trödecane, 5-methyl-         19/kg           1-methyl-(phenylmethyl-         19/kg           2-7-Dimethyldberozdhiophene         19/kg           1-3-Dimethyldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mehryldberozdhiophene         19/kg           1-Mophhalene, 2.3-6-timethyl-         19/kg           1-Mophhalene, 2.3-6-timethyl-         19/kg           1-Mophhalene, 1.4-6-timethyl-         19/kg           1-Mophhalene, 1.4-6-timethyl-         19/kg           1-Mophhalene, 1.4-6-timethyl-         19/kg           1-Moradecane         19/kg	nca		nca	6.065	_	1085		-	_			
Second   S	nca		nca	1.784	_	1000			_		-	-
Security   Security	nca		nca	23.463	_	_	_	-	_		_	
Tidecane, Smethyl-         μρ/kg           4-Chmethyldebrarolity         μρ/kg           2,7-Dimethyldebrarolitychene         μρ/kg           3,7-Dimethyldebrarolitychene         μρ/kg           3,7-Dimethyldebrarolitychene         μρ/kg           Naphmalene, 2,3-6-trimethyl-         μρ/kg           Naphmalene, 2,3-6-trimethyl-         μρ/kg           Naphmalene, 2,3-6-trimethyl-         μρ/kg           Naphmalene, 2,3-6-trimethyl-         μρ/kg           Naphmalene, 1,4-6-trimethyl-         μρ/kg           Partadecane, 2,8-10-trimethyl-         μρ/kg           Ecosane, 2-8-trimethyl-         μρ/kg           Ecosane, 2-8-trimethyl-         μρ/kg           Ecosane, 2-8-trimethyl-         μρ/kg           Ecosane, 2-8-trimethyl-         μρ/kg           3-10-methylebrarolitychene         μρ/kg           3-10-methylebrarolitychene         μρ/kg           3-10-methylebrarolitychene         μρ/kg           3-10-methylebrarolitychene         μρ/kg           1-4-dectylebrerylebrarolitychene         μρ/kg           1-4-dectylebrerylebrarolitychene         μρ/kg           1-4-dectylebrerylebrarolitychene         μρ/kg           1-4-destylebrerylebrarolitychene         μρ/kg           1-4-destylebrerylebraroli	nca	pging	nca	2,287	-		-	-	-	-		-
4.4-Dimethylophemyl         μg/kg           2.7-Dimethylophemyl         μg/kg           3.7-Dimethylopheme         μg/kg           3.7-Dimethylopheme         μg/kg           3.7-Dimethylopheme         μg/kg           1-Mehnylopheme         μg/kg           1-Mehnylopheme         μg/kg           Pertadecane         μg/kg           Nikphthalene, 2.5-di-rimethyl-         μg/kg           Nikphthalene, 3.6-di-rimethyl-         μg/kg           Nikphthalene, 3.6-di-rimethyl-         μg/kg           Pertadecame, 2.6-di-rimethyl-         μg/kg           Eccosame         μg/kg           3-Ethylophemylopheme         μg/kg           3-Ethylophemylo				1,360	-	-	-		-	-		-
2.7. Dimenskyddewczothicphane 2.7. Dimenskyddewczothicphane 3.9 kig 3.7. Dimenskyddewczothicphane 3.9 kig 3.7. Dimenskyddewczothicphane 3.9 kig 3.7. Dimenskyddewczothicphane 3.9 kig 4. Niphthalane, 2.3. dimensky 4. Niphthalane, 2.3. dimensky 4. Niphthalane, 2.3. dimensky 4. Niphthalane, 2.3. dimensky 4. Niphthalane, 1.4. dimensky 4. Niphthalane, 1.4. dimensky 4. Dipkig 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 5. Dimenskydewczothicphane 6. dimenskydewczothicphane	nca		nca				-		-	-		-
3.7. Demenylubenzothicphene   19/kg     1-Methyldbenzothicphene   19/kg     1-	nca	. ,,,,,	nca	1,045	-	-	-	-	-	-	-	-
1-Methyldberozchiophene	nca	100	nca	4,781	-	-	-	-	-	-	-	-
Naphthalane, 2.3,6-timethyl- polyta pertadecane  Naphthalane, 2.3,6-timethyl- polyta Naphthalane, 1.6,7-timethyl- polyta Naphthalane, 1.6,7-timethyl- polyta Naphthalane, 1.6,7-timethyl- polyta Pentadecane, 2.6,10-timethyl- polyta Pol	nca	700	nca	3,309	-	-	-	-	-	-	-	-
Pentadeciane   19/8	nca		nca	954	-	954	-	-	-	-	-	-
Naphmakene, 2.3.6-trimethyl- Naphmakene, 2.3.6-trimethyl- Naphmakene, 1.6-Trimethyl- Naphmakene, 1.6-t	nca		nca	5,738	-	-	-	-	-	-	-	-
Naphmänen, 1,8,7 strimethyl- Naphmänen, 1,8,6 strimethyl- pykg - Pertadecurie, 2,6,10-trimethyl- pykg - Ecosane - pykg - Ecosane, 2-methyl- pykg - Schosane, 2-methyl- pykg - Schosane, 2-methyl- pykg - Schoylane, 4,6-dimethyl- pykg - Schoylane, 3,6-dimethyl- Schoylane,	nca		nca	24,364	-	7568	-	-	-	-	-	-
Naphmaken, 1.4.6-trimethyl- pykig  Pertadecane, 2.6,10-trimethyl- pykig	nca		nca	5,738	-	-	-	-	-	-	-	-
Pentadecane, 2.6, 10-4methyl- Ecosane, 2-methyl- Ecosane, 2-methyl- Ecosane, 2-methyl- Ecosane, 2-methyl- Bylog - 3-8-thylotruszphenone pylog - 4-Acseylotruszphenone pylog - 1- Herbatosane, 1-chlotro- Horadocane, 1-chlotro- Horadocane, 1-chlotro- Horadocane, 1-chlotro- Horadocane pylog - 1- Horadocane, 4-methyl- pylog - 1- Horadocane, 2,6,10,14-letramethyl- pylog - 1-	nca		nca	5,049	-	-	-	e.•	-	-	-	-
Escasane	nca	6-trimethyl- μg/kg -	nca	4,597	-	-	3	5 .	-		-	•
Secondaria   Sec	nca	,10-trimethyl- μg/kg -	nca	4,669	-	-	1	-	-	-	-	-
3-Ethylbenzophennone 19/kg - Dibenzothophenn, 4.6-dimethyl- 19/kg - 19/kg - 19/kg - 19/kg - 19/kg - 1- 19/kg - 1- 19/kg - 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-	nca	μg/kg -	nca	14,524	349	-	300	-	-	-	-	-
3-Ethylenzophenone	nca	yl- µg/kg -	nca	5,612	-	-	0	-	-	-	-	-
Dibenzothicphene, 4,6-dmethyl-  pykg  -3,7-Dmethylenzphenone pykg -3,7-Dmethylenzphenone pykg -3,7-Dmethylenzphenone pykg -3,7-Dmethylenzphenone pykg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,9-dg -1,1-dg	nca		nca	4,321	-	1.4 •	A	-	-	-	-	-
3.4-Dimethylateracphenone   pp/kg   -3.7-Dimethylateracphenone   pp/kg   -1.7-Dimethylateracphiciphene   pp/kg   -1.7-Dimet	nca		nca	1,207	-	1207	<b>1</b> 2,	-	-	-	-	-
3.7-Dimethyllibenzothiophene	nca		nca	16,291	-	07.0		-	-	-	-	-
(4-Acetylphenylphenylenthane 19/kg 1- 14-Rostylphenylphenylenthane 19/kg 1- 14-Rostylphenylphenylenthane 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 15-Rostacena 19/kg 1- 16-Rostacena 19/kg 1- 17-Rostacena 17-Rostacena 19/kg 1- 17-Rostacena	nca	7.5.5	nca	1,291	-	S 1291	-	-	-	-	-	
Yestoppolymenty production   19/4g   -	nca		nca	1,445		2 .	-	-	-	-	-	-
Nonadecane 1-thioro	nca	nonymentano pg/ng	nca	2,358	- 20	·	_	_	_	_	-	
Nonadecane	nca		nca	3,391	11/4	177		355	-	-	-	
1-Monadecene 199kg - 1-Monadec	nca	pg/ng	nca	23,172	<del>~~</del> ~	3881		-	_	-	_	
Daudlist of shert-dotocyl         19/kg           1.4.5.8-Tetramethylosphhalene         19/kg           1.4.5.8-Tetramethylosphhalene         19/kg           Tetradecane         19/kg           Tetradecane         19/kg           Tetradosane         19/kg           Fractorosane         19/kg           Benzene, 1,4-bisiphenylmethyl)-         19/kg           Accotoritie, 6,5-dinoc5,5-dinethyl-2-         19/kg           Cycloboxen-1-yldrane), (E)-         19/kg           Dibenzotisphene, 3-methyl-         19/kg           Tophenylchosphine sulfide         19/kg           Fredericane         19/kg           Trobenylchosphine sulfide         19/kg           Fredericane         19/kg           Trobecane         19/kg           Trobecane         19/kg           Trobecane         19/kg           Octaocoanol         19/kg           Hoptadecane         19/kg           Heptadecane         19/kg           Heptadecane         19/kg           Headecane         26/kg           1-wasdecane         19/kg           1-wasdecane         19/kg	nca	руку	nca	315	0 1 to	315				-		
1.4.5,8-Tetramethylnaphthalene μg/kg Tetradecance μg/kg Tetradecance μg/kg Tetradecane μg/kg Tetradecane μg/kg Tetradecane μg/kg Tetradecane μg/kg Tetradecane μg/kg Tetradecane μg/kg Tetradecane μg/kg Acetoratine, G-t-bloos-5,4-dimethyl-2- gy/chbezen-1-yichene, (E-): [E)-Silbene μg/kg Debrezchicybene, 3-methyl- 19/kg  14-Debrezdia, cjcychhepten-5-ol μg/kg Tejphenyltoophine suffide μg/kg Tejphenyltoophine suffide μg/kg Tridecane μg/kg Tridecane μg/kg Tridecane, 3-methyl- μg/kg Tridecane, 3-methyl- μg/kg Tridecane, 3-methyl- μg/kg Tridecane, 4-methyl- μg/kg Telphenyltoophine suffide Tridecane, 4-methyl- μg/kg Telphenyltoophine suffide Telphenyltoophine suffide Tridecane, 4-methyl- μg/kg Telphendecane μg/kg Telphendecane, 2,6,10,14-tetramethyl- μg/kg Telphendecane, 2,6,10,14-tetramethyl- μg/kg	nca		nca	1,672	h, %	313						
Ternateracontane 199kg - 1 Ternateracontane 199kg - 1 Ternatocame 199kg - 1 Senzene, 1,4-bisiphenyimethyl) - 1 Senzene, 1,4-bisiphenyimethyl) - 1 Senzene, 1,4-bisiphenyimethyl) - 1 Senzene, 1,4-bisiphenyimethyl - 1 Senzene, 1,6-sines 5,5-dimethyl-2 - 199kg - 1 Senzene, 1,6-sines 5,5-dimethyl-2 - 199kg - 1 Senzene, 1,6-sines 5,5-dimethyl-2 - 199kg - 1 Senzene, 1,6-sines 1,6-sines 1,9-sines 1 - 199kg - 1 Senzene 1,9-sines 1,6-sines 1,9-sines 1 - 1,9-sines 1,9-sines 1 - 1,9-sines 1,9-sines 1 - 1,9-sines 1,9-sines 1 - 1,9				6,883	100	-	-	-	-	-	-	-
Теклибеские  19/8g  - Teknocossee  10/8g  -	nca	7 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	nca nca	6,883 3,662	07	-	-	-	-	-	-	-
Тектосовале  Бексzen, 1,4-bisphenylmethyl)-  Bekczen, 1,4-bisphenylmethyl)-  Bekczen, 1,4-bisphenylmethyl)-  Bekczen, 1,4-bisphenylmethyl)-  Bekczen, 1,4-bisphenylmethyl-  Bekczen, 1,4-bisphenyl-  Bekczen, 1,4-bisphenyl-  Bekczen, 1,4-bisphenyl-  Bekczen, 1,4-bisphenyl-  Bekczen, 1,4-bisphenyl-  Bekczen, 1,4-bisphenyl-  Tiphenylhosphine sulfide  Bykg -  Tidecane, 1,4-methyl-  Bykg -  Cotsocoand -  Bykg -  Tidecane, 3-methyl-  Bykg -  Hostadcane  Bykg -   Hostadcane  Bykg -  Bykg -  Bykg -   Bykg	nca			3,662	,~	7533	-	-	-	-	-	-
Вессеп , 1-4-bit/phenylmethyl)- дойд Аскостийн, 61-diso, 5-4-einstyly-2- суск/howan-1-yklane), (Е)- Вессеп , 1-4-bit/phenylmethyl-2- суск/howan-1-yklane), (Е)- Вессеп , 1-4-bit/phenyl-2- суск/howan-1-yklane), (Е)- Вессеп , 1-4-bit/phenyl-2- вессеп , 1-4-bit/pheny	nca		nca				-	-	-	-	-	-
Acetoninin (3-thion-5,5-dimethy-2- yolking ————————————————————————————————————	nca		nca	697	-	-	-	-	-	408	-	-
cycloheara-lydicane⟩, (E)   1949	nca		nca	1,686	-	-	-	-	-	-	-	-
усковател учиству ()  (EStitleme ир/к  (EStitleme ир/к  (Вобрател ир/к  (В	nca	loro-5,5-dimethyl-2- une)- (F)- µg/kg -	nca	0,792	-	-		-	-	-	-	-
Debenzothiophone, 3-methyl-   19/kg     141-Debenzothiophone-5-of   19/kg     141-Debenzothiophone-5-of   19/kg     141-Debenzothiophone-141-Deb	nca	siej-, (L)-	nca	28,221	-		-	-	-	_	-	-
5H Dbertzója cjojckhepten-5-ol         µg/kg         -           Triphereylitosphine sulfide         µg/kg         -           Heneicosane         µg/kg         -           Tridecane         µg/kg         -           Tridecane         µg/kg         -           Tridecane, 3-methył         µg/kg         -           Octacosanol         µg/kg         -           Hoptadecane         µg/kg         -           Heptadecane         µg/kg         -           Hesadecane         µg/kg         -           Hesadecane         1g/kg         -           Hesadecane         2,6,10,14-tertamethyl-         µg/kg           Yell         -         -	nca	19.10	nca 💃	847	-	847			-	-	-	-
Терћеноувћасраћне шивае  — 1998 —  — 1766-скале —  — 1766-скале —	nca	10	nca nca	2,394	-	- 047	-	_	-	-	-	-
1949   1949	nca nca	100	nca OV	2,394	-	-	-	-	-	-	-	-
Trödecane 199kg Trödecane 199kg Trödecane 3-methy+ 199kg Octaocanal 199kg Octaocanal 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hoctadecane 199kg Hocadecane 199kg	nca	ic ddilide µg/ng		5,478	-	-	-	-	-	-	-	
Тridecane, 4-methyl- µg/kg - Tridecane, 3-methyl- µg/kg - Tridecane, 3-methyl- µg/kg - 1-Octacosanol µg/kg - 1-Octadecane µg/kg - 1-Octadecane µg/kg - 1-Octadecane µg/kg - 1-Octadecane, 4-methyl- µg/kg - 1-Octadecane, 4-methyl- µg/kg - 1-Octadecane, 4-methyl- µg/kg - 1-Octadecane, 4-methyl- µg/kg - 1-Octadecane, 4-methyl- µg/kg - 1-Octadecane, 2,8,10,14-tertamethyl- µg/kg - 1-Octadecane, 2,8,10,14-tertamethyl- µg/kg -		,,,,,	C @3									
Тобесапа Э-тейту- 10-7/кд - 10-7/кд	nca	µg/ng	nca	11,533		11533	-	-	-	-	-	-
Освосовала — ружа — 1-Освабесяла — ружа — 1-Освабесяла — ружа — 1-Освабесяла — 1	nca		nca	1,212	-	1212	-	-	-	-	-	-
1-Octadecene µg/kg  - Неразабеселе µg/kg  - Неразабеселе, 4-methyl- µg/kg  - Несазабеселе µg/kg  - Несазабеселе µg/kg  - Несазабеселе µg/kg  - Несазабеселе µg/kg	nca		nca	713	-	713	-	-	-	-	-	-
Heptadecane         μg/kg         -           Heptadecane, 4-methyl-         μg/kg         -           Hexathiane         μg/kg         -           Hexadecane         μg/kg         -           Hexadecane, 2.6,10,14-tetramethyl-         μg/kg         -	nca		nca	538	-	-	-	-	-	-	-	-
Heptadecane, 4-methyl- Hesathiane Hesathiane Hesadecane, 1,14-tetramethyl- Hesadecane, 2,6,10,14-tetramethyl- Hesadecane, 2,6,10,14-tetramethyl-	nca		nca	6,184	-	-	-	-	-	-	-	-
Hexathlane µg/kg - Hexadecane µg/kg - Hexadecane, 2,6,10,14-tetramethyl- µg/kg -	nca		nca	23,369	-	-	-	-	-	-	-	-
Hexadecane µg/kg -  Hexadecane, 2,6,10,14-tetramethyl- µg/kg -	nca	nethyl- μg/kg -	nca	8,091	-	-	-	-	-	-	-	-
Hexadecane μg/kg -  Hexadecane, 2,6,10,14-tetramethyl- μg/kg -	nca	μg/kg -	nca	321	-	-			-	-	-	-
Hexadecane, 2,6,10,14-tetramethyl- µg/kg -	nca		nca	9,503	-	9503	-	-	-	-	-	-
	nca		nca	13,783	-	4649	-	-	-	-	-	-
	nca	μg/kg -	nca	5,608	-	5608	-	-	-	-	-	-
Cycloeicosane μg/kg -	nca		nca	414	-	-	-	-	-	-	-	-
		19.0		2.820		_		_	_	_		
13-Docosenamide, (Z)- mg/kg -	nca	a, (Z)- mg/kg -	nca	2,820	-	-	-	-	-	-	-	-
TICs Detected <80% Match	+	909/ Match			Yes	Yes		Yes			Yes	

μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

~ No samples taken

nca - No criteria available

ncr - No criteria required ND - No TICs detected

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

Sample Type					l l	Si	il	S	ioil	9	ioil		Soil		S	oil	Soil	
Sample ID		MDL	Human Health GAC -	Controlled Waters	Max Concentration	ВН			119		120		BH22		BH		DUP0	
Sample Depth (m)	Units	(µg/kg)	Commercial / Industrial (µg/kg)	GAC - Commercial / Industrial (µg/kg)	(μg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.60	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled			iliuusulai ( <b>p</b> g/kg)	muustriai ( <b>µ</b> g/kg)		25/07			7/2019		7/2019		22/07/2019			/2019	23/07/20	
Semi Volatile Organic Compounds - Tentatively Identified Compounds (TICs)																		
p-Ethyldiphenylmethane	µд/кд	-	nca	nca	322,183	-	-	-	-	-	-	-	322183	7246	-	-	-	-
Decane	μg/kg		nca	nca	1,078	-	-	-	-	-	-		-	-	-	1078	-	-
Undecane	μg/kg	-	nca	nca	3,008	-	-	-	-	-	-	•	-		-	3008	-	-
Dodecane	μg/kg	-	nca	nca	4,178	-	-	-	-	-	-	-	-	-	-	4178	-	-
Benzene, 2,6-dimethyl-1-(phenylmethyl)-	μg/kg	-	nca	nca	22,271	-	-	-	-	-	-	-	22271	-	-	-	-	
Benzene, 1-ethyl-3-(phenylmethyl)-	μg/kg	-	nca	nca nca	249,499 5,241	-	-	-	-	-	-	-	249499	6897 1013	-	5241	-	
1-Nonadecene 4-Methylnaphtho[1,2-b]thiophene	μg/kg	-	nca nca	nca nca	5,241 4,908	-	-	-	-	-	-	-	-	1013		5241 4908	-	-
Naphthalene, decahydro-2-methyl-	μg/kg μg/kg	-	nca	nca	934	-	385	-	-	-	-	-	934	-		4900	-	
Naphthalene, 1,4-dimethyl-	µg/kg		nca	nca	1,863	-	-	-	-	-	-	-	-	-	-	1863	-	-
Naphthalene, 1,6-dimethyl-	μg/kg	-	nca	nca	0	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene, 1,7-dimethyl-	μg/kg	-	nca	nca	6,065	-	-	-	-	-	-	-	-	-	-	6065	-	-
Octadecane, 2,6-dimethyl-	μg/kg		nca	nca	1,784	-	-	-	-	-	-		1784	-	-	1129	-	-
Hexadecane	μg/kg	-	nca	nca	23,463	-	-	540	-	-	-	-	1478	-	-	23463	-	-
Benzene, 1-methyl-4-(phenylmethyl)-	μg/kg	-	nca	nca	2,287	-		-	-	-	-	-	2287	-	-	-	-	
Tridecane, 5-methyl-	μg/kg	-	nca	nca nca	1,360	-	-	-	-	-	-	-	1045	-	-	1360	-	
4,4'-Dimethylbiphenyl	μg/kg ωα/kα	-	nca	nca nca	1,045 4,781	-		-	-	-	-	-	1045	-	-	4781	-	•
2,7-Dimethyldibenzothiophene 3,7-Dimethyldibenzothiophene	μg/kg μg/kg	-	nca	nca nca	4,781 3,309	-		1	-	-	-	-	-	-	-	4781 3309	-	-
1-Methyldibenzothiophene	μg/kg μg/kg	-	nca	nca	954	-	_	-	-	-	-	-	-	-	-	-		
Naphthalene, 2,3,6-trimethyl-	μg/kg μg/kg	-	nca	nca	5,738	-	-	-	-	-	-	-	1627	-	-	5738	-	
Pentadecane	μg/kg	-	nca	nca	24,364	-	-	-	-	-	-	-	-	-	-	24364	-	-
Naphthalene, 2,3,6-trimethyl-	μg/kg	-	nca	nca	5,738	-	-	-	-	-	-	-	-	-	-	5738	-	-
Naphthalene, 1,6,7-trimethyl-	μg/kg	-	nca	nca	5,049		-	-	-	-	.ون•	-	-	-	-	5049	-	-
Naphthalene, 1,4,6-trimethyl-	μg/kg	-	nca	nca	4,597	-	-	-	-	-	112	-	-	-	-	4597	-	-
Pentadecane, 2,6,10-trimethyl-	μg/kg	-	nca	nca	4,669	-		-	-	-	A .	-	3384	-	-	4669	-	-
Eicosane	μg/kg	-	nca	nca	14,524	-	337	1050	-			-	4039	-	-	14524	-	-
Eicosane, 2-methyl- 3-Ethylbenzophenone	μg/kg μg/kg	-	nca	nca	5,612 4.321	-		-	-	- 0	-	-	4321	-	-	5612	-	-
Dibenzothiophene, 4,6-dimethyl-	μg/kg μg/kg	-	nca	nca	1,207	-		-		14. 31.4)	-	-	4321	-		-	-	
3,4-Dimethylbenzophenone	μg/kg	-	nca	nca	16,291	-	-	-	- 6	- X	-	-	16291	-	-	-	-	
3,7-Dimethyldibenzothiophene	μg/kg	-	nca	nca	1,291	-	-	-	- 65	60x	-	-	-	-	-	-	-	-
(4-Acetylphenyl)phenylmethane	μg/kg	-	nca	nca	1,445	-	-	-	050 05	y -	-	-	1445		-	-	-	-
Heptacosane, 1-chloro-	μg/kg		nca	nca	2,358	-	-	-	Antidorines	-	-		2358	-	-	-	-	-
Nonadecane, 1-chloro-	μg/kg	-	nca	nca	3,391	-	-	-	Mr. Mr.	-	-	-	-	-	-	3391	-	-
Nonadecane	μg/kg	-	nca	nca	23,172	-	-		N (62)	-	-	-	842	-	-	23172	-	
1-Nonadecene	μg/kg	-	nca	nca	315	-		101	S .	-	-	-	-	-	-	-	-	*
Disulfide, di-tert-dodecyl 1,4,5,8-Tetramethylnaphthalene	μg/kg	-	nca	nca	1,672 6,883	-		- CV - S	Ç	-	-	-	-	-	-	1672 6883	-	
Tetratetracontane	μg/kg μg/kg	-	nca nca	nca nca	3,662	-		20.0	-	-	-		-	-		3662		
Tetradecane	µg/kg µg/kg	-	nca	nca	13,936	-		12.14	-	-	-	-	-	-	-	13936	-	
Tetracosane	µg/kg	-	nca	nca	697	-	697	130	-	-	-	-	-	-	-	-	-	
Benzene, 1,4-bis(phenylmethyl)-	μg/kg	-	nca	nca	1,086	-	. 20	A. Friday	-	-	-	-	1086	-	-	-	-	-
Acetonitrile, (3-chloro-5,5-dimethyl-2- cyclohexen-1-ylidene)-, (E)-	μg/kg	-	nca	nca	2,792	-	ی ً -	8, .	-	-	-	-	2792	-	-	-	-	-
(E)-Stilbene Dibenzothiophene, 3-methyl-	μg/kg	-	nca nca	nca	28,221 847	-	<del></del>	-	-	-	-	-	28221	-	-	-	-	-
Dibenzothiophene, 3-methyl- 5H-Dibenzo(a,c)cyclohepten-5-ol	μg/kg α/kg	<del></del>	nca nca	nca nca	2,394	-	- CIT	-	-	-	-	-	2394	-	-	_	-	
Triphenylphosphine sulfide	μg/kg μg/kg	-	nca	nca	2,394	-	250x	-	-	-	-	-	2394	-	-	-	-	
Heneicosane	µg/kg µg/kg	-	nca	nca	5,478	- ^(	347	-	-	-	-	-	-	-	-	5478	-	
Tridecane	μg/kg	-	nca	nca	11,533	. 0	-	-	-	-	-	-	-	-	-	9935	-	
Tridecane, 4-methyl-	μg/kg	-	nca	nca	1,212	-	-	-	-	-	-	-	-	-	-	-		-
Tridecane, 3-methyl-	μg/kg	-	nca	nca	713	-	-	-	-	-	-	-	-	-	-	-	-	÷
Octacosanol	μg/kg	-	nca	nca	538	-	-	538	-	-	-	-	-	-	-	-	-	
1-Octadecene	μg/kg	-	nca	nca	6,184	-	-	-	-	-	-	-	-	-	-	6184	-	
Heptadecane	μg/kg	-	nca	nca nca	23,369	-	-	-	-	-	-	-	-	-	-	23369	-	-
Heptadecane, 4-methyl-	μg/kg ωα/kα	-	nca nca	nca nca	8,091 321	-	-	-	321	-	-	-	-	-	-	8091	-	-
Hexathiane Hexadecane	μg/kg μg/kg	-	nca nca	nca nca	321 9.503	-	-	-	321	-	-	-	-	-	-	-	-	-
Hexadecane, 2,6,10,14-tetramethyl-	μg/kg μg/kg	-	nca	nca	13,783	-	-	-	-	-	-	-	-	-	-	13783	-	
Octadecane	μg/kg μg/kg	-	nca	nca	5,608	-	-	-	-	-	-	-	-	-	-	5015	-	
Cycloeicosane	μg/kg	-	nca	nca	414	-	-	-	414	-	-	-	-	-	-	-	-	
13-Docosenamide, (Z)-	mg/kg	-	nca	nca	2,820	-	-	-	2820	-	-	-	-	-	-	-	-	
TIC- Data and CON March	-	-						<del>                                     </del>		V				V		V		
TICs Detected <80% Match			-	-	L	-	-	<u> </u>	-	Yes	-	-	-	Yes		Yes	-	Yes

