Viva Energy Clyde Western Area Remediation Project

Response to Submissions Report
October 2019

Viva Energy Clyde Western Area Remediation Project

Client: Viva Energy Australia Pty Ltd

ABN: 46 004 610 459

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Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
2	21-Oct-2019	Final	William Miles CEnvP IA Associate Director - Environment	

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Terms and acronyms

Terms

Term	Definition
Aboriginal cultural heritage	The tangible (objects) and intangible (dreaming stories, song lines and places) cultural practices and traditions associated with past and present day Aboriginal communities.
Approved methods	The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA 2017).
Auditor	New South Wales Environment Protection Authority Accredited Site Auditor
Biopiling	A process in which concentrations of petroleum constituents in excavated contaminated soils is reduced through the use of biodegradation.
Clyde Barging Facility	The Clyde Barging Facility is associated with the Sydney Metro City and Southwest passenger rail project, and would involve the transfer of machinery and excavated material carried by barges on the Parramatta River to trucks from a site at the eastern end of Grand Avenue (Transport for NSW, 2017c). The Clyde facility will be located adjacent to the north-eastern Site boundary.
Hazardous materials	Hazardous materials in the Applying SEPP 33 guideline are defined as *"substance falling within the classification of the Australian Code for Transportation of Dangerous Goods by Road and Rail (Dangerous Goods Code)"*.
Heavy vehicle	A vehicle which has a gross vehicle mass or aggregate trailer mass of more than 4.5 tonnes (Austroads, 2015).
Impact	Influence of effect exerted by a project or other activity on the natural, built and community environment
In-area soil mixing	Ground improvement technique that improves soft or loose soils, by mechanically mixing them with oxidising/activating agents such as sodium persulfate/sodium hydroxide.
Landfarming	A process of turning the soil so as to encourage bioremediation.
Level of Service	A measure that uses a scale of A through F to define the value of average delay of vehicles.
Natural attenuation	A process which involves allowing naturally occurring micro-organisms in the ground to biodegrade hydrocarbon contamination.
Parramatta Light Rail project	Parramatta Light Rail Stage 1 is a major infrastructure project proposed by Transport for NSW, comprising a 12 kilometre two-way light rail track, connecting Westmead to Carlingford via Parramatta CBD. The proposed alignment of the main light rail track would run along Hassall Street and along James Ruse Drive. The project would involve the decommissioning of the T6 Carlingford passenger rail service and the construction and operation of a stabling and maintenance facility for the Parramatta Light Rail, located at 6 Grand Avenue, Camellia
Private vehicle	A private vehicle is a light vehicle used to transport the Project workforce to and from the Project Area. A light vehicle is a vehicle that is not a heavy vehicle (Austroads, 2015).
Secretary's Environmental Assessment Requirements (SEARs)	Requirements and specifications for an environmental assessment prepared by the Secretary of the NSW Department of the Planning and Environment under section 4.39 of the *Environmental Planning and Assessment Act 1979* (*NSW*).

Term	Definition
Swale	A shallow channel with gently sloping sides. Swales would be included in the final landform of the Western Area to direct overland flow directly into Duck River.
the Clyde Terminal	A part of the Site currently operating as an import, storage and distribution terminal for finished petroleum products including diesel, jet and gasoline fuels. The Clyde Terminal makes up the majority of the central part of Site and operates under SSD 5147 and EPL 570.
the Parramatta Terminal	A part of the Site currently used for distribution activities involving bulk road transport. The Parramatta Terminal is located in the north western part of the Site and operates under EPL 660.
the Project	The proposal to remediate the contaminated soils in the Western Area to a commercial/industrial standard alongside associated infrastructure removal, waste management, soil and groundwater management, land forming and stormwater management activities.
the Project Area	The Project Area is the land within the Western Area where the Project would occur. The extent of the Project Area, within the Western Area is provided in **Figure 1-1**.
the Site	Viva Energy owned land on the Camellia peninsula consisting of the following lots: Lot 398 DP 41324, Lots 100 and 101 of DP1168951, Lot 101 DP809340, Lot 2 DP224288, and Lot 1 DP383675. It includes the Clyde Terminal, the Parramatta Terminal, the Wetland, the Western Area and other land that is either currently vacant or leased to third parties.
the Western Area	A largely vacant area of land, approximately 40 ha in size, located in the south western part of the Site. This land previously contained a variety of refinery assets that have now been removed.
the Wetland	A large undeveloped wetland area in the north eastern part of the Site close to the confluence of the Parramatta and Duck Rivers.
Thermal desorption	An environmental remediation technology that utilises heat to increase the volatility of contaminants in order for contaminants to be separated from the soils.
Viva Energy	Viva Energy Australia Pty Ltd, the proponent of the Project and the landowner for the Project Area
Wastewater	Any water that has been affected by human use, including any combination of domestic, industrial, commercial or agricultural activities, surface runoff or stormwater, and any sewer inflow or sewer infiltration.

Acronyms

Acronym	Definition
ABN	Australian Business Number
AECOM	AECOM Australia Pty Ltd
AEP	Annual Exceedance Probability
ANZECC	Australia and New Zealand Environment and Conservation Council
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
AS/NZS	Australian / New Zealand Standard
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
ASS	Acid Sulfate Soil

Acronym	Definition
ASSMP	Acid Sulfate Soils Management Plan
BDAR	Biodiversity Development Assessment Report
BMP	Biodiversity Management Plan
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CBD	Central Business District
CEnvP	Certified Environmental Practitioner
Conceptual RAP	Conceptual Remediation Action Plan
COPC	Chemicals of Potential Concern
Council	City of Parramatta Council
CSM	Conceptual Site Model
CTPMP	Construction Traffic and Pedestrian Management Plan
DAF	Dissolved Air Flotation
DCC	Daily Cumulative Concentration
DIA	Discharge Impact Assessment
DPE	NSW Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment / (formerly NSW Department of Planning and Environment)
DTD	Direct Thermal Desorption
ECE	Environmental Control Enclosure
EDC	ethylene dichloride
EES	NSW Environment, Energy and Science Group / (formerly OEH Office of Environment and Heritage
EIS	Environmental Impact Statement
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence
ERM	Environmental Resources Management
EU	European Union
FEL	Family Emission Limits
GAC	Granular Activated Carbon
GGBF	Green & Gold Bell Frog
GMMP	Groundwater Monitoring and Management Plan
GMP	Groundwater Monitoring Plan
GSC	Greater Sydney Commission
ha	hectares
HEPA	Heads of EPAs Australia and New Zealand
HHERA	Human Health and Ecological Risk Assessment
HSL	Health Screening Level
IA	Impact Assessment

Acronym	Definition
IAA	Interim Audit Advice
km	kilometres
LGA	Local Government Area
LNAPL	Light Non-Aqueous Phase Liquid
LOD	Limit of Detection
LoS	Level of Service
LTEMP	Long Term Environmental Management Plan
m^3	metres cubed
mbgs	metres below ground surface
ML	megalitres
ML/d	megalitres per day
MMM	Mitigation and management measure
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NAPL	Non-Aqueous Phase Liquid
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NML	noise management levels
NPI	National Pollutant Inventory
NPI Mining	National Pollution Inventory Emissions Estimation Technique Manual for Mining (NPI Mining) (DSEWPC, 2012)
NSW	New South Wales
NSW EPA	NSW Environment Protection Authority
NVMP	Noise and Vibration Management Plan
OEH	Office of Environment and Heritage
OHS	Occupational Health and Safety
OU	Odour Units
OWS	Oil Water Separator
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Polyfluoroalkyl Substances
PFOS	perfluorooctane sulfonate
PM_{10}	Particulate matter 10 micrometres or less in diameter
$PM_{2.5}$	Particulate matter 2.5 micrometres or less in diameter
PMP	Project Management Plan
POEO Act	NSW Protection of the Environment Operations Act 1994
POM	Plan of Management
RAP	Remedial Action Plan
RAQMP	Reactive Air Quality Management Program

Acronym	Definition
RDC	Rolling Daily Criterion
REMP	Remediation Environmental Management Plan
Roads and Maritime	NSW Roads and Maritime Services
ROL	Road Occupancy Licence
RSI	Remediation Site Investigation
RtS report	Response to Submissions Report
RWP	Remedial Work Plan
SAQP	Sampling and Analysis Quality Plan
SCBA	Self-Contained Breathing Apparatus
SCO	TfNSW Sydney Coordination Office
SEARs	Secretary's Environmental Assessment Requirements
SEPP 33	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
SGMP	Soil and Groundwater Monitoring Program
SSD	State Significant Development
SWMP	Soil and Water Management Plan
t	tonne
TA-Air	NSW EPA's Air Technical Advice Unit
TECE	Temporary Environmental Control Enclosure
TfNSW	Transport for New South Wales
The Blue Book	*Managing Urban Stormwater - Soils and Construction Volume 1 and 2* (Landcom, 2004)
the Team	The DPE Greater Parramatta Urban Renewal Team
TMP	Traffic Management Plan
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
TSI	Targeted Site Investigation
TSS	Total suspended solids
US	United States
VCM	vinyl chloride monomer
Viva Energy	Viva Energy Australia Pty Ltd
VOCs	Volatile Organic Compounds
WH&S Regulation	NSW Work Health and Safety Regulation 2011
WMP	Waste Management Plan
WSLHD	Western Sydney Local Health District
WWTP	Wastewater Treatment Plant

1.0 Introduction

Viva Energy Australia Pty Ltd (Viva Energy) owns the land associated with the former Clyde Refinery (the 'Site') located at Durham Street, Rosehill on the Camellia Peninsula. Viva Energy currently operates the Clyde Terminal on part of the Site; however, a large part of the former refinery land in the south-western part of the Site (the 'Western Area') is no longer required for operational purposes. As such, Viva Energy is proposing to remediate contaminated soils in the Western Area (the 'Project') to facilitate future development of the land for other purposes permissible under the existing land use zoning.

Investigations completed within the Western Area have shown that not all of the soil and groundwater within this area requires remediation or management. As such, the Project would involve the remediation of impacted soils and the management of impacted groundwater within a number of targeted areas within the Western Area. The land where the proposed remediation activities would occur within the Western Area is referred to as the Project Area. The Site, Western Area and Project Area are shown on **Figure 1-1**.

Where remediation is required, the focus of this remediation would be on:

- addressing petroleum hydrocarbon impacts in shallow soil horizons;
- addressing residual soil/sludge impacts in the drainage network and surrounds;
- removing Light Non-Aqueous Phase Liquid (LNAPL) if present, to the extent practicable[1]; and
- ensuring potential contamination risks to the environment are removed or mitigated.

AECOM Australia Pty Ltd (AECOM) prepared an Environmental Impact Statement (EIS) for the Project on behalf of Viva Energy to support the State Significant Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act). The EIS was prepared in accordance with the provisions of the EP&A Act and addresses the Secretary's Environmental Assessment Requirements (SEARs) for the Project, dated 1 June 2018.

The EIS was placed on public exhibition on 7 February 2019 until 6 March 2019. This Response to Submissions (RtS) report summarises the submissions received during and after the exhibition period and provides responses to the issues raised.

1.1 Project overview

The Project would involve the remediation of impacted soils and the management of impacted groundwater within the Project Area (refer to **Figure 1-2**) to enable the land to be used for permissible development under the existing land use zoning in the future. Apart from preparation works, activities would be completed in an iterative approach and have been split into the following stages:

- Stage 1 – preparation works;
- Stage 2 – removal of redundant infrastructure and wastes;
- Stage 3 – remediation;
- Stage 4 – landforming; and
- Stage 5 – completion works and demobilisation.

[1] Where LNAPL is identified it would be addressed as part of the soil remediation works. As per the NSW EPA 2015 Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation, the removal of LNAPL would be based on the reduction of potential risk to the proposed commercial/industrial end users. Control of migration is not a driver for LNAPL removal as long-term monitoring in the Western Area has assessed dissolved phase conditions as stable or reducing, not migrating and not presenting an unacceptable risk to the Duck River. Where residual LNAPL may remain, this would be considered in the Human Health and Environmental Risk Assessment (HHERA) to demonstrate that no unacceptable risks are present for future commercial/industrial land users.

The main technology to remediate the soils during Stage 3 would be on-site biopiling. Other technologies that would be utilised include:

- in-area soil mixing/landfarming;
- thermal desorption; and
- stabilisation.

Off-site disposal and on-site management would also be considered.

The volume of soil that would require remediation has been estimated at 105,000 cubic metres (m^3). However, for the purposes of the assessment, a contingency soil volume of 30,000 m^3 was included (i.e. a total of 135,000 m^3).

In addition to the remediation activities, a number of associated works would also be completed as detailed within the EIS.

Following the completion of the Stage 1 to Stage 5 works, a Validation Report would be prepared in accordance with the New South Wales (NSW) Environment Protection Authority (EPA) Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2011) and reviewed/approved by the NSW EPA accredited Site Auditor (Auditor), confirming that the Western Area is suitable for future commercial/industrial land uses. The Validation Report may include progressive validation reports for separate portions of the Western Area to enable progressive validation of these areas.

Following completion of the remediation works, the Western Area in its post remediation works landform would continue to be managed by Viva Energy.

1.2 Design revisions

Following review of the submissions, Viva Energy is proposing to make two main revisions to the Project.

Firstly, Viva Energy is proposing to include an additional pre-treatment process for wastewater from excavations that may be impacted with unacceptable levels of Per- and polyfluoroalkyl substances (PFAS). As noted in **Section 3.2.2.2** of this report and Section 8.5.6.4 of the EIS, to date no soil samples have exceeded health or ecological criteria and only five groundwater samples have exceeded criteria and these were all limited to one part of the Project Area (AECOM, 2018b and ERM, 2018c). Due to the localised nature of the PFAS impact on groundwater, the existing proposal was to collect and dispose of PFAS impacted wastewater from excavations at an appropriately licenced facility off-site. As an alternative approach to managing this wastewater, it is now proposed to include a temporary pre-treatment plant as part of the Project.

Secondly, Viva Energy has reviewed the indicative program of works presented in Section 4.7 of the EIS and are proposing to extend the end date of the Project from Q1 2023 to Q4 2023.

Further discussion regarding the inclusion of a pre-treatment plant as part of the Project and the extension of the program is provided in **Chapter 11 Design revisions** of this report.

FIGURE 1-1 PROJECT LOCATION

KEY

- Site boundary
- Project Area boundary
- Western Area boundary
- State road
- Local road

Note: Project Area boundary along the southern border is indicative only and will be refined during detailed design to exclude the tree management zone.

0 250 500 m

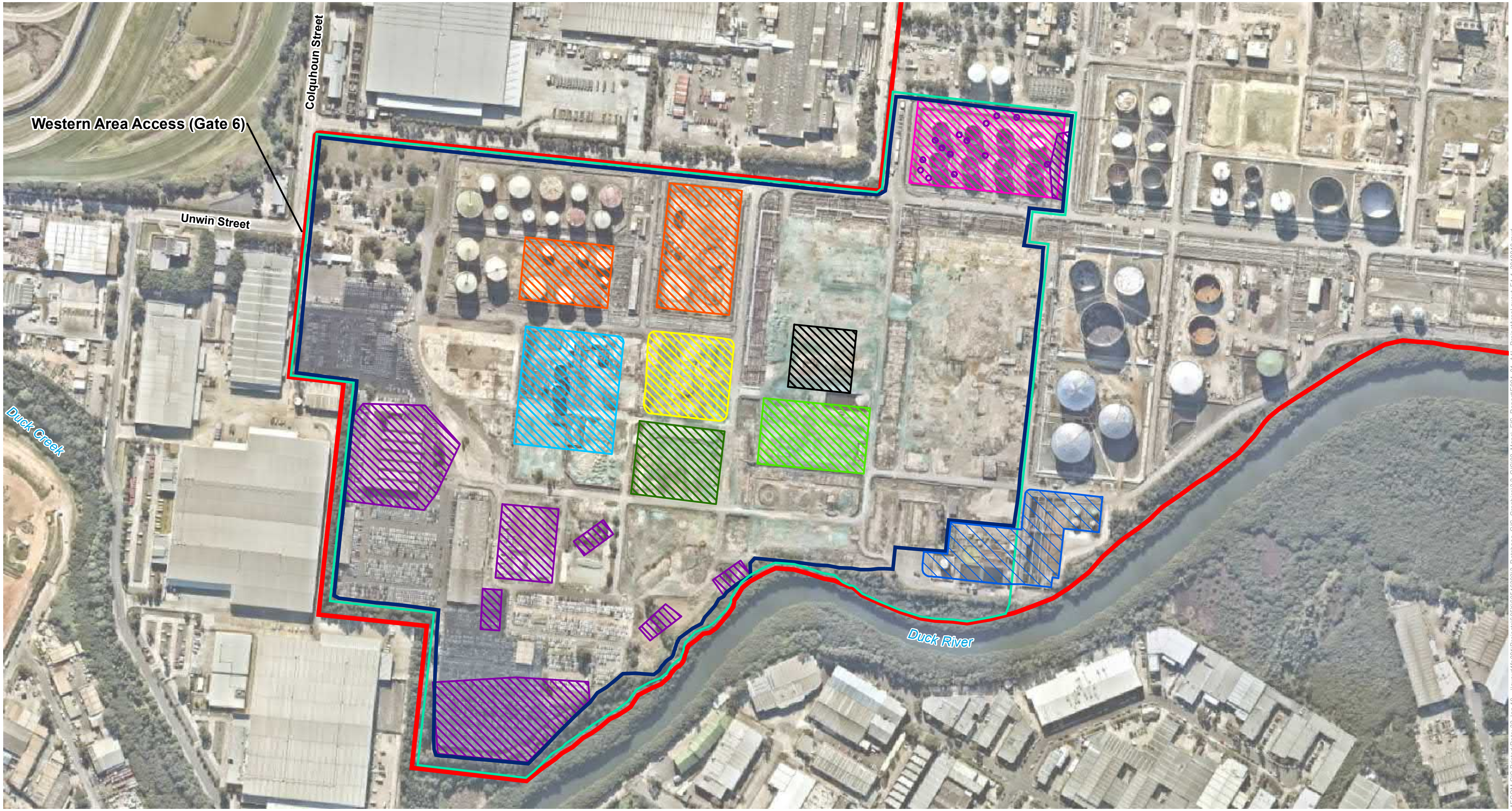

FIGURE 4-1 - PROJECT AREA LAYOUT

KEY

- Site boundary
- Project Area boundary
- Western Area boundary
- Wastewater Treatment Plant (WWTP)

Potential Location of Remediation Technologies

- Biopiling
- In-area soil mixing / landfarming excavation
- Landfarming
- Stabilisation
- Thermal desorption
- Waste proccessing area
- Contingency treated stockpile area
- On-site management (buried waste)

Note: Project Area boundary along the southern border is indicative only and will be refined during detailed design to exclude the tree management zone.

AECOM

0 50 100 200 m

1.3 Location and setting

The Site is located approximately 16 kilometres (km) west of the Sydney Central Business District, within the Parramatta Local Government Area (LGA), on the Camellia peninsula. The Site is surrounded by a mixture of land uses but is primarily in an industrial setting. To the west are the Rosehill Gardens Racecourse and a mix of industrial and commercial developments. To the south is Duck River, beyond which there is the industrial and commercial development of Silverwater. Industrial development within the suburb of Rosehill is adjacent to the north and west of the Site. Duck River runs along the south-eastern boundary of the Site and eventually joins the Parramatta River at the eastern most point of the Site (refer to **Figure 1-1**).

The Site is owned by Viva Energy and consists of the following lots:

- Lot 398 DP41324;
- Lots 100 and 101 of DP1168951;
- Lot 101 DP809340;
- Lot 2 DP224288; and
- Lot 1 DP383675.

All of these lots are located within the Parramatta LGA. The whole Site is zoned as IN3 Heavy Industrial under the *Parramatta Local Environmental Plan 2011*.

The Site includes the Clyde Terminal, the Parramatta Terminal, the Wetland, the Western Area and the Project Area, as shown on **Figure 1-1**. The Western Area is located within the Site, to the south-west of the Clyde Terminal. The Western Area is approximately 40 hectares (ha) in size and located on part of Lot 100 DP1168951. The land is largely vacant.

The Project Area is the land within the Western Area where the Project would predominantly occur. The Project Area consists of the majority of land within the Western Area, excluding vegetation within protected areas and certain portions of the Western Area which do not require remediation.

1.4 The Proponent and team

The proponent and landowner is Viva Energy. The relevant contact for the Project is:

Erica Salazar
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Durham Street
Rosehill NSW 2142
ABN: 46 004 610 459
Telephone: +61 2 9897 8046

This RtS report has been prepared by AECOM Australia Pty Ltd, ABN 20 093 846 925, Level 21, 420 George Street, Sydney NSW 2000, Tel: (02) 8934 0000. The Environmental Planning and Assessment Lead is William Miles, CEnvP IA and Associate Director - Environment.

1.5 Environmental assessment process

1.5.1 Overview

The Project was declared State Significant Development (SSD) as this ensures that the Project is assessed at a State level commensurate with the economic, social and environmental potential that the land could bring in the future. The Minister for Planning is the consent authority for SSD.

1.5.2 Exhibition

The EIS for the SSD application was placed on public exhibition by the NSW Department of Planning and Environment (DPE) for a minimum statutory period of 28 days, between 7 February 2019 and 6 March 2019. During this time and for a period time afterwards, DPE accepted submissions on the SSD application and the EIS.

DPE have provided Viva Energy with the submissions received. This RtS report has been prepared to respond to the comments within the submissions received. **Section 2.2** provides a summary of the submissions received.

1.5.3 Assessment and determination

Following acceptance of the RtS report the SSD application and associated documentation would be reviewed again by government regulators including the Department of Planning, Industry and Environment (DPIE) (formerly (DPE). DPIE will then finalise its assessment and produce draft conditions of consent.

No objection from City of Parramatta Council (the Council) or from the public was received by DPIE during or after exhibition of the EIS. However, the Council have stated that they would object if the payment of development contributions was not required. As outlined in **Section 4.7**, Viva Energy have agreed to pay development contributions for the Project. Therefore, as Viva Energy has not made any political donations, the SSD application will be determined by the Minister for Planning and not by the Independent Planning Commission.

1.6 Document structure

Table 1-1 provides a summary of the document structure of this EIS.

Table 1-1 Document structure

Chapter topic	Description
Introduction	**Chapter 1** provides an outline of the Project and the environmental assessment process.
Engagement activities and summary of submissions	**Chapter 2** summarises the engagement undertaken during exhibition of the EIS, the submissions received, and the main issues raised and the consultation to occur during execution of the Project.
NSW Environment Protection Authority	**Chapter 3** summarises the submissions provided by the NSW EPA and provides a response to the issues raised.
City of Parramatta Council	**Chapter 4** summarises the submissions provided by the City of Parramatta Council and provides a response to the issues raised.
NSW Department of Health – Western Sydney Local Health District	**Chapter 5** summarises the submission provided by the Western Sydney Local Health District and provides a response to the issues raised.
Roads and Maritime Services	**Chapter 6** summarises the submission provided by Roads and Maritime Services and provides a response to the conditions recommended.
Transport for NSW	**Chapter 7** summarises the submission provided by Transport for NSW and provides a response to the conditions recommended.
NSW Office of Environment and Heritage	**Chapter 8** summarises the submission provided by the NSW Office of Environment and Heritage and provides a response to their submission.
DPE – Greater Parramatta Urban Renewal Team	**Chapter 9** summarises the submission provided by the DPE's Greater Parramatta Urban Renewal Team and provides a response to the comments provided.
Endeavour Energy	**Chapter 10** summarises the submission provided by Endeavour Energy and provides a response to the requests made.
Design revisions	**Chapter 11** presents the proposed inclusion of pre-treatment technology to manage wastewater and an extension of the proposed program.
Revised mitigation and management measures	**Chapter 12** summarises changes made to the mitigation and management measures in response to the submissions received for the Project.
Appendices	**Appendix A** contains copies of the community engagement material. **Appendix B** contains the submissions received from DPIE. **Appendix C** contains the Air Quality Benchmarking Study (AECOM, 2018a).

Chapter topic	Description
	Appendix D contains the agenda for the meeting held with NSW EPA, DPIE and NSW Health on 7 May 2019. **Appendix E** provides Clyde Terminal - Quarter 4 (2018) Groundwater Monitoring Report, ERM, March 2019 (ERM, 2019a). **Appendix F** provides Air Quality Technical Note 1: Revised Odour Assessment. **Appendix G** provides Air Quality Technical Note 2: Revised Dust Assessment. **Appendix H** provides Air Quality Technical Note 3: Conservatism Log. **Appendix I** provides Air Quality Technical Note 4: Pore Space Emission Discussion. **Appendix J** provides Air Quality Technical Note 5: Indicative Remediation Decision Protocol. **Appendix K** provides Air Quality Technical Note 6: Draft Reactive Air Quality Management Plan Framework. **Appendix L** provides initial results from the Remediation Site Investigations (ERM, 2019b).

2.0 Engagement activities and summary of submissions

Viva Energy Australia Pty Ltd (Viva Energy) developed an Approvals and Consultation Strategy (refer to Appendix B of the EIS) which outlined the approach for stakeholder and community consultation for the Project.

2.1 Summary of community engagement activities undertaken during exhibition

Viva Energy provided community updates about the Project in November, December 2018, January 2019 (pre-EIS exhibition) and during EIS Exhibition in February 2019. These updates, in addition to a factsheet about the EIS, were also made available on the dedicated website[1] for the Project.

Community updates were circulated via letter drop to around 3,560 businesses and households in the areas of Rosehill, Camellia, Clyde, Silverwater, Rydalmere. Local businesses on the Camellia Peninsula were emailed (where contact details were available) to inform them about the information session that was held on 21 February 2019 for the EIS.

The communication materials are provided in **Appendix A**. Contact details were provided on flyers and the factsheet for the community to provide feedback or ask questions via email and phone.

During exhibition of the EIS, two Community Information Sessions were held on the following dates and locations:

- Tuesday 12 February 2019 at City of Parramatta Library, 1-3 Fitzwilliam Street, Parramatta; and
- Thursday 21 February 2019 at the Clyde Terminal, Gate 3, Durham Street Rosehill.

One community member attended each of these sessions. Feedback received from these attendees included questions regarding the existing contamination at the Site. In particular:

- management of the contamination and potential impact to neighbours; and
- water contamination, asbestos, dust, road traffic.

A suite of management plans and a range of mitigation and management measures have been proposed to manage potential impacts. In particular, the Remediation Environmental Management Plan (REMP) would detail the environmental controls, mitigating measures, contingency plans and monitoring programs for Stages 1 to 5 of the Project.

The REMP would include seven sub-plans, which would provide further details on management measures for certain environmental aspects. These include Soil and Water Management Plan, Air Quality Management Plan and Traffic Management Plan. **Chapter 12** of this report provides a complete list of the revised management and mitigation measures for the Project.

In addition, the community members indicated that they considered the greatest benefits of the Project to be the re-use of former industrial land and the reduction of contamination risks at the Site. One community member also noted their appreciation for the information provided and the openness of the project team.

2.2 Summary of submissions

A total of 11 submissions to the EIS were received by DPE and of these submissions eight required a response. The 11 submissions were received from government agencies and one business. No submissions were received from members of the public.

A draft of the RtS was provided to DPIE (formerly DPE), EPA, City of Parramatta Council, NSW Health and OEH (now the Environment, Energy and Science group in DPIE) on 4 July 2019. Comments on the draft responses from these agencies were received between 31 July and 7 August. Further comments and clarifications have been included as necessary.

[1] https://www.vivaenergy.com.au/about-us/terminals-shipping/clyde/community

Table 2-1 summarises the submissions received and where in this RtS responses are provided if required. Copies of the submissions are attached in **Appendix B**.

Table 2-1 Summary of submissions received from government agencies

Respondent	Main issues raised	Section of RtS report where responses are provided
Department of Planning, Industry and Environment (DPIE) (formally DPE)	A meeting was held with DPIE on 7 August 2019 to discuss the draft responses. At the meeting DPIE asked questions mainly relating to contamination, waste, groundwater, odour and particulates. A follow up letter from DPIE reiterating some of these points was received on the 13 September 2019.	Chapter 3 These comments have been addressed in Chapter 3 as they relate to comments previously raised by the NSW EPA.
NSW Environment Protection Authority	The NSW EPA asked questions in relation to water management, groundwater contamination assessment, air quality, waste management and noise. The NSW EPA provided an initial submission dated 6 March 2019 and an additional submission dated 1 April 2019. A meeting with the EPA was held on 7 May 2019 to discuss their comments. An additional meeting was held in partnership with DPIE on 13 August 2019 focusing on the use of enclosures, assumptions used in the air toxics assessment and predicted exceedances to odour criteria. This meeting was in response to comments following EPA's review of the draft RtS provided in a letter dated 2 August 2019.	Chapter 3
City of Parramatta Council	The City of Parramatta Council did not raise any objections to the Project, but did recommend conditions associated with environmental health compliance, biodiversity, traffic and developer conditions. A follow up letter was received on 2 August 2019 confirming City of Parramatta Council's position regarding the Project.	Chapter 4
NSW Department of Health – Western Sydney Local Health District	This submission asked questions and requested further detail on the handling, storage and transport of contaminated soils, air quality, management of asbestos contaminated soils, groundwater migration off-site, surface water treatment and migration, human health risk assessment modelling, community engagement, emergency management and future land uses. A further email response was received that reiterated comments regarding particulates and emission control enclosures.	Chapter 5

Respondent	Main issues raised	Section of RtS report where responses are provided
Roads and Maritime Services	Roads and Maritime Services did not raise any objections to the Project and recommended two conditions in relation to management of cumulative traffic with the Parramatta Light Rail project and a Road Occupancy Licence for surrounding classified roads.	Chapter 6
Transport for NSW	Transport for NSW requested that a Construction Traffic and Pedestrian Management Plan be prepared to assist in the management of cumulative impacts with the Parramatta Light Rail project.	Chapter 7
NSW Office of Environment and Heritage (OEH)	OEH requested a Biodiversity Development Assessment Report (BDAR) waiver be prepared. OEH did not raise any comments in relation to heritage. The NSW Environment, Energy and Science Group (EES) (formerly OEH) provided a response to the draft RtS in which they confirmed that they have reviewed the BDAR provided in Appendix I of the EIS and consider it adequate. EES reiterate that they support the preparation of a Biodiversity Management Plan (BMP) containing mitigation measures for the Green and Golden Bell Frog.	Chapter 8
DPE - Greater Parramatta Urban Renewal Team	The Greater Parramatta Urban Renewal Team made comments on traffic and transport; in particular regarding the intersection of James Ruse Drive and Hassell Street, the draft Camellia Town Centre Master Plan and the Parramatta Light Rail project.	Chapter 9
Endeavour Energy	Endeavour Energy did not have any objections of the Project providing that they are provided with documents associated with air quality.	Chapter 10
WaterNSW	WaterNSW did not have any comments for the Project and noted that it is not near any WaterNSW land or infrastructure.	N/A - The submission from WaterNSW has been noted. A response was not required and therefore this submission is not discussed further.
SafeWork NSW	SafeWork NSW did not have any comments on the Project.	N/A - The submission from SafeWork NSW has been noted. A response was not required and therefore this submission is not discussed further.

Respondent	Main issues raised	Section of RtS report where responses are provided
Greater Sydney Commission (GSC)	The GSC noted the following in their submission: • the Project is aligned with the GSC vision for Greater Parramatta and the Olympic Peninsula and Central City District Plan; • acknowledged the progress Viva Energy has been making to remediate the Western Area to enable future uses compatible with ongoing heavy industrial operations; and • the GSC is aware of various infrastructure and service providers that may in future require sites in the Camellia Precinct that may be compatible with Viva Energy's operations.	N/A - The submission from GSC has been noted. A response was not required and therefore this submission is not discussed further.

2.3 Follow on consultation

Following development consent for the Project, if granted, Viva Energy would continue to engage with the community and government agencies. Consultation would occur in accordance with a Community Engagement Plan and relevant development consent conditions. This would be included in the suite of remediation documentation as part of the Project Management Plan.

The Clyde Terminal webpage will continue to provide contact information, such as the 24 hour community (including complaints) hotline and information on how to provide comments or feedback.

The local Camellia Peninsula would be informed of the Project including projected timelines and potential impacts from planned works.

Ongoing consultation with government agencies such as DPIE, NSW EPA and City of Parramatta Council would likely occur in the form of meetings, review of documents and other approvals (if required).

3.0 NSW Environment Protection Authority

3.1 Introduction

Following exhibition of the EIS, the NSW EPA provided two written submissions for the State Significant Development (SSD) application. The initial submission was received on the 6 March 2019. In this submission the EPA made a number of comments on water management, groundwater, contamination, air quality, waste management and noise.

A supplementary submission was received on the 1 April 2019. This submission responded to a separate Air Quality Benchmarking Study report that had been prepared for the NSW EPA explaining why the use of emission control enclosures (ECE) for the Project during excavation was not feasible or necessary (refer to **Appendix C**). The supplementary submission has asked a number of questions regarding the conclusions within this report and the need for additional air quality controls.

Subsequent to receipt of both these submissions, Viva Energy arranged a meeting with key representatives from the NSW EPA, DPE and NSW Health on 7 May 2019. The discussion in the meeting focused on the key issues raised in the submissions (refer to the agenda provided in **Appendix D**). Where necessary the outcomes of these discussions are included in our responses below.

This section provides responses to the initial submission and the supplementary submission separately in **Section 3.2** and **Section 3.3** respectively.

Following review of a draft of this Response to Submissions (RtS) report, the NSW EPA provided a letter to DPIE (formerly DPE) dated 2 August 2019 with further comments and recommendations. These comments were discussed with the NSW EPA and DPIE at a meeting on the 13 August 2019. Where appropriate these comments have also been noted and the sections below updated accordingly.

3.2 Initial submission

3.2.1 Background summary

Issue

The NSW EPA submission made a statement about regulatory and reporting requirements of EPL 570, being; "*soil and groundwater conditions at the Clyde terminal are currently regulated by condition U1 (Pollution Studies and Reduction Programs) of environmental protection licence No. 570, which requires an annual report to be submitted to the NSW EPA. This entails the proponent to submit a report including:*

- *a summary of groundwater monitoring results for the previous 12 months;*
- *details of any soil or groundwater investigations undertaken and the results of such investigations;*
- *details of the progress against works proposed in the previous year's report;*
- *an update of the conceptual site model (CSM) if conditions change significantly;*
- *an update of the Soil and Groundwater Monitoring Program (SGMP) if required.*"

Response

Soil and groundwater at the Site would continue to be regulated by condition U1 of the EPL during the Project and Viva Energy would continue to provide an annual report to the NSW EPA outlining the required information. The CSM and Soil and Groundwater Management Plan would be updated based on the additional data which will be obtained from the proposed remedial investigations. An updated CSM would also be provided within the Detailed Remedial Action Plan (RAP).

3.2.2 Water management

3.2.2.1 Background

Issue

The NSW EPA stated that there are no licensed on-site groundwater monitoring points or discharge points that require monitoring of pollutant concentrations.

A licence variation amendment to the EPL will be required if the Project is approved. These will include limits, operating, storage, monitoring and reporting requirements. When exercising licensing functions, the NSW EPA is required to consider any of the matters in Section 45 of the *Protection of the Environment Operations Act 1997* (PoEO Act) that are relevant. These include but are not necessarily limited to:

- the pollution that will be caused and its impact on the environment;
- practicable measures that can be taken to prevent, control, abate or mitigate the pollution and protect the environment from harm;
- practical measures that can be taken to restore or maintain those values.

Response

Section 5.4.2 of the EIS recognises that EPL 570 would need to be varied to allow the Project to occur as it is considered a scheduled activity under the PoEO Act. However, the need to vary specific limits within the licence is not yet confirmed and would be agreed with the NSW EPA during the completion of the Detailed RAP. A new mitigation and management measure has been added to the Project to ensure that changes to the licence would be confirmed with the EPA (refer to **Table 3-1**).

Table 3-1 Additional mitigation and management measures – general – NSW EPA

Reference	Mitigation and management measures	Timing
G5	**EPL 570 will be varied in consultation with the NSW EPA. The final changes to EPL 570 would be agreed with the NSW EPA, once the detailed design for the Project is confirmed and prior to works commencing.**	**Detailed design**

With regards to surface water management, as discussed with the NSW EPA, the wastewater treatment plant (WWTP) is suitable for treating the majority of the chemicals of potential concern (COPC) that would be present within surface water flows from the Western Area (refer to the responses provided below in **Section 3.2.2.2**). Equally the WWTP and associated first flush systems at the Site allow for large volumes of surface water flows to not only be treated prior to discharge but also to be stored during periods of higher rainfall and treated once capacity at the WWTP becomes available.

The main discharge location for the WWTP listed on EPL 570 is licensed discharge point EPA No. 1. The following pollutants have concentration limits in EPL 570: Biochemical oxygen demand, fluoride, nitrogen (ammonia), oil and grease, pH, phenols, total nitrogen, total phosphorus – unfiltered sample, and total suspended solids. The EPL typically requires monthly monitoring at this discharge point. These limits were defined during operation of the Clyde Refinery.

During typical rainfall conditions the potential contamination of surface water flows from the remediation activities would be minimised using a number of measures (refer to **Chapter 11**) and the flows that do interact with remediation activities would be directed to the on-site WWTP for treatment prior to discharge to Duck River under licence or in certain circumstances would be captured and either pre-treated prior to the WWTP or disposed off-site.

Following a review of the above response the NSW EPA recommended in their letter dated 2 August 2019 that a Discharge Impact Assessment (DIA) be prepared to characterise the water quality of anticipated discharges along with measures to be implemented to minimise pollution and mitigate potential impacts (refer to **Appendix B**). Viva Energy accept the recommended condition and would prepare and provide to the NSW EPA a DIA prior to the commencement of the Project.

3.2.2.2 Treatment of specific pollutants

Issue

The NSW EPA recommended that the proponent: demonstrates that the wastewater treatment plant is suitable to treat the specific pollutants (types, concentrations, loads) likely to be present in the wastewater.

Response

As noted in Section 4.2.2 of Appendix D of the EIS, wastewater from the remediation activities would primarily result from:

- impacted surface water runoff from contact with contaminated soils (including direct rainfall and inflow to excavations);
- leachate from remediation technologies; and
- impacted groundwater infiltrating into excavations.

In each case, the wastewater would be potentially impacted by the relevant chemicals of potential concern (COPC) listed below. The relevant COPC are listed in Section 2.3.6 of the EIS. These broadly align with the list of contaminants noted in the EPA letter dated 6 March 2019, which included:

- Light Non-aqueous Phase Liquid (LNAPL);
- Total Petroleum hydrocarbons;
- Benzene, Toluene, Ethylbenzene and Xylenes;
- Polycyclic aromatic hydrocarbons;
- Lead and chromium including hexavalent chromium; and
- Perfluorooctane sulfonate.

A key difference between the two lists is the inclusion of LNAPL, which whilst present in the Western Area, was not listed as a COPC in the EIS for the reasons provided.

Potential impacts to surface water would be directly related to the parts of the Western Area where remediation is required. Investigations have indicated that large parts of the Western Area are unlikely to require remediation (refer to Section 10.2 of Appendix C of the EIS). In addition:

- remedial investigations and risk assessments will be completed to confirm the COPC present within the Project Area and whether areas require remediation;
- the proposed works would progress across the Western Area in a staged manner from north west to south east (refer to additional measure SW4 in **Table 3-3**);
- existing stormwater infrastructure in the central and eastern portions of the Western Area would be used to transfer flows to the WWTP (refer to SW4 in **Table 3-3**);
- stormwater flows from remediation areas within the catchment that flows to the Council Drain (catchment 6) in the west of the Project Area would be redirected to the WWTP (refer to amended measure SW4 in **Table 3-3**);
- temporary erosion and sediment controls, potentially including settling ponds, would be used to help segregate and manage surface water flows (refer to amended measure SW1 in **Table 3-3**); and
- contaminated stockpiles and biopiles would be covered with impermeable sheeting (refer to amended measure SW1 in **Table 3-3**).

In particular, where excavation for remediation occurs, the historical soil and groundwater data for these areas would be assessed to confirm whether surface water from these areas is affected by non-petroleum COPCs (noting that metal concentrations in soil and groundwater across the Site are in localised areas of higher concentrations greater than background levels). If non-petroleum COPCs are likely to be present, the surface water would be tested to confirm its suitability for WWTP treatment. If metal-impacted fill material is to be excavated during the remediation works, these materials would be stockpiled separately from the underlying natural clays and covered to mitigate infiltration, (available data indicates that natural clays are not impacted with metals) (refer to amended measure SGC2 in **Table 3-3**).

The progressive nature of the Project from the north west to south east is designed to allow retention of “downstream” stormwater systems. This means that runoff would continue to be treated in the WWTP, as the remediation works progress across the Project Area.

This approach to completing the works would mean that:

- parts of the Project Area containing COPCs that may not be treated sufficiently by the WWTP (refer to **Table 3-2**) would be confirmed prior to excavation occurring;
- open excavations would be limited as far as practicable reducing the amount of runoff that could potentially be contaminated;
- leachate from stockpiles and biopiles would be reduced;
- existing stormwater infrastructure would be retained as the remediation activities progress; and
- as explained in **Section 3.2.2.4**, 98% of the time potentially contaminated surface water from the Project Area would be treated by the existing WWTP prior to being discharged to the Duck River in line with EPL 570 (the remaining 2% represents high stormwater flow conditions resulting from significant rainfall events).

As outlined in Section 9.6.1.1 of the EIS, the majority of COPC from the Project are not expected to be different from those treated at the WWTP during the past operation of the Clyde Refinery or during the delivery of Conversion Project. The majority of the expected COPC can be managed by the WWTP currently. The existing WWTP was designed to service the Clyde Refinery and therefore has historically been used to treat a higher mass of pollutants. Whilst there is the potential that certain concentrations of these contaminants may differ, they are most likely to be lower than for a fully operating refinery.

The existing WWTP comprises of an inlet separator (Oil Water Separator) incorporating first flush storage capacity of 6,600 kL, chemical dosing and Dissolved Air Flotation (DAF), and a bio treater. The capacity of the physical chemical and bio treater system is 3.5-5 ML/d. In the past few years the average daily flows to the WWTP from the Western Area and the terminal are generally 0.8-1.3 ML/d. The WWTP has both the flow capacity and the contaminant capacity to deal with the flows from the remediation project as well as the terminal.

In addition, the initial treatment from the WWTP is via interceptors as part of the Oil Water Separator (OWS). These act as settling ponds for particulates and also remove free hydrocarbon. The system is designed to incorporate a first flush system such that there is capacity to treat and store the peak flow under conditions of a 1 in 10 year 30 minute storm (Jacobs 2014). Flows cascade through the bays of the OWS system receiving primary treatment before discharge, including when a release from discharge point EPA No. 2 may be undertaken.

The expected contaminants of concern that could be generated from the Project, could potentially impact the stormwater runoff and their ability to be treated by the existing WWTP are summarised in **Table 3-2** below. It is anticipated that the concentrations would be less than those from the operational Clyde Refinery.

Table 3-2 COPC treated by Clyde Terminal WWTP

COPC	Treatment process
LNAPL- free hydrocarbons	Main Interceptor and DAF.
Dissolved phase hydrocarbons	DAF and Biotreater.
Sediment	Main Interceptor, chemical flocculation, DAF.
Heavy metals (generally associated with sediment)	Main Interceptor, chemical flocculation, DAF, biotreater.
Other 'not treatable' COPC, e.g. PFOS/PFAS	Isolate area, collect and either pre-treat on-site prior to sending to the WWTP or send off-site for treatment/disposal.

As such, the WWTP would be able to effectively treat the majority of COPC. Management of COPC that may not be adequately treated within the WWTP are discussed below.

The WWTP is designed to deal with free and dissolved hydrocarbons, and as noted in Sections 12.2, 12.3 and 12.8 of Appendix C of the EIS, where LNAPL is present in excavations it would be extracted to the extent practical, collected and directed to the WWTP or disposed of off-site.

Heavy metals may potentially leach from contaminated soil stockpiles and remediation technologies or may be attached to sediment/soil mobilised by surface water flows. Based on existing data (refer to Section 9.6 of Appendix C of the EIS) "*only localised metals exceedances (arsenic and chromium) are present in the soils.*" Some localised exceedances of lead and hexavalent/trivalent chromium are also present in groundwater.

Localised parts of the Western Area with heavy metals at concentrations greater than background levels would be identified during the remedial investigations. Where soils are excavated from these areas, if necessary, they would be disposed off-site. If not, they would be stored and treated under impermeable sheets to reduce the potential for leachate to be generated.

Sediments mobilised by contaminated surface water would be captured by the erosion and sediment controls (e.g. settling ponds, refer to SW1). Low levels of metals attached to sediment in surface water flows would also settle out in the interceptors within the WWTP. Alum dosing (currently undertaken at the WWTP) would further remove these pollutants and heavy metals would adsorb to the surface of the bacteria in the biotreater and be removed with the associated biological waste.

PFAS contamination would also be further confirmed as part of the remedial investigations. To date no soil samples have exceeded health or ecological criteria. Five groundwater samples have exceeded criteria and these were all limited to one part of the Project Area. Where PFAS is present in soils at levels considered to present a risk to human health, these soils would be disposed off-site.

Given the controls that have been proposed for managing surface water flows and contaminated water as well as the ability of the on-site WWTP to manage and treat surface water flows from the Project, it is unlikely that there would be a deterioration in discharge characteristics that would lead to non-compliance with the existing licence conditions of EPL 570 or result in adverse impacts at neighbouring properties. On that basis, the characteristics of the discharge during the Project would be similar to those reported in Table 9.5 of the EIS and would be in line with Mitigation and Management Measure (MMM) SCG1.

The amended management measures relevant to this issue and response are provided in **Table 3-3**. New text has been highlighted in **bold**.

Table 3-3 Amended and additional mitigation and management measures – water management – NSW EPA

Reference	Mitigation and management measures	Timing
SW4	**The proposed works will broadly progress across the Western Area in a staged manner from north west to south east, towards the WWTP, to allow the existing drainage system to be utilised where possible.** **Where remediation is not required, surface water flows will continue in line with the current management practices. Where remediation is required, surface water flows will be directed to the WWTP, unless the ground investigation data from the surrounding area suggest that the water in excavations should be tested.**	**Stage 1 to Stage 4**
SGC2	A Soil and Water Management Plan (SWMP) would be prepared that outlines: • erosion and sediment control requirements (developed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004)) including: - the use of geotextile liners**,** ~~or~~ temporary capping **or other suitable measures** to reduce infiltration of surface water runoff; - installing silt fences around stockpiles to reduce erosion; - installing silt and sediment traps across stormwater drains in proximity to excavation areas; - placing stockpiles on impermeable sheeting to prevent infiltration, where possible; and - locating stockpiles away from council stormwater drainage systems; • control measures for the dewatering, storage, movement and treatment of groundwater encountered in excavations. **These measures** ~~This~~ would include ~~the following~~: - **testing** accumulated ~~ground~~water **in excavations from areas where ground investigation data suggests the presence of contaminants at levels that would not be able to be treated by the Wastewater Treatment Plant (WWTP)** ~~would be tested~~ to confirm that: ▪ it can be appropriately treated in the WWTP; ▪ **it can be appropriately treated in the WWTP following pre-treatment; or** ▪ **it should be collected and disposed of off-site** ~~and~~ - **managing** groundwater ~~would be collected and~~ **to be** sent to the on-site WWTP in accordance with the established Site wastewater management procedures ~~and discharged in line with the requirements of EPL 570~~. • management measures required for the appropriate handling of soils containing asbestos; • **management measures required for the appropriate handling of metal-impacted fill material, e.g. stockpiled separately from the underlying natural clays and covered to mitigate infiltration;** • requirement for inspection of erosion and sediment control structures; • potential chemical pollutants (e.g. fuels, additives, stockpiles etc.), would be stored in appropriate containers and/or within bunded and lined areas to minimise the risk of spillages or	Stage 1 to Stage 5

Reference	Mitigation and management measures	Timing
	mobilisation of these pollutants into soil and groundwater; • requirement for and location of spill kits for chemicals or fuels that could potentially be spilt or leak**ed**; • regular inspection of remediation equipment and plant to ensure **the potential for** leaks are minimised and **identified issues are** rectified; • measures to remove incidental rainfall from bunded remediation areas and transfer it to the WWTP by the existing surface water system or via temporary pipeline; • requirements for monitoring of groundwater for the duration of the Project; • **the requirement to install, operate and maintain a wheel wash to reduce soil on roads and dust; and** ~~measures to require vehicles leaving the Project Area to utilise the wheel wash to reduce soil on roads, production of dust and the introduction of contamination to groundwater and/or stormwater system. Maintenance requirements for the wheel wash would also be outlined; and~~ • if significant impacts are identified below 4 mbgs (including LNAPL) an area-specific risk assessment would be prepared to assess the requirement for remediation (and/or management measures) and would be reviewed by the NSW EPA accredited Site Auditor (Auditor).	
SW1	The Soil and Water Management Plan (sub-plan to the REMP) would outline the following: • stormwater around excavations would be diverted and directed to existing stormwater/wastewater management systems and WWTP; • discharges from the WWTP would be within existing EPL 570 limits; • reuse of water for dust suppression or wheel washing, where appropriate; • incorporation of temporary erosion and sediment controls such as settling ponds**,** silt fences etc. **to help segregate and** manage stormwater runoff where existing systems have been removed; • appropriate storage of materials being utilised for the Project, away from Duck River and the surface water drains; • **covering of contaminated stockpiles, (i.e. where available soil data indicates that excavated fill material may generate impacted leachates), and biopiles with impermeable sheeting when not being actively managed (e.g. created, moved, turned etc.);** • ongoing monitoring of licenced discharge points, in line with EPL 570, to confirm compliance during the Project. **If necessary, additional monitoring requirements would be developed following completion of the remedial investigation and would be agreed with the Auditor;** • **management actions should exceedances of management triggers occur;** • incorporation of runoff/sediment controls, including progressive covering and vegetation of remediated areas; and • routine inspections would be incorporated into the plan to monitor the implementation of the measures outlined above, including:	Stage 1 to Stage 5

Reference	Mitigation and management measures	Timing
	- routine inspections of excavations to instigate the pump out of water accumulating in excavations; - inspections of bunding would occur ~~during and~~ following periods of heavy rainfall to confirm that water is being directed to the WWTP as required.	

3.2.2.3 Characterisation of the discharges

Issue

The NSW EPA recommended that the proponent characterises the expected quality of the proposed treated and bypass discharges in terms of the concentrations and loads of all pollutants present at non-trivial levels (including typical and worst case for each project stage), with reference to a risk assessment of pollutant sources.

Response

As noted in the response under **Section 3.2.2.2**, the majority of the expected COPC can be treated by the WWTP currently. The existing WWTP was designed to service the Clyde Refinery and therefore has historically been used to treat a surface water stream with a higher loading of pollutants. The expected contaminants of concern that could potentially impact stormwater runoff during the Project can be treated in the existing WWTP, as summarised in **Table 3-2** above. It is anticipated that the COPC concentrations entering the WWTP would be less than those from the operational Clyde Refinery.

As noted in **Section 3.2.2.2** the areas with anticipated COPCs that may not be adequately treated in the WWTP would be isolated and managed at source. Also, as noted it is unlikely that there would be a deterioration in discharge characteristics that would lead to non-compliance with the existing licence conditions in EPL 570 or result in adverse impacts to Duck River. The characteristics of the discharge are likely to be similar to those reported for discharge point EPA No. 1 in Table 9.5 of the EIS.

In addition, the initial treatment from the WWTP is via interceptors as part of the OWS. These act as settling ponds for particulates and also remove free hydrocarbon. The system is designed to incorporate a first flush system such that there is capacity to treat and store the peak flow under conditions of a 1 in 10 year 30 minute storm (Jacobs 2014). Flows cascade through the bays of the OWS system receiving primary treatment before discharge, including when a release from discharge point EPA No. 2 may be undertaken. It is anticipated that the discharge will comply with the current EPL discharge criteria.

Following a review of the above response the NSW EPA have recommended in their letter dated 2 August 2019 that a Discharge Impact Assessment (DIA) be prepared to characterise the water quality of anticipated discharges along with measures to be implemented to minimise pollution and mitigate potential impacts (refer to **Appendix B**). Viva Energy accept the recommended condition and would provide to the NSW EPA a DIA prior to the commencement of the Project.

3.2.2.4 Rainfall and flow conditions

Issue

The NSW EPA recommended that the proponent provide details of the rainfall and flow conditions that would result in a bypass of the wastewater treatment plant and estimates the expected frequency and volume of treated and bypass discharges.

Response

As noted above, the WWTP contains an OWS which incorporates settlement basins and a first flush system. The system is designed to treat and store the first flush under conditions of a 1 in 10 year storm (Jacobs 2014). Flows cascade through the bays of the OWS system receiving primary treatment before discharge, including when a release from discharge point EPA No. 2 may be undertaken.

The storm flow modelling (Jacobs 2014) indicates that for the 1 in 10 event (30 minutes duration) the peak flow rates to Duck River would be 11,545 m^3/hr from the relevant catchments at the Site. The Western Area would contribute approximately 50 % of this flow based on the relative areas. In assessing the runoff from the Western Area Jacobs assumed that the area was all paved with a high runoff coefficient. Due to the works associated with the Clyde Refinery Conversion Project and the proposed remediation, the paved area has and will be reduced, resulting in a lower runoff coefficient and less runoff. Therefore, the Jacobs work is conservative, and over estimates the volume of runoff.

Nevertheless, a conservative analysis has been undertaken to determine the proportion of time runoff from the relevant catchments at the Site would exceed the capacity of the existing 6,600 m^3 storage and overtop into Duck Creek. The analysis used historical rainfall data to determine runoff volumes. The volume was captured by the 6,600 m^3 basin and removed at a rate of 3,500 m^3 per day which is equivalent to the WWTP capacity. The assessment was undertaken for a daily and 6 minute time step and both methods indicated the OWS basin would overtop approximately 2 % of the time or on approximately seven occasions per year.

Given that this flow is post the first flush containment and that Duck River would also be in peak flow, providing high levels of dilution, we do not anticipate adverse impacts for the discharge of residual constituents at the low concentrations anticipated. It is therefore expected that the discharge would comply with the EPL 570 discharge requirements.

3.2.2.5 Assessment of the impact of treated and bypass wastewater discharges on the environmental values

Issue

The NSW EPA recommended that the proponent assess the potential impact of the proposed treated and bypass wastewater discharges on the environmental values of the receiving waterways, with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values.

Response

The storm flow modelling (Jacobs 2014) indicates that for the 1 in 10 event (30 minutes duration) the peak flow rates to Duck River would be 11,545 m^3/hr from the relevant catchments at the Site. Given that this flow is post the first flush containment and that Duck River would also be in peak flow, providing high levels of dilution, we do not anticipate adverse impacts for the discharge of residual constituents at the low concentrations anticipated and that there would be no compromise of background conditions. Background conditions were discussed in section 3.1 Appendix D Technical Report Surface Water, Wastewater and Flooding of the EIS.

The Site has complied with the EPL 570 requirements as an oil refinery, during conversion and demolition of the refinery and as a terminal. The likely contaminants that would be generated during remediation have been discussed in the sections above and can be adequately treated in the WWTP. The background data for the Duck River indicates that the river is highly modified with poor water quality particularly after rainfall. As a result of the remediation, potential impacts to surface water flows from the Western Area would be avoided resulting in better quality surface water entering the Duck River from this part of the Site.

Water treated in the WWTP and discharged to Duck River is monitored on a monthly basis according to requirements of EPL 570 and results reported in the Annual Return to the EPA by 30 August every year.

During periods of high rainfall when the capacity of the interceptor bays are exceeded, stormwater flows overflow the interceptor bays directly to Duck River, which ‘bypasses’ the biotreater treatment system. As previously discussed, given the significant volumes of water during these events and the high levels of dilution, no adverse impacts to Duck River would be expected.

Given the nature of these high-volume stormwater events, these overflow (or bypass) discharges are not considered a licenced monitoring or discharge point in EPL 570. However, sampling of these overflow waters is still undertaken during the overflow/bypass events which confirms that the water quality of these overflow events is well within established criteria for other licenced discharge points at the Site. Average concentrations over the past 18 months include; pH 7.3, Total Phenols <0.05 mg/L, Oil & Grease <5 mg/L, TSS 21 mg/L, Biochemical Oxygen Demand <5 mg/L and Total Organic Carbon 8.7 mg/L.

The volume and nature of the wastewater and stormwater that will be treated by the biotreater and discharged to Duck River and the overflow (bypass) waters that are discharged during significant rainfall events are not expected to change significantly during the remediation works.

Therefore, for the reasons provided in the EIS and in the sections above, no potential impacts on the values of the receiving waters are considered likely. Further assessment is therefore not warranted given the temporary nature of the Project, the modified nature of the receiving environment and the ongoing compliance with EPL 570 of discharges from the WWTP.

3.2.2.6 NSW Water quality objectives

Issue

Consistent with the NSW Water Quality Objectives, the NSW EPA noted that the WWTP should be designed to ensure discharges contribute to:

- protecting the environmental values where they are being achieved in a waterway; and
- contribute towards achieving the environmental values over time where they are not being achieved in a waterway.

Response

The WWTP currently operates and complies with the limits presented in EPL 570 in order to protect environmental values in line with the EPA's expectations. The Project is a temporary activity which would reduce levels of contamination at the Site and of stormwater flows from the Site. The WWTP would treat most of the surface water flows from the Project and would discharge in line with agreed EPL limits. As such, the design of the WWTP and the expected discharges are considered to be appropriate.

3.2.2.7 Collection systems

Issue

The NSW EPA noted that the EIS indicated that liners, covers and leachate collection systems will be used to manage wastewater from remediation treatment areas, but does not provide details of the design specifications of these.

Plate 1 of the EIS indicates leachate from the biopile would be directed to the wastewater treatment plant and would not be recycled back to the biopile. It is unclear whether leachate recycling has been considered. Recycling leachate back to the biopile would reduce the amount of contaminated water requiring treatment and potentially the loads and concentrations of pollutants discharged.

The EIS states that landfarming (turning soil and/or adding nutrients/compost/microbes/oxidising agents) would be used to remediate shallower and less contaminated soils. It is unclear how potential water quality risks associated with landfarming activities (e.g. runoff; seepage) would be managed.

The NSW EPA therefore recommended that the proponent:

- provide details of the design specifications of liners and covers that would be installed to minimise generation of contaminated wastewater and prevent seepage from remediation treatment areas (details should include the composition, thickness and permeability);
- provide details of leachate collection systems that would be installed to manage leachate generated from the remediation treatment areas (details should include drainage design and storage capacity);
- consider options to recycle leachate back through the biopile to reduce the loads and concentrations of pollutants requiring treatment; and
- provide details of management of potential water quality risks associated with landfarming.

Response

The detailed design for the Project, including environmental controls, would be included in the Detailed RAP and would require approval from the EPA accredited Site Auditor (Auditor) prior to being implemented.

At this stage, a conceptual design for the biopiling process has been presented in the EIS (refer to **Section 4.4.2.1**). The purpose of this conceptual design is to demonstrate that biopiling and other technologies are possible in the location where they are proposed and to allow an assessment of the technology to be completed to support the development application.

With regards to this conceptual design, Section 4.4.2.1 of the EIS states that the biopiles would be covered with an impermeable material and that clay liners would be used. The use of impermeable covers when the biopiles are not being actively managed would reduce the amount of stormwater interacting with the biopiles and becoming contaminated. The use of clay liners and a leachate collection system would capture leachate from the biopiles and direct it to the WWTP.

Viva Energy are happy to discuss with the EPA their environmental performance requirements for the proposed liners and covers and consider these requirements as part of the detailed design.

Section 12.3 of the Conceptual RAP also discusses biopiling. It notes that the biopile areas would have a clay liner. Whilst not stated, this base would likely be graded to drain leachate that may be released from the biopile to a leachate collection sump. As detailed in Section 12.11 of the Conceptual RAP, the biopiling works would be undertaken in the bunded former tank farm areas which are connected to the WWTP by existing drainage infrastructure. If these drains are removed, leachate from the bunded areas would be transported to the WWTP using trucks or other suitable measures (e.g. temporary pipelines). The specifics of the biopile design, drainage design and storage capacity would be confirmed during preparation of the Detailed RAP, discussions with appropriate contractors and agreed with the Auditor.

As part of the detailed design, Viva Energy are happy to consider options to recycle leachate back through the biopiles.

As per Section 12.11 of the Conceptual RAP, landfarming is proposed to be located in the existing Tankfarm C. Runoff in the landfarming area would be managed via existing tankfarm bunds and drainage system and sent to WWTP for treatment prior to discharge. If required due to the contamination present in the soils being landfarmed (based on soil and groundwater data), seepage from landfarming would be captured, tested and if suitable transferred to the WWTP for treatment. If not suitable, it would be either pre-treated and sent to WWTP or disposed off-site. Further details would be provided in the Detailed RAP and Soil and Water Management Plan.

3.2.2.8 Runoff from ‘undisturbed’ areas

Issue

The NSW EPA was unclear on whether settling ponds would be installed to reduce discharges of suspended solids.

Response

Initial investigations have confirmed that a large part of the Western Area is not contaminated (i.e. meets a commercial/industrial standard) and therefore the controls outlined within the EIS relating to the Landcom guidance would be relevant for these areas and the management of soils from these areas (e.g. during the removal of subsurface infrastructure).

As explained in Section 4.4.1 of the EIS, once excavated, contaminated soils would be moved to a central location to be stockpiled prior to treatment. Mitigation and management measure AQ1 notes that where possible stockpiles would be covered. If the available soil data indicates that excavated fill material may generate impacted leachates, stockpiles would be covered with impermeable sheeting (refer to amended measure SW1 in **Table 3-4**). This would reduce infiltration of these stockpiles and the potential for leachate or contaminated run off to be produced.

Section 9.7.2 of the EIS discusses the proposed surface water mitigation for the Project during Stages 1 to 5 of the Project. This section notes that temporary settling ponds may be constructed to help manage surface water flows and that their need would be confirmed during detailed design. If required, they would be located down gradient of remediation areas to manage potential excavation overflow events. In addition, Management and Mitigation Measure SW1 notes that settling ponds may be used for erosion and sediment control.

The final layout, design and location of any settling ponds required and any temporary drainage channels would be confirmed before ground disturbing works commencing and following completion of the remedial investigations and Detailed RAP. This would help confirm the specific location of these features.

Typical plan and cross sections of settling ponds are provided in Landcom, 2004 (the Blue Book). In the event that settling ponds are required, relevant design criteria from the Blue Book would be adopted (refer to additional measure SW5 in **Table 3-4**):

In addition, key principles and practices for the control of sediment dispersal would include:

- using settling ponds to collect runoff from excavation areas and settle out associated sediments and potential contaminants;
- settling ponds would be lined to avoid interactions with groundwater;
- if water from an overtopped excavation is captured in a settling pond, this water would be sent to the WWTP, unless the ground investigation data from the excavated area suggests that this water should be tested.
- the sediments settled in the ponds would be tested and characterised before disposal off-site or reuse on-site. Depending on the characteristics of this sediment, these materials may need to be collected, appropriately stored and transported off-site to an appropriately licensed waste or treatment facility.

Viva Energy have made an allowance for two lined settling ponds as part of the Project. The final number of ponds would be detailed within the Soil and Water Management Plan.

The amended mitigation and management measures relevant to this issue and response are provided in **Table 3-4**. New text has been highlighted in **bold**.

Table 3-4 Amended and additional mitigation and management measures – water management – NSW EPA

Reference	Mitigation and management measures	Timing
SW1	The Soil and Water Management Plan (sub-plan to the REMP) would outline the following: • stormwater around excavations would be diverted and directed to existing stormwater/wastewater management systems and WWTP; • incorporation of temporary erosion and sediment controls such as settling ponds**,** silt fences etc. **to help segregate and** manage stormwater runoff where existing systems have been removed; • **if required, temporary settling ponds would be located down gradient of remediation areas to manage potential excavation overflow events;** • discharges from the WWTP would be within existing EPL 570 limits; • reuse of water for dust suppression or wheel washing, where appropriate; • appropriate storage of materials being utilised for the Project, away from Duck River and the surface water drains; • **covering of contaminated stockpiles, (i.e. where available soil data indicates that excavated fill material may generate impacted leachates), and biopiles with impermeable sheeting when not being actively managed (e.g. created, moved, turned etc.);** • ongoing monitoring of licenced discharge points, in line with EPL 570, to confirm compliance during the Project**. If necessary, additional monitoring requirements would be developed following completion of the remedial investigation and would be agreed with the Auditor;**	Stage 1 to Stage 5

Reference	Mitigation and management measures	Timing
	• **management actions should exceedances of management triggers occur;** • incorporation of runoff/sediment controls, including progressive covering and vegetation of remediated areas; and • routine inspections would be incorporated into the plan to monitor the implementation of the measures outlined above, including: - routine inspections of excavations to instigate the pump out of water accumulating in excavations; - inspections of bunding would occur ~~during and~~ following periods of heavy rainfall to confirm that water is being directed to the WWTP as required.	
SW5	**In the event that settling ponds are required, relevant design criteria from the Blue Book (Landcom, 2004) would be adopted. Key principles and practices for the control of sediment dispersal would include:** • **using settling ponds to collect runoff from excavation areas and settle out associated sediments and potential contaminants;** • **settling ponds would be lined to avoid interactions with groundwater;** • **if water from an overtopped excavation is captured in a settling pond, this water would be sent to the WWTP, unless the ground investigation data from the excavated area suggests that this water should be tested;** • **the sediments settled in the ponds would be tested and characterised before disposal off-site or reuse on-site. Depending on the characteristics of this sediment, these materials may need to be collected, appropriately stored and transported off-site to an appropriately licensed waste or treatment facility.**	**Detailed design/ Stage 1 to Stage 5**

3.2.2.9 Sediment retention basins

Issue

The NSW EPA recommended that the proponent clarify whether sediment retention basins would be installed to reduce discharges of suspended solids from the drainage system during the remediation process. If sediment retention basins will be used, the proponent should provide details of the design specifications (e.g. design storm capacity; liner; spillway) and management of any proposed water storages, demonstrating these are consistent with Landcom [2004].

Response

As noted in **Section 3.2.2.2**, the existing WWTP is capable of managing suspended solids in surface water flows and therefore settling ponds may not be required. The need for settling ponds would be confirmed during the detailed design for the Project. Further remedial investigations would be completed in parts of the Western Area to determine the required remediation areas and the best locations for settling ponds would be informed by the location of these areas. The design of the final landform and discussions with the successful contractors may also influence the precise number, design and location of the settling ponds. The design of the ponds would also be reviewed and approved by the Auditor. Should settling ponds be required, the design criteria and management principles noted in the response under **Section 3.2.2.8** would be employed.

3.2.2.10 Surface water controls

Issue

The NSW EPA recommended that the proponent demonstrate that surface water controls are appropriate to manage the pollutants likely to be present in runoff from each area of the premises.

Response

Numerous surface water controls are available for use during the Project. The final design of the erosion and sediment controls would be confirmed as part of the detailed design and agreed with the Auditor.

The COPC present at the Western Area are already managed by the existing drainage systems at the Site in line with EPL 570.

These systems would be used to manage stormwater runoff from undisturbed areas just as they are at present. Potential higher concentrations of Total Suspended Solids (TSS) would be managed through the erosion and sediment controls explained above, settling ponds (if required) and the WWTP.

Existing systems currently manage surface water flows from undisturbed areas, therefore it is unlikely that there would be a change in impact over the baseline condition.

3.2.2.11 Non-trivial levels

Issue

The NSW EPA recommended that the proponent characterise the expected quality of the proposed discharges from the drainage system in terms of the concentrations and loads of all pollutants present at non-trivial levels (including typical and worst case for each project stage), with reference to a risk assessment of pollutant sources.

Response

The characteristics of the discharges from the drainage system are unlikely to significantly change from those currently present. For the reasons presented above and within the EIS, discharges from undisturbed areas are expected to be similar to those currently being managed from the Site and therefore would be managed in line with the limits within the existing EPL.

Surface water that collects or interacts with areas where active remediation is taking place or excavation is occurring would be either directed to the WWTP or would be collected and disposed off-site. Where water is removed from excavations, the decision whether this potentially contaminated water is sent to directly to the WWTP or tested to confirm the appropriate disposal option would be based on the soil and groundwater data from the surrounding area. If this water requires testing it would be collected and based on the results of the tests either sent to the WWTP or disposed of off-site. It should be noted that the current WWTP was suitable for treating the range of contaminants from the former refinery including stormwater and therefore, as discussed above, would be suitable for treating stormwater during the Project.

3.2.2.12 Frequency and volume of discharges

Issue

The NSW EPA recommended that the proponent estimate the expected frequency and volume of discharges from the drainage system.

Response

The frequency and volume of discharges from the drainage system is unlikely to significantly change. There are no major water inputs into the Project although some waste water discharge from the remediation technologies, dust suppression, wheel washes etc. may occur. Section 4.2.2 of Appendix D of the EIS provides an estimate of expected flows from the Project to the WWTP during Stages 1 to 3 of the Project. The conclusion of this assessment is provided below. Please note that the drainage system and WWTP previously managed larger water discharges from the Clyde Refinery.

3.2.2.13 Assessments of impacts on receiving waters

Issue

The NSW EPA recommended that the proponent assess the potential impact of discharges from the drainage system on the environmental values of the receiving waterways, with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values.

Response

As stated in Section 9.6.1.1 of the EIS *"Based on the use of the existing surface water and wastewater management systems, it is anticipated that there would be no deterioration in discharge characteristics that would lead to non-compliance with licenced discharge conditions….. Given that surface water and wastewater would continue to be largely discharged via existing systems, no adverse impacts are anticipated at neighbouring properties."*

Therefore for the reasons provided in the EIS and in the sections above, no potential impacts on the values of the receiving waters are considered likely. Further assessment is therefore not warranted given the temporary nature of the Project, the modified nature of the receiving environment, the ability of the existing systems at the Clyde Terminal to manage stormwater flows and the ongoing compliance with EPL 570.

3.2.2.14 Surface water management System

Issue

Consistent with the NSW Water Quality Objectives, the NSW EPA noted that the surface water management system should be designed to ensure discharges contribute to:

- protecting the environmental values where they are being achieved in a waterway; and
- contributes towards achieving the environmental values over time where they are not being achieved in a waterway.

Response

Refer to the response under **Section 3.2.2.6**.

In addition:

- During the remediation activities the majority of the surface water flows from the Western Area would be discharged though the existing stormwater and wastewater management systems. As discussed previously it is unlikely that the quality and quantity of these flows would be significantly different to those that are currently treated by the WWTP and other water management systems.
- Following completion of the Project the final landform would improve surface water flows from the Western Area to the Duck River. This is discussed in Section 4.2.3 and 4.2.4 of Appendix D of the EIS. Model for Urban Stormwater Improvement Conceptualisation (MUSIC) modelling of the final landform for the Western Area shows significant reductions in TSS, Total Phosphorous, Total Nitrogen, and Gross pollutants (between 70% and 100%). In addition, the Project would remove contamination from across the Western Area and place a layer of topsoil across the final landform. This would also result in improved quality of surface water flows.

By remediating the Western Area and maintaining the proposed final landform, the resulting improvement in surface water flows would help achieve the water quality objectives for the Parramatta River including the Duck River by helping to protect aquatic ecosystems, visual amenity, and helping achieve improved recreation opportunities.

3.2.2.15 Drain excavations

Issue

The NSW EPA recommended that the proponent provide details of how excavation of soils around drains would be managed to minimise potential water quality risks, such as in relation to potential contaminated runoff and scouring of drainage channels.

Details provided should include controls to be implemented to prevent erosion and sediment movement during and following excavation (e.g. minimising exposed soils through cover and staging; diverting upslope drainage around exposed soils; slowing flows in drainage channels to reduce sediment movement) and where necessary to contain contaminated runoff and leachate.

Response

As per Section 12.11 of the Conceptual RAP, excavated stormwater drains would be isolated from the wider drainage system. Stormwater would be diverted away from the excavation and the excavated areas would be progressively validated and backfilled with suitable material to mitigate the pooling of surface water within excavations and related infiltration to the groundwater system.

Specific details regarding excavations around drains and appropriate erosion and sediment controls would be included in the Detailed RAP, Remediation Environmental Management Plan (REMP) and the Soil and Water Management Plan for the Project. The progressive validation and backfilling of excavated drains would be detailed in the Detailed RAP and would serve to mitigate erosion of drain excavations and pooling of surface water.

3.2.2.16 Surface water monitoring, management triggers and responses

Issue

The NSW EPA noted that the EIS did not provide details of monitoring that would be implemented to detect and manage potential water quality risks. The EIS indicates that discharges from the wastewater treatment plant would continue to be monitored in accordance with the existing licence conditions for the Clyde Terminal (EPL 570). It is unlikely the existing monitoring parameters and frequency are appropriate for the proposed discharges. In particular, monitoring of bypass discharges would be required but is not currently a licence requirement.

The EIS does not propose monitoring of discharges from the drainage system. Monitoring of these discharges is required to detect and manage potential risks to the receiving waterway.

The NSW EPA recommended that the proponent provides details of:

- monitoring points including monitoring of discharges from the wastewater treatment plant and from the drainage system;
- monitoring parameters including all pollutants likely to be present at non-trivial levels;
- monitoring frequency/conditions;
- management triggers derived with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values; and
- management actions to be implemented in response to exceedances of management triggers.

Response

The majority of the stormwater and all of the wastewater flows from the Western Area during the Project would be discharged via the WWTP or would be captured and disposed off-site.

As discussed above, adverse water quality impacts on the values of the Duck River are not anticipated as the potential COPCs arising from the Project would not be different from those treated in the WWTP currently and during the operation of the Clyde Refinery and the Conversion Project. As such Viva Energy believes that existing monitoring parameters and frequency outlined in EPL 570 are appropriate for the anticipated discharges from the WWTP. Existing monitoring locations are identified on Figure 9-1 of the EIS and would continue to be utilised for monitoring throughout the Project.

Specific details regarding management actions should exceedances of management triggers occur would be included in the Soil and Water Management Plan for the Project. If necessary, additional monitoring requirements would be developed following completion of the remedial investigations and would be agreed with the Auditor.

The western part of the Western Area does not currently drain to the WWTP. Stormwater in this location (Catchment Area 6, refer to Figure 9-1 of the EIS) flows off-site to a Council Drain. Where

Project activities could result in wastewater from the Project entering this drain, prior to works commencing in this catchment, measures would be taken to redirect flows to the WWTP.

Stormwater flows from Catchment Area 6 that are not likely to be impacted by the remediation works would continue to discharge directly to the Council Drain. This part of the Site was formally used for vehicle storage and therefore no monitoring is considered necessary. Discharges would only occur when there is sufficient rainfall to result in runoff.

The final landform of the Western Area would include 100-150 mm of clean fill cover and revegetation. Runoff would be directed via swales to a distribution system along the southern boundary as described in section 9.6 of the EIS. Given that the land would be remediated and covered with a clean layer of soil, licencing and monitoring would not be required following completion of the final landform.

The new management measure relevant to this issue and response are provided in **Table 3-5**.

Table 3-5 Amended mitigation and management measures – water management – NSW EPA

Reference	Mitigation and management measures	Timing
SW4	**The proposed works will broadly progress across the Western Area in a staged manner from north west to south east, towards the WWTP, to allow the existing drainage system to be utilised where possible.** **Where remediation is not required, surface water flows will continue in line with the current management practices. Where remediation is required, surface water flows will be directed to the WWTP, unless the ground investigation data from the surrounding area suggest that the water in excavations should be tested.**	**Stage 1 to Stage 5**

3.2.3 Hydrogeological

3.2.3.1 Removal of hardstand areas

Issue

The NSW EPA recommended the proponent provide details to assess the effective management of increased groundwater recharge to the local aquifers as a result of hardstand removal. The area has proven to be susceptible to flooding and unprecedented rainfall events (see supporting material), so the likelihood of large-scale surface inflows is possible.

Response

The flood risk for the Western Area is shown on Figure 3-1 of Appendix D of the EIS. As demonstrated by the relevant flood hazard mapping, most of the Project Area is low hazard for the 1% AEP, however there are some small areas close to Duck River where the hazard is high as a result of increased flood depth (WMA Water 2016). The supporting material referred to appears to be relevant for Parramatta CBD as opposed to the Camellia Peninsula.

The potential infiltration of surface water to the groundwater system would be reduced in the Project Area as far as practicable through measures identified in the EIS including erosion and sediment controls around excavation areas, drainage infrastructure and pumping water out of excavations. Hardstand areas would be retained for as long as possible to retain roads and other remediation and land forming staging areas. As the underlying natural geology comprises relatively impermeable clay sediments, significant recharge of the groundwater system from surface water is unlikely. The recent ERM (4 March 2019) Clyde Terminal - *Quarter 4 (2018) Groundwater Monitoring Report* (refer to **Appendix E**) confirms that no significant changes in groundwater levels has occurred at the Site in the last 2-3 years during which time demolition works have damaged and/or removed large areas of hardstand increasing the potential for infiltration. Equally the area likely to be excavated by the Project would be relatively small in comparison to the larger catchment. Overall it is considered unlikely that the Project would result in a notable increase in groundwater recharge.

In the short term (during the remediation), it is likely that some groundwater recharge would occur as areas of hardstand are removed. However, mitigation measures such as dewatering of excavations and the installation of temporary drainage systems are likely to reduce the infiltration rate. Conducting the remediation progressively in discrete portions of the Project Area (i.e. not opening up large scale excavations) would further limit the potential for groundwater recharge and the potential for migration of impacted groundwater. Towards the end of the remediation process and at its conclusion, the final landform would be focused on efficient movement of rainfall via surface water infrastructure, thus reducing potential for groundwater recharge in the longer term.

3.2.3.2 Natural attenuation and existing groundwater impacts

Issue

Evidence of the [ERM 2018a] report or the [Mann-Kendall] test was not presented in the EIS or RAP and conflicting information regarding the report reference and its publication date were identified.

To assist in the assessment of this proposal, it is recommended the proponent provide: a new Mann-Kendall test using updates monitoring results, complete with calculations and tables, to establish increased confidence in remedial plans.

Response

The reference in the Conceptual RAP is correct - ERM, March 2018a, Quarter 4 (2017) Groundwater Monitoring Event – Clyde and Parramatta Terminal, March 2018 (ERM 2018a).

Based on routine monitoring conducted across the Site since circa 2005 (including the Project Area), the trend plots in Appendix I of ERM 2018a indicate that benzene, Total Recoverable Hydrocarbons C6-C9 and C10-C36 concentrations are generally decreasing across the Project Area (including at several locations on the Project Area).

Statistical analysis has also been undertaken as part of the recent Clyde Terminal - Quarter 4 (2018) Groundwater Monitoring Report[1] (ERM, 2019a). This report presents the Mann-Kendall trend analysis results for the consolidated dataset back to 2005 undertaken for the Site and is provided in **Appendix E**.

The trend analysis within Section 6 of the 2019 ERM report concludes that the spatial extent of LNAPL thickness is "*stable to decreasing*" and for dissolved phase constituents "*generally, concentrations of COPCs exhibited stable to decreasing statistical trends*". It is considered with petroleum concentrations decreasing, the plumes would continue to have a negligible impact on the surrounding environment. A groundwater monitoring program would be implemented throughout the remediation works as detailed in Mitigation and Management Measure SGC6.

Statistical analysis of the groundwater data set would continue to be undertaken using the Mann Kendall procedure as part of the routine groundwater monitoring program.

3.2.3.3 Clarification on plume changes and trends

Issue

There are issues of increased surface runoff infiltration occurring during the remediation process, with the potential for a rise in contaminant concentration, and the possibility of expanded migration.

The NSW EPA recommended the proponent provide clarification on plume changes and trends.

Response

The identified petroleum hydrocarbon plumes associated with historical activities at the Site are considered stable and with petroleum concentrations decreasing, would continue to have a negligible impact on the surrounding environment.

As above, the trend analysis and groundwater gauging works across the Site reported in the ERM (2019) report has not identified significant changes to the groundwater system over the last 2 to 3 years when large hardstand areas have been damaged and/or removed as part of the demolition works. To assist in the NSW EPA review of groundwater trends, a copy of the results of the Mann-Kendall trend analysis is included within Appendix I of the Clyde Terminal - Quarter 4 (2018) Groundwater Monitoring Report (ERM, 2019a), which is provided in **Appendix E**.

[1] This analysis is located in Appendix I of the Groundwater Monitoring Report (ERM, 2019a) provided as **Appendix E** of this report.

The trend analysis within Section 6 of the 2019 ERM report concludes that the spatial extent of LNAPL thickness is "*stable to decreasing*" and for dissolved phase constituents "*generally, concentrations of COPCs exhibited stable to decreasing statistical trends*". It is considered with petroleum concentrations decreasing, the plumes would continue to have a negligible impact on the surrounding environment. A groundwater monitoring program would be implemented throughout the remediation works as detailed in Mitigation and Management Measure SGC6.

As discussed above, statistical analysis of the groundwater data set will continue to be undertaken using the Mann Kendall procedure as part of the routine groundwater monitoring program.

3.2.3.4 Monitoring, management and remediation plans

Issue

The NSW EPA requested that the proponent develop a Groundwater Monitoring and Management Plan (GMMP), made in consultation with, or approved by, the Department of Industry – Water and the EPA. The GMMP should detail ongoing monitoring practices as remediation progresses, trigger levels and associated response plans for the detection of unprecedented monitoring results, as well as mitigation and management options should harmful impacts be identified or continued.

Response

The Detailed RAP would contain a GMMP that would describe the monitoring of groundwater conditions during the Project. This plan would outline measures to identify, respond and report on groundwater conditions that may have the potential to create unacceptable risk to the Duck River receptors. This GMMP can be provided to both the NSW EPA and Department of Industry – Water for review and comment prior to being finalised. It will also be provided to the NSW EPA accredited Site Auditor for review and approval.

Measure SGC6 has been added in response to the above, refer to **Table 3-6**.

Table 3-6 Amended mitigation and management measures – groundwater management – NSW EPA

Reference	Mitigation and management measures	Timing

SGC6	**The GMMP will be provided to both the NSW EPA and Department of Industry – Water, for comment prior to being finalised and approved by the Auditor. The GMMP will include:**
	• **groundwater quality thresholds and trigger action response plans for changes in groundwater quality that would present an unacceptable risk to Duck River receptors;**
	• **annual reporting requirements for the groundwater monitoring program, including:**
	  - **a discussion of the efficacy of relevant mitigation measures; and**
	  - **a summary of groundwater monitoring data including updated groundwater trends.**
		Stage 1 to Stage 5

3.2.3.5 Annual report

Issue

An annual report on the remediation processes should be provided to allow review of the effectiveness of the program since its proposal, commencement, and its ongoing implementation. It will also allow a review of other methods of remediation should the program options be unsuccessful, or ineffective.

Response

Viva Energy can provide annual reports to NSW EPA on the progress of the remediation. This commitment has been captured in new measure G6 (refer to **Table 3-7**).

Table 3-7 Additional mitigation and management measures – general– NSW EPA

Reference	Mitigation and management measures	Timing
G6	**Viva Energy will provide annual reports to NSW EPA on the progress of the remediation.**	**Stage 1 to Stage 5**

3.2.3.6 Supporting material

Issue

The NSW EPA recommended the proponent develop and continually update as part of the project's approval, a Groundwater Monitoring and Management Plan. This should contain:

- thresholds for water quality impacts, considering the baseline and ongoing monitoring data that is collected and trigger action response plans for any unprecedented changes in groundwater quality or standing water levels at the project area;
- assess how applied mitigation measures (reducing infiltration with geotextile barriers) have reduced impacts using observed monitoring;
- ongoing monitoring that verifies anticipated natural attenuation of groundwater; and
- annual reporting requirements of groundwater impacts from the remediation project.

Response

Section 3.2.3.4 commits to preparing a GMMP as part of the Detailed RAP. This response addresses the first and forth bullet points.

Prior to the Project commencing, a Soil and Water Management Plan (SWMP) would be developed and included as part of the REMP. Measures to protect and monitor groundwater during the Project would be included as part of this plan (refer to MMM SGC2). This addresses bullet point number 2.

Following completion of the Project, the LTEMP would also include a Groundwater Monitoring Plan (GMP) that would be implemented to (amongst other things) to confirm that natural attenuation processes are occurring (refer to MMM SCG5). This LTEMP would be reviewed and approved by the Auditor. This addresses bullet point number 3.

3.2.4 Contamination assessment

Issue

The EPA notes that the EIS report states that the Conceptual RAP was updated to address comments provided by the EPA. The EPA's comment that "If the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced", have not been addressed.

To assist in the assessment of this proposal and in order for the Conceptual RAP to be approved, it is also recommended the following be noted and undertaken:

- dissolved phase contaminant concentrations in sentinel wells are below the closure concentrations for four consecutive bi-annual sampling events (e.g. two years period).
- statistical trends for the dissolved phase contaminant concentrations are either reducing or concentrations are stable as demonstrated using a statistically justified method such as Mann-Kendall analysis, and/or logarithmic plots of concentration versus time.
- if the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced.
- notification to the EPA that compliance with the RAP is complete (or non-compliance if it is not practicable to achieve the closure concentrations for groundwater in a reasonable timeframe).

Response

The EPA requirements listed in the first bullet would be addressed in the Detailed RAP and the LTEMP, which would include a program of groundwater monitoring during remediation (the GMMP, as committed to in measure SGC6) and post remediation works (GMP as part of the LTEMP, as committed to in measure SGC5). Both of these documents would be reviewed and approved by the Auditor. Discussions with the EPA and the Auditor confirmed that the assessment of groundwater conditions during and post remediation would involve a risk-based evaluation, including fate and transport considerations and groundwater flux. This is considered an appropriate and holistic approach for demonstrating stable groundwater conditions post remediation and confirmation that residual groundwater impacts do not present a risk to the ecological values of Duck River.

Regarding the second bullet point, statistical analysis of groundwater petroleum hydrocarbon concentrations is routinely undertaken at the Site on an annual basis. The most recent analysis is documented in Appendix I of the Clyde Terminal - Quarter 4 (2018) Groundwater Monitoring Report (ERM, 2019a). This report contains the result of the Mann-Kendall test undertaken for the Site and is provided in **Appendix E** of this RTS.

This analysis and statistical evaluation of dissolved phase contaminant concentrations will continue to be undertaken in accordance with the GMMP to assess potential changes in groundwater conditions and the potential for unacceptable risks to the Duck River during remediation works. Groundwater monitoring following completion of the Project would be in accordance with the GMP as part of the LTEMP. It should be noted that groundwater conditions at the Site have been routinely assessed for several years, with hydrocarbon concentrations considered to be stable to reducing, not migrating, and do not present an unacceptable risk to the Duck River receptor. Groundwater conditions would be discussed in detail in the Detailed RAP.

The third bullet suggests that groundwater remediation would be undertaken to address potential risks to human health and ecological receptors, with a monitoring program required to demonstrate remedial success and contingencies if remediation endpoints are not achieved. This evaluation or perspective is not consistent with the understanding of groundwater conditions at the Site. As noted above, the dissolved phase impacts have been assessed over many years as stable to reducing (refer to **Appendix E**). Removal of additional secondary contaminate sources (i.e. LNAPL and impacted soil) is expected to enhance the current natural attenuation processes.

LNAPL conditions identified during remediation works would be addressed as part of the soil remediation works. This would form part of demonstrating that residual groundwater impacts do not present unacceptable risks to future land users as well as addressing the most significant source areas of groundwater impacts. The Detailed RAP would provide information on contingency actions that would be considered if areas of residual LNAPL remain that pose an unacceptable risk to the environment. This would include a consideration of alternative management or remediation if changes to groundwater conditions are identified that may present an unacceptable risk to human health or ecological values.

Prior to the Project commencing, the Auditor would be engaged to issue a Section B site audit statement (SAS) to confirm that the Western Area can be made suitable for the proposed commercial/industrial land use given the implementation of the Detailed RAP.

Following the Project, the Auditor would provide Interim Audit Advice(s) (IAAs) and a SAS documenting his review of the Validation report and the post remediation GMP. The Validation Report, GMP, and the Auditor's IAAs and SAS would be provided to the EPA to document completion and compliance with the Detailed RAP.

Measure SGC5 has been amended in response to the above, refer to **Table 3-8**.

Table 3-8 Amended mitigation and management measures – groundwater management – NSW EPA

Reference	Mitigation and management measure	Timing
SGC5	The LTEMP would include a Groundwater Monitoring Plan (GMP) to be implemented to confirm that natural attenuation processes are occurring and residual hydrocarbon concentrations are not posing a human health or ecological risk. ~~It~~ **The LTEMP** would also include management of residual contaminated material (as and if required)**.**	Ongoing operation

3.2.5 Air Quality

3.2.5.1 Assessment uncertainty

Issue

The EPA stated that there is significant uncertainty associated with estimating emissions and predicting impacts utilising dispersion modelling for remediation projects involving material handling in the open. As such the predicted ground level concentrations should be treated with caution.

Given the assessment uncertainties, the guiding principle for managing air quality impacts is through the implementation of best practice mitigation measures. This principle forms the focus of this advice. The issues below have been identified in relation to the air assessment.

Response

As requested by the Secretary's Environmental Assessment Requirements (SEARs), quantitative assessments of potential air quality, dust and odours impacts from the Project were completed in line with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2016). The results of this assessment were provided in an Air Quality Impact Assessment (AQIA) (refer to Appendix E of the EIS). This AQIA identified potential impacts and appropriate mitigation measures (including those listed in **Table 3-9** below). Following further discussions with the NSW EPA, additional assessment has been completed to demonstrate compliance with the relevant air quality limits. This additional assessment is provided is discussed in this section, the rest of **Section 3.2.5**, **Section 3.3** and is provided in full in **Appendix F** and **Appendix G**.

An analysis of the most appropriate, reasonable and feasible mitigation measures (i.e. 'best practice' analysis) should consider a range of factors including:

1. available mitigation options and their expected effectiveness;
2. practical and financial feasibility of the measures being proposed;
3. the degree of risk mitigation gained from the application of the 'best practice' measures;
4. the anticipated ambient air quality and health impacts from the site based on the dispersion modelling; and
5. the environment context within which the source of emissions occurs.

In the case of this assessment, there is a wide range of mitigation options available across the different remedial technologies (refer to **Table 3-9**). The adopted air pollutant mitigation technologies are the typical measures applied for contaminated site remediation projects of this type in NSW and around the world. The measures which were not presented in the AQIA (including the addition of ECEs) were largely discounted due to the impracticality of some of the measures and the low benefit expected in terms of the mitigation of risk posed by the Project, i.e. the risk is already at an acceptable level, meaning that additional measures would result in a decrease in risk from an "acceptable" level to being "more acceptable" for a significant burden in terms of cost and practicality.

Mitigation measures must be reasonable and feasible depending on the environmental context, the nature of the project and the associated cost. The blanket application of one view of 'best practice' does not allow a bespoke consideration of mitigation measures for a particular project in its own context.

Table 3-9 Range of air quality mitigation options available

Source	Mitigation	Control factor	Comment
General activities (excavation and transporting spoil etc)			
Wind erosion from exposed excavation areas	Water sprays (dust mitigation)	50%	National Pollution Inventory Emissions Estimation Technique Manual for Mining (NPI Mining) (DSEWPC, 2012)
Wheel generated dust from dump trucks transporting spoil	Level 2 watering (>2 litres/m^2/h)	75%	NPI Mining (DSEWPC, 2012)
Wheel generated dust from dump trucks transporting concrete slabs	Level 2 watering (>2 litres/m^2/h)	75%	NPI Mining (DSEWPC, 2012)
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Family Emission Limits (FEL) (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Dump Trucks (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Dewatering pump (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Biopiling			
Biopile construction	Progressive covering of biopile during construction	N/A	Maximum exposed area 20% of total biopile volume
	Water sprays (dust mitigation)	50%	NPI Mining (DSEWPC, 2012)
	Volatile organic compounds (VOCs) and odour suppressant foam	95%	Between 6:00 pm to 7:00 am Control efficiency for RUSMAR VOC suppressant foam has been estimated at 99-100% (Kittle and Schmidt 2004), however a value of 95% has been adopted for this assessment to maintain a level of conservatism.
Biopile deconstruction	Progressive uncovering of biopile during deconstruction	N/A	Maximum exposed area 20% of total biopile volume
	Water sprays (dust mitigation)	50%	NPI Mining (DSEWPC, 2012)
Biopile operation	Biopiles covered with impermeable layer. Air from biopiles would pass through large scale granular activated carbon air filters (or another appropriate and effective technology) prior to venting to atmosphere	10 ppm (Total VOC)	
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards

Source	Mitigation	Control factor	Comment
FEL (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Bulldozer (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Concrete crushing			
Crushed concrete stockpile	Water sprays (dust mitigation)	50%	
Wheel generated dust from dump trucks transporting crushed concrete.	Level 2 watering (>2 litres/m^2/h)	75%	NPI Mining (DSEWPC, 2012)
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Dump Truck (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Concrete Crushing Plant (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Landfarming			
Landfarming Operation	Minimise off-site impacts by undertaking land farming away from site boundary	N/A	
	Water sprays with chemicals	90%	NPI Mining (DSEWPC, 2012)
Soil Excavation	Water sprays with chemicals	90%	NPI Mining (DSEWPC, 2012)
	Detailed RAP to identify Total petroleum hydrocarbons (TPH) and BTEX levels in spoil to assess appropriateness of landfarming.	N/A	Spoil with high concentration of TPH and/or BTEX to be remediated by activities employing a high level of VOC mitigation such as biopiling or DTD. Alternatively, an ECE may be considered for spoil with high concentration of BTEX.
Wheel generated dust from dump trucks transporting contaminated & remediated spoil	Level 2 watering (>2 litres/m^2/h)	75%	NPI Mining (DSEWPC, 2012)
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Dump Truck (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Landforming			
Wind erosion from exposed land forming area	Water sprays with chemicals	90%	NPI Mining (DSEWPC, 2012)
Wind erosion from treated stockpile areas	Water sprays with chemicals	90%	NPI Mining (DSEWPC, 2012)
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
FEL (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards

Source	Mitigation	Control factor	Comment
Rollers (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
DTD and Stabilisation			
Wind erosion from treated unvalidated stockpile areas	Water sprays with chemicals	90%	NPI Mining (DSEWPC, 2012)
Pre-treated stockpile area	Water sprays with chemicals (dust suppression)	90%	NPI Mining (DSEWPC, 2012)
	Three sided bay (dust suppression)	75%	Sierra Research (2003)/California Air Resources Board
	VOC and odour suppressant foam	95%	Control efficiency for RUSMAR has been estimated at 99-100% (Kittle and Schmidt 2004), however a value of 95% has been adopted for this assessment to maintain a level of conservatism.
DTD operation	Off-gas collection from the rotary dryer to be processed through the following unit operations: • Cyclone • Thermal oxidiser • Quench utilising water mist • Baghouse • Wet scrubber.		A more detailed description of the design of the DTD unit will be provided in the Detailed RAP once the specific DTD unit to be used has been selected (subject to the remediation contractor tendering phase).
	Screen enclosure and water sprays on outlet	90%	NPI Mining (DSEWPC, 2012)
Mobile Crushing Plant (dust emissions)	Particulate filter can be used on the mobile crushing plant to reduce dust emissions	99%	
Excavators (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
FEL (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards
Mobile Crushing Plant (combustion emissions)	Compliant with US EPA Tier 3 and EU Stage III A	N/A	Non-road Diesel Engine Emission Standards

In addition to the mitigation measures described in **Table 3-9** additional management and mitigation measures have been investigated and proposed including:

- Reduction in excavation areas to minimise impacts from windblown dust and odour. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total).
- Application of odour and VOC suppressant foam over excavation areas at the end of the day with excavation areas expected to be suppressed between the hours of 6:00 pm and 7:00 am daily.
- Additional mitigation measures to supress dust from the DTD plant area including:
  - an enclosure on the screen with water sprays placed on the outlet; and
  - using a particulate filter on the mobile crushing plant.

Modelling the inclusion of these additional mitigation measures has resulted in reductions to ground level odour and particulate concentrations at relevant sensitive receptors and shows a significant reduction in air quality impacts. The revised predicted impacts are discussed in AQIA Technical Notes 1 (Odour) and 2 (Dust) (refer to **Appendix F** and **Appendix G**). These reductions have been achieved without including the use of ECEs in the modelling.

In addition, the Remedial Site Investigations (RSI) have been completed and are documented in the Clyde Western Area RSI Data Summary (ERM, 2019b) provided in **Appendix L**. As explained in the letter, no further ground investigations are considered to be required and the additional investigations did not identify new areas of concern. The RSI letter report shows that from 592 samples collected across the Western Area, 19 samples from 11 locations contained detections of benzene and of those 19 samples, only 4 exceeded benzene soil concentration health screening level criteria for commercial / industrial land uses (HSL-D criteria). These HSL-D criteria exceedances were limited to the Southern Buried Waste Area, situated in the south western extent of the Western Area[2] of the Site.

The preliminary findings presented in the RSI letter report reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA. These findings alongside the information in the Conceptual RAP, EIS and the additional assessments for odour and dust emissions (**Appendix F** and **Appendix G**) have allowed the development of a high level, indicative protocol for informing decisions regarding the appropriate remediation or management method for contaminated soils (depending on TPH and VOC concentrations). This protocol is provided in **Appendix J** and is in the form of a decision tree which provides a mechanism for classifying soils and addressing potential air quality risks based on soil concentrations and employing appropriate remedial and mitigation measures based on the level of contaminants, specifically TPH and VOCs.

The draft protocol demonstrates how soils that need to be excavated as part of the Project for remediation will be broadly managed. The NSW EPA in their letter dated 2 August asked for a stronger commitment regarding the use of ECEs for handling, processing, treatment and storage of ‘higher risk materials’ in relation to principal toxic air pollutants (PTAPs). This request is in part based on text from Section 7.2.1 of the Approved Methods for Modelling and Assessment of Air Pollutants (NSW EPA, 2016), which describes that PTAPs *“must be minimised to the maximum extent achievable through the application of best practice design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations*”.

As shown in the Conceptual RAP and the RSI letter report, the presence of ‘higher risk materials’ is limited and as such it may not be reasonable and feasible to employ an ECE given, amongst other things, technical, logistical and financial considerations.

Nevertheless in order to address the matters raised by the NSW EPA, a commitment to using ECE for storage and pre-treatment has been made where soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. ‘higher risk soils) require treatment and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation.

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[2] Exceedance of other air toxics examined was not recorded. This is consistent with the existing understanding on the contamination distribution of the Western Area. Additional investigations did not identify any new areas of concern; providing further confidence and delineation of previously identified ground conditions. As such the data used within AQIA based on the TSI (AECOM 2018) is considered appropriate based on data available at the time of writing.

This commitment is presented in the indicative decision protocol (**Appendix J**) which details that management of this soil would include the following options:

- Transport offsite on the day of excavation; or
- Transport direct to an available biopile for remediation; or
- Transport to an enclosed preliminary treatment area prior to Direct Thermal Desorption; or
- Transport to an enclosed area to undergo stabilisation prior to offsite disposal.

The NSW EPA letter dated 2 August also requested a commitment be made to prevent VOCs from being remediated through landfarming. In line with the EPA's request, the draft protocol now stipulates that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming.

Two new management and mitigation measures are proposed regarding ECEs and to avoid VOCs being released during landfarming. One other measures (AQ1) also needs to be amended to account for the potential inclusion of an ECE. These new and amended measures are provided in **Table 3-10**.

Table 3-10 Additional mitigation and management measures – air quality – NSW EPA

Reference	Mitigation and management measures	Timing
AQ1	Air quality management controls would be implemented as part of the design of the Project including: • level 2 (>2 litres/m^2/h) watering of on-site haul roads; • watering with or without dust suppressants on exposed areas and stockpiles; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on untreated stockpiles in the DTD area **(if these stockpiles are not located in an ECE)** and on exposed untreated biopiles (i.e. during construction of the biopile) over night; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on exposed excavation areas where both required and practical; • biopiles would be covered during operation and off-gas from biopiles would be passed through air filters to remove volatile hydrocarbons; • the DTD unit pre-treatment area stockpile would be enclosed within a three sided bay **unless this material is being stored or pre-treated inside an ECE**; • all mobile and stationary diesel engines would be compliant with US EPA Tier 3 and EU Stage III *A Non-road Diesel Engine Emission Standards*; • off-gas from the DTD unit would be treated before it is discharged to the atmosphere through a stack; • where possible stockpiles would be covered; • enclosing the DTD **material** screening area and placing water sprays on the outlet; and ensuring a particulate filter is used on the mobile crushing plant.	Detailed design/ Stage 1 to Stage 5

Reference	Mitigation and management measures	Timing
AQ7	**An emission control enclosure (ECE) will be installed to store and pre-treat soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene prior to treatment within the DTD plant or prior to on-site stabilisation. The ECE would also contain the stabilisation plant when it is used to manage soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene. The design and feasibility of any enclosure would be confirmed as part of the Detailed RAP. Any ECE used would be located adjacent to the DTD plant towards the centre of the Western Area. The decision regarding the feasibility of an ECE will have regard to technical, logistical and financial considerations and would be supported by an air quality impact assessment. The feasibility of an ECE would be discussed with the NSW EPA and approved by the Auditor.**	**Detailed design / Stage 3**
AQ9	**Where soils require remediation, only soils with bulk concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below an agreed limit of detection would be remediated by landfarming. The appropriate limit of detection would be confirmed in the Detailed RAP and approved by the Auditor.**	**Detailed design / Stage 3**

3.2.5.2 Assessment uncertainty 1 – justification of remediation methods

Issue

The EPA found that the EIS did not justify the proposed remediation methods with respect to other contaminates, including whether the proposed remediation technologies are appropriate for these contaminates. Additionally, the EIS does not advise on the decision process for the remediation of non-petroleum contamination.

The EPA recommended the proponent justify the proposed remediation methods for other contaminates and details how the decisions would be made regarding which remediation option would be utilised for managing other non-petroleum contamination.

Response

Information regarding the need for remediation of non-hydrocarbon contaminants is provided in Section 8.6.1.1 of the EIS. The decision to remediate contaminants at the Western Area has been based on existing ground conditions and the level of risk presented by each of the contaminants. Further remedial investigations and risk assessments will be completed to confirm the characteristics and volumes of both the petroleum and non-petroleum contaminants.

As part of the work to complete the Detailed RAP, the results of the existing data and remedial investigations would be used to produce a Human Health and Ecological Risk Assessment (HHERA). This HHERA would be used to assess all COPCs present at the Project Area (including non-petroleum COPCs) and, if required derive Remediation Criteria to be used to define the required remediation extent in the Detailed RAP. Based on these outcomes, should risks from non-hydrocarbon contaminants be identified, the appropriate remediation (and/or management) method would be assessed and discussed in the Detailed RAP. If on-site remediation/management is not feasible, the material would be disposed off-site to an appropriately licensed waste or treatment facility (refer to **Appendix J** for an indicative decision protocol that has been developed to illustrate this process).

3.2.5.3 Assessment uncertainty 2 – analysis on the level of contamination

Issue

The EPA noted that the Project includes handling and remediation of material that is likely to contain principle air toxics pollutants (such as benzene) in the open. The assessment information does not describe or provide detailed analysis on the significance of the contamination (including the likelihood of significant principal air toxics) within specific inputs into each remediation method or open material handling area. As such the risk of significant air toxics air emissions has not been adequately communicated.

Based on this, the EPA recommended that the Proponent:

- Clearly articulate the level of contamination (including the presence of principal air toxics) associated with, but not necessarily limited to:
  - each area where material excavation/material handling is to be undertaken;
  - each area where contaminated material is to be stored; and
  - each contaminated material input stream to each remediation method proposed (biopiling, landfarming, DTD).
- Demonstrate that adequate mitigation measures are put in place that target the areas where there is potential for more significant emissions to air of air toxics (that is a higher degree of mitigation for those areas or processes, relative to the risk of air toxic emissions). In particular, it must be robustly justified that the landfarming remediation method is appropriate given the expected level of contamination.
- Provide detailed analysis on the level of contamination for each material input, and each processing area.
- Detail how the mitigation measures to be implemented are adequate relevant to the level of contamination for each material and processing area. This includes a justification that the landfarming remediation method is appropriate given the level of contamination.

Following a review of the draft response to this issue, the EPA provided further comments in a letter dated 2 August 2019, summarised as follows:

- Certain emission estimates were not considered to be conservative or representative of worst-case estimates, particularly those related to the site-specific soil vapour pore space calculations.
- Given the uncertainty regarding some of the estimates the proponent should provide a stronger commitment to the use of ECEs for handling, processing, treatment and storage of higher risk materials, including but not necessarily limited to storage of excavated material prior to classification, storage of material feed for the direct thermal desorption plant.

Response

Soil sample data collected as part of the Targeted Site Investigation (TSI) were used to inform the AQIA within the EIS. The extensive investigations completed at the Western Area has confirmed the assumptions that the AQIA was based on and has shown that contamination at the Western Area was not homogenous. A significant portion of soil samples collected returned concentrations that were less than the laboratory limit of detection for VOCs with some isolated areas of detectable VOC concentrations.

Based on the available data at the time of the AQIA was written, the contamination levels used for emissions calculations were considered adequate to characterise the air pollutant emissions. Post submission of the EIS, ERM have completed Remediation Site Investigations (RSIs) to inform the development of the Detailed RAP. The preliminary findings of RSIs are provided in **Appendix L** and reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA.

The response dated 2 August 2019 from the NSW EPA and a follow up meeting with the EPA and DPIE on the 13 August 2019 questioned the conservatism of the AQIA (through a question of the model uncertainty) and made specific comments in relation to the site-specific soil vapour pore space calculations. The EPA stated that this, together with the potential for unidentified hotspots, was a key consideration in the EPA's request for a stronger upfront commitment to the use of enclosures during remediation works on higher risk materials.

Emission rates for air toxics in the AQIA are considered conservative and representative of a reasonable worst-case estimate as:

- VOC emissions from exposed surfaces and stockpiles (referred to as passive VOC emissions in the AQIA) are based on an average of the soil vapour sampling data from targeted contaminated parts of the Western Area. This average has been calculated based on targeted sampling data within areas where contamination of soil was visibly present.
- VOC emissions from excavation and materials handling (when the soil is being disturbed) have been calculated using the US EPA Short Term Emission Rate Calculations, with additional upper limiting input parameters including activity rates, soil air porosity and vapour pressure.

A detailed explanation of the assumptions and numbers behind the pore space calculations emission estimates has been provided in the AQIA Technical Note 4 which has been provided in **Appendix I**. This note outlines the assumptions and conservatism in the pore space calculations and provides justification for the use of the emission rate equation used for the Air Toxic emission rates. Section 4.2.2 of **Appendix I** (Technical Note 4) also provides a comparison of the calculated emission rate for benzene for excavation with the available quantity of benzene within the soil. The mass balance equations for excavation of spoil in AQIA Technical Note 4 indicated the emissions equation used in the AQIA significantly over estimated the total mass of benzene emitted when compared to the total available quantity of benzene in the soil.

In addition to the pore space emission estimate discussion in **Appendix I**, a detailed list of assumptions and the degree of conservatism has been provided in AQIA Technical Note 3 which has been provided as **Appendix H**. This note lists 38 assumptions and details how each of the assumptions were developed to ensure the conservatism of the AQIA.

These documents show that there is a large amount of conservatism built into the emissions estimates and the methods used to calculate VOC emission rates from all sources within the AQIA.

The conclusions of the AQIA and the supporting technical notes provided in **Appendix F** (Odour) and **Appendix G** (Dust) have confirmed appropriate mitigation measures for the Project. These proposed mitigation and management measures now include limiting active excavation areas and the application of odour and VOC suppressant at night on exposed excavation areas to minimise potential VOC impacts from these sources (refer to **Section 3.2.5.1**). A mitigation measure regarding ECEs has also been included and is discussed in **Section 3.2.5.1**.

In addition, an indicative protocol for informing decisions regarding the appropriate remediation or management method for contaminated spoil depending on TPH and VOC concentrations has been prepared and is provided in **Appendix J**. This decision protocol would be further developed as the Detailed RAP is finalised, but in this indicative form shows how decisions would be made for soils that require remediation as to which remediation method is appropriate or whether soil needs to be disposed off-site.

The intent of the decision protocol is to ensure that if air toxics are present in the soil they would be dealt with by the appropriate remedial activity such as biopiling where air from biopiles is passed through an activated carbon air filter or by DTD where off-gas is processed through operations such as a cyclone, thermal oxidiser, baghouse and wet scrubber.

The decision protocol also makes it clear that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming. It also shows a commitment to using ECEs where soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. 'higher risk soils) are present and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation. A management and mitigation measure regarding an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

3.2.5.4 Assessment uncertainty 3 – mitigation measures for fugitive emissions

Issue

The EPA commented that the assessment did not:

- benchmark the proposed emission control and management measures with best practice process design and emission control; or
- evaluate the practicability of conducting processing operations in an enclosure, especially noting that contaminated material proposed to be handled may contain principal air toxics.

The EPA recommended the proponent benchmark the proposed emission management measures and controls with best practice process design and emission control. This must include the evaluation of conducting material excavation/handling and storage within emission control enclosure(s).

Following a review of the draft response to this issue the EPA provided further comments in a letter dated 2 August 2019. The relevant comments are summarised as follows:

- Based on the NSW EPA's view that the estimated emissions were not conservative and the text regarding PTAPs from Section 7.2.1 of the Approved Methods for Modelling and Assessment of Air Pollutants (stated in **Section 3.2.5.1**), the NSW EPA asked that the applicant consider implementing enclosures on specific areas where the most impacted material is proposed to be stored or processed and make a stronger commitment to the use of enclosures on higher risk material.
- The EPA noted that it is not acceptable to use landfarming to remove VOCs from soils unless the volatile constituents are captured and treated. They noted that Viva Energy had committed to sending soils requiring remediation with high concentrations of TPH or BTEXN to other forms of remediation and not landfarming them. The NSW EPA recommended that a protocol for informing decisions regarding appropriate remediation methods be developed to ensure that material containing VOCs are not remediated through landfarming.

Additional discussions with the NSW EPA on 13 August 2019 requested that protocol for how fugitive emissions would be managed onsite be provided.

Response

As noted in **Section 3.2.5.3**, the predicted air toxic pollutant emissions for the Project as a whole are well below relevant criteria (refer to Section 10.6.2 of the EIS).

An evaluation of the potential use of ECE(s) was provided to the NSW EPA as a separate Air Quality Benchmarking Study report. The NSW EPA provided a supplementary submission regarding this report. Our responses regarding this submission are provided in **Section 3.3** below with the NSW EPA's responses to this report provided in their letter dated 2 August and noted above.

With regards to the potential use of ECEs, as discussed in **Section 3.2.5.1**, the appropriateness of any mitigation measure is based on several considerations. In relation to principal toxic air pollutants, as shown in the EIS, Conceptual RAP and the RSI letter report (**Appendix L**) the presence of 'higher risk materials' is limited in the Western Area and as such it may not be reasonable and feasible to employ an ECE given, amongst other things, technical, logistical and financial considerations.

As noted in the meeting with the NSW EPA on the 7 May, in **Section 3.2.5.6** and confirmed by the EPA Accredited Site Auditor, 'best practice applications' utilising ECEs for small scale highly contaminated areas are not necessarily applicable to broad area remediation sites such as the Western Area where other mitigation techniques are employed. Discussions with Ventia (an experienced remediation contractor) noted the following:

- The question of what is considered best practice for remediation projects dealing with high concentrations of odorous and or volatile toxic chemical in soil, can be judged based on practice to date in NSW, Australia and internationally.
- Contaminants of concern on remediation sites where enclosures have been used have been focused on gasworks remediation sites (e.g. Macdonaldtown, Platypus, Millers Point and Toowoomba) and focused on toxic, carcinogenic or odorous compounds. Other remedial sites

which adopted enclosures were typically chlorinated chemical contaminated sites (e.g. Lednez, Allied Feeds, Orica Botany Car Park Waste Encapsulation, Orica Villawood).

- These sites can be split into sites with large excavation footprints (>1 ha, e.g. Toowoomba, Lednez, Allied Feeds) and sites with small excavation footprints (<1 ha, e.g. Macdonaldtown, Platypus, Orica Botany Car Park Waste Encapsulation).
  - For projects with small excavation footprints (<1 ha) that involve highly odorous and / or toxic volatile compounds excavation and pre-treatment is usually undertaken in an ECE with an effective Emission Control System (ECS). For former gas work sites treatment using immobilisation either on or offsite was undertaken; while treatment for former chemical plant sites occurred onsite using either a thermal treatment plant or soil washing.
  - For projects with large excavation footprints (>1 ha) excavation and temporary stockpiling has been commonly undertaken in the open using field controls to minimise emissions of odorous or toxic compounds (providing predicted human health air risks are acceptable). Pre-treatment frequently occurred within an ECE with an associated ECS.
- For comparison, the average benzene concentration for material from some of the larger sites was 11.9 mg/kg for fill from Toowoomba Gasworks, 675 mg/kg for sediments/mud from the Lednez site and 0.25 mg/kg for the fill from the Clyde Terminal Western Area. As confirmed in **Appendix L**, levels of benzene across the site are low, with the majority of soil samples below the level of detection.
- Carrying out remediation activities in an enclosed environment raises several additional Occupational Health and Safety (OHS) risks that must be properly considered and managed including respiratory exposure to air pollutants and heat stress.
- The costs associated with constructing and operating an ECE that covered a 10,000 m^2 (1 ha) area would be approximately:
  - $2.7M for construction
  - $30,000 - $70,000 per month during operation.
  - $2.5M ECS capital cost;
  - $40,000 per month ECS operating cost (excluding labour, plant and equipment)
  - $1M in relocation costs (per move)
  - OHS costs could be significant if self-contained breathing apparatus (SCBA) was required.

As the presence of ‘higher risk materials’ is limited in the Western Area and that there are no significant impacts related to air toxics, dust or odour (refer to the AQIA in Appendix E of the EIS, **Appendix F** and **Appendix G**) it is unlikely that the significant cost and OHS issues related to the use of an ECE would be considered reasonable and feasible. Furthermore, the Project is largely targeted at the remediation of aliphatic compounds and the comparison with former gasworks sites (such as MacDonald town, Barangaroo and Platypus) which exhibit a higher fraction of aromatic compounds is not valid.

A review by AECOM of its global experience of enclosures noted that they had primarily been used on pesticide and dioxin contamination projects including:

- Aberdeen Pesticides Dump Sites (Aberdeen, North Carolina, USA);
- Syngenta (Maidstone, U.K.);
- Pennys Bay (Hong Kong, China); and
- Times Beach (Missouri, USA).

In addition, Irish, French and Dutch teams have used enclosures as required primarily for former pharmaceutical sites and chemical facilities.

The use of ECEs was considered for a major refinery remediation project between 2008 and 2011 at Llandarcy in the UK (previously third largest refinery in UK) however the use of enclosures was discounted as the remedial works were undertaken remotely from nearby sensitive receptors and so nuisance/health risks to neighbours were low.

Nevertheless, to address the matters raised by NSW EPA, a commitment to using ECEs for storage and pre-treatment has been made where soils with a bulk soil concentration exceeding the HSL-D criteria for benzene (i.e. ‘higher risk soils’). The use of ECEs for storage and pre-treatment would occur where higher risk soils cannot be treated in-situ; placed directly into a biopile or transported offsite on the day of excavation.

This commitment would involve erecting an ECE adjacent to the DTD plant where soils that are to be treated by the plant would be stored and pre-treated prior to remediation. This ECE would also contain the stabilisation plant and would be used to store and pre-treat material that is to be stabilised. The ECE may also be used to store ‘higher risk soils’ that cannot either be quickly transported offsite or cannot be placed directly into a biopile. The design of the ECE would be confirmed as part of the Detailed RAP however it would be located adjacent to the DTD plant and stabilisation operations in the centre of the Western Area. Given this location and distance to sensitive receptors it is unlikely to result in adverse noise or visual impacts. A management and mitigation measure regarding an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

In accordance with the NSW EPA Best Practice Note: Landfarming (NSW EPA, 2014), emissions from VOCs should “*present no health risks and compliance with air quality standards and occupational exposure standards is required*”. In order to reduce emissions from PATPs as low as reasonably practical, a commitment has been made that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming. A management and mitigation measure committing to this is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

These commitments regarding an ECE and landfarming are presented in the indicative decision protocol provided in **Appendix J**. This protocol will be used to inform decisions regarding the appropriate remediation or management method for contaminated material depending on TPH and VOC concentrations. This decision protocol would be further developed as the Detailed RAP is finalised but in this indicative form it shows how decisions would be made for soils that require remediation as to which remediation method is appropriate or whether soil needs to be disposed off-site.

The decision protocol also makes it clear that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming. It also shows a commitment to using ECEs where soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. ‘higher risk soils) require treatment and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation.

Also, a further reduction in fugitive emissions from excavation areas has been achieved through the following committed management measures:

- Reduction in excavation areas to minimise impacts from windblown dust and odour. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total).
- Application of odour and VOC suppressant foam over excavation areas at the end of the day with excavation areas expected to be covered between the hours of 6:00 pm and 7:00 am daily.

Fugitive emissions would also be reduced through the management measures listed in **Section 3.2.5.1** and **Table 3-9** and the Reactive Air Quality Management Plan which is provided as a draft in **Appendix K**.

3.2.5.5 Assessment uncertainty 4 – potential for odour impacts at neighbouring receptors

Issue

The EPA commented that:

- the sole reliance on reactive management, through the use of odour suppressants, for managing odour impacts at neighbouring receptors is not appropriate and are not sufficient to demonstrate compliance with the 2 Odour Units (OU) assessment criterion. The EPA advised that reactive management measures should not be implemented in place of feasible and reasonable best practice controls (including engineering controls).
- the assumed 95 % control efficiency of the odour and VOC suppressant has not been justified.

The EPA recommended that the proponent should:

- consider additional control measures, including engineering controls to achieve compliance with the 2 OU odour criterion;
- include adequate best practice mitigation measures rather than solely relying on reactive measures; and
- reassess the predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.

Following a review of the draft response to this issue the EPA provided further comments regarding odour impacts in a letter dated 2 August 2019. The relevant comments are summarised as follows:

- The NSW EPA questioned the control efficiency of the proposed odour suppressant and noted that its effectiveness is dependent on its implementation.
- The NSW EPA noted that the modelled odour impacts presented in the EIS could be mitigated through a stronger commitment to the use of enclosures for high risk materials, areas and processes.

In discussions on 13 August 2019, the NSW EPA requested that odour emissions from the Project should be remodelled, with additional mitigation measures in place including enclosures.

Response

Modelled odour emissions within the AQIA were derived from odour sampling targeted at areas where notable odour was observed and contaminated soil was visibly present to ensure worst case odour emissions were captured as part of the Targeted Site Investigation (TSI). As such the modelled results are characterised by odour emission rates that remain both high and relatively[3] constant. In practice, odour emission rates are likely to be highly variable based on the level of contamination of exposed surfaces and the age of exposed material at any given point in time. Given the highly variable nature of odour emission rates, reactive mitigation would be an appropriate strategy to minimise the potential for off-site odour impacts.

In addition to the highly conservative sampling data used to inform the odour emissions inventory, additional layers of conservatism have been built into the odour modelling assumptions. These assumptions include concurrent operation of all remedial activities and excavation works, likely overestimation of contaminated spoil (particularly for biopiling and DTD treatment operations) and estimation of odour emissions based on maximum half-life treatment periods for landfarming and biopiling activities.

Measures discussed above in relation to the control of air toxics are expected to result in the minimisation of the release of air toxics from the remedial methods which is expected to further decrease the potential for odour impacts beyond the Site boundary. On-site proactive boundary monitoring would be employed to ensure there are no areas where uncontrolled odours are being released as part of the remediation. Where areas are identified, contingency measures would be

[3] Accounting for variability in peak-to-mean rations associated with changes in Pascal Gifford stability class and assumed half-life of TPH for remedial activates.

employed to further reduce the potential for odorous emissions, e.g. additional foaming, covering with tarps etc. Contingency measures would be further defined as part of the REMP.

The control efficiency of odour and VOC suppressant foam RUSMAR has been estimated at 99-100% (Kittle and Schmidt 2004). This is discussed in Appendix C of the Air Quality Impact Assessment (AQIA) (Appendix E of the EIS) noting the lower value of 95% has been adopted for this assessment to maintain a level of conservatism. Furthermore as noted in the AQIA and **Table 3-9** use of odour suppressant foam as a control factor in the emissions calculations for the AQIA was limited to night time during biopile construction and to the pre-treatment area for spoil designated for remediation by the DTD plant or by stabilisation.

Following discussions with the NSW EPA and DPIE the odour modelling and mitigation was reviewed. Additional management and mitigation measures are proposed and include:

- A reduction in excavation areas to minimise impacts from windblown odour. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total).
- Application of odour and VOC suppressant foam over excavation areas at the end of the day with excavation areas expected to be covered between the hours of 6:00 pm and 7:00 am daily.

The inclusion of these measures alongside the existing inputs into the odour model were quantified using dispersion modelling. The results show a significant reduction in predicted odour concentrations. The revised predicted odour concentrations are presented in AQIA Technical Note 1 in **Appendix F** and show that with the changes outlined above, odour concentrations are not predicted to exceed the 2 OU at nearby sensitive receptors.

It is understood from discussions with NSW EPA on 13 August that their expectation is that modelled odour emissions can be reduced to levels below the targeted odour criteria (2 OU) at sensitive receptors inclusive of nearby commercial and industrial receptors. These results are shown in **Figure 1** and **Table 3-11** below.

Figure 1 Predicted 99th Percentile Odour Concentration Contours for Revised Odour Modelling

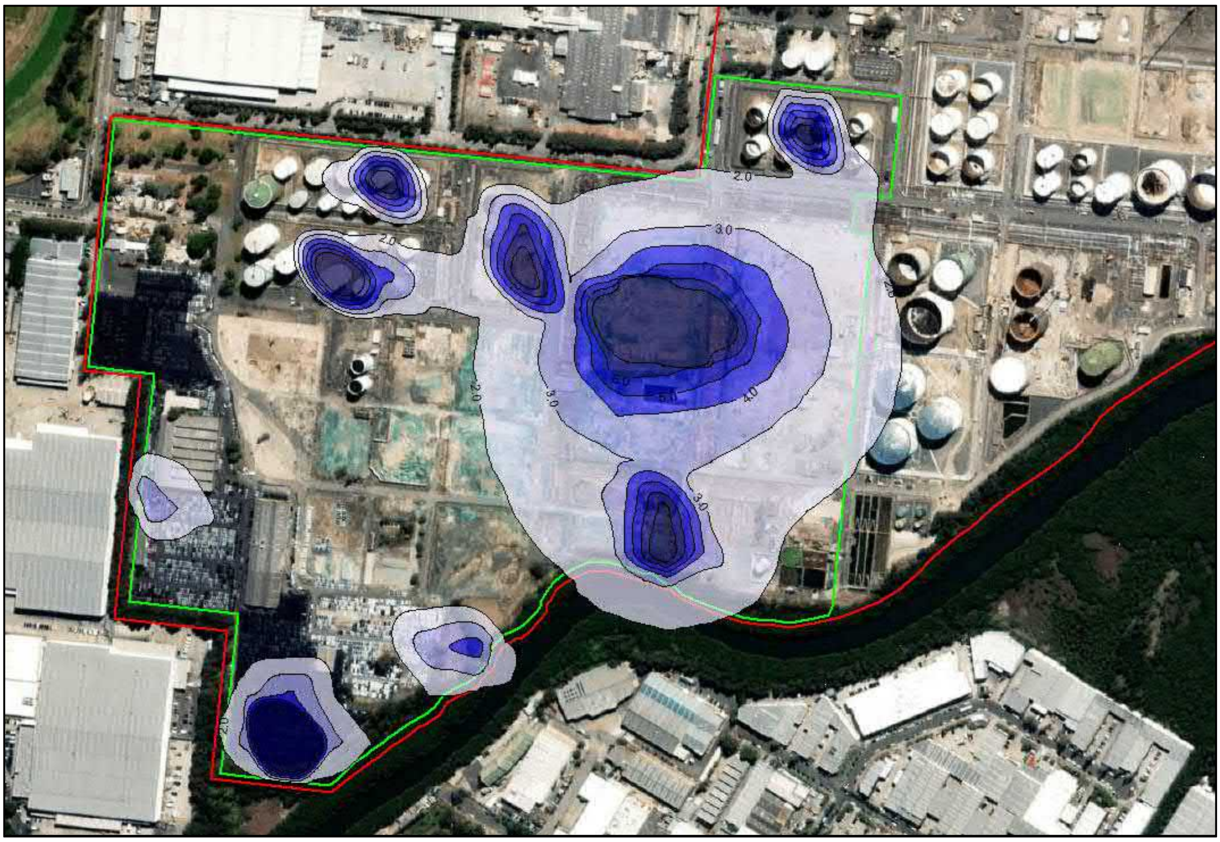

Table 3-11 Predicted 99th Percentile 1 Hour Odour Concentrations at Sensitive Receptors

Receptor ID	Odour
	1-Hour 99.0%
Criteria (µg/m³)	**2.0**
All Residential Max (µg/m³)	0.7
Mixed Use Max (µg/m³)	0.1
Industrial Max (µg/m³)	1.4
Recreation Max (µg/m³)	0.6

With the existing management measures and additional mitigation measures outlined above, the offsite odour impacts were reduced to a level of compliance with the EPA's odour criteria at nearby receptors. Therefore, additional mitigation measures such as ECEs were not included within the modelling predictions.

3.2.5.6 Assessment uncertainty 5 – exceedances of PM_{10} (24 hour) and $PM_{2.5}$ (24 hour) criteria

Issue

The EPA submission advised that reactive management strategies should not be solely relied upon for projects that involve the handling of material that contains air toxics which may or may not be particulate bound and suggested that the guiding principal should be the implementation of best practice mitigation measures (including engineering controls).

The assessment (AQIA) states that particulate matter impacts could be reduced through an enclosure on the screen and a particle filter on the mobile crushing plant associated with the DTD unit and stabilisation operations and has evaluated potential reductions on annual average PM_{10} and $PM_{2.5}$ ground level concentrations. No evaluation for daily PM_{10} and $PM_{2.5}$ has been included.

The EPA recommended that the proponent:

- evaluate reductions achieved with identified mitigation measures for 24-hour average PM_{10} and $PM_{2.5}$. Should exceedances still be predicted additional mitigation measures including engineering controls should be applied; and
- evaluate predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.

Following a review of the draft response to this issue the NSW EPA provided further comments in a letter dated 2 August 2019. The NSW EPA requested that the proponent revaluate predicted 24-hour PM_{10} and $PM_{2.5}$ impacts, based on implementation of the proposed enclosure on the screen and particle filter for the mobile crushing.

Additional discussions with the NSW EPA on 13 August 2019 also requested that:

- As part of this re-evaluation process PM_{10} emissions should be remodelled to provide a revised estimate of the maximum PM_{10} 24 hour concentration at sensitive receptors; and
- Reactive Air Quality Management Plan (RAQMP) with trigger values be developed.

Response

Following a previous request from the NSW EPA, an Air Quality Benchmarking Study report was provided to the NSW EPA on 8 March 2019 to support the Viva Energy Clyde Western Area Remediation Project Air Quality Impact Assessment (refer to **Appendix D**). The study concluded:

"the environmental implications as well as economic and practical implications of the Temporary Environmental Control Enclosure (TECE) above confirm the conclusion that the addition of a TECE would result in a Project that largely already complies with EPA criteria moving to a mitigation option

that would simply further extend the compliance at a significant cost, time and practicality penalty. Therefore the application of TECE is not considered a viable, reasonable or feasible mitigation option for the Project, particularly given the efficacy of the air quality mitigation and management options proposed in the AQIA (AECOM, 2018a)."

The NSW EPA provided a supplementary submission on the Air Quality Benchmarking Study report. Responses to this submission are provided in **Section 3.3** below.

The potential issue of ECEs was also discussed at the meeting with the NSW EPA on 7 May 2019. At this meeting Viva Energy reiterated that the use of enclosures during excavation activities was impractical given the size of the Project Area and the various locations where contaminated soil is likely to be present. The NSW EPA noted that enclosures had been used at other sites however it was noted by the Auditor that these sites had been former gas works and do not have the same types and volumes of contamination present within the Project Area. Equally many of these sites had potential receptors much closer and in higher numbers. As such, the use of ECEs is not warranted for the Project at this time particularly given the low levels of air toxics and the identified mitigation approaches are likely to result in no significant impact (further discussed in **Section 3.2.5.4**).

Nevertheless as noted throughout **Section 3.2.5** in order to address the considerations raised by the EPA regarding the use of ECEs, a commitment to using ECEs for storage and pre-treatment has been made where soils with a bulk soil concentration that exceed the HSL-D criteria for benzene (i.e. 'higher risk soils) that require treatment and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation. A management and mitigation measure regarding an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

As requested by NSW EPA the predicted 24-hour PM_{10} and $PM_{2.5}$ impacts have been re-evaluated based on the implementation of the following additional mitigation and management measures:

- Reduction in excavation areas. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total); and
- Additional mitigation measures to supress dust from the thermal desorption plant area including:
  - an enclosure on the screen with water sprays placed on the outlet; and
  - installation of a particulate filter on the mobile crushing plant.

Changes to ground level particulate concentrations at sensitive receptors have been quantified using dispersion modelling and show a significant reduction in predicted air quality impacts including a reduction in potential exceedances of the PM_{10} and $PM_{2.5}$ 24 hour criteria. The revised predicted impacts are discussed in AQIA Technical Note 2 in **Appendix G**. The change in predicted concentrations at nearby sensitive receptors is show in **Table 3-12**. The use of enclosures was not included in this revised assessment.

Table 3-12 Predicted Maximum 24 Hour and Annual Average PM_{10} and $PM_{2.5}$ Concentrations at Sensitive Receptors

Pollutant	Averaging Period	AQIA Concentration (µg/m^3)		Revised Dust Assessment Concentration (µg/m^3)		Criteria (µg/m^3)
		Incremental	Cumulative	Incremental	Cumulative	
PM_{10}	Maximum 24-hour average	43.9	83.3	20.1	65.3	**50**
	Annual average	12.0	32.1	2.8	22.8	**25**
$PM_{2.5}$	Maximum 24-hour average	4.4	45.6	2.8	45.1	**25**
	Annual average	1.1	10.6	0.4	9.9	**8**

In addition to the dust mitigation measures detailed in **Section 3.2.5.1** and additional commitments made above, a Reactive Air Quality Management Plan (RAQMP) for PM_{10} and $PM_{2.5}$ emissions would be developed to ensure offsite dust impacts are reduced to the furthest extent practicable. An outline of the RAQMP including trigger values is presented in **Appendix K**. This plan would be finalised as part of the Detailed RAP.

3.2.5.7 Assessment uncertainty 6 – Final design of remediation plant and equipment

Issue

The EPA was requested that the proponent provide detailed design of the proposed plant and equipment (DTD unit and biopiling) to enable recommended EPL conditions (including licensing limits and monitoring requirements) to be provided.

The EPA was noted that there were uncertainties with assessing emissions based on nominal discharge parameters and pollutant concentrations, stating that the referenced emission limits were for a project that treated a different type of contaminated material than currently being proposed for remediation.

Additionally, the EPA considered that sufficient detailed information on what discharge concentrations the proposed plant and equipment will achieve had not been provided and as such sufficient detailed information to enable recommended EPL limits has not been provided. The EPA did not find it sufficient to simply nominate discharge concentrations and noted that emission limits should also reflect proper and efficient operation of proposed plant and equipment

The EPA noted that the air filters proposed to be used to capture and control air from the covered biopiles have not been described.

The EPA recommended that the proponent provide:

- a detailed description of the design of the DTD unit and associated emissions control system;
- supporting evidence detailing the likely performance of emissions control equipment and demonstrating that the stated emission concentrations and rates are as low as practicable and the actual levels that can be achieved, including manufacturer's performance specifications. This is to include the emission control equipment for the DTD unit and bio piling remediation methods.

Following a review of the draft response to this issue the EPA noted in their letter dated 2 August 2019 that they agreed with the response provided in this section.

Response

Stack limits in the AQIA have been adapted from the stack emission limits imposed on a similar DTD unit used in the Orica Car Park Waste Encapsulation Project under EPL No. 13263. The adopted emission limits are also in line with (or better) than Group 6 Standards of Concentration for thermal treatment plants as listed under Schedule 2 of the *Protection of the Environment Operations (Clean Air) Regulation 2010 (NSW)* and are therefore considered appropriate.

Large scale Granular Activated Carbon air filters (or another effective and appropriate technology) would treat emissions from the biopiles with possible scrubbers if management of particulate matter is required. Further detail on the biopile construction would be provided in the Detailed RAP.

Detailed description of remediation plant and equipment would be provided in the Detailed RAP, including a more detailed description of the design of the DTD unit and associated emission control system, once the specific DTD unit to be used has been selected (subject to the remediation contractor tendering phase). The final EPL conditions can be agreed once the detailed design for the Project is confirmed (refer to additional measure G5 in **Table 3-13**.

Table 3-13 Additional mitigation and management measures – general – NSW EPA

Reference	Mitigation and management measures	Timing
G5	**EPL 570 will be varied in consultation with the NSW EPA. The final changes to EPL 570 would be agreed with the NSW EPA, once the detailed design for the Project is confirmed and prior to works commencing.**	**Detailed design**

3.2.6 Waste management

3.2.6.1 Contaminated soil

Issue

In relation to management of imported soils under a NSW EPA Resource Recovery Exemption, the EPA recommended that:

- the importation of contaminated soil to the Site will only be permitted under the Project approval, if an appropriate resource recovery order and exemption can be obtained for use of that contaminated soil at the Project Area; and
- no contaminated soil is to be imported to the Project Area, unless the EPA has provided written confirmation that an appropriate resource recovery order and exemption will be provided.

Regarding the Resource Recovery Order / Exemption, DPIE has also asked whether an existing order / exemption exists or whether Viva Energy will apply for a specific order/exemption. If a specific order / exemption is required, DPIE would like to know the timeframe for obtaining this order.

Response

The requirements for imported soils would be implemented through the Waste Management Plan and Material Tracking Plan which would form part of the REMP (refer to measures G2 and W1).

Section 4.5 and Section 12.7.2.3 of the EIS state that contaminated soils brought to the Western Area from other Viva Energy sites in NSW would require a NSW EPA Specific Resource Recovery Order and would be managed in line with this Order and a specific Validation Sampling and Analysis Quality Plan (SAQP). Once the soil is validated (using the criteria outlined in the Validation SAQP), the soil would be reused on-site under a NSW EPA approved specific Resource Recovery Exemption. Where soils are brought from other sites a NSW EPA specific Resource Recovery Exemption would be required.

No specific Resource Recovery Order or Exemption exists for this Project. The order and exemption would be sought following development consent and prior to any soils from other Viva Energy sites being brought to the Western Area.

Viva Energy would continue to consult with the EPA regarding the Project and potential EPL changes due to waste tracking.

3.2.6.2 Licence

Issue

The EPA recommended that the Proponent contact the EPA prior to the commencement of the Project to ensure that appropriate changes to its licence (EPL 570) are made in regards to waste management.

Response

As per the response for **Section 3.2.2.1** amendments to the existing EPL 570, would be managed in consultation with the NSW EPA. Viva Energy would continue to consult with the EPA prior to and during the delivery of Project.

3.2.7 Noise management

Issue

In general, the EPA was satisfied with the assessment of (construction) noise from the proposed remediation of the Western Area of the premises. The EPA considers the Project to be low risk, in regards construction noise, but recommends that the proposed mitigation measures (detailed in Section 9 of Appendix G to the EIS) are implemented, particularly if construction is approved outside standard hours.

Response

The comment on noise management has been noted. **Chapter 11** of this report provides the revised mitigation and management measures for the Project.

3.3 Supplementary submission

The EPA requested that an Air Quality Mitigation Benchmark Study (refer to **Appendix C**) be completed for the Project. This was prepared and submitted to the EPA in March 2019. The EPA's Air Technical Advice Unit (TA-Air) provided comments on the Air Quality Mitigation Benchmark Study report in context of the comments made on the EIS (summarised above). The following sections summarise the comments made by the TA-Air on the benchmarking study and provide Viva Energy's response. These responses have been updated where relevant considering the additional information and assessment work that has been provided and is discussed in **Section 3.2.5**.

3.3.1 Air toxics data presentation

Issue

TA-Air considered that the risk of air toxic emissions had not been adequately communicated through the provision of information on the extent of the contamination, including the presence of principal air toxics within each:

- area where material excavation/material handling is to be undertaken;
- area where contaminated material is to be stored;
- contaminated material input stream to each remediation method proposed; and
- remediation method proposed.

Response

The risk of toxic air pollutants has been communicated through an estimation of the expected levels of air toxics being emitted from the various activities proposed to occur as part of the Project. This has been assessed in the AQIA (refer to Appendix E of the EIS) through the combined data extracted from the TSI and through data adopted for the development of the Conceptual RAP. The findings of the worst case assessment were that air toxics were not expected to be a concern.

As this stage of the Project involves the assessment of a Conceptual RAP, a range of conservative assumptions have been made and account for potential variability in the emissions. These assumptions include:

- Air toxic soil concentrations within soil samples recorded below the limit of detection (LOD) were assigned a value equal to half the LOD within the emissions inventory calculations. In reality this over-inflates the actual presence of these compounds and results in a highly conservative estimate of air toxic emission rates.
- All activities have been assumed to be operating at the same time with variable emissions based on the expected remediation timetables.
- All of the VOCs present have been assumed to be liberated through handling and remedial activities. This does not account for bioremediation of a proportion of the VOC compounds through biopiling which would be expected to occur in reality; resulting in further over estimation of VOC emissions in the AQIA from this process.
- The moisture content in reality is expected to be higher than assumed average soil moisture given that much of the excavated material will be at or below the groundwater table. The levels of dust as a result will likely be lower due to wetter material.

In addition, as noted in **Section 3.2.5.3**, emission rates for air toxics in the AQIA are considered conservative and representative of a reasonable worst-case estimate as:

- VOC emissions from exposed surfaces and stockpiles (referred to as passive VOC emissions in the AQIA) are based on an average of the soil vapour sampling data from targeted contaminated parts of the Western Area. This average has been calculated based on targeted sampling data within areas where contamination of soil was visibly present.
- VOC emissions from excavation and materials handling (when the soil is being disturbed) have been calculated using the US EPA Short Term Emission Rate Calculations, with additional upper limiting input parameters including activity rates, soil air porosity and vapour pressure.

A detailed explanation of the assumptions and numbers behind the pore space calculations emission estimates has been provided in the AQIA Technical Note 4 which has been provided in **Appendix I**. This note outlines the assumptions and conservatism in the pore space calculations and provides justification for the use of the emission rate equation used for the Air Toxic emission rates. Mass balance equations for excavation of spoil in AQIA Technical Note 4 was also provided based on the assumed emission rates in the AQIA and equivalent soil concentrations. These equivalent soil concentrations are generally higher than the majority of sampling data.

In addition to the pore space emission estimate discussion in **Appendix I**, a detailed list of assumptions and the degree of conservatism has been provided in AQIA Technical Note 3 which has been provided as **Appendix H**. This note lists 38 assumptions and details how each of the assumptions were developed to ensure the conservatism of the AQIA.

These documents show that there is a large amount of conservatism built into the emissions estimates and the methods used to calculate VOC emission rates from stockpiles.

Detailed design information relating to exact locations of excavation areas, material to be transported to each of the remedial activities and the relevant concentrations at each of the area would be further defined as part of the development of the Detailed RAP.

Based on the available data at the time of the AQIA was written, the contamination levels used for emissions calculations were considered adequate to characterise the air pollutant emissions. Post submission of the EIS, ERM have completed Remediation Site Investigations (RSIs) to inform the development of the Detailed RAP. The preliminary findings of RSIs are provided in **Appendix L** and reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA. As noted in **Section 3.3.5**, the results of the RSI data presented in **Appendix L** suggests that the presence of air toxics in the soil is low and the concentrations are localised. Their presence would be unlikely to result in a significant or widespread release of air toxics during the Project. As also noted in **Appendix L**, no further ground investigations are considered to be required and the additional investigations did not identify new areas of concern.

Given the conservative assumptions listed above and the additional data from the RSIs, it is considered that the risks associated with air toxics are likely to have been overstated. Despite the conservatism in the assessment, the findings of the worst-case assessment were that air toxics were not expected to be a concern. It is considered unlikely that air toxics are a key issue for this Project.

As part of the process to finalise the Detailed RAP, a decision protocol would be developed that would use the soil contamination information (inclusive of BTEX) to decide which remediation method is appropriate or whether soil needs to be disposed off-site (refer to **Table 3-14** below). An indicative decision protocol has been drafted and is provided in **Appendix J**. This protocol would be finalised as part of the Detailed RAP.

The intent of the decision protocol is to ensure that if air toxics are present in the soil they would be dealt with by the appropriate remedial activity such as biopiling where air from biopiles is passed through an activated carbon air filter or by DTD plant where off-gas is processed through operations such as a cyclone, thermal oxidiser, baghouse and wet scrubber.

The decision protocol also makes it clear that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming. It also shows a commitment to using ECEs where soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. 'higher risk soils) are present and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation. A management and mitigation measure regarding an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

Table 3-14 Additional mitigation and management measures – general – decision tree

Reference	Mitigation and management measures	Timing
G7	**A decision protocol would be developed and included as part of the Detailed RAP. The purpose of this protocol would be to decide which remediation method is appropriate (or whether soil needs to be disposed off-site) depending on the contamination levels present within the material.**	**Detailed design**

3.3.2 Adequacy of mitigation measures

Issue

TA-Air stated that the adequacy of the mitigation measures relative to the risk of potential air toxic emissions (including principal air toxics) from individual material handling and processing areas had not been demonstrated.

Response

The mitigation measures applied to the Project are typical mitigation measures commonly applied to materials handling activities in NSW and are fit for their intended purpose to reduce emissions from the proposed activities. These mitigation measures are used commonly across NSW. The material handling and road dust mitigation measures proposed in both the AQIA and EIS are defined in the NPI Emissions Estimation Technique Manual for Mining (refer to **Table 3-10**) and are considered reasonable measures for the control of emissions from excavation and handling activities.

The measures applied for the capture and treatment of VOCs, e.g. biopiling and DTD, are commonly used measures and include the use of activated carbon and thermal treatment which are well understood and are effective in the reduction of air toxics in particular. Detailed designs are not available given the conceptual nature of the current design for Project but will be further developed (including the sourcing of manufacturer specifications) as part of the Detailed RAP.

For further clarity a complete list of proposed air quality mitigation measures proposed in the AQIA for the Project including general excavation, land farming, biopiling, DTD, stabilisation, land forming and concrete crushing are included in **Table 3-9**.

In addition to the mitigation measures described in **Table 3-9** a number of additional management and mitigation measures have been investigated and proposed including:

- Reduction in excavation areas. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total); and
- Additional mitigation measures to supress dust from the thermal desorption plant area including:
  - an enclosure on the screen with water sprays placed on the outlet; and
  - installation of a particulate filter on the mobile crushing plant.

Changes to ground level odour and particulate concentrations at sensitive receptors have been quantified using dispersion modelling and show significant reductions in air quality impacts. The revised predicted impacts are discussed in AQIA Technical Notes 1 and 2 in **Appendix F** (Odour) and **Appendix G** (Dust) respectively.

3.3.3 Consideration in providing advice

Issue

In providing comments and advice on the benchmarking report, TA-Air has considered the following:

- Principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best practice design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations.
- Proposed mitigation measures are not demonstrated to be consistent with best practice.
- Proposed mitigation measures include:

  - suppressant foams for the direct thermal desorption material stockpile, and exposed biopiles;
  - covers for active stockpiles and air filters/scrubbers for the biopile ventilation stacks. Although the filters are not described;
  - wet suppression for controlling dust from landfarming areas and excavation areas. No controls for volatile organic compound (VOCs) emissions including principal air toxics are proposed; and
  - scrubbers for the Direct Thermal Desorption plant. Although the scrubbers are not described within the benchmarking report.
- No controls for minimising volatile emissions or air toxics are proposed to be applied to excavation areas, contaminated material handling, or landfarming. Emissions of principle air toxics from these sources will be uncontrolled which is inconsistent with the objects of the Protection of the Environment Operations Act 1997 (“POEO Act”) and the Approved Methods for Modelling and Assessment of Air Pollutants in NSW.
- Other remediation projects conducted in NSW have been conducted within enclosures, indicating that enclosure is feasible.

Response

The AQIA shows that under the conservative emissions regime (conservatism is discussed in **Appendix H** and **Appendix I**) that the Project is under the criteria for all air toxics. The emissions from excavation and remedial activities would be minimised to an appropriate extent based on mitigation measures outlined in the AQIA (refer to **Table 3-10**) and the additional management strategies outlined in **Section 3.2.5.1**.

Details of the measures adopted for mitigation of the emissions of air toxics (suppressant foam, covers, filters, wet suppression and scrubbers) are based on commonly understood technology and have been used elsewhere. Detailed design information would be provided within the Detailed RAP (which would be approved by the Site Auditor). The development of a decision protocol as part of the Detailed RAP to inform the appropriate management of contaminated spoil at the Western Area adds an additional level of emissions management (refer to **Section 3.3.1**).

Based on this decision protocol, where high levels of contamination are present, the soil would be treated using methods such as biopiling or the DTD, which have controls to remove or scrub the emissions of air toxics to a degree which is considered to be best practice, i.e. Granular Activated Carbon (GAC) scrubbing or thermal destruction.

Emissions from proposed biopiles would pass through filters that would remove VOC emissions. Typically these filters would include the use of activated carbon but biobeds or another equally effective technology or approach may also be used.

Off gas emissions from the DTD unit rotary dryer would be processed through a cyclone, thermal oxidizer, quench utilising water mist, baghouse and wet scrubber. The primary treatment method for DTD unit is thermal oxidation. Typically scrubbers are not required unless treating chlorine, sulphur or fluorine compounds.

The AQIA shows that the Project is well below the criteria for all air toxics, inclusive of fugitive emissions from excavation and materials handling activities. The feasibility of using an ECE was evaluated in addition to the above proposed mitigation measures noting the following:

- Although other remediation projects conducted in NSW have been conducted within ECEs, the feasibility of each project’s mitigation options needs to be assessed on a case by case basis based on a number of factors including, type and level of contamination, proximity to sensitive receptors, localised site constraints, including area, and capital and ongoing expenditure.
- As noted in the meeting with the NSW EPA on the 7 May (refer to **Section 3.2.5.6**) and confirmed by the EPA Accredited Site Auditor, ‘best practice applications’ utilising ECEs for small scale highly contaminated areas are not necessarily applicable to broad area remediation sites such as the Western Area where other mitigation techniques are employed.

- The Project is largely targeted at aliphatic compounds and therefore comparisons with former gasworks sites such as MacDonaldtown, Barangaroo and Platypus which generally display a higher component of aromatics are not relevant.
- Other examples of ECEs have generally been for small scale highly contaminated areas, not broad scale remediation projects and have generally displayed high concentrations of aromatic hydrocarbons (from former gas work sites) or been used for former chemical manufacturing sites (e.g. the Lednez and Allied Feeds sites and Homebush Bay and OricaBotany Car Park Waste Encapsulation) which have exhibited a high level of contamination of chlorinated compounds such as vinyl chloride monomer (VCM), ethylene dichloride (EDC), trichloroethene (TCE).

Nevertheless as noted throughout **Section 3.2.5** in order to address the matters raised by the NSW EPA, a commitment to using ECEs for storage and pre-treatment has been made where soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. 'higher risk soils) require treatment and cannot be managed in situ, placed directly into a biopile or transported offsite on the day of excavation (refer to **Section 3.2.5.1**). This commitment would be reviewed during the development of the Detailed RAP to understand whether the use of an ECE for the Project is reasonable and feasible. A management and mitigation measure regarding an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

3.3.4 Summary and Recommendation of TA-Air Advice – rational

Issue

TA-Air advise the proponent has not robustly demonstrated proposed controls are consistent with best practice. A compelling rational for not implementing engineering controls for aspects of the proposal has not been provided.

Response

As discussed above, the measures applied are appropriate and are considered fit for purpose. Furthermore, the dispersion modelling in the AQIA shows compliance with all air toxics criteria for the proposed Project.

While a consideration of best practice is important, a best practice analysis should also consider a range of factors that are linked to overall project viability, including the following:

- available mitigation options and their expected effectiveness;
- practical and financial feasibility of the measures being proposed;
- the degree of risk mitigation gained from the application of the 'best practice' measures; and
- the expected impacts from the Project based on the dispersion modelling.

These factors have been discussed as part of the Air Quality Mitigation Benchmark Study (refer to **Appendix C**) and further below.

3.3.5 Summary and Recommendation of TA-Air Advice – re-evaluation

Issue

The proponent should re-evaluate the proposed controls, including a more robust assessment of engineering controls (including enclosure) through a more thorough consideration of:

- the broader regulatory principles for minimising air pollution including principle air toxic emissions;
- the extent of the contamination at the premises, the uncertainty of the extent of the contamination and the significance of principal air toxic emissions from, but not necessarily limited to:
  - each area where material excavation/material handling is to be undertaken;
  - each area where contaminated material is to be stored; and
  - each contaminated material input stream to each remediation method proposed (biopiling, landfarming, DTD);
- additional scenarios or options for implementing emission control enclosures;

- proposed remediation methods, in particular landfarming and biopiling, and whether or not principal air toxics are minimised when these remediation methods are used.

Response

The review of the best practice mitigation options outlined above as part of the Detailed RAP would address the point regarding mitigation measures (which at present are fit for purpose and would result in no significant impact).

The TSI and Conceptual RAP were used to define the extent and concentration of the contamination in the Western Area. The level of investigation completed to inform the Conceptual RAP was substantial and provided a robust level of information regarding the expected levels of contamination. Post submission of the EIS, ERM have completed Remediation Site Investigations (RSIs) to inform the development of the Detailed RAP. The preliminary findings of RSIs are provided in **Appendix L** and as explained, no further ground investigations are considered to be required and the additional investigations did not identify new areas of concern. The preliminary findings presented in the RSI letter report reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA.

The original (pre-RSI) data were applied conservatively into the air quality model to ensure that the worst case predicted results were adopted for the modelling. Given the high degree of conservatism (as discussed above), the results have addressed the expected uncertainty in the modelling and as such are considered to be reliable. In addition, the Detailed RAP would further define the extent and nature of the contamination to be remediated at the various locations across the Western Area.

Should the proposed mitigation approach for air quality change as part of the development of the Detailed RAP, then if necessary, the revised approach would be reassessed (potentially through dispersion modelling).

One recurring question raised by NSW EPA is the nature and extent of the contamination within the Western Area. Based on comments received it appears that the NSW EPA believe that there is significant air toxics present in the soil being excavated for remediation.

The consolidated soil data set presented in the Conceptual RAP presents the known contamination levels of air toxics in the soil at the Western Area (in particular Benzene, Ethyl Benzene and Benzo(a) Pyrene). As noted above this data has been augmented with the addition of the data from the RSIs (refer to **Appendix L**). Combined, the data comprises more than 592 analysed soil samples from 230 locations across the Western Area and from a range of depths and different soil profiles. Samples were collected from test pits and bore holes down to 4 and 5 m below ground surface. When the data was analysed for air toxic concentrations, the following was noted:

- Benzene: Of the 592 samples analysed, benzene was detected (above limit of detection) in 19 samples only, with four samples concentrations exceeding the HIL-D criteria i.e. if the assessment was made purely on the basis of benzene (i.e. if no other contaminants requiring remediation were present), then remediation of the soil would not be required as it meets the industrial land use criteria (therefore the material would not need to be excavated).
- Ethyl Benzene: Of the 591 samples analysed, Ethyl Benzene was detected (above limit of detection) in just 44 samples, with no samples above the HIL-D criteria.
- Benzo(a)Pyrene: Of the 327 samples analysed, Benzo(a)Pyrene was detected (above limit of detection) in just 41 samples. Of note here however is that Benzo(a)Pyrene is not volatile and would need to be adsorbed onto a dust particle to move off-site. As such Benzo(a)Pyrene as a volatile air toxic has not been considered further.

The comprehensive sampling data set suggests that the presence of air toxics in the soil is low and the concentrations are localised. Reaffirming the assumptions made within the AQIA based on the initial TSI data set. Based on the sample data set soil Benzene, Ethyl Benzene and Benzo(a) Pyrene are below the limit of detection in the majority of cases, indicating contamination of these pollutants is not wide spread. As such air emissions from these contaminants during excavation and remediation activities from the Project are unlikely to result in a significant ambient air quality impacts at or beyond the boundary of the Site.

As noted above, controls to manage the emissions from the biopiles and DTD unit have been proposed (refer to **Section 3.3.3**). The biopiling would occur under impermeable covers and as such is already largely enclosed. A complete list of the proposed air quality mitigation measures are listed in **Table 3-9**.

The potential use of ECEs is discussed throughout **Section 3.2.5**. The AQIA, the additional assessments provided in **Appendix F** (Odour) and **Appendix G** (Dust) and the other commitments made in this report confirm that potential impacts related to air toxics, dust and odour are unlikely to be significant and can be managed without the need for ECEs. Nevertheless, as noted above, a new mitigation and management measure, AQ7, regarding the potential use of an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

3.3.6 Predicted ground level concentrations using dispersion modelling should not be the sole justification for assessing the implementation of feasible and reasonable best practice mitigation options.

Issue

The guiding principle for considering best practice mitigation options is implementing practicable measures to prevent or minimise air pollution (including principal air toxics) at the source, in line with:

- Objects of the POEO Act;
- Section 128 (2) of the POEO Act which states that occupiers of a premises must carry out activities by such practicable means as may be necessary to prevent or minimise air pollution for non-point source emissions; and
- Section 7.2.1 of the Approved Methods for Modelling and Assessment of Air Pollutants which states "*principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best-practice process design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations*".

Dispersion modelling is one tool that can assist with the assessment of potential impacts and inform the need for emission controls. However, modelling results should not form the basis for assessing the implementation of feasible and reasonable best practice mitigation options to minimise emissions. There is uncertainty associated with the estimation of emissions from the handling of contaminated material within the open. This is due to spatial resolution on the extent of the contamination, potential for unidentified contaminated hot-spots, reliance on emission factors and assumptions for emission estimation.

Hence there is uncertainty surrounding the predicted ground level concentrations and they should not be the sole reliance for assessing the adequacy of feasible and reasonable best practice mitigation options. Assessing reasonable and feasible best practice mitigation measures should give a more thorough consideration to the overachieving principles identified above.

Response

It is acknowledged that dispersion modelling is a tool to assist in the assessment of projects and that it has by its very nature levels of uncertainty associated with the prediction of ground level pollutant concentrations. However, the modelling methodology in the AQIA (as followed in accordance with the Approved Methods[4] and the SEARs) does include a significant degree of conservatism which is expected account for the uncertainty in the emissions calculations. In addition, emissions calculations in the AQIA have been based on a range of conservative assumptions that overestimate the frequency of remediation activities, quantities of materials handled and timing (e.g. most of the activities occurring in unison when operations are likely to be staggered). A detailed log of conservative assumptions provided in the AQIA are documented in AQIA Technical Note 3 (refer to **Appendix H**). It is not considered reasonable to set aside the results of the dispersion modelling (completed in line with the EPA guidance) and by default move the selection of mitigation measures to a purely 'best practice' methodology. This has the potential to result in a methodology with impractical, overly costly solutions which are applied for a reason that may not occur in reality; particularly when predicted and conservative air toxic concentrations indicate compliance well below NSW EPA criteria. The two

[4] Approved methods for the modelling and assessment of air pollutants in NSW (EPA, 2016)

methodologies (modelling and best practice) should be used together to ensure the predictions are both below an acceptable level while still adopting effective measures that would result in the lowest pollutant concentrations that are both reasonable and feasible. This is the approach that Viva Energy has applied and through this approach developed mitigation controls that are proportional and appropriate.

3.3.7 Consideration to the extent and significance of the contamination

Issue

The benchmarking report makes reference to other remediation projects (Macdonaldtown, Platypus, Barangaroo) where ECEs of varying sizes have been implemented. The benchmarking report states that "*it should be noted that some of the former gas works remediation projects had additionally high concentrations of contaminates such as heavy metals and PAHs*".

Given the site history it is reasonable to expect there will be areas of highly impacted material. The benchmarking report does not give thorough consideration to the extent and significance of contaminated material to be remediated, including the presence of principal air toxics. The justification of proposed mitigation measures must consider the extent of contamination within material handling/excavation areas, material storage areas, and input/output material to each remediation process.

Response

The remediation technologies proposed for the Project, the AQIA and the proposed mitigation measures are based on the measured levels of contamination for the Western Area (as shown in the TSI and the Conceptual RAP). The NSW EPA's assumption regarding highly impacted material is understandable but based on the available data is not accurate. Indeed the preliminary findings presented in the RSI letter report (ERM, 2019b) reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA and did not identify new areas of concern. Initial results of these investigations are provided in a letter report provided in **Appendix L**.

Further information on the nature of the contamination and the extent of that contamination would be confirmed during the development of the Detailed RAP. If levels of contamination are identified for pollutants not included in the assessment, then they would be assessed accordingly to ensure mitigation measures are appropriate, fit for purpose and would minimise emissions to an appropriate degree.

As noted in **Section 3.3.1**, an indicative decision protocol has been prepared to outline the process for determining remediation methods for excavated soil based on the level of contamination. This is provided in AQIA Technical Note 5 in **Appendix J**. This decision protocol would be finalised as part of the Detailed RAP and would require sign off by the Site Auditor.

3.3.8 Consideration of the extent of contamination

Issue

The proposed methods for remediation are land farming, bio-piling, and direct thermal desorption. The benchmarking report has not demonstrated the proposed remediation methods are best practice considering the extent of the contamination each method is treating.

Response

The purpose of the benchmarking assessment was to evaluate the feasibility of using an ECE. This evaluation was based on environmental impacts and the associated potential risk reduction that may be achieved when compared to the currently proposed mitigation strategy, as well as the practical and financial implications associated with any gains in potential air quality risk reductions.

Given the expansive nature of the Western Area and different levels of contaminated fill and soil presented over such a large area, a number of remediation approaches have been proposed; offering a hierarchy of both treatment and associated mitigation. As part of the development of the Detailed RAP the level of contamination within the ground would be used to define the appropriate remediation approach within the hierarchy. As discussed in the EIS this would include approaches such as land farming, soil mixing, biopiling and direct thermal desorption. Each remediation approach would have appropriate mitigation measures assigned. An indicative decision protocol to identify the appropriate remediation method and associated mitigation measures is provided in AQIA Technical Note 5 (refer to **Appendix J**).

As noted in **Section 3.3.1**, during the development of the Detailed RAP the decision protocol would be further developed. Similarly, the need for an ECE would also be confirmed at this time.

3.3.9 Land farming

Issue

It is not acceptable to use land farming to remove volatile constituents from soils through evaporation. If volatile constituents are presented in the soils being land farmed, VOC emissions should be captured and treated using covers, structural enclosures and abatement techniques. The proponent has not demonstrated VOC emissions, in particular principal air toxics, from landfarming will be minimised to the maximum achievable.

Response

In order to reduce emissions from PATPs as low as reasonably practical, a commitment has been made that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming. A management and mitigation measure committing to this is discussed in **Section 3.2.5.1** and shown in **Table 3 10**. This commitment is also shown in the indicative decision protocol presented in **Appendix J**.

Spoil with high concentration of TPH and/or BTEX would be remediated through biopiling or the DTD unit which employ a high level of VOC mitigation.

3.3.10 Emission management

Issue

The benchmarking report states the use of foam suppressants for exposed biopiles, and air filters/scrubbers for biopile vents. However, it does not describe emission management consistent with information presented in the AQIA submitted during public exhibition. The publicly exhibited impact assessment advised that the biopiles would be covered with an impermeable material and would be maintained under negative pressure with treatment via air filters. The proponent should provide more clarity on the controls for biopiles and how they are consistent with best practice.

Response

Proposed management and mitigation measures for biopiles account for two different time steps within the biopile lifecycle, during construction of biopiles and during active biopiling where spoil is being remediated.

The EIS notes (refer to Section 4.4.2.1) and the AQIA assumes that biopiles would be covered with an impermeable material and the biopile kept under negative air pressure. Emissions from the biopile would be treated with an emission control system fitted with GAC filters before being emitted through a vent.

Ongoing monitoring of the treated emissions would confirm the success of the system. This is consistent with the assumptions in the EIS.

During construction of the biopiles, contaminated spoil would be exposed but would be limited to 20% of the total biopile volume; and any exposed surfaces during the construction period would be sprayed with foam suppressants at the end of the work day to minimise potential for VOC emissions outside of construction hours. Construction of biopiles would also be undertaken within a short as practicable timeframe to ensure biopiles are covered with impermeable material as quickly as possible.

3.3.11 Best practice benchmarking has not given consideration to varying options/scenarios to assess the viability of utilising enclosure(s)

Issue

Whilst TA-Air cannot provide advice on the specifics of project logistics, TA-Air can advise that given only a single option/scenario has been considered, the conclusion that ECEs as not being viable has not been robustly justified. The benchmarking report does not give consideration to project alternatives, such as, but not necessarily limited to:

- implementing enclosure(s) on the excavation areas where the most significant contamination is likely to be found, hence eliminating or reducing the need for enclosure relocation;
- implementing enclosure(s) on areas where the most impacted material is proposed to be stored prior to processing (e.g. the DTD unit material feed storage area), hence eliminating or reducing the need for enclosure relocation; and
- implementing enclosure(s) for storage of material prior to classification, and/or for storage of material for classification post processing.

TA-Air considers that additional scenarios or options should be considered especially given that the benchmarking report has identified other projects where enclosure of various sizes (ranging from 2,600 m^2 to 17,500 m^2) has been implemented.

Response

A single scenario of the Conceptual RAP remediation activities was modelled to provide worst case estimates of the remedial emissions. It is considered unlikely that everything will be able to occur at once and as such the actual emissions will be expected to be lower. This was the basis of the single scenario which demonstrated compliance with the relevant speciated VOC NSW EPA ground level criteria. Should changes occur due to changes as part of the development of the Detailed RAP, additional scenarios may need to be further assessed. However, a reduction in emissions achieved by additional mitigation measures that may be identified as part of the Detailed RAP would only result in a further compliance of the relevant speciated VOC compound.

The potential use of ECEs is discussed throughout **Section 3.2.5**. The AQIA, the additional assessments provided in **Appendix F** (Odour) and **Appendix G** (Dust) and the other commitments made in this report confirm that potential impacts related to air toxics, dust and odour are unlikely to be significant and can be managed without the need for ECEs. Nevertheless, as noted above, a new mitigation and management measure, AQ7, regarding the potential use of an ECE is discussed in **Section 3.2.5.1** and shown in **Table 3-10**.

4.0 City of Parramatta Council

The City of Parramatta Council (Council) did not raise any objections to the Project; however they did request that their comments be taken into consideration in the assessment of the application. These comments are summarised below.

4.1 Environmental health compliance

Issue

The Council anticipates that drafts of the following plans would be provided to them for review prior to approval:

- Remediation Action Plan;
- Project Management Plan;
- Air Quality Management Plan;
- Remediation Environmental Management Plan, with sub-plans: Waste Management Plan, Soil and Water Management Plan and Noise and Vibration Management Plan; and
- Long Term Environmental Management Plan.

In addition the Council has requested copies of the Validation Reports and Site Audit Statements, issued by a suitable accredited NSW Site Auditor, be provided for review as the Project progresses.

Council requested that conditions are imposed to require the above consultation and review of documentation by Council.

Response

Viva Energy note Council’s request regarding review of various post consent documents and propose to provide certain documents for review and other for information as detailed below. This is considered appropriate taking into account Council’s areas of interest provided in the submissions to date and the responsibilities of the Site Auditor.

Viva Energy agree to provide the following documentation to Council for review prior to finalisation:

- Remediation Environmental Management Plan (main document) and following sub-plans:
  - Waste Management Plan;
  - Soil and Water Management Plan;
  - Noise and Vibration Management Plan;
  - Traffic Management Plan; and
  - Air Quality Management Plan.

Once finalised, the Project Management Plan will be provided to Council for information.

Viva Energy would provide the following documentation to Council following approval by the Site Auditor:

- Detailed RAP;
- Long Term Environmental Management Plan;
- Validation Reports; and
- Site Audit Statements.

4.2 Natural resources

Issue

The Project has the potential to indirectly impact adjoining habitat within the Duck River riparian corridor and along the western boundary drainage line. To minimise impacts upon the Duck River riparian zone, Council recommended the following condition: Before commencement of works, the applicant shall prepare and implement a Biodiversity Management Plan (BMP) for the Project, to the satisfaction of the Secretary. The BMP must:

- be prepared in consultation with Council;
- be approved by the Secretary prior to the commencement of works; and
- include measures to be undertaken to minimise impacts on the Duck River Riparian Corridor, Swamp Oak Floodplain Forest and the Green and Golden Bell Frog population consistent with the recommendations in the BDAR (Appendix I of the EIS) and the mitigation and management measures (Chapter 15 of the EIS).

Response

Viva Energy agree to the Council's recommended condition for the preparation and implementation of a BMP. The BMP would be a subplan to the REMP.

Mitigation and management measures were provided in Chapter 20 If the EIS. Changes made to the mitigation and management measures in response to the submissions received for the Project are summarised in **Chapter 12**.

4.3 Traffic

Issue

Council supports the Project on traffic and parking grounds subject to the following traffic related condition: During the project (Stage 1 to Stage 5), an Oversize Vehicle Access Permit is to be submitted through Council's Traffic and Transport Services, prior to driving through local roads within the City of Parramatta LGA.

Response

Permits from the National Heavy Vehicle Regulator would be obtained, should vehicles with loads exceeding General Mass Limits or comprising non-standard dimensions require access to the Project Area (refer to mitigation and management measure (MMM) TT4).

Viva Energy agree to the Council's request regarding seeking an Oversize Vehicle Access Permit if necessary. The definition of oversize and/or overmass vehicles (i.e. Class 1 vehicles) would be considered under the Heavy Vehicle National Law (2014).

4.4 Heritage

Council did not raise any issues associated with heritage and instead referred to OEH. OEH did not raise any concerns regarding heritage of the Project (refer to **Chapter 2**).

4.5 Stormwater and catchment management

Council did not raise any concerns regarding stormwater and catchment management and notes that the water, wastewater and flooding details in the EIS were well prepared and comprehensive.

4.6 Tree management and landscaping

No concerns were raised by the Council in relation to existing vegetation within the proposed work areas of the Site.

4.7 Developer contributions

Issue

Council requested the following:

- a quantity surveyor's report stating the proposed cost of the works be submitted to Council for review, to determine the applicable Section 7.12 contributions to be paid to Council; and
- DPE to impose a condition requiring the payment of developer contributions for the Project.

Council noted that a condition can be recommend for imposition to DPE once information has been submitted and developer contributions are determined.

Response

The final cost of the proposed remediation works would be dependent on the outcome of the remedial investigations, the design within the Detailed RAP, and the amount of soil requiring remediation, being brought to the site and being disposed off-site. For the purposes of this development application a Conceptual RAP has been developed using a number of conservative assumptions. These conservative assumptions have had to be used to estimate the Capital Investment Value of the Project for the purpose of the development application fees however the conceptual design is not appropriate to estimate development contributions in line with Section 7.12 of the EP&A Act and the City of Parramatta Council *Section 94A Development Contributions Plan (Amendment 5)* (December 2017).

Whilst the Council are requesting a Section 7.12 payment for the Project, Viva Energy question whether this payment (in full or in part) is appropriate given that the Project would not result in or create a significant burden on existing or proposed social or public infrastructure. The Project only proposes the remediation of the Western Area and not the land's future development, i.e. no permanent operations are proposed as part of this development. It should also be noted that a Section 7.12 payment was also made recently for the Clyde Terminal Conversion Project (SSD 5147) which involved high capital cost works which actually reduced the infrastructure and permanent staff at the Site and therefore reduced the Site's burden on existing or proposed social or public infrastructure.

Viva Energy note the stipulations of Section 7.12(4) of the EP&A Act but also, given the consideration above, ask that DPIE to consider the provisions of Section 7.13 and Section 7.16. In particular Section 7.13 states that:

"(1) A consent authority may impose a condition under section 7.11 or 7.12 only if it is of a kind allowed by, and is determined in accordance with, a contributions plan (subject to any direction of the Minister under this Division).

(2) However, in the case of a consent authority other than a council:

> *(a) the consent authority may impose a condition under section 7.11 or 7.12 even though it is not authorised (or of a kind allowed) by, or is not determined in accordance with, a contributions plan, but*
>
> *(b) the consent authority must, before imposing the condition, have regard to any contributions plan that applies to the whole or any part of the area in which development is to be carried out."*

Following additional correspondence from the Council (dated 2 August 2019) it is understood that the Council would object to the Project in the event that the payment of developer contributions are not required as per the Parramatta Section 94A Development Contributions Plan (Amendment No.5).

Given the position of the Council, Viva Energy can commit to paying a Section 7.12 payment for the Project. However given the uncertainty regarding the final cost of remediation works, Viva Energy request that the final payment amount be determined when a more accurate cost of the Project is available (ideally following finalisation of the Detailed RAP but prior to works commencing). It is noted that under section 3.13 of the Development Contributions Plan cited above, development contributions require payment prior to commencement of works. The Detailed RAP will be finalised and approved by an EPA Accredited Site Auditor before works commence. At this point, Viva Energy would be able to provide an accurate cost for the Project which in turn can be used to calculate and appropriate development contribution in line with the Parramatta Section 94A Development Contributions Plan (Amendment No.5).

Given the above, Viva Energy propose the following amendments to the recommended condition provided by City of Parramatta Council in response to their review of this RtS dated 2 August 2019:

> *No later than one month after the Detailed RAP is approved by the Site Auditor, the applicant must provide the Department and Council with an updated cost summary report outlining the cost of the Project. The updated cost summary report must provide the information presented in Schedule B of Appendix B of the Parramatta Section 94A Development Contributions Plan (Amendment No. 5) and be completed by a member of the Australian Institute of Quantity Surveyors.*
>
> *A monetary contribution calculated in line with Section 3.10 of the Parramatta Section 94A Development Contributions Plan (Amendment No. 5) and dependant on cost of the Project presented in the updated cost summary, must be paid to City of Parramatta Council in accordance the Environmental Planning and Assessment Act 1979.*
>
> *The contribution is to be paid to Council prior to the works commencing. Payment must be by EFTPOS, bank cheque or credit card only.*
>
> *The contribution levy is subject to indexation on a quarterly basis in accordance with movements in the Consumer Price Index (All Groups Index) for Sydney issued by the Australian Statistician. At the time of payment, the contribution levy may have been the subject of indexation.*

5.0 NSW Department of Health – Western Sydney Local Health District

The Western Sydney Local Health District, Centre for Population Health (WSLHD) reviewed the EIS with a particular focus on air quality, odour impacts and the health risk assessment. The WSLHD comments are summarised and responded to below.

Following a review of these responses, WSLHD noted that their main concern continued to be limiting particulates from the remediation and the potential use of ECEs for the management of air toxics.

5.1 Remediation methods

Issue

The submission from WSLHD considered that there was limited information provided in the EIS on:

- how other contaminants of concern, other than petroleum hydrocarbons, would be managed on-site. Therefore WSLHD was unable to assess the adequacy of the separation of contaminated soils and proposed on-site treatment;
- how some contaminated soils, unable to be treated on-site would be transported off-site; and
- importing contaminated soils from other Viva Energy sites, other than noting that EPA approval would be required.

The WSLHD recommended that further information is provided on the treatment and sorting of contaminated soils, likely mixed contamination issues and proposed import and export of contaminated soils to the site.

Response

In order to help develop the existing conceptual design presented in the Conceptual RAP into a detailed design outlined in a Detailed RAP, additional remedial site investigations (RSIs) have been completed for the Western Area. These RSIs have been completed in accordance with the Sampling Analysis and Quality Plan (SAQP) for the works which was reviewed and approved by the appointed NSW EPA Accredited Site Auditor. The preliminary findings of RSIs are provided in **Appendix L**. As noted in **Appendix L**, no further ground investigations are considered to be required and the additional investigations did not identify new areas of concern. The data from the RSIs and the existing information for the Western Area will be used to develop the Detailed RAP which will also be signed off by the Auditor.

Through these investigations, it is clear that the Western Area contains COPCs and that the majority of these are petroleum hydrocarbons. Non-petroleum hydrocarbon COPCs (e.g. heavy metals) are also present but confined to localised and discrete locations.

Following the completion of the RSIs, the areas within the Project Area requiring remediation have been assessed and will be confirmed in the Detailed RAP. Through this process, the levels and types of contamination in these areas would be confirmed. This would involve the screening of non-petroleum based contaminants against relevant NSW EPA endorsed guidelines as part of a site specific Risk Assessment. The analytical data specific to each confirmed remediation area would be used to decide which remediation technology would be adopted to either remediate or manage the contaminated soils.

As part of the process to finalise the Detailed RAP, a decision protocol would be developed that would use the soil contamination information (inclusive of BTEX) to decide which remediation method is appropriate or whether soil needs to be disposed off-site (refer to **Section 3.3.1** and management and mitigation measure G7). An indicative decision protocol has been drafted and is provided in **Appendix J**. This protocol would be finalised as part of the Detailed RAP.

Contaminated soils that can be treated on-site would be excavated and remediated through one of the proposed technologies (e.g. landfarming, biopiling). As noted in Section 12.7 of the Conceptual RAP (refer to Appendix C of the EIS), materials deemed not suitable for reuse or are not suitable for treatment using the technologies identified in the EIS, would be treated (if required) and disposed off-site in accordance with the NSW PoEO (Waste) Regulation 2014.

The handling, storage, transport and import or export of soils from the Project Area would be managed by the Soil and Water Management Plan (refer to SCG2) and the Waste Management Plan (including a Material Tracking Plan) which would form part of the Remediation Environmental Management Plan (REMP) (refer to mitigation and management measures G2 and W1).

As noted in Section 4.4.1 of the EIS, soils to be treated off-site would be excavated and temporarily stockpiled in a centrally located area (with appropriate environmental controls), most likely within the proposed Waste Processing Area (refer to Figure 4-1 of the EIS). Contaminated soils would be stockpiled separately based on the proposed remediation technology and the type and concentration of contamination present.

Mitigation and management measure SCG2 includes requirements to place contaminated stockpiles on impermeable sheeting (unless existing sealed surfaces are available within bunded areas) and to cover certain contaminated stockpiles (dependent on its specific contamination characteristics) with impermeable sheeting to avoid contaminating the ground below the stockpile and to reduce potential leachate or erosion of the stockpile.

As noted in mitigation and management measure W3, wastes requiring off-site disposal would be disposed to an appropriately licenced facility. This would include the disposal of contaminated soils from the Project Area that could not be remediated. Also as noted in measure W1, wastes would be tracked: "*Material tracking records would include types, volumes and management measures for waste and resource arising from/used for the Project*."

Section 4.5 and Section 12.7.2.3 of the EIS state that contaminated soils brought to the Western Area from other Viva Energy sites in NSW would require a NSW EPA Specific Resource Recovery Order and would be managed in line with this Order and a specific Validation Sampling and Analysis Quality Plan (SAQP). Once the soil is validated (using the criteria outlined in the Validation SAQP), the soil would be reused on-site under a NSW EPA approved specific Resource Recovery Exemption. Where soils are brought from other sites, a NSW EPA specific Resource Recovery Exemption would be required.

5.2 Particulates

Issue

WSLHD was concerned about the modelled increment levels of particulates for the Project and the associated adverse health effect on susceptible members of the community. For example, the maximum 24 hour average PM_{10} increment modelled at one industrial receptor (1935) at 31.4 µg/m^3, with a measured maximum background level of 51.9 µg/m^3, is an incremental increase of 60.5%, resulting in a predicted maximum 24-hour PM_{10} concentration of 83.3 µg/m^3. Exceedances at this location are modelled to occur 20 times over 12 months compared to four exceedances based on background levels. Furthermore, the annual average PM_{10} concentration is modelled to increase background levels of 20 µg/m^3 by an additional increment of 12 µg/m^3 (60%) at this site.

WSLHD supported the application of best practice mitigation measures and the implementation of a detailed Reactive Air Quality Management Program. WSLHD suggested that further consideration be given to incremental responses based on the lowest possible triggers, rather than the proposal to set triggers at the current EPA Criteria, for example - 50 µg/m^3 for the 24 average PM_{10}.

Response

Predicted PM_{10} and $PM_{2.5}$ emissions for the Project have multiple layers of conservatism built in to the assumptions behind the modelling including the assumptions that:

- all activities are operating concurrently;
- the maximum throughput volumes for each activity is occurring; and
- using a conservative estimate of the likely soil volumes and contamination present requiring treatment.

As such incremental impacts from the Project are likely to be considerably lower than predicted. A detailed log of conservative assumptions for emissions calculation for the Project is provided in **Appendix H**.

In addition the assumed spoil moisture content used in the dust emission rate equations in reality is expected to be higher than the assumed average soil moisture given that much of the excavated material would be at or below the groundwater table. The levels of dust as a result would likely be lower due to wetter material and the characteristics of the fill material.

Following a review of the draft responses within this report, the NSW EPA provided further comments in a letter dated 2 August 2019. The NSW EPA requested that the proponent revaluate predicted 24-hour PM_{10} and $PM_{2.5}$ impacts, based on implementation of the proposed enclosure on the screen and particle filter for the mobile crushing plant. Following a consideration of this and other requests, the predicted 24-hour PM_{10} and $PM_{2.5}$ impacts were re-evaluated based on the implementation of the following additional mitigation and management measures:

- Reduction in excavation areas. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total); and
- Additional mitigation measures to supress dust from the thermal desorption plant area including:
  - an enclosure on the screen with water sprays placed on the outlet; and
  - installation of a particulate filter on the mobile crushing plant.

Changes to ground level particulate concentrations at sensitive receptors have been quantified using dispersion modelling and show a significant reduction in predicted air quality impacts including a reduction in potential exceedances of the PM_{10} and $PM_{2.5}$ 24 hour criteria. The revised predicted impacts are discussed in AQIA Technical Note 2 provided in **Appendix G**. Implementation of the additional mitigation measures resulted in a predicted reduction of the incremental maximum 24 hour and annual average concentrations for PM_{10} and $PM_{2.5}$ by approximately 50%.

Implementation of the above mitigation measures would result in a reduction in both predicted PM_{10} and $PM_{2.5}$ emissions from the Project. The commitment to these two measures was made as part of management and mitigation measure AQ1 (final two bullet points, refer to **Table 5-1**).

Table 5-1 Amended mitigation and management measures – air quality – design mitigation

Reference	Management and Mitigation Measures	Timing
AQ1	Air quality management controls would be implemented as part of the design of the Project including: • level 2 (>2 litres/m^2/h) watering of on-site haul roads; • watering with or without dust suppressants on exposed areas and stockpiles; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on untreated stockpiles in the DTD area and on exposed untreated biopiles (i.e. during construction of the biopile) over night; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on exposed excavation areas where both required and practical; • biopiles would be covered during operation and off-gas from biopiles would be passed through air filters to remove volatile hydrocarbons; • the DTD unit pre-treatment area stockpile would be enclosed within a three sided bay; • all mobile and stationary diesel engines would be compliant with US EPA Tier 3 and EU Stage III *A Non-road Diesel Engine Emission Standards*; • off-gas from the DTD unit would be treated before it is discharged to the atmosphere through a stack; • where possible stockpiles would be covered; • enclosing the DTD **material** screening area and placing water sprays on the outlet; and • ensuring a particulate filter is used on the mobile crushing plant.	Detailed design/ Stage 1 to Stage 5

In response to the comment regarding trigger levels for the Reactive Air Quality Management Plan (RAQMP), the aim of the RAQMP is to act as a preventive measure to reduce the risk of ground level PM_{10} or $PM_{2.5}$ concentrations reaching or exceeding the appropriate EPA criteria. As such, measured hourly concentrations would be compared to measured daily cumulative concentrations[1] and measured against specific developed trigger values to identify where appropriate actions must be undertaken to limit incremental dust impacts from the Project and reduce the potential for the relevant EPA criteria to be exceeded as a result of the Project. Calculation of trigger level values would be based around the objective of remaining below the 50 $\mu g/m^3$, 24 hour average PM_{10} concentration criteria at the monitoring location(s).

Hourly average data from the monitoring stations would be used to manage the Project from an air quality perspective along with an automated alarm system to provide feedback to the relevant environmental officers. Trigger values would be derived based on the relationship between the:

- Recorded hourly particulate concentration.
- Daily Cumulative Concentration (DCC) - Calculated based on the measured hour of day. For example, the cumulative concentration for hour two is the average of the first two measurements for that particular day, the cumulative concentration for hour 15 is the average of the first 15 measurements for that particular day etc.

[1] Daily cumulative concentration refers to calendar day rolling average concentration e.g. at 1pm the average is calculated from the first 13x1 hourly average concentrations measured for the site

- Rolling Daily Criterion (RDC) – Calculated using the DCC. The RDC represents the capacity[2] of the air shed to receive additional PM_{10} and still remain below the 24 hour PM_{10} criteria of 50μg/m³.

A series of trigger values would be developed based on the relationship between the hourly concentration the DCC and the RDC and likely include the following actions:

- ***PM_{10} Concentration less than EPA Criteria – Normal Operations***: Normal operational mitigation measures in place and no action is needed at this level.
- ***PM_{10} Concentration Level 1 Trigger – Investigate***: Identification of the likely reasons for the elevated pollutant concentration and formulation of a contingency response for the action stage;
- ***PM_{10} Concentration Level 2 Trigger – Action***: Implementation of the measures formulated in the investigative stage and review of their effectiveness; and
- ***PM_{10} Concentration above Level 3 Trigger – Stop Work***: All air polluting works associated with the remediation works identified to be generating particulates should stop until the measured particulate levels are below the relevant trigger level to avoid an exceedance of the pollutant criterion.

An outline of the RAQMP including trigger values is presented in **Appendix K**. This plan would be finalised as part of the Detailed RAP.

5.3 Asbestos

Issue

The EIS contained limited information on the level, type, depth and extent of asbestos contamination on the Site. WSLHD recommended that further investigation is warranted in particular due to: the close vicinity of the James Hardie sites on the Camellia Peninsula, the historical records of the Viva Energy Clyde Western Area, which show the area being covered in a large amount of fill over the years, and the known extent of asbestos contaminated land fill, including sludge contaminated friable asbestos, used extensively throughout the Rosehill, Parramatta and Granville areas (James Hardie legacy sites).

The WSLDH notes that due to the lack of information and even though a measure to remove asbestos material has been proposed, asbestos material may not be adequately removed prior to soil treatment. In addition, mixed contaminants and the sorting of soil for treatment may create difficulties in identifying and removing asbestos contaminated soils or material.

WSLHD recommended that appropriate identification and delineation of areas where mixed contamination is likely to occur should be established prior to the commencement of the project to allow further consideration of the appropriate and safe treatment of these soils. Areas found to be contaminated with asbestos were recommended to be managed under an appropriate asbestos management plan, that considers on-site and off-site asbestos exposure risks.

Response

The EIS noted that asbestos was a COPC and that there has been some assessment completed in 2012 (*Stage 1 and 2 Environmental Site Assessment,* ERM, 2012) and more recently in 2018 (*Targeted Site Investigation*, AECOM, 2018b). The 2012 assessment did not report any visible observations of asbestos during the works and only one of 43 samples returned a positive asbestos laboratory detection (refer to Section 9.5 of Appendix C of the EIS). In the 2018 assessment, visible asbestos was not observed in the 95 primary samples from 37 locations. Seven samples were analysed for asbestos and Chrysotile asbestos was identified at a depth of 0.3 meters below ground surface (mbgs), however the concentration reported was considered not detectable by the laboratory.

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[2] As an example, if hour 1 is 25 μg/m³, then the capacity of the air shed to receive PM_{10} increases as 25 μg/m³ is half of the criteria, meaning that provided the concentrations fall below 51.1 μg/m³ [2] for the rest of the day, then the 24 hour criteria will be met. Calculation of the 51.1 μg/m³ is as follows: {(50 μg/m³ x 24 hours) – 25 μg/m³} ÷ 23 hours = 51.1 μg/m³.

These assessment results and the presence of demolition waste at the Western Area means that asbestos is considered a COPC.

As noted in the Conceptual RAP, further remedial investigations have been completed at the Project Area which included sampling and analysis for asbestos. While the reporting of this remedial site investigation (RSI) is yet to be finalised, preliminary results are consistent with previous investigations and confirm that asbestos has been identified in the form of ACM fragments at isolated locations throughout the Western Area, largely associated with former infrastructure. The RSI also confirmed the presence of ACM fragments and fibres in the south-western waste area consistent with historically documented waste burial activities within this area of the Site. The findings of these remedial investigations would be incorporated into the Detailed RAP.

The proposed remediation technologies would not be able to treat asbestos, therefore should asbestos be found and the relevant fill material requires remediation, it would need to be removed from the Western Area. This work would be conducted in accordance with the requirements of SafeWork NSW, the *Work Health and Safety Act 2011* and supporting Regulations 2017, the *PoEO (Waste) Regulation 2014* and *NSW EPA Waste Classification Guidelines* (NSW EPA, 2014a). This includes ensuring that the removal and transport of asbestos containing materials is conducted by an NSW EPA licensed contractor, and the materials are disposed off-site at an appropriately licenced waste facility (refer to Table 12-4 of the EIS).

Also as noted in Chapter 12 of the EIS under the discussion on the *Protection of the Environment Operations (Waste) Regulation 2014*, "*asbestos waste is required to be securely packaged, be in a sealed container, be wetted down, or be covered in a leak-proof vehicle for transportation off-site (clause 78). Waste transporters and the receiving waste facility are also required to provide information to the NSW EPA to track the movement of any load of asbestos within NSW of more than 10 square meters of asbestos sheets or 100 kilograms (kg) of asbestos waste (clause 79). All wastes received or removed from the Project Area would be stored, transported and disposed of in accordance with PoEO Waste Regulation requirements and tracked via implementation of material tracking measures.*"

Management measures required for the appropriate handling of soils containing asbestos would be detailed in the SWMP (SGC2). An unexpected finds protocol to manage the potential for unexpected finds during the remediation of the soils (i.e., asbestos or other hazardous materials, excluding hydrocarbon contamination) would form part of the Waste Management Plan (W1). For the avoidance of doubt, measure SGC2 has been updated (refer to below **Table 5-2**).

Table 5-2 Additional mitigation and management measures – air quality – asbestos

Reference	Mitigation and management measures	Timing
SGC2	A Soil and Water Management Plan (SWMP) would be prepared that outlines: • erosion and sediment control requirements (developed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004)) including: - the use of geotextile liners or temporary capping to reduce infiltration of surface water runoff; - installing silt fences around stockpiles to reduce erosion; - installing silt and sediment traps across stormwater drains in proximity to excavation areas; - placing stockpiles on impermeable sheeting to prevent infiltration, where possible; and - locating stockpiles away from council stormwater drainage systems; • control measures for the dewatering, storage, movement and treatment of groundwater encountered in excavations. **These measures** ~~This~~ would include ~~the following~~: - **testing** accumulated ~~ground~~water **in excavations from areas where ground investigation data suggests the presence of contaminants at levels that would not be able to be treated by the Wastewater Treatment**	Stage 1 to Stage 5

Reference	Mitigation and management measures	Timing
	Plant (WWTP) ~~would be tested~~ to confirm that: ▪ it can be appropriately treated in the WWTP; ▪ **it can be appropriately treated in the WWTP following pre-treatment; or** ▪ **it should be collected and disposed of off-site** ~~and~~ - **managing** groundwater ~~would be collected and~~ **to be** sent to the on-site WWTP in accordance with the established Site wastewater management procedures ~~and discharged in line with the requirements of EPL 570~~. • **An asbestos management plan that:** - **is produced in line with the Work Health and Safety Act 2011 and supporting Regulations 2017, the PoEO (Waste) Regulation 2014 and NSW EPA Waste Classification Guidelines (NSW EPA, 2014a);** - **details how asbestos(i.e. in soils and unexpected materials) would be managed;** - **includes an unexpected find procedure for asbestos material;** - **includes management measures required for the appropriate handling of soils containing asbestos;** - **identifies a dedicated area within the Project Area for storing asbestos waste prior to disposal;** • ~~management measures required for the appropriate handling of soils containing asbestos;~~ • **management measures required for the appropriate handling of metal-impacted fill material, e.g. stockpiled separately from the underlying natural clays and covered to mitigate infiltration;** • requirement for inspection of erosion and sediment control structures; • potential chemical pollutants (e.g. fuels, additives, stockpiles etc.), would be stored in appropriate containers and/or within bunded and lined areas to minimise the risk of spillages or mobilisation of these pollutants into soil and groundwater; • requirement for and location of spill kits for chemicals or fuels that could potentially be spilt or leak**ed**; • regular inspection of remediation equipment and plant to ensure **the potential for** leaks are minimised and **identified issues are** rectified; • measures to remove incidental rainfall from bunded remediation areas and transfer it to the WWTP by the existing surface water system or via temporary pipeline; • requirements for monitoring of groundwater for the duration of the Project; • **the requirement to install, operate and maintain a wheel wash to reduce soil on roads and dust; and** ~~measures to require vehicles leaving the Project Area to utilise the wheel wash to reduce soil on roads, production of dust and the introduction of contamination to groundwater and/or stormwater system. Maintenance requirements for the wheel wash would also be outlined; and~~ • if significant impacts are identified below 4 mbgs (including LNAPL) an area-specific risk assessment would be prepared to assess the requirement for remediation (and/or	

Reference	Mitigation and management measures	Timing
	management measures) and would be reviewed by the NSW EPA accredited Site Auditor (Auditor).	

5.4 Groundwater and PFAS

Issue

WSLHD asked about the mitigation to be implemented if groundwater was to become adversely impacted by the Project, noting that groundwater would be monitored throughout the works. They noted that there is the potential for surface water to impact groundwater flows during and after excavation works, with the removal of hard stand areas and the likelihood of extreme weather events.

WSLHD stated that citing existing fishery closures (due to legacy pollution (including PFAS) of the Camelia Peninsula) is not a reason to not assess contamination and mitigate or remediate any risk identified.

WSLHD recommend that additional controls and systems be put in place during the Project to mitigate the potential for off-site migration of groundwater, of petroleum hydrocarbons and persistent chemicals such as PFAS.

Response

The mitigation and management measures provided for soil, surface water, groundwater and contamination management focus on preventing impacts to groundwater and the management of surface water that may be contaminated by coming into contact with remediation areas. These impacts would be managed by various measures outlined within the proposed SWMP that would form part of the REMP (refer to measure SCG2).

PFAS in soil and groundwater are discussed in Section 9.4 in the Conceptual RAP (**Appendix C** of the EIS). The most recent PFAS soil sampling (AECOM, 2018b) reported the PFAS concentrations in soil were significantly below both the human health commercial screening and the HEPA (2018) interim soil ecological screening criteria for a commercial land use. The most recent groundwater data for PFAS from the Project Area includes targeted sampling undertaken by AECOM as part of the TSI in February 2018 (AECOM 2018b) and sampling undertaken by ERM in June 2018 (ERM, 2018c). Exceedances of adopted investigation levels were noted at five locations with only one of these being on the southern boundary (hydraulically down gradient). In 2018 further assessment of PFAS was completed in the *PFAS Conceptual Site Model and Flux Assessment* (ERM, 2018b). The PFAS mass discharge estimates indicated that the contribution of PFAS from the Project Area to the environment would be below ecological criteria and likely below laboratory limits of reporting. Furthermore, it was estimated that 99% of the total PFAS mass to groundwater is sourced from the former Fire Training area, which is outside of this Project Area.

As noted in Section 10.2 of the Conceptual RAP, the identified petroleum hydrocarbon plumes associated with historical activities at the Site are considered stable and with petroleum concentrations decreasing.

With regards to the removal of hard stand and infiltration, please refer to the response provided to the NSW EPA in **Section 3.2.3**. A brief summary of this response is provided below.

The recent ERM (4 March 2019) Clyde Terminal - *Quarter 4 (2018) Groundwater Monitoring Report* confirms that no significant changes in groundwater levels has occurred at the Site in the last 2-3 years during which time demolition works have damaged and/or removed large areas of hardstand increasing the potential for infiltration. Equally the area likely to be excavated by the Project would be relatively small in comparison to the larger catchment. Overall it is considered unlikely that the Project would result in a notable increase in groundwater recharge.

Mitigation measures such as dewatering of excavations in remediation areas and the installation of temporary drainage systems are likely to reduce the infiltration rate. Conducting the remediation progressively in discrete portions of the Project Area (i.e. not opening up large scale excavations) would further limit the potential for groundwater recharge and the potential for migration of impacted groundwater. Towards the end of the remediation process and at its conclusion, the final landform would be focused on the efficient movement of rainfall via surface water infrastructure, thus reducing potential for groundwater recharge in the longer term.

The Detailed RAP would contain a Groundwater Monitoring and Management Plan (GMMP) that would describe the monitoring of groundwater conditions during the Project. This plan would outline measures to identify, respond and report on groundwater conditions that may have the potential to create unacceptable risk to the Duck River receptors (refer to measure SGC6 and **Table 3-6**). This GMMP would be provided to both the NSW EPA and Department of Industry – Water for review and comment prior to being finalised. It will also be provided to the Auditor for review and approval.

Prior to the Project commencing, a SWMP would be developed and included as part of the REMP. Measures to protect and monitor groundwater during the Project would be included as part of this plan (refer to measure SGC2).

5.5 Air toxics

Issue

WSLHD was unable to assess the level of risk associated with handling contaminated soils in the open air environment, due to the limited information on the level of contamination of the soil with air-toxics and modelling of likely emissions provided in the EIS.

The submission noted that other major remediation sites have used emission control enclosures to reduce the impact of air-toxics, as guided by best practice.

WSLHD recommended that the investigation be undertaken into the use of emission control enclosure as best practice to manage emissions during soil handling and excavation of soils contaminated with air toxics. WSLHD would also like to see further details regarding the degree of contamination of materials to be excavated, stored and treated.

Response

Based on the available data at the time of the AQIA was written, the contamination levels used for emissions calculations were considered adequate to characterise the air pollutant emissions. As noted in **Section 3.2.5.3**, emission rates for air toxics in the AQIA are considered conservative and representative of a reasonable worst-case estimate.

Post submission of the EIS, ERM have completed RSIs to inform the development of the Detailed RAP. The preliminary findings of RSIs are provided in **Appendix L** and reaffirm the underlying assumptions in relation to soil contamination made in the emissions inventory for the AQIA. As noted in **Section 3.3.5**, the results of the RSI data presented in **Appendix L** suggests that the presence of air toxics in the soil is low and the concentrations are localised. Their presence would be unlikely to result in a significant or widespread release of air toxics during the Project. As also noted in **Appendix L**, no further ground investigations are considered to be required and the additional investigations did not identify new areas of concern.

Given the conservative assumptions presented in the AQIA (as discussed in **Appendix H** and **Appendix I**) and the additional data from the RSIs, it is considered that the risks associated with air toxics are likely to have been overstated. Despite the conservatism in the AQIA, the findings of the worst-case assessment were that air toxics were not expected to be a concern. It is considered unlikely that air toxics are a key issue for this Project.

As part of the process to finalise the Detailed RAP, a decision protocol would be developed that would use the soil contamination information (inclusive of BTEX) to decide which remediation method is appropriate or whether soil needs to be disposed off-site (refer to **Section 3.3.1**). An indicative decision protocol has been drafted and is provided in **Appendix J**. This protocol would be finalised as part of the Detailed RAP.

The intent of the decision protocol is to ensure that if air toxics are present in the soil they would be dealt with by the appropriate remedial activity such as biopiling where air from biopiles is passed through an activated carbon air filter or by the DTD plant where off-gas is processed through operations such as a cyclone, thermal oxidiser, baghouse and wet scrubber. The decision protocol also makes it clear that only soil with bulk soil concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below a limit of detection would be remediated by landfarming (refer to management and mitigation measure AQ9 in **Table 3-10**).

As the presence of air toxics is limited in the Western Area and that there are no significant impacts related to air toxics, dust or odour (refer to the AQIA in **Appendix E** of the EIS, **Appendix F** and **Appendix G**) it is unlikely that the significant cost and OHH issues related to the use of an ECE (refer to **Section 3.2.5.4**) would be considered reasonable and feasible. Furthermore, the Project is largely targeted at the remediation of aliphatic compounds and the comparison with the remediation of former gasworks sites (such as MacDonaldtown, Barangaroo and Platypus) which exhibit a higher fraction of aromatic compounds is not valid.

Nevertheless, to address the matters raised by NSW EPA, a commitment to using ECEs for storage and pre-treatment has been made where soils with a bulk soil concentration exceeding the HSL-D criteria for benzene (i.e. 'higher risk soils'). The use of ECEs for storage and pre-treatment would occur where higher risk soils cannot be treated in-situ; placed directly into a biopile or transported offsite on the day of excavation. A management and mitigation measure regarding using an ECE is discussed in **Section 3.2.5.1**and shown in **Table 3-10**.

5.6 Odour

Issue

WSLHD noted that odour is likely to be a source of community concern.

WSLHD recommend that:

- appropriate triggers be included in a Reactive Odour Management Program to respond to community concern about odours;
- engagement with the community be undertaken to raise awareness of potential activities that may increase odours during the Project before they occur in the vicinity; and
- an arrangement to limit high risk odour activities occurring during large community events at the racecourse should be considered.

WSLHD noted that a proactive approach to odour management is preferred to a reactive approach.

Response

Odour modelling undertaken for the EIS was based on a limited number of samples collected as part of the TSI investigation in 2018. These samples deliberately targeted worst case expected emission locations and as such the emission rates and subsequent odour predictions are likely to be overestimates of the odour expected during the assessment (as not all areas of the Project Area would be expected to emit worst case odour emission rates). Actual odour emissions would be expected to be much lower given the worst case odour would not be expected at all locations as the levels of contamination (and by extension odour) vary significantly across the Western Area.

Following discussions with the NSW EPA and DPIE, the odour modelling and mitigation was reviewed. Additional management and mitigation measures are proposed and include:

- A reduction in excavation areas to minimise impacts from windblown odour. Excavation areas are now assumed to be limited to two 30 x 30 m sites (1,800 m^2 total).
- Application of odour and VOC suppressant foam over excavation areas at the end of the day with excavation areas expected to be covered between the hours of 6:00 pm and 7:00 am daily.

The inclusion of these measures alongside the existing inputs into the odour model was quantified using dispersion modelling. The results show a significant reduction in predicted odour concentrations. The revised predicted odour concentrations are presented in AQIA Technical Note 1 in **Appendix F** and show that with the changes outlined above, odour concentrations are not predicted to exceed 2 OU at nearby sensitive receptors.

As discussed in measure AQ6 in Chapter 11 of the EIS, the RAQMP would include odour management measures for the Project and would include the following proposed and new measures (updated measure AQ6 provided in **Table 5-3** below):

- identification of remediation areas which present a higher-risk of odorous materials;
- an operator-run odour complaints management system (as part of the wider Project complaints management procedure) to maintain and monitor air quality performance during potential odour generating activities associated with excavation and remediation of contaminated material;
- in the event of an odour complaint or onsite staff odour observation, information would be obtained regarding the character of the odour, frequency, duration and intensity of odour observations and whether impacts of offensive odours are occurring;
- an investigation into any odour complaint would be conducted as soon as practicable after an odour complaint has been received; and
- if odour impacts identified from the Project by workers or through complaints, action would be undertaken to reduce odour impacts; this may include:
  - spraying odour/VOC suppressant on exposed surface areas and/or stockpiles;
  - covering stockpiles; and
  - limiting excavation works and materials handling of highly contaminated fill while upwind of sensitive receptors during unfavourable weather conditions (e.g. dry and windy conditions).

Importantly as noted above, an operator-run odour complaints management system would be established to monitor air quality performance during potential odour generating activities associated with excavation and remediation of contaminated material. The RAQMP would include the details regarding the appropriate triggers and responses; with immediate action being undertaken where required to reduce the potential for off-site odour impacts. These responses would align with the measures listed in measure AQ6.

With regard to community engagement, following development consent, Viva Energy would continue to engage with the local community and would produce a Community Engagement Plan. This plan would include proactive measures to keep the local community informed of the Project including projected timelines and potential impacts from planned works. These communications would continue to provide details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address.

This commitment has been added as a new mitigation and management measure (G8) outlined in **Table 5-3** below.

Table 5-3 Additional mitigation and management measures – general– Community Consultation

Reference	Mitigation and management measures	Timing
G8	**Following development consent for the Project a Community Engagement Plan would be produced to guide ongoing community engagement during the execution of the Project. It would include measures to keep the local community informed of the Project including projected timelines and potential impacts from planned works. Communications would provide details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address.** **The Community Engagement Plan would provide details regarding a 24 hour community concerns phone line would be provided for Stage 1 to Stage 5 of the Project.** **A suitable complaints management procedure would be prepared, implemented and documented in Community Engagement Plan. This would include:** • **maintenance of a complaints register;** • **if required, monitoring would be conducted in response to complaints received to ensure compliance with relevant criteria (e.g. noise, air quality etc.);** • **if necessary, reasonable and feasible measures would**	**Detailed design/ Stage 1 to Stage 5**

Reference	Mitigation and management measures	Timing
	be implemented to address environmental impacts; and • **a feedback process would be established to manage complaints, including responding to complainant and updating them on the action/s taken.**	
AQ6	The RAQMP (odour) would include: • **identification of remediation areas which present a higher risk of odorous materials;** • an operator-run odour complaints management system (as part of the wider Project complaints management procedure) to maintain and monitor air quality performance during potential odour generating activities associated with excavation and remediation of contaminated material; • in the event of an odour complaint **or onsite staff odour observation** information would be obtained regarding the character of the odour, frequency, duration and intensity of odour observations and whether impacts of offensive odours are ~~currently~~ occurring; • an investigation ~~of the~~ **into the** odour complaint would be conducted as soon as practicable after ~~an odour~~ **the** complaint has been received; and • if odour impacts are **identified from the Project by workers or through complaints** ~~immediately occurring;~~ action would be undertaken to reduce odour impacts; this may include: - spraying odour/VOC suppressant on exposed surface areas and/or stockpiles; - covering stockpiles; and - limiting excavation works and materials handling of highly contaminated fill while upwind of sensitive receptors during unfavourable weather conditions (e.g. dry and windy conditions).	Detailed design/ Stage 1 to Stage 3

Spoil containing potentially highly odour material would be subject to the application of appropriate odour controls (refer to **Section 3.2.5.5**).

Whilst large community events at Rosehill racecourse can be considered when scheduling works related to the Project, odour exceedances are not expected. Potential odour impacts would be managed through the proposed mitigation and management measures.

5.7 Surface water treatment and release to the environment

Issue

In light of the community support for improving water quality along the Parramatta River, of which the Duck River is a tributary, WSLHD recommended that information on the effectiveness of surface water collection, storage and treatment within existing or water treatment facilities be provided. This would ensure that surface water is treated to an acceptable standard to limit any further contamination of surrounding receiving waters.

Response

Section 3.2.2 provides a number of detailed responses to the NSW EPA regarding the management of stormwater and wastewater flows from the Western Area during the Project. These responses and the information within the EIS outline how the water quality of the Duck River will be safeguarded during the Project and once the final landform is completed.

A new measure has been included that requires Viva Energy to provide annual reports to NSW EPA on the progress of the remediation (refer to **Section 3.3.2.5** and additional measure G6).

5.8 Human Health Risk Assessment modelling

Issue

The modelling of ground level concentrations of contaminants used in the Health Risk Assessment were based on EPA limits set on other projects, using similar treatment technologies. However, there is no information provided on the contaminated material that was being treated at those locations.

There are uncertainties around the relevance and applicability of proposed discharge concentrations from the direct thermal desorption (DTD) unit and the biopiles, as the concentrations used were not site specific.

WSLHD recommended that further information is provided to allow comparison of the contaminated soils, treatment technologies and in stack concentration used in the risk assessment to calculate exposure risk.

WSLHD requested that validation of modelled in stack and ground level concentrations be undertaken during the commissioning phase of the DTD unit and biopiles.

Response

All air quality data for air toxic and gaseous pollutants used in the HHRA (refer to Appendix F of the EIS) were derived from dispersion modelling provided in the AQIA (refer to Appendix E of the EIS). The AQIA used a number of sources to estimate emission rates from the Project which included:

- Site specific monitoring data (AECOM, 2018);
- Emission Estimation Manuals including;
  - US EPA Tier 3 and
  - EU Stage III *A Non-road Diesel Engine Emission Standards*; and
- AQIA reports and associated documentation for similar projects.

Stack emission rates in in the AQIA have been adapted from the stack emission limits imposed on a similar DTD used in the Orica Car Park Waste Encapsulation Project under EPL No. 13263. The adopted emission limits are also in line with (or better) than Group 6 Standards of Concentration for thermal treatment plants as listed under Schedule 2 of the *Protection of the Environment Operations (Clean Air) Regulation 2010 (NSW)* and are therefore considered both appropriate and conservative.

The *Caltex Sustainable Soil Regeneration Facility Air Quality Impact Assessment* (URS 2015) report a Total VOC concentration of 10 ppm as a typical upper limit of operation for typical biopile aeration system outlet stack with a proposed activated carbon filter.

It is acknowledged that actual stack data is not available for the Site. The limits used as proxy contaminant concentrations in the AQIA are considered to represent reasonable pollutant concentrations when capture technology and the clean air regulation limits are taken into consideration.

Detailed description of remediation plant and equipment would be provided in the Detailed RAP, including a more detailed description of the design of the DTD unit and associated Emission Control System, once the specific DTD unit to be used has been selected (subject to the remediation contractor tendering phase) and further detail on the biopile construction is available.

The AQIA (refer to section 7.2.4 of Appendix E of the EIS and measure AQ3 in Table 20-1 of the EIS) recommended that stack emissions testing be undertaken to validate the potential air quality impact against predicted impacts in the AQIA; to ensure ongoing performance of ventilation systems and comply with EPL limits. This recommendation has been made into an additional measure for the Project (refer to measure AQ8 in **Table 5-4**).

Table 5-4 Additional mitigation and management measures – air quality – WSLHD

Reference	Mitigation and management measures	Timing
AQ8	**Stack emissions testing will be undertaken to validate the potential air quality impact against predicted impacts in the AQIA, to ensure ongoing performance of ventilation systems and comply with EPL limits. Stack emissions testing would include:** • **validation of modelled in stack and ground level concentrations during the commissioning phase of the DTD unit and biopiles;** • **emissions testing of the DTD unit stack during commissioning to confirm particulate, NO_2, VOC and dioxin and furan stack concentrations and periodically post commissioning to ensure ongoing compliance with EPL limits; and** • **emissions testing of the biopile aeration system would be conducted during commissioning to confirm VOC concentrations and assess performance of air filters.** **Required stack emissions testing would be carried out in accordance with the NSW EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007).**	**Stage 3**

5.9 Community engagement

Issue

WSLHD has encouraged Viva Energy to continue to engage with the community during the project establishment phase and during operations, should the project be approved.

WSLHD also recommended that:

- during the Project avenues for lodgement of complaints in relation to the operational phases of the Project be provided; and
- management plans should include a complaints handling, investigation and actions system for addressing complaints lodge by the community.

Response

As stated in the EIS (refer to Chapter 6) Viva Energy has an existing relationship with the local community on the Camellia peninsula and has existing, established communication pathways.

As noted in the EIS, should the Project be consented, Viva Energy would continue to engage with the local community and would produce a Community Engagement Plan. It would include measures to keep the local community informed of the Project including projected timelines and potential impacts from planned works. These communications would continue to provide details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address. This commitment has been added as a new mitigation and management measure (G8) outlined in **Table 5-3** above.

The commitment to the 24 hour community (including complaints) hotline was made through measure NV2 in the EIS. As stated in measure NV3 in the EIS, a suitable complaints management procedure would be prepared, implemented and documented for the Project. This would include:

- maintenance of a complaints register;
- a feedback process would be established to manage complaints, including responding to complainant and updating them on the action/s taken.

For simplicity, the intent of these two measures (NV2 and NV3) has been included as part of the new measures G8 presented in **Table 5-3** above. Measures NV2 and NV3 have been deleted.

At all stages of the Project, the Clyde Terminal webpage would remain accessible and continue to provide contact information, such as the 24 hour community (including complaints) hotline and instructions on how to provide comments or feedback.

5.10 Incident management plans/emergency procedures

Issue

The site is identified as a hazardous facility based on the storage and transport of fuels.

The siting of the DTD unit and the development of an incident management plan should be considered in consultation with Emergency Management Services.

Response

The Clyde Terminal, which forms part of the larger Site is classified as a Major Hazard facility (MHF) under the *Work Health and Safety Act 2011 (NSW)* (WH&S Act) and its supporting Regulation 2017 (WH&S Regulation). The Project would not occur within the part of the Site where the Clyde Terminal is located. An assessment on hazards and risks, including a SEPP 33 risk screening assessment has been completed for the Project, refer to Chapter 18 of the EIS. The outcome of his assessment was that following the implementation of the mitigation and management measures (refer to **Chapter 11**), no adverse residual hazardous impacts are likely.

The management of hazards would be through the project management plan (PMP), which would include an Occupational Health and Safety Plan and Emergency Response and Contingency Plan for the works (Stage 1 to Stage 5).

The Site Emergency Response Plan would remain relevant during the Project and would be updated following its completion to reflect the changed site conditions in the Western Area (refer to measure HR4).

5.11 Future uses

Issue

WSLHD noted that validation of the remediation project by an EPA Approved Site Auditor should consider whether there is any remaining contamination at soil depths below the level of remediation of soils undertaken during the Project.

If contamination remains at depths below the level of remediated soil at 2-3 metres below ground surface than the installation of covenants on future development including restricting underground excavation e.g. underground carparks should be considered. A further assessment should be required prior to any change of land use zoning.

Response

The Project does not involve changing the land use zoning of the Western Area. The Project would enable the Project Area to be used for permissible development under the existing land use zoning in the future.

The vertical extent of TRH and BTEX impact in soil is typically within the uppermost 2 m with the exception of the south west corner where the fill material is known to be deeper and sludges may have been historically dumped with the fill material in this area. The available data indicate that there is a significant reduction in contaminant concentrations in deeper soils (> 2 metres below the ground surface (mbgs)) across much of the Site, which is likely due to the low permeability natural clays found at this depth reducing vertical/downward migration of contamination. Clay has been found to occur as shallow as 1.5 mbgs and extends to at least 8 mbgs.

The remediation would predominantly be limited to less than 4 mbgs, and would be generally focused on horizons within 2 mbgs, including impacted soils, LNAPL (in limited areas), and likely soils/sludges in the drainage network and surrounds.

Following the completion of the Stage 1 to Stage 5 works, a Validation Report would be prepared in accordance with the Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2011) and reviewed/approved by the Auditor, confirming that the Western Area is suitable for future commercial/industrial landuses.

The Remediation Criteria to be adopted for the Project and used to assess suitability for the future commercial/industrial land use would be derived as an outcome of the HHRA. The Remediation Criteria would likely include different criteria to assess contaminant concentrations at different depth intervals (based on changes to the risk profile) and would be prepared in accordance with the requirements of Schedule B7 of the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, amended 2013 (ASC NEPM) (National Environment Protection Council (NEPC), 2013). The HHRA would also be reviewed by the Auditor.

The implementation of development controls is the responsibility of the consent authority and is outside of the scope of this Project. The need for further development controls can be assessed following completion of the Project.

5.12 Further information

Issue

WSLHD recommended that additional supportive evidence as discussed above be provided to allow further assessment of the Project and the management of impacts and risks due to the proposed increase in the operating capacity at the Site.

Response

Responses to WSLHD's submission have been provided in **Sections 5.1** to **5.11** above.

The operating capacity of the Site would not be increased by the Project. There would be a temporary increase in the amount of plant, equipment and workforce during the Project (Stage 1 to Stage 5), however following completion of the Project, the Western Area will be largely vacant except for ongoing management and monitoring activities.

6.0 Roads and Maritime Services

Roads and Maritime Services (Roads and Maritime) did not raise any objections to the Project. Roads and Maritime recommended that two conditions be included as part of the determination. These are summarised below.

6.1 Cumulative impacts with the Parramatta Light Rail project

Issue

Roads and Maritime advised that the Parramatta Light Rail project has current and future construction activity planned at the corner of Grand Avenue and Colquhourn Street.

Roads and Maritime have requested that the proponent submit a Plan of Management (POM) in consultation with the Transport for NSW (TfNSW) Sydney Coordination Office (SCO), Roads and Maritime, Parramatta Light Rail, and the City of Parramatta Council (Council), prior to the commencement of remediation works. The POM should include, but is not limited to, the following: vehicle routes, number of trucks, hours of operation, access arrangements and traffic control to facilitate the remediation works.

Response

The Project is expected to have a negligible and temporary impact on the arterial road network. The Parramatta Light Rail project may cause disruption to the road network and the intersection of James Ruse Drive, Grand Avenue and Hassall Street, which is currently operating with high levels of congestion. The EIS identified that there may be a minor cumulative traffic impact with the Parramatta Light Rail project, in particular at the intersection of James Ruse Drive, Grand Avenue and Hassall Street.

The following measure was proposed to manage the potential cumulative traffic impacts (CU1):

> *Consultation with the Parramatta Light Rail project and Clyde Barging Facility would be undertaken to gain an understanding of project timing and traffic movements to avoid potential cumulative traffic impacts where possible.*

A Traffic Management Plan (TMP) would be prepared as a sub-plan of the REMP (refer to measure TT1). The TMP would be provided to TfNSW, Roads and Maritime and Council for comment, prior to finalisation. TfNSW may decide to pass the TMP on to the SCO for additional comments.

In addition, ongoing consultation with government agencies such as TfNSW, Roads and Maritime and Council would occur during the Project, in the form of meetings, review of documents and other approvals (if required).

The TMP would:

- detail vehicle routes:
    - for heavy and private vehicles to access the Western Area (refer to measure TT1);
    - for oversize or over-height vehicles (refer to measure TT1);
    - outlining preferred routes to and from the Project Area (in diagram format) (refer to measure TT5 in Table 14-8 of the EIS), which would:
        - avoid the intersection of James Ruse Drive, Grand Avenue and Hassall Street during peak periods for workforce and heavy vehicles; and
        - avoid the vehicle restrictions where Wentworth Street travels under the M4 Western Motorway for vehicles exceeding 4.6 m in height; and
- detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control.

The TMP would also detail the number of heavy vehicles proposed and the remediation working hours. Measure TT1 has been amended to make it clear that these items would also be included in the TMP (refer to **Table 6-1**).

A specific POM is not proposed to be prepared; however the items outlined in the submission from Roads and Maritime to be included in the POM would be included in the TMP.

The amended mitigation and management measure relevant to this submission is provided in **Table 6-1**. New text has been highlighted in **bold**.

Table 6-1 Amended mitigation and management measures – traffic, transport and access – Roads and Maritime

Reference	Mitigation and management measures	Timing
CU1	Consultation with the Parramatta Light Rail project and Clyde Barging Facility would be undertaken, **during detailed design, as part of works planning and during the Project,** to gain an understanding of project timing and traffic movements to avoid potential cumulative traffic impacts where possible.	**Detailed design/** Stage 1 to Stage 5
TT1	A Traffic Management Plan (TMP) would be prepared as a sub-plan of the REMP. **The TMP would be submitted to TfNSW, Roads and Maritime and Council for comment prior to being finalised.** The TMP would include: • **the maximum number of heavy and private vehicles expected to be generated by each stage of the Project;** • **the remediation working hours;** • **the time periods that vehicles are expected to be travelling to and from the Project Area;** • routes for heavy and private vehicles to access the Western Area; • appropriate routes for oversize or over-height vehicles; • on-site parking locations; and • the process for ensuring operators have the relevant permits from the National Heavy Vehicle Regulator, if required. The TMP would: • **refer to the potential traffic impacts, including cumulative impacts, detailed in the EIS;** • detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control; ~~• include a Driver Code of Conduct to:~~ ~~- outline expectations of Project related vehicles~~ ~~- minimise the impacts of the Project on the local and regional road network;~~ ~~- minimise conflicts with other road users; and~~ ~~- require truck drivers use specified routes;~~ • include a notification process for potentially affected businesses along Project haulage routes, in the event of a potential traffic disruption related to the use of vehicles larger than Class 2 Gross Mass Limit 25/26 m B-Doubles; and • Vehicle management measures to manage vehicle movements **within the Project Area** to reduce the likelihood of conflicts between workers and private and heavy vehicles, including a speed limit of 20 km/h for the Project Area.	Detailed design/ Stage 1 to Stage 5

6.2 Road Occupancy Licence

Issue

Roads and Maritime requested that a Road Occupancy Licence (ROL) be obtained from the Transport Management Centre for works that may impact on traffic flows on surrounding classified roads, such as James Ruse Drive, as a result of the remediation activities.

Response

The impact on traffic flows as a result of traffic generated by the Project was modelled using Sidra Intersection modelling for three intersections. These include:

- James Ruse Drive, Grand Avenue and Hassall Street;
- Parramatta Road and Wentworth Street; and
- James Ruse Drive and Parramatta Road.

The Sidra Intersection analysis results indicate that the Project has no impact on the Level of Service (LoS) for any of the three intersections listed above. Overall the addition of traffic generated by the Project would be temporary and has a negligible effect on the arterial road network. Therefore a significant impact on classified roads is considered unlikely to occur as a result of the Project.

Clause 138 of the *Roads Act 1993 (NSW)* states that consent is required from the relevant roads authority to:

- erect a structure or carry out a work in, on or over a public road;
- dig up or disturb the surface of a public road;
- remove or interfere with a structure, work or tree on a public road;
- pump water into a public road from any land adjoining the road; or
- connect a road to a classified road.

It is not anticipated that any of the above activities above would occur as part of the Project. In addition changes to access or local roads would not be required to accommodate traffic generated by the Project. Therefore consent from the relevant roads authority is not required. As the Project would not involve the activities stated in clause 138 of the Roads Act, a ROL is not required.

7.0 Transport for NSW

TfNSW raised one issue for consideration in their submission, which was related to cumulative traffic management. This is discussed in the following section.

7.1 Cumulative traffic management

Issue

TfNSW requested that the Proponent be conditioned to prepare a Construction Traffic and Pedestrian Management Plan (CTPMP) in consultation with SCO and Parramatta Light Rail within TfNSW and be endorsed by SCO. TfNSW requested the CTPMP is to take into account potential impacts of the proposal on the Parramatta Light Rail project and address the following:

- traffic and public transport customer management in the vicinity of the development;
- location of all proposed work zones;
- proposed construction hours;
- estimated number and type of construction vehicle movements including volume, time of day and truck routes;
- construction program highlighting details of peak construction activities and proposed construction staging;
- any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the duration of the proposed works;
- cumulative construction impacts of other projects in the vicinity and duration of the impacts;
- measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be identified;
- construction vehicle movements using the intersection of Grand Avenue/James Ruse Drive intersection should be limited during peak periods to reduce traffic impact.

Response

As stated above in response to the Roads and Maritime submission (refer to **Section 6.1**) there may be a minor cumulative traffic impact with the Parramatta Light Rail project.

A TMP would be prepared (refer to measure TT1) to manage potential traffic impacts. TT1 outlines a number of items to be included in the TMP (refer to **Section 6.1**). The preparation of a specific CTPMP is not proposed; however the TMP would be amended to include the relevant items requested by TfNSW. **Table 7-1** provides a response to each of the items that TfNSW requested be included in a CTPMP and outlines whether these items would be included in the TMP to be prepared for the Project. **Table 7-2** shows the amended mitigation and management measures in **bold**.

Table 7-1 Response to TfNSW CTPMP measures

CTPMP item requested by TfNSW	Response
Traffic and public transport customer management in the vicinity of the development.	TT1 states that the TMP would detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control. Impacts to bus stops or railway stations are not anticipated, as works would be contained within the Site. Potential impacts to public transport are limited to increased customer numbers, due to Project workers using public transport and potential delays, due to increased traffic on the local road network. As the workforce are likely to use private vehicles to access the Project Area and as the number of workers on-site at any

CTPMP item requested by TfNSW	Response
	one time would likely be less than 80, the potential increase of public transport users is expected to be negligible. The addition of traffic generated by the Project would be temporary and has a negligible effect on the arterial road network. Overall potential impacts on public transport would be negligible.
Location of all proposed work zones.	Project work zones would be within the existing Site boundary. The general location of work zones and remediation technologies, within the Project Area, would be detailed in the Project Management Plan (PMP) and referred to in the REMP. The location of work zones for remediation activities would change depending on the activity and stage being undertaken a particular point in time. As the TMP would form a sub-plan of the REMP and as the work zones would be inside the Project Area, it is not deemed necessary to include the location of the work zones in the TMP.
Proposed construction hours.	TT1 has been amended to include the remediation working hours (refer to **Table 7-2**).
Estimated number and type of construction vehicle movements including volume, time of day and truck routes.	Vehicle routes would be included in the TMP as outlined in **Section 6.1**. TT1 has been amended (refer to **Table 7-2**) to include the estimated number and type of remediation vehicle movements, including volume and time of day.
Construction program highlighting details of peak construction activities and proposed construction staging.	The remediation program and staging would be detailed in the PMP and referred to in the REMP. As the Project stages would be undertaken in an iterative approach the number of vehicles accessing the Project Area would vary throughout the duration of the Project. The timing of the peak workforce would change depending on which Project stages are being completed and which activities within each stage. Consultation with the Parramatta Light Rail project and the Clyde Barging Facility would be undertaken to gain an understanding of project timing and potential peak traffic movements to avoid potential cumulative traffic impacts where possible (refer to measure CU1 in **Table 6-1**).
Any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the duration of the proposed works. Measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be identified.	Potential impacts to the road network from Project traffic was assessed in Chapter 14 of the EIS. As there is limited pedestrian and cyclist links in the vicinity of the Site, impacts to pedestrians and cyclists is expected to be negligible. As discussed above the impact to the arterial road network, and through extension to local bus services, is expected to be negligible and temporary. A reference to the impacts identified in the EIS would be referred to in the TMP. Measure TT1 has been amended to reflect this (refer to **Table 7-2**). Relevant mitigation and management measure for traffic impacts were identified in Chapter 14 of the EIS. The TMP would detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control.
Cumulative construction impacts of other projects in the vicinity and duration of the impacts.	Cumulative traffic impacts have been assessed in Chapter 14 of the EIS. The Project is expected to have a minor cumulative impact with the Parramatta Light Rail project and the Clyde Barging Facility. Measure CU1 was proposed to manage cumulative impacts of the Project (measure CU1 is provided in **Section 6.1**). As stated above, a reference to the potential traffic impacts identified in the EIS, including cumulative impacts, would be included In the TMP (refer to amended measure TT1 presented in **Table 7-2**).

CTPMP item requested by TfNSW	Response
Construction vehicle movements using the intersection of Grand Avenue/James Ruse Drive intersection should be limited during peak periods to reduce traffic impact.	TT5 states that the TMP would include a diagram outlining preferred routes to and from the Project Area which would avoid the intersection of James Ruse Drive, Grand Avenue and Hassall Street during peak periods for workforce and heavy vehicles.

As noted above, consultation with the Parramatta Light Rail project would be undertaken to gain an understanding of project timing and traffic movements to avoid potential cumulative traffic impacts where possible (refer to measure CU1). The TMP would be provided to TfNSW, Roads and Maritime and Council for comment. As traffic impacts from the Project are likely to be minor, endorsement from the SCO is not considered necessary. However, TfNSW may decide to pass the TMP on to the SCO for comment.

The amended mitigation and management measure relevant to this submission and the Roads and Maritime submission is provided in **Table 7-2**. New text has been highlighted in **bold**.

Table 7-2 Amended mitigation and management measures – traffic, transport and access – Transport for NSW

Reference	Mitigation and management measures	Timing
TT1	A Traffic Management Plan (TMP) would be prepared as a sub-plan of the REMP. **The TMP would be submitted to TfNSW, Roads and Maritime and Council for comment prior to being finalised.** The TMP would include: • **the maximum number of heavy and private vehicles expected to be generated by each stage of the Project;** • **the remediation working hours;** • **the time periods that vehicles are expected to be travelling to and from the Project Area;** • routes for heavy and private vehicles to access the Western Area; • appropriate routes for oversize or over-height vehicles; • on-site parking locations; and • the process for ensuring operators have the relevant permits from the National Heavy Vehicle Regulator, if required. The TMP would: • **refer to the potential traffic impacts, including cumulative impacts, detailed in the EIS;** • detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control; • ~~include a Driver Code of Conduct to:~~ - ~~outline expectations of Project related vehicles~~ - ~~minimise the impacts of the Project on the local and regional road network;~~ - ~~minimise conflicts with other road users; and~~ - ~~require truck drivers use specified routes;~~ • include a notification process for potentially affected businesses along Project haulage routes, in the event of a potential traffic disruption related to the use of vehicles larger than Class 2 Gross Mass Limit 25/26 m B-Doubles; and • Vehicle management measures to manage vehicle movements **within the Project Area** to reduce the likelihood of conflicts between workers and private and heavy vehicles, including a speed limit of 20 km/h for the Project Area.	Detailed design/Stage 1 to Stage 5

8.0 NSW Office of Environment and Heritage

OEH raised on query regarding a BDAR waiver. OEH did not have any comments on State Heritage.

8.1 Biodiversity Development and Assessment Report

Issue

The original OEH submission stated that a BDAR had not been completed by the Project and as such OEH were unable to provide comments. As a BDAR was completed for the Project and appended to the EIS, clarification regarding the submission was requested of OEH by DPE.

OEH clarified their submission and requested that a BDAR waiver, not a BDAR, be prepared for the Project.

Further comments were provided by the Environment, Energy and Science Group (EES) (formerly OEH) following a review of a draft of this Response to Submissions Report. EES confirmed that they have undertaken a review of the BDAR provided in Appendix I of the EIS and consider it adequate.

EES (formerly OEH) further supported the preparation of a Biodiversity Management Plan (BMP), including mitigation measures for the Green and Golden Bell Frog as listed in Table 12-1 of this RtS, along with further measures as outlined in the BDAR including:

- implementation of the *Plan of Management – Restoration of Green and Golden Bell Frog Habitat Clyde* (Biosphere 2013);
- retention of areas of exotic grassland following completion of the Project, to provide shelter and forage opportunities for Green and Golden Bell Frogs;
- inclusion of measures in the BMP to reduce any biodiversity impact in relation to fencing, stockpiles, mulching, dust, stormwater, sediment and erosion control and acid sulfate soils; and
- inclusion of mitigation measures in the Long Term Environmental Management Plan (LTEMP) to manage the incidental occurrence of Green and Golden Bell Frogs in the Project Area.

EES (formerly OEH) recommended that conditions of consent are included which outline the requirements and required timeframes for the BMP and LTEMP to be prepared and implemented.

Response

The EIS included a BDAR, which was presented in Appendix I and was summarised in Chapter 15.

It is understood that a BDAR waiver would be produced by DPIE who would provide it to EES (formerly OEH).

Viva Energy support the preparation and implementation of a BMP along with the inclusion of mitigation measures within the LTEMP as requested by EES (formerly OEH) and outlined with in the BDAR for the Project.

Regarding the first bullet point listed above, the *Plan of Management – Restoration of Green and Golden Bell Frog Habitat Clyde* (Biosphere 2013), has been updated to the *Revised Plan of Management: Restoration of Green and Golden Bell Frog Habitat, Clyde Terminal, January 2019*. All references to the 2013 Plan of Management should be updated accordingly.

Regarding the second bullet point, Table 9 of the BDAR (refer to Appendix I of the EIS) states that "*The Project would result in the removal of low quality potential forage and movement habitat supported by exotic grassland and grass tussocks and open concreted areas. The potential habitat to be removed is not critical to the survival of the Clyde/Rosehill key population* (of Green and Golden Bell Frog), *or the species more broadly.*"

The BDAR does not recommend or require the retention of areas of exotic grassland within the Project Area. Given the nature of the works, Viva Energy cannot confirm that any areas of exotic grassland would be retained within the Project Area.

9.0 Department of Planning and Environment - Greater Parramatta Urban Renewal Team

The DPE Greater Parramatta Urban Renewal Team (the Team) raised concerns regarding traffic and transport impact associated with the intersection of James Ruse Drive and Hassell Street and cumulative impacts.

9.1 Traffic and transport

9.1.1 Intersection of James Ruse Drive and Hassell Street

Issue

The Team noted that the impact on existing intersections should be considered, particularly as there is limited access to the Camelia Precinct. The Team requested that the TMP consider limiting access to the Site via the James Ruse Drive and Hassell Street Intersection during peak times.

Response

The intersection of James Ruse Drive and Hassell Street is currently operating with high levels of congestion; under existing conditions (i.e. without Project generated traffic). The Project would not impact on the level of service of this intersection, or the other two intersections modelled (refer to **Section 6.2**). Measure TT5 states that the TMP would include a diagram outlining preferred routes to and from the Project Area which would avoid the intersection of James Ruse Drive, Grand Avenue and Hassall Street during peak periods for workforce and heavy vehicles.

9.1.2 Camellia Town Centre Draft Master Plan

Issue

The Team noted that consideration of potential cumulative impacts with the draft Camellia Town Centre Master plan should be considered.

Response

The Camellia Town Centre Draft Master Plan was considered in the traffic assessment (refer to Chapter 14 of the EIS); however, the plan does not provide the level of detail that is required to undertake a cumulative impact assessment. The EIS included projects in the cumulative impact assessment which met the spatial and temporal parameters identified in Chapter 19 of the EIS. As the Draft Master Plan did not meet these parameters, it was not included.

Projects which are constructed as part of the Camellia Town Centre Draft Master Plan would be subject to an environmental impact assessment as part of their development applications. Through this process these projects would need to consider cumulative impacts, including potentially with the Project, if the Project falls within the spatial and temporal parameters of the assessments for those projects.

It should also be noted that overall the addition of traffic generated by the Project would be temporary and have a negligible effect on the arterial road network.

9.1.3 Parramatta Light Rail project

Issue

The Team requested that consideration be given to traffic conflicts that may arise due to the construction of the Parramatta Light Rail Stage 1 project.

Response

As discussed in response to both Roads and Maritime (refer to **Section 6.1**) and TfNSW (refer to **Section 7.1**), cumulative impacts with other projects have been considered in the EIS (refer to section 14.7). The Project is expected to have a minor cumulative impact with the Parramatta Light Rail project and the Clyde Barging Facility. Measure TT1 has been amended to include a summary of potential cumulative impacts (refer to **Table 7-2**) and CU1 requires consultation with the Parramatta Light Rail project (refer to **Section 6.1**).

10.0 Endeavour Energy

Endeavour Energy did not raise any objections to the project. Endeavour Energy did request access to air quality information and this request is summarised below.

10.1 Air Quality

Issue

Endeavour Energy requested:

1. access to air quality compliance reports upon request;
2. timely warning of occurrences of particulate matter PM_{10} and $PM_{2.5}$ level exceedance above NSW EPA criteria; and
3. timely warning of occurrences of odour level exceedance above NSW EPA criterion of 2 odour units (OU).

Response

The AQIA concluded that all pollutants with the exception of PM_{10}, $PM_{2.5}$ and odour would be below the relevant NSW EPA criteria incrementally and inclusive of the existing background levels. Provided recommended mitigation measures to minimise the Project's pollutant contribution to the local air shed and a reactive air quality management program is implemented to minimise off-site particulate and odour impacts, no significant impacts are likely during the Project. Nevertheless, emissions would be released from the Project and would result in negligible adverse air quality impacts at nearby industrial and residential receivers during Stage 2 to Stage 4.

As part of the REMP an Air Quality Management Plan (AQMP) would be produced (refer to measure AQ2). As detailed in AQ2, the AQMP would outline:

- "*performance objectives to guide the monitoring and management of potential air quality impacts;*
- *timeframe for implementation of all identified emission controls;*
- *key performance indicator(s) for emission controls;*
- *monitoring method(s), including location, frequency and duration;*
- *response mechanisms to mitigate potential off-site impacts;*
- *responsibilities for demonstrating and reporting achievement of key performance indicator(s); and*
- *record keeping and complaints response register; and compliance reporting.*"

In line with the final bullet point, compliance reporting would occur as part of the Project. If requested Viva Energy can make these reports available to Endeavour Energy. As noted in the EIS, the proposed reactive air quality management program would mean that odour and particulate matter exceedances are unlikely to occur. In the unlikely event that an exceedance does occur, registered stakeholders that could be affected can be informed.

11.0 Design revisions

11.1 Introduction

Section 1.2 of this report noted that Viva Energy is proposing to make two revisions to the Project:

- extension of the Project program; and
- inclusion of an additional pre-treatment process for wastewater from excavations that may contain unacceptable levels of Per- and polyfluoroalkyl substances (PFAS).

This chapter reviews these proposed revisions against the environmental aspects assessed in the EIS to understand if these changes are likely to result in additional significant impacts.

11.2 Program extension

11.2.1 Overview

Viva Energy has reviewed the indicative program of works presented in Section 4.7 of the EIS and would like to extend the proposed end date of Q1 2023 to Q4 2023. This extension of time would provide more certainty that the Project can be completed within an agreed timeframe. A revised indicative program for the Project is provided in **Table 11-1** below.

Table 11-1 Revised indicative program of works

Stages		Indicative commencement date	Indicative duration	Revised indicative commencement date	Revised indicative duration
Stage 1 – Preparation works		January 2020	3 months	April 2020	2 months
Stage 2 – Removal of redundant infrastructure and waste	Concrete and waste processing	March 2020[1]	36 months	June 2020	36 months
	Excavation of drainage and other infrastructure	March 2020	18 months	June 2020	18 months
Stage 3 – Remediation technologies	Landfarming	March 2020	18 months	July 2020	18 months
	In-area soil mixing	March 2020	5 months	July 2020	5 months
	Biopiling	March 2020	28 months	July 2020	28 months
	Thermal desorption	Set up from January 2020, Operation from November 2020[2]	11 months setup 6 months operation	Set up from April 2020, Operation from March 2021[2]	11 months setup 6 months operation
	Stabilisation	Set up from January 2020, Operation from May 2020	4 months setup 9 months operation	Set up from April 2020, Operation from August 2020	4 months setup 9 months operation
Stage 4 – Landforming		Would occur periodically throughout the Project as materials and remediated areas are validated	22 months	Would occur periodically throughout the Project as materials and remediated areas are validated	22 months

Stages	Indicative commencement date	Indicative duration	Revised indicative commencement date	Revised indicative duration
Stage 5 – Completion works and demobilisation	Dependent on completion of Stages 3 and 4	Completed by March 2023	Dependent on completion of Stages 3 and 4	Completed by December 2023

Notes:

1. Concrete processing would be limited to 15, five day periods at various stages during the Project.
2. Operation of the DTD unit would be required 24 hours a day, six days a week.

11.2.2 Environmental assessment

A discussion of likely impacts of the proposed extension is provided in **Table 11-2** below. This discussion should be read in conjunction with the EIS and other sections of this report.

Table 11-2 Extension of program impact discussion

Environmental aspect	Discussion
Soils, groundwater and contamination	The Project would remain consistent with the proposal presented within the EIS with the exception of being undertaken over a longer duration than initially proposed. No additional remediation is proposed. All soil, groundwater and contamination management measures would be applied as required during the revised program. **Impact comparison:** Potential impacts would be of the same scale as those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Surface water, wastewater and flooding	The extension of time would not alter the physical scope of the Project or the magnitude of the potential impacts. All surface water, wastewater and flooding management measures would be applied as required during the revised program. **Impact comparison:** Potential impacts would be of the same scale as those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Air quality	The extension of time would not alter the physical scope of the Project or the magnitude of the potential impacts. Air quality and odour management measures would be applied as required during the revised program. **Impact comparison:** Potential impacts would be of the same scale as those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Human health risk assessment	Overall the estimated health risks related to the Project are considered low and acceptable. An Occupational Health and Safety Plan was required for the Project under measure HH1. **Impact comparison:** The extension of the program would not change the conclusions of the risk assessment.
Waste management	The extension of time would not alter the physical scope of the Project. Waste generated during the extension would not exceed that already assessed within the EIS. The management, storage and transport of waste from the Western Area would be undertaken in the same manner as previously proposed. **Impact comparison:** Potential impacts would be of same scale as those that have been previously assessed and would require similar mitigation.

Environmental aspect	Discussion
Noise and vibration	The scale and physical extent of the activities proposed to be undertaken for the Project would remain consistent with those assessed within the EIS. The extension would not result in works occurring closer to sensitive receivers and would not change the equipment proposed to be used. The noise assessment concluded that the Project meets the applicable noise criteria and is expected to have no significant impact. On the basis that noise impacts were assessed to be minor, the potential impact of extending the duration of the Project is considered to be negligible. All demolition activities within the extended period would be undertaken according to the same working hours, consultation requirements and management measures as assessed and described within the EIS. **Impact comparison:** Potential impacts would be of the same magnitude as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Traffic, transport and access	The proposed extension of time would involve an extended duration of traffic movements associated with the Project. The overall number of vehicle movements would not change as the activities proposed have already been assessed within the EIS. The Project is expected to have a negligible and temporary impact on the arterial road network. **Impact comparison:** Potential impacts would be of a similar scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Biodiversity	The extension of time would not alter the physical scope of the Project. There would be no change to potential biodiversity impacts as assessed in the EIS. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Historic and Aboriginal heritage	The extension of time would not alter the physical scope of the Project. There would be no change to potential heritage impacts as assessed in the EIS. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Hazards and risks	The extension of the program would not alter the location or methodology to complete the Project. The EIS concluded that following the implementation of mitigation and management measures, no adverse residual hazardous impacts are likely. **Impact comparison:** Extension of the program would not substantially alter the risk profile of the terminal or the Project.
Cumulative impacts	The cumulative assessment within the EIS considered a number of additional projects. The proposed 9 month extension to the Project program would not alter the conclusions of this assessment. Measure CU1 would still be implemented.

11.2.3 Summary

Given the discussion in **Table 11-2** it can be concluded that the potential impacts associated with the extension of the indicative Project program would be of the same type and scale as those that have been assessed and discussed in the EIS and this report. The proposed management and mitigation measures provided in **Chapter 12** of this report would continue to apply. No additional management or mitigation measures would be required.

11.3 Pre-treatment technology

11.3.1 Overview

Viva Energy is proposing to include an additional pre-treatment process for wastewater from excavations that may be impacted with unacceptable levels of Per- and polyfluoroalkyl substances

(PFAS). As previously noted the localised nature of the PFAS impact on groundwater, meant that the Project had proposed to collect and dispose of PFAS impacted wastewater from excavations at an appropriately licenced facility off-site.

As an alternative approach to managing this wastewater, it is now proposed to include a temporary pre-treatment technology as part of the Project. This approach would pre-treat the PFAS-impacted wastewater to remove the PFAS compounds to acceptable levels prior to sending the pre-treated wastewater to the existing WWTP.

A number of pre-treatment options are available and would only be used as part of the Project if the data from the remedial investigations suggest that it is more cost effective to pre-treat the PFAS impacted wastewater rather than to collect it and send it off-site. If required, the most likely approach to pre-treating the wastewater would involve a ‘treatment train’ approach where media (e.g. resins, clays, carbon etc.) are used to capture PFAS compounds and remove them from the wastewater.

It is possible that the wastewater requiring pre-treatment may also be impacted by other hydrocarbon contaminates or possibly suspended sediment. To add the removal of the PFAS compounds, other contaminants and suspended solids would also be removed through the pre-treatment process. Therefore the treatment train in the plant would generally include:

- pre-treatment to remove sediments and co-contaminants (this may include sand filtration, flocculation, sorption etc.); and
- PFAS removal via sorption, ultrafiltration (nanofiltration), foam fractionation, or reverse osmosis.

The most common PFAS treatment is sorption using GAC and/or ultrafiltration (e.g. reverse osmosis). Other sorptive media include modified clays (e.g. sand MatCARETM). Ion exchange resins have also been utilised in a treatment train approach. These treatment technologies are commercially available and have been used for PFAS water treatment in Australia.

The size of the pre-treatment plant required would be confirmed within the Detailed RAP; however, commercially available pre-treatment plants can be brought to site on the back of a trailer or in a shipping container (refer to **Figure 11-1**). They typically include a series of containers/vessels linked to each other in a train. A holding tank for the wastewater is connected to a pump which transfers the water through each of the vessels which contain filters and media to remove sediments, co-contaminants, and PFAS. Outputs from the process include treated wastewater and spent filters and media which either would be regenerated or disposed of as waste. If required, the pre-treatment plant would be located next to the existing WWTP at the Site and would be connected to the Site’s electricity network.

Figure 11-1 Synergy’s Mobile PFAS WTP (Source Synergy Resource Management)

11.3.2 Environmental assessment

A discussion of likely impacts of the pre-treatment plant is provided in **Table 11-3** below. This discussion should be read in conjunction with the EIS and other sections of this report.

Table 11-3 Introduction of pre-treatment plant impact discussion

Environmental aspect	Discussion
Soils, groundwater and contamination	The proposed use of the pre-treatment plant would not introduce new or increased potential impacts related to soils, groundwater or contamination. The Project already proposes to collect water in excavations that could be potentially impacted by PFAS at unacceptable levels. The measures and controls related to the collection and storage of this water would remain the same. Measure SGC2 has been updated to include the use of a pre-treatment plant. All other soil, groundwater and contamination management measures would be applied. **Impact comparison:** Potential impacts would be of same scale as those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Surface water, wastewater and flooding	The proposed use of the pre-treatment plant would not introduce new or increased potential adverse impacts related to surface water, wastewater and flooding. The Project already proposes to collect water in or from excavations that could be potentially impacted by PFAS at unacceptable levels. The measures and controls related to the collection and storage of this water would remain the same. The use of the pre-treatment plant would mean that wastewater that would have been sent off-site for disposal could be pre-treated and sent to the existing WWTP instead. As noted above the pre-treatment plant is likely to also treat/remove co-contaminants. Nevertheless the effluent stream would be directed to the WWTP. **Impact comparison:** Potential impacts would be similar to those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Air quality	The pre-treatment plants are likely to be connected to the electricity supply at Site and are unlikely to create point source emissions to air. As such the introduction of the pre-treatment plant is unlikely to change the conclusions of the Air Quality Impact Assessment for the Project. **Impact comparison:** Potential impacts would be similar to those that have been previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Human health risk assessment	Overall the estimated health risks related to the Project are considered low and acceptable. An Occupational Health and Safety Plan was required for the Project under measure HH1. **Impact comparison:** The introduction of the pre-treatment plant would not change the conclusions of the risk assessment.

Environmental aspect	Discussion
Waste management	The introduction of the pre-treatment plant would mean that PFAS-impacted wastewater that would have been sent off-site would be treated as part of the Project. Pre-treating the wastewater would result in: • the majority of the wastewater being discharged into the existing WWTP as treated water rather than being sent off-site; and • the production of solid waste in the form of PFAS impacted media that would need to either be regenerated or disposed at a suitably licenced facility. Whilst the introduction of the pre-treatment plant would change the types of waste likely generated, the volume of PFAS-impacted waste likely to be sent off-site would be significantly reduced and the bulk of the water would be sent to the WWTP. The processes and procedures to manage general, restricted and/or hazardous solid waste would remain consistent with the waste management assessment in the EIS. **Impact comparison:** The potential types of waste being sent off-site may change as a result of the introduction of the pre-treatment plant however the overall volume of waste is likely to reduce. The new waste streams would be classified as general, restricted and/or hazardous solid waste. The measures presented in **Chapter 12** of this report would remain appropriate for managing these waste types.
Noise and vibration	The pre-treatment plant would include a pump that would move the wastewater through the treatment process. The pre-treatment plant would be operational in line with the working hours presented in the EIS. Precise details regarding the Sound Pressure Levels from the pump are unknown as the precise pre-treatment approach has not been specified. However the noise assessment in the EIS concluded that even under a conservative worst-case scenario "*the highest noise level predicted for residential receivers was 45 dB at receiver R3 during day time hours. This is below the applicable noise management levels (NMLs) of 61 dB and 56 dB for daytime out of hours and daytime standard hours respectively. The highest noise level predicted for industrial receivers was 64 dB at receiver InN during daytime hours. This is well below the applicable NML of 75 dB for daytime out of hours and daytime standard hours respectively.*" The noise from the pre-treatment plant would be unlikely to result in the NMLs outlined above being exceeded. Indeed the noise is unlikely to be greater than that created by the existing WWTP. As such no additional noise impacts are expected from the introduction of the pre-treatment plant. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Traffic, transport and access	The introduction of the pre-treatment plant would change the types of waste and potentially the amount of waste sent off-site. Potentially the reduction in PFAS-impacted waste would reduce the actual traffic related impacts. The EIS concluded that the Project is likely to have a temporary and negligible effect on the arterial road network. It is unlikely that the introduction of the pre-treatment plant would change this conclusion. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Biodiversity	The introduction of the pre-treatment plant would not alter the physical scope of the Project. There would be no change to potential biodiversity impacts as assessed in the EIS. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.

Environmental aspect	Discussion
Historic and Aboriginal heritage	The introduction of the pre-treatment plant would not alter the physical scope of the Project. There would be no change to potential heritage impacts as assessed in the EIS. **Impact comparison:** Potential impacts would be of same scale as those previously assessed and would be managed using the mitigation measures presented in **Chapter 12** of this report.
Hazards and risks	The introduction of the pre-treatment plant would not alter the location or methodology to complete the Project. The EIS concluded that following the implementation of mitigation and management measures, no adverse residual hazardous impacts are likely. **Impact comparison:** Extension of the program would not substantially alter the risk profile of the terminal or the Project.
Cumulative impacts	The cumulative assessment within the EIS considered a number of additional projects. The proposed introduction of the pre-treatment plant would not alter the conclusions of this assessment.

11.3.3 Summary

Given the discussion in **Table 11-3** it can be concluded that the potential impacts associated with the introduction of the pre-treatment plant would be of the same type and scale as those that have been assessed and discussed in the EIS and this report. The proposed management and mitigation measures provided in **Chapter 12** of this report would continue to apply. No additional management or mitigation measures would be required, however some have been updated to include a reference to the option of pre-treating PFAS impacted wastewater from excavations.

11.4 Conclusion

The two impact discussions presented in **Table 11-2** and **Table 11-3** above demonstrate that the proposed design revisions are consistent with the Project and the environmental assessment of the Project presented in the EIS and this report. As such, it can be concluded that the two proposed design changes would not increase the overall environmental impact of the Project as presented in the EIS.

12.0 Amended mitigation and management measures

The preceding chapters of this Response to Submission report describe the issues raised by various stakeholders and Viva Energy's response to those submissions. This chapter provides a summary of the amended and additional mitigation and management measures that have been proposed in response to the submissions received.

12.1 Summary of management plans

Chapter 20 of the EIS provided an outline of the how the management plans sit within the wider remediation documentation for the Project. This has been repeated here to provide context to the measures provided in **Table 12-1**.

12.1.1 Remediation (Stage 1 to Stage 5)

Measures to address the potential impacts of Stage 1 to Stage 5 of the Project are provided in each of the technical chapters in this EIS and are summarised below. These measures would be detailed, as relevant, within management plans including:

- A Project Management Plan (PMP) which would outline the procedures and processes for managing the remediation activities during Stage 1 to Stage 5 of the Project. This plan would also include a Community Consultation Plan, Occupational Health and Safety Plan, Quality Management Plan and Emergency Response and Contingency Plan as relevant.
- A Remediation Environmental Management Plan (REMP) which would detail the environmental controls, mitigating measures, contingency plans and monitoring programs for Stage 1 to Stage 5 of the Project. The REMP would include the following sub-plans:
  - Acid Sulphate Soils Management Plan (ASSMP);
  - Soil and Water Management Plan (SWMP);
  - Air Quality Management Plan;
  - Waste Management Plan;
  - Noise and Vibration Management Plan (NVMP);
  - Traffic Management Plan (TMP);
  - Biodiversity Management Plan (BMP).
- Detailed Remedial Action Plan (RAP) would be prepared, as outlined in the Conceptual RAP (Appendix C of the EIS).
- Remedial Work Plan (RWP) (including Excavation Plans).
- A Validation Sampling and Analysis Quality Plan (SAQP). The Conceptual RAP outlines the validation works which would be conducted to confirm that the remediation works have achieved the remediation objectives and to confirm the suitability of soils for reuse in the Project Area in accordance with NSW EPA endorsed guidelines.

Preparation of the above documents would be considerate of conditions of consent for the Project and would include the mitigation and management measures as outlined in **Section 12.2** as relevant to each plan.

12.1.2 Ongoing operation

A Long Term Environmental Management Plan (LTEMP) would be prepared to detail the environmental controls, mitigating measures, contingency plans and monitoring programs for the Western Area after remediation has been completed. The LTEMP would include:

- persons responsible for administering the LTEMP;
- potential work health and safety requirements;
- maintenance requirements;
- Project Area access points;
- a Groundwater Monitoring Plan (GMP) to detail groundwater monitoring requirements at the Project Area;
- record keeping requirements; and
- audit and corrective action requirements.

It would also include the relevant mitigation and management measures as outlined in **Section 12.2**.

12.2 Mitigation and management measures

Table 12-1 provides a summary of the proposed mitigation and management measures that would be implemented during the Project, and which would be incorporated into the PMP, REMP and the LTEMP. These measures would also inform the development of the Detailed RAP.

Following a review of the submissions and the management and mitigation measures, two measures that were previously provided for the noise assessment (NV2 and NV3) have been deleted and amalgamated in a new measure (G8) regarding community engagement and complaints. Other amendments or additions have been made based on the responses provided in this report. Amendments to existing measures and new measures are highlighted in bold font and light pink fill.

Table 12-1 Project mitigation and management measures

Reference	Mitigation and management measures	Timing	Relevant Plan
	General		
G1	Viva Energy would carry out the Project in accordance with the EIS, Response to Submissions report (yet to be published) and the Project approval conditions.	Stage 1 to Stage 5/ ongoing operation	All
G2	Viva Energy would ensure that a PMP, REMP and LTEMP are prepared and implemented for the Project.	Stage 1 to Stage 5/ ongoing operation	All
G3	Viva Energy would appoint a suitable qualified Environmental Representative to review and advise on the implementation of the REMP, and monitor the implementation and effectiveness of the mitigation and management measures	Stage 1 to Stage 5	REMP
G4	The Project workforce would undergo training in accordance with the PMP and REMP and other training commitments agreed to as part of the Project approval.	Stage 1 to Stage 5	PMP and REMP
G5	**EPL 570 will be varied in consultation with the NSW EPA. The final changes to EPL 570 would be agreed with the NSW EPA, once the detailed design for the Project is confirmed and prior to works commencing.**	**Detailed design**	PMP
G6	**Viva Energy will provide annual reports to NSW EPA on the progress of the remediation.**	**Stage 1 to Stage 5**	PMP
G7	**A decision protocol would be developed and included as part of the Detailed RAP. The purpose of this protocol would be to decide which remediation method is appropriate (or whether soil needs to be disposed off-site) depending on the contamination levels present within the material.**	**Detailed design**	Detailed RAP
G8	**Following development consent for the Project a Community Engagement Plan would be produced to guide ongoing community engagement during the execution of the Project. It would include measures to keep the local community informed of the Project including projected timelines and potential impacts from planned works. Communications would provide details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address.** **The Community Engagement Plan would provide details regarding a 24 hour community concerns phone line would be provided for Stage 1 to Stage 5 of the Project.** **A suitable complaints management procedure would be prepared, implemented and documented in Community Engagement Plan. This would include:** • **maintenance of a complaints register;** • **if required, monitoring would be conducted in response to complaints received to ensure**	**Detailed design/ Stage 1 to Stage 5**	PMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	compliance with relevant criteria (e.g. noise, air quality etc.); • **if necessary, reasonable and feasible measures would be implemented to address environmental impacts; and** • **a feedback process would be established to manage complaints, including responding to complainant and updating them on the action/s taken.**		
	Soils, groundwater and contamination		
SGC1	An Acid Sulfate Soils Management Plan (ASSMP) would be prepared in accordance with the *Acid Sulfate Soils Assessment Guidelines* (NSW Acid Sulfate Soils Management Advisory Committee, 1998) to guide the ongoing monitoring and management of ASS within the Western Area. The ASSMP would include: • measures to identify ASS impacted soils within the Project Area prior to undertaking excavation activities; • measures to manage ASS that need to be excavated from the Project Area. These measures would be in accordance with the *Waste Classification Guidelines Part 4: Acid Sulfate Soils* (NSW EPA, 2014); and • contingency measures to manage impacts that have the potential to occur if specified management strategies fail, and to outline remediation and restoration actions that may be required.	Stage 1 to Stage 5	REMP
SGC2	A Soil and Water Management Plan (SWMP) would be prepared that outlines: • erosion and sediment control requirements (developed in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004)) including: - the use of geotextile liners**,** ~~or~~ temporary capping **or other suitable measures** to reduce infiltration of surface water runoff; - installing silt fences around stockpiles to reduce erosion; - installing silt and sediment traps across stormwater drains in proximity to excavation areas; - placing stockpiles on impermeable sheeting to prevent infiltration, where possible; and - locating stockpiles away from council stormwater drainage systems; • control measures for the dewatering, storage, movement and treatment of groundwater encountered in excavations. **These measures** ~~This~~ would include ~~the following~~: - **testing** accumulated ~~ground~~water **in excavations from areas where ground investigation data suggests the presence of contaminants at levels that would not be able to be treated by the Wastewater Treatment Plant (WWTP)** ~~would be tested~~ to confirm that: ▪ it can be appropriately treated in the WWTP; ▪ **it can be appropriately treated in the WWTP following pre-treatment; or** ▪ **it should be collected and disposed of off-site** ~~and~~	Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	- **managing** groundwater ~~would be collected and~~ **to be** sent to the on-site WWTP in accordance with the established Site wastewater management procedures ~~and discharged in line with the requirements of EPL 570~~. • **An asbestos management plan that:** - **is produced in line with the Work Health and Safety Act 2011 and supporting Regulations 2017, the PoEO (Waste) Regulation 2014 and NSW EPA Waste Classification Guidelines (NSW EPA, 2014a)** - **details how asbestos(i.e. in soils and unexpected materials) would be managed** - **includes an unexpected find procedure for asbestos material** - **includes management measures required for the appropriate handling of soils containing asbestos;** - **identifies a dedicated area within the Project Area for storing asbestos waste prior to disposal;** • ~~management measures required for the appropriate handling of soils containing asbestos;~~ • **management measures required for the appropriate handling of metal-impacted fill material, e.g. stockpiled separately from the underlying natural clays and covered to mitigate infiltration;** • requirement for inspection of erosion and sediment control structures; • potential chemical pollutants (e.g. fuels, additives, stockpiles etc.), would be stored in appropriate containers and/or within bunded and lined areas to minimise the risk of spillages or mobilisation of these pollutants into soil and groundwater; • requirement for and location of spill kits for chemicals or fuels that could potentially be spilt or leak**ed**; • regular inspection of remediation equipment and plant to ensure **the potential for** leaks are minimised and **identified issues are** rectified; • measures to remove incidental rainfall from bunded remediation areas and transfer it to the WWTP by the existing surface water system or via temporary pipeline; • requirements for monitoring of groundwater for the duration of the Project; • **the requirement to install, operate and maintain a wheel wash to reduce soil on roads and dust; and** ~~measures to require vehicles leaving the Project Area to utilise the wheel wash to reduce soil on roads, production of dust and the introduction of contamination to groundwater and/or stormwater system. Maintenance requirements for the wheel wash would also be outlined; and~~ • if significant impacts are identified below 4 mbgs (including LNAPL) an area-specific risk		

Reference	Mitigation and management measures	Timing	Relevant Plan
	assessment would be prepared to assess the requirement for remediation (and/or management measures) and would be reviewed by the NSW EPA accredited Site Auditor (Auditor).		
SGC3	Validation Sampling and Analysis Quality Plans (SAQPs) would be produced alongside the detailed RAP that outline the requirements for the validation of remediated materials proposed for on-site reuse and for the acceptance of imported fill material to the Project Area.	Stage 1 to Stage 5	~~RWP~~ **Detailed RAP**
SGC4	Following the completion of the Stage 1 to Stage 5 works, a Validation Report would be prepared in accordance with the New South Wales (NSW) Environment Protection Authority (EPA) Guidelines for Consultants Reporting on Contaminated Sites (NSW EPA, 2011) and reviewed/approved by the Auditor, confirming that the Western Area is suitable for commercial/industrial land use. The Validation Report may include progressive validation reports for separate portions of the Western Area to enable progressive validation of these areas.	Stage 1 to Stage 5	Detailed RAP
SGC5	The LTEMP would include a Groundwater Monitoring Plan (GMP) to be implemented to confirm that natural attenuation processes are occurring and residual hydrocarbon concentrations are not posing a human health or ecological risk. ~~It~~ **The LTEMP** would also include management of residual contaminated materials (as and if required).	Ongoing operation	LTEMP
SGC6	**The Groundwater Monitoring and Management Plan (GMMP) will be provided to both the NSW EPA and Department of Industry – Water, for comment prior to being finalised and approved by the Auditor. The GMMP will include:** • **groundwater quality thresholds and trigger action response plans for changes in groundwater quality that would present an unacceptable risk to Duck River receptors;** • **annual reporting requirements for the groundwater monitoring program, including:** - **a discussion of the efficacy of relevant mitigation measures; and** - **a summary of groundwater monitoring data including updated groundwater trends.**	**Stage 1 to Stage 5**	**Detailed RAP**
	Surface water, wastewater and flooding		
SW1	The Soil and Water Management Plan (sub-plan to the REMP) would outline the following: • stormwater around excavations would be diverted and directed to existing stormwater/wastewater management systems and WWTP; • incorporation of temporary erosion and sediment controls such as settling ponds**,** silt fences etc. **to help segregate and** manage stormwater runoff where existing systems have been removed; • **if required, temporary settling ponds would be located down gradient of remediation areas to manage potential excavation overflow events;** • discharges from the WWTP would be within existing EPL 570 limits;	Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	• reuse of water for dust suppression or wheel washing, where appropriate; • appropriate storage of materials being utilised for the Project, away from Duck River and the surface water drains; • **covering of contaminated stockpiles, (i.e. where available soil data indicates that excavated fill material may generate impacted leachates), and biopiles with impermeable sheeting when not being actively managed (e.g. created, moved, turned etc.);** • ongoing monitoring of licenced discharge points, in line with EPL 570, to confirm compliance during the Project**. If necessary, additional monitoring requirements would be developed following completion of the remedial investigation and would be agreed with the Auditor;** • **management actions should exceedances of management triggers occur;** • incorporation of runoff/sediment controls, including progressive covering and vegetation of remediated areas; and • routine inspections would be incorporated into the plan to monitor the implementation of the measures outlined above, including: - routine inspections of excavations to instigate the pump out of water accumulating in excavations; - inspections of bunding would occur ~~during and~~ following periods of heavy rainfall to confirm that water is being directed to the WWTP as required.		
SW2	Potential chemical pollutants (e.g. fuels, additives, stockpiles etc.), would be stored in appropriate containers and/or within bunded and lined areas to minimise the risk of spillages, or mobilisation of these pollutants into aquatic environments in the event that a storm surge or flood event impacts the Project Area.	Stage 1 to Stage 5	REMP
SW3	The Long Term Environmental Management Plan would outline: • routine inspection requirements to determine that: - vegetation is maintained; - erosion/sediment measures are operating effectively - channelling is not occurring; - the discharge locations (i.e. the swales and overland flow into Duck River) are operating effectively; and • inspection of swales after large flood event to confirm they are still intact; • periodic inspection of mangroves and surface water discharges to note observable changes in the condition of vegetation, which may indicate lower water quality; • weed management; and • maintenance of erosion and sediment controls.	Ongoing operation	LTEMP

Reference	Mitigation and management measures	Timing	Relevant Plan
SW4	**The proposed works will broadly progress across the Western Area in a staged manner from north west to south east, towards the WWTP, to allow the existing drainage system to be utilised where possible.** **Where remediation is not required, surface water flows will continue in line with the current management practices. Where remediation is required, surface water flows will be directed to the WWTP, unless the ground investigation data from the surrounding area suggest that the water in excavations should be tested.**	**Stage 1 to Stage 5**	**PMP, REMP**
SW5	**In the event that settling ponds are required, relevant design criteria from the Blue Book (Landcom, 2004) would be adopted. Key principles and practices for the control of sediment dispersal would include:** • **using settling ponds to collect runoff from excavation areas and settle out associated sediments and potential contaminants;** • **settling ponds would be lined to avoid interactions with groundwater;** • **if water from an overtopped excavation is captured in a settling pond, this water would be sent to the WWTP, unless the ground investigation data from the excavated area suggests that this water should be tested;** • **the sediments settled in the ponds would be tested and characterised before disposal off-site or reuse on-site. Depending on the characteristics of this sediment, these materials may need to be collected, appropriately stored and transported off-site to an appropriately licensed waste facility.**	**Detailed design/ Stage 1 to Stage 5**	**Detailed RAP, REMP**
	Air quality		
AQ1	Air quality management controls would be implemented as part of the design of the Project including: • level 2 (>2 litres/m^2/h) watering of on-site haul roads; • watering with or without dust suppressants on exposed areas and stockpiles; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on untreated stockpiles in the DTD area **(if these stockpiles are not located in an ECE)** and on exposed untreated biopiles (i.e. during construction of the biopile) over night; • application of odour and VOC suppressant foam (with a control efficiency of 95% or higher) on exposed excavation areas where both required and practical; • biopiles would be covered during operation and off-gas from biopiles would be passed through air filters to remove volatile hydrocarbons; • the DTD unit pre-treatment area stockpile would be enclosed within a three sided bay **unless this material is being stored or pre-treated inside an ECE**;	Detailed design/ Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	• all mobile and stationary diesel engines would be compliant with US EPA Tier 3 and EU Stage III *A Non-road Diesel Engine Emission Standards*; • off-gas from the DTD unit would be treated before it is discharged to the atmosphere through a stack; • where possible stockpiles would be covered; • enclosing the DTD **material** screening area and placing water sprays on the outlet; and • ensuring a particulate filter is used on the mobile crushing plant.		
AQ2	An Air Quality Management Plan (AQMP) would be prepared and implemented for the Project. The AQMP would include: • ambient air quality monitoring requirements; • a Reactive Air Quality Management Program (RAQMP) for: - particulates, specifically PM_{10} and $PM_{2.5}$; and - odour. • mitigation measures listed in AQ1 particularly for Stage 2 to Stage 4 where air pollutant emissions are likely to be highest. The AQMP would also include the following details: • performance objectives to guide the monitoring and management of potential air quality impacts; • timeframe for implementation of all identified emission controls; • key performance indicator(s) for emission controls; • monitoring method(s), including location, frequency and duration; • response mechanisms to mitigate potential off-site impacts; • responsibilities for demonstrating and reporting achievement of key performance indicator(s); and • record keeping and complaints response register; and compliance reporting.	Detailed design/ Stage 1 to Stage 4	REMP
AQ3	The AQMP would outline the requirement for stack emissions testing to validate the potential air quality impact against predicted impacts in the AQIA, ensure ongoing performance of ventilation systems and comply with other required limits. Stack emissions testing would include: • emissions testing of the DTD stack during commissioning and periodically post commissioning to confirm pollutant concentrations and ensure ongoing compliance; and • periodic emission testing of the biopile aeration system to ensure total VOC concentration is below 10 parts per million (ppm) and identify when air filters used to remove VOCs need to be replaced. Stack emissions testing would be carried out in accordance with the NSW EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007).	Stage 3	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
AQ4	The RAQMP would be prepared and implemented in accordance with: • The NSW EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007);* • *AS 3580.9.8-2008 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter - PM_{10} continuous direct mass method using a tapered element oscillating microbalance analyser;* • *AS/NZS 3580.9.11:2008 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter - PM_{10} beta attenuation monitors;* • *AS/NZS 3580.1.1:2007 Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment;* and • *AS 2923-1987 Ambient air - Guide for measurement of horizontal wind for air quality applications.*	Detailed design/ Stage 1 to Stage 4	REMP
AQ5	The RAQMP (PM_{10} and $PM_{2.5}$) would: • outline how monitoring stations at the boundary of the Project Area would be established, including location and number; • outline the process for collecting data from the monitoring stations; • establish and calculate trigger values; and • outline the response if trigger values are reached, e.g. investigate, implement contingency measures, review effectiveness of contingency measures and/or stop work.	Detailed design/ Stage 1 to Stage 4	REMP
AQ6	The RAQMP (odour) would include: • **identification of remediation areas which present a higher risk of odorous materials;** • an operator-run odour complaints management system (as part of the wider Project complaints management procedure) to maintain and monitor air quality performance during potential odour generating activities associated with excavation and remediation of contaminated material; • in the event of an odour complaint **or onsite staff odour observation** information would be obtained regarding the character of the odour, frequency, duration and intensity of odour observations and whether impacts of offensive odours are ~~currently~~ occurring; • an investigation ~~of the~~ **into the** odour complaint would be conducted as soon as practicable after ~~an odour~~ **the** complaint has been received; and • if odour impacts are **identified from the Project by workers or through complaints** ~~immediately occurring;~~ action would be undertaken to reduce odour impacts; this may include: - spraying odour/VOC suppressant on exposed surface areas and/or stockpiles; - covering stockpiles; and - limiting excavation works and materials handling of highly contaminated fill while upwind of	Detailed design/ Stage 1 to Stage 3	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	sensitive receptors during unfavourable weather conditions (e.g. dry and windy conditions).		
AQ7	**An emission control enclosure (ECE) will be installed to store and pre-treat soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene prior to treatment within the DTD plant or prior to on-site stabilisation. The ECE would also contain the stabilisation plant when it is used to manage soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene. The design and feasibility of any enclosure would be confirmed as part of the Detailed RAP. Any ECE used would be located adjacent to the DTD plant towards the centre of the Western Area. The decision regarding the feasibility of an ECE will have regard to technical, logistical and financial considerations and would be supported by an air quality impact assessment. The feasibility of an ECE would be discussed with the NSW EPA and approved by the Auditor.**	**Detailed design/ Stage 3**	**Detailed RAP, REMP**
AQ8	**Stack emissions testing will be undertaken to validate the potential air quality impact against predicted impacts in the AQIA, to ensure ongoing performance of ventilation systems and comply with EPL limits. Stack emissions testing would include:** • **validation of modelled in stack and ground level concentrations during the commissioning phase of the DTD unit and biopiles;** • **emissions testing of the DTD unit stack during commissioning to confirm particulate, NO_2, VOC and dioxin and furan stack concentrations and periodically post commissioning to ensure ongoing compliance with EPL limits; and** • **emissions testing of the biopile aeration system would be conducted during commissioning to confirm VOC concentrations and assess performance of air filters.** **Required stack emissions testing would be carried out in accordance with the NSW EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales* (DEC, 2007).**	**Stage 3**	**Detailed RAP, REMP**
AQ9	**Where soils require remediation, only soils with bulk concentrations of air toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene) below an agreed limit of detection would be remediated by landfarming. The appropriate limit of detection would be confirmed in the Detailed RAP and approved by the Auditor.**	**Detailed design/ Stage 3**	**Detailed RAP**
	Human health		
HH1	The Occupational Health and Safety Plan within the PMP would outline the personal protective equipment and occupational health and safety measures to manage potential risks to on-site workers.	Detailed design/ Stage 1 to Stage 5	PMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	Waste management		
W1	A WMP would be prepared as a sub-plan to the REMP. The WMP would: • identify requirements consistent with the waste and resource hierarchy and cleaner production initiatives; • include relevant measures from the revised *National Waste Policy: Less Waste, More Resources* (EPHC, 2009); • ensure resource efficiency is delivered through the design, remediation and operational practices; • provide consistent clear direction on waste and resource handling, storage, stockpiling, use and reuse management measures; • outline procedures for stockpiling of wastes (refer to W2); • set out processes for disposal, including on-site transfer, management and the necessary associated approvals; • outline that waste generated within the Project Area would be segregated at source and suitably stored in designated waste management areas within the Project Area; • include material tracking measures to track waste and recyclables generated from the Project and removed from the Project Area. Material tracking records would include types, volumes and management measures for waste and resource arising from/used for the Project; • outline an unexpected finds protocol to manage the potential for unexpected finds during the remediation of the soils (i.e., asbestos or other hazardous materials, excluding hydrocarbon contamination); and • include a process for auditing, monitoring and reporting.	Stage 1 to Stage 5	REMP
W2	Stockpiled wastes would be: • appropriately segregated to avoid mixing and contamination; • appropriately labelled; • appropriately stored to minimise risk of erosion; • less than 5 m in height; and • located more than 40 m away from sensitive receivers, ecological areas and watercourses.	Stage 1 to Stage 5	REMP
W3	Liquid (excluding those that are suitable to be transferred to the WWTP) and non-liquid wastes generated from Project would be assessed, classified and managed. Wastes requiring off-site disposal would be disposed of at an appropriately licenced facility.	Stage 1 to Stage 5	REMP
W4	All contaminated soil (as defined by Waste Classification Guidelines) received into the Project Area would comply with the SAQP criteria defined as part of the Remedial Work Plan (RWP).	Stage 1 to Stage 5	RWP

Reference	Mitigation and management measures	Timing	Relevant Plan
W5	No waste would be stored on-site during ongoing operation. Workers undertaking maintenance activities following completion of the Project would remove any waste produced from the Western Area at the completion of the activity.	Ongoing operation	LTEMP
	Noise and vibration		
NV1	A Noise and Vibration Management Plan would be prepared as part of the REMP. This would include the following commitments: • plant and equipment with low noise emission levels would be used where practicable; • ensuring plant and equipment is properly maintained; • turning off machinery when not in use; and • vibration trials would be conducted when vibration intensive work (e.g. a 20 t padfoot roller) is proposed within 30 m of buildings. Training of the Project workforce would be undertaken and include: ensuring work occurs within approved hours.	Stage 1 to Stage 5	REMP
~~NV2~~	~~A 24 hour community concerns phone line would be implemented for Stage 1 to Stage 5 of the Project. This would be detailed in the PMP for the Project.~~	~~Stage 1 to Stage 5~~	~~PMP~~
~~NV3~~	~~A suitable complaints management procedure would be prepared and implemented and documented in the PMP for the Project. This would include:~~ • ~~maintenance of a complaints register;~~ • ~~if required, noise and vibration monitoring would be conducted in response to complaints received to ensure compliance with Project noise and vibration criteria;~~ • ~~if necessary, reasonable and feasible measures would be implemented to address noise impacts; and~~ • ~~a feedback process would be established to manage complaints, including responding to complainant and updating them on the action/s taken.~~	~~Stage 1 to Stage 5~~	~~PMP~~
	Traffic, transport and access		
TT1	A Traffic Management Plan (TMP) would be prepared as a sub-plan of the REMP. **The TMP would be submitted to TfNSW, Roads and Maritime and Council for comment prior to being finalised.** The TMP would include: • **the maximum number of heavy and private vehicles expected to be generated by each stage of the Project;** • **the remediation working hours;**	Detailed design/ Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	• **the time periods that vehicles are expected to be travelling to and from the Project Area;** • routes for heavy and private vehicles to access the Western Area; • appropriate routes for oversize or over-height vehicles; • on-site parking locations; and • the process for ensuring operators have the relevant permits from the National Heavy Vehicle Regulator, if required. The TMP would: • **refer to the potential traffic impacts, including cumulative impacts, detailed in the EIS;** • detail the temporary measures that would be implemented to mitigate road safety and network efficiency impacts during the Project, such as work zone speed limits and traffic control; • ~~include a Driver Code of Conduct to:~~ - ~~outline expectations of Project related vehicles~~ - ~~minimise the impacts of the Project on the local and regional road network;~~ - ~~minimise conflicts with other road users; and~~ - ~~require truck drivers use specified routes;~~ • include a notification process for potentially affected businesses along Project haulage routes, in the event of a potential traffic disruption related to the use of vehicles larger than Class 2 Gross Mass Limit 25/26 m B-Doubles; and • Vehicle management measures to manage vehicle movements **within the Project Area** to reduce the likelihood of conflicts between workers and private and heavy vehicles, including a speed limit of 20 km/h for the Project Area.		
TT2	Workers would be encouraged to utilise more sustainable transport modes e.g. car-pooling, where feasible to reduce the reliance on private vehicles.	Stage 1 to Stage 5	REMP
TT3	On-site car parking for the workforce, within the Western Area would be provided during the Project for up to 80 cars. The car-parking area in the Western Area would be located near the site office, where possible and would have provision for: • convenient parking spaces for authorised visitors to the Project Area (i.e. not routine workers); and • emergency vehicle parking adjacent to the first aid office.	Detailed design/ Stage 1 to Stage 5	REMP
TT4	Should vehicles with loads exceeding GML limits or comprising non-standard dimensions require access to the Project Area, a permit would be obtained from the NHVR, prior to use of any such vehicle.	Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
TT5	The TMP would include a diagram outlining preferred routes to and from the Project Area which would: • avoid the intersection of James Ruse Drive, Grand Avenue and Hassall Street during peak periods for workforce and heavy vehicles; and • avoid the vehicle restrictions where Wentworth Street travels under the M4 Western Motorway for vehicles ~~over the height of vehicles~~ exceeding 4.6 m **in height**.	Stage 1 to Stage 5	REMP
TT6	The LTEMP would include a section on traffic management which would detail routes and access points to the Project Area and recommended parking locations.	Ongoing operation	LTEMP
	Biodiversity		
BD1	Installation of appropriate exclusion fencing protecting vegetation to be retained outside the Project Area. Exclusion fencing would be placed at a distance sufficient to minimise impacts within the vegetation's TPZs and in accordance with *AS4970-2009 Australiana Standard. Protection of trees on development sites* (Standards Australia Committee, 2009). Fencing is to include appropriate signage such as 'No Go Zone' or 'Environmental Protection Area'. The location of any 'No Go Zones' would be identified in site inductions. The above measures would be documented in the Biodiversity Management Plan (BMP).	Stage 1 to Stage 5	REMP
BD2	To mitigate against potential impacts to the GGBF population the following measures would be included in the BMP: • works inductions that focus on the potential occurrence of the species; • pre-clearance surveys by an environmental representative as needed of stockpiles and excavations to check for the presence of GGBF; • management of stockpiles to minimise the chances of frogs using them for shelter habitat (e.g. maintenance of sediment fencing around stockpiles and no ponding of water); • measures would also be implemented to minimise indirect impacts to GGBF through spread of Chytrid fungus; and • an unexpected finds protocol which outlines the need to engage a suitably qualified ecologist to relocate any GGBF encountered in the Project Area. Mitigation and management measures would be aligned with the actions currently being undertaken during the Conversion Project to maximise their successful implementation, and minimise potential confusion surrounding requirements.	Stage 1 to Stage 5	REMP
BD3	Material stockpiles, vehicle parking and machinery storage would be located within cleared areas and outside of vegetation exclusion zones.	Stage 1 to Stage 5	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
BD4	Where appropriate, native vegetation cleared from the Project Area should be mulched for reuse on-site, to stabilise bare ground (or similar).	Stage 1 to Stage 5	REMP
BD5	Measures to minimise the potential for the spread of weeds would be detailed in the BMP.	Stage 1 to Stage 5	REMP
	Historic heritage		
HH1	Workers and contractors would be made aware of the heritage values of the former Clyde Refinery and the three surrounding listed items of Lower Duck River Wetlands (I47), Wetlands (I1) and Capral Aluminium (I575), during the site induction.	Stage 1 to Stage 5	REMP
HH2	As noted in the Australian Museum Consulting archaeological assessment (Australian Museum Consulting, 2015), the north-west portion of the Site has low potential to contain significant relics. Notwithstanding this, should an unexpected find of likely significance be uncovered (including artefact scatters (glass, animal bone, ceramic, brick, metal etc.), building foundations, etc.), consistent with the unexpected finds protocol from the Clyde Terminal Conversion Project (SSD 5147), the following stop work procedure would be followed: • all work in the nearby area is to cease immediately; • contact OEH Heritage Branch; and • depending on the possible significance of the relics, an archaeological assessment and an excavation permit under the NSW *Heritage Act 1977* may be required before further works can continue in that area.	Stage 1 to Stage 5	REMP
	Aboriginal heritage		
AH1	Any items of potential Aboriginal archaeological or cultural heritage conservation significance or human remains discovered during remediation of the Project Area would be managed in accordance with the unexpected heritage finds and human remains procedure for the Project, which would be prepared in accordance with the: • NSW Police Force Handbook (2016); and • NSW Health Exumation of Human Remains Policy (2013). The following standard unexpected heritage finds procedure should be adopted (refer to Annexure A of Appendix K of the EIS for further detail): 1. all works must cease immediately in the area to prevent any further impacts to the object; 2. notify the Environmental Representative; 3. engage a suitably qualified archaeologist to determine the nature, extent and significance of the find and provide appropriate management advice; and 4. prepare and submit an AHIMS site card for the site.	Stage 1 to Stage 5 and ongoing operation	REMP

Reference	Mitigation and management measures	Timing	Relevant Plan
	In the event that potential human skeletal remains are identified, the following unexpected humans remains finds procedure should be followed: 1. all work in the vicinity of the remains should cease immediately; 2. the location should be cordoned off and the NSW Police notified; and 3. if the Police suspect the remains are Aboriginal, they would contact the Office of Environment and Heritage and arrange for a forensic anthropologist or archaeological expert to examine the site. Subsequent management actions would be dependent on the findings of the inspection undertaken under Point 3 (refer to Annexure A of Appendix K of the EIS for further detail on these actions).		
	Hazards and risk		
HR1	The REMP would outline the following to manage hazards and risks for the Project: • materials brought to the Project Area are not to exceed the thresholds provided in the Applying SEPP 33 guideline; • the GAC proposed to be used for biopiling would be activated carbon which is not listed as a dangerous good under the ADG Code. This would be confirmed by checking the relevant Material Safety Data Sheets before purchasing the material; • Portland cement and/or fly ash used during the Project would not be the type which is listed as dangerous good under the ADG Code. This would be confirmed by checking the relevant Material Safety Data Sheets before purchasing the material; and • in the event that a material is to be used during the Project which has not been assessed in the EIS (Chapter 18 Hazards and risks) or greater quantities and/or vehicle movements are required for materials used during the Project, then a screening risk assessment would need to be completed before the material can be transported, stored or used on-site.	Stage 1 to Stage 5	REMP
HR2	The transport, storage and handling of hazardous substances would be undertaken in accordance with: • *Work Health and Safety Act 2011 (NSW)*; • *Protection of the Environment Operations (Waste) Regulation 2005 (NSW);* • *Dangerous Goods (Road and Rail Transport) Act 2008 (NSW);* • *Dangerous Goods Regulation (Road and Rail Transport) Regulation 2014 (NSW);* • *Australian Code for the Transport of Dangerous Goods by Road and Rail* (National Transport Commission, 2018); • relevant Australian Standards; • the thresholds outlined in Applying SEPP 33 guidelines; and • the relevant Material Safety Data Sheets.	Stage 1 to Stage 5	REMP
HR3	The PMP would detail the process for identifying and managing services/utilities.	Stage 1	PMP

Reference	Mitigation and management measures	Timing	Relevant Plan
HR4	The Site Emergency Response Plan would be updated following completion of the Project to reflect the changed site conditions in the Western Area.	Ongoing operation	PMP
	Cumulative impacts		
CU1	Consultation with the Parramatta Light Rail project and Clyde Barging Facility would be undertaken, **during detailed design, as part of works planning and during the Project,** to gain an understanding of project timing and traffic movements to avoid potential cumulative traffic impacts where possible.	**Detailed design/** Stage 1 to Stage 5	REMP

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Appendix A

Community Engagement Material

JANUARY 2019

COMMUNITY INFORMATION

Clyde Terminal Western Area Remediation Project

The Western Area

The Western Area is approximately 40 hectares (ha) in size and was previously used for refining operations at the former Clyde Refinery.

Long-term and historical use has resulted in contamination impacts to the soils and groundwater.

Following completion of the remaining demolition activities, Viva Energy intends to commence environmental remediation of the Western Area to ensure this land meets the current standards for Commercial/Industrial land use.

The Planning Process

The designation of the project as a State Significant Development (SSD) involves the requirement to publicly exhibit the Environmental Impact Statement (EIS).

This EIS contains details of the proposed works, their potential impacts to the environment and surrounding community, and importantly, how Viva Energy proposes to manage these potential impacts

The EIS and its accompanying documents may be viewed on the Department of Planning and Environment's **website www.majorprojects.planning.nsw.gov.au** where you can also find out how to make a submission on the Western Area Remediation Project. The EIS will be on public exhibition from 7 February until 3 March 2018.

Remediation Works

A variety of remediation techniques are proposed to be used based on the nature and extent of the contamination present across the Western Area.

The remediation would be focused at shallow depths. It is estimated that approximately 105,000m3 of soils will require remediation.

During this process, we are planning to re-use some of the waste material such as soil and crushed concrete as fill on site, after certifying it is fit for use.

Management Plans

To manage our work and minimise impacts to the surrounding community and environment, a number of environmental management plans will be developed.

These plans will be developed in consultation with various regulators and government agencies and submitted to the Department of Planning and Environment (DPE) for approval prior to the execution of works.

Community Consultation

The project team will hold a community information session as part of the consultation process.

Expert members of the project team will be available to answer any questions you may have as well as provide information about the project.

You can drop in at any time during the Community Information Session and we encourage people to come along.

Community Information Session

When Tuesday 12 February 10.00am — 3.30pm

Where City of Parramatta Library, (Macquarie Room) 1 - 3 Fitzwilliam Street, Parramatta

You can also raise issues or concerns that you may want addressed as part of the EIS by contacting us via the details provided.

Telephone 02 9898 8046

Email communityrelations@vivaenergy.com.au

COMMUNITY INFORMATION

VIVA EnergyAustralia

Clyde Terminal Western Area Remediation Project

The Western Area

The Western Area is approximately 40 hectres (ha) in land size and was previously used for refining operations including hydrocarbon processing, fuel storage and transfer.

Long-term and historical use has resulted in contamination impacts to the soils and groundwater.

Following completion of the remaining demolition activities, Viva Energy intends to commence environmental remediation of the Western Area to ensure the site meets the current standards for Commercial/Industrial land use.

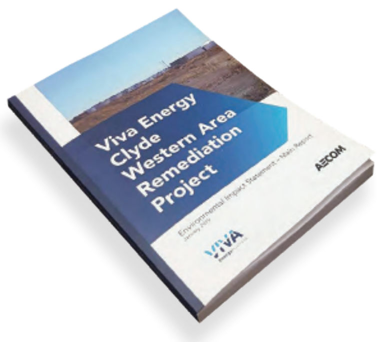
About the Remediation Works

The remediation will be focussed at shallow depths of the site. It is estimated that approximately 105,000m^3 of soils will require remediation.

The type of remediation involved will depend on the nature and extent of the contaminants found and will be across targeted areas of the Western Area.

Environmental Impact Statement

The Environmental Impact Statement (EIS) contains details of the proposed works, their potential impacts to the environment and surrounding community, and importantly how, Viva Energy proposes to manage these potential impacts.



EIS Exhibition Details

The EIS and its accompanying documents may be inspected at the following locations from Thursday 7 February 2019 until Wednesday 6 March 2019 as follows:

- An electronic copy may be viewed at **Department of Planning and Environment**, 320 Pitt Street, Sydney
- An electronic copy may be viewed at a **Service NSW Centre** located near you (see **service.nsw.gov.au/service-centre/service-nsw** for locations)
- A hardcopy may be viewed at **City of Parramatta Council:** 126 Church Street, Parramatta

You may also view the application, EIS and accompanying documents electronically on the Department of Planning and Environment's website at **majorprojects.planning.nsw.gov.au/page/on-exhibition**

How to have your say

Anyone can make a written submission about the proposed Project until Wednesday 6 March 2019.

You can find out how to make a submission on the Department of Planning and Environment's website at **majorprojects.planning.nsw.gov.au/page/on-exhibition**

Contact

For more information or if you have any questions, contact us as follows:

Telephone: **02 9897 8046**

Email: **Communityrelations@vivaenergy.com.au**

Website: **vivaenergy.com.au/about-us/terminals-and-refinery/clyde/community**

FEBUARY 2019

COMMUNITY INFORMATION

Clyde Terminal Western Area Remediation Project

The Western Area

The Western Area is approximately 40 hectares (ha) in size and was previously used for refining operations at the former Clyde Refinery.

Long-term and historical use has resulted in contamination impacts to the soils and groundwater.

Following completion of the remaining demolition activities, Viva Energy intends to commence environmental remediation of the Western Area to ensure this land meets the current standards for Commercial/Industrial land use.

The Planning Process

The designation of the project as a State Significant Development (SSD) involves the requirement to publicly exhibit the Environmental Impact Statement (EIS).

This EIS contains details of the proposed works, their potential impacts to the environment and surrounding community, and importantly, how Viva Energy proposes to manage these potential impacts

The EIS and its accompanying documents may be viewed on the Department of Planning and Environment's **website www.majorprojects.planning.nsw.gov.au** where you can also find out how to make a submission on the Western Area Remediation Project. The EIS will be on public exhibition from 7 February until 6 March 2019.

Remediation Works

A variety of remediation techniques are proposed to be used based on the nature and extent of the contamination present across the Western Area.

The remediation would be focused at shallow depths. It is estimated that approximately 105,000m3 of soils will require remediation.

During this process, we are planning to re-use some of the waste material such as soil and crushed concrete as fill on site, after certifying it is fit for use.

Management Plans

To manage our work and minimise impacts to the surrounding community and environment, a number of environmental management plans will be developed.

These plans will be developed in consultation with various regulators and government agencies and submitted to the Department of Planning and Environment (DPE) for approval prior to the execution of works.

Community Consultation

The project team will hold another community information session as part of the consultation process.

Expert members of the project team will be available to answer any questions you may have as well as provide information about the project.

Community Information Session

When Thursday 21 February
4.00pm — 5:00pm

Where Clyde Terminal
Gate 3, Durham Street
Rosehill

You can also raise issues or concerns that you may want addressed as part of the EIS by contacting us via the details provided.

Telephone 02 9897 8046

Email communityrelations@vivaenergy.com.au

Clyde Western Area Remediation Project

Community Information Session

City of Parramatta Library (Macquarie Room)

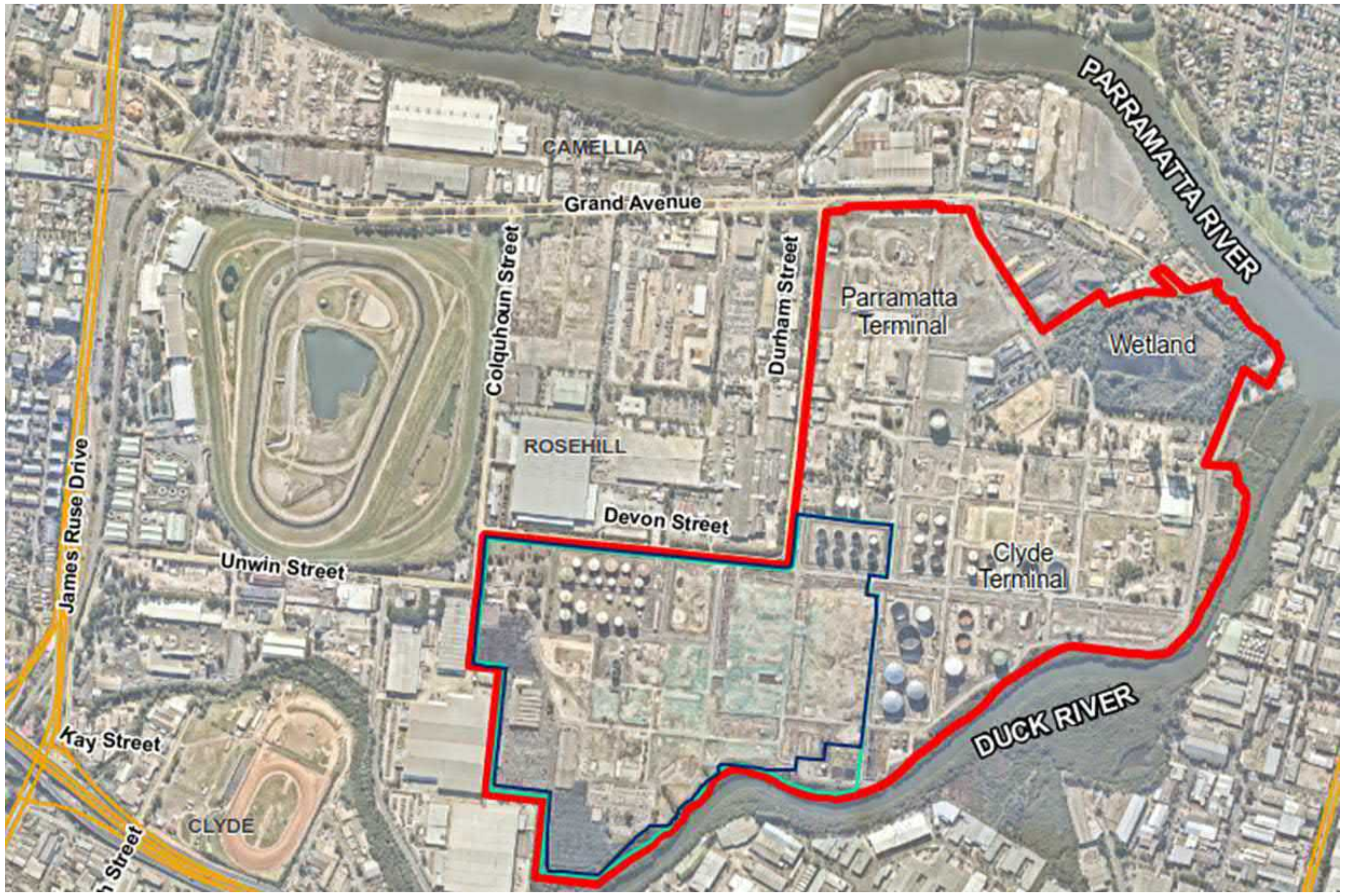
1–3 Fitzwilliam Street, Parramatta

Tuesday 12 February 2019

Clyde Western Area Remediation Project

Welcome to the drop-in session today and thank you for your participation. The purpose of today is to provide the wider community with an opportunity to comment and ask questions regarding Viva Energy's proposal.

Viva Energy propose to remediate the contaminated soils in the Western Area of the Clyde Terminal (former Clyde Refinery site) to a commercial/industrial standard inclusive of necessary infrastructure removal, waste management, soil management, land forming and groundwater and stormwater management activities.



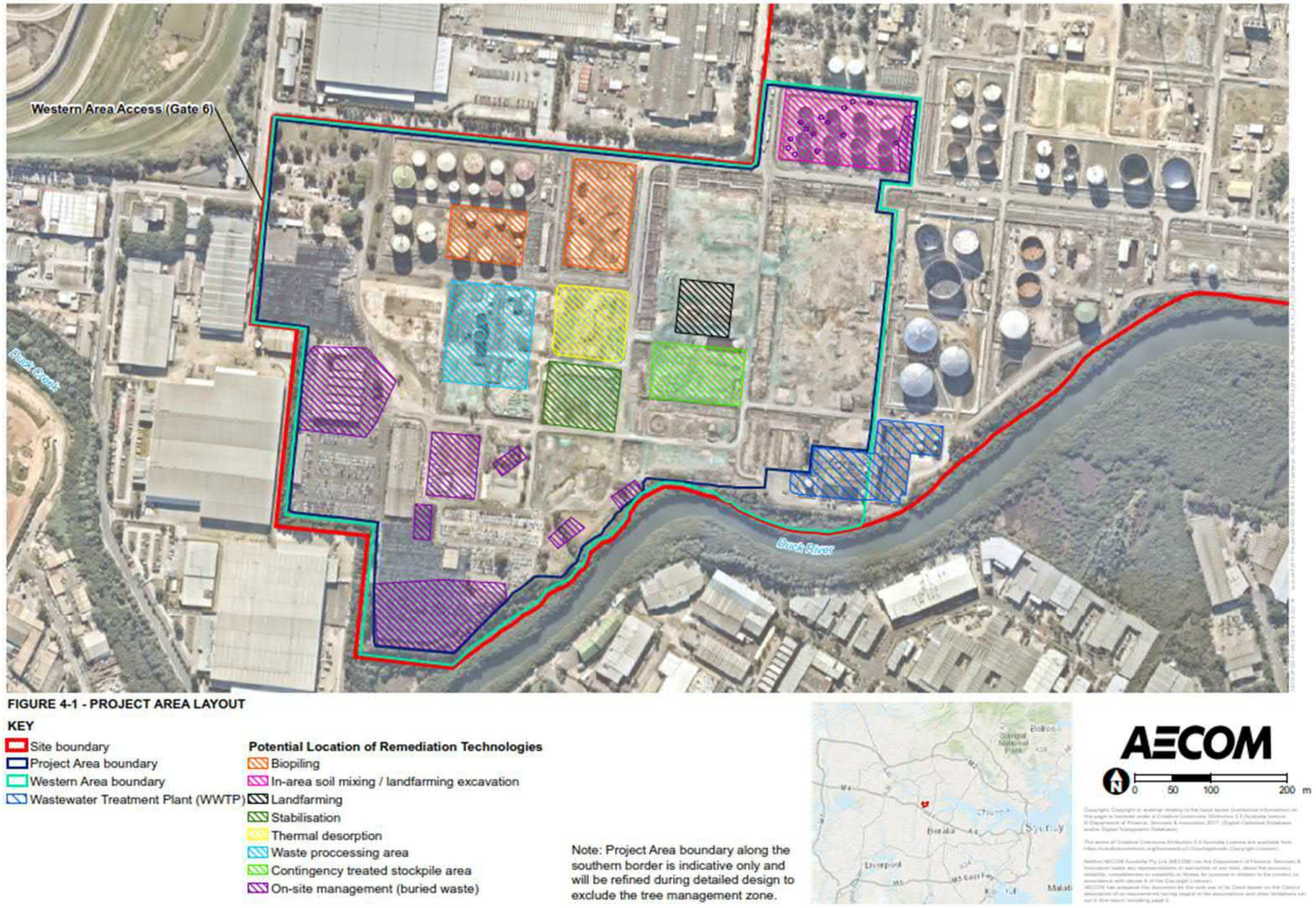
Clyde Western Area Remediation Project

The project is expected to take approximately three years

The remediation will be focused at shallow depths (i.e. 1-4 mbgs)

It is estimated that approximately 105,000m^3 of soils would require remediation

A variety of remediation techniques are proposed to be used based on the nature and extent of contamination across the Western Area



Clyde Western Area Remediation Project

Stage 1 – preparation works to set up the works area including the installation of temporary erosion and sediment controls

Duration: ~ three months

Stage 2 – removal of redundant infrastructure and wastes such as underground redundant pipework and concrete to clear and prepare the area for remediation

Duration: ~ up to 36 months

Stage 3 – remediation including setting up the areas and trialing specific remediation methods

Duration: ~ up to 28 months

Stage 4 – landforming of the area to return to current levels

Duration: ~ 22 months

Stage 5 – completion works and demobilisation including the progressive removal of plant and equipment

Table 12-1 Flowchart for remediation and validation works

Preparation	• Establishment of resources (staff, plant, equipment) • Demarcation of remedial excavations • Underground utility identification • Breakout of hardstand and surface reinforcements (with appropriate separation and stockpiling of concretes, asphalts and metals)
Excavations	• Excavation of subsurface structures such as drains, footings, pipework (with appropriate stockpiling) • Excavation of soils and segregation to stockpiles based on visual and olfactory evidence, field screening, and laboratory data (e.g validated soils stockpile, soil destined for biopile stockpile and soil destined for TDU/stabilisation stockpile) • Dewatering and segregation of excavation water for appropriate treatment route • Base and sidewall soil testing to confirm/validate the extent of the remedial excavations • Completion of tracking documentation for each excavation and stockpile in accordance with the Material Trackng Plan • At surface isolation of excavations (via fencing and signage) prior to backfilling with validated soils
Fate of soils	• Immediate use of validated soils via placement in available excavations • Treatment of impacted soils via biopiling or TDU/stabilisation • Following treatment, soils would be subject to validation testing (validation criteria will be established in the Detailed RAP) • Limited offsite disposal • Placement of treated and validated soils in available excavations

VIVA Energy Australia

Clyde Western Area Remediation Project

Potential impacts to Soil and Groundwater

Impacted soils that are to be remediated are mostly within the uppermost two metres of the ground and are typically: fill, silty gravels or silty clays

Soil and groundwater in the Western Area may be further impacted by the proposed remediation works through movement and disturbance of contaminated soils including excavation

Following completion of the Project, erosion to soils could potentially impact the environment

Potential impacts can be controlled and managed through the use of various measures:

- Implementation of the measures detailed on the NSW Government's 'Blue book'
- Management Plans
- Erosion controls on the final landform, including swales and grassing

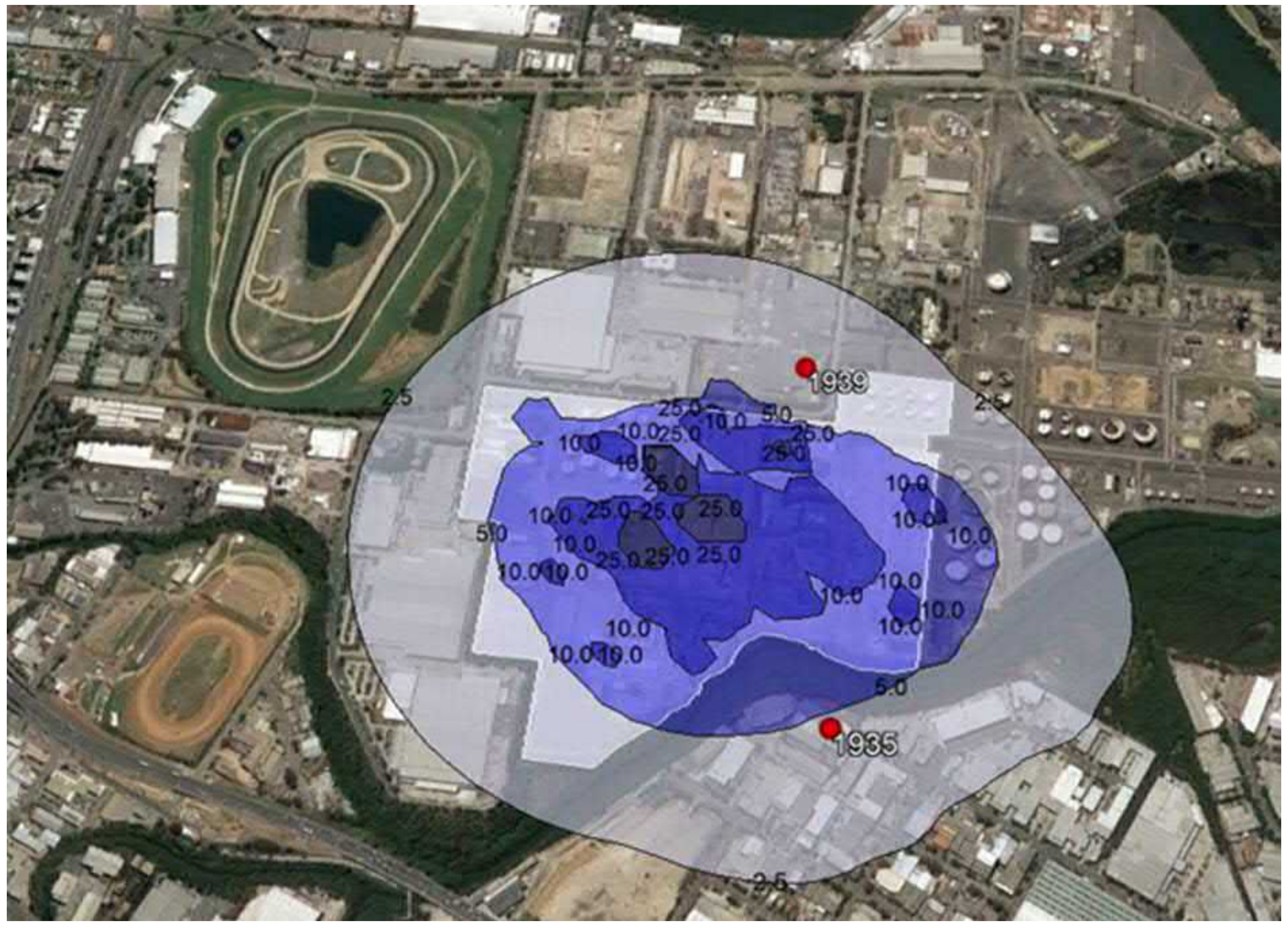
Clyde Western Area Remediation Project

Potential Impacts to Air Quality and Odour

Potential impacts to air quality and odour that may result during the project were assessed using air quality dispersion modelling

Incremental (the Project on its own) and cumulative (the Project with background air levels) impacts were below the relevant NSW EPA criteria with the exception of particulate matter $PM_{2.5}$ and PM_{10} and at times, odour

The largest PM2.5 contributors are from the direct thermal desorption (DTD) unit plant screen and the mobile crushing plant



Measures to reduce these predicted impacts by over 90% include:

- an enclosure on the DTD plant screen with water sprays placed on the outlet
- use of a particulate filter on the mobile crushing plant

Air quality will be monitored during the project

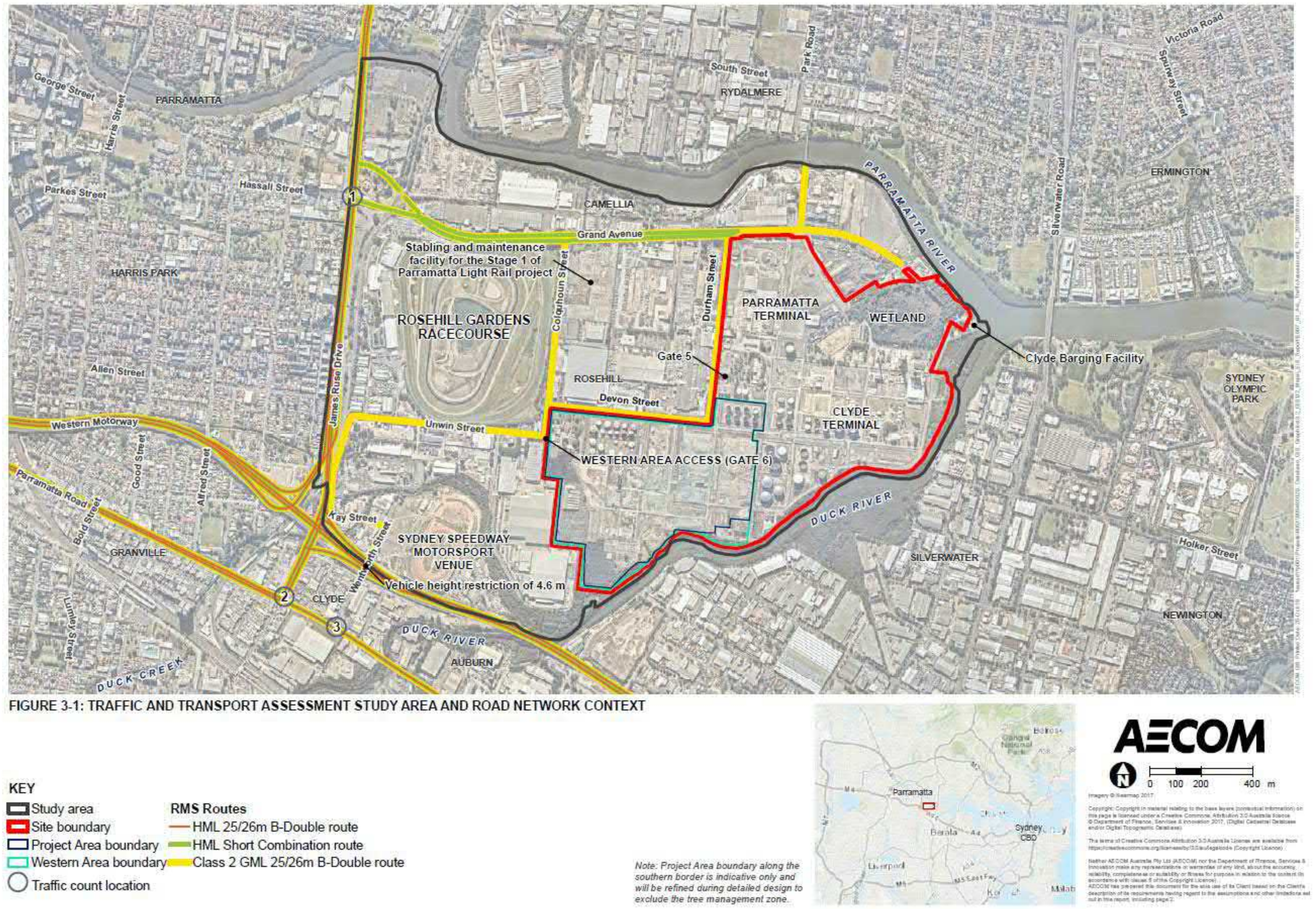
Clyde Western Area Remediation Project

Potential Noise and Traffic Impacts

Potential impacts to noise from the use of proposed equipment and machinery were assessed by noise modelling

Noise levels generated throughout all stages of the projected were predicted to be well below the applicable Noise Management Levels for all hours

Traffic modelling predicted that the Project will have no impact on the level of service for key intersections



A Traffic Management Plan will be in place and include routes for heavy and private vehicles to access the Western Area

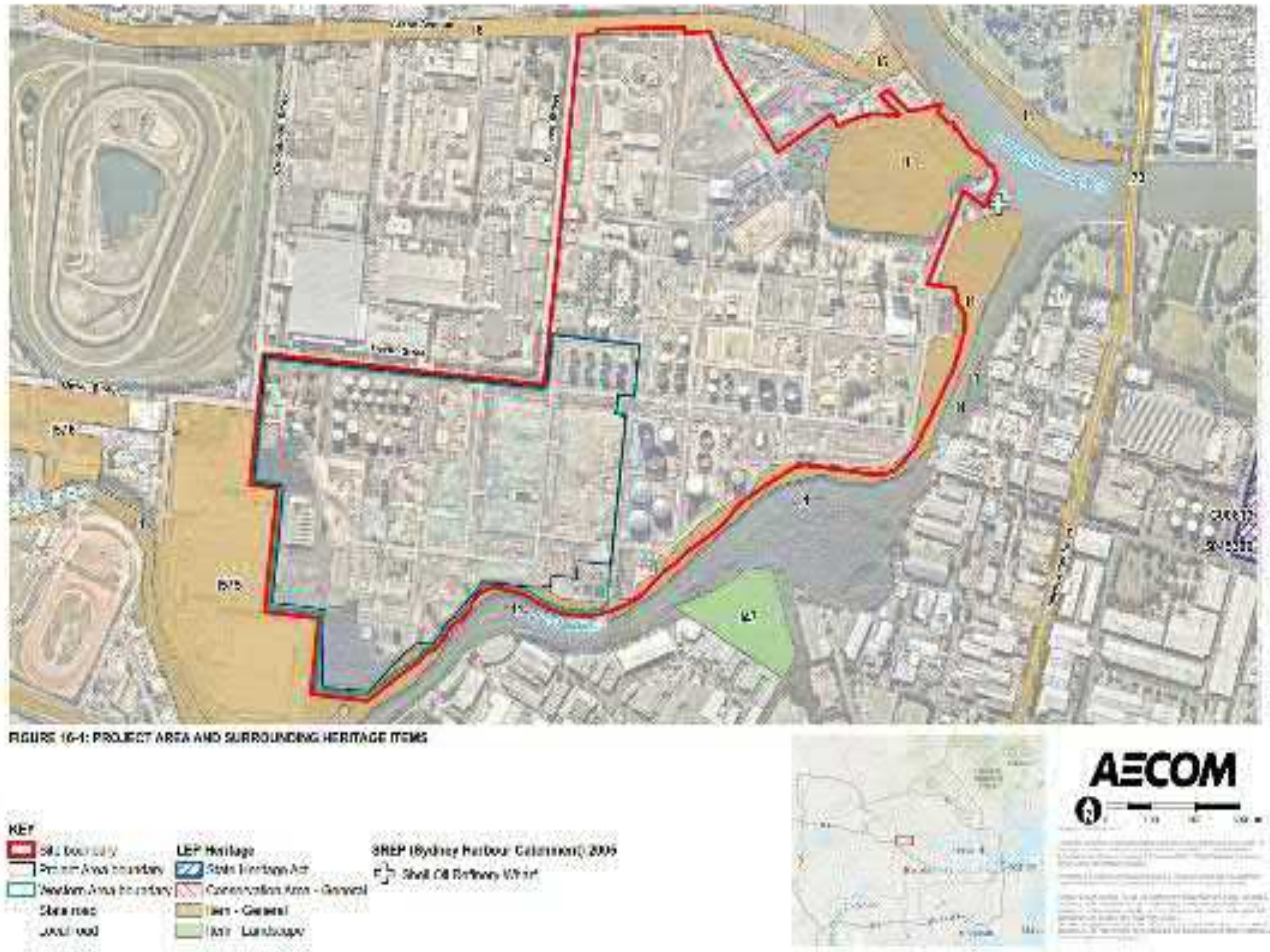
Clyde Western Area Remediation Project

Potential impact to Ecology and Heritage

Fauna habitat that is present within the Project Area is of little value and any vegetation currently present does not support high quality habitats for locally threatened fauna

Direct impacts from the former Conversion Project to the heritage value of the former Clyde Refinery have already been mitigated by previous archival recordings as part of the Conversion Project

The Lower Duck River Wetlands and key population of Green and Golden Bell Frog centred around the Wetland present in the north-east are outside of the Project Area



Clyde Western Area Remediation Project

Where to see the EIS

A hard copy can be viewed at Parramatta City Council, 126 Church Street, Parramatta

An electronic copy can be viewed at;

- www.majorprojects.planning.nsw.gov.au/page/on-exhibition
- Department of Planning and Environment, 320 Pitt Street Sydney
- Service NSW Centres

How to Have your Say

Submissions can submitted as follows:

Online: www.majorprojects.planning.nsw.gov.au/page/on-exhibition

Mail: Planning Services
Department of Planning and Environment
GPO Box 39, Sydney NSW 2001
Attention: Director – Industry Assessments

Phone: 1300 305 695

COMMUNITY INFORMATION

Clyde Terminal Western Area Remediation Project

The Western Area

The Western Area is approximately 40 hectres (ha) in land size and was previously used for refining operations including hydrocarbon processing, fuel storage and transfer.

Long-term and historical use has resulted in contamination impacts to the soils and groundwater.

Following completion of the remaining demolition activities, Viva Energy intends to commence environmental remediation of the Western Area to ensure the site meets the current standards for Commercial/Industrial land use.

Works Plan

The project is expected to take approximately three years to complete involving a number of stages that will run concurrently. In general, five main stages are involved:

STAGE 1 — **Preparation works** to set up the works area including the installation of temporary erosion and sediment controls
Duration: *three months*

STAGE 2 — **Removal of redundant infrastructure and wastes** such as underground redundant pipework and concrete to clear and prepare the area for remediation
Duration: *up to 36 months*

STAGE 3 — **Remediation** including setting up the areas and trialing specific remediation methods
Duration: *up to 28 months*

STAGE 4 — **Landforming** of the area to return to current levels
Duration: *22 months*

STAGE 5 — **Completion works and demobilisation** including the progressive removal of plant and equipment

About the Remediation Works

The remediation will be focussed at shallow depths of the site. It is estimated that approximately 105,000m3 of soils require remediation.

The type of remediation involved will depend on the nature and extent of the contaminants found and will be across targeted areas of the Western Area.

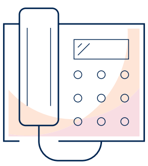
Environmental Impact Statement

The Environmental Impact Statement (EIS) has found that the Project can proceed with minimal and manageable risk to the community and the environment.

The EIS is a comprehensive document requiredas part of the development approvals process, to address potential impacts of the Project. It includes extensive studies with modelling and data on potential impacts including soil and groundwater, environmental, noise, air quality and traffic.

Key findings of the EIS

Potential Impacts	Measures to mitigate or manage potential impacts
Soil and Groundwater	
• Movement and disturbance of contaminated soils including excavation • Erosion to soils could potentially impact the environment	• Implementation of the measures detailed in the NSW Government's 'Blue book' • Management Plans • Erosion controls on the final landform, including swales and grassing
Air Quality and Odour	
• Impacts were below the relevant NSW EPA criteria with the exception of particulate matter PM2.5 and PM10 and at times, odour • The largest PM2.5 contributors are from the direct thermal desorption (DTD) unit plant screen and the mobile crushing plant	To reduce these predicted impacts: • An enclosure on the DTD plant screen with water sprays placed on the outlet • Use of a particulate filter on the mobile crushing plant • Air quality may be monitored during the project
Noise and Traffic	
• Noise levels generated throughout all stages of the project were predicted to be well below the applicable Noise Management Levels for all hours • Traffic modeling predicted that the Project will have no impact on the level of service for key intersections	• A Traffic Management Plan will be in place and include routes for heavy and private vehicles to access the Western Area
Ecology and Heritage	
• Fauna habitat that is present within the Project Area is of little value and any vegetation currently present does not support high quality habitats for locally threatened fauna • The Lower Duck River Wetlands and key population of Green and Golden Bell Frog centered around the Wetland present in the north-east are outside of the Project Area	• Direct impacts from the former Conversion Project to the heritage value of the former Clyde Refinery have already been mitigated by previous archival recordings as part of the Conversion Project



Contact

For more information or if you have any questions, contact us as follows:

Telephone: **02 9897 8046**
Email: **Communityrelations@vivaenergy.com.au**
Website: **vivaenergy.com.au/about-us/terminals-and-refinery/clyde/west-area-remediation-project**

VIVA EnergyAustralia

Thank you for participating in the Community Information Session today.

We encourage you to complete this feedback from and return it to one of the Viva Energy representatives.

Please indicate your suburb of residence: ______

How did you hear about this information session? Notice in Library

On the following Scale Please indicate your level of knowledge about the Project, before attending the session today:

1	2	3	4	5
I knew nothing about the Project	I knew a little about the Project	Moderate level of knowledge	I knew a fair amount about the Project	I am well informed about the Project

What is your greatest concern about the Project? Management of the contamination and potential impact to neighbors

What do you think is the greatest benefit of the Project? Re-Use of former industrial

On the following scale, please indicate how your level of knowledge about the Project has changed since attending the information session:

1	2	3	4	5
Not at all	A little	Moderately	I know a fair amount	I am well informed about the Project

Are there any aspects of the Project which you feel require further consideration by Viva Energy?

No

Do you have any further comments to make about the Project?

I appreciate the information provide and the openess of the team.

Thank you for your feedback

Optional information

Name: ______

Phone: ______

Address: ______

Email: ______

VIVA EnergyAustralia

Thank you for participating in the Community Information Session today.

We encourage you to complete this feedback from and return it to one of the Viva Energy representatives.

Please indicate your suburb of residence: Camellia

How did you hear about this information session? Direct email

On the following Scale Please indicate your level of knowledge about the Project, before attending the session today:

1	2	3	4	5
I knew nothing about the Project	I knew a little about the Project	Moderate level of knowledge	I knew a fair amount about the Project	I am well informed about the Project

What is your greatest concern about the Project? Water Contamination Asbestos, Dust Road Traffic

What do you think is the greatest benefit of the Project? Risk Reduction

On the following scale, please indicate how your level of knowledge about the Project has changed since attending the information session:

1	2	3	4	5
Not at all	A little	Moderately	I know a fair amount	I am well informed about the Project

Are there any aspects of the Project which you feel require further consideration by Viva Energy?

Will advise once we go through the Volume of information

Do you have any further comments to make about the Project?

Thank you for your feedback

[redacted]

Appendix B

DPE Submissions

DOC19/170800

Ms Deana Burn
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Email: deana.burn@planning.nsw.gov.au

6 March 2019

Dear Ms Burns

By Electronic Mail

Viva Energy Clyde Western Area Remediation Project (SSD 9302) – Comments on the Environmental Impact Assessment

The Environment Protection Authority ("EPA") is writing to you in reply to your email dated 4 February 2019 in relation to the Department of Planning and Environment's ("DPE") public exhibition of the Environmental Impact Statement ("EIS") for the proposed Viva Energy Clyde Western Area Remediation Project.

The EPA has reviewed the EIS and provides comments in this letter (Attachment A). The comments highlight areas where the proposal presents the likelihood of significant risk to the environment. The comments also point to areas where the EPA recommends Viva Energy Australia Pty Ltd (the proponent) provide more information and clarification to assist DPE and EPA in the assessment prior to the determination of this proposal.

The EPA may require further clarification upon receipt and review of this information.

Background

Viva Energy Australia Pty Ltd (the proponent) has submitted a State Significant Development application (SSD) for the Viva Energy Clyde Western Area Remediation Project (SSD 9302), located at 9 Devon Street Rosehill in the City of Parramatta local government area ("the premises"). The EPA has reviewed the SSD including the EIS and has prepared a response for DPE's consideration.

Viva Energy Australia Pty Ltd holds environment protection licence no. 570 for the facility located at Durham Avenue, Camellia ("the premises"). The licence permits petroleum products and fuel production, petroleum product storage and non-thermal treatment of hazardous and other waste.

Viva Energy Australia Pty Ltd also holds environment protection licence no. 660 for the Parramatta Terminal which is in the vicinity of the Clyde facility. The licence permits the storage of petroleum products.

Viva Energy Australia Pty Ltd proposes to remediate contaminated soils in the Western Area for future re-development under existing land use zoning.

The EPA understands the project includes the remediation of impacted soils and the management of impacted groundwater within a number of areas located in the Western Area.

Activities including chemical storage, petroleum and fuel production have been conducted at the premises over a number of years and have resulted in soil, groundwater, surface water and sediment contamination.

On 8 June 2016 the EPA declared the premises, including the Western Area, as 'significantly contaminated land' under the *Contaminated Land Management Act 1997* (Declaration Number 20131110 Area Number 3158).

The nature of contaminants the EPA found affecting the premises in its investigation to determine that it was a contaminated land include:

- Light Non-aqueous Phase Liquid;
- Total Petroleum hydrocarbons;
- Benzene, Toluene, Ethylbenzene and Xylenes;
- Polycyclic aromatic hydrocarbons;
- Lead and chromium including hexavalent chromium; and
- Perfluorooctane sulfonate.

Due to the sensitive environmental setting of the premises, contaminants in groundwater may also affect the adjacent water bodies of Duck and Parramatta Rivers including sediments.

Further, the premises historic use as a refinery means that other chemicals including acids, ethanolamine, sodium hydroxide, solvents and trichloroethylene may be present in the Western Area drainage system. There are also areas of buried waste/leaded sludges beneath the Western Area and asbestos.

The EPA can meet with DPE at a mutually convenient time to discuss any of our comments.

Should you require any further information please contact Christine Mitchell on (02) 9995 5732.

Yours sincerely

Jacqueline Ingham
Unit Head Sydney Industry
Environment Protection Authority

Attachment A

Background Summary

On 1 June 2018 the EPA provided a response to Secretary's Environmental Assessment Requirements to DPE to the key issues. The EPA identified the rehabilitation activities will pose environmental risks and those risks needed to be addressed in the EIS. The EPA recommended information about those risks be included in the EIS.

The EIS has been prepared by AECOM on behalf of Viva Energy Australia Pty Ltd, dated January 2019.

Soil and groundwater conditions at the Clyde terminal are currently regulated by condition U1 (Pollution Studies and Reduction Programs) of environmental protection licence No. 570, which requires an annual report to be submitted to the NSW EPA. This entails the proponent to submit a report including:

- a summary of groundwater monitoring results for the previous 12 months;
- details of any soil or groundwater investigations undertaken and the results of such investigations;
- details of the progress against works proposed in the previous year's report;
- an update of the conceptual site model (CSM) if conditions change significantly;
- an update of the Soil and Groundwater Monitoring Program (SGMP) if required.

Water Management

There are no licenced onsite groundwater monitoring points or discharge points that require monitoring of pollutant concentrations.

A licence variation amendment to the environment protection licence will be required if the project is approved. These will include limits, operating, storage, monitoring and reporting requirements. When exercising licensing functions, the EPA is required to consider any of the matters in Section 45 of the *Protection of the Environment Operations Act 1997* that are relevant. These include but are not necessarily limited to:

- the pollution that will be caused and its impact on the environment;
- practicable measures that can be taken to prevent, control, abate or mitigate the pollution and protect the environment from harm;
- practical measures that can be taken to restore or maintain those values.

Wastewater from remediation areas
It is proposed that contaminated wastewater from excavations and remediation processes will be collected and transferred to the existing wastewater treatment plant for treatment and discharge in accordance with the existing licence conditions for the Clyde Terminal of environment protection licence No.570.

The proposed remediation activities are likely to mobilise additional pollutants, and potentially additional pollutant types, to those currently regulated by the licence. However, the EIS does not:

- demonstrate that the wastewater treatment plant is suitable to treat the pollutants likely to be present in the wastewater;
- characterise the proposed discharges;

- provide details of the rainfall and flow conditions that would result in a bypass of the wastewater treatment plant;
- assess the potential impact of the proposed discharges on the receiving waterways.

To assist in the assessment of this proposal, it is **recommended** that the proponent:

- demonstrates that the wastewater treatment plant is suitable to treat the specific pollutants (types, concentrations, loads) likely to be present in the wastewater;
- characterises the expected quality of the proposed treated and bypass discharges in terms of the concentrations and loads of all pollutants present at non-trivial levels (including typical and worst case for each project stage), with reference to a risk assessment of pollutant sources;
- provides details of the rainfall and flow conditions that would result in a bypass of the wastewater treatment plant and estimates the expected frequency and volume of treated and bypass discharges; and
- assesses the potential impact of the proposed treated and bypass wastewater discharges on the environmental values of the receiving waterways, with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values.

Consistent with the NSW Water Quality Objectives, the wastewater treatment plant should be designed to ensure discharges contribute to:

- protecting the environmental values where they are being achieved in a waterway; and
- contribute towards achieving the environmental values over time where they are not being achieved in a waterway.

The EIS indicates that liners, covers and leachate collection systems will be used to manage wastewater from remediation treatment areas, but does not provide details of the design specifications of these.

Plate 1 of the EIS indicates leachate from the biopile would be directed to the wastewater treatment plant and would not be recycled back to the biopile. It is unclear whether leachate recycling has been considered. Recycling leachate back to the biopile would reduce the amount of contaminated water requiring treatment and potentially the loads and concentrations of pollutants discharged.

The EIS states that landfarming (turning soil and/or adding nutrients/compost/microbes/oxidising agents) would be used to remediate shallower and less contaminated soils. It is unclear how potential water quality risks associated with landfarming activities (e.g. runoff; seepage) would be managed.

To assist in the assessment of this proposal, it is **recommended** that the proponent:

- provides details of the design specifications of liners and covers that would be installed to minimise generation of contaminated wastewater and prevent seepage from remediation treatment areas (details should include the composition, thickness and permeability);
- provides details of leachate collection systems that would be installed to manage leachate generated from the remediation treatment areas (details should include drainage design and storage capacity);
- considers options to recycle leachate back through the biopile to reduce the loads and concentrations of pollutants requiring treatment; and
- provides details of management of potential water quality risks associated with landfarming.

Runoff from 'undisturbed' areas

The EIS indicates that runoff from 'undisturbed' areas would be diverted around disturbance areas and will discharge to waterways via the existing drainage network. The EIS does not characterise the expected quality of these discharges or assess their potential impact on the environmental values of the receiving waterways. A review of aerial imagery of the premises indicates that a large portion of the premises currently has exposed soils (including stockpiles) so runoff is likely to contain elevated suspended solids concentrations. Establishing cover over exposed soils and stockpiles is likely to reduce runoff volumes and suspended solid concentrations. Given the history of the premises it is likely the runoff will contain a range of other pollutants.