μg/kg - micrograms per kilogram GAC - Generic Assessment Criteria

- <MDL ~ No samples taken

nca - No criteria available

ncr - No criteria required ND - No TICs detected

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

Sample 19 yes           Sample 10 D         Units           Sample 10 D         Units           Sample 10 D         Units           Parameter         Presenter           TPH Acomatics         mplag           1794 (SECS 7) aromatic         mplag           1794 (SECS 7) aromatic         mplag           1794 (SECT 10 12) aromatic         mplag           1794 (SECT 10 12) aromatic         mplag           1794 (SECT 10 12) aromatic         mplag           1794 (SECT 10 12) aromatic         mplag           1794 (SECT 10 12) aromatic         mplag           1794 (SECT 10 23) aromatic         mplag           1794 (SECT 10 23) aromatic         mplag           1794 (SECT 10 23) aromatic         mplag           1794 (SECT 10 33) alphatic         mplag	-0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	Human Health GAG- Commercial Industrial (mg/kg)  ned  ned  ned  ned  ned  ned  ned  ne	Controlled Waters And C. Commercial Industrial (mg/kg)  Port Port Port Port Port Port Port Por	Max Concentration (mg/hg)	0.0-1.0	Sol	0.0-0.6	Sol	0.0-1.0	ical M3 1.0-2.0 1.0-2.	0.0-1.0	icol M4  1.0-2.0  1.0-2.0	0.0-1.0	icol   M5	Si Bi Bi Bi Bi Bi Bi Bi Bi Bi Bi Bi Bi Bi	1.0-2.0
Sample Depth (ny)  Dunis Sample Depth (ny)  Dunis Sample Depth Sample	-0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	Commercial / Industrial (mg/kg)  ner ner ner 1,800,000 ner 28,000,000 28,000,000 ner ner ner 1,000,000 5,000,000 nea nea nea nea nea nea nea nea nea nea	GAC - Commercial / Industrial (Imple)  nor nor nor nor nor nor nor nor nor nor	Concentration (mp/kg)	0.0-1.0 3004	1,0-2.0 7/2019	0.0-0.6 30x	772019	0.0-1.0 30/07	1.0-2.0	0.0-1.0 29/07	1.0-2.0 7/2019	0.0-1.0 29.0	1.0-2.0 7/2019	0.0-1.0 2907	1.0-2.0 1.0-2.
Date Sampled Parameter  TPH Aromatics TPH Aromatics TPH (+ CEC-74) anomatic: mg/kg TPH (+ CEC-74) anomatic: mg/kg TPH (+ CEC-74) anomatic: mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TPH (+ CEC-74) anomatic mg/kg TCM Anomatics (CS-23) mg/kg TCM Anomatics (CS-23) mg/kg TCM Anomatics (CS-23) mg/kg TEX  BECCORE mg/kg TEX EXECUTED MG/kg TEX EX EXECUTED MG/kg TEX	-0.1 -0.1 -0.1 -0.1 -0.2 -0.4 -0.2 -0.0 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	ner ner ner 1 1,800,000 ner ner 1 1,800,000 ner ner 1 1,800,000 ner ner ner ner ner ner ner ner ner ner	nor nor nor nor nor nor nor nor nor nor			7/2019	3000	772019		772019	2907	7/2019	290	7/2019	2907	
Parameter  TPH Atomatics  TPH (-ECS-7) auomatic mg/kg  TPH (-ECS-7) auomatic mg/kg  TPH (-ECS-7) auomatic mg/kg  TPH (-ECS-10) auomatic mg/kg  TPH (-ECS-10) auomatic mg/kg  TPH (-ECS-10-10) aromatic mg/kg  TPH (-ECS-10-10) alighatic mg/kg  TPH (-ECS-10) alighatic mg/kg	-0.1 -0.1 -0.1 -0.1 -0.2 -0.4 -0.2 -0.0 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	ner 1 800,000 ne	ner nea nea nea nea nea nea nea nea nea nea	- 0.2 - 280 - 280 - 201 - 628 - 1089 												6
TPH Anomatics	-0.1 -0.1 -0.1 -0.1 -0.2 -0.4 -0.2 -0.0 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	ner 1 800,000 ne	ner nea nea nea nea nea nea nea nea nea nea	- 0.2 - 280 - 280 - 201 - 628 - 1089 												- - - - - - - - - - - -
TPH (SECT-9) aromatic	-0.1 -0.1 -0.1 -0.1 -0.2 -0.4 -0.2 -0.0 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	ner 1 800,000 ne	ner nea nea nea nea nea nea nea nea nea nea	- 0.2 - 280 - 280 - 201 - 628 - 1089 												- - - - - - - - - - - -
TPH CECT-03 aromatic	-0.1 -0.1 -0.1 -0.1 -0.2 -0.4 -0.2 -0.0 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1 -0.1	ner 1 800,000 ne	ner nea nea nea nea nea nea nea nea nea nea	- 0.2 - 280 - 280 - 201 - 628 - 1089 												- - - - - - - - - - -
TFH   ECEC   10   aromatic   mg/kg	-0.1 -0.2 -0.2 -0.2 -0.2 -0.2 -0.2 -0.3 -0.3 -0.3 -0.3 -0.3 -0.3 -0.3 -0.3	1,800,000 1,800,000 28,000,000 28,000,000 100 100 100 100 100 100 100 100	nca nca nca nca nca nca nca nca nca nca	0.2 - 280 201 628 1089 3.2 30 54 83 139 233 1322				*** *** *** *** *** *** *** *** *** **								6
TPH 1-05C 1-0-12 aromatic	<ul> <li>&lt;0.2</li> <li>&lt;0.0</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.2</li> <li>&lt;0.1</li> <li>&lt;0.2</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <l></l></ul>	ner 34,000,000 ner 1 ner	ner ner ner ner ner ner ner ner ner ner	- 280 201 628 1089 3.2 30 54 83 139 233 1322			- 105 105 105 57 57	* * * * * * * * * * * * * * * * * * *								- - - - - - -
TPH CECT-10-12 aromatic	<ul> <li>&lt;0.2</li> <li>&lt;0.0</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.1</li> <li>&lt;0.2</li> <li>&lt;0.1</li> <li>&lt;0.2</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <li>&lt;0.1</li> <li>&lt;0.0</li> <l></l></ul>	ner 34,000,000 ner 1 ner	ner ner ner ner ner ner ner ner ner ner	- 280 201 628 1089 3.2 30 54 83 139 233 1322			- 105 105 105 57 57	** ** ** ** ** ** ** ** ** ** ** ** **			-			-		6
TRH   SEC12-10   aromatic   mplage	<40 <70 <70 <190 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.2 <40 <40 <70 <70 <49.0 <50 <50 <50 <50 <50 <50 <50	34,000,000 28,000,000 28,000,000 ner ner ner 1,000,000 1,000,000 1,000,000 1,000,000	nca nca nca nca nca nca nca nca nca nca	201 628 1089 - - - 3.2 30 54 83 139 233 1322			- 105 105 - - - - - - - - - - - - - - - - - - -	** ** ** ** ** ** ** ** ** ** ** ** **						-		- - - - - - - 6
TPH CECT-02   surmate:	<pre>&lt;7.0 &lt;7.0 &lt;7.0 &lt;7.0 </pre> <pre>&lt;7.0 </pre> <pre>&lt;7.0 </pre> <pre>&lt;7.0 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <7.0  <7.0  <7.0  <19.0  <38.0 <5.0  <5.0  <5.0 <5.0 <5.0 <5.0 <5.0	28,000,000 28,000,000 ner ner ner ner 1,000,000 5,000,000 nea nea nea nea nea nea nea nea nea 5,000,000 28,000,000 27,000,000 5,000,000 5,000,000 5,000,000 5,000,000	nca nca nca nca ncr ncr nca nca nca nca nca nca nca nca	201 628 1089 - - - 3.2 30 54 83 139 233 1322			- 105 105 - - - - - - - - - - - - - - - - - - -	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~						-		- - - - - - - 6
TPH (- ECC21-53) aromate:   mglog	<pre>&lt;7.0 </pre> <pre>&lt;7.0 </pre> <pre>&lt;19.0 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.1 </pre> <pre>&lt;0.2 </pre> <40.1  <7.0  <7.0  <7.0  <5.0  <5.0  <5.0  <5.0  <5.0  <5.0  <5.0	28,000,000 ner ner ner 1,000,000 nea 1,000,000 nea nea nea nea nea 28,000,000 27,000,000 27,000,000 27,000,000 27,000,000 27,000,000 27,000,000 27,000,000 27,000,000 27,000,000	nca nca nca nca nca nca nca nca nca nca	628 1089 - - - 3.2 30 54 83 139 233 1322			105 105 57 57	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~								- - - - - - 6
Total Anomales (CS-35)         mg/kg           THM Allphatic         mg/kg           TPM (-ECS-6) aliphatic         mg/kg           TPM (-ECS-6) aliphatic         mg/kg           TPM (-ECS-6) aliphatic         mg/kg           TPM (-ECS-10) aliphatic         mg/kg           TPM (-ECS-10-12) aliphatic         mg/kg           TPM (-ECS-10-2) aliphatic         mg/kg           TPM (-ECS-10-2) aliphatic         mg/kg           TOMA (Aliphatics (CS-36))         mg/kg           TOMA aliphatics (GS-36)         mg/kg           TEX         mg/kg           Benzene         jg/kg           Tolure         jg/kg           Tolure         jg/kg           mg/kg-10-10-10-10-10-10-10-10-10-10-10-10-10-	<pre>&lt;19.0 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.1 &lt;0.2 &lt;4.0 &lt;&lt;7.0 &lt;&lt;7.0 &lt;19.0 &lt;5.0 &lt;5.0 &lt;5.0 &lt;5.0 &lt;5.0 &lt;5.0 &lt;5.0 </pre>	ner ner 1.000,000 5.000,000 37.000,000 nea nea nea nea 28.000,000 28.000,000 27.000,000	nea ner ner nea nea nea nea nea nea nea nea nea nea	1089 			105	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~						-	-	6
TPH Aliphatics	<0.1 <0.1 <0.1 <0.1 <0.2 <4.0 <4.0 <7.0 <7.0 <7.0 <5.0 <5.0 <5.0 <5.0 <5.0	ner ner 1,000,000 5,000,000 7,000,000 nea nea nea nea 28,000,000 28,000,000 5,600,000	nor nos nos nos nos nos nos nos nos nos nos	- 32 30 54 83 139 233 1322				~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	-	-		0.2 - 15 21	-	-	-	- - - - 6
TPH   DECS   alighatic	<0.1 <0.1 <0.2 <4.0 <7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0 <5.0	ner 1,000,000 5,000,000 37,000,000 nea nea nea nea 12,000 28,000,000 5,600,000 5,600,000	nor nos nos nos nos nos nos nos nos nos nos	3.2 30 54 83 139 233 1322		-	- - - - - - 57	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	-		-	0.2 - 15 21		-	-	- - - 6
TRH (   ECE-50   sighate	<0.1 <0.1 <0.2 <4.0 <7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0 <5.0	ner 1,000,000 5,000,000 37,000,000 nea nea nea nea 12,000 28,000,000 5,600,000 5,600,000	nor nos nos nos nos nos nos nos nos nos nos	3.2 30 54 83 139 233 1322		-	- - - - - - 57	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	-		-	0.2 - 15 21		-	-	- - - 6
TPH 1-6EC1-10   all-phate	<0.1 <0.2 <4.0 <7.0 <7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0 <5.0	1,000,000 5,000,000 37,000,000 nea nea nea nea 12,000 28,000,000 5,600,000	nca nca nca nca nca nca nca nca nca nca	3.2 30 54 83 139 233 1322			- - - - 57	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	-	-	-	0.2 - 15 21	-	-	- - -	- 6
TRH (SECTO-123 alighantic mg/s/g TRH (SECTO-123 alighantic mg/s/g TRH (SECTO-123 alighantic mg/s/g TRH (SECTO-123 alighantic mg/s/g TRH (SECTO-123 alighantic mg/s/g Total alighantic sc (SE-SS) mg/s/g Total alighantic sc (SE-SS	<02 <4.0 <7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0	5,000,000 37,000,000 nea nea nea nea 12,000 28,000,000 2,700,000 5,600,000	nca nca nca nca nca nca nca nca nca nca	30 54 83 139 233 1322	-		- - - 57	~ ~	-	-	-	- 15 21	-	-	*	- 6
TPH 1 (SECT2-16) alighants         mg/kg/g           TPH (SECT6-21) alighants         mg/kg           TPH (SECT6-32) alighants         mg/kg           Total Alphantics (DS-05)         mg/kg           TEX         mg/kg           BEX         mg/kg           TEX         mg/kg           Toluse         µg/kg           Toluse         µg/kg           mg- Yylene         µg/kg           mg- Yylene         µg/kg           MTRE         µg/kg	<4.0 <7.0 <7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0	37,000,000 nea nea nea nea nea 12,000 28,000,000 5,600,000	nca nca nca nca nca nca 3.7	54 83 139 233 1322	-	- - -	- - 57 57	~ ~	-	-	-	15 21	-	-	-	6
TRH L	<7.0 <7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0	nca nca nca nca 12,000 28,000,000 2,700,000 5,600,000	nca nca nca nca 8.7	83 139 233 1322	-	-	- 57 57	~	-	-	-	21	-	-		
TPH (EC21-35) silphate	<7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0	nca nca nca 12,000 28,000,000 2,700,000 5,600,000	nca nca nca 8.7	139 233 1322		-	57 57	~							-	
TPH (ECZ-135) site/hasic	<7.0 <19.0 <38.0 <5.0 <5.0 <5.0 <5.0	nca nca 12,000 28,000,000 2,700,000 5,600,000	nca nca 8.7 31	233 1322 9	-		57		-			04	1	1		
Total Alphates (CS-SS)	<19.0 <38.0 <5.0 <5.0 <5.0 <5.0	nca nca 12,000 28,000,000 2,700,000 5,600,000	nca nca 8.7 31	233 1322 9	-		57					31			-	-
Total alphatics and aromatics (CS-C3S)         mg/kg           Berx         mg/kg           Berx         jg/kg           Toluene         jg/kg           Toluene         jg/kg           mg-Yofene         jg/kg           -Oyferine         jg/kg           MTBE         MTRE	<5.0 <5.0 <5.0 <5.0 <5.0	12,000 28,000,000 2,700,000 5,600,000	nca 8.7 31	1322		-				-	-	67	-	-	-	-
#TEX	<5.0 <5.0 <5.0 <5.0	12,000 28,000,000 2,700,000 5,600,000	8.7 31	9				~	-	-	-	67	-	-	-	-
Ветсапе	<5.0 <5.0 <5.0	28,000,000 2,700,000 5,600,000	31				102	1								
Тобивее избере	<5.0 <5.0 <5.0	28,000,000 2,700,000 5,600,000	31		-	-	-	~		_	-	-	-	_	-	
Ейуйьепгеле µg/kg mip-Ууйлее µg/kg o-Ууйлее µg/kg MTBE  MTBE µg/kg	<5.0 <5.0	2,700,000 5,600,000			-	-	-		-	-	-					<u> </u>
m/p-Xylene ид-Xy о-Xylene ид-Xy МТВЕ ид-Xylene ид-Xyl	<5.0	5,600,000		11				~								
o-Xylene µg/kg МТВЕ  МТВЕ µg/kg				5	-	-	-	~	-	-	-	5	-	-	-	-
MTBE µg/kg	<5.0		669	313	-	-	9	~	-	-	-	16	-	-	-	
MTBE µg/kg		3,100,000	669	14	-	-	4	~	-	-	-	14	-	-	-	-
	<5.0	ner	ncr							0.*	-	-	-			
		- Commercial / Industrial AC - Commercial / Industr	ial	CONF.	For of co	pyright of	I purposs	Solly, of	ny offic							

Sample Type	1	1				S	Soil	S	oil	S	Soil								
Sample ID	Units	MDL	Human Health GAC - Commercial /	Controlled Waters GAC - Commercial /	Max Concentration	В	IH7	В	Н8	В	H9	BI	110	BI	411	Bi	112	BI	H13
Sample Depth (m)	Units	MDL	Industrial (mg/kg)	Industrial (mg/kg)	(mg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled						29/0	7/2019	23/07	7/2019	24/07	7/2019	24/07	7/2019	24/07	7/2019	24/07	/2019	25/07	7/2019
Parameter																			
TPH Aromatics																			
TPH (>EC5-7) aromatic	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC7-8) aromatic	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC8-10) aromatic	mg/kg	<0.1	1,800,000	nca	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC10-12) aromatic	mg/kg	<0.2	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC12-16) aromatic	mg/kg	<4.0	34,000,000	nca	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC16-21) aromatic	mg/kg	<7.0	28,000,000	nca	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC21-35) aromatic	mg/kg	<7.0	28,000,000	nca	628	-	-	-	-	-	-	-	-	-	-			-	-
Total Aromatics (C5-35)	mg/kg	<19.0	ncr	nca	1089	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH Aliphatics																			
TPH (>EC5-6) aliphatic	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-			-	-
TPH (>EC6-8) aliphatic	mg/kg	<0.1	ncr	ner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC8-10) aliphatic	mg/kg	<0.1	1,000,000	nca	3.2	-	-	-	-	-	-	-	0.2	-	0.7			-	-
TPH (>EC10-12) aliphatic	mg/kg	<0.2	5,000,000	nca	30	-	-	-	-	-	-	-	-	-	30	-	-	-	-
TPH (>EC12-16) aliphatic	mg/kg	<4.0	37,000,000	nca	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TPH (>EC16-21) aliphatic	mg/kg	<7.0	nca	nca	83	-	-	-	-	-	-	-	-	-	10	-	-	-	-
TPH (EC21-35) aliphatic	mg/kg	<7.0	nca	nca	139	-	-	-	-	-	-	-	-	-	139	-	-	-	-
Total Aliphatics (C5-35)	mg/kg	<19.0	nca	nca	233	-	-	-	-	-	-	-	-	-	180			-	-
Total aliphatics and aromatics (C5-C35)	mg/kg	<38.0	nca	nca	1322	-	-	-	-	-	-	-	-	-	180	-	-	-	-
BTEX																			
Benzene	μg/kg	<5.0	12,000	8.7	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	μg/kg	<5.0	28,000,000	31	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	μg/kg	<5.0	2,700,000	132	5	-	-	-	-	-	-	-	-	-	-			-	-
m/p-Xylene	μg/kg	<5.0	5,600,000	669	313	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	μg/kg	<5.0	3,100,000	669	14	-	-	-	-	-	-	-	-	-	-			-	-
мтве																			1
MTRE	ua/ka	<5.0	ncr	ncr				-	-	-	-	~ .	-		-				-

Notes:

MDL - Method Detection Limit
mg/kg - miligrams per kilogram
µg/kg - micrograms per kilogram
GAD - Generic Assessment Criteria
- AMDL
- Samples not taken
nca - No criteria avaliable
ncr - No criteria required
NA - Not Analysed

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

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Sign Part	8417 0.010 1.02.0 0.01.0 25072019 21	BH16 0.0-10 10-2.0 0.0 2607/2019	BH16  0.0-1.0  1.0-2.0  2.0-0.72.019	BM16 0.0-10 10-20 20:07:2019
Commercial   Suspice Depth (m)   Commercial   Suspice Depth (m)   Commercial   Industrial (mg/kg)   Industrial (	00-10 10-20 00-10 20 00-10 20 00-10	0-10 10-20 0.0 28/07/2019	09-10 10-20 26:072019	0.0-1.0 10- 26:07:2019
Sample Perplan (mgkg)	25072019 21	26/07/2019	26/07/2019	26/07/2019
Perameter				
TPM Ammatics				
TRY   CECT-3   solvable				
PRINCECTO   Brownishe   mg/kg   4.51   mer   m				
TRY (SCEO 19) servante:   mg/kg   <0.1   1,800,000   mca   0.2				
TRH (SECTO-12) anomatic				
TRH (SECTO-12) anomatic				
Temple   T				
THY (SECTION) anomatic				
TPH (1962-193) semantic				
Total Aromatics (CS-58) mg/kg < c19.0 ncr nca 1089				
TPM Alphabate				
TRY (SCECR) allyhatic   mgAg   <0.1   ner   ner				
TRH (SECRIA) allegates   mg/kg   <0.1   ner   ner				
TRIFICESCE-01 sillaphate: mq-kg   -0.1   1,000,000   rea   3.2			· · · · · · · · · · · · · · · · · · ·	
TRH (SECTION 3) sighants			· · · · · · · · · · · · · · · · · · ·	
TPH (SEC12-19) alphate				
TRY (SECT-62) sighatic   mg/kg   <7.0   nca   nca   133				
TPH (ECC2-59) slightwise				
Total Allphates (C5-35) mg/kg < 19.0 nca nca nca 233 · · · · · · · · · · · · · · · · · ·				
Total alliphatics and aromatics (CS-C35)   mg/kg   <38.0   mcs   mcs   1322				
### STEK   Betweene				
Benzone         ug/kg         <.5.0         12,000         8.7         9         .			-	
Taluene				
Ethylencene µghg <5.0 2,700,000 1132 5				
руку <5.0 2,700,000 132 5				
The Water 1 Co. 1 Company 1 Co. 1 Co				
Notes	ases of the any offer the required for any offer			
THEE INTES I	Poses of the any offer use.			
Notes.  Mot - Metrod Delection Limit mg/le - miligrams per kilogram gale - miligram sper kilogra	and other and other use.			
Notes.  Molta- Method Detection Limit mg/lag- militigams per kilogram pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- milingams pylag- pylag- milingams pylag- pyla	Poses of to any other use			
a segitor		For help ching the property of the control of the c	iot its pedion purpo	For its perion

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Sample Type	1	1					Soil			ioil	5	Soil	S	oil	S	ioil	5	oil		Soil
Sample ID			Human Health GAC -	Controlled Waters GAC - Commercial /	Max		BH22		В	H23	В	H24	BH	125	В	H26	В	127	В	3H28
Sample Depth (m)	Units	MDL	Commercial / Industrial (mg/kg)	Industrial (mg/kg)	Concentration (mg/kg)	0.0-1.0	1.60	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-0.8	~	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled				(	(		22/07/2019		23/0	7/2019	23/0	7/2019	22/07	7/2019	25/0	7/2019	26/0	7/2019	24/0	07/2019
Parameter																				
TPH Aromatics																				
TPH (>EC5-7) aromatic	mg/kg	<0.1	ncr	ncr		-	-	-	-	-	-	-	-	-	-	~	-	-	-	-
TPH (>EC7-8) aromatic	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-
TPH (>EC8-10) aromatic	mg/kg	<0.1	1,800,000	nca	0.2	-	-	-	-	0.1	-	-	-	-	-	~	-	-	-	-
TPH (>EC10-12) aromatic	mg/kg	<0.2	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-
TPH (>EC12-16) aromatic	mg/kg	<4.0	34,000,000	nca	260	-	260	75	-	-	-	-	-	-	-	~	-	-	-	-
TPH (>EC16-21) aromatic	mg/kg	<7.0	28,000,000	nca	201	-	201	54	-	-	-	-		-		~			-	-
TPH (>EC21-35) aromatic	mg/kg	<7.0	28,000,000	nca	628	-	628	180	-	-	-	-	-	-	-	~	-	-		-
Total Aromatics (C5-35)	mg/kg	<19.0	ner	nca	1089	-	1089	309	-	-	-	-		-	-	~				-
TPH Aliphatics																				
TPH (>EC5-6) aliphatic	mg/kg	<0.1	ner	ner		-	-	-	-	-	-	-		-	-	~	-			-
TPH (>EC6-8) aliphatic	mg/kg	<0.1	ncr	ner	-		-	-	-	-	-	-	-		-	~	-	-		-
TPH (>EC8-10) aliphatic	mg/kg	<0.1	1,000,000	nca	3.2	-	-	-	-	3.2	-	0.3	-	-	-	~	-	-		0.5
TPH (>EC10-12) aliphatic	mg/kg	<0.2	5,000,000	nca	30	-	14	6.9	-	-	-	-		-	-	~				-
TPH (>EC12-16) aliphatic	mg/kg	<4.0	37,000,000	nca	54	-	54	31	-	-	-	-	-	-	-	~	-	-		-
TPH (>EC16-21) aliphatic	mg/kg	<7.0	nca	nca	83	-	83	46	-	-	-	-		-	-	~	-			-
TPH (EC21-35) aliphatic	mg/kg	<7.0	nca	nca	139		82	46	-	19	-	46	-		-	~	-	-		-
Total Aliphatics (C5-35)	mg/kg	<19.0	nca	nca	233	,	233	130	-	22	-	46		-	-	~	-			-
Total aliphatics and aromatics (C5-C35)	mg/kg	<38.0	nca	nca	1322		1322	439	-	-	-	46	-	-	-	~	-	-	-	-
BTEX																				
Benzene	μg/kg	<5.0	12,000	8.7	9	-	-	-	-	-	-	-		-	-	~	-		-	-
Toluene	μg/kg	<5.0	28,000,000	31	11	11	-	-	-	-	-	-	-	-	-	~	-	-	-	-
Ethylbenzene	μg/kg	<5.0	2,700,000	132	5	,	3	-	-	-	-	-		-	-	~	-			-
m/p-Xylene	μg/kg	<5.0	5,600,000	669	313	6	-	-	-	-	-	-		-	-	~			-	-
o-Xylene	μg/kg	<5.0	3,100,000	669	14	-	-	-	-	-	-	-	-	-	-	~	-	-	-	-
мтве																				
MTBE	μg/kg	<5.0	ncr	ner	-	-	-	-	-	-	-	0.0	-	-	-	~	-	-	-	-

Notes:

MDL - Method Detection Limit
mg/kg - milligrams per kilogram
yg/kg - micrograms per kilogram
g/kg - reforgrams per kilogram
GAC - Generic Assessment Criteria
- AMDL
- Samples not taken
nca - No criteria available
ncr - No criteria required
NA - Not Analysed

Exceeds Human Health GAC - Commercial / Industrial Exceeds Controlled Waters GAC - Commercial / Industrial

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Description	Sample ID Sample Depth (m) Date Sampled Parameter TPH Aromatics TPH (>EC5-7) aromatic TPH (>EC7-8) aromatic TPH (>EC8-10) aromatic		MDL	Commercial /	GAC - Commercial /	Concentration	0.0-1.0	JP01 1.0-2.0	0.0-1.0	P02 1.0-2.0	0.0-1.0	P03 1.0-2.0	0.0-1.0	P04 1.0-2.0	0.0-1.0	1.0-2.0	DUP06 0.0-1.0 1.0-2
Semple Depth (m)   Dust   Du	Sample Depth (m) Date Sampled Parameter TPH Aromatics TPH (=EC5-7) aromatic TPH (=EC7-8) aromatic TPH (=EC8-10) aromatic		MDL	Commercial / Industrial (mg/kg)	GAC - Commercial / Industrial (mg/kg)		0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0 1.0-2
Description   Property   Proper	Date Sampled Parameter TPH Aromatics TPH (>EC5-7) aromatic TPH (>EC5-8) aromatic TPH (>EC8-10) aromatic	mg/ka		Industrial (mg/kg)	Industrial (mg/kg)	(mg/kg)											
Permeter   Fee	Parameter TPH Aromatics TPH (>EC5-7) aromatic TPH (>EC7-8) aromatic TPH (>EC8-10) aromatic	mg/ka					23/0										20/07/2010
FM Monasias   FM   FM   FM   FM   FM   FM   FM   F	TPH Aromatics TPH (>EC5-7) aromatic TPH (>EC7-8) aromatic TPH (>EC8-10) aromatic	mg/kg							24/0	72019	23/0/	12019	20/0/	72019	25/0/	2019	30/07/2019
THY (SECT) aromate   mg/lg   d.1   mer	TPH (>EC5-7) aromatic TPH (>EC7-8) aromatic TPH (>EC8-10) aromatic	mg/kg			1												
THY INFORMATION   May	TPH (>EC7-8) aromatic TPH (>EC8-10) aromatic	mg/kg															
Temple Control of Market   M	TPH (>EC8-10) aromatic																
First   Firs																	
Trif (SECT-16) servante																	
THY (PECT) at parameter   mg/kg   4.70   28,000,000   mea   201							-	-	-	-	-	-	-	-	-	-	
TPH (																	
Total Arcmatics (C5-35)																	
TPM Alphastack   TPM				28,000,000	nca		-	-	-	-	-	-	-	-	-	-	
THY (ECC)-50 silpature		mg/kg	<19.0	ner	nca	1089	-	-	-	-	-	-	-	-	-	-	
THY (SCE)-9 alphate	TPH Aliphatics																
TRIFF   TRIF	TPH (>EC5-6) aliphatic	mg/kg	<0.1	ner	ncr	-		-	-	-	-	-	-	-	-	-	
TRIFF   TRIF								-	-	-	-	-	-		-		
TRY (PCD1-1/2) alphastic mg/kg 4.0						3.2	-	1.1		0.3			-		-		
TRY (SECT-19) allowate				5,000,000			-				-		-	-	-	-	
TRH (PCE1-52) alighasis c mg/kg																	
Tell (ECC1-50) dephate									-	-	-	-	-	-	-		
Total Alphatics (C5-35)   mg/kg   <18.0   nea   nea   1322   50																	
Table allophotics and arrandice (CS-CLS)																	
### STEX   19/4g																	
Benzere 1989 4.0 1200 8.7 9		mynd	4.30.0	II.d	1 Fud	1322	<u> </u>	30	<del></del>	<del></del>	-	<del></del>	<del>-</del>	· -	<del>-</del>	-	
Toluene 195 45 28,000,000 31 11		+		40.000	0.7		<b>-</b>	1	-	-	1	-	<b> </b>		<b> </b>		
Etyphename μρλg 4:0 2,700,000 132 5 · · · · · · · · · · · · · · · · · ·																	
Polymer   Poly																	
Solution   Solution						313		-	-	-	-	-					
MTRE		μg/kg	<5.0	3,100,000	669	14		-	-	-	-	-	-	-	-	-	
Motes Millor Method Detection Limit mg/kg - miligrams per kilogram  GAC - Germer Assessment Citeria - Sampler not taken nor - No criteria required  NA- Noc Analysed  Exceeds Name Health GAC - Commercial / Industrial  Exceeds Controlled Waters GAC - Commercial / Industrial  Excee																	
	GAC - Generic Assessment Criteriad/IDLSamples not taken nca - No criteria available ncr - No criteria required NA - Not Analysed  XX				ial		eni	For its the	stion pury	Schitted for	any						

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Sample Type	T	1				1	ioil	1 -	ioil	T .	Soil	1 -	Soil	Τ ,	Soil	1 ^	oil
Sample Type Sample ID			Human Health GAC -	Controlled Waters GAC			H1		H2		BH3		50II 5H4		SH5	_	H6
<u>'</u>	Units	MDL (mg/kg)	Commercial / Industrial	- Commercial /	Max Concentration (mg/kg)			0.0-0.6	~	0.0-1.0	1	0.0-1.0	1				
Sample Depth (m)	-	(mg/kg)	(mg/kg)	Industrial (mg/kg)	(Hg/kg)	0.0-1.0	1.0-2.0		7/2019		1.0-2.0 7/2019		1.0-2.0 7/2019	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled	1					30/07	7/2019	30/0	7/2019	30/0	7/2019	29/0	7/2019	29/0	7/2019	29/01	/2019
Parameter				10	44												
Arsenic	mg/kg	<0.5	640			17.4	39.9	7.0	~	8.8	19.6	9.6	15.9	6.1	8.3	12.1	16.2
Barium Beryllium	mg/kg	<1.0 <0.5	22,100 12	nca	218	54	68	46	~	37	45	35	39	35	40	27	32
	mg/kg			nca		1.2	1.8	0.8	~	0.9	1.7	0.9	1.2	-	0.8	1.0	1.1
Cadmium	mg/kg	<0.1	190	0.02	3.6	1.8	1.7	0.6	~	0.1	0.6	-	0.3	0.5	0.7	-	-
Chromium	mg/kg	<0.5	8,600	nca	68	59	23	68	~	43	36	38	47	24	22	29	37
Chromium III	mg/kg	<0.5	8,600	nca	68	59	23	68	~	43	36	38	47	24	22	29	37
Chromium VI	mg/kg	<0.3	ncr	ncr	-		-	-	~	-	-	-	-	-	-	-	-
Copper Lead	mg/kg	<1.0	68,000	0.50	43	29	42	43	~	19	27	16	22	11	15	21	20
	mg/kg	<5.0	2,300	3.5	220	39	65	22	~	220	54	21	41	81	31	23	58
Mercury	mg/kg	<0.1	ncr	ncr	-		-	-	~	-	-	-	-	-	-	-	-
Nickel	mg/kg	<0.7	980	4.3	236	43	68	236	~	34	55	32	40	13	23	35	39
Selenium	mg/kg	<1.0	12,000	nca	3.0	-	2	-	~	-	1	-	1	-	-	1	1
Vanadium	mg/kg	<1.0	9,000	1.3	31	21	25	13	~	21	30	23	26	11	20	22	26
Water Soluble Boron	mg/kg	<0.1	240,000	71	2.3	0.2	0.2	0.4	~	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.3
Zinc	mg/kg	<5.0	730,000	1.5	275	160	238	242	~	116	255	112	167	81	206	111	152
Miscellaneous Parameters																	
Cyclohexane	μg/kg	<50	ncr	ncr	-	-	-	-	~	-	-	-	-	-	-	-	-
Tetrahydrofuran	μg/kg	<50	ncr	ncr		-	-	-	~	-	-	-	-	-	-	-	-
Bromide Natural Moisture Content	mg/kg %	<0.3 <0.1	nca nca	nca nca	0.7 27	-	-	-	~	-	15	- 11	15	- 6	- 8	- 8	12
<u> </u>	1		1		1	1		on pure requir		115	1.	1.					
Notes: MDL - Method Detection Limit									Š	Her							
mg/kg - milligrams per kilogram										,							
GAC - Generic Assessment Criteria									92 211,								
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~ No samples taken								್ವಲೌ	XX								
ncr - No criteria required								200,7	e e								
nca - No criteria available								JIL ALL									
xx	Exceedance to	Controlled Wat	ers GAC					28, 160x									
xx	Exceeds Huma	an Health GAC	- Commercial / Industrial				:N	O11 of 1									
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ample Type						S	oil	S	oil	8	Soil	S	oil		Soil	S	oil
ample ID		MDL	Human Health GAC -	Controlled Waters GAC	Max Concentration		-17		-18		H9		110		H11		112
ample Depth (m)	Units	(mg/kg)	Commercial / Industrial (mg/kg)	- Commercial / Industrial (mg/kg)	(mg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
ate Sampled			(IIIg/Kg)	ilidustriai (ilig/kg)		29/07			/2019		7/2019		/2019		7/2019		/2019
arameter																	
rsenic	mg/kg	<0.5	640	10	44	14.1	44.2	2.0	2.9	7.2	18.4	8.6	19.8	4.1	3.2	11.1	2.7
arium	mg/kg	<1.0	22,100	nca	218	34	57	37	32	35	35	29	37	23	28	74	18
eryllium	mg/kg	<0.5	12	nca	2.4	1.0	1.9	0.9	0.9	0.8	1.3	0.9	1.3	0.6	0.5	-	
admium	mg/kg	<0.1	190	0.02	3.6	-	0.2	0.4	0.6	-	0.2	0.3	0.6	0.3	0.4	1.7	1.2
hromium	mg/kg	<0.5	8,600	nca	68	52	47	31	26	49	30	32	40	16	21	29	15
hromium III	mg/kg	<0.5	8,600	nca	68	52	47	31	26	49	30	32	40	16	21	29	15
hromium VI	mg/kg	<0.3	ncr	ncr		-	-	-		-	-	-	-	-	-	-	-
opper	mg/kg	<1.0	68,000	0.50	43	14	31	16	15	14	25	17	26	7	8	12	10
ead	mg/kg	<5.0	2,300	3.5	220	31	56	24	27	17	38	18	35	13	18	23	12
lercury	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-
lickel	mg/kg	<0.7	980	4.3	236	34	55	28	30	26	40	27	42	15	13	26	10
elenium	mg/kg	<1.0	12,000	nca	3.0	1	1	-		-	-	-	-	-	-	3	2
anadium	mg/kg	<1.0	9,000	1.3	31	22	26	16	15	20	22	17	22	9	8	21	9
/ater Soluble Boron	mg/kg	<0.1	240,000	71	2.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.8	0.2
inc	mg/kg	<5.0	730,000	1.5	275	139	207	123	117	72	178	141	189	84	61	207	105
liscellaneous Parameters																	
cyclohexane	μg/kg	<50	ncr	ncr		-	-	-	-	-	-	-	-	-	-	-	-
etrahydrofuran	μg/kg	<50	ncr	ncr		-	-	-	-	-	-	-	-	-	-	-	-
romide	mg/kg	<0.3	nca	nca	0.7	-	-	-	-	-	0.4	-	-	-	-	-	-
atural Moisture Content	%	<0.1	nca	nca	27	12	19	10	12	10.	14	8	13	5	4	14	12
		Controlled Wate	ers GAC Commercial / Industrial			· maent of	io inspedit	The second of th	opty, any of	ne.							

Sample Type						S	oil	S	oil		ioil	S	ioil		Soil		ioil
Sample ID	Units	MDL	Human Health GAC - Commercial / Industrial	Controlled Waters GAC - Commercial /	Max Concentration	Bi	113	BI	114	Bi	H16	Bl	H17	В	H18	BI	<del>1</del> 19
Sample Depth (m)	Oilles	(mg/kg)	(mg/kg)	Industrial (mg/kg)	(mg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled						25/07	/2019	25/07	7/2019	26/07	7/2019	25/07	7/2019	25/0	7/2019	22/0	7/2019
Parameter																	
Arsenic	mg/kg	<0.5	640	10	44	12.1	11.6	22.4	11.4	8.1	1.7	15.8	12.9	10.8	21.1	10.2	14.6
Barium	mg/kg	<1.0	22,100	nca	218	64	56	44	71	41	27	50	77	28	36	30	56
Beryllium	mg/kg	<0.5	12	nca	2.4	1.1	1.2	0.9	1.0	0.6	-	1.4	1.7	0.5	1.3	1.0	1.1
Cadmium	mg/kg	<0.1	190	0.02	3.6	0.8	1.2	0.6	0.5	-	0.3	0.2	3.6	0.3	0.3	0.2	-
Chromium	mg/kg	<0.5	8,600	nca	68	43	40	29	37	34	6.5	48	46	25	28	35	51
Chromium III	mg/kg	<0.5	8,600	nca	68	43	40	29	37	34	6.5	48	46	25	28	35	51
Chromium VI	mg/kg	<0.3	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	<1.0	68,000	0.50	43	20	19	24	24	12	3	26	19	13	20	8	15
Lead	mg/kg	<5.0	2,300	3.5	220	47	47	22	102	20	7	38	29	14	69	11	33
Mercury	mg/kg	<0.1	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/kg	<0.7	980	4.3	236	33	35	34	26	14	4	43	95	14	28	21	28
Selenium	mg/kg	<1.0	12,000	nca	3.0	-	1	-	-	-	-	-	1	-	-	-	-
Vanadium	mg/kg	<1.0	9,000	1.3	31	29	25	15	24	18	3	26	23	15	19	13	30
Water Soluble Boron	mg/kg	<0.1	240,000	71	2.3	0.8	0.3	0.3	2.3	0.5	0.2	0.3	0.3	0.2	0.4	0.3	0.5
Zinc	mg/kg	<5.0	730,000	1.5	275	162	162	100	129	48	20	143	265	54	110	70	114
Miscellaneous Parameters																	
Cyclohexane	μg/kg	<50	ncr	ncr	-		-	-	-	-	-	-	-	-	-	-	
Tetrahydrofuran	μg/kg	<50	ncr	ncr	•		-	-	-		-	-	-	-	-	-	
Bromide	mg/kg	<0.3	nca	nca	0.7	-	-	-	-	-	-	-	-	-	-	-	0.7
Natural Moisture Content	%	<0.1	nca	nca	27	13	15	7	27	14.	3	13	22	11	13	5	21
		Controlled Wate in Health GAC -	ers GAC Commercial / Industrial				15 16 16 16 16 16 16 16 16 16 16 16 16 16	n Pulloses	त्रीतं वाम्	ite.							