The EIS states, “Surface water flows would be managed by segregating surface water runoff from impacted water and preventing the inflow of surface water to excavation areas using surface bunds, silt fences and drainage diversions.” Silt fences are permeable and are not suitable for segregating runoff.

The EIS indicates that erosion and sediment controls would be implemented consistent with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) and would include:

- the use of geotextile liners or temporary capping to reduce infiltration of surface water runoff;
- installing silt fences around stockpiles to reduce erosion;
- installing silt and sediment traps across stormwater drains in proximity to excavation areas;
- placing stockpiles on impermeable sheeting to prevent infiltration, where possible; and
- locating stockpiles away from council stormwater drainage systems.”

The approaches recommended by Landcom (2004) are designed to manage erosion and control sediment from uncontaminated areas and may not be appropriate to manage potential water quality risks where contamination is present.

Erosion and sediment control practices generally aim to increase infiltration, so as to reduce runoff and associated erosion and sediment movement. Given that there is potential for contaminants to leach from stockpiles, measures may be required to prevent infiltration and contain runoff in some areas. Geotextile is generally permeable and unlikely to substantially reduce infiltration.

It is unclear whether sediment retention basins would be installed to reduce discharges of suspended solids.

To assist in the assessment of this proposal, it is **recommended** that the proponent:

- clarifies whether sediment retention basins would be installed to reduce discharges of suspended solids from the drainage system during the remediation process (If sediment retention basins will be used, the proponent should provide details of the design specifications [e.g. design storm capacity; liner; spillway] and management of any proposed water storages, demonstrating these are consistent with Landcom [2004].);
- demonstrates that surface water controls are appropriate to manage the pollutants likely to be present in runoff from each area of the premises;
- characterises the expected quality of the proposed discharges from the drainage system in terms of the concentrations and loads of all pollutants present at non-trivial levels (including typical and worst case for each project stage), with reference to a risk assessment of pollutant sources; and
- estimates the expected frequency and volume of discharges from the drainage system; and
- assesses the potential impact of discharges from the drainage system on the environmental values of the receiving waterways, with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values.

Consistent with the NSW Water Quality Objectives, the surface water management system should be designed to ensure discharges contribute to:

- protecting the environmental values where they are being achieved in a waterway; and
- contributes towards achieving the environmental values over time where they are not being achieved in a waterway.

Drain excavations

The EIS states that some soils surrounding existing drains would be excavated for remediation but does not provide details of how potential water quality risks (e.g. scouring) would be managed.

To assist in the assessment of this proposal, it is **recommended** that the proponent:

- provides details of how excavation of soils around drains would be managed to minimise potential water quality risks, such as in relation to potential contaminated runoff and scouring of drainage channels.
- Details provided should include controls to be implemented to prevent erosion and sediment movement during and following excavation (e.g. minimising exposed soils through cover and staging; diverting upslope drainage around exposed soils; slowing flows in drainage channels to reduce sediment movement) and where necessary to contain contaminated runoff and leachate.

Surface water monitoring, management triggers and responses

The EIS does not provide details of monitoring that would be implemented to detect and manage potential water quality risks. The EIS indicates that discharges from the wastewater treatment plant would continue to be monitored in accordance with the existing licence conditions for the Clyde Terminal (EPL570). It is unlikely the existing monitoring parameters and frequency are appropriate for the proposed discharges. In particular, monitoring of bypass discharges would be required but is not currently a licence requirement.

The EIS does not propose monitoring of discharges from the drainage system. Monitoring of these discharges is required to detect and manage potential risks to the receiving waterway.

To assist in the assessment of this proposal, it is **recommended** that the proponent provides details of:

- monitoring points including monitoring of discharges from the wastewater treatment plant and from the drainage system;
- monitoring parameters including all pollutants likely to be present at non-trivial levels;
- monitoring frequency/conditions;
- management triggers derived with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values; and
- management actions to be implemented in response to exceedances of management triggers.

<u>Hydrogeological</u>

Removal of hardstand areas

Excavations associated with the remediation works are proposed to extend to depths of up to 4m and are likely to intercept and expose potentially contaminated groundwater. The removal of existing infrastructure around the Western Area, including impervious material overlying the soil and subsurface profile, has the potential to result in increased infiltration of surface water within the Project Area. This increased recharge could result in both increased vertical and lateral migration of contamination plumes in the Western Area.

Mitigation and management measures proposed in the Environmental Impact Statement (EIS) (pg. 274) through a proposed Soil and Water Management Plan, details the use of geotextile liners or temporary capping to reduce the volumes of infiltration. No other details regarding liners are provided in the EIS.

To assist in the assessment of this proposal, it is **recommended** the proponent provide details:

- to assess the effective management of increased groundwater recharge to the local aquifers as a result of hardstand removal. The area has proven to be susceptible to flooding and unprecedented rainfall events (see supporting material), so the likelihood of large-scale surface inflows is possible.

Natural attenuation and existing groundwater impacts

The EIS and Remedial Action Plan (RAP) state that extensive investigations were carried out on identifying the extent and concentration of the underlying groundwater plume. It is understood that the groundwater plume is contaminated with dissolved phased hydrocarbons and heavy metals in isolated area around the Western Area, with its dispersal restricted by the clay content of the underlying sediments.

The current plumes are defined as having negligible impacts to the surrounding environments. The provided RAP utilised a previous report stating a Mann-Kendall Test was used to assess future groundwater trends from existing sampling events from the onsite monitoring network. The results of that test found that the spatial trends of the plume were stable or decreasing and was attributed to the natural attenuation rates where naturally occurring micro-organisms in the ground biodegrade the hydrocarbons present in the groundwater.

Evidence of the report or the test was not presented in the EIS or RAP, and conflicting information regarding the report reference and its publication date were identified.

To assist in the assessment of this proposal, it is **recommended** the proponent provide:

- a new Mann-Kendall test using updates monitoring results, complete with calculations and tables, to establish increased confidence in remedial plans.

There are issues of increased surface runoff infiltration occurring during the remediation process, with the potential for a rise in contaminant concentration, and the possibility of expanded migration.

To assist in the assessment of this proposal, it is **recommended** the proponent:

- provide clarification on plume changes and trends.

Monitoring, Management and Remediation Plans

The proponent should develop a groundwater monitoring and management plan (GMMP), made in consultation with, or approved by, the Department of Industry – Water and the EPA. The GMMP should detail ongoing monitoring practices as remediation progresses, trigger levels and associated response plans for the detection of unprecedented monitoring results, as well as mitigation and management options should harmful impacts be identified or continued.

The overall remediation program is expected to be completed by March 2023. This timeframe is entirely dependent on the success of the proposed remediation options proposed in the EIS and RAP. Regardless of the success of the program, an annual report on the remediation processes should be sought to allow review of the effectiveness of the program since its proposal, commencement, and its ongoing implementation. It will also allow a review of other methods of remediation should the program options be unsuccessful, or ineffective.

Supporting Material

The below article is located 1.5km away from the Western Area. This demonstrates the unprecedented amount of rainfall that can happen in the area, and the worst-case scenario of surface water infiltration in open excavations, potentially intensifying the degree of migration and solubility of contaminant sources.
https://www.smh.com.au/national/nsw/nine-minutes-to-flee-parramatta-s-catastrophic-flash-flooding-warning-20190214-p50xtv.html

It is **recommended** the proponent develop and continually update as part of the project's approval, a Groundwater Monitoring and Management Plant. This should contain:

- Thresholds for water quality impacts, considering the baseline and ongoing monitoring data that is collected and trigger action response plans for any unprecedented changes in groundwater quality or standing water levels at the project area;
- Assess how applied mitigation measures (reducing infiltration with geotextile barriers) have reduced impacts using observed monitoring;
- Ongoing monitoring that verifies anticipated natural attenuation of groundwater; and
- Annual reporting requirements of groundwater impacts from the remediation project.

Contamination Assessment

A general scope of works for soils and groundwater remediation is presented using a combination of in-situ and ex-situ remediation technologies. Following active soil remediation, a passive approach to managing impacted groundwater is proposed applying natural source zone depletion of the LNAPL, and subsequent natural attenuation monitoring of dissolved phase hydrocarbons in groundwater.

On-going groundwater monitoring will be undertaken to confirm the rate of natural source zone depletion of the LNAPL, and the rate of natural attenuation of dissolved phase hydrocarbons. Risk based remediation end points (closure concentrations) will be used and incorporated in the Detailed RAP to mitigate future risks (closure concentrations for groundwater remediation have yet to be prepared and approved by the EPA). Following completion of the remediation a Long-Term Environmental Management Plan (LT-EMP) will be implemented to manage groundwater.

The EPA notes that the EIS report states that the Conceptual RAP was updated to address comments provided by the EPA. The EPA's comment that "If the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced", have not been addressed.

To assist in the assessment of this proposal and in order for the Conceptual RAP to be approved, it is also **recommended** the following be noted and undertaken:

- Dissolved phase contaminant concentrations in sentinel wells are below the closure concentrations for four consecutive bi-annual sampling events (e.g. 2 years period);
- Statistical trends for the dissolved phase contaminant concentrations are either reducing or concentrations are stable as demonstrated using a statistically justified method such as Mann-Kendall analysis, and/or logarithmic plots of concentration versus time.
- If the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced; and
- Notification to the EPA that compliance with the RAP is complete (or non-compliance if it is not practicable to achieve the closure concentrations for groundwater in a reasonable timeframe).

Air Quality

The EPA notes that AECOM will provide the additional benchmarking study as requested by EPA around the first or second week of March (with the exhibition closing on 6 March 2019).

Assessment Uncertainties

There is significant uncertainty associated with estimating emissions and predicting impacts utilising dispersion modelling for remediation projects involving material handling in the open. As such the predicted ground level concentrations should be treated with caution.

Given the assessment uncertainties, the guiding principle for managing air quality impacts is through the implementation of best practice mitigation measures. This principle forms the focus of this advice. The issues below have been identified in relation to the air assessment.

1) *No justification of remediation methods for other contaminates identified has been included*

The EIS states that the remediation would focus on petroleum hydrocarbons, however other non-petroleum chemicals of potential concern may also occur within the Project Area. The EIS states that other contaminates could include heavy metals, PFAS, asbestos, pesticides, dioxins and PCBs. The EIS advises that these contaminates would either be treated with the proposed remediation methods or would be managed on-site or transported off-site. The EIS does not justify the proposed remediation methods with respect to other contaminates, including whether the proposed remediation technologies are appropriate for these contaminates. Additionally, the EIS does not advise on the decision process for the remediation of non-petroleum contamination.

To assist in the assessment of this proposal, it is **recommended** the proponent:

- justifies the proposed remediation methods for other contaminates and details how the decisions would be made regarding which remediation option would be utilised for managing other non-petroleum contamination.

2) *No analysis on the level of contamination within the material proposed for each remediation method or material handling areas has been included*

The proposal includes handling and remediation of material that is likely to contain principle air toxics pollutants (such as benzene) in the open. The assessment information does not describe or provide detailed analysis on the significance of the contamination (including the likelihood of significant principal air toxics) within specific inputs into each remediation method or open material handling area. As such the risk of significant air toxics air emissions has not been adequately communicated.

To assist in the assessment of this proposal, it is **recommended** the proponent clearly **articulate** the level of contamination (including the presence of principal air toxics) associated with, but not necessarily limited to:

- Each area where material excavation/material handling is to be undertaken
- Each area where contaminated material is to be stored
- Each contaminated material input stream to each remediation method proposed (bio piling, landfarming, DTD)

The proponent should demonstrate that adequate mitigation measures are put in place that target the areas where there is potential for more significant emissions to air of air toxics (that is a higher degree of mitigation for those areas or processes, relative to the risk of air toxic emissions). In particular, it must be robustly justified that the landfarming remediation method is appropriate given the expected level of contamination.

To assist in the assessment of this proposal, it is **recommended** the proponent:

- provide detailed analysis on the level of contamination for each material input, and each processing area.
- The proponent should detail how the mitigation measures to be implemented are adequate relevant to the level of contamination for each material and processing area. This includes a justification that the landfarming remediation method is appropriate given the level of contamination.

3) *Mitigation measures for fugitive emission management and control have not been benchmarked against best practice*

The proposal involves the remediation of contaminated material that contains principal air toxics (such as Benzene). As per section 7.2.1 of the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* principal toxics air pollutants must be minimised to the maximum extent achievable through the application of best-practice process design and/or emission controls. The proposal includes handling and excavation of contaminated material that is likely to contain principal air toxics.

The assessment does not benchmark the proposed emission control and management measures with best practice process design and emission control. The assessment does not evaluate the practicability of conducting processing operations in an enclosure, especially noting that contaminated material proposed to be handled may contain principal air toxics. It should be noted that other (similar) remediation projects in NSW have been undertaken inside an emission control enclosure indicating that enclosure is feasible.

To assist in the assessment of this proposal, it is **recommended** the proponent:

- must benchmark the proposed emission management measures and controls with best practice process design and emission control. This must include the evaluation of conducting material excavation/handling and storage within emission control enclosure(s).

4) *The assessment predicts the potential for odour impacts at neighbouring receptors*

The assessment predicts elevated ground level concentrations for odour at neighbouring receptors. The assessment advises that reactive management of odour, through the use of odour suppressants, is an appropriate strategy for minimising off-site odour impacts. As the proposal involves the handling of contaminated material that contains air toxics, the sole reliance on reactive management is not appropriate.

Section 6.1 of the AQIA advises that predicted ground level concentrations for odour and VOCs are based on continuous application of odour and VOC suppressant with assumed 95 % control efficiency or higher on the pre-treatment stockpile and night time application on exposed untreated bio piles. No controls are assumed for material handling and excavation areas. The assumed 95 % control efficiency has not been justified.

The AQIA predicts:

- Odour concentrations up to ~3 OU at residential receptors;
- Odour concentration up to ~ 11 OU at industrial receptors;
- Odour concentrations up to ~ 10 OU at recreational receptors.

The predicted odour concentrations are elevated and above the adopted odour impact assessment criteria of 2 OU. As such there is potential for offensive odour to occur at industrial, recreational and residential receptors. The assessment eludes to the implementation of reactive management measures to manage predicted odour impacts through the application of odour suppressants.

The EPA advise that reactive management measures should not be implemented in place of feasible and reasonable best practice controls (including engineering controls). Reactive management measures are not sufficient to demonstrate compliance with the 2 OU assessment criterion. The proponent should consider additional control measures, including engineering controls to achieve compliance with the 2 OU odour criterion.

Given that the proposal includes handling of contaminated material that contains principle air toxics, the proposal must include adequate best practice mitigation measures rather than solely relying on reactive measures.

To assist in the assessment of this proposal, it is **recommended** the proponent should:

- reassess the predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.

5) *The assessment predicts exceedances of the PM_{10} (24 hour) and $PM_{2.5}$ (24 hour) impact assessment criteria.*

The assessment predicts exceedances of the PM_{10} and $PM_{2.5}$ impact assessment criteria contained in the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW*. The assessment proposes a conceptual reactive management strategy based on ambient air monitoring. Whilst reactive management strategies can be effective in managing particulate matter impacts, they should not be solely relied upon for projects that involve the handling of material that contains air toxics which may or may not be particulate bound.

Section 6.2.1 of the AQIA provides ground level concentration prediction for PM_{10} and $PM_{2.5}$. Specifically, the assessment predicts:

- Exceedances of the PM_{10} (24 hour) impact assessment criteria;
  - 20 additional exceedances of the impact assessment criteria are predicted
  - Predicted incremental ground level concentration of 44 ug/m^3, which is ~ 88% of the impact assessment criteria
- Exceedances of the $PM_{2.5}$ (24 hour) impact assessment criteria;
  - 3 additional exceedances of the impact assessment criteria are predicted
  - Predicted incremental ground level concentration of 4.4 ug/m^3, which is ~ 18 % of the impact assessment criteria

The assessment states that particulate matter impacts could be reduced through an enclosure on the screen and a particle filter on the mobile crushing plant associated with the DTD and stabilisation operations and has evaluated potential reductions on annual average PM_{10} and $PM_{2.5}$ ground level concentrations. No evaluation for daily PM_{10} and $PM_{2.5}$ has been included.

The AQIA proposes a conceptual reactive management strategy for managing short term particulate emissions, through the use of ambient air monitoring. The EPA advise that whilst reactive management strategies can be effective in management of fugitive particulate emissions it should not be solely relied upon especially in the context of the proposal. The proposal involves the handling of material that contains air toxics, which may or may not be particulate bound. Hence the guiding principal should be the implementation of best practice mitigation measures (including engineering controls) rather than solely relying on reactive measures.

To assist in the assessment of this proposal, it is **recommended** the proponent:

- Evaluate reductions achieved with identified mitigation measures for 24-hour average PM_{10} and $PM_{2.5}$. Should exceedances still be predicted additional mitigation measures including engineering controls should be applied
- Evaluate predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.

6) Final design of remediation plant and equipment not specified

The assessment of proposed remediation plant and equipment (DTD and bio piling) is based on nominal/conceptual information rather than specific design information. The proponent will need to provide detailed design of the proposed plant and equipment to enable recommended EPL conditions (including licensing limits and monitoring requirements) to be provided.

The Direct Thermal Desorption (DTD) Unit process includes:

- Storage of material for pre-classification in a designated pre-treatment area (PTA)
- Crushing of oversized material using a mobile crushing plant, with screening before being fed into the DTD unit;
- Off gas collection from the rotary dryer to be processed through the following unit operations:
  - Cyclone;
  - Thermal oxidiser;
  - Quench utilising water mist
  - Baghouse
  - Wet scrubber

Assessment (modelling) of stack emissions from the DTD have been based on:

- Nominal discharge parameters and discharge concentrations
- Discharge concentrations adopted from the emission limits applied for the Orica Car Park Waste Encapsulation project.

The referenced emission limits were for a project that treated a different type of contaminated material than currently being proposed for remediation. There are uncertainties with assessing emissions based on nominal discharge parameters and pollutant concentrations. Additionally, sufficient detailed information on what discharge concentrations the proposed plant and equipment will achieve has not been provided. As such sufficient detailed information to enable recommended EPL limits has not been provided. It is not sufficient to simply nominate discharge concentrations. Emission limits should also reflect proper and efficient operation of proposed plant and equipment

The EPA advises that the bio piling remediation method involves covering the contaminated material with subsequent air capture and control via air filters. The air filters proposed have not been described.

To assist in the assessment of this proposal, it is **recommended** the proponent provide:

- A detailed description of the design of the DTD Plant and associated emissions control system;
- Supporting evidence detailing the likely performance of emissions control equipment and demonstrating that the stated emission concentrations and rates are as low as practicable and the actual levels that can be achieved, including manufacturer's performance specifications. This is to include the emission control equipment for the DTD Plant and bio piling remediation methods.

<u>Waste Management</u>

The EIS includes a broad identification of the type of wastes that will be generated throughout the project and how these wastes can be managed. As part of this, the EIS identifies that the proposed remediation and land forming activities will generate approximately 105,000 cubic metres of excavated soil. The EIS proposes that the bulk of these soils will be remediated and reused on site. If these soils are unable to be reused on-site they will be disposed of off-site in accordance with the Waste Classification Guidelines at an appropriately licensed facility.

The proposal also includes the importation of approximately 5,000 cubic metres of soil from off-site. This may include contaminated soils from other Viva Energy sites in NSW that would then be remediated and used on-site.

Section 4.5 of the EIS notes that any material imported to the Premises to be used in landforming would be required to meet a NSW EPA Resource Recovery Exemption. NSW resource recovery orders (orders) and resource recovery exemptions (exemptions) allow some wastes to be beneficially and safely re-used independent of the usual NSW laws that control applying waste to land, using waste as a fuel, or using waste in connection with a process of thermal treatment.

To assist in the assessment of this proposal, it is **recommended** that:

- the importation of contaminated soil to the Premises will only be permitted under the project approval, if an appropriate resource recovery order and exemption can be obtained for use of that contaminated soil at the Premises
- No contaminated soil is to be imported to the Premises, unless the EPA has provided written confirmation that an appropriate resource recovery order and exemption will be provided.

It is also recommended that the Proponent contact the EPA prior to the commencement of the project to ensure that appropriate changes to its licence are made.

The EPA notes that a Waste Management Sub Plan, as part of the Remediation Environmental Management Plan, will be developed by the proponent.

<u>Noise Management</u>
Potential traffic noise impacts from traffic generated by the project. In general, the EPA is satisfied with the assessment of (construction) noise from the proposed remediation of the Western Area of the premises. The location of the premises is within a substantially-sized existing industrial area, with the closest residences approximately 350-400m to the east. There are intervening buildings within the industrial estate that would provide shielding between the residences and the Western Area. Additionally, traffic noise from the M4 motorway would make it difficult to measure the noise contribution from the Western Area at the nearest residences.

The modelled noise levels are below the construction Noise Management Levels during standard hours and outside standard hours. The EPA considers this proposal is low risk but recommends that the proposed mitigation measures (detailed in Section 9 of Appendix G to the EIS) are implemented, particularly if construction is approved outside standard hours.

DOC19/264848

Ms Deana Burn
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Email: deana.burn@planning.nsw.gov.au

1 April 2019

Dear Ms Burns

By Electronic Mail

Viva Energy Clyde Western Area Remediation Project (SSD 9302) – Comments on Benchmark study

The Environment Protection Authority ("EPA") is writing to you in reply to your email dated 8 March 2019 in relation to the Department of Planning and Environment ("DPE") public exhibition of the Environmental Impact Statement ("EIS") for the proposed Viva Energy Clyde Western Area Remediation Project.

The EPA's review of the EIS included the Technical Report: "Air Quality and Odour" (AECOM, 4 December 2018) which did not adequately predict impacts utilising dispersion modelling for remediation projects involving material handling in the open.

On 21 February 2019 the EPA requested the proponent to provide an Air Quality Mitigation Benchmark Study.

On 6 March 2019 the EPA provided DPE with a response with overall comments on the EIS, noting the additional benchmarking study as requested by the EPA was yet to be provided.

On 8 March 2019 the EPA was provided with a Benchmarking Study for the Viva Energy Clyde Western Area Remediation Project Air Quality Impact Assessment ("AQIA").

The aim of the assessment is to benchmark the proposed management and control measures against best practice design and emission control, including the alternative mitigation measure of selected remediation works under temporary environmental control enclosures.

EPA's Air Technical Advice Unit ("TA-Air) has reviewed the Benchmark study and provides the following comments and in the context of comments made on the publicly exhibited EIS.

Comments made during public exhibition, relevant to the review of the Benchmarking study are:

- The risk of air toxic emissions has not been adequately communicated through the provision of information on the extent of the contamination, including the presence of principal air toxics within each:
    - Area where material excavation/material handling is to be undertaken;

    - Area where contaminated material is to be stored;
    - Contaminated material input stream to each remediation method proposed; and
    - Remediation method proposed.
- The adequacy of the mitigation measures relative to the risk of potential air toxic emissions (including principal air toxics) from individual material handling and processing areas has not been demonstrated.

Heads of Consideration in providing advice

In providing comments and advice on the benchmarking report, TA-Air has considered the following:

- Principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best practice design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations;
- Proposed mitigation measures are not demonstrated to be consistent with best practice;
- Proposed mitigation measures include:
    - Suppressant foams for the direct thermal desorption material stockpile, and exposed biopiles;
    - Covers for active stockpiles and air filters/scrubbers for the biopile ventilation stacks. Although the filters are not described;
    - Wet suppression for controlling dust from landfarming areas and excavation areas. No controls for volatile organic compound (VOCs) emissions including principal air toxics are proposed.
    - Scrubbers for the Direct Thermal Desorption plant. Although the scrubbers are not described within the benchmarking report.
- No controls for minimising volatile emissions or air toxics are proposed to be applied to excavation areas, contaminated material handling, or landfarming. Emissions of principle air toxics from these sources will be uncontrolled which is inconsistent with the objects of the *Protection of the Environment Operations Act 1997* ("POEO Act") and the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW*.
- Other remediation projects conducted in NSW have been conducted within enclosures, indicating that enclosure is feasible.

Conclusions of the benchmarking study

The benchmarking report concludes "*the application of TECE is not considered a viable, reasonable or feasible mitigation option for the project, particularly given the efficacy of the air quality mitigation and management options proposed in the AQIA*". The conclusions are based on, but not limited to:

- Generic cost information;
- Logistical issues based on the size of the remediation area and the depth in which excavation is to be undertaken and implications the logistical issues have on project delivery;
- The outcomes of dispersion modelling and predicted ground level concentrations within the Air Quality Impact Assessment prepared for the project (specifically analysis of predicted $PM_{2.5}$ impacts).

Summary and Recommendation of TA-Air Advice

Technical Advice Air (TA-Air) has reviewed AECOM, 2019[1] (the benchmarking report). Detailed comments are provided in **Attachment A**.

TA-Air advise the proponent has not robustly demonstrated proposed controls are consistent with best practice. A compelling rational for not implementing engineering controls for aspects of the proposal has not been provided.

The proponent should re-evaluate the proposed controls, including a more robust assessment of engineering controls (including enclosure) through a more thorough consideration of:

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[1] AECOM, 2019 – letter report subject *Clyde WARP AQIA Benchmarking Study: Environmental Control Enclosures*, prepared by AECOM Australia Pty Ltd dated 8 March 2019.

- The broader regulatory principles for minimising air pollution including principle air toxic emissions;
- The extent of the contamination at the premises, the uncertainty of the extent of the contamination and the significance of principal air toxic emissions from, but not necessarily limited to:
    - Each area where material excavation/material handling is to be undertaken;
    - Each area where contaminated material is to be stored; and
    - Each contaminated material input stream to each remediation method proposed (biopiling, landfarming, DTD).
- Additional scenarios or options for implementing emission control enclosures;
- Proposed remediation methods, in particular landfarming and biopiling, and whether or not principal air toxics are minimised when these remediation methods are used.

The EPA can meet with DPE at a mutually convenient time to discuss any of our comments.

Should you require any further information please contact Christine Mitchell on (02) 9995 5732.

Yours sincerely

Jacqueline Ingham
Unit Head Sydney Industry
<u>Environment Protection Authority</u>

Attachment A

1. Predicted ground level concentrations using dispersion modelling should not be the sole justification for assessing the implementation of feasible and reasonable best practice mitigation options.

The guiding principle for considering best practice mitigation options is implementing practicable measures to prevent or minimise air pollution (including principal air toxics) at the source, in line with:

- Objects of the POEO Act*;*
- Section 128 (2) of the POEO Act which states that occupiers of a premises must carry out activities by such practicable means as may be necessary to prevent or minimise air pollution for non-point source emissions; and
- Section 7.2.1 of the Approved Methods for Modelling and Assessment of Air Pollutants which states "*principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best-practice process design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations"*

Dispersion modelling is one tool that can assist with the assessment of potential impacts and inform the need for emission controls. However, modelling results should not form the basis for assessing the implementation of feasible and reasonable best practice mitigation options to minimise emissions. There is uncertainty associated with the estimation of emissions from the handling of contaminated material within the open. This is due to spatial resolution on the extent of the contamination, potential for unidentified contaminated hot-spots, reliance on emission factors and assumptions for emission estimation.

Hence there is uncertainty surrounding the predicted ground level concentrations and they should not be the sole reliance for assessing the adequacy of feasible and reasonable best practice mitigation options. Assessing reasonable and feasible best practice mitigation measures should give a more thorough consideration to the overachieving principles identified above.

2. Benchmarking report has not given consideration to the extent of the contamination or the proposed methods for remediation

The benchmarking report makes reference to other remediation projects (Macdonaldtown, Playtypus, Barangaroo) where enclosures of varying sizes have been implemented. The benchmarking report states that "*it should be noted that some of the former gas works remediation projects had additionally high concentrations of contaminates such as heavy metals and PAHs*".

Given the site history it is reasonable to expect there will be areas of highly impacted material. The benchmarking report does not give thorough consideration to the extent and significance of contaminated material to be remediated, including the presence of principal air toxics. The justification of proposed mitigation measures must consider the extent of contamination within material handling/excavation areas, material storage areas, and input/output material to each remediation process.

The proposed methods for remediation are landfarming, bio-piling, and direct thermal desorption. The benchmarking report has not demonstrated the proposed remediation methods are best practice considering the extent of the contamination each method is treating.

It is not acceptable to use landfarming to remove volatile constituents from soils through evaporation. If volatile constituents are presented in the soils being land farmed, VOC emissions should be captured and treated using covers, structural enclosures and abatement techniques. The proponent have not demonstrated VOC emissions, in particular principal air toxics, from landfarming will be minimised to the maximum achievable.

The benchmarking report states the use of foam suppressants for exposed biopiles, and air filters/scrubbers for bio pile vents. However, it does not describe emission management consistent with information presented in the Air Quality Impact Assessment submitted during public exhibition. The publicly exhibited impact assessment advised that the biopiles would be covered with an impermeable material and would be maintained under negative pressure with treatment via air filters. The proponent should provide more clarity on the controls for biopiles and how they are consistent with best practice.

3. <u>Best practice benchmarking has not given consideration to varying options/scenarios to assess the viability of utilising enclosure(s)</u>

The benchmarking report presents practical limitations with the implementation of an enclosure. The practical limitations are based on considering a single option/scenario where an enclosure is implemented on individual excavation areas with subsequent decommissioning and relocation of the enclosure as the project proceeds. Practical limitations identified are:

- The project area (40 ha) presents logistical and feasibility issues with the implementation of enclosure across the site;
- The shallow contamination depth (2-4 m) within the project area, would mean that enclosure relocation would need to occur more frequently with subsequent implications on project schedule and costs;
- Impacts on project delivery given the additional time required for site establishment, relocation and decommissioning of an enclosure should an enclosure be implemented and relocated across the project areas as excavation progresses.

Whilst TA-Air cannot provide advice on the specifics of project logistics, TA-Air can advise that given only a single option/scenario has been considered, the conclusion that emission control enclosures as not being viable has not been robustly justified. The benchmarking report does not give consideration to project alternatives, such as, but not necessarily limited to:

- Implementing enclosure(s) on the excavation areas where the most significant contamination is likely to be found, hence eliminating or reducing the need for enclosure relocation;
- Implementing enclosure(s) on areas where the most impacted material is proposed to be stored prior to processing (e.g. the DTD material feed storage area), hence eliminating or reducing the need for enclosure relocation; and
- Implementing enclosure(s) for storage of material prior to classification, and/or for storage of material for classification post processing.

TA-Air considers that additional scenarios or options should be considered especially given that the benchmarking report has identified other projects where enclosure of various sizes (ranging from 2,600 m^2 to 17, 500 m^2) has been implemented.

CITY OF PARRAMATTA

Planning Services
Department of Planning and Environment
GPO Box 39 Sydney NSW 2001
Attention: Director – Industry Assessments

Our Ref	**NCA/2/2019**
Contact	Kate Lafferty
Telephone	9806 5600
Email	klafferty@cityofparramatta.nsw.gov.au

13 March 2019

Dear Mr Ritchie,

COUNCIL SUBMISSION
SSD 9302 – 9 DEVON STREET – CAMELLIA
VIVA ENERGY CLYDE WESTERN AREA REMEDIATION PROJECT

I refer to the public exhibition of the above application seeking approval for the remediation of land.

Council officers have reviewed the application package and wish to advise that no objections are raised to the proposal. We request however that the following comments are taken into consideration in the assessment of the application.

ENVIRONMENTAL HEALTH COMPLIANCE

The review has found that the EIS appears to suitably address potential waste, environmental and public health impacts arising from the proposed development.

It is noted that further documentation is referenced in the EIS to be completed prior to the remediation works commencing, including but not limited to the following:

- Remediation Action Plan
- Project Management Plan
- Air Quality Management Plan
- Remediation Environmental Management Plan (with sub-plans: Waste Management Plan, Soil and Water Management Plan & Noise and Vibration Management Plan)
- Long-Term Environmental Management Plan.

It is anticipated that drafts of these documents will be made available to Council for review prior to their approval.

Further, it is noted that a staged Validation process will be taking place as the remediation process is completed in phases. It is anticipated that copies of the Validation Reports and Site Audit Statements issued by a suitably accredited NSW Site Auditor will be provided to Council for review as the development progresses.

It is requested that conditions be imposed requiring the above consultation and review of documentation by Council.

NATURAL RESOURCES

The proposed works adjoin the Duck River riparian corridor, which is mapped as 'Wetlands Protection Area' under the *(Sydney Harbour Catchment) 2005* deemed SEPP and 'Natural Resources – Riparian Land and Waterways' under the *Parramatta Local Environmental Plan 2011.* The site is largely devoid of vegetation, with potential habitat in the form of human made structures such as tanks, having now been demolished and removed as part of the Clyde Terminal Conversion Project. Swamp Oak Floodplain Forest Endangered Ecological Community is present within the adjoining Duck River riparian corridor and along the western boundary drainage line. Whilst these waterway corridors provide potential habitat for threatened species, including the Green and Golden Bell Frog, they have been excluded from the proposed works to avoid direct impacts.

The Biodiversity Development Assessment Report (BDAR) confirms that no native vegetation occurs within the site and that the project is unlikely to result in any prescribed or direct impacts on threatened species or ecological communities due to the absence of suitable habitat. Therefore, as the project excludes the adjoining riparian and has been designed to avoid impacts to native vegetation and threatened species, biodiversity offset credits are not required.

However, the proposed works have the potential to indirectly impact adjoining habitat within the adjoining Duck River riparian corridor and along the western boundary drainage line. To minimise the potential for indirect impacts, the following condition (consistent with the BDAR) is recommended:

<u>Before Commencement of Works</u>

The Applicant shall prepare and implement a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with Council;

(b) be approved by the Secretary prior to the commencement of works;

(c) include measures to be taken to minimise impacts on the Duck River riparian corridor, Swamp Oak Floodplain Forest, and the Green and Golden Bell Frog population consistent

with the recommendations in the Biodiversity Development Assessment Report (Appendix I) and the Mitigation and Management Measures (Chapter 15) of the EIS.

Reason: *To minimise impacts upon the Duck River riparian zone.*

Council also defers to the Department of Industry for their comments and technical expertise in riparian impacts.

TRAFFIC MATTERS

The submitted Traffic Report estimates that project-related vehicle trips during each peak hour would be in the order of 80 private vehicles and 20 heavy vehicles carrying remediation equipment or materials. On this basis, the report evaluated the performance of three intersections using SIDRA Intersection software. The results of the SIDRA modelling show that the increases of private and heavy vehicle movements generated by the project would have negligible impacts on existing traffic.

Based on the analysis and information submitted by the applicant, the proposed development is not expected to have a significant traffic impact on the surrounding road network. The proposal can be supported on traffic and parking grounds subject to the following traffic related condition.

During Construction or Works:

Oversize vehicles using local roads require Council's approval. The applicant is required to submit an application for an Oversize Vehicle Access Permit through Council's Traffic and Transport Services, prior to driving through local roads within the City of Parramatta LGA.

Reason: *To ensure maintenance of Council's assets.*

HERITAGE

The site of proposed development is not individually heritage listed, however, it is in the vicinity of listed wetlands, and has some archaeological potential (Aboriginal and European), as identified by the EIS.

In this regard, Council defers to the referral comments of the Office of Environment and Heritage, particularly if the application requires any approval under the NSW Heritage Act 1977 as a prescribed development application.

STORMWATER AND CATCHMENT MANAGEMENT

The water, wastewater and flooding details of the submitted EIS are considered to be well prepared and comprehensive. Providing all details of the EIS and supporting documentation are implemented, Council officers raise no concerns regarding stormwater and catchment management.

TREE MANAGEMENT AND LANDSCAPING

No concerns relating to existing vegetation within the proposed work areas of the site are raised. Appropriate protection of the riparian foreshore is addressed elsewhere within this submission.

DEVELOPER CONTRIBUTIONS

The information submitted did not appear to contain a quantity surveyor's report stating the proposed cost of works. This should be submitted to determine the applicable Section 7.12 contributions to be paid to Council. In this regard, Council requests to review this report and for the Department to impose a condition requiring the payment of developer contributions for the project. A condition can be recommended for imposition to the Department once the information has been submitted and developer contributions are determined.

Council appreciates the opportunity to comment on the above application and looks forward to further consultation on this matter.

Should you wish to discuss the above matters, please contact me direct on 9806 5393 or at klafferty@cityofparramatta.nsw.gov.au

Yours sincerely

KLafferty

Kate Lafferty
Executive Planner
City Significant Development

Health
Western Sydney
Local Health District

WSLHD HPRM Ref No: 19/24293
Your Ref. No: SSD 9302

Mr Chris Richie
Director
Industry Assessments
NSW Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Email: deana.burn@planning.nsw.gov.au

Dear Mr Richie

RE: Viva Energy Clyde Western Area Remediation Project (SSD 9302)

I write to you in response to your correspondence received on the 25 February 2019 concerning the Viva Energy Clyde Western Area Remediation Project, Notice of Exhibition. Thank you for providing additional time for our assessment of the project proposal.

The Western Sydney Local Health District, Centre for Population Health has reviewed the Environmental Impact Statement, with a particular focus on air quality and odour impacts and the health risk assessment, prepared for the proposed development.

The proposal is to remediate contaminated soils, predominately petroleum hydrocarbons including light non-aqueous phase liquid, using a range of on-site treatment technologies including land-farming, bio-piling, direct thermal desorption, in area soil mixing, stabilisation and some offsite disposal of heavily contaminated soils assessed as unsuitable for onsite treatment.

Other contaminants of concern include heavy metals, PFAS, PCBs, pesticides, dioxins, tetraethyl lead, and phenols. It is noted that there is asbestos contaminated soils located on site.

Remediation methods

The proposed remediation methods focus on the treatment process for petroleum hydrocarbons and provides limited information on how the other contaminants of concern identified on the site would be managed. Therefore assessment of the adequacy of separation of contaminated soils and proposed on-site treatment is not possible based on the information provided in the EIS. An option for transport of some contaminated soils unable to be treated on site is provided but again there is limited information on how this would be achieved. Information on the proposal to import contaminated soils from other Viva Energy sites is limited other than the advice that relevant EPA approval would be required.

1. It is recommended that further information is provided on the treatment and sorting of contaminated soils, likely mixed contamination issues, and proposed import and export of contaminated soils to the site.

Western Sydney Local Health District
ABN 48 702 394 764
PO Box 574 Wentworthville NSW 2145
Tel. (02) 8890 8793 Fax. (02) 9689 2041

Particulates

The proposal notes that the exposure response relationship for a number of health effects associated with PM_{10} and $PM_{2.5}$ is linear where there is no threshold below which no adverse effects have been identified.

Background levels for both PM_{10} and $PM_{2.5}$ are reported as being already high in comparison to the EPA criteria. The modelled increment levels of particulates for the project, although calculated based on the assumption of full operation (worst case scenario) are concerning. For example, the maximum 24 hour average PM_{10} increment modelled at one industrial receptor (1935) at 31.4ug/m^3 with a measured maximum background level of 51.9ug/m^3 is an incremental increase of 60.5%, resulting in a predicted maximum 24-hour PM_{10} concentration of 83.3 µg/m^3. Exceedances at this location are modelled to occur 20 times over 12 months compared to 4 exceedances based on background levels. Furthermore, the annual average PM_{10} concentration is modelled to increase background levels of 20ug/m^3 by an additional increment of 12ug/m^3 (60%) at this site.

As noted above, any increase in particulates can have an adverse health effect on susceptible members of the community.

2. In conjunction with the application of best practice mitigation measures, the introduction of a detailed Reactive Air Quality Management Program is strongly supported with further consideration of incremental responses based on the lowest possible triggers rather than the proposal to set triggers at the current EPA criteria of 50ug/m^3 for the 24 hour average PM_{10} for example.

Asbestos

In relation to asbestos contaminated soils the project proposal is limited in the information provided on the level, type, depth and extent of asbestos contamination on the site. It is recommended that further investigation is warranted in particular due to the close vicinity of the James Hardie sites on the Camellia peninsula, the historical records of the Viva Energy Clyde Western Area, which show the area being covered in a large amount of fill over the years, and the known extent of asbestos contaminated land fill, including sludge containing friable asbestos, used extensively throughout the Rosehill, Parramatta and Granville areas (James Hardie legacy sites).

The proposal states that any identified asbestos material will be removed before treatment. However, as mentioned above, limited information is provided on the current knowledge of asbestos in the contaminated soils (e.g. whether the asbestos is bonded or friable) and the method of detection and therefore this provides limited re-assurance that asbestos material will be adequately removed prior to soil treatment.

As discussed above, mixed contaminants and sorting of soil for appropriate treatment are likely to create difficulties in identifying and removing asbestos contaminated soils or material.

3. Appropriate identification and delineation of areas where mixed contamination is likely to occur should be established prior to the commencement of the remediation project to allow further consideration of the appropriate and safe treatment of these soils. It is recommended that areas found to be contaminated with asbestos be managed under an appropriate asbestos management plan that considers onsite and offsite asbestos exposure risks.

Groundwater and PFAS

It is noted that previous monitoring programs of groundwater migration has shown that generally the contaminated groundwater is stable and remains onsite. The proposal does suggest that groundwater will be monitored to ensure works have not adversely impacted groundwater conditions in the short term. However, no detail about mitigation if this was to occur was able to be found in the EIS documentation.
With the removal of hard stand areas and the likelihood of extreme weather events there is the potential for surface water to impact groundwater flows during and after excavation works.

Existing fishery closures due to legacy pollution from the Camellia peninsula (including PFAS) which has impacted local waterways and contributed to the fishery closures should not be cited as a reason not to assess contamination and mitigate or remediate any risks identified.

4. Additional controls and systems during the remediation project should be put in place to mitigate any potential for offsite migration of groundwater, of petroleum hydrocarbons and persistent chemicals such as PFAS.

Air Toxics

The proposal includes open air handling and excavation of soils contaminated with air-toxics, including benzene. Limited information is provided on the level of contamination of soil with air-toxics and modelling of likely emissions. In the absence of this information, the level of risk associated with handling contaminated soils in the open air environment is not able to be assessed. Other recent major remediation sites have used emission control enclosures to reduce the impact of air-toxics, as guided by best practice.

5. It is recommended that the proponent investigate the use of emission control enclosures as best practice to manage emissions during soil handling and excavation of soils contaminated with air toxics.

6. The proponent is encouraged to provide further details regarding the degree of contamination of materials to be excavated, stored and treated.

Odour

Odour modelling has shown that levels have the potential to cause community concern, particularly at neighbouring industrial/commercial sites and recreational users at the Rosehill Racecourse. Although the modelled impact is lower at residential sites it remains as one of the most likely sources of community concern.

7. Appropriate triggers should also be included in a Reactive Odour Management Program to respond to community concern about odours. The proponent is encouraged to engage with the community to raise awareness of potential activities that may increase odours during the project before they occur in the vicinity. Consideration should be given to an arrangement to limit high risk odorous activities occurring during large community events at the Racecourse. A proactive approach to odour management is preferred over a reactive one.

Surface Water treatment and release to the environment

The Parramatta River Catchment Group launched their Our Living River initiative in 2014 with the mission to make the Parramatta River swimmable again by 2025.

There has been overwhelming community support for the project and a high level of community engagement. The community supports improving water quality along the Parramatta River of which the Duck River is a tributary.

8. The proponent should provide information on the effectiveness of surface water collection, storage and treatment within existing or water treatment facilities to ensure that surface water is treated to an acceptable standard to limit any further contamination of surrounding receiving waters.

Human Health Risk Assessment modelling

Modelling of ground level concentrations of contaminants used in the Health Risk Assessment are based on EPA limits set on other projects using similar treatment technologies. However no information is provided on the contaminated material that was being treated at those locations.

As the proposed discharge concentrations from the direct thermal desorption unit and bio-piles are not site specific this raises uncertainties around their relevance and applicability to the proposed project.

9. It is recommended that further information is provided to allow comparison of the contaminated soils, treatment technologies and in stack concentrations used in the risk assessment to calculate exposure risk.

10. Validation of modelled in stack and ground level concentrations should be undertaken during the commissioning phase of the DTD unit and bio-piles.

Community Engagement

The SEARs requires that the EIS must address community and stakeholder engagement issues through a strategy identifying who and how stakeholders will be engaged in the process, as well as details of proposed engagement activities throughout the remediation works.

11. The proponent is encouraged to continue to engage with the community during the project establishment phase and during operations, should the project be approved. During the project, the proponent should provide avenues for lodgement of complaints in relation to the operational phases of the project. Management plans should include a complaints handling, investigation and actions system for addressing complaints lodged by the community.

Incident Management Plans /Emergency Procedures

The site is identified as a hazardous facility based on the storage and transport of fuels.

12. The siting of the direct thermal desorption unit and the development of incident management plan should be considered in consultation with Emergency Management Services.

Future uses

Validation of the remediation project by an EPA approved site audit should consider whether there is any remaining contamination at soil depth below the level of remediation of soils undertaken during this project.

Western Sydney Local Health District
ABN 48 702 394 764
PO Box 574 Wentworthville NSW 2145
Tel. (02) 8890 8793 Fax. (02) 9689 2041

13. If contamination remains at depths below the level of remediated soils at 2-3 metres below ground surface then the installation of covenants on future development including restricting underground excavation e.g. underground carparks should be considered. A further assessment should be required prior to any change of land use zoning.

It is recommended that additional supportive evidence, as discussed above, be provided to allow further assessment of the proposal and the management of impacts and risks due to the proposed increase in the operating capacity at the site.

If you wish to discuss further please contact Helen Noonan, Manager Environmental Health & Disaster Preparedness, Centre for Population Health on Tel: (02) 9840 3603 or Email: helen.noonan@health.nsw.gov.au.

Yours sincerely

Mr Graeme Loy
Chief Executive

Date: 27-3-19

Western Sydney Local Health District
ABN 48 702 394 764
PO Box 574 Wentworthville NSW 2145
Tel. (02) 8890 8793 Fax. (02) 9689 2041

Transport
Roads & Maritime Services

11 March 2019

Our Reference: SYD18/00753/02
Department Ref: SSD 9302

Chris Ritchie
Director, Industry Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Deana Burn

Dear Mr Ritchie,

VIVA ENERGY CLYDE WESTERN AREA REMEDIATION PROJECT (SSD 9302)
9 DEVON STREET, ROSEHILL

Reference is made to the Department of Planning and Environment's email dated 7 February 2019, regarding the abovementioned application which was referred to Roads and Maritime Services (Roads and Maritime) for comment.

Transport for NSW (TfNSW) will make a separate submission.

Roads and Maritime has reviewed the submitted development and whilst has no objections, recommends that the Department include the following conditions as part of any determination issued:

1. Roads and Maritime advises that the Parramatta Light Rail (PLR) project has current and future construction activity planned at the corner of Grand Avenue and Colquhourn Street.

   As such the proponent shall submit a Plan of Management (POM) in consultation with the TfNSW Sydney Coordination Office (SCO), Roads and Maritime, PLR, and Parramatta City Council, prior to the commencement of remediation works. The POM needs to include, but not be limited to, the following: vehicle routes, number of trucks, hours of operation, access arrangements and traffic control to facilitate the remediation works.

2. A Road Occupancy Licence (ROL) should be obtained from Transport Management Centre for any works that may impact on traffic flows on surrounding classified roads, such as James Ruse Drive, as a result of the remediation activities. A ROL can be obtained through https://myrta.com/oplinc2/pages/security/oplincLogin.jsf

Should you have any further inquiries in relation to this matter, please do not hesitate to contact the undersigned by email at development.sydney@rms.nsw.gov.au

Yours sincerely,

Aleks Tancevski
A/Senior Manager Land Use Assessment
South East Precinct, Sydney Division

Deana Burn
Industry Assessments
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Ms. Burn

SSD 9302 Viva Clyde Western Area Remediation Project

Thank you for your email dated 12 March 2019 referring the subject proposal to Transport for NSW (TfNSW) for review. It is noted Roads and Maritimes Services had provided a submission on 11 March 2019.

The proposal seeks approval for remediation works at the subject site that would include construction traffic of a mix of plant vehicles, delivery vehicles and workforce. The documentation in support of the proposal is reviewed and our comments are provided as follow:

Construction Traffic Management

Comment:

The proposal documentation indicates that a Traffic Management Plan (TMP) would be prepared as a sub-plan of Remediation Environmental Management Plan and measures would be included in the TMP to manage impacts related to project access and parking. Parramatta Light Rail (PLR) Stage 1 will be under construction at the same time as the proposed works in the SSD. The cumulative increase in construction vehicle movements from this project could have the potential to impact on general traffic on Grand Avenue.

Recommendation:

The applicant be conditioned to prepare a Construction Pedestrian and Traffic Management Plan (see **Attachment A** for details) in consultation with Sydney Coordination Office and Parramatta Light Rail within TfNSW.

Thank you again for the opportunity of providing comments on the subject application. If you require any further information regarding this matter, please contact Billy Yung, Senior Transport Planner, via email at billy.yung@transport.nsw.gov.au.

Yours sincerely

21/3/2019
Mark Ozinga
Principal Manager, Land Use Planning and Development
Freight, Strategy and Planning

CD19/02248

Attachment A – Recommended Conditions of Consent

Construction Traffic and Pedestrian Management Plan

Prior to the commencement of any construction works, a Construction Traffic and Pedestrian Management Plan (CTPMP) shall be prepared in consultation with the Sydney Coordination Office (SCO) and Parramatta Light Rail (PLR) within Transport for NSW and be endorsed by SCO. The CTPMP must take into account the potential impacts of the proposal on the PLR project and address, but not be limited to, the following:

- Traffic and public transport customer management in the vicinity of the development;
- Location of all proposed work zones;
- Proposed construction hours;
- Estimated number and type of construction vehicle movements including volume, time of day and truck routes;
- Construction program highlighting details of peak construction activities and proposed construction staging;
- Any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles during the duration of the proposed works;
- Cumulative construction impacts of other projects in the vicinity and duration of the impacts;
- Measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be identified;
- Construction vehicle movements using the intersection of Grand Avenue/ James Ruse Drive intersection should be limited during peak periods to reduce traffic impact.

OHara, Rachel

From:	Deana Burn <Deana.Burn@planning.nsw.gov.au>
Sent:	Tuesday, 26 February 2019 1:37 PM
To:	Miles, William; OHara, Rachel
Subject:	FW: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

Hi Will, Rachel
Submission from OEH Heritage Division below – no issues
Regards
Deana.

From: Adrian Hohenzollern
Sent: Tuesday, 26 February 2019 12:29 PM
To: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Cc: Luisa Maguire <Luisa.Maguire@planning.nsw.gov.au>
Subject: RE: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

Hi Deana

One of our assessments teams has looked at this project, and advised that the Heritage Division of OEH has no concerns in relation to State Heritage.

Kind regards
Adrian

Adrian Hohenzollern
Senior Team Leader
Customer Strategies, Heritage Division
Office of Environment and Heritage
Locked Bag 5020 PARRAMATTA NSW 2124
Level 6, 10 Valentine Ave, PARRAMATTA NSW 2150
T: 02 9860 1505 E: adrian.hohenzollern@environment.nsw.gov.au
W www.environment.nsw.gov.au | www.environment.nsw.gov.au/cultureandheritage.htm

---

From: Luisa Maguire
Sent: Monday, 4 February 2019 10:56 AM
To: OEH HD Heritage Mailbox <HERITAGEMailbox@environment.nsw.gov.au>; OEH HD Customer Strategies Mailbox <customer.strategies@environment.nsw.gov.au>
Cc: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Subject: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

Good Morning,

Please find attached the Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

The SSD Application and accompanying documents may be viewed on the department's website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9302

The Department of Planning and Environment invites you to comment on the proposal by close of business **Wednesday 6 March 2019.**

If you have any questions, please contact Deana Burn on (02) 9274 6453 or via email at deana.burn@planning.nsw.gov.au.

Regards

Luisa Maguire

Luisa Maguire
DA Coordinator | Key Sites and Industry Assessments
Department of Planning & Environment
320 Pitt Street | GPO Box 39 | Sydney NSW 2001
T 02 8289 6757 E luisa.maguire@planning.nsw.gov.au

NSW GOVERNMENT | Planning & Environment

Horvath, Emma-Lyn

From:	Deana Burn <Deana.Burn@planning.nsw.gov.au>
Sent:	21 March 2019 05:35
To:	Miles, William
Subject:	FW: SSD 9302 - Viva Clyde Western Area Remediation Project

Hi Will

Some comments from our internal Greater Parramatta Urban Renewal team.

Regards
Deana.

From: Melissa Parnis
Sent: Thursday, 21 March 2019 4:28 PM
To: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Cc: Yolanda Gil <Yolanda.Gil@planning.nsw.gov.au>; Nava Maghami <Nava.Maghami@planning.nsw.gov.au>
Subject: RE: SSD 9302 - Viva Clyde Western Area Remediation Project

Hi Deana,

Thank you for the opportunity to provide comments on SSD 9302 - Viva Clyde Western Area Remediation Project.

We have reviewed the EIS and provide the following comments, in particular regarding transport and traffic, for your consideration:

- The impact on existing intersections should be considered, particularly as there is limited access to the Camellia Precinct currently. The Traffic Management Plan for the SSD should consider limiting access to the site via the James Ruse Drive/ Hassell St intersection during peak times.
- Given the remediation program is a 3 year program, consideration should be given to any transport and traffic impacts that may conflict with the development proposed by the draft Camellia Town Centre master plan (https://www.planning.nsw.gov.au/Plans-for-your-area/Priority-Growth-Areas-and-Precincts/Camellia/Key-actions-and-documents).
- Consideration should be given to any traffic conflicts that may arise due to the construction of the Parramatta Light Rail Stage 1.

Please contact me if you have any questions.

Kind Regards,

Melissa Parnis
A/ Manager, Greater Parramatta Urban Renewal
Housing & Urban Renewal
10 Valentine Ave PARRAMATTA | GPO Box 39 SYDNEY NSW 2001
T 02 8837 6345 E Melissa.Parnis@planning.nsw.gov.au

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Deana Burn

From: system@accelo.com on behalf of Fon Wong <fon.wong@endeavourenergy.com.au>
Sent: Wednesday, 6 March 2019 10:27 AM
To: Deana Burn
Subject: Submission Details for company Endeavour Energy, Electricity Distributor (org_support)

Confidentiality Requested: no

Submitted by a Planner: no

Disclosable Political Donation: no

Agreed to false or misleading information statements: yes

Name: Fon Wong
Organisation: Endeavour Energy, Electricity Distributor (Environmental Specialist)
Govt. Agency: No
Email: fon.wong@endeavourenergy.com.au

Address:
51 Huntingwood Drive

Huntingwood, NSW
2148

Content:
Endeavour energy has no objections to the development subject to the following conditions:

1. Access to air quality compliance reports upon request
2. Timely warning of occurrences of particulate matter PM10 and PM2.5 level exceedance above NSW EPA criteria
3. Timely warning of occurrences of odour level exceedance above EPA criterion of 2 OU

IP Address: - 148.195.20.1
Submission: Online Submission from company Endeavour Energy, Electricity Distributor (org_support)
https://majorprojects.accelo.com/?action=view_activity&id=316338

Submission for Job: #9302 Viva Energy Clyde Western Area Remediation Project
https://majorprojects.accelo.com/?action=view_job&id=9302

Site: #3926 Viva Energy Clyde Terminal
https://majorprojects.accelo.com/?action=view_site&id=3926

OHara, Rachel

From:	Deana Burn <Deana.Burn@planning.nsw.gov.au>
Sent:	Thursday, 7 February 2019 2:32 PM
To:	Miles, William
Cc:	OHara, Rachel
Subject:	FW: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

1st submission on Viva Remediation – Water NSW – no comments.

I will forward submissions through progressively if that suits, with a consolidated summary at the end.

Regards
Deana.

From: Alison Kniha <Alison.Kniha@waternsw.com.au>
Sent: Thursday, 7 February 2019 2:27 PM
To: Luisa Maguire <Luisa.Maguire@planning.nsw.gov.au>
Cc: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Subject: RE: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

Good afternoon,

Thank you for your email inviting WaterNSW to comment on the above proposal. The project is not located within close proximity to any WaterNSW land or infrastructure, therefore we have no particular comments or requirements.

WaterNSW requests the Department continue to refer projects to us for comment that have the potential to impact on WaterNSW land, assets and infrastructure, using the email address Environmental.Assessments@waternsw.com.au.

Regards

Alison Kniha
Catchment Protection Planning Manager

WaterNSW

PO Box 398, Parramatta NSW 2124
Level 14, 169 Macquarie Street
Parramatta NSW 2150
T: 02 9865 2505
M: 0407 088 372
alison.kniha@waternsw.com.au
www.waternsw.com.au

From: Luisa Maguire <Luisa.Maguire@planning.nsw.gov.au>
Sent: Monday, 4 February 2019 10:55 AM
To: Environmental Assessments <Environmental.Assessments@waternsw.com.au>
Cc: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Subject: Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

Good Morning,

Please find attached the Notification of Exhibition of Viva Energy Clyde Western Area Remediation Project (SSD 9302).

The SSD Application and accompanying documents may be viewed on the department's website at http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9302

The Department of Planning and Environment invites you to comment on the proposal by close of business **Wednesday 6 March 2019.**

If you have any questions, please contact Deana Burn on (02) 9274 6453 or via email at deana.burn@planning.nsw.gov.au.

Regards

Luisa Maguire

Luisa Maguire
DA Coordinator | Key Sites and Industry Assessments
Department of Planning & Environment
320 Pitt Street | GPO Box 39 | Sydney NSW 2001
T 02 8289 6757 E luisa.maguire@planning.nsw.gov.au
NSW GOVERNMENT Planning & Environment

Deana.

From: Harit Jani <Harit.Jani@safework.nsw.gov.au>
Sent: Tuesday, 5 March 2019 1:46 PM
To: Deana Burn <Deana.Burn@planning.nsw.gov.au>
Cc: Michael Wright {Safework} <Michael.Wright@safework.nsw.gov.au>
Subject: Re: Viva Energy Clyde Western Area Remediation Project (SSD 9302) Notice of Exhibition

Dear Deana,

SafeWork NSW does not have any comments for "Viva Energy Clyde Western Area Remediation Project (SSD 9302) Notice of Exhibition".

Regards,
Harit

Dr Harit Jani BEng(Chemical), PhD, MIEAust CPEng, TUV FS Engineer ID 5237/12
Senior Safety Analyst | Major Hazard Facilities
Hazardous Chemical Facilities & Safety Management Audits
SafeWork NSW
p 02 8867 2842
e harit.jani@safework.nsw.gov.au | www.safework.nsw.gov.au
Level 4, 2 Burbank Place
Norwest NSW 2153

Ref: 19/87894

Mr Chris Ritchie
Director Industry Assessments
Department of Planning and Environment
Via email: chris.ritchie@planning.nsw.gov.au

Dear Mr Ritchie

Thank you for your letter of 4 February 2019 to Ms Lucy Turnbull AO, Chief Commissioner, Greater Sydney Commission regarding the proposed State Significant development application for the Viva Energy Clyde Western Area Remediation Project (SSD 9302). I have been asked to respond to you.

The Remediation Project is aligned with the Commission's vision for the Greater Parramatta and the Olympic Peninsula and the Central City District Plan.

The Commission notes the progress Viva Energy Australia Pty Ltd is making to remediate the western area of the former Clyde Refinery, to enable future uses compatible with the ongoing heavy industrial operations.

The Commission is aware of various infrastructure and service providers that may in future require sites in the Camellia Precinct that would likely be compatible uses with Viva Energy's operations.

If you require any further information, please contact me on (02) 8289 6234.

Yours sincerely

Natalie Camilleri
A/Executive Director, City Planning - Infrastructure
14/2/19

DOC19/654152

Ms Katelyn Symington
Senior Environmental Assessment Officer
Industry Assessments
Department of Planning Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Email: Katelyn.symington@planning.nsw.gov.au

Dear Ms Symington

2 August 2019

By Electronic Mail

Viva Energy Australia Pty Ltd - Clyde Western Area Remediation Project (SSD 9302) – Comments on the Response to Submissions Report

The Environment Protection Authority ("EPA") is writing to Planning Industry and Environment ("DPIE") in reply to the Response to Submission Report titled "Viva Energy Clyde Western Area Remediation Project, Response to Submissions Report, July 2019" ("RtS").

AECOM prepared an Environmental Impact Statement ("EIS") on behalf of Viva Energy Australia Pty Ltd ("the proponent") for the Western Area Remediation Project to support the State Significant Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (*NSW*) (EP&A Act).

The EIS was placed on public exhibition from 7 February 2019 to 6 March 2019.

On 6 March 2019 the EPA sent DPIE a letter with advice and recommendations on the EIS. In that letter the EPA highlighted several matters that the EIS did not address.

A meeting was held between all relevant parties, including EPA, the proponent, AECOM and DPIE on 7 May 2019 to discuss the EIS and the matters raised in the EPA's letter dated 6 March 2019.

The proponent has provided a RtS to reflect the advice and recommendations the EPA identified in the letter dated 6 March 2019 and the discussions held during the meeting on 7 May 2019.

The EPA has reviewed the RtS and takes this opportunity to again raise the concern that the proponent has not adequately addressed issues in the RtS and has failed to provide information for the EPA to adequately provide advice and recommendations.

Whilst some issues have been addressed or will be able to be addressed through recommended conditions of approval, there remains a number concerns with the adequacy of the assessment and the mitigation measures. In particular insufficient information has been provided for the EPA in relation to:

i) natural attenuation and groundwater risks;
ii) plume changes and trends;
iii) the commitment to, and investigation of, alternative remediation technologies to treat the light non-aqueous phase liquid (“LNAPL”) and dissolved phase hydrocarbon impacted groundwater, if the preferred natural attenuation processes are not making substantial progress;
iv) demonstration that the emission estimates used in the air quality assessment are conservative and representative of a reasonable worst-case estimate;
v) best practice air mitigation measures being adequately investigated and committed to;
vi) odour assessment not being adequately robust;
vii) issues associated with the predicted exceedances of the PM_{10} (24 hour) and $PM_{2.5}$ (24 hour) not being adequately addressed; and
viii) a stronger commitment to the use of emission control enclosures for handling, processing, treatment and storage of higher risk materials, including but not necessarily limited to storage of excavated material prior to classification and storage of material feed for the direct thermal desorption plant.

Based on this, the EPA is unable to provide recommended conditions of approval for this project at this stage. The EPA requests that the proponent be required to address the outstanding information and commitments required by the EPA. Please note that the provision of this information and commitments will be integral for any licensing changes at this premises to address the impacts of this project.

Further details of EPA advice and recommendations are in Attachment A.

The EPA notes that robust upfront assessment and mitigation measures are required for large scale remediation projects such as this. The former Shell Terminal, at Hamilton North was being remediated by the proponent. The remediation works included excavation of soils containing diesel and oils. The EPA has received multiple complaints since 9 July 2019 and this odour has been reported across several suburbs.

The EPA has investigated the source of fuel and tar-like odours reported in areas and identified the likely source as the former Shell Terminal. The remediation works have generated odours which are travelling to the east and southeast of the site, with the prevailing wind direction. The proponent has ceased excavations and advised that no further excavation will occur without improved odour management. The EPA asked for a report on recent activities and odour management practices.

The EPA can meet with DPIE at a mutually convenient time to discuss any of our comments. Should you require any further information please contact Christine Mitchell on (02) 9995 5732.

Yours sincerely

Jacqueline Ingham
Unit Head Sydney Industry
<u>Environment Protection Authority</u>

Attachment A

Background

The proponent owns the land associated with the former Clyde Refinery at Rosehill on the Camellia Peninsula and operates the Clyde Terminal on part of the premises under environment protection licence number 570. The premises abuts and drains to the Duck River estuary, a tributary of Parramatta River.

The proponent is proposing to remediate contaminated soils and manage contaminated groundwater in the south-western part of the premises to allow development of the land for other purposes. The remediation works would cover 40 hectares, take approximately three years and involve biological, physical and thermal treatment. The project would focus on remediation and/or management of petroleum hydrocarbon contaminated shallow soil horizons; contaminated soil/sludge in the drainage network and surrounds; light non-aqueous phase liquid on premises; and potential contamination risks to the environment.

The project would involve excavation to a depth of up to four metres and stockpiling of contaminated soils. Dewatered groundwater and leachate would be directed to a wastewater treatment plant for treatment prior to discharge. ‘Undisturbed’ areas of the premises would drain to the existing drainage system.

The EPA has sought technical advice from within the EPA’s specialised technical units and provides the following advice and recommendations, noting that the RtS does not address all advice and recommendations outlined in the EPA’s letter dated 6 May 2019.

Water Management and licensing

Section 45 matters

Section 45 of the *Protection of Environment Operations Act 1997* (“POEO Act”) sets out the matters the EPA must consider when making licensing decisions, including:

- the pollution caused or likely to be caused by the carrying out of the activity or work concerned and the likely impact of that pollution on the environment;
- the practical measures that could be taken to prevent, control, abate or mitigate that pollution, and to protect the environment from harm as a result of that pollution; and
- in relation to an activity or work that causes, is likely to cause or has caused water pollution the environmental values of water affected by the activity or work, and the practical measures that could be taken to restore or maintain those environmental values.

Consistent with s45, the EPA requested additional information in relation to the practical measures that would be implemented to minimise water pollution, the quality of proposed discharges and the potential impacts of discharges on the environmental values of the receiving waterway. The EIS and RtS present a conceptual proposal for the remediation project and include limited detail of the specific water pollution controls that will be implemented and the expected quality of proposed discharges. Further information will be required to inform the section 45 considerations.

The RtS indicates that detailed designs will be prepared for the Remediation Action Plan. This information will be required to inform the discharge impact assessment.

The RtS states that the discharge pollutant concentrations will be “similar to those reported for discharge point EPA No. 1 in Table 9.5 of the EIS”. It is unclear whether the limited suite of pollutants in Table 9.5 represent all those expected to be present at non-trivial levels and whether the data represent typical values or ranges. Notwithstanding these issues, the data appears to indicate that concentrations of most of the pollutants are expected to be much lower than the current discharge limits. A discharge characterisation will be required to inform the discharge impact assessment.

The RtS provides a qualitative discharge impact assessment stating that the discharges are not expected to impact on the receiving waterway. Given that substantial volumes would be discharged, and discharges will contain a range of pollutants, a quantitative discharge impact assessment will be required to inform licensing decisions and ensure water pollution risks are appropriately managed.

The premises is large and there are options available to manage the potential water pollution risks. Therefore, consistent with s45 of the POEO Act, the following condition of approval is recommended to inform licensing considerations and address potential water pollution risks.

Recommended Condition: Prior to commencement of operation, the applicant **must** prepare a Discharge Impact Assessment (DIA). The DIA must:

- be prepared by a suitably experienced and qualified person/s;
- include a characterisation of the quality of discharge in terms of the concentrations and loads of all pollutants present at non-trivial levels including typical and worst-case conditions (this should be based on a risk assessment of the expected sources of pollutants);
- provide details of the practical measures that will be implemented to minimise pollution and mitigate potential impacts;
- assess the impact of discharges on the environmental values of the receiving waterway with reference to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values for slightly to moderately disturbed ecosystems; and
- where relevant, identify practical measures to address identified impacts.

The EPA may review the existing licence discharge criteria, monitoring and other conditions subject to the DIA.

Risks and Mitigations

The EIS and RtS do not provide the information needed to inform licensing decisions and ensure appropriate management of water pollution risks. This information should be included in the DIA.

<u>Contamination Assessment</u>

The EPA has reviewed the RtS in relation to the recommendation in response to contamination assessment and are generally satisfied with the proponent’s responses regarding contaminated land matters.

However, from Section 3.2.4, it is inferred that an auditor will be engaged by the proponent to review the RAP, validation report, GMP, and LTEMP and issue Interim Audit Advice(s) only. Interim audit advice is not considered sufficient for these critical plans for the proposed development, and that relevant site audit statements should be required.

Recommended Condition: The EPA continues to recommend that DPIE must include development consent conditions requiring the proponent to continue use of a site auditor. The EPA accredited site auditor must be engaged by the proponent to issue a Section B site audit statement or statements confirming that the premises can be made suitable for the relevant use/s if the premises is remediated/managed in accordance with the RAP or any plan/reports submitted relevant to contaminated land matters.

<u>Hydrogeological</u>

Outstanding Information: The assessment of the groundwater concentration trends is still reliant on information not provided in the EIS and RtS. The EPA cannot review the statistical analyses of Mann-Kendall plots, with which the proponent is dependent on for justifying an efficient groundwater remediation program, as they were not provided with the project submission.

Removal of hardstand areas

The EPA recommended the proponent provide details to assess the effective management of increased groundwater recharged to the local aquifers as a results of hardstand removal. The area has proven to be susceptible to flooding and unprecedented rainfall events, so the likelihood of large-scale surface inflows is possible.

The information provided by the proponent in the RtS, adequately addresses the EPA's initial concerns of increased groundwater infiltration through exposed excavation voids.

Natural attenuation and existing groundwater impacts

Outstanding Information: The EPA was not able to provide adequate comments in relation to the extent of impacts, noting that information of the report or the test was not presented in the EIS or RAP. To assist in the assessment, it was recommended a new Mandell-Kendall test using be provided.

There has been no opportunity for the EPA to review groundwater trend analyses of the project. The request for trend analyses information was not provided or could not be located in the RtS. A thorough search for groundwater monitoring reports written by ERM on behalf of the proponent could not be located in either the EIS, Conceptual Remediation Action Plan, the RtS or associated appendices. Therefore, the EPA cannot provide any further advice or comments for natural attenuation and existing groundwater impacts.

Clarification on plume changes *and trends*

There were issues of increased surface runoff infiltration occurring during the remediation process with potential for a rise in contaminant concentration, and the possibility of expanded migration.

The RtS identified petroleum hydrocarbon plumes associated with historical activities at the premises are considered stable and with petroleum concentrations decreasing, would continue to have a negligible impact on the surrounding environment. The trend analysis and groundwater gauging works across the premises reported in the ERM (2019) report has not identified significant changes to the groundwater system over the last 2 to 3 years when large hardstand areas have been damaged and/or removed as part of the demolition works.

Outstanding Information: The RtS states the statistical analysis of the groundwater data set will continue to be undertaken using the Mann-Kendall procedure as part of the routine groundwater monitoring program. However, the request for information was not provided, or could be located in the RtS. There have been no opportunities for the EPA to review groundwater trend analyses of the project to date. Therefore, the EPA cannot provide any further advice or comments for plume changes and trends.

Monitoring, management and remediation plans

Recommended Condition: The EPA requested that the proponent develop a Groundwater Monitoring and Management Plan (GMMP), made in consultation with, or approved by, the Department of Industry — Water and the EPA. The GMMP should detail ongoing monitoring practices as remediation progresses, trigger levels and associated response plans for the detection of unprecedented monitoring results, as well as mitigation and management options should harmful impacts be identified or continued.

The Detailed RAP would contain a GMMP that would describe the monitoring of groundwater conditions during the Project. This plan would outline measures to identity, respond and report on groundwater conditions that may have the potential to create unacceptable risk to the Duck River receptors. This GMMP can be provided to both the NSW EPA and Department of Industry — Water for review and comment prior to being finalised. It will also be provided to the NSW EPA accredited Site Auditor for review and approval.

This response is suitable. The EPA will expect copies of the GMMP prior to the remediation project commencing, and continued updates of the GMMP during the project.

Annual Return

Recommended Condition: An annual report on the remediation processes should be provided to allow review of the effectiveness of the program since its proposal, commencement, and its ongoing implementation. It will also allow a review of other methods of remediation should the program options be unsuccessful, or ineffective.

The response is suitable. The EPA will expect copies of the annual report as the project progresses.

Supporting material

Recommended Condition: The EPA recommended the proponent develop and continually update, as part of the project's approval, a Groundwater Monitoring and Management Plan. This should contain:

- thresholds for water quality impacts, considering the baseline and ongoing monitoring data that is collected and trigger action response plans for any unprecedented changes in groundwater quality or standing water levels at the project area;

- assess how applied mitigation measures (reducing infiltration with geotextile barriers) have reduced impacts using observed monitoring;

- ongoing monitoring that verifies anticipated natural attenuation of groundwater; and

- annual reporting requirements of groundwater impacts from the remediation project.

The information provided in the RtS is suitable, The EPA will expect copies of the GMMP prior to the remediation project commencing, and continued updates of the GMMP during the project.

Contaminated Assessment

Outstanding Information: The EPA notes that the EIS report states that the Conceptual RAP was updated to address comments provided by the EPA. The EPA's comment that "*If the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced*", have not been addressed.

To assist in the assessment of this proposal and for the Conceptual RAP to be approved, the EPA recommended the following be noted and undertaken:

- dissolved phase contaminant concentrations in sentinel wells are below the closure concentrations for four consecutive bi-annual sampling events (e.g. two-year period);

- statistical trends for the dissolved phase contaminant concentrations are either reducing or concentrations are stable as demonstrated using a statistically justified method such as Mann-Kendall analysis, and/or logarithmic plots of concentration versus time;

- if the preferred natural attenuation processes are not making substantial progress within a reasonable timeframe one or more alternative remediation technologies to treat the LNAPL and dissolved phase hydrocarbon impacted groundwater will be introduced; and notification to the EPA that compliance with the RAP is complete (or non-compliance if it is not practicable to achieve the closure concentrations for groundwater in a reasonable timeframe).

The proponent has not fully addressed the initial concerns raised by the EPA in response to the EIS. The proponent is confident that their ongoing statistical analyses, (using non-submitted trend assessments - as detailed above), is acceptable for the project, and no other remediation options or alternatives should or need to be explored.

The commitment to having no other alternative options would be more reliable with submitted trend statistics, but in lieu of the results, the response by the proponent does not adequately address the concerns raised by the EPA.

<u>Air Quality</u>

<u>No justification of remediation methods for other (non-petroleum) contaminants</u>

The EPA's Air Advice Unit ("TAA") recommendation during public exhibition*:*

The proponent justifies the proposed remediation methods for other contaminates and details how the decisions would be made regarding which remediation option would be utilised for managing other non-petroleum contamination.

The RtS advises that further premises investigations are yet to be undertaken, and a detailed RAP is still to be developed. Based on the outcomes of these further investigations, should risks from non-hydrocarbon contaminates be identified, the appropriate remediation (and/or management) method would be assessed and discussed in the Detailed RAP. If on-site remediation/management was not feasible, the material would be disposed off-site to an appropriately licensed waste or treatment facility.

TAA provide no further comment on this issue. As the remediation will be subject to oversite from a Site Auditor, TAA understands that final remediation methods would be subject to Site Auditor input and/or approval.

<u>No analysis on the level of contamination within the material proposed for each remediation method or material handling areas</u>

TAA recommendation during public exhibition*: The proponent must provide detailed analysis on the level of contamination for each material input, and each processing area. The proponent should detail how the mitigation measures to be implemented are adequate relevant to the level of contamination for each material and processing area. This includes a justification for the landfarming remediation method is appropriate given the level of contamination.*

The RtS advises that additional analysis of the level of contamination for material input and processing area are not required on the basis that the Air Quality Impact Assessment predicts ground level concentrations below the impact assessment criteria and that assessment of air quality impacts are based on conservative assumptions.

TAA notes that fugitive emission estimates of volatile organic compounds were based on methods contained in *US EPA Estimation of Air Impacts for the Excavation of Contaminated Soil* (USEPA, 1992). USEPA, 1992 provides a number of emission estimation techniques, including methods for estimating Worst-Case Emission Rates. The Air Quality Impact Assessment has not utilised the Worst-Case Emission Rate calculation method contained in USEPA, 1992. The Air Quality Impact Assessment has utilised the Average Short-Term Emission Rate Equations.

Additionally, TAA considers that there are some assumptions made or method application inconsistencies which do not lead to robust, conservative, or potential worst-case emission estimates. Specifically, TAA notes that:

- Emission estimates are based on average contaminant soil concentration data, which will not reflect worst case emissions when areas of higher soil contamination are excavated.

Additionally, emission rates may not reflect excavation of unidentified “hot spots” which may have not been identified given that further site investigations are to be undertaken for compilation of a detailed Remediation Action plan.

- Emission estimates are based on average vapour pressures, which is not appropriate. Use of average vapour pressures underestimates emission for some compounds. Vapour pressures applicable to each compound should have been used.
- Lack of clarity on the use of Total Petroleum Hydrocarbon (TPH) soil concentrations and actual speciation profiles utilised to derive emission rates and identify key pollutants for assessment purposes.
- There are deviations from the application of the US EPA method used. Including:
  - Scaling pore space emissions using soil gas data. The US EPA method does not state that this should be undertaken;
  - The use of a 33 % scaling factor. It is unclear on the appropriateness or specially how this scaling factor has been used. It is noted that US EPA include a 33 % scaling factor, however it is only used upon conducting a mass balance check on pore space emission estimates is conducted.

Additionally, TAA notes that emission estimates using this method:

- are highly dependent on soil concentration inputs, and compound specific vapour pressures;
- are reliant on estimated exposed surfaces for exposed excavation pits, and surface areas for stockpiles upon excavation. The Air Quality Impact Assessment is not clear how the areas have been defined or derived.

Outstanding Information: Given the above factors and considerations, the emission estimates used in the air quality assessment have not been clearly demonstrated to be conservative or represent a reasonable worst-case estimate.

TAA notes that the RtS states that Viva Energy is proposing to re-assess the potential use of enclosures for areas where contaminated solids may be stored prior to remediation once the remedial investigations and detailed design for the Project is finalised.

Given above uncertainties with assessment information, TAA considers that the proponent should provide a stronger upfront commitment to use of enclosures on higher risk material and processes.

Outstanding Information: Issue not adequately addressed. TAA recommends:

- Proponent provide a stronger commitment to the use of emission control enclosures for handling, processing, treatment and storage of higher risk materials, including but not necessarily limited to storage of excavated material prior to classification, storage of material feed for the direct thermal desorption plant;

<u>Mitigation measures for fugitive emission management and control have not been benchmarked against best practice</u>

TAA recommendation during public exhibition: *The proponent must benchmark the proposed emission management measures and controls with best practice process design and emission control. This must include the evaluation of conducting material excavation/handling and storage within emission control enclosure(s).*

<u>a) Fugitive emission management utilising enclosures</u>

As discussed above the RtS asserts that the air quality impact assessment is conservative, and that implementation of enclosures is not warranted based on the predicted impacts contained within the Air Quality Impact Assessment. As above, TAA advises that estimated emissions have not been robustly demonstrated to be conservative.

During TAA's review of the Benchmarking Study: Environmental Control Enclosures[1] report, TAA provided comments and recommendations. Key points noted from that advice are:

- The Benchmarking study had only considered a single scenario of enclosures across the excavation area and had concluded that enclosures across the entire remediation area was not practical. However, the study had not considered alternative options such as implementing enclosures on specific areas where the most impact material is proposed to be stored or processed (for example but not necessarily limited to the DTD material feed storage area)
- Section 7.2.1 of the Approved Methods for Modelling and Assessment of Air Pollutants states" "*principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best-practice process design and/or emission controls. Decisions with respect to achievability will have regard to technical, logistical and financial considerations*
- The Benchmarking study had identified other remediation projects where enclosures of various sizes had been implemented, indicating that enclosures are practical and feasible, for at least some aspects of the proposed project.

Given the above considerations, and the uncertainties with assessment information previously discussed, TAA advises that the proponent should provide a stronger upfront commitment to use of enclosures on higher risk material

Outstanding Information: Issue not adequately addressed. TAA recommends:

- Proponent provide a stronger commitment to the use of emission control enclosures for handling, processing, treatment and storage of higher risk materials, including but not necessarily limited to storage of excavated material prior to classification, storage of material feed for the direct thermal desorption plant;

b) Fugitive emission management for proposed landfarming

During review of the Benchmarking Study: Environmental Control Enclosures[2] report, TAA advised that it is not acceptable to use land farming to remove volatile constituents from soils through evaporation. If volatile constituents are present in the soils being land farmed, VOC emissions should be captured and treated using covers, structural enclosures and abatement techniques. The advice was adopted from the NSW EPAs *Best Practice Note: Landfarming*[3] which states "*Landfarming to remove volatile constituents from soils through evaporation (that is, a physical process only) is not acceptable unless the volatile constituents are captured and treated*"

The RtS advises, spoil with high concentration of total petroleum hydrocarbons (TPH) and/or Benzene, Toluene, Ethylbenzene, Xylene (BTEX) would be remediated through biopiling or the DTD unit which employ a high level of VOC mitigation. The RTS proposes that a decision tree would be developed that would use the soil contamination levels to decide which remediation method is appropriate.

Recommended Condition: TAA recommend that the Remediation Action Plan:

- include a protocol for informing decisions regarding the appropriate remediation method and include methods and commitments that prevent material which contains volatile hydrocarbons from being remediated through landfarming, unless emissions of volatile constituents to air are captured and treated via a method approved in writing by the EPA.

Final design of remediation plant and equipment not specified

[1] *Clyde WARP AQIA Benchmarking Study: Environmental Control Enclosures,* dated 8 March 2019 prepared by AECOM Australia Pty Ltd.

[2] *Clyde WARP AQIA Benchmarking Study: Environmental Control Enclosures,* dated 8 March 2019 prepared by AECOM Australia Pty Ltd.

[3] *Best Practice Note: Landfarming*, published by the NSW Environment Protection, dated April 2014 (reference EPA 2014/0323)

TAA recommendation during public exhibition: *The proponent provide:*

- *A detailed description of the design of the DTD Plant and associated emissions control system;*
- *Supporting evidence detailing the likely performance of emissions control equipment and demonstrating that the stated emission concentrations and rates are as low as practicable and the actual levels that can be achieved, including manufacturer's performance specifications. This is to include the emission control equipment for the DTD Plant and bio piling remediation methods.*

The RtS advises that detailed description of remediation plant and equipment would be provided in the Detailed RAP, including a more detailed description of the design of the DTD unit and associated emission control system, once the specific DTD unit to be used has been selected (subject to the remediation contractor tendering phase). The final EPL conditions can be agreed once the detailed design for the Project is confirmed.

TAA agrees that this issue can be resolved upon completion of detailed design phase, and during the EPL application stage.

<u>The assessment predicts the potential for odour impacts at neighbouring receptors</u>

TAA recommendation during public exhibition: *Proponent should reassess the predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.*

The RtS advises that the odour assessment is conservative and does not propose to conduct further assessment of odour impacts prior to determination. The RtS states that the 95 % control efficiency of the proposed odour suppressant is conservative.

TAA notes that the RtS references Kittle and Schmidt (2004) for consideration of the control efficiency for the odour suppressant. Kittle and Schmidt (2004) is titled *Comparison of Long Duration Foam; Synthetic Tarpaulins, Geotextiles, and soil as subtle D compliant daily, covered materials for sanitary landfills.*

Given the reference supplied appears to refence investigations for landfills, it is not clearly demonstrated that the proposed suppressant will achieve a similar level of performance for hydrocarbon contaminated soils. No robust supporting test data, analytical methods or additional detail has been provided to demonstrate the appropriateness of the assumed 95% control efficiency and the ability to achieve the assumed level of control throughout the life of the project.

The assessment outcomes are based on the theoretical 95 % control efficiency being achieved via a management measure. The effectiveness of a management measure is highly dependent on the rigor and diligence of implementation. There is potential for significant difference between the assumed theoretical control efficiency and the actual control efficiency that would be achieved in practice for the project.

Regardless of achievability of assumed control efficiency via implementation of a management measure, and in the interest of resolving the issues associated with control of air emissions from the project, TAA considers that the modelled odour impacts could be mitigated through the proponent providing a stronger commitment to the use of enclosures for high risk materials, areas and processes.

Outstanding Information: Proponent provide a stronger commitment to the use of emission control enclosures for handling, processing, treatment and storage of higher risk materials, including but not necessarily limited to storage of excavated material prior to classification, storage of material feed for the direct thermal desorption plant;

<u>The assessment predicts exceedances of the PM_{10} (24 hour) and $PM_{2.5}$ (24 hour) impact assessment criteria.</u>

TAA recommendation during public exhibition: *The proponent:*

- *Evaluate reductions achieved with identified mitigation measures for 24-hour average PM_{10} and $PM_{2.5}$. Should exceedances still be predicted additional mitigation measures including engineering controls should be applied*
- *Evaluate predicted impacts associated with the implementation of measures identified through benchmarking the proposed emission management measures and controls with best practice process design and emission control.*

Section 6.2.1 of the AQIA predicts:

- Exceedances of the PM_{10} (24 hour) impact assessment criteria;
  - 20 additional exceedances of the impact assessment criteria are predicted
  - Predicted incremental ground level concentration of 44 ug/m^3, which is ~ 88% of the impact assessment criteria
- Exceedances of the $PM_{2.5}$ (24 hour) impact assessment criteria;
  - 3 additional exceedances of the impact assessment criteria are predicted
  - Predicted incremental ground level concentration of 4.4 ug/m^3, which is ~ 18 % of the impact assessment criteria

The AQIA stated that particulate matter impacts could be reduced through an enclosure on the screen and a particle filter on the mobile crushing plant associated with the DTD and Stabilisation operations. The proponent has evaluated potential reductions in annual average PM_{10} and $PM_{2.5}$ impacts, based on the implementation of these controls. No evaluation for daily PM_{10} and $PM_{2.5}$ has been included.

The RtS advises that Viva Energy is proposing to re-assess the potential use of enclosures for areas where contaminated soils may be stored prior to remediation once the remedial investigations and detailed design for the Project is finalised.

Outstanding Information: Issue not adequality addressed. The proponent re-evaluates predicted 24-hour PM_{10} and $PM_{2.5}$ impacts, based on implementation of the proposed enclosure on the screen and particle filter for the mobile crushing.

CITY OF
PARRAMATTA

Planning Services
Department of Planning and Environment
GPO Box 39 Sydney NSW 2001
Attention: Director – Industry Assessments

Our Ref	NCA/2/2019
Contact	Kate Lafferty
Telephone	9806 5393
Email	klafferty@cityofparramatta.nsw.gov.au

2 August 2019

Dear Sir,

COUNCIL SUBMISSION – RESPONSE TO SUBMISSIONS
SSD 9302 – 9 DEVON STREET – CAMELLIA
VIVA ENERGY CLYDE WESTERN AREA REMEDIATION PROJECT

I refer to the above application seeking approval for the remediation of land and the notification of the proponent's Response to Submissions.

Council officers have reviewed the information submitted and wish to advise that no objections are raised to the proposal (unless developer contributions are not to be imposed). We request however that the following comments are taken into consideration in the assessment of the application.

ENVIRONMENTAL HEALTH COMPLIANCE

The response is acceptable. No further issues raised.

NATURAL RESOURCES

The response is acceptable. No further issues raised.

Council acknowledges the proponent's agreement with these comments and the imposition of the following condition:

<u>Before Commencement of Works</u>
The Applicant shall prepare and implement a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must:
(a) be prepared in consultation with Council;
(b) be approved by the Secretary prior to the commencement of works;

(c) *include measures to be taken to minimise impacts on the Duck River riparian corridor, Swamp Oak Floodplain Forest, and the Green and Golden Bell Frog population consistent with the recommendations in the Biodiversity Development Assessment Report (Appendix I) and the Mitigation and Management Measures (Chapter 15) of the EIS.*

Reason: *To minimise impacts upon the Duck River riparian zone.*

TRAFFIC MATTERS

The response is acceptable. No further issues raised.

Council acknowledges the proponent's agreement with these comments and the imposition of the following condition:

During Construction or Works:

Oversize vehicles using local roads require Council's approval. The applicant is required to submit an application for an Oversize Vehicle Access Permit through Council's Traffic and Transport Services, prior to driving through local roads within the City of Parramatta LGA.

Reason: *To ensure maintenance of Council's assets.*

HERITAGE

No issues raised.

STORMWATER AND CATCHMENT MANAGEMENT

No issues raised.

TREE MANAGEMENT AND LANDSCAPING

No issues raised.

DEVELOPER CONTRIBUTIONS

Developer contributions are required to be paid on this proposal. It is our interpretation that both Clause 25J of the regulations and the City of Parramatta S94A plan clearly state remediation is included in the cost of works used to calculate a section 7.12 levy.

The proponent has put forward an argument that there is no nexus with the proposed development and the payment of contributions. As the Department will be aware, developer contributions under Section 7.12 of the EPA Act are fixed contributions and no nexus needs to be demonstrated as is done with Section 7.11 contributions.

Council's Parramatta Section 94A Development Contributions Plan (Amendment No. 5) authorises the imposition of a condition on certain development consents requiring the

CITY OF PARRAMATTA

payment of a development contribution pursuant to the EPA Act. Clause 3.6 of this Plan lists exemptions to development contributions, which does not include the works proposed within the application. In addition Clause 3.7 does not enable discounted contributions to be paid on the grounds this would potentially compromise Council's ability to provide the required infrastructure outlined in the Plan.

Clause 3.10 of the Plan explains how contributions are calculated as follows:

Development contribution = A x B
Where

A *If the cost of works is: ≤ $100,000 is 0 (zero)*
If the cost of works is > $100,001 but ≤ $200,000 is 0.5% (half a percent)
If the cost of works is >$200,001 is 1% (one percent)

B *is the cost of the development*

The cost of the development is to be determined in accordance with clause 25J of the Regulation.

In the absence of errors, the development contribution amount will be calculated based on the cost of works information relied upon at the time of determination.

In order to enable the fair and equitable implementation of the Plan and the provision of required infrastructure within the Plan, it is therefore requested that the Department:

(a) Forward a copy of the quantity surveyors report for the cost of remediation to Council for review; and
(b) Impose a condition requiring the payment of developer contributions in accordance with the Parramatta Section 94A Development Contributions Plan (Amendment No. 5). In this regard, the cost should be calculated on a known estimated cost of works before the determination is made, not at a post determination date.

An appropriate condition (and Council standard condition) would be as follows:

A monetary contribution comprising $[enter dollar value] is payable to City of Parramatta Council in accordance with Section 7.12 of the Environmental Planning and Assessment Act 1979 and the Parramatta Section 94A Development Contributions Plan (Amendment No. 5). Payment must be by EFTPOS, bank cheque or credit card only.

The contribution is to be paid to Council prior to the issue of a construction certificate/works commencing [delete whichever is not applicable – eg. if a construction certificate is not required].

The contribution levy is subject to indexation on a quarterly basis in accordance with movements in the Consumer Price Index (All Groups Index) for Sydney issued by the Australian Statistician. At the time of payment, the contribution levy may have been the subject of indexation.

Parramatta Section 94A Development Contributions Plan (Amendment No. 5) can be viewed on Council's website at: https://www.cityofparramatta.nsw.gov.au/business-development/planning/development-contributions

Reason: *To comply with legislative requirements and to provide for the increased demand for public amenities and services resulting from the development.*

Please note that **Council objects to the proposal** only in the event that the payment of developer contributions are not imposed as per the Parramatta Section 94A Development Contributions Plan (Amendment No. 5).

Council appreciates the opportunity to comment on the above application and looks forward to further consultation on this matter.

Should you wish to discuss the above matter, please contact Kate Lafferty, Executive Planner on 9806 5393.

Yours sincerely

Myfanwy McNally

Myfanwy McNally
Manager
City Significant Development

Planning, Industry & Environment

Ms Katelyn Symington

Planning & Assessment Group

Department of Planning, Industry & Environment

GPO Box 39

SYDNEY NSW 2001

Our ref: DOC19/588195

Your ref: SSD-9302

22 July 2019

Attention: Emma Barnet

Dear Ms Symington

Subject: EES comments on Response to Submissions and Biodiversity Development and Assessment Report – Viva Energy Clyde Western Area Remediation Project - SSD-9302

Thank you for your email of 4 July 2019 requesting comments on the Response to Submissions (RTS) for the above State Significant Development (SSD). Please note, the former Office of Environment and Heritage (OEH) responsibilities and functions have been transferred to the Environment, Energy and Science Group (EES) in the Department.

EES has reviewed the RTS and provides the following recommendations and comments.

The RTS refers to the Biodiversity Development and Assessment Report (BDAR) and confirms it was provided in Appendix I of the Environmental Impact Statement (EIS) for this SSD (see Section 8.1, page 8.1). There appears to have previously been some confusion as to whether a BDAR or BDAR waiver is required.

EES has now reviewed the BDAR and considers it is adequate.

EES support the preparation of a Biodiversity Management Plan (BMP), including mitigation measures for the Green and Golden Bell Frog as listed in Table 12-1 (Reference BD2) of the RTS (see pages 12.14 -12.15 of RTS). Other measures as outlined in the BDAR are also supported, namely:

- implementation of the Plan of Management - Restoration of Green and Golden Bell Frog Habitat Clyde (Biosphere 2013)
- inclusion of measures in the BMP for Green and Golden Bell Frogs, as outlined in section 5.3.4 of the BDAR
- retention of areas of exotic grassland following completion of the Project, to provide shelter and forage opportunities for Green and Golden Bell Frogs, as described in section 5.3.2
- inclusion of measures in the BMP to reduce any biodiversity impacts in relation to fencing, stockpiles, mulching, dust, stormwater, sediment and erosion control and acid sulphate soils, as described in section 5.2
- preparation of a long-term Environmental Management Plan (EMP) which details the environmental controls, mitigation measures, contingency plans and monitoring programs for the Project Area, as described in section 5.2

Planning, Industry & Environment

- inclusion of mitigation measures in the Long-term EMP to manage the incidental occurrence of Green and Golden Bell Frogs in the project area

If the development is approved, it is recommended conditions of consent are included which require the BMP and the long-term EMP to be prepared and implemented. The conditions of consent should outline the time frames in which the BMP and long-term EMP must be prepared and implemented by.

Should you have any queries regarding this matter, please contact Janne Grose on 8837 6017 or janne.grose@environment.nsw.gov.au

Yours sincerely,

S. Harrison 22/07/19

Susan Harrison

Senior Team Leader Planning Greater Sydney

Energy, Climate Change & Sustainability Division

Appendix C

Air Quality Benchmarking Study

AECOM Australia Pty Ltd
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8 March 2019

Anthony Savage
Manager Technical Advice - Air

NSW Environment Protection Authority

Dear Anthony,

The following information provides a response to EPA's request on 21 February to provide a Benchmarking Study for the Viva Energy Clyde Western Area Remediation Project Air Quality Impact Assessment.

Clyde WARP AQIA Benchmarking Study: Environmental Control Enclosures

1.0 Introduction

The following Air Quality Mitigation Benchmarking study for the Viva Energy Clyde Western Area Remediation Project (the Project) has been undertaken by AECOM Australia Pty Ltd (AECOM) in response to a request from the NSW Environment Protection Authority (NSW EPA) on 21 February 2019. NSW EPA's request was to:

"…benchmark the proposed management and control measures against best practice process design and emission control. As a minimum, the practicability of undertaking contaminated material handling, storage and processing within an emission control enclosure should be evaluated – noting that this has been done for other remediation projects in NSW. If the proponent finds it not feasible or practicable to undertake proposed activities inside an emission control enclosure, robust justification should be provided, including verification that equivalent best practice environmental performance will be achieved."

The aim of this benchmarking study is to:

- Provide a brief overview of other remediation projects within the Sydney Region that have been partially undertaken within a TECE;
- Compare potential impacts of the Project after applying proposed air quality mitigation measures in the *Viva Clyde Western Area Remediation Project Air Quality Impact Assessment* (AQIA) (AECOM 2018) against potential impacts associated with the Project under a temporary environmental control enclosure (TECE).
- Evaluate the feasibility of undertaking contaminated material handling, storage and processing within a TECE based on potential environmental benefits, costs and practicality.

A qualitative comparison of the proposed mitigation strategies and the alternative TECE have been undertaken based on the following scope:

- A description of the proposed air quality mitigation measures as described in the AQIA (AECOM 2018);
- A description of a TECE, including similar applications within the Sydney Region;
- A qualitative comparison of the proposed air quality mitigation measures for the Project and the application of an environmental remediation enclosure. This comparison includes benchmarking of:
    - Potential air quality impacts including predicted ground level concentrations (GLCs), potential health risks and greenhouse gas (GHG) emissions;
    - Potential additional costs associated with construction, operation and decommissioning of a TECE; and
    - Practicality of implementing a TECE for the Project;
- Conclusion and recommendations.

AECOM Imagine it. Delivered.

2.0 Proposed Mitigation Measures

Table 1 provides a summary of proposed air quality mitigation measures and associated control efficiencies currently recommended for the Project based on Section 7 of the AQIA (2018).

Table 1 Proposed Air Quality Mitigation & Management Measures in AQIA (AECOM 2018)

Element	Source	Control Method	Control Efficiency (%)
Wind erosion from exposed areas and stockpiles (1)	Excavation areas	Water sprays	50
	Pipeline trenches	Water sprays	50
	Land farming areas	Water sprays	50
	Exposed biopiles	Water sprays	50
	Active biopiles	Covered	90
	Land forming areas	Water sprays with chemicals	90
	PTA stockpile	Water sprays with chemicals	75
		Three sided enclosure	90
	Un-validated treated stockpile area	Water sprays with chemicals	90
	Treated stockpile area	Water sprays with chemicals	90
	Crushed concrete stockpile	Water sprays	50
Dust emissions from DTD plant equipment	Screening contaminated material	Enclosing the screening area and water sprays	90
	Crushing contaminated material	Particulate filter installed on mobile crushing plant.	99
Wheel Generated Dust from Unpaved Roads(1)	All internal haul roads	Level 2 watering (>2 litres/m^2/h)	75
Odour and VOC emissions from Exposed Areas (2)	Preliminary treatment area stockpile	Odour and VOC suppressant	≥95
	Exposed biopiles	Odour and VOC suppressant	≥95
Combustion Emissions From Diesel Engines (3)	Mobile Equipment	Compliant with US EPA Tier 3 and EU Stage III A Non-road Diesel Engine Emission Standards	>20 for CO >50 for PM_{10} & NO_x
	Stationary Equipment	Compliant with US EPA Tier 3 and EU Stage III A Non-road Diesel Engine Emission Standards	>20 for CO >50 for PM & NOx
Stack Emissions	Biopile Ventilation Stacks	Air Filters/Scrubbers	Total VOC stack concentration limit of 10ppm
	DTD Stack	Proposed stack emission limits /scrubbers	>99%

Note:

1. Control efficiencies for dust suppression have been estimated from the NPI Mining Emissions Estimation Technique Manual and Sierra Research (2003)/California Air Resources Board (CARB).
2. Control efficiency for Odour and VOC suppressant (e.g. RUSMAR) has been estimated at 99-100% (Kittle and Schmidt 2004), however the lower value of 95% has been adopted for estimation of emission rates in the AQIA to maintain a level of conservatism.
3. Control efficiencies for diesel engines based on a comparison of Stage I and Stage III EU Stage III A Non-road Diesel Engine Emission Standards. Control efficiency for NOx has been based on HC + NOx emission standard assuming 100% NO_x.

In addition to the mitigation measures presented in **Table 1**, Section 7 of the AQIA also stated that an Air Quality Management Plan (AQMP) would be developed for the Project and would include the following additional measures to minimise potential air quality impacts:

- Reactive management plan[1] including:
  - Continuous pollutant monitoring system during Stage 2 to 4 for PM_{10} and $PM_{2.5}$. The monitoring system would be used to record hourly particulate concentrations 24 hours per day to provide an early warning of potential criteria exceedances which may enable works to be scaled back or stopped potentially preventing an exceedance of a criteria;
  - An odour complaints management system and actions to be undertaken to manage potential nuisance odour impacts including:
    - Spraying odour and VOC suppressant with 95% control efficiency or higher on exposed surface areas and/or stockpiles;
    - Covering stockpiles; and
    - Limiting excavation works and materials handling of highly contaminated fill while upwind of residential sensitive receptors.

Stack emissions testing of the DTD stack and biopile aeration system would be undertaken to validate the measured air pollutant concentrations against impacts predicted in the AQIA. Testing would help ensure the ongoing performance of ventilation systems.

3.0 Alternative Mitigation

As requested by the EPA, AECOM has also considered alternative measures to mitigate potential adverse air quality impacts from the Project. Alternate measures could include undertaking excavation activities and selected remediation works under temporary environmental control enclosures (TECEs) possibly in conjunction with an emission control system (ECS).

If a TECE was employed, it would generally consist of a metal framework covered in a highly durable lightweight fabric that has the overall appearance of a tent. Pile driving would also be required to establish a deep foundation and support the TECE structure during excavation works which would be expected to extend below ground level. The TECE would operate under negative pressure containing emissions associated with excavation and remediation activities including particulates, combustion emissions, VOCs and odours within the tent. All air drawn out of the enclosure would pass through the ECS where the air would be scrubbed and emitted via a stack with a pollutant control efficiency of approximately 99% or higher.

While a TECE appears to be a good solution from the perspective of pollution mitigation, there are a number of additional factors which need to be considered which would present significant, if not insurmountable challenges to the Project from a practicality and cost standpoint. These issues have been discussed in the following paragraphs. In addition, given that the previously proposed mitigation measures are likely to avoid any significant air quality impacts, and the Project Area is largely surrounded by industrial land uses, the use of TECEs is unwarranted.

The TECE for the excavation of contaminated materials would need to be either relocated or rebuilt around the Project Area (area to be remediated) in multiple stages as excavation progresses. Each TECE establishment stage would involve the construction of the TECE to enclose the active excavation zone, then dismantling of the TECE and subsequent reconstruction over the next excavation zone. At the completion of the Project, the TECE would then be dismantled and taken offsite. The relocation of each TECE would take a significant period of time which would further extend the time required to remediate the Project Area and the associated cost of the overall project.

[1] Please note that whilst this plan is called a 'Reactive management plan' it is actually a proactive measure for managing potential air quality exceedances as controls or stop work provisions are put in place before an exceedance occurs.

3.1 Other TECE Remediation Projects

A number of smaller remediation projects, namely for former gasworks sites within the Sydney Region have been identified as examples which have utilised a TECE for a portion of the site. These example sites include the following:

- Macdonaldtown Gasworks Remediation (2014-2016);
- Platypus Remediation Project.(2010-2016); and
- Barangaroo Block4 & Block 5 Remediation Project (2017-2019).

Figure 1 shows the TECEs for each of the remediation projects and a description of each of these projects has been summarised in **Table 2**. The aspects of each project described in **Table 2** have been used in the benchmarking assessment in **Section 4.0**.

Macdonaldtown **Platypus** **Barangaroo**

Figure 1 TECEs for Macdonaldtown, Platypus and Barangaroo Block 4 & Block 5 Remediation Projects

Table 2 provides a comparison of similar remediation projects in the Sydney Region using TECEs. It can be seen from **Table 2** that other similar projects have been largely based on former gas works sites but have similar pollutants of interest when compared to the Project. It should be noted that some of the former gas works remediation projects also had additionally high concentrations of contaminants such as heavy metals and PAHs.

Other projects, as outlined in **Table 2**, that utilised a TECE are considerably smaller in area than the Project Area (40 ha), with only a portion of the site containing the highest level of contaminated material excavated under a TECE. Approximate required excavation depths were also greater than estimated at the Project Area (where excavation depths are estimated at around 4 m). Furthermore residential receptors were located adjacent to the boundary of the remediation site for all projects listed in **Table 2**, as opposed to the Project Area which is located within an industrial setting.

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Table 2 Comparison of Similar Remediation Projects in the Sydney Region Using Temporary Environmental Containment Enclosures

Project Name	Project Scale	TECE Footprint	Site History & Contaminants of Concern	Remediation Process	Sensitive Receptors	Project Cost
Macdonaldtown Gasworks Remediation (2014-2016) *Erskineville, NSW*	• **Area:** 7,732m^2 • **Mass/Volume**: 36,700 t (23,000m^3) of hazardous, restricted, asbestos and general wastes were removed from the site	• **Area**: 2,600m^2. • **Portion of site**: Covered middle of the site where the most contaminated materials were excavated. • **Depth of Contamination:** 9m	• Former Macdonaldtown Gasworks • Tar impacted soils and tar-impacted soil and tarry waste • Particulates, PAHs, TPH, BTEX, non-friable, bonded asbestos & odour	• Excavation and offsite disposal • Offsite treatment of most contaminated materials on the site using cement stabilisation prior to disposal	• 27 residential properties on western boundary of site • Bound by Macdonald town Stabling Yard and the railway tracks of the Illawarra Corridor on north, eastern and southern borders	• Unknown
Platypus Remediation Project. (2010-2016) *North Sydney, NSW*	• **Mass/Volume**:30,000 t of gasworks-related contaminated fill and bedrock material excavated and stabilised	• **Area**: 3,800m^2 • **Portion of site**: Northern Portion of the site	• Site was significantly contaminated from its earlier use as a gasworks and defence base • Tar and tar containing materials • Particulates, PAHs, TPH, BTEX, odour, minor quantities of heavy metals such as chromium, lead, zinc, copper and mercury • Other minor contaminants include phenols, cyanides, sulphates and ammonia.	• 30,000t material excavated fill stabilised onsite with cement and carbon using a track mounted soil recycler. • 3000 t of stabilised tar material removed from site by barge the remaining 27 000t used for backfilling	• Residential properties border three of the site boundaries • Multi storey residential apartments on south western boundary • Bound by Neutral Bay on north eastern boundary.	• $46 million Remediation Project
Barangaroo Block4 & Block 5 Remediation Project (2017-2019) *Barangaroo, NSW*	• **Mass/Volume**: 150,000 t of contaminated fill material	• **Area**: 17,500 m^2 • **Portion of site**: Block4 & 5 • **Depth of contamination:** 12-14m	• Former Millers Gasworks • Particulates, PAHs, TPH, BTEX, heavy metals & odour	• Excavation and offsite disposal	• High density residential and commercial properties on eastern and southern boundary of site.	• $400 million Remediation Project • Remediation cost of Block 4 & 5 $50-100 Million

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4.0 Comparison of Mitigation Options

A qualitative benchmarking analysis comparing the proposed mitigation measures for the Project, as presented in the AQIA (AECOM, 2018), and alternative option of the implementation of a TECE for the Project is provided in **Table 3** based on the following standards of measure:

- air quality environmental impacts;
- cost differentiations; and
- practicality of mitigation strategy implementation.

Table 3 Comparison of Mitigation Options

Benchmark	Sub-Aspect	Proposed Mitigation	TECE
Environment	Pollutant GLCs	• Potential sources of air emissions are largely ground based resulting in higher emissions immediately adjacent to the Project Area. • Predicted GLCs for TSP, CO, NO_2, and VOCs comply with EPA ambient air quality criterion. • Some predicted cumulative exceedances of PM_{10} and $PM_{2.5}$ 24 hour criteria at industrial receptors. (prior to additional DTD Plant equipment being implemented). • Annual average background concentration for $PM_{2.5}$ is already above the 8 µg/m^3 criteria. The maximum predicted potential incremental impacts for the Project assuming adoption of all mitigation measures proposed in **Table 3** are 0.55 µg/m^3 which is approximately 7% of the EPA criterion of 8 µg/m^3. • Some predicted odour exceedances of 2 OU criterion at industrial receptors at the Project Area boundary. • Predicted odour exceedances of the 2 OU at two residential receptors (Max 2.6 OU) within the Silverwater Industrial Estate. • The third highest 99th percentile concentration at a residential receiver was recorded at 1.4 OU which is below the EPA criterion of 2 OU. • Predicted ground level concentrations are highly conservative based on a number of conservative assumptions.	• Reduces the number of ground based sources and increases dispersion of pollutants reducing GLCs at nearby receptors. • TECE would contain emissions associated with excavation and remediation activities including particulates, combustion emissions, VOCs and odours within the tent. • ECS would further reduce potential offsite air quality impacts with a control efficiency of approximately 95-99.9% for activities operating under TECE. • Application of TECE may be limited to certain site activities such as excavation as conducting some remediation activities (e.g biopiling and landfarming) would be impractical. This would limit the effectiveness of the TECE to reduce potential annual $PM_{2.5}$ impacts. Based on the existing emissions inventory excavation activities contribute approximately 22% of $PM_{2.5}$ emissions from the project. • Land forming activities and DTD operations which would not be included in the TECE make up 58% of annual $PM_{2.5}$ emissions onsite. • Similarly potential odour impacts associated with onsite remedial activities outside the TECE would not be affected by this mitigation strategy.
	Health Impacts	Due to high existing background concentrations of and the non-threshold nature of $PM_{2.5}$ it is considered more appropriate to assess the change in $PM_{2.5}$ concentrations in terms of the extent of the public health burden than comparing cumulative concentrations against the EPA annual average criteria. Based on the SA Department of Planning Transport and Infrastructure Air Quality Screening Tool an increased annual average $PM_{2.5}$ concentration of 1.8 µg/m^3 equates to a risk of mortality of approximately 1 in 10,000.	
		• Based on a conservative maximum potential $PM_{2.5}$ annual average	• Assuming potential $PM_{2.5}$ annual average increase would be less than

Benchmark	Sub-Aspect	Proposed Mitigation	TECE
		increase of 0.55 µg/m^3 the risk of mortality is less than 1 in 10,000.	0.55 µg/m^3 the risk of mortality is less than 1 in 10,000.
	GHG Impacts	• Lower total GHG emission footprint from the Project with lower Scope 1, Scope 2 and Scope 3 GHG emissions than TECE.	• Higher Scope 1 GHG emissions associated with transport of materials, construction and decommissioning of TECE. • Higher Scope 2 GHG emissions associated with TECE, due to increased energy usage. Mains power would be required for operation of the ECS. • Higher Scope 3 GHG emissions from embodied energy in materials required for construction of TECE.
Costs	Establishment	• Establishment fees expected to be significantly lower than TECE due to absence of additional costs associated with additional workforce, materials and pile driving and construction activities.	• Significant additional establishment costs associated with additional workforce, materials and pile driving and construction activities. • Additional costs for establishment of TECE and associated ECS in the order of millions. • Remediation costs for similar smaller scale projects in **Table 2** and **Attachment A** indicate significant costs associated with the construction and operation of the TECE.
	Operation	• Operational costs expected to be much lower than operation of the TECE due lower electricity expenditure and monitoring requirements. • Continuous progressive movement of excavation areas would be in line with existing estimates.	• Significant additional operational and maintenance costs associated with operation of the TECE and associated ECS; including additional electricity expenditure and OHS and stack monitoring requirements. • Additional operational costs would be incurred to construct, dismantle the TECE over each excavation stage, which given the size of the Project Area (approximately 40 ha) would need to occur many times over, with potential effects on project schedule, i.e. delays, and related costs.
	Decommission	• Shorter decommissioning period resulting in lower costs.	• Longer decommissioning period due to deconstruction of the TECE and ECS; resulting in higher costs. • TECE and ECS may be reused or resold for other remediation projects to offset some costs.
	Total	• Total cost of Project expected to be in line with existing estimates. • Estimated Capital Investment Value (CIV) of $31 Million.	• Total cost of Project expected to be significantly higher and likely to increase by many tens of millions of dollars due to construction, operation and decommissioning of TECE and ECS and increased Project timeline. • An average resale cost of $162/$m^2$ second hand TECEs in Attachment B

Benchmark	Sub-Aspect	Proposed Mitigation	TECE
			would result in a cost of $6.5 million to cover 10% of the Project Area. The estimate is exclusive of : - installation or labour fees; - foundation works such as piling, - installation and operation of ECSs - occupational health and safety monitoring requirements. • Based on above estimate a TECE covering 10% of the project area would inflate CIV by at least 20% before taking into account additional installation, infrastructure & equipment, labour and monitoring fees.
Practicality	Physical Constraints	• Multiple alternative remediation technologies (5) to be employed onsite. The existing open air configuration provides greater flexibility for various activities and manoeuvrability for mobile equipment. • Some remedial activities already covered such as biopiles. Others such as land farming require open air. • Contamination is spread over a large area (40ha) compared to other Sydney remediation projects utilising TECEs making the proposed mitigation options more practical. For example the Barangaroo Block 4&5 Remediation area is approximately is approximately 1.7 ha or 4% of the Project Area. • Contamination depth is approximately 2-4 m; making progressive open air excavation more efficient.	• Potential limitations on implementing environmental remediation enclosure for some site activities including biopiling, land farming. • TECE would likely only be applied to excavation activities which make up approximately 22% of annual average $PM_{2.5}$ emissions. • Other TECE applications in the Sydney Region have been used for excavation works only (prior to off-site disposal) or excavation and ex-situ stabilisation (**Table 2**. • Other examples (**Attachment A**) indicate TECE has been used for a portion of the site containing the most contaminated materials (**Table 2**). • Contamination is spread over a large area (40 ha) compared to other Sydney remediation projects utilising TECEs and would require significantly larger environmental enclosures. For example the Barangaroo Block 4&5 Remediation area is approximately is approximately 1.7h ha (**Table 2**) or 4% of the Project Area. • Project Area contamination depth (2-4 m) is relatively shallow compared to other TECE projects (**Table 2**) therefore enclosure relocation would need to occur more frequently with consequent effects on project timeline and costs.
	Workforce	• Smaller workforce likely required for existing proposed measures	• Potential additional workforce required to account for establishment, relocation and decommissioning of TECE resulting in: - Additional cost implications for the Project - Additional traffic on local roads

Benchmark	Sub-Aspect	Proposed Mitigation	TECE
			- Additional local employment opportunities
	Timeframe	• Shorter project timeline than TECE implementation; particularly for site establishment and decommissioning.	• Longer project timeline; with additional time required for site establishment (including pile driving and construction); relocation and decommissioning of TECE. • TECE would need to be located around the site in multiple stages as excavation progresses. Given the size of the remediation area (40 ha) considerable time would be required construct , dismantle the TECE over each excavation stage
	Proximity to Residential Receptors	• The Site is largely bound by other industrial land, with the exception to the southern boarder which is bound by Duck River. • Nearest sensitive receptors are industrial receptors with the exception of transient recreational receptors within these areas. Rosehill Gardens Racecourse and Sydney Speedway approximately 25 m and 300 m to the west respectively. • The nearest residential receptors are located approximately 360 m to the south at Silverwater, 800 m to the east at Rosehill and 1 km to the northeast of the Project Area across the Parramatta River at Rydalmere. • Receiving environment is likely to have a lower standard of amenity due to existing industrial activities and roads in the surrounding the Project Area.	• Previous applications of TECE for other remediation projects in the Sydney Region have largely been required due to the proximity of high density residential receptors on the boundary of the remediation site (refer to **Table 2**). In these cases a high standard of amenity would largely be expected surrounding the immediate project area thus TECE is deemed appropriate.
	Onsite safety	• Natural ventilation of excavation sites would result in lower concentrations of air pollutants in immediate work space when compared to working under a TECE.	• Extensive occupational health and safety monitoring would be required during operation of the TECE. • Additional PPE including full face respirators required for workers in TECE due to high concentration of contaminants. • Potential safety risks associated with TECE relocation and decommissioning during high wind speed events.

5.0 Conclusion and Recommendations

The benchmarking assessment shows that proposed air quality mitigation measures for the Project ensure that predicted pollutant concentrations comply with EPA criteria (including air toxics), with exception to odour and predicted cumulative exceedances of PM_{10} and $PM_{2.5}$ 24 hour criteria at industrial receptors. Application of a TECE would provide further mitigation when applied to certain activities onsite but its benefit as a control measure presents some significant limitations. To benchmark the currently proposed mitigation measures against the implementation of a TECE, additional standards of measure must be taken into account including wider health and environmental implications as well as economic and practical implications. These include:

- Due to high existing background concentrations of and the non-threshold nature of $PM_{2.5}$, it is considered to be more appropriate to assess the change in $PM_{2.5}$ concentrations in terms of the extent of the public health burden than comparing cumulative concentrations against the EPA annual average criteria. Given that both with and without TECE potential health risks would be less than 1:10000, the benefits are considered similar.
- Implementation of a TECE would result in higher Scope 1, Scope 2 and Scope 3 GHG emissions from the Project;
- Total costs associated with establishment, operation and decommissioning of TECE is likely to be significantly higher than the current proposed mitigation measures (in the order of tens of millions). Average resale costs of second hand TECEs indicate costs of approximately $6.5 million to cover just 10% of the Project Area; exclusive of installation and labour fees, foundation works such as piling, installation and operation of ECSs, occupational health and safety monitoring, and relocation requirements;
- There are practical limitations associated with implementation of a TECE including:
    - Potential limitations on implementing the enclosure over some activities reducing overall benefit as a control measure. Other TECE applications in the Sydney Region have been used for excavation works only (prior to off-site disposal) or excavation and ex-situ stabilisation. Excavation contributes only approximately 22 % of annual average $PM_{2.5}$ for the Clyde Terminal Western Area Remediation Project.
    - Receiving environment is likely to have a lower standard of amenity due to existing industrial activities in the surrounding the Project Area. Other remediation projects requiring TECEs in the Sydney Region have been immediately adjacent to residential receptors where a higher standard of amenity would be expected.
    - Contamination is spread over a large area (40 ha) compared to other Sydney remediation projects utilising TECEs and would require significantly larger (>95%) enclosures.
    - Contamination depth (2-4 m) within the Project Area is relatively shallow compared to other TECE projects (**Attachment A**) therefore enclosure relocation would need to reoccur more frequently with subsequent implications on project schedule and costs.
    - Longer project timeline, with additional time required for site establishment (including pile driving and construction), relocation and decommissioning of TECE. TECE would need to be located across the Project Area in multiple stages as excavation progresses. Given the size of the Project Area (40 ha) considerable time would be required construct, dismantle the TECE over each excavation stage.
    - Additional safety concerns introduced onsite. Extensive OHS monitoring would be required during operation of the TECE to ensure workers were not impacted by highly concentrated levels of pollutants concentrated within the enclosure.

In short, the environmental implications as well as economic and practical implications of the TECE above confirm the conclusion that the addition of a TECE would result in a Project that largely already complies with EPA criteria moving to a mitigation option that would simply further extend the compliance at a significant cost, time and practicality penalty. Therefore the application of TECE is not considered a viable, reasonable or feasible mitigation option for the Project, particularly given the efficacy of the air quality mitigation and management options proposed in the AQIA (AECOM,2018).

Yours faithfully

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Attachment A

Limited publically available data exists for the cost of commissioning, operation and decommissioning of TECEs. **Table 4** below shows resale costs of second hand shelters which may be loosely indicative from BigTop Fabric Structures which provide environmental remediation containment shelters. It should be noted that costs for an original TECE would be higher and the cost below do not include installation or labour fees, foundation works such as piling, and installation and operation of ECSs and extensive occupational health and safety monitoring requirements and thus are considered a gross underestimation.

Based on the average cost per square metre of $162 to cover 10% of the Project Area would be in the order of $6.5 million.

Table 4 Costing/Second hand shelters

ID	No Shelters	Width (m)	Length (m)	Height (m)	Total Area (m^2)	Cost ($)	Cost ($ /m^2)
1	1	30.48	60.96	13.10	1858	$281,690	152
2	5	27.43	18.29	7.01	2508	$387,324	154
3	1	18.29	18.29	12.80	335	$83,099	248
4	1	18.29	21.34	7.3	390	$56,338	144
5	1	26.82	30.48	7.3	817	$91,549	112
						Average Cost ($/$m^2$)	**162**
Original cost supplied in $US has been converted to $AU currency assuming $1(US) = $0.71(AUS)							

Appendix D

Meeting Agenda - NSW EPA, DPE and NSW Health

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Agenda of Meeting

Clyde Western Area Remediation Project

Subject	EPA Submissions Meeting	Page	1
Venue	EPA Offices Parramatta Level 13, 10 Valentine Ave, Parramatta NSW 2150	Time	1.00pm to 3.00pm
Participants	Jacqueline Ingham – EPA Christine Mitchell – EPA Ulli Manuel – EPA Ben Livissianis – EPA Anthony Savage - EPA Anthony Pik – EPA Rhys Watson – EPA Janelle Pickup – EPA Jonathon Knight – EPA Deana Burn – Dept of Planning and Environment Kane Winwood - Dept of Planning and Environment Helen Noonan – NSW Health Damien Home – Viva Energy Adam Speers – Viva Energy Erica Salazar – Viva Energy William Miles – AECOM Andrew Rolfe – AECOM Harry Grynberg – AECOM (by phone) David Rollings – AECOM Kristen Clarke – AECOM		
File/Ref No.		Date	07-May-2019
Distribution	As above		

No	Item	Lead	Time
1.	Opening – introductions and agenda outline	All	5
2.	Safety Moment	AECOM	5
3.	Site Context - Site history - Previous works - Previous management approaches - Current infrastructure (WWTP etc.)	VE & AECOM	10
4.	Project Overview - Contamination overview (investigations, COPC, locations etc.) - Project description - Concept Design and Conceptual RAP - EIA approach	VE & AECOM	10
5.	Discussion approach – Themes	WM	
6.	Air quality assessment context and critical assumptions	DR	10
7.	Air toxics discussion	DR	10

No	Item	Lead	Time
8.	Best practice benchmarking assessment discussion	DR	10
9.	Remediation stormwater and wastewater runoff management	HG	10
10.	Surface water monitoring, triggers and responses	HG	10
11.	Ongoing groundwater management	AR	10
12.	EPA Discussion	All	10
13.	Close and actions	All	5

Skype Meeting Details:

Phone: +61299955599 (Sydney)

Conference ID: 5189477

Appendix E

Clyde Terminal - Quarter 4 (2018) Groundwater Monitoring Report

IMPORTANT NOTICE

Quarter 4 (2018) Groundwater Monitoring Event Report for the Clyde and Parramatta Terminal at Durham Street, Rosehill NSW (the "Site")

The attached "Quarter 4 (2018) Groundwater Monitoring Event - Clyde and Parramatta Terminal" (the "Report") dated 4 March 2019 was prepared by ERM Australia Pty Ltd in respect of the Site. The Report was commissioned by Viva Energy Australia Pty Ltd ("Viva Energy") for its own internal purposes, and the findings and conclusions contained in the Report should not be relied upon by any person or entity.

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Clyde Terminal – Quarter 4 (2018) Groundwater Monitoring Report

Durham Street, Rosehill, NSW

4 March 2019

Project No.: 0487488

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Document details	The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.
Document title	Clyde Terminal – Quarter 4 (2018) Groundwater Monitoring Report
Document subtitle	Durham Street, Rosehill, NSW
Project No.	0487488
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				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Draft	01	Adam Kalms	Stephen Mulligan	Michael Gaggin	28.02.2019	Draft Report
Final	02	Adam Kalms	Stephen Mulligan	Michael Gaggin	04.03.2019	Final Report

Signature Page

4 March 2019

Clyde Terminal – Quarter 4 (2018) Groundwater Monitoring Report

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CONTENTS

Acronyms and Abbreviations

ERM	Environmental Resources Management Australia Pty Ltd
Q4 GME	Quarter 4 Groundwater Monitoring Event
SGMP	Soil and Groundwater Monitoring Plan
NSW EPA	New South Wales Environmental Protection Agency
OEH	NSW Office of Environment and Heritage
CSM	Conceptual Site Model
APR	Annual Progress Report
GW SAP	Groundwater Sampling and Analysis Plan
EPL	Environmental Protection License
LNAPL	Light Non-Aqueous Phase Liquid
COPCs	Contaminants of Potential Concern
TRH	Total Recoverable Hydrocarbons
QA/QC	Quality Assurance / Quality Control
NEPC	National Environmental Protection Council
ASC NEPM	*National Environment Protection (Assessment of Site Contamination) Measure*, as amended *2013*
CRC CARE	The Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
NHMRC	National Health and Medical Research Council
PFAS NEMP	PFAS National Environmental Management. Plan
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
HSLs	Health Screening Levels
BGL	Below Ground Level
DO	Dissolved Oxygen
ORP	Oxidation Reduction Potential
LOR	Limit of Reporting
RPD	Relative Percent Differences
GWSDAT	GroundWater Spatiotemporal Data Analysis Tool
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Per- and Polyfluorinated Compounds
PFOS	Perfluorooctanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS + PFHxS	Sum of Perfluorooctanesulfonic acid and Perfluorohexanesulfonic Acid

1. INTRODUCTION

1.1 General

Viva Energy Australia Pty Ltd (Viva Energy) commissioned Environmental Resources Management Pty Ltd (ERM) to conduct the Quarter 4 (2018) Groundwater Monitoring Event (Q4 GME) at Clyde and Parramatta Terminals, located at Durham Street, Rosehill, New South Wales, Australia (the Site). The location of the site is presented in *Figure 1*.

1.2 Background

Viva Energy has adopted a Soil and Groundwater Management Plan (SGMP, 2010) designed to reduce soil and groundwater impacts through the implementation of a long-term management plan at the (then) Clyde Refinery. At the request of the Office of Environment and Heritage (OEH) and the NSW Environmental Protection Authority (NSW EPA), the SGMP has been reviewed and assessed by a Site Auditor accredited under the *Contamination Land Management Act 1997*, as being appropriate to

> *"..Monitor and manage the groundwater conditions at the Site and to identify, respond and report on groundwater conditions that may have the potential to impact upon the Parramatta and Duck Rivers to a degree that could cause harm."*

The SGMP enables a flexible and dynamic approach to the ongoing management and reporting of soil and groundwater conditions as the understanding of the Conceptual Site Model (CSM) evolves. A primary mechanism by which this occurs is through a program of routine groundwater monitoring, gauging and sampling (refer *Sections 5.6, 6.6* and *7.6* of the SGMP). This work has previously been completed on a quarterly basis, but was reduced to biannual during 2016 as a result of the established stability in environmental conditions, reduced potential for contaminating activities, downscaled operations and associated confidence in the CSM. A site features plan, including the monitoring well network, is provided in *Figure 2*.

This report provides details and results of the Quarter 4 (2018) groundwater monitoring event. The information contained within this report will feed into the Annual Progress Report (APR), which will be supplied to the NSW EPA, by 31 March 2019. The APR will detail all soil and groundwater monitoring and investigation activities completed during 2018.

2. OBJECTIVES

The overarching objectives of the SGMP and Groundwater Sampling and Analysis Plan (GW SAP), under which the groundwater monitoring program is implemented, include the following:

- maintaining compliance with regulatory requirements of the approved Pollution Reduction Program and Environmental Protection Licence 570 (EPL); and
- monitoring of potential risks to human health and the environment in line with adopted risk based management approach for the Site.

Based on the approach to groundwater management outlined in the SGMP, the objectives of the Q4 (2018) GME include the following:

- assess for the potential presence of residual light non-aqueous phase liquid (LNAPL) within the subsurface of the operating areas, and manage if required;
- monitoring the internal operations areas (potential primary source areas) and the boundary of the facility to reduce the potential for off-site migration of free and dissolved phase contaminants; and
- assess changes to conditions such as undetected release events, by site operators or leak detection equipment, or plume migration to assist in preventing unacceptable human health or environment exposure.

The routine monitoring events provide a continual mechanism to advance the CSM by addressing data gaps identified through previously completed and ongoing site assessments. The collection of data from groundwater monitoring events also satisfies the requirement for a summary of groundwater monitoring results to be provided annually to the NSW EPA as per the EPL.

3. APPROACH AND SCOPE OF WORK

3.1 Approach to Annual Groundwater Monitoring Program

Based on the approach to groundwater management outlined in the SGMP, the approach to the routine monitoring includes:

Internal Operations Monitoring

- focused gauging and sampling towards key source /operational areas to assess new releases or mobilisation of residual hydrocarbons or other Constituents of Potential Concern (COPCs) in the subsurface; and
- sampling only for COPCs to assess potential migration of historically observed contaminants, or new releases (i.e. Total Recoverable Hydrocarbons (TRH)).

Boundary Containment Monitoring

- continued characterisation of dissolved phase contaminant distribution and trends to assess potential for migration towards receptors; and
- sampling only for COPCs that have the potential to drive risk to identified receptors.

General

- provision of sufficient data to enable continual update of the CSM and revision of this SAP as warranted to inform the SGMP.

To keep the program relevant to current conditions, the scope of each subsequent GME will be subject to review and change, pending the results of the previous events. Where changes to the routine monitoring program are required, (e.g. to address emerging COPCs, data suggesting a new release or plume migration in an area not previously observed, or area of the Site become inaccessible) the changes will be detailed, adjustment made to subsequent monitoring events and outcome documented as part of the APR to the NSW EPA.

3.2 Scope of Work

ERM undertook the following scope of work as part of the Q4 (2018) GME to achieve the objectives for the Site:

- gauging of 87 monitoring wells on site for depth to groundwater and identification of potential non-aqueous phase liquid (NAPL);
- deployment of no purge 'Hydrasleeve' samplers during gauging for those wells designated for sampling as per the GW SAP;
- collection of no purge groundwater samples, following a minimum equilibration period of 24 hours from 71 groundwater monitoring wells on site, in accordance with the GW SAP;
- collection of quality assurance and quality control (QA/QC) samples, comprising intra- and inter-laboratory duplicates, rinsate blanks, trip blanks and trip spikes; and
- submission of groundwater samples for laboratory analysis for COPCs in accordance with the GW SAP.

4. GROUNDWATER ASSESSMENT CRITERIA

The adopted assessment criteria have been sourced from guidelines made or approved under the *Contaminated Land Management Act 1997*, which includes the National Environmental Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) 1999*, as amended by *Amendment Measure 2013 (No. 1)*. Where alternative sources have been utilised appropriate justification has been provided.

4.1 Human Health

Groundwater data has been assessed against the investigation criteria published in *Schedule B1 Guideline on the Investigation Levels for Soil and Groundwater* of the ASC NEPM, which references the following guidance for protection of human health:

- Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE), *Technical Report No. 10: Health Screening Levels in Soil and Groundwater (2011)*. Health Screening Levels (HSLs) for vapour intrusion – Commercial/Industrial 'D' and HSLs for Intrusive Maintenance Workers (shallow trench); and
- National Health and Medical Research Council (NHMRC), *Guidelines for Managing Risk in Recreational Waters (2008)*, to assess potential direct contact risks to recreational users of the Parramatta and Duck Rivers.

The CRC CARE HSLs are directly relevant to the human health exposure pathways identified for the Site. The CRC CARE guidance presents the latest approach for assessing the risks for petroleum mixtures and in particular the evaluation of the migration vapour intrusion pathway.

Groundwater HSLs for vapour intrusion were selected based on site specific information as follows:

- **soil –** given the soil at the Site has consisted of approximately 1 m of sandy fill material overlaying clayey soils, the HSLs developed for sandy soil were conservatively selected;
- **receptors –** the HSLs for commercial/industrial receptors (HSL-D) were considered as well as the HSLs developed for intrusive maintenance workers which could be applicable under any future land use;
- **depth –** for groundwater, HSLs for vapour migration were only developed for groundwater as shallow as 2 m below ground level (BGL). However, groundwater at the Site was observed to be as shallow as 1 m BGL. While groundwater this shallow has the potential to become temporarily exposed and available to direct contact (e.g. dermal contact) during intrusive works, such as construction, excavations and trenches, no groundwater screening criteria are currently available to evaluate potential health risks for that pathway.

  However, site specific modified HSLs were calculated for the vapour migration exposure pathways from the shallow groundwater using the Extension Model published by CRC CARE, *Technical Report No 10: Health Screening Levels in Soil and Groundwater, Part 4 (2011)*. The Extension Model allows for the development of site specific HSLs in a manner consistent with the original HSLs. The Extension Model is publically available and conceptual development, algorithms and inputs are provided by CRC CARE. The site specific modifications assumed the following:

  - commercial/industrial receptors, HSL-D, were considered in the selection of the site appropriate soil HSLs as well as the intrusive maintenance worker;
  - conservative soil type (sand) has been considered in the selection of the site appropriate HSLs; and
  - the depth to groundwater of 1 m BGL.

Calculations for the site specific HSLs are supplied in *Appendix H*. For other chemical and receptor input parameters, the CRC CARE default inputs were used.

The human health assessment criteria adopted assumes no future beneficial groundwater use, potable or non –potable, based on the saline nature of groundwater generally encountered and the low yields expected. As such, drinking water guidelines are not relevant for tier 1 screening of groundwater at the site.

4.2 Ecological Receptors

Groundwater data has been assessed against the ecological investigation criteria published in *Schedule B1 Guideline on the Investigation Levels for Soil and Groundwater* of the ASC NEPM, which references the following guidance for protection of marine ecological receptors of the adjoining Duck and Parramatta River Systems:

- Australian and New Zealand Governments (ANZG) (2018), Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Trigger values for marine water, level of protection 95% species and trigger values for marine water.

ERM used the above ecological guidelines based on the assumption that the upper Parramatta River catchment is a moderately disturbed ecosystem, as it receives road and storm water runoff from adjacent industry and residential properties. Additionally, the rivers within this area are considered to be within an upper estuarine environment, therefore receiving ecosystem is considered marine.

4.3 Per- and Polyfluorinated Substances

As a result of the known historical storage and use of Aqueous Film Forming Foam (AFFF) containing Per- and Polyfluorinated Substances (PFAS) for firefighting and fire training purposes across the site, groundwater monitoring and laboratory analysis for Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA) has been undertaken at the site since 2011. Analysis for a complete PFAS suite has been undertaken since December 2015.

The current CSM excludes drinking water as a potential exposure pathway for PFAS on the basis of no groundwater extraction occurring on, or down gradient of the Site. Potential exposure pathways are therefore limited to:

- on site commercial/industrial workers – incidental direct contact with contaminated surface water;
- on site intrusive maintenance workers – incidental direct contact with contaminated shallow groundwater during trenching or excavation activities; and
- off-site ecological receptors – Parramatta River and Duck River.

The recently published PFAS National Environmental Management Plan (‘the PFAS NEMP’), prepared by the Heads of the EPA (HEPA) calculates Tier 1 screening values for human health and ecological receptors for soil and water. The below screening criteria have been selected

Table 4.1 Adopted Groundwater Screening Criteria

Receptor	Adopted Screening Criteria	Source	Comments
On-site Intrusive Maintenance Workers (via Incidental direct contact with contaminated shallow groundwater during trenching/excavation)	Site Specific – Incidental Direct Contact	Modified from PFAS NEMP Drinking Water Guideline (HEPA, 2018)	Tier 1 screening criteria were developed by multiplying the drinking water guidelines by a factor of 100 for evaluating water exposures during worker incidental contact with shallow groundwater. Recreational Criteria were derived in the PFAS NEMP based on a factor of 10 x the Drinking Water values, as per ASC NEPM (2013) guidance. As the potential for incidental direct contact with groundwater during intrusive maintenance works is likely to be significantly less than recreational contact (i.e. swimming), a factor of 100 was applied to the drinking water criteria.
Off-site recreational users of the Parramatta and Duck River (via direct contact)	Recreational Water Quality Guideline	PFAS NEMP (HEPA, 2018)	The recreational values are conservative for the activities down gradient of the site (primarily boating and rowing). The recreational values assume swimming activities with much higher direct contact rates.
On-site and offsite Ecological receptors (via direct contact)	Freshwater Trigger Values (95% Species Protection – slightly to moderately disturbed systems)	ANZECC – technical draft guideline values (as referenced in PFAS NEMP (HEPA, 2018))	Freshwater values used in lieu of regulator endorsed Marine Criteria, as per the guidance in the NEMP.
Indirect exposure for off-site ecological receptors (via consumption of PFAS containing biota (bioaccumulation)).	Freshwater Trigger Values (99% Species Protection – high conservation value systems)	ANZECC – technical draft guideline values (as referenced in PFAS NEMP (HEPA, 2018))	The ANZECC (2000) Water quality guidelines advise the use of the 99% trigger value for slightly to moderately disturbed systems for chemicals which bio accumulate and bio magnify in wildlife. It is noted that the 99% protection value for PFOS is below the laboratory limit of reporting.

Overall, Tier 1 criteria are available only for PFOS, PFOA and the sum of PFOS and Perfluorohexane Sulfonate (PFOS + PFHxS). Tier 1 screening values for the assessment of other PFAS compounds do not exist in currently accepted Australian PFAS guidance documents. The lack of screening values for these compounds does not preclude the need for ongoing assessment.

It is noted that Tier 1 screening values for indirect human exposure via the consumption of seafood containing concentrations of PFAS are not available in Australian PFAS management guidance documents.

The Tier 1 screening criteria utilised are consistent with those used in for groundwater monitoring reports since Q4 2017. It is noted ANZECC guidelines for PFAS are not publically available and are referenced with the PFAS NEMP. Tier 1 criteria are available only for PFOS, PFOA and Perfluorohexane Sulfonate (PFHxS). Tier 1 screening values for the assessment of other PFAS compounds do not exist in currently accepted Australian PFAS guidance documents. The lack of screening values for these compounds does not preclude the need for ongoing assessment.

The ANZECC water quality guideline approach of using a higher level of species protection of 99% to account for bioaccumulation is problematic given values for PFOS are below the currently available limits of reporting delivered by accredited laboratories.

Groundwater analytical results for the Q4 GME, with comparisons to the adopted screening levels, are presented in *Tables 6* to *8*. Certified laboratory reports are included in *Appendix B*.

5. RESULTS

5.1 Summary of Field Activities

Field activities for the Q4 GME were conducted between the 3rd and 7th of December 2018. The field works undertaken are summarised in chronological order in *Table 3.* Monitoring wells gauged and sampled as part of the Q4 GME are shown on *Figure 2*.

The following monitoring wells formed part of the Q4 GME groundwater monitoring scope, but could not be gauged or sampled during fieldworks:

- BH90/7 – located along the northern site boundary, was inaccessible due to contractor works;
- MW09/14, MW91/6 and MW91/7 – located in Parramatta Terminal, could not be located beneath soil and gravel;
- MW12/05 – Located within the Suez Leased area, has been paved over and is no longer accessible (replaced with MW12/06);
- MW91/5 – located in Parramatta Terminal, was observed with a broken gatic cover and could not be opened for sampling;
- MW96/1, MW96/3 – located within the eastern wetlands, could not be accessed due to surface water; and
- MW09/16 – located adjacent to the northern wetlands could not be located due to overgrown vegetation.

Monitoring wells gauged and sampled as part of the Q4 (2018) GME and the wider monitoring well network is presented as *Figure 2*. Amendments to the GW SAP to account for the loss of these monitoring wells may be required during future monitoring events.

5.2 Field Data Summary

5.2.1 Groundwater Gauging Data

In accordance with best practice procedures, and to facilitate a representative assessment of the hydrogeological conditions beneath the Site, a site wide groundwater gauging event was conducted. Gauging results from this GME are presented in *Table 4*, with the interpretation of groundwater flow presented in *Figure 3*. Historical gauging data has been included in *Appendix D*.

A review of groundwater levels measured at the Site during the Q4 (2018) GME infers a consistent groundwater flow direction to the south-east within the southern portion of the Site towards the Duck River. The northern portion of site reflects the influence the river system has on the Site, and groundwater flows north-east, towards the Parramatta River.

During gauging conducted as part of the Q4 GME, LNAPL was detected at a measurable thickness within three wells during gauging with an oil/water interface probe and subsequently confirmed with the use of a bailer. These observations include:

- MW18/24 (0.045 m); and
- MW11/17 (0.025 m).

LNAPL was also gauged and visually confirmed using a bailer and on the outside of the interface probe during gauging of monitoring wells MW12/01 and MW12/15, however due to the highly viscous nature of the product encountered, thickness was unable to be measured accurately.

Although not recorded during the initial gauging event for MW12/16, approximately 15mm of LNAPL was noted to be present within the Hydrasleeve sampler during sampling.

It is noted that monitoring well MW18/24, was gauged with measureable LNAPL for the first time since installation in February 2018 during the Q4 GME. This monitoring wells is located within the footprint of the former laboratory in the southern portion of CSM3. The formation of LNAPL within this monitoring well correlates to the observation of strong hydrocarbon odours and staining within the soil profile during drilling.

Aside from MW18/24, the nature and extent of observed LNAPL is considered consistent with that observed during recent GMEs, and is discussed further is *Section 6.1.1* of this report.

5.2.2 Field Groundwater Quality Parameters

Field groundwater quality parameters including pH, conductivity, dissolved oxygen (DO), temperature and oxidation/reduction potential (ORP) were measured during the groundwater sampling activities immediately following collection of groundwater samples from no purge samplers. Groundwater quality parameters were unable to be collected from a number of wells due to an insufficient volume of water sample remaining after filling the required laboratory bottles.

Groundwater quality parameters and field observations during sampling are presented in *Table 5*, with groundwater monitoring field forms provided in *Appendix C*.

5.3 Groundwater Analytical Results

Groundwater samples were submitted to a National Association of Testing Authorities (NATA) accredited laboratory under chain of custody conditions. Primary and intra-laboratory groundwater samples were submitted to ALS (Sydney) Laboratory. Inter-laboratory duplicate samples were submitted to a secondary laboratory, Eurofins MGT (Sydney) for analysis. Groundwater analytical results and comparisons to the adopted assessment guidelines are presented in the following tables:

- *Table 6a* – TRH, BTEXN (Groundwater 0-2m BGL);
- *Table 6b* – TRH, BTEXN (Groundwater 2-4m BGL);
- *Table 7* – Metals; and
- *Table 8* – PFAS.

The spatial distribution of COPCs exceeding adopted groundwater screening criteria for the Site are illustrated on *Figures 4* to *7*. Laboratory analytical reports and Chain of Custody documentation are included in *Appendix B*.

Reported concentrations of COPCs in groundwater samples were below adopted human health and ecological screening criteria for the Site, with the exception of those outlined below:

Table 5.1 Groundwater Exceedance Summary

COPC	SL exceeded	Number of exceedances	Location(s)
Benzene	HSL-D (groundwater <2m)	1	MW09/1
	NEPM GIL (Marine)	2	MW09/1, W91/8
	Recreational Water Quality [2]	6	MW09/1, MW09/7, MW12/03, MW12/08, MW12/26, W91/8
Naphthalene	NEPM GIL (Marine)	2	MW12/03, MW12/26
Hexavalent Chromium [3]	NEPM GIL (Marine)	2	MW12/06, MW12/07
Perfluorooctane sulfonate (PFOS)	Marine/Freshwater 95% Species Protection Investigation Level (Direct Toxicity)	11	MW09/6, MW12/12, MW12/13, MW12/21, MW12/26, MW91/1, W91/4, MW91/8, MW94/3, MW98/4, MW94/12
	Marine/Freshwater 99% Species Protection Investigation Level (Bioaccumulation)	26	All Samples [1]
Sum of PFOS + Perfluorohexanesulfonic acid (PFHxS)	Site Specific Incidental Direct Contact (Intrusive Maintenance Worker)	5	MW09/6, MW12/12, MW12/13, MW12/26, MW91/1
	Recreational Water Quality	10	MW09/6, MW94/3, MW12/12, MW12/13, MW12/21, MW12/26, MW91/1, MW91/4, MW91/8, MW94/12
Perfluorooctanoate Acid (PFOA)	Recreational Water Quality	2	MW12/12, MW12/13

Notes:

1. Laboratory Limit Of Reporting (LOR) for PFOS is greater than the Marine/Freshwater 99% Species Protection Investigation Level. Groundwater samples collected from MW11/41, MW12/25 and MW96/3 reported concentrations of PFOS <LOR.
2. Recreational water quality criteria and Marine Ecological Criteria are applicable to off-site receptors only.
3. Trivalent Chromium Analysis not conducted due to inappropriate sample preservation.

Statistical trend analysis to assess for changes in environmental conditions is provided in *Section 6.2* of this report.

Silica gel clean-up and analysis of TRH C_{10}-C_{40} fractions were conducted for boundary monitoring wells in line with the recommendations of the Q2 (2018) GME Report. Concentrations reported post silica gel clean-up were below the laboratory limit of detection in all samples, with the exception of monitoring well BH116.

The significance of the above exceedances and Silica Gel Clean-up results with respect to the CSM as well as a discussion of potential data gaps is provided in *Section 6* and *7* of this report.

5.4 Quality of Analytical Data

5.4.1 Field Quality Control Results

Field quality control (QC) results are presented in *Table 9, 10* and *11*. Certified laboratory reports outlining the results of the laboratory QA/QC procedures in included in *Appendix B*.

Sample containers were received by the laboratory intact and appropriately stored and transported within chilled cooler boxes. All analysis was completed within the appropriate holding times.

Selected groundwater samples designated for speciated chromium analysis were not able to be analysed for trivalent chromium due to inappropriate sampling containers used. Hexavalent chromium results were reported. Given the extensive historical of the overall speciated chromium dataset, this minor non-conformance with the GWSAP is not considered to affect the overall quality of the dataset.

In summary, ERM considers the quality of the dataset, as evidence by the field and laboratory QA/QC results are acceptable for their intended purpose. A discussion of field QA/QC results for samples collected and submitted for laboratory analysis is provided below.

5.4.1.1 Field Duplicates

Ten intra-laboratory field duplicate samples and four inter-laboratory field duplicate samples were collected at an overall rate greater than 1 per 10 and 1 per 20 primary samples respectively. Duplicate samples were analysed for identified COPCs consistent with the primary samples.

The relative percentage differences (RPDs) generated between the parent sample and field duplicate were within an acceptable range according to *AS 4482. 1-2005* with the exception of those indicated in *Table 10*. Generally, RPDs reported outside of the accepted range can be explained by the statistical impact of the concentrations being less than 10 times the laboratory Limit of Reporting (LOR), rather than laboratory inaccuracies or sampling methodology. In instances where RPDs were reported above the acceptable range for COPCs, concentrations in primary and duplicate samples were below adopted screening criteria and therefore do not influence the outcomes of the investigation. Duplicate results have been utilised in trend analysis and are screened alongside primary sample results against site assessment criteria.

As such, duplicate RPDs noted outside of the acceptable range are not considered to impact on the overall usability of the results or the quality of the dataset.

5.4.1.2 Rinsate Blanks

A total of five equipment rinsate samples were collect and analysed for a combination of identified COPCs. Rinsate blank results are summarised in *Table 11*. Equipment rinsate blanks were collected from a decontaminated interface probe to demonstrate the efficacy of the equipment decontamination procedure for each sampling day. Sampling methods employed are designed to minimise the potential for cross contamination through the use of disposable nitrile gloves, twine and dedicated disposable Hydrasleeve samplers.

No COPCs were detected in equipment rinsate blank samples collected during the Q4 GME, indicating that cross contamination is unlikely to have occurred and that decontamination of reusable sampling equipment was adequately undertaken.

5.4.1.3 Trip Spikes and Blanks

One trip spike and one trip blank were transported with the batch of samples submitted to the laboratory. Trip spikes and blanks were analysed for BTEXN (spike and blank) and volatile TRH fractions (blank only).

Target analytes were not detected in the trip blanks indicating that cross-contamination of samples during storage and transportation to the laboratory is unlikely to have occurred.

Comparison of the water trip spike with known BTEX concentrations added to trip spike samples by the laboratory reported recoveries were within the acceptable range of 70% - 130%, indicating minimal loss of volatiles during sample storage and transportation.

5.4.1.4 Appropriateness of Laboratory LORs

The laboratory LORs were appropriate for assessment of concentrations against adopted screening criteria, with the exception of PFOS, which was raised above the screening criteria of 99% species protection. As discussed in *Section 4.1*, screening levels of PFOS 99% species protection is below the laboratory detection limits. The significance of PFAS concentrations, including PFOS is discussed further in *Section 7.1.*

In summary, the laboratory LORs are appropriate for the screening criteria that has been selected for the Site.

5.4.2 Laboratory Quality Control

The accuracy and precision of laboratory QA/QC results are measured by percentage recovery and RPD respectively. Certified laboratory reports are included in *Appendix B* and include information on the following:

- laboratory duplicates;
- method blanks;
- matrix spikes;
- matrix spike duplicates;
- surrogate spikes; and
- laboratory control samples.

In summary, ERM considers that the laboratory QA/QC results are acceptable for the purposes of this investigations. Laboratory validation documentation is included in *Appendix B.*

6. TREND ANALYSIS

6.1 Light Non Aqueous Phase Liquid

As detailed in *Section 5.2.1*, LNAPL was positively identified during the Q4 GME in five groundwater wells (MW18/24, MW12/16, MW11/17, MW12/01 and MW12/15). The following specific observation were made with regard to LNAPL trends during the Q4 GME:

- the spatial extent of LNAPL observed within the monitoring well network is generally considered to be consistent with previous GMEs, with stable to decreasing LNAPL thickness observed compared with those recorded during 2017 and the Q2 2018 GME; and
- Newly installed monitoring well MW18/24 recorded measurable LNAPL for the first time during the Q4 GME. Potential Hydrocarbon contamination was noted during installation at the beginning of 2018 by AECOM. On the basis of the observation of a heavy sheen throughout the soil profile, and the removal of above ground sources and operations from this area of the Site, the emergence of measureable LNAPL is not considered to represent a new release, with a degree of delineation achieved using data from down gradient wells MW11/20 and MW98/4.

6.2 Dissolved Phase Constituents

The Groundwater Spatiotemporal Data Analysis Tool (GWSDAT) is an application utilised to analyse historical trends of groundwater solute concentrations at a monitoring point using groundwater analytical data. ERM entered both the most recent and historical groundwater monitoring data in GWSDAT in order to evaluate concentration trends for Benzene, TRH C_6-C_9 and TRH C_{10}-C_{36} over the period of data collection. These analytes have been specifically selected as indicators of potential petroleum hydrocarbon plume migration or new releases associated with ongoing site operations. Trend analysis of historical laboratory analytical data was completed using the Mann Kendall procedure. The Mann Kendall method is a non-parametric method and does not require assumptions about the underlying distribution of the data.

An overall summary of trend analysis for Benzene, TRH C_6-C_9 and TRH C_{10}-C_{36} is provided as *Table 13*, and further illustrated in *Figures 8 through 10*. GWSDAT plots for are provided in *Appendix I*.

Generally, concentrations of COPCs exhibited stable to decreasing statistical trends. Specific discussions relating to increasing trends and historical maximum concentrations identified during the Q4 GME are provided below. A complete set of available historical analytical results are provided in *Appendix E*.

TRH C_{10}-C_{36} Fractions

The Mann Kendall statistical analysis reported the following statistically significant increasing trends for TRH C_{10}-C_{36}:

- MW11/04 – with a reported historical maximum concentration (760 µg/L);
- MW11/07 - with a reported concentration (540 µg/L) ;
- MW11/08 - with the reported concentration (1300 µg/L) on inter laboratory duplicate sample;
- MW11/24 - with the reported concentration (560 µg/L); and
- MW11/30 - reported historical maximum concentration (540 µg/L).

The concentration of TRH fractions reported for the above monitoring wells are not considered to represent a risk to human health or offsite ecological receptors under the current land use scenario. Based on the distance from off-site receptors and downgradient delineation achieved, the above increasing trends are not considered significant in the context of the CSM.

Silica gel clean-up analysis undertaken on the groundwater samples from boundary monitoring wells indicates that reported concentrations of TRH C_{10}-C_{36} in groundwater for samples analysed are comprised of mostly polar (non-petroleum hydrocarbon) by-products as a result of biodegradation of hydrocarbons via microbial activity. Although silica gel clean-up was not specifically undertaken for the monitoring wells above, the use of analytical data for TRH C_{10}-C_{36} fractions without further assessment of the relative contribution of biodegradation products for trend analysis may be unreliable for decision-making purposes. Further discussion of silica gel clean-up results is provided in *Section 7.2*.

TRH C_6-C_9 Fractions

The Mann Kendall statistical analysis reported the following statistically significant increasing trends for TRH C_6-C_9 fractions:

- MW12/03 – Increasing trends were reported based on an overall upward trend in the dataset. However, reported concentrations during the Q4 GME were noted to be lower than the historical maximum of the dataset and generally consistent with concentrations reported since 2014.

While no screening criteria exist for TRH C_6-C_9, the concentration of concentrations of TRH C6-C10 (less BTEX) reported for the above monitoring well are not considered to represent a risk to human health under a commercial/industrial land use scenario. Based on the distance from off-site receptors and downgradient delineation achieved, the above increasing trends are not considered significant in the context of the CSM. Furthermore, concentrations of TRH C6-C10 (less BTEX) were reported below adopted human health screening criteria for MW12/03. Down gradient of this location, impacts are delineated to below the laboratory LOR (and ecological screening values) via monitoring wells MW94/6 and BH116.

Benzene

The Mann Kendall statistical analysis did not report any statistically significant increasing trends for benzene during the Q4 GME.

Historical Maximum Concentrations

While not identified as an increasing trend via statistical analysis, concentrations of COPCs were reported at historical maximum concentrations during the Q4 GME as summarised below:

- MW09/11 –TRH C_{10}-C_{36} at a concentration of 700 µg/L;
- MW09/13 – TRH C_{10}-C_{36} at a concentration of 540 µg/L;
- MW11/03 – TRH C_{10}-C_{36} at a concentration of 430 µg/L;
- MW12/12 – TRH C_{10}-C_{36} at a concentration of 880 µg/L;
- MW12/13 – TRH C_{10}-C_{36} at a concentration of 770 µg/L;
- MW09/1 – benzene at a concentration of 6560 µg/L; and
- MW12/03 – TRH C_6-C_9 at a concentration of 140 µg/L.

The above monitoring wells locations are situated within or down gradient of known historical source areas, where dissolved phase concentrations have been delineated to below human health and ecological criteria within the site boundaries. The nature and extent of dissolved phase impacts at wells are not considered to currently represent a risk to human health or ecological receptors under the ongoing commercial/industrial land use and are therefore not considered significant in the overall context of the CSM.

Furthermore, silica gel clean-up results for boundary monitoring wells indicate that TRH C_{10}-C_{36} Fractions at the site may comprise a high proportion of polar compounds from the biodegradation of historical groundwater impacts. Further assessment is required to determine if the above historical maximum concentrations represent adverse changes in environmental conditions or are driven by natural attenuation of dissolved phase impacts.

Other COPCs

The presence of other non-petroleum hydrocarbon based COPCs in groundwater at the Site, including PFAS and Chromium are associated with historical site activities such as the storage and deployment of firefighting foams for training purposes and the importation of contaminated fill materials. Trend analysis has not been completed for these COPCs due to the small and focused datasets available. Discussion of the results of Tier 1 screening for these COPCs is provided in *Section 7.*

A complete set of historical data for Chromium and PFAS are provided as *Appendix E.*

7. DATA GAPS SUMMARY AND UPDATES TO GW SAP

Refinement of the CSM is facilitated through the identification and close out of key data gaps. The monitoring program provides a mechanism for progressive review of data, collected through both routine (biannual groundwater monitoring) and non-routine investigation works. This allows for the implementations of mitigation measures in a timely manner, as deemed necessary.

A Data Gap Reconciliation table, details any actions completed towards the close out of residual data gaps, along with the identification of new data gaps in the form of realised or suspected detrimental changes in environmental conditions. Based on our current understanding of site conditions, following a review of the Q4 GME results, the current status of identified data gaps is provided in *Appendix G*.

Data gaps that are considered to be reconciled, but will continue to be monitored under the SGMP are detailed in *Appendix* G. An update of ongoing data gaps are described in detail below.

7.1 Data Gap ID 3a - Nature and Extent of Dissolved Phase COPCs – Petroleum Hydrocarbons

Potentially changing environmental conditions continue to be identified in the former Process Area East, Western Tank farm Area and within the Suez and former AutoNexus leased areas through the historic or current establishment of increasing statistical trends (qualitative and quantitative) for TRH C_6-C_9 Fractions, TRH C_{10}-C_{36} Fractions and benzene, and the identification of LNAPL.

While LNAPL and dissolved-phase hydrocarbons have generally been delineated to on-site environments, potential primary sources and dissolved-phase trends within boundary and internal wells will continue to be assessed to enable appropriate ongoing environmental management.

Update on Data Gap Status

- During the Q4 (2018) GME, a statistically significant increasing trend for TRH C_{10}-C_{36} Fractions were reported for monitoring wells MW11/04, MW11/07, MW11/08, MW11/24 and MW11/30. A statistically increasing trend for TRH C_6-C_9 Fractions was also identified at MW12/03;
- Historical maximum concentrations were reported during the Q4 GME for TRH C_{10}-C_{36} Fractions at monitoring wells MW09/11, MW09/13, MW11/03, MW12/12, and MW12/13. Benzene and TRH C_6-C_9 concentrations were also reported as a historical maximum at MW09/1 and MW12/03, respectively;
- As per the recommendations of the Q2 (2018) GME report, TRH Silica Gel Clean-up analysis was undertaken for TRH C_{10}-C_{40} fractions on boundary monitoring wells to determine potential for false positive results arising from the presence of polar (non-petroleum) hydrocarbons in groundwater. Concentrations reported post silica gel clean-up were below the laboratory limit of detection in 30 of 31 samples analysed;
- This indicates that reported concentrations of TRH C_{10}-C_{36} in groundwater for samples analysed are comprised of mostly polar (non-petroleum hydrocarbon) by-products. These polar compounds may occur as a result of biodegradation of hydrocarbons via microbial activity or are present in oils of biological origin (such as vegetable oils, animal fats and humic acids). Although silica gel clean-up was not specifically undertaken for the monitoring wells identified with historical maximums or increasing trends, the use of analytical data for TRH C_{10}-C_{36} fractions without further assessment of the relative contribution of polar compounds for trend analysis may be unreliable for decision-making purposes; and
- Statistically significant increasing trends and historical maximum concentrations were reported in the C_{10}-C_{36} fractions in a number of boundary monitoring wells during the Q2 2018 GME. On the basis of silica gel clean-up analysis undertaken, these concentrations are likely to be associated with the formation of polar metabolites during biodegradation of petroleum hydrocarbons down

gradient of historical groundwater impacts. The presence of these non-petroleum by-products is not considered to pose a risk to offsite ecological receptors of the Duck and Parramatta River.

GWSAP Updates

In order to understand the relative contribution of non-petroleum related polar compounds to TRH results across the Site, it is recommended that all analysis for TRH C_{10}-C_{40} Fractions be undertaken pre and post silica gel clean-up for groundwater samples collected from monitoring wells designated for sampling during the Q2 (2019) GME.

Should a significant influence of polar compounds on reported TRH fractions be identified, the future analytical suite will be modified to incorporate silica gel clean-up on all semi-volatile TRH analysis.

7.2 Data Gap ID 4 - Nature and Extent of Dissolved Phase COPCs – Chromium

Hexavalent chromium has been reported at fluctuating concentrations within a number of monitoring wells (notably BH90/7, MW12/07 and MW12/08) in the northeast corner of the site during the previously completed GMEs. The source of ongoing elevated concentrations of hexavalent chromium in MW11/06, located south of Tank farm A2 is considered to be due to localised shallow fill material.

During the Q2 (2018) GME, exceedances of ecological criteria were reported for hexavalent and/or trivalent chromium at all of the abovementioned locations. Hexavalent chromium has been reported at fluctuating concentrations within monitoring well MW12/07, reported as a historical maximum during in the Q2 (2018) GME. Trivalent chromium exceeded the ecological criteria for the first time at monitoring well MW94/4 during the Q2 (2018) GME.

Update on Data Gap Status

During the Q4 (2018) GME, MW12/05 was unable to be sampled due to a damaged well head. In lieu of this sampling location, MW12/06 was sampled as an alternative downgradient location for MW12/07. BH90/7 was unable to be accessed for sampling.

Trivalent chromium analysis was unable to be completed as part of the Q4 GME, due to the use of inappropriate sample containers and preservations.

Consistent with previous GMEs, concentrations of hexavalent chromium were reported above adopted ecological criteria at MW12/07. Hexavalent chromium concentrations also exceeded adopted ecological criteria at MW12/06. Elevated concentrations at these locations are likely attributed from leaching of historically imported fill associated with the Chrome Chemicals Company.

GWSAP Updates

- Full speciated chromium analytical suite to be reported for wells selected for analysis during Q2 GME; and
- Biannual monitoring of these wells and down-gradient locations to continue to further develop the site characterisation and provide downgradient delineation of impacts.

7.3 Data Gap ID 11 – Emerging Contaminants of Concern: PFAS

Since the Quarter 2 (2018) GME, a PFAS Conceptual Site Model and Flux Assessment Report has been developed (ERM, 2018). A summary of the Conceptual Site Model relevant to PFAS in groundwater at the Site is provided below.

Based on a desktop review of available data, the following key potential source areas were identified at the Site:

- The Former Fire Training Area – residual soil and groundwater impacts due to routine historical deployment of PFAS containing Aqueous Film Forming Foams (AFFF) for fire training exercises. Located in the central-north of the Site;
- Former location of Tank 24 (now demolished) – residual soil and groundwater impacts from the historical storage and handling of AFFF concentrate, located adjacent the Fire Station in the Southwest portion of the Site, known as CSM3; and
- Potential offsite sources of PFAS relevant to the Site include multiple current and historical industrial land-use within the Camellia Peninsula, which may have contributed PFAS to shallow groundwater on the site.

Migration of groundwater to the downgradient Duck and Parramatta Rivers has been identified as a potential pathway to offsite receptors. Due to the tidal nature and large catchment area of these surface water bodies, numerous off-site sources from upstream and downstream of the Site are expected to contribute PFAS to these receiving water bodies.

Based on a review of available soil, leachate and groundwater data, the following potentially complete Source-Pathway-Receptor (SPR) linkages for exposure to PFAS from the Site were identified:

- direct contact with impacted soil, groundwater or on-site stormwater drainage for on-site commercial / industrial workers;
- incidental direct contact with shallow groundwater for on-site intrusive maintenance workers;
- offsite indirect exposure via human consumption of seafood caught recreationally;
- direct exposure to PFAS impacted surface water by off-site ecological receptors and off-site recreational users of the Duck and Parramatta River catchments; and
- Indirect exposure for off-site ecological receptors via consumption of PFAS containing biota (bioaccumulation).

Based on Tier 1 Screening, the following conclusions can be drawn with respect to the above potential SPR linkages under the current commercial/industrial land use:

- On-site soil data indicates direct contact with soils are not considered to present a potential risk to on-site workers;
- Concentrations of PFAS in groundwater within the Former Fire Training Area have been reported above the Tier 1 screening criteria developed for incidental direct contact with shallow groundwater by intrusive maintenance workers on site. Exposure pathways for on-site intrusive workers are currently mitigated via Viva Energy's permit to work system, which manages exposure risk via implementation of controls prior to excavation at the Site;
- Concentrations of PFAS in groundwater at select locations across the site, including some locations on the down gradient site boundary have been reported above the adopted direct contact Tier 1 screening criteria for recreational and ecological (slightly to moderately disturbed marine) exposure scenarios;
- Consideration of the natural processes of dilution are important for the interpretation of off-site PFAS data to understand the fate and transport of PFAS from on-site sources to off-site receptors, particularly where many potential contributing offsite sources exist. Mass flux estimates of key PFAS compounds undertaken at the site boundaries down gradient of identified on-site source areas estimated average discharge concentrations above the screening level for direct and bioaccumulative aquatic toxicity effects and recreational direct contact. Based on the effect of mixing of discharged groundwater with off-site surface water from a large catchment area of the Duck and Parramatta Rivers, discharged concentrations of relevant PFAS compounds are expected to be below these adopted criteria for offsite human health and ecological receptors; and

- ERM considers the risk from indirect exposure to off-site recreational fishers (via consumption) to be low given commercial fishing bans and extensive restrictions on recreational fishing and taking of fish for consumption within local waterways due to pre-existing dioxin contamination.