Sample Type					_	S	oil	S	oil		Soil		S	ioil	S	ioil	S	ioil
ample ID	Units	MDL	Human Health GAC -	Controlled Waters GAC - Commercial /	Max Concentration	Bl	120	BI	121		BH22		BI	123	Bi	H24	В	125
Sample Depth (m)	Units	(mg/kg)	Commercial / Industrial (mg/kg)	- Commercial / Industrial (mg/kg)	(mg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.60	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled			( 3 3)			23/07	/2019	23/07	/2019		22/07/2019		23/07	7/2019	23/07	7/2019	22/0	7/2019
Parameter																		
Arsenic	mg/kg	<0.5	640	10	44	8.2	5.7	6.4	17.1	2.8	14.2	14.6	3.4	2.9	3.2	1.0	14.7	20.2
Barium	mg/kg	<1.0	22,100	nca	218	27	41	32	37	15	38	42	18	15	50	23	38	62
Beryllium	mg/kg	<0.5	12	nca	2.4	0.7	1.3	-	1.1		1.1	1.1	-	-		-	1.4	2.4
Cadmium	mg/kg	<0.1	190	0.02	3.6	0.5	0.4	0.4	-	0.6	0.5	0.3	0.4	0.5	0.4	0.4	0.5	1.4
Chromium	mg/kg	<0.5	8,600	nca	68	18	38	23	46	20	39	51	17	6.6	15	13	39	48
Chromium III	mg/kg	<0.5	8,600	nca	68	18	38	23	46	20	39	51	17	6.6	15	13	39	48
Chromium VI	mg/kg	< 0.3	ncr	ncr		-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	<1.0	68,000	0.50	43	8	19	11	19	4	21	24	9	3	7	5	24	31
_ead	mg/kg	<5.0	2,300	3.5	220	9	72	11	44	-	30	40	5	-	6	-	41	54
Mercury	mg/kg	<0.1	ncr	ncr		-	-	-	-		-	-	-	-		-	-	-
Nickel	mg/kg	<0.7	980	4.3	236	13	33	13	41	8	32	38	15	3	11	8	40	59
Selenium	mg/kg	<1.0	12,000	nca	3.0	-	-		-	-	-	-		-	-	-	-	-
Vanadium	mg/kg	<1.0	9,000	1.3	31	9	19	13	26	6	20	25	5	2	7	5	23	31
Water Soluble Boron	mg/kg	<0.1	240,000	71	2.3	0.2	0.4	0.2	0.4	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.3	0.3
Zinc	mg/kg	<5.0	730,000	1.5	275	53	132	60	157	57	127	144	48	20	51	34	173	275
Miscellaneous Parameters																		
Cyclohexane	μg/kg	<50	ncr	ncr	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Γetrahydrofuran	μg/kg	<50	ncr	ncr			-		-		-	-		-	-			-
Bromide	mg/kg	< 0.3	nca	nca	0.7	-	-	-	0.5	-	-	-		-	-	-	-	-
Natural Moisture Content	%	<0.1	nca	nca	27	5	12	7	16	1 .0	13	15	4	2	3	2	12	18
	Exceedance to Exceeds Huma		irs GAC Commercial / Industrial				i copyright	on purposes	only any	offic								

nple Depth (m) e Sampled ameter	Units	MDL (mg/kg)	Human Health GAC - Commercial / Industrial (mg/kg)	Controlled Waters GAC - Commercial / Industrial (mg/kg)	Max Concentration (mg/kg)	0.0-0.8	26	BH	oil 127	В	Soil H28	DU S			P02	S DU	
e Sampled ameter	Units							-									
e Sampled ameter			(IIIg/kg)				~	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
ameter				iliuustriai (ilig/kg)		25/07/2			/2019		7/2019		/2019		7/2019	25/07	
enic	mg/kg	<0.5	640	10	44	7.6	~	11.8	20.3	11.7	9.0	3.2	2.3	4.5	3.9	12.4	12.0
	mg/kg	<1.0	22,100	nca	218	32	~	51	37	39	70	40	35	28	33	58	49
	mg/kg	<0.5	12	nca	2.4	0.7	~	0.9	1.7	0.8	0.7	1.1	0.9	0.6	1.0	1.0	1.3
	mg/kg	<0.1	190	0.02	3.6	-	~	0.4	0.6	0.3	0.4	0.6	0.4	0.3	0.3	0.9	0.9
	mg/kg	<0.5	8,600	nca	68	41	~	42	42	28	30	40	37	19	18	35	42
	mg/kg	<0.5	8,600	nca	68	41	~	42	42	28	30	40	37	19	18	35	42
	mg/kg	<0.3	ncr	ncr		-	~		-		-	-	-		-	-	
	mg/kg	<1.0	68,000	0.50	43	18	~	20	27	16	19	22	15	8	16	19	17
	mg/kg	<5.0	2,300	3.5	220	19	~	43	50	34	24	36	26	14	11	47	44
	mg/kg	<0.1	ncr	ncr		-	~	-	-			-	-	-	-	-	-
	mg/kg	<0.7	980	4.3	236	31	~	31	56	24	23	36	32	17	22	31	39
	mg/kg	<1.0	12,000	nca	3.0	-	~	-	-		-	-			-	1	1
	mg/kg	<1.0	9,000	1.3	31	19	~	27	27	21	21	20	18	9	11	26	26
	mg/kg	<0.1	240,000	71	2.3	0.3	~	0.4	0.2	0.4	0.5	0.4	0.3	0.2	0.2	0.7	0.2
	mg/kg	<5.0	730,000	1.5	275	90	~	123	247	116	258	192	117	99	88	158	167
cellaneous Parameters																	
lohexane	μg/kg	<50	ncr	ncr		-	~	-	-		-	-	-	-	-	-	-
	μg/kg	<50	ncr	ncr		-	~	-	-	-	-	-	-	-	-	-	-
	mg/kg	<0.3	nca	nca	0.7	-	~	-	-		-	-	-			-	-
ural Moisture Content	%	<0.1	nca	nca	27	8	-	12	14	12.*	17	13	12	5	7	13	16
		Controlled Water Health GAC - (	irs GAC Commercial / Industrial			Consent of	or inspect	on purposes	odia, suado	ge.							

Sample Type						S	ioil		oil	S	oil
Sample ID	Units	MDL	Human Health GAC - Commercial / Industrial	Controlled Waters GAC - Commercial /	Max Concentration	DU	P04	DU	P05	DU	P06
Sample Depth (m)	Oilles	(mg/kg)	(mg/kg)	Industrial (mg/kg)	(mg/kg)	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0	0.0-1.0	1.0-2.0
Date Sampled						26/07	7/2019	29/07	7/2019	30/07	/2019
Parameter											
Arsenic	mg/kg	<0.5	640	10	44	6.8	2.6	14.1	14.8	10.3	14.6
Barium	mg/kg	<1.0	22,100	nca	218	49	32	40	34	218	39
Beryllium	mg/kg	<0.5	12	nca	2.4	0.6	-	1.1	1.1	0.9	1.3
Cadmium	mg/kg	<0.1	190	0.02	3.6	-	0.2		-	3.2	0.3
Chromium	mg/kg	<0.5	8,600	nca	68	34	10.2	50	62	58	59
Chromium III	mg/kg	<0.5	8,600	nca	68	34	10.2	50	62	58	59
Chromium VI	mg/kg	< 0.3	ncr	ncr	-	-	-	-	-	-	-
Copper	mg/kg	<1.0	68,000	0.50	43	11	6	25	19	23	23
Lead	mg/kg	<5.0	2,300	3.5	220	19	7	26	40	57	39
Mercury	mg/kg	<0.1	ncr	ncr		-	-	-	-	-	-
Nickel	mg/kg	<0.7	980	4.3	236	13	6	36	41	49	48
Selenium	mg/kg	<1.0	12,000	nca	3.0	-	-	1	1	2	1
Vanadium	mg/kg	<1.0	9,000	1.3	31	18	5	23	26	23	26
Water Soluble Boron	mg/kg	<0.1	240,000	71	2.3	0.4	0.2	0.2	0.3	0.3	0.2
Zinc	mg/kg	<5.0	730,000	1.5	275	42	28	109	164	165	166
Miscellaneous Parameters											
Cyclohexane	μg/kg	<50	ncr	ncr			-		-	-	
Tetrahydrofuran	μg/kg	<50	ncr	ncr	-	-	-		-	-	
Bromide	mg/kg	< 0.3	nca	nca	0.7	-	-		0.4	-	-
Natural Moisture Content	%	<0.1	nca	nca	27	11		9	13	9	14
Notes: MDL - Method Detection Limit mg/kg - milligrams per kilogram GAC - Generic Assessment Criteria - <mdl -="" available="" criteria="" nca="" ncr="" no="" required="" samples="" taken="" td="" xx="" xx<=""><td>Exceedance to Exceeds Huma</td><td></td><td>rs GAC Commercial / Industrial</td><td>ner nea nea nea nea nea</td><td>ion purposes</td><td>office and of</td><td></td><td></td><td></td><td></td><td></td></mdl>	Exceedance to Exceeds Huma		rs GAC Commercial / Industrial	ner nea nea nea nea nea	ion purposes	office and of					
			co	For insplice	, or						

Sample Type		DU	P01	DU	P02	DU	P03	DU	P04	DU	P05	DU	P06
Sample ID	MDL		H8		111		113		116		H6		H3
Sample Depth (m)	(μg/kg)	0.0-1.0		0.0-1.0			1.0-2.0	0.0-1.0	1.0-2.0		1.0-2.0		1.0-2.0
Date Sampled	(1-3-3)		7/2019		/2019		7/2019		/2019		/2019		/2019
Parameter (Volatile Organic				1						.,,,,,			
Compounds)													1
Chloromethane	3	0	0	0	0	0	0	190	0	0	0	0	0
Toluene	3	0	0	0	0	0	195	0	0	0	0	0	0
Parameter (Semi Volatile Organic	-												
Compounds)													
Polyaromatic Hydrocarbons (PAHs)													
2-Methylnaphthalene	10	0	0	0	0	0	0	199	0	0	0	0	0
Naphthalene	10	0	0	0	0	0	0	198	0	0	0	0	0
Phenanthrene	10	0	0	0	0	0	0	72	0	0	0	0	0
Anthracene	10	0	0	0	0	0	0	0	0	0	0	0	0
Fluoranthene	10	198	0	0	0	0	0	197	0	0	0	0	0
Benzo(bk)fluoranthene	10	0	0	0	0	0	0	198	0	0	0	0	0
Benzo(b)fluoranthene	10	0	0	0	0	0	0	197	0	0	0	0	0
Parameter													
TPH (>EC8-10) aliphatic	0.1	0	167	0	80	0	0	0	0	0	0	0	0
TPH (>EC10-12) aliphatic	0.2	0	0	0	199	0	0	0	0	0	0	0	0
TPH (>EC12-16) aliphatic	4	0	0	0	0	0	0	0	0	0	193	0	0
TPH (>EC16-21) aliphatic	7	0	0	0	196	0	0	0	0	0	0	0	0
TPH (EC21-35) aliphatic	7	0	199	0	200	0	0	0	0	0	0	0	0
Total Aliphatics (C5-35)	19	0	199	0	200	0	0	0	0	0	0	0	0
Total aliphatics and aromatics (C5-													
C35)	38	0	199	0	200	0	0	0	0	0	0	0	0
BTEX													<b> </b>
Toluene	5	0	0	0	0	195	0	0	0	0	0	0	0
Ethylbenzene	5	0	0	0	0	0	0	0	0	0	0	0	0
m/p-Xylene	5	0	0	0	0	0	0	0	0	0	0	0	0
o-Xylene	5	0	0	0	0	0	0	0	0	0	0	0	0
Bromide	0.3	0	0	0	0	0	0	0	0	0	120	0	0
Natural Moisture Content	0.1	25	4	6	48	1	10	3	32	14	6	16	12
Parameter													
Arsenic	0.5	46	23	9	20	2	3	37	42	15	9	16	29
Barium	1	8	9	20	16	10	13	18	17	39	6	142	14
Beryllium	0.5	20	0	0	67	10	8 8	0	0	10	0	0	27
Cadmium	0.1	40	40	0	29	12	290	0	40	0	0	188	67
Chromium	0.5	25	32	17	16	21	1 No	1	44	52	49	29	47
Chromium III	0.5	25	32	17	16	20	<b>5</b> 5	1	44	52	49	29	47
				0	16 0		0	0	0	5Z	0		0
Chromium VI	0.3	0	0		_	Seg 77				0		0	
Copper	1	32	0	13	67	0°.50°	11	9	67	17	5	19	16
Lead	5	40	4	7	48	700	7	5	0	12	37	118	32
Nickel	0.7	26	7	16	.567	7	11	2	54	3	5	37	14
Selenium	1	0	0	0	3000	164	0	0	0	0	0	181	0
Vanadium	1	22	18	0 _0	32	11	4	0	50	4	0	9	14
Water Soluble Boron	0.1	29	0	0,5	, O <sub>0</sub>	13	40	22	0	0	0	0	0
Zinc	5	44	0	.16	36	3	3	13	33	2	8	35	42
Notes:			greater than	J. 22.									
Notes.		Pacult ic	areater than	#Other th	a MDL and	PPD is are	ater than A	0%					
		Result is g	greater triari	O arries ir	ie ivide and	KPD is gie	ater man 4	U%					
			~	$\sim$									
			cell										
			COL										
			$\mathcal{C}$										

# **Appendix E Geological Logs**

Consent of copyright owner required for any other use.



Project Name Pfizer R	and Site L ingaskide			e So	oil Asse	ssment	Client	Pfize	r Ireland	Pharmaceuti	cals	BOREHOLE	No
Job No PR-42		Da	te t Date	30-0	07-19 07-19		ound Level (m		Co-Ordina			BH1	
Contractor		Lino	Dute	50 (	37 17	Me	ethod / Plant U	Jsed				Sheet	
Cause	eway Geo	otech	Limit	ed			Windo	w Sampl	er Rig			1 of 1	
			m)			•		(	TRATA			·	
Depth BGL	Sample / Detai	Test ls	PID (ppm)	Water	Legend	Depth (Thick- ness)		DES	CRIPTION	N		COMMENTS	Instalation /Backfill
						- (0.20) 0.20	MADEGR rounded, si	OUND - C lty, sandy	Grey fine to GRAVEL.	coarse, sub ang	gular to sub	Dry, NEC.	
		BH1 0.0-1.0m 0.3					MADEGR	OUND - F	einforced o	concrete.		Dry, NEC.	
-0.5	ВН1 0.0	BH1 0.0-1.0m 0.3								gravelly CLAY	Y.	Dry, NEC.	
-1.0		0					or in gedion in copylight own						
-1.5	ВН1 1.0	)-2.0m	0.8			- - - (0.60)	Reddish br	own, silty,	gravelly C	LAY.		Dry, NEC.	
-2.0					* * * * * * * * * * * * * * * * * * *	2.00	End of hole	e - Target (	lepth reach	ed.			
WE	ELL INS	TALI	LAT	ON	DETA	ILS		LEG	GEND			GENERAL	
								Made Gi Sandy G CLAY		Concrete	e SILT/CLAY	NEC - No evidence o contamination.	
	SAMPI	LE T	YPE	DE.	ΓAILS							Hole backfilled with sarisings.	soil
							-	Groundwate	r <b>Table</b> Ground Level	<b>⊉</b> Water Strike		Hole hand dug to 1.20 below ground level.	) m
								Logged I	By R	.McGovern	App	proved By E. O'Hanno	elly



-	e and Site I Ringaskid			ie So	oil Asse:	ssment	Client		r Ireland	d Pharmace	uticals		BOREHOLE	No
Job No PR-42		Da	te t Date	30-0	)7-19 )7-19		ound Level (		Co-Ordin				BH2	
Contractor		Line	Dute	30 (	37 13	Me	ethod / Plant	Used					Sheet	
Caus	eway Ge	otech	Limit	ted			Winde	ow Sampl	er Rig				1 of 1	
			m)					(	STRAT	A				
Depth BGL	Sample Deta	/ Test ils	PID (ppm)	Water	Legend	Depth (Thick- ness)			CRIPTIC				MMENTS	Instalation /Backfill
-0.5	BH2 0.	0-0.6m	0.2			0.50	to sub rou	Punded silty s	andy GRA	AVEL.	o thickness of		, NEC.	
WI	ELL INS	TALI	LATI	ION	DETA	ILS		LE	GEND				GENERAL	
								Made G	round	Cond	crete		REMARKS  C - No evidence of tamination.	
	SAMP	LE T	YPE	DE'	ΓAILS								e backfilled with sings.	soil
								Groundwate bgl = Below		<b>⊉</b> Water Stri el	ke	Holbelo	e hand dug to 1.20 w ground level.	) m
								Logged 1	Rv ·	R.McGover	-n A	Approved	By E. O'Hanne	-11v



Project Name Pfizer R		ite Location kiddy, Ba		e So	oil Asses	sment	Client	Pfize	r Ireland Pharmaceut	icals	BOREHOLE	No
Job No PR-42:	3449	Dar Star End	t Date	30-( 30-(	07-19 07-19	Gro	ound Level (m	1)	Co-Ordinates ()		BH3	
Contractor						Me	thod / Plant U	Jsed			Sheet	
Cause	eway	Geotech	Limit	ed			Windo	w Sampl	er Rig		1 of 1	
			(md	H				(	STRATA			
Depth BGL	Sam E	ple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)			CRIPTION		COMMENTS	Instalation /Backfill
						(0.30)	MADEGR to sub roun content.	OUND - I ded sandy	ight brown fine to coarse GRAVEL with medium	, sub angular cobble	Dry, NEC.	
-0.5	BH3 0.0-1.0m 0.6 (0.					(0.40)	to sub roun	ded silty, s	ight brown fine to coarse andy GRAVEL.	sub angular	Dry, NEC.	
- - -1.0						0.70	Reddish brown Reddish brown Reddish brown	own sandy	gravelly CLAY.		Dry, NEC.	
-1.5	ВН	H3 1.0-2.0m	1.6		θ	1.20 5015ept 0 - (0.40)	Light brow	n sandy, g	ravelly CLAY.		Dry, NEC.	
- - - -2.0						(0.40)			avelly CLAY.		Dry, NEC.	
							End of hole	e - Target	lepth reached.			
WE	ELL I	NSTALI	LATI	ON	DETA	ILS		LEO	GEND ound Sandy CLAY	Gravelly	GENERAL REMARKS	
	SAN	MPLE T	YPE	DE.	ΓAILS						contamination.  Hole backfilled with s arisings.	
							🛨	Groundwate	r Table $\begin{tabular}{c} $\underline{\textbf{1}}$ Water Strike \\ Ground Level \end{tabular}$		Hole hand dug to 1.20 below ground level.	) m
								Logged I	R.McGovern	App	roved By E. O'Hanne	elly



Project Name	and Site Location	on				Client						BOREHOLE	No
Pfizer R	ingaskiddy, B	aselin	e So	oil Asses	ssment		Pfize	r Ireland	d Pharmace	uticals			
Job No PR-423	St	ate art Date ad Date	29-( 29-(	07-19 07-19	Gro	ound Level (m	1)	Co-Ordin	nates ()			BH4	
Contractor					Me	ethod / Plant U	Jsed					Sheet	
Cause	eway Geotech	Limit	ed			Windo	w Sampl	er Rig				1 of 1	
		(md	ĭ.				5	STRATA	A				
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)			CRIPTIC				COMMENTS	Instalation /Backfill
					(0.10) 0.10	MADEGR angular, sa	OUND - C ndy GRAV	rey, fine EL.	to coarse, ang	ular to sub		Dry, NEC.	
-					0.30	MADEGR	OUND - T	'armcadar	n.			Dry, NEC.	
- - -0.5	BH4 0.0-1.0m	0.3			- (0.40)	Reddish br sandy GRA	own, fine t	o coarse,	sub angular to	sub round	ed,	Dry, NEC.	
-				0,0,	0.70	Light brow	n silty, sar	dy, grave	lly CLAY.			Dry, NEC.	+
-1.0 -1.5 -1.5 	BH4 1.0-2.0m	0.6			1000 (1.30)	Light brow			hed.				
WE	CLI INICITAL	LATE	ON	DETA	II C	П	1.57	SENID					
WE	ELL INSTAL	LAII	IUN	DETA	ILS			GEND				GENERAL REMARKS	
							Made Gr		Tarm Sanc	nac ly Gravelly Y	- 11	NEC - No evidence o contamination.	
	SAMPLE T	YPE	DET	ΓAILS								Hole backfilled with sarisings.	soil
						-	Groundwate		<b>∮</b> Water Stri el	ke		Hole hand dug to 1.20 below ground level.	) m
						Ш	Logged I	By ]	R.McGover	n	Appro	ved By E. O'Hanno	elly



Project Name Pfizer R	and Site Lo			e Soi	l Asses	ssment	Client	Pfize	r Ireland Pharmaceuticals		BOREHOLE	No
Job No PR-42		Date		29-0	7-19		ound Level (n	n)	Co-Ordinates ()		BH5	
Contractor		Linu	Dute 2		, 1)	Me	thod / Plant U	Jsed			Sheet	
Caus	eway Geo	tech I	imite	ed			Windo	w Sampl	er Rig		1 of 1	
			m)			•		(	STRATA			
Depth BGL	Sample / Detail	Test s	PID (ppm)	Water	Legend	Depth (Thick- ness)			CRIPTION		COMMENTS	Instalation /Backfill
-0.5	BH5 0.0-	-1.0m	1.0			-	to sub angu	ualr silty, s	Greyish brown fine to coarse, ang andy GRAVEL with high cobble and GRAVEL with high co	ular	Dry, NEC.	
-1.0 - - -1.5	BH5 1.0-	-2.0m	1.1			onsento		OUND - O	Grey, medium to coarse, sub angu	lar to	Dry, NEC.	
-2.0						(0.30)			lepth reached.			
WI	ELL INST	ΓALL	ATI	ON I	DETA	ILS		LEG	GEND		GENERAL	
											REMARKS  NEC - No evidence of contamination.	
	SAMPL	ETY	PE I	DET.	AILS						Hole backfilled with so arisings.	
							<u> </u>	Groundwate	r Table 👲 Water Strike Ground Level		Hole hand dug to 1.20 below ground level.	m
								Logged I			oved By E. O'Hanne	=



Project Name							Client				BOREHOLE	. No
	Ringaskidd	1		e Soi	il Asse				nd Pharmaceuticals		ВН6	
Job No PR-42	3449	Date Start I End I	Date 4	29-0 29-0	7-19 7-19	Gro	ound Level (r	n) Co-Ord	inates ()		5110	
Contractor						Me	ethod / Plant	Jsed			Sheet	
Caus	eway Geot	tech L	imite	ed			Windo	w Sampler Rig			1 of 1	
			pm)	<u> </u>				STRAT	<sup>C</sup> A			
Depth BGL	Sample / Details	Test s	PID (ppm)	Water	Legend	Depth (Thick- ness)		DESCRIPTI	ON		COMMENTS	Instalation /Backfill
						(0.30)	MADEGR angualr to	OUND - Greyish b sub rounded, sandy	rown fine to coarse, sub GRAVEL.		Dry, NEC.	I
						0.35		OUND - Concrete.			Dry, NEC.	
-0.5	BH6 0.0-	1.0m	0.0			-	with piece	OUND Light brow		LAY	Dry, NEC.	
-1.5	BH6 1.0-	2.0m	0.0			- (1.55),	or in the conviolence of the con					
				k k		1.90 (0.10) 2.00	Dark brow	n sandy, silty, grav	elly CLAY.		Dry, NEC.	
-2.0					<del></del>	2.00	End of hol	e - Target depth rea	iched.			
<b>\</b> \\/1	ELL INST	<u> </u> ΓΔΙΙ	ΔΤΙ	ON.	DETA	11 5		LEGEND			CENIED AT	
441	11 10 1		1 1	J1 1	JU1/1			Made Ground	Concrete		GENERAL REMARKS	
								Sandy Gravelly CLAY	LK SSINGLE		NEC - No evidence o contamination.	f
	SAMPL	ETY	PE l	DET	AILS						Hole backfilled with sarisings.	soil
							<b>_</b>	Groundwater Table	<b>1</b> Water Strike		Hole hand dug to 1.20 below ground level.	0 m
										Appro		



Project Name	and Site L			e So	il Asses	ssment	Client	Pfizer Ir	reland Pharmaceuticals		BOREHOLE	No
Job No PR-42		Dat	te t Date	29-(	)7-19 )7-19		ound Level (m)		o-Ordinates ()		BH7	
Contractor	3117	Liid	Date	2) (	,, 1)	Me	thod / Plant Use	ed .			Sheet	
Caus	eway Geo	tech l	Limit	ed			Window	Sampler I	Rig		1 of 1	
			m)					STI	RATA			
Depth BGL	Sample / Detail	Test ls	PID (ppm)	Water	Legend	Depth (Thick- ness)		DESCR	LIPTION		COMMENTS	Instalation /Backfill
-0.5	ВН7 0.0	⊦1.0m	0.2			(0.50)	sub rounded, content.	silty sandy (	wn fine to coarse, sub angular GRAVEL with a high cobble of the cobble o	to	Dry, NEC.	
- 1.0 - 1.5	BH7 1.0	1-2.0m	0.3			- (1.500) (1.500)	or inspection her f	ędt.				
-2.0						2.00	End of hole -	Target dept	h reached.			
WI	ELL INS	ΓALI	LATI	ON	DETA	ILS		LEGE	ND		GENERAL	
								Made Ground	b		REMARKS	
											NEC - No evidence o contamination.	
	SAMPI	ET	YPE	DET	ΓAILS						Hole backfilled with sarisings.	
							<b>▼</b> Gro	oundwater Tab	ble		Hole hand dug to 1.20 below ground level.	0 m
							bgl	= Below Grou	<del>*</del>			



Project Name	and Site Location	on			Client				BOREHOLE	No
Pfizer R	Ringaskiddy, B	aseline	e Soil Asse	essment		Pfize	er Ireland Pharmaceuticals		рцо	
Job No PR-42	Sta	ate art Date	23-07-19 23-07-19	Gro	ound Level (n	n)	Co-Ordinates ()		BH8	
Contractor				Me	ethod / Plant U	Used			Sheet	
Cause	eway Geotech	Limite	ed		Windo	w Sampl	er Rig		1 of 1	
		(md	<u> </u>			,	STRATA			
Depth BGL	Sample / Test Details	PID (ppm)	Legend	Depth (Thick- ness)		DES	SCRIPTION		COMMENTS	Instalation /Backfill
-				× × × (0.35) × × 0.35	MADEGR with low c	OUND - Fobble conto	Brown, sandy, silty, gravelly CLA ent.	Y	Dry, NEC.	I
-				(0.10) 0.45	MADEGR silty GRA	OUND - O	Grey, coarse, angular to sub angula	ar,	Dry, NEC.	
-0.5 - - - -1.0	BH8 0.0-1.0m	4.9		× × × × × × × × × × × × × × × × × × ×	MADEGR with medit metal.	OUND - I	Brown, silty, sandy, gravelly CLA content and peices of wood, brick content and peices of wood, brick	Y and	Dry, NEC.	
- -1.5 -	BH8 1.0-2.0m	1000		(1.55)						
-2.0				2.00						
					End of hole	e - Target	depth reached.			
WE	ELL INSTAL	LATI	ON DETA	AILS		LE	GEND		GENERAL	
						Made G	round		REMARKS Evidence of contamination.	
	SAMPLE T	YPE I	DETAILS						Hole backfilled with s arisings.	
					<b></b>	Groundwate	r Table 💃 Water Strike Ground Level		Hole hand dug to 1.20 below ground level.	, 111
						Logged I	R.McGovern	Appro	oved By E. O'Hanne	elly



Project Name	and Site Location	n		Clien	t			BOREHOLE	No
Pfizer R	ingaskiddy, B	aseline S	Soil Assessi			Ireland Pharmaceuticals		ВН9	
Job No PR-42	Sta	ate art Date 24 d Date 24	-07-19 -07-19	Ground Level	(m)	Co-Ordinates ()		БПЭ	
Contractor	-			Method / Plan	t Used			Sheet	
Cause	eway Geotech	Limited		Wind	low Sample	r Rig		1 of 1	
	G 1 / FF	pm)	5		S	TRATA			ıe
Depth BGL	Sample / Test Details	PID (ppm)		Depth Thick- ess)	DESC	CRIPTION		COMMENTS	Instalation /Backfill
-0.5	BH9 0.0-1.0m	0.5		0.40)  Reddish rounded,	brown, mediu	m to coarse, sub rounded to RAVEL with low cobble conten		Dry, NEC.	
- - -1.0			9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.80  Reddish GRAVE 0.30)  1.10  Reddish	brown, fine to L. Septimed	ND &	Dry, NEC.		
- - -1.5 -	BH9 1.0-2.0m	0.6		o.90)	own, silty, gra	velly CLAY.		Dry, NEC.	
-2.0			× 0 × 1 × 0 × 1 × 1 × 1	2.00 End of hole - Target depth reached.					-
WE	ELL INSTAL	LATIO	N DETAIL	.S	LEC		GENERAL		
					Topsoil  SAND & GRAVEL with silt  Sandy Silty/Clayey GRAVEL GRAVEL  Gravelly SILT/CLAY			REMARKS NEC - No evidence of contamination.	
	SAMPLE T	YPE DI	ETAILS					Hole backfilled with so arisings.	
					▼ Groundwater Table ↓ Water Strike  bgl = Below Ground Level			Hole hand dug to 1.20 below ground level.	) m
			·		Logged B	y R.McGovern	Appro	ved By E. O'Hanne	elly



Project Name	and Site Location	n			Client				BOREHOLE	No
Pfizer R	ingaskiddy, B	aseline	Soil As	sessment	t	Pfizer Irela	and Pharmaceuticals		BH10	
Job No PR-423	Da Sta End	rt Date 2	24-07-19 24-07-19	)	ound Level (m	n) Co-On	rdinates ()		БПТ	
Contractor				Me	ethod / Plant U	Jsed			Sheet	
Cause	eway Geotech	Limite	ed		Windo	w Sampler Rig	5		1 of 1	
	G 1 /T 1	(mdo	ae		I	STRA	TA			I =
Depth BGL	Sample / Test Details	PID (ppm)	Lege Lege	Depth (Thick- ness)		DESCRIPT			COMMENTS	Instalation /Backfill
	BH10 0.0-1.0m	0.4		(0.60)	MADEGR to sub roun	OUND - Greyish ded, sandy GRA'	brown, fine to coarse, ang	ular I	Ory, NEC.	
-				(0.30)	cobble con			Ory, NEC.		
- 1.0 -			%0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(0.30) (0.30) (0.30)	Brown, fin sandy, clay Brown slig content pre	htly sandy, gravel		Ory, NEC.	_	
- - -1.5 -	BH10 1.0-2.0m	0.9		1 A (0.80)	content pre	Sont				
-2.0				2.00	2.00 End of hole - Target depth reached.					_
WE	ELL INSTAL	LATIO	ON DE	ΓAILS		LEGENI		GENERAL		
						Made Ground Sandy Silty/Clayey GRAVEL SILT/CLAY			REMARKS NEC - No evidence of contamination. Hole backfilled with s	f
	SAMPLE T	YPE I	DETAII	<u>.S</u>	₹	Groundwater Table	a la	Hole backfilled with sourisings.  Hole hand dug to 1.20 below ground level.		
						bgl = Below Ground I  Logged By	Approv	red By E. O'Hanne	elly	



Project Name	and Site	Locatio	n				Client					BOREHOLE	No
Pfizer R	ingaski	ddy, Ba	aselin	e So	oil Asses	sment	:	Pfize	er Ireland Pl	narmaceuticals		BH11	
Job No PR-423	3449	Da Star End	t Date	24-( 24-(	)7-19 )7-19	Gro	ound Level (n	n)	Co-Ordinates	s ()		ВПП	
Contractor		'				Me	ethod / Plant U	Jsed				Sheet	
Cause	eway G	eotech	Limit	ed			Windo	w Sampl	er Rig			1 of 1	
		/ <b>F</b> D .	(mdı	er.				,	STRATA				ıe
Depth BGL	Det	e / Test tails	PID (ppm)	Water	Legend	Depth (Thick- ness)			SCRIPTION			COMMENTS	Instalation /Backfill
-						(0.30)	TOPSOIL  Brown, ver		ery gravelly C	CLAY with a high c	cobble	Dry, NEC.	
- -0.5 - - - - -	BH11	0.0-1.0m	2.2			. (1.10)	content.		N. any diter us		Source	DIY, NEC.	
-		1.40						rey, fine to coarse angular, sandy, silty GRAVEL.				Dry, NEC.	
-1.5 - - 2.0 WE	вни	9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1											
-2.0	(%) ⊕° Ø 2.00						End of hole	e - Target	depth reached.				1
	<u> </u>	ar			DE-:	TT ~	П		an			T	
WE	ELL IN	STAL	LAT]	ION	DETA	ILS	LEGEND					GENERAL REMARKS	
							Sandy Silty/Clayey GRAVEL  Topsoil  Sandy gravelly CLA			CLAY	NEC - No evidence of contamination.		
	SAMI	PLE T	YPE	DE'	ΓAILS							Hole backfilled with sarisings.	oil
							<u> </u>	Groundwater Table Water Strike  bgl = Below Ground Level				Hole hand dug to 1.20 below ground level.	) m
								Logged 1	By R.M	AcGovern	Appr	roved By E. O'Hanne	elly



Project Name	and Site Lo			e So	il Acco	cemant	Client	Dfize	er Ireland Pharmaceuticals		BOREHOLE	No
Job No PR-42		Date	e Date	24-(	)7-19 )7-19		ound Level (m		Co-Ordinates ()		BH12	
Contractor	J <del>44</del> 7	End	Date	Z4-(	)/-19	Me	thod / Plant U	Jsed			Sheet	
Cause	eway Geor	tech I	Limit	ed			Windo	w Sampl	er Rig		1 of 1	
			m)			•		(	STRATA		·	
Depth BGL	Sample / ' Details	Test s	PID (ppm)	Water	Legend	Depth (Thick- ness)		DES	SCRIPTION		COMMENTS	Instalation /Backfill
						- (0.40) - 0.40	MADEGR sub angular	r, sandy G	ight brown, fine to coarse, angul RAVEL with high cobble content of the content o	ar to	Dry, NEC.	
-0.5	BH12 0.0-1.0m 2.4					-			A. and other use.			
-1.5 -	BH12 1.0	-2.0m	0.4			- (1.60); jonsent - -	or its ged own					
-2.0						2.00	End of hole	e - Target	lepth reached.			_
WE	WELL INSTALLATION DETAILS							LE	GEND		GENERAL	
								Made G	round Sandy gravelly C	CLAY	REMARKS  NEC - No evidence of contamination.	
	SAMPL	ΕTY	/PE	DE7	ΓAILS						Hole backfilled with sarisings.	oil
							▼ Groundwater Table ↓ Water Strike  bgl = Below Ground Level				Hole hand dug to 1.20 below ground level.	) m
											oved By E. O'Hanne	elly



Project Name	and Site Lo	ocation	1				Client				BOREHOLE	No
Pfizer R	tingaskidd	ly, Ba	selin	e So	il Asse	ssment		Pfize	er Ireland Pharmaceutica	ls		
Job No PR-42	3449	Date Start End	Date	25-( 25-(	)7-19 )7-19	Gro	ound Level (1	n)	Co-Ordinates ()		BH13	
Contractor						Me	ethod / Plant	Used			Sheet	
Cause	eway Geo	tech I	Limit	ed			Windo	w Samp	er Rig		1 of 1	
			(md	ï				ı	STRATA			
Depth BGL	Sample / Detail	Test	PID (ppm)	Water	Legend	Depth (Thick- ness)			SCRIPTION		COMMENTS	Instalation /Backfill
-0.5 	BH13 0.0		0.3			- (2.00) - (2.00) - 2.00	to medium	a cobble co	avelly, slightly sandy CLAY intent.	with low	Dry, NEC.	
	WELL INSTALLATION DETAILS							LE	GEND		GENERAL	
							<u>5</u>	Sandy	ravelly CLAY		REMARKS	
											NEC - No evidence of contamination.	f
	SAMPL	ETY	/PE	DE7	ΓAILS						Hole backfilled with so arisings.	oil
							<u> </u>	Groundwater Table  bgl = Below Ground Level  Water Strike			Hole hand dug to 1.20 below ground level.	) m
								Logged	By R.McGovern	App	roved By E. O'Hanne	elly