PFAS mass flux modelling was undertaken across groundwater transects upgradient, downgradient of and within these identified on site PFAS source areas. Based on the flux modelling undertaken it is estimated that residual PFAS sources within the former Fire Training area alone contribute over 99% of total PFAS mass to groundwater. This confirms the Former Fire Training Area as the primary source area for PFAS at the Site.

The nature and extent of elevated PFAS concentrations at the northern extent of Parramatta Terminal contributing to an exceedance of recreational criteria in groundwater is unknown (MW91/8). Ongoing attempts to characterise these impacts will be incorporated into the scope of future groundwater monitoring events at the site

Update on Data Gap Status

The Q4 GME scope incorporated groundwater sampling for PFAS at all available monitoring wells within Parramatta Terminal in efforts to better delineate and confirm PFAS impacts identified at MW91/8, located adjacent to the former rail gantry on the northern site boundary.

Within Parramatta Terminal, data obtained as part of the Q4 GME is summarised as follows:

- elevated concentrations of PFAS compounds, including PFOS + PFHxS in excess of recreational screening values were confirmed for monitoring well MW91/8, situated at the northern extent within the former rail gantry area;
- PFOS + PFHxS concentrations exceeded recreational criteria at MW91/4 and MW91/1, along the eastern boundary of Parramatta Terminal;
- PFOS + PFHxS also exceeded the incidental direct contact criteria at MW91/1;
- Ecological (direct contact) criteria were exceeded at the above locations;
- Downgradient delineations of the PFAS impacts has not been achieved; and
- Based on the relative contributions of PFOS, PFOA and PFHxS compounds to the total reported PFAS concentrations at MW91/1 (78%), MW91/4 (2%) and MW91/8 (41%), it can be inferred that PFAS impacts may be from different sources. This is also supported by relatively low PFAS concentrations reported between these locations (i.e. MW91/2 and MW91/3).

The above findings represent an increased understanding of the nature and extent of PFAS impacts to groundwater within Parramatta Terminal. Where exceedances have been noted, downgradient delineation has not yet been demonstrated. Further PFAS characterisation will be included in the scope of future GMEs.

For other areas of the Site, analytical data collected during the Q4 GME reported PFAS compounds in groundwater were generally consistent with results from previous monitoring events (where available). Human health criteria exceedances for incidental direct contact were limited to monitoring wells within the Former Fire Training Area (MW12/12, MW09/6 and MW12/26).

In addition to the above wells, PFOS + PFHxS concentrations exceeded recreational water quality criteria at MW12/13 (fire training area), MW94/3 (upgradient site boundary of CSM3) and at MW12/21, at the southwest portion of the Site (within CSM3). An exceedance of recreational criteria was also reported at MW94/12, which was sampled for the first time during the Q4 (2018) GME. Reported concentrations of PFAS within this monitoring well are not unexpected given the downgradient location from the Former Fire Training area and are consistent with the CSM and mass flux modelling undertaken.

Ecological direct toxicity trigger values were exceeded for PFOS at the above locations and are consistent with historical data.

With the exception of data obtained for Parramatta Terminal, reported concentrations are consistent with the historical dataset and the CSM for the Site.

GWSAP Updates

- Maintain existing PFAS monitoring network, focused around key source areas and downgradient boundary monitoring;
- Inclusion of PFAS monitoring for key monitoring wells within Parramatta Terminal (MW91/8, MW91/1, MW91/4) in future Groundwater Monitoring Events; and
- Include sampling and analysis of targeted monitoring wells down gradient of exceedances in Parramatta Terminal to characterise and potentially delineate identified impacts.

7.4 Data Gap ID 18 – Nature and Extent of LNAPL

LNAPL was observed for the first time at a measurable thickness (0.045m) within monitoring well MW18/24 during the Q4 (2018) GME. This monitoring well is located in the former footprint of a laboratory, within the south-western portion of CSM3.

This monitoring well was installed in early 2018 by AECOM, who noted a strong hydrocarbon odour and staining throughout the soil profile during installation. No LNAPL was gauged during groundwater monitoring round conducted by AECOM in February 2018. Given this area of the Site has been disused since before demolition in 2015, an ongoing primary source of LNAPL via storage, transfer and/or handling of product is not considered to be present.

In consideration of the above, the emergence of LNAPL during this GME is not considered to represent a change in environmental conditions but is a function of the low transmissivity of LNAPL within the soil profile from historical operations.

GWSAP Updates

Continued biannual gauging and sampling of MW18/24 and down gradient wells to further characterise and delineate impacts.

8. CONCLUSIONS

Based on the results of the Q4 (2018) GME, the following conclusions are made regarding groundwater conditions at the Site:

- The direction of groundwater flow is consistent with previous GMEs undertaken and generally flows to the north east, east and south east towards the bounding Duck and Parramatta Rivers;
- LNAPL was observed for the first time in monitoring well MW18/24, located towards the south of CSM3. This monitoring well was installed in early 2018 and was noted to contain indicators of LNAPL during drilling. In consideration of these observations and the absence of an ongoing primary source within this portion of the site, the emergence of LNAPL during this GME is representative of a historical source, rather than a new release;
- The incorporation of Silica Gel Clean-up analysis on boundary monitoring locations has indicated TRH C_{10}-C_{36} fractions to be comprised largely of polar (non-petroleum) compounds. These compounds are likely by-products of biodegradation processes. The removal of polar, non-petroleum hydrocarbons following silica gel clean-up is indicative of the natural attenuation processes occurring on site. In light of this information, the reliability of trend analysis conducted on TRH C_{10}-C_{36} fractions is to be reviewed in the context of additional silica gel clean-up analysis to be conducted during 2019 GMEs;
- the observed dissolved phase groundwater conditions do not indicate the occurrence of previously undetected release events; and
- the nature and extent of LNAPL and dissolved phase hydrocarbon impacts are currently considered to be stable, well characterised in the context of the current land use and the monitoring well network is considered suitable to assess potential changes in environmental conditions as well as source/pathway/receptor linkages.

Based on the current dataset for PFAS in groundwater at the Site, the following was noted during the Q4 GME:

- Concentrations of PFAS compounds reported in groundwater exceeding human health criteria for incidental direct contact were limited to monitoring wells within the Former Fire Training Area and one well within the southeast of Parramatta Terminal (MW91/1);
- In addition to the above wells, recreational water quality criteria for PFOS + PFHxS were exceeded in monitoring wells in the following areas of the Site:
  - Former fire training area;
  - Upgradient boundary of CSM3;
  - Southwest portion of CSM3;
  - Eastern site boundary of CSM2 (MW94/12);
  - Northern and eastern boundaries of Parramatta Terminal (MW91/8, MW91/1, MW91/4); and
- Where the above exceedances of human health and recreational criteria for PFAS were reported, ecological direct toxicity trigger values were also exceeded for PFOS.

The reported exceedances of adopted human health and ecological screening criteria are consistent with historical data (where available). Elevated PFAS concentrations identified during a first round of PFAS sampling within areas of Parramatta Terminal and the eastern site boundary have not been fully delineated, but are consistent with the source-pathway-receptor linkages previously identified for the Site.

Modifications of the Groundwater Sampling and Analysis Plan are proposed to further characterise the nature and extent of these impacts during 2019 GMEs.

The results collected as part of this event will be further commented and reported on within the Annual Progress Report.

9. STATEMENT OF LIMITATIONS

This report was prepared in accordance with the scope of work outlined within this report and subject to the applicable cost, time and other constraints. ERM performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental profession. ERM makes no warranty concerning the suitability of the Site for any purpose or the permissibility of any use, development or re-development of the Site. Except as otherwise stated, ERM's assessment is limited strictly to identifying specified environmental conditions associated with the subject Site and does not evaluate structural conditions of any buildings on the subject Site. Lack of identification in the report of any hazardous or toxic materials on the subject Site should not be interpreted as a guarantee that such materials do not exist on the Site.

This assessment is based on Site inspection conducted by ERM personnel, sampling and analyses described in the report, and information provided by Viva Energy Australia Pty Ltd ("Viva Energy" or "the client") or other people with knowledge of the Site conditions. All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved with the project and, while normal checking of the accuracy of data has been conducted, ERM assumes no responsibility or liability for errors in data obtained from such sources, regulatory agencies or any other external sources, nor from occurrences outside the scope of this project.

ERM is not engaged in environmental consulting and reporting for the purpose of advertising, sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity or investment purposes.

Nothing in this section or in this report in any way affects, limits or qualifies ERM's obligations and liabilities, or Viva Energy's rights and benefits under the agreement entitled Global Framework Agreement for the procurement of services (and related goods) (RET/10/0313/GLES) between Viva Energy Australia Pty Ltd and ERM (as amended, varied, supplemented, novated or replaced).

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TABLES

	Site Information
Site Identification	Clyde Terminal
Site Location	Durham Street, Rosehill, NSW 2142
Latitude/Longitude	N/A
Property Description	Bulk Fuel Import and Distribution Facility
Site Area (m^2)	117 Hectares
Site Elevation (m AHD)	2 - 5 m (approximate)
Ownership of Site	Viva Energy Australia Pty Ltd
Current Zoning	Industrial

Notes:

Source of Information: a. Parramatta City Council, 2011, Local Environment Plan

Date	Site Activities
1992	Coffey Partners International Pty Ltd developed a geotechnical model of the site using information from 150 previous site investigations. Ten wells were also installed along the southeastern boundary to determine if the migration of contaminants into Duck River was occurring.
1992	ANSTO conducted water sampling
1993	Groundwater Monitoring Event (GME) conducted by Groundwater Technology in March
1993	GME conducted by Groundwater Technology in July
1993	ESA conducted by Coffey (16 boreholes), August
1993	ESA conducted by Golder (8 boreholes), November
1993	ESA conducted by OTEK (3 boreholes), December
1994	ESA conducted by Coffey (6 boreholes), January
1995	ESA conducted by Groundwater Technology in March in the former chemical plant and Tankfarm E1
1995	ESA conducted by Groundwater Technology in April near the refuelling facility on the western site boundary
1997	ESA conducted by OTEK (13 boreholes eastern site boundary), July
1998	ESA (test pitting) completed by Coffey, November
1999	Sludge pilot conducted by IT (formerly Groundwater Technology) in February
1999	ESA conducted by IT in May near the refuelling facility on the western site boundary
1999	GME conducted by IT in October
1999	ESA conducted by Woodwood Clyde (43 boreholes), August
2000	GME conducted by IT in October
2001	GME conducted by IT in February
2001	ESA conducted by IT in March near the sludge drying area
2001	GME conducted by IT in August
2002	Pollution Reduction Program and Remedial Action Plan produced by Shell Engineering Pty Ltd in July
2003-2004	GME conducted by IT in December 2003 and January 2004
2004	Gauging event conducted by IT in February 2004
2004	Gauging event conducted by IT in April 2004
2004	Gauging event conducted by IT in May 2004
2004	GME conducted by IT in July 2004
2004	Gauging event conducted by IT in August 2004
2004	Gauging event conducted by IT in September 2004
2004	Limited ESA conducted by IT in September 2004
2004	Gauging event conducted by IT in October 2004
2004	Gauging event conducted by IT in December 2004
2005	GME conducted by IT in March 2005
2005	Gauging event conducted by IT in June 2005
2005	Gauging event conducted by IT in July 2005
2005	GME conducted by IT in August-September 2005
2005	Gauging event conducted by IT in November 2005
2005	Gauging event conducted by IT in December 2005
2006	Gauging event conducted by IT in January 2006
2006	GME conducted by IT in March 2006
2006	Gauging event conducted by Coffey in July 2006
2006	GME conducted by Coffey in September/October 2006
2006	Gauging event and limited GME conducted by Coffey in December 2006
2007	GME conducted by HLA ENSR in September 2007
2008	Conceptual Site Model and Data Gaps Analysis completed by ERM in October 2008
2008	GME conducted by ERM Australia in February 2008
2008	GME conducted by ERM Australia in November 2008
2009	ESA Phase Seperated Hydrocarbon Assessment (Sub Area CSM2) - ERM April 2009
2009	GME conducted by ERM Australia in April 2009
2009	ESA of Tankfarm E2 September 2009
2009	GME conducted by ERM Australia in November 2009
2009/2010	ESA Chromium Assessment conducted by ERM November 2009 - January 2010
2010	GME (Q1.2010) conducted by ERM Australia in March 2010
2010	GME (Q2 2010) conducted by ERM Australia in June 2010
2010	GME (Q3 2010) conducted by ERM in September 2010
2010	Investigation of Tank 92 release conducted by ERM Australia in October 2010
2010	GME (Q4 2010) conducted by ERM Australia in November 2010
2011	GME (Q1.2011) conducted by ERM Australia in March 2011
2011	GME (Q2 2011) conducted by ERM Australia in June 2011
2011	GME (Q3 2011) conducted by ERM in September 2011
2011	CSM3 ESA conducted by ERM in October/November 2011
2011	GME (Q4 2011) conducted by ERM Australia in December 2011
2011	Investigation of Tank 30 release conducted by ERM Australia in December 2011
2012	GME (Q1 2012) conducted by ERM Australia in March 2012
2012	ESA (Lot 1 PMT and Mobile Tank Farm) Phase 2 conducted in June 2012
2012	GME (Q2 2012) conducted by ERM Australia in June 2012
2012	GME (Q3 2012) conducted by ERM in September 2012
2012	GME (Q4 2012) conducted by ERM in December 2012
2013	GME (Q1 2013) conducted by ERM Australia in March 2013
2013	GME (Q2 2013) conducted by ERM Australia in June 2013
2013	GME (Q3 2013) conducted by ERM Australia in September 2013
2013	GME (Q4 2013) conducted by ERM Australia in December 2013
2014	GME (Q1 2014) conducted by ERM March 2014
2014	GME (Q2 2014) conducted by ERM in May 2014
2014	Lot 101 Detailed Site Investigation conducted by ERM in August/September 2014
2014	GME (Q3 2014) conducted by ERM in September 2014
2014	GME (Q4 2014) conducted by ERM in December 2014
2015	GME (Q1 2015) conducted by ERM March 2015
2015	GME (Q2 2015) conducted by ERM in June 2015
2015	GME (Q4 2015) conducted by ERM in November 2015
2016	GME (Q2 2016) conducted by ERM in August 2016
2016	GME (Q4 2016) conducted by ERM in December 2016
2017	GME (Q2 2017) conducted by ERM in May 2017
2017	GME (Q4 2017) conducted by ERM in December 2017
2018	Western Area Targeted Site Investigation completed by AECOM in January - March 2018
2018	GME (Q2 2018) conducted by ERM in June 2018
2018	PFAS PSI and Conceptual Site Model Fieldworks compled by ERM in August 2018
2018	GME (Q4 2018) conducted by ERM in December 2018

Notes:

Source of Information: IT Environmental Environmental Site Assessment Reports 1994, 1995, 1999

IT Environmental Groundwater Monitoring Report 1993, 1994, 1999, 2000, 2001, 2003 - 2006
Coffey Environments Groundwater Monitoring Report 2006

Date	Site Activity	Site Personnel	Summary
03-Dec-18	Gauging and sampling groundwater monitoring wells, hydrosleeve installation	Adam Kalms, Jack Emblen, Stephen Mulligan	Gauging the water and LNAPL level of existing groundwater wells. HydraSleeve installation for groundwater sampling. Undertaking groundwater sampling, including the recording of field parameters.
04-Dec-18	Gauging and sampling groundwater monitoring wells, hydrosleeve installation	Adam Kalms, Jack Emblen	Gauging the water and LNAPL level of existing groundwater wells. HydraSleeve installation for groundwater sampling. Undertaking groundwater sampling, including the recording of field parameters.
05-Dec-18	Gauging and sampling groundwater monitoring wells, hydrosleeve installation	Adam Kalms, Jack Emblen	Gauging the water and LNAPL level of existing groundwater wells. HydraSleeve installation for groundwater sampling. Undertaking groundwater sampling, including the recording of field parameters.
06-Dec-18	Gauging and sampling groundwater monitoring wells, hydrosleeve installation	Adam Kalms, Jack Emblen	Gauging the water and LNAPL level of existing groundwater wells. HydraSleeve installation for groundwater sampling. Undertaking groundwater sampling, including the recording of field parameters.
07-Dec-18	Gauging and sampling groundwater monitoring wells, hydrosleeve installation	Adam Kalms, Jack Emblen	Gauging the water and LNAPL level of existing groundwater wells. HydraSleeve installation for groundwater sampling. Undertaking groundwater sampling, including the recording of field parameters.

Well ID	Gauging Date	TOC Elevation (m AHD)	Total Measured Depth (m BTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m TOC)	LNAPL Thickness (m)	Corrected Depth to Water (m TOC)	Corrected Water Elevation (m AHD)	Well Condition/Comments	Top Collar Type
BH116	05-Dec-18	4.500	3.982	-	1.595	-	1.595	2.905	Roots on probe, sediment on probe and organic odour.	
BH90/7	-	-	-	-	-	-	-	-	Inaccessible due to contractor works zone.	
MW02/1	03-Dec-18	3.668	2.040	-	1.594	-	1.594	2.074	Slight hydrocarbon odour.	
MW09/1	06-Dec-18	2.963	3.344	-	1.344	-	1.344	1.619	Slight hydrocarbon odour, black silty base.	
MW09/10	04-Dec-18	3.150	3.418	-	1.508	-	1.508	1.642	No odour	
MW09/11	03-Dec-18	3.110	3.230	-	0.943	-	0.943	2.167	Silty base, no odour.	
MW09/13	03-Dec-18	3.395	3.465	-	1.530	-	1.530	1.865	No odour	
MW09/14	-	-	-	-	-	-	-	-	Lost. Could not be located beneath soil and gravel.	
MW09/16	-	-	-	-	-	-	-	-	Lost. Could not be located in overgrown vegetation	
MW09/2	03-Dec-18	4.568	4.390	-	2.500	-	2.500	2.068	Slight hydrocarbon odour.	
MW09/20	03-Dec-18	2.260	1.190		0.850		0.850	1.410	Slightly silty, organic odour.	
MW09/3	04-Dec-18	2.865	3.255	-	1.025	-	1.025	1.840	No odour.	
MW09/6	04-Dec-18	2.714	3.777	-	1.226	-	1.226	1.488	No odour	
MW09/7	03-Dec-18	2.962	3.365	-	0.855	-	0.855	2.107	Stale hydrocarbon odour, grey silty base	
MW09/8	03-Dec-18	2.804	4.460	-	1.629	-	1.629	1.175	No odour	
MW09/9	04-Dec-18	2.820	3.130	-	1.236	-	1.236	1.584	No odour	
MW10/01	03-Dec-18	3.150	2.707	-	0.912	-	0.912	2.238	No odour	
MW10/02	03-Dec-18	3.000	2.578	-	0.960	-	0.960	2.040	Brown silty base, no odour.	
MW11/01	03-Dec-18	5.050	4.950	-	0.712	-	0.712	4.338	No odour	
MW11/02	03-Dec-18	5.090	4.280	-	0.730	-	0.730	4.360	No odour	
MW11/03	03-Dec-18	4.450	4.740	-	0.190	-	0.190	4.260	No odour	
MW11/04	03-Dec-18	5.280	3.870	-	0.963	-	0.963	4.317	No odour	
MW11/06	03-Dec-18	4.680	4.165	-	0.220	-	0.220	4.460	No odour, potential for surface water ingress.	
MW11/07	03-Dec-18	4.780	5.090	-	0.930	-	0.930	3.850	No odour.	
MW11/08	03-Dec-18	4.880	5.150	-	0.545	-	0.545	4.335	No odour.	
MW11/17	03-Dec-18	4.750	-	1.575	1.600	0.025	1.580	3.170	~25 mm of dark brown LNAPL	
MW11/18	03-Dec-18	5.020	-	-	0.965	-	0.965	4.055	No colour.	
MW11/20	03-Dec-18	4.180	4.930	-	0.925	-	0.925	3.255	Viscous, sticky tar-like material in well head. Cleared prior removing well cap prior to gauging and sampling.	
MW11/24	04-Dec-18	4.210	5.300	-	1.452	-	1.452	2.758	No odour.	
MW11/26	04-Dec-18	3.770	2.660	-	2.040	-	2.040	1.730	No odour.	
MW11/30	04-Dec-18	3.810	4.866	-	1.747	-	1.747	2.063	No odour.	
MW11/31	04-Dec-18	3.850	4.915	-	0.780	-	0.780	3.070	No odour	
MW11/37	04-Dec-18	3.770	4.706	-	1.705	-	1.705	2.065	No odour.	
MW11/39	06-Dec-18	3.530	4.910	-	1.226	-	1.226	2.304	Slight hydrocarbon odour.	
MW11/41	04-Dec-18	3.550	4.418	-	1.475	-	1.475	2.075	No odour	
MW11/42	04-Dec-18	3.440	-	-	1.405	-	1.405	2.035	No odour, previous sleeve caught in well.	
MW11/46	04-Dec-18	3.460	4.878	-	2.035	-	2.035	1.425	No odour.	
MW12/01	05-Dec-18	-	-	1.420	-	-	-	-	Thick black LNAPL.	
MW12/03	05-Dec-18	4.590	4.918	-	0.640	-	0.640	3.950	No odour, grab sample taken.	
MW12/05	-	-	-	-	-	-	-	-	Repaved - lost.	
MW12/06	05-Dec-18	3.430	5.416	-	0.900	-	0.900	2.530	Slight hydrocarbon odour.	
MW12/07	05-Dec-18	3.350	2.664	-	0.484	-	0.484	2.866	Black silty base, no odour.	
MW12/08	05-Dec-18	3.660	4.895	-	0.481	-	0.481	3.179	Organic odour.	
MW12/12	03-Dec-18	2.960	3.945	-	0.831	-	0.831	2.129	Black silty base, no odour.	
MW12/13	03-Dec-18	3.170	4.842	-	0.936	-	0.936	2.234	Slight organic odour.	
MW12/14	03-Dec-18	3.340	3.880	-	0.585	-	0.585	2.755	No odour	
MW12/15	07-Dec-18	-	-	1.970	-	-	-	-	Thick black LNAPL, unable to get depth to water.	
MW12/16	04-Dec-18	4.000	5.903	-	1.595	-	1.595	2.405	Strong hydrocarbon odour. No measurable NAPL gauged initially. Approximately 15mm of black LNAPL noted in Hydrasleeve when sampled.	
MW12/20	05-Dec-18	2.940	3.736	-	1.771	-	1.771	1.169	No odour.	
MW12/21	04-Dec-18	2.860	4.057	-	0.228	-	0.228	2.632	Organic odour.	
MW12/22	06-Dec-18	3.370	4.990	-	2.190	-	2.190	1.180	Roots on probe, slight organic odour.	
MW12/23	04-Dec-18	2.830	4.649	-	1.801	-	1.801	1.029	No odour.	
MW12/24	04-Dec-18	2.260	3.840	-	1.180	-	1.180	1.080	Brown silty base, no odour.	
MW12/25	03-Dec-18	2.750	3.894	-	1.960	-	1.960	0.790	No odour, slightly black silty base.	
MW12/26	03-Dec-18	2.330	3.900	-	0.340	-	0.340	1.990	Strong hydrocarbon odour.	
MW18/06	04-Dec-18	4.000	6.913	-	1.730	-	1.730	2.270	Strong hydrocarbon odour.	
MW18/23	03-Dec-18	2.420	4.550	-	1.143	-	1.143	1.277	No odour.	
MW18/24	03-Dec-18	4.530	-	1.715	1.760	0.045	1.724	2.806	Monument damaged, light brown LNAPL, hydrocarbon/solvent odour.	
MW91/1	05-Dec-18	4.125	6.989	-	0.326	-	0.326	3.799	Black silty base, no odour.	
MW91/11	06-Dec-18	4.025	7.585	-	2.000	-	2.000	2.025	No odour.	
MW91/2	05-Dec-18	3.065	2.477	-	0.527	-	0.527	2.538	No odour.	
MW91/3	05-Dec-18	3.505	6.075	-	1.060	-	1.060	2.445	No odour.	
MW91/4	05-Dec-18	3.525	3.951	-	0.690	-	0.690	2.835	Light brown salty base, no odour.	
MW91/5	-	-	-	-	-	-	-	-	Well gatic broken - unable to access for sampling.	
MW91/6	-	-	-	-	-	-	-	-	Lost.	
MW91/7	-	-	-	-	-	-	-	-	Lost.	

MW91/8	05-Dec-18	3.395	6.074	-	1.010	-	1.010	2.385	No odour.
MW91/9	05-Dec-18	3.255	4.890	-	0.560	-	0.560	2.695	No odour.
MW94/10	06-Dec-18	2.585	2.200	-	1.510	-	1.510	1.075	Organics on probe, organic colour.
MW94/11	04-Dec-18	2.678	3.220	-	1.712	-	1.712	0.966	No odour
MW94/12	03-Dec-18	2.585	-	-	1.835	-	1.835	0.750	No odour.
MW94/16	04-Dec-18	2.908	2.905	-	1.038	-	1.038	1.870	Slight hydrocarbon odour.
MW94/18	03-Dec-18	2.888	7.003	-	1.290	-	1.290	1.598	No odour
MW94/3	07-Dec-18	4.85	10.549	-	0.895	-	0.895	3.955	Black silty base, no odour.
MW94/4	03-Dec-18	4.690	9.085	-	0.845	-	0.845	3.845	No odour
MW94/6	03-Dec-18	2.566	4.000	-	1.205	-	1.205	1.361	No odour
MW94/8	06-Dec-18	3.228	3.337	-	2.434	-	2.434	0.794	No odour
MW95/13	03-Dec-18	2.945	3.345	-	0.815	-	0.815	2.130	Grey silty base, strong chemical odour.
MW95/4	03-Dec-18	3.025	3.650	-	0.834	-	0.834	2.191	Orange silty base, strong chemical odour.
MW96/1	-	-	-	-	-	-	-	-	Inaccessible due to surface water present throughout wetland area.
MW96/3	-	-	-	-	-	-	-	-	Inaccessible due to surface water present throughout wetland area.
MW96/7	06-Dec-18	2.435	3.990	-	2.545	-	2.545	-0.110	No odour.
MW97/3	03-Dec-18	2.365	1.599	-	1.013	-	1.013	1.352	No odour.
MW97/4	03-Dec-18	1.895	-	-	0.657	-	0.657	1.238	No odour.
MW98/4	03-Dec-18	4.195	4.030	-	0.975	-	0.975	3.220	No odour.
MW98/6	06-Dec-18	3.725	3.450	-	0.770	-	0.770	2.955	Hydrocarbon odour.
TW94/1	03-Dec-18	4.817	8.778	-	2.050	-	2.050	2.767	No odour.
TW94/2	03-Dec-18	4.833	4.048	-	2.030	-	2.030	2.803	No odour.
TW94/3	06-Dec-18	4.171	3.005	-	1.739	-	1.739	2.432	Slight hydrocarbon odour.
TW94/4	04-Dec-18	3.573	2.170	-	0.841	-	0.841	2.732	No odour
TW94/5	03-Dec-18	3.620	3.070	-	0.955	-	0.955	2.665	No odour
TW94/6	03-Dec-18	3.621	3.140	-	1.230	-	1.230	2.391	Slight hydrocarbon odour, no silt.
TW94/7	03-Dec-18	4.543	3.315	-	1.980	-	1.980	2.563	No silt, no odour.
W91/7	03-Dec-18	3.202	5.120	-	2.250	-	2.250	0.952	Silty base, organic odour.
W91/8	03-Dec-18	3.071	4.081	-	2.025	-	2.025	1.046	Clear, colourless odour.
W91/9	03-Dec-18	2.553	2.094	-	1.549	-	1.549	1.004	Silt, no odour.

Notes:
TOC=Top of Casing
BTOC=Below Top of Casing -
mDatum=Site Height Datum
m=Meters
NA - Not Available

Well ID	Sample Date	TEMP (°C)	pH	EC (µScm-¹)	DO (mg/L)	Eh (mV)	Comments
BH116	05-Dec-18	19.9	8.17	1480	1.7	-146.3	Roots in sleeve, black sediment, clear, colourless, no odour.
BH90/7	-	-	-	-	-	-	Inaccessible
MW02/1	03-Dec-18	-	-	-	-	-	SVOC half filled, not enough water for parameters.
MW09/1	07-Dec-18	23.9	5.82	21292	1.98	-68.5	Yellow/green tinge, clear, no colour
MW09/10	05-Dec-18	22.7	6.48	5406	1.97	-84.5	Cloudy, yellow tinge, silty base, no odour
MW09/11	04-Dec-18	24.5	6.72	3396	1.03	-98.1	Clear colourless, no odour
MW09/13	04-Dec-18	24.2	6.78	1234	0.66	-94.3	Clear colourless, no odour
MW09/14	-	-	-	-	-	-	Lost
MW09/2	04-Dec-18	23.3	7.13	1110	0.32	-62.3	No odour
MW09/3	07-Dec-18	25.9	7.23	744	2.16	-124.1	Clear, colourless, no odour
MW09/6	04-Dec-18	23.4	7.01	9064	0.68	-133.2	Clear, colourless, slight organic odour, silty bottom
MW09/7	03-Dec-18	26	7.16	3261	1.45	-129.7	Clear, colourless chemical odour
MW09/8	03-Dec-18	-	-	-	-	-	Clear, green tinge, no odour, not enough water in sleeve for parameters
MW09/9	05-Dec-18	23.4	6.05	36698	1	-66.4	Yellow, clear, hydrocarbon and solvent colour
MW11/02	06-Dec-18	23.5	4.79	1862	1.90	69.2	Clear, colourless, odourless
MW11/03	06-Dec-18	22.1	3.99	12237	1.94	100.4	Clear colourless, no odour
MW11/04	06-Dec-18	24.7	5.45	3114	1.32	34.9	Clear, colourless, odourless, orange silty base
MW11/06	06-Dec-18	23.3	4.94	3129	1.43	81.5	Clear, colourless, odourless
MW11/07	06-Dec-18	22.5	5	9205	1.86	131.5	Colourless, odourless, clear
MW11/08	06-Dec-18	23.2	4.09	10684	1.97	116.2	Odourless, colourless, clear
MW11/17	-	-	-	-	-	-	LNAPL present
MW11/20	06-Dec-18	22.9	4.98	2004	2.23	73.7	Clear, colourless, no odour
MW11/24	07-Dec-18	22.7	4.56	13135	2.81	20.2	Clear, colourless, slight hydrocarbon odour
MW11/26	07-Dec-18	-	-	-	-	-	Yellow tinge, cloudy, no odour, not enough water in sleeve for parameters
MW11/30	07-Dec-18	22.8	5.12	7845	3.23	-52.5	Clear, colourless, no odour, orange silty base
MW11/31	07-Dec-18	-	-	-	-	-	Clear, colourless, no odour, not enough water in sleeve for parameters
MW11/37	07-Dec-18	-	-	-	-	-	Yellow, cloudy, no odour, not enough water in sleeve for parameters
MW11/41	06-Dec-18	23.3	3.97	11719	2.08	128.4	Clear, colourless, no odour
MW11/42	-	-	-	-	-	-	Hydrasleeve caught in well
MW11/46	06-Dec-18	23.2	5.93	1711	2.21	36.7	Clear, colourless, odourless
MW12/01	-	-	-	-	-	-	LNAPL present
MW12/03	05-Dec-18	21.8	5.36	2308	1.9	20.5	Grab sample due to demolition works
MW12/05		-	-	-			Lost - replaced with MW12/06
MW12/06	06-Dec-18	25.3	6.56	8417	0.33	-140.3	Black, lots of silt, strong organic odour
MW12/07	05-Dec-18	23.1	11.45	4796	1.11	-286.8	Black silty base, green tinge
MW12/08	05-Dec-18	22.1	10.99	8839	2.07	-260.8	Very silty
MW12/12	04-Dec-18	23	7.17	8093	1.26	-122.9	Clear, colourless, no odour
MW12/13	04-Dec-18	22.9	7.09	12559	0.51	-114.2	Clear, colourless, no odour
MW12/15	-	-	-	-	-	-	LNAPL present
MW12/16	07-Dec-18	-	-	-	-	-	15mm of black LNAPL in sleeve, not analysed
MW12/20	05-Dec-18	20.1	6.64	331.5	2.70	-73.2	Black sediment at base
MW12/21	04-Dec-18	-	-	-	-	-	Not enough water for parameters, clear, colourless, organic odour, sediment in base
MW12/22	06-Dec-18	22.0	6.00	14355	1.67	-39.1	Yellow tinge, cloudy, organic odour
MW12/23	04-Dec-18	22.8	7.11	11868	1.18	-12.6	Yellow tinge, cloudy, no odour
MW12/24	04-Dec-18	22.5	7.05	3545	0.92	-32.6	Slightly cloudy, yellow tinge, no colour
MW12/25	03-Dec-18	22.8	7.13	40090	1.64	-105.3	Clear, colourless, no odour
MW12/26	04-Dec-18	-	-	-	-	-	Not enough water for parameters
MW18/06	07-Dec-18	23.0	5.09	16288	2.90	10.2	Clear, colourless, no odour
MW18/23	05-Dec-18	19.3	6.88	27286	1.49	-96.5	Yellow, cloudy, no odour
MW18/24	-	-	-	-	-	-	LNAPL present
MW91/1	06-Dec-18	22.4	5.92	1224	2.66	-7.6	Clear, colourless, no odour, orange silty base
MW91/11	06-Dec-18	22.9	6.95	4815	3.13	-24.8	Clear, colourless, no odour, orange silty base
MW91/2	05-Dec-18	22.7	7.75	305.5	3.23	-98.0	No odour, orange, silty
MW91/3	06-Dec-18	21.4	4.64	7343	1.51	5.5	Clear, colourless, no odour
MW91/4	05-Dec-18	21.7	5.99	1196	1.75	36.2	Orange, cloudy, no odour
MW91/5	-	-	-	-	-	-	Destroyed
MW91/6	-	-	-	-	-	-	Lost
MW91/7	-	-	-	-	-	-	Lost
MW91/8	06-Dec-18	22.2	5.01	7922	0.92	12.1	Yellow tinge, slightly cloudy, no odour
MW91/9	06-Dec-18	25.6	7.73	1733	2.18	-63.3	Clear, colourless, no odoru
MW94/10	04-Dec-18	-	-	-	-	-	Only BTEX vials able to be collected, not redeployed
MW94/11	04-Dec-18	23.2	6.82	22905	0.89	-118.0	Clear, colourless, no odour
MW94/12	03-Dec-18	22.9	7.44	2638	1.20	-168.3	No odour, clear, colourless
MW94/16	07-Dec-18	25.9	7.08	2496	0.95	-137.2	Clear, colourless, no odour
MW94/18	04-Dec-18	22.9	7.20	4769	0.78	-113.6	Clear, pink tinge, no odour
MW94/3	07-Dec-18	20.7	5.46	1880	2.60	20.2	Orange, cloudy, no odour
MW94/4	06-Dec-18	24.5	4.80	165.4	8.74	68.4	Clear , colourless, no odour
MW94/6	05-Dec-18	19.7	6.53	20718	1.31	83.0	Yellow, clear, organic odour
MW94/8	06-Dec-18	-	-	-	-	-	Yellow tinge, cloudy, organics in sleev, organic odour, not enough water for parameters
MW95/13	04-Dec-18	25.7	7.16	3115	0.90	-109.3	Cloudy, slight yellow tinge, strong chemical odour
MW95/4	04-Dec-18	24.2	6.77	3300	1.69	-72.2	Cloudy, slight yellow tinge, strong chemical odour
MW96/1	-	-	-	-	-	-	Lost
MW96/3	-	-	-	-	-	-	Inaccessible
MW96/7	06-Dec-18	21.6	6.94	50114	1.53	-165.2	Clear colourless, no odour
MW97/3	05-Dec-18	20.4	5.72	12.4	9.89	-25.6	Cloudy, yellow tinge, no odour
MW97/4	03-Dec-18	21.9	6.78	9700	1.60	-66.1	Clear, colourless, slight organic odour
MW98/4	06-Dec-18	24.3	5.51	2372	1.36	80.0	Clear, colourless, no odour
MW98/6	07-Dec-18	24.2	6.42	1733	1.98	96.7	Clear, colourless, no odour
TW94/2	05-Dec-18	-	-	-	-	-	Yellow tinge, cloudy, no odour, not enough water for parameters
TW94/3	07-Dec-18	-	-	-	-	-	Clear, colourless, no odour, not enough water
TW94/4	04-Dec-18	24.8	7.06	1219	0.97	-118.6	Slight yellow tinge, cloudy, no odour
TW94/5	04-Dec-18	24.4	6.84	4525	0.66	-100.6	Clear, yellow tinge, no odour
W91/7	03-Dec-18	24.6	6.70	46463	0.51	-203.0	Clear, colourless, organic odour, black silty base
W91/8	03-Dec-18	23.7	7.17	912	2.51	-139.0	Clear colourless, organic odour

Well ID	Sample Date	TEMP (°C)	pH	EC (µScm-¹)	DO (mg/L)	Eh (mV)	Comments
W91/9	05-Dec-18	-	-	-	-	-	Very silty base, green tinge, no odour, not enough water for parameters

Notes:

DO	Dissolved Oxygen
mg/L	milligrams per litre
EC	Electrical Conductivity
μScm^{-1}	microsiemens per centimetre
Eh	Redox
mV	millivolts
L	Litres

Field Staff:
Adam Kalms, Jack Emblen

					TRH Silica Gel Cleanup								TRH Silica Gel Cleanup□	TRH NEPM (1999)						TRH NEPM (2013)							BTEX							Naphthalene
					TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					50	100	50	100	100	100	50	100	100	20	20	50	100	50	50	20	20	100	100	100	100	100	1	2	2	2	2	2	1	5
Clyde - Site Specific HSL D (Sand) 0-<2 m																					6120		NL				4800	NL		NL				NL
NEPM (2013) - Marine Water																											500							50
NEPM (2013) - Recreational																											10	8000	3000			6000		
Location_Code	Field_ID	Monitoring_Zone	Sampled_Date_Time	Sample_Type																														
BH116	BH116	CSM3	5/12/2018	Normal	<50	<100	500	590	260	450	240	140	<100	<20	-	<50	910	520	1430	<20	<20	<100	<100	1230	1570	340	<1	<2	<2	<2	<2	<2	<1	<5
BH116	D02_20181205	CSM3	5/12/2018	Field_D	<50	<100	450	520	210	380	240	140	<100	<20	-	<50	1060	670	1730	<20	<20	<100	<100	1480	1920	440	<1	<2	<2	<2	<2	<2	<1	<5
MW02/1	MW02/1	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	330	-	1300	530	<50	1830	570	560	1460	1460	300	1760	<100	2	<2	<2	2	6	8	10	<5
MW09/1	MW09/1	CSM2	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	11,800	-	560	<100	650	1210	9470	2430	510	510	490	1270	270	6560	226	86	24	144	168	7040	<20
MW09/10	MW09/10	CSM2	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	30	-	110	<100	160	270	<20	<20	100	100	120	220	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW09/10	D03_20181205	CSM2	5/12/2018	Field_D	-	-	-	-	-	-	-	-	-	-	-	220	<100	250	470	-	-	220	-	230	450	<100	-	-	-	-	-	-	-	-
MW09/11	MW09/11	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	110	130	460	700	<20	<20	120	120	430	730	180	<1	<2	<2	<2	<2	<2	<1	<5
MW09/13	MW09/13	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	80	<100	460	540	<20	<20	<100	<100	350	530	180	<1	<2	<2	<2	<2	<2	<1	<5
MW09/3	MW09/3	CSM2	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	540	-	70	<100	90	160	530	530	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW09/6	MW09/6	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	220	-	<50	260	<50	260	270	270	110	110	230	340	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW09/7	MW09/7	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	1680	-	400	460	170	1030	2840	2800	460	460	540	1000	<100	19	<2	<2	4	13	17	36	<5
MW09/8	MW09/8	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW09/9	MW09/9	CSM2	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW09/9	T02_20181205	CSM2	6/12/2018	Interlab_D	<50	<50	<100	-	<100	<100	<100	<100	-	<20	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100	<100	<1	<1	<1	<1	<2	<3	-	<10
MW11/02	MW11/02	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	130	<100	340	470	<20	<20	130	130	310	570	130	<1	<2	<2	<2	<2	<2	<1	<5
MW11/03	MW11/03	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	140	<100	290	430	<20	<20	130	130	220	460	110	<1	<2	<2	<2	<2	<2	<1	<5
MW11/04	MW11/04	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	120	180	460	760	<20	<20	140	140	490	800	170	<1	<2	<2	<2	<2	<2	<1	<5
MW11/06	MW11/06	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	70	<100	120	190	<20	<20	<100	<100	120	120	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW11/07	MW11/07	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	140	<100	120	260	<20	<20	160	160	130	290	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW11/07	D02_20181206	CSM3	6/12/2018	Field_D	-	-	-	-	-	-	-	-	-	<20	-	130	<100	80	210	<20	<20	150	150	<100	150	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW11/08	MW11/08	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	130	<100	520	650	<20	<20	130	130	430	760	200	<1	<2	<2	<2	<2	<2	<1	<5
MW11/08	T01_20181206	CSM3	6/12/2018	Field_D	-	-	-	-	-	-	-	-	-	<20	-	100	<100	560	660	<20	<20	<100	<100	430	640	210	<1	<2	<2	<2	<2	<2	<1	<5
MW11/08	D01_20181206	CSM3	6/12/2018	Interlab_D	-	-	-	-	-	-	-	-	-	<20	<20	<50	<100	1300	1300	<20	<20	<50	<50	1300	1700	400	<1	<1	<1	<1	<2	<3	-	<10
MW11/20	MW11/20	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	110	<100	180	290	<20	<20	110	110	140	250	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW11/24	MW11/24	CSM3	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	120	<100	440	560	<20	<20	120	120	370	650	160	<1	<2	<2	<2	<2	<2	<1	<5
MW11/30	MW11/30	CSM3	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	100	<100	240	340	<20	<20	110	110	210	320	<100	5	<2	<2	<2	<2	<2	5	<5
MW11/30	D01_20181207	CSM3	7/12/2018	Field_D	-	-	-	-	-	-	-	-	-	<20	-	180	<100	360	540	<20	<20	170	170	310	610	130	3	<2	<2	<2	<2	<2	3	<5
MW11/31	MW11/31	CSM3	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	130	<100	110	240	<20	<20	120	120	<100	120	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW11/37	MW11/37	CSM3	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1	<5
MW11/41	MW11/41	CSM3	6/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/03	MW12/03	CSM3	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	140	-	1740	1410	<50	3150	210	180	2130	1930	930	3060	<100	11	<2	9	6	4	10	30	198
MW12/07	MW12/07	SITA	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	60	-	<50	<100	<50	<50	80	40	<100	<100	<100	<100	<100	<1	4	5	12	18	30	39	<5
MW12/08	MW12/08	SITA	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	460	-	-	-	-	-	490	250	-	-	-	-	-	18	130	11	28	49	77	236	11
MW12/12	MW12/12	CSM1	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	150	220	510	880	<20	<20	220	220	520	900	160	<1	<2	<2	<2	<2	<2	<1	<5
MW12/13	MW12/13	CSM1	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	140	140	490	770	<20	<20	160	160	500	810	150	<1	<2	<2	<2	<2	<2	<1	<5
MW12/20	MW12/20	CSM3	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/21	MW12/21	CSM3	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/21	D01_2018214	CSM3	4/12/2018	Field_D	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/23	MW12/23	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	410	<50	410	<20	<20	<100	<100	440	440	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/24	MW12/24	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/25	MW12/25	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW12/26	MW12/26	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	190	-	-	-	-	-	290	180	-	-	-	-	-	16	9	70	11	9	20	115	284
MW18/06	MW18/06	CSM3	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	190	<100	240	430	<20	<20	230	230	200	530	100	<1	<2	<2	<2	<2	<2	<1	<5
MW18/23	MW18/23	CSM3	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	80	100	230	410	<20	<20	<100	<100	260	260	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW91/2	MW91/2	CSM4	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW91/8	MW91/8	CSM4	6/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	100	<100	450	550	<20	<20	110	110	410	700	180	<1	<2	<2	<2	<2	<2	<1	<5
MW91/8	T02_20181206	CSM4	6/12/2018	Interlab_D	<50	<50	<100	-	<100	<100	<100	<100	-	<20	<20	<50	<100	<100	<100	<20	<20	<50	<50	<100	<100	<100	<1	<1	<1	<1	<2	<3	-	<10
MW91/9	MW91/9	CSM4	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW91/9	T03_20181206	CSM4	6/12/2018	Field_D	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	200	200	<20	<20	<100	<100	160	160	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/10	MW94/10	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1	<5
MW94/11	MW94/11	CSM2	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/11	D02_20181204	CSM2	4/12/2018	Field_D	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/16	MW94/16	CSM2	7/12/2018	Normal	-	-	-	-	-	-	-	-	-	2590	-	450	340	940	1730	2610	2610	480	480	990	1880	410	<1	<2	<2	<2	<2	<2	<1	<5
MW94/18	MW94/18	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/3	MW94/3	CSM3	7/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/4	MW94/4	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	80	80	<20	<20	<100	<100	150	150	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/4	D03_20181206	CSM3	6/12/2018	Field_D	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW94/6	MW94/6	CSM3	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	120	260	360	740	<20	<20	120	120	560	820	140	<1	<2	<2	<2	<2	<2	<1	<5
MW95/13	MW95/13	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	1780	-	210	<100	250	460	1740	1740	220	220	230	450	<100	2	<2	<2	<2	<2	<2	2	<5
MW95/4	MW95/4	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	4130	-	550	300	400	1250	4960	4960	600	600	530	1250	120	2	<2	<2	<2	<2	<2	2	<5
MW97/3	MW97/3	CSM1	5/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	140	<100	320	460	<20	<20	140	140	320	600	140	<1	<2	<2	<2	<2	<2	<1	<5

					TRH Silica Gel Cleanup								TRH Silica Gel Cleanup	TRH NEPM (1999)						TRH NEPM (2013)							BTEX							Naphthalene
					TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					50	100	50	100	100	100	50	100	100	20	20	50	100	50	50	20	20	100	100	100	100	100	1	2	2	2	2	2	1	5
Clyde - Site Specific HSL D (Sand) 0-<2 m																					6120		NL				4800	NL		NL				NL
NEPM (2013) - Marine Water																											500							50
NEPM (2013) - Recreational																											10	8000	3000			6000		
Location Code	**Field ID**	**Monitoring Zone**	**Sampled Date Time**	**Sample Type**																														
MW97/4	MW97/4	CSM1	4/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
MW98/4	MW98/4	CSM3	6/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	210	830	470	1510	<20	<20	360	360	1130	1680	190	<1	<2	<2	<2	<2	<2	<1	<5
MW98/6	MW98/6	CSM3	7/12/2018	Normal	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	-	150	1480	960	2590	<20	<20	270	270	2320	3000	410	<1	<2	<2	<2	<2	<2	<1	<5
TW94/2	TW94/2	CSM2	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
TW94/4	TW94/4	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	110	-	<50	<100	<50	<50	80	80	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
TW94/5	TW94/5	CSM2	4/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	70	<100	440	510	<20	<20	<100	<100	380	520	140	<1	<2	<2	<2	<2	<2	<1	<5
W91/9	W91/9	CSM1	5/12/2018	Normal	-	-	-	-	-	-	-	-	-	<20	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1	<5

Statistical Summary

Number of Results	25	25	25	23	25	25	25	25	23	67	3	63	63	63	63	67	67	63	62	63	63	63	67	67	67	67	67	67	64	67
Number of Detects	0	0	2	2	2	2	2	2	0	14	0	35	17	38	42	13	13	30	29	39	41	24	10	4	5	7	7	7	11	3
Minimum Concentration	<50	<50	<50	<100	<100	<100	<50	<100	<100	<20	<20	<50	<100	<50	<50	<20	<20	<50	<50	<100	<100	<100	<1	<1	<1	<1	<2	<2	<1	<5
Minimum Detect	ND	ND	450	520	210	380	240	140	ND	30	ND	70	100	80	80	80	40	100	100	120	120	100	2	4	5	2	4	8	2	11
Maximum Concentration	<50	<100	500	590	260	450	240	140	<100	11800	<20	1740	1480	1300	3150	9470	4960	2130	1930	2320	3060	440	6560	226	86	28	144	168	7040	284
Maximum Detect	ND	ND	500	590	260	450	240	140	ND	11800	ND	1740	1480	1300	3150	9470	4960	2130	1930	2320	3060	440	6560	226	86	28	144	168	7040	284
Average Concentration	25	48	63	94	65	79	44	57	50	367	10	150	180	247	528	368	256	176	172	335	564	111	100	6.4	3.6	2.2	4.5	5.8	118	10
Median Concentration	25	50	25	50	50	50	25	50	50	10	10	80	50	160	340	10	10	50	50	210	320	50	0.5	1	1	1	1	1	0.5	2.5
Standard Deviation	0	6.9	124	146	52	102	59	25	0	1560	0	279	312	271	648	1372	822	326	309	420	690	102	801	31	13	4.6	18	23	880	42
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	2
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	2

ERM

					BTEX							Naphthalene	TRH Silica Gel Cleanup								TRH Silica Gel Cleanup□	TRH NEPM (1999)					TRH NEPM (2013)						
					Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	2	2	2	2	2	1	5	50	100	50	100	100	100	50	100	100	20	50	100	50	50	20	20	100	100	100	100	100
Clyde - Site Specific HSL D (Sand) 0-<2 m					4800	NL		NL				NL																6120		NL			
NEPM (2013) - Marine Water					500							50																					
NEPM (2013) - Recreational					10	8000	3000			6000																							
Location_Code	**Field_ID**	**Monitoring_Zone**	**Sampled_Date_Time**	**Sample_Type**																													
MW09/2	MW09/2	CSM2	4/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	<20	160	<100	200	360	<20	<20	180	180	140	320	<100
MW11/26	MW11/26	CSM3	7/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	<20	<60	<100	600	600	<20	<20	<100	<100	410	660	250
MW11/46	MW11/46	CSM3	6/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	60	<100	<50	60	<20	<20	<100	<100	<100	<100	<100
MW12/22	MW12/22	CSM3	6/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100
MW94/12	MW94/12	CSM2	4/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	50	<50	<100	<50	<50	60	60	<100	<100	<100	<100	<100
MW94/8	MW94/8	CSM3	6/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	30	<50	<100	<50	<50	30	30	<100	<100	<100	<100	<100
MW96/7	MW96/7	CSM2	6/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100
TW94/2	TW94/2	CSM2	5/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	-	-	-	-	-	-	-	-	-	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100
W91/7	W91/7	CSM1	4/12/2018	Normal	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100
W91/8	W91/8	CSM1	4/12/2018	Normal	1340	19	8	6	<5	6	1370	<5	-	-	-	-	-	-	-	-	-	1660	<50	400	<50	400	1980	610	<100	<100	370	370	<100

Statistical Summary

Statistical Summary	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction
Number of Results	10	10	10	10	10	10	10	10	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	3	2	1	2	4	3	3	1	1	3	3	1
Minimum Concentration	<1	<2	<2	<2	<2	<2	<1	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	<20	<50	<100	<50	<50	<20	<20	<100	<100	<100	<100	<100
Minimum Detect	1340	19	8	6	ND	6	1370	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	30	60	400	200	60	30	30	180	180	140	320	250
Maximum Concentration	1340	19	8	6	<5	6	1370	<5	<50	<100	<50	<100	<100	<100	<50	<100	<100	1660	160	400	600	600	1980	610	180	180	410	660	250
Maximum Detect	1340	19	8	6	ND	6	1370	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1660	160	400	600	600	1980	610	180	180	410	660	250
Average Concentration	134	2.8	1.7	1.5	1.2	1.5	137	2.5	25	50	25	50	50	50	25	50	50	181	43	85	100	157	214	77	63	63	127	170	70
Median Concentration	0.5	1	1	1	1	1	0.5	2.5	25	50	25	50	50	50	25	50	50	10	25	50	25	25	10	10	50	50	50	50	50
Standard Deviation	424	5.7	2.2	1.6	0.47	1.6	433	0	0	0	0	0	0	0	0	0	0	520	43	111	184	214	621	188	41	41	142	212	63
Number of Guideline Exceedances	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Metals
	Chromium (hexavalent)
	µg/L
EQL	1
NEPM (2013) - Marine Water	4.4

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	Chromium (hexavalent)
MW11/06	MW11/06	Normal	6/12/2018	ES1836989	<1
MW12/06	MW12/06	Normal	6/12/2018	ES1836989	18
MW12/07	MW12/07	Normal	5/12/2018	ES1836989	2800
MW12/08	MW12/08	Normal	5/12/2018	ES1836989	<1
MW94/4	MW94/4	Normal	6/12/2018	ES1836989	<1
D03_20181206	MW94/4	Field_D	6/12/2018	ES1836989	<1

Statistical Summary

Number of Results	6
Number of Detects	2
Minimum Concentration	<1
Minimum Detect	18
Maximum Concentration	2800
Maximum Detect	2800
Average Concentration	470
Median Concentration	0.5
Standard Deviation	1141
Number of Guideline Exceedances	2
Number of Guideline Exceedances(Detects Only)	2

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	Per- and Polyfluoroalkyl Subst								
					N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOS	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01
Clyde SSTL PFAS - Intrusive Maintenance Worker (Direct Contact) #1													7
NEMP (2018) PFAS SL - Non Potable/Recreational Use													0.7
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (95%)													
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (99%) #2													
MW09/3	MW09/3	Normal	7/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
MW09/6	MW09/6	Normal	4/12/2018	ES1836402	<0.12	<0.12	<0.12	<0.12	1.7	0.44	43.1	39.8	21.7
MW11/20	MW11/20	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	0.02	<0.02	0.49	0.47	0.13
MW11/41	MW11/41	Normal	6/12/2018	ES1836989	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05
MW11/46	MW11/46	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	0.5	0.2
MW12/12	MW12/12	Normal	4/12/2018	ES1836402	<2.5	<2.5	<2.5	<2.5	11.9	6.8	518	468	315
MW12/13	MW12/13	Normal	4/12/2018	ES1836402	<0.12	<0.12	<0.12	<0.12	8.3	1.68	288	274	80.7
MW12/20	MW12/20	Normal	5/12/2018	ES1836989	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.16	0.16	0.16
MW12/21	MW12/21	Normal	4/12/2018	ES1836402	<0.12	<0.12	<0.12	<0.12	0.09	<0.05	3.06	2.97	1.78
MW12/25	MW12/25	Normal	4/12/2018	ES1836402	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05
MW12/26	MW12/26	Normal	4/12/2018	ES1836402	<0.05	<0.05	<0.05	<0.05	2.57	1.2	80.6	73.9	43.3
MW18/23	MW18/23	Normal	5/12/2018	ES1836989	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.62	0.62	0.22
MW91/1	MW91/1	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	0.98	0.47	20	18.5	15.1
MW91/11	MW91/11	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.08	0.08	<0.01
MW91/2	MW91/2	Normal	5/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.18	0.18	0.07
MW91/3	MW91/3	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
MW91/4	MW91/4	Normal	5/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	0.37	0.03	285	284	3.59
D01-20181205	MW91/4	Field_D	5/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	0.42	0.03	250	250	3.27
T01_20181205	MW91/4	Interlab_D	5/12/2018	632224	-	<0.05	<0.05	<0.05	0.41	0.04	266.03	265.54	3.01
MW91/8	MW91/8	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	1.57	0.04	13.1	11.5	5.07
MW91/9	MW91/9	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	0.52	0.13
T03_20181206	MW91/9	Field_D	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.45	0.45	0.12
MW94/11	MW94/11	Normal	4/12/2018	ES1836402	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05
D02_20181204	MW94/11	Field_D	4/12/2018	ES1836402	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
MW94/12	MW94/12	Normal	4/12/2018	ES1836402	<0.05	<0.05	<0.05	<0.05	0.03	<0.02	1.35	1.28	0.96
MW94/3	MW94/3	Normal	7/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	0.38	<0.02	2.24	1.86	1.03
MW98/4	MW98/4	Normal	6/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.49	0.46	0.22
W91/8	W91/8	Normal	4/12/2018	ES1836402	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	1.5	1.46	0.37
W91/9	W91/9	Normal	5/12/2018	ES1836989	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.12	0.12	0.05

Field_ID	PFOS and PFOA																					
	PFOS	PFOA	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamidoacetic acid (Et	N-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroundecanoic acid (PFUnA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonamide (PFOSA)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EQL	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.02	0.02
Clyde SSTL PFAS - Intrusive Maintenance Worker (Direct Contact) #1		56																				
NEMP (2018) PFAS SL - Non Potable/Recreational Use		5.6																				
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (95%)	*0.13*	*220*																				
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (99%) #2	**0.00023**	**19**																				
MW09/3	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/6	10	2.6	<0.05	0.52	0.13	<0.05	<0.05	<0.05	2.4	<0.2	<0.05	11.7	<0.05	0.06	3.24	6.83	2.36	<0.12	<0.05	<0.05	1.14	<0.05
MW11/20	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.03	<0.1	<0.02	0.13	<0.02	<0.02	0.08	0.11	0.09	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/41	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW11/46	0.08	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.12	<0.02	<0.02	0.1	0.08	0.07	<0.05	<0.02	<0.02	0.02	<0.02
MW12/12	231	20.7	<1	30.8	16.2	<1	<1	<1	13	<5	<1	83.6	2.2	<1	11.8	43.4	17	<2.5	<1	<1	30	<1
MW12/13	37.2	25.3	<0.05	7.88	38.7	0.2	<0.05	<0.05	16	8.7	<0.05	43.5	0.08	0.6	22.6	44	29.7	<0.12	<0.05	<0.05	4.02	<0.05
MW12/20	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/21	1.01	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	<0.2	<0.05	0.77	<0.05	<0.05	0.32	0.42	0.11	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/26	26	3.58	<0.05	4.02	6.01	0.09	<0.02	<0.02	3.2	<0.1	<0.02	17.3	0.1	0.21	2.07	7.87	3.84	<0.05	<0.02	<0.02	2.46	0.08
MW18/23	0.1	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.12	<0.05	<0.05	0.1	0.12	0.11	<0.12	<0.05	<0.05	<0.05	<0.05
MW91/1	3.94	0.58	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	1	<0.1	<0.02	11.2	<0.02	<0.02	0.31	1.2	0.27	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/11	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.05	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/2	0.03	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	0.03	0.03	0.03	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/3	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/4	0.75	2.86	<0.05	0.45	0.17	<0.05	<0.02	<0.02	0.56	31	<0.02	2.84	<0.02	<0.02	19.5	93.2	133	<0.05	<0.02	<0.02	0.04	<0.02
D01-20181205	0.71	2.78	<0.05	0.44	0.17	<0.05	<0.02	<0.02	0.52	28.9	<0.02	2.56	<0.02	<0.02	18.3	85.5	110	<0.05	<0.02	<0.02	0.04	<0.02
T01_20181205	0.81	2.5	<0.01	0.39	0.17	<0.01	<0.05	<0.05	0.47	36	<0.01	2.2	<0.01	<0.01	18	75	130	<0.01	<0.01	<0.01	0.04	<0.05
MW91/8	0.41	0.14	<0.05	0.11	<0.05	<0.05	<0.02	<0.02	2.47	<0.1	<0.02	4.66	<0.02	<0.02	0.49	1.71	1.51	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/9	0.07	0.03	<0.05	0.2	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	0.03	0.06	0.07	<0.05	<0.02	<0.02	<0.02	<0.02
T03_20181206	0.08	0.03	<0.05	0.14	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	<0.02	<0.02	0.03	0.06	0.07	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
D02_20181204	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/12	0.63	0.08	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.33	<0.02	<0.02	0.12	0.09	0.03	<0.05	<0.02	<0.02	0.04	<0.02
MW94/3	0.16	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	<0.1	<0.02	0.87	<0.02	<0.02	0.02	0.25	0.03	<0.05	<0.02	<0.02	<0.02	<0.02
MW98/4	0.16	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	<0.02	<0.02	0.09	0.06	0.03	<0.05	<0.02	<0.02	0.03	<0.02
W91/8	0.11	0.17	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.26	<0.02	<0.02	0.47	0.32	0.13	<0.05	<0.02	<0.02	0.04	<0.02
W91/9	0.05	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02

Statistical Summary

Statistic	EtFOSA	EtFOSE	MeFOSA	MeFOS	PFPeS	PFHpS	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS
Number of Results	28	29	29	29	29	29	29	29	29
Number of Detects	0	0	0	0	13	9	23	23	22
Minimum Concentration	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
Minimum Detect	ND	ND	ND	ND	0.02	0.03	0.08	0.08	0.05
Maximum Concentration	<2.5	<2.5	<2.5	<2.5	11.9	6.8	518	468	315
Maximum Detect	ND	ND	ND	ND	11.9	6.8	518	468	315
Average Concentration	0.079	0.077	0.077	0.077	1	0.38	61	58	17
Median Concentration	0.025	0.025	0.025	0.025	0.025	0.025	0.52	0.52	0.22
Standard Deviation	0.23	0.23	0.23	0.23	2.6	1.3	129	122	60
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	12
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	12

Statistic	PFOS	PFOA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	EtFOSAA	MeFOSAA	PFBS	PFBA	PFDS	PFHxS	PFUnA	PFDA	PFHpA	PFHxA	PFPeA	PFTeDA	PFTrDA	PFDoA	PFNA	PFOSA
Number of Results	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Number of Detects	21	21	0	10	7	2	0	0	12	4	0	21	3	3	21	22	21	0	0	0	11	1
Minimum Concentration	<0.01	<0.01	<0.01	<0.05	<0.05	<0.01	<0.02	<0.02	<0.02	<0.1	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.02	<0.02
Minimum Detect	0.03	0.01	ND	0.11	0.13	0.09	ND	ND	0.03	8.7	ND	0.04	0.08	0.06	0.02	0.02	0.03	ND	ND	ND	0.02	0.08
Maximum Concentration	231	25.3	<1	30.8	38.7	<1	<1	<1	16	36	<1	83.6	2.2	<1	22.6	93.2	133	<2.5	<1	<1	30	<1
Maximum Detect	231	25.3	ND	30.8	38.7	0.2	ND	ND	16	36	ND	83.6	2.2	0.6	22.6	93.2	133	ND	ND	ND	30	0.08
Average Concentration	11	2.1	0.041	1.6	2.1	0.049	0.032	0.032	1.4	3.7	0.031	6.3	0.094	0.059	3.4	12	15	0.076	0.031	0.031	1.3	0.034
Median Concentration	0.1	0.05	0.025	0.025	0.025	0.025	0.01	0.01	0.025	0.05	0.01	0.12	0.01	0.01	0.09	0.09	0.07	0.025	0.01	0.01	0.025	0.01
Standard Deviation	43	5.9	0.088	5.8	7.7	0.093	0.09	0.09	3.7	9.9	0.09	17	0.41	0.14	7	27	39	0.23	0.09	0.09	5.6	0.091
Number of Guideline Exceedances	29	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	21	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Environmental Standards Comments

#1 Site specific threshold level - developed based on 100x drinking water or 10x recreational values.

#2 Guideline screening levels are lower than laboratory LOR.

Field Duplicates (water)
Filter: Lab_Report_Nu

			Lab Report Number	ES1836402	ES1836402		ES1836402	ES1836402		ES1836989	ES1836989		ES1836989	ES1836989	
			Field ID	MW94/11	D02_20181204	RPD	MW12/21	D01_2018214	RPD	MW91/4	D01-20181205	RPD	MW91/9	T03_20181206	RPD
			Sampled Date/Time	4/12/2018	4/12/2018		4/12/2018	4/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018	
Chem_Gr	ChemNam	Units	EQL												
Per- and P	N-Ethyl pe	µg/L	0.05	<0.12	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl pe	µg/L	0.05	<0.12	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl p	µg/L	0.05	<0.12	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	N-Methyl p	µg/L	0.05	<0.12	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	Perfluorop	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				0.37	0.42	13	<0.02	<0.02	0
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				0.03	0.03	0	<0.02	<0.02	0
	Sum of PF	µg/L	0.01 : 0.1 (Interlab)	<0.05	<0.01	0				285	250	13	0.52	0.45	14
	Sum of PF	µg/L	0.01 : 0.05 (Interlab)	<0.05	<0.01	0				284	250	13	0.52	0.45	14
	Sum of PF	µg/L	0.01	<0.05	<0.01	0				3.59	3.27	9	0.13	0.12	8
'olyfluoroalkyl Subst															
PFOS and	PFOS	µg/L	0.01	<0.05	<0.01	0				0.75	0.71	5	0.07	0.08	13
	Perfluoroo	µg/L	0.01	<0.05	<0.01	0				2.86	2.78	3	0.03	0.03	0
	4:2 Fluorot	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	6:2 Fluorot	µg/L	0.05	<0.05	<0.05	0				0.45	0.44	2	**0.2**	**0.14**	**35**
	8:2 Fluorot	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0				0.17	0.17	0	<0.05	<0.05	0
	10:2 Fluor	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	N-Ethyl pe	µg/L	0.02 : 0.05 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	N-Methyl p	µg/L	0.02 : 0.05 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorob	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				0.56	0.52	7	<0.02	<0.02	0
	Perfluorob	µg/L	0.1 : 0.05 (Interlab)	<0.2	<0.1	0				31	28.9	7	<0.1	<0.1	0
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				2.84	2.56	10	**0.06**	**0.04**	**40**
	Perfluorou	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				19.5	18.3	6	0.03	0.03	0
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				93.2	85.5	9	0.06	0.06	0
	Perfluorop	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				133	110	19	0.07	0.07	0
	Perfluorote	µg/L	0.05 : 0.01 (Interlab)	<0.12	<0.05	0				<0.05	<0.05	0	<0.05	<0.05	0
	Perfluorotr	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
	Perfluoron	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.02	0				0.04	0.04	0	<0.02	<0.02	0
	Perfluoroo	µg/L	0.02 : 0.05 (Interlab)	<0.05	<0.02	0				<0.02	<0.02	0	<0.02	<0.02	0
PFOA															

Lab Report Number	ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989
Field ID	MW94/4	D03_20181206	RPD	BH116	D02_20181205	RPD	MW09/10	D03_20181205	RPD	MW11/07	D02_20181206	RPD	MW11/08	T01_20181206	RPD	MW11/30
Sampled Date/Time	6/12/2018	6/12/2018		5/12/2018	5/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018		6/12/2018	6/12/2018		7/12/2018

Field Duplicates (water)			**Lab Report Number**	ES1836402	ES1836402		ES1836402	ES1836402		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989	ES1836989		ES1836989
Filter: Lab_Report_Nu			**Field ID**	MW94/11	D02_20181204	**RPD**	MW12/21	D01_2018214	**RPD**	MW91/4	D01-20181205	**RPD**	MW91/9	T03_20181206	**RPD**	MW94/4	D03_20181206	**RPD**	BH116	D02_20181205	**RPD**	MW09/10	D03_20181205	**RPD**	MW11/07	D02_20181206	**RPD**	MW11/08	T01_20181206	**RPD**	MW11/30
			Sampled Date/Time	4/12/2018	4/12/2018		4/12/2018	4/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018		6/12/2018	6/12/2018		5/12/2018	5/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018		6/12/2018	6/12/2018		7/12/2018
TRH Silica	TRH >C10	µg/L	50	<50	<50	0	<50	<50	0										<50	<50	0										
	TRH >C10	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	<100	0										<100	<100	0										
	TRH >C10	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<50	0										500	450	11										
	TRH >C10	µg/L	100	<100	<100	0	<100	<100	0										590	520	13										
	TRH >C15	µg/L	100	<100	<100	0	<100	<100	0										260	210	21										
	TRH >C16	µg/L	100	<100	<100	0	<100	<100	0										450	380	17										
	TRH >C29	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<50	0										240	240	0										
	TRH >C34	µg/L	100	<100	<100	0	<100	<100	0										140	140	0										
Gel Cleanup																															
TRH Silica	TRH >C10	µg/L	100	<100	<100	0	<100	<100	0										<100	<100	0										
Gel Cleanup																															
TRH NEPM	TRH C6-C	µg/L	20	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20
	TRH >C10	µg/L	50	<50	<50	0	<50	<50	0				<50	<50	0	<50	<50	0	<50	<50	0				140	130	7	130	100	26	**100**
	TRH >C15	µg/L	100	<100	<100	0	<100	<100	0				<100	<100	0	<100	<100	0	910	1060	15				<100	<100	0	<100	<100	0	<100
	TRH >C29	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<50	0				**<50**	**200**	**120**	**80**	**<50**	**46**	520	670	25				**120**	**80**	**40**	520	560	7	**240**
	TRH >C10	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<50	0				**<50**	**200**	**120**	**80**	**<50**	**46**	1430	1730	19				260	210	21	650	660	2	**340**
M (1999)																															
TRH NEPM	TRH C6-C	µg/L	20	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20
	TRH C6-C	µg/L	20	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20	<20	0				<20	<20	0	<20	<20	0	<20
	TRH >C10	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	<100	0				<100	<100	0	<100	<100	0	<100	<100	0				160	150	6	130	<100	26	**110**
	TRH >C10	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	<100	0				<100	<100	0	<100	<100	0	<100	<100	0				160	150	6	130	<100	26	**110**
	TRH >C16	µg/L	100	<100	<100	0	<100	<100	0				**<100**	**160**	**46**	**150**	**<100**	**40**	1230	1480	18				130	<100	26	430	430	0	**210**
	TRH >C10	µg/L	100	<100	<100	0	<100	<100	0				**<100**	**160**	**46**	**150**	**<100**	**40**	1570	1920	20				**290**	**150**	**64**	760	640	17	**320**
	TRH >C34	µg/L	100	<100	<100	0	<100	<100	0				<100	<100	0	<100	<100	0	340	440	26				<100	<100	0	200	210	5	<100
M (2013)																															
BTEX	Benzene	µg/L	1	<1	<1	0	<1	<1	0				<1	<1	0	<1	<1	0	<1	<1	0				<1	<1	0	<1	<1	0	**5**
	Toluene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2
	Ethylbenze	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2
	Xylene (o)	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2
	Xylene (m	µg/L	2	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2
	Xylene Tot	µg/L	2 : 3 (Interlab)	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0				<2	<2	0	<2	<2	0	<2
	BTEX	µg/L	1	<1	<1	0	<1	<1	0				<1	<1	0	<1	<1	0	<1	<1	0				<1	<1	0	<1	<1	0	**5**
Naphthalene	Naphthale	µg/L	5 : 10 (Interlab)	<5	<5	0	<5	<5	0				<5	<5	0	<5	<5	0	<5	<5	0				<5	<5	0	<5	<5	0	<5
ne																															
Metals	Chromium	µg/l	1													<1	<1	0													

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 30 (1-10 x EQL); 30 (10-30 x EQL); 30 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Field Duplicates (water)			**Lab Report Number**	ES1836989			ES1836989	632224		ES1836989	632224		ES1836989	632224		ES1836989	632224	
Filter: Lab_Report_Nu			**Field ID**	D01_20181207		**RPD**	MW91/4	T01_20181205	**RPD**	MW91/8	T02_20181206	**RPD**	MW09/9	T02_20181205	**RPD**	MW11/08	D01_20181206	**RPD**
			Sampled Date/Time	7/12/2018			5/12/2018	5/12/2018		6/12/2018	6/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018	
Chem_Grc	**ChemNam**	**Units**	**EQL**															
Per- and P	N-Ethyl pe	µg/L	0.05				<0.05											
	N-Ethyl pe	µg/L	0.05				<0.05	<0.05	0									
	N-Methyl p	µg/L	0.05				<0.05	<0.05	0									
	N-Methyl p	µg/L	0.05				<0.05	<0.05	0									
	Perfluorop	µg/L	0.02 : 0.01 (Interlab)				0.37	0.41	10									
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)				0.03	0.04	29									
	Sum of PF	µg/L	0.01 : 0.1 (Interlab)				285	266.03	7									
	Sum of PF	µg/L	0.01 : 0.05 (Interlab)				284	265.54	7									
	Sum of PF	µg/L	0.01				3.59	3.01	18									
'olyfluoroalkyl Subst																		
PFOS and	PFOS	µg/L	0.01				0.75	0.81	8									
	Perfluoroo	µg/L	0.01				2.86	2.5	13									
	4:2 Fluorot	µg/L	0.05 : 0.01 (Interlab)				<0.05	<0.01	0									
	6:2 Fluorot	µg/L	0.05				0.45	0.39	14									
	8:2 Fluorot	µg/L	0.05 : 0.01 (Interlab)				0.17	0.17	0									
	10:2 Fluor	µg/L	0.05 : 0.01 (Interlab)				<0.05	<0.01	0									
	N-Ethyl pe	µg/L	0.02 : 0.05 (Interlab)				<0.02	<0.05	0									
	N-Methyl p	µg/L	0.02 : 0.05 (Interlab)				<0.02	<0.05	0									
	Perfluorob	µg/L	0.02 : 0.01 (Interlab)				0.56	0.47	17									
	Perfluorob	µg/L	0.1 : 0.05 (Interlab)				31	36	15									
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)				<0.02	<0.01	0									
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)				2.84	2.2	25									
	Perfluorou	µg/L	0.02 : 0.01 (Interlab)				<0.02	<0.01	0									
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)				<0.02	<0.01	0									
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)				19.5	18	8									
	Perfluoroh	µg/L	0.02 : 0.01 (Interlab)				93.2	75	22									
	Perfluorop	µg/L	0.02 : 0.01 (Interlab)				133	130	2									
	Perfluorote	µg/L	0.05 : 0.01 (Interlab)				<0.05	<0.01	0									
	Perfluorotr	µg/L	0.02 : 0.01 (Interlab)				<0.02	<0.01	0									
	Perfluorod	µg/L	0.02 : 0.01 (Interlab)				<0.02	<0.01	0									
	Perfluoron	µg/L	0.02 : 0.01 (Interlab)				0.04	0.04	0									
	Perfluoroo	µg/L	0.02 : 0.05 (Interlab)				<0.02	<0.05	0									
PFOA																		

Field Duplicates (water)			Lab Report Number	ES1836989		ES1836989	632224		ES1836989	632224		ES1836989	632224		ES1836989	632224	
Filter: Lab_Report_Nu			Field ID	D01_20181207	RPD	MW91/4	T01_20181205	RPD	MW91/8	T02_20181206	RPD	MW09/9	T02_20181205	RPD	MW11/08	D01_20181206	RPD
			Sampled Date/Time	7/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018		5/12/2018	5/12/2018		6/12/2018	6/12/2018	
TRH Silica	TRH >C10	µg/L	50						<50	<50	0	<50	<50	0			
	TRH >C10	µg/L	100 : 50 (Interlab)						<100	<50	0	<100	<50	0			
	TRH >C10	µg/L	50 : 100 (Interlab)						<50	<100	0	<50	<100	0			
	TRH >C10	µg/L	100														
	TRH >C15	µg/L	100						<100	<100	0	<100	<100	0			
	TRH >C16	µg/L	100						<100	<100	0	<100	<100	0			
	TRH >C29	µg/L	50 : 100 (Interlab)						<50	<100	0	<50	<100	0			
	TRH >C34	µg/L	100						<100	<100	0	<100	<100	0			
Gel Cleanup																	
TRH Silica	TRH >C10	µg/L	100														
Gel Cleanup□																	
TRH NEPM	TRH C6-C	µg/L	20	<20	0										<20		
	TRH >C10	µg/L	50	**180**	**57**				**100**	**<50**	**67**	<50	<50	0	**130**	**<50**	**89**
	TRH >C15	µg/L	100	<100	0				<100	<100	0	<100	<100	0	<100	<100	0
	TRH >C29	µg/L	50 : 100 (Interlab)	**360**	**40**				**450**	**<100**	**127**	<50	<100	0	**520**	**1300**	**86**
	TRH >C10	µg/L	50 : 100 (Interlab)	**540**	**45**				**550**	**<100**	**138**	<50	<100	0	**650**	**1300**	**67**
M (1999)																	
TRH NEPM	TRH C6-C	µg/L	20	<20	0				<20	<20	0	<20	<20	0	<20	<20	0
	TRH C6-C	µg/L	20	<20	0				<20	<20	0	<20	<20	0	<20	<20	0
	TRH >C10	µg/L	100 : 50 (Interlab)	**170**	**43**				**110**	**<50**	**75**	<100	<50	0	**130**	**<50**	**89**
	TRH >C10	µg/L	100 : 50 (Interlab)	**170**	**43**				**110**	**<50**	**75**	<100	<50	0	**130**	**<50**	**89**
	TRH >C16	µg/L	100	**310**	**38**				**410**	**<100**	**122**	<100	<100	0	**430**	**1300**	**101**
	TRH >C10	µg/L	100	**610**	**62**										760		
	TRH >C34	µg/L	100	130	26				**180**	**<100**	**57**	<100	<100	0	**200**	**400**	**67**
M (2013)																	
BTEX	Benzene	µg/L	1	**3**	**50**				<1	<1	0	<1	<1	0	<1	<1	0
	Toluene	µg/L	2 : 1 (Interlab)	<2	0				<2	<1	0	<2	<1	0	<2	<1	0
	Ethylbenze	µg/L	2 : 1 (Interlab)	<2	0				<2	<1	0	<2	<1	0	<2	<1	0
	Xylene (o)	µg/L	2 : 1 (Interlab)	<2	0				<2	<1	0	<2	<1	0	<2	<1	0
	Xylene (m	µg/L	2	<2	0				<2	<2	0	<2	<2	0	<2	<2	0
	Xylene Tot	µg/L	2 : 3 (Interlab)	<2	0				<2	<3	0	<2	<3	0	<2	<3	0
	BTEX	µg/L	1	**3**	**50**										<1		
Naphthalen	Naphthalen	µg/L	5 : 10 (Interlab)	<5	0				<5	<10	0	<5	<10	0	<5	<10	0
ne																	
Metals	Chromium	µg/l	1														

*RPDs have only been considered where a concentrat

**High RPDs are in bold (Acceptable RPDs for each E

***Interlab Duplicates are matched on a per compound

Field Blanks (water)
Filter: Lab_Report_Number in('ES1836989','ES1836402')

Chem_Group	ChemName	Units	EQL					
			Lab Report Number	ES1836402	ES1836989	ES1836989	ES1836989	ES1836989
			Field ID	R01_20181203	R01_20181204	R01_20181205	R01_20181206	R01_20181207
			Sampled_Date/Time	3/12/2018	4/12/2018	5/12/2018	6/12/2018	7/12/2018
			Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
BTEX	Benzene	µg/L	1	<1	<1	<1	<1	<1
	Toluene	µg/L	2	<2	<2	<2	<2	<2
	Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	<2	<2	<2	<2	<2
	BTEX	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	Naphthalene	µg/L	5	<5	<5	<5	<5	<5
TRH NEPM (1999)	TRH C6-C9 Fraction	µg/L	20	<20	<20	<20	<20	<20
	TRH >C10-C14 Fraction	µg/L	50	<50	<50	<50	<50	<50
	TRH >C15-C28 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C29-C36 Fraction	µg/L	50	<50	<50	<50	<50	<50
	TRH >C10-C36 Fraction	µg/L	50	<50	<50	<50	<50	<50
TRH NEPM (2013)	TRH C6-C10 Fraction	µg/L	20	<20	<20	<20	<20	<20
	TRH C6-C10 less BTEX	µg/L	20	<20	<20	<20	<20	<20
	TRH >C10-C16 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C10-C16 Fraction less N	µg/L	100	<100	<100	<100	<100	<100
	TRH >C16-C34 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C10-C40 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C34-C40 Fraction	µg/L	100	<100	<100	<100	<100	<100

Field Blanks (water)
Filter: Lab_Report_Number in('ES1836989','ES1836402')

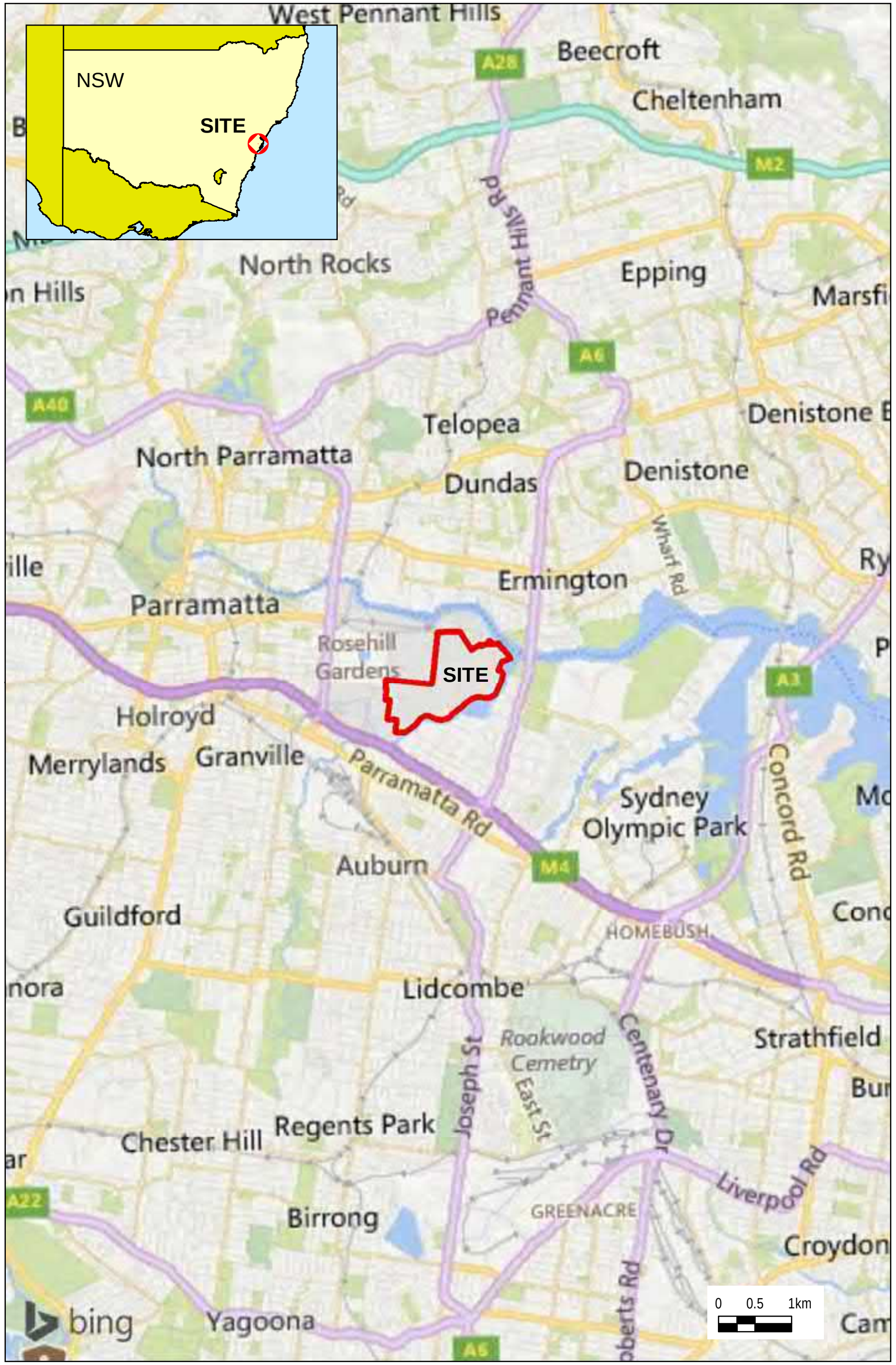
Chem_Group	ChemName	Units	EQL					
			Lab Report Number	ES1836402	ES1836989	ES1836989	ES1836989	ES1836989
			Field ID	R01_20181203	R01_20181204	R01_20181205	R01_20181206	R01_20181207
			Sampled_Date/Time	3/12/2018	4/12/2018	5/12/2018	6/12/2018	7/12/2018
			Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Rinsate
BTEX	Benzene	µg/L	1	<1	<1	<1	<1	<1
	Toluene	µg/L	2	<2	<2	<2	<2	<2
	Ethylbenzene	µg/L	2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	2	<2	<2	<2	<2	<2
	Xylene (m & p)	µg/L	2	<2	<2	<2	<2	<2
	Xylene Total	µg/L	2	<2	<2	<2	<2	<2
	BTEX	µg/L	1	<1	<1	<1	<1	<1
Naphthalene	Naphthalene	µg/L	5	<5	<5	<5	<5	<5
TRH NEPM (1999)	TRH C6-C9 Fraction	µg/L	20	<20	<20	<20	<20	<20
	TRH >C10-C14 Fraction	µg/L	50	<50	<50	<50	<50	<50
	TRH >C15-C28 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C29-C36 Fraction	µg/L	50	<50	<50	<50	<50	<50
	TRH >C10-C36 Fraction	µg/L	50	<50	<50	<50	<50	<50
TRH NEPM (2013)	TRH C6-C10 Fraction	µg/L	20	<20	<20	<20	<20	<20
	TRH C6-C10 less BTEX	µg/L	20	<20	<20	<20	<20	<20
	TRH >C10-C16 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C10-C16 Fraction less N	µg/L	100	<100	<100	<100	<100	<100
	TRH >C16-C34 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C10-C40 Fraction	µg/L	100	<100	<100	<100	<100	<100
	TRH >C34-C40 Fraction	µg/L	100	<100	<100	<100	<100	<100

Well ID	Benzene	TRH >C_{10}-C_{36} Fraction	TRH C_6-C_9 Fraction
BH116	ND	No Trend	ND
MW02/1	Decreasing Trend	Decreasing Trend	Decreasing Trend
MW09/1	No Trend #1	Decreasing Trend	-
MW09/10	ND	No Trend	Decreasing Trend #4
MW09/11	ND	No Trend	No Trend
MW09/13	ND	No Trend	ND
MW09/2	Decreasing Trend #4	Decreasing Trend	Decreasing Trend #4
MW09/3	ND	No Trend	Decreasing Trend
MW09/6	ND	No Trend	No Trend
MW09/7	Decreasing Trend	Decreasing Trend	Decreasing Trend
MW09/8	ND	No Trend #4	ND
MW09/9	ND	Decreasing Trend #4	No Trend #4
MW11/02	ND	No Trend	No Trend #4
MW11/03	ND	No Trend	No Trend #4
MW11/04	ND	Increasing trend #1	ND
MW11/06	ND	-	ND
MW11/07	ND	Increasing Trend	ND
MW11/08	ND	Increasing Trend	ND
MW11/20	ND	No Trend #3	ND
MW11/24	ND	Increasing Trend	ND
MW11/26	ND	No Trend	ND
MW11/30	Decreasing Trend	Increasing Trend #1	Decreasing Trend #4
MW11/31	ND	No Trend	ND
MW11/37	ND	-	ND
MW11/41	ND	No Trend #4	ND
MW11/46	ND	No Trend	ND
MW12/03	No Trend	Decreasing Trend	Increasing Trend
MW12/07	No Trend #4	No Trend #4	No Trend
MW12/08	No Trend	-	No Trend
MW12/12	No Trend #4	No Trend #1	No Trend #4
MW12/13	ND	No Trend	ND
MW12/20	ND	No Trend #4	ND
MW12/21	ND	No Trend #4	ND
MW12/22	ND	No Trend #4	ND
MW12/23	ND	No Trend	ND
MW12/24	ND	No Trend #4	ND
MW12/25	ND	No Trend #4	ND
MW12/26	No Trend	-	No Trend
MW18/06	ND	No Trend #3	ND
MW18/23	ND	No Trend #3	ND
MW91/2	ND	No Trend #4	ND
MW91/8	ND	No Trend	ND
MW91/9	ND	Decreasing Trend	ND
MW94/10	ND	-	ND
MW94/11	ND	Decreasing Trend #4	ND
MW94/12	ND	Decreasing Trend #4	Decreasing Trend
MW94/16	ND	No Trend	No Trend
MW94/18	ND	Decreasing Trend #4	No Trend #4
MW94/3	ND	ND	ND
MW94/4	ND	Decreasing Trend	ND
MW94/6	ND	Decreasing Trend	ND
MW94/8	ND	Decreasing Trend #4	No Trend
MW95/13	No Trend	Decreasing Trend	No Trend
MW95/4	No Trend	Decreasing trend	No Trend
MW95/13	-	Decreasing Trend	-
MW96/7	No Trend #4	No Trend #4	ND
MW97/3	ND	No Trend #1	ND
MW97/4	ND	Decreasing Trend #4	ND
MW98/4	-	No Trend	ND
MW98/6	Decreasing Trend #4	Decreasing Trend	Decreasing Trend #4
TW94/2	ND	ND	ND
TW94/3	Decreasing Trend	Decreasing Trend	Decreasing Trend
TW94/4	No Trend #4	Decreasing Trend #4	No Trend
TW94/5	ND	Decreasing Trend	No Trend #4
W91/7	ND	Decreasing Trend #4	ND
W91/8	No Trend	No Trend	Decreasing Trend
W91/9	ND	-	No Trend #4

Notes

#1	Historical Maximum concentration noted
#2	Concentrations less than historical maximum
#3	First detection of this COPC
#4	Concentrations of this analyte were not detected above the laboratory limit of reporting during Q4 2018 GME
ND	Concentrations have been consistently reported below the laboratory limit of reporting throughout the period of data collection

FIGURES



General Area Land Use:
Industrial
General Hydrogeology of Locality:
1. Soil Type:
Residual clay with minor silt and sand
2. Depth to aquifer:
0.5-2.5m bgs

Aquifer Usage:
Not known beneficial onsite extraction
Potentially Sensitive Receptors:
- Parramatta River (north eastern boundary)
- Duck River (southern boundary)

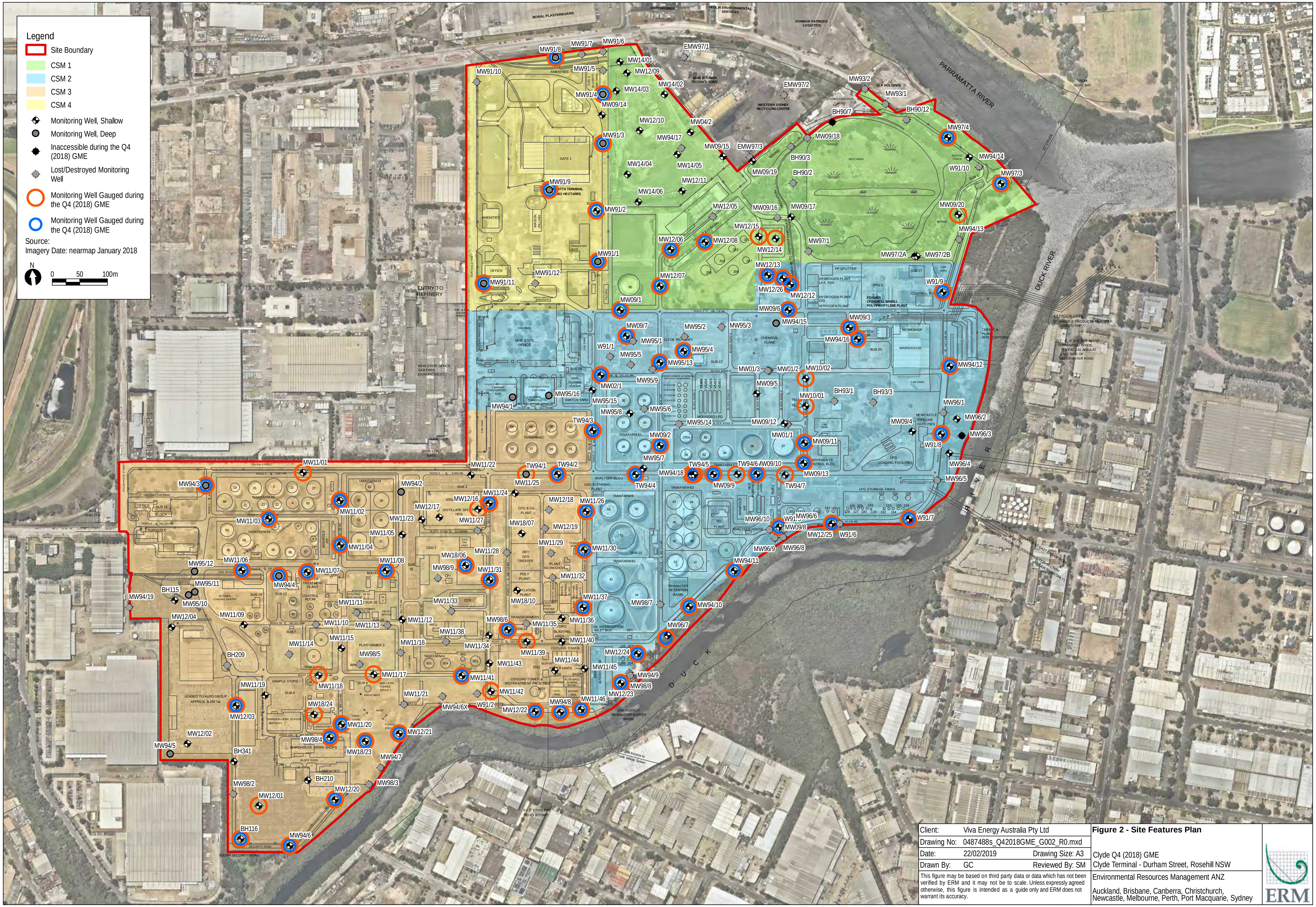
Legend
Site Boundary

Source:
Imagery Data:
nearmap January 2018

N

Client: Viva Energy Australia Pty Ltd		**Figure 1 - Site Locality Map**
Drawing No: 0487488s_Q42018GME_G001_R0.mxd		
Date: 22/02/2019	Drawing Size: A4	Clyde Q4 (2018) GME
Drawn By: GC	Reviewed By: SM	Clyde Terminal - Durham Street, Rosehill NSW
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.		Environmental Resources Management ANZ Auckland, Brisbane, Canberra, Christchurch, Melbourne, Newcastle, Perth, Port Macquarie, Sydney

ERM


Legend
Site Boundary
CSM 1
CSM 2
CSM 3
CSM 4
Monitoring Well, Shallow
Monitoring Well, Deep
Inaccessible during the Q4 (2018) GME
Lost/Destroyed Monitoring Well
Monitoring Well Gauged during the Q4 (2018) GME
Monitoring Well Gauged during the Q4 (2018) GME
Source:
Imagery Date: nearmap January 2018
N
0 50 100m
PARRAMATTA RIVER
DUCK RIVER
ENTRY TO REFINERY
Client: Viva Energy Australia Pty Ltd
Drawing No: 0487488s_Q42018GME_G002_R0.mxd
Date: 22/02/2019
Drawing Size: A3
Drawn By: GC
Reviewed By: SM
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
Figure 2 - Site Features Plan
Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW
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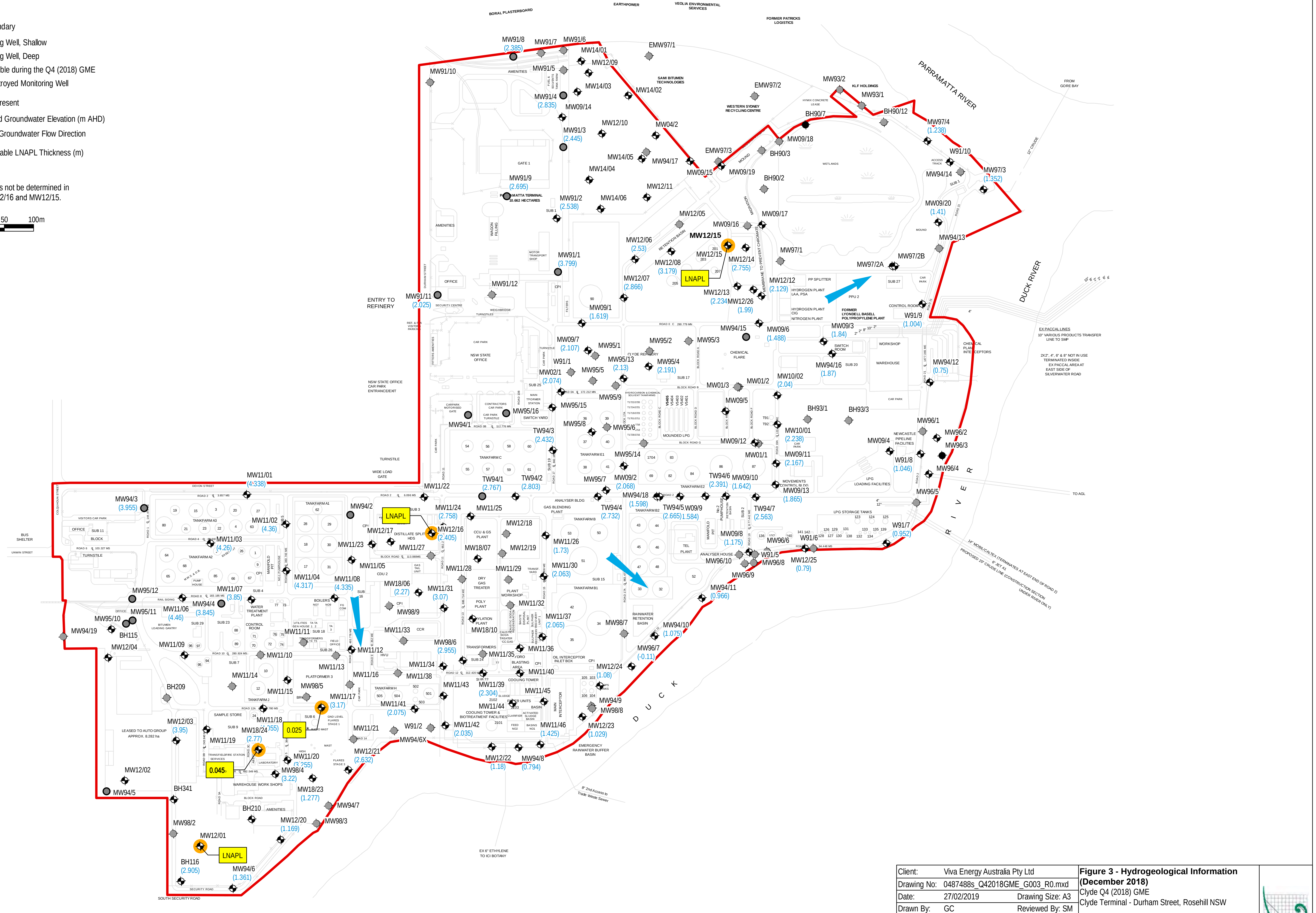
ERM

Legend

- Site Boundary
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Inaccessible during the Q4 (2018) GME
- Lost/Destroyed Monitoring Well
- LNAPL Present
- (2.48) Corrected Groundwater Elevation (m AHD)
- Inferred Groundwater Flow Direction
- 0.025 Measureable LNAPL Thickness (m)

Note:
LNAPL thickness not be determined in MW12/01, MW12/16 and MW12/15.

N 0 50 100m



Client:	Viva Energy Australia Pty Ltd		
Drawing No:	0487488s_Q42018GME_G003_R0.mxd		
Date:	27/02/2019	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 3 - Hydrogeological Information (December 2018)
Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW

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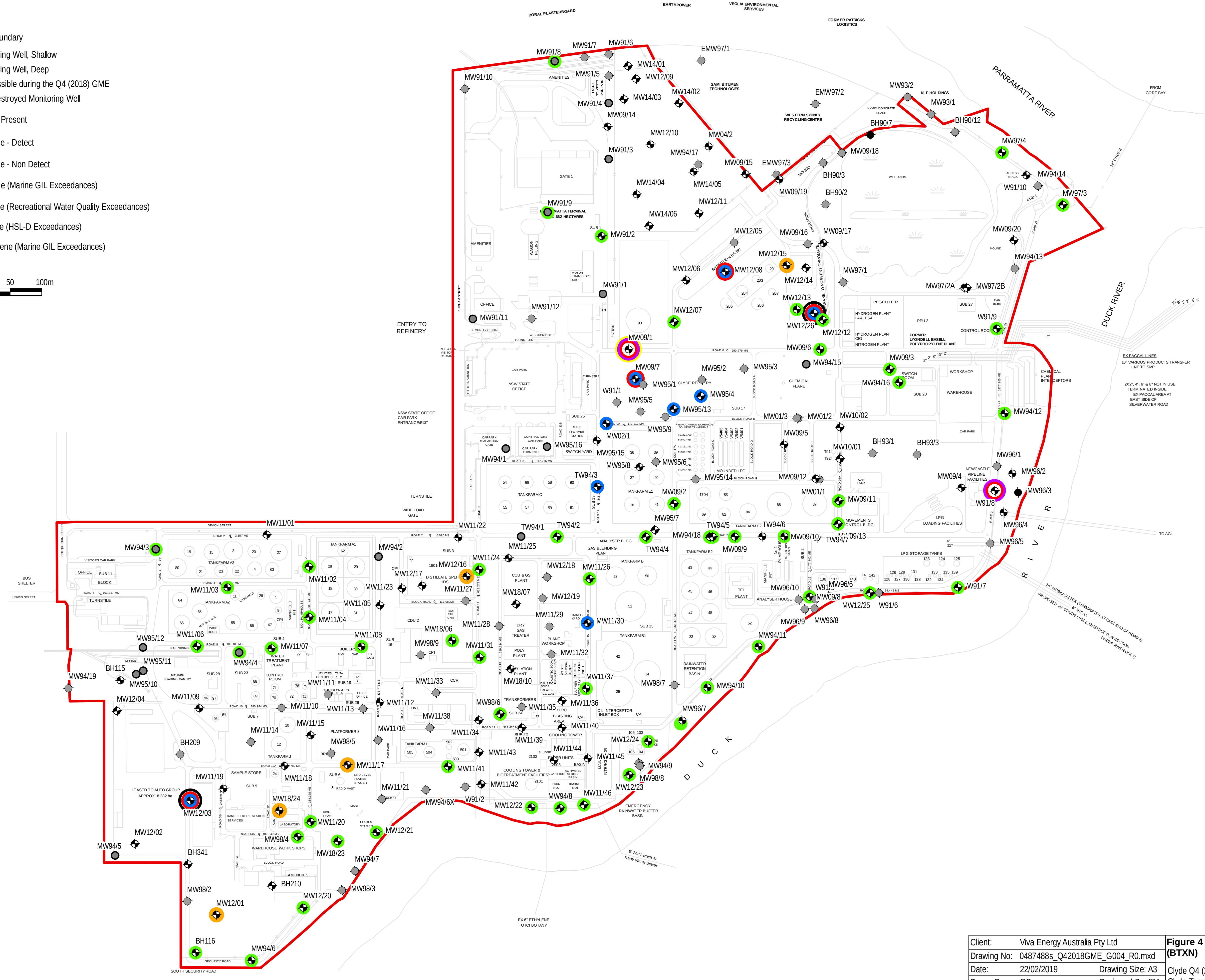
Legend

- Site Boundary
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Inaccessible during the Q4 (2018) GME
- Lost/Destroyed Monitoring Well
- LNAPL Present
- Benzene - Detect
- Benzene - Non Detect
- Benzene (Marine GIL Exceedances)
- Benzene (Recreational Water Quality Exceedances)
- Benzene (HSL-D Exceedances)
- Napthalene (Marine GIL Exceedances)

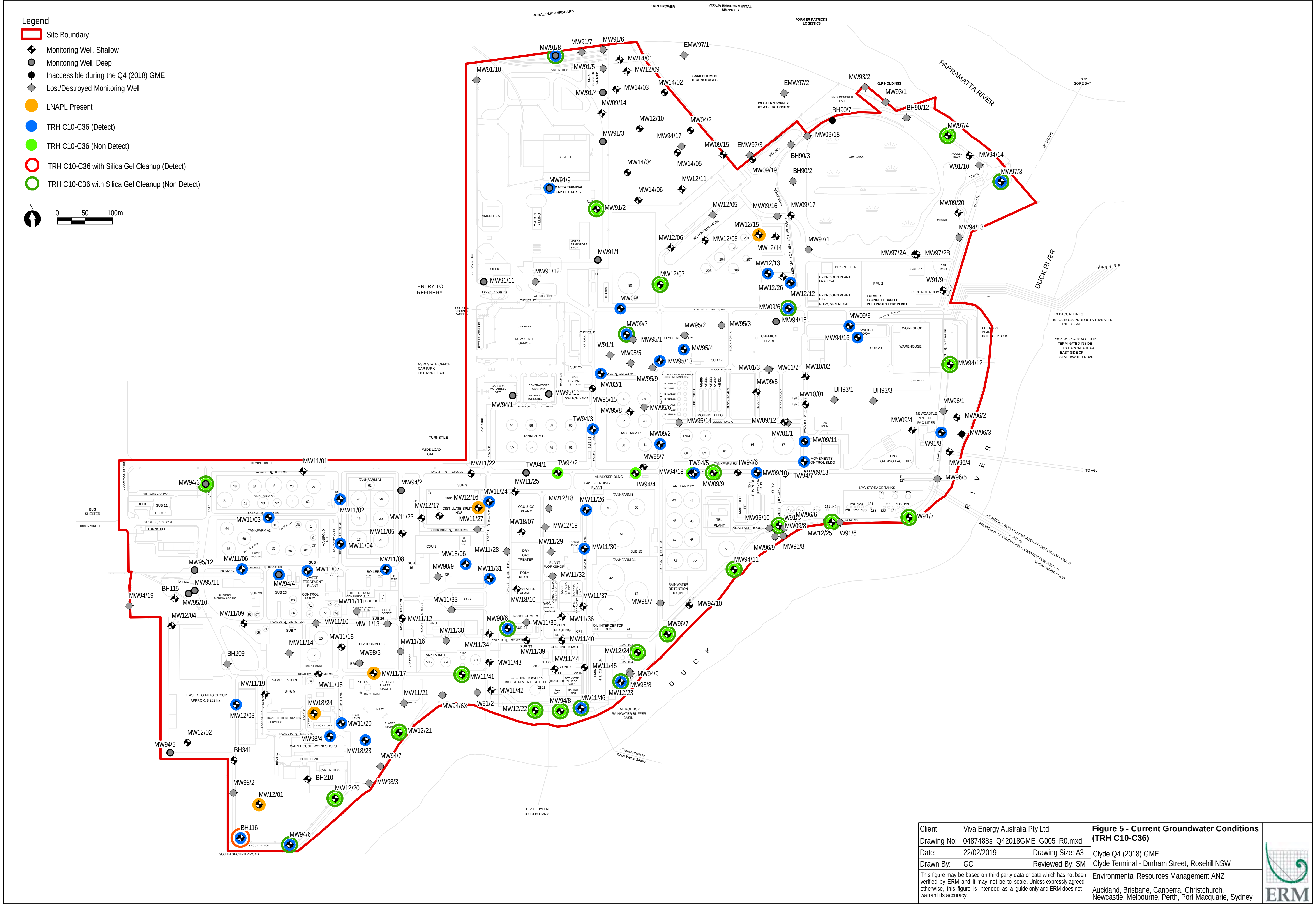
N

0 50 100m



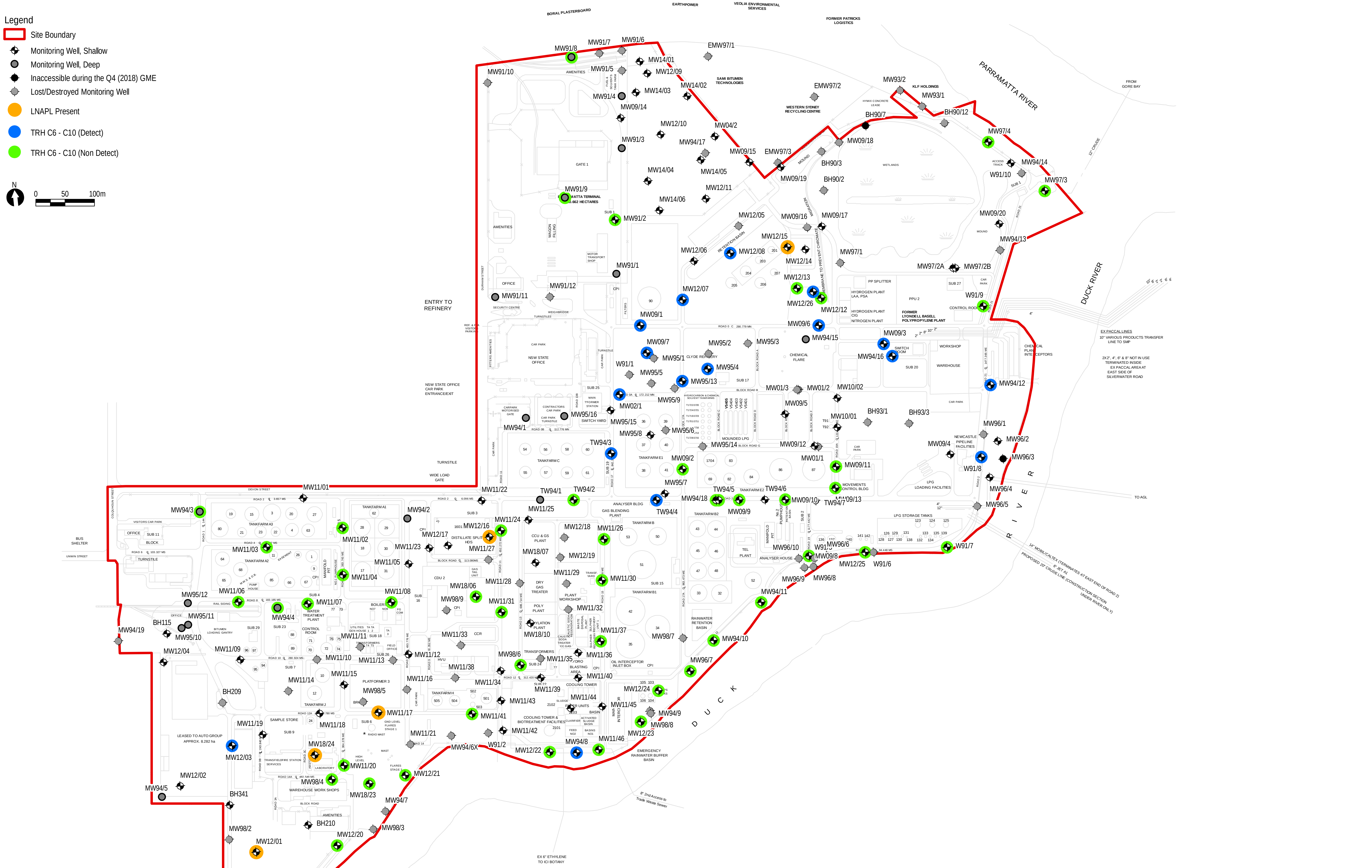
Client:	Viva Energy Australia Pty Ltd		**Figure 4 - Current Groundwater Conditions (BTXN)**
Drawing No:	0487488s_Q42018GME_G004_R0.mxd		
Date:	22/02/2019	Drawing Size: A3	Clyde Q4 (2018) GME Clyde Terminal - Durham Street, Rosehill NSW
Drawn By:	GC	Reviewed By: SM	
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.			Environmental Resources Management ANZ Auckland, Brisbane, Canberra, Christchurch, Newcastle, Melbourne, Perth, Port Macquarie, Sydney

ERM



Client:	Viva Energy Australia Pty Ltd		**Figure 5 - Current Groundwater Conditions (TRH C10-C36)**
Drawing No:	0487488s_Q42018GME_G005_R0.mxd		
Date:	22/02/2019	Drawing Size: A3	Clyde Q4 (2018) GME Clyde Terminal - Durham Street, Rosehill NSW
Drawn By:	GC	Reviewed By: SM	
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.			Environmental Resources Management ANZ Auckland, Brisbane, Canberra, Christchurch, Newcastle, Melbourne, Perth, Port Macquarie, Sydney

ERM



Client:	Viva Energy Australia Pty Ltd		**Figure 6 - Current Groundwater Conditions (TRH C6-C10 minus BTEX)**
Drawing No:	0487488s_Q42018GME_G006_R0.mxd		Clyde Q4 (2018) GME
Date:	22/02/2019	Drawing Size: A3	Clyde Terminal - Durham Street, Rosehill NSW
Drawn By:	GC	Reviewed By: SM	Environmental Resources Management ANZ

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

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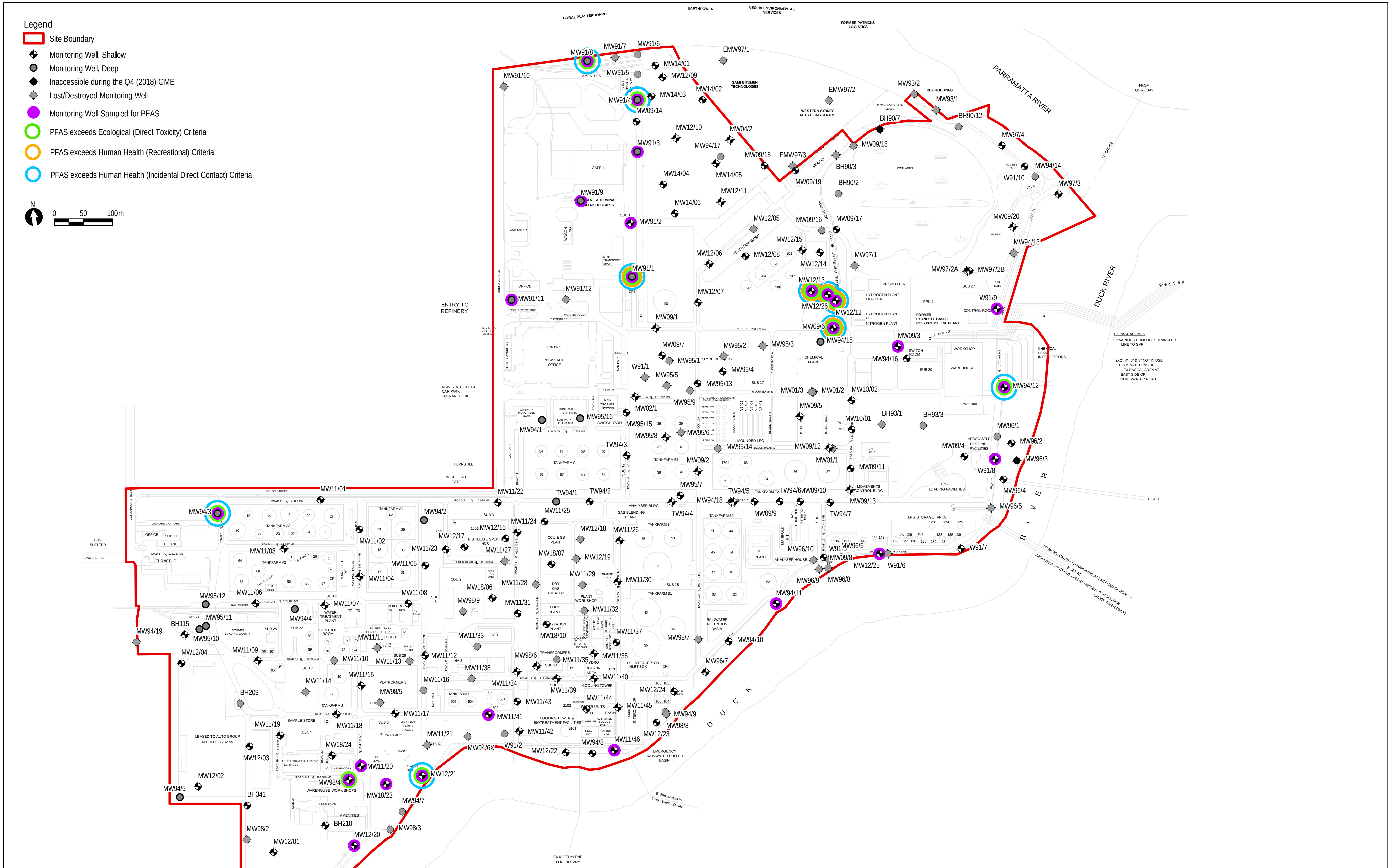
ERM



Client:	Viva Energy Australia Pty Ltd
Drawing No:	0487488s_Q42018GME_G007_R0.mxd
Date:	22/02/2019 Drawing Size: A3
Drawn By:	GC Reviewed By: SM

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Figure 7 - Current Groundwater Conditions (PFAS)

Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW

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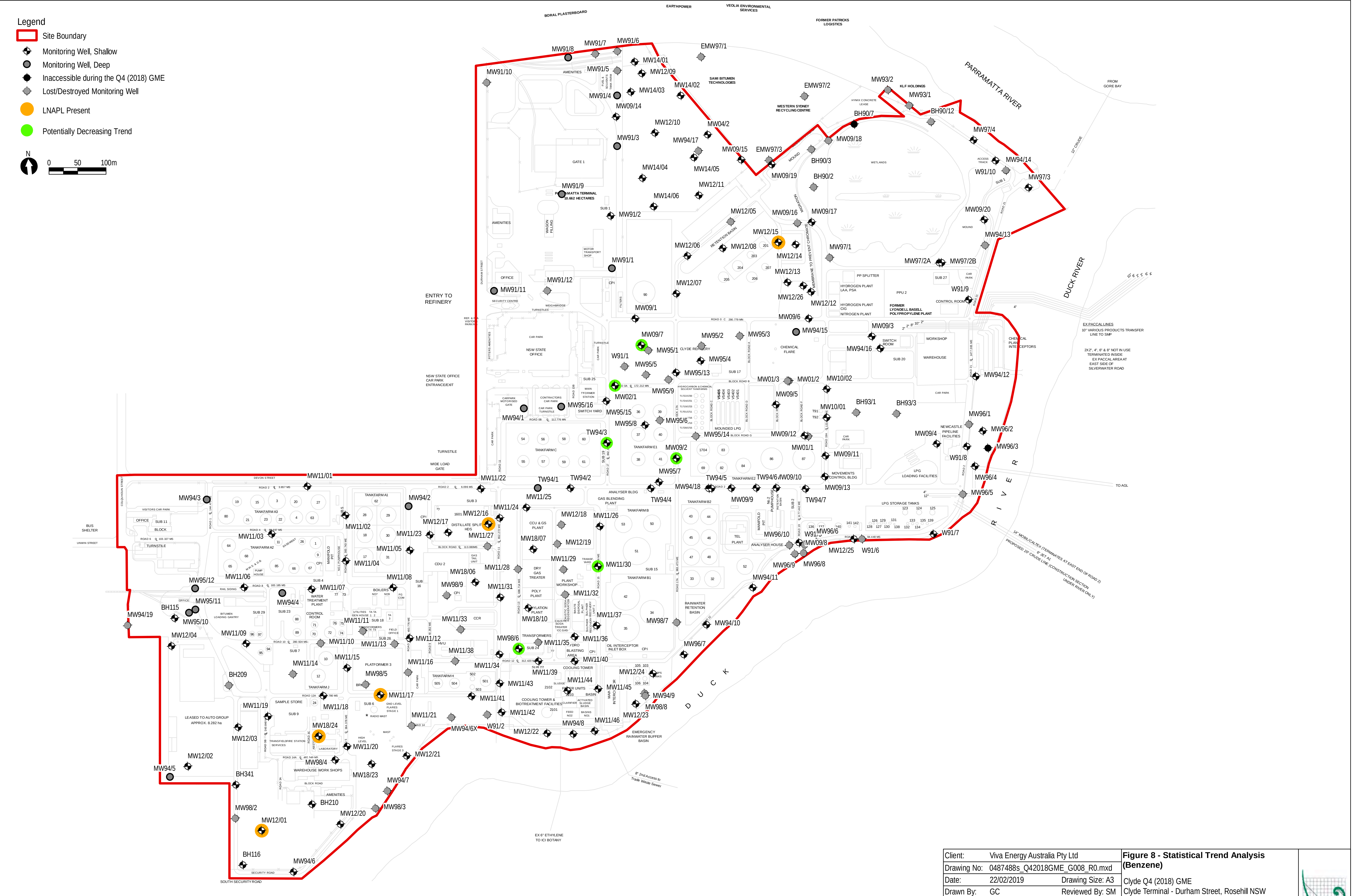
ERM



Client:	Viva Energy Australia Pty Ltd		
Drawing No:	0487488s_Q42018GME_G008_R0.mxd		
Date:	22/02/2019	Drawing Size:	A3
Drawn By:	GC	Reviewed By:	SM

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 8 - Statistical Trend Analysis (Benzene)

Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW

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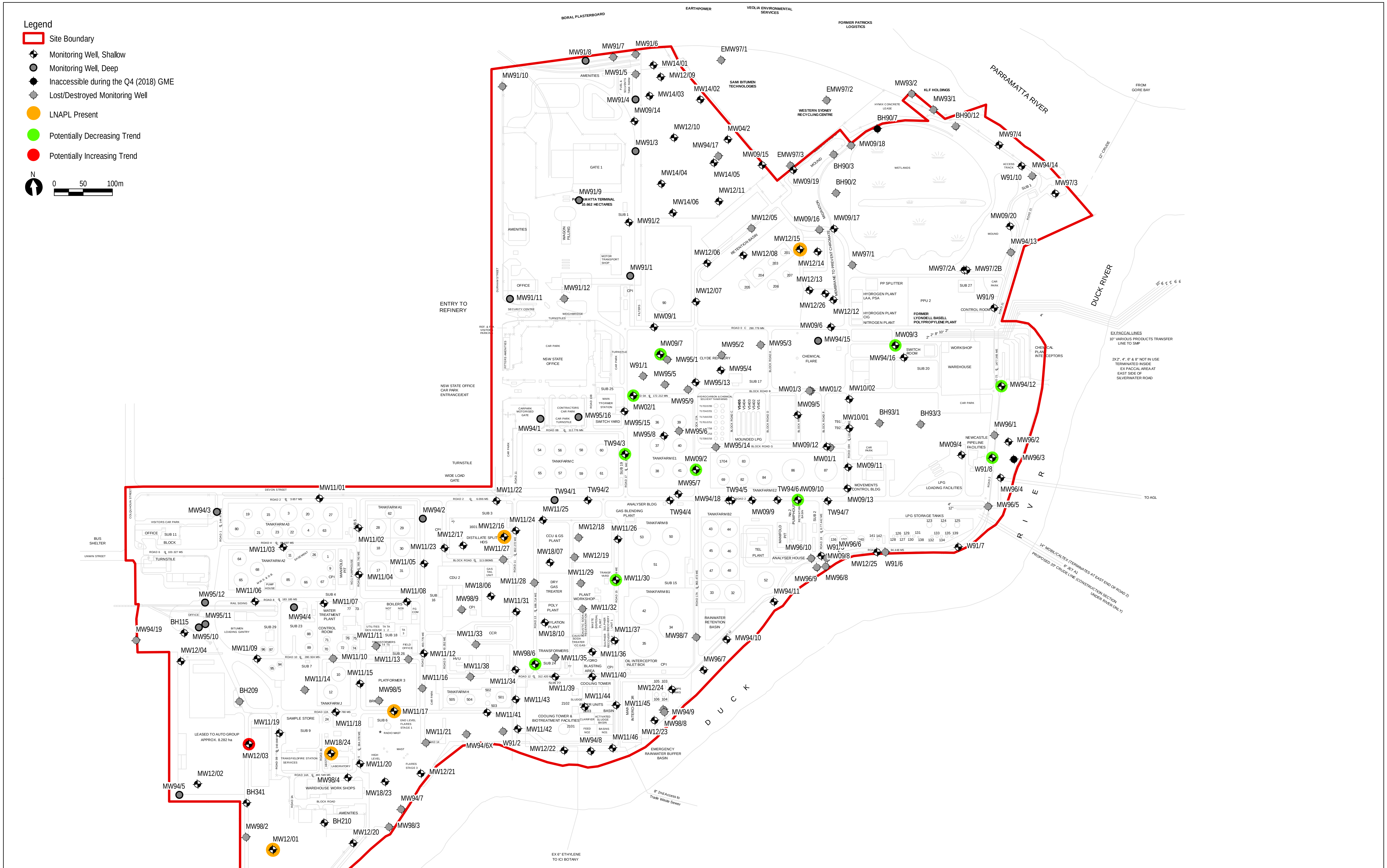
ERM



Client:	Viva Energy Australia Pty Ltd		
Drawing No:	0487488s_Q42018GME_G009_R0.mxd		
Date:	22/02/2019	Drawing Size:	A3
Drawn By:	GC	Reviewed By:	SM

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 9 - Statistical Trend Analysis (TRH C6-C9)

Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW

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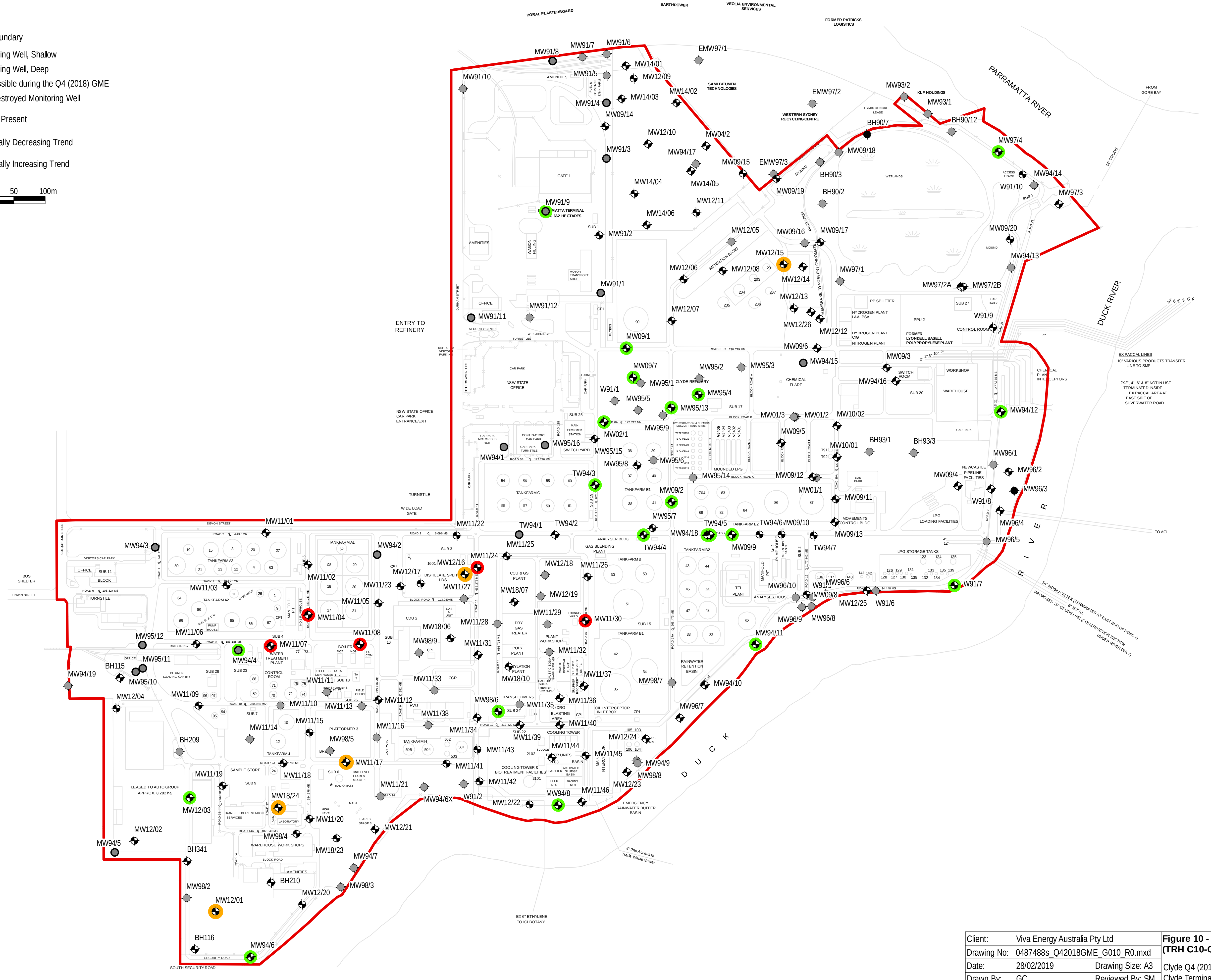
ERM

Legend

- Site Boundary
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Inaccessible during the Q4 (2018) GME
- Lost/Destroyed Monitoring Well
- LNAPL Present
- Potentially Decreasing Trend
- Potentially Increasing Trend

N

0 50 100m



Client:	Viva Energy Australia Pty Ltd
Drawing No:	0487488s_Q42018GME_G010_R0.mxd
Date:	28/02/2019 — Drawing Size: A3
Drawn By:	GC — Reviewed By: SM

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

Figure 10 - Statistical Trend Analysis (TRH C10-C36)

Clyde Q4 (2018) GME
Clyde Terminal - Durham Street, Rosehill NSW

Environmental Resources Management ANZ

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ERM

APPENDIX A REFERENCES

- AECOM (2018). Viva Energy Clyde Western Area Remediation Project – Targeted Site Investigation. September 2018.
- Australian and New Zealand Governments (ANZG) (2018), Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, available at www.waterquality.gov.au/anz-guidelines, accessed 19/02/2019.
- Environmental Protection Authority, Environmental Protection License – 570. 10 September 2007.
- ERM (2018). Clyde Terminal, Durham Street, Rosehill NSW. PFAS Conceptual Site Model and Flux Assessment. December 2018.
- Friebel, E & Nadebaum, P (2011). *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater. Technical Report No. 10*. Part 1: Technical development document. Cooperative Research Centre for Contaminant Assessment and Remediation of the Environment (CRC CARE), Adelaide, Australia.
- Friebel, E & Nadebaum, P. (2011). *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater.* Part 2: Application document, CRC CARE Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia.
- Heads of EPA, Australia and New Zealand (HEPA) (2018), *PFAS National Environment Management Plan* (NEMP).
- National Environment Protection Council (NEPC) (April 2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999*, NEPC, Canberra.
- OEH Science (2017) *PFAS Screening Criteria (May 2017) – Draft*.
- Shell Engineering Pty Ltd, 2002. *Groundwater Pollution Reduction Program and Remedial Action Plan.* 15 July 2002.
- WA DER (2016) Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluorinated Substances (PFAS).

APPENDIX B LABORATORY CERTIFICATES

ALS Laboratory: please tick →

CHAIN OF CUSTODY

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Clyde Q4 GME
ORDER NUMBER:	487488
PROJECT MANAGER:	Stephen Mulligan — CONTACT PH: 02 8584 8888
SAMPLER:	Adam Kalms — SAMPLER MOBILE: 0432 057 606
COC emailed to ALS? ~~YES~~	EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 3.3 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Adam Kalms	Soulyla ALS		Luca D. (MCOT)
DATE/TIME: 1400	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME: 10/12/18 5:17 PM 7.4°C

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
			Water							
1	BH116	5/12 1125	SOIL		3	X	X			
2	MW09/1	7/12 1005	SOIL		3	X				
3	MW09/10	5/12 1430	SOIL		3	X				
4	MW09/3	7/12 1020	SOIL		4	X			X	
5	MW09/9	5/12 1500	SOIL		3	X	X			
6	MW11/03	6/12 1010	SOIL		3	X				
7	MW11/04	6/12 1020	SOIL		3	X				
8	MW11/06	6/12 0950	SOIL		4	X		X		
9	MW11/07	6/12 0930	SOIL		3	X				
10	MW11/08	6/12 0920	SOIL		3	X				
11	MW11/24	7/12 0930	SOIL		3	X				
12	MW11/26	7/12 0840	SOIL		3	X				
13	MW11/30	7/12 0845	SOIL		3	X				
14	MW11/31	7/12 0915	SOIL		3	X				
				TOTAL						

Environmental Division
Sydney
Work Order Reference
ES1836989

Telephone : + 61-2-8784 8555

Subcontract / Forward Lab / Split WO
Organised By / Date: Eurofins
Relinquished By / Date:
Connote / Courier: TO1, TO2
D01
Attach By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

#632224

CHAIN OF CUSTODY

ALS Laboratory: *please tick* →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 E:samples.newcastle@alsenviro.com
☐ Brisbane
☐ Townsville
☐ Melbourne
☐ Adelaide

CLIENT:	ERM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Sydney		
PROJECT:	Clyde Q4 GME	ALS QUOTE NO.:	SY-245-17 ERM v3
ORDER NUMBER:	487488		
PROJECT MANAGER:	Stephen Mulligan	CONTACT PH: 02 8584 8888	
SAMPLER:	Adam Kalms	SAMPLER MOBILE: 0432 057 606	
COC emailed to ALS? YES		EDD FORMAT (or default):	

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 3.3 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	SGS Ajis		Wood (MET) 7.4°C
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME: 10/12/18 5:17PM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX Water	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
15	MW11/37	7/12 0855	SOIL		1	X								
16	MW11/41	6/12 1030	SOIL		4	X	X		X					
17	MW11/46	6/12 1040	SOIL		4	X	X		X					
18	MW12/03	5/12 1200	SOIL		3	X								
19	MW12/07	5/12 1045	SOIL		4	X	X	X						
20	MW12/08	5/12 1040	SOIL		4	X	X	X						
21	MW12/20	5/12 1530	SOIL		4	X	X		X					
22	MW11/20	6/12 0915	SOIL		4	X			X					
23	MW11/02	6/12 1015	SOIL		3	X								
24	MW12/06	6/12 1230	SOIL		1			X						
25	DOL_20181205	5/12 0920	SOIL		1				X					
—	TOL_20181205	5/12 0920	SOIL		1				X					Please forward to Eurofins
26	MW91/4	5/12 0920	SOIL		1				X					
27	MW12/22	6/12 1100	SOIL		3	X	X							
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

632224

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney ☐ Newcastle ☐ Brisbane ☐ Townsville ☐ Melbourne ☐ Adelaide

CLIENT:	ERM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Sydney		
PROJECT:	Clyde Q4 GME	ALS QUOTE NO.:	SY-245-17 ERM v3
ORDER NUMBER:	487488	COC SEQUENCE NUMBER (Circle)	COC: 1 2 3 4 5 6 7 / OF: 1 2 3 4 5 6 7
PROJECT MANAGER:	Stephen Mulligan	CONTACT PH: 02 8584 8888	
SAMPLER:	Adam Kalms	SAMPLER MOBILE: 0432 057 606	
COC emailed to ALS?	~~YES~~	EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com; adam.kalms@erm.com		
Email Invoice to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com		

FOR LABORATORY USE ONLY (Circle)

- Custody Seal Intact? Yes No N/A
- Free ice / frozen ice bricks present upon receipt? Yes No N/A
- Random Sample Temperature on Receipt: 3.3 °C
- Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	SCS AJ		WILLIAM MCT 7.4°C
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME: 10/12/18 5:17PM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
			Water							
28	MW18/06	7/12 0920	~~SOIL~~		3	X				
29	MW18/23	5/12 1550	~~SOIL~~		4	X			X	
30	MW91/1	6/12 1430	~~SOIL~~		1				X	
31	MW91/11	6/12 1300	~~SOIL~~		1				X	
32	MW91/2	5/12 0850	~~SOIL~~		4	X	X		X	
33	MW91/3	6/12 1440	~~SOIL~~		1				X	
34	MW94/8	6/12 1045	~~SOIL~~		3	X	X		X	
x 35	MW91/9	6/12 1420	~~SOIL~~		4	X			X	
36	MW94/16	7/12 1015	~~SOIL~~		3	X				
37	MW94/3	7/12 0945	~~SOIL~~		4	X	X		X	
x 38	MW94/4	6/12 0940	~~SOIL~~		4	X		X		
39	MW94/6	5/12 1525	~~SOIL~~		3	X	X			
40	MW91/8	6/12 1315	~~SOIL~~		4	X	X			
41	MW96/7	6/12 1350	~~SOIL~~		3	X	X			
				TOTAL						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

632224

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

CLIENT:	ERM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Sydney		
PROJECT:	Clyde Q4 GME	ALS QUOTE NO.:	SY-245-17 ERM v3
ORDER NUMBER:	487488	COC SEQUENCE NUMBER (Circle)	COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7
PROJECT MANAGER:	Stephen Mulligan	CONTACT PH: 02 8584 8888	
SAMPLER:	Adam Kalms	SAMPLER MOBILE: 0432 057 606	
COC emailed to ALS?	~~YES~~	EDD FORMAT (or default):	

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	Scott Als		Wen D. Melb
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME: 10/12/18 5:17PM

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: 3.3 °C

Other comment: 7.4°C

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS						Additional Information
			Water												Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
42	MW97/3	5/12 1415	~~SOIL~~		3	X	X								
43	MW98/4	6/12 0905	~~SOIL~~		4	X			X						
44	MW98/6	7/12 0900	~~SOIL~~		3	X	X								
45	TW94/2	5/12 1450	~~SOIL~~		3	X									
46	TW94/3	7/12 0940	~~SOIL~~		3	X									
47	W91/9	5/12 1425	~~SOIL~~		3	X	X		X						
48	R01_20181204	4/12 1700	~~SOIL~~		3										
x 49	R01_20181205	5/12 1700	~~SOIL~~		3										
50	R01_20181206	6/12 1700	~~SOIL~~		3										
51	R01_20181207	7/12 1700	~~SOIL~~		3										
x 52	TS		~~SOIL~~		3										
53	TB		~~SOIL~~		3										
54	T03_20181206	6/12 1420	~~SOIL~~		4	X			X						
55	D03_20181206	6/12 0940	~~SOIL~~		4	X		X							
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

#632224

CHAIN OF CUSTODY

ALS Laboratory: please tick →

CLIENT:	ERM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Sydney		
PROJECT:	Clyde Q4 GME	ALS QUOTE NO.:	SY-245-17 ERM v3
ORDER NUMBER:	487488	COC SEQUENCE NUMBER (Circle)	COC: 1 2 3 4 5 6 7 / OF: 1 2 3 4 5 6 7
PROJECT MANAGER:	Stephen Mulligan	CONTACT PH: 02 8584 8888	
SAMPLER:	Adam Kalms	SAMPLER MOBILE: 0432 057 606	
COC emailed to ALS? YES		EDD FORMAT (or default):	

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	SOS		Wes D. (Kat) 7.6°C
DATE/TIME:	DATE/TIME: 7/12/18 0920	DATE/TIME:	DATE/TIME: 10/12/18 5:17PM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	~~[illegible]~~		Water											
—	T02_20181206	6/12 1315			3	X	X							Please send Eurofins
56	D02_20181205	5/12 1125			3	X	X							
57	D03_20181205	5/12 1430			3	X								
—	T02_20181205	5/12 1500			3	X	X							Please send Eurofins
58	D02_20181206	6/12 0930			3	X								
—	D01_20181206	6/12 0920			3	X								
59	T01_20181206	6/12 0920			3	X								Please send Eurofins
60	D01_20181207	7/12 0845			3	X								
			~~SOIL~~											
			~~SOIL~~											
			~~SOIL~~											
			~~SOIL~~											
			~~SOIL~~											
			TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

632224

eurofins | mgt

Melbourne
3-5 Kingston Town Close
Oakleigh Vic 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**ERM Sydney**
Contact name:	Stephen Mulligan
Project name:	CLYDE Q4 GME
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Dec 10, 2018 5:17 PM
Eurofins | mgt reference:	**632224**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Sample D01_20181206 received instead of T01_20181206, analysis conducted.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Stephen Mulligan - stephen.mulligan@erm.com.

Company Name:	ERM Sydney	**Order No.:**	487488	**Received:**	Dec 10, 2018 5:17 PM
Address:	Level 15, 309 Kent St Sydney NSW 2000	**Report #:**	632224	**Due:**	Dec 17, 2018
		Phone:	02 8584 8888	**Priority:**	5 Day
		Fax:	02 8584 8800	**Contact Name:**	Stephen Mulligan
Project Name:	CLYDE Q4 GME				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						BTEX and Naphthalene	TRH (after Silica Gel cleanup)	Total Recoverable Hydrocarbons	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									X
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	T01_20181205	Dec 05, 2018		Water	S18-De12373				X
2	T02_20181206	Dec 06, 2018		Water	S18-De12374	X	X	X	
3	T02_20181205	Dec 06, 2018		Water	S18-De12375	X	X	X	
4	D01_2018120 6	Dec 06, 2018		Water	S18-De12376	X		X	
Test Counts						3	2	3	1

eurofins | mgt

Certificate of Analysis

ERM Sydney
Level 15, 309 Kent St
Sydney
NSW 2000

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Stephen Mulligan**

Report **632224-W**
Project name CLYDE Q4 GME
Received Date Dec 10, 2018

Client Sample ID			**T01_20181205**	**T02_20181206**	**T02_20181205**	**D01_20181206**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S18-De12373**	**S18-De12374**	**S18-De12375**	**S18-De12376**
Date Sampled			**Dec 05, 2018**	**Dec 06, 2018**	**Dec 06, 2018**	**Dec 06, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	-	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	-	< 0.1	< 0.1	1.3
TRH C10-36 (Total)	0.1	mg/L	-	< 0.1	< 0.1	1.3
BTEX						
Benzene	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	-	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	-	103	120	117
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	-	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	-	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	-	< 0.1	< 0.1	1.3
TRH >C34-C40	0.1	mg/L	-	< 0.1	< 0.1	0.4
TRH >C10-C40 (total)*	0.1	mg/L	-	< 0.1	< 0.1	1.7
TRH - 2013 NEPM Fractions (after silica gel clean-up)						
TRH >C10-C16 (after silica gel clean-up)	0.05	mg/L	-	< 0.05	< 0.05	-
TRH >C16-C34 (after silica gel clean-up)	0.1	mg/L	-	< 0.1	< 0.1	-
TRH >C34-C40 (after silica gel clean-up)	0.1	mg/L	-	< 0.1	< 0.1	-
TRH - 1999 NEPM Fractions (after silica gel clean-up)						
TRH C10-C36 (Total) (after silica gel clean-up)	0.1	mg/L	-	< 0.1	< 0.1	-
TRH C10-C14 (after silica gel clean-up)	0.05	mg/L	-	< 0.05	< 0.05	-
TRH C15-C28 (after silica gel clean-up)	0.1	mg/L	-	< 0.1	< 0.1	-
TRH C29-C36 (after silica gel clean-up)	0.1	mg/L	-	< 0.1	< 0.1	-
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	36	-	-	-
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	130	-	-	-
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	75	-	-	-
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	18	-	-	-

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	T01_20181205 Water S18-De12373 Dec 05, 2018	T02_20181206 Water S18-De12374 Dec 06, 2018	T02_20181205 Water S18-De12375 Dec 06, 2018	D01_20181206 Water S18-De12376 Dec 06, 2018
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	2.5	-	-	-
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	[N09]0.04	-	-	-
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	-	-	-
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	-	-	-
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	-	-	-
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	-	-	-
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	-	-	-
13C4-PFBA (surr.)	1	%	54	-	-	-
13C5-PFPeA (surr.)	1	%	45	-	-	-
13C5-PFHxA (surr.)	1	%	71	-	-	-
13C4-PFHpA (surr.)	1	%	72	-	-	-
13C8-PFOA (surr.)	1	%	70	-	-	-
13C5-PFNA (surr.)	1	%	88	-	-	-
13C6-PFDA (surr.)	1	%	110	-	-	-
13C2-PFUnDA (surr.)	1	%	93	-	-	-
13C2-PFDoDA (surr.)	1	%	85	-	-	-
13C2-PFTeDA (surr.)	1	%	76	-	-	-
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	-	-	-
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	-	-	-
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	-	-	-
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	-	-	-
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	-	-	-
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	-	-	-
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	-	-	-
13C8-FOSA (surr.)	1	%	57	-	-	-
D3-N-MeFOSA (surr.)	1	%	14	-	-	-
D5-N-EtFOSA (surr.)	1	%	14	-	-	-
D7-N-MeFOSE (surr.)	1	%	25	-	-	-
D9-N-EtFOSE (surr.)	1	%	26	-	-	-
D5-N-EtFOSAA (surr.)	1	%	48	-	-	-
D3-N-MeFOSAA (surr.)	1	%	40	-	-	-
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	[N09]0.47	-	-	-
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	[N09]0.41	-	-	-
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	[N09]2.2	-	-	-
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	[N09]0.04	-	-	-
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	[N09]0.81	-	-	-
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	-	-	-
13C3-PFBS (surr.)	1	%	29	-	-	-
18O2-PFHxS (surr.)	1	%	82	-	-	-
13C8-PFOS (surr.)	1	%	116	-	-	-

Client Sample ID			T01_20181205	T02_20181206	T02_20181205	D01_20181206
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S18-De12373**	**S18-De12374**	**S18-De12375**	**S18-De12376**
Date Sampled			**Dec 05, 2018**	**Dec 06, 2018**	**Dec 06, 2018**	**Dec 06, 2018**
Test/Reference	LOR	Unit				
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	-	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	0.39	-	-	-
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	0.17	-	-	-
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N15]	0.01	ug/L	< 0.01	-	-	-
13C2-4:2 FTSA (surr.)	1	%	34	-	-	-
13C2-6:2 FTSA (surr.)	1	%	34	-	-	-
13C2-8:2 FTSA (surr.)	1	%	36	-	-	-
PFASs Summations						
Sum (PFHxS + PFOS)*	0.01	ug/L	3.01	-	-	-
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	3.31	-	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	5.51	-	-	-
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	265.54	-	-	-
Sum of PFASs (n=28)*	0.1	ug/L	266.03	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Dec 13, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Dec 13, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Dec 13, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX and Naphthalene			
BTEX	Melbourne	Dec 13, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Melbourne	Dec 13, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Melbourne	Dec 13, 2018	7 Day
- Method: TRH C6-C36 (Silica Gel Cleanup) - MGT 100A			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Dec 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Dec 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Dec 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Dec 13, 2018	14 Day
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

Company Name:	ERM Sydney	**Order No.:**	487488
Address:	Level 15, 309 Kent St Sydney NSW 2000	**Report #:**	632224
		Phone:	02 8584 8888
		Fax:	02 8584 8800
Project Name:	CLYDE Q4 GME		

Received:	Dec 10, 2018 5:17 PM
Due:	Dec 17, 2018
Priority:	5 Day
Contact Name:	Stephen Mulligan

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						BTEX and Naphthalene	TRH (after Silica Gel cleanup)	Total Recoverable Hydrocarbons	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									X
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	T01_20181205	Dec 05, 2018		Water	S18-De12373				X
2	T02_20181206	Dec 06, 2018		Water	S18-De12374	X	X	X	
3	T02_20181205	Dec 06, 2018		Water	S18-De12375	X	X	X	
4	D01_20181206	Dec 06, 2018		Water	S18-De12376	X		X	
Test Counts						3	2	3	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ug/L:** micrograms per litre
ppm: Parts per million	**ppb:** Parts per billion	**%:** Percentage
org/100mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
Method Blank							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	mg/L	< 0.05			0.05	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/L	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
TRH C10-C14	%	125			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	103			70-130	Pass	
Toluene	%	102			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
Xylenes - Total	%	105			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	103			70-130	Pass	
TRH C6-C10	%	110			70-130	Pass	
TRH >C10-C16	%	115			70-130	Pass	
LCS - % Recovery							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	%	123			70-130	Pass	
LCS - % Recovery							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	%	103			70-130	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	115			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	101			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	112			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	113			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	108			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	111			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	105			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	115			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	106			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	93			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	117			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	125			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	120			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	90			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	119			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	121			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	108			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	120			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	102			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	103			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	103			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	99			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	87			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	113			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	109			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	107			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	84			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B18-De11701	NCP	%	118			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B18-De11701	NCP	%	90			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B18-De11701	NCP	%	114			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B18-De11701	NCP	%	116			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B18-De11701	NCP	%	110			50-150	Pass	
Perfluorononanoic acid (PFNA)	B18-De11701	NCP	%	114			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B18-De11701	NCP	%	107			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B18-De11701	NCP	%	115			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B18-De11701	NCP	%	112			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B18-De11701	NCP	%	94			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B18-De11701	NCP	%	111			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B18-De11701	NCP	%	119			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B18-De11701	NCP	%	126			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B18-De11701	NCP	%	108			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B18-De11701	NCP	%	112			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B18-De11701	NCP	%	103			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B18-De11701	NCP	%	108			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B18-De11701	NCP	%	124			50-150	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B18-De11701	NCP	%	104			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B18-De11701	NCP	%	106			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B18-De11701	NCP	%	108			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B18-De11701	NCP	%	103			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B18-De11701	NCP	%	109			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B18-De11701	NCP	%	88			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B18-De11701	NCP	%	114			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B18-De11701	NCP	%	118			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B18-De11701	NCP	%	111			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B18-De11701	NCP	%	95			50-150	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-De12875	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-De12875	NCP	%	96			70-130	Pass	
Spike - % Recovery									
TRH - 2013 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH >C10-C16 (after silica gel clean-up)	M18-De14404	NCP	%	84			70-130	Pass	
Spike - % Recovery									
TRH - 1999 NEPM Fractions (after silica gel clean-up)				Result 1					
TRH C10-C14 (after silica gel clean-up)	M18-De14404	NCP	%	92			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	M18-De14458	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	M18-De14458	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	M18-De14458	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	M18-De14458	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	M18-De14458	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	M18-De13174	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	M18-De13174	NCP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M18-De11101	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M18-De11101	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M18-De11101	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M18-De11101	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M18-De11101	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M18-De11101	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
TRH - 2013 NEPM Fractions (after silica gel clean-up)				Result 1	Result 2	RPD			
TRH >C10-C16 (after silica gel clean-up)	M18-De14641	NCP	mg/L	18	15	13	30%	Pass	
TRH >C16-C34 (after silica gel clean-up)	M18-De14641	NCP	mg/L	21	19	9.0	30%	Pass	
TRH >C34-C40 (after silica gel clean-up)	M18-De14641	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
TRH - 1999 NEPM Fractions (after silica gel clean-up)				Result 1	Result 2	RPD			
TRH C10-C36 (Total) (after silica gel clean-up)	M18-De14641	NCP	mg/L	41	35	16	30%	Pass	
TRH C10-C14 (after silica gel clean-up)	M18-De14641	NCP	mg/L	12	11	8.0	30%	Pass	
TRH C15-C28 (after silica gel clean-up)	M18-De14641	NCP	mg/L	29	24	19	30%	Pass	
TRH C29-C36 (after silica gel clean-up)	M18-De14641	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 and 14271 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N09	Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear/branched standard.
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised By

Nibha Vaidya	Analytical Services Manager
Harry Bacalis	Senior Analyst-Volatile (VIC)
Jonathon Angell	Senior Analyst-Organic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1836402**	Page	: 1 of 17
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: Stephen Mulligan	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Clyde Q4 GME	Date Samples Received	: 04-Dec-2018 17:30
Order number	: 487488	Date Analysis Commenced	: 06-Dec-2018
C-O-C number	: ----	Issue Date	: 12-Dec-2018 10:02
Sampler	: ADAM KALMS		
Site	: ----		
Quote number	: SY/245/17		
No. of samples received	: 28		
No. of samples analysed	: 28		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP089: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231X: Particular samples required dilution due to sample matrix . LOR values have been adjusted accordingly.