Project Name	and Sit	e Locatio	n				Client					BOREHOLE	No
Pfizer F	Ringask	iddy, B	aselin	e So	il Asses	ssment	:	Pfize	r Ireland Pha	rmaceuticals		BH14	
Job No PR-42	3449	Da Star Enc	rt Date	25-0 25-0	)7-19 )7-19	Gro	ound Level (n	1)	Co-Ordinates (	()		БП14	
Contractor						Me	ethod / Plant U	Jsed				Sheet	
Caus	eway (	Geotech	Limit	ted			Windo	w Sampl	er Rig			1 of 1	
		1 /50	(mdi	i.				,	STRATA				1 c
Depth BGL	Samp	le / Test etails	PID (ppm)	Water	Legend	Depth (Thick- ness)			CRIPTION			COMMENTS	Instalation /Backfill
					XX	(0.10) 0.10		OUND - C	Frey fint to coar	se, sandy GRAVI	EL.	Dry, NEC.	
-						- (0.20)	MADEGR	OUND - (	Concrete.			Dry, NEC.	
-					%0.×0.7	0.30	MADEGR sub rounde	OUND - E d. siltv. sa	Brown, fine to condy GRAVEL.	oarse, sub angualr	·to	Dry, NEC. Evidence of pieces of plastic	
	вні	4 0.0-1.0m	0.2		\$0.00 \$0.00	- (0.40)		.,. ,,	01			and brick.	
-					×0.7	0.70	Dark brow	n candy o	ravelly CLAY.			Dry, NEC.	-
- - -1.0 -						-	ra inspections	httbogg og t	or and o				
- -1.5 -	вні	BH14 1.0-2.0m 2.7					•						
-2.0						2.00	2.00 End of hole - Target depth reached.						
3377	71 1 12	ICTAL	[ A 7E		DETA	пс				П	~~~·		
WI	CLL II	NSTAL.	LAI	ION	DETA	ILS	Made Ground  Sandy Silty/Clayey  Sandy Grayelly				GENERAL REMARKS		
	C 43.	ini e æ	VDF	DD	ran c		Sandy Silty/Clayey GRAVEL Sandy Gravelly CLAY				NEC - No evidence of contamination.  Hole backfilled with s		
	SAM	IPLE T	YPE	DE.	IAILS			■ Groundwater Table  ■ Water Strike				arisings.  Hole hand dug to 1.20	
	T						Groundwater Table Water Strike bgl = Below Ground Level				below ground level.		
							Logged By R.McGovern				Appro	oved By E. O'Hanne	elly



Project Name	and Site Location	n			Client				BOREHOLE	No
Pfizer R	ingaskiddy, B	aseline	Soil Assess	sment		Pfize	r Ireland Pharmaceuticals		BH16	
Job No PR-42	Sts	ate art Date 26 d Date 26	5-07-19 5-07-19	Grour	nd Level (m	1)	Co-Ordinates ()		БПТО	
Contractor				Meth	od / Plant U				Sheet	
Caus	eway Geotech		1		Windov	w Sampl	er Rig		1 of 1	
	Camarla / Track	(mqc	5			5	STRATA			15.
Depth BGL	Sample / Test Details	PID (ppm)	n	ness)		DES	CRIPTION		COMMENTS	Instalation /Backfill
-0.5	BH16 0.0-1.0m	1.5		0.50	Grey, fine t	to coarse, a	angular to sub angular, sandy, silt	у	Dry, NEC.	
-1.0 - - -1.5	BH16 1.0-2.0m	\$0.00000000000000000000000000000000000	(1.50) (1.50)	inspection,						
-2.0				2.00 End of hole - Target depth reached.						-
WE	ELL INSTAL	LATIO	N DETAI	LS	LEGEND				GENERAL	
						_	Sandy Silty/Claye	∍y	REMARKS	
							GRAVEL		NEC - No evidence of contamination.	f
	SAMPLE T	YPE D	ETAILS						Hole backfilled with searisings.	oil
					Groundwater Table				Hole hand dug to 1.20 below ground level.	) m
					Logged By R.McGovern				oved By E. O'Hanne	elly



Project Name	and Si	te Location	n				Client					BOREHOLE	No
Pfizer R	Ringas	kiddy, Ba	aselin	e So	il Assess	sment		Pfize	er Ireland P	harmaceutical	S	BH17	
Job No PR-42	3449	Da Star End	t Date	25-( 25-(	07-19 07-19	Gro	ound Level (m	1)	Co-Ordinate	es ()		БПТ	
Contractor		I				Me	ethod / Plant U	Jsed				Sheet	
Caus	eway	Geotech	Limit	ed			Windo	w Sampl	er Rig			1 of 1	
			(md	H				,	STRATA				
Depth BGL	Sam E	ple / Test Details	PID (ppm)	Water	Legend (	Depth Thick- ess)		DES	SCRIPTION			COMMENTS	Instalation /Backfill
		(17 0.0-1.0m	0.5				or inspection to	juposes on the land of the lan	y any other no	sandy, gravelly C		Dry, NEC.	ul /
	ELL I	(0.70)					End of hole	LE	depth reached	Sandy Grave	elly	GENERAL REMARKS NEC - No evidence of contamination.	
	SAN	MPLE T	YPE	DE.	ΓAILS							Hole backfilled with sarisings.	oil
							-	Groundwater Table  bgl = Below Ground Level  Water Strike				Hole hand dug to 1.20 below ground level.	) m
								Logged 1	By R.N	McGovern	App	roved By E. O'Hanne	elly



-	and Site Loca ingaskiddy,		10 Sc	vil Acca	cemant	Client	Dfiza	er Ireland Pharmaceuticals		BOREHOLE	No
Job No PR-423	]	Date Start Date End Date	25-0	07-19		ound Level (m		Co-Ordinates ()		BH18	
Contractor	1447	End Date	23-0	07-19	Me	ethod / Plant U	Jsed			Sheet	
Cause	eway Geotec	h Limi	ted				w Sampl	er Rig		1 of 1	
		m)			'		,	STRATA			
Depth BGL	Sample / Tes Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DES	SCRIPTION		COMMENTS	Instalation /Backfill
-0.5	BH18 0.0-1.0	m 1.0			0.25	angualr to s	sub rounde	Greyish brown, fine to coarse, sub d GRAVEL.		Dry, NEC. Evidence of pieces of plastic, metal, brick & concrete.  Dry, NEC.	
-1.5	BH18 1.0-2.0	m 0.9			01.25)	content.	uroses of	gavelly CLAY with low cobble of			
-2.0						2.00 End of hole - Target depth reached.					
WE	LL INSTA	LLAT	ION	DETA	ILS		LE	GEND		GENERAL	
						Topsoil Made Ground Sandy Gravelly CLAY					
	SAMPLE	TYPE	DE	TAILS						Hole backfilled with soil arisings.	
						▼ Groundwater Table ↓ Water Strike  bgl = Below Ground Level				Hole hand dug to 1.20 below ground level.	) m
							Logged 1	By R.McGovern	Appr	oved By E. O'Hanne	elly



Project Name	and Site	Location	n				Client						BOREHOLE	No
Pfizer R	Ringaski	iddy, Ba	aselin	e So	il Asses	sment		Pfize	r Irelan	d Pharmace	uticals		BH19	
Job No PR-42	3449	Da Star End	t Date	22-( 22-(	)7-19 )7-19	Gro	ound Level (m	1)	Co-Ordi	nates ()			БПІЭ	
Contractor						Me	thod / Plant U	Jsed					Sheet	
Caus	eway G	eotech	Limit	ed			Windo	w Sampl	er Rig				1 of 1	
			(md	ı				,	STRAT	A				
Depth BGL	Sampl De	e / Test tails	PID (ppm)	Water	Legend (	Depth Thick- ness)		DES	CRIPTIC	ON			COMMENTS	Instalation /Backfill
-						(0.50)	MADEGR GRAVEL.	OUND - (	Grey coars	se, angular silt	y, sandy		Dry, NEC.	I
-0.5 - - - -	внія	0.0-1.0m	0.5				Brown, fine to coarse, sub angular, clayey, sandy GRAVEL.  Of the section printed sector and the state of the section of the sector of the sec						Dry, NEC.	
- - -1.5	внія	) 1.0-2.0m	2.4		θ	1.20 nsent o	Greyish bro	own, slight	ly sandy,	slightly grave	lly CLAY.		Dry, NEC.	
-2.0						2.00	2.00 End of hole - Target depth reached.							
W/F	I J. IN	STAI I	AT	ON	DETAI	LS	S LEGEND					GENERAL		
441	11 <b>\</b>	~ 11 <b>1</b> L/l	1 1 J	.011	221111	_,,				Sanc GRA	ly Clayey		REMARKS	
							Made Ground  Sandy Gravelly CLAY  Sandy Clayey GRAVEL				NEC - No evidence of contamination.	f		
	SAM	PLE T	YPE	DET	ΓAILS						Hole backfilled with s arisings.	oil		
							-	▼ Groundwater Table ↓ Water Strike  bgl = Below Ground Level				Hole hand dug to 1.20 below ground level.	) m	
							П					Appr	oved By E. O'Hanne	elly



Project Name	and Si	te Location	n				Client						BOREHOLE	No
Pfizer R	lingas	kiddy, Ba	aselir	e So	il Asses	ssment		Pfize		d Pharmace	euticals		BH20	
Job No PR-42:	3449	Da Star End	t Date	23-( 23-(	)7-19 )7-19	Gro	ound Level (n	n)	Co-Ordin	nates ()			Bilzo	
Contractor						Me	ethod / Plant U	Jsed					Sheet	
Cause	eway	Geotech	Limit	ted			Windo	w Sampl	er Rig				1 of 1	
			(mc	r				Ç	STRATA	A				
Depth BGL	Sam E	ple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DES	SCRIPTIC	N			COMMENTS	Instalation /Backfill
- - - -0.5	вн	20 0.0-1.0m	4.2			(0.70)	angular to cobble con	sub rounde tent. Bolde	ed, silty, sa	own, fine to andy GRAVI	coarse, sub EL with low	,	Dry, NEC.	<u> </u>
- - -1.0						- (0.60)	MADEGROUND - Light brown, sandy, gravelly CLAY with low cobble content.  with low cobble content.  of its test to the reduced by the content of the content						Dry, NEC.	
- - 1.5	ВН	20 1.0-2.0m	5.4		% 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0	- (0.40) - 1.70	Light brown, fine to coarse, angular, sandy, silty GRAVEL 40)				ÆL.	Dry, NEC.		
-2.0							Light brow							
WF	ELLT	NSTALI	LAT	ON	DETA	ILS		LEG	GEND				GENERAL	
***		- ,~ 11 11/1		1				Made G		Sar GR	ndy Silty/Clayey AVEL	y	REMARKS	
	SAN	MPLE T	YPE	DE]	ΓAILS			<del>_</del>		.Ω d GR	AVEL		NEC - No evidence o contamination.  Hole backfilled with s arisings.	f
							Groundwater Table  Dgl = Below Ground Level  Water Strike				Hole hand dug to 1.20 below ground level.	) m		
								Logged By R.McGovern				Appro	oved By E. O'Hanne	elly



Project Name	and Site Locati	on			Client				BOREHOLE	No
Pfizer R	ingaskiddy, I	Baseline	e Soil A	ssessment	t	Pfizer Ir	eland Pharmaceuticals		BH21	
Job No PR-42	S	Date at Date and Date	23-07-1 23-07-1	9	ound Level (n	n) Co-	Ordinates ()		БП21	
Contractor	<b>'</b>			Me	ethod / Plant U	Jsed			Sheet	
Cause	eway Geotecl	n Limite	ed		Windo	w Sampler F	Rig		1 of 1	
		(md	;			STR	RATA			
Depth BGL	Sample / Tes Details	PID (ppm)	Mater Leg	end Depth (Thick- ness)		DESCR	IPTION		COMMENTS	Instalation /Backfill
-				(0.30)	TOPSOIL.				Dry, NEC.	I
-				(0.15)	MADEGR silty GRAV		fine to coarse, angular, sand	ly,	Dry, NEC.	
-0.5 -	BH21 0.0-1.0r	a 3.1		(0.55) (0.55) (0.55)	MADEGR	OUND - Conc			Dry, NEC.	
-1.0 - - - -1.5	BH21 1.0-2.0r	n 70.3		(0.20) 1.20 1.20 (0.80)	or in ight	OUND - Grey.			Dry, NEC. Evidence of burnt wood.  Dry, NEC.	
- - - -2.0						e - Target deptl	n reached.			-
WE	ELL INSTAI	LATI	ON DE	TAILS		LEGE	ND		GENERAL	
	SAMPLE	ГҮРЕ І	DETAI	LS	[///  }	<u> </u>	Made Ground Sandy Gravelly CLAY		REMARKS  NEC - No evidence of contamination.  Hole backfilled with s arisings.	f
					Ā	Groundwater Tab	₹		Hole hand dug to 1.20 below ground level.	) m
						Logged By	R.McGovern	Appro	oved By E. O'Hanne	elly



-	and Site Locatio				Client		HOLE LO			BOREHOLE	No
	ingaskiddy, B		Soil Ass				r Ireland Phar			BH22	
Job No PR-423	Da Sta End	rt Date 2	22-07-19 22-07-19	Gro	ound Level (n	1)	Co-Ordinates ()			DITE	
Contractor				Me	thod / Plant U	Jsed				Sheet	
Cause	eway Geotech	Limite	ed		Windo	w Sample	er Rig			1 of 1	
	a 1 /=	pm)	10			S	STRATA				
Depth BGL	Sample / Test Details	PID (ppm)	A Legend	Depth (Thick- ness)			CRIPTION			COMMENTS	Instalation /Backfill
- - -0.5 - - -	BH22 0.0-1.0m	0.5					Coarse, angular, s	andy GRAVEL.		Dry, NEC.	
-1.5 	BH22 1.0-2.0m	0.3		(0.70)	MADEGR	OUND - L	ight brown, sand	ly, gravelly CLA	Y.	Dry, NEC. Some evidence of staining and hydrocarbon odours at 1.6m BGL.	
2.0					End of hole	e - Target o	lepth reached.				
WE	ELL INSTAL	LATI(	ON DETA	AILS		LEC	GEND			GENERAL	
	SAMPLE T				Made Gr	ound			REMARKS  Evidence of contamination - hydrododours & staining.  Hole backfilled with so arisings.		
					-	Groundwate	r Table 👲 W Ground Level	ater Strike		Hole hand dug to 1.20 below ground level.	
						Logged E	R.McG	Govern	Appro	oved By E. O'Hanne	elly



-	and Site Locatio				Client		IOLE LOG		BOREHOLE	No
	Ringaskiddy, B		Soil Asse				reland Pharmaceu	ıticals	BH23	
Job No PR-42	Da Sta	rt Date 2.	3-07-19 3-07-19	Gro	und Level (m	n) Co	o-Ordinates ()		51120	
Contractor	3447 Enc	i Date ∠.	3-07-19	Me	thod / Plant U	Jsed			Sheet	
Cause	eway Geotech	Limited	d		Windo	w Sampler	Rig		1 of 1	
		(md	, L			ST	RATA			
Depth BGL	Sample / Test Details	PID (ppm)	Legend	Depth (Thick- ness)			RIPTION		COMMENTS	Instalation /Backfill
-0.5 	BH23 0.0-1.0m	5.2		-	GRAVEL.		y coarse, angular, san	dy, clayey	Dry, NEC.	
-1.5 1.5	BH23 1.0-2.0m	58.3		- John State of the state of th	otinged our					
-2.0				2.00	End of hole	e - Target dep	oth reached.			
WE	ELL INSTAL	LATIC	N DETA	ILS		LEGE	END		GENERAL	
						Made Grour	nd		REMARKS	1
									NEC - No evidence of contamination.	f
	SAMPLE T	YPE D	ETAILS						Hole backfilled with s arisings.	soil
						Groundwater Ta	¥	e	Hole hand dug to 1.20 below ground level.	) m
						Logged By	R.McGoveri	n Appr	oved By E. O'Hanne	elly



-	and Site Location					Client		HOLE			BOREHOLE	No
	Ringaskiddy, B		ne So	il Asses					narmaceuticals		BH24	
Job No PR-42	Sta	ate art Date	23-(	)7-19 )7-19	Gro	ound Level (n	1)	Co-Ordinates	s ()		2	
Contractor	5447 En	d Date	23-0	)/-19	Me	thod / Plant U	Jsed				Sheet	
Caus	eway Geotech	Limi	ted			Windo	w Samp	oler Rig			1 of 1	
		pm)	ı					STRATA				
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)			SCRIPTION			COMMENTS	Instalation /Backfill
-0.5 	BH24 0.0-1.0m	1.7			-	sandy GRA	VEL wi	Grey, fine to con a cobble content		<i>'</i> ,	Dry, NEC.	
- - - -1.5 - -	BH24 1.0-2.0m	8.7			- 1.20 onsent o	MADEGR GRAVEL,	OUND - with high	Grey, fine to content of the content	oarse, angular, san t.	dy	Dry, NEC.	
-2.0					2.00	End of hole	- Target	depth reached.				
Wi	ELL INSTAL	LAT	ION	DETA	ILS		I,F	EGEND			GENERAL	<u> </u>
.,-							Made				REMARKS	
											NEC - No evidence of contamination.	f
	SAMPLE T	YPE	DET	ΓAILS							Hole backfilled with s arisings.	soil
							Groundwa bgl = Belov	ter Table $\begin{tabular}{c} $\underline{\begin{tabular}{c} $\underline{\begin{tabular} $\underline{\begin{tabular} $\underline{\begin{tabular}{c} $\underline{\begin{tabular}{c} $\underline{\begin{tabular}{c$	Water Strike		Hole hand dug to 1.20 below ground level.	) m
							Logged	By R.M	1cGovern	Appr	oved By E. O'Hanne	elly



Project Name	and Site Locat	ion				Client				BOREHOLE	No
Pfizer R	ingaskiddy,	Baselin	e So	il Asse	ssment	:	Pfize	er Ireland Pharmaceuticals		BH25	
Job No PR-42	l s	Date tart Date and Date	22-( 22-(	)7-19 )7-19	Gro	ound Level (m	1)	Co-Ordinates ()		ВП23	
Contractor					Me	ethod / Plant U	Jsed			Sheet	
Cause	eway Geotec	h Limit	ed			Windo	w Samp	er Rig		1 of 1	
	G 1 / T	pm)	ıe				i	STRATA			ıc
Depth BGL	Sample / Tes Details	PID (ppm)		Legend	ness)			SCRIPTION		COMMENTS	Instalation /Backfill
					(0.10)	MADEGR	OUND - (	Concrete.		Dry, NEC.	
-					(0.30)		OUND - (	Grey, coarse, angualr sandy, silty	,	Dry, NEC.	
0.5 	BH25 0.0-1.0	n 0.4			0.40	Light orang bolder cont	tent.	sandy, gravelly, silty CLAY with	n low	Dry, NEC.	_
					-	agedion for	urposes of	S. and other use.			
- - - -1.5	BH25 1.0-2.0	n 0.2			- (1.60); - (1.60); 	copyright copyright					
					2.00	End of hole	e - Target	depth reached.			-
WE	ELL INSTA	LLATI	ON	DETA	ILS		LE	GEND		GENERAL	
						\[ \frac{\rightarrow}{\rightarrow} \]	Concret Sandy (			REMARKS  NEC - No evidence of contamination.	
	SAMPLE '	ГҮРЕ	DET	ΓAILS						Hole backfilled with s arisings.	oil
							Groundwate	er Table 👲 Water Strike Ground Level		Hole hand dug to 1.20 below ground level.	) m
						Logged 1	By R.McGovern	Appro	oved By E. O'Hanne	elly	



Project Name a	and Site Location	n				Client				BOREHOLE	No
Pfizer Ri	ngaskiddy, B	aselir	ne So	il Asses				er Ireland Pharmaceuti	icals	BH26	
Job No PR-423	Sta	ate art Date d Date	25-( 25-(	07-19 07-19	Gro	ound Level (m	1)	Co-Ordinates ()		БП20	
Contractor					Me	ethod / Plant U	Jsed			Sheet	
Causev	way Geotech	Limi	ted			Windo	w Sampl	er Rig		1 of 1	
		(mc	r				,	STRATA			
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend (	Depth Thick- ness)		DES	SCRIPTION		COMMENTS	Instalation /Backfill
-0.5	BH26 0.0-0.8m				,	MADEGR angular to s	OUND - I sub rounded	Reddish brown, fine to mead GRAVEL.	dium, sub	Dry, NEC.	
WEI	WELL INSTALLATION DETAILS						LE	GEND		GENERAL	
							Made G	round		REMARKS	
										NEC - No evidence of contamination.	
	SAMPLE T	YPE	DE'	ΓAILS						Hole backfilled with so arisings.	oil
							Groundwate	r Table $\begin{tabular}{c} $\underline{\begin{tabular}{c} $\underline{\begin{tabular} $\underline{\begin{tabular}{c} $\underline{\begin{tabular}{c} $\underline{\begin{tabular} $\underline{\begin{tabular} $$		Hole hand dug to 1.20 below ground level.	) m
							Logged 1	R.McGovern	App	proved By E. O'Hanne	elly



Project Name	and Site Locati	ion				Client				BOREHOLE	No
Pfizer R	Ringaskiddy, 1	Baselir	ne So	oil Asses	sment		Pfize	er Ireland Pharmaceuticals		BH27	
Job No PR-42	S	Oate tart Date and Date	26-0 26-0	07-19 07-19	Gro	ound Level (m	1)	Co-Ordinates ()		БП21	
Contractor	,				Me	ethod / Plant U	Jsed			Sheet	
Caus	eway Geotecl	h Limi	ted			Windo	w Samp	er Rig		1 of 1	
	G 1 / T	(mdo	er		. 1		,	STRATA			I =
Depth BGL	Sample / Tes Details	PID (ppm)	Water	Legend (	Depth Thick- ness)		DE	SCRIPTION		COMMENTS	Instalation /Backfill
				///	(0.10)	TOPSOIL				Dry, NEC.	
-0.5	BH27 0.0-1.0r	n 0.5			(0.80)	MADEGR	LAY, with	Orange brown, very sandy, very a low cobble content.		Dry, NEC.	
- - 1.0 - -					0.90	cobble con	K silo, sa	ndy, gravelly CLAY with mediu	m	Dry, NEC.	
- 1.5 	BH27 1.0-2.01	n 1.0			(1.10)						
-2.0	$\square$				2.00	End of hole	- Target	depth reached.			
						LIG OF HOR	- raiget	асран гоасной.			
WI	ELL INSTAI	LAT	ION	DETAI	LS		LE	GEND		GENERAL	
						/// -o	Topsoil Sandy C	Made Ground Gravelly		REMARKS  NEC - No evidence of contamination.	
	SAMPLE 7	ГҮРЕ	DE	TAILS						Hole backfilled with sarisings.	oil
						-	Groundwate	er Table Water Strike Ground Level		Hole hand dug to 1.20 below ground level.	) m
							Logged	By R.McGovern	Appro	oved By E. O'Hanne	elly



Project Name	and Sit	e Location	n				Client						BOREHOLE	No
Pfizer R	Ringask	ciddy, Ba	aselin	e Sc	oil Asses	ssment		Pfize	er Ireland	d Pharmac	euticals			
Job No PR-42	3449	Da Star End	t Date	24-( 24-(	07-19 07-19	Gro	ound Level (m	1)	Co-Ordin	nates ()			BH28	
Contractor						Me	ethod / Plant U	Jsed					Sheet	
Caus	eway (	Geotech	Limit	ed			Windo	w Samp	er Rig				1 of 1	
			(md	Y.					STRAT	A				
Depth BGL	Samp D	ole / Test etails	PID (ppm)	Water	Legend	Depth (Thick- ness)		DE	SCRIPTIC	ON			COMMENTS	Instalation /Backfill
-						- (0.40) - 0.40	TOPSOIL						Dry, NEC. Evidence of pieces of plastic	
-0.5	вн2	28 0.0-1.0m	0.2			- - (0.60) -	low cobble	understand	ig any oth		y CLAY with		Dry, NEC.	
-1.0 -							or the divi			velly CLAY	with medium	m	Dry, NEC. (Possible Gypsum Waste).  Dry, NEC. Evidence	
-1.5 -	ВН2	28 1.0-2.0m	19.1			- - (0.70) -							of glass and plastic present.	
-2.0					# -	2.00	End of hole	e - Target	depth reac	ched.				
** **	WELL INSTALLATION DETAILS								ODAD					<u> </u>
WI	WELL INSTALLATION DETAILS								GEND				GENERAL REMARKS	
								7	CLAY		nde Ground ndy Gravelly .AY		NEC - No evidence of contamination.	
	SAMPLE TYPE DETAILS												Hole backfilled with s arisings.	oil
								Groundwate	er Table Ground Lev	<b>⊉</b> Water S	itrike		Hole hand dug to 1.20 below ground level.	) m
								Logged	Ву	R.McGove	ern	Appro	oved By E. O'Hanne	elly

# **Appendix F Shallow Soil Investigation Validated Laboratory Certificates**

Consent of copyright owner required for any other use.



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

AECOM 1st Floor, Montrose House Carrigaline Road Douglas Cork

Ireland





Edel O'Hannelly Attention:

30th July, 2019 Date:

PR-423449 Your reference :

Test Report 19/11899 Batch 1 Schedule A 19/11899 Batch 1 Schedule B Our reference :

Location: Ringaskiddy

Date samples received: 24th July, 2019

Status: Final report

Issue: 1

Seven samples were received for analysis on 24th July, 2019 of which seven 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. 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 activy weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Boden BSc Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR-423449

Location: Ringaskiddy
Contact: Edel O'Hannelly

**EMT Job No:** 19/11899

Report : Solid

				,			,	,	 	ı		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21					
Sample ID	BH22	BH22	BH22	BH25	BH25	BH19	BH19					
Depth	0.00-1.00	1.00-2.00	1.60	1.00-2.00	0.00-1.00	0.00-1.00	1.00-2.00			Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1					
Date of Receipt				24/07/2019			24/07/2019			LOD/LOR	Units	Method No.
Arsenic **M	2.8	14.6	14.2	20.2	14.7	10.2	14.6			<0.5	mg/kg	TM30/PM15
Barium *M	15	42	38	62	38	30	56			<1	mg/kg	TM30/PM15
Beryllium	<0.5	1.1	1.1	2.4	1.4	1.0	1.1			<0.5	mg/kg	TM30/PM15
Cadmium #M	0.6	0.3	0.5	1.4	0.5	0.2	<0.1			<0.1	mg/kg	TM30/PM15
Chromium #M	19.5	51.4	39.1	48.2	39.3	34.6	51.1			<0.5	mg/kg	TM30/PM15
Copper *M	4	24	21	31	24	8	15			<1	mg/kg	TM30/PM15
Lead #M	<5	40	30	54	41	11	33			<5	mg/kg	TM30/PM15
Mercury **M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	hei use.		<0.1	mg/kg	TM30/PM15
Nickel #M	7.6	38.2	31.6	58.8	40.0	21.0	28.0	net it.		<0.7	mg/kg	TM30/PM15
Selenium *M	<1	<1	<1	<1	<1	<1	<1	0.		<1	mg/kg	TM30/PM15
Vanadium	6 0.1	25 0.3	20 0.2	31 0.3	0.3	13	7 500.5			<1 <0.1	mg/kg mg/kg	TM30/PM15 TM74/PM32
Water Soluble Boron *** Zinc ****	57	144	127	275	173	70505	114			<5	mg/kg	TM30/PM15
20						our dil					99	
VOC TICs	ND	ND	ND	ND	ND tions of integral of the state of the sta	0.3 70 Ses	See Attached				None	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	A COLO	Wille <2	<2			<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	institu	<3	<3			<3	ug/kg	TM15/PM10
Toluene #	11	<3	<3	<3 ❖	Q 3/<3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	3	<3 &	<3	<3	<3			<3	ug/kg	TM15/PM10
m/p-Xylene #	6	<5	<5	COUSE 11 OF	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	010×3	<3	<3	<3			<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8 Surrogate Recovery 4-Bromofluorobenzene	98 94	93 84	87 73	90 92	90	100 91	94 77			<0 <0	%	TM15/PM10 TM15/PM10
Surrogate Recovery 4-Bromondoroberizene	94	04	73	92	83	91	77			<0	70	TIVITS/FIVITO
SVOC TICs	ND	See Attached	See Attached	ND	ND	See Attached	See Attached				None	TM16/PM8
TPH CWG												
Aliphatics												
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2			<0.1	mg/kg	TM36/PM12
>C10-C12 **M	<0.2	6.9	14.4	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	<4	31	54	<4	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 **M >C21-C35 **M	<7 <7	46 46	83 82	<7 <7	<7 <7	<7 <7	<7 <7			<7 <7	mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
Total aliphatics C5-35	<19	130	233	<19	<19	<19	<19			<19	mg/kg mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics 05-55	\13	130	200	\13	~13	13	~13			~13	mg/kg	

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Contact: Edel O'Hannelly

**EMT Job No:** 19/11899

Report : Solid

EMT Job No:	19/11899												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21						
Sample ID	BH22	BH22	BH22	BH25	BH25	BH19	BH19						
Depth	0.00-1.00	1.00-2.00	1.60	1.00-2.00	0.00-1.00	0.00-1.00	1.00-2.00				Division		
COC No / misc												e attached n ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J						
Sample Date	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019						
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay						
Batch Number	1	1	1	1	1	1	1						
											LOD/LOR	Units	Method No.
Date of Receipt	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019						
Aromatics													
>C5-EC7#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16#	<4	75	260	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7	54	201	<7	<7	<7	<7	hei use.			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35#	<7	180	628	<7	<7	<7	<7	netille			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	309	1089	<19	<19	<19	<19	d.			<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	439	1322	<38	<38	<38	1113<341,				<38	mg/kg	TM5/TM38/PM8/PM12/PM16
Natural Moisture Content	1.2	15.2	12.5	18.1	11.9	out adin	<7 <19 0 11 12 13 13 14 20.6 <0.3 51.1				<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	€0.3	<0.3				<0.3	mg/kg	TM38/PM20
Chromium III	19.5	51.4	39.1	48.2	<0.3 ito 38 school of the control of	34.6	51.1				<0.5	mg/kg	NONE/NONE
					inspire								
Sample Type	Clay	Clay	Clay	Clay 🕏	Clay	Clay	Clay					None	PM13/PM0
Sample Colour	Medium Grey	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown					None	PM13/PM0
Other Items	mostly stones	stones	stones	Stones	stones	stones	stones, vegetation					None	PM13/PM0
				CONS									
	<u> </u>	<u>i                                      </u>		1		1	<u> </u>	1	1	1	I		

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
FMT. Job No: 19/11899

EMT Job No:	19/11899											
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21					
Sample ID	BH22	BH22	BH22	BH25	BH25	BH19	BH19					
Depth COC No / misc	0.00-1.00	1.00-2.00	1.60	1.00-2.00	0.00-1.00	0.00-1.00	1.00-2.00				e attached nations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date Sample Type	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay					
Batch Number	1	1	1	1	1	1	1					Method
Date of Receipt	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019			LOD/LOR	Units	No.
SVOC MS												
Phenols 2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4-Dimethylphenol 2,4,5-Trichlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Nitrophenol	<10 <10	<10	<10 <10	<10 <10	<10	<10 <10	<10 <10			<10 <10	ug/kg	TM16/PM8 TM16/PM8
Pentachlorophenol  Phenol **M	<10 <10	<10 <10	<10 <10	<10	<10 <10	<10 <10	<10			<10 <10	ug/kg ug/kg	TM16/PM8
PAHs											3 .3	
2-Chloronaphthalene #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2-Methylnaphthalene **M Naphthalene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	hei use.		<10 <10	ug/kg	TM16/PM8 TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	her		<10	ug/kg ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	A <104			<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	10 × 10 × 10 × 10 × 10 × 10			<10	ug/kg	TM16/PM8
Phenanthrene #M	<10	<10	240	<10	<10	<10,000				<10	ug/kg	TM16/PM8
Anthracene Fluoranthene <sup>#M</sup>	<10 <10	<10 <10	107 <10	<10 <10	<10 <10	Pur John	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Pyrene *M	<10	<10	<10	<10	<10	10 <10	<10			<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<1000	VIIIC <10	<10			<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	<10	<10 . 10 . 10 . 10 . 10 . 10 . 10 . 10 .	<10	<10			<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene Benzo(a)pyrene	<10 <10	<10 <10	<10 <10	<10 <10	07 × 10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	.40 6	.40	<10	<10			<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	01:810 <10	<10	<10	<10			<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene Benzo(k)fluoranthene	<10 <10	<10 <10	<10 (	<10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Phthalates											-99	
Bis(2-ethylhexyl) phthalate	<100	206	4616	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100 <100	<100	<100	<100 <100	<100			<100	ug/kg	TM16/PM8 TM16/PM8
Di-n-butyl phthalate Di-n-Octyl phthalate	<100 <100	<100 <100	<100	<100 <100	<100 <100	<100	<100 <100			<100 <100	ug/kg ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
Dimethyl phthalate #M	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
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Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
FMT\_Job No: 19/11899

EMT Job No:	19/11899											
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21					
Sample ID	BH22	BH22	BH22	BH25	BH25	BH19	BH19					
Depth COC No / misc	0.00-1.00	1.00-2.00	1.60	1.00-2.00	0.00-1.00	0.00-1.00	1.00-2.00				e attached n ations and a	
Containers	V J	V J	V J	V J	V J	V J	V J					
Sample Date Sample Type	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay	22/07/2019 Clay					
Batch Number	1	1	1	1	1	1	1					Method
Date of Receipt		24/07/2019		24/07/2019						LOD/LOR	Units	No.
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene **M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene 1,4-Dichlorobenzene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Bromophenylphenylether ***	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8 TM16/PM8
4-Nitroaniline Azobenzene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	.40			<10	ug/kg ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	hei Use.		<10	ug/kg ug/kg	TM16/PM8
Carbazole	<10	<10	105	<10	<10	<10	<10	2113		<10	ug/kg	TM16/PM8
Dibenzofuran **M	<10	<10	77	<10	<10	<10	<10	the.		<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	14<104			<10	ug/kg	TM16/PM8
Hexachlorobutadiene #M	<10	<10	<10	<10	<10	<10	50€10			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<100	<10			<10	ug/kg	TM16/PM8
Hexachloroethane Isophorone #M	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	OUT TOUL	<10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10	<10	<10	<10	3<10	<10			<10	ug/kg ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10	<10	<10	<10011	1710×10	<10			<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	130	126	126	130	. 1585 10	93	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10			<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	119	120	127	122	<10 <10:10 <10:10 <10:11 51:11.85 11.0 51:11.85 11.0	128	122			<0	%	TM16/PM8
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Client Name: AECOM VOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
FMT. Job No: 19/11899

EMT Job No:	19/11899	·										
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21			]		
Sample ID	BH22	BH22	BH22	BH25	BH25	BH19	BH19					
Depth COC No / misc	0.00-1.00	1.00-2.00	1.60	1.00-2.00	0.00-1.00	0.00-1.00	1.00-2.00				e attached r ations and a	
Containers	۸٦	٨٦	٧J	٧J	٧J	٧J	۸٦			j		
Sample Date		22/07/2019										
Sample Type Batch Number	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1					Method
Date of Receipt		24/07/2019		24/07/2019						LOD/LOR	Units	No.
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether # Chloromethane #	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3			<2 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1			<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Trichlorofluoromethane * 1,1-Dichloroethene (1,1 DCE) *	<2 <6	<2 <6	<2 <6	<2 <6	<2 <6	<2 <6	<2 <6			<2 <6	ug/kg ug/kg	TM15/PM10 TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30			<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene # 2,2-Dichloropropane	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4			<3 <4	ug/kg	TM15/PM10 TM15/PM10
2,2-Dicnioropropane  Bromochloromethane #	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3			<4 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Chloroform#	<3	<3	<3	<3	<3	<3	.0			<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	Je.		<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3 <4	het use.		<3	ug/kg	TM15/PM10
Carbon tetrachloride # 1,2-Dichloroethane #	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4	Q.		<4 <4	ug/kg ug/kg	TM15/PM10 TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	7 501×3114			<3	ug/kg	TM15/PM10
Trichloroethene (TCE)#	<3	<3	<3	<3	<3	<3_05	7 to <3			<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	ILE JIL	<6			<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	3 3 6 3 3 10 10 10 10 10 10 10 10 10 10 10 10 10	Vi San	<3			<3	ug/kg	TM15/PM10
Bromodichloromethane # cis-1-3-Dichloropropene	<3 <4	<3 <4	<3 <4	<3 <4	<3 110 <40110	TIE1<3	<3 <4			<3 <4	ug/kg ug/kg	TM15/PM10 TM15/PM10
Toluene #	11	<3	<3	<3	. N. 200.0	<3	<3			<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	11 136	<3	<3			<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	00 <sup>3</sup> <3	<3	<3			<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) # 1,3-Dichloropropane #	<3 <3	<3 <3	<3 <3	<3 &	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Dibromochloromethane #	<3	<3	<3	egg.	<3	<3	<3			<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3 (	Onest of	<3	<3	<3			<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3 <3	<3 3	<3	<3 <3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene * m/p-Xylene *	<3 6	<5	<5	<3 <5	<5 <5	<3 <5	<3 <5			<3 <5	ug/kg ug/kg	TM15/PM10 TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Styrene	<3	<3	9	<3	<3	<3	<3			<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Isopropylbenzene # 1,1,2,2-Tetrachloroethane #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
2-Chlorotoluene 1,3,5-Trimethylbenzene #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
4-Chlorotoluene	<3 <3	<3	<3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5			<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6			<6	ug/kg	TM15/PM10
sec-Butylbenzene#	<4	7	19	<4	<4	<4	<4			<4	ug/kg	TM15/PM10 TM15/PM10
4-Isopropyltoluene # 1,3-Dichlorobenzene #	<4 <4	<4 <4	9 <4	<4 <4	<4 <4	<4 <4	<4 <4			<4 <4	ug/kg ug/kg	TM15/PM10 TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	6	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4 <7	<4			<4	ug/kg	TM15/PM10 TM15/PM10
1,2,4-Trichlorobenzene * Hexachlorobutadiene	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<br <4	<7 <4			<7 <4	ug/kg ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27			<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7			<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	98	93	87	90	90	100	94			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	94	84	73	92	83	91	77	<u> </u>		<0	%	TM15/PM10

Job number: 19/11899 Method: VOC Sample number: 19 Matrix: Solid

Sample identity:BH19Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2234-75-5	Cyclohexane, 1,2,4-trimethyl-	5.894 - 5.927	92,93	153
3728-56-1	1-Ethyl-4-methylcyclohexane	5.961	94	141
6236-88-0	Cyclohexane, 1-ethyl-4-methyl-, trans-	6.122	81	139
1678-92-8	Cyclohexane, propyl-	6.273	87	171
4551-51-3	1H-Indene, octahydro-, cis-	6.770	97	137
493-01-6	Naphthalene, decahydro-, cis-	7.219	94	207
	Consent of Copyright of the Copyright of	aty ary other use.		

Job number:19/11899Method:SVOCSample number:6Matrix:Solid

Sample identity:BH22Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
620-85-9	p-Ethyldiphenylmethane	9.506	95	7246
28122-29-4	Benzene, 2,6-dimethyl-1-(phenylmethyl)-	9.559	87	419
28122-24-9	Benzene, 1-ethyl-3-(phenylmethyl)-	9.637	94	6897
18435-45-5	1-Nonadecene	12.224	95	1013
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		other		
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Job number:19/11899Method:SVOCSample number:9Matrix:Solid

Sample identity: BH22
Sample depth: 1.60
Sample Type: Clay
Units: ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2958-76-1	Naphthalene, decahydro-2-methyl-	6.515	90	934
75163-97-2	Octadecane, 2,6-dimethyl-	7.631	83	1784
544-76-3	Hexadecane	8.309	86	1478
620-83-7	Benzene, 1-methyl-4-(phenylmethyl)-	9.106	98	2287
613-33-2	4,4'-Dimethylbiphenyl	9.135	97	1045
829-26-5	Naphthalene, 2,3,6-trimethyl-	9.237	96	1627
620-85-9	p-Ethyldiphenylmethane	9.519	95	322183
28122-29-4	Benzene, 2,6-dimethyl-1-(phenylmethyl)-	9.571	94	22271
28122-25-0	Benzene, 1-ethyl-2-(phenylmethyl)-	9.663 <mark>,©</mark> ·	90	249499
3892-00-0	Benzene, 1-ethyl-2-(phenylmethyl)- Pentadecane, 2,6,10-trimethyl- Eicosane 3-Ethylbenzophenone 3,4-Dimethylbenzophenone (4-Acetylphenyl)phenylmethane Heptacosane, 1-chloro- Nonadecane Benzene, 1,4-bis(phenylmethyl)- Acetonitrile, (3-chloro-5,5-dimethyl-2-cyclohexen-1-ylidene)-, (E)-	9,820	96	3384
112-95-8	Eicosane	at 0.052	92	4039
66067-43-4	3-Ethylbenzophenone	10.515	96	4321
2571-39-3	3,4-Dimethylbenzophenone	10.702	93	16291
782-92-3	(4-Acetylphenyl)phenylmethane	10.768	89	1445
62016-79-9	Heptacosane, 1-chloro-	10.977	86	2358
629-92-5	Nonadecane	11.414	90	842
793-23-7	Benzene, 1,4-bis(phenylmethyl)-	12.392	94	1086
76399-17-2	Acetonitrile, (3-chloro-5,5-dimethyl-2-cyclohexen-1-ylidene)-, (E)-	12.527	86	2792
103-30-0	(E)-Stilbene	12.730	81	28221
80636-47-1	5H-Dibenzo[a,c]cyclohepten-5-ol	13.535	81	2394
3878-45-3	Triphenylphosphine sulfide	14.039	98	2270

Job number:19/11899Method:SVOCSample number:18Matrix:Solid

Sample identity:BH19Sample depth:0.00-1.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
557-61-9	Octacosanol	12.224	86	538
544-76-3	Hexadecane	13.160	91	540
112-95-8	Eicosane	14.092	95	1050
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Job number: 19/11899 Method: SVOC Sample number: 21 Matrix: Solid

Sample identity:BH19Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
13798-23-7	Hexathiane	8.879	90	321
296-56-0	Cycloeicosane	12.224	93	414
112-84-5	13-Docosenamide, (Z)-	14.690	81	2820
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Client Name: AECOM
Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 19/11899	
					No deviating sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899	

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.: 19/11899

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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**

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

**EMT Job No:** 19/11899

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required tractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	. Y	+ O.Z.	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PMOJ COP	No preparation is required.			AR	No
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.			AR	Yes
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		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes

**EMT Job No:** 19/11899

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
ТМ30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace and liquid samples for GC headspace and liquid samples for GC headspace and liquid samples for GC headspace and liquid samples for GC	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Whodified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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)	PM201 col	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes



Unit 3 Deeside Point

Zone 3

Deeside Industrial Park

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W: www.element.com

AECOM 1st Floor, Montrose House Carrigaline Road Douglas Cork

Ireland

Edel O'Hannelly Attention:

30th July, 2019 Date:

PR-423449 Your reference :

Test Report 19/11899 Batch 1 Schedule C Our reference :

Location: Ringaskiddy

Date samples received: 24th July, 2019

Status: Final report

Issue: 1

Seven samples were received for analysis on 24th July, 2019 of which sever 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. 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 activy weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

**Simon Gomery BSc** 

**Project Manager** 

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Ringaskiddy Edel O'Hannelly

**EMT Job No:** 19/11899

Contact:

Report : Solid

EMT Sample No.  Sample ID  Depth COC No / misc Containers Sample Date Sample Type Batch Number Date of Receipt 2:	V J 22/07/2019 Clay 1	Clay	Clay		13-15 BH25 0.00-1.00 V J	16-18 BH19 0.00-1.00	19-21 BH19 1.00-2.00				e attached nations and ac	
Depth C COC No / misc Containers Sample Date 2: Sample Type Batch Number	0.00-1.00 V J 22/07/2019 Clay 1	1.00-2.00 V J 22/07/2019 Clay 1	1.60 V J 22/07/2019 Clay	1.00-2.00 V J 22/07/2019	0.00-1.00 V J	0.00-1.00						
COC No / misc Containers Sample Date 2: Sample Type Batch Number	V J 22/07/2019 Clay 1	V J 22/07/2019 Clay	V J 22/07/2019 Clay	V J 22/07/2019	VJ		1.00-2.00					
Containers Sample Date 2: Sample Type Batch Number	22/07/2019 Clay 1	22/07/2019 Clay 1	22/07/2019 Clay	22/07/2019		V I						
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Sample Type Batch Number	Clay	Clay	Clay		00/07/0040	٧J	٧J					
Batch Number	1	1			22/07/2019	22/07/2019	22/07/2019					
				Clay	Clay	Clay	Clay					
Date of Receipt 24	24/07/2019	04/07/0040	1	1	1	1	1			LOD/LOR	Units	Method
		24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019			LOD/LOR	Units	No.
Alcohols/Acetates												
Cyclohexane	<50	<50	<50	<50	<50	<50	<50			<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50	<50	<50	<50	<50	<50			<50	ug/kg	TM83/PM10
Bromide	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.7			<0.3	mg/kg	TM27/PM20
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Client Name: AECOM
Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 19/11899	
					No deviating sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899  The sample report results for job 19/11899	

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.: 19/11899

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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**

OC	Outside Calibration Range
ТВ	Trip Blank Sample Conte
N	Client Sample
LB	AQC Sample  Blank Sample
BS	AQC Sample For Trible
NFD	No Fibres Detected
ME	Matrix Effect Eight Little Communication Com
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISQ 77025 and MCERTS
СО	Suspected carry over
AD	Samples are dried at 35°C ±5°C
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
W	Results expressed on as received basis.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
SS	Calibrated against a single substance
NDP	No Determination Possible
ND	None Detected (usually refers to VOC and/SVOC TICs).
NAD	No Asbestos Detected.
NA	Not applicable
M	MCERTS accredited.
DR	Dilution required.
В	Indicates analyte found in associated method blank.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
#	ISO17025 (UKAS Ref No. 4225) accredited - UK.

**EMT Job No:** 19/11899

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056. Determination of water soluble anions using Dionex (lon-Chromatography).	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	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.			AR	Yes
			headspace analysis.  Rection hird sequired for any other tase.				
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Unit 3 Deeside Point

Zone 3

Deeside Industrial Park

Deeside CH5 2UA P: +44 (0) 1244 833780

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W: www.element.com

AECOM 1st Floor, Montrose House Carrigaline Road Douglas Cork

Ireland





Edel O'Hannelly Attention:

2nd August, 2019 Date:

PR423449 Your reference :

Test Report 19/11989 Batch 1 Our reference :

Location: Ringaskiddy

Date samples received: 25th July, 2019

Status: Final report

Issue: 1

Twelve samples were received for analysis on 25th July, 2019 of which the late the work of the report and should include all sections if reproduced. Interpretations and opinions are outside the 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 active weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

**Simon Gomery BSc** 

**Project Manager** 

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

**EMT Job No:** 19/11989

Report : Solid

EMT Job No:	19/11989												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08			
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n	
COC No / misc											abblevi	ations and a	cionyma
Containers	٧J	VJ	VJ	VJ	VJ	VJ	VJ	VJ	٧J	٧J			
Sample Date	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			No.
Arsenic #M	8.2	5.7	6.4	17.1	3.4	2.9	3.2	1.0	2.0	2.9	<0.5	mg/kg	TM30/PM15
Barium <sup>#M</sup>	27	41	32	37	18	15	50	23	37	32	<1	mg/kg	TM30/PM15
Beryllium	0.7	1.3	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	0.9	0.9	<0.5	mg/kg	TM30/PM15
Cadmium #M	0.5	0.4	0.4	<0.1	0.4	0.5	0.4	0.4	0.4	0.6	<0.1	mg/kg	TM30/PM15
Chromium #M	17.9	38.0	22.7	45.9	16.8	6.6	15.0	13.4	31.4	26.4	<0.5	mg/kg	TM30/PM15
Copper **M	8	19	11	19	9	3	7	5	16	15	<1	mg/kg	TM30/PM15
Lead **M	9	72	11	44	5	<5	6	<5	24	27	<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1.	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel <sup>#M</sup> Selenium <sup>#M</sup>	12.6	33.4	12.5	40.7	14.8	3.4	10.5	ther 8.1	27.7	29.9	<0.7	mg/kg	TM30/PM15 TM30/PM15
Vanadium Vanadium	<1 9	<1 19	<1 13	<1 26	<1 5	2	×1 0	5	<1 16	<1 15	<1 <1	mg/kg mg/kg	TM30/PM15
Water Soluble Boron ***	0.2	0.4	0.2	0.4	0.2	0.1	Mr. all.	0.1	0.3	0.3	<0.1	mg/kg	TM74/PM32
Zinc *M	53	132	60	157	48	2005	51	34	123	117	<5	mg/kg	TM30/PM15
Ziilo	00	102	00	107	40	2 0.1 es 10 trucked 10 Sep Attached	0.	04	120		40	mg/kg	11110071 11110
VOC TICs	ND	ND	ND	ND	ND HO	See Attached	ND	See Attached	ND	ND		None	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	SECUL.	Will <2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	9	opyish o	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3 ❖	<b>~</b> <3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	313	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3 32100 32100 3100 3100 3100 3100 3100 3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	95	96	95	91	64	99	97	100	92	94	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	88	87	85	78	60	92	87	94	90	85	<0	%	TM15/PM10
SVOC TICs	See Attached	ND	ND	ND	ND	See Attached	ND	ND	ND	ND		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	1.0	<0.1	3.2	<0.1	0.3	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 **M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 **M	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	<7	<7	<7	<7	19	<7	46	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	22	<19	46	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM16
								<u> </u>			<u> </u>		

Client Name: AECOM

Reference: PR423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

**EMT Job No:** 19/11989

Report : Solid

EMT Job No:	19/11989												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08			
Depth		1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	Please see attached no abbreviations and acr		
COC No / misc											d55.07.	a	o. o. ry rio
Containers	VJ	VJ	VJ	VJ	VJ	VJ	VJ	VJ	VJ	VJ			
Sample Date	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			No.
TPH CWG													
Aromatics													
>C5-EC7#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16# >EC16-EC21#	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4	<4 <7	<4 <7	<4 <7	mg/kg mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>EC16-EC21" >EC21-EC35#	<7	<7	<7					₹. •¥7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19	<19	-10	-10	<10	-10	ties 27	<19	<19	<19	mg/kg	TMS/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	<38	1383 14<383	46	<38	<38	<38	mg/kg	TM5/TM38/PM8/PM12/PM16
						۔ چوچ	d for a					99	
Alcohols/Acetates	50	50	50	50	50	il Parlif	50	50	50	50	50		TM00/DM40
Cyclohexane Tetrahydrofuran	<50 <50	<50 <50	<50	<50 -E0	<50 -50 · C	7 500 ×	<50 -E0	<50 <50	<50 <50	<50 <50	<50 <50	ug/kg	TM83/PM10 TM83/PM10
Tetranydroiuran	<50	<50	<50	<50	<50 cit	MIEKOU	<50	<50	<50	<50	<50	ug/kg	TIVIOS/PIVITO
Natural Moisture Content	4.7	11.9	7.2	16.2	<7 <19 <38 <50 <50 in 19 <50 in 19 <50 in 19 <50 in 19 <50 <50 <50 <50 <50 <50 <50 <50 <50 <50	1.5	3.4	2.0	9.8	12.0	<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	<0.3	0.5	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<000	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	17.9	38.0	22.7	<0745.9	16.8	6.6	15.0	13.4	31.4	26.4	<0.5	mg/kg	NONE/NONE
			'										
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		None	PM13/PM0
Sample Colour	Medium Brown		Medium Brown	Medium Brown		Medium Brown			Medium Brown			None	PM13/PM0
Other Items	stones, sand	stones	stones, vegetation	stones	stones, sand	mostly stones	stones	mostly stones	stones	stones		None	PM13/PM0

Client Name: AECOM

Reference: PR423449
Location: Ringaskidd

Ringaskiddy Edel O'Hannelly

**EMT Job No:** 19/11989

Contact:

Report : Solid

EMT Sample No.	31-33	34-36									
Sample ID	DUP01	DUP01									
Depth	0.00-1.00	1.00-2.00							Please se	e attached n	otes for all
COC No / misc										cronyms	
Containers	٧J	٧J									
Sample Date	23/07/2019	23/07/2019									
Sample Type	Clay	Clay									
Batch Number	1	1									
									LOD/LOR	Units	Method No.
Date of Receipt  Arsenic **M									-0 F	ma/ka	TM30/PM15
Arsenic Barium **M	3.2 40	2.3							<0.5 <1	mg/kg mg/kg	TM30/PM15
Beryllium	1.1	0.9							<0.5	mg/kg	TM30/PM15
Cadmium #M	0.6	0.4							<0.1	mg/kg	TM30/PM15
Chromium *M	40.3	36.5							<0.5	mg/kg	TM30/PM15
Copper #M	22	15							<1	mg/kg	TM30/PM15
Lead *M	36	26							<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	Consent of				رو.		<0.1	mg/kg	TM30/PM15
Nickel #M	36.0	32.2					eris		<0.7	mg/kg	TM30/PM15
Selenium *M	<1	<1					die		<1	mg/kg	TM30/PM15
Vanadium	20	18				My any			<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.4	0.3			-ses	gion			<0.1	mg/kg	TM74/PM32
Zinc #M	192	117			aliponii				<5	mg/kg	TM30/PM15
VOC TICs	ND	See Attached		6	y de lock					None	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2		gertie	MIL				<2	ug/kg	TM15/PM10
Benzene #	<3	<3		inspire					<3	ug/kg	TM15/PM10
Toluene #	<3	<3	Ŷ	of Wills					<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	S.	COA					<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	ant o						<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	ONSU						<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	99	95							<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	91	87							<0	%	TM15/PM10
SVOC TICs	ND	See Attached								None	TM16/PM8
TPH CWG											
Aliphatics											
>C5-C6 **M	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	1.1							<0.1	mg/kg	TM36/PM12
>C10-C12 #M	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	<4	<4							<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7							<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	49							<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	50							<19	mg/kg	TMS/TM38/PM8/PM12/PM18

Client Name: AECOM

Reference: PR423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

**EMT Job No:** 19/11989

EMT Job No:	19/11989		 					 	_			
EMT Sample No.	31-33	34-36										
Sample ID	DUP01	DUP01										
Depth	0.00-1.00	1.00-2.00										
COC No / misc									Please see attached notes for abbreviations and acronyms			
Containers	٧J	٨٦										
Sample Date												
Sample Type	Clay	Clay										
Batch Number	1	1							LOD/LOR	Units	Method No.	
Date of Receipt	25/07/2019	25/07/2019									110.	
TPH CWG												
Aromatics	-0.4	-0.4							.0.4		TMACC/DMAAC	
>C5-EC7#	<0.1	<0.1							<0.1	mg/kg	TM36/PM12 TM36/PM12	
>EC7-EC8# >EC8-EC10#M	<0.1 <0.1	<0.1 <0.1							<0.1 <0.1	mg/kg mg/kg	TM36/PM12	
>EC8-EC10 >EC10-EC12#	<0.1	<0.1							<0.1	mg/kg	TM5/PM8/PM16	
>EC12-EC16#	<4	<4							<4	mg/kg	TM5/PM8/PM16	
>EC16-EC21 #	<7	<7					0		<7	mg/kg	TM5/PM8/PM16	
>EC21-EC35#	<7	<7					1150		<7	mg/kg	TM5/PM8/PM16	
Total aromatics C5-35 #	<19	<19				خ	Her		<19	mg/kg	TM5/TM38/PM8/PM12/PM16	
Total aliphatics and aromatics(C5-35)	<38	50				14. My			<38	mg/kg	TM5/TM38/PM8/PM12/PM16	
					ري و	of for a						
Alcohols/Acetates					170°50							
Cyclohexane	<50	<50			Directi.				<50	ug/kg	TM83/PM10	
Tetrahydrofuran	<50	<50		ctio	ter,				<50	ug/kg	TM83/PM10	
				175700	4							
Natural Moisture Content	12.6	11.5	Consent of	ज्ञां व्या					<0.1	%	PM4/PM0	
Bromide	<0.3	<0.3	8	000					<0.3	mg/kg	TM27/PM20	
Hexavalent Chromium #	<0.3	<0.3	ento						<0.3	mg/kg	TM38/PM20	
Chromium III	40.3	36.5	OUSC						<0.5	mg/kg	NONE/NONE	
Sample Type	Clay	Clay								None	PM13/PM0	
Sample Colour	Medium Brown									None	PM13/PM0	
Other Items	stones	stones								None	PM13/PM0	
	1	I	J	l	1	J.	l		1			

AECOM SVOC Report : Client Name: Solid

PR423449 Reference: Ringaskiddy Location: Edel O'Hannelly Contact: EMT Job No: 19/11989

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	
Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08	
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	
COC No / misc											
Containers	٧J										
Sample Date	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	
Sample Type	Clay										
Batch Number	1	1	1	1	1	1	1	1	1	1	
Date of Receipt	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	Ĺ
SVOC MS											

Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers	٧J	٧J	VJ	VJ	VJ	VJ	٧J	٧J	٧J	٧J			
Sample Date Sample Type	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay	23/07/2019 Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	1.00/1.00	11.5.	Method
Date of Receipt	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	LOD/LOR	Units	No.
SVOC MS													
Phenols 2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol 2,4,5-Trichlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol Pentachlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Phenoi **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene **M Naphthalene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10.	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	net 210	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	14<104	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	10×10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene **M Anthracene	<10 <10	<10 <10	<10 <10	<10 <10	<10	<10.0	<10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Fluoranthene #M	<10	<10	16	<10	<10	OUT 101111	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Pyrene #M	<10	<10	12	<10	<10	ej<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	33	<10	<1000	×10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene Benzo(bk)fluoranthene	<10 <10	<10 <10	13 20	<10 <10	THE TOTAL	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10	<10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(a)pyrene	<10	<10	14	<10	57 × 10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10 🔇	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10 <10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene Benzo(b)fluoranthene	<10 <10	<10 <10	<10 14 (	On \$10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg	TM16/PM8 TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate Di-n-butyl phthalate	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	ug/kg ug/kg	TM16/PM8 TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate #M	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
	I	<u> </u>						<u>I</u>	<u>I</u>	İ	İ		

Client Name: AECOM SVOC Report : Solid

Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/11989

EMT Job No:	19/11989												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			
Sample Date	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019	23/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			1
Batch Number Date of Receipt	1	1	1	1	1	1 25/07/2019	1	1	1	1	LOD/LOR	Units	Method No.
SVOC MS	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			140.
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10	ug/kg	TM16/PM8 TM16/PM8
4-Bromophenylphenylether *** 4-Chloroaniline	<10 <10	<10	<10 <10	<10 <10	<10 <10	<10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	<10.	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	net \$10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran ***	<10	<10	<10	<10	<10	<10	<10		<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene #M	<10	<10	<10	<10	<10	<10	114<10H	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene *** Hexachlorocyclopentadiene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10	A FOR A	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg	TM16/PM8 TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10	2100°	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Isophorone #M	<10	<10	<10		<10	01/2/01/11	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10	<10	<10	<10 . 0	<10 <10 est	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10	<10	<10	<10	×10 <10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	124	123	126	123	1792/110	124	124	125	125	124	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	119	116	115	115	2. 148.	126	120	122	118	120	<0	%	TM16/PM8
				*	<10 <10 to <10 to <10 to 5 to 10 to								
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Client Name: AECOM SVOC Report :

Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Lob No: 19/11989

EMT Sample No.	31-33	34-36									
Sample ID											
Sample ID											
	DUP01	DUP01									
Depth COC No / misc	0.00-1.00	1.00-2.00								e attached n	
Containers	٧J	٧J									
Sample Date 2	23/07/2019	23/07/2019									
Sample Type	Clay	Clay							,		
Batch Number	1	1							LOD/LOR	Units	Method No.
Date of Receipt 2:	25/07/2019	25/07/2019									140.
Phenois											
2-Chlorophenol *M	<10	<10							<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10							<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #M	<10	<10							<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10							<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol	<10 <10	<10 <10							<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
4-Chloro-3-methylphenol	<10	<10							<10	ug/kg ug/kg	TM16/PM8
4-Methylphenol	<10	<10							<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10							<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10							<10	ug/kg	TM16/PM8
Phenol **M	<10	<10							<10	ug/kg	TM16/PM8
PAHs	.40	:40	i i i i i i i i i i i i i i i i i i i						:40		TM4.0/D140
2-Chloronaphthalene #M 2-Methylnaphthalene #M	<10 <10	<10 <10					Ø1*		<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Naphthalene	<10	<10					, 115C		<10	ug/kg ug/kg	TM16/PM8
Acenaphthylene	<10	<10				á	her		<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10				14. VJ			<10	ug/kg	TM16/PM8
Fluorene	<10	<10				Milly div			<10	ug/kg	TM16/PM8
Phenanthrene *M	<10	<10			Ses	9 to			<10	ug/kg	TM16/PM8
Anthracene	<10	<10			1112 Till	,			<10	ug/kg	TM16/PM8
Fluoranthene <sup>#M</sup> Pyrene <sup>#M</sup>	17 17	<10 <10		3	St. Lock				<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(a)anthracene	<10	<10		cito	net				<10	ug/kg ug/kg	TM16/PM8
Chrysene	<10	<10		1250°0					<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	^0	I TIGHT					<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	*	083					<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	8	<i>y</i>					<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	ente						<10	ug/kg	TM16/PM8
Benzo(ghi)perylene Benzo(b)fluoranthene	<10 <10	<10 <10	Offse						<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(k)fluoranthene	<10	<10	<i>)</i> -						<10	ug/kg ug/kg	TM16/PM8
Phthalates	1.0	110							110	ugriig	
Bis(2-ethylhexyl) phthalate	<100	<100							<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100							<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100							<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100							<100	ug/kg	TM16/PM8
Diethyl phthalate  Dimethyl phthalate ***	<100 <100	<100 <100							<100 <100	ug/kg ug/kg	TM16/PM8 TM16/PM8
Dimetriyi pritrialate	×100	×100							100	ug/ng	/ IVI I O/F IVIO
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Solid

Client Name: AECOM

Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/11989

SVOC Report : Solid

EMT Job No:	19/11989											
EMT Sample No.	31-33	34-36										
Sample ID	DUP01	DUP01										
Depth COC No / misc	0.00-1.00	1.00-2.00									e attached nations and a	
Containers	٧J	٧J										,
Sample Date		23/07/2019										
· ·	Clay	Clay										
Sample Type Batch Number		1										1
	1 25/07/2019									LOD/LOR	Units	Method No.
Date of Receipt SVOC MS	25/07/2019	25/07/2019										110.
Other SVOCs		4.0										T1440/D140
1,2-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene **M	<10	<10								<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10								<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10								<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
4-Bromophenylphenylether ***	<10	<10								<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10								<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10								<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
Azobenzene	<10	<10		İ						<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10								<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10						٧٥٠		<10	ug/kg	TM16/PM8
Carbazole	<10	<10						115		<10	ug/kg	TM16/PM8
Dibenzofuran #M	<10	<10			inspection winspection or inspection		á	Ver .		<10	ug/kg ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10					1. 40	•		<10	ug/kg	TM16/PM8
Hexachlorobutadiene #M	<10	<10					912, 312			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10				ي ج	) KOT			<10	ug/kg ug/kg	TM16/PM8
						-05. v8	<b>8</b>					
Hexachloroethane	<10	<10				Madil				<10	ug/kg	TM16/PM8
Isophorone #M	<10	<10				1 Si Col				<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #M	<10	<10			dio	Let ,				<10	ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10			2000	Nr.				<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	128	125			inspire.					<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	116	123		\$G	of the					<0	%	TM16/PM8
				<b>Y</b>	06,							
				8	0-							
				de								
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			(	Cox								
				l								

Client Name: AECOM VOC Report : Solid

Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/11989

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH20	BH20	BH21	BH21	BH23	BH23	BH24	BH24	BH08	BH08			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached nations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			,
Sample Date	23/07/2019		23/07/2019					23/07/2019	-				
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	LOD/LOIX	OTINO	No.
VOC MS													
Dichlorodifluoromethane Methyl Tertiary Butyl Ether #	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	ug/kg ug/kg	TM15/PM10 TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM)#	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene # 1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10 TM15/PM10
1,1-Dichloroethane " cis-1-2-Dichloroethene #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
2,2-Dichloropropane	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	ug/kg ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chloroform#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane#	<3	<3	<3	<3	<3	<3	<3	₹30.	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	ner 123	<3	<3	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	14.54H	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3 <3	<3 <3	<3 <3	9 <3	<3 <3	7 Pir saliti	7 50K3 TY	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Trichloroethene (TCE) # 1,2-Dichloropropane #	<5 <6	<5 <6	<6	<5 <6	<5 <6	28 . X	<6	<5 <6	<6	<5 <6	<5 <6	ug/kg ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	OHESHI!	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3 tio	Roll of America	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	SACTI	VIIIC <4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	inspiro	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	opyes of state	<b>\</b> 0	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	%,<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) # 1,3-Dichloropropane #	<3 <3	<3 <3	<3 <3	Ones of	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Dibromochloromethane #	<3	<3	<3	en	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3 (	Offica	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	313	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10 TM15_A/PM10
Styrene Bromoform	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
Isopropylbenzene#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene * 4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10 TM15/PM10
tert-Butylbenzene #	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	ug/kg ug/kg	TM15/PM10 TM15/PM10
1,2,4-Trimethylbenzene #	<5 <6	<5 <6	<5 <6	<5 <6	<5 <6	<5 <6	<5 <6	<5 <6	<6	<5 <6	<5 <6	ug/kg ug/kg	TM15/PM10
sec-Butylbenzene#	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
11 2 Hibrama 2 chlarantenana#	1	/	/	-/1	-/1	-/1	-/1	-/1	-/1	-/1	-/1	l ua/ka	1 1 N/1 5/12 N/11 O

<4

<7

<4

<27

<7

99

<4

<7

<4

<27

<7

97

<4

<7

<4

<27

<7

100

<4

<7

<4

<27

<7

92

<4

<7

<4

<27

<7

94

<4

<7

<4

<27

<7

<0

ug/kg

ug/kg

ug/kg

ug/kg

ug/kg

%

1,2-Dibromo-3-chloropropane #

Surrogate Recovery Toluene D8

1,2,4-Trichlorobenzene#

1,2,3-Trichlorobenzene #

Hexachlorobutadiene

Naphthalene

<4

<7

<4

<27

<7

95

<4

<7

<4

<27

<7

96

<4

<7

<4

<27

<7

95

<4

<7

<4

<27

<7

91

78

<4

<7

<4

<27

<7

64

60

TM15/PM10

TM15/PM10

TM15/PM10

TM15/PM10

TM15/PM10

TM15/PM10

TM15/PM10

Client Name: AECOM

Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/11989

VOC Report : Solid

EMT Job No:	19/11989											
EMT Sample No.	31-33	34-36										
Sample ID	DUP01	DUP01										
Depth COC No / misc	0.00-1.00	1.00-2.00									e attached nations and a	
Containers	٧J	٧J										
Sample Date	23/07/2019	23/07/2019										
Sample Type	Clay	Clay										
Batch Number	1	1								LOD/LOR	Units	Method
Date of Receipt	25/07/2019	25/07/2019								LOD/LOK	UTIILS	No.
VOC MS												
Dichlorodifluoromethane	<2	<2								<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2								<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3								<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2								<2	ug/kg	TM15_A/PM10
Bromomethane #	<1	<1								<1	ug/kg	TM15/PM10
Chloroethane #	<2 <2	<2 <2								<2 <2	ug/kg	TM15/PM10 TM15/PM10
Trichlorofluoromethane # 1,1-Dichloroethene (1,1 DCE) #	<2 <6	<2 <6								<2 <6	ug/kg ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30								<30	ug/kg ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<30 <3	<30 <3								<30 <3	ug/kg ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3								<3	ug/kg ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3								<3	ug/kg ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4								<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3			n inspection					<3	ug/kg	TM15/PM10
Chloroform#	<3	<3								<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3						eo.		<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3						of 112		<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4					ž	The,		<4	ug/kg	TM15/PM10
1,2-Dichloroethane#	<4	<4					14.14			<4	ug/kg	TM15/PM10
Benzene #	<3	<3					Mr. dr			<3	ug/kg	TM15/PM10
Trichloroethene (TCE)#	<3	<3				ومح	9 to			<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6				IP Jil	,			<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3				Sp. Con				<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3			dio	net '				<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4			20° 0	y.				<4	ug/kg	TM15/PM10
Toluene #	<3	<3			insint					<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3 <3	<3		Ŷ <sup>(</sup>	of Alle					<3	ug/kg	TM15/PM10 TM15/PM10
1,1,2-Trichloroethane # Tetrachloroethene (PCE) #	<3 <3	<3 <3		ر ا	$c_{0\beta}$ , —					<3 <3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3		, ot						<3	ug/kg ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3		cent						<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3		Office						<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	`							<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3								<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3								<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5								<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3								<3	ug/kg	TM15/PM10
Styrene	<3	<3								<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3								<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3								<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3								<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2								<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4								<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4								<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3								<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3								<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3								<3	ug/kg	TM15/PM10 TM15/PM10
tert-Butylbenzene # 1,2,4-Trimethylbenzene #	<5 <6	<5								<5 <6	ug/kg	TM15/PM10 TM15/PM10
1,2,4-Trimethylbenzene " sec-Butylbenzene #	<6 <4	<6 <4								<6 <4	ug/kg ug/kg	TM15/PM10 TM15/PM10
4-Isopropyltoluene #	<4 <4	<4								<4 <4	ug/kg ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4								<4	ug/kg ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4								<4	ug/kg	TM15/PM10
n-Butylbenzene#	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4								<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4								<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7								<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4								<4	ug/kg	TM15/PM10
Naphthalene	<27	<27								<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7								<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8			1									
Surrogate Recovery Toluene Do	99	95								<0	%	TM15/PM10