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW12/13	MW12/12	MW12/24	MW12/23	MW09/8
				04-Dec-2018 13:20	04-Dec-2018 13:15	04-Dec-2018 11:00	04-Dec-2018 10:50	04-Dec-2018 16:05
				ES1836402-001	ES1836402-002	ES1836402-003	ES1836402-004	ES1836402-005
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	<50	<50	<50
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	<100	<100	<100
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	**140**	**150**	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	**140**	**220**	<100	**410**	<100
C29 - C36 Fraction	----	50	µg/L	**490**	**510**	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	**770**	**880**	<50	**410**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	**160**	**220**	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	**500**	**520**	<100	**440**	<100
>C34 - C40 Fraction	----	100	µg/L	**150**	**160**	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**810**	**900**	<100	**440**	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	**160**	**220**	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW12/13	MW12/12	MW12/24	MW12/23	MW09/8
				04-Dec-2018 13:20	04-Dec-2018 13:15	04-Dec-2018 11:00	04-Dec-2018 10:50	04-Dec-2018 16:05
				ES1836402-001	ES1836402-002	ES1836402-003	ES1836402-004	ES1836402-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**16.0**	**13.0**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**8.30**	**11.9**	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**43.5**	**83.6**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**1.68**	**6.80**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**37.2**	**231**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<1.00	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**8.7**	<5.0	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**29.7**	**17.0**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**44.0**	**43.4**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**22.6**	**11.8**	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**25.3**	**20.7**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**4.02**	**30.0**	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	**0.60**	<1.00	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	**0.08**	**2.20**	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<1.00	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<1.00	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<2.50	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<1.00	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<2.50	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW12/13	MW12/12	MW12/24	MW12/23	MW09/8
				04-Dec-2018 13:20	04-Dec-2018 13:15	04-Dec-2018 11:00	04-Dec-2018 10:50	04-Dec-2018 16:05
				ES1836402-001	ES1836402-002	ES1836402-003	ES1836402-004	ES1836402-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<2.50	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<2.50	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<2.50	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<1.00	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<1.00	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<1.00	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**7.88**	**30.8**	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	**38.7**	**16.2**	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	**0.20**	<1.00	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**288**	**518**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**80.7**	**315**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**274**	**468**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**106**	**106**	**107**	**99.8**	**102**
Toluene-D8	2037-26-5	2	%	**118**	**111**	**110**	**116**	**99.4**
4-Bromofluorobenzene	460-00-4	2	%	**112**	**104**	**109**	**106**	**103**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**87.7**	**86.0**	----	----	----
13C8-PFOA	----	0.02	%	**63.3**	**77.0**	----	----	----

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW94/11	MW94/10	MW12/25	W91/7	MW09/6
				04-Dec-2018 11:15	04-Dec-2018 11:15	04-Dec-2018 15:50	04-Dec-2018 15:40	04-Dec-2018 13:00
				ES1836402-006	ES1836402-007	ES1836402-008	ES1836402-009	ES1836402-010
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	----	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	<50	<50	<50
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	<100	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	<100	<100	<100
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	**220**
C10 - C14 Fraction	----	50	µg/L	<50	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	<100	**260**
C29 - C36 Fraction	----	50	µg/L	<50	----	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	<50	<50	**260**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	**270**
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	**270**
>C10 - C16 Fraction	----	100	µg/L	<100	----	<100	<100	**110**
>C16 - C34 Fraction	----	100	µg/L	<100	----	<100	<100	**230**
>C34 - C40 Fraction	----	100	µg/L	<100	----	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	<100	<100	**340**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	----	<100	<100	**110**
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/11	MW94/10	MW12/25	W91/7	MW09/6
				04-Dec-2018 11:15	04-Dec-2018 11:15	04-Dec-2018 15:50	04-Dec-2018 15:40	04-Dec-2018 13:00
				ES1836402-006	ES1836402-007	ES1836402-008	ES1836402-009	ES1836402-010
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.05	----	<0.05	----	**2.40**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	----	<0.05	----	**1.70**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.05	----	<0.05	----	**11.7**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	----	<0.05	----	**0.44**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.05	----	<0.05	----	**10.0**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	----	<0.05	----	<0.05
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	----	<0.2	----	<0.2
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.05	----	<0.05	----	**2.36**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.05	----	<0.05	----	**6.83**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.05	----	<0.05	----	**3.24**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.05	----	<0.05	----	**2.60**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	----	<0.05	----	**1.14**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	----	<0.05	----	**0.06**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	----	<0.05	----	<0.05
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	----	<0.05	----	<0.05
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	----	<0.05	----	<0.05
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	----	<0.12	----	<0.12
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	----	<0.05	----	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	----	<0.12	----	<0.12

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/11	MW94/10	MW12/25	W91/7	MW09/6
				04-Dec-2018 11:15	04-Dec-2018 11:15	04-Dec-2018 15:50	04-Dec-2018 15:40	04-Dec-2018 13:00
				ES1836402-006	ES1836402-007	ES1836402-008	ES1836402-009	ES1836402-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	----	<0.12	----	<0.12
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	----	<0.12	----	<0.12
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	----	<0.12	----	<0.12
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	----	<0.05	----	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	----	<0.05	----	<0.05
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	<0.05	----	**0.52**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	**0.13**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.05	----	<0.05	----	**43.1**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.05	----	<0.05	----	**21.7**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.05	----	<0.05	----	**39.8**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**106**	**101**	**107**	**105**	**115**
Toluene-D8	2037-26-5	2	%	**107**	**101**	**109**	**103**	**116**
4-Bromofluorobenzene	460-00-4	2	%	**104**	**102**	**107**	**102**	**110**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	----	**105**	----	**100**
13C8-PFOA	----	0.02	%	**60.1**	----	**61.7**	----	**68.2**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW95/4	D02_20181204	MW97/4	MW02/1	W91/8
				04-Dec-2018 13:50	04-Dec-2018 11:30	04-Dec-2018 13:30	04-Dec-2018 00:00	04-Dec-2018 11:10
				ES1836402-011	ES1836402-012	ES1836402-013	ES1836402-014	ES1836402-015
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	----	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	<50	<50	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	----	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	<100	<100	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	<100	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	**4130**	<20	<20	**330**	**1660**
C10 - C14 Fraction	----	50	µg/L	**550**	<50	<50	**1300**	<50
C15 - C28 Fraction	----	100	µg/L	**300**	<100	<100	**530**	**400**
C29 - C36 Fraction	----	50	µg/L	**400**	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**1250**	<50	<50	**1830**	**400**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	**4960**	<20	<20	**570**	**1980**
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	**4960**	<20	<20	**560**	**610**
>C10 - C16 Fraction	----	100	µg/L	**600**	<100	<100	**1460**	<100
>C16 - C34 Fraction	----	100	µg/L	**530**	<100	<100	**300**	**370**
>C34 - C40 Fraction	----	100	µg/L	**120**	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**1250**	<100	<100	**1760**	**370**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	**600**	<100	<100	**1460**	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	**2**	<1	<1	**2**	**1340**
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	**19**
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	**8**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	**6**	<5
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	**2**	**6**
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	**8**	**6**
^ **Sum of BTEX**	----	1	µg/L	**2**	<1	<1	**10**	**1370**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW95/4	D02_20181204	MW97/4	MW02/1	W91/8
				04-Dec-2018 13:50	04-Dec-2018 11:30	04-Dec-2018 13:30	04-Dec-2018 00:00	04-Dec-2018 11:10
				ES1836402-011	ES1836402-012	ES1836402-013	ES1836402-014	ES1836402-015
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	<0.02	----	----	**0.26**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	----	----	**0.11**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	----	----	**0.13**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	----	----	**0.32**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	----	----	**0.47**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	----	----	**0.17**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	----	**0.04**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW95/4	D02_20181204	MW97/4	MW02/1	W91/8
				04-Dec-2018 13:50	04-Dec-2018 11:30	04-Dec-2018 13:30	04-Dec-2018 00:00	04-Dec-2018 11:10
				ES1836402-011	ES1836402-012	ES1836402-013	ES1836402-014	ES1836402-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	<0.01	----	----	**1.50**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	<0.01	----	----	**0.37**
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	<0.01	----	----	**1.46**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**103**	**110**	**107**	**106**	**102**
Toluene-D8	2037-26-5	2	%	**111**	**113**	**106**	**111**	**107**
4-Bromofluorobenzene	460-00-4	2	%	**105**	**109**	**104**	**106**	**104**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	**104**	----	----	**118**
13C8-PFOA	----	0.02	%	----	**61.6**	----	----	**70.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/12	MW09/7	MW12/21	D01_2018214	MW12/26
				04-Dec-2018 10:50	04-Dec-2018 15:00	04-Dec-2018 10:25	04-Dec-2018 11:00	04-Dec-2018 13:40
				ES1836402-016	ES1836402-017	ES1836402-018	ES1836402-019	ES1836402-020
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	<50	<50	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	<100	<100	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	**50**	**1680**	<20	<20	**190**
C10 - C14 Fraction	----	50	µg/L	<50	**400**	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	**460**	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	**170**	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	**1030**	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	**60**	**2840**	<20	<20	**290**
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	**60**	**2800**	<20	<20	**180**
>C10 - C16 Fraction	----	100	µg/L	<100	**460**	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	**540**	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	**1000**	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	**460**	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	**19**	<1	<1	**16**
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	**9**
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	**70**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	**13**	<2	<2	**9**
ortho-Xylene	95-47-6	2	µg/L	<2	**4**	<2	<2	**11**
^ **Total Xylenes**	----	2	µg/L	<2	**17**	<2	<2	**20**
^ **Sum of BTEX**	----	1	µg/L	<1	**36**	<1	<1	**115**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW94/12	MW09/7	MW12/21	D01_2018214	MW12/26
				04-Dec-2018 10:50	04-Dec-2018 15:00	04-Dec-2018 10:25	04-Dec-2018 11:00	04-Dec-2018 13:40
				ES1836402-016	ES1836402-017	ES1836402-018	ES1836402-019	ES1836402-020
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	**284**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	**0.18**	----	**3.20**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	----	**0.09**	----	**2.57**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**0.33**	----	**0.77**	----	**17.3**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	<0.05	----	**1.20**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.63**	----	**1.01**	----	**26.0**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.05	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.2	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.03**	----	**0.11**	----	**3.84**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.09**	----	**0.42**	----	**7.87**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.12**	----	**0.32**	----	**2.07**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.08**	----	**0.16**	----	**3.58**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.04**	----	<0.05	----	**2.46**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.05	----	**0.21**
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.05	----	**0.10**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.05	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.05	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.12	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.05	----	**0.08**
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.12	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/12	MW09/7	MW12/21	D01_2018214	MW12/26
				04-Dec-2018 10:50	04-Dec-2018 15:00	04-Dec-2018 10:25	04-Dec-2018 11:00	04-Dec-2018 13:40
				ES1836402-016	ES1836402-017	ES1836402-018	ES1836402-019	ES1836402-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.12	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.12	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.12	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.05	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.05	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	<0.05	----	**4.02**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	**6.01**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	**0.09**
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**1.35**	----	**3.06**	----	**80.6**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.96**	----	**1.78**	----	**43.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**1.28**	----	**2.97**	----	**73.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**102**	**105**	**117**	**105**	**102**
Toluene-D8	2037-26-5	2	%	**107**	**116**	**119**	**103**	**109**
4-Bromofluorobenzene	460-00-4	2	%	**102**	**111**	**112**	**99.3**	**103**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	----	**108**	----	**107**
13C8-PFOA	----	0.02	%	**68.2**	----	**73.9**	----	**67.6**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				TW94/5	MW94/18	MW09/11	MW95/13	MW09/13
				04-Dec-2018 15:05	04-Dec-2018 15:10	04-Dec-2018 14:40	04-Dec-2018 13:45	04-Dec-2018 14:45
				ES1836402-021	ES1836402-022	ES1836402-023	ES1836402-024	ES1836402-025
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	**1780**	<20
C10 - C14 Fraction	----	50	µg/L	**70**	<50	**110**	**210**	**80**
C15 - C28 Fraction	----	100	µg/L	<100	<100	**130**	<100	<100
C29 - C36 Fraction	----	50	µg/L	**440**	<50	**460**	**250**	**460**
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**510**	<50	**700**	**460**	**540**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	**1740**	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	**1740**	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	**120**	**220**	<100
>C16 - C34 Fraction	----	100	µg/L	**380**	<100	**430**	**230**	**350**
>C34 - C40 Fraction	----	100	µg/L	**140**	<100	**180**	<100	**180**
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**520**	<100	**730**	**450**	**530**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	**120**	**220**	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	**2**	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	**2**	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**103**	**110**	**111**	**109**	**115**
Toluene-D8	2037-26-5	2	%	**119**	**105**	**108**	**112**	**113**
4-Bromofluorobenzene	460-00-4	2	%	**101**	**94.6**	**93.3**	**109**	**96.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW09/2	TW94/4	R01_20181203	----	----
				04-Dec-2018 14:25	04-Dec-2018 14:15	04-Dec-2018 17:00	----	----
				ES1836402-026	ES1836402-027	ES1836402-028	--------	--------
				Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	**110**	<20	----	----
C10 - C14 Fraction	----	50	µg/L	**160**	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	**200**	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	**360**	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	**80**	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	**80**	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	**180**	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	**140**	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**320**	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	**180**	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**112**	**104**	**102**	----	----
Toluene-D8	2037-26-5	2	%	**105**	**103**	**89.8**	----	----
4-Bromofluorobenzene	460-00-4	2	%	**98.0**	**103**	**86.8**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

		Recovery Limits (%)	
		Low	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1836402**	Page	: 1 of 10
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: Stephen Mulligan	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Clyde Q4 GME	Date Samples Received	: 04-Dec-2018
Order number	: 487488	Date Analysis Commenced	: 06-Dec-2018
C-O-C number	: ----	Issue Date	: 12-Dec-2018
Sampler	: ADAM KALMS		
Site	: ----		
Quote number	: SY/245/17		
No. of samples received	: 28		
No. of samples analysed	: 28		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2082115)									
ES1836402-001	MW12/13	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1836402-012	D02_20181204	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2082120)									
ES1836240-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1836348-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2082115)									
ES1836402-001	MW12/13	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1836402-012	D02_20181204	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2082120)									
ES1836240-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1836348-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2082115)									
ES1836402-001	MW12/13	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1836402-012	D02_20181204	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080: BTEXN (QC Lot: 2082115) - continued									
ES1836402-012	D02_20181204	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2082120)									
ES1836240-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1836348-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2083526)									
EM1819530-013	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ES1836402-002	MW12/12	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	231	259	11.3	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	13.0	12.5	3.92	0% - 50%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	11.9	12.8	7.29	0% - 50%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	83.6	83.3	0.359	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	6.80	7.80	13.7	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<1.00	<1.00	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2083526)									
EM1819530-013	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2083526) - continued									
EM1819530-013	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ES1836402-002	MW12/12	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	20.7	23.1	11.0	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	17.0	17.7	4.03	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	43.4	43.7	0.689	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	11.8	12.6	6.56	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	30.0	32.4	7.69	0% - 20%
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	2.20	1.80	20.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<2.50	<2.50	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<5.0	<5.0	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2083526)									
EM1819530-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836402-002	MW12/12	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<2.50	<2.50	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<2.50	<2.50	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<2.50	<2.50	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<2.50	<2.50	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2083526)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2083526) - continued									
EM1819530-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836402-002	MW12/12	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<1.00	<1.00	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	30.8	32.5	5.37	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	16.2	16.6	2.44	0% - 50%
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<1.00	<1.00	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2083526)									
EM1819530-013	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
ES1836402-002	MW12/12	EP231X: Sum of PFAS	----	0.01	µg/L	518	556	6.96	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2078523)								
EP071SG: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	88.2	75	117
EP071SG: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	90.9	81	113
EP071SG: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	86.9	71	117
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2078523)								
EP071SG: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	93.2	73	119
EP071SG: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	94.9	81	113
EP071SG: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	101	65	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2078522)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	85.4	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.0	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	93.5	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2078818)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	93.8	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	99.6	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	104	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2082115)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	95.3	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2082120)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	83.5	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2078522)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	83.1	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	104	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	94.1	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2078818)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	82.0	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	87.4	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	89.8	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2082115)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	101	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2082120)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	84.5	75	127
EP080: BTEXN (QCLot: 2082115)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	101	70	122

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EP080: BTEXN (QCLot: 2082115) - continued								
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	104	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	104	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	103	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	105	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	102	70	120
EP080: BTEXN (QCLot: 2082120)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	86.2	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	94.6	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	93.6	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.3	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.7	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	97.2	70	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2083526)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	113	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	116	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	104	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	95.2	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	98.8	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2083526)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	108	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	122	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	123	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	122	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	109	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	122	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	117	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	116	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	92.0	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	88.6	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	106	70	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2083526)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	123	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	117	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	119	70	150

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2083526) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	114	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	113	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	106	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	112	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2083526)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	118	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	117	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	123	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	96.6	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2082115)							
ES1836402-001	MW12/13	EP080: C6 - C9 Fraction	----	325 µg/L	86.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2082120)							
ES1836240-009	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	109	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2082115)							
ES1836402-001	MW12/13	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	93.7	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2082120)							
ES1836240-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	113	70	130
EP080: BTEXN (QCLot: 2082115)							
ES1836402-001	MW12/13	EP080: Benzene	71-43-2	25 µg/L	101	70	130
		EP080: Toluene	108-88-3	25 µg/L	103	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	101	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	99.3	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	100	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	87.6	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP080: BTEXN (QCLot: 2082120)							
ES1836240-009	Anonymous	EP080: Benzene	71-43-2	25 µg/L	91.9	70	130
		EP080: Toluene	108-88-3	25 µg/L	103	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	101	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	102	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	84.6	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2083526)							
EM1819530-013	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	128	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	128	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	120	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	112	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	101	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	102	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2083526)							
EM1819530-013	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	119	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	127	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	130	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	127	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	114	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	124	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	128	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	122	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	96.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	106	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	113	50	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2083526)							
EM1819530-013	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	126	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	118	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	116	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	111	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	120	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	111	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	105	50	130

Work Order : ES1836402
Client : ENVIRO RESOURCES MANAGEMENT
Project : Clyde Q4 GME

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2083526)							
EM1819530-013	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	125	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	129	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	127	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	101	50	130

Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1836402**	Page	: 1 of 8
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: Stephen Mulligan	Telephone	: +61-2-8784 8555
Project	: Clyde Q4 GME	Date Samples Received	: 04-Dec-2018
Site	: ----	Issue Date	: 12-Dec-2018
Sampler	: ADAM KALMS	No. of samples received	: 28
Order number	: 487488	No. of samples analysed	: 28

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	38	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	38	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
Amber Glass Bottle - Unpreserved (EP071SG)								
MW12/24,	MW12/23,	**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**11-Dec-2018**	15-Jan-2019	✓
MW09/8,	MW94/11,							
MW12/25,	W91/7,							
MW09/6,	D02_20181204,							
MW97/4,	MW94/12,							
MW09/7,	MW12/21,							
D01_2018214								
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Amber Glass Bottle - Unpreserved (EP071SG)								
MW12/24,	MW12/23,	**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**11-Dec-2018**	15-Jan-2019	✓
MW09/8,	MW94/11,							
MW12/25,	W91/7,							
MW09/6,	D02_20181204,							
MW97/4,	MW94/12,							
MW09/7,	MW12/21,							
D01_2018214								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
MW12/13,	MW12/12,	**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**10-Dec-2018**	15-Jan-2019	✓
MW12/24,	MW12/23,							
MW09/8,	MW94/11,							
MW12/25,	W91/7,							
MW09/6,	MW95/4,							
D02_20181204,	MW97/4,							
W91/8,	MW94/12,							
MW09/7,	MW12/21,							
D01_2018214,	TW94/5,							
MW94/18,	MW09/11,							
MW95/13,	MW09/13,							
MW09/2,	TW94/4,							
R01_20181203								
Amber Glass Bottle - Unpreserved (EP071)								
MW02/1		**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**12-Dec-2018**	15-Jan-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW12/13,	MW12/12,	**04-Dec-2018**	**08-Dec-2018**	18-Dec-2018	✓	**08-Dec-2018**	18-Dec-2018	✓
MW12/24,	MW12/23,							
MW09/8,	MW94/11,							
MW94/10,	MW12/25,							
W91/7,	MW09/6,							
MW95/4,	D02_20181204,							
MW97/4,	MW02/1,							
W91/8,	MW94/12,							
MW09/7,	MW12/21,							
D01_2018214,	MW12/26,							
TW94/5,	MW94/18,							
MW09/11,	MW95/13,							
MW09/13,	MW09/2,							
TW94/4,	R01_20181203							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
MW12/13, MW12/24, MW09/8, MW12/25, MW09/6, D02_20181204, W91/8, MW09/7, D01_2018214, MW94/18, MW95/13, MW09/2, R01_20181203	MW12/12, MW12/23, MW94/11, W91/7, MW95/4, MW97/4, MW94/12, MW12/21, TW94/5, MW09/11, MW09/13, TW94/4,	**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**10-Dec-2018**	15-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071)								
MW02/1		**04-Dec-2018**	**06-Dec-2018**	11-Dec-2018	✓	**12-Dec-2018**	15-Jan-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW12/13, MW12/24, MW09/8, MW94/10, W91/7, MW95/4, MW97/4, W91/8, MW09/7, D01_2018214, TW94/5, MW09/11, MW09/13, TW94/4,	MW12/12, MW12/23, MW94/11, MW12/25, MW09/6, D02_20181204, MW02/1, MW94/12, MW12/21, MW12/26, MW94/18, MW95/13, MW09/2, R01_20181203	**04-Dec-2018**	**08-Dec-2018**	18-Dec-2018	✓	**08-Dec-2018**	18-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
MW12/13,	MW12/12,	**04-Dec-2018**	**08-Dec-2018**	18-Dec-2018	✓	**08-Dec-2018**	18-Dec-2018	✓
MW12/24,	MW12/23,							
MW09/8,	MW94/11,							
MW94/10,	MW12/25,							
W91/7,	MW09/6,							
MW95/4,	D02_20181204,							
MW97/4,	MW02/1,							
W91/8,	MW94/12,							
MW09/7,	MW12/21,							
D01_2018214,	MW12/26,							
TW94/5,	MW94/18,							
MW09/11,	MW95/13,							
MW09/13,	MW09/2,							
TW94/4,	R01_20181203							
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
MW12/13,	MW12/12,	**04-Dec-2018**	**09-Dec-2018**	02-Jun-2019	✓	**09-Dec-2018**	02-Jun-2019	✓
MW94/11,	MW12/25,							
MW09/6,	D02_20181204,							
W91/8,	MW94/12,							
MW12/21,	MW12/26							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
MW12/13,	MW12/12,	**04-Dec-2018**	**09-Dec-2018**	02-Jun-2019	✓	**09-Dec-2018**	02-Jun-2019	✓
MW94/11,	MW12/25,							
MW09/6,	D02_20181204,							
W91/8,	MW94/12,							
MW12/21,	MW12/26							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
MW12/13,	MW12/12,	**04-Dec-2018**	**09-Dec-2018**	02-Jun-2019	✓	**09-Dec-2018**	02-Jun-2019	✓
MW94/11,	MW12/25,							
MW09/6,	D02_20181204,							
W91/8,	MW94/12,							
MW12/21,	MW12/26							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
MW12/13,	MW12/12,	**04-Dec-2018**	**09-Dec-2018**	02-Jun-2019	✓	**09-Dec-2018**	02-Jun-2019	✓
MW94/11,	MW12/25,							
MW09/6,	D02_20181204,							
W91/8,	MW94/12,							
MW12/21,	MW12/26							
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
MW12/13,	MW12/12,	**04-Dec-2018**	**09-Dec-2018**	02-Jun-2019	✓	**09-Dec-2018**	02-Jun-2019	✓
MW94/11,	MW12/25,							
MW09/6,	D02_20181204,							
W91/8,	MW94/12,							
MW12/21,	MW12/26							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	38	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	13	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	38	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	13	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	WATER	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1836402**

Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: Stephen Mulligan	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: stephen.mulligan@erm.com	E-mail	: Tamara.Duker@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: Clyde Q4 GME	Page	: 1 of 3
Order number	: 487488	Quote number	: ES2017ENVRES0010 (SY/245/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ADAM KALMS		

Dates

Date Samples Received	: 04-Dec-2018 17:30	Issue Date	: 05-Dec-2018
Client Requested Due Date	: 11-Dec-2018	Scheduled Reporting Date	: **11-Dec-2018**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 1.2 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 28 / 28

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP071SG TRH Silica Gel Clean Up	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1836402-001	04-Dec-2018 13:20	MW12/13		✓	✓	
ES1836402-002	04-Dec-2018 13:15	MW12/12		✓	✓	
ES1836402-003	04-Dec-2018 11:00	MW12/24	✓		✓	
ES1836402-004	04-Dec-2018 10:50	MW12/23	✓		✓	
ES1836402-005	04-Dec-2018 16:05	MW09/8	✓		✓	
ES1836402-006	04-Dec-2018 11:15	MW94/11	✓	✓	✓	
ES1836402-007	04-Dec-2018 11:15	MW94/10				✓
ES1836402-008	04-Dec-2018 15:50	MW12/25	✓	✓	✓	
ES1836402-009	04-Dec-2018 15:40	W91/7	✓		✓	
ES1836402-010	04-Dec-2018 13:00	MW09/6	✓	✓	✓	
ES1836402-011	04-Dec-2018 13:50	MW95/4			✓	
ES1836402-012	04-Dec-2018 11:30	D02_20181204	✓	✓	✓	
ES1836402-013	04-Dec-2018 13:30	MW97/4	✓		✓	
ES1836402-014	04-Dec-2018 00:00	MW02/1			✓	
ES1836402-015	04-Dec-2018 11:10	W91/8		✓	✓	
ES1836402-016	04-Dec-2018 10:50	MW94/12	✓	✓	✓	
ES1836402-017	04-Dec-2018 15:00	MW09/7	✓		✓	
ES1836402-018	04-Dec-2018 10:25	MW12/21	✓	✓	✓	
ES1836402-019	04-Dec-2018 11:00	D01_2018214	✓		✓	
ES1836402-020	04-Dec-2018 13:40	MW12/26		✓		✓
ES1836402-021	04-Dec-2018 15:05	TW94/5			✓	
ES1836402-022	04-Dec-2018 15:10	MW94/18			✓	
ES1836402-023	04-Dec-2018 14:40	MW09/11			✓	
ES1836402-024	04-Dec-2018 13:45	MW95/13			✓	
ES1836402-025	04-Dec-2018 14:45	MW09/13			✓	
ES1836402-026	04-Dec-2018 14:25	MW09/2			✓	
ES1836402-027	04-Dec-2018 14:15	TW94/4			✓	
ES1836402-028	04-Dec-2018 17:00	R01_20181203			✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
ADAM KALMS		
- *AU Certificate of Analysis - NATA (COA)	Email	adam.kalms@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	adam.kalms@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	adam.kalms@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	adam.kalms@erm.com
- Chain of Custody (CoC) (COC)	Email	adam.kalms@erm.com
- EDI Format - ENMRG (ENMRG)	Email	adam.kalms@erm.com
- EDI Format - ESDAT (ESDAT)	Email	adam.kalms@erm.com
STEPHEN MULLIGAN		
- *AU Certificate of Analysis - NATA (COA)	Email	stephen.mulligan@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	stephen.mulligan@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	stephen.mulligan@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	stephen.mulligan@erm.com
- A4 - AU Tax Invoice (INV)	Email	stephen.mulligan@erm.com
- Chain of Custody (CoC) (COC)	Email	stephen.mulligan@erm.com
- EDI Format - ENMRG (ENMRG)	Email	stephen.mulligan@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	stephen.mulligan@erm.com
- EDI Format - ESDAT (ESDAT)	Email	stephen.mulligan@erm.com

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph. 08 8359 0890 E:adelaide@alsenviro.com

CLIENT: ERM
OFFICE: Sydney
PROJECT: Clyde Q4 GME
ORDER NUMBER: 487488
PROJECT MANAGER: Stephen Mulligan — CONTACT PH: 02 8584 8888
SAMPLER: Adam Kalms — SAMPLER MOBILE: 0432 057 606
COC emailed to ALS? [redacted] — EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com
Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 1.2 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Adam Kalms	Justin		
DATE/TIME: 4/12/18 1630	DATE/TIME: 4/12 5.30pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY: LAB ID	SAMPLE DETAILS MATRIX: Solid(S) Water(W): SAMPLE ID	DATE / TIME	MATRIX (Water)	CONTAINER INFORMATION: TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS	Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MW12/13	4/12 1320	SOIL		4	X			X	
2	MW12/12	4/12 1315	SOIL		4	X			X	
3	MW12/24	4/12 1100	SOIL		3	X	X			
4	MW12/23	4/12 1050	SOIL		3	X	X			
5	MW09/8	3/12 1605	SOIL		3	X	X			
6	MW94/11	4/12 1115	SOIL		4	X	X		X	
7	MW94/10	4/12 1115	SOIL		2	X	X			
x 8	MW12/25	3/12 1550	SOIL		4	X	X		X	
9	W91/7	3/12 1540	SOIL		3	X	X			
10	MW09/6	4/12 1300	SOIL		4	X	X		X	
x 11	MW95/4	4/12 1350	SOIL		3	X				
12	DO2_20181204	4/12 1130	SOIL		4	X	X		X	
13	MW97/4	3/12 1330	SOIL		3	X	X			
14	MW02/1	3/12			3	X				
				TOTAL						

Environmental Division
Sydney
Work Order Reference
ES1836402
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Clyde Q4 GME
ORDER NUMBER:	487488
PROJECT MANAGER:	Stephen Mulligan — CONTACT PH: 02 8584 8888
SAMPLER:	Adam Kalms — SAMPLER MOBILE: 0432 057 606
COC emailed to ALS? YES	EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
ADAM KALMS	JUSTIN		
DATE/TIME: 4/12 1630	DATE/TIME: 4/12 5.30pm	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY: LAB ID	SAMPLE DETAILS MATRIX: Solid(S) Water(W): SAMPLE ID	DATE / TIME	MATRIX	CONTAINER INFORMATION: TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
			Water											
15	W91/8	3/12 1110	SOIL		4	X			X					
16	mw94/12	3/12 1050	SOIL		4	X	X		X					
17	mw09/7	3/12 1500	SOIL		3	X	X							
18	mw12/21	4/12 1025	SOIL		4	X	X		X					
19	D01_20181214	4/12 1100	SOIL		3	X	X							
20	mw12/26	4/12 1340	SOIL		3	X			X					
21	TW94/5	4/12 1505	SOIL		3	X								
22	mw94/18	4/12 1510	SOIL		3	X								
23	mw09/11	4/12 1440	SOIL		3	X								
24	mw95/13	4/12 1345	SOIL		3	X								
25	mw09/13	4/12 1445	SOIL		3	X								
26	mw09/2	4/12 1425	SOIL		3	X								
27	TW94/4	4/12 1415	SOIL		3	X								
28	R01_20181203	3/12 1700	SOIL		3	X								
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
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Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order	: **ES1836989**	Page	: 1 of 37
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN MULLIGAN	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8584 8888	Telephone	: +61-2-8784 8555
Project	: CLYDE Q4 GME	Date Samples Received	: 08-Dec-2018 17:20
Order number	: 487488	Date Analysis Commenced	: 10-Dec-2018
C-O-C number	: ----	Issue Date	: 14-Dec-2018 16:56
Sampler	: ADAM KALMS		
Site	: ----		
Quote number	: SY/245/17		
No. of samples received	: 60		
No. of samples analysed	: 60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG050G-LL: Poor spike recovery for Low Level Hexavalent Chromium due to matrix interferences.
- EP080: Particular sample(s) required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231X: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEX compounds spiked at 20 ug/L.

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				BH116	MW09/1	MW09/10	MW09/3	MW09/9
				05-Dec-2018 11:25	07-Dec-2018 10:05	05-Dec-2018 14:30	07-Dec-2018 10:20	05-Dec-2018 15:00
				ES1836989-001	ES1836989-002	ES1836989-003	ES1836989-004	ES1836989-005
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	<50
C15 - C28 Fraction	----	100	µg/L	**260**	----	----	----	<100
C29 - C36 Fraction	----	50	µg/L	**240**	----	----	----	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**500**	----	----	----	<50
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	<100
>C16 - C34 Fraction	----	100	µg/L	**450**	----	----	----	<100
>C34 - C40 Fraction	----	100	µg/L	**140**	----	----	----	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**590**	----	----	----	<100
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	<100
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	**11800**	**30**	**540**	<20
C10 - C14 Fraction	----	50	µg/L	<50	**560**	**110**	**70**	<50
C15 - C28 Fraction	----	100	µg/L	**910**	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	**520**	**650**	**160**	**90**	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**1430**	**1210**	**270**	**160**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	**9470**	<20	**530**	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	**2430**	<20	**530**	<20
>C10 - C16 Fraction	----	100	µg/L	<100	**510**	**100**	<100	<100
>C16 - C34 Fraction	----	100	µg/L	**1230**	**490**	**120**	<100	<100
>C34 - C40 Fraction	----	100	µg/L	**340**	**270**	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**1570**	**1270**	**220**	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	**510**	**100**	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	**6560**	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	**226**	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	**86**	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	**144**	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	**24**	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	**168**	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	**7040**	<1	<1	<1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				BH116	MW09/1	MW09/10	MW09/3	MW09/9
				05-Dec-2018 11:25	07-Dec-2018 10:05	05-Dec-2018 14:30	07-Dec-2018 10:20	05-Dec-2018 15:00
				ES1836989-001	ES1836989-002	ES1836989-003	ES1836989-004	ES1836989-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<20	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				BH116	**MW09/1**	**MW09/10**	**MW09/3**	**MW09/9**
				05-Dec-2018 11:25	07-Dec-2018 10:05	05-Dec-2018 14:30	07-Dec-2018 10:20	05-Dec-2018 15:00
				ES1836989-001	**ES1836989-002**	**ES1836989-003**	**ES1836989-004**	**ES1836989-005**
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	----	----	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	<0.01	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**114**	**116**	**111**	**108**	**126**
Toluene-D8	2037-26-5	2	%	**113**	**121**	**109**	**102**	**122**
4-Bromofluorobenzene	460-00-4	2	%	**110**	**116**	**105**	**99.6**	**121**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	----	----	**98.5**	----
13C8-PFOA	----	0.02	%	----	----	----	**102**	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW11/03	MW11/04	MW11/06	MW11/07	MW11/08
				06-Dec-2018 10:10	06-Dec-2018 10:20	06-Dec-2018 09:50	06-Dec-2018 09:30	06-Dec-2018 09:20
				ES1836989-006	ES1836989-007	ES1836989-008	ES1836989-009	ES1836989-010
				Result	Result	Result	Result	Result
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	----	----	<0.001	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	**140**	**120**	**70**	**140**	**130**
C15 - C28 Fraction	----	100	µg/L	<100	**180**	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	**290**	**460**	**120**	**120**	**520**
^ C10 - C36 Fraction (sum)	----	50	µg/L	**430**	**760**	**190**	**260**	**650**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	**130**	**140**	<100	**160**	**130**
>C16 - C34 Fraction	----	100	µg/L	**220**	**490**	**120**	**130**	**430**
>C34 - C40 Fraction	----	100	µg/L	**110**	**170**	<100	<100	**200**
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**460**	**800**	**120**	**290**	**760**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	**130**	**140**	<100	**160**	**130**
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**111**	**118**	**114**	**114**	**127**
Toluene-D8	2037-26-5	2	%	**105**	**122**	**116**	**112**	**125**
4-Bromofluorobenzene	460-00-4	2	%	**101**	**120**	**109**	**108**	**116**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW11/24	MW11/26	MW11/30	MW11/31	MW11/37
				07-Dec-2018 09:30	07-Dec-2018 08:40	07-Dec-2018 08:45	07-Dec-2018 09:15	07-Dec-2018 08:55
				ES1836989-011	**ES1836989-012**	**ES1836989-013**	**ES1836989-014**	**ES1836989-015**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	**120**	<60	**100**	**130**	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	**440**	**600**	**240**	**110**	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**560**	**600**	**340**	**240**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	**120**	<100	**110**	**120**	----
>C16 - C34 Fraction	----	100	µg/L	**370**	**410**	**210**	<100	----
>C34 - C40 Fraction	----	100	µg/L	**160**	**250**	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**650**	**660**	**320**	**120**	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	**120**	<100	**110**	**120**	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	**5**	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	**5**	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**118**	**109**	**125**	**115**	**111**
Toluene-D8	2037-26-5	2	%	**114**	**107**	**130**	**104**	**109**
4-Bromofluorobenzene	460-00-4	2	%	**110**	**106**	**124**	**101**	**109**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW11/41	MW11/46	MW12/03	MW12/07	MW12/08
				06-Dec-2018 10:30	06-Dec-2018 10:40	05-Dec-2018 12:00	05-Dec-2018 10:45	05-Dec-2018 10:40
				ES1836989-016	ES1836989-017	ES1836989-018	ES1836989-019	ES1836989-020
				Result	Result	Result	Result	Result
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	----	----	----	**2.80**	<0.001
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	<50	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	<100	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	<100	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	**140**	**60**	**460**
C10 - C14 Fraction	----	50	µg/L	<50	**60**	**1740**	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	**1410**	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	**60**	**3150**	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	**210**	**80**	**490**
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	**180**	**40**	**250**
>C10 - C16 Fraction	----	100	µg/L	<100	<100	**2130**	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	**930**	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	**3060**	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	**1930**	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	**11**	<1	**18**
Toluene	108-88-3	2	µg/L	<2	<2	<2	**4**	**130**
Ethylbenzene	100-41-4	2	µg/L	<2	<2	**9**	**5**	**11**
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	**4**	**18**	**49**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW11/41	MW11/46	MW12/03	MW12/07	MW12/08
				06-Dec-2018 10:30	06-Dec-2018 10:40	05-Dec-2018 12:00	05-Dec-2018 10:45	05-Dec-2018 10:40
				ES1836989-016	ES1836989-017	ES1836989-018	ES1836989-019	ES1836989-020
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
ortho-Xylene	95-47-6	2	µg/L	<2	<2	**6**	**12**	**28**
^ Total Xylenes	----	2	µg/L	<2	<2	**10**	**30**	**77**
^ Sum of BTEX	----	1	µg/L	<1	<1	**30**	**39**	**236**
Naphthalene	91-20-3	5	µg/L	<5	<5	**198**	<5	**11**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.05	**0.12**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.05	**0.08**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.05	**0.07**	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.05	**0.08**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.05	**0.10**	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.05	**0.05**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	**0.02**	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW11/41	MW11/46	MW12/03	MW12/07	MW12/08
				06-Dec-2018 10:30	06-Dec-2018 10:40	05-Dec-2018 12:00	05-Dec-2018 10:45	05-Dec-2018 10:40
				ES1836989-016	ES1836989-017	ES1836989-018	ES1836989-019	ES1836989-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.05	**0.52**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.05	**0.20**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.05	**0.50**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**122**	**126**	**108**	**111**	**119**
Toluene-D8	2037-26-5	2	%	**118**	**124**	**105**	**109**	**118**
4-Bromofluorobenzene	460-00-4	2	%	**110**	**118**	**110**	**111**	**118**
EP231S: PFAS Surrogate								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW11/41	MW11/46	MW12/03	MW12/07	MW12/08
				06-Dec-2018 10:30	06-Dec-2018 10:40	05-Dec-2018 12:00	05-Dec-2018 10:45	05-Dec-2018 10:40
				ES1836989-016	ES1836989-017	ES1836989-018	ES1836989-019	ES1836989-020
				Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued								
13C4-PFOS	----	0.02	%	**104**	**101**	----	----	----
13C8-PFOA	----	0.02	%	**105**	**102**	----	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW12/20	MW11/20	MW11/02	MW12/06	D01-20181205
				05-Dec-2018 15:30	06-Dec-2018 09:15	06-Dec-2018 10:15	06-Dec-2018 12:30	05-Dec-2018 09:20
				ES1836989-021	ES1836989-022	ES1836989-023	ES1836989-024	ES1836989-025
				Result	Result	Result	Result	Result
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	----	----	----	**0.018**	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L	<50	**110**	**130**	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	**180**	**340**	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	**290**	**470**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	**110**	**130**	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	**140**	**310**	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	**130**	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	**250**	**570**	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	**110**	**130**	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW12/20	MW11/20	MW11/02	MW12/06	D01-20181205
				05-Dec-2018 15:30	06-Dec-2018 09:15	06-Dec-2018 10:15	06-Dec-2018 12:30	05-Dec-2018 09:20
				ES1836989-021	ES1836989-022	ES1836989-023	ES1836989-024	ES1836989-025
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.05	**0.03**	----	----	**0.52**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.05	**0.02**	----	----	**0.42**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**0.10**	**0.13**	----	----	**2.56**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.05	<0.02	----	----	**0.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.06**	<0.01	----	----	**0.71**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.05	<0.02	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.2	<0.1	----	----	**28.9**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.05	**0.09**	----	----	**110**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.05	**0.11**	----	----	**85.5**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.05	**0.08**	----	----	**18.3**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.05	**0.03**	----	----	**2.78**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.05	<0.02	----	----	**0.04**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.05	<0.02	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.05	<0.02	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.05	<0.02	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.05	<0.02	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.12	<0.05	----	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW12/20	MW11/20	MW11/02	MW12/06	D01-20181205
				05-Dec-2018 15:30	06-Dec-2018 09:15	06-Dec-2018 10:15	06-Dec-2018 12:30	05-Dec-2018 09:20
				ES1836989-021	ES1836989-022	ES1836989-023	ES1836989-024	ES1836989-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.05	<0.02	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.12	<0.05	----	----	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.12	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.12	<0.05	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.12	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.05	<0.02	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.05	<0.02	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	**0.44**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	**0.17**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.16**	**0.49**	----	----	**250**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.16**	**0.13**	----	----	**3.27**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.16**	**0.47**	----	----	**250**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**92.4**	**95.4**	**96.3**	----	----
Toluene-D8	2037-26-5	2	%	**103**	**109**	**107**	----	----
4-Bromofluorobenzene	460-00-4	2	%	**90.1**	**93.4**	**92.3**	----	----
EP231S: PFAS Surrogate								

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW12/20	**MW11/20**	**MW11/02**	**MW12/06**	**D01-20181205**
				05-Dec-2018 15:30	06-Dec-2018 09:15	06-Dec-2018 10:15	06-Dec-2018 12:30	05-Dec-2018 09:20
				ES1836989-021	**ES1836989-022**	**ES1836989-023**	**ES1836989-024**	**ES1836989-025**
				Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued								
13C4-PFOS	----	0.02	%	**102**	**102**	----	----	**98.9**
13C8-PFOA	----	0.02	%	**100**	**101**	----	----	**104**

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW91/4	MW12/22	MW18/06	MW18/23	MW91/1
				05-Dec-2018 09:20	06-Dec-2018 11:00	07-Dec-2018 13:50	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-026	ES1836989-027	ES1836989-028	ES1836989-029	ES1836989-030
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	----	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	<50	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	<100	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	----	<50	**190**	**80**	----
C15 - C28 Fraction	----	100	µg/L	----	<100	<100	**100**	----
C29 - C36 Fraction	----	50	µg/L	----	<50	**240**	**230**	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	<50	**430**	**410**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	----	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	----	<100	**230**	<100	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	**200**	**260**	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	**100**	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	<100	**530**	**260**	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	----	<100	**230**	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	----	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	----	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	----	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	----	<2	<2	<2	----
^ **Total Xylenes**	----	2	µg/L	----	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L	----	<1	<1	<1	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW91/4	MW12/22	MW18/06	MW18/23	MW91/1
				05-Dec-2018 09:20	06-Dec-2018 11:00	07-Dec-2018 13:50	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-026	**ES1836989-027**	**ES1836989-028**	**ES1836989-029**	**ES1836989-030**
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	----	<5	<5	<5	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.56**	----	----	<0.05	**1.00**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.37**	----	----	<0.05	**0.98**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	**2.84**	----	----	**0.12**	**11.2**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.03**	----	----	<0.05	**0.47**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.75**	----	----	**0.10**	**3.94**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	<0.05	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**31.0**	----	----	<0.2	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**133**	----	----	**0.11**	**0.27**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**93.2**	----	----	**0.12**	**1.20**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**19.5**	----	----	**0.10**	**0.31**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**2.86**	----	----	**0.07**	**0.58**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.04**	----	----	<0.05	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	<0.05	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	<0.05	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	<0.05	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	<0.05	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	<0.12	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	<0.05	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	<0.12	<0.05

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW91/4	MW12/22	MW18/06	MW18/23	MW91/1
				05-Dec-2018 09:20	06-Dec-2018 11:00	07-Dec-2018 13:50	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-026	ES1836989-027	ES1836989-028	ES1836989-029	ES1836989-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	<0.12	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	<0.12	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	<0.12	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	<0.05	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	<0.05	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**0.45**	----	----	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	**0.17**	----	----	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**285**	----	----	**0.62**	**20.0**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**3.59**	----	----	**0.22**	**15.1**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**284**	----	----	**0.62**	**18.5**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	----	**93.4**	**91.8**	**92.2**	----
Toluene-D8	2037-26-5	2	%	----	**106**	**106**	**104**	----
4-Bromofluorobenzene	460-00-4	2	%	----	**91.0**	**89.5**	**90.6**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.4**	----	----	**101**	**97.8**
13C8-PFOA	----	0.02	%	**96.3**	----	----	**98.2**	**99.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW91/11	MW91/2	MW91/3	MW94/8	MW91/9
				06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-031	ES1836989-032	ES1836989-033	ES1836989-034	ES1836989-035
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	----	<50	----	<50	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	----
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	<50	----	<50	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	<100	----	<100	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	<20	----	**30**	<20
C10 - C14 Fraction	----	50	µg/L	----	<50	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	<20	----	**30**	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	----	<20	----	**30**	<20
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	<100	----	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	----	<100	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	----	<1	----	<1	<1
Toluene	108-88-3	2	µg/L	----	<2	----	<2	<2
Ethylbenzene	100-41-4	2	µg/L	----	<2	----	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	<2	----	<2	<2
ortho-Xylene	95-47-6	2	µg/L	----	<2	----	<2	<2
^ **Total Xylenes**	----	2	µg/L	----	<2	----	<2	<2
^ **Sum of BTEX**	----	1	µg/L	----	<1	----	<1	<1

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW91/11	**MW91/2**	**MW91/3**	**MW94/8**	**MW91/9**
				06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-031	**ES1836989-032**	**ES1836989-033**	**ES1836989-034**	**ES1836989-035**
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	----	<5	----	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	**0.04**	<0.02	----	**0.06**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.03**	<0.01	----	**0.07**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.05**	**0.03**	<0.02	----	**0.07**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.03**	**0.03**	<0.02	----	**0.06**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.03**	<0.02	----	**0.03**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.02**	<0.01	----	**0.03**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW91/11	MW91/2	MW91/3	MW94/8	MW91/9
				06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-031	ES1836989-032	ES1836989-033	ES1836989-034	ES1836989-035
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	**0.20**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.08**	**0.18**	<0.01	----	**0.52**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.07**	<0.01	----	**0.13**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.08**	**0.18**	<0.01	----	**0.52**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	----	**90.6**	----	**89.3**	**87.8**
Toluene-D8	2037-26-5	2	%	----	**103**	----	**106**	**104**
4-Bromofluorobenzene	460-00-4	2	%	----	**89.7**	----	**90.3**	**87.2**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**100**	**97.3**	**97.4**	----	**95.9**
13C8-PFOA	----	0.02	%	**101**	**101**	**102**	----	**103**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/16	MW94/3	MW94/4	MW94/6	MW91/8
				07-Dec-2018 00:00	07-Dec-2018 00:00	06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-036	ES1836989-037	ES1836989-038	ES1836989-039	ES1836989-040
				Result	Result	Result	Result	Result
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	----	----	<0.001	----	----
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	----	<50	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	<50	----	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	<50	----	<50	<50
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	----	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	<100	----	<100	<100
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	<100	----	<100	<100
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	**2590**	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	**450**	<50	<50	**120**	**100**
C15 - C28 Fraction	----	100	µg/L	**340**	<100	<100	**260**	<100
C29 - C36 Fraction	----	50	µg/L	**940**	<50	**80**	**360**	**450**
^ C10 - C36 Fraction (sum)	----	50	µg/L	**1730**	<50	**80**	**740**	**550**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	**2610**	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	**2610**	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	**480**	<100	<100	**120**	**110**
>C16 - C34 Fraction	----	100	µg/L	**990**	<100	**150**	**560**	**410**
>C34 - C40 Fraction	----	100	µg/L	**410**	<100	<100	**140**	**180**
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**1880**	<100	**150**	**820**	**700**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	**480**	<100	<100	**120**	**110**
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				MW94/16	MW94/3	MW94/4	MW94/6	MW91/8
				07-Dec-2018 00:00	07-Dec-2018 00:00	06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-036	ES1836989-037	ES1836989-038	ES1836989-039	ES1836989-040
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	**0.52**	----	----	**2.47**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	**0.38**	----	----	**1.57**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	**0.87**	----	----	**4.66**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	----	**0.04**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	**0.16**	----	----	**0.41**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	**0.03**	----	----	**1.51**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	**0.25**	----	----	**1.71**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	**0.02**	----	----	**0.49**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	**0.01**	----	----	**0.14**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	----	<0.05
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW94/16	MW94/3	MW94/4	MW94/6	MW91/8
				07-Dec-2018 00:00	07-Dec-2018 00:00	06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-036	ES1836989-037	ES1836989-038	ES1836989-039	ES1836989-040
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	----	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	----	**0.11**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	**2.24**	----	----	**13.1**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	**1.03**	----	----	**5.07**
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	**1.86**	----	----	**11.5**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**92.0**	**96.8**	**95.5**	**97.3**	**95.0**
Toluene-D8	2037-26-5	2	%	**103**	**102**	**104**	**106**	**103**
4-Bromofluorobenzene	460-00-4	2	%	**91.6**	**90.5**	**89.2**	**91.9**	**90.2**
EP231S: PFAS Surrogate								

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				MW94/16	MW94/3	MW94/4	MW94/6	MW91/8
				07-Dec-2018 00:00	07-Dec-2018 00:00	06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 00:00
				ES1836989-036	**ES1836989-037**	**ES1836989-038**	**ES1836989-039**	**ES1836989-040**
				Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued								
13C4-PFOS	----	0.02	%	----	**99.1**	----	----	**101**
13C8-PFOA	----	0.02	%	----	**90.5**	----	----	**114**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW96/7	MW97/3	MW98/4	MW98/6	TW94/2
				06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 09:05	07-Dec-2018 09:00	05-Dec-2018 14:50
				ES1836989-041	ES1836989-042	ES1836989-043	ES1836989-044	ES1836989-045
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	<100	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	<50	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	<100	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	<100	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	<100	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	<100	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	**140**	**210**	**150**	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	**830**	**1480**	<100
C29 - C36 Fraction	----	50	µg/L	<50	**320**	**470**	**960**	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	**460**	**1510**	**2590**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	**140**	**360**	**270**	<100
>C16 - C34 Fraction	----	100	µg/L	<100	**320**	**1130**	**2320**	<100
>C34 - C40 Fraction	----	100	µg/L	<100	**140**	**190**	**410**	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	**600**	**1680**	**3000**	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	**140**	**360**	**270**	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			[illegible]	MW96/7	MW97/3	MW98/4	MW98/6	TW94/2
			[illegible]	06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 09:05	07-Dec-2018 09:00	05-Dec-2018 14:50
[illegible]	[illegible]	[illegible]	[illegible]	ES1836989-041	ES1836989-042	ES1836989-043	ES1836989-044	ES1836989-045
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	**0.06**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	**0.16**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	**0.03**	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	**0.06**	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	**0.09**	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	**0.06**	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	**0.03**	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				MW96/7	MW97/3	MW98/4	MW98/6	TW94/2
				06-Dec-2018 00:00	05-Dec-2018 00:00	06-Dec-2018 09:05	07-Dec-2018 09:00	05-Dec-2018 14:50
				ES1836989-041	ES1836989-042	ES1836989-043	ES1836989-044	ES1836989-045
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	----	**0.49**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	**0.22**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	**0.46**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**94.0**	**99.7**	**90.6**	**90.2**	**91.4**
Toluene-D8	2037-26-5	2	%	**105**	**106**	**105**	**105**	**102**
4-Bromofluorobenzene	460-00-4	2	%	**88.2**	**92.3**	**89.6**	**89.9**	**89.2**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	----	**105**	----	----
13C8-PFOA	----	0.02	%	----	----	**91.0**	----	----

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				TW94/3	W91/9	R01_20181204	R01_20181205	R01_20181206
				07-Dec-2018 09:40	05-Dec-2018 14:25	04-Dec-2018 17:00	05-Dec-2018 17:00	06-Dec-2018 17:00
				ES1836989-046	ES1836989-047	ES1836989-048	ES1836989-049	ES1836989-050
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	**610**	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	**460**	----	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	**140**	----	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	**600**	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	**780**	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	**760**	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	**500**	----	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	**150**	----	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**650**	----	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	**500**	----	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	**2**	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	**10**	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	**4**	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	**14**	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	**16**	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	<0.02	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	**0.05**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				TW94/3	W91/9	R01_20181204	R01_20181205	R01_20181206
				07-Dec-2018 09:40	05-Dec-2018 14:25	04-Dec-2018 17:00	05-Dec-2018 17:00	06-Dec-2018 17:00
				ES1836989-046	ES1836989-047	ES1836989-048	ES1836989-049	ES1836989-050
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	**0.02**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	**0.02**	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	**0.03**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				TW94/3	W91/9	R01_20181204	R01_20181205	R01_20181206
				07-Dec-2018 09:40	05-Dec-2018 14:25	04-Dec-2018 17:00	05-Dec-2018 17:00	06-Dec-2018 17:00
				ES1836989-046	ES1836989-047	ES1836989-048	ES1836989-049	ES1836989-050
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	**0.12**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	**0.05**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	**0.12**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**89.2**	**72.5**	**83.4**	**85.3**	**86.5**
Toluene-D8	2037-26-5	2	%	**104**	**84.2**	**96.5**	**99.5**	**101**
4-Bromofluorobenzene	460-00-4	2	%	**89.8**	**113**	**87.5**	**88.7**	**91.4**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	**102**	----	----	----
13C8-PFOA	----	0.02	%	----	**93.9**	----	----	----

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				R01_20181207	TS	TB	T03_20181206	D03_20181206
				07-Dec-2018 17:00	26-Nov-2018 00:00	26-Nov-2018 00:00	06-Dec-2018 14:20	06-Dec-2018 09:40
				ES1836989-051	ES1836989-052	ES1836989-053	ES1836989-054	ES1836989-055
				Result	Result	Result	Result	Result
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Hexavalent Chromium	18540-29-9	0.001	mg/L	----	----	----	----	<0.001
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	----	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	----	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	----	----	**200**	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	----	----	**200**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	**160**	<100
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	----	----	**160**	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	----	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	**15**	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	**14**	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	**15**	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	**14**	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	**16**	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	**30**	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	**74**	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	**18**	<5	<5	<5
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	----	----	----	**0.04**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				R01_20181207	TS	TB	T03_20181206	D03_20181206
				07-Dec-2018 17:00	26-Nov-2018 00:00	26-Nov-2018 00:00	06-Dec-2018 14:20	06-Dec-2018 09:40
				ES1836989-051	ES1836989-052	ES1836989-053	ES1836989-054	ES1836989-055
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	**0.08**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	**0.07**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	**0.06**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	**0.03**	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	**0.03**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	<0.02	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				R01_20181207	TS	TB	T03_20181206	D03_20181206
				07-Dec-2018 17:00	26-Nov-2018 00:00	26-Nov-2018 00:00	06-Dec-2018 14:20	06-Dec-2018 09:40
				ES1836989-051	ES1836989-052	ES1836989-053	ES1836989-054	ES1836989-055
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	**0.14**	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	----	----	----	**0.45**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	**0.12**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	**0.45**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**78.8**	**126**	**118**	**73.4**	**78.3**
Toluene-D8	2037-26-5	2	%	**101**	**102**	**101**	**93.0**	**92.5**
4-Bromofluorobenzene	460-00-4	2	%	**87.7**	**105**	**101**	**120**	**120**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	----	----	----	**101**	----
13C8-PFOA	----	0.02	%	----	----	----	**93.2**	----

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

				D02_20181205	**D03_20181205**	**D02_20181206**	**T01_20181206**	**D01_20181207**
				05-Dec-2018 11:25	05-Dec-2018 14:30	06-Dec-2018 09:30	06-Dec-2018 09:20	07-Dec-2018 08:45
				ES1836989-056	**ES1836989-057**	**ES1836989-058**	**ES1836989-059**	**ES1836989-060**
				Result	Result	Result	Result	Result
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	**210**	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	**240**	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**450**	----	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	**380**	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	**140**	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	**520**	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP071: Total Petroleum Hydrocarbons								
C10 - C14 Fraction	----	50	µg/L	----	**220**	----	----	----
C15 - C28 Fraction	----	100	µg/L	----	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	----	**250**	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	**470**	----	----	----
EP071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	100	µg/L	----	**220**	----	----	----
>C16 - C34 Fraction	----	100	µg/L	----	**230**	----	----	----
>C34 - C40 Fraction	----	100	µg/L	----	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	**450**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	----	**130**	**100**	**180**
C15 - C28 Fraction	----	100	µg/L	**1060**	----	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	**670**	----	**80**	**560**	**360**
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**1730**	----	**210**	**660**	**540**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	----	**150**	<100	**170**
>C16 - C34 Fraction	----	100	µg/L	**1480**	----	<100	**430**	**310**
>C34 - C40 Fraction	----	100	µg/L	**440**	----	<100	**210**	**130**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

				D02_20181205	D03_20181205	D02_20181206	T01_20181206	D01_20181207
				05-Dec-2018 11:25	05-Dec-2018 14:30	06-Dec-2018 09:30	06-Dec-2018 09:20	07-Dec-2018 08:45
				ES1836989-056	ES1836989-057	ES1836989-058	ES1836989-059	ES1836989-060
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**1920**	----	**150**	**640**	**610**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	**150**	<100	**170**
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	<1	<1	**3**
Toluene	108-88-3	2	µg/L	<2	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	----	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	----	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	----	<1	<1	**3**
Naphthalene	91-20-3	5	µg/L	<5	----	<5	<5	<5
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**89.5**	----	**87.2**	**78.5**	**86.1**
Toluene-D8	2037-26-5	2	%	**109**	----	**112**	**91.2**	**97.7**
4-Bromofluorobenzene	460-00-4	2	%	**118**	----	**122**	**116**	**120**

Surrogate Control Limits

Sub-Matrix: **WATER**

		Recovery Limits (%)	
		Low	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1836989**	Page	: 1 of 21
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN MULLIGAN	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8584 8888	Telephone	: +61-2-8784 8555
Project	: CLYDE Q4 GME	Date Samples Received	: 08-Dec-2018
Order number	: 487488	Date Analysis Commenced	: 10-Dec-2018
C-O-C number	: ----	Issue Date	: 14-Dec-2018
Sampler	: ADAM KALMS		
Site	: ----		
Quote number	: SY/245/17		
No. of samples received	: 60		
No. of samples analysed	: 60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level (QC Lot: 2085845)									
ES1836546-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.005	<0.005	0.00	No Limit
ES1836989-020	MW12/08	EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2086069)									
ES1837099-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2088630)									
ES1836989-003	MW09/10	EP080: C6 - C9 Fraction	----	20	µg/L	30	20	0.00	No Limit
ES1836989-011	MW11/24	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2088631)									
ES1836989-022	MW11/20	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1836989-037	MW94/3	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2088633)									
ES1836948-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES1836948-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2094427)									
ES1836989-048	R01_20181204	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2086069)									
ES1837099-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2088630)									
ES1836989-003	MW09/10	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1836989-011	MW11/24	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2088631)									
ES1836989-022	MW11/20	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1836989-037	MW94/3	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2088633)									
ES1836948-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES1836948-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2094427)									
ES1836989-048	R01_20181204	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2086069)									
ES1837099-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2088630)									
ES1836989-003	MW09/10	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1836989-011	MW11/24	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2088631)									
ES1836989-022	MW11/20	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1836989-037	MW94/3	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 2088631) - continued									
ES1836989-037	MW94/3	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2088633)									
ES1836948-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES1836948-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2094427)									
ES1836989-048	R01_20181204	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2087471)									
ES1836989-004	MW09/3	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ES1836989-032	MW91/2	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.04	0.04	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2087474)									
ES1836841-001	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.06	0.06	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2087474) - continued									
ES1836841-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
ES1836880-023	Anonymous	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 2092889)									
ES1836989-040	MW91/8	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.41	0.40	4.20	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	2.47	2.46	0.527	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	1.57	1.60	2.21	0% - 20%
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	4.66	4.74	1.70	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.04	0.04	0.00	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2087471)									
ES1836989-004	MW09/3	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ES1836989-032	MW91/2	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2087471) - continued									
ES1836989-032	MW91/2	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2087474)									
ES1836841-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
ES1836880-023	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.00	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 2092889)									
ES1836989-040	MW91/8	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.14	0.12	12.0	0% - 50%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	1.51	1.47	2.28	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	1.71	1.70	0.586	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.49	0.49	0.00	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2087471)									
ES1836989-004	MW09/3	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2087471) - continued									
ES1836989-004	MW09/3	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836989-032	MW91/2	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2087474)									
ES1836841-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836880-023	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2087474) - continued									
ES1836880-023	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 2092889)									
ES1836989-040	MW91/8	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2087471)									
ES1836989-004	MW09/3	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836989-032	MW91/2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2087474)									
ES1836841-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
ES1836880-023	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 2092889)									
ES1836989-040	MW91/8	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.11	0.10	0.00	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.00	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2087471)									
ES1836989-004	MW09/3	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
ES1836989-032	MW91/2	EP231X: Sum of PFAS	----	0.01	µg/L	0.18	0.18	0.00	0% - 50%
EP231P: PFAS Sums (QC Lot: 2087474)									
ES1836841-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.17	0.17	0.00	0% - 50%
ES1836880-023	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.00	No Limit
EP231P: PFAS Sums (QC Lot: 2092889)									
ES1836989-040	MW91/8	EP231X: Sum of PFAS	----	0.01	µg/L	13.1	13.1	0.0762	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 2085845)								
EG050G: Hexavalent Chromium	18540-29-9	0.001	mg/L	<0.001	0.05 mg/L	95.4	82	120
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2084339)								
EP071SG: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	101	75	117
EP071SG: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	87.4	81	113
EP071SG: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	82.3	71	117
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2084341)								
EP071SG: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	87.3	75	117
EP071SG: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	101	81	113
EP071SG: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	94.7	71	117
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2084438)								
EP071SG: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	87.8	75	117
EP071SG: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	100	81	113
EP071SG: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	88.4	71	117
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2084339)								
EP071SG: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	83.7	73	119
EP071SG: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	96.1	81	113
EP071SG: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	106	65	127
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2084341)								
EP071SG: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	91.7	73	119
EP071SG: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	99.9	81	113
EP071SG: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	94.3	65	127
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2084438)								
EP071SG: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	84.4	73	119
EP071SG: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	86.0	81	113
EP071SG: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	90.6	65	127
EP071: Total Petroleum Hydrocarbons (QCLot: 2084342)								
EP071-SV: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	96.8	71	119
EP071-SV: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	95.8	81	111
EP071-SV: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	98.3	70	116
EP071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2084342)								
EP071-SV: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	102	75	113
EP071-SV: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	97.7	81	113
EP071-SV: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	102	65	123

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2084338)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	104	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	102	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	106	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2084340)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	83.8	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	104	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	99.3	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2084437)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	83.4	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	103	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	105	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2086069)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	91.2	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088630)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	88.6	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088631)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	87.3	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088633)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	87.2	75	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2092613)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	92.8	76	116
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	98.0	83	109
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	88.9	75	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2094427)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	88.4	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2084338)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	107	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	93.1	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	103	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2084340)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	88.1	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	89.2	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	91.8	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2084437)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	93.2	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	103	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	80.1	77	119

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2086069)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	100	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088630)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.0	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088631)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	92.1	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088633)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	76.0	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2092613)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	2500 µg/L	90.6	76	114
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	97.1	81	111
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	85.8	77	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2094427)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	94.0	75	127
EP080: BTEXN (QCLot: 2086069)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	102	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100.0	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.2	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.7	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.4	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.6	70	120
EP080: BTEXN (QCLot: 2088630)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	104	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	99.8	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	97.4	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	103	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	104	70	120
EP080: BTEXN (QCLot: 2088631)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	103	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	103	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	102	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	101	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	109	70	120
EP080: BTEXN (QCLot: 2088633)								

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080: BTEXN (QCLot: 2088633) - continued								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	83.1	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	86.2	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	79.0	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	78.7	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	82.1	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	90.2	70	120
EP080: BTEXN (QCLot: 2094427)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	106	70	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	107	69	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	106	70	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	103	69	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	113	70	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2087471)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	81.6	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	88.2	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	86.6	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	82.0	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	83.2	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	78.6	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2087474)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	73.4	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	91.4	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	92.6	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	72.0	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	74.4	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	80.8	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2092889)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.5 µg/L	83.0	70	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.5 µg/L	78.6	70	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02	µg/L	<0.02	0.5 µg/L	81.2	70	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.5 µg/L	89.4	70	130
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.5 µg/L	85.8	70	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.5 µg/L	89.6	70	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087471)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	85.2	70	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	LCS Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087471) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	89.8	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	86.2	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	86.4	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	83.0	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	79.8	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	92.8	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	73.0	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	81.2	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	75.8	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	90.4	70	150
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087474)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	86.0	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	84.4	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	91.0	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	75.4	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	81.0	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	76.6	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	78.0	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	88.8	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	93.8	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	85.4	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	114	70	150
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2092889)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	2.5 µg/L	87.1	70	130
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.5 µg/L	89.2	70	130
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.5 µg/L	87.8	70	130
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.5 µg/L	90.0	70	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.5 µg/L	90.2	70	130
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.5 µg/L	92.0	70	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.5 µg/L	89.4	70	130
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.5 µg/L	93.6	70	130
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.5 µg/L	87.0	70	130
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.5 µg/L	81.4	70	130
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	1.25 µg/L	91.9	70	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087471)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	81.2	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	72.7	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	89.4	70	150

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087471) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	82.2	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	71.4	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	76.4	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	80.2	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087474)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	102	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	72.6	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	78.8	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	84.4	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	98.2	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	107	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	103	70	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2092889)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.5 µg/L	92.2	70	130
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	1.25 µg/L	96.6	70	150
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	1.25 µg/L	90.7	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	1.25 µg/L	87.3	70	150
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	1.25 µg/L	93.4	70	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.5 µg/L	97.8	70	130
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.5 µg/L	97.6	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2087471)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	79.6	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	81.2	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	80.4	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	78.4	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2087474)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	82.0	70	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2087474) - continued								
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	78.4	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	103	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	73.8	70	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2092889)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.5 µg/L	106	70	130
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.5 µg/L	97.6	70	130
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.5 µg/L	95.0	70	130
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.5 µg/L	101	70	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level (QCLot: 2085845)							
ES1836546-001	Anonymous	EG050G: Hexavalent Chromium	18540-29-9	0.05 mg/L	# 0.380	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2086069)							
ES1837099-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	93.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088630)							
ES1836989-003	MW09/10	EP080: C6 - C9 Fraction	----	325 µg/L	107	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088631)							
ES1836989-022	MW11/20	EP080: C6 - C9 Fraction	----	325 µg/L	109	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2088633)							
ES1836948-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	94.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2094427)							
ES1836989-048	R01_20181204	EP080: C6 - C9 Fraction	----	325 µg/L	82.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2086069)							
ES1837099-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088630)							
ES1836989-003	MW09/10	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	103	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088631)							
ES1836989-022	MW11/20	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	109	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088633)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2088633) - continued							
ES1836948-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	89.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2094427)							
ES1836989-048	R01_20181204	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	81.4	70	130
EP080: BTEXN (QCLot: 2086069)							
ES1837099-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	93.0	70	130
		EP080: Toluene	108-88-3	25 µg/L	78.3	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	99.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	86.6	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	102	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	101	70	130
EP080: BTEXN (QCLot: 2088630)							
ES1836989-003	MW09/10	EP080: Benzene	71-43-2	25 µg/L	105	70	130
		EP080: Toluene	108-88-3	25 µg/L	105	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	106	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	103	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	109	70	130
EP080: BTEXN (QCLot: 2088631)							
ES1836989-022	MW11/20	EP080: Benzene	71-43-2	25 µg/L	106	70	130
		EP080: Toluene	108-88-3	25 µg/L	107	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	105	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	104	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	97.2	70	130
EP080: BTEXN (QCLot: 2088633)							
ES1836948-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	88.2	70	130
		EP080: Toluene	108-88-3	25 µg/L	92.9	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.4	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	89.3	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	97.3	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	81.6	70	130
EP080: BTEXN (QCLot: 2094427)							
ES1836989-048	R01_20181204	EP080: Benzene	71-43-2	25 µg/L	91.9	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP080: BTEXN (QCLot: 2094427) - continued							
ES1836989-048	R01_20181204	EP080: Toluene	108-88-3	25 µg/L	89.3	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	90.2	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	88.2	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	89.9	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	90.5	70	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2087471)							
ES1836989-004	MW09/3	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	85.0	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	88.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	86.0	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	95.8	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	96.2	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	92.8	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2087474)							
ES1836841-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	77.2	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	90.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	92.2	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	77.0	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	74.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	73.8	50	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 2092889)							
ES1836989-040	MW91/8	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.5 µg/L	96.8	50	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.5 µg/L	# Not Determined	50	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.5 µg/L	88.6	50	130
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.5 µg/L	90.0	50	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.5 µg/L	88.4	50	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087471)							
ES1836989-004	MW09/3	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	51.7	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	120	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	94.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	90.8	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	93.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	88.6	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	91.4	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	101	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087471) - continued							
ES1836989-004	MW09/3	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	93.4	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	86.8	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	89.2	50	150
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2087474)							
ES1836841-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	78.3	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	87.8	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	90.2	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	82.0	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	82.8	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	81.8	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	75.6	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	99.6	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	82.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	77.4	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	128	50	150
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 2092889)							
ES1836989-040	MW91/8	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	2.5 µg/L	94.9	50	130
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.5 µg/L	90.6	50	130
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.5 µg/L	94.6	50	130
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.5 µg/L	93.2	50	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.5 µg/L	94.2	50	130
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.5 µg/L	96.2	50	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.5 µg/L	92.8	50	130
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.5 µg/L	97.0	50	130
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.5 µg/L	91.8	50	130
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.5 µg/L	81.2	50	130
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	1.25 µg/L	89.9	50	150
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087471)							
ES1836989-004	MW09/3	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	87.2	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	98.2	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	96.3	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	91.8	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	96.0	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	95.6	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087471) - continued							
ES1836989-004	MW09/3	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	97.4	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2087474)							
ES1836841-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	84.8	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	91.1	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	69.4	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	111	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	94.4	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	114	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	119	50	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 2092889)							
ES1836989-040	MW91/8	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.5 µg/L	91.8	50	130
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	1.25 µg/L	99.0	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	1.25 µg/L	88.9	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	1.25 µg/L	86.2	50	150
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	1.25 µg/L	95.0	50	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.5 µg/L	93.4	50	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.5 µg/L	93.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2087471)							
ES1836989-004	MW09/3	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	110	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	95.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	110	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	96.8	50	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2087474)							
ES1836841-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	83.6	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	81.2	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	106	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	81.8	50	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 2092889)							
ES1836989-040	MW91/8	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.5 µg/L	108	50	130
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.5 µg/L	102	50	130
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.5 µg/L	111	50	130
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.5 µg/L	91.8	50	130

Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1836989**	Page	: 1 of 14
Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN MULLIGAN	Telephone	: +61-2-8784 8555
Project	: CLYDE Q4 GME	Date Samples Received	: 08-Dec-2018
Site	: ----	Issue Date	: 14-Dec-2018
Sampler	: ADAM KALMS	No. of samples received	: 60
Order number	: 487488	No. of samples analysed	: 60

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG050G LL: Hexavalent Chromium by Discrete Analyser	ES1836546--001	Anonymous	**Hexavalent Chromium**	18540-29-9	0.380 %	70-130%	**Recovery less than lower data quality objective**
EP231A: Perfluoroalkyl Sulfonic Acids	ES1836989--040	MW91/8	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES1836989--040	MW91/8	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EP080/071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved R01_20181204	13-Dec-2018	11-Dec-2018	**2**	----	----	----
Amber Glass Bottle - Unpreserved R01_20181205	13-Dec-2018	12-Dec-2018	**1**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved R01_20181204	13-Dec-2018	11-Dec-2018	**2**	----	----	----
Amber Glass Bottle - Unpreserved R01_20181205	13-Dec-2018	12-Dec-2018	**1**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	59	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	59	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG050G LL: Hexavalent Chromium by Discrete Analyser - Low Level								
Clear Plastic Bottle - NaOH Filtered (EG050G LL)								
MW12/07,	MW12/08	**05-Dec-2018**	----	----	----	**10-Dec-2018**	02-Jan-2019	✓
Clear Plastic Bottle - NaOH Filtered (EG050G LL)								
MW11/06, MW94/4,	MW12/06, D03_20181206	**06-Dec-2018**	----	----	----	**10-Dec-2018**	03-Jan-2019	✓
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup								
Amber Glass Bottle - Unpreserved (EP071SG)								
D02_20181205		**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
BH116, MW12/07, MW91/2, MW97/3	MW09/9, MW12/20, MW94/6,	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
MW11/41, MW12/22, MW91/8,	MW11/46, MW94/8, MW96/7	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
MW94/3,	MW98/6	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Amber Glass Bottle - Unpreserved (EP071SG)								
D02_20181205		**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
BH116, MW12/07, MW91/2, MW97/3	MW09/9, MW12/20, MW94/6,	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
MW11/41, MW12/22, MW91/8,	MW11/46, MW94/8, MW96/7	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071SG)								
MW94/3,	MW98/6	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**14-Dec-2018**	20-Jan-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071-SV) D03_20181205	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
EP071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071-SV) D03_20181205	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓

Matrix: **WATER**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) R01_20181204	**04-Dec-2018**	**13-Dec-2018**	11-Dec-2018	✗	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D02_20181205	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) BH116, MW09/10, MW09/9, MW12/03, MW12/07, MW12/20, MW18/23, MW91/2, MW94/6, MW97/3, TW94/2	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181205	**05-Dec-2018**	**13-Dec-2018**	12-Dec-2018	✗	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D02_20181206, T01_20181206	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW11/03, MW11/04, MW11/06, MW11/07, MW11/08, MW11/41, MW11/46, MW11/20, MW11/02, MW12/22, MW94/8, MW91/9, MW94/4, MW91/8, MW96/7, MW98/4, T03_20181206, D03_20181206	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181206	**06-Dec-2018**	**13-Dec-2018**	13-Dec-2018	✓	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D01_20181207	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW09/1, MW09/3, MW11/24, MW11/26, MW11/30, MW11/31, MW18/06, MW94/16, MW94/3, MW98/6, TW94/3	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181207	**07-Dec-2018**	**13-Dec-2018**	14-Dec-2018	✓	**14-Dec-2018**	22-Jan-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_20181204	**04-Dec-2018**	**14-Dec-2018**	18-Dec-2018	✓	**14-Dec-2018**	18-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons - Continued								
BH116, MW09/9, MW12/07, MW12/20, MW91/2, MW97/3, W91/9,	MW09/10, MW12/03, MW12/08, MW18/23, MW94/6, TW94/2, D02_20181205	**05-Dec-2018**	**12-Dec-2018**	19-Dec-2018	✓	**12-Dec-2018**	19-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_20181205		**05-Dec-2018**	**14-Dec-2018**	19-Dec-2018	✓	**14-Dec-2018**	19-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW11/03, MW11/06, MW11/08, MW11/46, MW11/02, MW94/8, MW94/4, MW96/7, T03_20181206, D02_20181206,	MW11/04, MW11/07, MW11/41, MW11/20, MW12/22, MW91/9, MW91/8, MW98/4, D03_20181206, T01_20181206	**06-Dec-2018**	**12-Dec-2018**	20-Dec-2018	✓	**12-Dec-2018**	20-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_20181206		**06-Dec-2018**	**14-Dec-2018**	20-Dec-2018	✓	**14-Dec-2018**	20-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW09/1, MW11/24, MW11/30, MW11/37, MW94/16, MW98/6, D01_20181207	MW09/3, MW11/26, MW11/31, MW18/06, MW94/3, TW94/3,	**07-Dec-2018**	**12-Dec-2018**	21-Dec-2018	✓	**12-Dec-2018**	21-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_20181207		**07-Dec-2018**	**14-Dec-2018**	21-Dec-2018	✓	**14-Dec-2018**	21-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) TB		**26-Nov-2018**	**10-Dec-2018**	10-Dec-2018	✓	**10-Dec-2018**	10-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) R01_20181204	**04-Dec-2018**	**13-Dec-2018**	11-Dec-2018	×	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D02_20181205	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) BH116, MW09/10, MW09/9, MW12/03, MW12/07, MW12/20, MW18/23, MW91/2, MW94/6, MW97/3, TW94/2	**05-Dec-2018**	**11-Dec-2018**	12-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181205	**05-Dec-2018**	**13-Dec-2018**	12-Dec-2018	×	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D02_20181206, T01_20181206	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW11/03, MW11/04, MW11/06, MW11/07, MW11/08, MW11/41, MW11/46, MW11/20, MW11/02, MW12/22, MW94/8, MW91/9, MW94/4, MW91/8, MW96/7, MW98/4, T03_20181206, D03_20181206	**06-Dec-2018**	**11-Dec-2018**	13-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181206	**06-Dec-2018**	**13-Dec-2018**	13-Dec-2018	✓	**14-Dec-2018**	22-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) D01_20181207	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**12-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) MW09/1, MW09/3, MW11/24, MW11/26, MW11/30, MW11/31, MW18/06, MW94/16, MW94/3, MW98/6, TW94/3	**07-Dec-2018**	**11-Dec-2018**	14-Dec-2018	✓	**13-Dec-2018**	20-Jan-2019	✓
Amber Glass Bottle - Unpreserved (EP071) R01_20181207	**07-Dec-2018**	**13-Dec-2018**	14-Dec-2018	✓	**14-Dec-2018**	22-Jan-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080) R01_20181204	**04-Dec-2018**	**14-Dec-2018**	18-Dec-2018	✓	**14-Dec-2018**	18-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
BH116, MW09/9, MW12/07, MW12/20, MW91/2, MW97/3, W91/9,	MW09/10, MW12/03, MW12/08, MW18/23, MW94/6, TW94/2, D02_20181205	**05-Dec-2018**	**12-Dec-2018**	19-Dec-2018	✓	**12-Dec-2018**	19-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181205		**05-Dec-2018**	**14-Dec-2018**	19-Dec-2018	✓	**14-Dec-2018**	19-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW11/03, MW11/06, MW11/08, MW11/46, MW11/02, MW94/8, MW94/4, MW96/7, T03_20181206, D02_20181206,	MW11/04, MW11/07, MW11/41, MW11/20, MW12/22, MW91/9, MW91/8, MW98/4, D03_20181206, T01_20181206	**06-Dec-2018**	**12-Dec-2018**	20-Dec-2018	✓	**12-Dec-2018**	20-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181206		**06-Dec-2018**	**14-Dec-2018**	20-Dec-2018	✓	**14-Dec-2018**	20-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW09/1, MW11/24, MW11/30, MW11/37, MW94/16, MW98/6, D01_20181207	MW09/3, MW11/26, MW11/31, MW18/06, MW94/3, TW94/3,	**07-Dec-2018**	**12-Dec-2018**	21-Dec-2018	✓	**12-Dec-2018**	21-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181207		**07-Dec-2018**	**14-Dec-2018**	21-Dec-2018	✓	**14-Dec-2018**	21-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TB		**26-Nov-2018**	**10-Dec-2018**	10-Dec-2018	✓	**10-Dec-2018**	10-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181204		**04-Dec-2018**	**14-Dec-2018**	18-Dec-2018	✓	**14-Dec-2018**	18-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
BH116,	MW09/10,	**05-Dec-2018**	**12-Dec-2018**	19-Dec-2018	✓	**12-Dec-2018**	19-Dec-2018	✓
MW09/9,	MW12/03,							
MW12/07,	MW12/08,							
MW12/20,	MW18/23,							
MW91/2,	MW94/6,							
MW97/3,	TW94/2,							
W91/9,	D02_20181205							
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181205		**05-Dec-2018**	**14-Dec-2018**	19-Dec-2018	✓	**14-Dec-2018**	19-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW11/03,	MW11/04,	**06-Dec-2018**	**12-Dec-2018**	20-Dec-2018	✓	**12-Dec-2018**	20-Dec-2018	✓
MW11/06,	MW11/07,							
MW11/08,	MW11/41,							
MW11/46,	MW11/20,							
MW11/02,	MW12/22,							
MW94/8,	MW91/9,							
MW94/4,	MW91/8,							
MW96/7,	MW98/4,							
T03_20181206,	D03_20181206,							
D02_20181206,	T01_20181206							
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181206		**06-Dec-2018**	**14-Dec-2018**	20-Dec-2018	✓	**14-Dec-2018**	20-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
MW09/1,	MW09/3,	**07-Dec-2018**	**12-Dec-2018**	21-Dec-2018	✓	**12-Dec-2018**	21-Dec-2018	✓
MW11/24,	MW11/26,							
MW11/30,	MW11/31,							
MW11/37,	MW18/06,							
MW94/16,	MW94/3,							
MW98/6,	TW94/3,							
D01_20181207								
Amber VOC Vial - Sulfuric Acid (EP080)								
R01_20181207		**07-Dec-2018**	**14-Dec-2018**	21-Dec-2018	✓	**14-Dec-2018**	21-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
TS,	TB	**26-Nov-2018**	**10-Dec-2018**	10-Dec-2018	✓	**10-Dec-2018**	10-Dec-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) W91/9		**05-Dec-2018**	**11-Dec-2018**	03-Jun-2019	✓	**11-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW12/20, MW91/4, MW91/2	D01-20181205, MW18/23,	**05-Dec-2018**	**12-Dec-2018**	03-Jun-2019	✓	**12-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW98/4,	T03_20181206	**06-Dec-2018**	**11-Dec-2018**	04-Jun-2019	✓	**11-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW11/41, MW11/20, MW91/11, MW91/9	MW11/46, MW91/1, MW91/3,	**06-Dec-2018**	**12-Dec-2018**	04-Jun-2019	✓	**12-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW91/8		**06-Dec-2018**	**13-Dec-2018**	04-Jun-2019	✓	**13-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW94/3		**07-Dec-2018**	**11-Dec-2018**	05-Jun-2019	✓	**11-Dec-2018**	05-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW09/3		**07-Dec-2018**	**12-Dec-2018**	05-Jun-2019	✓	**12-Dec-2018**	05-Jun-2019	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) W91/9		**05-Dec-2018**	**11-Dec-2018**	03-Jun-2019	✓	**11-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW12/20, MW91/4, MW91/2	D01-20181205, MW18/23,	**05-Dec-2018**	**12-Dec-2018**	03-Jun-2019	✓	**12-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW98/4,	T03_20181206	**06-Dec-2018**	**11-Dec-2018**	04-Jun-2019	✓	**11-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW11/41, MW11/20, MW91/11, MW91/9	MW11/46, MW91/1, MW91/3,	**06-Dec-2018**	**12-Dec-2018**	04-Jun-2019	✓	**12-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW91/8		**06-Dec-2018**	**13-Dec-2018**	04-Jun-2019	✓	**13-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW94/3		**07-Dec-2018**	**11-Dec-2018**	05-Jun-2019	✓	**11-Dec-2018**	05-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW09/3		**07-Dec-2018**	**12-Dec-2018**	05-Jun-2019	✓	**12-Dec-2018**	05-Jun-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) W91/9		**05-Dec-2018**	**11-Dec-2018**	03-Jun-2019	✓	**11-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW12/20, MW91/4, MW91/2	D01-20181205, MW18/23,	**05-Dec-2018**	**12-Dec-2018**	03-Jun-2019	✓	**12-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW98/4,	T03_20181206	**06-Dec-2018**	**11-Dec-2018**	04-Jun-2019	✓	**11-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW11/41, MW11/20, MW91/11, MW91/9	MW11/46, MW91/1, MW91/3,	**06-Dec-2018**	**12-Dec-2018**	04-Jun-2019	✓	**12-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW91/8		**06-Dec-2018**	**13-Dec-2018**	04-Jun-2019	✓	**13-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW94/3		**07-Dec-2018**	**11-Dec-2018**	05-Jun-2019	✓	**11-Dec-2018**	05-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW09/3		**07-Dec-2018**	**12-Dec-2018**	05-Jun-2019	✓	**12-Dec-2018**	05-Jun-2019	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) W91/9		**05-Dec-2018**	**11-Dec-2018**	03-Jun-2019	✓	**11-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW12/20, MW91/4, MW91/2	D01-20181205, MW18/23,	**05-Dec-2018**	**12-Dec-2018**	03-Jun-2019	✓	**12-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW98/4,	T03_20181206	**06-Dec-2018**	**11-Dec-2018**	04-Jun-2019	✓	**11-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW11/41, MW11/20, MW91/11, MW91/9	MW11/46, MW91/1, MW91/3,	**06-Dec-2018**	**12-Dec-2018**	04-Jun-2019	✓	**12-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW91/8		**06-Dec-2018**	**13-Dec-2018**	04-Jun-2019	✓	**13-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW94/3		**07-Dec-2018**	**11-Dec-2018**	05-Jun-2019	✓	**11-Dec-2018**	05-Jun-2019	✓
HDPE (no PTFE) (EP231X) MW09/3		**07-Dec-2018**	**12-Dec-2018**	05-Jun-2019	✓	**12-Dec-2018**	05-Jun-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
W91/9		**05-Dec-2018**	**11-Dec-2018**	03-Jun-2019	✓	**11-Dec-2018**	03-Jun-2019	✓
HDPE (no PTFE) (EP231X)								
MW12/20,	D01-20181205,	**05-Dec-2018**	**12-Dec-2018**	03-Jun-2019	✓	**12-Dec-2018**	03-Jun-2019	✓
MW91/4,	MW18/23,							
MW91/2								
HDPE (no PTFE) (EP231X)								
MW98/4,	T03_20181206	**06-Dec-2018**	**11-Dec-2018**	04-Jun-2019	✓	**11-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X)								
MW11/41,	MW11/46,	**06-Dec-2018**	**12-Dec-2018**	04-Jun-2019	✓	**12-Dec-2018**	04-Jun-2019	✓
MW11/20,	MW91/1,							
MW91/11,	MW91/3,							
MW91/9								
HDPE (no PTFE) (EP231X)								
MW91/8		**06-Dec-2018**	**13-Dec-2018**	04-Jun-2019	✓	**13-Dec-2018**	04-Jun-2019	✓
HDPE (no PTFE) (EP231X)								
MW94/3		**07-Dec-2018**	**11-Dec-2018**	05-Jun-2019	✓	**11-Dec-2018**	05-Jun-2019	✓
HDPE (no PTFE) (EP231X)								
MW09/3		**07-Dec-2018**	**12-Dec-2018**	05-Jun-2019	✓	**12-Dec-2018**	05-Jun-2019	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✘ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Aquakem Discrete Analyser - Low Level	EG050G LL	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	37	**13.51**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	59	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	0	10	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	16	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	8	74	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Aquakem Discrete Analyser - Low Level	EG050G LL	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	37	**8.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	59	**6.78**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	3	16	**18.75**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	74	**6.76**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Aquakem Discrete Analyser - Low Level	EG050G LL	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	37	**8.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	59	**6.78**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	3	16	**18.75**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	74	**6.76**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Aquakem Discrete Analyser - Low Level	EG050G LL	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	37	**8.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	59	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fractions Only	EP071-SV	0	10	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	0	16	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	5	74	**6.76**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Hexavalent Chromium by Aquakem Discrete Analyser - Low Level	EG050G LL	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45 um filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Aquakem Discrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH - Total Recoverable Hydrocarbons - Silica Gel C	EP071SG	WATER	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
TRH - Semivolatile Fractions Only	EP071-SV	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In house: Direct injection analysis of fresh waters after dilution (1:1) with methanol. Analysis by LC-Electrospray-MS-MS, Negative Mode using MRM. Where commercially available, isotopically labelled analogues of the target analytes are used as internal standards for quantification. Where a labelled analogue is not commercially available, the internal standard with similar chemistry and the closest retention time to the target is used for quantification. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. This method complies with the quality control definitions as stated in QSM 5.1. Data is reviewed in line with the DQOs as stated in QSM5.1

Preparation Methods	Method	Matrix	Method Descriptions
Preparation for PFAS in water.	EP231-PR	WATER	Method presumes direct injection without workup. Preparation includes addition of internal standard and surrogate, and filtration prior to anaylsis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1836989**

Client	: **ENVIRO RESOURCES MANAGEMENT**	Laboratory	: Environmental Division Sydney
Contact	: MR STEPHEN MULLIGAN	Contact	: Tamara Duker
Address	: Level 15, 309 Kent Street SYDNEY NSW AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: stephen.mulligan@erm.com	E-mail	: Tamara.Duker@ALSGlobal.com
Telephone	: +61 02 8584 8888	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8584 8800	Facsimile	: +61-2-8784 8500
Project	: CLYDE Q4 GME	Page	: 1 of 4
Order number	: 487488	Quote number	: ES2017ENVRES0010 (SY/245/17)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ADAM KALMS		

Dates

Date Samples Received	: 08-Dec-2018 17:20	Issue Date	: 13-Dec-2018
Client Requested Due Date	: 14-Dec-2018	Scheduled Reporting Date	: **14-Dec-2018**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 3	Temperature	: 3.3'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 60 / 60

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 13/12/18: This is an updated SRN which indicates the additional analysis requested.
- **Sample T01_20181205, T02_20181206, T02_20181205, D01_20181206 have been forwarded to Eurofins**
- **Sample MW94/6 one voc vial received broken.**
- **CR III and Chromium analysis could not be conducted as nitric acid preserved was not received.**
- **Sample MW94/8 was not received PFAS preserved bottle, therefore PFAS analysis could not be conducted.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Sample D03_20181205 voc vial received broken, therefore TPH C6-C9/BTEX analysis could not be conducted.
- Sample MW11/37, MW12/08, MW94/8 and MW91-9 amber glass unpreserved bottle were not received, therefore TPH C10-C36 analysis could not be conducted.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **Sample MW11/26, MW11/31 and TW94/2 amber glass unpreseved received 40mL only, Insufficient sample volume has been supplied therefore TPH analytes requested could be compromised.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG050G LL Hexavalent Chromium - Low Level	WATER - EP071SG TRH Silica Gel Clean Up	WATER - EP071-SV TRH - SV Fractions only	WATER - EP080 BTEXN	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1836989-001	05-Dec-2018 11:25	BH116		✓				✓	
ES1836989-002	07-Dec-2018 10:05	MW09/1						✓	
ES1836989-003	05-Dec-2018 14:30	MW09/10						✓	
ES1836989-004	07-Dec-2018 10:20	MW09/3					✓	✓	
ES1836989-005	05-Dec-2018 15:00	MW09/9		✓				✓	
ES1836989-006	06-Dec-2018 10:10	MW11/03						✓	
ES1836989-007	06-Dec-2018 10:20	MW11/04						✓	
ES1836989-008	06-Dec-2018 09:50	MW11/06	✓					✓	
ES1836989-009	06-Dec-2018 09:30	MW11/07						✓	
ES1836989-010	06-Dec-2018 09:20	MW11/08						✓	
ES1836989-011	07-Dec-2018 09:30	MW11/24						✓	
ES1836989-012	07-Dec-2018 08:40	MW11/26						✓	
ES1836989-013	07-Dec-2018 08:45	MW11/30						✓	
ES1836989-014	07-Dec-2018 09:15	MW11/31						✓	
ES1836989-015	07-Dec-2018 08:55	MW11/37							✓
ES1836989-016	06-Dec-2018 10:30	MW11/41		✓			✓	✓	
ES1836989-017	06-Dec-2018 10:40	MW11/46		✓			✓	✓	
ES1836989-018	05-Dec-2018 12:00	MW12/03						✓	
ES1836989-019	05-Dec-2018 10:45	MW12/07	✓	✓				✓	
ES1836989-020	05-Dec-2018 10:40	MW12/08	✓						✓
ES1836989-021	05-Dec-2018 15:30	MW12/20		✓			✓	✓	
ES1836989-022	06-Dec-2018 09:15	MW11/20					✓	✓	
ES1836989-023	06-Dec-2018 10:15	MW11/02						✓	
ES1836989-024	06-Dec-2018 12:30	MW12/06	✓						
ES1836989-025	05-Dec-2018 09:20	D01-20181205					✓		
ES1836989-026	05-Dec-2018 09:20	MW91/4					✓		
ES1836989-027	06-Dec-2018 11:00	MW12/22		✓				✓	
ES1836989-028	07-Dec-2018 13:50	MW18/06						✓	
ES1836989-029	05-Dec-2018 00:00	MW18/23					✓	✓	
ES1836989-030	06-Dec-2018 00:00	MW91/1					✓		
ES1836989-031	06-Dec-2018 00:00	MW91/11					✓		
ES1836989-032	05-Dec-2018 00:00	MW91/2		✓			✓	✓	
ES1836989-033	06-Dec-2018 00:00	MW91/3					✓		
ES1836989-034	06-Dec-2018 00:00	MW94/8		✓				✓	
ES1836989-035	06-Dec-2018 00:00	MW91/9					✓	✓	

			WATER - EG050G LL Hexavalent Chromium - Low Level	WATER - EP071SG TRH Silica Gel Clean Up	WATER - EP071-SV TRH - SV Fractions only	WATER - EP080 BTEXN	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES1836989-036	07-Dec-2018 00:00	MW94/16						✓	
ES1836989-037	07-Dec-2018 00:00	MW94/3		✓			✓	✓	
ES1836989-038	06-Dec-2018 00:00	MW94/4	✓					✓	
ES1836989-039	05-Dec-2018 00:00	MW94/6		✓				✓	
ES1836989-040	06-Dec-2018 00:00	MW91/8		✓			✓	✓	
ES1836989-041	06-Dec-2018 00:00	MW96/7		✓				✓	
ES1836989-042	05-Dec-2018 00:00	MW97/3		✓				✓	
ES1836989-043	06-Dec-2018 09:05	MW98/4					✓	✓	
ES1836989-044	07-Dec-2018 09:00	MW98/6		✓				✓	
ES1836989-045	05-Dec-2018 14:50	TW94/2						✓	
ES1836989-046	07-Dec-2018 09:40	TW94/3						✓	
ES1836989-047	05-Dec-2018 14:25	W91/9					✓		✓
ES1836989-048	04-Dec-2018 17:00	R01_20181204						✓	
ES1836989-049	05-Dec-2018 17:00	R01_20181205						✓	
ES1836989-050	06-Dec-2018 17:00	R01_20181206						✓	
ES1836989-051	07-Dec-2018 17:00	R01_20181207						✓	
ES1836989-052	26-Nov-2018 00:00	TS				✓			
ES1836989-053	26-Nov-2018 00:00	TB							✓
ES1836989-054	06-Dec-2018 14:20	T03_20181206					✓	✓	
ES1836989-055	06-Dec-2018 09:40	D03_20181206	✓					✓	
ES1836989-056	05-Dec-2018 11:25	D02_20181205		✓				✓	
ES1836989-057	05-Dec-2018 14:30	D03_20181205			✓				
ES1836989-058	06-Dec-2018 09:30	D02_20181206						✓	
ES1836989-059	06-Dec-2018 09:20	T01_20181206						✓	
ES1836989-060	07-Dec-2018 08:45	D01_20181207						✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	au.accounts@erm.com
ADAM KALMS		
- *AU Certificate of Analysis - NATA (COA)	Email	adam.kalms@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	adam.kalms@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	adam.kalms@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	adam.kalms@erm.com
- Chain of Custody (CoC) (COC)	Email	adam.kalms@erm.com
- EDI Format - ENMRG (ENMRG)	Email	adam.kalms@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	adam.kalms@erm.com
- EDI Format - ESDAT (ESDAT)	Email	adam.kalms@erm.com
STEPHEN MULLIGAN		
- *AU Certificate of Analysis - NATA (COA)	Email	stephen.mulligan@erm.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	stephen.mulligan@erm.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	stephen.mulligan@erm.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	stephen.mulligan@erm.com
- A4 - AU Tax Invoice (INV)	Email	stephen.mulligan@erm.com
- Chain of Custody (CoC) (COC)	Email	stephen.mulligan@erm.com
- EDI Format - ENMRG (ENMRG)	Email	stephen.mulligan@erm.com
- EDI Format - EQUIS V5 ERM (EQUIS_V5_ERM)	Email	stephen.mulligan@erm.com
- EDI Format - ESDAT (ESDAT)	Email	stephen.mulligan@erm.com

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Clyde Q4 GME
ORDER NUMBER:	487488
PROJECT MANAGER:	Stephen Mulligan — CONTACT PH: 02 8584 8888
SAMPLER:	Adam Kalms — SAMPLER MOBILE: 0432 057 606
COC emailed to ALS? ~~YES~~	EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 3.3
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Adam Kalms	Sonya ALS		
DATE/TIME: 1400	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS				Additional Information
			Water										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH116	5/12 1125	~~SOIL~~		3	X	X						
2	MW09/1	7/12 1005	~~SOIL~~		3	X							
3	MW09/10	5/12 1430	~~SOIL~~		3	X							
4	MW09/3	7/12 1020	~~SOIL~~		4	X			X				
5	MW09/9	5/12 1500	~~SOIL~~		3	X	X						
6	MW11/03	6/12 1010	~~SOIL~~		3	X							
7	MW11/04	6/12 1020	~~SOIL~~		3	X							
8	MW11/06	6/12 0950	~~SOIL~~		4	X		X					
9	MW 11/07	6/12 0930	~~SOIL~~		3	X							
10	MW 11/08	6/12 0920	~~SOIL~~		3	X							
11	MW 11/24	7/12 0930	~~SOIL~~		3	X							
12	MW 11/26	7/12 0840	~~SOIL~~		3	X							
13	MW 11/30	7/12 0845	~~SOIL~~		3	X							
14	MW 11/31	7/12 0915	~~SOIL~~		3	X							
TOTAL													

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Environmental Division
Sydney
Work Order Reference
ES1836989

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: Eurofins
Organised By / Date:
Relinquished By / Date:
Connote / Courier: TO1, TO2
WO No: 001
Attach By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ **Sydney**: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sy[illegible]@alsenviro.com
☐ **Newcastle**: 5 Rosegum Rd, [illegible]brook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane**: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alse[illegible]com
☐ **Townsville**: 14-15 Desma Ct, Bohle QL[illegible].8 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT: ERM
OFFICE: Sydney
PROJECT: Clyde Q4 GME
ORDER NUMBER: 487488
PROJECT MANAGER: Stephen Mulligan **CONTACT PH:** 02 8584 8888
SAMPLER: Adam Kalms **SAMPLER MOBILE:** 0432 057 606
COC emailed to ALS? YES **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com
Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 3.3 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	Sof ... ALS		
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY: LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Additional Information (Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.)
			Water											
15	MW11/37	7/12 0855	SOIL		1	X								
16	MW11/41	6/12 1030	SOIL		4	X	X		X					
17	MW11/46	6/12 1040	SOIL		4	X	X		X					
18	MW12/03	5/12 1200	SOIL		3	X								
19	MW12/07	5/12 1045	SOIL		4	X	X	X						
20	* MW12/08	5/12 1040	SOIL		4	X	X	X						
21	MW12/20	5/12 1530	SOIL		4	X	X		X					
22	MW11/20	6/12 0915	SOIL		4	X			X					
23	MW11/02	6/12 1015	SOIL		3	X								
24	MW12/06	6/12 1230	SOIL		1			X						
25	DOL20181205	5/12 0920	SOIL		1				X					
—	TOL_20181205	5/12 0920	SOIL		1				X					Please Forward to Eurofins
26	MW91/4	5/12 0920	SOIL		1				X					
27	MW12/22	6/12 1100	SOIL		3	X	X							
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Clyde Q4 GME
ORDER NUMBER:	487488
PROJECT MANAGER:	Stephen Mulligan
CONTACT PH:	02 8584 8888
SAMPLER:	Adam Kalms
SAMPLER MOBILE:	0432 057 606
COC emailed to ALS?	~~YES~~
EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com; adam.kalms@erm.com
Email Invoice to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 3.3 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	Soo [illegible]		
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY: LAB ID	SAMPLE ID	DATE / TIME	MATRIX (Solid(S) Water(W)): Water	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
28	MW18/06	7/12 0920	SOIL		3	X								
29	MW18/23	5/12 1550	SOIL		4	X			X					
30	MW91/1	6/12 1430	SOIL		1				X					
31	MW91/11	6/12 1300	SOIL		1				X					
32	MW91/2	5/12 0850	SOIL		4	X	X		X					
33	MW91/3	6/12 1440	SOIL		1				X					
34	MW94/8	6/12 1045	SOIL		3	X	X		X					
35	MW91/9	6/12 1420	SOIL		4	X			X					
36	MW94/16	7/12 1015	SOIL		3	X								
37	MW94/3	7/12 0945	SOIL		4	X	X		X					
38	MW94/4	6/12 0940	SOIL		4	X		X						
39	MW94/6	5/12 1525	SOIL		3	X	X							
40	MW91/8	6/12 1315	SOIL		4	X	X							
41	MW96/7	6/12 1350	SOIL		3	X	X							
				TOTAL										

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price). Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS

ALS Laboratory: please tick →

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Ph: 02 8784 8555 E:samples.sydney@alsenviro.com

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Ph:02 4968 9433 E:samples.newcastle@alsenviro.com

☐ **Brisbane**: 32 Shand St, Stafford QLD 4053
Ph 07 3243 7222 E:samples.brisbane@alsenviro.com

☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818
Ph:07 4796 0600 E: townsville.environmental@alsenviro.com

☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171
Ph:03 8549 9600 E: samples.melbourne@alsenviro.com

☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095
Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT: ERM

OFFICE: Sydney

PROJECT: Clyde Q4 GME

ORDER NUMBER: 487488

PROJECT MANAGER: Stephen Mulligan **CONTACT PH:** 02 8584 8888

SAMPLER: Adam Kalms **SAMPLER MOBILE:** 0432 057 606

COC emailed to ALS? ~~YES~~ **EDD FORMAT (or default):**

Email Reports to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com; adam.kalms@erm.com

Email Invoice to (will default to PM if no other addresses are listed): stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☐ Standard TAT **(List due date):**

☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: 3.3 °C

Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	Sonja AH		
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX Water	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
42	mw97/3	5/12 1415	~~SOIL~~		3	X	X							
43	MW 98/4	6/12 0905	~~SOIL~~		4	X			X					
44	mw 98/6	7/12 0900	~~SOIL~~		3	X	X							
45	TW 94/2	5/12 1450	~~SOIL~~		3	X								
46	TW 94/3	7/12 0940	~~SOIL~~		3	X								
47	W 91/9	5/12 1425	~~SOIL~~		3	X	X		X					
48	R01_20181204	4/12 1700	~~SOIL~~		3									
49	R01_20181205	5/12 1700	~~SOIL~~		3									
50	R01_20181206	6/12 1700	~~SOIL~~		3									
51	R01_20181207	7/12 1700	~~SOIL~~		3									
52	TS		~~SOIL~~		3									
53	TB		~~SOIL~~		3									
54	T03_20181206	6/12 1420	~~SOIL~~		4	X			X					
55	D03_20181206	6/12 0940	~~SOIL~~		4	X		X						
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: *please tick →*

☐ **Sydney**: 277 Woodpark Rd, Smithfield NSW 2164 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ **Newcastle**: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ **Brisbane**: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ **Townsville**: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ **Melbourne**: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ **Adelaide**: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com

CLIENT:	ERM
OFFICE:	Sydney
PROJECT:	Clyde Q4 GME
ORDER NUMBER:	487488
PROJECT MANAGER:	Stephen Mulligan
CONTACT PH:	02 8584 8888
SAMPLER:	Adam Kalms
SAMPLER MOBILE:	0432 057 606
COC emailed to ALS?	YES
EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com; adam.kalms@erm.com
Email Invoice to (will default to PM if no other addresses are listed):	stephen.mulligan@erm.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY-245-17 ERM v3

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt:
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	SCS AJ		
DATE/TIME:	DATE/TIME: 7/12/18 1720	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TRH/BTEXN	TRH (Silica Gel Clean up)	Spec Cr	PFAS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	~~[illegible]~~		~~SOIL~~ Water											
—	T02_20181206	6/12 1315	SOIL		3	X	X							Please send Eurofins
56	D02_20181205	5/12 1125	SOIL		3	X	X							
57	D03_20181205	5/12 1430	SOIL		3	X								
—	T02_20181205	5/12 1500	SOIL		3	X	X							Please send Eurofins
58	D02_20181206	6/12 0930	SOIL		3	X								
—	D01_20181206	6/12 0920	SOIL		3	X								
59	T01_20181206	6/12 0920	SOIL		3	X								Please send Eurofins
60	D01_20181207	7/12 0845	SOIL		3	X								
			SOIL											
			SOIL											
			SOIL											
			SOIL											
			SOIL											
TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

APPENDIX C FIELD NOTES

Well ID	Location	CSM Zone	Sample	Hydrasleeve Installed (Y/N)	Date	Time	Depth to NAPL (mBTOC)	SWL (mBTOC)	Total Depth (mBTOC)	Comments	Lab Analysis
BH116	Autonexus	3	√	Y	5/12	1125	–	1.595	3.982	Roots on probe, sediment on probe + organic odour	TRH, BTEXN (SG)
BH90/7	Clyde Terminal Operations (Nth Wetland)	1	√	N	–	–	–	–	–	Inaccessible - behind contractor work zone.	Spec Cr
MW02/1	Clyde Terminal Operations	2	√	N	3/12	1450	–	1.594	2.040	Slight HC odour.	TRH, BTEXN
MW09/1	Clyde Terminal Operations	2	√	Yes	6/12	1445	–	1.410	3.344	Slight HC odour. Black silty base.	TRH, BTEXN
MW09/10	Clyde Terminal Operations	2	√	Yes	4/12	1455	–	1.508	3.418	No odour.	TRH, BTEXN
MW09/11	Clyde Terminal Operations	2	√	Yes	3/12	1400	–	0.943	3.230	Silty base, no odour.	TRH, BTEXN
MW09/13	Clyde Terminal Operations	2	√	Yes	3/12	1405	–	1.295	3.475	Slight organic odour.	TRH, BTEXN
MW09/14	Parramatta Terminal	4	√	–	–	–	–	–	–	Lost	PFAS
MW09/16	Clyde Terminal Operations	1		No	–	–	–	–	–	Lost.	-
MW09/2	Clyde Terminal Operations	2	√	Yes	3/12	1530	–	2.500	4.390	Slight HC odour.	TRH, BTEXN
MW09/20	Clyde Terminal Operations (Nth Wetland)	1		No	3/12	1030	–	0.850	1.190	Slighty silty, organic odour.	-
MW09/3	Lyondell Basell	2	√	Yes	4/12	1610	–	1.025	3.255	No Odour	TRH, BTEXN, PFAS
MW09/6	Clyde Terminal Operations	2	√	Yes	4/12	1300	–	1.226	3.777	No odour	TRH, BTEXN (SG), PFAS
MW09/7	Clyde Terminal Operations	2	√	Yes	3/12	1500	–	0.855	3.365	Grey silty base, chemical odour.	TRH, BTEXN (SG)
MW09/8	Clyde Terminal Operations	2	√	Yes	3/12	1605	–	1.629	4.460	No odour.	TRH, BTEXN (SG)
MW09/9	Clyde Terminal Operations	2	√	Yes	4/12	1457	–	~~[illegible]~~ 1.236	3.130	No odour	TRH, BTEXN (SG)
MW10/01	Clyde Terminal Operations	2		No	3/12	1355	–	0.912	2.707	No odour.	-
MW10/02	Clyde Terminal Operations	2		No	3/12	1350	–	0.960	2.578	Brown silty base, no odour.	-
MW11/01	Clyde Terminal Operations	3		No	3/12	1020	–	0.712	4.950	No odour.	-
MW11/02	Clyde Terminal Operations	3	√	Yes	3/12	1352	–	0.730	4.280	No odour.	TRH, BTEXN
MW11/03	Clyde Terminal Operations	3	√	Yes	3/12	1338	–	0.190	4.740	No odour.	TRH, BTEXN
MW11/04	Clyde Terminal Operations	3	√	Yes	3/12	1320	–	0.963	3.870	No odour.	TRH, BTEXN
MW11/06	Clyde Terminal Operations	3	√	Yes	3/12	1038	–	0.220	4.165	No odour. Potential for surface water ingress.	TRH, BTEXN, Spec Cr
MW11/07	Clyde Terminal Operations	3	√	Yes	3/12	1110	–	0.930	5.090	No odour.	TRH, BTEXN
MW11/08	Clyde Terminal Operations	3	√	Yes	3/12	1141	–	0.545	5.150	No odour.	-
MW11/17	Clyde Terminal Operations	3	√	No	3/12	1430	1.575	1.600	–	~25mm of dark brown LNAPL	TRH, BTEXN
MW11/24	Clyde Terminal Operations	3	√	Yes	4/12	0945	–	1.452	5.300	No odour	TRH, BTEXN
MW11/26	Clyde Terminal Operations	3	√	Yes	4/12	0845	–	2.040	2.660	No odour.	TRH, BTEXN
MW11/30	Clyde Terminal Operations	3	√	Yes	4/12	0855	–	1.747	4.866	No odour.	TRH, BTEXN
MW11/31	Former Process West	3	√	Yes	4/12	0940	–	0.780	4.915	No odour.	TRH, BTEXN
MW11/37	Former Process East	3	√	Yes	4/12	0905	–	1.705	4.706	No odour.	TRH, BTEXN
MW11/39	Clyde Terminal Operations	3		No	6/12	1115	–	1.226	4.910	Slight HC odour.	-
MW11/41	Clyde Terminal Operations	3	√	Yes	4/12	0930	–	1.475	4.418	No odour.	TRH, BTEXN (SG), PFAS
MW11/42	Clyde Terminal Operations	3	√	Yes	4/12	0910	–	1.405	–	No odour. Previous sleeve caught in well.	TRH, BTEXN (SG)
MW11/46	Clyde Terminal Operations	3	√	Yes	4/12	0925	–	2.035	4.878	No odour.	TRH, BTEXN (SG), PFAS
MW12/01	Autonexus	3	√	No	5/12	1130	1.420	–	–	Thick black LNAPL.	TRH, BTEXN
MW12/03	Autonexus	3	√	No	5/12	1200	–	0.840	4.918	No odour. Grab sample taken.	TRH, BTEXN
MW12/05	SITA	1	√	No	–	–	–	–	–	Repaved - Lost.	Spec Cr
MW12/07	SITA	1	√	Yes	5/12	1025	–	0.484	2.664	Black silty base, no odour	TRH, BTEXN (SG), Spec Cr
MW12/08	SITA	1	√	Yes	5/12	1015	–	0.481	4.895	Organic odour.	TRH, BTEXN (SG), Spec Cr
MW12/12	Former Fire Training Area	1	√	Yes	3/12	1125	–	0.831	3.945	Black silty base, no odour.	TRH, BTEXN, PFAS
MW12/13	Former Fire Training Area	1	√	Yes	3/12	1130	–	0.936	4.842	Slight organic odour.	TRH, BTEXN, PFAS
MW12/14	Former Fire Training Area	1		No	3/12	1255	–	0.585	3.880	No odour.	-
MW12/15	Clyde Terminal Operations	1	√	NO	7/12	1030	1.970	–	–	Thick black LNAPL. Unable to get depth to water.	TRH, BTEXN
MW11/20		3	√	Yes	3/12	1520	–	0.925	4.930	Tar like material in well head	TRH, BTEXN, PFAS.
MW12/06	SITA	1	√	Yes	5/12	1315	–	0.900	5.416	Slight HC odour.	Spec Cr.

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					Sleeve?	Date	Time	LNAPL	SWL	Depth	Comments	
	MW12/16	Former Process West	3	√	Yes	4/12	0955	—	1.595	5.903	Strong HC odour.	TRH, BTEXN
	MW12/20	Clyde Terminal Operations	3	√	Yes	5/12	1530	–	1.771	3.736	No odour.	TRH, BTEXN (SG), PFAS
	MW12/21	Clyde Terminal Operations	3	√	Yes	4/12	1025	–	0.228	4.057	Organic odour.	TRH, BTEXN (SG), PFAS
	MW12/22	Clyde Terminal Operations	3	√	Yes	6/12	1100	–	2.190	4.990	Roots on probe, slight organic odour.	TRH, BTEXN (SG)
	MW12/23	Clyde Terminal Operations	2	√	Yes	4/12	1045	–	1.801	4.649	No odour	TRH, BTEXN (SG)
	MW12/24	Clyde Terminal Operations	2	√	Yes	4/12	1100	–	1.180	3.840	Brown silty base, no odour.	TRH, BTEXN (SG)
	MW12/25	Clyde Terminal Operations	2	√	Yes	3/12	1550	–	1.960	3.894	No odour, slightly black silty base	TRH, BTEXN (SG), PFAS
	MW12/26	Former Fire Training Area	1	√	Yes	3/12	1149	–	0.340	3.900	Strong HC odour	TRH, BTEXN, PFAS
	MW18/06	Former Process West (AECOM, 2018)	3	√	Yes	4/12	1010	–	1.730	6.913	Strong HC odour.	TRH, BTEXN
	MW18/23	Clyde Terminal Operations (AECOM, 2018)	3	√	Yes	3/12	1611	–	1.143	4.550	No odour	TRH, BTEXN, PFAS
	MW18/24	Clyde Terminal Operations (AECOM, 2018)	3	√	No	3/12	1500	1.715	1.780	–	Monument damaged. Light brown LNAPL. HC/solvent odour.	TRH, BTEXN, PFAS
mw91/9	~~MW91/12~~	Parramatta Terminal	4	√	Yes	5/12	0830	–	0.560	4.890	No odour.	PFAS
	MW91/11	Parramatta Terminal	4	√	Yes	6/12	1300	–	~~[illegible]~~ 2.010	7.585	No odour.	PFAS
	MW91/2	Parramatta Terminal	4	√	Yes	5/12	0850	–	0.527	2.477	No odour	TRH, BTEXN (SG), PFAS
	MW91/3	Parramatta Terminal	4	√	Yes	5/12	0910	–	1.060	6.075	No odour.	PFAS
	MW91/4	Parramatta Terminal	4	√	Yes	5/12	0915	–	0.690	3.951	Light brown silty base, no odour.	PFAS
	MW91/5	Parramatta Terminal	4	√	–	–	–	–	–	–	Well ~~cap~~ gatic broken - unable to remove.	TRH, BTEXN (SG), PFAS
	MW91/6	Parramatta Terminal	4	√	No	–	–	–	–	–	Lost	TRH, BTEXN (SG), PFAS
	MW91/7	Parramatta Terminal	4	√	No	–	–	–	–	–	Lost	TRH, BTEXN (SG), PFAS
	MW91/8	Parramatta Terminal	4	√	Yes	5/12	1400	–	1.010	6.074	No odour.	TRH, BTEXN (SG), PFAS
mw91/1	~~MW91/9~~	Parramatta Terminal	4	√	Yes	5/12	0845	–	0.326	6.989	Black silty base, no odour.	TRH, BTEXN, PFAS
	MW94/10	Clyde Terminal Operations	2	√	Yes	6/12	1400	–	1.510	2.200	Organics on probe, organic odour.	TRH, BTEXN (SG), PFAS
	MW94/11	Clyde Terminal Operations	2	√	Yes	4/12	1130	–	1.712	3.220	No odour.	TRH, BTEXN (SG)
	MW94/12	Clyde Terminal Operations	2	√	Yes	3/12	1050	–	1.835	–	No Odour	TRH, BTEXN (SG), PFAS
	MW94/16	Bassell	2	√	Yes	4/12	16:15	–	1.038	2.905	Slight HC odour	TRH, BTEXN
	MW94/18	Clyde Terminal Operations	2	√	Yes	3/12	14:20	–	1.290	7.003	No Odour.	TRH, BTEXN
	MW94/3	Clyde Terminal Operations	3	√	Yes	7/12	0945	-	0.895	10.549	Black silty base, no odour.	TRH, BTEXN (SG), PFAS
	MW94/4	Clyde Terminal Operations	3	√	Yes	3/12	1050	–	0.845	9.085	No odour.	TRH, BTEXN, Spec Cr
	MW94/6	Clyde Terminal Operations	3	√	Yes	3/12	1550	–	1.205	4.000	No odour	TRH, BTEXN (SG)
	MW94/8	Clyde Terminal Operations	3	√	NO	6/12	1045	–	2.434	3.337	No Odour	TRH, BTEXN (SG)
	MW95/13	Clyde Terminal Operations	2	√	Yes	3/12	1515	–	0.815	3.345	Grey silty base, strong chemical odour.	TRH, BTEXN
	MW95/4	Clyde Terminal Operations	2	√	Yes	3/12	1520	–	0.834	3.650	Orange silty base, strong chemical odour.	TRH, BTEXN
	MW96/1	Clyde Terminal Operations	2	√	No	–	–	–	–	–	Lost	TRH, BTEXN (SG)
	MW96/3	Clyde Terminal Operations (East Wetlands)	2	√	No	–	–	–	–	–	Inaccessible due to surface water.	TRH, BTEXN (SG)
	MW96/7	Clyde Terminal Operations (sth wetlands)	2	√	Yes	6/12	1350	–	2.545	3.990	No odour.	TRH, BTEXN (SG)
	MW97/3	Clyde Terminal Operations (Nth Wetland)	1	√	Yes	3/12	1025	–	1.013	1.599	No odour.	TRH, BTEXN (SG)
	MW97/4	Clyde Terminal Operations (Nth Wetland)	1	√	Yes	3/12	1045	–	0.657		No odour.	TRH, BTEXN (SG)
	MW98/4	Autonexus	3	√	Yes	3/12	1520	–	0.975	4.030	No odour.	PFAS, TRH, BTEXN.
	MW98/6	Former Process East	3	√	Yes	6/12	1125	–	0.770	3.450	HC Odour.	TRH, BTEXN (SG)
	TW94/1	Clyde Terminal Operations	3		NO	3/12	1435	–	2.050	8.778	No odour	-
	TW94/2	Clyde Terminal Operations	2	√	Yes	3/12	1430	–	2.030	4.048	No odour	TRH, BTEXN
	TW94/3	Clyde Terminal Operations	2	√	Yes	6/12	1450	–	1.739	3.005	Slight HC odour.	TRH, BTEXN
	TW94/4	Clyde Terminal Operations	2	√	Yes	4/12	1415	–	0.841	2.170	No Odour	TRH, BTEXN
	TW94/5	Clyde Terminal Operations	2	√	Yes	3/12	1425	–	0.955	3.070	No Odour	TRH, BTEXN
	TW94/6	Clyde Terminal Operations	2		NO	3/12	1415	–	1.230	3.140	Slight HC odour, no silt	-
	TW94/7	Clyde Terminal Operations	2		NO	3/12	1410	–	1.980	3.315	No Silt, no odour	-
	W91/7	Clyde Terminal Operations (LPG)	2	√	Yes	3/12	1540	–	2.250	5.120	Silty base, organic odour.	TRH, BTEXN (SG)
	W91/8	Clyde Terminal Operations	2	√	Yes	3/12	1110	–	2.025	4.081	Clear, colourless. Organic odour.	PFAS
	W91/9	Clyde Terminal Operations	2	√	Yes	3/12	1040	–	1.549	2.094	Silt, No Odour	TRH, BTEXN (SG), PFAS
	MW11/18				No	3/12	1420	–	0.965	-	No odour.	

Well ID	Location	CSM Zone	Lab Analysis	Hydrasleeve re-install req'd (Y/N)	Date	Time	Temp (°C)	pH	EC (µs/cm)	DO (mg/L)	Redox (mV/L)	# Bottles	Duplicate ID	Comments
BH116	Autonexus	3	TRH, BTEXN (SG)	N	5/12	1125	19.9	8.17	1480	1.70	-146.3	6	D02_20181205	Roots in sleeve, black sediment, clear, colourless, NO.
BH90/7	Clyde Terminal Operations (Nth Wetland)	1	Spec Cr	Y	–	–	–	–	–	–	–	–	–	Inaccessible.
MW02/1	Clyde Terminal Operations	2	TRH, BTEXN	N	3/12	1450	–	–	–	–	–	3	–	SVOC ½ filled. Not enough H_2O for parameters.
MW09/1	Clyde Terminal Operations	2	TRH, BTEXN	N	7/12	1005	23.9	5.82	21292	1.98	-68.5	3	–	Yellow/green tinge, clear, no odour.
MW09/10	Clyde Terminal Operations	2	TRH, BTEXN	N	5/12	1430	22.7	6.48	5406	1.97	-84.5	6	D03_20181205	Cloudy, yellow tinge, silty base, no odour.
MW09/11	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	1440	24.5	6.72	3396	1.08	-98.1	3	–	Clear, colourless, no odour
MW09/13	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	1445	24.2	6.78	1234	0.66	-94.3	3	–	Clear, colourless, no odour.
MW09/14	Parramatta Terminal	4	PFAS	–	–	–	–	–	–	–	–	–	–	Lost.
MW09/2	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	14:25	23.3	7.13	1110	0.32	-62.3	3	–	~~Cle~~ No Odour
MW09/3	Lyondell Basell	2	TRH, BTEXN, PFAS	N	7/12	1020	25.9	7.23	744	2.16	-124.1	4	–	Clear, colourless, no odour.
MW09/6	Clyde Terminal Operations	2	TRH, BTEXN (SG), PFAS	Y	4/12	1300	23.4	7.01	9064	0.68	-133.2	4	–	Clear, colourless, slight organic odour. Silty bottom.
MW09/7	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	3/12	1500	26.0	7.16	3261	1.45	-129.7	3	–	Clear, colourless, chemical odour.
MW09/8	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	3/12	1605	–	–	–	–	–	3	–	Clear, green tinge, no odour. Not enough H_2O in sleeve
MW09/9	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	5/12	1500	23.4	6.05	36698	1.00	-66.4	6	T02_20181205	Yellow, clear, HC + solvent odour.
MW11/03 ~~MW11/02~~	Clyde Terminal Operations	3	TRH, BTEXN	N	6/12	1010	22.1	3.99	12237	1.94	100.4	3	–	Clear, colourless, no odour.
~~MW11/03~~	Clyde Terminal Operations	3	TRH, BTEXN	–	–	–	–	–	–	–	–	–	–	Line above MW11/03. MW11/02 at bottom.
MW11/04	Clyde Terminal Operations	3	TRH, BTEXN	N	6/12	1020	24.7	5.45	3114	1.32	34.9	3	–	Clear, colourless, Odourless, Orange silty Base.
MW11/06	Clyde Terminal Operations	3	TRH, BTEXN, Spec Cr	N	6/12	0950	~~23.4~~ 23.3	4.94	3129	1.43	81.5	4		Clear, colourless, Odourless. 23.3°C
MW11/07	Clyde Terminal Operations	3	TRH, BTEXN	N	6/12	0930	22.5	5.00	9205	1.86	131.5	6	D02_20181206	Colourless, Odourless, clear
MW11/08	Clyde Terminal Operations	3	TRH, BTEXN	N	6/12	0920	23.2	4.09	10684	1.97	116.2	09	D01/T01_20181206	Odour less, colourless, clear.
MW11/17	Clyde Terminal Operations	3	TRH, BTEXN	–	–	–	–	–	–	–	–	–	–	LNAPL Present.
MW11/24	Clyde Terminal Operations	3	TRH, BTEXN	N	7/12	0930	22.7	4.56	13135	2.81	20.2	3	–	Clear, colourless, slight HC odour.
MW11/26	Clyde Terminal Operations	3	TRH, BTEXN	N	7/12	0840	–	–	–	–	–	3	–	Yellow tinge, cloudy, no odour. Not enough H_2O
MW11/30	Clyde Terminal Operations	3	TRH, BTEXN	N	7/12	0845	22.8	5.12	7845	3.23	-52.5	6	D01_20181207	Clear, colourless, no odour. Orange silty base
MW11/31	Former Process West	3	TRH, BTEXN	N	7/12	0915	–	–	–	–	–	3	–	Clear, colourless, NO. Not enough H_2O.
MW11/37	Former Process East	3	TRH, BTEXN	N	7/12	0855	–	–	–	–	–	1	–	Yellow, cloudy, NO. Not enough H_2O - 1x BTEX vial.
MW11/41	Clyde Terminal Operations	3	TRH, BTEXN (SG), PFAS	Y	6/12	1030	23.3	3.97	11719	2.08	128.4	4	–	Clear, colourless, no odour.
MW11/42	Clyde Terminal Operations	3	TRH, BTEXN (SG)	Y	–	–	–	–	–	–	–	–	–	Hydrasleeve caught in well
MW11/46	Clyde Terminal Operations	3	TRH, BTEXN (SG), PFAS	Y	6/12	1040	23.2	5.93	1711	2.21	36.7	4	–	Clear, colourless, odourless.
MW12/01	Autonexus	3	TRH, BTEXN	–	–	–	–	–	–	–	–	–	–	LNAPL Present
MW12/03	Autonexus	3	TRH, BTEXN	N	5/12	1200	21.8	5.36	2308	1.90	20.8	3	–	Grab sample due to demo works.
MW12/05	SITA	1	Spec Cr	–	–	–	–	–	–	–	–	–	–	Lost - replaced w/ MW 12/06
MW12/07	SITA	1	TRH, BTEXN (SG), Spec Cr	Y	5/12	1045	23.1	11.45	4796	1.11	-286.8	4	–	Black silty base, green tinge.
MW12/08	SITA	1	TRH, BTEXN (SG), Spec Cr	Y	5/12	1040	22.1	10.99	8839	2.07	-260.8	3		Very silty
MW12/12	Former Fire Training Area	1	TRH, BTEXN, PFAS	Y	4/12	1315	23.0	7.17	8093	1.26	-122.9	4	–	Clear, colourless, no odour
MW12/13	Former Fire Training Area	1	TRH, BTEXN, PFAS	Y	4/12	1320	22.9	7.09	12559	0.51	-114.2	4	–	Clear, colourless, no odour.
MW12/15	Clyde Terminal Operations	1	TRH, BTEXN	–	–	–	–	–	–	–	–	–	–	LNAPL Present.
MW12/16	Former Process West	3	TRH, BTEXN	N	7/12	0930	–	–	–	–	–	–	–	15mm of black LNAPL in sleeve.
MW12/20	Clyde Terminal Operations	3	TRH, BTEXN (SG), PFAS	Y	5/12	15:30	20.1	6.64	331.5	2.70	-73.2	4	–	Black sediment at base.
MW12/21	Clyde Terminal Operations	3	TRH, BTEXN (SG), PFAS	Y	4/12	1025	–	–	–	–	–	4	–	Not enough H_2O for parameters. Clear, colourless, organic odour. Sediment in base
MW11/20			TRH, BTEX, PFAS	N	6/12	0915	22.9	4.98	2004	2.23	73.7	4	–	Clear, colourless, no odour.
MW11/02			TRH, BTEX	N	6/12	1015	23.5	4.79	1862	1.90	69.2	3	–	Clear, colourless, odourless.
MW12/06			Spec Cr	N	6/12	1230	25.3	6.56	8417	0.33	-140.3	1	–	Black, lots of Silt, Strong organic odour.

Well ID	Location	CSM Zone	Lab Analysis	Hydrasleeve re-install req'd (Y/N)	Date	Time	Temp (°C)	pH	EC (µs/cm)	DO (mg/L)	Redox (mV/L)	# Bottles	Duplicate ID	Comments
MW12/22	Clyde Terminal Operations	3	TRH, BTEXN (SG)	Y	6/12	1100	22.0	6.00	14355	1.67	-39.1	3	–	Yellow tinge, cloudy, organic odour.
MW12/23	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	4/12	1050	22.8	7.11	11,868	1.18	-12.6	3	–	Yellow tinge, cloudy, no odour
MW12/24	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	4/12	1100	22.5	7.05	3,545	0.92	-32.6	6	D01_20181204	Slightly cloudy, yellow tinge, no odour.
MW12/25	Clyde Terminal Operations	2	TRH, BTEXN (SG), PFAS	Y	3/12	1550	22.8	7.13	40,090	1.64	-105.3	4	–	Clear, colourless, no odour.
MW12/26	Former Fire Training Area	1	TRH, BTEXN, PFAS	N	4/12	1340	–	–	–	–	–	3	–	BTEX + PFAS. Not enough H_2O for parameters | SVOC.
MW18/06	Former Process West (AECOM, 2018)	3	TRH, BTEXN	N	7/12	0920	23.0	5.09	16288	2.90	10.2	3	–	Clear, colourless, no odour.
MW18/23	Clyde Terminal Operations (AECOM, 2018)	3	TRH, BTEXN, PFAS	N	5/12	1550	19.3	6.88	27286	1.49	-96.5	4	–	Yellow, cloudy, no odour
MW18/24	Clyde Terminal Operations (AECOM, 2018)	3	TRH, BTEXN, PFAS	–	–	–	–	–	–	–	–	–	–	LNAPL present.
MW91/1	Parramatta Terminal	4	PFAS	N	6/12	1430	22.4	5.92	1224	2.66	-7.6	1	–	Clear, colourless, no odour. Orange silty base.
MW91/11	Parramatta Terminal	4	PFAS	N	6/12	1309	22.9	6.95	4815	3.13	-24.8	1	–	Clear, colourless, no odour. Orange silty base.
MW91/2	Parramatta Terminal	4	TRH, BTEXN (SG), PFAS	Y	5/12	0850	22.7	7.75	305.5	3.23	-98.0	4	–	No Odour. Orange, silty.
MW91/3	Parramatta Terminal	4	PFAS	N	6/12	1440	21.4	4.64	7343	1.51	5.5	1	–	Clear, colourless, no odour.
MW91/4	Parramatta Terminal	4	PFAS	Y	5/12	0920	21.7	5.99	1196	1.75	36.2	3	D01/T01_20181205	Orange, cloudy, no odour.
MW91/5	Parramatta Terminal	4	TRH, BTEXN (SG), PFAS	Y	–	–	–	–	–	–	–	–	–	Destroyed.
MW91/6	Parramatta Terminal	4	TRH, BTEXN (SG), PFAS	~~Y~~	–	–	–	–	–	–	–	–	–	Lost
MW91/7	Parramatta Terminal	4	TRH, BTEXN (SG), PFAS	~~Y~~	–	–	–	–	–	–	–	–	–	Lost.
~~MW91/8~~ 94/8	Parramatta Terminal	4	TRH, BTEXN (SG), PFAS	N	6/12	1045	–	–	–	–	–	3	–	Yellow tinge, cloudy, organics in sleeve, organic odour. Not enough H_2O for para
MW91/9	Parramatta Terminal	4	TRH, BTEXN, PFAS	N	6/12	1420	25.6	7.73	1733	2.18	-63.3	8	T03_20181206	Clear, colourless, No odour
MW94/10	Clyde Terminal Operations	2	TRH, BTEXN (SG), PFAS	~~Y~~	4/12	1115	–	–	–	–	–	2	–	Only BTEX vials able to be collected. Not redeployed.
MW94/11	Clyde Terminal Operations	2	TRH, BTEXN (SG)	Y	4/12	1130	23.2	6.82	22905	0.89	-118.0	8	D02_20181204	Clear, colourless, no odour.
MW94/12	Clyde Terminal Operations	2	TRH, BTEXN (SG), PFAS	Y	3/12	1050	22.9	7.44	2638	1.20	-168.3	4	–	No Odour, clear, colourless
MW94/16	Bassell	2	TRH, BTEXN	N	7/12	1015	25.9	7.08	2496	0.95	-137.2	3	–	Clear, colourless, no odour.
MW94/18	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	1510	22.9	7.20	4769	0.78	-113.6	3	–	Clear, pink tinge, no odour.
MW94/3	Clyde Terminal Operations	3	TRH, BTEXN (SG), PFAS	Y	7/12	0945	20.7	5.46	1880	2.60	20.2	4	–	Orange, cloudy, no odour.
MW94/4	Clyde Terminal Operations	3	TRH, BTEXN, Spec Cr	N	6/12	0940	24.5	4.80	165.4	8.74	68.4	8	D03_20181206	Clear, colourless, no odour.
MW94/6	Clyde Terminal Operations	3	TRH, BTEXN (SG)	N	5/12	1525	19.7	6.53	20718	1.31	83.0	3	–	Yellow, clear, organic odour.
MW91/8 ~~MW94/8~~	Clyde Terminal Operations	3	TRH, BTEXN (SG)	Y	6/12	1315	22.2	5.01	7922	0.92	12.1	4	T02_20181206	Yellow tinge, slightly cloudy, no odour
MW95/13	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	13:45	25.7	7.16	3115	0.90	-109.3	3	–	Cloudy, slight yellow tinge, strong chemical odour
MW95/4	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	13:50	24.2	6.77	3300	1.69	-72.2	3	–	Cloudy, slight yellow tinge, strong chemical odour.
MW96/1	Clyde Terminal Operations	2	TRH, BTEXN (SG)	N	–	–	–	–	–	–	–	–	–	Lost
MW96/3	Clyde Terminal Operations (East Wetlands)	2	TRH, BTEXN (SG)	N	–	–	–	–	–	–	–	–	–	Inaccessible
MW96/7	Clyde Terminal Operations (sth wetlands)	2	TRH, BTEXN (SG)	Y	6/12	1330	21.6	6.94	50114	1.53	-165.2	3	–	Clear, colourless, NO.
MW97/3	Clyde Terminal Operations (Nth Wetland)	1	TRH, BTEXN (SG)	N	5/12	1415	20.4	5.72	12.4	9.89 ~~25.6~~	-25.6	3	–	Cloudy, yellow tinge, no odour. ~~Not enough H_2O for para.~~ 9.89 DO
MW97/4	Clyde Terminal Operations (Nth Wetland)	1	TRH, BTEXN (SG)	Y	3/12	1330	21.9	6.78	9700	1.60	-66.1	~~4~~ 3	–	Clear, colourless, slight organic odour.
MW98/4	Autonexus	3	TRH, PFAS, BTEXN	N	6/12	0905	24.3	5.51	2372	1.36	80.0	4	–	Clear, colourless, No odour.
MW98/6	Former Process East	3	TRH, BTEXN (SG)		7/12	0900	24.2	6.42	1733	1.98	96.7	3	–	Clear, colourless, no odour.
TW94/2	Clyde Terminal Operations	2	TRH, BTEXN	N	5/12	1450	–	–	–	–	–	3	–	Yellow tinge, cloudy, NO. Not enough H_2O for para. 1/3 full sleeve.
TW94/3	Clyde Terminal Operations	2	TRH, BTEXN	N	7/12	0940	–	–	–	–	–	3	–	Clear, colourless, no odour. Not enough H_2O
TW94/4	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	1415	24.8	7.06	1219	0.97	-118.6	3	–	Slight yellow tinge, cloudy, no odour.
TW94/5	Clyde Terminal Operations	2	TRH, BTEXN	N	4/12	1505	24.4	6.84	4525	0.66	-100.6	3	–	Clear, yellow tinge, no odour.
W91/7	Clyde Terminal Operations (LPG)	2	TRH, BTEXN (SG)	Y	3/12	1540	24.6	6.70	46463	0.51	-203.0	3	–	Clear, colourless, organic odour, black silty base.
W91/8	Clyde Terminal Operations	2	PFAS	Y	3/12	1110	23.7	7.17	912	2.51	-139.0	4	–	Clear colourless, organic odour
W91/9	Clyde Terminal Operations	2	TRH, BTEXN (SG), PFAS	N	5/12	1425	–	–	–	–	–	3	–	Very silty base, green tinge, NO. Not enough H_2O for parameters.

↳ 2 - BTEX, PFAS

APPENDIX D HISTORICAL GAUGING DATA

ERM

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
BH115	Q2 2010	21/06/2010	4.5	4.1	-	0.898	-	0.898	3.602	
BH115	Q4 2010	22/11/2010	4.5	4.093	-	0.66	-	0.66	3.84	
BH115	Q2 2011	7/06/2011	4.5	4.091	-	0.723	-	0.723	3.777	
BH115	Q4 2011	9/12/2011	4.5	4.08	-	0.558	-	0.558	3.942	
BH115	Q4 2014	4/12/2014	4.5		-		-	0	-	Could not access
BH116	Q2 2010	21/06/2010	4.5	4.065	-	1.724	-	1.724	2.776	
BH116	Q4 2010	22/11/2010	4.5	4.085	-	1.69	-	1.69	2.81	0 - 1.450 Black tar like substance covering tape, thick and sticky.
BH116	Q2 2011	7/06/2011	4.5	4.066	-	1.609	-	1.609	2.891	
BH116	Q4 2011	7/10/2011	4.5	4.073	-	1.365	-	1.365	3.135	Suspected hydrocarbon odour.
BH116	Q4 2011	7/12/2011	4.5	4.052	-	1.568	-	1.568	2.932	Suspected hydrocarbon odour.
BH116	Q1 2012	20/03/2012	4.5	4.065	-	1.493	-	1.493	3.007	
BH116	Q2 2012	4/06/2012	4.5	4.082	-	2.574	-	2.574	1.926	No odour
BH116	Q3 2012	18/09/2012	4.5	4.07	-	1.95	-	1.95	2.55	Slight Organic odour
BH116	Q4 2012	4/12/2012	4.5	4.05	-	1.565	-	1.565	2.935	Slight hydrocarbon odour
BH116	Q1 2013	13/03/2013	4.5	4.072	-	1.645	-	1.645	2.855	Hydrocarbon odour
BH116	Q2 2013	18/06/2013	4.5	4.12	-	1.74	-	1.74	2.76	Hydrocarbon odour
BH116	Q3 2013	24/09/2013	4.5	4.051	-	1.664	-	1.664	2.836	Hydrocarbon odour
BH116	Q4 2013	5/12/2013	4.5	4.05	-	1.54	-	1.54	2.96	Strong organic odour
BH116	Q1 2014	28/03/2014	4.5	4.05	-	1.582	-	1.582	2.918	Hydrocarbon odour, tar-like globules on interface probe
BH116	Q2 2014	20/05/2014	4.5	4.05	-	1.796	-	1.796	2.704	Strong hydrocarbon odour. Black tar observed on Interface probe tape
BH116	Q3 2014	24/09/2014	4.5	4.044	-	1.676	-	1.676	2.824	Black tar-like residue on interface probe
BH116	Q4 2014	4/12/2014	4.5	4.044	-	1.58	-	1.58	2.92	Strong organic odour, viscous black product on probe. Not detected at surface water level.
BH116	Q1 2015	11/03/2015	4.5		-	1.74	-	1.74	2.76	Thick black LNAPL on tape, hydrocarbon odour.
BH116	Q2 2015	19/06/2015	4.5		-	1.485	-	1.485	3.015	Hydrocarbon odour
BH116	Q4 2015	25/11/2015	4.5	4.055	-	1.72	-	1.72	2.78	Chemical odour.
BH116	Q2 2016	16/08/2016	4.5	4.04	-	1.65	-	1.65	2.85	Hydrocarbon odour, LNAPL globules on outside of HydraSleeve®.
BH116	Q4 2016	12/12/2016	-	4.06	-	1.344	-	1.344		Organic Odour
BH116	Q2 2017	22/05/2017	4.5	4.05	-	1.755	-	1.755	2.745	Hydrocarbon odour.
BH116	Q4 2017	4/12/2017	4.500	3.992	-	1.491	-	1.491	3.009	Hyrdogen Sulfide odour, hydrocarbon globules on probe.
BH116	Q4 2018	5/12/2018	4.500	3.982	-	1.595	-	1.595	2.905	Roots on probe, sediment on probe and organic odour.
BH116	Q2 2018	-	-	-	-	-	-	-	-	Could not locate well
BH210	Q2 2010	21/06/2010	3.75	6.978	-	1.266	-	1.266	2.484	
BH210	Q4 2010	22/11/2010	3.75	6.925	-	0.917	-	0.917	2.833	
BH210	Q2 2011	7/06/2011	3.75	6.81	-	1.165	-	1.165	2.585	
BH210	Q4 2011	7/10/2011	3.75	6.703	-	1.016	-	1.016	2.734	
BH210	Q4 2012	4/12/2012	3.75	7	-	1.01	-	1.01	2.74	-
BH210	Q4 2013	5/12/2013	3.75	6.842	-	0.91	-	0.91	2.84	Silty bottom, organic odour
BH210	Q4 2014	4/12/2014	3.75		-		-	0	-	Could not access
BH341	Q2 2010	21/06/2010	4.44	3.115	-	1.595	-	1.595	2.845	
BH341	Q4 2010	22/11/2010	4.44	2.95	-	1.554	-	1.554	2.886	
BH341	Q2 2011	7/06/2011	4.44	2.929	-	1.533	-	1.533	2.907	
BH341	Q4 2011	7/10/2011	4.44	2.914	-	1.555	-	1.555	2.885	Suspected hydrocarbon odour.
BH341	Q2 2012	4/06/2012	4.44	2.86	-	1.515	-	1.515	2.925	No odour
BH341	Q4 2012	4/12/2012	4.44	2.84	-	1.495	-	1.495	2.945	Strong hydrocarbon odour
BH341	Q2 2013	18/06/2013	4.44	2.906	-	1.6	-	1.6	2.84	Hydrocarbon odour
BH341	Q4 2013	2/12/2013	4.44	2.831	-	1.569	-	1.569	2.871	Odour (eucalyptus trees)
BH341	Q2 2014	20/05/2014	4.44	2.828	-	1.653	-	1.653	2.787	Hydrocarbon odour
BH341	Q4 2014	4/12/2014	4.44	2.922	-	1.514	-	1.514	2.926	No odour
BH341	Q4 2015	23/11/2015	4.44	4.055	-	1.59	-	1.59	2.85	No odour.
BH90/7	2008	20/02/2008	2.158	4.136	-	1.195	-	1.195	0.963	
BH90/7	2008	10/11/2008	2.158	4.138	-	1.315	-	1.315	0.843	
BH90/7	2009	16/04/2009	2.158	4.135	-	1.281	-	1.281	0.877	
BH90/7	2009	16/11/2009	2.158	4.127	-	1.318	-	1.318	0.84	
BH90/7	Q2 2010	21/06/2010	2.158	4.139	-	1.223	-	1.223	0.935	
BH90/7	Q4 2010	22/11/2010	2.158	4.155	-	1.335	-	1.335	0.823	
BH90/7	Q2 2011	6/06/2011	2.158	4.069	-	1.208	-	1.208	0.95	
BH90/7	Q4 2011	5/12/2011	2.158	4.138	-	1.246	-	1.246	0.912	
BH90/7	Q2 2012	4/06/2012	2.158	4.153	-	1.265	-	1.265	0.893	No odour
BH90/7	Q4 2012	3/12/2012	2.158	4.13	-	1.475	-	1.475	0.683	No odour
BH90/7	Q2 2013	17/06/2013	2.158	4.226	-	1.217	-	1.217	0.941	No odour
BH90/7	Q4 2013	2/12/2013	2.158	4.132	-	1.364	-	1.364	0.794	No odour
BH90/7	Q2 2014	19/05/2014	2.158	4.135	-	1.413	-	1.413	0.745	No odour
BH90/7	Q4 2014	3/12/2014	2.158	4.132	-	1.363	-	1.363	0.795	No odour
BH90/7	Q2 2015	19/06/2015	2.158		-	1.301	-	1.301	0.857	No odour
BH90/7	Q4 2015	24/11/2015	2.158	4.14	-	1.34	-	1.34	0.818	No odour.
BH90/7	Q2 2016	16/08/2016	2.158	4.315	-	1.31	-	1.31	0.848	No odour.
BH90/7	Q4 2016	12/12/2016	2.158	4.13	-	1.427	-	1.427	0.731	No odour.
BH90/7	Q2 2017	22/05/2017	2.158	4.14	-	1.305	-	1.305	0.853	No odour.
BH90/7	Q4 2017	5/12/2017	2.158	-	-	-	-	-	-	Not gauged, data logger present in well
BH90/7	Q2 2018	18/06/2018	2.158	4.15	-	1.455	-	1.455	0.703	No odour
BH90/7	Q4 2018	-	-	-	-	-	-	-	-	Inaccessible due to contractor works zone.
MW02/1	2008	21/02/2008	3.668	2.03	-	1.606	-	1.606	2.062	

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW02/1	2008	11/11/2008	3.668	2.03	-	1.764	-	1.764	1.904	
MW02/1	2009	15/04/2009	3.668	2.024	-	1.593	-	1.593	2.075	
MW02/1	2009	16/11/2009	3.668	2.019	-	1.736	-	1.736	1.932	
MW02/1	Q2 2010	21/06/2010	3.668	2.015	-	1.685	-	1.685	1.983	Hydrocarbon odour.
MW02/1	Q3 2010	22/09/2010	3.668	1.974	-	1.746	-	1.746	1.922	
MW02/1	Q4 2010	22/11/2010	3.668	2.052	-	1.655	-	1.655	2.013	
MW02/1	Q1 2011	8/03/2011	3.668	1.9	-	1.837	-	1.837	1.831	
MW02/1	Q2 2011	6/06/2011	3.668	2.041	-	1.553	-	1.553	2.115	
MW02/1	Q3 2011	6/09/2011	3.668	1.946	-	1.732	-	1.732	1.936	
MW02/1	Q4 2011	5/12/2011	3.668	2.03	-	1.594	-	1.594	2.074	Suspected hydrocarbon odour.
MW02/1	Q1 2012	19/03/2012	3.668	2.049	-	1.521	-	1.521	2.147	
MW02/1	Q2 2012	4/06/2012	3.668	2.08	-	1.69	-	1.69	1.978	Hydrocarbon odour
MW02/1	Q3 2012	17/09/2012	3.668	2.057	-	1.871	-	1.871	1.797	Chemical odour
MW02/1	Q4 2012	4/12/2012	3.668	2.06	-	1.823	-	1.823	1.845	Slight odour
MW02/1	Q1 2013	13/03/2013	3.668	2.05	-	1.658	-	1.658	2.01	No odour
MW02/1	Q2 2013	17/06/2013	3.668	2.101	-	1.742	-	1.742	1.926	Organic odour
MW02/1	Q3 2013	23/09/2013	3.668	2.025	-	1.809	-	1.809	1.859	Strong solvent odour
MW02/1	Q4 2013	3/12/2013	3.668	2.029	-	1.662	-	1.662	2.006	Unknown odour
MW02/1	Q1 2014	27/03/2014	3.668	2.025	-	1.53	-	1.53	2.138	Solvent odour
MW02/1	Q2 2014	19/05/2014	3.668	2.033	-	1.75	-	1.75	1.918	Solvent odour
MW02/1	Q3 2014	23/09/2014	3.668	2.04	-	1.682	-	1.682	1.986	No odour
MW02/1	Q4 2014	4/12/2014	3.668	2.08	-	1.625	-	1.625	2.043	Strong hydrocarbon odour, bailed
MW02/1	Q1 2015	10/03/2015	3.668		-	1.688	-	1.688	1.98	Hydrocarbon odour.
MW02/1	Q2 2015	19/06/2015	3.668		-	1.565	-	1.565	2.103	Chemical / hydrpcarbon odour
MW02/1	Q4 2015	24/11/2015	3.668	2.05	-	1.64	-	1.64	2.028	Hydrocarbon odour.
MW02/1	Q2 2016	17/08/2016	3.668	1.995	-	1.665	-	1.665	2.003	No odour, iron precipitate.
MW02/1	Q4 2016	13/12/2016	3.668	2.032	-	1.762	-	1.762	1.906	Chemical/hydrocarbon odour. (Grab sample)
MW02/1	Q2 2017	23/05/2017	3.668	2.02	-	1.767	-	1.767	1.901	No odour.
MW02/1	Q4 2017	5/12/2017	3.668	2.030	-	1.702	-	1.702	1.966	Hydrocarbon odour.
MW02/1	Q2 2018	22/06/2018	3.668	2	-	0.61	-	0.61	3.058	Hydrocarbon odour.
MW02/1	Q4 2018	3/12/2018	3.668	2.040	-	1.594	-	1.594	2.074	Slight hydrocarbon odour.
MW04/2	2008	21/02/2008	4.08	3.89	-	1.945	-	1.945	2.135	
MW04/2	2008	11/11/2008	4.08	3.885	-	1.854	-	1.854	2.226	
MW04/2	2009	15/04/2009	4.08	3.89	-	1.942	-	1.942	2.138	
MW04/2	2009	16/11/2009	4.08	3.882	-	1.88	-	1.88	2.2	
MW04/2	Q2 2010	21/06/2010	4.08		-		-	0	-	Unable to access due to cobble resurface.
MW04/2	Q4 2010	22/11/2010	4.08		-		-	0	-	Unable to access due to cobble resurface.
MW04/2	Q2 2011	6/06/2011	4.08	3.747	-	0.908	-	0.908	3.172	
MW04/2	Q4 2011	6/12/2011	4.08	3.721	-	0.89	-	0.89	3.19	
MW04/2	Q2 2012	4/06/2012	4.08	3.8	-	0.775	-	0.775	3.305	No odour
MW04/2	Q4 2012	4/12/2012	4.08	3.8	-	2.05	-	2.05	2.03	No odour
MW04/2	Q2 2013	18/06/2013	4.08	3.908	-	1.515	-	1.515	2.565	No odour
MW04/2	Q4 2013	2/12/2013	4.08	3.84	-	1.925	-	1.925	2.155	No odour
MW04/2	Q2 2014	26/05/2014	4.08	3.842	-	2.105	-	2.105	1.975	No odour
MW04/2	Lot 101 ESA	10/09/2014	4.08	3.804	-	2.205	-	2.205	1.875	
MW04/2	Q4 2014	4/12/2014	4.08	3.822	-	0.94	-	0.94	3.14	No odour
MW09/1	2009	15/04/2009	2.963	3.485	-	1.375	-	1.375	1.588	
MW09/1	2009	16/11/2009	2.963	3.469	-	1.407	-	1.407	1.556	Approximately 0.001 m LNAPL visible.
MW09/1	Q1 2010	31/03/2010	2.963	3.46	-	1.37	-	1.37	1.593	
MW09/1	Q2 2010	21/06/2010	2.963	3.475	-	1.411	-	1.411	1.552	
MW09/1	Q3 2010	22/09/2010	2.963	3.46	-	1.417	-	1.417	1.546	
MW09/1	Q4 2010	22/11/2010	2.963	3.47	-	1.436	-	1.436	1.527	Hydrocarbon odour.
MW09/1	Q1 2011	8/03/2011	2.963	3.42	-	1.425	-	1.425	1.538	
MW09/1	Q2 2011	6/06/2011	2.963	3.455	-	1.416	-	1.416	1.547	
MW09/1	Q3 2011	6/09/2011	2.963	3.321	-	1.415	-	1.415	1.548	
MW09/1	Q4 2011	5/12/2011	2.963	3.312	-	1.381	-	1.381	1.582	
MW09/1	Q1 2012	19/03/2012	2.963	3.35	-	1.256	-	1.256	1.707	
MW09/1	Q2 2012	4/06/2012	2.963	3.35	-	1.41	-	1.41	1.553	Slight hydrocarbon odour
MW09/1	Q3 2012	17/09/2012	2.963	3.345	-	1.435	-	1.435	1.528	Strong hydrocarbon odour
MW09/1	Q4 2012	4/12/2012	2.963	3.355	-	1.432	-	1.432	1.531	Strong hydrocarbon odour
MW09/1	Q1 2013	13/03/2013	2.963	3.33	-	1.374	-	1.374	1.589	Strong hydrocarbon odour
MW09/1	Q2 2013	17/06/2013	2.963	3.42	-	1.415	-	1.415	1.548	Strong hydrocarbon odour
MW09/1	Q3 2013	23/09/2013	2.963	3.3	-	1.391	-	1.391	1.572	Hydrocarbon odour
MW09/1	Q4 2013	3/12/2013	2.963	3.32	-	1.372	-	1.372	1.591	Hydrocarbon odour
MW09/1	Q1 2014	27/03/2014	2.963	3.34	-	1.321	-	1.321	1.642	Strong hydrocarbon odour, silty base
MW09/1	Q2 2014	19/05/2014	2.963	3.333	-	1.391	-	1.391	1.572	Strong hydrocarbon odour
MW09/1	Q3 2014	23/09/2014	2.963	3.33	-	1.33	-	1.33	1.633	Hydrocarbon odour
MW09/1	Q4 2014	4/12/2014	2.963	3.31	-	1.315	-	1.315	1.648	Strong hydrocarbon odour
MW09/1	Q1 2015	10/03/2015	2.963		-	1.317	-	1.317	1.646	Hydrocarbon odour, silty base, iron bacteria.
MW09/1	Q2 2015	19/06/2015	2.963		-	1.29	-	1.29	1.673	Hydrocarbon odour, black silty base
MW09/1	Q4 2015	24/11/2015	2.963	3.335	-	1.305	-	1.305	1.658	Hydrocarbon/chemical odour, black silty base.
MW09/1	Q2 2016	18/08/2016	2.963	3.31	-	1.333	-	1.333	1.63	Strong hydrocarbon odour, silty base.
MW09/1	Q4 2016	13/12/2016	2.963	3.315	-	1.337	-	1.337	1.626	No odour.
MW09/1	Q2 2017	23/05/2017	2.963	3.324	-	1.431	-	1.431	1.532	Hydrocarbon odour.
MW09/1	Q4 2017	5/12/2017	2.963	3.315	-	1.380	-	1.380	1.583	Black silty base, HC odour
MW09/1	Q2 2018	19/06/2018	2.963	3.32	-	1.39	-	1.39	1.573	Strong hydrocarbon odour
MW09/1	Q4 2018	6/12/2018	2.963	3.344	-	1.344	-	1.344	1.619	Slight hydrocarbon odour, black silty base.

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW09/10	2009	16/11/2009	3.15	3.476	-	1.495	-	1.495	1.655	
MW09/10	Q1 2010	31/03/2010	3.15	3.481	-	1.48	-	1.48	1.67	
MW09/10	Q2 2010	21/06/2010	3.15	3.977	-	1.524	-	1.524	1.626	Strong hydrocarbon odour.
MW09/10	Q3 2010	22/09/2010	3.15	3.454	-	1.523	-	1.523	1.627	
MW09/10	Q4 2010	22/11/2010	3.15	3.461	-	1.499	-	1.499	1.651	Strong hydrocarbon odour.
MW09/10	Q1 2011	8/03/2011	3.15	3.41	-	1.571	-	1.571	1.579	
MW09/10	Q2 2011	6/06/2011	3.15	2.475	-	1.477	-	1.477	1.673	
MW09/10	Q3 2011	6/09/2011	3.15	3.47	-	1.503	-	1.503	1.647	
MW09/10	Q4 2011	5/12/2011	3.15	3.48	-	1.494	-	1.494	1.656	
MW09/10	Q1 2012	19/03/2012	3.15	3.48	-	1.43	-	1.43	1.72	
MW09/10	Q2 2012	5/06/2012	3.15	3.5	-	1.505	-	1.505	1.645	No odour
MW09/10	Q3 2012	17/09/2012	3.15	3.482	-	1.618	-	1.618	1.532	No odour
MW09/10	Q4 2012	3/12/2012	3.15	3.5	-	1.555	-	1.555	1.595	No odour
MW09/10	Q1 2013	13/03/2013	3.15	3.485	-	1.477	-	1.477	1.673	No odour
MW09/10	Q2 2013	17/06/2013	3.15	3.535	-	1.579	-	1.579	1.571	No odour
MW09/10	Q3 2013	23/09/2013	3.15	3.46	-	1.538	-	1.538	1.612	No odour
MW09/10	Q4 2013	3/12/2013	3.15	3.461	-	1.494	-	1.494	1.656	No odour
MW09/10	Q1 2014	27/03/2014	3.15	3.46	-	1.46	-	1.46	1.69	No odour
MW09/10	Q2 2014	19/05/2014	3.15	3.465	-	1.57	-	1.57	1.58	No odour
MW09/10	Q3 2014	23/09/2014	3.15	3.448	-	1.499	-	1.499	1.651	No odour
MW09/10	Q4 2014	4/12/2014	3.15	3.455	-	1.454	-	1.454	1.696	No odour
MW09/10	Q1 2015	10/03/2015	3.15		-	1.52	-	1.52	1.63	No odour.
MW09/10	Q2 2015	22/06/2015	3.15		-	1.475	-	1.475	1.675	No odour
MW09/10	Q4 2015	23/11/2015	3.15	3.445	-	1.46	-	1.46	1.69	No odour.
MW09/10	Q2 2016	17/08/2016	3.15	3.13	-	1.235	-	1.235	1.915	Hydrocarbon odour.
MW09/10	Q4 2016	14/12/2016	3.15	3.43	-	1.54	-	1.54	1.61	Chemical odour.
MW09/10	Q2 2017	23/05/2017	3.15	3.439	-	1.575	-	1.575	1.575	Very slight hydrocarbon odour.
MW09/10	Q4 2017	5/12/2017	3.150	3.439	-	1.503	-	1.503	1.647	Silty bottom, no odour
MW09/10	Q2 2018	19/06/2018	3.15	3.43	-	1.59	-	1.59	1.56	No odour
MW09/10	Q4 2018	4/12/2018	3.150	3.418	-	1.508	-	1.508	1.642	No odour
MW09/11	2009	16/11/2009	3.11	3.51	-	1.059	-	1.059	2.051	
MW09/11	Q1 2010	31/03/2010	3.11	3.53	-	1.019	-	1.019	2.091	
MW09/11	Q2 2010	21/06/2010	3.11	3.513	-	1.036	-	1.036	2.074	
MW09/11	Q3 2010	22/09/2010	3.11	3.434	-	1.08	-	1.08	2.03	
MW09/11	Q4 2010	22/11/2010	3.11	3.453	-	1.041	-	1.041	2.069	
MW09/11	Q1 2011	8/03/2011	3.11	3.402	-	1.11	-	1.11	2	
MW09/11	Q2 2011	6/06/2011	3.11	3.4	-	0.971	-	0.971	2.139	
MW09/11	Q3 2011	6/09/2011	3.11	3.36	-	1.044	-	1.044	2.066	
MW09/11	Q4 2011	5/12/2011	3.11	3.388	-	0.975	-	0.975	2.135	
MW09/11	Q1 2012	19/03/2012	3.11	3.391	-	0.897	-	0.897	2.213	
MW09/11	Q2 2012	5/06/2012	3.11	3.37	-	0.9	-	0.9	2.21	Slight hydrocarbon odour
MW09/11	Q3 2012	17/09/2012	3.11	3.34	-	1.1	-	1.1	2.01	No odour
MW09/11	Q4 2012	3/12/2012	3.11	3.36	-	1.07	-	1.07	2.04	No odour
MW09/11	Q1 2013	13/03/2013	3.11	3.35	-	0.98	-	0.98	2.13	No odour
MW09/11	Q2 2013	17/06/2013	3.11	3.398	-	1.043	-	1.043	2.067	No odour
MW09/11	Q3 2013	23/09/2013	3.11	3.325	-	1.057	-	1.057	2.053	No odour. No bolts in gatic, 2 x new bolts added
MW09/11	Q4 2013	3/12/2013	3.11	3.285	-	0.983	-	0.983	2.127	No odour
MW09/11	Q1 2014	27/03/2014	3.11	3.35	-	0.958	-	0.958	2.152	No odour, silty base
MW09/11	Q2 2014	19/05/2014	3.11	3.285	-	1.075	-	1.075	2.035	No odour, silty base
MW09/11	Q3 2014	23/09/2014	3.11	3.285	-	1.026	-	1.026	2.084	No odour
MW09/11	Q4 2014	4/12/2014	3.11	0.284	-	0.98	-	0.98	2.13	No odour, silty base
MW09/11	Q1 2015	10/03/2015	3.11		-	0.984	-	0.984	2.126	No odour, silty base.
MW09/11	Q2 2015	19/06/2015	3.11		-	0.89	-	0.89	2.22	No odour, grey silty base
MW09/11	Q4 2015	23/11/2015	3.11	3.27	-	0.955	-	0.955	2.155	No odour.
MW09/11	Q4 2016	12/12/2016	-	3.264	-	1.062	-	1.062		
MW09/11	Q2 2017	23/05/2017	3.3	3.275	-	1.014	-	1.014	2.286	Very slight chemical odour. Brown silty base.
MW09/11	Q4 2017	5/12/2017	3.110	2.271	-	1.032	-	1.032	2.078	Silty bottom, no odour
MW09/11	Q2 2018	19/06/2018	3.11	3.245	-	1.04	-	1.04	2.07	Black silty bottom, no odour
MW09/11	Q4 2018	3/12/2018	3.110	3.230	-	0.943	-	0.943	2.167	Silty base, no odour.
MW09/12	2009	16/11/2009	3.2	3.295	-	1.08	-	1.08	2.12	
MW09/12	Q1 2010	31/03/2010	3.2	3.273	-	1.039	-	1.039	2.161	
MW09/12	Q2 2010	21/06/2010	3.2	3.275	-	1.042	-	1.042	2.158	
MW09/12	Q3 2010	22/09/2010	3.2	3.238	-	1.121	-	1.121	2.079	
MW09/12	Q4 2010	22/11/2010	3.2	3.176	-	1.408	-	1.408	1.792	
MW09/12	Q1 2011	8/03/2011	3.2	3.166	-	1.173	-	1.173	2.027	
MW09/12	Q2 2011	6/06/2011	3.2	3.145	-	0.923	-	0.923	2.277	
MW09/12	Q3 2011	6/09/2011	3.2	3.125	-	1.047	-	1.047	2.153	
MW09/12	Q4 2011	5/12/2011	3.2	3.143	-	0.986	-	0.986	2.214	
MW09/12	Q1 2012	19/03/2012	3.2	3.117	-	0.815	-	0.815	2.385	
MW09/12	Q2 2012	4/06/2012	3.2	3.12	-	0.98	-	0.98	2.22	No odour
MW09/12	Q3 2012	17/09/2012	3.2	3.088	-	1.136	-	1.136	2.064	No odour
MW09/12	Q4 2012	3/12/2012	3.2	3.06	-	1.13	-	1.13	2.07	No odour
MW09/12	Q1 2013	13/03/2013	3.2	2.97	-	0.948	-	0.948	2.252	No odour
MW09/12	Q2 2013	17/06/2013	3.2	3.034	-	1.06	-	1.06	2.14	No odour
MW09/12	Q3 2013	23/09/2013	3.2	2.787	-	1.086	-	1.086	2.114	No odour
MW09/12	Q4 2013	3/12/2013	3.2	2.793	-	0.983	-	0.983	2.217	No odour
MW09/12	Q1 2014	27/03/2014	3.2	2.735	-	1	-	1	2.2	No odour
MW09/12	Q2 2014	19/05/2014	3.2	2.732	-	1.115	-	1.115	2.085	No odour
MW09/12	Q3 2014	23/09/2014	3.2	2.726	-	1.018	-	1.018	2.182	No odour
MW09/12	Q4 2014	4/12/2014	3.2	2.725	-	1.035	-	1.035	2.165	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW09/12	Q1 2015	10/03/2015	3.2		-	0.976	-	0.976	2.224	Metallic odour.
MW09/12	Q2 2015	22/06/2015	3.2		-	0.885	-	0.885	2.315	No odour
MW09/12	Q4 2015	24/11/2015	3.2	2.699	-	0.95	-	0.95	2.25	No odour.
MW09/12		15/08/2016	3.2		-		-	0	-	No Access. Within fenced Liberty Works Area
MW09/13	2009	16/11/2009	3.395	3.495	-	1.479	-	1.479	1.916	
MW09/13	Q1 2010	31/03/2010	3.395	3.51	-	1.556	-	1.556	1.839	
MW09/13	Q2 2010	21/06/2010	3.395	3.505	-	1.634	-	1.634	1.761	
MW09/13	Q3 2010	22/09/2010	3.395	3.509	-	1.551	-	1.551	1.844	
MW09/13	Q4 2010	22/11/2010	3.395	3.531	-	1.512	-	1.512	1.883	
MW09/13	Q1 2011	8/03/2011	3.395	3.513	-	1.647	-	1.647	1.748	
MW09/13	Q2 2011	6/06/2011	3.395	3.509	-	1.511	-	1.511	1.884	
MW09/13	Q3 2011	6/09/2011	3.395	3.508	-	1.526	-	1.526	1.869	
MW09/13	Q4 2011	5/12/2011	3.395	3.496	-	1.432	-	1.432	1.963	Solvent odour.
MW09/13	Q1 2012	19/03/2012	3.395	3.528	-	1.268	-	1.268	2.127	
MW09/13	Q2 2012	5/06/2012	3.395	3.54	-	1.47	-	1.47	1.925	No odour
MW09/13	Q3 2012	17/09/2012	3.395	3.519	-	1.604	-	1.604	1.791	No odour
MW09/13	Q1 2013	13/03/2013	3.395	3.525	-	1.335	-	1.335	2.06	No odour
MW09/13	Q2 2013	17/06/2013	3.395	3.584	-	1.469	-	1.469	1.926	No odour
MW09/13	Q3 2013	23/09/2013	3.395	3.498	-	1.521	-	1.521	1.874	No odour
MW09/13	Q4 2013	3/12/2013	3.395	3.497	-	1.365	-	1.365	2.03	Organic odour
MW09/13	Q1 2014	27/03/2014	3.395	3.495	-	1.232	-	1.232	2.163	No odour
MW09/13	Q2 2014	19/05/2014	3.395	3.503	-	1.315	-	1.315	2.08	Slight organic odour
MW09/13	Q3 2014	23/09/2014	3.395	3.505	-	1.452	-	1.452	1.943	No odour
MW09/13	Q4 2014	4/12/2014	3.395	3.55	-	1.356	-	1.356	2.039	Organic odour
MW09/13	Q1 2015	10/03/2015	3.395		-	1.338	-	1.338	2.057	No odour.
MW09/13	Q2 2015	19/06/2015	3.395		-	1.239	-	1.239	2.156	No odour
MW09/13	Q4 2015	23/11/2015	3.395	3.5	-	1.26	-	1.26	2.135	No odour.
MW09/13	Q2 2016	17/08/2016	3.395	3.265	-	0.975	-	0.975	2.42	No odour, grey silty base
MW09/13	Q4 2016	12/12/2016	3.395	3.5	-	1.495	-	1.495	1.9	No odour.
MW09/13	Q2 2017	23/05/2017	3.395	3.495	-	1.512	-	1.512	1.883	No odour.
MW09/13	Q4 2017	5/12/2017	3.395	3.481	-	1.413	-	1.413	1.982	No odour
MW09/13	Q2 2018	19/06/2018	3.395	3.465	-	1.53	-	1.53	1.865	No odour
MW09/13	Q4 2018	3/12/2018	3.395	3.465	-	1.530	-	1.530	1.865	No odour
MW09/14	Q1 2010	31/03/2010	3.5	3.995	-	0.685	-	0.685	2.815	
MW09/14	Q2 2010	22/06/2010	3.5	3.991	-	0.819	-	0.819	2.681	
MW09/14	Q3 2010	22/09/2010	3.5	3.995	-	0.849	-	0.849	2.651	Has not been surveyed in
MW09/14	Q4 2010	23/11/2010	3.5	4.004	-	0.57	-	0.57	2.93	
MW09/14	Q1 2011	8/03/2011	3.5		-		-	0	-	Has not been surveyed in
MW09/14	Q2 2011	9/06/2011	3.5	5.994	-	0.624	-	0.624	2.876	
MW09/14	Q3 2011	6/09/2011	3.5	3.98	-	0.617	-	0.617	2.883	Has not been surveyed in
MW09/14	Q4 2011	5/12/2011	3.5	3.997	-	0.516	-	0.516	2.984	
MW09/14	Q2 2012	5/06/2012	3.5	4.014	-	0.602	-	0.602	2.898	No odour
MW09/14	Q3 2012	18/09/2012	3.5	3.944	-	0.862	-	0.862	2.638	No odour
MW09/14	Q4 2012	3/12/2012	3.5	4.02	-	0.705	-	0.705	2.795	Silty, no odour
MW09/14	Q1 2013	14/03/2013	3.5	4	-	0.563	-	0.563	2.937	No odour
MW09/14	Q2 2013	20/06/2013	3.5	4.025	-	0.818	-	0.818	2.682	No odour
MW09/14	Q3 2013	23/09/2013	3.5	4.985	-	0.757	-	0.757	2.743	Silty at base, no odour
MW09/14	Q4 2013	3/12/2013	3.5	3.983	-	0.509	-	0.509	2.991	Bolts on gatic threaded. No odour, silty base.
MW09/14	Q2 2014	22/05/2014	3.5	3.995	-	0.91	-	0.91	2.59	No odour, silted base
MW09/14	Q3 2014	10/09/2014	3.5	4	-	0.69	-	0.69	2.81	-
MW09/14	Lot 101 ESA	12/09/2014	3.5	4	-	0.69	-	0.69	2.81	
MW09/14	Q4 2014	3/12/2014	3.5	3.983	-	0.6	-	0.6	2.9	No odour
MW09/14	Q1 2015	11/03/2015	3.5		-	0.665	-	0.665	2.835	No odour, silty base.
MW09/14	Q2 2015	24/06/2015	3.5		-	0.75	-	0.75	2.75	No odour, slity base
MW09/14	Q4 2015	23/11/2015	3.5	3.995	-	0.495	-	0.495	3.005	No odour.
MW09/14	Q2 2016	16/08/2016	3.5	3.975	-	0.76	-	0.76	2.74	Slight hydrocarbon odour, silty base.
MW09/14	Q4 2018	-	-	-	-	-	-	-	-	Lost. Could not be located beneath soil and gravel.
MW09/15	2010	7/01/2010	3.86		-	1.407	-	1.407	2.453	
MW09/15	Q2 2010	23/06/2010	3.86	3.752	-	1.147	-	1.147	2.713	
MW09/15	Q4 2010	24/11/2010	3.86	3.885	-	1.075	-	1.075	2.785	
MW09/15	Q2 2011	6/06/2011	3.86	3.701	-	1	-	1	2.86	
MW09/15	Q4 2011	6/12/2011	3.86	3.67	-	1.06	-	1.06	2.8	
MW09/15	Q2 2012	4/06/2012	3.86	3.36	-	1.125	-	1.125	2.735	No odour
MW09/15	Q4 2012	4/12/2012	3.86	1.75	-	1.61	-	1.61	2.25	Silty, no odour
MW09/15	Q2 2013	18/06/2013	3.86	3.695	-	1.324	-	1.324	2.536	Silty, no odour
MW09/15	Q4 2013	2/12/2013	3.86	3.662	-	1.156	-	1.156	2.704	Silty Bottom - faint lemon like odour
MW09/15	Q2 2014	20/05/2014	3.86	3.619	-	1.597	-	1.597	2.263	No odour
MW09/15	Lot 101 ESA	10/09/2014	3.86	3.62	-	0.945	-	0.945	2.915	
MW09/15	Q4 2014	4/12/2014	3.86	3.625	-	0.85	-	0.85	3.01	No odour, silty base
MW09/16	2010	7/01/2010	3.25		-	1.318	-	1.318	1.932	
MW09/16	Q1 2010	31/03/2010	3.25	4.025	-	1.202	-	1.202	2.048	
MW09/16	Q2 2010	21/06/2010	3.25	4.032	-	1.283	-	1.283	1.967	
MW09/16	Q3 2010	22/09/2010	3.25	3.913	-	1.215	-	1.215	2.035	
MW09/16	Q4 2010	22/11/2010	3.25	4.038	-	1.084	-	1.084	2.166	
MW09/16	Q1 2011	8/03/2011	3.25	4	-	1.695	-	1.695	1.555	
MW09/16	Q2 2011	6/06/2011	3.25	4.025	-	1.025	-	1.025	2.225	
MW09/16	Q3 2011	6/09/2011	3.25	4.036	-	1.121	-	1.121	2.129	
MW09/16	Q4 2011	5/12/2011	3.25	4.033	-	1.088	-	1.088	2.162	
MW09/16	Q1 2012	19/03/2012	3.25	4.048	-	0.571	-	0.571	2.679	
MW09/16	Q3 2012	17/09/2012	3.25	4.04	-	1.39	-	1.39	1.86	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW09/16	Q4 2012	3/12/2012	3.25	4.02	-	1.29	-	1.29	1.96	-
MW09/16	Q1 2013	13/03/2013	3.25	4.04	-	1.018	-	1.018	2.232	No odour
MW09/16	Q3 2013	23/09/2013	3.25	4.016	-	1.279	-	1.279	1.971	No odour
MW09/16	Q4 2013	13/12/2013	3.25	4.024	-	1.195	-	1.195	2.055	No odour
MW09/16	Q1 2014	27/03/2014	3.25	4.02	-	0.841	-	0.841	2.409	No odour
MW09/16	Lot 101 ESA	12/09/2014	3.25	4.02	-	1.057	-	1.057	2.193	
MW09/16	Q3 2014	23/09/2014	3.25	4	-	1.161	-	1.161	2.089	No odour
MW09/16	Q4 2014	5/12/2014	3.25	4.025	-	1.1	-	1.1	2.15	No odour
MW09/16	Q1 2015	10/03/2015	3.25		-	1.236	-	1.236	2.014	No odour.
MW09/16	Q2 2018	21/06/2018	-	13.46	-	2	-	2	-	Hydrocarbon odour
MW09/16	Q2 2017	-	-	-	-	-	-	Dry	-	Lost under gravel and vegetation,
MW09/16	Q4 2018	-	-	-	-	-	-	-	-	Lost. Could not be located in overgrown vegetation
MW09/17	2010	7/01/2010	3.11		-	1.617	-	1.617	1.493	
MW09/17	Q2 2010	21/06/2010	3.11	4.431	-	1.772	-	1.772	1.338	
MW09/17	Q4 2010	22/11/2010	3.11	4.444	-	1.119	-	1.119	1.991	
MW09/17	Q4 2011	5/12/2011	3.11	4.425	-	0.984	-	0.984	2.126	
MW09/17	Q4 2012	3/12/2012	3.11	4.42	-	1.665	-	1.665	1.445	No odours
MW09/17	Q4 2013	3/12/2013	3.11	4.413	-	1.594	-	1.594	1.516	Odour (not hydrocarbon)
MW09/17	Q4 2014	5/12/2014	3.11	4.42	-	1.54	-	1.54	1.57	No odour
MW09/17	Q4 2015	23/11/2015	3.11	4.42	-	0.97	-	0.97	2.14	Faint hydrocarbon odour.
MW09/17	Q4 2016	13/12/2016	-	4.425	-	1.582	-	1.582		No odour.
MW09/17	Q2 2017	23/05/2017	3.11	4.42	-	1.635	-	1.635	1.475	No odour.
MW09/18	2010	7/01/2010	2.35		-	0.734	-	0.734	1.616	
MW09/18	Q1 2010	31/03/2010	2.35	3.235	-	0.573	-	0.573	1.777	
MW09/18	Q2 2010	21/06/2010	2.35	3.228	-	0.494	-	0.494	1.856	
MW09/18	Q3 2010	22/09/2010	2.35	3.237	-	0.642	-	0.642	1.708	
MW09/18	Q4 2010	22/11/2010	2.35	4.242	-	1.542	-	1.542	0.808	
MW09/18	Q1 2011	8/03/2011	2.35	3.18	-	0.943	-	0.943	1.407	
MW09/18	Q2 2011	6/06/2011	2.35	3.19	-	0.346	-	0.346	2.004	
MW09/18	Q3 2011	6/09/2011	2.35	3.24	-	0.516	-	0.516	1.834	
MW09/18	Q4 2011	5/12/2011	2.35	3.236	-	0.475	-	0.475	1.875	
MW09/18	Q1 2012	19/03/2012	2.35	3.257	-	0.232	-	0.232	2.118	
MW09/18	Q2 2012	4/06/2012	2.35		-		-	0	-	Covered by road base - Lost/destroyed
MW09/18	Q4 2013	2/12/2013	2.35		-		-	0	-	Lost
MW09/18	Q4 2014	4/12/2014	2.35		-		-	0	-	Lost
MW09/19	2010	7/01/2010	3.05		-	0.85	-	0.85	2.2	
MW09/19	Q2 2010	21/06/2010	3.05	3.491	-	0.662	-	0.662	2.388	
MW09/19	Q4 2010	22/11/2010	3.05	3.485	-	0.66	-	0.66	2.39	
MW09/19	Q4 2011	5/12/2011	3.05	3.43	-	0.584	-	0.584	2.466	Organic odour.
MW09/19	Q4 2012	3/12/2012	3.05	3.51	-	1.002	-	1.002	2.048	Strong sulphur odour
MW09/19	Q4 2013	13/12/2013	3.05	3.4	-	0.83	-	0.83	2.22	Strong sulphur odour
MW09/19	Q3 2014	23/09/2014	3.05	3.406	-	0.84	-	0.84	2.21	No odour
MW09/19	Q4 2014	8/12/2014	3.05	3.395	-	0.46	-	0.46	2.59	Organic odour, silty base
MW09/2	2009	15/04/2009	4.568	4.432	-	2.395	-	2.395	2.173	
MW09/2	2009	16/11/2009	4.568	4.425	-	2.618	-	2.618	1.95	
MW09/2	Q1 2010	31/03/2010	4.568	5.44	-	2.545	-	2.545	2.023	
MW09/2	Q2 2010	21/06/2010	4.568	4.434	-	2.535	-	2.535	2.033	
MW09/2	Q3 2010	22/09/2010	4.568	4.435	-	2.624	-	2.624	1.944	
MW09/2	Q4 2010	22/11/2010	4.568	4.437	-	2.512	-	2.512	2.056	
MW09/2	Q1 2011	8/03/2011	4.568	4.418	-	2.691	-	2.691	1.877	
MW09/2	Q2 2011	6/06/2011	4.568	4.437	-	2.451	-	2.451	2.117	
MW09/2	Q3 2011	6/09/2011	4.568	4.432	-	2.607	-	2.607	1.961	
MW09/2	Q4 2011	7/12/2011	4.568	4.439	-	2.5	-	2.5	2.068	Suspected hydrocarbon odour.
MW09/2	Q1 2012	19/03/2012	4.568	4.451	-	2.404	-	2.404	2.164	
MW09/2	Q2 2012	4/06/2012	4.568	4.44	-	2.575	-	2.575	1.993	Slight hydrocarbon odour
MW09/2	Q3 2012	17/09/2012	4.568	4.45	-	2.074	-	2.074	2.494	No odour
MW09/2	Q4 2012	4/12/2012	4.568	4.45	-	2.67	-	2.67	1.898	No odour
MW09/2	Q1 2013	13/03/2013	4.568	4.44	-	2.555	-	2.555	2.013	No odour
MW09/2	Q2 2013	17/06/2013	4.568	4.51	-	2.622	-	2.622	1.946	Organic odour
MW09/2	Q3 2013	23/09/2013	4.568	4.406	-	2.647	-	2.647	1.921	Slight hydrocarbon odour
MW09/2	Q4 2013	3/12/2013	4.568	4.412	-	2.555	-	2.555	2.013	No odour
MW09/2	Q1 2014	27/03/2014	4.568	4.423	-	2.365	-	2.365	2.203	Hydrocarbon odour
MW09/2	Q2 2014	28/05/2014	4.568	4.422	-	2.365	-	2.365	2.203	No odour
MW09/2	Q3 2014	23/09/2014	4.568	4.4	-	2.592	-	2.592	1.976	No odour
MW09/2	Q4 2014	4/12/2014	4.568	4.41	-	2.384	-	2.384	2.184	No odour
MW09/2	Q1 2015	10/03/2015	4.568		-	2.59	-	2.59	1.978	Slight hydrocarbon odour.
MW09/2	Q2 2015	22/06/2015	4.568		-	2.47	-	2.47	2.098	No odour
MW09/2	Q4 2015	23/11/2015	4.568	4.39	-	2.515	-	2.515	2.053	No odour.
MW09/2	Q2 2016	18/08/2016	4.568	4.47	-	2.55	-	2.55	2.018	No odour.
MW09/2	Q4 2016	13/12/2016	4.568	4.39	-	2.622	-	2.622	1.946	No odour.
MW09/2	Q2 2017	23/05/2017	4.568	4.395	-	2.61	-	2.61	1.958	-
MW09/2	Q4 2017	5/12/2017	4.568		2.584	2.600	0.02	2.587	1.981	LNAPL present
MW09/2	Q2 2018	19/06/2018	4.568	4.38	-	2.56	-	2.56	2.008	Organic soil odour
MW09/2	Q4 2018	3/12/2018	4.568	4.390	-	2.500	-	2.500	2.068	Slight hydrocarbon odour.
MW09/20	2010	7/01/2010	2.26		-	1.137	-	1.137	1.123	
MW09/20	Q2 2010	21/06/2010	2.26	3.128	-	0.886	-	0.886	1.374	
MW09/20	Q4 2010	22/11/2010	2.26	3.051	-	0.869	-	0.869	1.391	
MW09/20	Q4 2011	5/12/2011	2.26	3.095	-	0.802	-	0.802	1.458	
MW09/20	Q4 2013	2/12/2013	2.26		-		-	0	-	Could not locate, suspected lost
MW09/20	Q4 2014	8/12/2014	2.26	1.185	-	0.65	-	0.65	1.61	No odour, bailed due to short water column

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW09/20	Q4 2016	12/12/2016	-	2.95	-	1.215	-	1.215		Hydrogen sulfide odour, silty base
MW09/20	Q2 2017	24/05/2017	2.26	2.927	-	1.004	-	1.004	1.256	-
MW09/20	Q2 2018	18/06/2018	-	1.21	-	-	-	Dry	-	Dry, no water
MW09/20	Q4 2018	3/12/2018	2.260	1.190		0.850		0.850	1.410	Slightly silty, organic odour.
MW09/3	2009	16/04/2009	2.865	3.426	-	1.028	-	1.028	1.837	
MW09/3	2009	16/11/2009	2.865	3.412	-	1.178	-	1.178	1.687	
MW09/3	Q2 2010	22/06/2010	2.865	3.413	-	1.162	-	1.162	1.703	Could not open. Gatic cover screw.
MW09/3	Q3 2010	22/09/2010	2.865	2.905	-	1.183	-	1.183	1.682	
MW09/3	Q4 2010	26/11/2010	2.865	3.427	-	1.125	-	1.125	1.74	
MW09/3	Q1 2011	8/03/2011	2.865	3.395	-	1.256	-	1.256	1.609	
MW09/3	Q2 2011	6/06/2011	2.865	3.394	-	1.011	-	1.011	1.854	
MW09/3	Q3 2011	6/09/2011	2.865	3.399	-	1.203	-	1.203	1.662	
MW09/3	Q4 2011	6/12/2011	2.865	3.376	-	1.071	-	1.071	1.794	Suspected hydrocarbon odour.
MW09/3	Q1 2012	20/03/2012	2.865	3.391	-	0.935	-	0.935	1.93	
MW09/3	Q2 2012	6/06/2012	2.865	3.38	-	1.055	-	1.055	1.81	No odour
MW09/3	Q3 2012	17/09/2012	2.865	3.37	-	1.3	-	1.3	1.565	No odour
MW09/3	Q4 2012	4/12/2012	2.865	3.37	-	1.15	-	1.15	1.715	Slight hydrocarbon odour
MW09/3	Q1 2013	13/03/2013	2.865	3.39	-	1.076	-	1.076	1.789	No odour
MW09/3	Q2 2013	18/06/2013	2.865	3.452	-	1.18	-	1.18	1.685	Slight hydrocarbon odour
MW09/3	Q3 2013	23/09/2013	2.865	3.356	-	1.195	-	1.195	1.67	No odour
MW09/3	Q4 2013	5/12/2013	2.865	3.336	-	1.083	-	1.083	1.782	No odour
MW09/3	Q1 2014	28/03/2014	2.865	3.33	-	0.973	-	0.973	1.892	Slight hydrocarbon odour
MW09/3	Q2 2014	22/05/2014	2.865	3.315	-	1.225	-	1.225	1.64	No odour, silty base
MW09/3	Q3 2014	23/09/2014	2.865	3.294	-	1.133	-	1.133	1.732	Hydrocarbon odour
MW09/3	Q4 2014	4/12/2014	2.865	3.3	-	1.03	-	1.03	1.835	No odour
MW09/3	Q1 2015	10/03/2015	2.865		-	1.165	-	1.165	1.7	Hydrocarbon odour, silty base.
MW09/3		15/08/2016	2.865		-		-	0	-	Demo area. No access.
MW09/3	Q4 2016	13/12/2016	-	3.282	-	1.078	-	1.078	-	
MW09/3	Q2 2017	26/05/2017	2.865	3.265	-	1.202	-	1.202	1.663	No odour. Grey silty base.
MW09/3	Q4 2017	5/12/2017	2.865	3.255	-	1.082	-	1.082	1.783	No odour, silty bottom.
MW09/3	Q2 2018	20/06/2018	2.865	3.265	-	0.923	-	0.923	1.942	No odour, silty bottom.
MW09/3	Q4 2018	4/12/2018	2.865	3.255	-	1.025	-	1.025	1.840	No odour.
MW09/4	2009	15/04/2009	3.112	4.426	-	1.825	-	1.825	1.287	
MW09/4	2009	16/11/2009	3.112	4.412	-	2.129	-	2.129	0.983	
MW09/4	Q2 2010	21/06/2010	3.112		-		-	0	-	Not Gauged.
MW09/4	Q2 2010	22/06/2010	3.112		-		-	0	-	Not Gauged.
MW09/4	Q4 2010	22/11/2010	3.112	4.421	-	2.053	-	2.053	1.059	
MW09/4	Q2 2011	6/06/2011	3.112	4.43	-	2.334	-	2.334	0.778	
MW09/4	Q4 2011	6/12/2011	3.112	4.412	-	1.89	-	1.89	1.222	
MW09/4	Q2 2012	6/06/2012	3.112	4.45	-	2.26	-	2.26	0.852	No odour
MW09/4	Q4 2012	4/12/2012	3.112	4.45	-	1.924	-	1.924	1.188	No odour
MW09/4	Q2 2013	17/06/2013	3.112	4.48	-	2.343	-	2.343	0.769	No odour
MW09/4	Q4 2013	2/12/2013	3.112	4.418	-	1.954	-	1.954	1.158	No odour
MW09/4	Q2 2014	19/05/2014	3.112	4.42	-	2.345	-	2.345	0.767	No odour
MW09/4	Q4 2014	4/12/2014	3.112	4.41	-	1.84	-	1.84	1.272	No odour
MW09/4	Q4 2016	12/12/2016	-	4.405	-	1.878	-			
MW09/5	2009	22/04/2009	3.187	3.103	-	0.879	-	0.879	2.308	
MW09/5	2009	16/11/2009	3.187	3.085	-	0.981	-	0.981	2.206	
MW09/5	Q1 2010	31/03/2010	3.187		-		-	-	-	Could not open.
MW09/5	Q2 2010	21/06/2010	3.187	3.076	-	0.949	-	0.949	2.238	
MW09/5	Q3 2010	22/09/2010	3.187	3.094	-	1.028	-	1.028	2.159	
MW09/5	Q4 2010	26/11/2010	3.187	3.12	-	0.941	-	0.941	2.246	
MW09/5	Q1 2011	8/03/2011	3.187	3.084	-	1.089	-	1.089	2.098	
MW09/5	Q2 2011	6/06/2011	3.187	3.1	-	0.862	-	0.862	2.325	
MW09/5	Q3 2011	6/09/2011	3.187	3.045	-	0.938	-	0.938	2.249	
MW09/5	Q4 2011	5/12/2011	3.187	3.087	-	0.903	-	0.903	2.284	
MW09/5	Q1 2012	19/03/2012	3.187	3.11	-	0.713	-	0.713	2.474	
MW09/5	Q2 2012	5/06/2012	3.187	3.17	-	0.39	-	0.39	2.797	Slight hydrocarbon odour
MW09/5	Q3 2012	17/09/2012	3.187	3.11	-	1.04	-	1.04	2.147	No odour
MW09/5	Q4 2012	3/12/2012	3.187	3.09	-	1.66	-	1.66	1.527	No odours
MW09/5	Q1 2013	13/03/2013	3.187		-		-	-	-	Could not locate - appears surface has been regraded.
MW09/5	Q2 2013	17/06/2013	3.187	3.145	-	0.965	-	0.965	2.222	No odour
MW09/5	Q3 2013	23/09/2013	3.187	3.051	-	1	-	1	2.187	No odour. Gatic cover not present, cover and bolts replaced
MW09/5	Q4 2013	3/12/2013	3.187	3.045	-	0.907	-	0.907	2.28	Hydrocarbon odour
MW09/5	Q1 2014	28/03/2014	3.187	3.044	-	0.93	-	0.93	2.257	No odour
MW09/5	Q2 2014	19/05/2014	3.187	3.046	-	1.036	-	1.036	2.151	Slight hydrocarbon odour
MW09/5	Q3 2014	23/09/2014	3.187	3.05	-	0.92	-	0.92	2.267	Hydrocarbon odour
MW09/5	Q4 2014	4/12/2014	3.187	3.05	-	0.94	-	0.94	2.247	Slight hydrocarbon odour
MW09/5	Q1 2015	10/03/2015	3.187		-	0.849	-	0.849	2.338	Hydrocarbon odour.
MW09/5	Q4 2015	23/11/2015	3.187		-		-	-	-	Could not access. Within Active Demolition Exclusion Zone.
MW09/5		15/08/2016	3.187		-		-	-	-	No Access. Buried beneath sand stockpile.
MW09/6	2009	15/04/2009	3.187	4.934	-	1.179	-	1.179	2.008	
MW09/6	2009	16/11/2009	3.187		-		-	-	-	Not Gauged
MW09/6	Q2 2010	21/06/2010	2.714	3.925	-	1.407	-	1.407	1.307	
MW09/6	Q3 2010	22/09/2010	2.714	3.801	-	1.339	-	1.339	1.375	
MW09/6	Q4 2010	22/11/2010	2.714	3.896	-	1.386	-	1.386	1.328	Slight hydrocarbon odour.
MW09/6	Q1 2011	8/03/2011	2.714	3.835	-	1.532	-	1.532	1.182	
MW09/6	Q2 2011	6/06/2011	2.714	3.847	-	1.247	-	1.247	1.467	Slight solvent odour.
MW09/6	Q3 2011	6/09/2011	2.714	3.872	-	1.451	-	1.451	1.263	

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MW09/6	Q4 2011	5/12/2011	2.714	3.863	-	1.391	-	1.391	1.323	
MW09/6	Q1 2012	19/03/2012	2.714	3.855	-	1.067	-	1.067	1.647	
MW09/6	Q2 2012	4/06/2012	2.714	3.84	-	1.26	-	1.26	1.454	No odour
MW09/6	Q3 2012	17/09/2012	2.714	3.81	-	1.48	-	1.48	1.234	No odour
MW09/6	Q4 2012	3/12/2012	2.714	3.85	-	1.375	-	1.375	1.339	Odour
MW09/6	Q1 2013	13/03/2013	2.714	3.84	-	1.321	-	1.321	1.393	No odour
MW09/6	Q2 2013	17/06/2013	2.714	3.883	-	1.399	-	1.399	1.315	No odour, silty bottom
MW09/6	Q3 2013	23/09/2013	2.714	3.818	-	1.343	-	1.343	1.371	Silty at base, no odour
MW09/6	Q4 2013	3/12/2013	2.714	3.806	-	1.282	-	1.282	1.432	Silty bottom, odour (not hydrocarbon)
MW09/6	Q1 2014	27/03/2014	2.714	3.8	-	1.176	-	1.176	1.538	No odour, silty base
MW09/6	Q2 2014	19/05/2014	2.714	3.799	-	1.395	-	1.395	1.319	No odour, silty base
MW09/6	Q3 2014	23/09/2014	2.714	3.805	-	1.385	-	1.385	1.329	Faint chemical odour
MW09/6	Q4 2014	5/12/2014	2.714	3.81	-	1.306	-	1.306	1.408	Chemical odour
MW09/6	Q1 2015	10/03/2015	2.714		-	1.472	-	1.472	1.242	No odour, silty base.
MW09/6	Q2 2015	19/06/2015	2.714		-	1.385	-	1.385	1.329	No odour, brown silty base
MW09/6	Q4 2015	24/11/2015	2.714	3.8	-	1.455	-	1.455	1.259	Hydrocarbon odour.
MW09/6		15/08/2016	2.714		-		-	-	-	No Access. Within fenced Lyondell Bassell Demolition Area
MW09/6	Q4 2016	13/12/2016	-	3.8	-	1.514	-	1.514	-	No odour. Light brown silty base.
MW09/6	Q2 2017	23/05/2017	2.714	3.783	-	1.439	-	1.439	1.275	Slight chemical odour.
MW09/6	Q4 2017	5/12/2017	2.714	3.803	-	1.287	-	1.287	1.427	Hydrocarbon odour, dark grey silty bottom.
MW09/6	Q2 2018	20/06/2018	2.714	3.78	-	1.035	-	1.035	1.679	No odour
MW09/6	Q4 2018	4/12/2018	2.714	3.777	-	1.226	-	1.226	1.488	No odour
MW09/7	2009	16/04/2009	2.962	3.489	-	0.856	-	0.856	2.106	
MW09/7	2009	16/11/2009	2.962	3.48	-	0.997	-	0.997	1.965	
MW09/7	Q2 2010	21/06/2010	2.962	3.49	-	0.945	-	0.945	2.017	Solvent smell.
MW09/7	Q3 2010	22/09/2010	2.962	3.431	-	1.002	-	1.002	1.96	
MW09/7	Q4 2010	22/11/2010	2.962	3.468	-	0.885	-	0.885	2.077	Strong solvent odour.
MW09/7	Q1 2011	8/03/2011	2.962	3.413	-	1.104	-	1.104	1.858	
MW09/7	Q2 2011	6/06/2011	2.962	3.483	-	0.818	-	0.818	2.144	Strong solvent odour.
MW09/7	Q3 2011	6/09/2011	2.962	3.459	-	0.996	-	0.996	1.966	
MW09/7	Q4 2011	5/12/2011	2.962	3.43	-	0.846	-	0.846	2.116	Solvent odour.
MW09/7	Q1 2012	19/03/2012	2.962	3.444	-	0.769	-	0.769	2.193	
MW09/7	Q2 2012	4/06/2012	2.962	3.43	-	0.955	-	0.955	2.007	Solvent/chemical odour
MW09/7	Q3 2012	17/09/2012	2.962	3.41	-	1.44	-	1.44	1.522	Chemical odour
MW09/7	Q4 2012	4/12/2012	2.962	3.42	-	1.08	-	1.08	1.882	Potential solvent and hydrocarbon odour
MW09/7	Q1 2013	13/03/2013	2.962	3.4	-	0.902	-	0.902	2.06	Strong solvent odour
MW09/7	Q2 2013	26/06/2013	2.962	3.484	-	0.745	-	0.745	2.217	Solvent odour
MW09/7	Q3 2013	23/09/2013	2.962	3.381	-	1.067	-	1.067	1.895	Solvent odour
MW09/7	Q4 2013	3/12/2013	2.962	2.395	-	0.91	-	0.91	2.052	Solvent odour, silty bottom.
MW09/7	Q1 2014	27/03/2014	2.962	3.39	-	0.845	-	0.845	2.117	Strong solvent odour
MW09/7	Q2 2014	19/05/2014	2.962	3.383	-	1.01	-	1.01	1.952	Strong solvent odour
MW09/7	Q3 2014	23/09/2014	2.962	3.37	-	0.939	-	0.939	2.023	Chemical odour
MW09/7	Q4 2014	4/12/2014	2.962	3.37	-	0.928	-	0.928	2.034	Chemical odour
MW09/7	Q1 2015	10/03/2015	2.962		-	0.946	-	0.946	2.016	Slight solvent odour, silty base.
MW09/7	Q2 2015	19/06/2015	2.962		-	0.874	-	0.874	2.088	Grey silty base, chemical odour
MW09/7	Q4 2015	24/11/2015	2.962	3.385	-	0.855	-	0.855	2.107	Solvent odour.
MW09/7	Q2 2016	17/08/2016	2.962	3.36	-	0.915	-	0.915	2.047	Hydrocarbon odour, dark grey silty base.
MW09/7	Q4 2016	13/12/2016	2.962	3.37	-	1	-	1	1.962	Chemical odour.
MW09/7	Q2 2017	23/05/2017	2.962	3.364	-	1.015	-	1.015	1.947	Chemical odour. Grey silty base.
MW09/7	Q4 2017	5/12/2017	2.962	3.370	-	0.960	-	0.960	2.002	Hydrocarbon odour. Slight Hydrogen Sulfide odour.
MW09/7	Q2 2018	22/06/2018	2.962	3.385	-	0.098	-	0.098	2.864	Stale hydrocarbon odour, grey silty base
MW09/7	Q4 2018	3/12/2018	2.962	3.365	-	0.855	-	0.855	2.107	Stale hydrocarbon odour, grey silty base
MW09/8	2009	15/04/2009	2.804	4.425	-	1.591	-	1.591	1.213	
MW09/8	2009	16/11/2009	2.804	4.415	-	1.668	-	1.668	1.136	
MW09/8	Q1 2010	31/03/2010	2.804	4.425	-	1.579	-	1.579	1.225	
MW09/8	Q2 2010	21/06/2010	2.804	4.443	-	1.677	-	1.677	1.127	
MW09/8	Q3 2010	22/09/2010	2.804	2.024	-		-	Dry	-	Dry.
MW09/8	Q4 2010	22/11/2010	2.804	4.406	-	1.665	-	1.665	1.139	
MW09/8	Q1 2011	8/03/2011	2.804	4.38	-	1.754	-	1.754	1.05	
MW09/8	Q2 2011	6/06/2011	2.804	4.44	-	1.62	-	1.62	1.184	
MW09/8	Q3 2011	6/09/2011	2.804	4.415	-	1.683	-	1.683	1.121	
MW09/8	Q4 2011	6/12/2011	2.804	4.412	-	1.64	-	1.64	1.164	
MW09/8	Q1 2012	19/03/2012	2.804	4.444	-	1.596	-	1.596	1.208	
MW09/8	Q2 2012	6/06/2012	2.804	4.45	-	1.58	-	1.58	1.224	No odour
MW09/8	Q3 2012	17/09/2012	2.804	4.43	-	1.798	-	1.798	1.006	Organic odour
MW09/8	Q4 2012	4/12/2012	2.804	4.455	-	1.715	-	1.715	1.089	Slight odour
MW09/8	Q1 2013	13/03/2013	2.804	4.445	-	1.661	-	1.661	1.143	No odour
MW09/8	Q2 2013	17/06/2013	2.804	4.49	-	1.71	-	1.71	1.094	No odour
MW09/8	Q3 2013	23/09/2013	2.804	4.419	-	1.706	-	1.706	1.098	No odour
MW09/8	Q4 2013	2/12/2013	2.804	4.476	-	1.648	-	1.648	1.156	No odour
MW09/8	Q1 2014	27/03/2014	2.804	4.422	-	1.59	-	1.59	1.214	No odour
MW09/8	Q2 2014	19/05/2014	2.804	4.425	-	1.716	-	1.716	1.088	No odour
MW09/8	Q3 2014	23/09/2014	2.804	4.425	-	1.593	-	1.593	1.211	No odour
MW09/8	Q4 2014	4/12/2014	2.804	4.424	-	1.609	-	1.609	1.195	No odour
MW09/8	Q1 2015	10/03/2015	2.804		-	1.689	-	1.689	1.115	No odour.
MW09/8	Q2 2015	22/06/2015	2.804		-	1.61	-	1.61	1.194	No odour

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MW09/8	Q4 2015	24/11/2015	2.804	4.42	-	1.64	-	1.64	1.164	Faint sulfur odour.
MW09/8	Q2 2016	16/08/2016	2.804	4.43	-	1.655	-	1.655	1.149	No odour.
MW09/8	Q4 2016	12/12/2016	2.804	4.425	-	1.75	-	1.75	1.054	
MW09/8	Q2 2017	25/05/2017	2.804	4.6	-	1.925	-	1.925	0.879	No odour.
MW09/8	Q4 2017	5/12/2017	2.804	4.594	-	1.946	-	1.946	0.858	No odour, silty bottom.
MW09/8	Q2 2018	18/06/2018	2.804	4.43	-	1.7	-	1.7	1.104	Hydrocarbon odour
MW09/8	Q4 2018	3/12/2018	2.804	4.460	-	1.629	-	1.629	1.175	No odour
MW09/9	2009	16/11/2009	2.82	3.506	-	1.144	-	1.144	1.676	
MW09/9	Q1 2010	31/03/2010	2.82	3.515	-	1.163	-	1.163	1.657	
MW09/9	Q2 2010	21/06/2010	2.82	3.508	-	1.144	-	1.144	1.676	
MW09/9	Q3 2010	22/09/2010	2.82	3.463	-	1.168	-	1.168	1.652	
MW09/9	Q4 2010	22/11/2010	2.82	3.526	-	1.158	-	1.158	1.662	
MW09/9	Q1 2011	8/03/2011	2.82	3.439	-	1.224	-	1.224	1.596	
MW09/9	Q2 2011	6/06/2011	2.82	3.497	-	1.175	-	1.175	1.645	
MW09/9	Q3 2011	6/09/2011	2.82	3.488	-	1.156	-	1.156	1.664	
MW09/9	Q4 2011	5/12/2011	2.82	3.501	-	1.128	-	1.128	1.692	
MW09/9	Q1 2012	19/03/2012	2.82	3.492	-	1.087	-	1.087	1.733	
MW09/9	Q2 2012	5/06/2012	2.82	3.47	-	1.14	-	1.14	1.68	No odour
MW09/9	Q3 2012	17/09/2012	2.82	3.455	-	1.195	-	1.195	1.625	No odour
MW09/9	Q4 2012	3/12/2012	2.82	3.455	-	1.21	-	1.21	1.61	No odour
MW09/9	Q1 2013	13/03/2013	2.82	3.43	-	1.133	-	1.133	1.687	No odour
MW09/9	Q2 2013	18/06/2013	2.82	3.478	-	1.216	-	1.216	1.604	No odour, silty bottom
MW09/9	Q3 2013	23/09/2013	2.82	3.394	-	1.217	-	1.217	1.603	No odour
MW09/9	Q4 2013	3/12/2013	2.82	3.415	-	1.191	-	1.191	1.629	Silty bottom, no odour
MW09/9	Q1 2014	27/03/2014	2.82	3.39	-	1.208	-	1.208	1.612	No odour
MW09/9	Q2 2014	19/05/2014	2.82	3.4	-	1.233	-	1.233	1.587	Slight organic odour, silty base
MW09/9	Q3 2014	23/09/2014	2.82	3.372	-	1.222	-	1.222	1.598	No odour
MW09/9	Q4 2014	4/12/2014	2.82	3.37	-	1.223	-	1.223	1.597	No odour
MW09/9	Q1 2015	10/03/2015	2.82		-	1.231	-	1.231	1.589	Slight hydrocarbon odour, silty base.
MW09/9	Q2 2015	22/06/2015	2.82		-	1.2	-	1.2	1.62	No odour, silty base
MW09/9	Q4 2015	23/11/2015	2.82	3.36	-	1.2	-	1.2	1.62	No odour.
MW09/9	Q2 2016	18/08/2016	2.82	3.355	-	1.2	-	1.2	1.62	No odour, silty base.
MW09/9	Q4 2016	13/12/2016	2.82	3.36	-	1.222	-	1.222	1.598	No odour. Light brown silty base.
MW09/9	Q2 2017	23/05/2017	2.82	3.06	-	1.048	-	1.048	1.772	No odour.
MW09/9	Q4 2017	5/12/2017	2.820	3.351	-	1.213	-	1.213	1.607	No odour, silty bottom.
MW09/9	Q2 2018	19/06/2018	2.82	3.54	-	1.225	-	1.225	1.595	No odour
MW09/9	Q4 2018	4/12/2018	2.820	3.130	-	1.236	-	1.236	1.584	No odour
MW10/01	Q4 2010	22/11/2010	3.15	2.764	-	1.019	-	1.019	2.131	
MW10/01	Q1 2011	8/03/2011	3.15	3.551	-	0.79	-	0.79	2.36	Has not been surveyed in
MW10/01	Q2 2011	6/06/2011	3.15	2.749	-	0.946	-	0.946	2.204	
MW10/01	Q3 2011	6/09/2011	3.15	2.752	-	1.034	-	1.034	2.116	Has not been surveyed in
MW10/01	Q4 2011	5/12/2011	3.15	2.733	-	0.968	-	0.968	2.182	Solvent odour.
MW10/01	Q1 2012	19/03/2012	3.15	2.747	-	0.891	-	0.891	2.259	
MW10/01	Q2 2012	5/06/2012	3.15	2.74	-	0.97	-	0.97	2.18	No odour
MW10/01	Q3 2012	17/09/2012	3.15	2.755	-	1.086	-	1.086	2.064	No odour
MW10/01	Q4 2012	3/12/2012	3.15	2.74	-	1.05	-	1.05	2.1	No odour
MW10/01	Q1 2013	13/03/2013	3.15	2.74	-	0.965	-	0.965	2.185	No odour
MW10/01	Q2 2013	17/06/2013	3.15	2.815	-	1.011	-	1.011	2.139	Silty bottom
MW10/01	Q3 2013	23/09/2013	3.15	2.721	-	1.036	-	1.036	2.114	No odour. 2 x bolts replaced
MW10/01	Q4 2013	3/12/2013	3.15	2.723	-	0.965	-	0.965	2.185	Silty bottom, no odour
MW10/01	Q1 2014	27/03/2014	3.15	2.72	-	0.915	-	0.915	2.235	Mild sulphur odour, silty bottom.
MW10/01	Q2 2014	19/05/2014	3.15	2.724	-	1.058	-	1.058	2.092	No odour
MW10/01	Q3 2014	23/09/2014	3.15	2.726	-	1.013	-	1.013	2.137	No odour
MW10/01	Q4 2014	4/12/2014	3.15	2.72	-	0.936	-	0.936	2.214	Hydrocarbon odour
MW10/01	Q1 2015	10/03/2015	3.15		-	1.007	-	1.007	2.143	Hydrocarbon odour.
MW10/01	Q2 2015	19/06/2015	3.15		-	0.845	-	0.845	2.305	Hydrocarbon odour
MW10/01	Q4 2015	23/11/2015	3.15	2.73	-	0.94	-	0.94	2.21	Faint hydrocarbon odour.
MW10/01	Q2 2016	18/08/2016	3.15	2.715	-	0.945	-	0.945	2.205	Slight hydrocarbon odour, silty base.
MW10/01	Q4 2016	13/12/2016	3.15	2.73	-	1.055	-	1.055	2.095	Slight hydrocarbon odour.
MW10/01	Q2 2017	25/05/2017	3.15	2.716	-	1.01	-	1.01	2.14	Slight hydrocarbon odour.
MW10/01	Q4 2017	5/12/2017	3.150	2.720	-	0.999	-	0.999	2.151	Hydrocarbon odour.
MW10/01	Q2 2018	19/06/2018	3.15	2.69	-	0.985	-	0.985	2.165	No odour
MW10/01	Q4 2018	3/12/2018	3.150	2.707	-	0.912	-	0.912	2.238	No odour
MW10/02	Q4 2010	22/11/2010	3	2.796	-	1.046	-	1.046	1.954	Hydrocarbon odour.
MW10/02	Q1 2011	8/03/2011	3	2.666	-	1.16	-	1.16	1.84	Has not been surveyed in
MW10/02	Q2 2011	6/06/2011	3	2.66	-	0.966	-	0.966	2.034	
MW10/02	Q3 2011	6/09/2011	3	2.655	-	1.056	-	1.056	1.944	Has not been surveyed in
MW10/02	Q4 2011	5/12/2011	3	2.645	-	1.005	-	1.005	1.995	Suspected hydrocarbon odour.
MW10/02	Q2 2012	5/06/2012	3	2.68	-	1.005	-	1.005	1.995	No odour
MW10/02	Q4 2012	3/12/2012	3	2.65	-	1.085	-	1.085	1.915	Hyrdocarbon odour
MW10/02	Q2 2013	17/06/2013	3	2.73	-	1.037	-	1.037	1.963	Hydrocarbon odour, silty bottom
MW10/02	Q4 2013	3/12/2013	3	2.626	-	1.002	-	1.002	1.998	Hydrocarbon odour
MW10/02	Q1 2014	27/03/2014	3	2.65	-	0.915	-	0.915	2.085	Strong hydrocarbon odour, slight sheen.
MW10/02	Q2 2014	19/05/2014	3	2.655	-	1.112	-	1.112	1.888	Strong hydrocarbon odour
MW10/02	Q3 2014	23/09/2014	3	2.6	-	1.034	-	1.034	1.966	Hydrocarbon odour
MW10/02	Q4 2014	4/12/2014	3	2.6	-	0.94	-	0.94	2.06	Hydrocarbon odour
MW10/02	Q1 2015	10/03/2015	3		-	0.972	-	0.972	2.028	No odour, silty base.
MW10/02	Q2 2015	19/06/2015	3		-	0.86	-	0.86	2.14	No odour, silty base
MW10/02	Q4 2015	23/11/2015	3	2.6	-	0.968	-	0.968	2.032	Strong hydrocarbon odour.
MW10/02	Q2 2016	18/08/2016	3	2.6	-	0.998	-	0.998	2.002	Strong hydrocarbon odour.
MW10/02	Q4 2016	13/12/2016	3	2.596	-	1.125	-	1.125	1.875	Hydrocarbon odour.
MW10/02	Q2 2017	25/05/2017	3	2.598	-	1.066	-	1.066	1.934	Hydrocarbon odour.

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW10/02	Q4 2017	5/12/2017	3.000	2.602	-	1.021	-	1.021	1.979	Hydrocarbon odour, some oily residue on interface probe.
MW10/02	Q2 2018	19/06/2018	3	2.59	-	1.04	-	1.04	1.96	Strong hydrocarbon odour
MW10/02	Q4 2018	3/12/2018	3.000	2.578	-	0.960	-	0.960	2.040	Brown silty base, no odour.
MW11/01	Q3 2011	4/10/2011	5.05	4.958	-		-	-	-	
MW11/01	Q1 2012	19/03/2012	5.05	4.936	-	0.711	-	0.711	4.339	
MW11/01	Q3 2012	17/09/2012	5.05	4.945	-	1.065	-	1.065	3.985	No odour
MW11/01	Q4 2012	4/12/2012	5.05	4.952	-	1.12	-	1.12	3.93	-
MW11/01	Q1 2013	13/03/2013	5.05	4.938	-	0.859	-	0.859	4.191	No odour
MW11/01	Q3 2013	24/09/2013	5.05	4.915	-	1.041	-	1.041	4.009	No odour. 1 x bolt replaced
MW11/01	Q4 2013	3/12/2013	5.05	4.925	-	1.183	-	1.183	3.867	No odour
MW11/01	Q1 2014	27/03/2014	5.05	4.92	-	1.167	-	1.167	3.883	No odour
MW11/01	Q3 2014	24/09/2014	5.05	4.916	-	1.472	-	1.472	3.578	No odour
MW11/01	Q4 2014	10/12/2014	5.05	3.919	-	1.149	-	1.149	3.901	No odour
MW11/01	Q1 2015	10/03/2015	5.05		-	0.97	-	0.97	4.08	No odour.
MW11/01	Q2 2015	22/06/2015	5.05		-	1.18	-	1.18	3.87	No odour
MW11/01	Q4 2015	23/11/2015	5.05	4.93	-	1	-	1	4.05	No odour.
MW11/01	Q2 2016	18/08/2016	5.05	4.92	-	0.875	-	0.875	4.175	No odour.
MW11/01	Q4 2016	14/12/2016	5.05	4.921	-	1.115	-	1.115	3.935	
MW11/01	Q2 2017	25/05/2017	5.05	4.926	-	1.125	-	1.125	3.925	No odour.
MW11/01	Q4 2017	6/12/2017	5.050	4.991	-	0.957	-	0.957	4.093	Hydrocarbon odour.
MW11/01	Q2 2018	20/06/2018	5.05	4.94	-	1.645	-	1.645	3.405	No odour
MW11/01	Q4 2018	3/12/2018	5.050	4.950	-	0.712	-	0.712	4.338	No odour
MW11/02	Q3 2011	4/10/2011	5.09	4.288	-		-	-	-	
MW11/02	Q4 2011	5/12/2011	5.09	4.246	-	0.827	-	0.827	4.263	
MW11/02	Q1 2012	19/03/2012	5.09	4.267	-	0.57	-	0.57	4.52	
MW11/02	Q2 2012	5/06/2012	5.09	4.27	-	0.855	-	0.855	4.235	Slight hydrocarbon odour
MW11/02	Q3 2012	17/09/2012	5.09	4.27	-	0.93	-	0.93	4.16	No odour
MW11/02	Q4 2012	3/12/2012	5.09	4.29	-	0.775	-	0.775	4.315	No odour
MW11/02	Q1 2013	13/03/2013	5.09	4.272	-	0.721	-	0.721	4.369	No odour
MW11/02	Q2 2013	17/06/2013	5.09	4.31	-	0.935	-	0.935	4.155	No odour
MW11/02	Q3 2013	24/09/2013	5.09	4.25	-	0.844	-	0.844	4.246	No odour
MW11/02	Q4 2013	3/12/2013	5.09	4.25	-	0.77	-	0.77	4.32	No odour
MW11/02	Q1 2014	27/03/2014	5.09	4.25	-	0.855	-	0.855	4.235	No odour
MW11/02	Q2 2014	19/05/2014	5.09	4.248	-	0.97	-	0.97	4.12	No odour
MW11/02	Q3 2014	24/09/2014	5.09	4.248	-	0.713	-	0.713	4.377	No odour
MW11/02	Q4 2014	3/12/2014	5.09	4.26	-	0.785	-	0.785	4.305	No odour
MW11/02	Q1 2015	10/03/2015	5.09		-	0.791	-	0.791	4.299	No odour.
MW11/02	Q2 2015	22/06/2015	5.09		-	0.885	-	0.885	4.205	No odour
MW11/02	Q4 2015	25/11/2015	5.09	4.26	-	0.69	-	0.69	4.4	No odour.
MW11/02	Q2 2016	17/08/2016	5.09	4.245	-	0.81	-	0.81	4.28	No odour.
MW11/02	Q4 2016	14/12/2016	5.09	4.235	-	0.72	-	0.72	4.37	
MW11/02	Q2 2017	25/05/2017	5.09	4.258	-	0.96	-	0.96	4.13	No odour.
MW11/02	Q4 2017	6/12/2017	5.090	4.235	-	0.771	-	0.771	4.319	Hydrocarbon odour.
MW11/02	Q2 2018	22/06/2018	5.09	4.245	-	1.075	-	1.075	4.015	No odour
MW11/02	Q4 2018	3/12/2018	5.090	4.280	-	0.730	-	0.730	4.360	No odour
MW11/03	Q3 2011	7/10/2011	4.45	4.935	-		-	-	-	
MW11/03	Q1 2012	19/03/2012	4.45	4.925	-	0.234	-	0.234	4.216	
MW11/03	Q2 2012	5/06/2012	4.45	4.931	-	0.523	-	0.523	3.927	No odour
MW11/03	Q3 2012	17/09/2012	4.45	4.93	-	0.535	-	0.535	3.915	No odour
MW11/03	Q4 2012	4/12/2012	4.45	4.945	-	0.055	-	0.055	4.395	No odour
MW11/03	Q1 2013	13/03/2013	4.45	4.931	-	-	-	-	#VALUE!	No odour
MW11/03	Q2 2013	17/06/2013	4.45	4.965	-	0.1	-	0.1	4.35	Water in well head, no odour
MW11/03	Q3 2013	24/09/2013	4.45	4.907	-	0.802	-	0.802	3.648	No odour
MW11/03	Q4 2013	3/12/2013	4.45	4.915	-	0.26	-	0.26	4.19	Potential surface water ingress
MW11/03	Q1 2014	27/03/2014	4.45	4.91	-	0.06	-	0.06	4.39	Gatic filled with surface water, no odour.
MW11/03	Q2 2014	19/05/2014	4.45	4.92	-	0.16	-	0.16	4.29	No odour
MW11/03	Q3 2014	24/09/2014	4.45	4.912	-	0.865	-	0.865	3.585	No odour
MW11/03	Q4 2014	3/12/2014	4.45	4.915	-	0.135	-	0.135	4.315	No odour
MW11/03	Q1 2015	10/03/2015	4.45		-	0.449	-	0.449	4.001	No odour.
MW11/03	Q2 2015	22/06/2015	4.45		-	0.01	-	0.01	4.44	No odour
MW11/03	Q4 2015	25/11/2015	4.45	4.92	-	0.38	-	0.38	4.07	No odour.
MW11/03	Q2 2016	17/08/2016	4.45	4.91	-	0.765	-	0.765	3.685	No odour.
MW11/03	Q4 2016	14/12/2016	4.45	4.918	-	0.004	-	0.004	4.446	
MW11/03	Q2 2017	25/05/2017	4.45	4.918	-	0.699	-	0.699	3.751	No odour.
MW11/03	Q4 2017	6/12/2017	5.090	4.901	-	0.150	-	0.150	4.940	Hydrocarbon odour.
MW11/03	Q2 2018	20/06/2018	5.09	4.92	-	0.82	-	0.82	4.27	No odour
MW11/03	Q4 2018	3/12/2018	4.450	4.740	-	0.190	-	0.190	4.260	No odour
MW11/04	Q3 2011	4/10/2011	5.28	3.979	-		-	-	-	
MW11/04	Q1 2012	19/03/2012	5.28	3.874	-	0.775	-	0.775	4.505	
MW11/04	Q2 2012	5/06/2012	5.28	3.873	-	1.098	-	1.098	4.182	Chemical odour
MW11/04	Q3 2012	17/09/2012	5.28	3.88	-	1.39	-	1.39	3.89	No odour
MW11/04	Q4 2012	3/12/2012	5.28	4.88	-	1.03	-	1.03	4.25	Slight hydrocarbon odour
MW11/04	Q1 2013	13/03/2013	5.28	3.866	-	0.753	-	0.753	4.527	No odour
MW11/04	Q2 2013	17/06/2013	5.28	3.91	-	1.19	-	1.19	4.09	No odour
MW11/04	Q3 2013	24/09/2013	5.28	3.845	-	1.24	-	1.24	4.04	No odour
MW11/04	Q4 2013	3/12/2013	5.28	3.85	-	0.943	-	0.943	4.337	No odour
MW11/04	Q1 2014	27/03/2014	5.28	3.85	-	0.805	-	0.805	4.475	Mild sulphur odour.
MW11/04	Q2 2014	19/05/2014	5.28	3.847	-	1.154	-	1.154	4.126	No odour
MW11/04	Q3 2014	23/09/2014	5.28	3.846	-	1.438	-	1.438	3.842	No odour
MW11/04	Q4 2014	3/12/2014	5.28	3.855	-	0.953	-	0.953	4.327	No odour
MW11/04	Q1 2015	10/03/2015	5.28		-	0.745	-	0.745	4.535	No odour.

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MW11/04	Q2 2015	22/06/2015	5.28		-	1.355	-	1.355	3.925	No odour
MW11/04	Q4 2015	24/11/2015	5.28	3.855	-	0.95	-	0.95	4.33	No odour.
MW11/04	Q2 2016	17/08/2016	5.28	3.845	-	1.377	-	1.377	3.903	No odour.
MW11/04	Q4 2016	14/12/2016	5.28	3.85	-	0.883	-	0.883	4.397	
MW11/04	Q2 2017	25/05/2017	5.28	3.856	-	1.135	-	1.135	4.145	No odour.
MW11/04	Q4 2017	6/12/2017	4.450	3.844	-	1.003	-	1.003	3.447	Hydrocarbon odour.
MW11/04	Q2 2018	20/06/2018	4.45	3.855	-	1.37	-	1.37	3.08	No odour
MW11/04	Q4 2018	3/12/2018	5.280	3.870	-	0.963	-	0.963	4.317	No odour
MW11/05	Q3 2011	4/10/2011	4.76	4.935	-		-	-	-	
MW11/05	Q4 2011	7/12/2011	4.76	4.919	-	1.629	-	1.629	3.131	
MW11/05	Q1 2012	19/03/2012	4.76	3.393	-	1.389	-	1.389	3.371	
MW11/05	Q2 2012	5/06/2012	4.76	4.936	-	1.593	-	1.593	3.167	
MW11/05	Q3 2012	17/09/2012	4.76	4.94	-	1.92	-	1.92	2.84	No odour
MW11/05	Q4 2012	3/12/2012	4.76	4.94	-	1.548	-	1.548	3.212	No odour
MW11/05	Q1 2013	13/03/2013	4.76	4.925	-	1.069	-	1.069	3.691	No odour
MW11/05	Q2 2013	17/06/2013	4.76	4.96	-	1.946	-	1.946	2.814	No odour
MW11/05	Q3 2013	24/09/2013	4.76	4.904	-	1.89	-	1.89	2.87	No odour
MW11/05	Q4 2013	3/12/2013	4.76	3.895	-	1.457	-	1.457	3.303	No odour
MW11/05	Q1 2014	27/03/2014	4.76	4.904	-	1.192	-	1.192	3.568	No odour
MW11/05	Q2 2014	19/05/2014	4.76	4.923	-	1.53	-	1.53	3.23	No odour
MW11/05	Q3 2014	24/09/2014	4.76	3.878	-	2.382	-	2.382	2.378	No odour
MW11/05	Q4 2014	3/12/2014	4.76	4.91	-	1.487	-	1.487	3.273	No odour
MW11/05	Q1 2015	10/03/2015	4.76		-	1.166	-	1.166	3.594	No odour.
MW11/05	Q4 2015	24/11/2015	4.76		-		-	-	-	Could not access. Within Active Demolition Exclusion Zone.
MW11/05	Q2 2016	17/08/2016	4.76	4.91	-	2.33	-	2.33	2.43	No odour.
MW11/05	Q4 2016	13/12/2016	4.76	4.91	-	1.41	-	1.41	3.35	No odour.
MW11/05	Q2 2017	25/05/2017	4.76	4.915	-	1.805	-	1.805	2.955	No odour.
MW11/06	Q3 2011	4/10/2011	4.68	4.16	-		-	-	-	
MW11/06	Q4 2011	5/12/2011	4.68	4.131	-	0.309	-	0.309	4.371	
MW11/06	Q1 2012	19/03/2012	4.68	4.15	-	0.176	-	0.176	4.504	
MW11/06	Q2 2012	5/06/2012	4.68	4.16	-	0.23	-	0.23	4.45	No odour
MW11/06	Q3 2012	17/09/2012	4.68	4.17	-	0.505	-	0.505	4.175	No odour
MW11/06	Q4 2012	4/12/2012	4.68	4.17	-	0.18	-	0.18	4.5	-
MW11/06	Q1 2013	13/03/2013	4.68	4.153	-	0.298	-	0.298	4.382	No odour
MW11/06	Q2 2013	17/06/2013	4.68	4.195	-	0.315	-	0.315	4.365	No odour
MW11/06	Q3 2013	24/09/2013	4.68	4.172	-	0.171	-	0.171	4.509	No odour
MW11/06	Q4 2013	3/12/2013	4.68	4.14	-	0.26	-	0.26	4.42	No odour
MW11/06	Q1 2014	28/03/2014	4.68	4.135	-	4.135	-	4.135	0.545	No odour
MW11/06	Q2 2014	19/05/2014	4.68	4.137	-	0.513	-	0.513	4.167	No odour
MW11/06	Q3 2014	24/09/2014	4.68	4.132	-	0.366	-	0.366	4.314	No odour
MW11/06	Q4 2014	3/12/2014	4.68	4.135	-	0.124	-	0.124	4.556	No odour
MW11/06	Q1 2015	10/03/2015	4.68		-	0.286	-	0.286	4.394	No odour.
MW11/06	Q2 2015	22/06/2015	4.68		-	0.51	-	0.51	4.17	No odour
MW11/06	Q4 2015	24/11/2015	4.68	4.145	-	0.3	-	0.3	4.38	No odour.
MW11/06	Q2 2016	17/08/2016	4.68	4.135	-	0.515	-	0.515	4.165	No odour.
MW11/06	Q4 2016	14/12/2016	4.68	4.41	-	0.254	-	0.254	4.426	
MW11/06	Q2 2017	25/05/2017	4.68	4.142	-	0.6	-	0.6	4.08	No odour.
MW11/06	Q4 2017	6/12/2017	4.680	4.131	-	0.280	-	0.280	4.400	No odour.
MW11/06	Q2 2018	20/06/2018	4.68	4.383	-	0.653	-	0.653	4.027	No odour.
MW11/06	Q4 2018	3/12/2018	4.680	4.165	-	0.220	-	0.220	4.460	No odour, potential for surface water ingress.
MW11/07	Q3 2011	4/10/2011	4.78	5.107	-		-	-	-	
MW11/07	Q3 2013	24/09/2013	4.78	5.074	-	1.194	-	1.194	3.586	No odour
MW11/07	Q2 2015	22/06/2015	4.78		-	1.105	-	1.105	3.675	No odour
MW11/07	Q4 2015	24/11/2015	4.78	5.1	-	1.06	-	1.06	3.72	No odour.
MW11/07	Q2 2016	17/08/2016	4.78	5.085	-	1.395	-	1.395	3.385	No odour.
MW11/07	Q4 2016	14/12/2016	4.78	5.079	-	0.735	-	0.735	4.045	
MW11/07	Q2 2017	25/05/2017	4.78	5.088	-	0.638	-	0.638	4.142	Slight hydrocarbon odour.
MW11/07	Q4 2017	6/12/2017	4.780	5.080	-	0.725	-	0.725	4.055	No odour.
MW11/07	Q2 2018	20/06/2018	4.78	5.065	-	0.785	-	0.785	3.995	Chemical odour
MW11/07	Q4 2018	3/12/2018	4.780	5.090	-	0.930	-	0.930	3.850	No odour.
MW11/08	Q3 2011	4/10/2011	4.88	5.145	-		-	-	-	
MW11/08	Q4 2011	7/12/2011	4.88	5.13	-	0.623	-	0.623	4.257	Solvent odour.
MW11/08	Q1 2012	19/03/2012	4.88	5.135	-	0.481	-	0.481	4.399	
MW11/08	Q2 2012	5/06/2012	4.88	5.15	-	0.57	-	0.57	4.31	No odour
MW11/08	Q3 2012	17/09/2012	4.88	5.14	-	0.82	-	0.82	4.06	No odour
MW11/08	Q4 2012	3/12/2012	4.88	5.15	-	0.605	-	0.605	4.275	No odour
MW11/08	Q1 2013	13/03/2013	4.88	5.138	-	0.549	-	0.549	4.331	No odour
MW11/08	Q2 2013	17/06/2013	4.88	5.18	-	0.66	-	0.66	4.22	No odour
MW11/08	Q3 2013	24/09/2013	4.88	5.115	-	0.656	-	0.656	4.224	No odour
MW11/08	Q4 2013	3/12/2013	4.88	5.12	-	0.618	-	0.618	4.262	No odour
MW11/08	Q1 2014	27/03/2014	4.88	5.119	-	0.66	-	0.66	4.22	No odour
MW11/08	Q2 2014	19/05/2014	4.88	5.13	-	0.902	-	0.902	3.978	No odour
MW11/08	Q3 2014	24/09/2014	4.88	5.1	-	0.749	-	0.749	4.131	No odour
MW11/08	Q4 2014	3/12/2014	4.88	5.135	-	0.588	-	0.588	4.292	No odour
MW11/08	Q1 2015	10/03/2015	4.88		-	0.678	-	0.678	4.202	No odour.
MW11/08	Q4 2015	24/11/2015	4.88		-		-	-	-	Could not access. Within Active Demolition Exclusion Zone.
MW11/08	Q2 2016	17/08/2016	4.88	5.115	-	0.71	-	0.71	4.17	No odour.
MW11/08	Q2 2017	25/05/2017	4.88	5.116	-	0.994	-	0.994	3.886	No odour.
MW11/08	Q4 2017	6/12/2017	4.880	5.111	-	0.631	-	0.631	4.249	No odour.
MW11/08	Q2 2018	20/06/2018	4.88	5.125	-	0.85	-	0.85	4.03	No odour.

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MW11/08	Q4 2018	3/12/2018	4.880	5.150	-	0.545	-	0.545	4.335	No odour.
MW11/09	Q3 2011	4/10/2011	4.9	4.432	-		-	-	-	
MW11/10	Q3 2011	4/10/2011	4.9	5.124	-		-	-	-	
MW11/10	Q1 2012	19/03/2012	4.9	5.135	-	1.736	-	1.736	3.164	
MW11/10	Q2 2012	5/06/2012	4.9	5.15	-	1.645	-	1.645	3.255	No odour
MW11/10	Q3 2012	17/09/2012	4.9	5.1	-	1.73	-	1.73	3.17	No odour
MW11/10	Q4 2012	4/12/2012	4.9	5.145	-	1.57	-	1.57	3.33	No odour
MW11/10	Q1 2013	13/03/2013	4.9	5.12	-	1.537	-	1.537	3.363	No odour
MW11/10	Q2 2013	17/06/2013	4.9	5.17	-	1.745	-	1.745	3.155	No odour
MW11/10	Q3 2013	24/09/2013	4.9	5.106	-	1.601	-	1.601	3.299	No odour
MW11/10	Q4 2013	3/12/2013	4.9	5.115	-	1.572	-	1.572	3.328	No odour
MW11/10	Q1 2014	27/03/2014	4.9	3.11	-	1.58	-	1.58	3.32	No odour
MW11/10	Q2 2014	19/05/2014	4.9	5.12	-	1.75	-	1.75	3.15	No odour
MW11/10	Q3 2014	24/09/2014	4.9		-		-	-	-	Well not accessible due to demolition activities
MW11/10	Q4 2014	9/12/2014	4.9	5.111	-	1.441	-	1.441	3.459	No odour
MW11/10		15/08/2016	4.9		-		-	-	-	Well lost/destroyed beneath road base
MW11/11	Q3 2011	5/10/2011	5.03	4.989	-		-	-	-	
MW11/11		15/08/2016	5.03		-		-	-	-	Destroyed buried under road base.
MW11/12	Q3 2011	6/10/2011	4.9	4.911	-		-	-	-	
MW11/12	Q2 2016	15/08/2016	4.9	4.89	-	2.015	-	2.015	2.885	
MW11/12	Q4 2016	13/12/2016	4.9	4.905	-	2.265	-	2.265	2.635	No odour.
MW11/13	Q3 2011	6/10/2011	4.87	4.93	-		-	-	-	
MW11/13		15/08/2016	4.87		-		-	-	-	Destroyed buried under road base.
MW11/14	Q3 2011	4/10/2011	4.85	4.937	-		-	-	-	
MW11/14		15/08/2016	4.85		-		-	-	-	Destroyed buried under road base.
MW11/15	Q3 2011	4/10/2011	5.01	4.883	-		-	-	-	
MW11/15	Q1 2013	13/03/2013	5.01	4.89	-	1.395	-	1.395	3.615	No odour
MW11/15	Q2 2016	15/08/2016	5.01	4.86	-	1.515	-	1.515	3.495	No odour, silty base.
MW11/16	Q3 2011	4/10/2011	4.78	4.864	-		-	-	-	
MW11/16	Q1 2013	13/03/2013	4.78	4.87	-	1.65	-	1.65	3.13	No odour
MW11/16		15/08/2016	4.78		-		-	-	-	Destroyed buried under road base.
MW11/17	Q3 2011	4/10/2011	4.75	4.89	-		-	-	-	
MW11/17	Q1 2012	19/03/2012	4.75	4.902	-	1.435	-	1.435	3.315	
MW11/17	Q2 2012	5/06/2012	4.75	4.902	-	1.877	-	1.877	2.873	Faint odour, water in gatic with sheen present
MW11/17	Q3 2012	17/09/2012	4.75	4.9	-	1.91	-	1.91	2.84	No odour
MW11/17	Q4 2012	3/12/2012	4.75	4.91	-	1.73	-	1.73	3.02	Slight hyrdocarbon odour
MW11/17	Q1 2013	13/03/2013	4.75		1.617	1.625	0.008	1.6186	3.1314	LNAPL present
MW11/17	Q2 2013	17/06/2013	4.75		1.859	1.86	0.001	1.8592	2.8908	Viscous, brown tar-like LNAPL present
MW11/17	Q3 2013	24/09/2013	4.75	4.882	-	1.797	-	1.797	2.953	Hydrocarbon odour, brown tar on outside of bailer
MW11/17	Q4 2013	2/12/2013	4.75	4.884	-	1.685	-	1.685	3.065	No odour
MW11/17	Q1 2014	27/03/2014	4.75		1.69	1.765	0.075	1.705	3.045	Viscous black LNAPL present
MW11/17	Q2 2014	19/05/2014	4.75		1.96	2.001	0.041	1.9682	2.7818	Dark brown, viscous LNAPL, hydrocarbon odour
MW11/17	Q3 2014	24/09/2014	4.75		-		-	-	-	Well not accessible due to demolition activities
MW11/17	Q4 2014	9/12/2014	4.75	4.884	1.63	1.634	0.004	1.6308	3.1192	LNAPL, dark brown, viscous
MW11/17	Q2 2015	19/06/2015	4.75		1.9	2.04	0.14	1.928	2.822	Black LNAPL present
MW11/17	Q2 2016	18/08/2016	4.75		1.814	1.855	0.041	1.8222	2.9278	Dark brown LNAPL.
MW11/17	Q4 2016	13/12/2016	4.75	-	1.798	1.835	0.037	1.8054	2.9446	LNAPL Present.
MW11/17	Q2 2017	23/05/2017	4.75	-	1.907	1.915	0.008	1.907816	2.842184	LNAPL present, thick and black.
MW11/17	Q4 2017	6/12/2017	4.750	4.888	2.745	2.795	0.05	2.755	1.995	LNAPL present - thick, black.
MW11/17	Q2 2018	21/06/2018	4.75	-	2.128	2.205	0.077	2.1434	2.6066	LNAPL present
MW11/17	Q4 2018	3/12/2018	4.750	-	1.575	1.600	0.025	1.580	3.170	~25 mm of dark brown LNAPL
MW11/18	Q3 2011	4/10/2011	5.02	4.915	-		-	-	-	
MW11/18	Q1 2012	19/03/2012	5.02	4.981	-	0.985	-	0.985	4.035	
MW11/18	Q2 2012	5/06/2012	5.02	4.924	-	1.199	-	1.199	3.821	No odour
MW11/18	Q3 2012	17/09/2012	5.02	4.92	-	1.285	-	1.285	3.735	No odour
MW11/18	Q4 2012	3/12/2012	5.02	4.93	-	1.01	-	1.01	4.01	No odour
MW11/18	Q1 2013	13/03/2013	5.02	4.911	-	0.984	-	0.984	4.036	No odour
MW11/18	Q2 2013	17/06/2013	5.02	4.95	-	1.208	-	1.208	3.812	No odour
MW11/18	Q3 2013	24/09/2013	5.02	4.891	-	1.105	-	1.105	3.915	No odour
MW11/18	Q4 2013	2/12/2013	5.02	4.9	-	1.074	-	1.074	3.946	No odour, gatic damaged
MW11/18	Q1 2014	27/03/2014	5.02	4.895	-	1.14	-	1.14	3.88	No odour
MW11/18	Q2 2014	19/05/2014	5.02	4.899	-	1.353	-	1.353	3.667	Well requires repair (concrete). No odour
MW11/18	Q3 2014	24/09/2014	5.02		-		-	-	-	Well not accessible due to demolition activities
MW11/18	Q4 2014	9/12/2014	5.02	4.895	-	0.946	-	0.946	4.074	No odour
MW11/18	Q2 2016	15/08/2016	5.02	1.92	-	1.25	-	1.25	3.77	Well silted, no gatic, no HydraSleeve® installed.
MW11/18	Q4 2016	13/12/2016	5.02	1.832	-	0.983	-	0.983	4.037	
MW11/18	Q4 2018	3/12/2018	5.020	-	-	0.965	-	0.965	4.055	No colour.
MW11/19	Q3 2011	4/10/2011	4.55	4.826	-		-	-	-	
MW11/19	Q4 2011	5/12/2011	4.55	4.804	-	0.802	-	0.802	3.748	
MW11/19	Q2 2016	15/08/2016	4.55	4.805	-	1.045	-	1.045	3.505	No odour.
MW11/20	Q3 2011	4/10/2011	4.18	4.927	-		-	-	-	
MW11/20	Q2 2016	15/08/2016	4.18	4.91	-	0.93	-	0.93	3.25	Gatic full of bitumen, no odour.
MW11/20	Q2 2018	21/06/2018	-	4.55	-	1.23	-	1.23	-	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW11/20	Q4 2018	3/12/2018	4.180	4.930	-	0.925	-	0.925	3.255	Viscous, sticky tar-like material in well head. Cleared prior removing well cap prior to gauging and sampling.
MW11/21	Q3 2011	13/10/2011	4.12	4.065	-		-	-	-	
MW11/21	Q2 2013	18/06/2013	4.12	3.985	-	1.95	-	1.95	2.17	No odour, silty bottom
MW11/21	Q3 2013	24/09/2013	4.12	3.934	-	2.135	-	2.135	1.985	Silty at base, no odour
MW11/21	Q4 2013	3/12/2013	4.12	3.925	-	1.899	-	1.899	2.221	No odour
MW11/21	Q1 2014	28/03/2014	4.12	3.932	-	1.895	-	1.895	2.225	No odour
MW11/21	Q2 2014	19/05/2014	4.12	3.933	-	2.085	-	2.085	2.035	No odour, silty base
MW11/21	Q3 2014	24/09/2014	4.12		-		-	-	-	Well not accessible due to demolition activities
MW11/21	Q4 2014	9/12/2014	4.12	3.915	-	1.783	-	1.783	2.337	No odour
MW11/21		15/08/2016	4.12		-		-	-	-	Destroyed buried under road base.
MW11/22	Q3 2011	4/10/2011	4.13	4.935	-		-	-	-	
MW11/22	Q4 2012	3/12/2012	4.13	4.955	-	2.053	-	2.053	2.077	No odour
MW11/22	Q4 2013	9/12/2013	4.13	4.916	-	1.649	-	1.649	2.481	No odour
MW11/22	Q4 2014	11/12/2014	4.13	4.925	-	1.848	-	1.848	2.282	No odour
MW11/22	Q2 2016	16/08/2016	4.13	4.915	-	1.875	-	1.875	2.255	No odour.
MW11/22	Q2 2016	18/08/2016	4.13	4.915	-	1.875	-	1.875	2.255	No odour.
MW11/22	Q4 2016	13/12/2016	4.13	4.93	-	1.915		1.915	2.215	No odour.
MW11/23	Q3 2011	6/10/2011	4.1	5.989	-		-	-	-	
MW11/23	Q2 2016	16/08/2016	4.1	5.97	-	1.815	-	1.815	2.285	No odour.
MW11/23	Q2 2016	17/08/2016	4.1	5.97	-	1.815	-	1.815	2.285	No odour.
MW11/24	Q3 2011	6/10/2011	4.21	5.315	-		-	-	-	
MW11/24	Q2 2012	6/06/2012	4.21	5.33	-	2.16	-	2.16	2.05	No odour
MW11/24	Q4 2012	3/12/2012	4.21	5.3	-	1.91	-	1.91	2.3	No odour
MW11/24	Q2 2013	18/06/2013	4.21	5.389	-	2.457	-	2.457	1.753	No odour
MW11/24	Q4 2013	3/12/2013	4.21	5.294	-	2.04	-	2.04	2.17	No odour
MW11/24	Q2 2014	19/05/2014	4.21	5.3	-	2.15	-	2.15	2.06	No odour
MW11/24	Q4 2014	9/12/2014	4.21	5.29	-	1.721	-	1.721	2.489	No odour
MW11/24	Q2 2016	18/08/2016	4.21	5.3	-	2.143	-	2.143	2.067	No odour.
MW11/24	Q4 2016	13/12/2016	4.21	5.31	-	1.515		1.515	2.695	
MW11/24	Q2 2017	23/05/2017	4.21	5.28	-	1.735	-	1.735	2.475	No odour.
MW11/24	Q4 2017	5/12/2017	4.210	5.285	-	1.422	-	1.422	2.788	No odour.
MW11/24	Q2 2018	20/06/2018	4.21	5.3	-	1.825	-	1.825	2.385	Soil organic odour
MW11/24	Q4 2018	4/12/2018	4.210	5.300	-	1.452	-	1.452	2.758	No odour.
MW11/25	Q3 2011	14/10/2011	3.89	5.24	-		-	-	-	
MW11/25	Q2 2012	6/06/2012	3.89	5.25	-	1.575	-	1.575	2.315	No odour
MW11/25	Q4 2012	3/12/2012	3.89	5.22	-	1.36	-	1.36	2.53	No odour
MW11/25	Q2 2013	18/06/2013	3.89	5.275	-	1.78	-	1.78	2.11	No odour
MW11/25	Q4 2013	4/12/2013	3.89	5.226	-	1.358	-	1.358	2.532	No odour
MW11/25	Q2 2014	19/05/2014	3.89	5.225	-	1.614	-	1.614	2.276	No odour
MW11/25	Q4 2014	9/12/2014	3.89	5.22	-	1.325	-	1.325	2.565	No odour
MW11/25	Q2 2016	17/08/2016	3.89	5.22	-	2.37	-	2.37	1.52	No odour.
MW11/25	Q2 2016	19/08/2016	3.89	5.22	-	2.37	-	2.37	1.52	No odour.
MW11/26	Q3 2011	4/10/2011	3.77	2.612	-		-	-	-	
MW11/26	Q2 2012	5/06/2012	3.77	2.63	-	2.135	-	2.135	1.635	No odour
MW11/26	Q3 2012	17/09/2012	3.77	2.65	-	2.245	-	2.245	1.525	No odour
MW11/26	Q4 2012	4/12/2012	3.77	2.63	-	2.205	-	2.205	1.565	No odour
MW11/26	Q1 2013	13/03/2013	3.77	2.641	-	2.106	-	2.106	1.664	No odour
MW11/26	Q2 2013	26/06/2013	3.77	2.701	-	2.103	-	2.103	1.667	No odour
MW11/26	Q3 2013	24/09/2013	3.77	2.621	-	2.204	-	2.204	1.566	No odour
MW11/26	Q4 2013	4/12/2013	3.77	2.625	-	2.12	-	2.12	1.65	No odour
MW11/26	Q1 2014	28/03/2014	3.77	2.65	-	2.115	-	2.115	1.655	No odour
MW11/26	Q2 2014	19/05/2014	3.77	2.645	-	2.225	-	2.225	1.545	No odour
MW11/26	Q3 2014	24/09/2014	3.77	2.65	-	2.138	-	2.138	1.632	No odour
MW11/26	Q4 2014	3/12/2014	3.77	2.65	-	2.158	-	2.158	1.612	No odour, bailed
MW11/26	Q1 2015	10/03/2015	3.77		-	2.134	-	2.134	1.636	No odour.
MW11/26	Q2 2016	16/08/2016	3.77	2.66	-	2.05	-	2.05	1.72	No odour.
MW11/26	Q2 2016	20/08/2016	3.77	2.66	-	2.05	-	2.05	1.72	No odour.
MW11/26	Q4 2016	13/12/2016	3.77	2.645	-	2.217		2.217	1.553	No odour.
MW11/26	Q2 2017	23/05/2017	3.77	2.652	-	2.153	-	2.153	1.617	No odour.
MW11/26	Q4 2017	5/12/2017	3.770	2.641	-	2.173	-	2.173	1.597	No odour.
MW11/26	Q2 2018	19/06/2018	3.77	2.669	-	2.225	-	2.225	1.545	No odour.
MW11/26	Q4 2018	4/12/2018	3.770	2.660	-	2.040	-	2.040	1.730	No odour.
MW11/27	Q3 2011	6/10/2011	4.08	5.319	-		-	-	-	
MW11/27	Q2 2012	6/06/2012	4.08	5.34	-	1.225	-	1.225	2.855	No odour
MW11/27	Q4 2012	3/12/2012	4.08	5.31	-	1.175	-	1.175	2.905	No odour
MW11/27	Q2 2013	18/06/2013	4.08	5.396	-	1.482	-	1.482	2.598	Faint chemical odour (not hydrocarbon)
MW11/27	Q4 2013	3/12/2013	4.08	5.31	-	1.279	-	1.279	2.801	No odour
MW11/27	Q2 2014	19/05/2014	4.08	5.311	-	1.23	-	1.23	2.85	No odour
MW11/27	Q4 2014	9/12/2014	4.08	5.31	-	1.155	-	1.155	2.925	No odour
MW11/27		16/08/2016	4.08		-		-	-	-	Destroyed buried under road base.
MW11/28	Q3 2011	13/10/2011	3.69	5.429	-		-	-	-	
MW11/28	Q4 2011	6/12/2011	3.69	5.409	-	1.02	-	1.02	2.67	
MW11/28	Q2 2012	6/06/2012	3.69	5.44	-	1.045	-	1.045	2.645	No odour
MW11/28	Q3 2012	18/09/2012	3.69	5.44	-	1.07	-	1.07	2.62	No odour
MW11/28	Q4 2012	3/12/2012	3.69	5.42	-	1.085	-	1.085	2.605	No odour
MW11/28	Q1 2013	13/03/2013	3.69	5.43	-	1.087	-	1.087	2.603	Hydrocarbon odour
MW11/28	Q2 2013	18/06/2013	3.69	5.465	-	1.18	-	1.18	2.51	No odour
MW11/28	Q3 2013	24/09/2013	3.69	5.409	-	1.138	-	1.138	2.552	No odour
MW11/28	Q4 2013	4/12/2013	3.69	5.416	-	1.075	-	1.075	2.615	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW11/28	Q1 2014	28/03/2014	3.69	5.41	-	1.04	-	1.04	2.65	No odour
MW11/28	Q2 2014	19/05/2014	3.69	5.42	-	1.211	-	1.211	2.479	No odour
MW11/28	Q3 2014	24/09/2014	3.69		-		-	-	-	Well not accessible due to demolition activities
MW11/28	Q4 2014	9/12/2014	3.69	5.415	-	1.024	-	1.024	2.666	No odour
MW11/28		17/08/2016	3.69		-		-	-	-	Destroyed buried under road base.
MW11/29	Q3 2011	14/10/2011	3.54	5.899	-		-	-	-	
MW11/29	Q2 2012	6/06/2012	3.54	5.9	-	1.705	-	1.705	1.835	No odour
MW11/29	Q3 2012	18/09/2012	3.54	5.89	-	2.015	-	2.015	1.525	No odour
MW11/29	Q4 2012	3/12/2012	3.54	5.67	-	1.68	-	1.68	1.86	No odour
MW11/29	Q1 2013	13/03/2013	3.54	4.9	-	1.36	-	1.36	2.18	No odour
MW11/29	Q2 2013	18/06/2013	3.54	5.91	-	1.884	-	1.884	1.656	No odour
MW11/29	Q3 2013	24/09/2013	3.54	5.86	-	1.026	-	1.026	2.514	No odour
MW11/29	Q4 2013	4/12/2013	3.54	5.872	-	1.5	-	1.5	2.04	No odour
MW11/29	Q1 2014	28/03/2014	3.54	5.871	-	1.365	-	1.365	2.175	No odour
MW11/29	Q2 2014	19/05/2014	3.54	5.88	-	1.705	-	1.705	1.835	Slight hydrocarbon odour
MW11/29	Q3 2014	24/09/2014	3.54		-		-	-	-	Well not accessible due to demolition activities
MW11/29	Q4 2014	9/12/2014	3.54	5.86	-	1.4	-	1.4	2.14	No odour
MW11/29		16/08/2016	3.54		-		-	-	-	Destroyed buried under road base stockpile.
MW11/30	Q3 2011	4/10/2011	3.81	4.96	-		-	-	-	
MW11/30	Q1 2012	19/03/2012	3.81	4.733	-	1.8	-	1.8	2.01	
MW11/30	Q2 2012	5/06/2012	3.81	4.95	-	2.08	-	2.08	1.73	No odour
MW11/30	Q3 2012	17/09/2012	3.81	4.75	-	2.185	-	2.185	1.625	No odour
MW11/30	Q4 2012	4/12/2012	3.81	4.95	-	2.058	-	2.058	1.752	No odour
MW11/30	Q1 2013	13/03/2013	3.81	4.925	-	1.979	-	1.979	1.831	No odour
MW11/30	Q2 2013	26/06/2013	3.81	4.995	-	2.454	-	2.454	1.356	No odour
MW11/30	Q3 2013	24/09/2013	3.81	4.911	-	2.206	-	2.206	1.604	Slight H2S odour
MW11/30	Q4 2013	4/12/2013	3.81	4.7	-	1.933	-	1.933	1.877	No odour
MW11/30	Q1 2014	28/03/2014	3.81	4.914	-	2.04	-	2.04	1.77	No odour
MW11/30	Q2 2014	19/05/2014	3.81	4.92	-	2.28	-	2.28	1.53	
MW11/30	Q3 2014	24/09/2014	3.81	4.715	-	2.341	-	2.341	1.469	No odour
MW11/30	Q4 2014	3/12/2014	3.81	4.711	-	1.905	-	1.905	1.905	No odour
MW11/30	Q2 2016	16/08/2016	3.81	4.92	-	2.225	-	2.225	1.585	No odour.
MW11/30	Q2 2016	19/08/2016	3.81	4.92	-	2.225	-	2.225	1.585	No odour.
MW11/30	Q4 2016	13/12/2016	3.81	4.713	-	1.942		1.942	1.868	No odour.
MW11/30	Q2 2017	25/05/2017	3.81	4.92	-	2.136	-	2.136	1.674	No odour.
MW11/30	Q4 2017	5/12/2017	3.810	4.915	-	1.943	-	1.943	1.867	No odour.
MW11/30	Q2 2018	19/06/2018	3.81	4.9	-	2.29	-	2.29	1.52	No odour.
MW11/30	Q4 2018	4/12/2018	3.810	4.866	-	1.747	-	1.747	2.063	No odour.
MW11/31	Q3 2011	6/10/2011	3.85	4.936	-		-	-	-	
MW11/31	Q2 2016	16/08/2016	3.85	4.91	-	1.32	-	1.32	2.53	No odour.
MW11/31	Q2 2016	20/08/2016	3.85	4.91	-	1.32	-	1.32	2.53	No odour.
MW11/31	Q4 2016	13/12/2016	3.85	4.92	-	1.055		1.055	2.795	No odour.
MW11/31	Q2 2017	23/05/2017	3.85	4.92	-	1.026	-	1.026	2.824	No odour.
MW11/31	Q2 2018	20/06/2018	-	4.93	-	0.405	-	0.405	-	No odour
MW11/31	Q4 2018	4/12/2018	3.850	4.915	-	0.780	-	0.780	3.070	No odour
MW11/32	Q3 2011	14/10/2011	3.68	4.993	-		-	-	-	
MW11/32		16/08/2016	3.68		-		-	-	-	Destroyed buried, beneath puddle.
MW11/33	Q3 2011	5/10/2011	3.6	5.457	-		-	-	-	
MW11/33		15/08/2016	3.6		-		-	-	-	Destroyed.
MW11/33		18/08/2016	3.6		-		-	-	-	Lost beneath thin road base.
MW11/34	Q3 2011	5/10/2011	3.58	5.475	-		-	-	-	
MW11/34	Q2 2016	15/08/2016	3.58	5.45	-	1.72	-	1.72	1.86	No odour.
MW11/35	Q3 2011	13/10/2011	3.71	4.931	-		-	-	-	
MW11/35		16/08/2016	3.71		-		-	-	-	Lost beneath road base.
MW11/36	Q3 2011	13/10/2011	3.83	5.003	-		-	-	-	
MW11/36	Q4 2011	6/12/2011	3.83	4.955	-	0.628	-	0.628	3.202	
MW11/36	Q1 2012	20/03/2012	3.83	4.99	-	0.389	-	0.389	3.441	
MW11/36	Q2 2012	6/06/2012	3.83	5.01	-	0.865	-	0.865	2.965	No odour
MW11/36	Q3 2012	18/09/2012	3.83	5.01	-	0.925	-	0.925	2.905	No odour
MW11/36	Q4 2012	3/12/2012	3.83	4.98	-	0.74	-	0.74	3.09	No odour
MW11/36	Q1 2013	13/03/2013	3.83	5.005	-	0.565	-	0.565	3.265	Hydrocarbon odour
MW11/36	Q2 2013	18/06/2013	3.83	5.045	-	1.018	-	1.018	2.812	No odour
MW11/36	Q3 2013	24/09/2013	3.83	4.981	-	0.844	-	0.844	2.986	No odour
MW11/36	Q4 2013	4/12/2013	3.83	4.991	-	0.642	-	0.642	3.188	No odour
MW11/36	Q1 2014	28/03/2014	3.83	4.98	-	0.758	-	0.758	3.072	No odour
MW11/36	Q2 2014	19/05/2014	3.83	4.986	-	1.1	-	1.1	2.73	No odour
MW11/36	Q3 2014	24/09/2014	3.83		-		-	-	-	Well not accessible due to demolition activities
MW11/36	Q4 2014	9/12/2014	3.83	4.99	-	0.57	-	0.57	3.26	No odour
MW11/36	Q2 2016	16/08/2016	3.83	3.245	-	0.93	-	0.93	2.9	No gatic or well cap. Possibly silted, ran over by excavation..
MW11/36	Q4 2016	13/12/2016	3.83	3.245		0.745		0.745	3.085	no odour.
MW11/37	Q3 2011	4/10/2011	3.6	5.955	-		-	-	-	
MW11/37	Q2 2016	16/08/2016	3.6	4.92	-	2.14	-	2.14	1.46	No odour.
MW11/37	Q4 2016	13/12/2016	3.77	4.926		1.943		1.943	1.827	No odour.
MW11/37	Q2 2017	23/05/2017	3.77	4.926	-	2.106	-	2.106	1.664	No odour.
MW11/37	Q4 2017	5/12/2017	3.830	4.902	-	1.746	-	1.746	2.084	No odour.
MW11/37	Q2 2018	20/06/2018	3.83	4.93	-	2.305	-	2.305	1.525	No odour.
MW11/37	Q4 2018	4/12/2018	3.770	4.706	-	1.705	-	1.705	2.065	No odour.
MW11/38	Q3 2011	6/10/2011	3.54	4.816	-		-	-	-	

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MW11/38	Q2 2012	6/06/2012	3.54	4.83	-	1.565	-	1.565	1.975	No odour
MW11/38	Q3 2012	18/09/2012	3.54	4.83	-	1.595	-	1.595	1.945	No odour
MW11/38	Q4 2012	10/12/2012	3.54	4.81	-	1.47	-	1.47	2.07	No odour
MW11/38	Q1 2013	13/03/2013	3.54	4.821	-	1.353	-	1.353	2.187	Hydrocarbon odour
MW11/38	Q2 2013	18/06/2013	3.54	4.886	-	1.678	-	1.678	1.862	No odour
MW11/38	Q3 2013	24/09/2013	3.54	4.797	-	1.589	-	1.589	1.951	No odour
MW11/38	Q4 2013	3/12/2013	3.54	4.807	-	1.424	-	1.424	2.116	No odour
MW11/38	Q1 2014	28/03/2014	3.54	4.8	-	1.394	-	1.394	2.146	No odour
MW11/38	Q2 2014	19/05/2014	3.54	4.805	-	1.62	-	1.62	1.92	No odour
MW11/38	Q3 2014	24/09/2014	3.54		-		-	-	-	Well not accessible due to demolition activities
MW11/38	Q4 2014	9/12/2014	3.54	4.8	-	1.372	-	1.372	2.168	No odour
MW11/38		16/08/2016	3.54		-		-	-	-	Lost beneath thin road base.
MW11/39	Q3 2011	4/10/2011	3.53	4.93	-		-	-	-	
MW11/39	Q4 2011	5/12/2011	3.53	4.902	-	1.613	-	1.613	1.917	
MW11/39	Q1 2012	19/03/2012	3.53	4.932	-	1.339	-	1.339	2.191	
MW11/39	Q2 2012	5/06/2012	3.53	4.95	-	1.38	-	1.38	2.15	No odour
MW11/39	Q3 2012	17/09/2012	3.53	4.92	-	1.585	-	1.585	1.945	No odour
MW11/39	Q4 2012	4/12/2012	3.53	4.91	-	1.24	-	1.24	2.29	No odour
MW11/39	Q1 2013	13/03/2013	3.53	4.924	-	1.199	-	1.199	2.331	Hydrocarbon odour
MW11/39	Q2 2013	17/06/2013	3.53	4.97	-	1.469	-	1.469	2.061	No odour
MW11/39	Q3 2013	23/09/2013	3.53	4.9	-	1.46	-	1.46	2.07	No odour
MW11/39	Q4 2013	3/12/2013	3.53	4.91	-	1.198	-	1.198	2.332	No odour
MW11/39	Q1 2014	28/03/2014	3.53	4.903	-	1.254	-	1.254	2.276	No odour
MW11/39	Q2 2014	19/05/2014	3.53	4.913	-	1.52	-	1.52	2.01	No odour
MW11/39	Q3 2014	24/09/2014	3.53	4.9	-	1.314	-	1.314	2.216	No odour
MW11/39	Q4 2014	3/12/2014	3.53	4.91	-	1.131	-	1.131	2.399	No odour
MW11/39	Q2 2016	16/08/2016	3.53	4.9	-	1.44	-	1.44	2.09	No odour.
MW11/39	Q4 2016	13/12/2016	3.53	4.908		1.284		1.284	2.246	No odour.
MW11/39	Q2 2017	25/05/2017	3.5	4.913	-	1.329	-	1.329	2.171	Slight chemical odour.
MW11/39	Q2 2018	20/06/2018	-	4.875	-	1.815	-	1.815		Organic soil odour
MW11/39	Q4 2018	6/12/2018	3.530	4.910	-	1.226	-	1.226	2.304	Slight hydrocarbon odour.
MW11/40	Q3 2011	4/10/2011	3.5	5.94	-		-	-	-	
MW11/40	Q2 2016	16/08/2016	3.5	4.9	-	1.097	-	1.097	2.403	No odour.
MW11/41	Q3 2011	4/10/2011	3.55	4.43	-		-	-	-	
MW11/41	Q1 2012	19/03/2012	3.55	4.426	-	1.249	-	1.249	2.301	
MW11/41	Q2 2012	5/06/2012	3.55	4.936	-	1.57	-	1.57	1.98	No odour
MW11/41	Q3 2012	17/09/2012	3.55	4.91	-	1.675	-	1.675	1.875	No odour
MW11/41	Q4 2012	3/12/2012	3.55	4.44	-	1.505	-	1.505	2.045	No odour
MW11/41	Q1 2013	13/03/2013	3.55	4.429	-	1.439	-	1.439	2.111	No odour
MW11/41	Q2 2013	17/06/2013	3.55	4.47	-	1.496	-	1.496	2.054	No odour
MW11/41	Q3 2013	23/09/2013	3.55	4.405	-	1.749	-	1.749	1.801	Surface water in gatic prior to gauging, slight hydrocarbon odour.
MW11/41	Q4 2013	3/12/2013	3.55	4.42	-	1.545	-	1.545	2.005	No odour
MW11/41	Q1 2014	28/03/2014	3.55	4.41	-	1.351	-	1.351	2.199	No odour
MW11/41	Q2 2014	19/05/2014	3.55	4.408	-	1.445	-	1.445	2.105	No odour
MW11/41	Q3 2014	24/09/2014	3.55		-		-	-	-	Well not accessible due to demolition activities
MW11/41	Q4 2014	9/12/2014	3.55	4.41	-	1.372	-	1.372	2.178	No odour
MW11/41	Q2 2016	15/08/2016	3.55	4.4	-	1.83	-	1.83	1.72	No odour.
MW11/41	Q4 2016	13/12/2016	3.55	4.41		1.385		1.385	2.165	No odour.
MW11/41	Q2 2017	23/05/2017	3.55	3.997	-	1.932	-	1.932	1.618	No odour.
MW11/41	Q4 2017	6/12/2017	3.550	3.399	-	1.541	-	1.541	2.009	Hydrogen Sulfide odour.
MW11/41	Q2 2018	21/06/2018	3.55	4.4	-	1.845	-	1.845	1.705	No odour
MW11/41	Q4 2018	4/12/2018	3.550	4.418	-	1.475	-	1.475	2.075	No odour
MW11/42	Q3 2011	4/10/2011	3.44	4.95	-		-	-	-	
MW11/42	Q1 2012	19/03/2012	3.44	4.932	-	1.307	-	1.307	2.133	
MW11/42	Q2 2012	5/06/2012	3.44	4.94	-	1.85	-	1.85	1.59	No odour
MW11/42	Q3 2012	17/09/2012	3.44	4.93	-	1.965	-	1.965	1.475	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW11/42	Q4 2012	3/12/2012	3.44	4.945	-	1.985	-	1.985	1.455	No odour
MW11/42	Q1 2013	13/03/2013	3.44	4.933	-	1.607	-	1.607	1.833	No odour
MW11/42	Q2 2013	17/06/2013	3.44	4.977	-	1.822	-	1.822	1.618	No odour
MW11/42	Q3 2013	23/09/2013	3.44	4.908	-	1.857	-	1.857	1.583	No odour
MW11/42	Q4 2013	2/12/2013	3.44	5.918	-	1.857	-	1.857	1.583	No odour
MW11/42	Q1 2014	28/03/2014	3.44	4.92	-	1.865	-	1.865	1.575	No odour
MW11/42	Q2 2014	19/05/2014	3.44	4.917	-	2.106	-	2.106	1.334	No odour
MW11/42	Q3 2014	24/09/2014	3.44		-		-	-	-	Well not accessible due to demolition activities
MW11/42	Q4 2014	9/12/2014	3.44	4.914	-	1.58	-	1.58	1.86	No odour
MW11/42	Q2 2016	16/08/2016	3.44	4.905	-	1.76	-	1.76	1.68	No odour.
MW11/42	Q4 2016	13/12/2016	3.44	4.92		2.245		2.245	1.195	No odour.
MW11/42	Q2 2017	25/05/2017	3.44	4.922	-	2.143	-	2.143	1.297	-
MW11/42	Q4 2017	6/12/2017	3.440	4.901	-	1.915	-	1.915	1.525	Hydrocarbon odour.
MW11/42	Q2 2018	21/06/2018	3.44	4.905	-	2.234	-	2.234	1.206	Soil organic odour
MW11/42	Q4 2018	4/12/2018	3.440	-	-	1.405	-	1.405	2.035	No odour, previous sleeve caught in well.
MW11/43	Q3 2011	4/10/2011	3.5	5.395	-		-	-	-	
MW11/43	Q4 2011	5/12/2011	3.5	5.366	-	1.59	-	1.59	1.91	
MW11/43	Q2 2016	15/08/2016	3.5	5.365	-	1.475	-	1.475	2.025	Organic odour.
MW11/43	Q4 2016	13/12/2016	3.5	5.365	-	1.745	-	1.745	1.755	
MW11/43	Q4 2017	6/12/2017	3.500	5.333	-	1.493	-	1.493	2.007	No odour, slightly silty bottom.
MW11/44	Q3 2011	7/10/2011	3.41	6.418	-		-	-	-	
MW11/44	Q2 2016	17/08/2016	3.41	6.39	-	2.618	-	2.618	0.792	No odour.
MW11/45	Q3 2011	4/10/2011	3.4	5.915	-		-	-	-	
MW11/45	Q2 2016	17/08/2016	3.4	4.89	-	2.24	-	2.24	1.16	No odour.
MW11/46	Q3 2011	4/10/2011	3.46	4.924	-		-	-	-	
MW11/46	Q2 2012	15/06/2012	3.46	4.192	-	2.155	-	2.155	1.305	No odour
MW11/46	Q3 2012	17/09/2012	3.46	4.9	-	2.845	-	2.845	0.615	No odour
MW11/46	Q1 2013	13/03/2013	3.46	4.915	-	2.27	-	2.27	1.19	No odour
MW11/46	Q2 2013	17/06/2013	3.46	4.93	-	2.324	-	2.324	1.136	No odour
MW11/46	Q3 2013	23/09/2013	3.46	4.871	-	2.7	-	2.7	0.76	No odour
MW11/46	Q4 2013	2/12/2013	3.46	4.867	-	2.062	-	2.062	1.398	No odour
MW11/46	Q1 2014	28/03/2014	3.46	4.91	-	1.81	-	1.81	1.65	Sulphur odour
MW11/46	Q2 2014	19/05/2014	3.46	4.876	-	2.589	-	2.589	0.871	No odour
MW11/46	Q3 2014	23/09/2014	3.46	4.89	-	2.347	-	2.347	1.113	No odour
MW11/46	Q4 2014	3/12/2014	3.46	4.865	-	2.598	-	2.598	0.862	No odour
MW11/46	Q1 2015	10/03/2015	3.46		-	2.522	-	2.522	0.938	No odour.
MW11/46	Q2 2015	22/06/2015	3.46		-	1.85	-	1.85	1.61	No odour
MW11/46	Q4 2015	24/11/2015	3.46	4.87	-	2.17	-	2.17	1.29	No odour.
MW11/46	Q2 2016	17/08/2016	3.46	4.865	-	2.305	-	2.305	1.155	No odour.
MW11/46	Q4 2016	14/12/2016	3.46	4.865		2.926		2.926	0.534	
MW11/46	Q2 2017	26/05/2017	3.46	4.881	-	2.703	-	2.703	0.757	Slight chemical odour.
MW11/46	Q4 2017	6/12/2017	3.460	4.842	-	2.561	-	2.561	0.899	No odour.
MW11/46	Q4 2018	4/12/2018	3.460	4.878	-	2.035	-	2.035	1.425	No odour.
MW11/46	Q2 2018	-	-	-	-	-	-	-	-	Could not locate well
MW12/01	Q1 2012	22/03/2012	6.04	4.893	-		-	-	-	
MW12/01	Q2 2012	4/06/2012	6.04	-	2.783	2.935	0.152	2.8134	3.2266	Hydrocarbon odour. PSH observed on probe but not pick up by IP, verified with bailer
MW12/01	Q3 2012	18/09/2012	6.04	-	3.325	3.34	0.015	3.328	2.712	PSH, strong hydrocarbon odour, Black product
MW12/01	Q4 2012	4/12/2012	6.04			2.785	-	2.785	3.255	Hydrocarbon odour. LNAPL observed on probe
MW12/01	Q1 2013	14/03/2013	6.04		2.52	2.521	0.001	2.5202	3.5198	LNAPL present
MW12/01	Q2 2013	18/06/2013	6.04	-	2.51	-	-	-	-	Dark brown, viscous LNAPL verfied with bailer. Interface probe could not determine depth to water, likely due to LNAPL stuck to sensor
MW12/01	Q3 2013	24/09/2013	6.04		3.155	3.155	0	3.155	2.885	LNAPL present - Highly viscous dark brown tar. Thickness unable to be determined due to tarry substance coating interface probe and bailer.
MW12/01	Q4 2013	2/12/2013	6.04	4.88	1.92	3.065	1.145	2.149	3.891	Thick black product
MW12/01	Q1 2014	28/03/2014	6.04		2.835	2.855	0.02	2.839	3.201	Dark brown viscous LNAPL on interface probe
MW12/01	Q2 2014	20/05/2014	6.04		2.91	2.955	0.045	2.919	3.121	Tar-like LNAPL, dark brown-black. Strong HC odour
MW12/01	Q3 2014	24/09/2014	6.04		3.495	3.77	0.275	3.55	2.49	Dark brown viscous LNAPL
MW12/01	Q4 2014	4/12/2014	6.04	-	2.916	-	-	-	-	Thick black product. LNAPL thickness unable to be determined due to LNAPL coating interface probe
MW12/01	Q1 2015	11/03/2015	6.04		2.575	3.1	0.525	2.68	3.36	Thick black LNAPL. Depth to water estimated due to LNAPL covering probe.
MW12/01	Q2 2015	19/06/2015	6.04		3.145	3.24	0.095	3.164	2.876	Depth to water is approximate, thick black LNAPL
MW12/01	Q4 2015	25/11/2015	6.04		2.91	3.2	0.29	2.968	3.072	LNAPL Present. Thickness approximate due to NAPL viscosity interfering with sensor.
MW12/01		17/08/2016	6.04	-	3.375	-	-	-	-	Strong hydrocarbon odour, black LNAPL, possibly down to 4m (hard to distinguish).

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MW12/01	Q4 2016	12/12/2016	6.04	-	2.795	3.375	0.58	2.911	3.129	Black LNAPL.
MW12/01	Q2 2017	22/05/2017	6.04	-	2.83	-	-	-	-	LNAPL greater than one meter. Thick, black with a strong odour.
MW12/01	Q4 2017	4/12/2017	6.040		2.710	3.330	0.62	2.834	3.206	LNAPL present - thick, black.
MW12/01	Q2 2018	21/06/2018	6.04		2.243	2.918	0.675	2.378	3.662	LNAPL present
MW12/01	Q4 2018	5/12/2018	-	-	1.420	-	-	-	-	Thick black LNAPL.
MW12/02	Q1 2012	23/03/2012	4.01	5.885	-		-	-	-	
MW12/02	Q2 2012	4/06/2012	4.01	5.91	-	0.735	-	0.735	3.275	No odour
MW12/02	Q4 2012	4/12/2012	4.01	5.87	-	0.78	-	0.78	3.23	Slight hydrocarbon odour
MW12/02	Q2 2013	18/06/2013	4.01	4.93	-	0.512	-	0.512	3.498	No odour
MW12/02	Q4 2013	4/12/2013	4.01	4.842	-	0.705	-	0.705	3.305	No odour
MW12/02	Q2 2014	20/05/2014	4.01	5.879	-	0.449	-	0.449	3.561	No odour
MW12/02	Q4 2014	4/12/2014	4.01	5.873	-	0.85	-	0.85	3.16	No odour
MW12/03	Q1 2012	23/03/2012	4.59	4.926	-		-	-	-	
MW12/03	Q2 2012	4/06/2012	4.59	4.942	-	0.87	-	0.87	3.72	Faint plastic like odour
MW12/03	Q3 2012	18/09/2012	4.59	4.83	-	0.905	-	0.905	3.685	No odour
MW12/03	Q4 2012	4/12/2012	4.59	4.92	-	0.8	-	0.8	3.79	Slight hydrocarbon odour
MW12/03	Q1 2013	14/03/2013	4.59	4.939	-	0.64	-	0.64	3.95	Hydrocarbon odour
MW12/03	Q2 2013	18/06/2013	4.59	4.98	-	0.884	-	0.884	3.706	No odour
MW12/03	Q3 2013	24/09/2013	4.59	4.915	-	0.958	-	0.958	3.632	Slight solvent odour
MW12/03	Q4 2013	2/12/2013	4.59	4.91	-	0.872	-	0.872	3.718	Hospital Odour
MW12/03	Q1 2014	28/03/2014	4.59	4.914	-	0.72	-	0.72	3.87	Chemical odour
MW12/03	Q2 2014	20/05/2014	4.59	4.925	-	0.96	-	0.96	3.63	Chemical odour
MW12/03	Q3 2014	24/09/2014	4.59	4.916	-	1.05	-	1.05	3.54	Slight chemical odour
MW12/03	Q4 2014	4/12/2014	4.59	4.914	-	0.754	-	0.754	3.836	Metallic/chemical odour
MW12/03	Q1 2015	11/03/2015	4.59		-	0.709	-	0.709	3.881	No odour.
MW12/03	Q2 2015	19/06/2015	4.59		-	0.925	-	0.925	3.665	Strong chemical odour
MW12/03	Q4 2015	25/11/2015	4.59	4.925	-	0.743	-	0.743	3.847	Solvent/chemical odour.
MW12/03	Q2 2016	16/08/2016	4.59	4.915	-	1.04	-	1.04	3.55	Organic soil odour
MW12/03	Q4 2016	12/12/2016	4.59	4.92	-	0.865	-	0.865	3.725	No odour.
MW12/03	Q4 2017	4/12/2017	4.590	4.863	-	0.884	-	0.884	3.706	Hydrocarbon odour.
MW12/03	Q2 2018	21/06/2018	4.59	4.924	-	1.155	-	1.155	3.435	Chemical odour
MW12/03	Q4 2018	5/12/2018	4.590	4.918	-	0.640	-	0.640	3.950	No odour, grab sample taken.
MW12/04	Q1 2012	22/03/2012	4.17	4.856	-		-	-	-	
MW12/04	Q4 2012	4/12/2012	4.17	4.85	-	0.87	-	0.87	3.3	No odour
MW12/04	Q4 2013	5/12/2013	4.17	4.842	-	0.705	-	0.705	3.465	No odour
MW12/04	Q4 2014	4/12/2014	4.17	4.846	-	0.21	-	0.21	3.96	No odour
MW12/05	Q1 2012	20/03/2012	3.28	3.612	-		-	-	-	
MW12/05	Lot 101 ESA	10/09/2014	3.28	3.565	-	0.85	-	0.85	2.43	
MW12/05	Q4 2018	-	-	-	-	-	-	-	-	Repaved - lost.
MW12/06	Q1 2012	20/03/2012	3.43	5.396	-		-	-	-	
MW12/06	Lot 101 ESA	10/09/2014	3.43	5.383	-	1.4	-	1.4	2.03	
MW12/06	Q4 2018	5/12/2018	3.430	5.416	-	0.900	-	0.900	2.530	Slight hydrocarbon odour.
MW12/07	Q1 2012	20/03/2012	3.35	2.975	-		-	-	-	
MW12/07	Q2 2012	4/06/2012	3.35	2.88	-	0.825	-	0.825	2.525	No odours, olive green silty bottom
MW12/07	Q3 2012	18/09/2012	3.35	2.89	-	1.13	-	1.13	2.22	No odour
MW12/07	Q4 2012	4/12/2012	3.35	2.95	-	1.105	-	1.105	2.245	Silty, no odour
MW12/07	Q1 2013	14/03/2013	3.35	2.839	-	0.9	-	0.9	2.45	No odour
MW12/07	Q2 2013	18/06/2013	3.35	2.866	-	1.019	-	1.019	2.331	Silty, no odour
MW12/07	Q3 2013	24/09/2013	3.35	2.814	-	1.011	-	1.011	2.339	Silty at base, no odour
MW12/07	Q4 2013	2/12/2013	3.35	2.785	-	0.853	-	0.853	2.497	Silty bottom, odour (organic waste)
MW12/07	Q1 2014	28/03/2014	3.35	2.768	-	0.899	-	0.899	2.451	No odour, silty at base
MW12/07	Q2 2014	20/05/2014	3.35	2.758	-	1.183	-	1.183	2.167	No odour, silty base
MW12/07	Lot 101 ESA	10/09/2014	3.35	2.76	-	0.78	-	0.78	2.57	
MW12/07	Q4 2014	4/12/2014	3.35	2.178	-	1.006	-	1.006	2.344	No odour, green silty base
MW12/07	Q1 2015	11/03/2015	3.35		-	1.095	-	1.095	2.255	No odour.
MW12/07	Q2 2015	19/06/2015	3.35		-	0.71	-	0.71	2.64	Strong organic odour, green silty base
MW12/07	Q4 2015	23/11/2015	3.35	2.7	-	0.905	-	0.905	2.445	Organic odour.
MW12/07	Q2 2016	16/08/2016	3.35	2.68	-	0.925	-	0.925	2.425	Organic waste odour, green/grey silty base,.
MW12/07	Q4 2016	12/12/2016	3.35	4.87	-	1.37	-	1.37	1.98	No odour. Silty bottom.
MW12/07	Q2 2017	22/05/2017	3.35	4.881	-	2.703	-	2.703	0.647	No odour.
MW12/07	Q4 2017	5/12/2017	3.350	2.658	-	1.170	-	1.170	2.180	Slight hydrocarbon odour.
MW12/07	Q2 2018	21/06/2018	3.35	2.63	-	1.095	-	1.095	2.255	Slight hydrocarbon odour, degraded
MW12/07	Q4 2018	5/12/2018	3.350	2.664	-	0.484	-	0.484	2.866	Black silty base, no odour.
MW12/08	Q1 2012	20/03/2012	3.66	4.877	-		-	-	-	
MW12/08	Q2 2012	18/06/2012	3.66	4.89	-	1.239	-	1.239	2.421	No odour
MW12/08	Q4 2012	4/12/2012	3.66	4.87	-	1.31	-	1.31	2.35	Hydrocarbon odour
MW12/08	Q2 2013	18/06/2013	3.66		-		-	-	-	Bolt sheared, could not open gatic cover
MW12/08	Q4 2013	2/12/2013	3.66	4.854	-	1.594	-	1.594	2.066	Odour (plastic like) Green / Yellow
MW12/08	Q2 2014	20/05/2014	3.66	4.875	-	1.486	-	1.486	2.174	Hydrocarbon odour
MW12/08	Lot 101 ESA	10/09/2014	3.66	4.87	-	1.325	-	1.325	2.335	
MW12/08	Q4 2014	4/12/2014	3.66	4.87	-	1.338	-	1.338	2.322	Hydrocarbon/citrus odour
MW12/08	Q2 2016	16/08/2016	3.66	4.875	-	1.355	-	1.355	2.305	Metallic odour.
MW12/08	Q4 2016	12/12/2016	3.66	2.883	-	1.246	-	1.246	2.414	
MW12/08	Q2 2017	22/05/2017	3.66	2.67	-	0.82	-	0.82	2.84	No odour.
MW12/08	Q4 2017	5/12/2017	3.660	4.873	-	1.303	-	1.303	2.357	Hydrogen Sulfide odour.
MW12/08	Q2 2018	21/06/2018	3.66	4.877	-	1.343	-	1.343	2.317	Slight hydrocarbon odour, degraded
MW12/08	Q4 2018	5/12/2018	3.660	4.895	-	0.481	-	0.481	3.179	Organic odour.
MW12/09	Q1 2012	20/03/2012	4.3	4.438	-		-	-	-	
MW12/09	Lot 101 ESA	10/09/2014	4.3	4.432	-	1.945	-	1.945	2.355	

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW12/10	Q1 2012	20/03/2012	4.31	4.416	-		-	-	-	
MW12/10	Q2 2012	4/06/2012	4.31	4.47	-	1.055	-	1.055	3.255	No odour
MW12/10	Q4 2012	4/12/2012	4.31	4.4	-	0.75	-	0.75	3.56	No odour
MW12/10	Q2 2013	18/06/2013	4.31	4.481	-	1.324	-	1.324	2.986	No odour, silty bottom
MW12/10	Q4 2013	2/12/2013	4.31	4.392	-	0.998	-	0.998	3.312	No odour
MW12/10	Q2 2014	20/05/2014	4.31	4.446	-	1.307	-	1.307	3.003	No odour, silty base
MW12/10	Lot 101 ESA	10/09/2014	4.31	4.4	-	1.555	-	1.555	2.755	
MW12/10	Q4 2014	4/12/2014	4.31	4.4	-	0.952	-	0.952	3.358	No odour, silty base
MW12/11	Q1 2012	20/03/2012	4.21	4.42	-		-	-	-	
MW12/11	Q2 2012	4/06/2012	4.21	4.45	-	1.515	-	1.515	2.695	No odour
MW12/11	Q4 2012	4/12/2012	4.21	4.42	-	1.355	-	1.355	2.855	No odour
MW12/11	Q2 2013	18/06/2013	4.21	4.505	-	1.779	-	1.779	2.431	No odour
MW12/11	Q4 2013	2/12/2013	4.21	4.419	-	1.591	-	1.591	2.619	No odour
MW12/11	Q2 2014	20/05/2014	4.21	4.42	-	1.763	-	1.763	2.447	No odour
MW12/11	Lot 101 ESA	10/09/2014	4.21	4.415	-	1.75	-	1.75	2.46	
MW12/11	Q4 2014	4/12/2014	4.21	4.42	-	1.335	-	1.335	2.875	No odour
MW12/12	Q1 2012	21/03/2012	2.96	4.13	-		-	-	-	
MW12/12	Q2 2012	5/06/2012	2.96	4.03	-	0.765	-	0.765	2.195	Slight hydrocarbon odour
MW12/12	Q4 2012	3/12/2012	2.96	4.16	-	1.06	-	1.06	1.9	Slight hydrocarbon odour
MW12/12	Q2 2013	17/06/2013	2.96	4.052	-	1.836	-	1.836	1.124	No odour, silty bottom
MW12/12	Q4 2013	3/12/2013	2.96	3.998	-	0.865	-	0.865	2.095	No odour
MW12/12	Q2 2014	19/05/2014	2.96	3.99	-	1.322	-	1.322	1.638	No odour
MW12/12	Q4 2014	3/12/2014	2.96	3.973	-	1.122	-	1.122	1.838	No odour, silty base
MW12/12	Q2 2015	19/06/2015	2.96		-	0.623	-	0.623	2.337	Hydrocarbon odour, black silty base
MW12/12	Q4 2015	24/11/2015	2.96	3.99	-	0.925	-	0.925	2.035	No odour.
MW12/12	Q2 2016	17/08/2016	2.96	4.84	-	0.75	-	0.75	2.21	No odour.
MW12/12	Q4 2016	15/12/2016	2.96	3.96	-	1.478	-	1.478	1.482	No odour. Silty black base.
MW12/12	Q2 2017	23/05/2017	2.96	3.964	-	1.08	-	1.08	1.88	No odour. Slightly silty base.
MW12/12	Q4 2017	5/12/2017	2.960	3.967	-	1.330	-	1.330	1.630	Black silty base, no odour
MW12/12	Q2 2018	20/06/2018	2.96	3.96	-	0.985	-	0.985	1.975	Hydrocarbon odour, grey/silty bottom
MW12/12	Q4 2018	3/12/2018	2.960	3.945	-	0.831	-	0.831	2.129	Black silty base, no odour.
MW12/13	Q1 2012	21/03/2012	3.17	4.846	-		-	-	-	
MW12/13	Q2 2016	17/08/2016	3.17	3.975	-	0.875	-	0.875	2.295	Hydrocarbon odour, ironic precipitate, organic sheen, green/grey silty vase.
MW12/13	Q4 2016	15/12/2016	3.17	4.844	-	1.835	-	1.835	1.335	No odour.
MW12/13	Q2 2017	23/05/2017	3.17	4.839	-	1.412	-	1.412	1.758	No odour.
MW12/13	Q4 2017	5/12/2017	3.170	4.881	-	1.791	-	1.791	1.379	HC odour
MW12/13	Q2 2018	20/06/2018	3.17	4.845	-	0.71	-	0.71	2.46	No odour
MW12/13	Q4 2018	3/12/2018	3.170	4.842	-	0.936	-	0.936	2.234	Slight organic odour.
MW12/14	Q1 2012	21/03/2012	3.34	3.881	-		-	-	-	
MW12/14	Q2 2012	5/06/2012	3.34	3.89	-	0.85	-	0.85	2.49	No odour
MW12/14	Q3 2012	17/09/2012	3.34	3.93	-	1.205	-	1.205	2.135	No odour
MW12/14	Q4 2012	3/12/2012	3.34	3.88	-	1.205	-	1.205	2.135	No odour
MW12/14	Q1 2013	13/03/2013	3.34	3.895	-	1.055	-	1.055	2.285	No odour
MW12/14	Q2 2013	17/06/2013	3.34	3.96	-	0.383	-	0.383	2.957	No odour
MW12/14	Q3 2013	23/09/2013	3.34	3.864	-	1.16	-	1.16	2.18	No odour
MW12/14	Q4 2013	3/12/2013	3.34	3.865	-	1.12	-	1.12	2.22	No odour
MW12/14	Q1 2014	27/03/2014	3.34	3.875	-	1.071	-	1.071	2.269	No odour
MW12/14	Q2 2014	19/05/2014	3.34	3.882	-	1.232	-	1.232	2.108	No odour
MW12/14	Q3 2014	23/09/2014	3.34	3.878	-	1.18	-	1.18	2.16	No odour
MW12/14	Q4 2014	5/12/2014	3.34	3.88	-	1.07	-	1.07	2.27	No odour
MW12/14	Q1 2015	10/03/2015	3.34		-	0.925	-	0.925	2.415	No odour.
MW12/14	Q4 2015	23/11/2015	3.34	3.88	-	0.78	-	0.78	2.56	No odour.
MW12/14	Q2 2016	17/08/2016	3.34	3.88	-	0.495	-	0.495	2.845	No odour.
MW12/14	Q4 2016	15/12/2016	3.34	3.875	-	1.745	-	1.745	1.595	No odour.
MW12/14	Q2 2017	23/05/2017	3.34	3.879	-	0.976	-	0.976	2.364	Solvent chemical odour.
MW12/14	Q4 2017	5/12/2017	3.340	3.871	-	1.620	-	1.620	1.720	HC odour
MW12/14	Q2 2018	21/06/2018	3.34	3.88	-	0.85	-	0.85	2.49	HC odour
MW12/14	Q4 2018	3/12/2018	3.340	3.880	-	0.585	-	0.585	2.755	No odour
MW12/15	Q1 2012	21/03/2012	4.3	5.826	1.284	-	-	-	-	PSH Thickness 0.470 m

ERM

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW12/15	Q2 2012	5/06/2012	4.3	-	2.005	-	-	-	-	Dry, PSH in well, verified with bailer
MW12/15	Q3 2012	17/09/2012	4.3		-	2.33	-	2.33	1.97	PSH, thick oily black product
MW12/15	Q4 2012	3/12/2012	4.3	4.3	2.06	-	-	-	-	LNAPL in well, unknown thickness, viscous black
MW12/15	Q1 2013	13/03/2013	4.3		1.755	2.07	0.315	1.818	2.482	LNAPL, thick oily black appearance
MW12/15	Q2 2013	17/06/2013	4.3		2.295	2.642	0.347	2.3644	1.9356	LNAPL in well, viscous black, total depth not taken
MW12/15	Q3 2013	23/09/2013	4.3		1.28	1.66	0.38	1.356	2.944	LNAPL present, viscous dark brown to black colour
MW12/15	Q4 2013	3/12/2013	4.3		-	1.05	-	1.05	3.25	Water picked up by IP @ 1.505m. Thick Black LNAPL on tape (IP not picking up LNAPL)
MW12/15	Q1 2014	27/03/2014	4.3		2.27	2.285	0.015	2.273	2.027	Viscous, black LNAPL on interface probe
MW12/15	Q2 2014	19/05/2014	4.3	-	2.545	-	-	-	-	Very dark brown viscous LNAPL. Could not obtain SWL due to LNAPL covering probe. Could not confirm with bailer due to damaged well casing.
MW12/15	Q3 2014	23/09/2014	4.3		2.72	3.27	0.55	2.83	1.47	Viscous, dark brown LNAPL
MW12/15	Q4 2014	4/12/2014	4.3		1.835	2.486	0.651	1.9652	2.3348	Viscous black LNAPL
MW12/15	Q1 2015	10/03/2015	4.3		1.73	1.93	0.2	1.77	2.53	LNAPL. Black, viscous.
MW12/15	Q2 2015	19/06/2015	4.3		1.44	2.135	0.695	1.579	2.721	LNAPL - black and thick
MW12/15	Q4 2015	26/11/2015	4.3		1.73	2.23	0.5	1.83	2.47	LNAPL.
MW12/15		17/08/2016	4.3	-	2.185	-	-	-	-	LNAPL thick, black.
MW12/15	Q4 2016	15/12/2016	4.3	-	2.195	-	-	-	-	LNAPL > 25 mm. Bailer could not fit down bent well.
MW12/15	Q2 2017	23/05/2017	4.3	-	2.38	2.96	0.58	2.43916	1.86084	LNAPL present, thick and black. Bailer could not fit down bent well.
MW12/15	Q4 2017	5/12/2017	4.300		2.320	2.830	0.51	2.422	1.878	LNAPL present - thick, black.
MW12/15	Q2 2018	21/06/2018	4.3		2.59	-	-	-	-	LNAPL present - thick, black, degraded. IP unable to detect LNAPL/Water interface
MW12/15	Q4 2018	7/12/2018	-	-	1.970	-	-	-	-	Thick black LNAPL, unable to get depth to water.
MW12/16	Q1 2012	22/03/2012	4	5.905	-		-	-	-	
MW12/16	Q2 2012	6/06/2012	4	5.93	-	1.08	-	1.08	2.92	Chemical odour
MW12/16	Q3 2012	18/09/2012	4	5.92	-	1.71	-	1.71	2.29	Hydrocarbon odour
MW12/16	Q4 2012	3/12/2012	4	5.89	-	1.285	-	1.285	2.715	Strong hydrocarbon odour
MW12/16	Q1 2013	13/03/2013	4		0.855	0.86	0.005	0.856	3.144	LNAPL present
MW12/16	Q2 2013	18/06/2013	4	5.995	-	0.948	-	0.948	3.052	Strong odour (texta)
MW12/16	Q3 2013	24/09/2013	4		1.74	1.743	0.003	1.7406	2.2594	LNAPL present, light brown colour with solvent odour, confirmed with bailer
MW12/16	Q4 2013	3/12/2013	4		-	1.206	-	1.206	2.794	Strong chemical paint thinner odour. 1 mm of light brown LNAPL in bailer
MW12/16	Q1 2014	28/03/2014	4		0.855	0.856	0.001	0.8552	3.1448	Heavy sheen, solvent odour, light brown LNAPL globules in bailer.
MW12/16	Q2 2014	19/05/2014	4		0.922	0.942	0.02	0.926	3.074	Dark brown LNAPL, confirmed with bailer
MW12/16	Q3 2014	24/09/2014	4		-		-	-	-	Well not accessible due to demolition activities
MW12/16	Q4 2014	10/12/2014	4	5.9	1.18	1.2	0.02	1.184	2.816	LNAPL present in well when HydroSleeve retrieved. Not sampled.
MW12/16	Q2 2016	16/08/2016	4		1.675	1.7	0.025	1.68	2.32	Strong hydrocarbon/chemical odour, 2cm of LNAPL present in bailer.
MW12/16	Q4 2016	13/12/2016	4	-	-	1.04	-	1.04	2.96	No measureable LNAPL. Dark brown globules, strong hydrocarbon odour, hydrasleeve not installed.
MW12/16	Q2 2017	23/05/2017	4	-	0.716	0.74	0.024	0.718448	3.281552	LNAPL present. No sample taken.
MW12/16	Q4 2018	4/12/2018	4.000	5.903	-	1.595	-	1.595	2.405	Strong hydrocarbon odour. No measurable NAPL gauged initially. Approximately 15mm of black LNAPL noted in Hydrasleeve when sampled.
MW12/16	Q2 2018	-	-	-	-	-	-	-	-	Could not locate well
MW12/17	Q1 2012	22/03/2012	3.71	5.533	-		-	-	-	
MW12/17	Q2 2012	6/06/2012	3.71	5.44	-	0.935	-	0.935	2.775	
MW12/17	Q4 2012	3/12/2012	3.71	5.48	-	0.615	-	0.615	3.095	Slight hydrocarbon odour
MW12/17	Q2 2013	18/06/2013	3.71	5.489	-	0.912	-	0.912	2.798	Odour (non-petroleum)
MW12/17	Q4 2013	3/12/2013	3.71	5.426	-	0.755	-	0.755	2.955	No odour
MW12/17	Q2 2014	19/05/2014	3.71	5.375	-	0.822	-	0.822	2.888	No odour
MW12/17	Q3 2014	24/09/2014	3.71		-		-	-	-	Well not accessible due to demolition activities
MW12/17	Q4 2014	9/12/2014	3.71	5.35	-	0.548	-	0.548	3.162	No odour
MW12/17	Q2 2016	16/08/2016	3.71	5.35	-	1.085	-	1.085	2.625	No odour.
MW12/17	Q4 2016	13/12/2016	3.71	5.35	-	0.565	-	0.565	3.145	
MW12/18	Q2 2012	6/06/2012	3.62	1.45	-	0.545	-	0.545	3.075	Hydrocarbon odour
MW12/18	Q3 2012	18/09/2012	3.62		-	0.535	-	0.535	3.085	Hydrocarbon odour
MW12/18	Q4 2012	3/12/2012	3.62	1.42	-	0.515	-	0.515	3.105	Slight hydrocarbon odour
MW12/18	Q1 2013	14/03/2013	3.62		0.559	0.6	0.041	0.5672	3.0528	LNAPL present
MW12/18	Q2 2013	18/06/2013	3.62	1.46	-	0.645	-	0.645	2.975	Strong hydrocarbon odour
MW12/18	Q3 2013	24/09/2013	3.62	1.416	-	0.713	-	0.713	2.907	Hydrocarbon odour
MW12/18	Q4 2013	4/12/2013	3.62	1.421	-	0.59	-	0.59	3.03	Hydrocarbon odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW12/18	Q1 2014	28/03/2014	3.62		0.565	0.568	0.003	0.5656	3.0544	LNAPL present, product and heavy sheen in well head and on concrete at surface.
MW12/18	Q2 2014	19/05/2014	3.62		0.674	0.676	0.002	0.6744	2.9456	Dark brown, very thick LNAPL. Confirmed with bailer
MW12/18	Q3 2014	24/09/2014	3.62		-		-	-	-	Well not accessible due to demolition activities
MW12/18	Q4 2014	9/12/2014	3.62	1.42	-	0.517	-	0.517	3.103	Strong hydrocarbon odour, LNAPL globules on interface probe, HydraSleeve not deployed
MW12/18		17/08/2016	3.62		-		-	-	-	Destroyed in explosion.
MW12/19	Q2 2012	6/06/2012	3.62	1.16	-	0.96	-	0.96	2.66	Strong hydrocarbon odour, PSH observed on proble but not picked up IP, yellow/brown in colour. Elevated LEL in well at 51%
MW12/19	Q3 2012	18/09/2012	3.62		0.945	0.95	0.005	0.946	2.674	PSH, strong odour, light brown product
MW12/19	Q4 2012	3/12/2012	3.62	1.105	0.98	1	0.02	0.984	2.636	PSH in well confirmed with bailer, approximate thickness of 0.2m
MW12/19	Q1 2013	14/03/2013	3.62		0.935	1.09	0.155	0.966	2.654	LNAPL present
MW12/19	Q2 2013	18/06/2013	3.62		0.646	1.12	0.474	0.7408	2.8792	LNAPL identified
MW12/19	Q3 2013	24/09/2013	3.62		-		-	-	-	LNAPL present - brown to green hydrocarbon, unable to be gauged due to LEL detections in well head, visually confirmed with bailer.
MW12/19	Q4 2013	4/12/2013	3.62	0.97	0.604	0.97	0.366	0.6772	2.9428	Green-brown LNAPL, strong hydrocarbon odour
MW12/19	Q1 2014	28/03/2014	3.62		0.543	0.553	0.01	0.545	3.075	Green-brown LNAPL present
MW12/19	Q2 2014	19/05/2014	3.62		0.65	0.88	0.23	0.696	2.924	Dark brown LNAPL. Confirmed with bailer
MW12/19	Q3 2014	24/09/2014	3.62		-		-	-	-	Well not accessible due to demolition activities
MW12/19	Q4 2014	9/12/2014	3.62		0.401	0.437	0.036	0.4082	3.2118	Green-brown LNAPL, strong hydrocarbon odour
MW12/20	Q1 2012	21/03/2012	2.94	3.772	-		-	-	-	
MW12/20	Q2 2012	5/06/2012	2.94	3.75	-	1.68	-	1.68	1.26	No odour
MW12/20	Q4 2012	4/12/2012	2.94	3.775	-	1.987	-	1.987	0.953	No odour
MW12/20	Q2 2013	17/06/2013	2.94	3.805	-	1.745	-	1.745	1.195	No odour
MW12/20	Q4 2013	10/12/2013	2.94	3.775	-	1.805	-	1.805	1.135	No odour
MW12/20	Q2 2014	19/05/2014	2.94	3.76	-	1.93	-	1.93	1.01	No odour
MW12/20	Q4 2014	9/12/2014	2.94	3.75	-	1.64	-	1.64	1.3	No odour
MW12/20	Q2 2015	19/06/2015	2.94		-	1.476	-	1.476	1.464	No odour
MW12/20	Q4 2015	26/11/2015	2.94	3.709	-	1.86	-	1.86	1.08	No odour.
MW12/20	Q2 2016	15/08/2016	2.94	3.74	-	1.745	-	1.745	1.195	No odour.
MW12/20	Q4 2016	13/12/2016	2.94	3.742	-	2.207	-	2.207	0.733	
MW12/20	Q2 2017	25/05/2017	2.94	3.746	-	1.91	-	1.91	1.03	Slight hydrocarbon odour, slight organic odour.
MW12/20	Q4 2018	5/12/2018	2.940	3.736	-	1.771	-	1.771	1.169	No odour.
MW12/20	Q2 2018	-	-	-	-	-	-	-	-	Could not locate well
MW12/21	Q1 2012	22/03/2012	2.86	4.115	-		-	-	-	
MW12/21	Q2 2012	6/06/2012	2.86	4.14	-	1.215	-	1.215	1.645	No odour
MW12/21	Q4 2012	4/12/2012	2.86	4.13	-	0.83	-	0.83	2.03	No odour
MW12/21	Q1 2013	13/03/2013	2.86	4.09	-	1.281	-	1.281	1.579	No odour
MW12/21	Q2 2013	17/06/2013	2.86	4.125	-	1.385	-	1.385	1.475	No odour
MW12/21	Q3 2013	24/09/2013	2.86	4.052	-	1.737	-	1.737	1.123	No odour
MW12/21	Q4 2013	2/12/2013	2.86	4.061	-	1.471	-	1.471	1.389	No odour
MW12/21	Q1 2014	28/03/2014	2.86	4.052	-	1.575	-	1.575	1.285	No odour
MW12/21	Q2 2014	19/05/2014	2.86	4.065	-	1.815	-	1.815	1.045	No odour
MW12/21	Q3 2014	24/09/2014	2.86		-		-	-	-	Well not accessible due to demolition activities
MW12/21	Q4 2014	9/12/2014	2.86	4.07	-	1.018	-	1.018	1.842	No odour
MW12/21	Q2 2015	19/06/2015	2.86		-	0.802	-	0.802	2.058	No odour
MW12/21	Q4 2015	26/11/2015	2.86	4.08	-	1.37	-	1.37	1.49	No odour.
MW12/21	Q2 2016	15/08/2016	2.86	4.05	-	1.245	-	1.245	1.615	No odour.
MW12/21	Q4 2016	13/12/2016	2.86	4.065	-	2.08	-	2.08	0.78	
MW12/21	Q2 2017	25/05/2017	2.86	4.061	-	1.725	-	1.725	1.135	No odour.
MW12/21	Q4 2017	6/12/2017	2.860	4.044	-	1.931	-	1.931	0.929	No odour.
MW12/21	Q2 2018	21/06/2018	2.86	-	-	1.745	-	1.745	1.115	No odour.
MW12/21	Q4 2018	4/12/2018	2.860	4.057	-	0.228	-	0.228	2.632	Organic odour.
MW12/22	Q1 2012	21/03/2012	3.37	4.896	-		-	-	-	
MW12/22	Q2 2012	5/06/2012	3.37	4.92	-	2.245	-	2.245	1.125	No odour
MW12/22	Q4 2012	3/12/2012	3.37	4.92	-	2.602	-	2.602	0.768	No odour
MW12/22	Q2 2013	17/06/2013	3.37	4.945	-	2.415	-	2.415	0.955	No odour
MW12/22	Q4 2013	2/12/2013	3.37	4.895	-	2.312	-	2.312	1.058	No odour
MW12/22	Q2 2014	19/05/2014	3.37	4.888	-	2.509	-	2.509	0.861	No odour
MW12/22	Q4 2014	3/12/2014	3.37	4.9	-	2.337	-	2.337	1.033	No odour
MW12/22	Q2 2015	22/06/2015	3.37		-	2.215	-	2.215	1.155	No odour
MW12/22	Q4 2015	24/11/2015	3.37	4.89	-	2.277	-	2.277	1.093	No odour.
MW12/22	Q2 2016	17/08/2016	3.37	4.88	-	2.28	-	2.28	1.09	No odour.
MW12/22	Q4 2016	14/12/2016	3.37	4.872	-	2.46	-	2.46	0.91	No odour.
MW12/22	Q2 2017	26/05/2017	3.37	4.87	-	2.367	-	2.367	1.003	No odour.
MW12/22	Q4 2017	6/12/2017	3.370	2.723	-	2.552	-	2.552	0.818	Organic odour, rootlets on probe.
MW12/22	Q2 2018	21/06/2018	3.37	2.72	-	2.39	-	2.39	0.98	No odour, rootlets

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MW12/22	Q4 2018	6/12/2018	3.370	4.990	-	2.190	-	2.190	1.180	Roots on probe, slight organic odour.
MW12/23	Q1 2012	21/03/2012	2.83	4.651	-		-	-	-	
MW12/23	Q2 2012	5/06/2012	2.83	4.66	-	1.92	-	1.92	0.91	No odour
MW12/23	Q4 2012	4/12/2012	2.83	4.66	-	2.36	-	2.36	0.47	No odour
MW12/23	Q2 2013	17/06/2013	2.83	4.71	-	2.017	-	2.017	0.813	No odour
MW12/23	Q4 2013	2/12/2013	2.83	4.649	-	1.935	-	1.935	0.895	No odour
MW12/23	Q2 2014	19/05/2014	2.83	4.648	-	2.087	-	2.087	0.743	No odour
MW12/23	Q4 2014	4/12/2014	2.83	4.644	-	2.001	-	2.001	0.829	No odour
MW12/23	Q2 2015	22/06/2015	2.83		-	1.785	-	1.785	1.045	No odour
MW12/23	Q4 2015	24/11/2015	2.83	4.65	-	1.992	-	1.992	0.838	No odour.
MW12/23	Q2 2016	17/08/2016	2.83	4.64	-	1.9	-	1.9	0.93	No odour.
MW12/23	Q4 2016	14/12/2016	2.83	4.644	-	2.352	-	2.352	0.478	No odour.
MW12/23	Q2 2017	24/05/2017	2.83	4.65	-	2.15	-	2.15	0.68	Organic odour, rootlets present.
MW12/23	Q4 2017	5/12/2017	2.830	5.640	-	2.155	-	2.155	0.675	No odour.
MW12/23	Q2 2018	19/06/2018	2.83	4.64	-	1.915	-	1.915	0.915	No odour, monument
MW12/23	Q4 2018	4/12/2018	2.830	4.649	-	1.801	-	1.801	1.029	No odour.
MW12/24	Q1 2012	21/03/2012	2.26	3.81	-		-	-	-	
MW12/24	Q2 2012	5/06/2012	2.26	3.82	-	1.43	-	1.43	0.83	No odour
MW12/24	Q4 2012	4/12/2012	2.26	3.795	-	1.83	-	1.83	0.43	No odour, silty bottom
MW12/24	Q2 2013	17/06/2013	2.26	3.83	-	1.112	-	1.112	1.148	No odour, silty bottom
MW12/24	Q4 2013	2/12/2013	2.26	3.763	-	1.251	-	1.251	1.009	No odour, silty bottom
MW12/24	Q2 2014	19/05/2014	2.26	3.868	-	1.723	-	1.723	0.537	No odour, silty base
MW12/24	Q4 2014	4/12/2014	2.26	3.9	-	1.189	-	1.189	1.071	No odour
MW12/24	Q2 2015	22/06/2015	2.26		-	1.12	-	1.12	1.14	No odour, silty base
MW12/24	Q4 2015	24/11/2015	2.26	3.89	-	2.965	-	2.965	-0.705	No odour, silty base.
MW12/24	Q2 2016	16/08/2016	2.26	3.865	-	1.01	-	1.01	1.25	Chemical odour.
MW12/24	Q4 2016	14/12/2016	2.26	3.858	-	1.715	-	1.715	0.545	No odour. Dark brown silty base.
MW12/24	Q4 2017	5/12/2017	2.260	3.566	-	1.691	-	1.691	0.569	Silty bottom, no odour
MW12/24	Q2 2018	19/06/2018	2.26	3.85	-	1.6	-	1.6	0.66	No odour
MW12/24	Q4 2018	4/12/2018	2.260	3.840	-	1.180	-	1.180	1.080	Brown silty base, no odour.
MW12/24	Q2 2017	-	-	-	-	-	-	-	-	Lost under new roadbase.
MW12/25	Q1 2012	22/03/2012	2.75	3.891	-		-	-	-	
MW12/25	Q2 2012	6/06/2012	2.75	3.92	-	1.985	-	1.985	0.765	No odour
MW12/25	Q4 2012	4/12/2012	2.75	3.92	-	2.012	-	2.012	0.738	No odour
MW12/25	Q2 2013	17/06/2013	2.75	3.94	-	2.03	-	2.03	0.72	No odour
MW12/25	Q4 2013	2/12/2013	2.75	3.888	-	1.948	-	1.948	0.802	No odour
MW12/25	Q2 2014	19/05/2014	2.75	3.895	-	1.982	-	1.982	0.768	Slight organic odour
MW12/25	Q4 2014	4/12/2014	2.75	3.89	-	1.957	-	1.957	0.793	No odour
MW12/25	Q2 2015	22/06/2015	2.75		-	1.975	-	1.975	0.775	No odour
MW12/25	Q4 2015	24/11/2015	2.75	3.89	-	2.296	-	2.296	0.454	No odour.
MW12/25	Q2 2016	16/08/2016	2.75	3.89	-	1.97	-	1.97	0.78	No odour.
MW12/25	Q4 2016	14/12/2016	2.75	3.9	-	1.922	-	1.922	0.828	No odour.
MW12/25	Q2 2017	22/05/2017	2.75	3.88	-	1.992	-	1.992	0.758	-
MW12/25	Q4 2017	5/12/2017	2.750	3.877	-	1.351	-	1.351	1.399	Hydrocarbon odour.
MW12/25	Q2 2018	18/06/2018	2.75	3.9	-	1.97	-	1.97	0.78	Hydrocarbon odour.
MW12/25	Q4 2018	3/12/2018	2.750	3.894	-	1.960	-	1.960	0.790	No odour, slightly black silty base.
MW12/26	Q1 2012	21/03/2012	2.33	3.894	-		-	-	-	
MW12/26	Q2 2012	6/06/2012	2.33	3.9	-	0.855	-	0.855	1.475	Hydrocarbon odour
MW12/26	Q3 2012	17/09/2012	2.33	3.9	-	0.81	-	0.81	1.52	Hydrocarbon odour
MW12/26	Q4 2012	3/12/2012	2.33		-	0.88	-	0.88	1.45	Strong hydrocarbon odour, sheen on probe
MW12/26	Q1 2013	13/03/2013	2.33	3.905	-	0.755	-	0.755	1.575	Hydrocarbon odour
MW12/26	Q2 2013	17/06/2013	2.33	3.973	-	1.095	-	1.095	1.235	Strong hydrocarbon odour
MW12/26	Q3 2013	23/09/2013	2.33	3.898	-	0.941	-	0.941	1.389	Hydrocarbon odour
MW12/26	Q4 2013	3/12/2013	2.33	3.884	-	0.722	-	0.722	1.608	Solvent odour
MW12/26	Q1 2014	27/03/2014	2.33	3.905	-	0.997	-	0.997	1.333	Hydrocarbon odour
MW12/26	Q2 2014	19/05/2014	2.33	3.89	-	1.05	-	1.05	1.28	Strong hydrocarbon odour
MW12/26	Q3 2014	23/09/2014	2.33	3.89	-	0.888	-	0.888	1.442	Hydrocarbon odour
MW12/26	Q4 2014	5/12/2014	2.33	3.9	-	0.616	-	0.616	1.714	Hydrocarbon odour, globules of LNAPL on IP tape
MW12/26	Q1 2015	10/03/2015	2.33		-	2.524	-	2.524	-0.194	Strong chemical odour, sheen.
MW12/26	Q2 2015	19/06/2015	2.33		-	0.885	-	0.885	1.445	Strong hydrocarbon / chemical odour
MW12/26	Q4 2015	24/11/2015	2.33		-	0.485	-	0.485	1.845	Hydrocarbon odour. LNAPL on outside of hydrasleeve. Total depth not taken after removal of hydrasleeve.
MW12/26	Q2 2016	17/08/2016	2.33	3.89	-	0.782	-	0.782	1.548	Hydrocarbon odour.
MW12/26	Q4 2016	15/12/2016	2.33	3.89	-	0.932	-	0.932	1.398	Solvent odour and sheen.
MW12/26	Q2 2017	23/05/2017	2.33	3.891	-	0.692	-	0.692	1.638	Strong chemical odour.
MW12/26	Q4 2017	5/12/2017	2.330	3.890	-	0.223	-	0.223	2.107	Hydrocarbon odour.
MW12/26	Q2 2018	20/06/2018	2.33	3.9	-	0.895	-	0.895	1.435	Strong chemical odour
MW12/26	Q4 2018	3/12/2018	2.330	3.900	-	0.340	-	0.340	1.990	Strong hydrocarbon odour.
MW14/01	Lot 101 ESA	15/09/2014	4.46	5.525	-	4.715	-	4.715	-0.255	
MW14/02	Lot 101 ESA	10/09/2014	4.26	5	-	2.264	-	2.264	1.996	
MW14/03	Lot 101 ESA	10/09/2014	4.55	5.235	-	2.015	-	2.015	2.535	
MW14/04	Lot 101 ESA	10/09/2014	4.8	5.15	-	2.185	-	2.185	2.615	
MW14/05	Lot 101 ESA	10/09/2014	4.62	5.212	-	2.515	-	2.515	2.105	
MW14/06	Lot 101 ESA	10/09/2014	4.92	5.175	-	2.322	-	2.322	2.598	
MW18/06	Q4 2018	4/12/2018	4.000	6.913	-	1.730	-	1.730	2.270	Strong hydrocarbon odour.
MW18/23	Q4 2018	3/12/2018	2.420	4.550	-	1.143	-	1.143	1.277	No odour.
MW18/24	Q4 2018	3/12/2018	4.530	-	1.715	1.760	0.045	1.724	2.806	Monument damaged, light brown LNAPL, hydrocarbon/solvent odour.

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW91/1	2008	29/02/2008	4.125	7.057	-	0.786	-	0.786	3.339	
MW91/1	2008	12/11/2008	4.125	7.038	-	0.674	-	0.674	3.451	
MW91/1	2009	16/04/2009	4.125	7.032	-	0.806	-	0.806	3.319	
MW91/1	2009	16/11/2009	4.125	7.02	-	1.055	-	1.055	3.07	
MW91/1	Q2 2010	22/06/2010	4.125	7.036	-	1.483	-	1.483	2.642	
MW91/1	Q4 2010	23/11/2010	4.125	7.045	-	1.257	-	1.257	2.868	
MW91/1	Q2 2011	9/06/2011	4.125	7.029	-	1.384	-	1.384	2.741	
MW91/1	Q4 2011	5/12/2011	4.125	7.01	-	0.977	-	0.977	3.148	No LNAPL - Confirmed with bailer.
MW91/1	Q2 2012	5/06/2012	4.125	7.04	-	1.008	-	1.008	3.117	No odour
MW91/1	Q4 2012	3/12/2012	4.125	7.04	-	1.145	-	1.145	2.98	No odour
MW91/1	Q2 2013	20/06/2013	4.125	7.05	-	1.746	-	1.746	2.379	No odour
MW91/1	Q4 2013	4/12/2013	4.125	7.005	-	0.955	-	0.955	3.17	No odour
MW91/1	Q2 2014	22/05/2014	4.125	7.005	-	1.737	-	1.737	2.388	No odour
MW91/1	Q4 2014	3/12/2014	4.125	7	-	0.975	-	0.975	3.15	No odour
MW91/1	Q4 2016	12/12/2016		5.062	-	0.7	-	0.7		No odour.
MW91/1	Q4 2018	5/12/2018	4.125	6.989	-	0.326	-	0.326	3.799	Black silty base, no odour.
MW91/10	2008	29/02/2008	4.055		-		-	-	-	Not located.
MW91/10	Q4 2013	2/12/2013	4.055	2.485	-	1.244	-	1.244	2.811	No odour
MW91/10	Q4 2014	4/12/2014	4.055		-		-	-	-	Could not access, in demolition area
MW91/11	2008	29/02/2008	4.025	7.55	-	1.442	-	1.442	2.583	
MW91/11	2008	12/11/2008	4.025	7.535	-	1.207	-	1.207	2.818	
MW91/11	2009	16/04/2009	4.025	7.548	-	1.432	-	1.432	2.593	
MW91/11	2009	16/11/2009	4.025	7.539	-	0.743	-	0.743	3.282	
MW91/11	Q2 2010	22/06/2010	4.025	7.542	-	2.076	-	2.076	1.949	
MW91/11	Q4 2010	24/11/2010	4.025	7.542	-	2.076	-	2.076	1.949	
MW91/11	Q2 2011	9/06/2011	4.025	7.548	-	0.965	-	0.965	3.06	
MW91/11	Q4 2011	5/12/2011	4.025	7.55	-	1.599	-	1.599	2.426	
MW91/11	Q2 2012	5/06/2012	4.025	7.567	-	1.556	-	1.556	2.469	No odour
MW91/11	Q4 2012	3/12/2012	4.025	7.57	-	1.76	-	1.76	2.265	No odour
MW91/11	Q2 2013	20/06/2013	4.025	7.575	-	2.335	-	2.335	1.69	No odour
MW91/11	Q4 2013	4/12/2013	4.025	7.542	-	1.512	-	1.512	2.513	No odour
MW91/11	Q2 2014	22/05/2014	4.025	7.545	-	2.363	-	2.363	1.662	No odour
MW91/11	Q4 2014	3/12/2014	4.025	7.534	-	1.6	-	1.6	2.425	No odour
MW91/11	Q4 2018	6/12/2018	4.025	7.585	-	2.000	-	2.000	2.025	No odour.
MW91/2	2008	29/02/2008	3.065	2.51	-	0.389	-	0.389	2.676	
MW91/2	2008	12/11/2008	3.065	2.515	-	0.688	-	0.688	2.377	
MW91/2	2009	16/04/2009	3.065	2.518	-	0.373	-	0.373	2.692	
MW91/2	2009	16/11/2009	3.065	2.514	-	0.598	-	0.598	2.467	
MW91/2	Q2 2010	22/06/2010	3.065	2.506	-	0.699	-	0.699	2.366	
MW91/2	Q4 2010	23/11/2010	3.065	2.524	-	0.53	-	0.53	2.535	
MW91/2	Q2 2011	9/06/2011	3.065	2.53	-	0.479	-	0.479	2.586	
MW91/2	Q4 2011	5/12/2011	3.065	2.533	-	0.484	-	0.484	2.581	
MW91/2	Q2 2012	5/06/2012	3.065	2.534	-	0.327	-	0.327	2.738	No odour
MW91/2	Q4 2012	3/12/2012	3.065	2.545	-	0.55	-	0.55	2.515	No odour
MW91/2	Q2 2013	20/06/2013	3.065	2.575	-	0.54	-	0.54	2.525	No odour
MW91/2	Q4 2013	4/12/2013	3.065	2.515	-	0.384	-	0.384	2.681	No odour
MW91/2	Q2 2014	22/05/2014	3.065	2.525	-	0.776	-	0.776	2.289	No odour
MW91/2	Lot 101 ESA	12/09/2014	3.065	2.511	-	0.478	-	0.478	2.587	
MW91/2	Q4 2014	3/12/2014	3.065	2.503	-	0.53	-	0.53	2.535	No odour
MW91/2	Q2 2015	24/06/2015	3.065		-	0.49	-	0.49	2.575	No odour
MW91/2	Q4 2015	23/11/2015	3.065	2.282	-	1.59	-	1.59	1.475	Organic soil odour, green silty base.
MW91/2	Q2 2016	16/08/2016	3.065	2.5	-	0.595	-	0.595	2.47	No odour.
MW91/2	Q4 2016	12/12/2016	3.065	2.465	-	0.676	-	0.676	2.389	Stinky (unknown).
MW91/2	Q2 2017	22/05/2017	3.065	2.5	-	0.79	-	0.79	2.275	No odour.
MW91/2	Q4 2017	4/12/2017	3.065	2.501	-	0.551	-	0.551	2.514	No odour.
MW91/2	Q2 2018	21/06/2018	3.065	2.5	-	0.495	-	0.495	2.57	Slight hydrocarbon odour
MW91/2	Q4 2018	5/12/2018	3.065	2.477	-	0.527	-	0.527	2.538	No odour.
MW91/3	2008	29/02/2008	3.505	6.06	-	0.588	-	0.588	2.917	
MW91/3	2008	12/11/2008	3.505	6.055	-	0.739	-	0.739	2.766	
MW91/3	2009	16/04/2009	3.505	6.07	-	0.544	-	0.544	2.961	
MW91/3	2009	16/11/2009	3.505	5.058	-	0.577	-	0.577	2.928	
MW91/3	Q2 2010	22/06/2010	3.505	6.063	-	1.038	-	1.038	2.467	
MW91/3	Q4 2010	23/11/2010	3.505	6.881	-	0.676	-	0.676	2.829	
MW91/3	Q2 2011	9/06/2011	3.505	6.073	-	0.891	-	0.891	2.614	
MW91/3	Q4 2011	5/12/2011	3.505	6.065	-	0.529	-	0.529	2.976	
MW91/3	Lot 101 ESA	12/09/2014	3.505	6.06	-	1.015	-	1.015	2.49	
MW91/3	Q4 2016	12/12/2016		6.98	-	1.522	-	1.522		No odour.
MW91/3	Q4 2018	5/12/2018	3.505	6.075	-	1.060	-	1.060	2.445	No odour.
MW91/4	2008	29/02/2008	3.525	6.033	-	0.163	-	0.163	3.362	
MW91/4	2008	12/11/2008	3.525	6.028	-	0.651	-	0.651	2.874	
MW91/4	2009	16/04/2009	3.525	6.035	-	0.402	-	0.402	3.123	
MW91/4	2009	16/11/2009	3.525	6.03	-	0.414	-	0.414	3.111	
MW91/4	Q2 2010	22/06/2010	3.525	6.03	-	0.383	-	0.383	3.142	
MW91/4	Q4 2010	23/11/2010	3.525	6.03	-	0.57	-	0.57	2.955	
MW91/4	Q2 2011	9/06/2011	3.525	6.038	-	0.274	-	0.274	3.251	
MW91/4	Q4 2011	5/12/2011	3.525	6.045	-	0.267	-	0.267	3.258	
MW91/4	Q2 2012	5/06/2012	3.525	6.051	-	0.205	-	0.205	3.32	No odour
MW91/4	Q4 2012	3/12/2012	3.525	6.06	-	0.667	-	0.667	2.858	hydrocarbon odour
MW91/4	Q2 2013	20/06/2013	3.525	6.08	-	0.29	-	0.29	3.235	No odour
MW91/4	Q4 2013	5/12/2013	3.525	6.023	-	0.278	-	0.278	3.247	Hydrocarbon odour
MW91/4	Q2 2014	22/05/2014	3.525	6.03	-	0.802	-	0.802	2.723	Hydrocarbon odour
MW91/4	Lot 101 ESA	12/09/2014	3.525	6.025	-	0.125	-	0.125	3.4	
MW91/4	Q4 2014	3/12/2014	3.525	6.03	-	0.722	-	0.722	2.803	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW91/4	Q4 2016	12/12/2016	-	3.97	-	0.822	-	0.822		No odour. Orange silty base.
MW91/4	Q2 2017	22/05/2017	3.525	3.955	-	0.894	-	0.894	2.631	No odour. Orange silty base.
MW91/4	Q4 2017	4/12/2017	3.525	3.973	-	0.740	-	0.740	2.785	No odour, orange silty base.
MW91/4	Q2 2018	21/06/2018	3.525	3.938	-	0.925	-	0.925	2.6	No odour, brown silty bottom.
MW91/4	Q4 2018	5/12/2018	3.525	3.951	-	0.690	-	0.690	2.835	Light brown salty base, no odour.
MW91/5	2008	29/02/2008	2.585	8.18	-	1.751	-	1.751	0.834	
MW91/5	2008	12/11/2008	2.585	8.172	-	1.984	-	1.984	0.601	
MW91/5	2009	16/04/2009	2.585	8.18	-	1.828	-	1.828	0.757	
MW91/5	2009	16/11/2009	2.585	8.185	-	1.89	-	1.89	0.695	
MW91/5	Q2 2010	22/06/2010	2.585	8.156	-	2.023	-	2.023	0.562	
MW91/5	Q4 2010	23/11/2010	2.585	8.191	-	1.896	-	1.896	0.689	
MW91/5	Q2 2011	9/06/2011	2.585	8.168	-	1.906	-	1.906	0.679	
MW91/5	Q4 2011	5/12/2011	2.585	8.171	-	1.788	-	1.788	0.797	
MW91/5	Q4 2018	-	-	-	-	-	-	-	-	Well gatic broken - unable to access for sampling.
MW91/6	2008	29/02/2008	3.325	8.617	-	2.33	-	2.33	0.995	
MW91/6	2008	12/11/2008	3.325	8.608	-	2.524	-	2.524	0.801	
MW91/6	2009	16/04/2009	3.325	6.61	-	2.395	-	2.395	0.93	
MW91/6	2009	16/11/2009	3.325	8.6	-	2.487	-	2.487	0.838	
MW91/6	Q2 2010	22/06/2010	3.325	8.595	-	2.477	-	2.477	0.848	
MW91/6	Q4 2010	23/11/2010	3.325	8.52	-	2.485	-	2.485	0.84	
MW91/6	Q2 2011	9/06/2011	3.325	8.615	-	2.37	-	2.37	0.955	
MW91/6	Q4 2011	5/12/2011	3.325	8.594	-	2.329	-	2.329	0.996	
MW91/6	Q2 2012	5/06/2012	3.325	8.58	-	2.318	-	2.318	1.007	No odour
MW91/6	Q4 2012	3/12/2012	3.325	8.56	-	2.535	-	2.535	0.79	No odour
MW91/6	Q2 2013	20/06/2013	3.325	8.6	-	2.485	-	2.485	0.84	No odour
MW91/6	Q4 2013	5/12/2013	3.325	8.526	-	2.616	-	2.616	0.709	No odour
MW91/6	Q2 2014	22/05/2014	3.325	8.555	-	2.928	-	2.928	0.397	No odour
MW91/6	Q4 2014	4/12/2014	3.325		-		-	-	-	Could not access, in demolition area
MW91/6	Q4 2015	23/11/2015	3.325	8.54	-	2.655	-	2.655	0.67	No odour.
MW91/6	Q4 2018	-	-	-	-	-	-	-	-	Lost.
MW91/7	2008	29/02/2008	2.687	9.005	-	0.312	-	0.312	2.375	
MW91/7	2008	12/11/2008	2.687	6.044	-	1.559	-	1.559	1.128	
MW91/7	2009	16/04/2009	2.687	9.055	-	0.465	-	0.465	2.222	
MW91/7	2009	16/11/2009	2.687	9.042	-	1.255	-	1.255	1.432	
MW91/7	Q2 2010	22/06/2010	2.687	9.052	-	0.831	-	0.831	1.856	
MW91/7	Q4 2010	23/11/2010	2.687	5.07	-	0.737	-	0.737	1.95	
MW91/7	Q2 2011	9/06/2011	2.687	9.068	-	0.575	-	0.575	2.112	
MW91/7	Q4 2011	5/12/2011	2.687	9.056	-	0.747	-	0.747	1.94	
MW91/7	Q4 2018	-	-	-	-	-	-	-	-	Lost.
MW91/8	2008	29/02/2008	3.395	6.06	-	0.91	-	0.91	2.485	
MW91/8	2008	12/11/2008	3.395	6.053	-	1.444	-	1.444	1.951	
MW91/8	2009	16/04/2009	3.395	6.072	-	0.677	-	0.677	2.718	
MW91/8	2009	16/11/2009	3.395	6.052	-	1.157	-	1.157	2.238	
MW91/8	Q2 2010	22/06/2010	3.395	6.064	-	0.998	-	0.998	2.397	
MW91/8	Q4 2010	23/11/2010	3.395	6.082	-	0.856	-	0.856	2.539	
MW91/8	Q2 2011	9/06/2011	3.395	6.074	-	0.642	-	0.642	2.753	
MW91/8	Q4 2011	5/12/2011	3.395	6.061	-	0.928	-	0.928	2.467	
MW91/8	Q2 2012	5/06/2012	3.395	6.083	-	1.045	-	1.045	2.35	No odour
MW91/8	Q4 2012	3/12/2012	3.395	6.08	-	1.897	-	1.897	1.498	No odour
MW91/8	Q2 2013	20/06/2013	3.395	6.12	-	1.138	-	1.138	2.257	No odour
MW91/8	Q4 2013	5/12/2013	3.395	6.05	-	1.446	-	1.446	1.949	No odour
MW91/8	Q2 2014	22/05/2014	3.395	6.03	-	0.802	-	0.802	2.593	Hydrocarbon odour
MW91/8	Q4 2014	4/12/2014	3.395		-		-	-	-	Could not access, in demolition area
MW91/8	Q4 2017	4/12/2017		6.076	-	2.053	-	2.053	-2.053	No odour
MW91/8	Q4 2018	5/12/2018	3.395	6.074	-	1.010	-	1.010	2.385	No odour.
MW91/8	Q2 2018	-		-	-	-	-	-	-	Could not locate well
MW91/9	2008	29/02/2008	3.255	5.44	-	0.729	-	0.729	2.526	
MW91/9	2008	12/11/2008	3.255	5.448	-	0.402	-	0.402	2.853	
MW91/9	2009	16/04/2009	3.255	5.448	-	0.592	-	0.592	2.663	
MW91/9	2009	16/11/2009	3.255	5.432	-	1.131	-	1.131	2.124	
MW91/9	Q2 2010	22/06/2010	3.255	5.435	-	1.881	-	1.881	1.374	
MW91/9	Q4 2010	23/11/2010	3.255	5.455	-	1.825	-	1.825	1.43	
MW91/9	Q2 2011	9/06/2011	3.255	5.439	-	2.166	-	2.166	1.089	
MW91/9	Q4 2011	5/12/2011	3.255	5.443	-	1.8	-	1.8	1.455	
MW91/9	Q2 2012	5/06/2012	3.255	5.485	-	1.203	-	1.203	2.052	No odour, well under pressure, gauged after levels stabilised
MW91/9	Q4 2012	3/12/2012	3.255		-		-	-	-	Gatic rusted in, unable to be opened
MW91/9	Q2 2013	20/06/2013	3.255	4.94	-	0.675	-	0.675	2.58	No odour
MW91/9	Q4 2013	3/12/2013	3.255	3.292	-	1.588	-	1.588	1.667	No odour, silty at base
MW91/9	Q2 2014	22/05/2014	3.255	4.9	-	0.78	-	0.78	2.475	No odour
MW91/9	Q4 2014	3/12/2014	3.255	4.89	-	0.555	-	0.555	2.7	No odour
MW91/9	Q4 2015	23/11/2015	3.255	4.903	-	0.665	-	0.665	2.59	No odour.
MW91/9	Q4 2016	12/12/2016	-	4.894	0.509	0.509	0	0.509	-	Potential sheen < 1 mm. Slight organic odour.
MW91/9	Q2 2017	22/05/2017	2.553	4.981	-	0.834	-	0.834	1.719	-
MW91/9	Q4 2017	4/12/2017	3.255	4.895	-	0.732	-	0.732	2.523	No odour.
MW91/9	Q2 2018	21/06/2018	3.255	4.5	-	0.83	-	0.83	2.425	No odour.
MW91/9	Q4 2018	5/12/2018	3.255	4.890	-	0.560	-	0.560	2.695	No odour.
MW94/1	2008	21/02/2008	3.62	8.878	-	1.304	-	1.304	2.316	
MW94/1	2008	14/11/2008	3.62	8.869	-	1.82	-	1.82	1.8	
MW94/1	2009	15/04/2009	3.62	8.884	-	0.616	-	0.616	3.004	
MW94/1	2009	16/11/2009	3.62	8.87	-	1.89	-	1.89	1.73	

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MW94/10	2008	20/02/2008	2.585	3.464	-	1.149	-	1.149	1.436	
MW94/10	2008	10/11/2008	2.585	3.46	-	2.19	-	2.19	0.395	
MW94/10	2009	15/04/2009	2.585	3.472	-	1.444	-	1.444	1.141	
MW94/10	2009	16/11/2009	2.585	1.823	-		-	Dry	-	Well Dry
MW94/10	Q2 2010	21/06/2010	2.585	2.328	-	1.261	-	1.261	1.324	
MW94/10	Q4 2010	22/11/2010	2.585	3.478	-	1.489	-	1.489	1.096	
MW94/10	Q2 2011	6/06/2011	2.585	3.462	-	1.084	-	1.084	1.501	
MW94/10	Q4 2011	5/12/2011	2.585	1.772	-	1.244	-	1.244	1.341	
MW94/10	Q2 2012	5/06/2012	2.585	1.56	-		-	Dry	-	Dry
MW94/10	Q4 2012	4/12/2012	2.585	2.085	-		-	Dry	-	Dry
MW94/10	Q2 2013	17/06/2013	2.585	1.99	-	1.295	-	1.295	1.29	No odour
MW94/10	Q4 2013	2/12/2013	2.585	1.943	-		-	Dry	-	Dry
MW94/10	Q2 2014	19/05/2014	2.585	2.232	-		-	Dry	-	Well dry
MW94/10	Q4 2014	4/12/2014	2.585	2.122	-		-	Dry	-	Dry
MW94/10	Q2 2015	22/06/2015	2.585		-	1.156	-	1.156	1.429	No odour
MW94/10	Q4 2015	25/11/2015	2.585	2.23	-	1.892	-	1.892	0.693	No odour.
MW94/10	Q2 2016	16/08/2016	2.585	2.2	-	1.22	-	1.22	1.365	Organic soil odour.
MW94/10	Q4 2016	14/12/2016	2.585	2.195	-	-	-	Dry	-	Dry.
MW94/10	Q2 2017	22/05/2017	2.585	2.18	-	1.952	-	1.952	0.633	No odour.
MW94/10	Q4 2017	5/12/2017	2.585	2.200	-		-	0.000	2.585	Dry - possible roots in well.
MW94/10	Q2 2018	19/06/2018	2.585	2.2	-	1.948	-	1.948	0.637	Slight hydrocarbon odour
MW94/10	Q4 2018	6/12/2018	2.585	2.200	-	1.510	-	1.510	1.075	Organics on probe, organic colour.
MW94/11	2008	20/02/2008	2.687	3.234	-	1.718	-	1.718	0.969	
MW94/11	2008	10/11/2008	2.687	3.232	-	1.8	-	1.8	0.887	
MW94/11	2009	15/04/2009	2.687	3.24	-	0.675	-	0.675	2.012	
MW94/11	2009	16/11/2009	2.687		-		-	-	-	Not Gauged
MW94/11	Q1 2010	31/03/2010	2.687	3.235	-	1.698	-	1.698	0.989	
MW94/11	Q2 2010	21/06/2010	2.687	3.238	-	1.723	-	1.723	0.964	
MW94/11	Q3 2010	22/09/2010	2.687	3.243	-	1.745	-	1.745	0.942	
MW94/11	Q4 2010	22/11/2010	2.687	3.235	-	1.949	-	1.949	0.738	
MW94/11	Q1 2011	8/03/2011	2.687	3.24	-	1.831	-	1.831	0.856	
MW94/11	Q2 2011	6/06/2011	2.687	3.244	-	1.692	-	1.692	0.995	
MW94/11	Q3 2011	6/09/2011	2.687	3.189	-	1.765	-	1.765	0.922	
MW94/11	Q4 2011	5/12/2011	2.687	3.225	-	1.723	-	1.723	0.964	
MW94/11	Q1 2012	19/03/2012	2.687	3.253	-	1.557	-	1.557	1.13	
MW94/11	Q2 2012	5/06/2012	2.687	3.24	-	1.65	-	1.65	1.037	No odour
MW94/11	Q3 2012	17/09/2012	2.687	3.25	-	1.9	-	1.9	0.787	No odour
MW94/11	Q4 2012	4/12/2012	2.687	3.27	-	1.815	-	1.815	0.872	No odour
MW94/11	Q1 2013	13/03/2013	2.687	3.245	-	1.758	-	1.758	0.929	No odour
MW94/11	Q2 2013	17/06/2013	2.687	3.305	-	1.765	-	1.765	0.922	No odour
MW94/11	Q3 2013	23/09/2013	2.687	3.223	-	1.813	-	1.813	0.874	No odour
MW94/11	Q4 2013	2/12/2013	2.687	3.231	-	1.718	-	1.718	0.969	No odour
MW94/11	Q1 2014	28/03/2014	2.687	3.223	-	1.661	-	1.661	1.026	No odour
MW94/11	Q2 2014	19/05/2014	2.687	3.231	-	1.807	-	1.807	0.88	No odour
MW94/11	Q3 2014	24/09/2014	2.687	3.234	-	1.68	-	1.68	1.007	No odour
MW94/11	Q4 2014	4/12/2014	2.687	3.228	-	1.675	-	1.675	1.012	No odour
MW94/11	Q1 2015	10/03/2015	2.687		-	1.789	-	1.789	0.898	Metallic odour.
MW94/11	Q2 2015	22/06/2015	2.687		-	1.67	-	1.67	1.017	No odour
MW94/11	Q4 2015	24/11/2015	2.687	3.24	-	1.72	-	1.72	0.967	No odour.
MW94/11	Q2 2016	16/08/2016	2.687	3.23	-	1.745	-	1.745	0.942	No odour.
MW94/11	Q4 2016	12/12/2016	2.687	3.23	-	1.86	-	1.86	0.827	
MW94/11	Q2 2017	22/05/2017	2.687	3.23	-	1.81	-	1.81	0.877	No odour.
MW94/11	Q4 2017	5/12/2017	2.687	3.234	-	1.361	-	1.361	1.326	Slight hydrocarbon odour.
MW94/11	Q2 2018	19/06/2018	2.687	3.228	-	1.655	-	1.655	1.032	No odour
MW94/11	Q4 2018	4/12/2018	2.678	3.220	-	1.712	-	1.712	0.966	No odour
MW94/12	2008	20/02/2008	2.585	3.83	-	1.91	-	1.91	0.675	
MW94/12	2008	10/11/2008	2.585	3.82	-	1.928	-	1.928	0.657	
MW94/12	2009	15/04/2009	2.585	3.824	-	1.831	-	1.831	0.754	
MW94/12	2009	16/11/2009	2.585	3.81	-	1.934	-	1.934	0.651	
MW94/12	Q1 2010	31/03/2010	2.585	3.828	-	1.894	-	1.894	0.691	
MW94/12	Q2 2010	21/06/2010	2.585	3.82	-	1.942	-	1.942	0.643	
MW94/12	Q3 2010	22/09/2010	2.585	3.81	-	1.962	-	1.962	0.623	
MW94/12	Q4 2010	22/11/2010	2.585	3.816	-	1.915	-	1.915	0.67	
MW94/12	Q1 2011	8/03/2011	2.585	3.845	-	2.083	-	2.083	0.502	
MW94/12	Q2 2011	6/06/2011	2.585	3.692	-	1.878	-	1.878	0.707	
MW94/12	Q3 2011	6/09/2011	2.585	3.784	-	1.975	-	1.975	0.61	
MW94/12	Q4 2011	5/12/2011	2.585	3.834	-	1.857	-	1.857	0.728	
MW94/12	Q1 2012	19/03/2012	2.585	3.383	-	1.756	-	1.756	0.829	
MW94/12	Q2 2012	4/06/2012	2.585	3.85	-	1.87	-	1.87	0.715	No odour
MW94/12	Q3 2012	17/09/2012	2.585	3.83	-	2.085	-	2.085	0.5	No odour
MW94/12	Q4 2012	3/12/2012	2.585	3.82	-	1.965	-	1.965	0.62	No odour
MW94/12	Q1 2013	13/03/2013	2.585	3.845	-	1.92	-	1.92	0.665	No odour
MW94/12	Q2 2013	17/06/2013	2.585	3.895	-	2.009	-	2.009	0.576	No odour
MW94/12	Q3 2013	23/09/2013	2.585	3.81	-	1.976	-	1.976	0.609	Slight organic odour
MW94/12	Q4 2013	2/12/2013	2.585	3.819	-	1.891	-	1.891	0.694	No odour
MW94/12	Q4 2013	3/12/2013	2.585	3.819	-	1.891	-	1.891	0.694	No odour
MW94/12	Q1 2014	27/03/2014	2.585	3.813	-	1.84	-	1.84	0.745	Mild sulphur odour
MW94/12	Q2 2014	19/05/2014	2.585	3.82	-	2.01	-	2.01	0.575	Organic odour
MW94/12	Q3 2014	23/09/2014	2.585	3.812	-	1.942	-	1.942	0.643	No odour
MW94/12	Q4 2014	4/12/2014	2.585	3.82	-	1.828	-	1.828	0.757	No odour
MW94/12	Q1 2015	10/03/2015	2.585		-	1.947	-	1.947	0.638	No odour.
MW94/12	Q2 2015	19/06/2015	2.585		-	1.724	-	1.724	0.861	Hydrocarbon odour
MW94/12	Q4 2015	24/11/2015	2.585	3.81	-	1.875	-	1.875	0.71	No odour.