Job number: 19/11989 Method: VOC Sample number: 16 Matrix: Solid

Sample identity:BH23Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
cis-1-Ethyl-3-methyl-cyclohexane	5.954	91	151
Cyclohexanone, 2,3-dimethyl-	6.273	86	253
Octane, 3,5-dimethyl-	6.367	81	291
Cyclohexane, 2-ethyl-1,3-dimethyl-	6.478	87	116
Pentalene, octahydro-2-methyl-	6.770	90	315
Decane, 3-methyl-	7.063	95	164
2,6-Dimethylbicyclo[3.2.1]octane	7.097	80	202
Naphthalene, decahydro-, trans-	7.219	91	538
Naphthalene, decahydro-, cis-	7.51 <b>4</b>	93	216
trans-Decalin, 2-methyl-	7.551%7.698	93,96	657
Naphthalene, decahydro-2-methyl-		97	164
cis-Decalin, 2-syn-methyl-	7.827	91	104
trans,trans-1,6-Dimethylspiro[4.5]decane	7.945 - 8.060	94,95	117
Consent of copyright out			
	cis-1-Ethyl-3-methyl-cyclohexane Cyclohexanone, 2,3-dimethyl- Octane, 3,5-dimethyl- Cyclohexane, 2-ethyl-1,3-dimethyl- Pentalene, octahydro-2-methyl- Decane, 3-methyl- 2,6-Dimethylbicyclo[3.2.1]octane Naphthalene, decahydro-, trans- Naphthalene, decahydro-, cis- trans-Decalin, 2-methyl-	cis-1-Ethyl-3-methyl-cyclohexane  cis-1-Ethyl-3-methyl-cyclohexane  Cyclohexanone, 2,3-dimethyl-  Octane, 3,5-dimethyl-  Cyclohexane, 2-ethyl-1,3-dimethyl-  Pentalene, octahydro-2-methyl-  Decane, 3-methyl-  2,6-Dimethylbicyclo[3.2.1]octane  Naphthalene, decahydro-, trans-  Naphthalene, decahydro-, cis-  trans-Decalin, 2-methyl-  Naphthalene, decahydro-2-methyl-  Naphthalene, decahydro-2-methyl-  T.551 14 67 7.898  Naphthalene, decahydro-2-methyl-  Cis-Decalin, 2-syn-methyl-  T.827	Cis-1-Ethyl-3-methyl-cyclohexane       5.954       91         Cyclohexanone, 2,3-dimethyl-       6.273       86         Octane, 3,5-dimethyl-       6.367       81         Cyclohexane, 2-ethyl-1,3-dimethyl-       6.478       87         Pentalene, octahydro-2-methyl-       6.770       90         Decane, 3-methyl-       7.063       95         2,6-Dimethylbicyclo[3.2.1]octane       7.097       80         Naphthalene, decahydro-, trans-       7.219       91         Naphthalene, decahydro-, cis-       7.514       93         trans-Decalin, 2-methyl-       7.551       7.698       93,96

Job number: 19/11989 Method: VOC Sample number: 22 Matrix: Solid

Sample identity:BH24Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
-	trans-Decalin, 2-methyl-	7.551 - 7.657	83,95	316
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Job number: 19/11989 Method: VOC Sample number: 34 Matrix: Solid

Sample identity:DUP01Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
493-02-7	Naphthalene, decahydro-, trans-	7.219	92	161
-	trans-Decalin, 2-methyl-	7.551	96	174
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Job number:19/11989Method:SVOCSample number:3Matrix:Solid

Sample identity:BH20Sample depth:0.00-1.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
13798-23-7	Hexathiane	8.892	81	151
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Job number:19/11989Method:SVOCSample number:18Matrix:Solid

Sample identity:BH23Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2958-76-1	Naphthalene, decahydro-2-methyl-	6.376	95	385
112-95-8	Eicosane	13.641	95	337
646-31-1	Tetracosane	14.092	94	697
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Job number:19/11989Method:SVOCSample number:36Matrix:Solid

Sample identity:DUP01Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
13798-23-7	Hexathiane	8.878	81	125
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	tion purpose			
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Client Name: AECOM
Reference: PR423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 19/11989	
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					ight for took	
					as Pech drift	
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					Colfr	

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.: 19/11989

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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**

OC	Outside Calibration Range
ТВ	Trip Blank Sample Conte
N	Client Sample
LB	AQC Sample  Blank Sample
BS	AQC Sample For Trible
NFD	No Fibres Detected
ME	Matrix Effect Eight Little Communication Com
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISQ 77025 and MCERTS
СО	Suspected carry over
AD	Samples are dried at 35°C ±5°C
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
W	Results expressed on as received basis.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
SS	Calibrated against a single substance
NDP	No Determination Possible
ND	None Detected (usually refers to VOC and/SVOC TICs).
NAD	No Asbestos Detected.
NA	Not applicable
M	MCERTS accredited.
DR	Dilution required.
В	Indicates analyte found in associated method blank.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
#	ISO17025 (UKAS Ref No. 4225) accredited - UK.

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required tractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	. 02	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PMOSTOR	No preparation is required.			AR	No
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.			AR	Yes
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		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (lon-Chromatography).	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM1291 con	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
			ay any other use.				
			Special Durge required for any other use.				
		cot is	Special Confect Confec				
		nsent of col	3				
		Cor					



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Ireland





Edel O'Hannelly Attention:

2nd August, 2019 Date:

PR-423449 Your reference :

Test Report 19/12086 Batch 1 Our reference :

Location: Ringaskiddy

Date samples received: 26th July, 2019

Status: Final report

Issue: 1

Twelve samples were received for analysis on 26th July, 2019 of which the late the work of the report and should include all sections if reproduced. Interpretations and opinions are outside the 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 active weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Paul Boden BSc Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Ringaskiddy Edel O'Hannelly Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Contact: Edel O'Ha EMT Job No: 19/12086

EMT Job No:	19/12086												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	ВН9	ВН9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28			
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n	
COC No / misc													,
Containers	٧J	۸٦	٧J	٧J	۸٦	۸٦	۸٦	٧J	۸٦	۸٦			
Sample Date	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Llaita	Method
Date of Receipt	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	LOD/LOR	Units	No.
Arsenic **M	7.2	18.4	8.6	19.8	4.1	3.2	11.1	2.7	11.7	9.0	<0.5	mg/kg	TM30/PM15
Barium *M	35	35	29	37	23	28	74	18	39	70	<1	mg/kg	TM30/PM15
Beryllium	0.8	1.3	0.9	1.3	0.6	0.5	<0.5	<0.5	0.8	0.7	<0.5	mg/kg	TM30/PM15
Cadmium #M	<0.1	0.2	0.3	0.6	0.3	0.4	1.7	1.2	0.3	0.4	<0.1	mg/kg	TM30/PM15
Chromium #M	48.7	29.7	32.3	40.4	16.2	20.7	28.8	15.3	27.8	29.9	<0.5	mg/kg	TM30/PM15
Copper <sup>#M</sup> Lead <sup>#M</sup>	14 17	25 38	17 18	26 35	7 13	8 18	12 23	10 12	16 34	19 24	<1 <5	mg/kg mg/kg	TM30/PM15 TM30/PM15
Lead Mercury **M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1.	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel *M	25.6	39.7	27.2	41.8	14.5	12.5		net 10.3	23.9	23.3	<0.7	mg/kg	TM30/PM15
Selenium #M	<1	<1	<1	<1	<1	<1	3	ther 2	<1	<1	<1	mg/kg	TM30/PM15
Vanadium	20	22	17	22	9	8	114 2 JUY	9	21	21	<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.2	0.3	0.3	0.3	0.2	0.2	207	0.2	0.4	0.5	<0.1	mg/kg	TM74/PM32
Zinc *M	72	178	141	189	84	0.2 Pur 60 Se Si	207	105	116	258	<5	mg/kg	TM30/PM15
						See Attached							
VOC TICs	ND	ND	ND	ND	ND tio	See Attached	ND	ND	ND	See Attached		None	TM15/PM10
Methyl Tertiary Butyl Ether # Benzene #	<2	<2 <3	<2	<2 <3	115/20	<2 <3	<2	<2	<2 <3	<2 <3	<2 <3	ug/kg	TM15/PM10 TM15/PM10
Toluene #	<3 <3	<3	<3 <3	<3 🕏	opyian o	<3	<3 <3	<3 <3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3 5	00 <3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	<3 of	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	2011.55 TO 1	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	100	95	96	102	99	96	101	99	93	67	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	88	84	95	91	91	91	93	75	62	<0	%	TM15/PM10
SVOC TICs	ND	ND	ND	ND	ND	See Attached	ND	See Attached	ND	See Attached		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>SV</sup>	<0.1	mg/kg	TM36/PM12
>C6-C8 **M >C8-C10	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 0.2	<0.1 <0.1	<0.1 0.7	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <sup>sv</sup>	<0.1 <0.1	mg/kg	TM36/PM12 TM36/PM12
>C8-C10 >C10-C12 **M	<0.1	<0.1	<0.1	<0.2	<0.1	29.9	<0.1	<0.1	<0.1	<0.2	<0.1	mg/kg mg/kg	TM5/PM8/PM16
>C12-C16 ***	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7	<7	<7	<7	10	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	<7	<7	<7	<7	139	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	180	<19	<19	<19	<19	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
		·			1	·	·	·					

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Ringaskiddy Edel O'Hannelly

**EMT Job No:** 19/12086

Contact:

Report : Solid

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

	13/12000										Į.		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	вн9	BH9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28			
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	Please se	e attached n	otes for all
COC No / misc												ations and a	
Containers	٧J	٨٦	٧J	٧J	٨٦	٨٦	٧J	٧J	۸٦	٧J			
Sample Date	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			Mathad
Date of Receipt	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>sv</sup>	<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <sup>sv</sup>	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 sv	<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2 <4	<0.2	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	<0.2	<0.2 <4	<0.2 <4	<0.2 <4	mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>EC12-EC16# >EC16-EC21#	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	mg/kg mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>EC16-EC21 >EC21-EC35#	<7	<7	<7	.7	.7	.7	.7	₹.	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19	<19	<19	<19	<19	<19	Ties 27	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM18
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	180	17×3874	<38	<38	<38	<38	mg/kg	TM5/TM38/PM8/PM12/PM16
							of for t						
Alcohols/Acetates						1705111	C			ev			
Cyclohexane	<50	<50	<50	<50	<50	70<500	<50	<50	<50	<50 <sup>SV</sup>	<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50	<50	<50	<50 til	MILEX 50	<50	<50	<50	<50 <b>sv</b>	<50	ug/kg	TM83/PM10
Natural Moisture Content	9.5	13.5	7.8	13.4	opytient o	4.3	<19 colored to 1	11.5	11.6	16.5	<0.1	%	PM4/PM0
Bromide	<0.3	0.4	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM27/PM20
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	48.7	29.7	32.3	<0.4 0140.4	16.2	20.7	28.8	15.3	27.8	29.9	<0.5	mg/kg	NONE/NONE
On water Trans	01-	Ole	01-		01-	Ole	01-	01-	Ole	01-		Maria	DIA40/DIA0
Sample Type Sample Colour	Clay  Medium Brown	Clay  Medium Brown	Clay	Clay Medium Brown	Clay Medium Brown	Clay  Medium Brown	Clay  Medium Brown	Clay  Medium Brown	Clay  Medium Brown	Clay Medium Brown		None None	PM13/PM0 PM13/PM0
Other Items	stones	stones		bricks, stones	stones	sand, stones	sand, stones	stones	stones	stones, chalk		None	PM13/PM0

Client Name: AECOM

Reference: PR-423449 Location: Ringaskiddy

Contact: Edel O'Hannelly EMT Job No: 19/12086

Report : Solid

**Solids:** V=60g VOC jar, J=250g glass jar, T=plastic tub

									-					
EMT Sample No.	31-33	34-36												
Sample ID	DUP-02	DUP-02												
Depth	0.00-1.00	1.00-2.00							Please se	e attached n	otes for all			
COC No / misc										abbreviations and acronyme				
Containers	٧J	٧J												
Sample Date	24/07/2019	24/07/2019												
Sample Type	Clay	Clay												
Batch Number	1	1							LOD/LOR	Units	Method			
Date of Receipt	26/07/2019	26/07/2019									No.			
Arsenic *M	4.5	3.9							<0.5	mg/kg	TM30/PM15			
Barium <sup>#M</sup>	28	33							<1	mg/kg	TM30/PM15			
Beryllium	0.6	1.0							<0.5	mg/kg	TM30/PM15			
Cadmium #M	0.3	0.3							<0.1	mg/kg	TM30/PM15			
Chromium **M	19.2	17.7							<0.5	mg/kg	TM30/PM15			
Copper #M	8	16							<1	mg/kg	TM30/PM15			
Lead #M	14	11							<5	mg/kg	TM30/PM15			
Mercury #M	<0.1	<0.1					ွစ.		<0.1	mg/kg	TM30/PM15			
Nickel #M	17.0	22.3					2112		<0.7	mg/kg	TM30/PM15			
Selenium #M	<1	<1				Š	ne,		<1	mg/kg	TM30/PM15			
Vanadium	9	11				17. UH			<1	mg/kg	TM30/PM15			
Water Soluble Boron #M	0.2	0.2			ء ۾	of kot it			<0.1	mg/kg	TM74/PM32			
Zinc #M	99	88			205.20	9,			<5	mg/kg	TM30/PM15			
					DILLOUIS									
VOC TICs	ND	See Attached		inspection of the control of the con	y Street					None	TM15/PM10			
Methyl Tertiary Butyl Ether #	<2	<2		Decition of	MILL				<2	ug/kg	TM15/PM10			
Benzene #	<3	<3		inspire					<3	ug/kg	TM15/PM10			
Toluene #	<3	<3	Ŷ	OI VILE					<3	ug/kg	TM15/PM10			
Ethylbenzene #	<3	<3	c	Cos.					<3	ug/kg	TM15/PM10			
m/p-Xylene #	<5	<5	40						<5	ug/kg	TM15/PM10			
o-Xylene #	<3	<3	nself						<3	ug/kg	TM15/PM10			
Surrogate Recovery Toluene D8	89	92	Cor						<0	%	TM15/PM10			
Surrogate Recovery 4-Bromofluorobenzene	81	85							<0	%	TM15/PM10			
SVOC TICs	ND	ND								None	TM16/PM8			
TPH CWG														
Aliphatics														
>C5-C6 **M	<0.1	<0.1							<0.1	mg/kg	TM36/PM12			
>C6-C8 #M	<0.1	<0.1							<0.1	mg/kg	TM36/PM12			
>C8-C10	<0.1	0.3							<0.1	mg/kg	TM36/PM12			
>C10-C12 **M	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16			
>C10-C12 >C12-C16 **M	<4	<4							<4	mg/kg	TM5/PM8/PM16			
>C12-C16 >C16-C21 #M	<7	<7							<7		TM5/PM8/PM16			
	<7	<7								mg/kg	TM5/PM8/PM16			
>C21-C35 #M									<7	mg/kg	TM5/PM8/PM16 TM5/TM38/PM8/PM12/PM16			
Total aliphatics C5-35	<19	<19							<19	mg/kg	IMS/PM8/PM12/PM16			

Client Name: AECOM

Reference: PR-423449

Location: Ringaskiddy
Contact: Edel O'Hannelly

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Job No:	19/12086										
EMT Sample No.	31-33	34-36									
Sample ID	DUP-02	DUP-02									
Depth	0.00-1.00	1.00-2.00									
COC No / misc										e attached n ations and a	
Containers	٧J	٧J									
Sample Date	24/07/2019	24/07/2019									
Sample Type	Clay	Clay									
Batch Number	1	1							LOD/LOR	Units	Method No.
Date of Receipt	26/07/2019	26/07/2019									
TPH CWG  Aromatics											
>C5-EC7#	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>C5-EC7 >EC7-EC8#	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC8-EC10 **M	<0.1	<0.1							<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2							<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16#	<4	<4							<4	mg/kg	TM5/PM8/PM16
>EC16-EC21#	<7	<7					<sub>.</sub> و.		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7					exila		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35#	<19	<19					the the		<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38			چې (	uly, any			<38	mg/kg	TM5/TM38/PM8/PM12/PM16
Alcohols/Acetates					10°50	,o					
Cyclohexane	<50	<50			Dill edil.				<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50		gection of	Miler				<50	ug/kg	TM83/PM10
Natural Moisture Content	5.0	7.0	Consent of C	or install					<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	&'	00					<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	est of						<0.3	mg/kg	TM38/PM20
Chromium III	19.2	17.7	COUSE						<0.5	mg/kg	NONE/NONE
Sample Type	Clay	Clay								None	PM13/PM0
Sample Colour	Medium Brown									None	PM13/PM0
Other Items	stones	sand, stones								None	PM13/PM0
		I	<u> </u>					l			I

AECOM Client Name: SVOC Report : Solid

PR-423449 Reference: Ringaskiddy Location: Edel O'Hannelly Contact: EMT Job No: 19/12086

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
Sample ID	ВН9	вн9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00
COC No / misc										
Containers	٧J									
Sample Date	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019	24/07/2019
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay
Batch Number	1	1	1	1	1	1	1	1	1	1
Date of Receipt	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019
SVOC MS										
Phenois										
0. Old	.40	.40	.40	.40	.40	.40	.40	.40	.40	.40

Sample ID	вн9	вн9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			
Sample Date		24/07/2019		24/07/2019	24/07/2019				24/07/2019	1			
Sample Type Batch Number	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1			Mathad
Date of Receipt		26/07/2019	26/07/2019		26/07/2019		26/07/2019	26/07/2019			LOD/LOR	Units	Method No.
SVOC MS	20/01/2013	20/01/2013	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010			
Phenois													
2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol *M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10 <10	<10	<10	<10 <10	<10	<10	<10 <10	<10	<10	35 <10	<10	ug/kg	TM16/PM8
4-Nitrophenol Pentachlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Pentachiorophenoi Phenoi ***	<10	<10	<10	<10	<10	<10	<10	<10	<10	214	<10	ug/kg ug/kg	TM16/PM8
PAHs	~10	~10	~10	~10	~10	~10	110	110	110	21-7	1.0	agring	
2-Chloronaphthalene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #M	<10	<10	<10	<10	<10	<10	-10	-100	<10	242	<10	ug/kg	TM16/PM8
Naphthalene	<10	<10	<10	<10	<10	<10	<10	×210	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	Tier >10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	A <104	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	114<10H	<10	<10	190	<10	ug/kg	TM16/PM8
Phenanthrene *M	<10	72	<10	<10	<10	<10,05	×10	<10	<10	199	<10	ug/kg	TM16/PM8
Anthracene	<10	24	<10	<10	<10	Pur John	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #M	<10	153	<10	<10	<10	Q11<101V	<10	<10	12	<10	<10	ug/kg	TM16/PM8
Pyrene **M	<10	128	<10	<10	<10	ej<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	94	<10	<10	<100	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene	<10	73	<10	<10	<10 <10 :10 <10 :10 11 :10 11 :10 11 :10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	112	<10	<10	57 × 10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	72	<10	<10	S <10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene Dibenzo(ah)anthracene	<10 <10	32 12	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(ghi)perylene	<10	36	<10	OT <10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	81	<10	011310	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	31	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phthalates												0 0	
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate ***	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
							l		l	l	l		

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12086

EMT Job No:	19/12086												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	ВН9	ВН9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached no	
Containers	V J	V J	V J	V J	V J	V J	VJ	V J	V J	V J			
Sample Date		24/07/2019		24/07/2019				24/07/2019					
Sample Type Batch Number	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1			Method
Date of Receipt		26/07/2019		26/07/2019					26/07/2019		LOD/LOR	Units	No.
SVOC MS													
Other SVOCs	40	40	40	40	40	40	40	40	40	40	40		TM16/PM8
1,2-Dichlorobenzene 1,2,4-Trichlorobenzene ***	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether ***	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10 <10	<10	<10	<10 <10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline Azobenzene	<10	<10 <10	<10 <10	<10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	-10	-10.	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	< <b>₹10</b>	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #M	<10	<10	<10	<10	<10	<10	<10	<b>10</b> <10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	14<104	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene ***	<10	<10	<10	<10	<10	<10	50€10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<100	<b>&gt;</b> <10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachloroethane Isophorone #M	<10 <10	<10	<10 <10	<10 <10	<10 <10	Puz Johin	<10	<10 <10	<10 <10	<10	<10	ug/kg	TM16/PM8 TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10 <10	<10	<10	<10	Q* < 10	<10	<10	<10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10	<10	<10	<160110	71 <10 271 <10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	118	120	127	122	. 8927.0	121	119	123	127	129	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	114	116	118	118	<10 <10 <10 10 10 10 10 10 10 10 10 10 10 10 10 1	118	116	115	119	127	<0	%	TM16/PM8
				*	083								
				Consent of									
				cent									
				Olise									
	1	1	1	1	1	1	1	1	1	1	. ,		

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12086

SVOC Report : Solid

EMT Job No:	19/12086											
EMT Sample No.	31-33	34-36										
Sample ID	DUP-02	DUP-02										
Depth	0.00-1.00	1.00-2.00								Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	٧J	٧J										
Sample Date		24/07/2019										
Sample Type	Clay	Clay										
Batch Number	1	1										Method
Date of Receipt		26/07/2019								LOD/LOR	Units	No.
SVOC MS	20/01/2010	20/01/2010										
Phenols												
2-Chlorophenol *M	<10	<10								<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10								<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dichlorophenol **M	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10								<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10								<10	ug/kg ug/kg	TM16/PM8
·	<10	<10								<10		TM16/PM8
2,4,6-Trichlorophenol 4-Chloro-3-methylphenol	<10	<10									ug/kg	TM16/PM8
4-Unioro-3-methylphenol 4-Methylphenol	<10 <10	<10 <10								<10 <10	ug/kg	TM16/PM8
											ug/kg	1
4-Nitrophenol	<10	<10								<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10								<10	ug/kg	TM16/PM8 TM16/PM8
Phenol *M	<10	<10								<10	ug/kg	TIVIT6/PM8
PAHs "M												
2-Chloronaphthalene #M	<10	<10		Consent of Consent of						<10	ug/kg	TM16/PM8
2-Methylnaphthalene ***	<10	<10						150.		<10	ug/kg	TM16/PM8
Naphthalene	<10	<10						net "		<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10						().		<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10					17.017			<10	ug/kg	TM16/PM8
Fluorene	<10	<10					Mr. of a			<10	ug/kg	TM16/PM8
Phenanthrene *M	<10	<10				رجوي	gre			<10	ug/kg	TM16/PM8
Anthracene	<10	<10				TO THE				<10	ug/kg	TM16/PM8
Fluoranthene #M	<10	<10			,	Spreak				<10	ug/kg	TM16/PM8
Pyrene *M	<10	<10			30	Set ,				<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10			Secret S	Mil				<10	ug/kg	TM16/PM8
Chrysene	<10	<10			institu					<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10		6	11,118					<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10		*	083					<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10		S.	<u>ر</u> م					<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10		M. O.						<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10		rect						<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	(	Con						<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10								<10	ug/kg	TM16/PM8
Phthalates												
Bis(2-ethylhexyl) phthalate	<100	<100								<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100								<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100								<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100		İ						<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100								<100	ug/kg	TM16/PM8
Dimethyl phthalate #M	<100	<100								<100	ug/kg	TM16/PM8
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Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12086

SVOC Report : Solid

EMT Job No:	19/12086											
EMT Sample No.	31-33	34-36										
•												
Sample ID	DUP-02	DUP-02										
Cumple 15	50. 02	50. 02										
Bth	0.00.4.00	4 00 0 00										
Depth	0.00-1.00	1.00-2.00									e attached n ations and a	
COC No / misc										abbievie	alloris aria al	Cionyma
Containers	VJ	VJ										
Sample Date		24/07/2019										
Sample Type	Clay	Clay										
Batch Number	1	1								LOD/LOR	Units	Method No.
Date of Receipt	26/07/2019	26/07/2019										NO.
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #M	<10	<10								<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10								<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10								<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10								<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #M	<10	<10								<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10								<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10								<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10								<10	ug/kg	TM16/PM8
Azobenzene	<10	<10								<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10								<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10						ွစ.		<10	ug/kg	TM16/PM8
Carbazole	<10	<10		Çinsent di (				1115		<10	ug/kg	TM16/PM8
Dibenzofuran #M	<10	<10					á.	<i>der</i>		<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10					1. 40	Ĩ		<10	ug/kg ug/kg	TM16/PM8
Hexachlorobutadiene **M	<10	<10					all all			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10				چې	160			<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10				205.36	,			<10	ug/kg ug/kg	TM16/PM8
Isophorone #M	<10	<10				MIL MI				<10	ug/kg ug/kg	TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10			. 3	18, 1801				<10	ug/kg ug/kg	TM16/PM8
Nitrobenzene **M	<10	<10			cito	nex				<10	ug/kg ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	123	125			- 2000	4				<0	wg/kg	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	114	118			the thi					<0	%	TM16/PM8
Curregate receivery p Terpriteriyi 414	114	110		Ŷ	or Alice					<b>\</b> 0	70	TIVITO/T IVIO
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Client Name: AECOM VOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12086

EMT Job No:	19/12086												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	ВН9	ВН9	BH10	BH10	BH11	BH11	BH12	BH12	BH28	BH28			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached r ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			
Sample Date			24/07/2019						24/07/2019				
Sample Type Batch Number	Clay	Clay	Clay	Clay	Clay	Clay 1	Clay	Clay	Clay 1	Clay 1			Made
Date of Receipt	1 26/07/2019	1 26/07/2019	1 26/07/2019	1 26/07/2019	1 26/07/2019	26/07/2019	1 26/07/2019	1 26/07/2019			LOD/LOR	Units	Method No.
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Chloromethane # Vinyl Chloride	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	<3 <2	ug/kg ug/kg	TM15/PM10 TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) # trans-1-2-Dichloroethene #	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	<30 <3	ug/kg ug/kg	TM15/PM10
trans-1-2-Dichloroethene 1,1-Dichloroethane#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chloroform # 1,1,1-Trichloroethane #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
1,1,1-1 richioroethane " 1,1-Dichloropropene #	<3 <3	<3 <3	<3	<3 <3	<3 <3	<3 <3	<3 <3	7 153 Sg.	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	net <3	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane#	<4	<4	<4	<4	<4	<4	14.<4.4	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	3 3 6 3 3 110 5 5 110 5 5 110 5 5 110 5 5 110 5 5 110 5 5 110 5 5 110 5 5 110 5 5 110 5 11	<3	nly.<4hy	<3	<3	<3	<3	ug/kg	TM15/PM10
Trichloroethene (TCE)#	<3 <6	<3 <6	<3 <6	<3 <6	<3	<3.0°	<b>6</b> √ <3	<3 <6	<3 <6	<3 <6	<3 <6	ug/kg	TM15/PM10
1,2-Dichloropropane # Dibromomethane #	<3	<3	<3	<3	<3	Olifo III	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3 :.0	33	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	SOUTH	WIIC <4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	inshi	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene 1,1,2-Trichloroethane#	<3 <3	<3 <3	<3 <3	<3 <3	N 1530	<3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3 📢	of the state of th	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	Out <3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	315E3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3 (	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene # 1,1,1,2-Tetrachloroethane #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15_A/PM10
Bromoform Isopropylbenzene#	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene # 2-Chlorotoluene	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	ug/kg ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	5	<3	ug/kg ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene#	<6	<6	<6	<6	<6	<6	<6	<6	<6	17	<6	ug/kg	TM15/PM10
sec-Butylbenzene # 4-Isopropyltoluene #	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 6	<4 <4	ug/kg ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg ug/kg	TM15/PM10
1,4-Dichlorobenzene#	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	8	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane # 1,2,4-Trichlorobenzene #	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	ug/kg ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	100	95	96	102	99	96	101	99	93	67	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	97	88	84	95	91	91	91	93	75	62	<0	%	TM15/PM10

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12086

VOC Report : Solid

EMT Sample No. 31-33 34-36 DUP-02 DUP-02 Sample ID Depth 0.00-1.00 1.00-2.00 Please see attached notes for all COC No / misc abbreviations and acronyms ٧J Containers V J Sample Date 24/07/2019 24/07/2019 Clay Batch Number Method LOD/LOR Units 26/07/2019 26/07/2019 Date of Receipt VOC MS TM15/PM1 Dichlorodifluoromethane ug/kg <2 TM15/PM10 <2 <2 Methyl Tertiary Butyl Ether 1 <2 ug/kg Chloromethane i <3 <3 <3 ug/kg TM15/PM1 Vinyl Chloride <2 <2 <2 TM15 A/PM10 ug/kg TM15/PM10 Bromomethane <1 <1 <1 ug/kg TM15/PM10 Chloroethane <sup>4</sup> <2° **~**2 <2 ug/kg Trichlorofluoromethane # <2 <2 <2 ug/kg TM15/PM10 TM15/PM10 1,1-Dichloroethene (1,1 DCE) # <6 <6 <6 ug/kg TM15/PM10 <30 <30 <30 Dichloromethane (DCM) ug/kg trans-1-2-Dichloroethene # <3 <3 <3 ug/kg TM15/PM10 1,1-Dichloroethane# <3 <3 <3 ug/kg TM15/PM10 TM15/PM10 cis-1-2-Dichloroethene <3 <3 <3 ug/kg 2.2-Dichloropropane <4 **<**4 <4 ug/kg TM15/PM10 Bromochloromethane \* <3 <3 <3 TM15/PM10 ug/kg Chloroform # TM15/PM10 <3 <3 <3 ua/ka 1,1,1-Trichloroethane # TM15/PM10 <3 <3 <3 ug/kg 1,1-Dichloropropene <3 <3 <3 ug/kg TM15/PM10 TM15/PM10 Carbon tetrachloride # <4 <4 ug/kg TM15/PM10 <4 <4 1,2-Dichloroethane <4 ug/kg Benzene # <3 <3 <3 ug/kg TM15/PM10 <3 TM15/PM10 Trichloroethene (TCE) # <3 <3 ug/kg <6 <6 TM15/PM10 <6 1.2-Dichloropropane ua/ka Dibromomethane # TM15/PM10 <3 <3 -3 ug/kg <3 <3 <3 ug/kg TM15/PM10 Bromodichloromethane # TM15/PM10 cis-1-3-Dichloropropene <4 <4 <4 ug/kg Toluene \* <3 TM15/PM10 <3 <3 ug/kg trans-1-3-Dichloropropene <3 <3 <3 ug/kg TM15/PM10 1,1,2-Trichloroethane <3 <3 <3 ug/kg TM15/PM10 TM15/PM10 Tetrachloroethene (PCF) <3 <3 <3 ug/kg 1,3-Dichloropropane <3 <3 <3 ug/kg TM15/PM10 Dibromochloromethane # <3 <3 <3 TM15/PM10 ug/kg TM15/PM10 1.2-Dibromoethane <3 <3 <3 ug/kg TM15/PM10 Chlorobenzene \* <3 <3 <3 ug/kg 1,1,1,2-Tetrachloroethane # <3 <3 <3 ug/kg TM15/PM10 TM15/PM10 Ethylbenzene # <3 <3 ug/kg TM15/PM10 <5 <5 m/p-Xvlene <5 ug/kg TM15/PM10 o-Xylene <sup>‡</sup> <3 <3 <3 ug/kg Styrene <3 <3 ug/kg TM15\_A/PM10 <3 Bromoform <3 <3 TM15/PM1 <3 ug/kg lsopropylbenzene # TM15/PM10 <3 <3 <3 ug/kg 1,1,2,2-Tetrachloroethane # <3 <3 <3 ug/kg TM15/PM10 TM15/PM10 <2 <2 <2 Bromobenzene ug/kg TM15/PM10 <4 1.2.3-Trichloropropane \* <4 <4 ug/kg Propylbenzene # <4 <4 <4 ug/kg TM15/PM10 <3 <3 TM15/PM10 <3 ug/kg TM15/PM10 1.3.5-Trimethylbenzene <3 <3 <3 ug/kg 4-Chlorotoluene <3 <3 <3 ug/kg TM15/PM10 tert-Butylbenzene # <5 <5 <5 TM15/PM10 ug/kg TM15/PM10 1.2.4-Trimethylbenzene \* <6 <6 <6 ua/ka TM15/PM10 sec-Butylbenzene \* <4 <4 <4 ug/kg 4-Isopropyltoluene# <4 <4 <4 TM15/PM10 ug/kg 1,3-Dichlorobenzene # <4 ug/kg TM15/PM10 TM15/PM10 <4 1.4-Dichlorobenzene # <4 <4 ug/kg n-Butylbenzene# <4 <4 <4 ug/kg TM15/PM10 <4 TM15/PM10 1,2-Dichlorobenzene # ug/kg 1.2-Dibromo-3-chloropropane <4 <4 <4 TM15/PM10 ua/ka TM15/PM10 1,2,4-Trichlorobenzene <7 <7 <7 ug/kg Hexachlorobutadiene <4 <4 <4 ug/kg TM15/PM10 Naphthalene <27 TM15/PM10 <27 <27 ug/kg 1,2,3-Trichlorobenzene# TM15/PM10 <7 <7 <7 ug/kg Surrogate Recovery Toluene D8 89 92 <0 % TM15/PM10 TM15/PM1 85