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW94/12	Q2 2016	16/08/2016	2.585	3.805	-	1.9	-	1.9	0.685	No odour.
MW94/12	Q4 2016	12/12/2016	2.585	3.81	-	1.993	-	1.993	0.592	No odour.
MW94/12	Q2 2017	22/05/2017	2.585	3.182	-	0.989	-	0.989	1.596	No odour.
MW94/12	Q4 2017	5/12/2017	2.585	3.800	-	1.884	-	1.884	0.701	Slight hydrocarbon odour.
MW94/12	Q2 2018	18/06/2018	2.585	3.81	-	1.93	-	1.93	0.655	Strong hydrocarbon odour
MW94/12	Q4 2018	3/12/2018	2.585	-	-	1.835	-	1.835	0.750	No odour.
MW94/15	2008	21/02/2008	2.438	5.975	-	0.176	-	0.176	2.262	
MW94/15	2008	10/11/2008	2.438		-		-	-	-	Water level at toc; well probably filled with surface water runoff.
MW94/15	2009	16/04/2009	2.438	5.958	-	0.29	-	0.29	2.148	
MW94/15	2009	16/11/2009	2.438	5.96	-	0.002	-	0.002	2.436	
MW94/16	2008	21/02/2008	2.908	3.04	0.89	0.892	0.002	0.8904	2.0176	
MW94/16	2008	10/11/2008	2.908	2.9	1.178	1.215	0.037	1.1854	1.7226	
MW94/16	2009	16/04/2009	2.908	2.899	-	1.049	-	1.049	1.859	Approximately 0.015 m LNAPL visible.
MW94/16	2009	16/11/2009	2.908	2.892	-	1.183	-	1.183	1.725	Approximately 0.010 m LNAPL visible
MW94/16	Q2 2010	22/06/2010	2.908	0	1.169	1.208	0.039	1.1768	1.7312	
MW94/16	Q3 2010	22/09/2010	2.908	3.415	-	1.171	-	1.171	1.737	
MW94/16	Q4 2010	26/11/2010	2.908	2.92	-	1.129	-	1.129	1.779	
MW94/16	Q1 2011	8/03/2011	2.908	-	-	-	0.04	-	-	Could not gauge high LEL levels (measure from bailer); PSH thickenss 0.040
MW94/16	Q2 2011	6/06/2011	2.908	2.89	-	1.015	-	1.015	1.893	Approximately 3mm LNAPL observed in bailer.
MW94/16	Q3 2011	6/09/2011	2.908	2.89	-	1.216	-	1.216	1.692	
MW94/16	Q4 2011	6/12/2011	2.908	2.905	-	1.091	-	1.091	1.817	LNAPL on tape - <5mm LNAPL confirmed with bailer, strong suspected hydrocarbon odour.
MW94/16	Q1 2012	20/03/2012	2.908	2.9	0.964	0.97	0.006	0.9652	1.9428	
MW94/16	Q2 2012	6/06/2012	2.908	2.91	1.065	1.07	0.005	1.066	1.842	Strong hydrocarbon odour, PSH detected, verified with bailer, clear/yellow in colour
MW94/16	Q3 2012	17/09/2012	2.908		1.315	1.345	0.03	1.321	1.587	PSH, Hyderocarbon odour
MW94/16	Q4 2012	4/12/2012	2.908	-	-	1.165	-	1.165	1.743	Strong hydrocarbon odour
MW94/16	Q1 2013	13/03/2013	2.908	2.9	-	1.1	-	1.1	1.808	Hydrocarbon odour
MW94/16	Q2 2013	18/06/2013	2.908		1.195	1.234	0.039	1.2028	1.7052	Product detected, verified with bailer
MW94/16	Q3 2013	23/09/2013	2.908		1.212	1.231	0.019	1.2158	1.6922	LNAPL present, yellow-brown, hydrocarbon odour
MW94/16	Q4 2013	4/12/2013	2.908		-	1.112	-	1.112	1.796	Golden yellow colour, globules in bailer forming LNAPL 4mm thickness. Tobacco / mint odour.
MW94/16	Q4 2013	5/12/2013	2.908		1.108	1.112	0.004	1.1088	1.7992	Golden yellow colour, globules in bailer forming LNAPL 4mm thickness. Tabacco / mint odour.
MW94/16	Q1 2014	28/03/2014	2.908		1.004	1.014	0.01	1.006	1.902	Hydrocarbon odour, light brown LNAPL
MW94/16	Q2 2014	22/05/2014	2.908		1.235	1.24	0.005	1.236	1.672	Product detected, verified with bailer
MW94/16	Q3 2014	23/09/2014	2.908	2.89	-	1.152	-	1.152	1.756	Faint hydrocarbon odour
MW94/16	Q4 2014	4/12/2014	2.908	2.9	-	1.056	-	1.056	1.852	No odour
MW94/16	Q1 2015	10/03/2015	2.908		-	1.178	-	1.178	1.73	Strong hydrocarbon odour.
MW94/16	Q2 2015	19/06/2015	2.908		0.947	0.965	0.018	0.9506	1.9574	LNAPL
MW94/16	Q4 2015	23/11/2015	2.908	2.91	-	1.085	-	1.085	1.823	Hydrocarbon odour.
MW94/16		15/08/2016	2.908		-		-	-	-	No Access. Within fenced Lyondell Bassell Demolition Area.
MW94/16	Q4 2016	13/12/2016	-	2.89	-	1.182	-	1.182	-	Strong hydrocarbon odour.
MW94/16	Q2 2017	24/05/2017	2.908	2.899	-	1.195	-	1.195	1.713	Strong hydrocarbon odour.
MW94/16	Q4 2017	5/12/2017	2.908	2.880	-	1.010	-	1.010	1.898	Hydrocarbon odour, oil and sheen on probe.
MW94/16	Q2 2018	20/06/2018	2.908	2.88	-	0.975	-	0.975	1.933	Hydrocarbon odour, sheen and staining on probe.
MW94/16	Q4 2018	4/12/2018	2.908	2.905	-	1.038	-	1.038	1.870	Slight hydrocarbon odour.
MW94/18	2008	21/02/2008	2.888	7	-	0.954	-	0.954	1.934	
MW94/18	2008	10/11/2008	2.888	7.005	-	1.326	-	1.326	1.562	
MW94/18	2009	15/04/2009	2.888	7.012	-	1.063	-	1.063	1.825	
MW94/18	2009	16/11/2009	2.888	6.995	-	1.179	-	1.179	1.709	
MW94/18	Q1 2010	31/03/2010	2.888	7.003	-	1.053	-	1.053	1.835	
MW94/18	Q2 2010	21/06/2010	2.888	7.004	-	1.002	-	1.002	1.886	
MW94/18	Q3 2010	22/09/2010	2.888	6.985	-	1.056	-	1.056	1.832	
MW94/18	Q4 2010	22/11/2010	2.888	7.022	-	1.072	-	1.072	1.816	
MW94/18	Q1 2011	8/03/2011	2.888	6.944	-	1.111	-	1.111	1.777	
MW94/18	Q2 2011	6/06/2011	2.888	7.013	-	1.007	-	1.007	1.881	
MW94/18	Q3 2011	6/09/2011	2.888	6.971	-	1.132	-	1.132	1.756	
MW94/18	Q4 2011	5/12/2011	2.888	7.022	-	1.205	-	1.205	1.683	
MW94/18	Q1 2012	19/03/2012	2.888	7.025	-	1.01	-	1.01	1.878	
MW94/18	Q2 2012	5/06/2012	2.888	7.02	-	1.1	-	1.1	1.788	No odour
MW94/18	Q3 2012	17/09/2012	2.888	7.02	-	1.42	-	1.42	1.468	No odour
MW94/18	Q4 2012	3/12/2012	2.888	7.02	-	1.41	-	1.41	1.478	Silty bottom, no odour
MW94/18	Q1 2013	13/03/2013	2.888	7.015	-	1.235	-	1.235	1.653	No odour
MW94/18	Q2 2013	17/06/2013	2.888	7.08	-	1.159	-	1.159	1.729	No odour
MW94/18	Q3 2013	23/09/2013	2.888	6.191	-	1.637	-	1.637	1.251	No odour
MW94/18	Q4 2013	3/12/2013	2.888	6.989	-	1.326	-	1.326	1.562	Silty bottom, no odour
MW94/18	Q1 2014	27/03/2014	2.888	6.99	-	1.233	-	1.233	1.655	No odour

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MW94/18	Q2 2014	19/05/2014	2.888	7.005	-	1.24	-	1.24	1.648	Slight organic odour
MW94/18	Q3 2014	23/09/2014	2.888	6.99	-	1.419	-	1.419	1.469	No odour
MW94/18	Q4 2014	4/12/2014	2.888	6.985	-	1.497	-	1.497	1.391	No odour, silty base
MW94/18	Q1 2015	10/03/2015	2.888		-	1.22	-	1.22	1.668	No odour.
MW94/18	Q2 2015	22/06/2015	2.888		-	1.068	-	1.068	1.82	No odour
MW94/18	Q4 2015	23/11/2015	2.888	7	-	1.16	-	1.16	1.728	No odour, silty base.
MW94/18	Q2 2016	17/08/2016	2.888	6.995	-	1.03	-	1.03	1.858	No odour, brown silty base.
MW94/18	Q4 2016	13/12/2016	2.888	7	-	1.31	-	1.31	1.578	No odour.
MW94/18	Q2 2017	23/05/2017	2.888	9	-	1.42	-	1.42	1.468	-
MW94/18	Q4 2017	5/12/2017	2.888	6.987	-	1.409	-	1.409	1.479	No odour, silty bottom.
MW94/18	Q2 2018	19/06/2018	2.888	7	-	1.325	-	1.325	1.563	No odour
MW94/18	Q4 2018	3/12/2018	2.888	7.003	-	1.290	-	1.290	1.598	No odour
MW94/2	2008	21/02/2008	4.777	9.005	-	1.86	-	1.86	2.917	
MW94/2	2008	10/11/2008	4.777	8.85	-	1.13	-	1.13	3.647	
MW94/2	2009	15/04/2009	4.777	8.75	-	0.051	-	0.051	4.726	
MW94/2	2009	16/11/2009	4.777	8.699	-	1.023	-	1.023	3.754	
MW94/2	Q2 2010	21/06/2010	4.777	8.648	-	1.658	-	1.658	3.119	Well cap missing.
MW94/2	Q4 2010	22/11/2010	4.777	8.645	-	1.191	-	1.191	3.586	Well cap missing.
MW94/2	Q2 2011	6/06/2011	4.777	8.577	-	1.426	-	1.426	3.351	Well cap missing.
MW94/2	Q4 2011	5/10/2011	4.777	8.533	-	1.13	-	1.13	3.647	
MW94/2	Q4 2011	5/12/2011	4.777	8.842	-	0.603	-	0.603	4.174	
MW94/2	Q2 2012	5/06/2012	4.777	8.665	-	0.685	-	0.685	4.092	No odour
MW94/2	Q4 2012	3/12/2012	4.777	8.63	-		-	-	-	Gatic filled with water, well cap missing, no odour
MW94/2	Q2 2013	17/06/2013	4.777	8.63	-	1.38	-	1.38	3.397	Well cap missing, no odour
MW94/2	Q4 2013	3/12/2013	4.777	8.62	-	1.096	-	1.096	3.681	Silty at base, no odour
MW94/2	Q2 2014	19/05/2014	4.777	8.619	-	1.633	-	1.633	3.144	No odour, silty base
MW94/2	Q4 2014	3/12/2014	4.777	8.59	-	0.552	-	0.552	4.225	No odour, silty base
MW94/2	Q4 2015	26/11/2015	4.777		-		-	-	-	Could not access. Within Active Demolition Exclusion Zone.
MW94/2	Q2 2016	17/08/2016	4.777	8.555	-	1.68	-	1.68	3.097	No odour.
MW94/3	2008	21/02/2008	4.85	10.508	-	0.545	-	0.545	4.305	
MW94/3	2008	10/11/2008	4.85	10.528	-	1.01	-	1.01	3.84	
MW94/3	2009	15/04/2009	4.85	10.534	-	0.355	-	0.355	4.495	
MW94/3	2009	16/11/2009	4.85	10.51	-	0.832	-	0.832	4.018	
MW94/3	Q2 2010	21/06/2010	4.85	10.518	-	0.41	-	0.41	4.44	
MW94/3	Q4 2010	22/11/2010	4.85	10.55	-	0.443	-	0.443	4.407	
MW94/3	Q2 2011	6/06/2011	4.85	10.509	-	0.26	-	0.26	4.59	
MW94/3	Q4 2011	6/10/2011	4.85	10.565	-	0.3	-	0.3	4.55	
MW94/3	Q2 2012	5/06/2012	4.85	10.64	-	0.355	-	0.355	4.495	No odour
MW94/3	Q4 2012	4/12/2012	4.85	10.54	-	1.16	-	1.16	3.69	No odour
MW94/3	Q2 2013	17/06/2013	4.85	10.56	-	0.435	-	0.435	4.415	No odour
MW94/3	Q4 2013	3/12/2013	4.85	10.515	-	0.732	-	0.732	4.118	No odour
MW94/3	Q2 2014	19/05/2014	4.85	10.525	-	1.451	-	1.451	3.399	No odour, silty base
MW94/3	Q4 2014	5/12/2014	4.85	10.64	-	0.68	-	0.68	4.17	No odour
MW94/3	Q2 2016	18/08/2016	4.85	10.51	-	0.325	-	0.325	4.525	No odour.
MW94/3	Q2 2017	26/05/2017	4.171	10.515	-	0.765	-	0.765	3.406	No odour.
MW94/3	Q4 2017	7/12/2017	4.850	10.566	-	0.926	-	0.926	3.924	No odour
MW94/3	Q2 2018	22/06/2018	4.85	10.608	-	1.493	-	1.493	3.357	No odour
MW94/3	Q4 2018	7/12/2018	4.85	10.549	-	0.895	-	0.895	3.955	Black silty base, no odour.
MW94/4	2008	21/02/2008	4.69	9.004	-	0.506	-	0.506	4.184	
MW94/4	2008	10/11/2008	4.69	9.04	-	0.825	-	0.825	3.865	
MW94/4	2009	15/04/2009	4.69	9.047	-	0.471	-	0.471	4.219	
MW94/4	2009	16/11/2009	4.69	9.04	-	0.967	-	0.967	3.723	
MW94/4	Q2 2010	21/06/2010	4.69	9.048	-	0.497	-	0.497	4.193	
MW94/4	Q4 2010	22/11/2010	4.69	9.068	-	0.881	-	0.881	3.809	
MW94/4	Q2 2011	6/06/2011	4.69	8.968	-	0.807	-	0.807	3.883	
MW94/4	Q4 2011	5/10/2011	4.69	9.058	-	0.799	-	0.799	3.891	
MW94/4	Q2 2012	5/06/2012	4.69	9.12	-	0.83	-	0.83	3.86	No odour
MW94/4	Q4 2012	4/12/2012	4.69	5.12	-	1.065	-	1.065	3.625	No odour
MW94/4	Q2 2013	17/06/2013	4.69	9.09	-	0.66	-	0.66	4.03	No odour
MW94/4	Q4 2013	3/12/2013	4.69	9.045	-	0.581	-	0.581	4.109	No odour
MW94/4	Q2 2014	19/05/2014	4.69	9.053	-	0.724	-	0.724	3.966	No odour, silty base
MW94/4	Q4 2014	3/12/2014	4.69	9.015	-	0.751	-	0.751	3.939	No odour
MW94/4	Q2 2016	17/08/2016	4.69	9.4	-	0.6	-	0.6	4.09	No odour.
MW94/4	Q4 2016	14/12/2016	4.69	9.3044		0.735	-	0.735	3.955	No odour.
MW94/4	Q2 2017	25/05/2017	4.69	9.058	-	0.675	-	0.675	4.015	No odour. Orange /brown silty base.
MW94/4	Q4 2017	6/12/2017	4.690	9.030	-	0.701	-	0.701	3.989	Slight hyrdocarbon odour, brown silty base.
MW94/4	Q2 2018	20/06/2018	4.69	9.045	-	0.92	-	0.92	3.77	No odour
MW94/4	Q4 2018	3/12/2018	4.690	9.085	-	0.845	-	0.845	3.845	No odour
MW94/5	2008	21/02/2008	4.477	4.816	-	0.806	-	0.806	3.671	
MW94/5	2008	12/11/2008	4.477	4.48	-	1.425	-	1.425	3.052	
MW94/5	2009	15/04/2009	4.477	4.489	-	1.255	-	1.255	3.222	
MW94/5	2009	16/11/2009	4.477	4.477	-	1.346	-	1.346	3.131	
MW94/5	Q2 2010	22/06/2010	4.477	4.81	-	1.365	-	1.365	3.112	
MW94/5	Q4 2010	22/11/2010	4.477	4.824	-	1.346	-	1.346	3.131	
MW94/5	Q2 2011	7/06/2011	4.477	4.763	-	1.375	-	1.375	3.102	
MW94/5	Q4 2011	7/10/2011	4.477	4.503	-	0.856	-	0.856	3.621	
MW94/6	2008	20/02/2008	2.566	4.004	-	1.004	-	1.004	1.562	
MW94/6	2008	11/11/2008	2.566	3.998	-	1.716	-	1.716	0.85	
MW94/6	2009	15/04/2009	2.566	4	-	1.209	-	1.209	1.357	
MW94/6	2009	16/11/2009	2.566	3.991	-	1.674	-	1.674	0.892	

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MW94/6	Q2 2010	21/06/2010	2.566	3.999	-	1.302	-	1.302	1.264	
MW94/6	Q4 2010	22/11/2010	2.566	4.018	-	1.221	-	1.221	1.345	
MW94/6	Q2 2011	6/06/2011	2.566	4	-	0.995	-	0.995	1.571	
MW94/6	Q4 2011	7/10/2011	2.566	4.008	-	1.241	-	1.241	1.325	
MW94/6	Q2 2012	5/06/2012	2.566	4.02	-	1.595	-	1.595	0.971	No odour
MW94/6	Q4 2012	4/12/2012	2.566	4.02	-	2.095	-	2.095	0.471	No odour
MW94/6	Q2 2013	17/06/2013	2.566	4.06	-	1.483	-	1.483	1.083	No odour
MW94/6	Q4 2013	2/12/2013	2.566	4	-	1.415	-	1.415	1.151	No odour
MW94/6	Q2 2014	19/05/2014	2.566	4	-	1.797	-	1.797	0.769	No odour
MW94/6	Q4 2014	9/12/2014	2.566	2.63	-	0.2	-	0.2	2.366	No odour
MW94/6	Q2 2015	19/06/2015	2.566		-	0.87	-	0.87	1.696	Organic odour
MW94/6	Q4 2015	26/11/2015	2.566	4.01	-	1.343	-	1.343	1.223	Organic soil odour.
MW94/6	Q2 2016	15/08/2016	2.566	3.88	-	1.07	-	1.07	1.496	Organic odour.
MW94/6	Q4 2016	13/12/2016	2.566	3.98	-	2.175	-	2.175	0.391	
MW94/6	Q2 2017	25/05/2017	2.566	3.746	-	1.91	-	1.91	0.656	Slight hydrocarbon odour.
MW94/6	Q4 2017	6/12/2017	2.566	3.989	-	2.322	-	2.322	0.244	Organic odour.
MW94/6	Q4 2018	3/12/2018	2.566	4.000	-	1.205	-	1.205	1.361	No odour
MW94/6	Q2 2018	-	-	-	-	-	-	-	-	Could not locate well
MW94/6X	2008	20/02/2008	3.732	4.915	-	0.992	-	0.992	2.74	
MW94/6X	2008	10/11/2008	3.732	4.93	-	1.265	-	1.265	2.467	
MW94/6X	2009	15/04/2009	3.732	4.941	-	0.938	-	0.938	2.794	
MW94/6X	2009	16/11/2009	3.732	4.916	-	1.223	-	1.223	2.509	
MW94/6X	Q2 2010	23/06/2010	3.732	4.937	-	1.344	-	1.344	2.388	
MW94/6X	Q4 2010	22/11/2010	3.732	4.955	-	1.077	-	1.077	2.655	
MW94/6X	Q2 2011	6/06/2011	3.732	4.941	-	1.053	-	1.053	2.679	
MW94/6X	Q4 2011	6/10/2011	3.732	4.945	-	1.107	-	1.107	2.625	
MW94/6X	Q2 2012	6/06/2012	3.732	4.96	-	1.26	-	1.26	2.472	No odour
MW94/6X	Q4 2012	4/12/2012	3.732	4.96	-	1.485	-	1.485	2.247	No odour
MW94/6X	Q2 2013	17/06/2013	3.732	4.98	-	1.215	-	1.215	2.517	No odour
MW94/6X	Q4 2013	3/12/2013	3.732	4.935	-	1.236	-	1.236	2.496	No odour
MW94/6X	Q2 2014	19/05/2014	3.732	4.945	-	1.515	-	1.515	2.217	No odour
MW94/6X	Q4 2014	4/12/2014	3.732		-		-	-	-	Lost - in demolition area
MW94/7	2008	20/02/2008	2.835	5.885	-	0.814	-	0.814	2.021	
MW94/7	2008	10/11/2008	2.835	5.882	-	1.138	-	1.138	1.697	
MW94/7	2009	15/04/2009	2.835	5.845	-	0.83	-	0.83	2.005	
MW94/7	2009	16/11/2009	2.835	5.875	-	0.87	-	0.87	1.965	
MW94/7	Q1 2010	31/03/2010	2.835	5.895	-	0.849	-	0.849	1.986	
MW94/7	Q2 2010	21/06/2010	2.835	1.433	-	1.292	-	1.292	1.543	
MW94/7	Q2 2010	22/09/2010	2.835	3.281	-	2.096	-	2.096	0.739	
MW94/7	Q4 2010	22/11/2010	2.835	5.895	-	0.847	-	0.847	1.988	
MW94/7	Q1 2011	8/03/2011	2.835	5.892	-	1.033	-	1.033	1.802	
MW94/7	Q2 2011	6/06/2011	2.835	5.893	-	0.784	-	0.784	2.051	
MW94/7	Q3 2011	6/09/2011	2.835	5.83	-	1.019	-	1.019	1.816	
MW94/7	Q4 2011	6/10/2011	2.835	1.43	-	1.235	-	1.235	1.6	
MW94/7	Q2 2012	5/06/2012	2.835	1.61	-	1.23	-	1.23	1.605	No odour
MW94/7	Q3 2012	17/09/2012	2.835	0.65	-	0.645	-	0.645	2.19	No odour
MW94/7	Q4 2012	4/12/2012	2.835	1.53	-		-	Dry	-	Dry
MW94/7	Q1 2013	13/03/2013	2.835	1.602	-	1.33	-	1.33	1.505	No odour
MW94/7	Q2 2013	17/06/2013	2.835	1.615	-	1.309	-	1.309	1.526	Gatic damaged, no odour
MW94/7	Q3 2013	24/09/2013	2.835	1.591	-	1.566	-	1.566	1.269	No odour
MW94/7	Q4 2013	2/12/2013	2.835	1.591	-	1.35	-	1.35	1.485	No odour
MW94/7	Q1 2014	28/03/2014	2.835	1.554	-	1.148	-	1.148	1.687	No odour
MW94/7	Q2 2014	19/05/2014	2.835	1.585	-	1.58	-	1.58	1.255	No odour
MW94/7	Q3 2014	24/09/2014	2.835		-		-	-	-	Well not accessible due to demolition activities
MW94/7	Q4 2014	9/12/2014	2.835	1.45	-	1.122	-	1.122	1.713	Hydrocarbon odour
MW94/7	Q4 2015	26/11/2015	2.835	1.55	-	1.55	-	Dry	-	Well dry.
MW94/8	2008	20/02/2008	3.228	3.494	-	2.217	-	2.217	1.011	
MW94/8	2008	10/11/2008	3.228	3.485	-	2.744	-	2.744	0.484	
MW94/8	2009	15/04/2009	3.228	3.488	-	2.235	-	2.235	0.993	
MW94/8	2009	16/11/2009	3.228	3.468	-	2.459	-	2.459	0.769	
MW94/8	Q1 2010	31/03/2010	3.228	3.48	-	2.542	-	2.542	0.686	
MW94/8	Q2 2010	23/06/2010	3.228	3.965	-	2.264	-	2.264	0.964	
MW94/8	Q3 2010	22/09/2010	3.228	3.475	-	2.424	-	2.424	0.804	
MW94/8	Q4 2010	22/11/2010	3.228	3.482	-	2.295	-	2.295	0.933	
MW94/8	Q1 2011	8/03/2011	3.228	3.395	-	2.703	-	2.703	0.525	
MW94/8	Q2 2011	6/06/2011	3.228	3.45	-	2.186	-	2.186	1.042	
MW94/8	Q3 2011	6/09/2011	3.228	3.413	-	2.376	-	2.376	0.852	
MW94/8	Q4 2011	6/10/2011	3.228	3.427	-	2.263	-	2.263	0.965	
MW94/8	Q2 2012	5/06/2012	3.228	3.43	-	2.24	-	2.24	0.988	No odour
MW94/8	Q4 2012	3/12/2012	3.228	3.43	-	2.935	-	2.935	0.293	No odour
MW94/8	Q2 2013	17/06/2013	3.228	3.445	-	2.32	-	2.32	0.908	No odour
MW94/8	Q4 2013	2/12/2013	3.228	3.395	-	2.268	-	2.268	0.96	No odour
MW94/8	Q2 2014	19/05/2014	3.228	3.385	-	2.504	-	2.504	0.724	Slight chemical odour
MW94/8	Q4 2014	3/12/2014	3.228	3.37	-	2.518	-	2.518	0.71	Faint chemical odour
MW94/8	Q2 2015	22/06/2015	3.228		-	2.19	-	2.19	1.038	-
MW94/8	Q4 2015	24/11/2015	3.228	3.36	-	2.353	-	2.353	0.875	Faint chemical odour.
MW94/8	Q2 2016	17/08/2016	3.228	3.345	-	2.295	-	2.295	0.933	Slight chemical odour, silty base.
MW94/8	Q4 2016	14/12/2016	3.228	3.36	-	2.778	-	2.778	0.45	
MW94/8	Q2 2017	25/05/2017	3.228	3.34	-	2.518	-	2.518	0.71	Slight chemical odour.
MW94/8	Q4 2017	6/12/2017	3.228	3.355	-	2.211	-	2.211	1.017	Organic odour.
MW94/8	Q2 2018	21/06/2018	3.228	3.928	-	2.2	-	2.2	1.028	Organic soil odour
MW94/8	Q4 2018	6/12/2018	3.228	3.337	-	2.434	-	2.434	0.794	No odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW95/10	2008	20/02/2008	4.555	10.555	-	0.631	-	0.631	3.924	
MW95/10	2008	11/11/2008	4.555	10.565	-	0.905	-	0.905	3.65	
MW95/10	2009	22/04/2009	4.555	10.575	-	0.695	-	0.695	3.86	
MW95/10	2009	16/11/2009	4.555	10.549	-	0.819	-	0.819	3.736	
MW95/10	Q2 2010	21/06/2010	4.555	10.576	-	0.844	-	0.844	3.711	
MW95/10	Q4 2010	22/11/2010	4.555	10.596	-	0.831	-	0.831	3.724	
MW95/10	Q2 2011	7/06/2011	4.555	10.589	-	0.857	-	0.857	3.698	
MW95/10	Q2 2012	4/06/2012	4.555	10.6	-	0.875	-	0.875	3.68	No odour
MW95/10	Q4 2012	4/12/2012	4.555	10.56	-	1.095	-	1.095	3.46	No odour
MW95/10	Q2 2013	19/06/2013	4.555	10.6	-	0.8	-	0.8	3.755	No odour
MW95/10	Q4 2013	5/12/2013	4.555	6.558	-	1.095	-	1.095	3.46	No odour
MW95/10	Q2 2014	20/05/2014	4.555	10.57	-	0.823	-	0.823	3.732	No odour
MW95/10	Q4 2014	4/12/2014	4.555	10.565	-	1.178	-	1.178	3.377	No odour
MW95/11	2008	21/02/2008	5.21	10.635	-	0.518	-	0.518	4.692	
MW95/11	2008	11/11/2008	5.21	10.53	-	0.72	-	0.72	4.49	
MW95/11	2009	15/04/2009	5.21	9.95	-	0.574	-	0.574	4.636	
MW95/11	2009	16/11/2009	5.21	10.54	-	0.671	-	0.671	4.539	
MW95/12	2008	21/02/2008	5.49	9.065	-	0.705	-	0.705	4.785	
MW95/12	2008	11/11/2008	5.49	9.07	-	0.877	-	0.877	4.613	
MW95/12	2009	15/04/2009	5.49	9.079	-	0.755	-	0.755	4.735	
MW95/12	2009	16/11/2009	5.49	9.07	-	0.766	-	0.766	4.724	
MW95/13	2008	21/02/2008	2.945	3.651	-	0.807	-	0.807	2.138	
MW95/13	2008	11/11/2008	2.945	3.605	-	0.986	-	0.986	1.959	
MW95/13	2009	15/04/2009	2.945	3.579	-	0.798	-	0.798	2.147	
MW95/13	2009	16/11/2009	2.945	3.56	-	0.956	-	0.956	1.989	
MW95/13	Q2 2010	21/06/2010	2.945	3.555	-	0.899	-	0.899	2.046	
MW95/13	Q4 2010	22/11/2010	2.945	3.572	-	0.844	-	0.844	2.101	Strong solvent odour.
MW95/13	Q2 2011	6/06/2011	2.945	3.562	-	0.77	-	0.77	2.175	Strong solvent odour.
MW95/13	Q4 2011	5/12/2011	2.945	3.54	-	0.803	-	0.803	2.142	Solvent odour.
MW95/13	Q2 2012	4/06/2012	2.945	3.29	-	1.755	-	1.755	1.19	Hydrocarbon odour
MW95/13	Q4 2012	4/12/2012	2.945	3.565	-	1.04	-	1.04	1.905	Potential solvent odour, silty bottom
MW95/13	Q2 2013	17/06/2013	2.945	3.612	-	0.91	-	0.91	2.035	Solvent odour
MW95/13	Q4 2013	3/12/2013	2.945	3.535	-	0.88	-	0.88	2.065	Solvent odour, silty bottom.
MW95/13	Q2 2014	19/05/2014	2.945	3.528	-	0.967	-	0.967	1.978	Strong solvent odour
MW95/13	Q4 2014	4/12/2014	2.945	3.525	-	0.861	-	0.861	2.084	Strong chemical odour
MW95/13	Q2 2015	19/06/2015	2.945		-	0.803	-	0.803	2.142	Chemical odour
MW95/13	Q4 2015	24/11/2015	2.945	3.535	-	0.84	-	0.84	2.105	Solvent odour, grey silty base.
MW95/13	Q2 2016	17/08/2016	2.945	3.51	-	0.865	-	0.865	2.08	Chemical odour, dark grey silty base.
MW95/13	Q4 2016	13/12/2016	2.945	3.48	-	0.966	-	0.966	1.979	Chemical odour, silty base.
MW95/13	Q2 2017	23/05/2017	2.945	3.505	-	0.969	-	0.969	1.976	Chemical odour. Grey silty base.
MW95/13	Q4 2017	5/12/2017	2.945	3.460	-	0.930	-	0.930	2.015	Solvent odour, grey silty bottom.
MW95/13	Q2 2018	19/06/2018	2.945	3.343	-	0.63	-	0.63	2.315	Strong hydrocarbon odour odour, grey silty bottom.
MW95/13	Q4 2018	3/12/2018	2.945	3.345	-	0.815	-	0.815	2.130	Grey silty base, strong chemical odour.
MW95/14	2008	21/02/2008	3.015	3.619	-	0.423	-	0.423	2.592	
MW95/14	2008	11/11/2008	3.015	3.618	-	0.635	-	0.635	2.38	
MW95/14	2009	16/04/2009	3.015	3.625	-	0.424	-	0.424	2.591	
MW95/14	2009	16/11/2009	3.015	3.613	-	0.596	-	0.596	2.419	
MW95/14	Q1 2010	31/03/2010	3.015	3.623	-	0.583	-	0.583	2.432	
MW95/14	Q2 2010	21/06/2010	3.015	3.625	-	0.55	-	0.55	2.465	
MW95/14	Q3 2010	22/09/2010	3.015	3.619	-	0.688	-	0.688	2.327	
MW95/14	Q4 2010	22/11/2010	3.015	3.632	-	0.526	-	0.526	2.489	
MW95/14	Q1 2011	8/03/2011	3.015	2.744	-	1.087	-	1.087	1.928	
MW95/14	Q2 2011	6/06/2011	3.015	3.625	-	0.476	-	0.476	2.539	
MW95/14	Q3 2011	6/09/2011	3.015	3.63	-	0.611	-	0.611	2.404	
MW95/14	Q4 2011	5/12/2011	3.015	3.619	-	0.536	-	0.536	2.479	Suspected hydrocarbon odour.
MW95/14	Q1 2012	19/03/2012	3.015	3.641	-	0.324	-	0.324	2.691	
MW95/14	Q2 2012	4/06/2012	3.015	3.64	-	0.56	-	0.56	2.455	Hydrocarbon odour
MW95/14	Q3 2012	17/09/2012	3.015		0.737	0.9	0.163	0.7696	2.2454	PSH, pale yellow, hydrocarbon odour
MW95/14	Q4 2012	4/12/2012	3.015	-	0.77	0.772	0.002	0.7704	2.2446	LNAPL present
MW95/14	Q1 2013	13/03/2013	3.015	3.64	-	0.489	-	0.489	2.526	Strong hydrocarbon odour
MW95/14	Q2 2013	17/06/2013	3.015	3.698	-	0.61	-	0.61	2.405	Hydrocarbon odour
MW95/14	Q3 2013	23/09/2013	3.015	3.64	0.705	0.736	0.031	0.7112	2.3038	LNAPL present, brown, hydrocarbon odour
MW95/14	Q4 2013	3/12/2013	3.015	3.607	-	0.544	-	0.544	2.471	Strong Hydrocarbon odour, oily residue on tape
MW95/14	Q1 2014	27/03/2014	3.015	3.64	-	0.572	-	0.572	2.443	Strong hydrocarbon odour and sheen
MW95/14	Q2 2014	19/05/2014	3.015		0.69	0.715	0.025	0.695	2.32	LNAPL, dark brown, confirmed with bailer
MW95/14	Q3 2014	23/09/2014	3.015		0.581	0.584	0.003	0.5816	2.4334	Pale brown LNAPL noted. Total depth not taken.
MW95/14	Q4 2014	4/12/2014	3.015	3.607	0.607	0.62	0.013	0.6096	2.4054	Light brown LNAPl observed on IP, strong hydrocarbon odour
MW95/14	Q1 2015	10/03/2015	3.015		-	0.587	-	0.587	2.428	Strong hydrocarbon odour, sheen on probe.
MW95/14	Q2 2015	22/06/2015	3.015		0.51	0.52	0.01	0.512	2.503	LNAPL present, strong hydrocarbon odour
MW95/14	Q4 2015	26/11/2015	3.015	2.67	-	0.485	-	0.485	2.53	Strong hydrocarbon odour, gatic destroyed, no cap on well, not sampled.
MW95/14		15/08/2016	3.015		-		-	-	-	No Access. Within fenced Liberty Works Area

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW95/15	2008	21/02/2008	3.585	3.309	-	1.776	-	1.776	1.809	
MW95/15	2008	11/11/2008	3.585	3.3	-	1.74	-	1.74	1.845	Oil absorbent sock removed.
MW95/15	2009	15/04/2009	3.585	3.299	-	1.765	-	1.765	1.82	
MW95/15	2009	16/11/2009	3.585	3.274	-	1.785	-	1.785	1.8	
MW95/15	Q2 2010	21/06/2010	3.585	3.291	-	1.814	-	1.814	1.771	
MW95/15	Q4 2010	22/11/2010	3.585	3.314	-	1.801	-	1.801	1.784	Hydrocarbon odour.
MW95/15	Q2 2011	6/06/2011	3.585	3.285	-	1.687	-	1.687	1.898	
MW95/15	Q4 2011	5/12/2011	3.585	3.305	-	1.79	-	1.79	1.795	Suspected hydrocarbon odour.
MW95/15	Q2 2012	4/06/2012	3.585	3.56	-	0.905	-	0.905	2.68	No odour
MW95/15	Q4 2012	4/12/2012	3.585	3.13	-	1.86	-	1.86	1.725	Hydrocarbon odour
MW95/15	Q2 2013	17/06/2013	3.585	3.357	-	1.882	-	1.882	1.703	Slight hdrocarbon odour, silty bottom
MW95/15	Q4 2013	3/12/2013	3.585	3.269	-	1.777	-	1.777	1.808	Silty bottom , hydrocarbon odour
MW95/15	Q2 2014	19/05/2014	3.585	3.284	-	1.839	-	1.839	1.746	Strong hydrocarbon odour
MW95/15	Q4 2014	4/12/2014	3.585	3.28	-	1.692	-	1.692	1.893	Strong chemical odour, silty base
MW95/15	Q2 2015	22/06/2015	3.585		-	1.705	-	1.705	1.88	Hydrocarbon odour
MW95/15	Q4 2015	23/11/2015	3.585	3.285	-	1.785	-	1.785	1.8	Chemical odour.
MW95/15	Q2 2016	17/08/2016	3.585	3.275	-	1.81	-	1.81	1.775	Hydrocarbon odour, black silty base.
MW95/16	2008	21/02/2008	4.14	8.36	-	1.25	-	1.25	2.89	
MW95/16	2008	11/11/2008	4.14	8.369	-	1.399	-	1.399	2.741	
MW95/16	2009	15/04/2009	4.14	8.356	-	1.145	-	1.145	2.995	
MW95/16	2009	16/11/2009	4.14	8.325	-	1.52	-	1.52	2.62	
MW95/16	Q2 2010	22/06/2010	4.14	8.363	-	1.47	-	1.47	2.67	
MW95/16	Q4 2010	22/11/2010	4.14	8.36	-	1.541	-	1.541	2.599	
MW95/16	Q2 2011	6/06/2011	4.14	8.38	-	0.434	-	0.434	3.706	
MW95/16	Q4 2011	5/12/2011	4.14	8.347	-	1.45	-	1.45	2.69	
MW95/16	Q4 2013	4/12/2013	4.14	8.333	-	1.552	-	1.552	2.588	Silty bottom, no odour
MW95/16	Q4 2014	4/12/2014	4.14		-		-	-	-	Well underneath approximately 30 cm of water. Not gauged or sampled
MW95/4	2008	21/02/2008	3.025	3.692	-	0.805	-	0.805	2.22	
MW95/4	2008	11/11/2008	3.025	3.67	-	1.015	-	1.015	2.01	
MW95/4	2009	16/04/2009	3.025	3.673	-	0.723	-	0.723	2.302	
MW95/4	2009	16/11/2009	3.025	3.636	-	0.956	-	0.956	2.069	
MW95/4	Q1 2010	31/03/2010	3.025	3.636	-	0.75	-	0.75	2.275	
MW95/4	Q2 2010	21/06/2010	3.025	3.665	-	0.945	-	0.945	2.08	
MW95/4	Q3 2010	22/09/2010	3.025	3.615	-	0.958	-	0.958	2.067	
MW95/4	Q4 2010	22/11/2010	3.025	3.658	-	0.853	-	0.853	2.172	
MW95/4	Q1 2011	8/03/2011	3.025	3.641	-	1.085	-	1.085	1.94	
MW95/4	Q2 2011	6/06/2011	3.025	3.683	-	0.761	-	0.761	2.264	
MW95/4	Q3 2011	6/09/2011	3.025	3.65	-	0.987	-	0.987	2.038	
MW95/4	Q4 2011	5/12/2011	3.025	3.672	-	0.799	-	0.799	2.226	Solvent odour.
MW95/4	Q1 2012	19/03/2012	3.025	3.708	-	0.639	-	0.639	2.386	
MW95/4	Q2 2012	4/06/2012	3.025	3.66	-	0.825	-	0.825	2.2	No odour
MW95/4	Q3 2012	17/09/2012	3.025		-	1.145	-	1.145	1.88	Chemical odour
MW95/4	Q4 2012	4/12/2012	3.025	3.7	-	0.1	-	0.1	2.925	Strong solvent odour
MW95/4	Q1 2013	13/03/2013	3.025	3.69	-	0.85	-	0.85	2.175	Chemical odour
MW95/4	Q2 2013	17/06/2013	3.025	3.755	-	0.923	-	0.923	2.102	Silty bottom
MW95/4	Q3 2013	23/09/2013	3.025	3.66	-	1.025	-	1.025	2	Strong chemical (solvent) odour
MW95/4	Q4 2013	3/12/2013	3.025	3.672	-	0.848	-	0.848	2.177	Respirator worn
MW95/4	Q1 2014	27/03/2014	3.025	3.664	-	0.785	-	0.785	2.24	Strong solvent odour
MW95/4	Q2 2014	19/05/2014	3.025	3.67	-	1.014	-	1.014	2.011	Strong solvent odour
MW95/4	Q3 2014	23/09/2014	3.025	3.665	-	0.932	-	0.932	2.093	Strong solvent odour
MW95/4	Q4 2014	4/12/2014	3.025	3.67	-	0.858	-	0.858	2.167	Strong chemical odour
MW95/4	Q1 2015	10/03/2015	3.025		-	0.94	-	0.94	2.085	Strong solvent odour.
MW95/4	Q2 2015	19/06/2015	3.025		-	0.755	-	0.755	2.27	Strong chemical odour
MW95/4	Q4 2015	24/11/2015	3.025	3.65	-	0.87	-	0.87	2.155	Solvent odour.
MW95/4	Q2 2016	17/08/2016	3.025	3.635	-	0.92	-	0.92	2.105	Chemical odour, iron precipitate.
MW95/4	Q4 2016	13/12/2016	3.025	3.65	-	1.01	-	1.01	2.015	Chemical odour.
MW95/4	Q2 2017	23/05/2017	3.025	3.65	-	1.02	-	1.02	2.005	Strong chemical odour.
MW95/4	Q4 2017	5/12/2017	3.025	3.645	-	0.916	-	0.916	2.109	Strong solvent odour.
MW95/4	Q4 2018	3/12/2018	3.025	3.650	-	0.834	-	0.834	2.191	Orange silty base, strong chemical odour.
MW95/4	Q2 2018	-	-	-	-	-	-	-	-	Could not access well - steel pipes covering well
MW95/6	2008	28/02/2008	3.29	2.187	-	0.005	-	0.005	3.285	
MW95/6	2008	11/11/2008	3.29		-		-	-	-	Well screen installed above ground surface.
MW95/7	2008	21/02/2008	2.305	1.645	-	0.25	-	0.25	2.055	
MW95/7	2008	10/11/2008	2.305	1.645	-	0.367	-	0.367	1.938	
MW95/7	2009	15/04/2009	2.305	1.644	-	0.26	-	0.26	2.045	
MW95/7	2009	16/11/2009	2.305	1.623	-	0.33	-	0.33	1.975	
MW95/7	Q2 2010	21/06/2010	2.305	1.627	-	0.327	-	0.327	1.978	
MW95/7	Q4 2010	22/11/2010	2.305	1.649	-	0.295	-	0.295	2.01	
MW95/7	Q2 2011	6/06/2011	2.305	1.625	-	0.27	-	0.27	2.035	
MW95/7	Q4 2011	5/12/2011	2.305	1.658	-	0.268	-	0.268	2.037	Suspected hydrocarbon odour.
MW95/7	Q2 2012	5/06/2012	2.305	1.66	-	0.3	-	0.3	2.005	Hydrocarbon odour
MW95/7	Q4 2012	3/12/2012	2.305	2.665	-	0.36	-	0.36	1.945	No odour
MW95/7	Q2 2013	17/06/2013	2.305	1.705	-	0.323	-	0.323	1.982	Faint hydrocarbon odour, black silty bottom
MW95/7	Q4 2013	3/12/2013	2.305	1.695	-	0.294	-	0.294	2.011	Silty bottom , hydrocarbon odour
MW95/7	Q2 2014	19/05/2014	2.305	1.64	-	0.37	-	0.37	1.935	No odour
MW95/7	Q4 2014	4/12/2014	2.305	1.635	-	0.22	-	0.22	2.085	Hydrocarbon odour, sheen on water
MW95/7	Q2 2015	22/06/2015	2.305		-	0.28	-	0.28	2.025	Hydrocarbon odour
MW95/7	Q4 2015	23/11/2015	2.305	1.62	-	0.275	-	0.275	2.03	Hydrocarbon odour.
MW95/7	Q2 2016	16/08/2016	2.305	3.305	-	2.345	-	2.345	-0.04	No odour.

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW95/7	Q4 2016	13/12/2016	4.195	1.64	-	0.319	-	0.319	3.876	Slight hydrocarbon odour.
MW95/7	Q2 2017	25/05/2017	4.195	1.629	-	0.366	-	0.366	3.829	Hydrocarbon odour.
MW95/7	Q2 2018	-	-	-	-	-	-	-	-	Underneath electric cable. Permanently inaccessible.
MW95/8	2008	21/02/2008	5.06	1.018	-	0.36	-	0.36	4.7	
MW95/8	2008	10/11/2008	5.06	1.026	0.176	0.177	0.001	0.1762	4.8838	
MW95/8	2009	16/04/2009	5.06	1.037	0.42	0.734	0.314	0.4828	4.5772	
MW96/1	2008	20/02/2008	2.515	3.49	-	1.28	-	1.28	1.235	
MW96/1	2008	10/11/2008	2.515	3.435	-	1.328	-	1.328	1.187	
MW96/1	2009	15/04/2009	2.515	3.415	-	1.223	-	1.223	1.292	
MW96/1	2009	16/11/2009	2.515	3.399	-	1.406	-	1.406	1.109	
MW96/1	Q2 2010	21/06/2010	2.515	3.412	-	1.376	-	1.376	1.139	
MW96/1	Q4 2010	22/11/2010	2.515	3.41	-	1.322	-	1.322	1.193	
MW96/1	Q2 2011	10/06/2011	2.515	3.404	-	1.334	-	1.334	1.181	
MW96/1	Q4 2011	8/12/2011	2.515	8.171	-	1.788	-	1.788	0.727	
MW96/1	Q2 2012	4/06/2012	2.515	3.432	-	1.359	-	1.359	1.156	No odour
MW96/1	Q4 2012	3/12/2012	2.515	3.36	-	1.55	-	1.55	0.965	No odour
MW96/1	Q2 2013	17/06/2013	2.515	3.43	-	1.426	-	1.426	1.089	No odour
MW96/1	Q4 2013	3/12/2013	2.515	3.35	-	1.397	-	1.397	1.118	No odour
MW96/1	Q2 2014	19/05/2014	2.515	3.335	-	1.53	-	1.53	0.985	No odour
MW96/1	Q4 2014	4/12/2014	2.515	3.3	-	1.31	-	1.31	1.205	Hydrocarbon odour
MW96/1	Q2 2015	19/06/2015	2.515		-	1.145	-	1.145	1.37	Slight hydrocarbon odour
MW96/1	Q4 2015	24/11/2015	2.515	3.305	-	1.33	-	1.33	1.185	No odour.
MW96/1	Q2 2016	16/08/2016	2.515	3.305	-	2.345	-	2.345	0.17	No odour.
MW96/1	Q4 2016	12/12/2016	2.515	4.071	-	2.13	-	2.13	0.385	
MW96/1	Q2 2017	22/05/2017	2.515	3.28	-	1.517	-	1.517	0.998	Slight organic odour.
MW96/1	Q4 2017	6/12/2017	2.515	3.265	-	1.321	-	1.321	1.194	No odour
MW96/1	Q2 2018	25/06/2018	2.515	3.215	-	1.365	-	1.365	1.15	No odour, rootlets present
MW96/1	Q4 2018	-	-	-	-	-	-	-	-	Inaccessible due to surface water present throughout wetland area.
MW96/2	2008	20/02/2008	1.375	2.39	-	0.585	-	0.585	0.79	
MW96/2	2008	10/11/2008	1.375	2.394	-	0.87	-	0.87	0.505	
MW96/2	2009	15/04/2009	1.375	2.39	-	0.426	-	0.426	0.949	
MW96/2	2009	16/11/2009	1.375	2.383	-	0.684	-	0.684	0.691	
MW96/2	Q2 2010	21/06/2010	1.375	2.382	-	0.52	-	0.52	0.855	
MW96/2	Q4 2010	22/11/2010	1.375	2.395	-	0.636	-	0.636	0.739	
MW96/2	Q2 2011	6/06/2011	1.375	2.391	-	0.456	-	0.456	0.919	
MW96/2	Q4 2011	7/12/2011	1.375	2.4	-	0.603	-	0.603	0.772	Organic odour.
MW96/2	Q4 2012	3/12/2012	1.375	2.39	-	0.78	-	0.78	0.595	Strong sulphur odour
MW96/2	Q4 2013	11/12/2013	1.375	2.385	-	0.675	-	0.675	0.7	Sulphur odour
MW96/2	Q4 2014	4/12/2014	1.375	2.386	-	0.44	-	0.44	0.935	Slight sulfuric odour
MW96/2	Q4 2016	14/12/2016	-	2.39		0.31				
MW96/3	2008	20/02/2008	1.275	2.02	-	0.55	-	0.55	0.725	
MW96/3	2008	10/11/2008	1.275	2.023	-	0.955	-	0.955	0.32	
MW96/3	2009	15/04/2009	1.275	2.02	-	0.403	-	0.403	0.872	
MW96/3	2009	16/11/2009	1.275	2.015	-	0.556	-	0.556	0.719	
MW96/3	Q2 2010	21/06/2010	1.275	2.018	-	0.504	-	0.504	0.771	
MW96/3	Q3 2010	22/09/2010	1.275	1.967	-	0.593	-	0.593	0.682	
MW96/3	Q4 2010	22/11/2010	1.275	2.03	-	0.595	-	0.595	0.68	
MW96/3	Q1 2011	8/03/2011	1.275	2.022	-	0.638	-	0.638	0.637	
MW96/3	Q2 2011	6/06/2011	1.275	1.995	-	0.355	-	0.355	0.92	
MW96/3	Q3 2011	6/09/2011	1.275	2.011	-	0.634	-	0.634	0.641	
MW96/3	Q4 2011	7/12/2011	1.275	2.025	-	0.646	-	0.646	0.629	Organic odour.
MW96/3	Q1 2012	19/03/2012	1.275	2.046	-	0.367	-	0.367	0.908	
MW96/3	Q2 2012	5/06/2012	1.275	2.03	-	0.33	-	0.33	0.945	Sulphur odour
MW96/3	Q3 2012	17/09/2012	1.275	2.045	-	0.794	-	0.794	0.481	H2S odour
MW96/3	Q4 2012	3/12/2012	1.275	2.02	-	0.59	-	0.59	0.685	Strong sulphur odour
MW96/3	Q1 2013	13/03/2013	1.275	2.04	-	0.58	-	0.58	0.695	H2S odour
MW96/3	Q2 2013	17/06/2013	1.275	2.085	-	0.542	-	0.542	0.733	Strong sulphur odour
MW96/3	Q3 2013	23/09/2013	1.275	2.014	-	0.562	-	0.562	0.713	Strong H2S Odour
MW96/3	Q4 2013	11/12/2013	1.275	2.018	-	0.585	-	0.585	0.69	Sulphur odour
MW96/3	Q1 2014	27/03/2014	1.275	2.015	-	0.28	-	0.28	0.995	Sulphur odour
MW96/3	Q2 2014	19/05/2014	1.275	2.025	-	0.402	-	0.402	0.873	Strong sulfur odour
MW96/3	Q3 2014	23/09/2014	1.275	2.022	-	0.657	-	0.657	0.618	Sulphur odour
MW96/3	Q4 2014	4/12/2014	1.275	2.015	-	0.355	-	0.355	0.92	Slight sulfuric odour
MW96/3	Q1 2015	10/03/2015	1.275		-	0.592	-	0.592	0.683	Strong organic odour.
MW96/3	Q2 2015	22/06/2015	1.275		-	0.42	-	0.42	0.855	-
MW96/3	Q4 2015	26/11/2015	1.275	2.02	-	0.365	-	0.365	0.91	Sulfur odour.
MW96/3	Q2 2016	18/08/2016	1.275	2.01	-	0.5	-	0.5	0.775	Strong sulphur odour.
MW96/3	Q4 2016	14/12/2016	1.275	2.01	-	0.25	-	0.25	1.025	Hydrogen sulfide odour.
MW96/3	Q2 2017	24/05/2017	1.275	2.02	-	0.485	-	0.485	0.79	Organic odour.
MW96/3	Q2 2018	18/06/2018	-	2.03	-	0.37	-	0.37	-	Mangrove sediment odour
MW96/3	Q4 2018	-	-	-	-	-	-	-	-	Inaccessible due to surface water present throughout wetland area.
MW96/4	2008	20/02/2008	1.195	2.628	-	0.415	-	0.415	0.78	
MW96/4	2008	10/11/2008	1.195	2.633	-	0.633	-	0.633	0.562	
MW96/4	2009	15/04/2009	1.195	2.63	-	0.21	-	0.21	0.985	
MW96/4	2009	16/11/2009	1.195	2.625	-	0.535	-	0.535	0.66	
MW96/4	Q1 2010	31/03/2010	1.195	2.63	-	0.357	-	0.357	0.838	
MW96/4	Q2 2010	21/06/2010	1.195	2.631	-	0.34	-	0.34	0.855	
MW96/4	Q4 2010	22/11/2010	1.195	2.64	-	0.45	-	0.45	0.745	
MW96/4	Q2 2011	6/06/2011	1.195	2.568	-	0.233	-	0.233	0.962	
MW96/4	Q4 2011	7/12/2011	1.195	2.635	-	0.395	-	0.395	0.8	Organic odour.

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MW96/4	Q3 2012	17/09/2012	1.195	2.643	-	0.728	-	0.728	0.467	H2S odour
MW96/4	Q4 2012	3/12/2012	1.195	2.63	-	0.65	-	0.65	0.545	Strong sulphur odour
MW96/4	Q1 2013	13/03/2013	1.195	2.645	-	0.44	-	0.44	0.755	H2S odour
MW96/4	Q3 2013	23/09/2013	1.195	2.82	-	0.505	-	0.505	0.69	No odour
MW96/4	Q4 2013	3/12/2013	1.195	2.625	-	1.404	-	1.404	-0.209	Organic sulphur odour
MW96/4	Q1 2014	27/03/2014	1.195	2.625	-	0.065	-	0.065	1.13	Sulphur odour
MW96/4	Q3 2014	23/09/2014	1.195	2.629	-	0.49	-	0.49	0.705	No odour
MW96/4	Q4 2014	4/12/2014	1.195	2.63	-	0.2	-	0.2	0.995	Sulfur odour
MW96/4	Q1 2015	10/03/2015	1.195		-	0.498	-	0.498	0.697	Strong organic odour.
MW96/4	Q4 2016	13/12/2016		2.53	-	0.1	-	0.1		Organic odour.
MW96/7	2008	27/02/2008	2.435		-		-	-	-	Not accessible.
MW96/7	2008	10/11/2008	2.435	3.792	-	2.252	-	2.252	0.183	
MW96/7	2009	15/04/2009	2.435	3.823	-	2.656	-	2.656	-0.221	
MW96/7	2009	16/11/2009	2.435	3.832	-	2.484	-	2.484	-0.049	
MW96/7	Q1 2010	31/03/2010	2.435	3.845	-	2.642	-	2.642	-0.207	
MW96/7	Q2 2010	21/06/2010	2.435	3.842	-	2.4	-	2.4	0.035	
MW96/7	Q3 2010	22/09/2010	2.435	3.882	-	2.754	-	2.754	-0.319	
MW96/7	Q4 2010	22/11/2010	2.435	3.876	-	2.547	-	2.547	-0.112	
MW96/7	Q1 2011	8/03/2011	2.435	3.895	-	2.8	-	2.8	-0.365	
MW96/7	Q2 2011	6/06/2011	2.435	3.889	-	2.433	-	2.433	0.002	
MW96/7	Q3 2011	6/09/2011	2.435	3.905	-	2.54	-	2.54	-0.105	
MW96/7	Q4 2011	6/12/2011	2.435	4.599	-		-	-	-	Organic odour from well.
MW96/7	Q1 2012	19/03/2012	2.435	3.934	-	2.181	-	2.181	0.254	
MW96/7	Q2 2012	5/06/2012	2.435	3.93	-	2.14	-	2.14	0.295	No odour
MW96/7	Q3 2012	17/09/2012	2.435	3.95	-		-	-	-	No odour
MW96/7	Q4 2012	4/12/2012	2.435	3.95	-	2.721	-	2.721	-0.286	No odour
MW96/7	Q1 2013	13/03/2013	2.435		-		-	-	-	Could not locate.
MW96/7	Q2 2013	17/06/2013	2.435	4.023	-	2.45	-	2.45	-0.015	No odour
MW96/7	Q3 2013	23/09/2013	2.435	3.961	-	2.72	-	2.72	-0.285	No odour
MW96/7	Q4 2013	4/12/2013	2.435	3.965	-	2.611	-	2.611	-0.176	No odour
MW96/7	Q1 2014	28/03/2014	2.435	3.97	-	2.878	-	2.878	-0.443	No odour
MW96/7	Q2 2014	19/05/2014	2.435	3.974	-	2.645	-	2.645	-0.21	No odour
MW96/7	Q3 2014	24/09/2014	2.435	3.974	-	2.628	-	2.628	-0.193	No odour
MW96/7	Q4 2014	4/12/2014	2.435	4	-	2.36	-	2.36	0.075	No odour
MW96/7	Q1 2015	10/03/2015	2.435		-	2.335	-	2.335	0.1	No odour.
MW96/7	Q2 2015	22/06/2015	2.435		-	2.15	-	2.15	0.285	No odour
MW96/7	Q4 2015	25/11/2015	2.435	3.98	-	2.405	-	2.405	0.03	Septic odour.
MW96/7	Q2 2016	18/08/2016	2.435	4.985	-	2.322	-	2.322	0.113	Organic odour.
MW96/7	Q2 2017	24/05/2017	2.435	3.97	-	2.293	-	2.293	0.142	Slight organic odour.
MW96/7	Q4 2017	7/12/2017	2.435	3.989	-	2.601	-	2.601	-0.166	Slight organic odour.
MW96/7	Q2 2018	19/06/2018	2.435	-	-	2.585	-	2.585	-	No odour, stick up pipe
MW96/7	Q4 2018	6/12/2018	2.435	3.990	-	2.545	-	2.545	-0.110	No odour.
MW97/2B	2008	20/02/2008	4.415	3.96	-	0.845	-	0.845	3.57	
MW97/2B	2008	10/11/2008	4.415	4.935	-	3.023	-	3.023	1.392	
MW97/2B	2009	15/04/2009	4.415	4.938	-	2.864	-	2.864	1.551	
MW97/2B	2009	19/11/2009	4.415	4.93	-	3.021	-	3.021	1.394	
MW97/3	2008	20/02/2008	2.365	1.06	-	0.74	-	0.74	1.625	
MW97/3	2008	10/11/2008	2.365	1.177	-	0.952	-	0.952	1.413	
MW97/3	2009	16/04/2009	2.365	1.172	-	0.903	-	0.903	1.462	
MW97/3	2009	16/11/2009	2.365	1.762	-	1.066	-	1.066	1.299	
MW97/3	Q2 2010	21/06/2010	2.365		-		-	-	-	Not gauged, well blocked.
MW97/3	Q4 2010	22/11/2010	2.365		-		-	-	-	Not gauged, well blocked.
MW97/3	Q2 2011	6/06/2011	2.365	1.125	-	0.823	-	0.823	1.542	Not gauged, well blocked.
MW97/3	Q4 2011	6/12/2011	2.365	1.305	-	0.78	-	0.78	1.585	Organic odour.
MW97/3	Q2 2012	4/06/2012	2.365	1.34	-	0.715	-	0.715	1.65	No odour
MW97/3	Q4 2012	3/12/2012	2.365		-		-	-	-	Blocked at apprxoimately 0.45 mbgl
MW97/3	Q2 2013	17/06/2013	2.365	2.133	-	1.002	-	1.002	1.363	Sulphur odour
MW97/3	Q4 2013	2/12/2013	2.365	2.034	-	0.985	-	0.985	1.38	Organic odour
MW97/3	Q2 2014	19/05/2014	2.365	1.295	-		-	Dry	-	Well dry
MW97/3	Q4 2014	3/12/2014	2.365	1.3	-	1.182	-	1.182	1.183	No odour
MW97/3	Q4 2016	12/12/2016	-	1.93	-	1.28	-			
MW97/3	Q2 2017	23/05/2017	2.365	1.922	-	0.957	-	0.957	1.408	Slight organic odour.
MW97/3	Q2 2018	19/06/2018	2.365	1.8	-	-	-	Dry	-	Dry, no hydrasleeve installed
MW97/3	Q4 2018	3/12/2018	2.365	1.599	-	1.013	-	1.013	1.352	No odour.
MW97/4	2008	20/02/2008	1.895	2.987	-	0.198	-	0.198	1.697	
MW97/4	2008	10/11/2008	1.895	2.985	-	0.457	-	0.457	1.438	
MW97/4	2009	16/04/2009	1.895	2.994	-	0.514	-	0.514	1.381	
MW97/4	2009	16/11/2009	1.895	2.979	-	0.656	-	0.656	1.239	
MW97/4	Q2 2010	21/06/2010	1.895	2.997	-	0.465	-	0.465	1.43	
MW97/4	Q4 2010	22/11/2010	1.895	2.905	-	0.507	-	0.507	1.388	
MW97/4	Q2 2011	6/06/2011	1.895	2.961	-	0.4	-	0.4	1.495	
MW97/4	Q4 2011	5/12/2011	1.895	3	-	0.295	-	0.295	1.6	
MW97/4	Q2 2012	4/06/2012	1.895	2.99	-	0.22	-	0.22	1.675	No odour
MW97/4	Q4 2012	3/12/2012	1.895	2.99	-	0.78	-	0.78	1.115	Slight organic and sulphur odours
MW97/4	Q2 2013	17/06/2013	1.895	3.072	-	0.539	-	0.539	1.356	No odour
MW97/4	Q4 2013	2/12/2013	1.895	2.97	-	0.592	-	0.592	1.303	No odour
MW97/4	Q2 2014	19/05/2014	1.895	2.98	-	1.109	-	1.109	0.786	No odour
MW97/4	Q4 2014	3/12/2014	1.895	2.988	-	0.767	-	0.767	1.128	Organic odour
MW97/4	Q4 2016	12/12/2016	-	2.984		0.882				
MW97/4	Q2 2017	23/05/2017	1.895	2.981	-	0.432	-	0.432	1.463	No odour.
MW97/4	Q2 2018	19/06/2018	-	3	-	1.745	-	1.745	-	Organic odour
MW97/4	Q4 2018	3/12/2018	1.895	-	-	0.657	-	0.657	1.238	No odour.
MW98/4	2008	20/02/2008	4.195	4.011	-	1.295	-	1.295	2.9	

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW98/4	2008	10/11/2008	4.195	4.011	-	1.42	-	1.42	2.775	
MW98/4	2009	15/04/2009	4.195	4.02	-	1.462	-	1.462	2.733	
MW98/4	2009	16/11/2009	4.195	4.006	-	1.645	-	1.645	2.55	
MW98/4	Q2 2010	21/06/2010	4.195	4.012	-	1.439	-	1.439	2.756	
MW98/4	Q4 2010	22/11/2010	4.195	4.012	-	1.602	-	1.602	2.593	
MW98/4	Q2 2011	6/06/2011	4.195	4.02	-	1.034	-	1.034	3.161	
MW98/4	Q4 2011	4/10/2011	4.195	4.019	-	1.3	-	1.3	2.895	
MW98/4	Q4 2011	5/12/2011	4.195	4.011	-	1.044	-	1.044	3.151	
MW98/4	Q2 2012	5/06/2012	4.195	4.042	-	1.964	-	1.964	2.231	No odour
MW98/4	Q4 2012	4/12/2012	4.195	4.04	-	1.885	-	1.885	2.31	No odour
MW98/4	Q2 2013	17/06/2013	4.195	4.065	-	1.034	-	1.034	3.161	No odour
MW98/4	Q4 2013	2/12/2013	4.195	4.013	-	1.028	-	1.028	3.167	No odour
MW98/4	Q2 2014	19/05/2014	4.195	3.997	-	1.215	-	1.215	2.98	No odour
MW98/4	Q4 2014	9/12/2014	4.195	4.005	-	0.907	-	0.907	3.288	No odour
MW98/4	Q2 2016	15/08/2016	4.195	4	-	0.98	-	0.98	3.215	No odour.
MW98/4	Q2 2016	17/08/2016	4.195	1.63	-	0.3	-	0.3	3.895	Hydrocarbon odour.
MW98/4	Q4 2016	13/12/2016	4.195	4.05	-	0.842	-	0.842	3.353	No odour.
MW98/4	Q2 2017	22/05/2017	4.195	4.005	-	1.104	-	1.104	3.091	Slight chemical odour.
MW98/4	Q4 2018	3/12/2018	4.195	4.030	-	0.975	-	0.975	3.220	No odour.
MW98/4	Q2 2018	-	-	-	-	-	-	-	-	Not on SAQP
MW98/6	2008	21/02/2008	3.725	3.5	-	0.875	-	0.875	2.85	
MW98/6	2008	17/11/2008	3.725		-		-	-	-	0.020m PSH visually identified during sampling; not gauged due to safety restrictions
MW98/6	2009	21/04/2009	3.725	4.02	-	0.887	-	0.887	2.838	
MW98/6	2009	19/11/2009	3.725		0.948	0.949	0.001	0.9482	2.7768	
MW98/6	Q1 2010	31/03/2010	3.725		-		-	-	-	Could not open.
MW98/6	Q2 2010	22/06/2010	3.725	3.525	-	0.897	-	0.897	2.828	
MW98/6	Q3 2010	22/09/2010	3.725	3.527	-	0.92	-	0.92	2.805	
MW98/6	Q4 2010	22/11/2010	3.725	3.54	-	0.855	-	0.855	2.87	
MW98/6	Q1 2011	8/03/2011	3.725	3.53	-	0.907	-	0.907	2.818	
MW98/6	Q2 2011	6/06/2011	3.725	3.542	-	0.827	-	0.827	2.898	
MW98/6	Q3 2011	6/09/2011	3.725	3.514	-	0.861	-	0.861	2.864	
MW98/6	Q4 2011	13/10/2011	3.725	3.533	-	0.866	-	0.866	2.859	Suspected hydrocarbon odour.
MW98/6	Q4 2011	6/12/2011	3.725	3.518	-	0.83	-	0.83	2.895	Suspected hydrocarbon odour.
MW98/6	Q1 2012	20/03/2012	3.725	3.53	-	0.776	-	0.776	2.949	
MW98/6	Q2 2012	6/06/2012	3.725	3.53	-	0.835	-	0.835	2.89	No odour
MW98/6	Q3 2012	18/09/2012	3.725		-		-	-	-	Covered with roadbase
MW98/6	Q4 2012	6/12/2012	3.725	3.52	-	0.93	-	0.93	2.795	Sheen, slight hydrocarbon odour
MW98/6	Q1 2013	13/03/2013	3.725	3.535	-	0.865	-	0.865	2.86	Hydrocarbon odour
MW98/6	Q2 2013	17/06/2013	3.725	3.565	-	0.958	-	0.958	2.767	Hydrocarbon odour
MW98/6	Q3 2013	23/09/2013	3.725	3.512	-	0.954	-	0.954	2.771	No odour
MW98/6	Q4 2013	3/12/2013	3.725	3.52	-	0.845	-	0.845	2.88	LNAPL on IP, brown tar-like - not measurable on I.P
MW98/6	Q1 2014	28/03/2014	3.725	3.535	-	0.818	-	0.818	2.907	Hydrocarbon odour and sheen
MW98/6	Q2 2014	19/05/2014	3.725	3.523	-	0.944	-	0.944	2.781	Hydrocarbon odour, black silted base, absence of LNAPL confirmed with bailer.
MW98/6	Q3 2014	24/09/2014	3.725	3.505	-	0.887	-	0.887	2.838	Hydrocarbon odour
MW98/6	Q4 2014	3/12/2014	3.725	3.5	-	0.863	-	0.863	2.862	Hydrocarbon odour
MW98/6	Q2 2016	16/08/2016	3.725	3.5	-	0.93	-	0.93	2.795	Hydrocarbon odour, silty base.
MW98/6	Q2 2017	23/05/2017	3.725	3.481	-	0.952	-	0.952	2.773	Slight chemical odour.
MW98/6	Q4 2017	5/12/2017	3.725	3.455	-	0.910	-	0.910	2.815	Hydrocarbon odour, slightly silty bottom.
MW98/6	Q2 2018	20/06/2018	3.725	5.46	-	1.79	-	1.79	1.935	No odour
MW98/6	Q4 2018	6/12/2018	3.725	3.450	-	0.770	-	0.770	2.955	Hydrocarbon odour.
MW98/7	2008	21/02/2008	4.195	3.52	-	0.935	-	0.935	3.26	
MW98/7	2008	10/11/2008	4.195	3.52	-	0.97	-	0.97	3.225	
MW98/7	2009	15/04/2009	4.195	3.524	-	0.921	-	0.921	3.274	
MW98/7	2009	16/11/2009	4.195	3.514	-	0.956	-	0.956	3.239	
MW98/7	Q2 2010	21/06/2010	4.195	3.527	-	1.652	-	1.652	2.543	
MW98/7	Q4 2010	22/11/2010	4.195	3.492	-	0.984	-	0.984	3.211	
MW98/7	Q2 2011	6/06/2011	4.195	3.525	-	0.94	-	0.94	3.255	
MW98/7	Q4 2011	5/12/2011	4.195	3.52	-	0.924	-	0.924	3.271	
MW98/7	Q2 2012	5/06/2012	4.195	3.56	-	0.94	-	0.94	3.255	No odour
MW98/7	Q4 2012	4/12/2012	4.195	3.55	-	0.97	-	0.97	3.225	No well cap, no odour
MW98/7	Q2 2013	17/06/2013	4.195	3.56	-	1.005	-	1.005	3.19	No odour, silty bottom
MW98/7	Q4 2013	2/12/2013	4.195	3.495	-	0.963	-	0.963	3.232	No odour
MW98/7	Q2 2014	19/05/2014	4.195		-		-	-	-	Well inaccessible for gauging due to road closure and crane activity
MW98/7	Q4 2014	4/12/2014	4.195	3.462	-	0.916	-	0.916	3.279	No odour
MW98/7	Q2 2015	22/06/2015	4.195		-	0.92	-	0.92	3.275	-
MW98/7	Q4 2015	24/11/2015	4.195	3.395	-	0.985	-	0.985	3.21	No odour.
MW98/7	Q2 2016	18/08/2016	4.195	3.345	-	1.56	-	1.56	2.635	No odour, silty base.
MW98/7	Q4 2016	12/12/2016	4.195	3.313	-	0.98	-	0.98	3.215	
MW98/7	Q2 2018	20/06/2018	-	-	-	-	-	-	-	Well destroyed
MW98/7	Q2 2017	-	-	-	-	-	-	-	-	Well cap destroyed.
MW98/9	2008	21/02/2008	3.725	3.52	-	0.58	-	0.58	3.145	
MW98/9	2008	11/11/2008	3.725	3.52	-	0.536	-	0.536	3.189	
MW98/9	2009	15/04/2009	3.725	3.52	-	0.779	-	0.779	2.946	
MW98/9	2009	16/11/2009	3.725	3.508	-	0.327	-	0.327	3.398	
MW98/9	Q2 2010	23/06/2010	3.725	3.519	-	1.939	-	1.939	1.786	
MW98/9	Q4 2010	22/11/2010	3.725	3.529	-	0.498	-	0.498	3.227	

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
MW98/9	Q2 2011	6/06/2011	3.725	3.528	-	1.207	-	1.207	2.518	
MW98/9	Q4 2011	6/10/2011	3.725	3.529	-	0.792	-	0.792	2.933	
MW98/9	Q2 2012	6/06/2012	3.725	3.54	-	1.115	-	1.115	2.61	
MW98/9	Q4 2012	3/12/2012	3.725	3.51	-	0.455	-	0.455	3.27	No odour
MW98/9	Q2 2013	18/06/2013	3.725	3.61	-	1.348	-	1.348	2.377	No odour
MW98/9	Q4 2013	3/12/2013	3.725	3.517	-	0.658	-	0.658	3.067	No odour
MW98/9	Q2 2014	19/05/2014	3.725	3.514	-	1.293	-	1.293	2.432	No odour
MW98/9	Q4 2014	9/12/2014	3.725	3.51	-	0.325	-	0.325	3.4	No odour
MW98/9		16/08/2016	3.725		-		-	-	-	Lost beneath road base.
TW_1	Q1 2010	31/03/2010	3.06	1.52	-	0.553	-	0.553	2.507	
TW_2	Q1 2010	31/03/2010	3.16		0.555	0.781	0.226	0.6002	2.5598	PSH thickness 0.226
TW_3	Q1 2010	31/03/2010	3.15	1.72	-	0.41	-	0.41	2.74	
TW_4	Q1 2010	31/03/2010	3.26	1.41	-	0.724	-	0.724	2.536	
TW_5	Q1 2010	31/03/2010		1.522	-	0.475	-	0.475	-0.475	
TW94/1	2008	21/02/2008	4.817	8.864	-	1.886	-	1.886	2.931	
TW94/1	2008	10/11/2008	4.817	8.88	-	2.135	-	2.135	2.682	
TW94/1	2009	15/04/2009	4.817	8.868	-	1.96	-	1.96	2.857	
TW94/1	2009	16/11/2009	4.817	8.842	-	2.063	-	2.063	2.754	
TW94/1	Q2 2010	21/06/2010	4.817	8.833	-	2.174	-	2.174	2.643	
TW94/1	Q4 2010	25/11/2010	4.817	8.845	-	2.264	-	2.264	2.553	
TW94/1	Q2 2011	6/06/2011	4.817	8.855	-	2.194	-	2.194	2.623	
TW94/1	Q4 2011	5/10/2011	4.817	8.852	-	2.357	-	2.357	2.46	
TW94/1	Q2 2012	5/06/2012	4.817	8.87	-	2.155	-	2.155	2.662	No odour, silty bottom
TW94/1	Q4 2012	3/12/2012	4.817	8.835	-	2.263	-	2.263	2.554	No odour, silty bottom
TW94/1	Q2 2013	17/06/2013	4.817	8.877	-	2.34	-	2.34	2.477	No odour, silty bottom
TW94/1	Q4 2013	3/12/2013	4.817	8.823	-	2.116	-	2.116	2.701	No odour, silty bottom
TW94/1	Q2 2014	19/05/2014	4.817	8.816	-	2.21	-	2.21	2.607	No odour, silty base
TW94/1	Q4 2014	4/12/2014	4.817	8.785	-	2.19	-	2.19	2.627	No odour, silty bottom
TW94/1	Q4 2015	23/11/2015	4.817	8.8	-	2.035	-	2.035	2.782	No odour.
TW94/1	Q2 2016	18/08/2016	4.817	8.79	-	2.302	-	2.302	2.515	No odour, silty base.
TW94/1	Q4 2016	13/12/2016	4.817	8.82	-	2.032	-	2.032	2.785	No odour. Grey silty base.
TW94/1	Q2 2017	23/05/2017	4.817	8.785	-	2.06	-	2.06	2.757	No odour. Brown silty base.
TW94/1	Q4 2017	5/12/2017	4.817	8.780	-	2.055	-	2.055	2.762	Slightly silty base, no odour
TW94/1	Q2 2018	20/06/2018	8.79	8.78	-	2.25	-	2.25	6.54	Organic soil odour
TW94/1	Q4 2018	3/12/2018	4.817	8.778	-	2.050	-	2.050	2.767	No odour.
TW94/2	2008	21/02/2008	4.833	4.052	-	2.225	-	2.225	2.608	
TW94/2	2008	10/11/2008	4.833	4.054	-	2.394	-	2.394	2.439	
TW94/2	2009	15/04/2009	4.833	4.063	-	2.259	-	2.259	2.574	
TW94/2	2009	16/11/2009	4.833	4.043	-	2.376	-	2.376	2.457	
TW94/2	Q1 2010	31/03/2010	4.833	4.055	-	2.385	-	2.385	2.448	
TW94/2	Q2 2010	21/06/2010	4.833	4.051	-	2.363	-	2.363	2.47	
TW94/2	Q3 2010	22/09/2010	4.833	4.012	-	2.411	-	2.411	2.422	
TW94/2	Q4 2010	22/11/2010	4.833	2.164	-	0.886	-	0.886	3.947	
TW94/2	Q1 2011	8/03/2011	4.833	4.039	-	2.454	-	2.454	2.379	
TW94/2	Q2 2011	6/06/2011	4.833	4.049	-	2.203	-	2.203	2.63	
TW94/2	Q3 2011	6/09/2011	4.833	4.051	-	2.401	-	2.401	2.432	
TW94/2	Q4 2011	5/10/2011	4.833	4.064	-	2.261	-	2.261	2.572	
TW94/2	Q1 2012	19/03/2012	4.833	4.076	-	2.163	-	2.163	2.67	
TW94/2	Q2 2012	5/06/2012	4.833	4.08	-	2.365	-	2.365	2.468	No odour
TW94/2	Q3 2012	17/09/2012	4.833	4.09	-	2.49	-	2.49	2.343	No odour
TW94/2	Q4 2012	3/12/2012	4.833	4.08	-	2.44	-	2.44	2.393	Hydrocarbon odour
TW94/2	Q1 2013	13/03/2013	4.833	4.065	-	1.216	-	1.216	3.617	No odour
TW94/2	Q2 2013	17/06/2013	4.833	4.145	-	2.353	-	2.353	2.48	No odour
TW94/2	Q3 2013	23/09/2013	4.833	4.049	-	2.417	-	2.417	2.416	No odour
TW94/2	Q4 2013	3/12/2013	4.833	4.046	-	2.195	-	2.195	2.638	No odour
TW94/2	Q1 2014	27/03/2014	4.833	4.05	-	2.162	-	2.162	2.671	No odour
TW94/2	Q2 2014	19/05/2014	4.833	4.055	-	2.372	-	2.372	2.461	Slight organic odour
TW94/2	Q3 2014	23/09/2014	4.833	4.05	-	2.307	-	2.307	2.526	No odour
TW94/2	Q4 2014	4/12/2014	4.833	4.039	-	2.208	-	2.208	2.625	No odour
TW94/2	Q1 2015	10/03/2015	4.833		-	2.278	-	2.278	2.555	No odour.
TW94/2	Q2 2015	22/06/2015	4.833		-	2.21	-	2.21	2.623	No odour
TW94/2	Q4 2015	23/11/2015	4.833	4.055	-	2.201	-	2.201	2.632	No odour.
TW94/2	Q2 2016	18/08/2016	4.833	4.045	-	2.147	-	2.147	2.686	No odour.
TW94/2	Q4 2016	13/12/2016	4.833	4.055	-	2.094	-	2.094	2.739	No odour. Grey silty base.
TW94/2	Q2 2017	23/05/2017	4.833	4.05	-	2.287	-	2.287	2.546	No odour.
TW94/2	Q4 2017	5/12/2017	4.833	4.044	-	2.099	-	2.099	2.734	Slightly silty base, no odour
TW94/2	Q2 2018	20/06/2018	4.833	4.033	-	1.995	-	1.995	2.838	Slight hydrocarbon odour
TW94/2	Q4 2018	3/12/2018	4.833	4.048	-	2.030	-	2.030	2.803	No odour.
TW94/3	2008	21/02/2008	4.171	2.995	-	1.693	-	1.693	2.478	
TW94/3	2008	10/11/2008	4.171	2.995	-	1.63	-	1.63	2.541	
TW94/3	2009	15/04/2009	4.171	2.998	-	1.682	-	1.682	2.489	
TW94/3	2009	16/11/2009	4.171	2.991	-	1.681	-	1.681	2.49	
TW94/3	Q2 2010	21/06/2010	4.171	2.999	-	1.715	-	1.715	2.456	
TW94/3	Q3 2010	22/09/2010	4.171	2.957	-	1.699	-	1.699	2.472	
TW94/3	Q4 2010	22/11/2010	4.171	3.009	-	1.703	-	1.703	2.468	Hydrocarbon odour.
TW94/3	Q1 2011	8/03/2011	4.171	2.998	-	1.729	-	1.729	2.442	
TW94/3	Q2 2011	6/06/2011	4.171	2.995	-	0.596	-	0.596	3.575	
TW94/3	Q3 2011	6/09/2011	4.171	2.996	-	1.724	-	1.724	2.447	
TW94/3	Q4 2011	5/12/2011	4.171	3.015	-	1.706	-	1.706	2.465	Suspected hydrocarbon odour.
TW94/3	Q2 2012	4/06/2012	4.171	3	-	1.65	-	1.65	2.521	Slight hydrocarbon odour
TW94/3	Q3 2012	17/09/2012	4.171	3.015	-	1.771	-	1.771	2.4	Slight hydrocarbon odour
TW94/3	Q4 2012	4/12/2012	4.171	3.025	-	1.745	-	1.745	2.426	-
TW94/3	Q1 2013	13/03/2013	4.171	3.005	-	1.714	-	1.714	2.457	Slight hydrocarbon odour

Well ID	Monitoring Round	Gauging Date	Top of Casing Elevation (m AHD)	Measured Well Depth (mbTOC)	Depth to LNAPL (m BTOC)	Depth to Water (m BTOC)	LNAPL Thickness (m)	Corrected Depth to Water (m BTOC)	Corrected Water Level (m AHD)	Comments
TW94/3	Q2 2013	17/06/2013	4.171	3.079	-	1.781	-	1.781	2.39	Faint odour
TW94/3	Q3 2013	24/09/2013	4.171	2.987	-	1.734	-	1.734	2.437	Faint solvent odour
TW94/3	Q4 2013	3/12/2013	4.171	2.984	-	1.695	-	1.695	2.476	Hydrocarbon odour
TW94/3	Q1 2014	27/03/2014	4.171	2.989	-	1.58	-	1.58	2.591	No odour
TW94/3	Q2 2014	19/05/2014	4.171	2.99	-	1.748	-	1.748	2.423	Hydrocarbon odour
TW94/3	Q3 2014	23/09/2014	4.171	3	-	1.737	-	1.737	2.434	Faint hydrocarbon odour
TW94/3	Q4 2014	4/12/2014	4.171	2.99	-	1.628	-	1.628	2.543	Strong hydrocarbon odour
TW94/3	Q1 2015	10/03/2015	4.171		-	1.754	-	1.754	2.417	Slight hydrocarbon odour.
TW94/3	Q2 2015	22/06/2015	4.171		-	1.615	-	1.615	2.556	Hydrocarbon odour
TW94/3	Q4 2015	23/11/2015	4.171	2.99	-	1.71	-	1.71	2.461	No odour.
TW94/3	Q2 2016	17/08/2016	4.171	2.985	-	1.735	-	1.735	2.436	Hydrocarbon odour.
TW94/3	Q4 2016	13/12/2016	4.171	2.99	-	1.757	-	1.757	2.414	No odour.
TW94/3	Q2 2017	23/05/2017	4.171	2.99	-	1.774	-	1.774	2.397	Slight chemical odour.
TW94/3	Q4 2017	5/12/2017	4.171	2.995	-	1.746	-	1.746	2.425	HC odour
TW94/3	Q2 2018	19/06/2018	4.171	2.995	-	1.765	-	1.765	2.406	Strong hydrocarbon odour
TW94/3	Q4 2018	6/12/2018	4.171	3.005	-	1.739	-	1.739	2.432	Slight hydrocarbon odour.
TW94/4	2008	21/02/2008	3.573	2.139	-	0.863	-	0.863	2.71	
TW94/4	2008	10/11/2008	3.573	2.14	-	0.967	-	0.967	2.606	
TW94/4	2009	15/04/2009	3.573	2.173	-	0.987	-	0.987	2.586	
TW94/4	2009	16/11/2009	3.573	2.136	-	0.948	-	0.948	2.625	
TW94/4	Q1 2010	31/03/2010	3.573	2.166	-	0.939	-	0.939	2.634	
TW94/4	Q2 2010	21/06/2010	3.573	2.138	-	0.914	-	0.914	2.659	
TW94/4	Q3 2010	22/09/2010	3.573	2.069	-	0.95	-	0.95	2.623	
TW94/4	Q4 2010	22/11/2010	3.573	3.093	-	1.011	-	1.011	2.562	
TW94/4	Q1 2011	8/03/2011	3.573	2.065	-	0.99	-	0.99	2.583	
TW94/4	Q2 2011	6/06/2011	3.573	2.143	-	0.862	-	0.862	2.711	
TW94/4	Q3 2011	6/09/2011	3.573	2.154	-	0.926	-	0.926	2.647	
TW94/4	Q4 2011	5/12/2011	3.573	2.184	-	0.889	-	0.889	2.684	
TW94/4	Q1 2012	19/03/2012	3.573	2.155	-	0.84	-	0.84	2.733	
TW94/4	Q2 2012	5/06/2012	3.573	2.19	-	0.925	-	0.925	2.648	Hydrocarbon odour
TW94/4	Q3 2012	17/09/2012	3.573	2.18	-	0.99	-	0.99	2.583	No odour
TW94/4	Q4 2012	3/12/2012	3.573	3.172	-	0.98	-	0.98	2.593	No odour
TW94/4	Q1 2013	13/03/2013	3.573	2.16	-	0.909	-	0.909	2.664	No odour
TW94/4	Q2 2013	17/06/2013	3.573	2.24	-	0.942	-	0.942	2.631	Hydrocarbon odour
TW94/4	Q3 2013	23/09/2013	3.573	2.159	-	0.956	-	0.956	2.617	No odour
TW94/4	Q4 2013	3/12/2013	3.573	2.135	-	0.903	-	0.903	2.67	Slight hydrocarbon odour
TW94/4	Q1 2014	27/03/2014	3.573	2.16	-	0.861	-	0.861	2.712	Slight hydrocarbon odour
TW94/4	Q2 2014	19/05/2014	3.573	2.143	-	0.976	-	0.976	2.597	Slight hydrocarbon odour
TW94/4	Q3 2014	23/09/2014	3.573	2.145	-	0.928	-	0.928	2.645	No odour
TW94/4	Q4 2014	4/12/2014	3.573	2.087	-	0.924	-	0.924	2.649	No odour
TW94/4	Q1 2015	10/03/2015	3.573		-	0.95	-	0.95	2.623	Strong hydrocarbon odour.
TW94/4	Q2 2015	22/06/2015	3.573		-	0.861	-	0.861	2.712	Hydrocarbon odour
TW94/4	Q4 2015	23/11/2015	3.573	2.15	-	0.89	-	0.89	2.683	No odour.
TW94/4	Q4 2016	13/12/2016	-	2.145	-	0.925	-	0.925	#VALUE!	Slight hydrocarbon odour.
TW94/4	Q2 2017	25/05/2017	2.875	2.167	-	0.953	-	0.953	1.922	Hydrocarbon odour.
TW94/4	Q4 2017	7/12/2017	4.690	2.153	-	0.899	-	0.899	3.791	Hydrocarbon odour.
TW94/4	Q2 2018	19/06/2018	4.69	2.175	-	0.895	-	0.895	3.795	No odour
TW94/4	Q4 2018	4/12/2018	3.573	2.170	-	0.841	-	0.841	2.732	No odour
TW94/5	2008	21/02/2008	3.62	3.078	-	0.991	-	0.991	2.629	
TW94/5	2008	10/11/2008	3.62	3.074	-	1.052	-	1.052	2.568	
TW94/5	2009	15/04/2009	3.62	3.077	-	1.003	-	1.003	2.617	
TW94/5	2009	16/11/2009	3.62	3.059	-	1.047	-	1.047	2.573	
TW94/5	Q1 2010	31/03/2010	3.62	3.074	-	1.053	-	1.053	2.567	
TW94/5	Q2 2010	21/06/2010	3.62	3.065	-	1.022	-	1.022	2.598	
TW94/5	Q3 2010	22/09/2010	3.62	2.973	-	1.055	-	1.055	2.565	
TW94/5	Q4 2010	22/11/2010	3.62	3.091	-	1.009	-	1.009	2.611	
TW94/5	Q1 2011	8/03/2011	3.62	3.065	-	1.089	-	1.089	2.531	
TW94/5	Q2 2011	6/06/2011	3.62	2.075	-	0.981	-	0.981	2.639	
TW94/5	Q3 2011	6/09/2011	3.62	3.086	-	1.023	-	1.023	2.597	
TW94/5	Q4 2011	5/12/2011	3.62	3.095	-	1.004	-	1.004	2.616	
TW94/5	Q2 2012	5/06/2012	3.62	3.09	-	1.025	-	1.025	2.595	No odour
TW94/5	Q4 2012	3/12/2012	3.62	3.11	-	1.09	-	1.09	2.53	No odour
TW94/5	Q1 2013	13/03/2013	3.62	2.08	-	1.027	-	1.027	2.593	No odour
TW94/5	Q2 2013	17/06/2013	3.62	3.155	-	1.063	-	1.063	2.557	No odour
TW94/5	Q4 2013	3/12/2013	3.62	3.065	-	1.017	-	1.017	2.603	No odour
TW94/5	Q1 2014	27/03/2014	3.62	2.08	-	1.027	-	1.027	2.593	No odour
TW94/5	Q2 2014	19/05/2014	3.62	3.075	-	1.08	-	1.08	2.54	No odour
TW94/5	Q4 2014	4/12/2014	3.62	3.08	-	1.041	-	1.041	2.579	Organic odour
TW94/5	Q2 2015	22/06/2015	3.62		-	0.991	-	0.991	2.629	No odour
TW94/5	Q4 2015	23/11/2015	3.62	3.075	-	0.998	-	0.998	2.622	Chemical odour.
TW94/5	Q4 2016	13/12/2016		2.145	-	0.925	-	0.925	-0.925	Slight hydrocarbon odour.
TW94/5	Q2 2017	23/05/2017	2.876	3.34	-	1.23	-	1.23	1.646	No odour.
TW94/5	Q4 2017	5/12/2017	3.620	3.464	-	1.001	-	1.001	2.619	No odour
TW94/5	Q2 2018	19/06/2018	3.62	3.06	-	1.02	-	1.02	2.6	No odour
TW94/5	Q4 2018	3/12/2018	3.620	3.070	-	0.955	-	0.955	2.665	No odour
TW94/6	2008	21/02/2008	3.621	3.134	-	1.139	-	1.139	2.482	
TW94/6	2008	10/11/2008	3.621	3.13	-	1.175	-	1.175	2.446	
TW94/6	2009	15/04/2009	3.621	3.142	-	1.162	-	1.162	2.459	
TW94/6	2009	16/11/2009	3.621	3.126	-	1.184	-	1.184	2.437	
TW94/6	Q1 2010	31/03/2010	3.621	3.135	-	1.209	-	1.209	2.412	
TW94/6	Q2 2010	21/06/2010	3.621	3.133	-	1.192	-	1.192	2.429	
TW94/6	Q3 2010	22/09/2010	3.621	3.064	-	1.21	-	1.21	2.411	
TW94/6	Q4 2010	22/11/2010	3.621	3.151	-	0.914	-	0.914	2.707	

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TW94/6	Q1 2011	8/03/2011	3.621	3.091	-	1.264	-	1.264	2.357	
TW94/6	Q2 2011	6/06/2011	3.621	3.134	-	1.215	-	1.215	2.406	
TW94/6	Q3 2011	6/09/2011	3.621	3.142	-	1.196	-	1.196	2.425	
TW94/6	Q4 2011	5/12/2011	3.621	3.149	-	1.168	-	1.168	2.453	Suspected hydrocarbon odour.
TW94/6	Q2 2012	5/06/2012	3.621	3.17	-	1.18	-	1.18	2.441	Strong hydrocarbon odour
TW94/6	Q4 2012	3/12/2012	3.621	3.16	-	1.245	-	1.245	2.376	Strong hydrocarbon odour
TW94/6	Q2 2013	17/06/2013	3.621	3.203	-	1.257	-	1.257	2.364	No odour
TW94/6	Q3 2013	23/09/2013	3.621	3.127	-	1.267	-	1.267	2.354	No odour
TW94/6	Q4 2013	3/12/2013	3.621	3.126	-	1.235	-	1.235	2.386	Faint odour
TW94/6	Q2 2014	19/05/2014	3.621	3.13	-	1.265	-	1.265	2.356	No odour
TW94/6	Q4 2014	4/12/2014	3.621	3.134	-	1.259	-	1.259	2.362	Chemical odour
TW94/6	Q2 2015	22/06/2015	3.621		-	1.235	-	1.235	2.386	No odour
TW94/6	Q4 2015	23/11/2015	3.621	3.133	-	1.23	-	1.23	2.391	Organic soil odour.
TW94/6	Q4 2016	13/12/2016		3.13	-	1.251	-	1.251	-1.251	Slight hydrocarbon odour.
TW94/6	Q2 2017	25/05/2017	3.798	3.13	-	1.265	-	1.265	2.533	No odour.
TW94/6	Q4 2017	5/12/2017	3.621	3.120	-	1.246	-	1.246	2.375	Slight HC odour
TW94/6	Q2 2018	19/06/2018	3.621	3.11	-	1.254	-	1.254	2.367	Organic silt odour
TW94/6	Q4 2018	3/12/2018	3.621	3.140	-	1.230	-	1.230	2.391	Slight hydrocarbon odour, no silt.
TW94/7	2008	21/02/2008	4.543	3.315	-	1.893	-	1.893	2.65	
TW94/7	2008	10/11/2008	4.543	3.312	-	2.1	-	2.1	2.443	
TW94/7	2009	15/04/2009	4.543	3.323	-	2.036	-	2.036	2.507	
TW94/7	2009	16/11/2009	4.543	3.3	-	2.051	-	2.051	2.492	
TW94/7	Q1 2010	31/03/2010	4.543	3.32	-	2.026	-	2.026	2.517	
TW94/7	Q2 2010	21/06/2010	4.543	3.315	-	1.983	-	1.983	2.56	
TW94/7	Q3 2010	22/09/2010	4.543	5.877	-	0.955	-	0.955	3.588	
TW94/7	Q4 2010	22/11/2010	4.543	3.32	-	2.001	-	2.001	2.542	
TW94/7	Q1 2011	8/03/2011	4.543	3.321	-	2.106	-	2.106	2.437	
TW94/7	Q2 2011	6/06/2011	4.543	3.31	-	1.959	-	1.959	2.584	
TW94/7	Q3 2011	6/09/2011	4.543	3.325	-	2.06	-	2.06	2.483	
TW94/7	Q4 2011	5/12/2011	4.543	3.333	-	1.953	-	1.953	2.59	Suspected hydrocarbon odour.
TW94/7	Q1 2012	19/03/2012	4.543	3.345	-	1.901	-	1.901	2.642	
TW94/7	Q2 2012	5/06/2012	4.543	3.35	-	2.075	-	2.075	2.468	Strong hydrocarbon odour
TW94/7	Q3 2012	17/09/2012	4.543	3.31	-	2.164	-	2.164	2.379	No odour
TW94/7	Q4 2012	4/12/2012	4.543	3.345	-	2.105	-	2.105	2.438	No odour
TW94/7	Q1 2013	13/03/2013	4.543	3.33	-	1.943	-	1.943	2.6	No odour
TW94/7	Q2 2013	17/06/2013	4.543	3.401	-	2.097	-	2.097	2.446	No odour
TW94/7	Q3 2013	23/09/2013	4.543	3.307	-	2.094	-	2.094	2.449	No odour
TW94/7	Q4 2013	3/12/2013	4.543	3.31	-	1.981	-	1.981	2.562	Organic odour
TW94/7	Q1 2014	27/03/2014	4.543	3.305	-	2.02	-	2.02	2.523	No odour
TW94/7	Q2 2014	19/05/2014	4.543	3.311	-	2.11	-	2.11	2.433	Slight hydrocarbon odour
TW94/7	Q3 2014	23/09/2014	4.543	3.31	-	1.97	-	1.97	2.573	Faint hydrocarbon odour
TW94/7	Q4 2014	4/12/2014	4.543	3.313	-	2.03	-	2.03	2.513	No odour
TW94/7	Q1 2015	10/03/2015	4.543		-	2.02	-	2.02	2.523	No odour.
TW94/7	Q2 2015	22/06/2015	4.543		-	1.97	-	1.97	2.573	No odour
TW94/7	Q4 2015	23/11/2015	4.543	3.31	-	1.95	-	1.95	2.593	No odour.
TW94/7	Q4 2016	13/12/2016		3.305	-	2.075	-	2.075	-2.075	
TW94/7	Q2 2017	25/05/2017	3.76	3.306	-	2.15	-	2.15	1.61	No odour.
TW94/7	Q4 2017	5/12/2017	4.543	2.301	-	1.041	-	1.041	3.502	No odour
TW94/7	Q2 2018	19/06/2018	4.543	3.315	-	2.13	-	2.13	2.413	Slight hydrocarbon odour
TW94/7	Q4 2018	3/12/2018	4.543	3.315	-	1.980	-	1.980	2.563	No silt, no odour.
W91/10	2008	20/02/2008	2.422	2.47	-	0.9	-	0.9	1.522	
W91/10	2008	10/11/2008	2.422	2.475	-	1.166	-	1.166	1.256	
W91/10	2009	16/04/2009	2.422	2.481	-	1.163	-	1.163	1.259	
W91/10	2009	16/11/2009	2.422	2.473	-	1.322	-	1.322	1.1	
W91/10	Q2 2010	21/06/2010	2.422	2.498	-	1.145	-	1.145	1.277	
W91/10	Q4 2010	22/11/2010	2.422	2.498	-	1.19	-	1.19	1.232	
W91/10	Q2 2011	6/06/2011	2.422	2.49	-	1.055	-	1.055	1.367	
W91/10	Q4 2011	5/12/2011	2.422	2.495	-	0.972	-	0.972	1.45	
W91/10	Q2 2012	4/06/2012	2.422	3.57	-	1.51	-	1.51	0.912	No odour
W91/10	Q4 2012	3/12/2012	2.422	2.48	-	1.45	-	1.45	0.972	No odour
W91/10	Q2 2013	17/06/2013	2.422	2.565	-	1.236	-	1.236	1.186	No odour
W91/10	Q4 2013	2/12/2013	2.422	2.485	-	1.244	-	1.244	1.178	No odour
W91/10	Q2 2014	19/05/2014	2.422	2.47	-	1.765	-	1.765	0.657	No odour
W91/10	Q4 2014	3/12/2014	2.422	2.488	-	1.456	-	1.456	0.966	Organic/waste odour
W91/10	Q4 2016	12/12/2016	-			1.535				Hydrasleeve already installed - pink string.
W91/10	Q2 2017	23/05/2017	2.422	2.492	-	1.11	-	1.11	1.312	No odour.
W91/2	2008	20/02/2008	3.892	4.854	-	1.219	-	1.219	2.673	
W91/2	2008	10/11/2008	3.892		-		-	-	-	Destroyed.
W91/5	2008	27/02/2008	3.892	1.94	-	1.94	-	1.94	1.952	
W91/5	2008	10/11/2008	3.892	1.952	-		-	Dry	-	Dry.
W91/5	2009	15/04/2009	3.892	1.932	-		-	-	-	
W91/5	Q4 2013	2/12/2013	3.892	4.606	-	1.986	-	1.986	1.906	No odour
W91/7	2008	27/02/2008	3.202	5.114	-	2.525	-	2.525	0.677	
W91/7	2008	10/11/2008	3.202	5.12	-	2.572	-	2.572	0.63	
W91/7	2009	15/04/2009	3.202	5.132	-	2.52	-	2.52	0.682	
W91/7	2009	16/11/2009	3.202	5.114	-	2.506	-	2.506	0.696	
W91/7	Q1 2010	31/03/2010	3.202	5.122	-	2.474	-	2.474	0.728	
W91/7	Q2 2010	21/06/2010	3.202	5.119	-	2.529	-	2.529	0.673	
W91/7	Q3 2010	22/09/2010	3.202	5.125	-	2.536	-	2.536	0.666	
W91/7	Q4 2010	22/11/2010	3.202	5.116	-	2.527	-	2.527	0.675	No well cap.
W91/7	Q1 2011	8/03/2011	3.202	5.1	-	2.535	-	2.535	0.667	
W91/7	Q2 2011	6/06/2011	3.202	5.125	-	2.522	-	2.522	0.68	No well cap.

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W91/7	Q3 2011	6/09/2011	3.202	5.111	-	2.546	-	2.546	0.656	
W91/7	Q4 2011	6/12/2011	3.202	5.116	-	2.517	-	2.517	0.685	
W91/7	Q1 2012	19/03/2012	3.202	5.146	-	2.524	-	2.524	0.678	
W91/7	Q2 2012	6/06/2012	3.202	5.16	-	2.505	-	2.505	0.697	No odour
W91/7	Q3 2012	17/09/2012	3.202	5.135	-	2.545	-	2.545	0.657	Organic odour
W91/7	Q4 2012	4/12/2012	3.202	5.15	-	2.563	-	2.563	0.639	No odour
W91/7	Q1 2013	13/03/2013	3.202	5.137	-	2.438	-	2.438	0.764	No odour
W91/7	Q2 2013	17/06/2013	3.202	5.97	-	2.51	-	2.51	0.692	No odour
W91/7	Q3 2013	23/09/2013	3.202	5.105	-	2.336	-	2.336	0.866	No odour
W91/7	Q4 2013	2/12/2013	3.202	5.117	-	2.493	-	2.493	0.709	No odour
W91/7	Q1 2014	27/03/2014	3.202	5.101	-	2.476	-	2.476	0.726	Sulphur odour
W91/7	Q2 2014	19/05/2014	3.202	5.103	-	2.526	-	2.526	0.676	No odour, no well cap
W91/7	Q3 2014	23/09/2014	3.202	5.096	-	2.531	-	2.531	0.671	Faint hydrocarbon odour
W91/7	Q4 2014	4/12/2014	3.202	5.102	-	2.496	-	2.496	0.706	No odour
W91/7	Q1 2015	10/03/2015	3.202		-	2.521	-	2.521	0.681	No odour.
W91/7	Q2 2015	22/06/2015	3.202		-	2.51	-	2.51	0.692	No odour
W91/7	Q4 2015	24/11/2015	3.202		-	-	-	-	-	Not gauged due to hot works being undertaken in area.
W91/7	Q2 2016	16/08/2016	3.202	5.095	-	2.53	-	2.53	0.672	Sulphur odour.
W91/7	Q4 2016	12/12/2016	3.202	5.1	-	2.512	-	2.512	0.69	
W91/7	Q2 2017	25/05/2017	3.202	5.11	-	2.52	-	2.52	0.682	No odour.
W91/7	Q2 2018	18/06/2018	-	5.11	-	2.52	-	2.52	-	No odour
W91/7	Q4 2018	3/12/2018	3.202	5.120	-	2.250	-	2.250	0.952	Silty base, organic odour.
W91/8	2008	20/02/2008	3.071	4.19	-	1.827	-	1.827	1.244	
W91/8	2008	10/11/2008	3.071	4.16	-	1.879	-	1.879	1.192	
W91/8	2009	15/04/2009	3.071	4.165	-	1.776	-	1.776	1.295	
W91/8	2009	16/11/2009	3.071	4.154	-	1.957	-	1.957	1.114	
W91/8	Q2 2010	21/06/2010	3.071	4.16	-	1.923	-	1.923	1.148	
W91/8	Q4 2010	22/11/2010	3.071	4.155	-	2.044	-	2.044	1.027	Hydrocarbon odour.
W91/8	Q2 2011	6/06/2011	3.071	4.123	-	2.001	-	2.001	1.07	
W91/8	Q4 2011	5/12/2011	3.071	4.14	-	2.047	-	2.047	1.024	Suspected hydrocarbon odour.
W91/8	Q2 2012	4/06/2012	3.071	4.13	-	2.075	-	2.075	0.996	Strong hydrocarbon odour
W91/8	Q4 2012	3/12/2012	3.071	4.12	-	2.27	-	2.27	0.801	Hydrocarbon odour
W91/8	Q2 2013	17/06/2013	3.071	4.215	-	2.165	-	2.165	0.906	No odour
W91/8	Q4 2013	2/12/2013	3.071	4.1	-	2.105	-	2.105	0.966	Faint hydrocarbon odour
W91/8	Q2 2014	19/05/2014	3.071	4.092	-	2.244	-	2.244	0.827	Slight organic odour, silty base
W91/8	Q4 2014	4/12/2014	3.071	4.09	-	2.005	-	2.005	1.066	No odour
W91/8	Q2 2015	19/06/2015	3.071		-	1.84	-	1.84	1.231	Hydrocarbon odour
W91/8	Q4 2015	23/11/2015	3.071	4.08	-	2.02	-	2.02	1.051	Hydrocarbon odour.
W91/8	Q2 2017	22/05/2017	3.071	4.08	-	2.22	-	2.22	0.851	No odour.
W91/8	Q4 2017	5/12/2017	3.071	4.121	-	2.193	-	2.193	0.878	Hydrocarbon odour.
W91/8	Q2 2018	18/06/2018	3.071	4.094	-	2.105	-	2.105	0.966	Hydrocarbon odour.
W91/8	Q4 2018	3/12/2018	3.071	4.081	-	2.025	-	2.025	1.046	Clear, colourless odour.
W91/9	2008	20/02/2008	2.553	4.29	-	1.56	-	1.56	0.993	
W91/9	2008	10/11/2008	2.553	4.283	-	1.621	-	1.621	0.932	
W91/9	2009	16/04/2009	2.553	4.279	-	1.563	-	1.563	0.99	
W91/9	2009	16/11/2009	2.553	4.255	-	1.506	-	1.506	1.047	
W91/9	Q1 2010	31/03/2010	2.553	4.255	-		-	Dry	-	Dry.
W91/9	Q2 2010	21/06/2010	2.553	4.224	-	1.58	-	1.58	0.973	
W91/9	Q3 2010	22/09/2010	2.553	4.177	-	1.635	-	1.635	0.918	
W91/9	Q4 2010	22/11/2010	2.553	4.085	-	1.603	-	1.603	0.95	No well cap so replaced.
W91/9	Q1 2011	8/03/2011	2.553	4.04	-	1.672	-	1.672	0.881	
W91/9	Q2 2011	6/06/2011	2.553	-	-	-	-	-	-	Not gauged.
W91/9	Q3 2011	6/09/2011	2.553	3.912	-	1.586	-	1.586	0.967	
W91/9	Q4 2011	5/12/2011	2.553	3.8	-	1.554	-	1.554	0.999	
W91/9	Q1 2012	19/03/2012	2.553	3.692	-	1.497	-	1.497	1.056	
W91/9	Q2 2012	4/06/2012	2.553	2.49	-	0.915	-	0.915	1.638	No odour
W91/9	Q3 2012	17/09/2012	2.553	3.57	-	1.7	-	1.7	0.853	No odour
W91/9	Q4 2012	3/12/2012	2.553	3.57	-	1.66	-	1.66	0.893	No odour
W91/9	Q1 2013	13/03/2013	2.553	3.48	-	1.587	-	1.587	0.966	No odour
W91/9	Q2 2013	17/06/2013	2.553	3.353	-	1.642	-	1.642	0.911	Organic odour
W91/9	Q3 2013	23/09/2013	2.553	3.266	-	1.647	-	1.647	0.906	Slight organic/ H2S odour, silty at base
W91/9	Q4 2013	2/12/2013	2.553	3.292	-	1.588	-	1.588	0.965	No odour, silty at base
W91/9	Q1 2014	27/03/2014	2.553	3.172	-	1.576	-	1.576	0.977	No odour, silty at base
W91/9	Q2 2014	19/05/2014	2.553	3.08	-	1.685	-	1.685	0.868	No odour, silty base
W91/9	Q3 2014	23/09/2014	2.553	3.06	-	1.595	-	1.595	0.958	No odour
W91/9	Q4 2014	4/12/2014	2.553	3.14	-	1.62	-	1.62	0.933	Organic odour
W91/9	Q1 2015	10/03/2015	2.553		-	1.65	-	1.65	0.903	Sandy/silty at water level, no odour.
W91/9	Q2 2015	19/06/2015	2.553		-	1.456	-	1.456	1.097	Chemical odour, black silty base
W91/9	Q4 2015	24/11/2015	2.553	2.89	-	1.57	-	1.57	0.983	Organic soil odour.
W91/9	Q2 2016	16/08/2016	2.553	2.57	-	1.525	-	1.525	1.028	No odour.
W91/9	Q2 2017	23/05/2017	2.553	2.31	-	1.633	-	1.633	0.92	No odour.
W91/9	Q4 2017	5/12/2017	2.553	2.298	-	1.482	-	1.482	1.071	No odour, silty bottom.
W91/9	Q2 2018	18/06/2018	2.553	2.17	-	1.52	-	1.52	1.033	No odour
W91/9	Q4 2018	3/12/2018	2.553	2.094	-	1.549	-	1.549	1.004	Silt, no odour.

APPENDIX E HISTORICAL ANALYTICAL DATA

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
	BH1	Normal	20/11/2003		-	-	84	910	-	1600	-	1870	-	270	-	2780	-	-	-	-	-	-	-	-	15	8	6	-	-	53	82
BH11|04	BH11/04	Normal	15/12/2011	322217	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
BH11|06	BH11/06	Normal	15/12/2011	322217	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
BH115	BH115	Normal	22/06/2010	268407	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH115	BH115	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH115	BH115	Normal	9/06/2011		<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH115	BH115	Normal	9/12/2011	321414	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<3
BH116	BH116	Normal	22/06/2010	268407	<20	-	-	<50	-	1900	-	1950	-	<100	-	1975	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH116	BH116	Normal	23/11/2010		<20	-	-	<50	-	1900	-	2100	-	200	-	2125	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	9/06/2011		<20	-	-	50	-	2100	-	2300	-	200	-	2350 - 2400	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	7/10/2011	314682	<20	-	-	70	-	-	-	-	-	-	-	<100 - 70	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	7/12/2011	321117	<20	-	-	210	-	-	-	-	-	-	-	210 - 4700	-	<20	<20	550	550	4200	-	400	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
BH116	BH116	Normal	19/06/2012	341448	<20	-	-	<50	-	1300	-	1350	-	<100	-	1300 - 1375	-	<20	<20	<50	<50	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	13/12/2012	363171	<20	-	-	120	-	1900	-	2400	-	500	-	2500 - 2520	-	<20	<20	310	310	1900	-	100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	18/06/2013	383201	<20	-	-	<50	-	1000	-	1050	-	<100	-	1000 - 1075	-	<20	<20	110	110	1000	-	<100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	5/12/2013	402604	<20	-	-	<50	-	1200	-	1250	-	<100	-	1200 - 1275	-	<20	<20	90	90	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	26/05/2014	419629	<20	-	-	50	-	1700	-	2200	-	500	-	2250 - 2300	-	<20	<20	180	180	1900	-	300	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	8/12/2014	441637	<20	-	-	<50	-	2100	-	-	-	200	-	2300	-	<20	<20	180	180	3000	-	500	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	24/06/2015	462945	<20	-	-	<50	-	400	-	-	-	<100	-	400	-	<20	<20	<50	<50	400	-	<100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	25/11/2015		<20	-	-	<50	-	500	-	-	-	<100	-	500	-	<20	<20	<50	<50	500	-	<100	<1	<1	<1	<1	<2	<3	<6
BH116	BH116	Normal	17/08/2016	512488	<20	-	<20	<50	-	800	-	-	-	300	-	1100	-	<20	<20	<50	<50	1100	-	200	<1	<1	<1	<1	<2	<3	-
BH116	BH116	Normal	14/12/2016	528403	-	-	<20	<50	-	500	-	-	-	200	-	700	-	<20	<20	60	60	600	-	100	<1	<1	<1	<1	<2	<3	-
BH116	BH116	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	1140	-	-	-	160	-	1300	-	<20	<20	<100	<100	1180	1280	100	<1	<2	<2	<2	<2	<2	<1
BH116	BH116	Normal	6/12/2017	ES1731188	110	-	-	520	-	3440	-	-	-	1730	-	5690	-	50	50	950	950	4190	6350	1210	<1	<2	<2	<2	<2	<2	<1
BH116	BH116	Normal	5/12/2018	ES1836989	<20	-	-	<50	-	910	-	-	-	520	-	1430	-	<20	<20	<100	<100	1230	1570	340	<1	<2	<2	<2	<2	<2	<1
D01_141216HB	BH116	Field_D	14/12/2016	528403	-	-	<20	<50	-	1100	-	-	-	300	-	1400	-	<20	<20	170	170	1200	-	200	<1	<1	<1	<1	<2	<3	-
D02_20181205	BH116	Field_D	5/12/2018	ES1836989	<20	-	-	<50	-	1060	-	-	-	670	-	1730	-	<20	<20	<100	<100	1480	1920	440	<1	<2	<2	<2	<2	<2	<1
DUP_02	BH116	Field_D	18/06/2013	383201	<20	-	-	<50	-	1000	-	1050	-	<100	-	1000 - 1075	-	<20	<20	120	120	1100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_02_081214	BH116	Field_D	8/12/2014	441637	<20	-	-	170	-	2100	-	-	-	200	-	2500	-	<20	<20	310	310	3000	-	500	<1	<1	<1	<1	<2	<3	<6
D04_251115_TT	BH116	Interlab_D	25/11/2015	ES1537290	<20	-	-	<50	-	640	-	-	-	<50	-	640	-	<20	<20	<100	<100	620	620	<100	<1	<2	<2	<2	<2	<2	<1
TRIP_02	BH116	Interlab_D	18/06/2013	ES1314016	<20	-	-	140	-	2790	-	3350	-	560	-	3490	-	<20	<20	350	-	3000	3620	270	<1	<2	<2	<2	<2	<2	<1
	BH14	Normal	20/11/2003		-	-	<40	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
	BH16	Normal	20/11/2003		-	-	<40	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH210	BH210	Normal	22/06/2010	268407	20	-	-	410	-	<100	-	<200	-	<100	-	510	-	-	-	-	-	-	-	-	<1	2	<1	-	-	<3	4.5
BH210	BH210	Normal	23/11/2010		40	-	-	620	-	200	-	250	-	<100	-	870	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH210	BH210	Normal	9/06/2011		<20	-	-	210	-	<100	-	<200	-	<100	-	200 - 310	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH210	BH210	Normal	7/10/2011	314682	<20	-	-	220	-	-	-	-	-	-	-	200 - 220	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH210	BH210	Normal	7/12/2012	362290	<20	-	-	120	-	<100	-	<200	-	<100	-	100 - 220	-	<20	<20	110	110	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
BH210	BH210	Normal	5/12/2013	402604	<20	-	-	100	-	300	-	350	-	<100	-	400 - 450	-	<20	<20	280	280	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC01	BH210	Field_D	22/06/2010	268407	20	-	-	470	-	<100	-	<200	-	<100	-	570	-	-	-	-	-	-	-	-	<1	2	<1	-	-	<3	4.5
	BH23	Normal	20/11/2003		-	-	<40	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
	BH26	Normal	20/11/2003		-	-	160	110	-	<200	-	<400	-	<200	-	310	-	-	-	-	-	-	-	-	21	35	12	-	-	120	188
BH341	BH341	Normal	22/06/2010	268407	<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH341	BH341	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	9/06/2011		<20	-	-	60	-	800	-	850	-	<100	-	900 - 910	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	19/06/2012	341448	<20	-	-	100	-	700	-	900	-	200	-	1000	-	<20	<20	230	220	700	-	200	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	7/12/2012	362290	<20	-	-	<50	-	700	-	750	-	<100	-	700 - 775	-	<20	<20	90	90	600	-	<100	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	18/06/2013	383201	<20	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	<20	<20	100	100	400	-	<100	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	5/12/2013	402604	<20	-	-	<50	-	700	-	750	-	<100	-	700 - 775	-	<20	<20	150	150	600	-	<100	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	26/05/2014	419629	<20	-	-	<50	-	600	-	650	-	<100	-	600 - 675	-	<20	<20	100	100	600	-	<100	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	8/12/2014	441637	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
BH341	BH341	Normal	25/11/2015		<20	-	-	110	-	1100	-	-	-	100	-	1300	-	<20	<20	240	240	1000	-	<100	<1	<1	<1	<1	<2	<3	<6
D_071011-02	BH341	Field_D	7/10/2011	314682	<20	-	-	60	-	-	-	-	-	-	-	<100 - 60	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
DUP_02_260514	BH341	Field_D	26/05/2014	419629	<20	-	-	60	-	700	-	750	-	<100	-	800 - 810	-	<20	<20	180	180	700	-	<100	<1	<1	<1	<1	<2	<3	<6
T_071011_02	BH341	Interlab_D	7/10/2011		<20	-	-	270	-	2340	-	2630	-	290	-	2900	-	<20	<20	470	-	2220	2840	150	<1	<5	<2	<2	<2	<2	<1
TRIP_02_260514	BH341	Interlab_D	26/05/2014	ES1411792	<20	-	-	1780	-	14,000	-	17,760	-	3760	-	19,500 - 19,540	-	<20	<20	3640	3640	15,800	21,000	1510	<1	<2	<2	<2	<2	<2	<1
	BH9	Normal	20/11/2003		-	-	<40	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/12	BH90/12	Normal	1/08/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/7	BH90/7	Normal	1/08/1999		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/7	BH90/7	Normal	1/07/2000		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/7	BH90/7	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/7	BH90/7	Normal	1/08/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH90/7	BH90/7	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
BH90/7	BH90/7	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
BH90/7	BH90/7	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
BH90/7	BH90/7	Normal	18/11/2009	255440	<20	-	-	80	-	500	-	550	-	<100	-	630	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
BH90/7	BH90/7	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
BH90/7	BH90/7	Normal	6/12/2011	320982	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
BH90/7	BH90/7	Normal	11/12/2012	362822	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
BH90/7	BH90/7	Normal	6/12/2013	402721	<200	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<200	<200	<50	<50	<100	-	<100	<10	<10	<10	<10	<20	<30	<60
BH90/7	BH90/7	Normal	8/12/2014	441642	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC04	BH90/7	Field_D	18/11/2009	255440	130	-	-	120	-	700	-	800	-	100	-	920	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
BH93/3	BH93/3	Normal	1/12/2000		<20	-	-	200	-	7800	-	10,400	-	2600	-	10,600	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
BH93/3	BH93/3	Normal	1/06/2001		<20	-	-	330	-	8100	-	10,000	-	1900	-	10,330	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
D1	D1	Normal	4/04/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	1/02/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/1	MW01/1	Normal	30/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	1/02/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	23/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/2	MW01/2	Normal	27/09/2006		<20	-	-	<40	-	600	-	800	-	200	-	820	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	1/02/2001		60	-	-	360	-	3800	-	4600	-	800	-	4960	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	1/06/2001		180	-	-	430	-	4200	-	5000	-	800	-	5430	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	1/12/2003		30	-	-	50	-	498	-	548	-	<100	-	598	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	1/07/2004		<20	-	-	140	-	900	-	950	-	<100	-	1090	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	1/03/2005		30	-	-	50	-	921	-	1069	-	148	-	1119	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	14/09/2005		<20	-	-	<40	-	692	-	795	-	103	-	815	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	23/03/2006		<20	-	-	50	-	588	-	638	-	<100	-	688	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW01/3	MW01/3	Normal	5/10/2006		<20	-	-	60	-	1100	-	1410	-	310	-	1470	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW02/01	MW02/1	Normal	15/12/2016	528305	-	-	420	2900	-	3000	-	-	-	3100	-	9000	-	510	500	3200	3200	4000	-	1700	2	<1	<1	2	6	8	-
MW02/1	MW02/1	Normal	1/01/2004		6400	-	-	40,474	-	12,609	-	19,929	-	7320	-	60,403	-	-	-	-	-	-	-	-	650	<50	920	-	-	4296	5891
MW02/1	MW02/1	Normal	1/07/2004		4500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	26	630	-	-	948	1934
MW02/1	MW02/1	Normal	1/03/2005		3500	-	-	12,476	-	6850	-	9840	-	2990	-	22,316	-	-	-	-	-	-	-	-	290	26	810	-	-	111	1237

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW02/1	MW02/1	Normal	14/09/2005		2500	-	-	7100	-	2220	-	2994	-	774	-	10,094	-	-	-	-	-	-	-	-	270	19	620	-	-	73	982
MW02/1	MW02/1	Normal	22/03/2006		2100	-	-	6100	-	2260	-	3172	-	912	-	9272	-	-	-	-	-	-	-	-	180	14	430	-	-	8	632
MW02/1	MW02/1	Normal	27/09/2006		1390	-	-	19,700	-	8900	-	15,220	-	6320	-	34,920	-	-	-	-	-	-	-	-	62	<1	<1	-	-	22	85
MW02/1	MW02/1	Normal	28/02/2008		3300	-	-	4100	-	1000	-	1200	-	200	-	5300	-	-	-	-	-	-	-	-	25	6	8	-	-	38	77
MW02/1	MW02/1	Normal	17/11/2008		3600	-	-	4500	-	1600	-	2400	-	800	-	6900	-	-	-	-	-	-	-	-	26	5	5	-	-	29	65
MW02/1	MW02/1	Normal	22/04/2009		2500	-	-	3000	-	1600	-	2400	-	800	-	5400	-	-	-	-	-	-	-	-	16	5	4	-	-	32	57
MW02/1	MW02/1	Normal	23/11/2009	255816	2300	-	-	5200	-	1100	-	1150	-	<100	-	6350	-	-	-	-	-	-	-	-	13	3	3	-	-	20	39
MW02/1	MW02/1	Normal	25/06/2010	268866	4800	-	-	2100	-	400	-	450	-	<100	-	2550	-	-	-	-	-	-	-	-	<100	<100	<100	-	-	<100	<400
MW02/1	MW02/1	Normal	25/11/2010		2600	-	-	3100	-	800	-	850	-	<100	-	3950	-	-	-	-	-	-	-	-	<40	<40	<40	<40	<40	<40	<160
MW02/1	MW02/1	Normal	8/06/2011		960	-	-	3600	-	700	-	900	-	200	-	4500	-	-	-	-	-	-	-	-	21	<1	3	9	19	28 - 29	50 - 53.5
MW02/1	MW02/1	Normal	8/12/2011	321281	1300	-	-	3600	-	-	-	-	-	-	-	3600	-	1700	1600	4500	4000	1100	-	<100	17	<10	<10	<10	<20	<30 - 15	40 - 42
MW02/1	MW02/1	Normal	14/06/2012	340975	590	-	-	3200	-	1700	-	2400	-	700	-	5600	-	590	580	3700	3500	2000	-	500	14	4	<1	9	19	28	46.5 - 50
MW02/1	MW02/1	Normal	12/12/2012	363008	1700	-	-	4700	-	3000	-	4200	-	1200	-	8900	-	2200	2200	5700	5500	2600	-	700	<20	<20	<20	<20	<40	<60	<20
MW02/1	MW02/1	Normal	24/06/2013	383701	790	-	-	3400	-	1400	-	2300	-	900	-	5700	-	990	950	4000	4000	1700	-	500	13	11	<10	<10	<20	<30	44
MW02/1	MW02/1	Normal	10/12/2013	403166	1100	-	-	2800	-	700	-	750	-	<100	-	3500 - 3550	-	6600	6600	3400	3400	500	-	<100	5	2	2	4	9	13	22
MW02/1	MW02/1	Normal	27/05/2014	419785	1200	-	-	2800	-	1100	-	1500	-	400	-	4300	-	1600	1600	3100	3100	1000	-	200	6	2	1	4	9	13	22
MW02/1	MW02/1	Normal	11/12/2014	442349	820	-	-	570	-	500	-	-	-	<100	-	1100	-	1000	1000	830	830	400	-	<100	5	2	2	4	9	12	21
MW02/1	MW02/1	Normal	23/06/2015	462630	520	-	-	1700	-	900	-	-	-	100	-	2700	-	670	650	1900	1900	600	-	<100	3	1	<1	3	7	10	14.5
MW02/1	MW02/1	Normal	24/11/2015		560	-	-	2000	-	900	-	-	-	<100	-	2900	-	750	740	2100	2100	600	-	<100	2	1	1	3	7	10	14
MW02/1	MW02/1	Normal	19/08/2016	512679	190	-	190	<50	-	<100	-	-	-	<100	-	<100	-	210	210	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW02/1	MW02/1	Normal	26/05/2017	ES1712963	520	-	-	1290	-	680	-	-	-	200	-	2170	-	630	620	1480	1480	620	2100	<100	2	<2	<2	<2	4	4	6
MW02/1	MW02/1	Normal	25/06/2018	ES1818602	240	-	-	700	-	240	-	-	-	210	-	1150	-	280	280	800	800	250	1170	120	2	<2	<2	<2	3	3	5
MW02/1	MW02/1	Normal	4/12/2018	ES1836402	330	-	-	1300	-	530	-	-	-	<50	-	1830	-	570	560	1460	1460	300	1760	<100	2	<2	<2	2	6	8	10
MW04/1	MW04/1	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/1	MW04/1	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/1	MW04/1	Normal	31/03/2006		<20	-	-	<40	-	347	-	584	-	237	-	604	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/1	MW04/1	Normal	29/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/02	MW04/2	Normal	19/11/2009	255526	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW04/02	MW04/2	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW04/2	MW04/2	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/2	MW04/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/2	MW04/2	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/2	MW04/2	Normal	31/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/2	MW04/2	Normal	29/09/2006		<20	-	-	<40	-	100	-	160	-	60	-	180	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW04/2	MW04/2	Normal	22/02/2008		-	-	-	-	-	-	-	150	-	-	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW04/2	MW04/2	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW04/2	MW04/2	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW04/2	MW04/2	Normal	6/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW04/2	MW04/2	Normal	7/12/2012	362294	<20	-	-	<50	-	400	-	700	-	300	-	700 - 725	-	<20	<20	<50	<50	600	-	100	<1	<1	<1	<1	<2	<3	<6
MW04/2	MW04/2	Normal	6/12/2013	402721	<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	<20	<20	70	70	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW04/2	MW04/2	Normal	5/12/2014	441476	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_03	MW04/2	Field_D	6/12/2013	402721	<20	-	-	50	-	<100	-	<200	-	<100	-	<100 - 150	-	<20	<20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_03_051214	MW04/2	Field_D	5/12/2014	441476	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
TRIP_03	MW04/2	Interlab_D	6/12/2013	ES1326809	<20	-	-	150	-	280	-	430	-	150	-	580	-	<20	<20	150	150	380	640	110	<1	<2	<2	<2	<2	<2	<1
MW 09/1	MW09/1	Normal	23/05/2014	419458	5600	-	-	2600	-	600	-	650	-	<100	-	3200 - 3250	-	6100	3900	2200	2200	500	-	<100	830	860	140	86	310	396 - 400	2230
MW09/1	MW09/1	Normal	25/06/2010	268866	36,000	-	-	8000	-	300	-	350	-	<100	-	8350	-	-	-	-	-	-	-	-	2400	4500	2400	-	-	13,000	22,300
MW09/1	MW09/1	Normal	24/11/2010		26,000	-	-	17,000	-	2600	-	3000	-	400	-	20,000	-	-	-	-	-	-	-	-	2100	420	2200	2600	5500	8100	12,820
MW09/1	MW09/1	Normal	8/06/2011		100,000	-	-	4400	-	400	-	450	-	<100	-	4800 - 4850	-	-	-	-	-	-	-	-	3900	2500	3700	1200	9500	10,700 - 11,000	21,000 - 21,100
MW09/1	MW09/1	Normal	8/12/2011	321281	33,000	-	-	6600	-	-	-	-	-	-	-	6600 - 7300	-	35,000	16,000	4800	4500	400	-	<100	6000	4800	1700	790	5300	6090 - 6100	18,600 - 19,000
MW09/1	MW09/1	Normal	15/06/2012	341117	33,000	-	-	3800	-	300	-	350	-	<100	-	4100 - 4150	-	35,000	5900	2600	100	200	-	<100	6200	17,000	<500	1300	4200	5500	28,950 - 29,000
MW09/1	MW09/1	Normal	12/12/2012	363008	6800	-	-	5900	-	1300	-	1400	-	100	-	7300	-	7100	3900	4700	4600	900	-	<100	1100	1100	<50	140	850	990	3200 - 3215
MW09/1	MW09/1	Normal	25/06/2013	383856	19,000	-	-	2900	-	600	-	650	-	<100	-	3500 - 3550	-	20,000	2800	2200	2200	400	-	<100	3000	9200	570	990	3200	4190 - 4200	16,970
MW09/1	MW09/1	Normal	10/12/2013	403166	6400	-	-	2500	-	1200	-	1250	-	<100	-	3700 - 3750	-	6700	3300	2800	2800	900	-	<100	1900	620	180	<100	580	580 - 630	3280
MW09/1	MW09/1	Normal	10/12/2014	441997	1100	-	-	90	-	100	-	-	-	<100	-	190	-	1200	1200	100	100	100	-	<100	7	<1	14	<1	7	7	28.5
MW09/1	MW09/1	Normal	25/11/2015		780	-	-	110	-	<100	-	-	-	<100	-	110	-	980	910	70	50	<100	-	<100	18	6	20	8	16	24	68
MW09/1	MW09/1	Normal	19/08/2016	512679	4900	-	4900	530	-	100	-	-	-	<100	-	630	-	5000	2500	540	540	200	-	100	2400	<50	92	<50	<100	<150	-
MW09/1	MW09/1	Normal	15/12/2016	528305	-	-	7400	<50	-	<100	-	-	-	<100	-	<100	-	7400	3200	<50	<50	<100	-	200	3900	61	130	15	52	68	-
MW09/1	MW09/1	Normal	26/05/2017	ES1712963	610	-	-	620	-	<100	-	-	-	<50	-	620	-	480	80	680	680	<100	680	<100	322	57	11	3	7	10	400
MW09/1	MW09/1	Normal	8/12/2017	ES1731268	10,100	-	-	530	-	140	-	-	-	<50	-	670	-	7800	2790	480	450	120	600	<100	4460	175	163	33	177	210	5010
MW09/1	MW09/1	Normal	25/06/2018	ES1818602	1480	-	-	350	-	<100	-	-	-	90	-	440	-	1120	630	370	370	<100	370	<100	398	54	10	6	20	26	488
MW09/1	MW09/1	Normal	7/12/2018	ES1836989	11,800	-	-	560	-	<100	-	-	-	650	-	1210	-	9470	2430	510	510	490	1270	270	6560	226	86	24	144	168	7040
D02_151216_HB	MW09/1	Field_D	15/12/2016	528305	-	-	1800	<50	-	<100	-	-	-	100	-	100	-	1900	1200	<50	<50	<100	-	100	650	12	64	2	12	15	-
D02_251115_SH	MW09/1	Field_D	25/11/2015		730	-	-	360	-	100	-	-	-	<100	-	460	-	910	850	270	260	200	-	<100	17	5	18	8	15	22	62
DUP_01	MW09/1	Field_D	25/06/2013	383856	20,000	-	-	3300	-	500	-	550	-	<100	-	3800 - 3850	-	20,000	3100	2400	2400	300	-	<100	3200	9200	310	1000	3100	4100	16,810
DUP_01	MW09/1	Field_D	10/12/2013	403166	6300	-	-	2800	-	900	-	950	-	<100	-	3700 - 3750	-	6500	3400	2800	2800	700	-	<100	1800	580	170	<100	550	550 - 600	3100
DUP_01_101214	MW09/1	Field_D	10/12/2014	441997	1000	-	-	90	-	100	-	-	-	<100	-	190	-	1200	1100	100	100	100	-	<100	8	<1	15	1	9	10	33.5
DUP_01_230514	MW09/1	Field_D	23/05/2014	419458	5300	-	-	1900	-	400	-	450	-	<100	-	2300 - 2350	-	5700	3700	1600	1600	400	-	<100	750	790	120	79	280	359 - 360	2020
DUP_09	MW09/1	Field_D	15/06/2012	341117	34,000	-	-	4600	-	500	-	550	-	<100	-	5100 - 5150	-	36,000	5600	3300	2600	300	-	<100	6100	18,000	670	1400	4600	6000	30,770 - 31,000
QC07	MW09/1	Field_D	24/11/2010		24,000	-	-	13,000	-	2400	-	2900	-	500	-	15,900	-	-	-	-	-	-	-	-	2100	370	2100	2600	5300	7900	12,470
QC08	MW09/1	Field_D	8/06/2011		39,000	-	-	3600	-	300	-	350	-	<100	-	3900 - 3950	-	-	-	-	-	-	-	-	4900	2900	2000	860	6900	7760 - 7800	17,600 - 18,000
T01_151216_HB	MW09/1	Interlab_D	15/12/2016	ES1629258	10,800	-	-	140	-	380	-	-	-	190	-	710	-	7290	2680	170	140	440	840	230	4350	76	141	<20	45	45	4610
TRIP_01	MW09/1	Interlab_D	25/06/2013	ES1314420	-	-	23,000	6270	-	870	-	895	-	<50	-	7140 - 7165	-	25,700	12,800	3960	-	620	4580	<100	1930	6530	718	911	2830	3740 - 3741	12,900 - 12,918
TRIP_01	MW09/1	Interlab_D	10/12/2013	ES1327200	11,200	-	-	3680	-	1050	-	1075	-	<50	-	4730 - 4755	-	11,800	7150	2940	-	700	3640	<100	2360	871	383	115	919	1030 - 1034	4644 - 4650
TRIP_01-230514	MW09/1	Interlab_D	23/05/2014	ES1411704	6530	-	-	3150	-	1120	-	1145	-	<50	-	4270 - 4295	-	6790	5060	2450	2440	850	3300	<100	552	670	134	87	287	374	1730
MW09/10	MW09/10	Normal	20/11/2009	255548	80	-	-	90	-	<100	-	<200	-	<100	-	190	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/10	MW09/10	Normal	24/06/2010	268696	330	-	-	450	-	<100	-	<200	-	<100	-	550	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/10	MW09/10	Normal	25/11/2010		30	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	7/06/2011		120	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	6/12/2011	320972	70	-	-	<50	-	-	-	-	-	-	-	<50	-	80	80	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/10	MW09/10	Normal	13/06/2012	340826	50	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	50	50	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	5/12/2012	362018	40	-	-	50	-	100	-	150	-	<100	-	200	-	40	40	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	24/06/2013	383701	40	-	-	300	-	200	-	250	-	<100	-	500 - 550	-	40	40	140	140	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	9/12/2013	402999	20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	30	30	50	50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	22/05/2014	419285	30	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	30	30	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW09/10	MW09/10	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	30	30	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/10	MW09/10	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/10	MW09/10	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	30	30	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/10	MW09/10	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/10	MW09/10	Normal	25/06/2018	ES1818590	<20	-	-	<50	-	<100	-	-	-	170	-	170	-	<20	<20	<100	<100	150	290	140	<1	<2	<2	<2	<2	<2	<1
MW09/10	MW09/10	Normal	5/12/2018	ES1836989	30	-	-	110	-	<100	-	-	-	160	-	270	-	<20	<20	100	100	120	220	<100	<1	<2	<2	<2	<2	<2	<1
D03_20181205	MW09/10	Field_D	5/12/2018	ES1836989	-	-	-	220	-	<100	-	-	-	250	-	470	-	-	-	220	-	230	450	<100	-	-	-	-	-	-	-
QC04	MW09/10	Field_D	24/06/2010	268696	360	-	-	120	-	100	-	150	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/11	MW09/11	Normal	19/11/2009	255519	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/11	MW09/11	Normal	24/06/2010	268696	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/11	MW09/11	Normal	24/11/2010		<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	7/12/2011	321118	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/11	MW09/11	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW09/11	MW09/11	Normal	12/12/2012	363008	<20	-	-	150	-	200	-	250	-	<100	-	400	-	<20	<20	50	50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	25/06/2013	383856	<20	-	-	310	-	300	-	350	-	<100	-	600 - 660	-	<20	<20	130	130	400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	9/12/2013	402999	<20	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	<20	<20	<50	<50	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	22/05/2014	419285	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW09/11	MW09/11	Normal	8/12/2014	441642	<20	-	-	<50	-	300	-	-	-	<100	-	300	-	<20	<20	50	50	400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/11	MW09/11	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/11	MW09/11	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/11	MW09/11	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/11	MW09/11	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	100	-	100	-	<20	<20	<100	<100	140	140	<100	<1	<2	<2	<2	<2	<2	<1
MW09/11	MW09/11	Normal	4/12/2018	ES1836402	<20	-	-	110	-	130	-	-	-	460	-	700	-	<20	<20	120	120	430	730	180	<1	<2	<2	<2	<2	<2	<1
DUP-07_081214	MW09/11	Field_D	8/12/2014	441642	<20	-	-	<50	-	300	-	-	-	<100	-	300	-	<20	<20	50	50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
T01_220618	MW09/11	Interlab_D	22/06/2018	604505	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/12	MW09/12	Normal	19/11/2009	255519	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/12	MW09/12	Normal	24/06/2010	268696	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/12	MW09/12	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	9/06/2011		<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	7/12/2011	321118	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/12	MW09/12	Normal	14/06/2012	340975	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	13/12/2012	363230	<20	-	-	90	-	700	-	750	-	<100	-	800 - 840	-	<20	<20	100	100	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	24/06/2013	383701	<20	-	-	300	-	400	-	450	-	<100	-	700 - 750	-	<20	<20	160	160	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	11/12/2013	403332	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	21/05/2014	419480	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	50	50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	10/12/2014	441997	<20	-	-	310	-	700	-	-	-	<100	-	1000	-	<20	<20	330	330	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/12	MW09/12	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	19/11/2009	255519	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/13	MW09/13	Normal	24/06/2010	268696	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/13	MW09/13	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	7/12/2011	321118	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/13	MW09/13	Normal	12/12/2012	363008	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	9/12/2013	402999	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	8/12/2014	441642	<20	-	-	160	-	300	-	-	-	<100	-	460	-	<20	<20	140	140	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/13	MW09/13	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/13	MW09/13	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/13	MW09/13	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/13	MW09/13	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	100	-	100	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/13	MW09/13	Normal	4/12/2018	ES1836402	<20	-	-	80	-	<100	-	-	-	460	-	540	-	<20	<20	<100	<100	350	530	180	<1	<2	<2	<2	<2	<2	<1
MW09/14	MW09/14	Normal	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/14	MW09/14	Normal	23/06/2010	268593	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/14	MW09/14	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	9/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/14	MW09/14	Normal	19/06/2012	341447	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	12/12/2012	362997	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	20/06/2013	383357	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	4/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	22/05/2014	419480	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	8/12/2014	441637	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	25/06/2015	463095	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	23/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/14	MW09/14	Normal	17/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/15	MW09/15	Normal	7/01/2010	257678	-	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/15	MW09/15	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/16	MW09/16	Normal	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/16	MW09/16	Normal	12/09/2014	432186	<20	-	-	130	-	200	-	250	-	<100	-	300 - 380	-	<20	<20	150	150	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/17	MW09/17	Normal	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/17	MW09/17	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/17	MW09/17	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/18	MW09/18	Normal	7/01/2010	257678	<20	-	-	120	-	600	-	650	-	<100	-	770	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/19	MW09/19	Normal	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	4	<1	<1	-	-	4	9
QC1	MW09/19	Field_D	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	4	<1	<1	-	-	3	8
MW09/2	MW09/2	Normal	22/04/2009		1000	-	-	2800	-	400	-	450	-	<100	-	3250	-	-	-	-	-	-	-	-	1	2	99	-	-	220	322
MW09/2	MW09/2	Normal	19/11/2009	255519	510	-	-	6800	-	1100	-	1150	-	<100	-	7950	-	-	-	-	-	-	-	-	1	<1	3	-	-	18	22.5
MW09/2	MW09/2	Normal	24/06/2010	268696	4000	-	-	3700	-	600	-	700	-	100	-	4400	-	-	-	-	-	-	-	-	<50	<50	<50	-	-	<50	<200
MW09/2	MW09/2	Normal	25/11/2010		330	-	-	2600	-	1600	-	1800	-	200	-	4400	-	-	-	-	-	-	-	-	1	1	2	3	7	10	14
MW09/2	MW09/2	Normal	10/06/2011		270	-	-	5100	-	300	-	350	-	<100	-	5400 - 5450	-	-	-	-	-	-	-	-	2	<1	2	3	7	10	10 - 14.5
MW09/2	MW09/2	Normal	7/12/2011	321118	350	-	-	4600	-	-	-	-	-	-	-	4600 - 5200	-	740	730	4700	4700	200	-	<100	<1	<1	<1	3	5	7 - 8	<10 - 8.5
MW09/2	MW09/2	Normal	14/06/2012	340975	250	-	-	2800	-	200	-	250	-	<100	-	3000 - 3050	-	490	470	2900	2900	<100	-	<100	1	2	2	3	6	9 - 10	10 - 15
MW09/2	MW09/2	Normal	13/12/2012	363230	300	-	-	3900	-	2300	-	2350	-	<100	-	6200 - 6250	-	570	570	4800	4800	1100	-	<100	<5	<5	<5	<5	<10	<15	<10
MW09/2	MW09/2	Normal	24/06/2013	383701	260	-	-	2900	-	600	-	650	-	<100	-	3500 - 3550	-	520	510	3200	3200	400	-	<100	1	1	2	3	4	7	11
MW09/2	MW09/2	Normal	10/12/2013	403166	290	-	-	3300	-	2000	-	2050	-	<100	-	5300 - 5350	-	6800	6800	4200	4200	1500	-	<100	<1	<1	<1	2	2	4	5.5
MW09/2	MW09/2	Normal	28/05/2014	419873	370	-	-	1600	-	400	-	450	-	<100	-	2000 - 2050	-	830	820	1800	1800	200	-	<100	<1	<1	<1	2	2	4 - 5	6.5
MW09/2	MW09/2	Normal	10/12/2014	441997	130	-	-	990	-	900	-	-	-	<100	-	1900	-	340	340	1300	1300	700	-	<100	<1	<1	<1	2	<2	4	5.5
MW09/2	MW09/2	Normal	26/11/2015	481119	180	-	-	1900	-	900	-	-	-	<100	-	2800	-	380	370	2300	2300	500	-	<100	<1	<1	1	3	3	6	8
MW09/2	MW09/2	Normal	14/12/2016	528402	-	-	<20	230	-	200	-	-	-	<100	-	430	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/2	MW09/2	Normal	26/05/2017	ES1712963	240	-	-	1020	-	210	-	-	-	<50	-	1230	-	320	320	1110	1110	<100	1110	<100	<1	<2	<2	<2	<2	<2	<1
MW09/2	MW09/2	Normal	25/06/2018	ES1818590	30	-	-	580	-	<100	-	-	-	380	-	960	-	50	50	630	630	290	1060	140	<1	<2	<2	<2	<2	<2	<1
MW09/2	MW09/2	Normal	4/12/2018	ES1836402	<20	-	-	160	-	<100	-	-	-	200	-	360	-	<20	<20	180	180	140	320	<100	<1	<2	<2	<2	<2	<2	<1
QC11	MW09/2	Field_D	22/04/2009		920	-	-	3300	-	500	-	550	-	<100	-	3850	-	-	-	-	-	-	-	-	1	2	100	-	-	220	323
QC11	MW09/2	Field_D	25/11/2010		330	-	-	3000	-	1400	-	1500	-	100	-	4500	-	-	-	-	-	-	-	-	1	1	2	<1	6	6 - 6.5	10
TRIP_01_101214	MW09/2	Interlab_D	10/12/2014	ES1427737	320	-	-	740	-	220	-	-	-	<50	-	960	-	580	580	790	790	<100	790	<100	<1	<2	<2	<2	2	2	2
MW09/20	MW09/20	Normal	7/01/2010	257678	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/20	MW09/20	Normal	8/12/2014	441642	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/20	MW09/20	Normal	14/12/2016	528589	-	-	50	390	-	100	-	-	-	<100	-	490	-	50	50	270	270	<100	-	<100	<1	<1	<1	<1	<2	<3	-
D04_141216	MW09/20	Field_D	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
T04_141216	MW09/20	Interlab_D	14/12/2016	ES1629560	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/03	MW09/3	Normal	19/11/2009	255526	7200	-	-	1000	-	100	-	150	-	<100	-	1150	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/3	MW09/3	Normal	16/04/2009		4800	-	-	750	-	<100	-	<200	-	<100	-	850	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/3	MW09/3	Normal	23/06/2010	268593	2200	-	-	410	-	300	-	700	-	400	-	1110	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/3	MW09/3	Normal	26/11/2010		2100	-	-	300	-	<100	-	<200	-	<100	-	400	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	8/06/2011		2100	-	-	140	-	<100	-	<200	-	<100	-	100 - 240	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<100	<150	<10
MW09/3	MW09/3	Normal	6/12/2011	320972	1800	-	-	<50	-	-	-	-	-	-	-	<50	-	1800	1800	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/3	MW09/3	Normal	18/06/2012	341298	990	-	-	110	-	<100	-	<200	-	<100	-	100 - 210	-	990	990	110	110	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	11/12/2012	362822	1200	-	-	1100	-	500	-	1000	-	500	-	2100	-	1200	1200	1000	1000	800	-	200	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	21/06/2013	383497	3700	-	-	900	-	400	-	1000	-	600	-	1900	-	3700	3700	740	740	800	-	300	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	5/12/2013	402604	1600	-	-	840	-	200	-	250	-	<100	-	1000 - 1090	-	1600	1600	820	820	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	22/05/2014	419285	1200	-	-	290	-	600	-	1100	-	500	-	1390 - 1400	-	1200	1200	330	330	800	-	200	<1	<1	<1	<1	<2	<1	<4

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW09/3	MW09/3	Normal	8/12/2014	441637	470	-	-	490	-	200	-	-	-	<100	-	700	-	470	470	630	630	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/3	MW09/3	Normal	15/12/2016	528403	-	-	600	420	-	<100	-	-	-	<100	-	420	-	600	600	400	400	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/3	MW09/3	Normal	29/05/2017	ES1713176	750	-	-	<50	-	<100	-	-	-	<50	-	<50	-	740	740	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/3	MW09/3	Normal	8/12/2017	ES1731268	1400	-	-	310	-	100	-	-	-	110	-	520	-	1360	1360	300	300	170	470	<100	<1	<2	<2	<2	<2	<2	<1
MW09/3	MW09/3	Normal	22/06/2018	ES1818457	760	-	-	<50	-	<100	-	-	-	70	-	70	-	760	760	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/3	MW09/3	Normal	7/12/2018	ES1836989	540	-	-	70	-	<100	-	-	-	90	-	160	-	530	530	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_02	MW09/3	Field_D	6/12/2011	320972	1700	-	-	430	-	-	-	-	-	-	-	430 - 1400	-	1700	1700	460	460	700	-	300	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
TRIP_01	MW09/3	Interlab_D	6/12/2011	ES1126906	1300	-	-	2490	-	-	-	-	-	-	-	2490 - 6330	-	1270	1270	2550	-	3140	6690	1000	<1	<5	<2	<2	<2	<2 - 2	<1 - 5
MW09/4	MW09/4	Normal	21/04/2009		<20	-	-	<50	-	900	-	1100	-	200	-	1125	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	1	2.5
MW09/4	MW09/4	Normal	23/11/2009	255816	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/4	MW09/4	Normal	23/06/2010	268583	<20	-	-	690	-	300	-	350	-	<100	-	1040	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
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MW09/4	MW09/4	Normal	9/06/2011		<20	-	-	150	-	2300	-	3000	-	700	-	3150 - 3200	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/4	MW09/4	Normal	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 1300	-	<20	<20	150	150	1300	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/4	MW09/4	Normal	14/06/2012	340975	<20	-	-	<50	-	1200	-	1300	-	100	-	1300 - 1325	-	<20	<20	190	190	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/4	MW09/4	Normal	13/12/2012	363230	<20	-	-	90	-	2100	-	2400	-	300	-	2490 - 2500	-	<20	<20	200	200	2000	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/4	MW09/4	Normal	26/06/2013	384108	<20	-	-	310	-	1700	-	2100	-	400	-	2400 - 2410	-	<20	<20	300	300	2100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/4	MW09/4	Normal	11/12/2013	403332	<20	-	-	<50	-	2100	-	2300	-	200	-	2300 - 2325	-	<20	<20	150	150	2400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/4	MW09/4	Normal	21/05/2014	419285	<20	-	-	50	-	1100	-	1400	-	300	-	1450 - 1500	-	<20	<20	150	150	1200	-	<100	<1	<1	<1	<1	<2	<1	<4
MW09/4	MW09/4	Normal	11/12/2014	442349	<20	-	-	50	-	1200	-	-	-	<100	-	1300	-	<20	<20	150	150	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_05	MW09/4	Field_D	13/12/2012	363230	<20	-	-	110	-	2100	-	2400	-	300	-	2500 - 2510	-	<20	<20	190	190	1900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	22/04/2009		30	-	-	2300	-	17,000	-	17,200	-	200	-	19,500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/5	MW09/5	Normal	19/11/2009	255519	<20	-	-	3100	-	18,000	-	18,200	-	200	-	21,300	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/5	MW09/5	Normal	24/06/2010	268696	<20	-	-	530	-	2200	-	2250	-	<100	-	2780	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/5	MW09/5	Normal	26/11/2010		<20	-	-	1200	-	12,000	-	12,300	-	300	-	13,500	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	9/06/2011		<20	-	-	380	-	1800	-	1850	-	<100	-	2200 - 2230	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	7/12/2011	321118	<20	-	-	370	-	-	-	-	-	-	-	370 - 3300	-	<20	<20	1400	1400	2000	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/5	MW09/5	Normal	15/06/2012	341115	<20	-	-	90	-	800	-	850	-	<100	-	900 - 940	-	<20	<20	370	370	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	13/12/2012	363171	<20	-	-	260	-	2100	-	2200	-	100	-	2460 - 2500	-	<20	<20	670	0	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	20/06/2013	383357	<20	-	-	910	-	5800	-	6000	-	200	-	6900 - 6910	-	30	30	2700	2700	4600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	11/12/2013	403332	170	-	-	1400	-	9500	-	9600	-	100	-	11,000	-	530	530	4700	4700	6800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	21/05/2014	419480	<20	-	-	220	-	1000	-	1050	-	<100	-	1200 - 1270	-	<20	<20	490	490	700	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/5	MW09/5	Normal	10/12/2014	441997	<20	-	-	340	-	700	-	-	-	<100	-	1000	-	<20	<20	390	390	700	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_03	MW09/5	Field_D	7/12/2011	321118	<20	-	-	390	-	-	-	-	-	-	-	390 - 2400	-	<20	<20	830	830	1500	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
QC13	MW09/5	Field_D	26/11/2010		<20	-	-	310	-	2900	-	3000	-	100	-	3310	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
QC6	MW09/5	Field_D	19/11/2009	255519	<20	-	-	940	-	5300	-	5350	-	<100	-	6290	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/6	MW09/6	Normal	17/04/2009		310	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/6	MW09/6	Normal	23/11/2009	255816	510	-	-	70	-	<100	-	<200	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	1	2.5
MW09/6	MW09/6	Normal	25/06/2010	268866	420	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/6	MW09/6	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<40	<40	<40	<40	<40	<40	<160
MW09/6	MW09/6	Normal	8/06/2011		70	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	8/12/2011	321281	100	-	-	90	-	-	-	-	-	-	-	90 - 400	-	110	110	130	130	200	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/6	MW09/6	Normal	15/06/2012	341117	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	60	70	66	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	12/12/2012	363008	130	-	-	200	-	300	-	350	-	<100	-	500 - 550	-	130	130	130	130	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	25/06/2013	383856	120	-	-	300	-	300	-	350	-	<100	-	600 - 650	-	130	130	210	210	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	10/12/2013	403166	400	-	-	80	-	500	-	550	-	<100	-	600 - 630	-	400	400	190	190	400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	21/05/2014	419480	440	-	-	110	-	300	-	350	-	<100	-	400 - 460	-	440	440	170	170	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	8/12/2014	441642	830	-	-	350	-	600	-	-	-	<100	-	950	-	830	830	460	460	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	23/06/2015	462630	480	-	-	60	-	100	-	-	-	<100	-	160	-	480	480	80	80	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	24/11/2015		460	-	-	<50	-	200	-	-	-	<100	-	200	-	470	470	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/6	MW09/6	Normal	15/12/2016	528403	-	-	170	<50	-	<100	-	-	-	<100	-	<100	-	170	170	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/6	MW09/6	Normal	26/05/2017	ES1712963	220	-	-	<50	-	180	-	-	-	<50	-	180	-	220	220	<100	<100	160	160	<100	<1	<2	<2	<2	<2	<2	<1
MW09/6	MW09/6	Normal	8/12/2017	ES1731268	70	-	-	<50	-	160	-	-	-	<50	-	160	-	70	70	<100	<100	130	130	<100	<1	<2	<2	<2	<2	<2	<1
MW09/6	MW09/6	Normal	22/06/2018	ES1818457	330	-	-	<50	-	<100	-	-	-	<50	-	<50	-	330	330	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/6	MW09/6	Normal	4/12/2018	ES1836402	220	-	-	<50	-	260	-	-	-	<50	-	260	-	270	270	110	110	230	340	<100	<1	<2	<2	<2	<2	<2	<1
D01_081217	MW09/6	Field_D	8/12/2017	ES1731268	60	-	-	<50	-	140	-	-	-	<50	-	140	-	60	60	<100	<100	120	120	<100	<1	<2	<2	<2	<2	<2	<1
DUP_06	MW09/6	Field_D	12/12/2012	363008	190	-	-	350	-	500	-	550	-	<100	-	900	-	190	190	300	300	400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW 09/7	MW09/7	Normal	23/05/2014	419458	1400	-	-	1700	-	900	-	1100	-	200	-	2800	-	1600	1600	1800	1800	900	-	<100	21	<4	<4	<4	<8	<12	31
MW09/07	MW09/7	Normal	25/11/2010		6600	-	-	4100	-	12,000	-	18,800	-	6800	-	22,900	-	-	-	-	-	-	-	-	140	<100	<100	<100	<100	<100	290
MW09/7	MW09/7	Normal	21/04/2009		3900	-	-	3100	-	3100	-	5000	-	1900	-	8100	-	-	-	-	-	-	-	-	190	13	29	-	-	55	287
MW09/7	MW09/7	Normal	23/11/2009	255816	4400	-	-	4500	-	3100	-	4300	-	1200	-	8800	-	-	-	-	-	-	-	-	120	8	12	-	-	45	185
MW09/7	MW09/7	Normal	25/06/2010	268866	5900	-	-	1600	-	300	-	350	-	<100	-	1950	-	-	-	-	-	-	-	-	<100	<100	<100	-	-	<100	<400
MW09/7	MW09/7	Normal	8/06/2011		1500	-	-	2500	-	3400	-	5200	-	1800	-	7700	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<100	<150	<300 - 100
MW09/7	MW09/7	Normal	7/12/2011	321118	1100	-	-	2600	-	-	-	-	-	-	-	2600 - 4300	-	1200	1200	2700	2700	1400	-	100	35	<20	<20	<20	<40	<60 - 30	40 - 85
MW09/7	MW09/7	Normal	14/06/2012	340975	1100	-	-	1900	-	200	-	250	-	<100	-	2100 - 2150	-	1400	1300	1800	1800	<100	-	<100	77	8	5	10	34	43 - 44	130 - 133
MW09/7	MW09/7	Normal	12/12/2012	363008	1200	-	-	2700	-	2100	-	2900	-	800	-	5600	-	1400	1400	2700	2700	2300	-	300	20	<20	<20	<20	<40	<60	20 - 70
MW09/7	MW09/7	Normal	26/06/2013	384108	1100	-	-	2900	-	1500	-	1800	-	300	-	4700	-	1500	1400	2600	2600	1700	-	<100	100	<10	<10	<10	<20	<30	125
MW09/7	MW09/7	Normal	11/12/2013	403332	2200	-	-	2600	-	1800	-	2400	-	600	-	5000	-	7100	7000	2800	2800	2400	-	200	77	6	6	7	24	30 - 31	119
MW09/7	MW09/7	Normal	10/12/2014	441997	2800	-	-	2200	-	2200	-	-	-	<100	-	4400	-	3300	3300	2700	2700	2300	-	<100	54	<20	<20	<20	<40	<60	104
MW09/7	MW09/7	Normal	23/06/2015	462630	1700	-	-	1500	-	600	-	-	-	<100	-	2100	-	2100	2000	1500	1500	400	-	<100	64	<1	2	6	22	28	94.5
MW09/7	MW09/7	Normal	24/11/2015		2100	-	-	1600	-	1100	-	-	-	<100	-	2700	-	2700	2700	1500	1500	800	-	<100	19	<1	1	3	13	16	36.5
MW09/7	MW09/7	Normal	19/08/2016	512679	1500	-	1500	1000	-	800	-	-	-	<100	-	1800	-	1800	1700	890	890	600	-	<100	51	<10	<10	<10	<20	<30	-
MW09/7	MW09/7	Normal	15/12/2016	528305	-	-	2300	1100	-	800	-	-	-	300	-	2200	-	2700	2700	1200	1200	900	-	100	17	2	2	4	16	20	-
MW09/7	MW09/7	Normal	26/05/2017	ES1712963	1940	-	-	680	-	500	-	-	-	<50	-	1180	-	2240	2190	840	840	380	1220	<100	31	<2	<2	5	15	20	51
MW09/7	MW09/7	Normal	8/12/2017	ES1731268	1300	-	-	770	-	310	-	-	-	<50	-	1080	-	1580	1560	840	840	240	1080	<100	10	<2	<2	3	11	14	24
MW09/7	MW09/7	Normal	25/06/2018	ES1818602	1380	-	-	700	-	780	-	-	-	400	-	1880	-	1660	1620	760	760	1010	1950	180	27	<2	<2	3	9	12	39
MW09/7	MW09/7	Normal	4/12/2018	ES1836402	1680	-	-	400	-	460	-	-	-	170	-	1030	-	2840	2800	460	460	540	1000	<100	19	<2	<2	4	13	17	36
QC05	MW09/7	Field_D	25/06/2010	268866	6300	-	-	1900	-	500	-	550	-	<100	-	2450	-	-	-	-	-	-	-	-	120	<100	<100	-	-	<100	270
QC06	MW09/7	Field_D	8/06/2011		1700	-	-	2600	-	1200	-	1600	-	400	-	4200	-	-	-	-	-	-	-	-	150	14	12	11	44	55	230 - 231
QC8	MW09/7	Field_D	21/04/2009		3900	-	-	2900	-	4700	-	8000	-	3300	-	10,900	-	-	-	-	-	-	-	-	180	12	28	-	-	54	274
T02_190816_TT	MW09/7	Interlab_D	19/08/2016	ES1618607	2210	-	-	840	-	480	-	-	-	<50	-	1320	-	2590	2510	930	930	320	1250	<100	61	<2	<2	5	16	21	82
MW09/8	MW09/8	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/8	MW09/8	Normal	23/11/2009	255816	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
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MW09/8	MW09/8	Normal	26/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/8	MW09/8	Normal	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/8	MW09/8	Normal	6/12/2011	320985	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
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MW09/8	MW09/8	Normal	26/06/2013	384108	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/8	MW09/8	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/8	MW09/8	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/8	MW09/8	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW09/8	MW09/8	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/8	MW09/8	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW09/8	MW09/8	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/8	MW09/8	Normal	11/12/2017	ES1731349	20	-	-	<50	-	180	-	-	-	<50	-	180	-	<20	<20	<100	<100	210	210	<100	<1	<2	<2	<2	<2	<2	<1
MW09/8	MW09/8	Normal	22/06/2018	ES1818457	<20	-	-	120	-	<100	-	-	-	90	-	210	-	<20	<20	120	120	<100	120	<100	<1	<2	<2	<2	<2	<2	<1