Job number: 19/12086 Method: VOC Sample number: 16 Matrix: Solid

Sample identity:BH11Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
13395-76-1	Cyclohexanone, 2,3-dimethyl-	6.273	87	132
4551-51-3	1H-Indene, octahydro-, cis-	6.770	95	131
91-17-8	Naphthalene, decahydro-	7.219	93	268
1000152-47-3	trans-Decalin, 2-methyl-	7.547	97	166
1000155-85-6	cis-Decalin, 2-syn-methyl-	7.698 - 7.827	92,95,96	141
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Job number: 19/12086 Method: VOC Sample number: 28 Matrix: Solid

Sample identity:BH28Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	7.379 - 7.584	93,93	125
112-40-3	Dodecane	7.780	86	150
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Job number: 19/12086 Method: VOC Sample number: 34 Matrix: Solid

Sample identity:DUP-02Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2040-95-1	Cyclopentane, butyl-	5.927	91	133
3728-55-0	1-Ethyl-3-methylcyclohexane (c,t)	5.954	91	131
1678-92-8	Cyclohexane, propyl-	6.273	83	221
15869-93-9	Octane, 3,5-dimethyl-	6.367	81	257
13151-34-3	Decane, 3-methyl-	7.058	96	163
2808-75-5	1-Methyl-2-methylenecyclohexane	7.098	89	199
493-01-6	Naphthalene, decahydro-, cis-	7.219	92	533
73937-05-0	1-Tetradecanol, 14-chloro-	7.332	87	182
3282-53-9	Cyclohexene, 1-butyl-	7.514,&	93	213
1000152-47-3	trans-Decalin, 2-methyl-	7,551 157,658 - 7.787 7.698	95	552
2958-76-1	Naphthalene, decahydro-2-methyl-	7.638 - 7.787	93,97	275
16021-08-2	2(1H)-Naphthalenone, octahydro-, trans-	7.698	91	158
1000155-85-6	cis-Decalin, 2-syn-methyl-	7.827	90	118
1000111-72-1	Naphthalene, decahydro-2-methyl- 2(1H)-Naphthalenone, octahydro-, trans- cis-Decalin, 2-syn-methyl- trans,trans-1,6-Dimethylspiro[4.5]decane  Consent of Constitute of Consent o	7.944 - 8.025	89,94	118
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Job number:19/12086Method:SVOCSample number:18Matrix:Solid

Sample identity:BH11Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
2958-76-1	Naphthalene, decahydro-2-methyl-	6.375	89	140
62016-76-6	Nonadecane, 1-chloro-	13.641	92	355
646-31-1	Tetracosane	14.092	89	547
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Job number: 19/12086 Method: SVOC Sample number: 24 Matrix: Solid

Sample identity:BH12Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
646-31-1	Tetracosane	13.160	90	408
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Job number: 19/12086 Method: SVOC Sample number: 30 Matrix: Solid

Sample identity:BH28Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
124-18-5	Decane	5.289	91	1078
17302-32-8	Nonane, 3,7-dimethyl-	5.998	81	400
1120-21-4	Undecane	6.255	94	3008
1002-43-3	Undecane, 3-methyl-	6.861	87	1231
112-40-3	Dodecane	7.086	96	4178
13287-24-6	Nonadecane, 9-methyl-	7.553	80	1608
2051-30-1	Octane, 2,6-dimethyl-	7.631	80	1129
25117-31-1	Tridecane, 5-methyl-	8.154	92	1360
582-16-1	Naphthalene, 2,7-dimethyl-	8.401,50	89	1632
629-59-4	Naphthalene, 2,7-dimethyl- Tetradecane Naphthalene, 1,7-dimethyl- Naphthalene, 1,4-dimethyl- Pentadecane Naphthalene, 2,3,6-trimethyl- Naphthalene, 1,6,7-trimethyl- Naphthalene, 1,4,6-trimethyl- Tetratetracontane Hexadecane Pentadecane, 2,6,10-trimethyl-	8,436	96	13936
575-37-1	Naphthalene, 1,7-dimethyl-	n14 at 8.493	97	6065
571-58-4	Naphthalene, 1,4-dimethyl-	8.612	90	1863
629-62-9	Pentadecane Putte Equit	9.018	96	24364
829-26-5	Naphthalene, 2,3,6-trimethyl-	9.120	97	5738
2245-38-7	Naphthalene, 1,6,7-trimethyl-	9.149	98	5049
2131-42-2	Naphthalene, 1,4,6-trimethyl-	9.237	97	4597
7098-22-8	Tetratetracontane	9.362	87	3662
544-76-3	Hexadecane conservation control of the control of t	9.545	96	23463
3892-00-0	Pentadecane, 2,6,10-trimethyl-	9.820	97	4669
629-73-2	Cetene	9.846	83	2972
2717-39-7	1,4,5,8-Tetramethylnaphthalene	9.986	92	6883
629-78-7	Heptadecane	10.052	91	23369
31295-56-4	Dodecane, 2,6,11-trimethyl-	10.107	87	14769
112-88-9	1-Octadecene	10.228	90	6184
629-50-5	Tridecane	10.272	91	9935
26429-11-8	Heptadecane, 4-methyl-	10.338	90	8091
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	10.603	94	13783
67388-11-8	4-Methylnaphtho[1,2-b]thiophene	10.768	94	4908
629-92-5	Nonadecane	10.977	97	23172
18435-45-5	1-Nonadecene	11.043	92	5241

Job number: 19/12086 Method: SVOC Sample number: 30 Matrix: Solid

Sample identity:BH28Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
31317-19-8	2,7-Dimethyldibenzothiophene	11.230	95	4781
1560-84-5	Eicosane, 2-methyl-	11.296	91	5612
1136-85-2	3,7-Dimethyldibenzothiophene	11.318	97	3309
112-95-8	Eicosane	11.415	98	14524
593-45-3	Octadecane	11.575	91	5015
1000351-81-4	Dotriacontyl pentafluoropropionate	11.895	87	3607
15096-10-3	Benzene, 1,1'-[(methylthio)ethenylidene]bis-	11.937	87	5408
62016-76-6	Nonadecane, 1-chloro-	12.030	92	3391
56009-20-2	Cyclohexane, 1-(1,5-dimethylhexyl)-4-(4-methylpentyl)-	12.224	86	2995
629-94-7	Heneicosane	12,\$86	90	5478
7320-37-8	Oxirane, tetradecyl-	तार्थ राष्ट्री 2.645	87	3764
27458-90-8	Disulfide, di-tert-dodecyl	12.991	90	1672
	Cyclohexane, 1-(1,5-dimethylhexyl)-4-(4-methylpentyl)- Heneicosane Oxirane, tetradecyl- Disulfide, di-tert-dodecyl  Consent of contribute titerature of the contribute titerature of the contribute of the contrib			

Client Name: AECOM
Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 19/12086	
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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.: 19/12086

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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. 10729) 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 ISQL 1005.  BS AQC Sample  LB Blank Sample		
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 ISQC TOPS and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
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 ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
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 haboratory.  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 7 005 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	В	Indicates analyte found in associated method blank.
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 ISQ4 Total S and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	DR	Dilution required.
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 ISQL 1005 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	M	MCERTS accredited.
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 Taboratory.  AD Samples are dried at 35°C ±5°C  CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISCAT 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NA	Not applicable
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 ISQL 100 5 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NAD	No Asbestos Detected.
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 ISQL 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	ND	None Detected (usually refers to VOC and/SVOC TICs).
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 ISQL 7025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NDP	No Determination Possible
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 ISQL 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SS	Calibrated against a single substance
+ 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 ISQ 70°25 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
++ 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 ISQ 77025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	W	Results expressed on as received basis.
* 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 ISQ17025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
Analysis subcontracted to all 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 ISQL 7025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	++	Result outside calibration range, results should be considered as indicative only and are not accredited.
CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	AD	Samples are dried at 35°C ±5°C
ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	СО	Suspected carry over
NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	LOD/LOR	
NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	ME	Matrix Effect autority Effect
BS AQC Sample  LB Blank Sample  A Client Sample	NFD	No Fibres Detected
LB Blank Sample	BS	AQC Sample Got Tried
N. Clicat Comple	LB	Blank Sample
N Client Sample	N	Client Sample Trip Blank Sample
TB Trip Blank Sample	ТВ	Trip Blank Sample
OC Outside Calibration Range	OC	

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required tractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	. Y	+ O.Z.	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PMOJ COP	No preparation is required.			AR	No
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.			AR	Yes
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		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (lon-Chromatography).	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM1291 con	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
			ay any other use.				
			Special on the realized for any other tree.				
		cotif	Section Let Liebt Owner L				
		nsent of cop					
		Cor					



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Zone 3

Deeside Industrial Park

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AECOM 1st Floor, Montrose House Carrigaline Road Douglas Cork

Ireland







Edel O'Hannelly Attention:

6th August, 2019 Date:

PR-423449 Your reference :

Test Report 19/12278 Batch 1 Our reference :

Location:

Date samples received:

30th July, 2019

Status:

Final report

Issue:

1

Seventeen samples were received for analysis on 30th July, 2019 of which seventeen 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 outsi Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Paul Boden BSc Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR-423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

Report : Solid

<b>EMT Job</b>	No:	19/12278

EMT Job No:	19/12278												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03			
Depth	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00		e attached n ations and a	
COC No / misc													
Containers	VJ	VJ	VJ	VJ	VJ	VJ	VJ	VJ	٧J	٧J			
Sample Date	25/07/2019	25/07/2019			25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019			No.
Arsenic **M	7.6	12.1	11.6	22.4	11.4	15.8	12.9	10.8	21.1	12.4	<0.5	mg/kg	TM30/PM15
Barium <sup>#M</sup>	32	64	56	44	71	50	77	28	36	58	<1	mg/kg	TM30/PM15
Beryllium	0.7	1.1	1.2	0.9	1.0	1.4	1.7	0.5	1.3	1.0	<0.5	mg/kg	TM30/PM15
Cadmium **M Chromium **M	<0.1 40.9	0.8 43.3	1.2 39.6	0.6 29.4	0.5 36.9	0.2 47.7	3.6 45.8	0.3 24.6	0.3 27.7	0.9 35.0	<0.1 <0.5	mg/kg mg/kg	TM30/PM15 TM30/PM15
Copper **M	18	43.3	19	29.4	24	26	19	13	20	19	<0.5	mg/kg	TM30/PM15
Lead *M	19	47	47	22	102	38	29	14	69	47	<5	mg/kg	TM30/PM15
Mercury **M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<b>~</b> 0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel *M	30.6	33.4	34.8	33.7	26.0	43.0	94.5	100	27.5	31.0	<0.7	mg/kg	TM30/PM15
Selenium **M	<1	<1	1	<1	<1	<1	1 8	(1 <sup>(2)</sup> <1	<1	1	<1	mg/kg	TM30/PM15
Vanadium	19	29	25	15	24	26	114,53114	15	19	26	<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.3	0.8	0.3	0.3	2.3	0.3	(0.3	0.2	0.4	0.7	<0.1	mg/kg	TM74/PM32
Zinc #M	90	162	162	100	24 2.3 129 ND 110 ND 11	1433	265	54	110	158	<5	mg/kg	TM30/PM15
VOC TIC-	ND	ND	ND	ND	ND . Ó	y by logs	ND	ND	ND	ND		Ness	TM45/DM40
VOC TICs  Methyl Tertiary Butyl Ether #	ND <2	ND <2	ND <2	ND <2	ND TIC	MIEND	ND -2	ND <2	ND <2	ND <2	<2	None ug/kg	TM15/PM10 TM15/PM10
Benzene#	<3	<3	<3	<3	instanto	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	5 🕏	07/3	<3	<3	<3	<3	8	<3	ug/kg	TM15/PM10
Ethylbenzene#	<3	<3	<3	<3 &	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	SET OF	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	CO11253 97	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	103	94	103	-	93	105	97	102	105	104	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	96	82	100	88	76	102	96	93	100	90	<0	%	TM15/PM10
SVOC TICs	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		None	TM16/PM8
TPH CWG													
Aliphatics													
>C5-C6 **M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10 >C10-C12 **M	<0.1 <0.2	<0.1	<0.1	<0.1 <0.2	<0.1 <0.2	<0.1	<0.1	<0.1	<0.1	<0.1 <0.2	<0.1 <0.2	mg/kg	TM36/PM12 TM5/PM8/PM16
>C10-C12 >C12-C16 #M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg mg/kg	TM5/PM8/PM16
>C16-C21 #M	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #M	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM16
		L			L		t	L		t	l		1

Client Name: AECOM

Reference: PR-423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

**EMT Job No:** 19/12278

Report : Solid

	13/12270										-		
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03			
Depth	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	Please se	e attached n	otes for all
COC No / misc												ations and a	
Containers	٧J	٧J	٧J	٧J	٧٦	٧J	٧٦	٧٦	٧٦	٧J			
Sample Date	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			Mathad
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	LOD/LOR	Units	Method No.
TPH CWG													
Aromatics													
>C5-EC7#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12# >EC12-EC16#	<0.2 <4	<0.2 <4	<0.2	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	<0.2 <4	mg/kg mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>EC16-EC21 #	<7	<7	<7	<7	<7	<7	<7		<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	.7	<7	.7	.7	<z.< td=""><td>&lt;7</td><td>&lt;7</td><td>&lt;7</td><td>mg/kg</td><td>TM5/PM8/PM16</td></z.<>	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35#	<19	<19	<19	<19	<19	<19	<19	ttet 47 19	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	<38	MY SAN	<38	<38	<38	<38	mg/kg	TM5/TM38/PM8/PM12/PM16
Alaska la /A a status						ases.	9 601						
Alcohols/Acetates  Cyclohexane	<50	<50	<50	<50	<b>~50</b>	aur Poulit	<b>-50</b>	<50	<50	<50	<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50	<50	<50	<50	\$\frac{50}{50}	<50	<50	<50	<50	<50	ug/kg	TM83/PM10
,					Dect.	WILL						- 3 3	
Natural Moisture Content	7.8	13.1	14.9	6.6	of 127 bit 0	13.1	<19 colored to 1	10.7	12.7	13.0	<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	<0.3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0/4 OF	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	40.9	43.3	39.6	0129.4	36.9	47.7	45.8	24.6	27.7	35.0	<0.5	mg/kg	NONE/NONE
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		None	PM13/PM0
Sample Colour	Medium Brown	-	Medium Brown			Medium Brown	Medium Brown	Medium Brown		Medium Brown		None	PM13/PM0
Other Items	stones	stones, vegetation	stones	stones	stones	stones	stones	stones, vegetation	stones	stones, vegetation		None	PM13/PM0
	1	J	l	l	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	ı			

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Ringaskiddy Edel O'Hannelly

**EMT Job No:** 19/12278

Contact:

Report : Solid

EMT Sample No.	31-33	34-36	37-39	40-42	40.45	40.10						
Į l			0. 00	-U-4Z	43-45	46-48	49-51					
Sample ID	DUP03	BH16	BH16	BH27	BH27	DUP04	DUP04					
Depth	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00			Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date	25/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1					
Date of Receipt		30/07/2019		30/07/2019			30/07/2019			LOD/LOR	Units	Method No.
Arsenic **M	12.0	8.1	1.7	11.8	20.3	6.8	2.6			<0.5	mg/kg	TM30/PM15
Barium #M	49	41	27	51	37	49	32			<1	mg/kg	TM30/PM15
Beryllium	1.3	0.6	<0.5	0.9	1.7	0.6	<0.5			<0.5	mg/kg	TM30/PM15
Cadmium *M	0.9	<0.1	0.3	0.4	0.6	<0.1	0.2			<0.1	mg/kg	TM30/PM15
Chromium #M	41.7	33.5	6.5	41.6	41.8	33.7	10.2			<0.5	mg/kg	TM30/PM15
Copper #M	17	12	3	20	27	11	6			<1	mg/kg	TM30/PM15
Lead *M	44	20	7	43	50	19	7			<5	mg/kg	TM30/PM15
Mercury #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Se.		<0.1	mg/kg	TM30/PM15
Nickel <sup>#M</sup>	39.0	13.5	3.5	30.9	55.9	13.2	6.1	het use.		<0.7	mg/kg	TM30/PM15
Selenium **M	1	<1	<1 3	<1 27	<1	<1	<1	C.		<1	mg/kg	TM30/PM15 TM30/PM15
Vanadium Water Soluble Boron ***	26 0.2	18 0.5	0.2	0.4	27 0.2	18	714.2 114.2			<1 <0.1	mg/kg mg/kg	TM74/PM32
Zinc **M	167	48	20	123	247	425	28			<5	mg/kg	TM30/PM15
						0.4 42 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					99	
VOC TICs	ND	ND	ND	ND	ND tion	ND	ND				None	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	A COLO	WIII <2	<2			<2	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	THE THE	<3	<3			<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3 ❖	02 <sup>3</sup> <3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3 &	<3	<3	<3			<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	On 58 Or	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	Olissa 2013	<3	<3	<3			<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8 Surrogate Recovery 4-Bromofluorobenzene	103 91	96 81	77 74	56 51	103 99	96 84	104 100			<0 <0	%	TM15/PM10 TM15/PM10
Surrogate Recovery 4-Bromondobenzene	91	01	74	51	99	04	100			<0	70	TWT5/FWT0
SVOC TICs	ND	See Attached	ND	ND	ND	ND	ND				None	TM16/PM8
TPH CWG												
Aliphatics												
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 **M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M >C16-C21 #M	<4 <7	<4	<4 <7	<4 <7	<4	<4 <7	<4 <7			<4 <7	mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>C16-C21 **** >C21-C35 **M	<7	<7 <7	<7	<7 <7	<7 <7	<7	<7			<7 <7	mg/kg mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	<19			<19	mg/kg	TM5/TM38/PM8/PM12/PM16
		1.0	1.0	1.0	1.5		1.0			1.0	9"19	

AECOM Client Name:

PR-423449 Reference: Location:

Ringaskiddy Edel O'Hannelly Contact:

EMT Job No: 19/12278 Report : Solid

LIII OOD NO.	13/122/0									-		
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	DUP03	BH16	BH16	BH27	BH27	DUP04	DUP04					
Depth	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00			Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date	25/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019	26/07/2019					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1					Method
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019			LOD/LOR	Units	No.
TPH CWG												
Aromatics												
>C5-EC7# >EC7-EC8#	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1 <0.1			<0.1 <0.1	mg/kg	TM36/PM12 TM36/PM12
>EC7-EC8" >EC8-EC10 #M	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1 <0.1	<0.1	<0.1			<0.1	mg/kg mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2	<0.2	<0.1	<0.1	<0.2	<0.1			<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21#	<7	<7	<7	<7	<7	<7	<7	her use.		<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7	<7	<7	<7	<7	<7	<7	pet 118		<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19	<19	<19	<19	<19	<19	di.		<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	<38	<38	<38	Oli of gar,			<38	mg/kg	TM5/TM38/PM8/PM12/PM16
Alcohols/Acetates						2020	Pic					
Cyclohexane	<50	<50	<50	<50	<50	011/25011/11	<50			<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50	<50	<50	<50	€×50	<50			<50	ug/kg	TM83/PM10
					Teber 0	W.						
Natural Moisture Content	16.4	10.6	2.9	12.1	or 11/4 2011 or 11/4 2011 <0.3	10.9	<19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 control <19 co			<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	<0.3							<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.03 Or <0.03 Or <0.03 Or	<0.3	<0.3	<0.3			<0.3	mg/kg	TM38/PM20 NONE/NONE
Chromium III	41.7	33.5	6.5	CO141.6	41.8	33.7	10.2			<0.5	mg/kg	NONE/NONE
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay				None	PM13/PM0
Sample Colour	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown				None	PM13/PM0
Other Items	stones, chalk	stones, chalk, vegetation	stones, sand	stones, vegetation	stones, chalk	stones, vegetation	stones				None	PM13/PM0

AECOM Client Name: SVOC Report : Solid

PR-423449 Reference: Ringaskiddy Location: Edel O'Hannelly Contact: EMT Job No: 19/12278

	EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	l
	Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03	
	Depth	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	l
	COC No / misc											l
	Containers	٧J	l									
	Sample Date	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	l
	Sample Type	Clay										
	<b>Batch Number</b>	1	1	1	1	1	1	1	1	1	1	Ι,
	Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	Ľ
SVOC MS												Γ
		1	1									1

Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03			
Depth COC No / misc	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00		e attached n ations and a	
Containers	٧J	VJ	VJ	٧J	٧J	VJ	VJ	٧J	٧J	٧J			
Sample Date Sample Type	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay	25/07/2019 Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	1.00/1.00	11.5.	Method
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	LOD/LOR	Units	No.
SVOC MS													
Phenols 2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol 2,4,5-Trichlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol Pentachlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8						
Phenoi **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene *** Naphthalene	<10 <10	<10.	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8						
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	net 210	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	14<104	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	50× 10°	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenanthrene **M Anthracene	<10 <10	<10 <10	<10 <10	<10 <10	<10	<10.0	<10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Fluoranthene #M	<10	<10	<10	<10	19	OUT 101111	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Pyrene #M	<10	<10	<10	<10	18 💢	ej<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<1000	×10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene Benzo(bk)fluoranthene	<10 <10	<10 <10	<10 <10	<10 <10	11/8/11/	<10	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	00 14 <10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	-10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene Benzo(b)fluoranthene	<10 <10	<10 <10	<10 <10 (	On \$10 <10	<10 17	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg	TM16/PM8 TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate Di-n-butyl phthalate	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	ug/kg ug/kg	TM16/PM8 TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Dimethyl phthalate **M	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
		<u> </u>						<u> </u>	l	l	l		<u> </u>

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12278

EMT Job No:	19/12278												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03			
Depth COC No / misc	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00		e attached neations and ac	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			
Sample Date	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			Method
Date of Receipt				30/07/2019		30/07/2019			30/07/2019		LOD/LOR	Units	No.
SVOC MS	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010	00/01/2010			
Other SVOCs													
	40	40	40	40	40	40	40	40	40	40	40		TM16/PM8
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	
1,2,4-Trichlorobenzene **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	-10	-100	<10	<10	<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	× 110	<10	<10	<10	ug/kg	TM16/PM8
Dibenzofuran #M	<10	<10	<10	<10	<10	<10	<10	net 210	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	1 -104	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene #M	<10	<10	<10	<10	<10	<10	114<104°C	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	-10	-10.05	10	<10	<10	<10	<10		TM16/PM8
					<10	Puz Johin	10					ug/kg	
Hexachloroethane	<10	<10	<10	<10	<10	JIPO JII	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Isophorone #M	<10	<10	<10	<10	<10	Pur John	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #M	<10	<10	<10	<10	<10	10 < 10 10 < 10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	123	126	130	115	<10 <10 to <10 to <10 to to to to	121	124	127	129	128	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	123	123	122	120	Dr 7158	118	121	126	128	126	<0	%	TM16/PM8
				*	°6,								
				onsent of	0								
				all									
				3136									
			(										
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Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Lob No: 19/12278

EMT Job No:	19/12278	-										
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	DUP03	BH16	BH16	BH27	BH27	DUP04	DUP04					
Depth COC No / misc	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				e attached nations and a	
Containers	V J	V J	V J	V J	V J	V J	V J					
Sample Date Sample Type	25/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay					
Batch Number	1	1	1	1	1	1	1					Method
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019				LOD/LOR	Units	No.
SVOC MS												
Phenois											_	
2-Chlorophenol **M 2-Methylphenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg	TM16/PM8 TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
2,4-Dichlorophenol #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol 4-Methylphenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Phenol #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
PAHs											-	
2-Chloronaphthalene **M	<10	<10	<10	<10	<10	<10	<10	0.0		<10	ug/kg	TM16/PM8
2-Methylnaphthalene **M Naphthalene	<10 <10	75 21	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	her use.		<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	hei		<10	ug/kg ug/kg	TM16/PM8
Acenaphthene	<10	<10	<10	<10	<10	<10	A<104			<10	ug/kg	TM16/PM8
Fluorene	<10	<10	<10	<10	<10	<10	114<104 10510			<10	ug/kg	TM16/PM8
Phenanthrene *M	<10	34	<10	<10	<10	16,00	<10			<10	ug/kg	TM16/PM8
Anthracene	<10 <10	<10 <10	<10 <10	<10 24	<10 <10	OUI TOUR	<10 <10			<10 <10	ug/kg	TM16/PM8 TM16/PM8
Fluoranthene **M Pyrene **M	<10	<10	<10	24	<10	16,65 16,65 16,10 12,111 12,111 1,11 1,11 1,11 1,11 1,11 1,11 1,11 1,11 1,11 1,11 1,11 1,1	<10			<10	ug/kg ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10		<10 · 0	1110 × 10	<10			<10	ug/kg	TM16/PM8
Chrysene	<10	<10	<10	17	1000 of 1000 o	<10	<10			<10	ug/kg	TM16/PM8
Benzo(bk)fluoranthene	<10	<10	<10	4.2	07 × 10		<10			<10	ug/kg	TM16/PM8
Benzo(a)pyrene	<10	<10	<10	15	o₹10	<10	<10			<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene Dibenzo(ah)anthracene	<10 <10	<10 <10	<10 <10	<10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	713-10 17	<10	<10	<10			<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene	<10	<10	<10 (	17	<10	12	<10			<10	ug/kg	TM16/PM8
Benzo(k)fluoranthene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Phthalates	-100	-100	-100	-100	-100	-100	-100			-100	110/100	TM46/DM0
Bis(2-ethylhexyl) phthalate Butylbenzyl phthalate	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100			<100 <100	ug/kg ug/kg	TM16/PM8 TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
Dimethyl phthalate #M	<100	<100	<100	<100	<100	<100	<100			<100	ug/kg	TM16/PM8
												1

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12278

EMT Job No:	19/12278											
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	DUP03	BH16	BH16	BH27	BH27	DUP04	DUP04					
Depth	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00			DI		-4 fII
COC No / misc	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				e attached n ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					•
Sample Date				26/07/2019								
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay					
Batch Number	1	1	1	1	1	1	1			100/100	Heite	Method
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019			LOD/LOR	Units	No.
SVOC MS												
Other SVOCs												
1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #M	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2-Nitroaniline 2,4-Dinitrotoluene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg	TM16/PM8 TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
4-Bromophenylphenylether ***	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10	<10	<10	her use.		<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	ei		<10	ug/kg	TM16/PM8
Dibenzofuran *M	<10	<10	<10	<10	<10	<10	<10	XI.		<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	14<10H			<10	ug/kg	TM16/PM8
Hexachlorobutadiene #M	<10	<10	<10	<10	<10	<10 <10 e5 1	<10 619<10 719<10 <10			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene Hexachloroethane	<10	<10 <10	<10	<10 <10	<10 <10	<10,00	×<10			<10	ug/kg	TM16/PM8 TM16/PM8
Isophorone #M	<10 <10	<10	<10 <10	40	<10	AY AV	<10			<10 <10	ug/kg ug/kg	TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10	<10	<10	<10	\$210	<10			<10	ug/kg ug/kg	TM16/PM8
Nitrobenzene **M	<10	<10	<10	<10	<16010	111E < 10	<10			<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	122	127	126	128	227x 0	127	126			<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	121	124	127	123	<10 <10 to <10 to <10 to <10 to <10 to	125	125			<0	%	TM16/PM8
				*	2037							
				S.	0,4							
				M.O.								
				30501								
			(	Consent of								

AECOM Client Name: **VOC Report:** Solid

PR-423449 Reference: Ringaskiddy Location: Edel O'Hannelly Contact:

Contact:	Edel O'Ha	ınnelly										
EMT Job No:	19/12278											
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30		
Sample ID	BH26	BH13	BH13	BH14	BH14	BH17	BH17	BH18	BH18	DUP03		
Depth	0.00-0.85	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	Please se	e attached n
COC No / misc											abbrevi	ations and a
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J		
Sample Date	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019	25/07/2019		
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units
Date of Receipt	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	LOD/LOR	Offics
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg
1,1-Dichloroethene (1,1 DCE)#	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	ug/kg
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
1,1-Dichloroethane#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
Chloroform#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg
1,1,1-Trichloroethane#	<3	<3	<3	<3	<3	<3	<3	of 153	<3	<3	<3	ug/kg
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	×3	<3	<3	<3	ug/kg
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	.~~	<4	<4	<4	ug/kg
1,2-Dichloroethane#	<4	<4	<4	<4	<4	<4	4.<4,4	<4	<4	<4	<4	ug/kg
Benzene #	<3	<3	<3	<3	<3	<3 (	714 - 4 0 714 - 414 0 710 - 3	<3	<3	<3	<3	ug/kg
Trichloroethene (TCE)#	<3	<3	<3	<3	<3	<3 co	× × × × × × × × × × × × × × × × × × ×	<3	<3	<3	<3	ug/kg
1,2-Dichloropropane #	<6	<6	<6	<6	<6	alike Still	<6	<6	<6	<6	<6	ug/kg
n., #	_	_	_		_	AY W	_	_		_	_	

notes for all acronyms

Method

TM15/PM1 TM15/PM10

Client Name: AECOM VOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT\_Job No: 19/12278

EMT Job No:	19/12278											
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51			]		
Sample ID	DUP03	BH16	BH16	BH27	BH27	DUP04	DUP04					
Depth COC No / misc	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				e attached r ations and a	
Containers	V J	V J	V J	V J	V J	V J	V J					
Sample Date Sample Type	25/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay	26/07/2019 Clay					
Batch Number	1	1	1	1	Clay 1	1	1					Method
Date of Receipt	30/07/2019		30/07/2019		30/07/2019	30/07/2019				LOD/LOR	Units	No.
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Chloromethane #	<3	4	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Vinyl Chloride Bromomethane	<2 <1	<2 <1	<2 <1	<2 <1	<2 <1	<2 <1	<2 <1			<2 <1	ug/kg	TM15_A/PM10 TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE)#	<6	<6	<6	<6	<6	<6	<6			<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30			<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
2,2-Dichloropropane  Bromochloromethane #	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3			<4 <3	ug/kg	TM15/PM10 TM15/PM10
Chloroform#	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3				<3 <3	ug/kg ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	get use.		<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	of Ils		<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	ne.		<4	ug/kg	TM15/PM10
1,2-Dichloroethane#	<4	<4	<4	<4	<4	<4	A .<4A			<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	3 3 65 3 65 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0111.01<31			<3	ug/kg	TM15/PM10
Trichloroethene (TCE)#	<3	<3	<3	<3	<3	<3,00	<b>8</b> 10 <3			<3	ug/kg	TM15/PM10
1,2-Dichloropropane * Dibromomethane *	<6 <3	<6 <3	<6 <3	<6 <3	<6 <3	aligo lili	<6 <3			<6 <3	ug/kg	TM15/PM10 TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3 . 0	15 53 V	<3			<3	ug/kg ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4CIIC	VIIET <4	<4			<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	<3 to	<3565 1 PH 68 Hill 1 PH 63 HILL 1 PH 64 4 4 4 3 3	<3			<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	opytality of the same of the s	<3	<3			<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	063<3	<3	<3			<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3 &		<3	<3			<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	egt.	<3	<3	<3			<3	ug/kg	TM15/PM10 TM15/PM10
Dibromochloromethane # 1.2-Dibromoethane #	<3 <3	<3 <3	<3 <3 (	Onega of	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	<5	<5	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15_A/PM10 TM15/PM10
Bromoform Isopropylbenzene #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
4-Chlorotoluene tert-Butylbenzene #	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5	<3 <5			<3 <5	ug/kg	TM15/PM10 TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6			<6	ug/kg ug/kg	TM15/PM10
sec-Butylbenzene#	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
n-Butylbenzene#	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane # 1,2,4-Trichlorobenzene #	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7	<4 <7			<4 <7	ug/kg	TM15/PM10 TM15/PM10
1,2,4-Trichioropenzene Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27			<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7			<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	103	96	77	56	103	96	104			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	91	81	74	51	99	84	100			<0	%	TM15/PM10

Job number:19/12278Method:SVOCSample number:36Matrix:Solid

Sample identity:BH16Sample depth:0.00-1.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
575-43-9	Naphthalene, 1,6-dimethyl-	8.401	87	227
		ituse.		
	Consent of copyright owner teaching	aly any other		
	200 - 100 -	diotio		
	: con purple du			
	inspectuality			
	E COD ALE			
	a septor			
	Copr			

Client Name: AECOM
Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
					No deviating sample report results for job 19/12278	
					at USC	
					1. A diffe	
					Collect all	
					Consent of copyright owner required for any other tage.  Consent of copyright owner required for any other tage.	
					on Pilitedir	
					accition that the same of the	
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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.: 19/12278

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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. 10729) 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 ISQL 1005.  BS AQC Sample  LB Blank Sample		
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 ISQC TOPS and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
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 ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
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 haboratory.  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 7 005 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	В	Indicates analyte found in associated method blank.
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 ISQ4 Total S and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	DR	Dilution required.
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 ISQL 1005 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	M	MCERTS accredited.
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 Taboratory.  AD Samples are dried at 35°C ±5°C  CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISCAT 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NA	Not applicable
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 ISQL 100 5 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NAD	No Asbestos Detected.
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 ISQL 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	ND	None Detected (usually refers to VOC and/SVOC TICs).
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 ISQL 7025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	NDP	No Determination Possible
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 ISQL 1025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SS	Calibrated against a single substance
+ 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 ISQ 70°25 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
++ 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 ISQ 77025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	W	Results expressed on as received basis.
* 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 ISQ17025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
Analysis subcontracted to all 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 ISQL 7025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	++	Result outside calibration range, results should be considered as indicative only and are not accredited.
CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO Suspected carry over  LOD/LOR Limit of Detection (Limit of Reporting) in line with ISQN 70025 and MCERTS  ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	AD	Samples are dried at 35°C ±5°C
ME Matrix Effect  NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	СО	Suspected carry over
NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	LOD/LOR	
NFD No Fibres Detected  BS AQC Sample  LB Blank Sample	ME	Matrix Effect autority Effect
BS AQC Sample  LB Blank Sample  A Client Sample	NFD	No Fibres Detected
LB Blank Sample	BS	AQC Sample Got Tried
N. Clicat Comple	LB	Blank Sample
N Client Sample	N	Client Sample Trip Blank Sample
TB Trip Blank Sample	ТВ	Trip Blank Sample
OC Outside Calibration Range	OC	

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required tractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	. Y	+ O.Z.	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PMOJ COP	No preparation is required.			AR	No
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.			AR	Yes
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		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (lon-Chromatography).	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM1291 con	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
			14. ay after use.				
			Special Burdeses afty, and after use.				
		adi	spection net the state of the s				
		nsent of cop					
		Cox					



Ireland

**Element Materials Technology** 

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AECOM 1st Floor, Montrose House Carrigaline Road Douglas Cork







Edel O'Hannelly Attention:

6th August, 2019 Date:

PR-423449 Your reference :

Test Report 19/12362 Batch 1 Our reference :

Location: Ringaskiddy

Date samples received: 31st July, 2019

Status: Final report

Issue: 1

Seventeen samples were received for analysis on 31st July, 2019 of which seventeen 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. the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Paul Boden BSc Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name: AECOM

Reference: PR-423449 Location: Ringaskiddy

Contact: Edel O'Hannelly

**EMT Job No:** 19/12362

Report : Solid

Barlum**  35 39 35 40 27 32 34 57 40 34 -1 mg/kg TMSOPPMIS Barlum**  0.9 1.2 <0.5 0.8 1.0 1.1 1.0 1.9 1.1 1.0 1.9 1.1 1.0 1.0 mg/kg TMSOPPMIS Gadmum**  0.01 0.3 0.5 0.7	EWI JOD NO:	19/12362										-		
Depth   COC No / mise   COC	EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Cock   No misc   Containers   V	Sample ID	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	DUP05	DUP05			
Cocker/miles	Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	Please se	e attached n	otes for all
Sample Type   Clay	COC No / misc													
Sample Type   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay   Clay	Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧٦	٧J	٧J	٧J			
Batch Number   1	Sample Date	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019			
Date of Receips   \$107/2019	Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Date of Receipt   S1077201   S1	Batch Number	1	1	1	1	1	1	1	1	1	1			Method
Barium** 35 39 35 40 27 32 34 57 40 34 c1 mgkg TASOPPMS Beryllum 0.9 12 4.5 0.8 1.0 1.1 1.0 1.9 1.1 1.1 4.5 mgkg TASOPPMS Commun** 4.01 0.3 0.5 0.7 4.01 4.01 4.01 0.2 4.01 0.1 4.01 mgkg TASOPPMS Copper** 16 22 11 15 21 20 14 31 35 25 19 c1 mgkg TASOPPMS Copper** 21 41 81 31 23 58 31 56 26 40 55 mgkg TASOPPMS Morcuy** 4.01 4.0.1 4.0.1 4.0.1 4.0.1 4.0.1 4.0.1 4.0.1 4.0.1 4.0.1 mgkg TASOPPMS NOISEIM** NOISEIM** 32.3 39.7 12.8 22.8 35.1 39.1 34.4 31.5 6 19 c1 mgkg TASOPPMS Solenaum** 4.1 1 4.1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Date of Receipt	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	LOD/LOR	Units	No.
Beryllium	Arsenic #M	9.6	15.9	6.1	8.3	12.1	16.2	14.1	44.2	14.1	14.8	<0.5	mg/kg	TM30/PM15
Cadmium   Main	Barium *M	35	39	35	40	27	32	34	57	40	34	<1	mg/kg	TM30/PM15
Chromium**    38.2   46.8   23.8   21.7   29.0   37.1   52.0   47.1   49.6   61.5   <0.5   mg/kg   TM30/PM15	Beryllium	0.9	1.2	<0.5	0.8	1.0	1.1	1.0	1.9	1.1	1.1	<0.5	mg/kg	TM30/PM15
Copper   M	Cadmium #M	<0.1	0.3	0.5	0.7	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Copper   M		38.2	46.8	23.8	21.7	29.0	37.1	52.0	47.1	49.6	61.5	<0.5	mg/kg	TM30/PM15
Lead** 21 41 81 31 23 58 31 56 26 40 <-5 mg/kg TM30/PM15  Marcury***					15		20							TM30/PM15
Mercury   Merc														
Nickel ***   32.3   39.7   12.8   22.8   35.1   39.1   34.4   38.8   36.0   41.3   <0.7   mg/kg   TM30/PM15								<0.1	<0.1.					
Value   Valu					22.0	25.4	20.4	24.4	200					
Value   Valu					-1	1	1	1	neto no					
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10					20	22	26	14.224	26					1
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10					0.2	0.2	0.3	111, 2013	0.2					
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10					206	111	1535	130	207					
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	Zinc	112	167	01	206		Pitteditt	139	207	109	104	<5	mg/kg	TWISO/FWITS
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	VOC TICs	ND	See Attached	ND	ND	ND 10	CND	ND	ND	ND	ND		None	TM15/PM10
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	Methyl Tertiary Butyl Ether #	<2	<2	<2	<2		<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	Benzene #	<3	<3	<3	<3	Till Shi	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	Toluene #	<3	<3	<3	<3	27×3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Composite Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery Tolluene DB   Surrogate Recovery 4-Brondituorobenzene   102   81   92   99   98   94   99   103   102   102   <0   %   TM15/PM10	Ethylbenzene #	<3	5	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene  102 81 92 99 98 94 99 103 102 102 <0 % TM15/PM10  SVOC TICS  See Attached See Attached ND ND ND ND ND ND ND ND ND ND ND ND ND	m/p-Xylene #	<5	16	<5	SAL	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene  102 81 92 99 98 94 99 103 102 102 <0 % TM15/PM10  SVOC TICS  See Attached See Attached ND ND ND ND ND ND ND ND ND ND ND ND ND	o-Xylene #	<3	14	<3	011553	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
SVOC TICS  See Attached See Attached ND ND ND ND ND ND ND ND ND ND ND ND ND	Surrogate Recovery Toluene D8	99	88	99	105	103	97	103	107	107	107	<0	%	TM15/PM10
TPH CWG  Aliphatics  >C5-C6 fM  <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <0.2 <th>Surrogate Recovery 4-Bromofluorobenzene</th> <th>102</th> <th>81</th> <th>92</th> <th>99</th> <th>98</th> <th>94</th> <th>99</th> <th>103</th> <th>102</th> <th>102</th> <th>&lt;0</th> <th>%</th> <th>TM15/PM10</th>	Surrogate Recovery 4-Bromofluorobenzene	102	81	92	99	98	94	99	103	102	102	<0	%	TM15/PM10
Aliphatics  >C5-C6 **M	SVOC TICs	See Attached	See Attached	ND	ND	ND	ND	ND	ND	ND	ND		None	TM16/PM8
>C5-C6 **M         < 0.1	TPH CWG													
C6-C8 8M         <0.1														
>C8-C10         <0.1	>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
C10-C12 **M         <0.2	>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C12-C16 **M     <4     15     <4     <4     <4     6     <4     <4     <4     <4     mg/kg     TM5/PM8/PM16       >C16-C21 **M     <7     21     <7     <7     <7     <7     <7     <7     <7     <7     <7     mg/kg     TM5/PM8/PM16       >C21-C35 **M     <7     31     <7     <7     <7     <7     <7     <7     <7     <7     mg/kg     TM5/PM8/PM16	>C8-C10	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C16-C21 **M	>C10-C12 **M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C21-C35 #M < 7 31 <7 <7 <7 <7 <7 <7 <7 <7 <7 mg/kg TM5/PM8/PM16	>C12-C16 #M	<4	15	<4	<4	<4	6	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
	>C16-C21 #M	<7	21	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
	>C21-C35 **M	<7	31	<7	<7	<7	<7	<7	<7	<7	<7	<7	mg/kg	TM5/PM8/PM16
	Total aliphatics C5-35	<19	67	<19	<19	<19	<19	<19	<19	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM16

AECOM Client Name:

EMT Job No:

PR-423449 Reference: Location:

Ringaskiddy Edel O'Hannelly Contact:

19/12362

Report : Solid

EMT Job No:	19/12362												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH4	BH4	BH5	BH5	BH6	вн6	ВН7	BH7	DUP05	DUP05			
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	Please se	e attached n	otes for all
COC No / misc												ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J			
Sample Date	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt											LOD/LOR	Units	Method No.
TPH CWG	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/01/2019	31/01/2019	31/0//2019	31/07/2019			-
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 <sup>#M</sup>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16#	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21#	<7	<7	<7	<7	<7	<7	<7	<₹.	<7	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35#	<7	<7	<7	<7	<7	<7	<7	132	<7	<7	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19	<19	<19	<19	<19	<19	(19 × 19	<19	<19	<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	67	<38	<38	<19 <38 <50 <50 <50 in 18 3h. of 18	<38	गिर्देशम्	<38	<38	<38	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
Alcohols/Acetates						2005,300	8,						
Cyclohexane	<50	<50	<50	<50	<50	QU-50111	<50	<50	<50	<50	<50	ug/kg	TM83/PM10
Tetrahydrofuran	<50	<50	<50	<50	<50 tio	VIIEK50	<50	<50	<50	<50	<50	ug/kg	TM83/PM10
Natural Moisture Content	11.4	15.3	6.1	8.3	opyright o	12.2	12.3	19.0	9.3	13.0	<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	<0.3	<0.3 🦹	<0.3	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0,3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Chromium III	38.2	46.8	23.8	<0/12/1.7	29.0	37.1	52.0	47.1	49.6	61.5	<0.5	mg/kg	NONE/NONE
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay		None	PM13/PM0
Sample Colour	Medium Brown	Light Brown	Medium Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown		None	PM13/PM0
Other Items	stones	stones	stones	stones	stones	stones	stones	stones	stones	stones		None	PM13/PM0

Client Name: AECOM

Reference: PR-423449
Location: Ringaskiddy

Ringaskiddy Edel O'Hannelly

**EMT Job No:** 19/12362

Contact:

Report : Solid

EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	BH1	BH1	BH2	внз	внз	DUP06	DUP06					
Depth	0.00-1.00	1.00-2.00	0.50	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00			Please se	e attached n	otes for all
COC No / misc											ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019					
Sample Type	Clay		Clay	Clay	Clay	Clay	Clay					
		Clay		-			•					
Batch Number	1	1	1	1	1	1	1			LOD/LOR	Units	Method No.
Date of Receipt					31/07/2019							
Arsenic **M	17.4	39.9	7.0	8.8	19.6	10.3	14.6			<0.5	mg/kg	TM30/PM15
Barium #M	54	68	46	37	45	218	39			<1	mg/kg	TM30/PM15
Beryllium  Cadmium *M	1.2	1.8	0.8	0.9	1.7 0.6	0.9 3.2	1.3 0.3			<0.5 <0.1	mg/kg mg/kg	TM30/PM15 TM30/PM15
Chromium **M	59.1	23.0	68.3	43.4	36.2	58.2	58.5			<0.1	mg/kg	TM30/PM15
Copper **M	29	42	43	19	27	23	23			<1	mg/kg	TM30/PM15
Lead **M	39	65	22	220	54	57	39			<5	mg/kg	TM30/PM15
Mercury *M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	٠٠.		<0.1	mg/kg	TM30/PM15
Nickel <sup>#M</sup>	43.0	67.5	236.3	33.7	55.0	49.2	47.8	het use.		<0.7	mg/kg	TM30/PM15
Selenium #M	<1	2	<1	<1	1	2		die		<1	mg/kg	TM30/PM15
Vanadium	21	25	13	21	30	23	714 2614 760.2			<1	mg/kg	TM30/PM15
Water Soluble Boron #M	0.2	0.2	0.4	0.3	0.2	0.3	0.2			<0.1	mg/kg	TM74/PM32
Zinc #M	160	238	242	116	30 0.2 255 ND cities and of the cities of th	0.3 es 16	166			<5	mg/kg	TM30/PM15
VOC TICs	ND	ND	ND	ND	ND · Ć	y Dr. Cor	ND				None	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	ND CITY	MILE AND	<2			<2	None ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	instito	<3	<3			<3	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3 🕏	01/3 01/3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3 ♀	of instant of	<3	<3			<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	9	011 23 105	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	4	011563	<3	<3	<3			<3	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	97	106	98		101	107	108			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	95	104	87	101	86	101	91			<0	%	TM15/PM10
SVOC TICs	ND	ND	ND	ND	ND	ND	ND				None	TM16/PM8
TPH CWG												
Aliphatics												
>C5-C6 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 **M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #M	<4	<4	<4	<4	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16 TM5/PM8/PM16
>C16-C21 <sup>#M</sup> >C21-C35 <sup>#M</sup>	<7 <7	<7 <7	<7 57	<7 <7	<7 <7	<7 <7	<7 <7			<7 <7	mg/kg mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	57	<19	<19	<19	<19			<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total displaces of of	110	V10	01	110	V10	V10	V10			V10	mg/kg	
												i

AECOM Client Name:

PR-423449 Reference: Location:

Ringaskiddy Edel O'Hannelly Contact:

EMT Job No: 19/12362 Report : Solid

EMT Job No:	19/12362												
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51						
Sample ID	BH1	BH1	BH2	ВН3	внз	DUP06	DUP06						
Depth	0.00-1.00	1.00-2.00	0.50	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				Please se	e attached r	otos for all
COC No / misc												ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J						
Sample Date	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019	30/07/2019						
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt				31/07/2019							LOD/LOR	Units	Method No.
TPH CWG	31/0//2019	31/01/2013	31/0//2019	31/0//2019	31/01/2019	31/07/2019	31/01/2013						
Aromatics													
>C5-EC7#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC7-EC8#	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC8-EC10 **M	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				<0.1	mg/kg	TM36/PM12
>EC10-EC12#	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16#	<4	<4	<4	<4	<4	<4	<4				<4	mg/kg	TM5/PM8/PM16
>EC16-EC21#	<7	<7	<7	<7	<7	<7	<7	.Øi*			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35#	<7	<7	105	<7	<7	<7	<7	her use.			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19	<19	105	<19	<19	<19	<19	ine,			<19	mg/kg	TM5/TM38/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	162	<38	<38	<38	MY SANY				<38	mg/kg	TM5/TM38/PM8/PM12/PM16
Aleste de la Contrata						ases.	gion						
Alcohols/Acetates	.50	.50	.50	.50	.50	1170 ii	.50				.50		TM83/PM10
Cyclohexane Tetrahydrofuran	<50 <50	<50 <50	<50 <50	<50	<50 • 0	Q < 300,	<50				<50 <50	ug/kg ug/kg	TM83/PM10
retranyuroturan	<50	<50	<50	<50	250 ctile	Milekso	<50				<50	ug/kg	TIVIOS/FIVITO
Natural Moisture Content	9.6	14.1	9.6	7.7	1195 at 0	9.0	<7 <19 0 1114:3817 <50 <50 <50 13.6				<0.1	%	PM4/PM0
Bromide	<0.3	<0.3	<0.3	<0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 of <0.3 o	<0.3	<0.3	<0.3				<0.3	mg/kg	TM27/PM20
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0%	<0.3	<0.3	<0.3				<0.3	mg/kg	TM38/PM20
Chromium III	59.1	23.0	68.3	ON43.4	36.2	58.2	58.5				<0.5	mg/kg	NONE/NONE
				$\mathcal{O}^{c}$									
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay					None	PM13/PM0
Sample Colour	Light Brown	Medium Brown	Light Brown	Light Brown	Light Brown	Light Brown	Light Brown					None	PM13/PM0
Other Items	stones	stones	stones, sand	stones	stones	stones	stones					None	PM13/PM0
	İ		<u> </u>	<u> </u>	İ	l			<u> </u>	İ	l		

AECOM Client Name: SVOC Report : Solid

PR-423449 Reference: Ringaskiddy Location: Edel O'Hannelly Contact: EMT Job No: 19/12362

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30
Sample ID	BH4	BH4	BH5	BH5	BH6	вн6	ВН7	вн7	DUP05	DUP05
Depth	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00
COC No / misc										
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J	٧J
Sample Date	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay
Batch Number	1	1	1	1	1	1	1	1	1	1
Date of Receipt	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019
SVOC MS										
Phenois										
2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2 Mothylphonol	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10

Sample ID	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	DUP05	DUP05			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J	۸٦	۸٦	٧J			
Sample Date Sample Type	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			Method
Date of Receipt		31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019		31/07/2019	31/07/2019		LOD/LOR	Units	No.
SVOC MS													
Phenols 2-Chlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Phenol *M PAHs	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Chloronaphthalene #M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Methylnaphthalene #M	25	459	<10	<10	<10	<10	-10	-10.	<10	<10	<10	ug/kg	TM16/PM8
Naphthalene	<10	47	<10	<10	<10	<10	<10	net 210	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthylene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Acenaphthene Fluorene	<10 <10	<10 53	<10	<10 <10	<10	<10	114×104	<10 <10	<10 <10	<10 <10	<10	ug/kg	TM16/PM8 TM16/PM8
Phenanthrene *M	11	114	<10 <10	<10	<10	<10	10 < 10	<10	<10	<10	<10 <10	ug/kg ug/kg	TM16/PM8
Anthracene	<10	<10	<10	<10	<10	A9 :38	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Fluoranthene #M	<10	<10	<10	<10	<10	DII < 1011	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Pyrene #M	<10	<10	<10	<10	<10	ej<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(a)anthracene	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Chrysene Benzo(bk)fluoranthene	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Benzo(a)pyrene	<10	<10	<10	<10	57 × 10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Indeno(123cd)pyrene	<10	<10	<10	<10 🔇	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Dibenzo(ah)anthracene	<10	<10	<10	<10 <10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(ghi)perylene	<10	<10	<10	On \$10 <10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Benzo(b)fluoranthene Benzo(k)fluoranthene	<10 <10	<10 <10	<10 (	<10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Phthalates												-99	
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
Di-n-butyl phthalate Di-n-Octyl phthalate	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100	<100 <100	<100 <100	<100	<100 <100	<100 <100	ug/kg	TM16/PM8 TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100	<100 <100	<100	<100	<100 <100	<100	<100	ug/kg ug/kg	TM16/PM8
Dimethyl phthalate #M	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM16/PM8
	<u> </u>	l						<u> </u>	<u> </u>	<u> </u>			

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT\_Job No: 19/12362

EMT Job No:	19/12362												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH4	BH4	BH5	BH5	вн6	BH6	BH7	BH7	DUP05	DUP05			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers Sample Date	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date Sample Type	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay	Clay	29/07/2019 Clay	29/07/2019 Clay	29/07/2019 Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	LOD/LOR	Offics	No.
SVOC MS													
Other SVOCs 1,2-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene 3-Nitroaniline	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
4-Bromophenylphenylether **M	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10	<10 <10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Carbazole	<10	<10	<10	<10	<10	<10	<10	net 210	<10	<10	<10	ug/kg ug/kg	TM16/PM8
Dibenzofuran #M	<10	<10	<10	<10	<10	<10	<10	TIE <10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	111×1014	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorobutadiene ***	<10	<10	<10	<10	<10	<10	TOF 10	<10	<10	<10	<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene Hexachloroethane	<10 <10	<10	<10	<10	<10	<100	<10	<10	<10 <10	<10	<10	ug/kg	TM16/PM8 TM16/PM8
Isophorone #M	<10	<10 <10	<10 <10	<10	<10	OUT TOUT	<10 <10	<10 <10	<10	<10 <10	<10 <10	ug/kg ug/kg	TM16/PM8
N-nitrosodi-n-propylamine ***	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Nitrobenzene #M	<10	<10	<10	<10	<1000	×100 <10	<10	<10	<10	<10	<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	115	109	111	106	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10	108	123	124	126	114	<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	119	126	115	114	1, 154	111	116	114	113	112	<0	%	TM16/PM8
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Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
FMT. Job No: 19/12362

Date of Receipt	
Page   Coordinates   Coordin	
COD No / mises   Consisiones   Sample Date   Sample Date   Sample Type   Cilip   Ci	
Sample Type   Batch Number   Cally	
Sample Type   Clay	
Batch Number   1	
Date of Receipt   31/07/2019	Method
Phenols	No.
2-Chicophenol**	
2-Mortylyhenel   <10	
2-Nitrophenol M	116/PM8 116/PM8
2.4-Dichlorophenol M	116/PM8
2.4-Direntylyphenol	116/PM8
2.4.6-Trichlorophenol	116/PM8
## A-Chloro-3-methylphenol	116/PM8
### A-Methylphenol	116/PM8
4-Nitrophenol < 10 < 10 < 10 < 10 < 10 < 10 < 10 < 1	116/PM8 116/PM8
Pentachlorophenol	116/PM8 116/PM8
Phenori M PAHs         <10	116/PM8
2-Chloronaphthalene M	116/PM8
2-Methylnaphthalene	
Acenaphthene   <10	116/PM8
Acenaphthene   <10	116/PM8 116/PM8
Acenaphthene   <10	116/PM8
Anthracene	116/PM8
Anthracene <a href="#"></a>	116/PM8
Pyrene ***	116/PM8
Pyrene ***	116/PM8
Chrysene	116/PM8 116/PM8
Chrysene	116/PM8
Benzo(a)pyrene	116/PM8
Indeno(123cd)pyrene	116/PM8
Dibenzo(ah)anthracene	116/PM8
Benzo(ghi)perylene	116/PM8
Benzo(k)fluoranthene	116/PM8 116/PM8
Benzo(k)fluoranthene	116/PM8
Bis(2-ethylhexyl) phthalate	116/PM8
Butylbenzyl phthalate         <100         <100         <100         <100         <100         ug/kg         Th.           Di-n-butyl phthalate         1475         <100         <100         <100         <100         <100         <100         ug/kg         Th.           Di-n-Octyl phthalate         <100         <100         <100         <100         <100         <100         <100         <100         ug/kg         Th.           Diethyl phthalate         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100	
Di-n-butyl phthalate     1475     <100     <100     <100     <100     <100     ug/kg     TM       Di-n-Octyl phthalate     <100     <100     <100     <100     <100     <100     <100     ug/kg     TM       Diethyl phthalate     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100     <100	116/PM8
Di-n-Octyl phthalate         <100	116/PM8 116/PM8
Diethyl phthalate <100 <100 <100 <100 <100 <100 <100 <10	116/PM8
Dimethyl phtholografia	116/PM8
	116/PM8

Client Name: AECOM SVOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT\_Job No: 19/12362

EMT Job No:	19/12362											
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	BH1	BH1	BH2	внз	ВН3	DUP06	DUP06					
Depth COC No / misc	0.00-1.00	1.00-2.00	0.50	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				e attached n ations and a	
Containers	V J	V J	V J	V J	V J	V J	V J					
Sample Date Sample Type	30/07/2019 Clay	30/07/2019 Clay	30/07/2019 Clay	30/07/2019 Clay	30/07/2019 Clay	30/07/2019 Clay	30/07/2019 Clay					
Batch Number	1	1	1	1	1	1	1			1 OD/I OD	Haita	Method
Date of Receipt	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019			LOD/LOR	Units	No.
SVOC MS												
Other SVOCs	.40	.10	:40	.40	:40	-10	.40			.40		TM4.C/DM0
1,2-Dichlorobenzene 1,2,4-Trichlorobenzene #M	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene 3-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
3-Nitroaniline     4-Bromophenylphenylether ***	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10	<10	<10			<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10	<10	<10	0		<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether Carbazole	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	<10 <10	hei Use.		<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Dibenzofuran **M	<10	<10	<10	<10	<10	<10	<10	her		<10	ug/kg ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10	<10	A <104			<10	ug/kg	TM16/PM8
Hexachlorobutadiene #M	<10	<10	<10	<10	<10	<10	101 × 101			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10	<10,000	<10			<10	ug/kg	TM16/PM8
Hexachloroethane #M	<10	<10	<10	<10	<10	TIPO III	<10			<10	ug/kg	TM16/PM8
Isophorone **M N-nitrosodi-n-propylamine **M	<10 <10	<10 <10	<10 <10	<10	<10	Q < 100x	<10			<10 <10	ug/kg ug/kg	TM16/PM8 TM16/PM8
Nitrobenzene **M	<10	<10	<10	<10	<10	111E < 10	<10			<10	ug/kg ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	117	110	115	114	· SPALO	110	112			<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	118	111	116	113	11 140	110	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10			<0	%	TM16/PM8
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Client Name: AECOM VOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
EMT Job No: 19/12362

EMT Job No:	19/12362												
EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30			
Sample ID	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	DUP05	DUP05			
Depth COC No / misc	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00		e attached n ations and a	
Containers	VJ	٧J	٧J	٧J	٧J	VJ	VJ	VJ	٧J	٧J			
Sample Date	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019	29/07/2019			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method
Date of Receipt	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019	31/07/2019			No.
VOC MS			2	.0	.0	.0	.0	.0		.0	.0	/!	TM15/PM10
Dichlorodifluoromethane Methyl Tertiary Butyl Ether#	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	<2 <2	ug/kg ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10 TM15/PM10
cis-1-2-Dichloroethene # 2,2-Dichloropropane	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	<3 <4	ug/kg ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	₹30.	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	× ×3	<3	<3	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	(NE) <4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane#	<4	<4	<4	<4	<4	<4	14.<4H	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	7 10 × 3 11 × 4 11 × 6	<3	<3	<3	<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	<3	<3,00	<b>3</b> √ <3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	JIP JUIL	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
Dibromomethane #	<3 <3	<3 <3	<3 <3	<3 <3	<3	16. 28rx	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Bromodichloromethane * cis-1-3-Dichloropropene	<4	<4	<4	<4	3 3 10 3 10 5 11 12 11 12 11 10 10 10 10 10 10 10 10 10 10 10 10	TIET CA	<4	<4	<4	<4	<4	ug/kg ug/kg	TM15/PM10
Toluene #	<3	<3	<3	<3	3000	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	i il Alli	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	ODYS3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE)#	<3	<3	<3		<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	531. O	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	Out <3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3 (	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene#	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10 TM15/PM10
1,1,1,2-Tetrachloroethane * Ethylbenzene *	<3 <3	<3 5	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	ug/kg ug/kg	TM15/PM10
m/p-Xylene #	<5	16	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	14	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
lsopropylbenzene #	<3	6	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene # 2-Chlorotoluene	<4 <3	18 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	<4 <3	ug/kg	TM15/PM10 TM15/PM10
1,3,5-Trimethylbenzene #	<3	32	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	ug/kg ug/kg	TM15/PM10
tert-Butylbenzene#	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	253	<6	<6	<6	<6	<6	<6	<6	<6	<6	ug/kg	TM15/PM10
sec-Butylbenzene#	<4	18	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	28	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene#	<4	36	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene * Hexachlorobutadiene	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	<7 <4	ug/kg ug/kg	TM15/PM10 TM15/PM10
Naphthalene	<27	73	<27	<27	<27	<27	<27	<27	<27	<27	<27	ug/kg ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	ug/kg ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	99	88	99	105	103	97	103	107	107	107	<0	% %	TM15/PM10

97

103

107

107

107

<0

%

Surrogate Recovery Toluene D8

99

88

99

105

103

TM15/PM10 TM15/PM10

Client Name: AECOM VOC Report : Solid

Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly
FMT. Job No: 19/12362

EMT Job No:	19/12362	-										
EMT Sample No.	31-33	34-36	37-39	40-42	43-45	46-48	49-51					
Sample ID	BH1	BH1	BH2	внз	внз	DUP06	DUP06					
Depth COC No / misc	0.00-1.00	1.00-2.00	0.50	0.00-1.00	1.00-2.00	0.00-1.00	1.00-2.00				e attached r ations and a	
Containers	٧J	٧J	٧J	٧J	٧J	٧J	٧J					
Sample Date		30/07/2019			30/07/2019							
Sample Type Batch Number	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1	Clay 1					Madhad
Date of Receipt	31/07/2019			31/07/2019			-			LOD/LOR	Units	Method No.
VOC MS												
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether # Chloromethane #	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3	<2 <3			<2 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1			<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) # Dichloromethane (DCM) #	<6 <30	<6 <30	<6 <30	<6 <30	<6 <30	<6 <30	<6 <30			<6 <30	ug/kg ug/kg	TM15/PM10 TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1-Dichloroethane#	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10 TM15/PM10
Bromochloromethane # Chloroform #	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	het use.		<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	of its		<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	(he		<4	ug/kg	TM15/PM10
1,2-Dichloroethane # Benzene #	<4	<4	<4	<4	<4	<4				<4	ug/kg	TM15/PM10
Trichloroethene (TCE)#	<3 <3	<3 <3	<3 <3	<3 <3	<3	<3,05	1 to <3			<3 <3	ug/kg ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	(88° 35°	<6			<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	Dill Sill	<3			<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3 110	Tet ≥3	<3			<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene Toluene #	<4 <3	<4 <3	<4 <3	<4 <3	3 3 66 3 3 100 100 100 100 100 100 100 100 100	<4	<4 <3			<4 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	rifizant	<3	<3			<3	ug/kg ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	29/<3	<3	<3			<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3 &	<3	<3	<3			<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	Onest of	<3	<3	<3			<3	ug/kg	TM15/PM10
Dibromochloromethane # 1,2-Dibromoethane #	<3 <3	<3 <3	<3 <3 (	011323	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10 TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
m/p-Xylene #	<5	<5	9	<5	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene <sup>#</sup> Styrene	<3 <3	<3 <3	4 <3	<3 <3	<3 <3	<3 <3	<3 <3			<3 <3	ug/kg ug/kg	TM15/PM10 TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane * Propylbenzene *	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4			<4 <4	ug/kg ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5			<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene <sup>#</sup> sec-Butylbenzene <sup>#</sup>	<6 <4	<6 <4	<6 <4	<6 <4	<6 <4	<6 <4	<6 <4			<6 <4	ug/kg ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4			<4 <4	ug/kg	TM15/PM10
1,2-Dichlorobenzene # 1,2-Dibromo-3-chloropropane #	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4	<4 <4			<4 <4	ug/kg ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7			<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	<27	<27	<27			<27	ug/kg	TM15/PM10
										.7		TM15/PM10
1,2,3-Trichlorobenzene # Surrogate Recovery Toluene D8	<7 97	<7 106	<7 98	<7 105	<7 101	<7 107	<7 108			<7 <0	ug/kg %	TM15/PM10

Job number: 19/12362 Method: VOC Sample number: 4 Matrix: Solid

Sample identity:BH4Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1120-21-4	Undecane	7.219	94	345
1074-55-1	Benzene, 1-methyl-4-propyl-	7.285	90	135
2870-04-4	Benzene, 2-ethyl-1,3-dimethyl-	7.337	93	229
934-80-5	Benzene, 4-ethyl-1,2-dimethyl-	7.379 - 7.540	95,95	331
7045-71-8	Undecane, 2-methyl-	7.584	83	148
112-40-3	Dodecane	7.780	96	831
527-84-4	o-Cymene	7.835	95	278
6117-97-1	Dodecane, 4-methyl-	8.094	87	196
294-62-2	Cyclododecane	8.117,50	86	216
	o-Cymene Dodecane, 4-methyl- Cyclododecane  Lot transport of the first partial to the first p	Ator any other		

Job number:19/12362Method:SVOCSample number:3Matrix:Solid

Sample identity:BH4Sample depth:0.00-1.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
629-59-4	Tetradecane	8.424	89	352
629-62-9	Pentadecane	9.003	83	408
112-95-8	Eicosane	10.042	90	349
		115c.		
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	Cor			

Job number:19/12362Method:SVOCSample number:6Matrix:Solid

Sample identity:BH4Sample depth:1.00-2.00Sample Type:ClayUnits:ug/kg

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1120-21-4	Undecane	6.246	87	852
112-40-3	Dodecane	7.072	93	3242
6117-97-1	Dodecane, 4-methyl-	7.513	89	543
629-50-5	Tridecane	7.787 - 10.042	91,96	11533
26730-12-1	Tridecane, 4-methyl-	8.179	93	1212
6418-41-3	Tridecane, 3-methyl-	8.251	93	713
638-36-8	Hexadecane, 2,6,10,14-tetramethyl-	8.297 - 10.588	87,93,94	4649
629-59-4	Tetradecane	8.424 - 10.273	81,97	7533
575-37-1	Naphthalene, 1,7-dimethyl-	8.481,&	97	1085
629-62-9	Pentadecane	9,003	96	7568
544-76-3	Hexadecane	9.546 - 12.246	95,96,96	9503
17312-53-7	Decane, 3,6-dimethyl-	9.808	86	1314
25117-26-4	Hexadecane, 4-methyl-	9.847	80	998
13187-99-0	2-Bromo dodecane	9.873	83	557
3031-15-0	Naphthalene, 1,2,3,4-tetramethyl-	9.976	87	851
593-45-3	Octadecane	10.523 - 12.693	97,97	5608
16587-52-3	Dibenzothiophene, 3-methyl-	10.758	95	847
31317-07-4	Hexadecane Decane, 3,6-dimethyl- Hexadecane, 4-methyl- 2-Bromo dodecane Naphthalene, 1,2,3,4-tetramethyl- Octadecane Dibenzothiophene, 3-methyl- 1-Methyldibenzothiophene Nonadecane	10.849	92	954
629-92-5	Nonadecane	10.967	97	3881
112-95-8	Eicosane	11.163	86	619
1136-85-2	3,7-Dimethyldibenzothiophene	11.215 - 11.307	98,99	1291
1207-12-1	Dibenzothiophene, 4,6-dimethyl-	11.385	90	1207
18435-45-5	1-Nonadecene	12.212	96	315

Client Name: AECOM
Reference: PR-423449
Location: Ringaskiddy
Contact: Edel O'Hannelly

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason			
	No deviating sample report results for job 19/12362								
					No deviating sample report results for job 19/12362  No deviating sample report results for job 19/12362  Log in the control of the control o				

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.: 19/12362

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 guoted, 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 HCI (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**

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

ISO17025 accreditation applies to surface water and groundwater and visually 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.

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Where Mineral Oil or Fats, Oils and Grease is quoted, this refers 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.

**EMT Job No.:** 19/12362

## 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**

OC	Outside Calibration Range
ТВ	Trip Blank Sample Conte
N	Client Sample
LB	AQC Sample  Blank Sample
BS	AQC Sample For Title
NFD	No Fibres Detected
ME	Matrix Effect Eight Park Communication Commu
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISQ 77025 and MCERTS
СО	Suspected carry over
AD	Samples are dried at 35°C ±5°C
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
W	Results expressed on as received basis.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
SS	Calibrated against a single substance
NDP	No Determination Possible
ND	None Detected (usually refers to VOC and/SVOC TICs).
NAD	No Asbestos Detected.
NA	Not applicable
М	MCERTS accredited.
DR	Dilution required.
В	Indicates analyte found in associated method blank.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
#	ISO17025 (UKAS Ref No. 4225) accredited - UK.

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required tractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	. Y	+ O.Z.	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PMOJ COP	No preparation is required.			AR	No
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.			AR	Yes
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		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (lon-Chromatography).	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM1291 con	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	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)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	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.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
			W. of other use.				
			Quito et in a sur sur sur sur sur sur sur sur sur sur				
		COLI	Special Durges could, and other use.				
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		Cor					

Consent of copylight owner leading for involver use.

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