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW09/8	MW09/8	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_01	MW09/8	Field_D	6/12/2011	320985	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/09	MW09/9	Normal	20/11/2009	255548	260	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/09	MW09/9	Normal	6/12/2011	320972	20	-	-	<50	-	-	-	-	-	-	-	<50	-	20	20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW09/09	MW09/9	Normal	9/12/2014	441766	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	23/07/2009		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW09/9	MW09/9	Normal	24/06/2010	268696	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW09/9	MW09/9	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	13/06/2012	340833	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	5/12/2012	362018	<20	-	-	100	-	100	-	150	-	<100	-	200 - 250	-	<20	<20	70	70	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	24/06/2013	383701	<20	-	-	210	-	100	-	150	-	<100	-	300 - 360	-	<20	<20	140	140	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	9/12/2013	402999	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	22/05/2014	419285	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW09/9	MW09/9	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW09/9	MW09/9	Normal	15/12/2016	528405	-	-	<400	<50	-	<100	-	-	-	<100	-	<100	-	<400	<400	<50	<50	<100	-	<100	<20	<20	<20	<20	<40	<60	-
MW09/9	MW09/9	Normal	26/05/2017	ES1712963	20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW09/9	MW09/9	Normal	7/12/2017	ES1731188	20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	2	2	2
MW09/9	MW09/9	Normal	25/06/2018	ES1818590	<20	-	-	<50	-	<100	-	-	-	70	-	70	-	<20	<20	<100	<100	130	130	<100	<1	<2	<2	<2	<2	<2	<1
MW09/9	MW09/9	Normal	5/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC07	MW09/9	Field_D	20/11/2009	255548	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
T02_20181205	MW09/9	Interlab_D	6/12/2018	632224	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW10/01	MW10/01	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	7/06/2011		<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	7/12/2011	321118	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 400	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW10/01	MW10/01	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	11/12/2012	362997	<20	-	-	80	-	1200	-	1400	-	200	-	1480 - 1500	-	<20	<20	120	120	1100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	25/06/2013	383856	<20	-	-	320	-	900	-	1100	-	200	-	1400 - 1420	-	<20	<20	240	240	1000	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	9/12/2013	402999	<20	-	-	470	-	1400	-	1450	-	<100	-	1900 - 1920	-	<20	<20	360	360	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	22/05/2014	419285	<20	-	-	100	-	800	-	850	-	<100	-	900 - 950	-	<20	<20	200	200	800	-	<100	<1	<1	<1	<1	<2	<1	<4
MW10/01	MW10/01	Normal	8/12/2014	441642	<20	-	-	110	-	1200	-	-	-	<100	-	1300	-	<20	<20	160	160	1400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	25/11/2015		<20	-	-	100	-	800	-	-	-	100	-	1000	-	<20	<20	180	180	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/01	MW10/01	Normal	16/12/2016	528402	-	-	<20	<50	-	800	-	-	-	200	-	1000	-	<20	<20	60	60	900	-	<100	<1	<1	<1	<1	<2	<3	-
MW10/01	MW10/01	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	510	-	-	-	60	-	570	-	<20	<20	<100	<100	510	510	<100	<1	<2	<2	<2	<2	<2	<1
D01_251115_SH	MW10/01	Field_D	25/11/2015		<20	-	-	90	-	800	-	-	-	<100	-	890	-	<20	<20	160	160	700	-	<100	<1	<1	<1	<1	<2	<3	<6
DO_07_220514	MW10/01	Field_D	22/05/2014	419285	<20	-	-	120	-	800	-	850	-	<100	-	900 - 970	-	<20	<20	220	220	800	-	<100	<1	<1	<1	<1	<2	<1	<4
MW10/02	MW10/02	Normal	24/11/2010		190	-	-	190	-	2000	-	2400	-	400	-	2590	-	-	-	-	-	-	-	-	16	1	3	2	3	5	25
MW10/02	MW10/02	Normal	7/06/2011		90	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	-	-	-	-	-	-	-	3	<1	2	<1	<2	<3	<10 - 7
MW10/02	MW10/02	Normal	7/12/2011	321118	20	-	-	140	-	-	-	-	-	-	-	140 - 1200	-	20	20	270	270	1000	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW10/02	MW10/02	Normal	11/12/2012	362997	30	-	-	210	-	1500	-	1700	-	200	-	1900 - 1910	-	30	30	190	190	1400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW10/02	MW10/02	Normal	9/12/2013	402999	30	-	-	520	-	2700	-	2900	-	200	-	3400 - 3420	-	30	30	680	680	2800	-	<100	<1	<1	1	<1	<2	<3	3.5
MW10/02	MW10/02	Normal	21/05/2014	419480	120	-	-	140	-	900	-	950	-	<100	-	1000 - 1090	-	120	110	250	250	800	-	<100	3	<1	5	<1	<2	<3	10
MW10/02	MW10/02	Normal	8/12/2014	441642	420	-	-	460	-	3300	-	-	-	<100	-	3800	-	430	410	730	730	4000	-	<100	3	<1	18	<1	<2	<3	23
MW10/02	MW10/02	Normal	25/11/2015		310	-	-	210	-	1100	-	-	-	<100	-	1300	-	320	310	360	360	900	-	<100	<1	<1	6	<1	<2	<3	8.5
MW10/02	MW10/02	Normal	16/12/2016	528402	-	-	210	390	-	1000	-	-	-	<100	-	1390	-	210	210	250	250	900	-	<100	<1	<1	<1	<1	<2	<3	-
MW10/02	MW10/02	Normal	7/12/2017	ES1731188	140	-	-	260	-	1250	-	-	-	<50	-	1510	-	150	150	420	420	1120	1540	<100	<1	<2	4	<2	<2	<2	4
QC08	MW10/02	Field_D	24/11/2010		260	-	-	310	-	2300	-	2800	-	500	-	3110	-	-	-	-	-	-	-	-	22	2	4	3	4	6 - 7	34
TRIP _03_081214	MW10/02	Interlab_D	8/12/2014	ES1427450	220	-	-	170	-	520	-	-	-	<50	-	690	-	220	200	240	240	450	690	<100	3	<2	14	<2	<2	<2	17
MW11/01	MW11/01	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/01	MW11/01	Normal	6/12/2012	362205	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/01	MW11/01	Normal	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/01	MW11/01	Normal	11/12/2014	442353	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/01	MW11/01	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/01	MW11/01	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/01	MW11/01	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/01	MW11/01	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/ 02	MW11/02	Normal	12/06/2012	340668	<20	-	-	280	-	<100	-	<200	-	<100	-	300 - 380	-	20	<20	360	260	<100	-	<100	<1	<1	<1	2	<2	<3 - 3	<6
MW11/02	MW11/02	Normal	5/10/2011	314283	<20	-	-	130	-	-	-	-	-	-	-	130 - 2700	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/02	MW11/02	Normal	8/12/2011	321280	<20	-	-	490	-	-	-	-	-	-	-	490 - 900	-	30	30	710	710	200	-	<100	<1	<1	<1	2	<2	<3 - 3	<10 - 3
MW11/02	MW11/02	Normal	6/12/2012	362205	<20	-	-	500	-	1200	-	1250	-	<100	-	1700 - 1750	-	<20	<20	630	580	900	-	<100	<1	<1	<1	1	<2	<3 - 2	<6
MW11/02	MW11/02	Normal	26/06/2013	384105	<20	-	-	470	-	800	-	850	-	<100	-	1300 - 1320	-	30	30	680	590	800	-	<100	<1	<1	<1	2	<2	<3 - 3	<6
MW11/02	MW11/02	Normal	12/12/2013	403484	50	-	-	690	-	1100	-	1150	-	<100	-	1800 - 1840	-	1400	1400	1100	1000	900	-	<100	<1	<1	<1	2	<2	<3 - 3	<6
MW11/02	MW11/02	Normal	27/05/2014	419785	<20	-	-	690	-	1200	-	1300	-	100	-	1990 - 2000	-	40	40	990	810	900	-	<100	<1	<1	<1	2	<2	3	4.5
MW11/02	MW11/02	Normal	5/12/2014	441493	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	80	<50	300	-	<100	<1	<1	<1	1	<2	<3	<6
MW11/02	MW11/02	Normal	25/11/2015		<20	-	-	210	-	300	-	-	-	<100	-	510	-	30	30	270	190	200	-	<100	<1	<1	<1	2	<2	<3	<6
MW11/02	MW11/02	Normal	19/08/2016	512679	<20	-	<20	230	-	200	-	-	-	<100	-	430	-	<20	<20	340	300	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/02	MW11/02	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	2	<2	3	-
MW11/02	MW11/02	Normal	29/05/2017	ES1713176	30	-	-	220	-	340	-	-	-	<50	-	560	-	70	70	270	180	300	570	<100	<1	<2	<2	<2	<2	<2	<1
MW11/02	MW11/02	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	380	-	-	-	<50	-	380	-	<20	<20	150	140	350	500	<100	<1	<2	<2	<2	<2	<2	<1
MW11/02	MW11/02	Normal	25/06/2018	ES1818602	<20	-	-	130	-	<100	-	-	-	140	-	270	-	<20	<20	120	120	<100	120	<100	<1	<2	<2	<2	<2	<2	<1
MW11/02	MW11/02	Normal	6/12/2018	ES1836989	<20	-	-	130	-	<100	-	-	-	340	-	470	-	<20	<20	130	130	310	570	130	<1	<2	<2	<2	<2	<2	<1
D01_290517	MW11/02	Field_D	29/05/2017	ES1713176	30	-	-	220	-	330	-	-	-	<50	-	550	-	80	80	260	170	300	560	<100	<1	<2	<2	<2	<2	<2	<1
T04_250618	MW11/02	Field_D	25/06/2018	ES1818590	<20	-	-	170	-	<100	-	-	-	70	-	240	-	<20	<20	180	180	120	300	<100	<1	<2	<2	<2	<2	<2	<1
MW11/ 03	MW11/03	Normal	12/06/2012	340668	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	7/10/2011	314682	<20	-	-	50	-	-	-	-	-	-	-	<100 - 50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	6/12/2012	362205	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	26/06/2013	384105	<20	-	-	1300	-	3600	-	4200	-	600	-	5500	-	<20	<20	2200	2200	3900	-	200	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	27/05/2014	419785	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW11/03	MW11/03	Normal	5/12/2014	441493	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/03	MW11/03	Normal	19/08/2016	512679	70	-	70	<50	-	<100	-	-	-	<100	-	<100	-	70	70	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/03	MW11/03	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/03	MW11/03	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/03	MW11/03	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/03	MW11/03	Normal	22/06/2018	ES1818457	<20	-	-	110	-	<100	-	-	-	180	-	290	-	<20	<20	120	120	190	310	<100	<1	<2	<2	<2	<2	<2	<1
MW11/03	MW11/03	Normal	6/12/2018	ES1836989	<20	-	-	140	-	<100	-	-	-	290	-	430	-	<20	<20	130	130	220	460	110	<1	<2	<2	<2	<2	<2	<1
D_071011_03	MW11/03	Field_D	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
D04_111217	MW11/03	Field_D	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D04_220618	MW11/03	Field_D	22/06/2018	ES1818457	<20	-	-	130	-	<100	-	-	-	270	-	400	-	<20	<20	130	130	230	480	120	<1	<2	<2	<2	<2	<2	<1
T03_111217	MW11/03	Interlab_D	11/12/2017	577517	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	500	<1	<1	<1	<1	<2	<3	-
MW11/ 04	MW11/04	Normal	12/06/2012	340668	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	6/12/2012	362205	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	26/06/2013	384105	<20	-	-	50	-	100	-	150	-	<100	-	200	-	<20	<20	80	80	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	50	50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	27/05/2014	419785	<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	<20	<20	80	80	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	5/12/2014	441493	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	25/11/2015		<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	60	60	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/04	MW11/04	Normal	19/08/2016	512679	<20	-	<20	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/04	MW11/04	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/04	MW11/04	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	300	-	-	-	<50	-	300	-	<20	<20	<100	<100	320	320	<100	<1	<2	<2	<2	<2	<2	<1
MW11/04	MW11/04	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	340	-	-	-	<50	-	340	-	<20	<20	<100	<100	310	310	<100	<1	<2	<2	<2	<2	<2	<1
MW11/04	MW11/04	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	200	-	200	-	<20	<20	<100	<100	220	220	<100	<1	<2	<2	<2	<2	<2	<1
MW11/04	MW11/04	Normal	6/12/2018	ES1836989	<20	-	-	120	-	180	-	-	-	460	-	760	-	<20	<20	140	140	490	800	170	<1	<2	<2	<2	<2	<2	<1
DUP_08	MW11/04	Field_D	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	50	50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	13/06/2012	340826	<20	-	-	60	-	2500	-	2550	-	<100	-	2600 - 2610	-	<20	<20	90	90	2600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	10/12/2012	362586	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	26/06/2013	384105	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	27/05/2014	419785	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	9/12/2014	441766	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/05	MW11/05	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/05	MW11/05	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D03_190816	MW11/05	Field_D	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
DUP_02	MW11/05	Field_D	10/12/2012	362586	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	2	<2	<3 - 3	<6
MW11/06	MW11/06	Normal	13/06/2012	340826	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	20	20	<50	<50	<100	-	<100	<1	<1	<1	1	<2	<3 - 2	<6
MW11/06	MW11/06	Normal	6/12/2012	362205	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	26/06/2013	384105	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	30	30	<50	<50	200	-	<100	<1	<1	<1	2	<2	<3 - 3	<6
MW11/06	MW11/06	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	27/05/2014	419785	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	5/12/2014	441493	<20	-	-	<50	-	100	-	-	-	<100	-	<0	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	25/11/2015		<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	100	100	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/06	MW11/06	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/06	MW11/06	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/06	MW11/06	Normal	16/12/2016	528705	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/06	MW11/06	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	130	-	-	-	<50	-	130	-	<20	<20	<100	<100	170	170	<100	<1	<2	<2	<2	<2	<2	<1
MW11/06	MW11/06	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	140	-	-	-	<50	-	140	-	<20	<20	<100	<100	170	170	<100	<1	<2	<2	<2	<2	<2	<1
MW11/06	MW11/06	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	400	-	400	-	<20	<20	<100	<100	360	470	110	<1	<2	<2	<2	<2	<2	<1
MW11/06	MW11/06	Normal	6/12/2018	ES1836989	<20	-	-	70	-	<100	-	-	-	120	-	190	-	<20	<20	<100	<100	120	120	<100	<1	<2	<2	<2	<2	<2	<1
DUP_09	MW11/06	Field_D	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP09	MW11/06	Field_D	26/06/2013	384105	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	20	20	<50	<50	100	-	<100	<1	<1	<1	2	<2	<3 - 3	<6
D05_251115_TT	MW11/06	Interlab_D	25/11/2015	ES1537290	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
T02_290517	MW11/06	Interlab_D	29/05/2017	548413	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/07	MW11/07	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/07	MW11/07	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/07	MW11/07	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/07	MW11/07	Normal	16/12/2016	528402	-	-	<20	150	-	<100	-	-	-	<100	-	150	-	<20	<20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/07	MW11/07	Normal	16/12/2016	528705	-	-	<20	150	-	<100	-	-	-	<100	-	150	-	<20	<20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/07	MW11/07	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	20	20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/07	MW11/07	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	190	-	-	-	<50	-	190	-	20	20	130	130	150	280	<100	<1	<2	<2	<2	<2	<2	<1
MW11/07	MW11/07	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	540	-	540	-	<20	<20	<100	<100	470	610	140	<1	<2	<2	<2	<2	<2	<1
MW11/07	MW11/07	Normal	6/12/2018	ES1836989	<20	-	-	140	-	<100	-	-	-	120	-	260	-	<20	<20	160	160	130	290	<100	<1	<2	<2	<2	<2	<2	<1
D01_111217	MW11/07	Field_D	11/12/2017	ES1731349	<20	-	-	<50	-	160	-	-	-	<50	-	160	-	<20	<20	<100	<100	150	150	<100	<1	<2	<2	<2	<2	<2	<1
D01_161216_PM	MW11/07	Field_D	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
D02_20181206	MW11/07	Field_D	6/12/2018	ES1836989	<20	-	-	130	-	<100	-	-	-	80	-	210	-	<20	<20	150	150	<100	150	<100	<1	<2	<2	<2	<2	<2	<1
D04_190816_TT	MW11/07	Field_D	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
T01_111217	MW11/07	Interlab_D	11/12/2017	577517	-	-	<20	<50	-	300	-	-	-	<100	-	300	-	<20	<20	140	140	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/08	MW11/08	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	13/06/2012	340826	<20	-	-	<50	-	1900	-	1950	-	<100	-	1900 - 1975	-	<20	<20	<50	<50	2000	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	10/12/2012	362586	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	26/06/2013	384105	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	12/12/2013	403484	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	27/05/2014	419785	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	5/12/2014	441493	<20	-	-	<50	-	300	-	-	-	<100	-	300	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/08	MW11/08	Normal	19/08/2016	514153	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/08	MW11/08	Normal	6/12/2018	ES1836989	<20	-	-	130	-	<100	-	-	-	520	-	650	-	<20	<20	130	130	430	760	200	<1	<2	<2	<2	<2	<2	<1
T01_20181206	MW11/08	Field_D	6/12/2018	ES1836989	<20	-	-	100	-	<100	-	-	-	560	-	660	-	<20	<20	<100	<100	430	640	210	<1	<2	<2	<2	<2	<2	<1
D01_20181206	MW11/08	Interlab_D	6/12/2018	632224	-	-	<20	<50	-	<100	-	-	-	1300	-	1300	-	<20	<20	<50	<50	1300	-	400	<1	<1	<1	<1	<2	<3	-
MW11/09	MW11/09	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	13/06/2012	340826	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	10/12/2012	362586	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	27/05/2014	419785	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/10	MW11/10	Normal	10/12/2014	442003	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
D_051011_01	MW11/10	Field_D	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/11	MW11/11	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	2	<1	2	1	<2	<3 - 2	<10 - 6
D_061011_01	MW11/11	Field_D	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	2	<1	2	2	<2	<3 - 3	<10 - 6
T_061011_01	MW11/11	Field_D	6/10/2011	314462	<20	-	-	100	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	2	<1	2	2	<2	<3 - 3	<10 - 6
MW11/12	MW11/12	Normal	4/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/12	MW11/12	Normal	19/08/2016	512679	<20	-	<20	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/13	MW11/13	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/14	MW11/14	Normal	4/10/2011	314106	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/15	MW11/15	Normal	4/10/2011	314106	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW11/15	MW11/15	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/16	MW11/16	Normal	5/10/2011	314682	<20	-	-	60	-	-	-	-	-	-	-	<100 - 60	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/17	MW11/17	Normal	4/10/2011	314106	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/17	MW11/17	Normal	13/06/2012	340826	<20	-	-	220	-	3000	-	3800	-	800	-	4000 - 4020	-	<20	<20	590	590	3600	-	500	<1	<1	<1	<1	<2	<3	<6
MW11/17	MW11/17	Normal	10/12/2012	362586	<20	-	-	140	-	2000	-	2050	-	<100	-	2100 - 2190	-	<20	<20	380	380	1600	-	<100	<1	<1	<1	<1	<2	<3	<6
D_041011_01	MW11/17	Field_D	4/10/2011	314106	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	5/10/2011	314284	<20	-	-	90	-	-	-	-	-	-	-	<100 - 90	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	13/06/2012	340826	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	10/12/2012	362586	<20	-	-	50	-	200	-	250	-	<100	-	300	-	<20	<20	70	70	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	24/06/2013	383714	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	28/05/2014	419873	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	10/12/2014	442003	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/18	MW11/18	Normal	15/12/2016	528403	-	-	<20	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
DUP_05	MW11/18	Field_D	24/06/2013	383714	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_05	MW11/18	Field_D	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_05_101214	MW11/18	Field_D	10/12/2014	442003	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_07	MW11/18	Field_D	10/12/2012	362586	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	60	60	200	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_10	MW11/18	Field_D	13/06/2012	340826	<20	-	-	70	-	200	-	250	-	<100	-	300 - 320	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP-05_280514	MW11/18	Field_D	28/05/2014	419873	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TRIP_04	MW11/18	Interlab_D	10/12/2012	ES1229205	-	-	<20	<50	-	<100	-	<150	-	<50	-	<50	-	<20	<20	<100	-	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TRIP_05	MW11/18	Interlab_D	11/12/2013	ES1327347	<20	-	-	<50	-	210	-	310	-	100	-	310 - 335	-	<20	<20	<100	<100	240	240	<100	<1	<2	<2	<2	<2	<2	<1
TRIP_05_280514	MW11/18	Interlab_D	28/05/2014	ES1412066	<20	-	-	<50	-	160	-	210	-	50	-	210 - 235	-	<20	<20	<100	<100	180	180	<100	<1	<2	<2	<2	<2	<2	<1
TRIP-05	MW11/18	Interlab_D	24/06/2013	ES1314335	<20	-	-	<50	-	100	-	125	-	<50	-	100 - 150	-	<20	<20	<100	-	120	120	<100	<1	<2	<2	<2	<2	<2	<1
MW11/19	MW11/19	Normal	4/10/2011	314106	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/19	MW11/19	Normal	18/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	20	20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/20	MW11/20	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/20	MW11/20	Normal	18/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/20	MW11/20	Normal	6/12/2018	ES1836989	<20	-	-	110	-	<100	-	-	-	180	-	290	-	<20	<20	110	110	140	250	<100	<1	<2	<2	<2	<2	<2	<1
MW11/21	MW11/21	Normal	13/10/2011	315268	60	-	-	140	-	-	-	-	-	-	-	140 - 300	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/21	MW11/21	Normal	21/06/2013	383502	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/21	MW11/21	Normal	9/12/2013	403002	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/21	MW11/21	Normal	23/05/2014	419484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/21	MW11/21	Normal	10/12/2014	442003	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/22	MW11/22	Normal	5/10/2011	314284	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/22	MW11/22	Normal	10/12/2012	362587	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/22	MW11/22	Normal	9/12/2013	402999	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/22	MW11/22	Normal	11/12/2014	442353	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/22	MW11/22	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/23	MW11/23	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/23	MW11/23	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/24	MW11/24	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	20/06/2012	341553	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	10/12/2012	362587	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	19/06/2013	383198	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	10/12/2013	403171	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	23/05/2014	419484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	10/12/2014	442003	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/24	MW11/24	Normal	19/08/2016	512679	<20	-	<20	<50	-	100	-	-	-	300	-	400	-	<20	<20	<50	<50	300	-	400	<1	<1	<1	<1	<2	<3	-
MW11/24	MW11/24	Normal	15/12/2016	528403	-	-	<20	170	-	100	-	-	-	<100	-	270	-	<20	<20	<50	<50	100	-	100	<1	<1	<1	<1	<2	<3	-
MW11/24	MW11/24	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	120	-	-	-	<50	-	120	-	<20	<20	<100	<100	140	140	<100	<1	<2	<2	<2	<2	<2	<1
MW11/24	MW11/24	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	120	-	-	-	<50	-	120	-	<20	<20	<100	<100	120	120	<100	<1	<2	<2	<2	<2	<2	<1
MW11/24	MW11/24	Normal	25/06/2018	ES1818602	<20	-	-	270	-	<100	-	-	-	210	-	480	-	<20	<20	230	230	190	420	<100	<1	<2	<2	<2	<2	<2	<1
MW11/24	MW11/24	Normal	7/12/2018	ES1836989	<20	-	-	120	-	<100	-	-	-	440	-	560	-	<20	<20	120	120	370	650	160	<1	<2	<2	<2	<2	<2	<1
D02_190816_SM	MW11/24	Field_D	19/08/2016	512679	<20	-	<20	350	-	3500	-	-	-	1000	-	4850	-	<20	<20	670	670	4000	-	500	<1	<1	<1	<1	<2	<3	-
D07_250618	MW11/24	Field_D	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	240	-	240	-	<20	<20	<100	<100	250	250	<100	<1	<2	<2	<2	<2	<2	<1
MW11/25	MW11/25	Normal	14/10/2011	315334	<20	-	-	80	-	-	-	-	-	-	-	80 - 200	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	20/06/2012	341550	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	6/12/2012	362203	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	21/06/2013	383502	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	9/12/2013	403002	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	26/05/2014	419614	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	11/12/2014	442353	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/25	MW11/25	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/26	MW11/26	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	13/12/2012	363230	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	26/06/2013	384108	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	23/05/2014	419458	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/26	MW11/26	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/26	MW11/26	Normal	15/12/2016	528405	-	-	<20	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<1	<1	<1	<2	<3	-
MW11/26	MW11/26	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/26	MW11/26	Normal	25/06/2018	ES1818602	<20	-	-	740	-	<100	-	-	-	330	-	1070	-	<20	<20	740	740	230	1120	150	<1	<2	<2	<2	<2	<2	<1
MW11/26	MW11/26	Normal	7/12/2018	ES1836989	<20	-	-	<60	-	<100	-	-	-	600	-	600	-	<20	<20	<100	<100	410	660	250	<1	<2	<2	<2	<2	<2	<1
MW11/27	MW11/27	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	4	<1	<1	<1	<2	<3	<10 - 6.5
MW11/27	MW11/27	Normal	20/06/2012	341553	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	7	<1	<1	<1	<2	<3	<10 - 9.5
MW11/27	MW11/27	Normal	10/12/2012	362587	80	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	80	60	<50	<50	<100	-	<100	23	<1	<1	<1	<2	<3	20 - 25.5
MW11/27	MW11/27	Normal	19/06/2013	383198	50	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	50	30	<50	<50	<100	-	<100	25	<1	<1	<1	<2	<3	27.5
MW11/27	MW11/27	Normal	10/12/2013	403171	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	40	<50	<50	<100	-	<100	21	<1	<1	<1	<2	<3	23.5
MW11/27	MW11/27	Normal	23/05/2014	419484	50	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	50	40	<50	<50	<100	-	<100	16	<1	<1	<1	<2	<3	18.5
MW11/27	MW11/27	Normal	10/12/2014	442003	240	-	-	<50	-	<100	-	-	-	<100	-	<100	-	240	200	<50	<50	<100	-	<100	46	<1	<1	<1	<2	<3	48.5
DUP_07	MW11/27	Field_D	10/12/2013	403171	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	30	<50	<50	<100	-	<100	21	<1	<1	<1	<2	<3	23.5
MW11/28	MW11/28	Normal	13/10/2011	315268	<20	-	-	220	-	-	-	-	-	-	-	220 - 1000	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	6/12/2011	320985	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW11/28	MW11/28	Normal	19/06/2012	341447	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	6/12/2012	362203	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	21/06/2013	383502	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	50	50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	11/12/2013	403328	<20	-	-	<50	-	600	-	650	-	<100	-	600 - 675	-	<20	<20	80	80	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	26/05/2014	419614	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/28	MW11/28	Normal	10/12/2014	442003	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	14/10/2011	315334	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	19/06/2012	341448	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	6/12/2012	362203	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	21/06/2013	383502	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	9/12/2013	403002	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/29	MW11/29	Normal	23/05/2014	419484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/30	MW11/30	Normal	5/10/2011	314284	30	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	30	<1	<1	<1	<2	<3	30 - 32.5

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
MW11/30	MW11/30	Normal	18/06/2012	341308	30	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	30	<20	<50	<50	<100	-	<100	28	<1	<1	<1	<2	<3	30 - 30.5
MW11/30	MW11/30	Normal	13/12/2012	363230	40	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	40	<20	50	50	<100	-	<100	37	<1	<1	<1	<2	<3	39.5 - 40
MW11/30	MW11/30	Normal	26/06/2013	384108	50	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	50	<20	<50	<50	<100	-	<100	45	<1	1	<1	<2	<3	48
MW11/30	MW11/30	Normal	12/12/2013	403490	50	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	<20	<50	<50	<100	-	<100	42	<1	<1	<1	<2	<3	44.5
MW11/30	MW11/30	Normal	23/05/2014	419458	40	-	-	60	-	300	-	350	-	<100	-	400 - 410	-	40	<20	120	120	200	-	<100	23	<1	<1	<1	<2	<3	25.5
MW11/30	MW11/30	Normal	10/12/2014	441997	40	-	-	<50	-	<100	-	-	-	<100	-	<100	-	40	30	<50	<50	<100	-	<100	15	<1	<1	<1	<2	<3	17.5
MW11/30	MW11/30	Normal	19/08/2016	512679	30	-	30	<50	-	<100	-	-	-	<100	-	<100	-	30	<20	<50	<50	<100	-	<100	26	<1	1	<1	<2	<3	-
MW11/30	MW11/30	Normal	15/12/2016	528405	-	-	20	70	-	200	-	-	-	<100	-	270	-	20	<20	120	120	<100	-	<100	12	<1	<1	<1	<2	<3	-
MW11/30	MW11/30	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	150	-	-	-	<50	-	150	-	<20	<20	<100	<100	160	160	<100	9	<2	<2	<2	<2	<2	9
MW11/30	MW11/30	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	8	<2	<2	<2	<2	<2	8
MW11/30	MW11/30	Normal	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	150	-	150	-	<20	<20	<100	<100	200	200	<100	6	<2	<2	<2	<2	<2	6
MW11/30	MW11/30	Normal	7/12/2018	ES1836989	<20	-	-	100	-	<100	-	-	-	240	-	340	-	<20	<20	110	110	210	320	<100	5	<2	<2	<2	<2	<2	5
D01_20181207	MW11/30	Field_D	7/12/2018	ES1836989	<20	-	-	180	-	<100	-	-	-	360	-	540	-	<20	<20	170	170	310	610	130	3	<2	<2	<2	<2	<2	3
D06_250618	MW11/30	Field_D	25/06/2018	ES1818602	<20	-	-	160	-	130	-	-	-	90	-	380	-	<20	<20	170	170	150	320	<100	6	<2	<2	<2	<2	<2	6
DUP_03	MW11/30	Field_D	13/12/2012	363230	40	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	40	<20	<50	<50	<100	-	<100	35	<1	<1	<1	<2	<3	37.5 - 40
TRIP-02	MW11/30	Interlab_D	13/12/2012	ES1229653	-	-	<20	70	-	370	-	395	-	<50	-	465	-	<20	<20	100	-	390	490	<100	28	<2	<2	<2	<2	<2	28 - 31
MW11/31	MW11/31	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/31	MW11/31	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/31	MW11/31	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/31	MW11/31	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/31	MW11/31	Normal	25/06/2018	ES1818602	<20	-	-	110	-	<100	-	-	-	340	-	450	-	<20	<20	110	110	220	490	160	<1	<2	<2	<2	<2	<2	<1
MW11/31	MW11/31	Normal	7/12/2018	ES1836989	<20	-	-	130	-	<100	-	-	-	110	-	240	-	<20	<20	120	120	<100	120	<100	<1	<2	<2	<2	<2	<2	<1
D03_151216	MW11/31	Field_D	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
T03_250618	MW11/31	Interlab_D	25/06/2018	604967	-	-	<20	100	-	<100	-	-	-	100	-	200	-	<20	<20	110	110	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/32	MW11/32	Normal	14/10/2011	315334	<20	-	-	100	-	-	-	-	-	-	-	100 - 300	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/33	MW11/33	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/34	MW11/34	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/34	MW11/34	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/35	MW11/35	Normal	13/10/2011	315268	<20	-	-	90	-	-	-	-	-	-	-	90 - 300	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	13/10/2011	315268	<20	-	-	220	-	-	-	-	-	-	-	220 - 3600	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	6/12/2011	320985	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 2100	-	<20	<20	220	220	1900	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW11/36	MW11/36	Normal	19/06/2012	341447	<20	-	-	<50	-	1600	-	1650	-	<100	-	1600 - 1675	-	<20	<20	240	240	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	6/12/2012	362203	<20	-	-	100	-	4200	-	4500	-	300	-	4600	-	<20	<20	420	420	3700	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	21/06/2013	383502	<20	-	-	90	-	3400	-	3600	-	200	-	3690 - 3700	-	<20	<20	440	440	3600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	9/12/2013	403002	<20	-	-	90	-	3800	-	3900	-	100	-	3990 - 4000	-	<20	<20	510	510	3900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	23/05/2014	419484	<20	-	-	150	-	4100	-	4500	-	400	-	4650 - 4700	-	<20	<20	560	560	4100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	11/12/2014	442353	<20	-	-	80	-	3400	-	-	-	<100	-	3500	-	<20	<20	480	480	3600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/36	MW11/36	Normal	19/08/2016	512679	<20	-	<20	<50	-	900	-	-	-	<100	-	900	-	<20	<20	130	130	800	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/36	MW11/36	Normal	15/12/2016	528403	-	-	<20	90	-	1600	-	-	-	100	-	1790	-	<20	<20	240	240	1500	-	<100	18	<1	<1	<1	<2	<3	-
MW11/37	MW11/37	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/37	MW11/37	Normal	19/08/2016	512679	<20	-	<20	<50	-	700	-	-	-	200	-	900	-	<20	<20	60	60	800	-	200	<1	<1	<1	<1	<2	<3	-
MW11/37	MW11/37	Normal	15/12/2016	528405	-	-	<20	<50	-	400	-	-	-	<100	-	400	-	<20	<20	80	80	300	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/37	MW11/37	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	260	-	-	-	<50	-	260	-	<20	<20	<100	<100	280	280	<100	<1	<2	<2	<2	<2	<2	<1
MW11/37	MW11/37	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/37	MW11/37	Normal	25/06/2018	ES1818602	<20	-	-	60	-	<100	-	-	-	190	-	250	-	<20	<20	<100	<100	240	240	<100	<1	<2	<2	<2	<2	<2	<1
MW11/37	MW11/37	Normal	7/12/2018	ES1836989	<20	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1
D_051011_02	MW11/37	Field_D	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
D01_190816_SM	MW11/37	Interlab_D	19/08/2016	ES1618607	<20	-	-	<50	-	450	-	-	-	<50	-	450	-	<20	<20	<100	<100	440	440	<100	<1	<2	<2	<2	<2	<2	<1
MW11/38	MW11/38	Normal	14/06/2012	340975	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/38	MW11/38	Normal	10/12/2012	362587	<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/38	MW11/38	Normal	19/06/2013	383198	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	50	50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/38	MW11/38	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/38	MW11/38	Normal	23/05/2014	419484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/38	MW11/38	Normal	10/12/2014	442003	<20	-	-	80	-	100	-	-	-	<100	-	180	-	<20	<20	90	90	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	5/10/2011	314283	<20	-	-	350	-	-	-	-	-	-	-	350 - 6000	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	8/12/2011	321280	<20	-	-	110	-	-	-	-	-	-	-	110 - 1900	-	<20	<20	610	610	1500	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW11/39	MW11/39	Normal	14/06/2012	340986	<20	-	-	340	-	3600	-	3800	-	200	-	4100 - 4140	-	<20	<20	1500	1500	3100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	4/12/2012	362014	<20	-	-	250	-	4000	-	4000	-	200	-	4000 - 4500	-	<20	<20	1000	1000	2900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	25/06/2013	383856	<20	-	-	140	-	2400	-	2450	-	<100	-	2500 - 2590	-	<20	<20	770	770	2200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	12/12/2013	403484	<20	-	-	170	-	3700	-	3750	-	<100	-	3900 - 3920	-	<20	<20	990	990	3100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	28/05/2014	419873	<20	-	-	160	-	2000	-	2100	-	100	-	2260 - 2300	-	<20	<20	560	560	1700	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	9/12/2014	441766	<20	-	-	50	-	2000	-	-	-	<100	-	2100	-	<20	<20	470	470	1900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/39	MW11/39	Normal	19/08/2016	512679	<20	-	<20	<50	-	2200	-	-	-	<100	-	2200	-	<20	<20	280	280	2000	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/39	MW11/39	Normal	15/12/2016	528403	-	-	<20	270	-	2500	-	-	-	<100	-	2770	-	<20	<20	770	770	2000	-	<100	<1	<1	<1	<1	<2	<3	-
D01_151216_HB	MW11/39	Field_D	15/12/2016	528403	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
DUP_08	MW11/39	Field_D	4/12/2012	362014	<20	-	-	270	-	4100	-	4100	-	200	-	4100 - 4600	-	<20	<20	1100	1100	3000	-	<100	<1	<1	<1	<1	<2	<3	<6
T01_151216	MW11/39	Interlab_D	15/12/2016	ES1629585	<20	-	-	300	-	3170	-	-	-	100	-	3570	-	<20	<20	880	880	2470	3350	<100	<1	<2	<2	<2	<2	<2	<1
MW11/40	MW11/40	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/40	MW11/40	Normal	19/08/2016	512679	<20	-	<20	<50	-	2100	-	-	-	400	-	2500	-	<20	<20	100	100	2100	-	500	<1	<1	<1	<1	<2	<3	-
MW11/41	MW11/41	Normal	5/10/2011	314283	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	13/12/2012	363171	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	10/12/2013	403171	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	28/05/2014	419873	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	10/12/2014	442003	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/41	MW11/41	Normal	18/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/41	MW11/41	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/41	MW11/41	Normal	16/12/2016	528705	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/41	MW11/41	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	140	-	-	-	<50	-	140	-	<20	<20	<100	<100	190	190	<100	<1	<2	<2	<2	<2	<2	<1
MW11/41	MW11/41	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/41	MW11/41	Normal	22/06/2018	ES1818457	<20	-	-	130	-	130	-	-	-	590	-	850	-	<20	<20	130	130	540	930	260	<1	<2	<2	<2	<2	<2	<1
MW11/41	MW11/41	Normal	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D01_180816_SM	MW11/41	Field_D	18/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/42	MW11/42	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	11/12/2012	362827	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	24/06/2013	383714	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	28/05/2014	419904	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	50	50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	10/12/2014	442003	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/42	MW11/42	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/42	MW11/42	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/42	MW11/42	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	280	-	-	-	<50	-	280	-	<20	<20	<100	<100	310	310	<100	<1	<2	<2	<2	<2	<2	<1
MW11/42	MW11/42	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/42	MW11/42	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	140	-	-	-	130	-	270	-	<20	<20	<100	<100	230	230	<100	<1	<2	<2	<2	<2	<2	<1
D03_081217	MW11/42	Field_D	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/43	MW11/43	Normal	5/10/2011	314283	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/43	MW11/43	Normal	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3

ERM

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW11/43	MW11/43	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/43	MW11/43	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
DUP_08	MW11/43	Field_D	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW11/44	MW11/44	Normal	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/44	MW11/44	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
D_071011_01	MW11/44	Field_D	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
T_071011_01	MW11/44	Interlab_D	7/10/2011		<20	-	-	90	-	<100	-	<150	-	<50	-	90 - 165	-	<20	<20	<100	-	<100	<100	<100	<1	<5	<2	<2	<2	<2	<1
MW11/45	MW11/45	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/45	MW11/45	Normal	19/08/2016	512679	<20	-	<20	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/46	MW11/46	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	11/12/2012	362827	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	28/05/2014	419904	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	25/06/2015	463095	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW11/46	MW11/46	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW11/46	MW11/46	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<500	<1	<1	<1	<1	<2	<3	-
MW11/46	MW11/46	Normal	16/12/2016	528705	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<500	<1	<1	<1	<1	<2	<3	-
MW11/46	MW11/46	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/46	MW11/46	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW11/46	MW11/46	Normal	6/12/2018	ES1836989	<20	-	-	60	-	<100	-	-	-	<50	-	60	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D_051011_03	MW11/46	Field_D	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
D_051011_04	MW11/46	Interlab_D	5/10/2011		<20	-	-	<50	-	160	-	185	-	<50	-	160 - 210	-	<20	<20	<100	-	170	170	<100	<1	<5	<2	<2	<2	<2	<1
D05_250615	MW11/46	Interlab_D	25/06/2015	ES1524966	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/01	MW12/01	Normal	22/03/2012	331294	420	-	-	6900	-	-	-	-	-	-	-	6900 - 63,000	-	430	70	13,000	13,000	49,000	-	5900	16	350	4	5	11	16 - 17	387 - 390
DUP01	MW12/01	Field_D	22/03/2012	331294	450	-	-	6100	-	-	-	-	-	-	-	6100 - 52,000	-	460	70	11,000	11,000	40,000	-	5400	17	380	4	6	12	17 - 18	418 - 420
TRIP_01	MW12/01	Interlab_D	22/03/2012	ES1206987	610	-	-	6520	-	-	-	-	-	-	-	6520 - 36,600	-	620	320	8630	-	25,300	33,900	<100	14	270	2	4	6	10	296
MW12/02	MW12/02	Normal	23/03/2012	331456	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	19/06/2012	341448	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	7/12/2012	362290	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	19/06/2013	383201	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	5/12/2013	402604	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	26/05/2014	419629	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/02	MW12/02	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_03	MW12/02	Field_D	19/06/2012	341448	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TRIP-03	MW12/02	Interlab_D	19/06/2012	ES1215282	<20	-	-	<50	-	<100	-	<150	-	<50	-	<50	-	<20	<20	<100	-	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/03	MW12/03	Normal	23/03/2012	331456	<20	-	-	1800	-	-	-	-	-	-	-	1800 - 3000	-	<20	<20	2400	2400	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/03	MW12/03	Normal	19/06/2012	341448	80	-	-	2900	-	2100	-	2150	-	<100	-	5000 - 5050	-	130	100	3700	3600	1500	-	<100	11	<1	6	5	4	9	26.5 - 30
MW12/03	MW12/03	Normal	13/12/2012	363171	120	-	-	3700	-	3200	-	3250	-	<100	-	6900 - 6950	-	200	160	4400	4300	2100	-	<100	10	<1	11	7	8	15	36.5 - 40
MW12/03	MW12/03	Normal	19/06/2013	383201	80	-	-	3900	-	3100	-	3150	-	<100	-	7000 - 7050	-	130	110	4800	4800	2100	-	<100	11	<1	5	3	3	6	22.5
MW12/03	MW12/03	Normal	5/12/2013	402604	140	-	-	2900	-	2900	-	2950	-	<100	-	5800 - 5850	-	240	220	4500	4400	1800	-	<100	7	<1	5	3	4	7	19.5
MW12/03	MW12/03	Normal	20/05/2014	419285	160	-	-	3700	-	3100	-	3150	-	<100	-	6800 - 6850	-	270	240	4700	4500	1900	-	<100	9	<1	7	4	4	8	24.5
MW12/03	MW12/03	Normal	5/12/2014	441476	190	-	-	3100	-	3600	-	-	-	<100	-	6700	-	340	320	4700	4700	2500	-	<100	2	<1	7	4	5	9	18.5
MW12/03	MW12/03	Normal	24/06/2015	462945	70	-	-	1900	-	1900	-	-	-	<100	-	3800	-	120	110	2400	2400	1200	-	<100	2	<1	2	1	<2	<3	6
MW12/03	MW12/03	Normal	25/11/2015		180	-	-	2500	-	2300	-	-	-	<100	-	4800	-	310	280	3300	3200	1400	-	<100	9	<1	8	5	5	10	27.5
MW12/03	MW12/03	Normal	17/08/2016	512488	100	-	100	2100	-	2100	-	-	-	100	-	4300	-	160	150	2600	2600	1400	-	<100	2	<1	3	2	<2	<3	-
MW12/03	MW12/03	Normal	14/12/2016	528403	-	-	160	1600	-	1100	-	-	-	<100	-	2700	-	280	250	1900	1800	600	-	<100	12	<1	8	5	5	10	-
MW12/03	MW12/03	Normal	6/12/2017	ES1731188	140	-	-	2240	-	1870	-	-	-	<50	-	4110	-	200	180	2660	2520	1240	3900	<100	8	<2	7	4	4	8	23
MW12/03	MW12/03	Normal	25/06/2018	ES1818590	140	-	-	2360	-	1510	-	-	-	<50	-	3870	-	220	180	2900	2720	920	3820	<100	16	<2	10	7	5	12	38
MW12/03	MW12/03	Normal	5/12/2018	ES1836989	140	-	-	1740	-	1410	-	-	-	<50	-	3150	-	210	180	2130	1930	930	3060	<100	11	<2	9	6	4	10	30
D04_200514	MW12/03	Field_D	20/05/2014	419285	160	-	-	2900	-	2400	-	2450	-	<100	-	5300 - 5350	-	270	250	3700	3500	1500	-	<100	9	<1	8	4	5	9	26.5
D04_240615	MW12/03	Field_D	24/06/2015	462945	70	-	-	3100	-	3500	-	-	-	<100	-	6600	-	120	110	4000	4000	2400	-	<100	3	<1	2	1	<2	<3	7
DUP_04	MW12/03	Field_D	19/06/2013	383201	130	-	-	3600	-	2700	-	2750	-	<100	-	6300 - 6350	-	220	170	4500	4400	1700	-	<100	20	<1	13	7	8	15	48.5
DUP_04	MW12/03	Field_D	5/12/2013	402604	140	-	-	2500	-	2400	-	2450	-	<100	-	4900 - 4950	-	230	200	3600	3500	1500	-	<100	7	<1	8	4	4	8	23.5
DUP_04_051214	MW12/03	Field_D	5/12/2014	441476	180	-	-	2300	-	2800	-	-	-	<100	-	5100	-	320	300	4000	3900	1900	-	<100	2	<1	7	4	5	9	18.5
DUP_09	MW12/03	Field_D	13/12/2012	363171	120	-	-	3900	-	3600	-	3700	-	100	-	7600	-	210	170	4800	4700	2300	-	<100	10	<1	11	7	8	15	36.5 - 40
DUP_11	MW12/03	Field_D	19/06/2012	341448	90	-	-	2700	-	2200	-	2250	-	<100	-	4900 - 4950	-	130	110	3400	3300	1700	-	<100	11	<1	6	5	4	9	26.5 - 30
TRIP_04	MW12/03	Field_D	5/12/2013	402604	130	-	-	2500	-	2400	-	2450	-	<100	-	4900 - 4950	-	210	190	3600	3600	1500	-	<100	7	<1	7	4	4	7 - 8	21.5
T04_200514	MW12/03	Interlab_D	20/05/2014	ES1411628	190	-	-	3370	-	2280	-	2305	-	<50	-	5650 - 5675	-	300	280	3990	3870	1270	5260	<100	7	<2	8	4	5	9	24 - 25
TRIP_04	MW12/03	Interlab_D	19/06/2013	ES1314016	110	-	-	4550	-	3260	-	3285	-	<50	-	7810 - 7835	-	160	120	5460	-	2060	7520	<100	14	<2	11	6	8	14	39 - 40
TRIP-05	MW12/03	Interlab_D	13/12/2012	ES1229652	-	-	100	7930	-	4460	-	4510	-	50	-	12,440	-	190	160	7030	-	3160	10,200	<100	8	<2	8	6	8	14	30 - 31
MW12/04	MW12/04	Normal	23/03/2012	331456	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/04	MW12/04	Normal	7/12/2012	362290	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/04	MW12/04	Normal	5/12/2013	402604	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/04	MW12/04	Normal	5/12/2014	441476	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/05	MW12/05	Normal	20/03/2012	331010	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/05	MW12/05	Normal	10/09/2014	432186	<20	-	-	100	-	<100	-	<200	-	<100	-	100 - 200	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/06	MW12/06	Normal	20/03/2012	331010	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/06	MW12/06	Normal	10/09/2014	432186	<20	-	-	90	-	<100	-	<200	-	<100	-	<100 - 190	-	<20	<20	50	50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/07	MW12/07	Normal	20/03/2012	331010	70	-	-	<50	-	-	-	-	-	-	-	<50	-	120	70	<50	<50	<100	-	<100	<1	5	6	14	24	38	49.5 - 50
MW12/07	MW12/07	Normal	18/06/2012	341298	70	-	-	80	-	<100	-	<200	-	<100	-	<100 - 180	-	110	80	60	59	<100	-	<100	<10	<10	<10	13	<20	23 - 32	30 - 47
MW12/07	MW12/07	Normal	13/12/2012	363171	70	-	-	5700	-	1200	-	1300	-	100	-	7000	-	130	40	6000	6000	1000	-	<100	2	10	13	27	39	66	90 - 91
MW12/07	MW12/07	Normal	18/06/2013	383198	100	-	-	3600	-	1300	-	1350	-	<100	-	4900 - 4950	-	140	80	3800	3800	1200	-	<100	2	8	9	20	29	49	68
MW12/07	MW12/07	Normal	4/12/2013	402604	80	-	-	2900	-	1200	-	1250	-	<100	-	4100 - 4150	-	160	100	3600	3600	1100	-	<100	1	5	7	18	26	44	57
MW12/07	MW12/07	Normal	26/05/2014	419614	170	-	-	70	-	200	-	250	-	<100	-	300 - 320	-	240	170	90	90	200	-	<100	2	7	10	22	31	53	72
MW12/07	MW12/07	Normal	10/09/2014	432186	80	-	-	170	-	200	-	250	-	<100	-	400 - 420	-	100	50	200	200	200	-	<100	<1	4	7	15	19	34 - 35	46.5
MW12/07	MW12/07	Normal	5/12/2014	441476	100	-	-	4000	-	1900	-	-	-	<100	-	5900	-	160	90	4900	4900	1900	-	<100	1	8	10	23	32	56	75
MW12/07	MW12/07	Normal	24/06/2015	462945	<20	-	-	3300	-	700	-	-	-	<100	-	4000	-	<20	<20	1500	1500	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/07	MW12/07	Normal	23/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/07	MW12/07	Normal	19/08/2016	512679	60	-	60	<50	-	<100	-	-	-	<100	-	<100	-	80	40	<50	<50	<100	-	<100	1	4	6	12	17	28	-
MW12/07	MW12/07	Normal	14/12/2016	528403	-	-	80	110	-	100	-	-	-	<100	-	210	-	150	80	110	110	100	-	<100	1	7	10	21	31	52	-
MW12/07	MW12/07	Normal	24/05/2017	ES1712813	100	-	-	300	-	1100	-	-	-	<50	-	1400	-	110	70	200	200	980	1180	<100	11	11	4	7	10	17	43
MW12/07	MW12/07	Normal	7/12/2017	ES1731188	140	-	-	<50	-	990	-	-	-	80	-	1070	-	180	90	<100	<100	1060	1060	<100	<1	8	12	27	40	67	87
MW12/07	MW12/07	Normal	22/06/2018	ES1818457	90	-	-	<50	-	<100	-	-	-	140	-	140	-	130	70	<100	<100	130	130	<100	<1	6	8	20	26	46	60
MW12/07	MW12/07	Normal	5/12/2018	ES1836989	60	-	-	<50	-	<100	-	-	-	<50	-	<50	-	80	40	<100	<100	<100	<100	<100	<1	4	5	12	18	30	39
D03_240615	MW12/07	Field_D	24/06/2015	462945	<20	-	-	430	-	400	-	-	-	<100	-	800	-	30	<20	480	480	400	-	<100	<1	1	1	3	4	7	9.5
DUP_05	MW12/07	Field_D	18/06/2012	341298	60	-	-	110	-	<100	-	<200	-	<100	-	100 - 210	-	120	80	80	73	<100	-	<100	<1	5	6	12	19	31	40 - 42.5
TRIP_05	MW12/07	Field_D	18/06/2012	341298	60	-	-	100	-	<100	-	<200	-	<100	-	100 - 200	-	110	60	80	64	<100	-	<100	<1	5	6	13	20	33	44.5 - 50
TRIP_05_051214	MW12/07	Interlab_D	5/12/2014	ES1427452	100	-	-	280	-	190	-	-	-	<50	-	470	-	130	60	290	280	160	450	<100	1	8	10	23	33	56	75
MW12/08	MW12/08	Normal	20/03/2012	331010	60	-	-	130	-	-	-	-	-	-	-	130 - 400	-	60	40	140	140	200	-	<100	2	14	1	5	5	10	27 - 30
MW12/08	MW12/08	Normal	18/06/2012	341298	90	-	-	640	-	1900	-	2200	-	300	-	2800 - 2840	-	110	60	900	900	2000	-	200	6	26	2	6	10	16	50
MW12/08	MW12/08	Normal	13/12/2012	363171	150	-	-	390	-	1800	-	1850	-	<100	-	2200 - 2240	-	180	90	660	650	1400	-	<100	16	26	8	14	27	41 - 42	90 - 92
MW12/08	MW12/08	Normal	21/06/2013	383497	60	-	-	280	-	1000	-	1050	-	<100	-	1300 - 1330	-	70	40	460	460	900	-	<100	6	12	3	4	6	10 - 11	32
MW12/08	MW12/08	Normal	6/12/2013	402721	310	-	-	1700	-	4900	-	5500	-	600	-	7200	-	390	210	2700	2700	4900	-	200	15	110	<10	25	31	55 - 56	185
MW12/08	MW12/08	Normal	26/05/2014	419614	30	-	-	150	-	800	-	850	-	<100	-	1000	-	40	30	290	290	700	-	<100	7	2	2	2	<2	3	14
MW12/08	MW12/08	Normal	10/09/2014	432186	450	-	-	510	-	1000	-	1100	-	100	-	1600 - 1610	-	500	280	660	660	900	-	<100	18	150	10	32	50	82	260

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW12/08	MW12/08	Normal	5/12/2014	441476	430	-	-	640	-	1600	-	-	-	<100	-	2200	-	530	340	970	970	1600	-	<100	18	93	9	28	42	71	191
MW12/08	MW12/08	Normal	18/08/2016	512488	650	-	650	5100	-	12,000	-	-	-	700	-	17,800	-	730	450	7000	7000	10,000	-	500	29	180	<10	30	46	76	-
MW12/08	MW12/08	Normal	14/12/2016	528403	-	-	150	240	-	900	-	-	-	<100	-	1140	-	200	110	420	420	800	-	<100	18	25	7	17	23	40	-
MW12/08	MW12/08	Normal	24/05/2017	ES1712813	180	-	-	<50	-	1020	-	-	-	<50	-	1020	-	230	140	<100	<100	940	940	<100	1	10	13	28	42	70	94
MW12/08	MW12/08	Normal	7/12/2017	ES1731188	150	-	-	140	-	600	-	-	-	210	-	950	-	160	80	200	200	680	1000	120	6	51	3	9	15	24	84
MW12/08	MW12/08	Normal	22/06/2018	ES1818457	<100	-	-	390	-	1500	-	-	-	490	-	2380	-	<100	<100	560	560	1610	2460	290	7	17	<5	5	8	13	37
MW12/08	MW12/08	Normal	5/12/2018	ES1836989	460	-	-	-	-	-	-	-	-	-	-	-	-	490	250	-	-	-	-	-	18	130	11	28	49	77	236
D01_100914	MW12/08	Field_D	10/09/2014	432186	440	-	-	1000	-	1600	-	1800	-	200	-	2800	-	470	200	1200	1200	1400	-	<100	22	150	13	41	63	100 - 104	285
D01_240517	MW12/08	Field_D	24/05/2017	ES1712813	140	-	-	<50	-	1360	-	-	-	<50	-	1360	-	180	80	<100	<100	1390	1390	<100	1	11	13	29	46	75	100
DUP_10	MW12/08	Field_D	13/12/2012	363171	120	-	-	520	-	2100	-	2200	-	100	-	2700 - 2720	-	150	80	840	830	1600	-	<100	14	20	7	12	23	35	76 - 80
T01_100914	MW12/08	Interlab_D	10/09/2014	ES1421084	350	-	-	520	-	800	-	825	-	<50	-	1320 - 1345	-	400	160	610	600	630	1240	<100	17	132	11	32	50	82	242
TRIP_04_051214	MW12/08	Interlab_D	4/12/2014	ES1427452	240	-	-	250	-	860	-	-	-	<50	-	1110	-	280	140	380	370	720	1100	<100	15	63	8	24	35	59	145
TRIP-06	MW12/08	Interlab_D	13/12/2012	ES1229652	-	-	50	5970	-	7260	-	7830	-	570	-	13,800	-	60	<20	3430	-	6270	9960	260	10	12	4	7	13	20	46
MW12/09	MW12/09	Normal	20/03/2012	331010	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/09	MW12/09	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/10	MW12/10	Normal	20/03/2012	331010	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/10	MW12/10	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	20/03/2012	331010	40	-	-	<50	-	-	-	-	-	-	-	<50	-	50	50	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	18/06/2012	341298	20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	30	30	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	7/12/2012	362294	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	21/06/2013	383497	<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	<20	<20	90	90	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	6/12/2013	402721	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	70	70	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	20/05/2014	419480	<20	-	-	60	-	200	-	250	-	<100	-	300 - 310	-	<20	<20	90	90	200	-	<100	<1	2	<1	<1	<2	<3	4.5
MW12/11	MW12/11	Normal	10/09/2014	432186	<20	-	-	100	-	300	-	350	-	<100	-	400 - 450	-	<20	<20	140	140	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/11	MW12/11	Normal	5/12/2014	441476	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_03	MW12/11	Field_D	20/03/2012	331010	40	-	-	<50	-	-	-	-	-	-	-	<50	-	50	50	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/12	MW12/12	Normal	21/03/2012	331150	20	-	-	160	-	-	-	-	-	-	-	160 - 200	-	30	30	150	100	<100	-	<100	<1	<1	2	1	2	3	<10 - 6
MW12/12	MW12/12	Normal	12/06/2012	340670	<20	-	-	90	-	<100	-	<200	-	<100	-	<100 - 190	-	30	20	100	60	<100	-	<100	<1	<1	2	2	<2	3 - 4	<10 - 7
MW12/12	MW12/12	Normal	11/12/2012	362997	<200	-	-	330	-	400	-	450	-	<100	-	700 - 780	-	<200	<200	370	240	300	-	<100	<10	<10	<10	<10	<20	<30	<30
MW12/12	MW12/12	Normal	20/06/2013	383357	<20	-	-	80	-	300	-	350	-	<100	-	400 - 430	-	<20	<20	140	140	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/12	MW12/12	Normal	6/12/2013	402721	<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	<20	<20	100	100	<100	-	<100	<1	<1	2	<1	<2	<3	4.5
MW12/12	MW12/12	Normal	21/05/2014	419480	<20	-	-	180	-	300	-	350	-	<100	-	500 - 530	-	<20	<20	250	220	200	-	<100	1	<1	<1	<1	<2	<3	3.5
MW12/12	MW12/12	Normal	8/12/2014	441642	40	-	-	<50	-	<100	-	-	-	<100	-	<100	-	50	40	<50	<50	<100	-	<100	4	<1	7	3	3	6	17.5
MW12/12	MW12/12	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	20	<20	<50	<50	<100	-	<100	1	<1	<1	<1	<2	<3	3.5
MW12/12	MW12/12	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/12	MW12/12	Normal	18/08/2016	512488	<20	-	<20	60	-	<100	-	-	-	<100	-	<100	-	20	<20	60	<50	<100	-	<100	2	<1	<1	1	<2	<3	-
MW12/12	MW12/12	Normal	16/12/2016	528402	-	-	<20	190	-	<100	-	-	-	<100	-	190	-	<20	<20	110	90	<100	-	<100	5	<1	<1	1	3	4	-
MW12/12	MW12/12	Normal	25/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/12	MW12/12	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	250	-	-	-	<50	-	250	-	<20	<20	<100	<100	230	230	<100	1	<2	<2	<2	<2	<2	1
MW12/12	MW12/12	Normal	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/12	MW12/12	Normal	4/12/2018	ES1836402	<20	-	-	150	-	220	-	-	-	510	-	880	-	<20	<20	220	220	520	900	160	<1	<2	<2	<2	<2	<2	<1
D02_250517	MW12/12	Field_D	25/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_06	MW12/12	Field_D	20/06/2013	383357	<20	-	-	70	-	200	-	250	-	<100	-	300 - 320	-	<20	<20	110	110	100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_06	MW12/12	Field_D	6/12/2013	402721	<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	<20	<20	110	110	<100	-	<100	<1	<1	1	<1	<2	<3	3.5
DUP_06	MW12/12	Field_D	21/05/2014	419480	<20	-	-	200	-	300	-	350	-	<100	-	500 - 550	-	<20	<20	260	220	200	-	<100	2	<1	<1	<1	<2	<3	4.5
DUP_06_281214	MW12/12	Field_D	8/12/2014	441642	30	-	-	<50	-	100	-	-	-	<100	-	100	-	40	30	<50	<50	100	-	<100	3	<1	5	2	3	5	13.5
T02_250618	MW12/12	Interlab_D	25/06/2018	604967	-	-	<20	100	-	<100	-	-	-	200	-	300	-	<20	<20	100	100	200	-	<100	<1	<1	<1	<1	<2	<3	-
TRIP_06	MW12/12	Interlab_D	6/12/2013	ES1326809	<20	-	-	100	-	640	-	700	-	60	-	800	-	<20	<20	200	190	600	800	<100	1	<2	<2	<2	<2	<2	1 - 4
MW12/13	MW12/13	Normal	21/03/2012	331150	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	4	1	1	<1	<2	<3	<10 - 7.5
MW12/13	MW12/13	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/13	MW12/13	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/13	MW12/13	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/13	MW12/13	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/13	MW12/13	Normal	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/13	MW12/13	Normal	4/12/2018	ES1836402	<20	-	-	140	-	140	-	-	-	490	-	770	-	<20	<20	160	160	500	810	150	<1	<2	<2	<2	<2	<2	<1
D01_071217	MW12/13	Field_D	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D01_161216HB	MW12/13	Field_D	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
D03_250517	MW12/13	Field_D	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
T01_161216_HB	MW12/13	Interlab_D	16/12/2016	ES1629554	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
T02_250517	MW12/13	Interlab_D	25/05/2017	547809	-	-	<20	<50	-	700	-	-	-	100	-	800	-	<20	<20	80	80	700	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/14	MW12/14	Normal	21/03/2012	331150	<20	-	-	60	-	-	-	-	-	-	-	60 - 500	-	<20	<20	110	110	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	15/06/2012	341117	<20	-	-	100	-	1400	-	1450	-	<100	-	1500 - 1550	-	<20	<20	300	300	1400	-	<100	1	<1	<1	<1	<2	<3	<10 - 3.5
MW12/14	MW12/14	Normal	11/12/2012	362997	<20	-	-	120	-	1300	-	1350	-	<100	-	1400 - 1470	-	<20	<20	250	250	1000	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	20/06/2013	383357	<20	-	-	120	-	1200	-	1300	-	100	-	1400 - 1420	-	<20	<20	300	300	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	10/12/2013	403166	30	-	-	70	-	1300	-	1350	-	<100	-	1400 - 1420	-	30	30	230	230	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	21/05/2014	419480	<20	-	-	150	-	1200	-	1300	-	100	-	1450 - 1500	-	<20	<20	310	310	1100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	10/12/2014	441997	<20	-	-	50	-	1200	-	-	-	<100	-	1300	-	<20	<20	190	190	1200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	24/11/2015		<20	-	-	<50	-	300	-	-	-	<100	-	300	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/14	MW12/14	Normal	19/08/2016	512679	<20	-	<20	<50	-	900	-	-	-	<100	-	900	-	<20	<20	120	120	900	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/14	MW12/14	Normal	16/12/2016	528402	-	-	<20	80	-	500	-	-	-	<100	-	580	-	<20	<20	100	100	500	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/14	MW12/14	Normal	6/12/2017	ES1731188	<20	-	-	<50	-	590	-	-	-	100	-	690	-	<20	<20	<100	<100	620	620	<100	<1	<2	<2	<2	<2	<2	<1
MW12/16	MW12/16	Normal	22/03/2012	331294	5700	-	-	3800	-	-	-	-	-	-	-	3800 - 4400	-	6800	2200	2500	2300	300	-	<100	490	1200	290	700	2000	2700	4680 - 4700
MW12/16	MW12/16	Normal	20/06/2012	341553	7500	-	-	2800	-	500	-	550	-	<100	-	3300 - 3350	-	8800	2900	2200	2000	200	-	<100	860	1300	480	710	2600	3300 - 3310	5900 - 5940
MW12/16	MW12/16	Normal	10/12/2012	362587	44,000	-	-	22,000	-	5600	-	5650	-	<100	-	27,650 - 28,000	-	51,000	17,000	20,000	74,000	1500	-	<100	4000	16,000	1600	3600	9100	12,700 - 13,000	34,600 - 35,000
DUP_06	MW12/16	Field_D	20/06/2012	341553	7200	-	-	2600	-	300	-	350	-	<100	-	2900 - 2950	-	8500	2800	1900	1700	<100	-	<100	830	1200	460	690	2500	3190 - 3200	5690 - 5700
DUP02	MW12/16	Field_D	22/03/2012	331294	5400	-	-	3700	-	-	-	-	-	-	-	3700 - 3900	-	6500	2100	2400	2200	<100	-	<100	440	1100	280	670	1900	2570 - 2600	4400 - 4420
DUP-11	MW12/16	Field_D	10/12/2012	362587	53,000	-	-	94,000	-	31,000	-	31,700	-	700	-	125,700 - 130,000	-	61,000	18,000	100,000	100,000	8700	-	300	4800	20,000	2100	4600	12,000	16,000 - 16,600	42,900 - 43,000
TRIP_06	MW12/16	Interlab_D	20/06/2012	ES1215510	6850	-	-	4100	-	180	-	205	-	<50	-	4280 - 4305	-	7830	3200	2440	-	<100	2440	<100	607	1050	420	605	1950	2555 - 2560	4630 - 4637
TRIP_07	MW12/16	Interlab_D	10/12/2012	ES1229204	-	-	97,600	1.24E6	-	221,000	-	221,025	-	<50	-	1.461025E6	-	138,000	90,400	1.02E6	-	78,900	1.1E6	<100	4060	15,900	2880	7310	17,500	24,800 - 24,810	47,600 - 47,640
MW12/17	MW12/17	Normal	22/03/2012	331294	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	20/06/2012	341553	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	10/12/2012	362587	<20	-	-	70	-	1000	-	1050	-	<100	-	1100 - 1120	-	<20	<20	170	170	900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	19/06/2013	383198	<20	-	-	70	-	800	-	850	-	<100	-	900 - 920	-	<20	<20	190	190	700	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	9/12/2013	403171	<20	-	-	<50	-	900	-	950	-	<100	-	900 - 975	-	<20	<20	130	130	900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	23/05/2014	419484	<20	-	-	60	-	800	-	850	-	<100	-	900 - 910	-	<20	<20	170	170	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	10/12/2014	442003	<20	-	-	<50	-	800	-	-	-	<100	-	800	-	<20	<20	130	130	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/17	MW12/17	Normal	19/08/2016	512679	<20	-	<20	240	-	1100	-	-	-	<100	-	1340	-	<20	<20	360	360	1000	-	100	<1	<1	<1	<1	<2	<3	-
MW12/17	MW12/17	Normal	15/12/2016	528403	-	-	<20	240	-	600	-	-	-	<100	-	840	-	<20	<20	190	190	500	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/18	MW12/18	Normal	20/06/2012	341550	50	-	-	2700	-	11,000	-	13,500	-	2500	-	16,000 - 16,200	-	70	70	5800	5800	11,000	-	1100	<1	<1	<1	<1	<2	<3	<6
MW12/18	MW12/18	Normal	6/12/2012	362203	340	-	-	710	-	2800	-	3400	-	600	-	4100 - 4110	-	630	630	1200	1200	2400	-	100	<1	<1	<1	<1	<2	<3	<6
MW12/18	MW12/18	Normal	21/06/2013	383502	670	-	-	1200	-	5700	-	7100	-	1400	-	8300	-	1300	1300	2600	2600	5800	-	500	<1	<1	<1	<1	<2	<3	<6
DUP_07	MW12/18	Field_D	21/06/2013	383502	11,000	-	-	700	-	3200	-	4100	-	900	-	4800	-	22,000	22,000	1400	1400	3400	-	300	<20	<20	<20	<20	<40	<60	<120
MW12/20	MW12/20	Normal	21/03/2012	331142	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	14/06/2012	340986	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	10/12/2012	362587	<20	-	-	<50	-	500	-	600	-	100	-	600 - 625	-	<20	<20	<50	<50	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	24/06/2013	383714	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	10/12/2013	403171	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	27/05/2014	419782	<20	-	-	<50	-	700	-	800	-	100	-	800 - 825	-	<20	<20	70	70	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	10/12/2014	442003	<20	-	-	50	-	100	-	-	-	<100	-	150	-	<20	<20	50	50	100	-	<100	<1	<1	<1	<1	<2	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW12/20	MW12/20	Normal	25/06/2015	463095	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	26/11/2015	481119	<20	-	-	130	-	200	-	-	-	<100	-	330	-	<20	<20	70	70	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/20	MW12/20	Normal	17/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/20	MW12/20	Normal	15/12/2016	528403	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/20	MW12/20	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	140	-	-	-	<50	-	140	-	<20	<20	<100	<100	170	170	<100	<1	<2	<2	<2	<2	<2	<1
MW12/20	MW12/20	Normal	5/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/21	MW12/21	Normal	22/03/2012	331294	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 300	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/21	MW12/21	Normal	11/12/2012	362827	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/21	MW12/21	Normal	24/06/2013	383714	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/21	MW12/21	Normal	10/12/2013	403171	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/21	MW12/21	Normal	27/05/2014	419782	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	50	50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/21	MW12/21	Normal	10/12/2014	442003	<20	-	-	<50	-	400	-	-	-	<100	-	400	-	<20	<20	<50	<50	500	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/21	MW12/21	Normal	18/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/21	MW12/21	Normal	15/12/2016	528403	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
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MW12/21	MW12/21	Normal	21/06/2018	ES1818311	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/21	MW12/21	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D01_2018214	MW12/21	Field_D	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D08_270514	MW12/21	Field_D	27/05/2014	419782	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_08	MW12/21	Field_D	24/06/2013	383714	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/22	MW12/22	Normal	21/03/2012	331142	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/22	MW12/22	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/22	MW12/22	Normal	11/12/2012	362827	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/22	MW12/22	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/22	MW12/22	Normal	16/12/2016	528402	-	-	<20	250	-	<100	-	-	-	<100	-	250	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/22	MW12/22	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	150	-	-	-	<50	-	150	-	<20	<20	<100	<100	210	210	<100	<1	<2	<2	<2	<2	<2	<1
MW12/22	MW12/22	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	170	-	-	-	230	-	400	-	<20	<20	<100	<100	390	390	<100	<1	<2	<2	<2	<2	<2	<1
MW12/22	MW12/22	Normal	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/23	MW12/23	Normal	21/03/2012	331142	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/23	MW12/23	Normal	15/06/2012	341115	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/23	MW12/23	Normal	11/12/2012	362827	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/23	MW12/23	Normal	26/06/2013	384108	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/23	MW12/23	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/23	MW12/23	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/23	MW12/23	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	190	-	-	-	<50	-	190	-	<20	<20	<100	<100	200	200	<100	<1	<2	<2	<2	<2	<2	<1
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MW12/23	MW12/23	Normal	25/06/2018	ES1818590	<20	-	-	70	-	290	-	-	-	140	-	500	-	<20	<20	<100	<100	390	390	<100	<1	<2	<2	<2	<2	<2	<1
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D01_180816	MW12/23	Field_D	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
T01_180816	MW12/23	Interlab_D	18/08/2016	ES1618496	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/24	MW12/24	Normal	21/03/2012	331142	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/24	MW12/24	Normal	11/12/2014	442353	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/24	MW12/24	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
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MW12/24	MW12/24	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/24	MW12/24	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/24	MW12/24	Normal	6/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
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MW12/24	MW12/24	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_07	MW12/24	Field_D	15/06/2012	341115	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	22/03/2012	331294	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	13/06/2012	340833	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	5/12/2012	362014	<20	-	-	<50	-	<100	-	<100	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	26/06/2013	384108	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	27/05/2014	419782	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	200	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW12/25	MW12/25	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/25	MW12/25	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW12/25	MW12/25	Normal	25/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/25	MW12/25	Normal	6/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW12/25	MW12/25	Normal	21/06/2018	ES1818311	<20	-	-	<50	-	<100	-	-	-	160	-	160	-	<20	<20	<100	<100	180	180	<100	<1	<2	<2	<2	<2	<2	<1
MW12/25	MW12/25	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D02_210618	MW12/25	Field_D	21/06/2018	ES1818311	<20	-	-	<50	-	<100	-	-	-	210	-	210	-	<20	<20	<100	<100	230	230	<100	<1	<2	<2	<2	<2	<2	<1
MW12/26	MW12/26	Normal	21/03/2012	331150	1900	-	-	3700	-	-	-	-	-	-	-	3700 - 8400	-	2000	590	4100	2800	4100	-	700	800	130	320	55	120	170 - 175	1400 - 1420
MW12/26	MW12/26	Normal	12/06/2012	340670	4900	-	-	3500	-	300	-	350	-	<100	-	3800 - 3850	-	5400	1500	3700	1800	<100	-	<100	2400	410	650	<200	<400	<600	3760 - 4000
MW12/26	MW12/26	Normal	11/12/2012	362997	16,000	-	-	12,000	-	3500	-	4700	-	1200	-	16,700 - 17,000	-	17,000	3600	13,000	6000	3100	-	500	8200	1800	2300	380	590	970 - 980	13,000 - 13,280
MW12/26	MW12/26	Normal	23/06/2015	462630	26,000	-	-	8400	-	2500	-	-	-	200	-	11,000	-	28,000	13,000	9200	500	1800	-	100	7400	2600	3700	360	700	1100	14,800
MW12/26	MW12/26	Normal	24/11/2015		23,000	-	-	9900	-	1500	-	-	-	300	-	12,000	-	24,000	8700	9600	1600	1200	-	<100	7300	3000	4000	360	610	970	15,270
MW12/26	MW12/26	Normal	18/08/2016	512488	11,000	-	11,000	8600	-	2700	-	-	-	500	-	11,800	-	12,000	1500	8400	2600	2900	-	300	4900	1900	2800	330	560	900	-
MW12/26	MW12/26	Normal	19/12/2016	529065	-	-	27,000	13,000	-	600	-	-	-	<100	-	13,600	-	29,000	11,000	12,000	0	300	-	<100	12,000	2200	2400	690	760	1400	-
MW12/26	MW12/26	Normal	24/05/2017	ES1712813	21,700	-	-	7800	-	740	-	-	-	<50	-	8540	-	22,600	8590	7680	670	460	8140	<100	6540	2310	4080	414	663	1080	14,000
MW12/26	MW12/26	Normal	7/12/2017	ES1731188	7570	-	-	6320	-	2500	-	-	-	340	-	9160	-	8170	3640	6640	450	2090	8730	<100	1230	658	2120	200	325	525	4530
MW12/26	MW12/26	Normal	25/06/2018	ES1818602	6910	-	-	8740	-	4690	-	-	-	2500	-	15,900	-	7760	3100	9080	3780	5820	15,800	890	1100	730	2310	224	299	523	4660
MW12/26	MW12/26	Normal	4/12/2018	ES1836402	190	-	-	-	-	-	-	-	-	-	-	-	-	290	180	-	-	-	-	-	16	9	70	11	9	20	115
D01_230615	MW12/26	Field_D	23/06/2015	462630	28,000	-	-	9700	-	2500	-	-	-	200	-	12,000	-	29,000	14,000	11,000	1600	1800	-	100	7800	2800	3900	400	710	1100	15,600
D02_18/08/16_TT	MW12/26	Field_D	18/08/2016	512488	14,000	-	14,000	11,000	-	4000	-	-	-	300	-	15,300	-	15,000	2300	12,000	5500	2200	-	300	6200	2200	3300	390	660	1100	-
D03_241115	MW12/26	Field_D	24/11/2015		22,000	-	-	9100	-	1300	-	-	-	<100	-	10,000	-	23,000	8400	8900	800	700	-	<100	7100	2900	3700	330	560	900	14,600

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
DUP_12	MW12/26	Field_D	11/12/2012	362997	15,000	-	-	12,000	-	3100	-	4000	-	900	-	16,000	-	16,000	3400	11,000	3800	2700	-	200	8500	1400	1900	320	510	830	12,630 - 13,000
MW12/12B	MW12/26	Field_D	21/03/2012	331150	3600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1300	160	390	<100	<200	<300	2000 - 2100
MW14/01	MW14/01	Normal	15/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW14/02	MW14/02	Normal	11/09/2014	432186	<20	-	-	80	-	200	-	300	-	100	-	380 - 400	-	<20	<20	90	90	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW14/03	MW14/03	Normal	11/09/2014	432186	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW14/04	MW14/04	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW14/05	MW14/05	Normal	11/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW14/06	MW14/06	Normal	11/09/2014	432186	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	60	60	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW18/06	MW18/06	Normal	7/12/2018	ES1836989	<20	-	-	190	-	<100	-	-	-	240	-	430	-	<20	<20	230	230	200	530	100	<1	<2	<2	<2	<2	<2	<1
MW18/06_180219	MW18/06	Normal	19/02/2018	ES1805499	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW18/07_180219	MW18/07	Normal	19/02/2018	ES1805499	440	-	-	3160	-	1020	-	-	-	<50	-	4180	-	550	370	3270	2650	810	4080	<100	166	<5	<5	5	12	17	183
QC18/100_180219	MW18/07	Field_D	19/02/2018	ES1805499	430	-	-	3400	-	990	-	-	-	<50	-	4390	-	530	340	3490	2830	780	4270	<100	168	<5	<5	5	12	17	185
MW18/10_180219	MW18/10	Normal	19/02/2018	ES1805499	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW18/23	MW18/23	Normal	5/12/2018	ES1836989	<20	-	-	80	-	100	-	-	-	230	-	410	-	<20	<20	<100	<100	260	260	<100	<1	<2	<2	<2	<2	<2	<1
MW18/23_180219	MW18/23	Normal	19/02/2018	ES1805499	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC18/200	MW18/23	Interlab_D	19/02/2018	586033	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW18/24_180219	MW18/24	Normal	19/02/2018	ES1805499	2470	-	-	890	-	1340	-	-	-	<50	-	2230	-	2570	1850	1120	1100	1160	2280	<100	258	8	134	12	306	318	718
MW91/1	MW91/1	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/01/2001		<20	-	-	<40	-	100	-	200	-	100	-	220	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/1	MW91/1	Normal	28/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/1	MW91/1	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	2	<1	-	-	4	7
MW91/1	MW91/1	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/1	MW91/1	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/1	MW91/1	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/1	MW91/1	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/1	MW91/1	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/1	MW91/1	Normal	12/12/2012	362997	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/1	MW91/1	Normal	4/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/1	MW91/1	Normal	8/12/2014	441637	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC10	MW91/1	Field_D	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	2	<1	-	-	4	7
QC5	MW91/1	Field_D	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC11	MW91/1	Interlab_D	29/02/2008	EM0801626	<20	-	-	<50	-	<100	-	<150	-	<50	-	<200	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<4	<5
MW91/10	MW91/10	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	1/01/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	11/10/2006		<20	-	-	<40	-	100	-	160	-	60	-	180	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/10	MW91/10	Normal	14/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/10	MW91/10	Normal	6/12/2011	320982	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/11	MW91/11	Normal	1/12/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	12/10/2006		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/11	MW91/11	Normal	28/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/11	MW91/11	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/11	MW91/11	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/11	MW91/11	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/11	MW91/11	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/11	MW91/11	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/11	MW91/11	Normal	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/11	MW91/11	Normal	12/12/2012	362997	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/11	MW91/11	Normal	4/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/11	MW91/11	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/11	MW91/11	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	1/01/2001		<20	-	-	<40	-	200	-	1300	-	1100	-	1320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	1/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	11/10/2006		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<100	<1	<1	-	-	<3	<105
MW91/2	MW91/2	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/2	MW91/2	Normal	28/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/2	MW91/2	Normal	28/02/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/2	MW91/2	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/2	MW91/2	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/2	MW91/2	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/2	MW91/2	Normal	23/11/2010		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/2	MW91/2	Normal	12/12/2012	362997	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	4/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	12/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	25/06/2015	463095	<20	-	-	60	-	100	-	-	-	<100	-	160	-	<20	<20	60	60	100	-	100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	23/11/2015		<20	-	-	<50	-	4300	-	-	-	1100	-	5400	-	<20	<20	<50	<50	5400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/2	MW91/2	Normal	17/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW91/2	MW91/2	Normal	14/12/2016	528403	-	-	<20	470	-	400	-	-	-	300	-	1170	-	<20	<20	90	90	600	-	300	<1	<1	<1	<1	<2	<3	-
MW91/2	MW91/2	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	220	-	-	-	<50	-	220	-	<20	<20	<100	<100	230	230	<100	<1	<2	<2	<2	<2	<2	<1
MW91/2	MW91/2	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW91/2	MW91/2	Normal	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW91/2	MW91/2	Normal	5/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_06	MW91/2	Field_D	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/3	MW91/3	Normal	1/01/2001		<20	-	-	<40	-	200	-	400	-	200	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW91/3	MW91/3	Normal	1/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/3	MW91/3	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/3	MW91/3	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/3	MW91/3	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/3	MW91/3	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/3	MW91/3	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/3	MW91/3	Normal	12/09/2014	432186	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
D02_120914	MW91/3	Field_D	12/09/2014	432186	<20	-	-	70	-	<100	-	<200	-	<100	-	<100 - 170	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC3	MW91/3	Field_D	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/4	MW91/4	Normal	1/01/2001		23,000	-	-	16,000	-	1200	-	1800	-	600	-	17,800	-	-	-	-	-	-	-	-	3500	9000	970	-	-	6000	19,470
MW91/4	MW91/4	Normal	1/06/2001		24,000	-	-	2800	-	800	-	1000	-	200	-	3800	-	-	-	-	-	-	-	-	3900	14,000	730	-	-	6200	24,830
MW91/4	MW91/4	Normal	1/12/2003		2200	-	-	1100	-	<100	-	<200	-	<100	-	1200	-	-	-	-	-	-	-	-	66	290	260	-	-	1510	2126
MW91/4	MW91/4	Normal	1/07/2004		120	-	-	780	-	400	-	600	-	200	-	1380	-	-	-	-	-	-	-	-	6.3	11	18	-	-	89	124.3
MW91/4	MW91/4	Normal	1/03/2005		7300	-	-	2900	-	<100	-	<200	-	<100	-	3000	-	-	-	-	-	-	-	-	78	89	1200	-	-	6000	7367
MW91/4	MW91/4	Normal	14/09/2005		16,000	-	-	7100	-	<100	-	<200	-	<100	-	7200	-	-	-	-	-	-	-	-	110	<100	2300	-	-	11,400	13,860
MW91/4	MW91/4	Normal	28/03/2006		2100	-	-	1700	-	146	-	196	-	<100	-	1896	-	-	-	-	-	-	-	-	30	<10	420	-	-	1670	2125
MW91/4	MW91/4	Normal	11/10/2006		540	-	-	1560	-	300	-	350	-	<100	-	1910	-	-	-	-	-	-	-	-	8	<1	101	-	-	165	274.5
MW91/4	MW91/4	Normal	1/09/2007		310	-	-	1300	-	<100	-	<200	-	<100	-	1400	-	-	-	-	-	-	-	-	<2	<1	<1	-	-	100	102
MW91/4	MW91/4	Normal	27/09/2007		310	-	-	1300	-	<100	-	<200	-	<100	-	1400	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	100	101.5
MW91/4	MW91/4	Normal	28/02/2008		450	-	-	1500	-	200	-	250	-	<100	-	1750	-	-	-	-	-	-	-	-	9	1	110	-	-	350	470
MW91/4	MW91/4	Normal	12/11/2008		200	-	-	250	-	<100	-	<200	-	<100	-	350	-	-	-	-	-	-	-	-	<1	<1	2	-	-	5	8
MW91/4	MW91/4	Normal	20/04/2009		150	-	-	580	-	<100	-	<200	-	<100	-	680	-	-	-	-	-	-	-	-	2	<1	16	-	-	29	47.5
MW91/4	MW91/4	Normal	17/11/2009	255428	230	-	-	310	-	<100	-	<200	-	<100	-	410	-	-	-	-	-	-	-	-	<1	<1	3	-	-	<1	4.5
MW91/4	MW91/4	Normal	23/06/2010	268593	90	-	-	350	-	400	-	600	-	200	-	950	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/4	MW91/4	Normal	23/11/2010		80	-	-	90	-	100	-	150	-	<100	-	240	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	9/06/2011		360	-	-	1700	-	<100	-	<200	-	<100	-	1700 - 1800	-	-	-	-	-	-	-	-	<1	<1	<1	1	<2	<3 - 2	<6
MW91/4	MW91/4	Normal	7/12/2011	321117	130	-	-	90	-	-	-	-	-	-	-	<100 - 90	-	180	180	70	70	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/4	MW91/4	Normal	19/06/2012	341447	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	20	20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	12/12/2012	362997	250	-	-	1900	-	<100	-	<200	-	<100	-	1900 - 2000	-	340	340	1400	1400	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	20/06/2013	383357	450	-	-	870	-	<100	-	<200	-	<100	-	900 - 970	-	660	660	690	690	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	5/12/2013	402613	160	-	-	1300	-	<100	-	<200	-	<100	-	1300 - 1400	-	500	500	1200	1200	<100	-	<100	<1	<1	2	<1	<2	<3	4.5
MW91/4	MW91/4	Normal	22/05/2014	419480	60	-	-	340	-	<100	-	<200	-	<100	-	300 - 440	-	230	230	290	290	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	12/09/2014	432186	<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	20	20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	8/12/2014	441637	50	-	-	<50	-	100	-	-	-	<100	-	100	-	60	60	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/4	MW91/4	Normal	14/12/2016	528403	-	-	<20	370	-	300	-	-	-	200	-	870	-	<20	<20	80	80	400	-	300	<1	<1	<1	<1	<2	<3	-
MW91/4	MW91/4	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW91/4	MW91/4	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW91/4	MW91/4	Normal	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D05_250618	MW91/4	Field_D	25/06/2018	ES1818602	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC2	MW91/4	Field_D	23/06/2010	268593	100	-	-	270	-	300	-	500	-	200	-	770	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	11/10/2006		<20	-	-	<40	-	200	-	260	-	60	-	280	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	1/09/2007		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/5	MW91/5	Normal	28/02/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<2	<5
MW91/5	MW91/5	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/5	MW91/5	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/5	MW91/5	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/5	MW91/5	Normal	23/06/2010	268593	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/5	MW91/5	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/5	MW91/5	Normal	9/06/2011		<20	-	-	60	-	200	-	250	-	<100	-	300 - 310	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/5	MW91/5	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
QC01	MW91/5	Field_D	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC6	MW91/5	Field_D	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	1/01/2001		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	11/06/2006		<20	-	-	<40	-	100	-	150	-	50	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/6	MW91/6	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/6	MW91/6	Normal	23/11/2010		<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/6	MW91/6	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/6	MW91/6	Normal	12/12/2012	362997	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/6	MW91/6	Normal	5/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/6	MW91/6	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/7	MW91/7	Normal	1/01/2001		<20	-	-	<40	-	300	-	500	-	200	-	520	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	1/06/2001		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	11/10/2006		<20	-	-	<40	-	200	-	300	-	100	-	320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/7	MW91/7	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	MW91/7	Normal	28/02/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	MW91/7	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	MW91/7	Normal	20/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	MW91/7	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	MW91/7	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/7	MW91/7	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/7	MW91/7	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/7	MW91/7	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	200	<1	<1	<1	<1	<2	<3	<6
MW91/8	MW91/8	Normal	1/01/2001		<20	-	-	<40	-	200	-	300	-	100	-	320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW91/8	MW91/8	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	11/10/2006		<20	-	-	<40	-	400	-	600	-	200	-	620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/8	MW91/8	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/8	MW91/8	Normal	28/02/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/8	MW91/8	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/8	MW91/8	Normal	20/04/2009		30	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/8	MW91/8	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/8	MW91/8	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/8	MW91/8	Normal	7/12/2011	321117	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/8	MW91/8	Normal	12/12/2012	362997	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/8	MW91/8	Normal	5/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/8	MW91/8	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	220	-	-	-	<50	-	220	-	<20	<20	<100	<100	230	230	<100	<1	<2	<2	<2	<2	<2	<1
MW91/8	MW91/8	Normal	6/12/2018	ES1836989	<20	-	-	100	-	<100	-	-	-	450	-	550	-	<20	<20	110	110	410	700	180	<1	<2	<2	<2	<2	<2	<1
T02_20181206	MW91/8	Interlab_D	6/12/2018	632224	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
M91/09	MW91/9	Normal	26/09/2007		<20	-	-	130	-	300	-	350	-	<100	-	480	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/9	MW91/9	Normal	1/01/2001		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	1/01/2004		<20	-	-	500	-	500	-	550	-	<100	-	1050	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	28/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	12/10/2006		<20	-	-	<40	-	200	-	300	-	100	-	320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW91/9	MW91/9	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/9	MW91/9	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/9	MW91/9	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/9	MW91/9	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/9	MW91/9	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW91/9	MW91/9	Normal	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW91/9	MW91/9	Normal	12/12/2012	362997	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/9	MW91/9	Normal	5/12/2013	402613	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/9	MW91/9	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/9	MW91/9	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW91/9	MW91/9	Normal	14/12/2016	528403	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW91/9	MW91/9	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW91/9	MW91/9	Normal	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
T03_20181206	MW91/9	Field_D	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	200	-	200	-	<20	<20	<100	<100	160	160	<100	<1	<2	<2	<2	<2	<2	<1
MW94/1	MW94/1	Normal	1/08/1999		69	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	1/12/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	27/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/1	MW94/1	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/1	MW94/1	Normal	22/02/2008		<20	-	-	<50	-	200	-	300	-	100	-	325	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/1	MW94/1	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/1	MW94/1	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/1	MW94/1	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC1	MW94/1	Field_D	22/02/2008		<20	-	-	<50	-	200	-	300	-	100	-	325	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/10	MW94/10	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	29/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	4/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	17/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/10	MW94/10	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
MW94/10	MW94/10	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/10	MW94/10	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/10	MW94/10	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/10	MW94/10	Normal	25/11/2010		<20	-	-	290	-	<100	-	<200	-	<100	-	390	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	8/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	8/12/2011	321281	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW94/10	MW94/10	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	26/06/2013	384108	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	25/11/2015		<20	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/10	MW94/10	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/10	MW94/10	Normal	26/05/2017	ES1712963	<20	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	1	<2	<2	<2	<2	<2	1
MW94/10	MW94/10	Normal	22/06/2018	ES1818457	<20	-	-	100	-	<100	-	-	-	100	-	200	-	<20	<20	200	200	140	340	<100	<1	<2	<2	<2	<2	<2	<1
MW94/10	MW94/10	Normal	4/12/2018	ES1836402	<20	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1
MW94/11	MW94/11	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	29/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	3/10/2006		<20	-	-	<40	-	200	-	320	-	120	-	340	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	1/12/2006		<20	-	-	<40	-	600	-	790	-	190	-	810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW94/11	MW94/11	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	14/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/11	MW94/11	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/11	MW94/11	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/11	MW94/11	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/11	MW94/11	Normal	18/11/2009	255440	<20	-	-	60	-	<100	-	<200	-	<100	-	160	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/11	MW94/11	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/11	MW94/11	Normal	25/11/2010		<20	-	-	60	-	<100	-	<200	-	<100	-	160	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	8/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<3
MW94/11	MW94/11	Normal	8/12/2011	321281	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW94/11	MW94/11	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	11/12/2012	362827	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	26/05/2014	419629	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/11	MW94/11	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW94/11	MW94/11	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/11	MW94/11	Normal	25/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/11	MW94/11	Normal	6/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/11	MW94/11	Normal	22/06/2018	ES1818457	<20	-	-	<50	-	<100	-	-	-	140	-	140	-	<20	<20	<100	<100	110	110	<100	<1	<2	<2	<2	<2	<2	<1
MW94/11	MW94/11	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D02_20181204	MW94/11	Field_D	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/12	MW94/12	Normal	1/08/1999		301	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	1/07/2000		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	1/12/2003		90	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	1/03/2005		180	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	21/03/2006		180	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	25/09/2006		100	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	1/09/2007		230	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	14/09/2007		230	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/12	MW94/12	Normal	27/02/2008		30	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/12	MW94/12	Normal	14/11/2008		200	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/12	MW94/12	Normal	17/04/2009		220	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/12	MW94/12	Normal	17/11/2009	255428	160	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/12	MW94/12	Normal	24/06/2010	268700	110	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/12	MW94/12	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	10/06/2011		100	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	6/12/2011	320982	110	-	-	<50	-	-	-	-	-	-	-	<50	-	110	110	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW94/12	MW94/12	Normal	12/06/2012	340670	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	60	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	5/12/2012	362014	80	-	-	<50	-	<100	-	<100	-	<100	-	<100	-	80	80	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	20/06/2013	383357	90	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	90	90	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	11/12/2013	403332	70	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	70	70	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	21/05/2014	419285	40	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	40	40	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW94/12	MW94/12	Normal	8/12/2014	441642	30	-	-	<50	-	200	-	-	-	<100	-	200	-	30	30	<50	<50	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	24/11/2015		40	-	-	<50	-	<100	-	-	-	<100	-	<100	-	40	40	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/12	MW94/12	Normal	18/08/2016	512488	30	-	30	<50	-	<100	-	-	-	<100	-	<100	-	40	40	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/12	MW94/12	Normal	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/12	MW94/12	Normal	24/05/2017	ES1712813	60	-	-	<50	-	<100	-	-	-	<50	-	<50	-	60	60	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/12	MW94/12	Normal	6/12/2017	ES1731188	140	-	-	<50	-	<100	-	-	-	<50	-	<50	-	130	130	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/12	MW94/12	Normal	20/06/2018	ES1818158	80	-	-	<50	-	<100	-	-	-	<50	-	<50	-	80	80	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/12	MW94/12	Normal	4/12/2018	ES1836402	50	-	-	<50	-	<100	-	-	-	<50	-	<50	-	60	60	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_02	MW94/12	Field_D	11/12/2013	403332	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	60	60	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC2	MW94/12	Field_D	17/11/2009	255428	220	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC4	MW94/12	Field_D	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TRIP_02	MW94/12	Interlab_D	11/12/2013	ES1327348	50	-	-	<50	-	180	-	240	-	60	-	240 - 265	-	50	50	<100	<100	220	220	<100	<1	<2	<2	<2	<2	<2	<1
MW94/14	MW94/14	Normal	1/06/2001		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/14	MW94/14	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/12/2000		<20	-	-	200	-	800	-	900	-	100	-	1100	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/06/2001		<20	-	-	80	-	400	-	450	-	<100	-	530	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/12/2003		<20	-	-	170	-	400	-	450	-	<100	-	620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/07/2004		<20	-	-	120	-	300	-	350	-	<100	-	470	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/03/2005		<20	-	-	150	-	500	-	550	-	<100	-	700	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	14/09/2005		<20	-	-	180	-	421	-	471	-	<100	-	651	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	30/03/2006		<20	-	-	80	-	169	-	219	-	<100	-	299	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	26/09/2006		<20	-	-	<40	-	800	-	960	-	160	-	980	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	1/09/2007		30	-	-	130	-	300	-	350	-	<100	-	480	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/15	MW94/15	Normal	13/09/2007		30	-	-	130	-	300	-	350	-	<100	-	480	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/15	MW94/15	Normal	25/02/2008		-	-	-	-	-	-	-	250	-	-	-	350	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/15	MW94/15	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/15	MW94/15	Normal	16/04/2009		30	-	-	130	-	400	-	450	-	<100	-	580	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/16	MW94/16	Normal	1/12/2003		2100	-	-	400	-	1000	-	1900	-	900	-	2300	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/16	MW94/16	Normal	1/03/2005		2200	-	-	380	-	700	-	1200	-	500	-	1580	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/16	MW94/16	Normal	14/09/2005		2800	-	-	800	-	1170	-	2039	-	869	-	2839	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/16	MW94/16	Normal	30/03/2006		31,000	-	-	420	-	854	-	904	-	<100	-	1324	-	-	-	-	-	-	-	-	<100	<100	<100	-	-	<600	<900
MW94/16	MW94/16	Normal	26/09/2006		8620	-	-	4160	-	6300	-	12,350	-	6050	-	16,510	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/16	MW94/16	Normal	1/09/2007		12,000	-	-	240	-	<100	-	<200	-	<100	-	340	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/16	MW94/16	Normal	17/09/2007		12,000	-	-	240	-	<100	-	<200	-	<100	-	340	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
MW94/16	MW94/16	Normal	8/12/2014	441637	480	-	-	<50	-	<100	-	-	-	<100	-	<100	-	480	480	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/16	MW94/16	Normal	25/11/2015		3500	-	-	1500	-	2800	-	-	-	2200	-	6500	-	3500	3500	1700	1700	4200	-	700	<1	<1	<1	<1	<2	<3	<6
MW94/16	MW94/16	Normal	15/12/2016	528403	-	-	3800	90	-	<100	-	-	-	<100	-	<100	-	4800	4800	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/16	MW94/16	Normal	26/05/2017	ES1712963	2160	-	-	120	-	280	-	-	-	320	-	720	-	2880	2880	150	150	430	720	140	<1	<2	<2	<2	<2	<2	<1
MW94/16	MW94/16	Normal	8/12/2017	ES1731268	1800	-	-	80	-	<100	-	-	-	<50	-	80	-	1750	1750	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/16	MW94/16	Normal	22/06/2018	ES1818457	2360	-	-	590	-	990	-	-	-	930	-	2510	-	2370	2370	730	730	1530	2730	470	<1	<2	<2	<2	<2	<2	<1
MW94/16	MW94/16	Normal	7/12/2018	ES1836989	2590	-	-	450	-	340	-	-	-	940	-	1730	-	2610	2610	480	480	990	1880	410	<1	<2	<2	<2	<2	<2	<1
QC9	MW94/16	Field_D	17/09/2007		610	-	-	280	-	<100	-	150	-	100	-	430	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
D03_220618	MW94/16	Field_D	22/06/2018	ES1818457	2470	-	-	<50	-	430	-	-	-	520	-	950	-	2480	2480	130	130	810	1110	170	<1	<2	<2	<2	<2	<2	<1
MW94/18	MW94/18	Normal	1/12/2003		<20	-	-	180	-	<100	-	<200	-	<100	-	280	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	1/07/2004		<20	-	-	120	-	300	-	350	-	<100	-	470	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	1/05/2005		20	-	-	90	-	180	-	230	-	<100	-	320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	14/09/2005		<20	-	-	100	-	<100	-	<200	-	<100	-	200	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	21/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	25/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/18	MW94/18	Normal	12/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/18	MW94/18	Normal	25/02/2008		-	-	-	-	-	-	-	<200	-	-	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/18	MW94/18	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/18	MW94/18	Normal	16/04/2009		80	-	-	<50	-	200	-	250	-	<100	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/18	MW94/18	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/18	MW94/18	Normal	7/12/2017	ES1731188	30	-	-	<50	-	<100	-	-	-	<50	-	<50	-	20	20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/18	MW94/18	Normal	25/06/2018	ES1818590	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/18	MW94/18	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC2	MW94/18	Field_D	12/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/19	MW94/19	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	1/12/2000		<20	-	-	70	-	800	-	1400	-	600	-	1470	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	23/03/2006		<20	-	-	30	-	245	-	295	-	<100	-	325	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	26/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	1/09/2007		<20	-	-	<40	-	300	-	350	-	<100	-	370	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	13/09/2007		<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/2	MW94/2	Normal	28/02/2008		<20	-	-	70	-	400	-	450	-	<100	-	520	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW94/2	MW94/2	Normal	13/11/2008		<20	-	-	60	-	500	-	550	-	<100	-	610	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/2	MW94/2	Normal	22/04/2009		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/2	MW94/2	Normal	20/11/2009	255549	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/2	MW94/2	Normal	25/06/2010	268864	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/2	MW94/2	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	10/06/2011		<20	-	-	<50	-	900	-	1400	-	500	-	1400 - 1425	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	13/06/2012	340826	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	10/12/2012	362586	<20	-	-	80	-	900	-	1200	-	300	-	1280 - 1300	-	<20	<20	150	150	1000	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	25/06/2013	383856	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	27/05/2014	419785	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	9/12/2014	441766	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/2	MW94/2	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
QC12	MW94/2	Interlab_D	22/04/2009	EM0903583	<20	-	-	100	-	800	-	1090	-	290	-	1190	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<4	<5
MW94/3	MW94/3	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	1/12/2000		<20	-	-	<40	-	300	-	400	-	100	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	30/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	27/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/3	MW94/3	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/3	MW94/3	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<2	<1	-	-	<2	<6
MW94/3	MW94/3	Normal	13/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/3	MW94/3	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/3	MW94/3	Normal	19/11/2009	255526	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/3	MW94/3	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/3	MW94/3	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/3	MW94/3	Normal	6/12/2012	362205	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/3	MW94/3	Normal	12/12/2013	403484	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/3	MW94/3	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/3	MW94/3	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/3	MW94/3	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/3	MW94/3	Normal	16/12/2016	528705	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/3	MW94/3	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/3	MW94/3	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/3	MW94/3	Normal	25/06/2018	ES1818797	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/3	MW94/3	Normal	7/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D03_111217	MW94/3	Field_D	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
T02_111217	MW94/3	Interlab_D	11/12/2017	577517	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	300	<1	<1	<1	<1	<2	<3	-
MW94/4	MW94/4	Normal	1/12/2003		<20	-	-	<40	-	370	-	420	-	<100	-	440	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	1/03/2005		<20	-	-	<40	-	370	-	420	-	<100	-	440	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	30/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	3/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/4	MW94/4	Normal	25/02/2008		-	-	-	-	-	-	-	<200	-	-	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/4	MW94/4	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/4	MW94/4	Normal	23/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/4	MW94/4	Normal	19/11/2009	255526	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/4	MW94/4	Normal	25/06/2010	268864	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/4	MW94/4	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/4	MW94/4	Normal	8/06/2011		<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/4	MW94/4	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/4	MW94/4	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/4	MW94/4	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/4	MW94/4	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/4	MW94/4	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/4	MW94/4	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW94/4	MW94/4	Normal	22/06/2018	ES1818457	<20	-	-	210	-	160	-	-	-	360	-	730	-	<20	<20	220	220	410	800	170	<1	<2	<2	<2	<2	<2	<1
MW94/4	MW94/4	Normal	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	80	-	80	-	<20	<20	<100	<100	150	150	<100	<1	<2	<2	<2	<2	<2	<1
D02_111217	MW94/4	Field_D	11/12/2017	ES1731349	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D02_290517	MW94/4	Field_D	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D03_20181206	MW94/4	Field_D	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC05	MW94/4	Field_D	19/11/2009	255526	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
T01_290517	MW94/4	Interlab_D	29/05/2017	548413	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
BH94/5	MW94/5	Normal	12/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/5	MW94/5	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	31/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	29/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/5	MW94/5	Normal	22/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/5	MW94/5	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/5	MW94/5	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/5	MW94/5	Normal	22/06/2010	268407	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/5	MW94/5	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/5	MW94/5	Normal	9/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/5	MW94/5	Normal	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	1/08/1999		<20	-	-	78	-	1730	-	1780	-	<100	-	1858	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/07/2000		<20	-	-	50	-	1100	-	1600	-	500	-	1650	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/12/2000		<20	-	-	130	-	3200	-	4500	-	1300	-	4630	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/06/2001		<20	-	-	60	-	1000	-	1400	-	400	-	1460	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	23/03/2006		<20	-	-	30	-	340	-	390	-	<100	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	28/09/2006		<20	-	-	<40	-	14,300	-	20,960	-	6660	-	20,980	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	1/12/2006		<20	-	-	<40	-	1700	-	2080	-	380	-	2100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW94/6	MW94/6	Normal	1/09/2007		<20	-	-	50	-	800	-	900	-	100	-	950	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	13/09/2007		<20	-	-	50	-	800	-	900	-	100	-	950	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6	MW94/6	Normal	17/09/2007		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6	MW94/6	Normal	22/02/2008		<20	-	-	<50	-	1000	-	1200	-	200	-	1225	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6	MW94/6	Normal	13/11/2008		<20	-	-	<100	-	500	-	600	-	<200	-	650	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW94/6	MW94/6	Normal	21/04/2009		<20	-	-	<50	-	1100	-	1500	-	400	-	1525	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6	MW94/6	Normal	19/11/2009	255526	<20	-	-	70	-	<100	-	<200	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6	MW94/6	Normal	25/06/2010	268864	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6	MW94/6	Normal	25/11/2010		<20	-	-	<50	-	500	-	550	-	<100	-	575	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	8/06/2011		<20	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	7/10/2011	314682	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 300	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	13/06/2012	340826	<20	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	<20	<20	<50	<50	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	6/12/2012	362203	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	24/06/2013	383714	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	10/12/2013	403171	<20	-	-	<50	-	300	-	350	-	<100	-	300 - 375	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	27/05/2014	419782	<20	-	-	<50	-	500	-	600	-	100	-	600 - 625	-	<20	<20	60	60	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	10/12/2014	442003	<20	-	-	<50	-	700	-	-	-	<100	-	700	-	<20	<20	<50	<50	800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	25/06/2015	463095	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	26/11/2015	481119	<20	-	-	100	-	500	-	-	-	100	-	700	-	<20	<20	100	100	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6	MW94/6	Normal	17/08/2016	512485	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/6	MW94/6	Normal	15/12/2016	528403	-	-	20	<50	-	200	-	-	-	<100	-	200	-	40	30	<50	<50	300	-	<100	<1	<1	<1	4	4	7	-
MW94/6	MW94/6	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	480	-	-	-	120	-	600	-	<20	<20	<100	<100	600	600	<100	<1	<2	<2	<2	<2	<2	<1
MW94/6	MW94/6	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	300	-	-	-	<50	-	300	-	<20	<20	<100	<100	320	320	<100	<1	<2	<2	<2	<2	<2	<1
MW94/6	MW94/6	Normal	5/12/2018	ES1836989	<20	-	-	120	-	260	-	-	-	360	-	740	-	<20	<20	120	120	560	820	140	<1	<2	<2	<2	<2	<2	<1
MW94/6X	MW94/6X	Normal	1/08/1999		<20	-	-	53	-	824	-	874	-	<100	-	927	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	23/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	3/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6X	MW94/6X	Normal	22/02/2008		<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6X	MW94/6X	Normal	13/11/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6X	MW94/6X	Normal	17/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6x	MW94/6X	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/6X	MW94/6X	Normal	23/06/2010	268583	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/6X	MW94/6X	Normal	26/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	7/06/2011		<20	-	-	<50	-	<100	-	250	-	200	-	200 - 275	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	11/12/2012	362827	<20	-	-	50	-	200	-	250	-	<100	-	300	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	25/06/2013	383856	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	11/12/2013	403328	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/6X	MW94/6X	Normal	27/05/2014	419782	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC4	MW94/6X	Field_D	17/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/7	MW94/7	Normal	1/07/2000		<20	-	-	<40	-	500	-	700	-	200	-	720	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	1/06/2001		<20	-	-	80	-	500	-	550	-	<100	-	630	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	23/03/2006		<20	-	-	40	-	178	-	228	-	<100	-	268	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	27/09/2006		<20	-	-	<40	-	1700	-	2080	-	380	-	2100	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	1/12/2006		<20	-	-	<40	-	600	-	930	-	330	-	950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW94/7	MW94/7	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/7	MW94/7	Normal	13/11/2008		<20	-	-	<50	-	400	-	450	-	<100	-	475	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/7	MW94/7	Normal	21/04/2009		<20	-	-	50	-	1200	-	1300	-	100	-	1350	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/7	MW94/7	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/7	MW94/7	Normal	25/06/2010	268864	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/7	MW94/7	Normal	25/11/2010		<20	-	-	<50	-	500	-	550	-	<100	-	575	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/7	MW94/7	Normal	8/06/2011		<20	-	-	<50	-	900	-	1200	-	300	-	1200 - 1225	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/7	MW94/7	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/7	MW94/7	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/7	MW94/7	Normal	21/06/2013	383502	<20	-	-	<50	-	200	-	250	-	<100	-	200 - 275	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94_7	MW94/7	Normal	22/02/2008		<20	-	-	<50	-	1100	-	1300	-	200	-	1325	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/8	MW94/8	Normal	1/07/2000		<20	-	-	80	-	700	-	1000	-	300	-	1080	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	1/12/2000		<20	-	-	110	-	1100	-	1600	-	500	-	1710	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	1/06/2001		<20	-	-	130	-	700	-	750	-	<100	-	880	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	1/12/2003		<20	-	-	<40	-	300	-	350	-	<100	-	370	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	1/03/2005		26	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	14/09/2005		<20	-	-	100	-	<100	-	<200	-	<100	-	200	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	29/03/2006		40	-	-	100	-	226	-	276	-	<100	-	376	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	27/09/2006		<20	-	-	70	-	1100	-	1470	-	370	-	1540	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	1/12/2006		<20	-	-	300	-	2200	-	2690	-	490	-	2990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW94/8	MW94/8	Normal	25/02/2008		-	-	-	-	-	-	-	350	-	-	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/8	MW94/8	Normal	13/11/2008		<20	-	-	<50	-	200	-	250	-	<100	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/8	MW94/8	Normal	21/04/2009		80	-	-	<50	-	200	-	250	-	<100	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/8	MW94/8	Normal	19/11/2009	255526	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW94/8	MW94/8	Normal	23/06/2010	268583	<20	-	-	60	-	200	-	300	-	100	-	360	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/8	MW94/8	Normal	26/11/2010		40	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	7/06/2011		<20	-	-	<50	-	<100	-	150	-	100	-	100 - 175	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	14/06/2012	340986	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	11/12/2012	362827	60	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	70	70	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	24/06/2013	383714	30	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	30	30	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	11/12/2013	403328	610	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	660	660	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	27/05/2014	419782	60	-	-	90	-	800	-	1000	-	200	-	1090 - 1100	-	60	60	170	170	900	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	9/12/2014	441766	60	-	-	<50	-	<100	-	-	-	<100	-	<100	-	60	60	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	25/06/2015	463095	60	-	-	<50	-	<100	-	-	-	<100	-	<100	-	60	60	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	24/11/2015		30	-	-	<50	-	200	-	-	-	<100	-	200	-	30	30	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW94/8	MW94/8	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	1	<1	<1	<1	<2	<3	-
MW94/8	MW94/8	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW94/8	MW94/8	Normal	29/05/2017	ES1713176	30	-	-	<50	-	200	-	-	-	<50	-	200	-	30	30	<100	<100	260	260	<100	<1	<2	<2	<2	<2	<2	<1
MW94/8	MW94/8	Normal	8/12/2017	ES1731268	20	-	-	<50	-	190	-	-	-	240	-	430	-	20	20	<100	<100	330	500	170	<1	<2	<2	<2	<2	<2	<1
MW94/8	MW94/8	Normal	22/06/2018	ES1818457	<20	-	-	600	-	210	-	-	-	1110	-	1920	-	<20	<20	610	610	970	2070	490	<1	<2	<2	<2	<2	<2	<1
MW94/8	MW94/8	Normal	6/12/2018	ES1836989	30	-	-	<50	-	<100	-	-	-	<50	-	<50	-	30	30	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D01_241115_SH	MW94/8	Field_D	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC14	MW94/8	Field_D	26/11/2010		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW94/9	MW94/9	Normal	1/12/2003		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/9	MW94/9	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/9	MW94/9	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/9	MW94/9	Normal	29/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW94/9	MW94/9	Normal	4/10/2006		<20	-	-	<40	-	400	-	550	-	150	-	570	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW94/9	MW94/9	Normal	1/12/2006		<20	-	-	<40	-	600	-	840	-	240	-	860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW95/1	MW95/1	Normal	1/12/2000		<20	-	-	<40	-	200	-	400	-	200	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/1	MW95/1	Normal	1/12/2003		2500	-	-	683	-	632	-	4447	-	3815	-	5130	-	-	-	-	-	-	-	-	67	11	27	-	-	108	213
MW95/1	MW95/1	Normal	26/09/2006		230	-	-	2030	-	800	-	1450	-	650	-	3480	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	14/09/2005		<20	-	-	<40	-	272	-	322	-	<100	-	342	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	31/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	29/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	22/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/10	MW95/10	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/10	MW95/10	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/10	MW95/10	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/10	MW95/10	Normal	22/06/2010	268407	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/10	MW95/10	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	9/06/2011		<20	-	-	50	-	<100	-	<200	-	<100	-	<100 - 150	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	19/06/2012	341448	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	13/12/2012	363171	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	19/06/2013	383201	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	5/12/2013	402604	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/10	MW95/10	Normal	20/05/2014	419285	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW95/10	MW95/10	Normal	5/12/2014	441476	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/11	MW95/11	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	31/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	29/09/2006		<20	-	-	<40	-	<100	-	110	-	60	-	130	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/11	MW95/11	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/11	MW95/11	Normal	22/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/11	MW95/11	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/11	MW95/11	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/12	MW95/12	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	14/09/2005		<20	-	-	<40	-	639	-	689	-	<100	-	709	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	31/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	29/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/12	MW95/12	Normal	27/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/12	MW95/12	Normal	22/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/12	MW95/12	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/12	MW95/12	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW 95/13	MW95/13	Normal	23/05/2014	419458	5900	-	-	730	-	500	-	550	-	<100	-	1200 - 1280	-	6000	6000	690	690	400	-	<100	<20	<20	<20	<20	<40	<60	<120
MW95/13	MW95/13	Normal	1/03/2005		3800	-	-	2700	-	979	-	1029	-	<100	-	3729	-	-	-	-	-	-	-	-	27	<1	<1	-	-	<3	29.5
MW95/13	MW95/13	Normal	14/09/2005		2900	-	-	2400	-	660	-	710	-	<100	-	3110	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/13	MW95/13	Normal	23/03/2006		10,000	-	-	3800	-	739	-	789	-	<100	-	4589	-	-	-	-	-	-	-	-	840	<50	1100	-	-	620	2585
MW95/13	MW95/13	Normal	26/09/2006		500	-	-	4160	-	1300	-	1470	-	170	-	5630	-	-	-	-	-	-	-	-	66	<1	101	-	-	41	208.5
MW95/13	MW95/13	Normal	1/09/2007		6800	-	-	690	-	300	-	350	-	<100	-	1040	-	-	-	-	-	-	-	-	9	<1	35	-	-	18	62.5
MW95/13	MW95/13	Normal	12/09/2007		6800	-	-	690	-	300	-	350	-	<100	-	1040	-	-	-	-	-	-	-	-	9	<2	35	-	-	18	63
MW95/13	MW95/13	Normal	28/02/2008		6200	-	-	390	-	300	-	350	-	<100	-	740	-	-	-	-	-	-	-	-	6	<1	5	-	-	8	19.5
MW95/13	MW95/13	Normal	17/11/2008		24,000	-	-	730	-	100	-	150	-	<100	-	880	-	-	-	-	-	-	-	-	25	<1	20	-	-	11	56.5
MW95/13	MW95/13	Normal	22/04/2009		22,000	-	-	500	-	300	-	350	-	<100	-	850	-	-	-	-	-	-	-	-	160	5	300	-	-	72	537
MW95/13	MW95/13	Normal	23/11/2009	255816	11,000	-	-	4000	-	300	-	350	-	<100	-	4350	-	-	-	-	-	-	-	-	110	2	250	-	-	160	522
MW95/13	MW95/13	Normal	25/06/2010	268864	15,000	-	-	570	-	100	-	150	-	<100	-	720	-	-	-	-	-	-	-	-	<100	<100	<100	-	-	<100	<400
MW95/13	MW95/13	Normal	25/11/2010		12,000	-	-	790	-	200	-	250	-	<100	-	1040	-	-	-	-	-	-	-	-	79	1	81	<1	63	63 - 63.5	224
MW95/13	MW95/13	Normal	8/06/2011		2200	-	-	60	-	500	-	550	-	<100	-	600 - 610	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<100	<150	<10
MW95/13	MW95/13	Normal	7/12/2011	321118	3100	-	-	1800	-	-	-	-	-	-	-	1800 - 2200	-	3300	3300	1500	1500	200	-	<100	<20	<20	43	<20	<40	<60 - 30	40 - 93
MW95/13	MW95/13	Normal	14/06/2012	340975	2000	-	-	470	-	<100	-	<200	-	<100	-	500 - 570	-	2200	2100	440	440	<100	-	<100	<1	<1	2	1	3	4	<10 - 7
MW95/13	MW95/13	Normal	12/12/2012	363008	2800	-	-	420	-	<100	-	<200	-	<100	-	400 - 520	-	2900	2900	410	410	<100	-	<100	<20	<20	<20	<20	<40	<60	<20
MW95/13	MW95/13	Normal	24/06/2013	383701	2700	-	-	510	-	200	-	250	-	<100	-	700 - 760	-	2800	2700	440	440	100	-	<100	<100	<100	150	<100	<200	<300	400
MW95/13	MW95/13	Normal	10/12/2013	403166	5100	-	-	760	-	<100	-	<200	-	<100	-	800 - 860	-	5400	5400	680	680	<100	-	<100	<10	<10	<10	<10	<20	<30	<60
MW95/13	MW95/13	Normal	10/12/2014	441997	11,000	-	-	50	-	<100	-	-	-	<100	-	<100	-	11,000	11,000	60	60	<100	-	<100	16	<10	270	<10	<20	<30	306
MW95/13	MW95/13	Normal	23/06/2015	462630	10,000	-	-	870	-	500	-	-	-	<100	-	1400	-	10,000	10,000	890	890	300	-	<100	<100	<100	110	<100	<200	<300	360
MW95/13	MW95/13	Normal	24/11/2015		11,000	-	-	810	-	500	-	-	-	<100	-	1300	-	12,000	12,000	630	630	400	-	<100	<100	<100	410	<100	<200	<300	660
MW95/13	MW95/13	Normal	19/08/2016	512679	8300	-	8300	1000	-	200	-	-	-	<100	-	1200	-	8500	8100	870	870	100	-	<100	35	<10	380	<10	<20	<30	-
MW95/13	MW95/13	Normal	16/12/2016	528402	-	-	16,000	640	-	200	-	-	-	<100	-	840	-	16,000	16,000	540	540	200	-	<100	<50	<50	210	<50	280	280	-
MW95/13	MW95/13	Normal	26/05/2017	ES1712963	45,800	-	-	240	-	210	-	-	-	<50	-	450	-	45,800	45,500	290	290	170	460	<100	86	<20	189	<20	25	25	300
MW95/13	MW95/13	Normal	8/12/2017	ES1731268	3010	-	-	350	-	340	-	-	-	<50	-	690	-	2960	2960	400	400	270	670	<100	3	<2	<2	<2	<2	<2	3
MW95/13	MW95/13	Normal	22/06/2018	ES1818457	2200	-	-	420	-	130	-	-	-	<50	-	550	-	2300	2300	480	480	<100	480	<100	2	<2	<2	<2	<2	<2	2
MW95/13	MW95/13	Normal	4/12/2018	ES1836402	1780	-	-	210	-	<100	-	-	-	250	-	460	-	1740	1740	220	220	230	450	<100	2	<2	<2	<2	<2	<2	2
D01_241115	MW95/13	Field_D	24/11/2015		15,000	-	-	870	-	500	-	-	-	<100	-	1400	-	15,000	15,000	650	650	400	-	<100	18	<10	370	<10	<20	<30	408
QC10	MW95/13	Field_D	17/11/2008		23,000	-	-	1000	-	300	-	350	-	<100	-	1350	-	-	-	-	-	-	-	-	22	<1	17	-	-	9	48.5
MW95/14	MW95/14	Normal	1/03/2005		500	-	-	3500	-	543	-	593	-	<100	-	4093	-	-	-	-	-	-	-	-	8	2	3	-	-	61	74
MW95/14	MW95/14	Normal	22/03/2006		80	-	-	380	-	117	-	167	-	<100	-	547	-	-	-	-	-	-	-	-	1.4	<1	<1	-	-	20	22.4
MW95/14	MW95/14	Normal	26/09/2006		2320	-	-	5510	-	900	-	970	-	70	-	6480	-	-	-	-	-	-	-	-	1380	10	3	-	-	648	2041
MW95/14	MW95/14	Normal	1/09/2007		2200	-	-	1400	-	200	-	250	-	<100	-	1650	-	-	-	-	-	-	-	-	1300	18	140	-	-	560	2018
MW95/14	MW95/14	Normal	17/09/2007		2200	-	-	1400	-	200	-	250	-	<100	-	1650	-	-	-	-	-	-	-	-	1300	18	140	-	-	560	2018
MW95/14	MW95/14	Normal	28/02/2008		8700	-	-	640	-	100	-	150	-	<100	-	790	-	-	-	-	-	-	-	-	7	<1	<1	-	-	2	10
MW95/14	MW95/14	Normal	12/11/2008		800	-	-	4400	-	400	-	600	-	200	-	5000	-	-	-	-	-	-	-	-	14	2	3	-	-	52	71
MW95/14	MW95/14	Normal	22/04/2009		430	-	-	2500	-	300	-	350	-	<100	-	2850	-	-	-	-	-	-	-	-	5	2	2	-	-	32	41
MW95/14	MW95/14	Normal	19/11/2009	255519	1400	-	-	4500	-	400	-	450	-	<100	-	4950	-	-	-	-	-	-	-	-	4	1	<1	-	-	230	235.5
MW95/14	MW95/14	Normal	25/06/2010	268866	350	-	-	3800	-	500	-	550	-	<100	-	4350	-	-	-	-	-	-	-	-	270	<20	<20	-	-	57	347
MW95/14	MW95/14	Normal	24/11/2010		740	-	-	1600	-	100	-	150	-	<100	-	1750	-	-	-	-	-	-	-	-	13	4	<1	<1	140	140 - 140.5	157.5
MW95/14	MW95/14	Normal	9/06/2011		260	-	-	670	-	200	-	250	-	<100	-	900 - 920	-	-	-	-	-	-	-	-	38	13	7	3	32	35 - 36	90 - 94
MW95/14	MW95/14	Normal	7/12/2011	321118	660	-	-	2400	-	-	-	-	-	-	-	2400 - 2900	-	1000	930	2300	2300	300	-	<100	1	3	<1	3	67	70	70 - 74.5
DUP_04	MW95/14	Field_D	7/12/2011	321118	670	-	-	2500	-	-	-	-	-	-	-	2500 - 3000	-	940	870	2400	2400	300	-	<100	1	<1	1	3	68	71 - 72	70 - 74.5
QC09	MW95/14	Field_D	24/11/2010		710	-	-	1300	-	200	-	250	-	<100	-	1550	-	-	-	-	-	-	-	-	10	3	<1	<1	130	130 - 130.5	143.5
MW95/15	MW95/15	Normal	1/03/2005		38,000	-	-	8300	-	1140	-	1331	-	191	-	9631	-	-	-	-	-	-	-	-	2600	280	1500	-	-	3920	8300
MW95/15	MW95/15	Normal	14/09/2005		8200	-	-	49,399	-	6010	-	7850	-	1840	-	57,249	-	-	-	-	-	-	-	-	2500	190	1200	-	-	2250	6140
MW95/15	MW95/15	Normal	22/03/2006		7600	-	-	12,949	-	2310	-	2733	-	423	-	15,682	-	-	-	-	-	-	-	-	1400	110	780	-	-	1230	3520
MW95/15	MW95/15	Normal	27/09/2006		29,000	-	-	39,400	-	4200	-	5700	-	1500	-	45,100	-	-	-	-	-	-	-	-	1240	142	177	-	-	2906	4465
MW95/15	MW95/15	Normal	1/09/2007		1900	-	-	20,000	-	5700	-	7600	-	1900	-	27,600	-	-	-	-	-	-	-	-	25	<1	81	-	-	78	184.5
MW95/15	MW95/15	Normal	12/09/2007		1900	-	-	20,000	-	5700	-	7600	-	1900	-	27,600	-	-	-	-	-	-	-	-	25	<10	81	-	-	78	189
MW95/15	MW95/15	Normal	27/02/2008		7000	-	-	6300	-	2100	-	2500	-	400	-	8800	-	-	-	-	-	-	-	-	600	61	220	-	-	450	1331
MW95/15	MW95/15	Normal	17/04/2009		5400	-	-	2800	-	800	-	1000	-	200	-	3800	-	-	-	-	-	-	-	-	410	41	210	-	-	260	921
MW95/15	MW95/15	Normal	23/11/2009	255816	6900	-	-	5800	-	1000	-	1050	-	<100	-	6850	-	-	-	-	-	-	-	-	350	25	190	-	-	190	755
MW95/15	MW95/15	Normal	25/06/2010	268864	5500	-	-	7600	-	1800	-	1850	-	<100	-	9450	-	-	-	-	-	-	-	-	310	<100	150	-	-	110	620
MW95/15	MW95/15	Normal	25/11/2010		5200	-	-	6500	-	2900	-	3500	-	600	-	10,000	-	-	-	-	-	-	-	-	270	<100	<100	<100	<100	<100	420
MW95/15	MW95/15	Normal	10/06/2011		1700	-	-	8700	-	3000	-	3200	-	200	-	11,900 - 12,000	-	-	-	-	-	-	-	-	140	25	120	34	94	128 - 130	410 - 415

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
MW95/15	MW95/15	Normal	8/12/2011	321281	450	-	-	7400	-	-	-	-	-	-	-	7400 - 10,000	-	530	470	7200	7200	1800	-	100	24	2	18	4	12	16	60
MW95/15	MW95/15	Normal	14/06/2012	340975	390	-	-	5500	-	2500	-	3200	-	700	-	8700	-	460	410	5900	5900	2500	-	700	21	3	11	4	11	15	50
MW95/15	MW95/15	Normal	12/12/2012	363008	4400	-	-	7700	-	4900	-	6300	-	1400	-	14,000	-	5300	5000	8600	8600	4000	-	700	170	<20	73	28	58	86	339 - 340
MW95/15	MW95/15	Normal	24/06/2013	383701	2700	-	-	7000	-	1600	-	2200	-	600	-	9200	-	3200	2700	7500	7500	1600	-	300	200	21	150	32	100	130 - 132	501
MW95/15	MW95/15	Normal	10/12/2013	403166	3200	-	-	3300	-	800	-	850	-	<100	-	4100 - 4150	-	5000	4600	4000	4000	500	-	<100	190	14	140	27	21	48	392
MW95/15	MW95/15	Normal	23/05/2014	419458	3300	-	-	2600	-	1000	-	1050	-	<100	-	3600 - 3650	-	4200	3900	2800	2600	700	-	<100	100	13	82	31	83	110 - 114	305
MW95/15	MW95/15	Normal	10/12/2014	441997	1100	-	-	280	-	200	-	-	-	<100	-	480	-	1300	1200	400	400	100	-	<100	18	<10	23	<10	50	50	96
MW95/15	MW95/15	Normal	25/11/2015		3400	-	-	2300	-	600	-	-	-	<100	-	2900	-	4200	3800	2600	2300	400	-	<100	69	11	150	39	130	170	400
DUP_05	MW95/15	Field_D	8/12/2011	321281	4200	-	-	8500	-	-	-	-	-	-	-	8500 - 12,000	-	5000	4400	8500	8500	2600	-	300	240	22	170	38	120	158 - 160	590 - 592
QC10	MW95/15	Field_D	25/11/2010		3100	-	-	3600	-	1900	-	2200	-	300	-	5800	-	-	-	-	-	-	-	-	270	<40	100	<40	96	96 - 116	486
QC3	MW95/15	Interlab_D	17/04/2009	EM0903430	4750	-	-	8800	-	3100	-	3640	-	540	-	12,440	-	-	-	-	-	-	-	-	538	58	300	58	318	376	896
MW95/16	MW95/16	Normal	1/12/2000		<20	-	-	110	-	700	-	1100	-	400	-	1210	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	23/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	6/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/16	MW95/16	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/16	MW95/16	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/16	MW95/16	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/16	MW95/16	Normal	22/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/16	MW95/16	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW95/16	MW95/16	Normal	23/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW95/16	MW95/16	Normal	8/12/2011	321280	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW95/16	MW95/16	Normal	4/12/2012	362014	<20	-	-	<50	-	<100	-	<100	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/16	MW95/16	Normal	11/12/2013	403332	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW95/2	MW95/2	Normal	1/12/2000		8700	-	-	1600	-	2700	-	3200	-	500	-	4800	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/2	MW95/2	Normal	1/06/2001		<20	-	-	1300	-	1700	-	1750	-	<100	-	3050	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/2	MW95/2	Normal	1/01/2004		9300	-	-	840	-	912	-	962	-	<100	-	1802	-	-	-	-	-	-	-	-	3.4	<1	<1	-	-	5	9.4
MW95/2	MW95/2	Normal	1/03/2005		6300	-	-	960	-	1100	-	1150	-	<100	-	2110	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/2	MW95/2	Normal	14/09/2005		3600	-	-	1400	-	1720	-	1770	-	<100	-	3170	-	-	-	-	-	-	-	-	<1	100	<1	-	-	<3	102.5
MW95/2	MW95/2	Normal	23/03/2006		12,000	-	-	1800	-	2360	-	2410	-	<100	-	4210	-	-	-	-	-	-	-	-	<50	<100	<100	-	-	<300	<550
MW95/2	MW95/2	Normal	26/09/2006		3250	-	-	1840	-	7300	-	8050	-	750	-	9890	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/4	MW95/4	Normal	1/12/2003		24,000	-	-	28,300	-	464	-	514	-	<100	-	28,814	-	-	-	-	-	-	-	-	5.4	<1	2	-	-	<3	9.4
MW95/4	MW95/4	Normal	1/07/2004		14,000	-	-	13,000	-	500	-	550	-	<100	-	13,550	-	-	-	-	-	-	-	-	12	3	30	-	-	6	51
MW95/4	MW95/4	Normal	1/03/2005		19,000	-	-	5800	-	<100	-	<200	-	<100	-	5900	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/4	MW95/4	Normal	14/09/2005		8400	-	-	3600	-	217	-	267	-	<100	-	3867	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/4	MW95/4	Normal	23/03/2006		14,000	-	-	4200	-	<100	-	<200	-	<100	-	4300	-	-	-	-	-	-	-	-	<50	<100	<100	-	-	<300	<550
MW95/4	MW95/4	Normal	26/09/2006		5170	-	-	8900	-	1500	-	1720	-	220	-	10,620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/4	MW95/4	Normal	1/09/2007		19,000	-	-	2800	-	400	-	450	-	<100	-	3250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW95/4	MW95/4	Normal	12/09/2007		19,000	-	-	2800	-	400	-	450	-	<100	-	3250	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
MW95/4	MW95/4	Normal	28/02/2008		550	-	-	690	-	200	-	250	-	<100	-	940	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	12	13.5
MW95/4	MW95/4	Normal	12/11/2008		32,000	-	-	990	-	200	-	250	-	<100	-	1240	-	-	-	-	-	-	-	-	4	<1	<1	-	-	1	6
MW95/4	MW95/4	Normal	22/04/2009		27,000	-	-	480	-	100	-	150	-	<100	-	630	-	-	-	-	-	-	-	-	5	<1	<1	-	-	1	7
MW95/4	MW95/4	Normal	23/11/2009	255816	20,000	-	-	1800	-	<100	-	<200	-	<100	-	1900	-	-	-	-	-	-	-	-	5	<1	<1	-	-	<1	6.5
MW95/4	MW95/4	Normal	25/06/2010	268866	50,000	-	-	770	-	<100	-	<200	-	<100	-	870	-	-	-	-	-	-	-	-	<100	<100	<100	-	-	<100	<400
MW95/4	MW95/4	Normal	25/11/2010		41,000	-	-	1000	-	400	-	450	-	<100	-	1450	-	-	-	-	-	-	-	-	<100	<100	<100	<100	<200	<300	<600
MW95/4	MW95/4	Normal	8/06/2011		6000	-	-	310	-	100	-	150	-	<100	-	400 - 460	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<100	<150	<10
MW95/4	MW95/4	Normal	7/12/2011	321118	5300	-	-	610	-	-	-	-	-	-	-	600 - 610	-	5500	5500	470	470	<100	-	<100	<20	<20	<20	<20	<40	<60 - 30	<20 - 60
MW95/4	MW95/4	Normal	18/06/2012	341308	5600	-	-	430	-	<100	-	<200	-	<100	-	400 - 530	-	5700	5700	380	380	<100	-	<100	<100	<100	<100	<100	<200	<300	<100
MW95/4	MW95/4	Normal	12/12/2012	363008	3800	-	-	440	-	<100	-	<200	-	<100	-	400 - 540	-	3900	3900	370	370	<100	-	<100	<50	<50	<50	<50	<100	<150	<150
MW95/4	MW95/4	Normal	24/06/2013	383701	6200	-	-	1600	-	100	-	150	-	<100	-	1700 - 1750	-	6400	6400	1400	1400	100	-	<100	<100	<100	<100	<100	<200	<300	<600
MW95/4	MW95/4	Normal	12/12/2013	403484	18,000	-	-	660	-	<100	-	<200	-	<100	-	700 - 760	-	18,000	18,000	420	420	<100	-	<100	<50	<50	<50	<50	<100	<150	<300
MW95/4	MW95/4	Normal	28/05/2014	419904	21,000	-	-	420	-	100	-	150	-	<100	-	500 - 570	-	21,000	21,000	390	390	100	-	<100	<50	<50	<50	<50	<100	<150	<300
MW95/4	MW95/4	Normal	10/12/2014	441997	46,000	-	-	4400	-	<100	-	-	-	<100	-	4400	-	46,000	46,000	5100	5100	<100	-	<100	<100	<100	<100	<100	<200	<300	<600
MW95/4	MW95/4	Normal	23/06/2015	462630	18,000	-	-	630	-	300	-	-	-	<100	-	930	-	18,000	18,000	560	560	300	-	<100	<100	<100	<100	<100	<200	<300	<600
MW95/4	MW95/4	Normal	24/11/2015		39,000	-	-	310	-	<100	-	-	-	<100	-	310	-	39,000	39,000	290	290	<100	-	<100	<200	<200	<200	<200	<400	<600	<1200
MW95/4	MW95/4	Normal	19/08/2016	512679	22,000	-	22,000	1600	-	<100	-	-	-	<100	-	1600	-	22,000	22,000	1500	1500	<100	-	<100	<10	<10	<10	<10	<20	<30	-
MW95/4	MW95/4	Normal	16/12/2016	528402	-	-	12,000	1100	-	<100	-	-	-	<100	-	1100	-	12,000	12,000	1000	1000	<100	-	<100	<50	<50	<50	<50	<100	<150	-
MW95/4	MW95/4	Normal	26/05/2017	ES1712963	2680	-	-	420	-	320	-	-	-	<50	-	740	-	2680	2680	430	430	290	720	<100	3	<2	<2	<2	<2	<2	3
MW95/4	MW95/4	Normal	8/12/2017	ES1731268	7870	-	-	720	-	<100	-	-	-	<50	-	720	-	7870	7870	700	700	<100	700	<100	2	<2	<2	<2	<2	<2	2
MW95/4	MW95/4	Normal	4/12/2018	ES1836402	4130	-	-	550	-	300	-	-	-	400	-	1250	-	4960	4960	600	600	530	1250	120	2	<2	<2	<2	<2	<2	2
D02_081217	MW95/4	Field_D	8/12/2017	ES1731268	6120	-	-	840	-	150	-	-	-	<50	-	990	-	6120	6120	820	820	140	960	<100	2	<2	<2	<2	<2	<2	2
D02_241115	MW95/4	Field_D	24/11/2015		50,000	-	-	460	-	<100	-	-	-	<100	-	460	-	50,000	50,000	400	400	<100	-	<100	<20	<20	<20	<20	<40	<60	<120
D03_190816_TT	MW95/4	Field_D	19/08/2016	512679	26,000	-	26,000	4400	-	100	-	-	-	<100	-	4500	-	26,000	26,000	4100	4100	200	-	<100	<20	<20	<20	<20	<40	<60	-
QC07	MW95/4	Field_D	8/06/2011		6600	-	-	990	-	200	-	250	-	<100	-	1200 - 1240	-	-	-	-	-	-	-	-	<50	<50	<50	<50	<100	<150	<10
D02_230615	MW95/4	Interlab_D	23/06/2015	ES1524664	3060	-	-	480	-	<100	-	-	-	<50	-	480	-	3080	3080	440	440	<100	440	<100	5	<2	<2	<2	<2	<2	5
T01_081217	MW95/4	Interlab_D	8/12/2017	576960	-	-	21,000	1200	-	<100	-	-	-	<100	-	1200	-	22,000	22,000	1200	1200	<100	-	<100	<200	<200	<200	<200	<400	<600	-
TRIP_02_101214	MW95/4	Interlab_D	10/12/2014	ES1427737	25,500	-	-	4080	-	120	-	-	-	<50	-	4200	-	25,600	25,600	3790	3790	100	3890	<100	<5	<5	<5	<5	<5	<5	<5
MW95/5	MW95/5	Normal	1/03/2005		3300	-	-	8400	-	4450	-	5860	-	1410	-	14,260	-	-	-	-	-	-	-	-	190	18	230	-	-	131	569
MW95/5	MW95/5	Normal	14/09/2005		7700	-	-	7500	-	3270	-	4360	-	1090	-	11,860	-	-	-	-	-	-	-	-	860	<1	4300	-	-	90	5250.5
MW95/5	MW95/5	Normal	22/03/2006		2100	-	-	7100	-	3200	-	4112	-	912	-	11,212	-	-	-	-	-	-	-	-	120	15	120	-	-	81	336
MW95/5	MW95/5	Normal	27/09/2006		2940	-	-	6950	-	6800	-	8630	-	1830	-	15,580	-	-	-	-	-	-	-	-	1240	<1	79	-	-	212	1531.5
MW95/6	MW95/6	Normal	22/03/2006		500	-	-	1000	-	<100	-	<200	-	<100	-	1100	-	-	-	-	-	-	-	-	2	1	<1	-	-	6	9.5
MW95/7	MW95/7	Normal	1/03/2005		7800	-	-	6400	-	254	-	304	-	<100	-	6704	-	-	-	-	-	-	-	-	650	240	610	-	-	2650	4150
MW95/7	MW95/7	Normal	14/09/2005		11,000	-	-	2400	-	599	-	649	-	<100	-	3049	-	-	-	-	-	-	-	-	3000	580	690	-	-	3910	8180
MW95/7	MW95/7	Normal	22/03/2006		2100	-	-	2800	-	137	-	187	-	<100	-	2987	-	-	-	-	-	-	-	-	210	49	110	-	-	544	913
MW95/7	MW95/7	Normal	26/09/2006		15,900	-	-	9580	-	800	-	850	-	<100	-	10,430	-	-	-	-	-	-	-	-	2450	507	96	-	-	5274	8327
MW95/7	MW95/7	Normal	1/09/2007		4700	-	-	2000	-	800	-	1000	-	200	-	3000	-	-	-	-	-	-	-	-	320	190	360	-	-	2300	3170
MW95/7	MW95/7	Normal	12/09/2007		4700	-	-	2000	-	800	-	1000	-	200	-	3000	-	-	-	-	-	-	-	-	320	190	360	-	-	2300	3170
MW95/7	MW95/7	Normal	27/02/2008		2800	-	-	2200	-	500	-	550	-	<100	-	2750	-	-	-	-	-	-	-	-	64	33	83	-	-	590	770
MW95/7	MW95/7	Normal	17/11/2008		3300	-	-	1100	-	100	-	150	-	<100	-	1250	-	-	-	-	-	-	-	-	17	14	37	-	-	220	288
MW95/7	MW95/7	Normal	16/04/2009		1500	-	-	1900	-	400	-	450	-	<100	-	2350	-	-	-	-	-	-	-	-	210	76	130	-	-	620	1036
MW95/7	MW95/7	Normal	19/11/2009	255519	3200	-	-	1500	-	<100	-	<200	-	<100	-	1600	-	-	-	-	-	-	-	-	22	7	21	-	-	210	260
MW95/7	MW95/7	Normal	24/06/2010	268696	3600	-	-	2300	-	<100	-	<200	-	<100	-	2400	-	-	-	-	-	-	-	-	47	19	97	-	-	610	773
MW95/7	MW95/7	Normal	25/11/2010		1500	-	-	880	-	<100	-	<200	-	<100	-	980	-	-	-	-	-	-	-	-	24	11	47	20	220	240	322
MW95/7	MW95/7	Normal	7/06/2011		2800	-	-	1200	-	<100	-	<200	-	<100	-	1200 - 1300	-	-	-	-	-	-	-	-	<10	<10	110	26	540	560 - 566	670 - 680
MW95/7	MW95/7	Normal	7/12/2011	321118	2900	-	-	2700	-	-	-	-	-	-	-	2700 - 2900	-	3700	2800	2200	2200	100	-	<100	42	36	120	30	600	630	828 - 830
MW95/7	MW95/7	Normal	14/06/2012	340975	2900	-	-	2000	-	300	-	350	-	<100	-	2300 - 2350	-	3400	2300	1700	1300	200	-	<100	39	31	180	60	860	920	1170 - 1200
MW95/7	MW95/7	Normal	5/12/2012	362018	1400	-	-	1100	-	<100	-	<200	-	<100	-	1100 - 1200	-	1600	1500	820	660	<100	-	<100	<10	<10	13	<10	88	93 - 95	118 - 120
MW95/7	MW95/7	Normal	19/06/2013	383201	1200	-	-	1600	-	200	-	250	-	<100	-	1800 - 1850	-	1400	1300	1400	1300	100	-	<100	5	4	14	4	44	48	71
MW95/7	MW95/7	Normal	9/12/2013	402999	1000	-	-	2100	-	400	-	450	-	<100	-	2500 - 2550	-	1200	1100	2300	2100	200	-	<100	4	6	12	4	67	71 - 72	94
MW95/7	MW95/7	Normal	28/05/2014	419904	500	-	-	990	-	300	-	350	-	<100	-	1300 - 1340	-	580	570	980	950	200	-	<100	<1	1	2	<1	5	5.5 - 6	9.5
MW95/7	MW95/7	Normal	9/12/2014	441766	560	-	-	450	-	<100	-	-	-	<100	-	450	-	690	620	530	460	<100	-	<100	4	5	9	5	46	51	69
MW95/7	MW95/7	Normal	26/11/2015	481119	1500	-	-	630	-	200	-	-	-	<100	-	830	-	1800	1400	590	500	100	-	<100	31	29	85	48	160	210	355
MW95/7	MW95/7	Normal	15/12/2016	528305	-	-	880	740	-	<100	-	-	-	<100	-	740	-	1100	810	650	570	<100	-	100	130	31	28	28	76	100	-

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
QC7	MW95/7	Field_D	27/02/2008		<20	-	-	2000	-	500	-	550	-	<100	-	2550	-	-	-	-	-	-	-	-	<2	<1	<1	-	-	<1	<5
MW95/8	MW95/8	Normal	1/03/2005		13,000	-	-	10,942	-	3460	-	4950	-	1490	-	15,892	-	-	-	-	-	-	-	-	1800	1700	720	-	-	7000	11,220
MW95/8	MW95/8	Normal	14/09/2005		57,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2500	4400	1600	-	-	14,000	22,500
MW95/8	MW95/8	Normal	23/03/2006		11,000	-	-	24,000	-	6150	-	7330	-	1180	-	31,330	-	-	-	-	-	-	-	-	750	520	750	-	-	5700	7720
MW95/8	MW95/8	Normal	27/09/2006		37,300	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	830	220	1220	-	-	9320	11,590
MW95/8	MW95/8	Normal	1/09/2007		3000	-	-	14,000	-	11,000	-	11,700	-	700	-	25,700	-	-	-	-	-	-	-	-	250	65	290	-	-	2100	2705
MW95/8	MW95/8	Normal	12/09/2007		3000	-	-	14,000	-	11,000	-	11,700	-	700	-	25,700	-	-	-	-	-	-	-	-	250	65	290	-	-	2100	2705
MW95/8	MW95/8	Normal	28/02/2008		2200	-	-	8600	-	5900	-	5950	-	<100	-	14,550	-	-	-	-	-	-	-	-	250	55	300	-	-	1600	2205
QC9	MW95/8	Field_D	28/02/2008		2000	-	-	8200	-	6000	-	6050	-	<100	-	14,250	-	-	-	-	-	-	-	-	230	52	260	-	-	1500	2042
MW95/9	MW95/9	Normal	1/12/2003		14,000	-	-	13,810	-	3310	-	3560	-	250	-	17,370	-	-	-	-	-	-	-	-	3000	<50	2100	-	-	<3	5126.5
MW95/9	MW95/9	Normal	1/07/2004		11,000	-	-	16,000	-	3400	-	3900	-	500	-	19,900	-	-	-	-	-	-	-	-	940	<1	2600	-	-	7430	10,971
MW95/9	MW95/9	Normal	14/09/2005		3100	-	-	11,981	-	2090	-	2240	-	150	-	14,221	-	-	-	-	-	-	-	-	86	<1	180	-	-	1700	1966.5
MW95/9	MW95/9	Normal	22/03/2006		4000	-	-	4400	-	931	-	981	-	<100	-	5381	-	-	-	-	-	-	-	-	70	10	78	-	-	193	351
MW95/9	MW95/9	Normal	26/09/2006		3400	-	-	4820	-	1800	-	1850	-	<100	-	6670	-	-	-	-	-	-	-	-	11	<1	<1	-	-	<3	13.5
MW95/9	MW95/9	Normal	1/09/2007		1500	-	-	3200	-	1000	-	1200	-	200	-	4400	-	-	-	-	-	-	-	-	25	9	90	-	-	92	216
MW95/9	MW95/9	Normal	12/09/2007		1500	-	-	3200	-	1000	-	1200	-	200	-	4400	-	-	-	-	-	-	-	-	25	9	90	-	-	92	216
MW96/1	MW96/1	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	1/07/2000		<20	-	-	90	-	1500	-	1900	-	400	-	1990	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	1/06/2001		<20	-	-	190	-	2100	-	2700	-	600	-	2890	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	1/12/2003		<20	-	-	50	-	407	-	457	-	<100	-	507	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	1/03/2005		<20	-	-	100	-	1630	-	1868	-	238	-	1968	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	21/03/2006		<20	-	-	<40	-	384	-	509	-	125	-	529	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	25/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	1/09/2007		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	14/09/2007		<20	-	-	<50	-	200	-	250	-	<100	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/1	MW96/1	Normal	27/02/2008		<20	-	-	<50	-	400	-	600	-	200	-	625	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/1	MW96/1	Normal	14/11/2008		20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/1	MW96/1	Normal	17/04/2009		<20	-	-	<50	-	200	-	250	-	<100	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/1	MW96/1	Normal	18/11/2009	255440	<20	-	-	<50	-	1000	-	1050	-	<100	-	1075	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/1	MW96/1	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/1	MW96/1	Normal	24/11/2010		<20	-	-	<50	-	600	-	650	-	<100	-	675	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	10/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	8/12/2011	321281	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW96/1	MW96/1	Normal	12/06/2012	340670	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	5/12/2012	362014	<20	-	-	<50	-	400	-	400	-	<100	-	400	-	<20	<20	<50	<50	400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	24/06/2013	383701	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	11/12/2013	403332	<20	-	-	<50	-	500	-	550	-	<100	-	500 - 575	-	<20	<20	<50	<50	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	21/05/2014	419285	<20	-	-	<50	-	400	-	450	-	<100	-	400 - 475	-	<20	<20	<50	<50	400	-	<100	<1	<1	<1	<1	<2	<1	<4
MW96/1	MW96/1	Normal	8/12/2014	441642	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/1	MW96/1	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/1	MW96/1	Normal	15/12/2016	528405	-	-	<20	<50	-	300	-	-	-	<100	-	300	-	<20	<20	<50	<50	300	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/1	MW96/1	Normal	11/12/2017	ES1731349	<20	-	-	<50	-	140	-	-	-	100	-	240	-	<20	<20	<100	<100	180	180	<100	<1	<2	<2	<2	<2	<2	<1
MW96/1	MW96/1	Normal	25/06/2018	ES1818797	<20	-	-	<50	-	<100	-	-	-	200	-	200	-	<20	<20	<100	<100	180	180	<100	<1	<2	<2	<2	<2	<2	<1
QC5	MW96/1	Field_D	14/09/2007		<20	-	-	<50	-	300	-	350	-	<100	-	375	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC03	MW96/1	Interlab_D	24/06/2010	ES1012551	<20	-	-	<50	-	1990	-	2480	-	490	-	2480 - 2505	-	-	-	-	-	-	-	-	<1	<5	<2	<2	<2	<4	<8
MW96/10	MW96/10	Normal	1/07/2000		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/10	MW96/10	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/10	MW96/10	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/10	MW96/10	Normal	29/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/10	MW96/10	Normal	5/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	1/08/1999		<20	-	-	47	-	1990	-	2040	-	<100	-	2087	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	1/01/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	9	<1	-	-	<3	11.5
MW96/2	MW96/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	9	<1	-	-	<3	11.5
MW96/2	MW96/2	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	22/03/2006		<20	-	-	120	-	144	-	194	-	<100	-	314	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	3/10/2006		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/2	MW96/2	Normal	26/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/2	MW96/2	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/2	MW96/2	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/2	MW96/2	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/2	MW96/2	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/2	MW96/2	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/2	MW96/2	Normal	7/12/2011	321281	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 3600	-	<20	<20	<50	<50	3700	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW96/2	MW96/2	Normal	6/12/2012	362203	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/2	MW96/2	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/2	MW96/2	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/2	MW96/2	Normal	19/12/2016	529065	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/3	MW96/3	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	1/01/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	4	<1	-	-	<3	6.5
MW96/3	MW96/3	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	1/03/2005		<20	-	-	30	-	486	-	536	-	<100	-	566	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	14/09/2005		<20	-	-	200	-	341	-	391	-	<100	-	591	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	22/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	3/10/2006		<20	-	-	50	-	100	-	170	-	70	-	220	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	1/09/2007		<20	-	-	1500	-	600	-	1300	-	700	-	2800	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/3	MW96/3	Normal	26/09/2007		<20	-	-	1500	-	600	-	1300	-	700	-	2800	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/3	MW96/3	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/3	MW96/3	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/3	MW96/3	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/3	MW96/3	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/3	MW96/3	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<50	<50	<50	-	-	<50	<200
MW96/3	MW96/3	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	8/06/2011		<20	-	-	70	-	<100	-	350	-	300	-	400 - 420	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	7/12/2011	321281	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW96/3	MW96/3	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	5/12/2012	362203	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	25/06/2013	383856	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	12/12/2013	403490	140	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	150	150	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	21/05/2014	419285	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW96/3	MW96/3	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW96/3	MW96/3	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/3	MW96/3	Normal	19/08/2016	512679	30	-	30	<50	-	<100	-	-	-	<100	-	<100	-	30	30	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/3	MW96/3	Normal	19/12/2016	529065	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/3	MW96/3	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW96/3	MW96/3	Normal	21/06/2018	ES1818311	<20	-	-	110	-	<100	-	-	-	420	-	530	-	<20	<20	120	120	440	560	<100	<1	<2	<2	<2	<2	<2	<1
MW96/4	MW96/4	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	1/01/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	22/03/2006		<20	-	-	20	-	179	-	229	-	<100	-	249	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	3/10/2006		<20	-	-	<40	-	100	-	160	-	60	-	180	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/4	MW96/4	Normal	26/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/4	MW96/4	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/4	MW96/4	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/4	MW96/4	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/4	MW96/4	Normal	18/11/2009	255440	<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/4	MW96/4	Normal	25/11/2010		<20	-	-	60	-	400	-	500	-	100	-	560	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/4	MW96/4	Normal	7/12/2011	321116	<20	-	-	80	-	-	-	-	-	-	-	<100 - 80	-	<20	<20	90	90	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW96/4	MW96/4	Normal	5/12/2012	362014	<20	-	-	<50	-	<100	-	<100	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/4	MW96/4	Normal	6/12/2013	402721	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/4	MW96/4	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/4	MW96/4	Normal	19/12/2016	529065	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/5	MW96/5	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/5	MW96/5	Normal	1/07/2000		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/5	MW96/5	Normal	1/12/2000		<20	-	-	<40	-	400	-	600	-	200	-	620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/5	MW96/5	Normal	1/06/2001		<20	-	-	<40	-	300	-	350	-	<100	-	370	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/6	MW96/6	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	6	<1	-	-	<3	8.5
MW96/7	MW96/7	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	6/10/2006		<20	-	-	<40	-	300	-	370	-	70	-	390	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	26/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/7	MW96/7	Normal	17/11/2008		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/7	MW96/7	Normal	21/04/2009		<40	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<2	<2	<2	-	-	<2	<8
MW96/7	MW96/7	Normal	18/11/2009	255440	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/7	MW96/7	Normal	25/06/2010	268864	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/7	MW96/7	Normal	25/11/2010		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	8/06/2011		<20	-	-	50	-	<100	-	<200	-	<100	-	<100 - 150	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	11/12/2012	362827	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	25/06/2013	383856	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	6/12/2013	402721	<20	-	-	160	-	4700	-	4900	-	200	-	5060 - 5100	-	<20	<20	870	870	4400	-	100	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	26/05/2014	419629	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	11/12/2014	442349	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	2	<1	<1	<1	<2	<3	4.5
MW96/7	MW96/7	Normal	24/06/2015	462945	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	25/11/2015		<20	-	-	350	-	<100	-	-	-	100	-	450	-	<20	<20	340	340	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW96/7	MW96/7	Normal	19/08/2016	512679	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW96/7	MW96/7	Normal	16/12/2016	528402	-	-	<20	<50	-	<100	-	-	-	300	-	300	-	20	20	<50	<50	300	-	300	<1	<1	<1	<1	<2	<3	-
MW96/7	MW96/7	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	1	<2	<2	<2	<2	<2	1
MW96/7	MW96/7	Normal	19/06/2018	ES1818045	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW96/7	MW96/7	Normal	6/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW96/8	MW96/8	Normal	1/07/2000		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	14/09/2005		<20	-	-	<40	-	<100	-	211	-	161	-	231	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	6/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/8	MW96/8	Normal	26/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW96/9	MW96/9	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	1/07/2004		<20	-	-	90	-	<100	-	<200	-	<100	-	190	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	1/03/2005		<20	-	-	20	-	197	-	247	-	<100	-	267	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	6/10/2006		<20	-	-	<40	-	300	-	380	-	80	-	400	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW96/9	MW96/9	Normal	26/09/2007		<20	-	-	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/1	MW97/1	Normal	1/12/2000		<20	-	-	<40	-	300	-	500	-	200	-	520	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2	MW97/2	Normal	1/07/2000		<20	-	-	180	-	1200	-	1500	-	300	-	1680	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2	MW97/2	Normal	1/06/2001		310	-	-	380	-	900	-	950	-	<100	-	1330	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	1/12/2003		<20	-	-	60	-	300	-	350	-	<100	-	410	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	1/03/2005		<20	-	-	100	-	536	-	586	-	<100	-	686	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	30/03/2006		<20	-	-	60	-	<100	-	<200	-	<100	-	160	-	-	-	-	-	-	-	-	1	<1	<1	-	-	<3	3.5
MW97/2A	MW97/2A	Normal	25/09/2006		<20	-	-	90	-	1500	-	2100	-	600	-	2190	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	1/09/2007		30	-	-	80	-	300	-	350	-	<100	-	430	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	14/09/2007		30	-	-	80	-	300	-	350	-	<100	-	430	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2A	MW97/2A	Normal	27/02/2008		<20	-	-	130	-	300	-	400	-	100	-	530	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2A	MW97/2A	Normal	14/11/2008		420	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2A	MW97/2A	Normal	16/04/2009		730	-	-	1200	-	400	-	450	-	<100	-	1650	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2A	MW97/2A	Normal	19/11/2009	255526	380	-	-	100	-	<100	-	<200	-	<100	-	200	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2A	MW97/2A	Normal	22/06/2010	268407	550	-	-	3300	-	500	-	550	-	<100	-	3850	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2A	MW97/2A	Normal	26/11/2010		140	-	-	110	-	300	-	400	-	100	-	510	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/2A	MW97/2A	Normal	8/06/2011		230	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/2A	MW97/2A	Normal	6/12/2011	320972	540	-	-	<50	-	-	-	-	-	-	-	<50	-	540	540	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW97/2B	MW97/2B	Normal	14/09/2005		440	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2B	MW97/2B	Normal	30/03/2006		220	-	-	80	-	266	-	316	-	<100	-	396	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2B	MW97/2B	Normal	25/09/2006		250	-	-	230	-	<100	-	<200	-	<100	-	330	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2B	MW97/2B	Normal	1/09/2007		300	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/2B	MW97/2B	Normal	14/09/2007		300	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2B	MW97/2B	Normal	27/02/2008		80	-	-	60	-	<100	-	<200	-	<100	-	160	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/2B	MW97/2B	Normal	14/11/2008		<20	-	-	50	-	<100	-	<200	-	<100	-	150	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW97/2B	MW97/2B	Normal	16/04/2009		40	-	-	130	-	600	-	650	-	<100	-	780	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	1/07/2000		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	21/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	25/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	14/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	11/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	21/04/2009		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/3	MW97/3	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/3	MW97/3	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	8/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	6/12/2011	320982	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW97/3	MW97/3	Normal	15/06/2012	341117	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	11/12/2012	362822	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	20/06/2013	383357	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	6/12/2013	402721	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	8/12/2014	441642	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/3	MW97/3	Normal	14/12/2016	528589	-	-	-	<50	-	<100	-	-	-	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW97/3	MW97/3	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW97/3	MW97/3	Normal	5/12/2018	ES1836989	<20	-	-	140	-	<100	-	-	-	320	-	460	-	<20	<20	140	140	320	600	140	<1	<2	<2	<2	<2	<2	<1
MW97/4	MW97/4	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	30/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	25/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	14/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/4	MW97/4	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/4	MW97/4	Normal	11/11/2008		<20	-	-	60	-	200	-	250	-	<100	-	310	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/4	MW97/4	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/4	MW97/4	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW97/4	MW97/4	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW97/4	MW97/4	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	8/06/2011		<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	6/12/2011	320982	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
MW97/4	MW97/4	Normal	18/06/2012	341308	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	11/12/2012	362822	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	20/06/2013	383357	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	6/12/2013	402721	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	21/05/2014	419285	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
MW97/4	MW97/4	Normal	8/12/2014	441642	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
MW97/4	MW97/4	Normal	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
MW97/4	MW97/4	Normal	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW97/4	MW97/4	Normal	20/06/2018	ES1818158	<20	-	-	230	-	<100	-	-	-	420	-	650	-	<20	<20	220	220	360	710	130	<1	<2	<2	<2	<2	<2	<1
MW97/4	MW97/4	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC7	MW97/4	Field_D	14/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
D02_240517	MW97/4	Field_D	24/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D03_141216	MW97/4	Field_D	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
QC04	MW97/4	Field_D	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
QC1	MW97/4	Field_D	11/11/2008		<20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
T03_141216	MW97/4	Interlab_D	14/12/2016	ES1629560	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW98/4	MW98/4	Normal	1/12/2000		<20	-	-	290	-	1500	-	1800	-	300	-	2090	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	1/06/2001		<20	-	-	280	-	1400	-	1450	-	<100	-	1730	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	1/12/2003		<20	-	-	160	-	492	-	542	-	<100	-	702	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	1/03/2005		<20	-	-	400	-	1260	-	1310	-	<100	-	1710	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	14/09/2005		<20	-	-	260	-	1800	-	2117	-	317	-	2377	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	23/03/2006		<20	-	-	380	-	1160	-	1210	-	<100	-	1590	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	28/09/2006		<20	-	-	140	-	1600	-	1930	-	330	-	2070	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	1/09/2007		<20	-	-	90	-	500	-	550	-	<100	-	640	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	13/09/2007		<20	-	-	90	-	500	-	550	-	<100	-	640	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/4	MW98/4	Normal	25/02/2008		-	-	-	-	-	-	-	1150	-	-	-	1290	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/4	MW98/4	Normal	13/11/2008		<20	-	-	160	-	1000	-	1050	-	<100	-	1210	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/4	MW98/4	Normal	21/04/2009		<20	-	-	120	-	1400	-	1450	-	<100	-	1570	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/4	MW98/4	Normal	17/11/2009	255428	30	-	-	150	-	1800	-	1850	-	<100	-	2000	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/4	MW98/4	Normal	25/06/2010	268864	<20	-	-	110	-	1300	-	1350	-	<100	-	1460	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/4	MW98/4	Normal	25/11/2010		<20	-	-	110	-	1300	-	1350	-	<100	-	1460	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	8/06/2011		<20	-	-	260	-	2000	-	2050	-	<100	-	2300 - 2310	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	4/10/2011	314106	<20	-	-	740	-	-	-	-	-	-	-	740 - 7700	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	14/06/2012	340986	<20	-	-	160	-	2000	-	2050	-	<100	-	2200 - 2210	-	<20	<20	590	590	1800	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	10/12/2012	362586	<20	-	-	220	-	1900	-	1950	-	<100	-	2100 - 2170	-	<20	<20	530	530	1400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	24/06/2013	383714	<20	-	-	130	-	1500	-	1550	-	<100	-	1600 - 1680	-	<20	<20	460	460	1400	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	10/12/2013	403171	<20	-	-	100	-	1600	-	1650	-	<100	-	1700 - 1750	-	<20	<20	480	480	1300	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	27/05/2014	419782	<20	-	-	50	-	600	-	650	-	<100	-	700	-	<20	<20	190	190	500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	10/12/2014	442003	<20	-	-	400	-	1600	-	-	-	<100	-	2000	-	<20	<20	680	680	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/4	MW98/4	Normal	17/08/2016	512485	<20	-	<20	<50	-	500	-	-	-	<100	-	500	-	<20	<20	180	180	400	-	<100	<1	<1	<1	<1	<2	<3	-
MW98/4	MW98/4	Normal	14/12/2016	528403	-	-	<20	<50	-	500	-	-	-	<100	-	500	-	<20	<20	220	220	400	-	<100	<1	<1	<1	<1	<2	<3	-
MW98/4	MW98/4	Normal	6/12/2018	ES1836989	<20	-	-	210	-	830	-	-	-	470	-	1510	-	<20	<20	360	360	1130	1680	190	<1	<2	<2	<2	<2	<2	<1
MW98/5	MW98/5	Normal	1/12/2000		<20	-	-	240	-	4200	-	5000	-	800	-	5240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/5	MW98/5	Normal	1/06/2001		<20	-	-	270	-	3900	-	4400	-	500	-	4670	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/5	MW98/5	Normal	1/12/2003		<20	-	-	250	-	2500	-	2800	-	300	-	3050	-	-	-	-	-	-	-	-	6	<1	<1	-	-	<3	8.5
MW98/5	MW98/5	Normal	1/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/6	MW98/6	Normal	1/12/2003		<20	-	-	680	-	6600	-	7300	-	700	-	7980	-	-	-	-	-	-	-	-	7	<1	<1	-	-	<3	9.5
MW98/6	MW98/6	Normal	1/03/2005		90	-	-	560	-	5560	-	6311	-	751	-	6871	-	-	-	-	-	-	-	-	3.8	<1	<1	-	-	<3	6.3
MW98/6	MW98/6	Normal	14/09/2005		60	-	-	800	-	5150	-	6015	-	865	-	6815	-	-	-	-	-	-	-	-	8.4	1	1	-	-	<3	11.9
MW98/6	MW98/6	Normal	30/03/2006		<20	-	-	880	-	7780	-	9430	-	1650	-	10,310	-	-	-	-	-	-	-	-	5.2	<1	<1	-	-	<3	7.7
MW98/6	MW98/6	Normal	27/09/2006		20	-	-	1160	-	42,900	-	51,810	-	8910	-	52,970	-	-	-	-	-	-	-	-	4	<1	<1	-	-	<3	6.5
MW98/6	MW98/6	Normal	1/09/2007		<20	-	-	320	-	3900	-	4300	-	400	-	4620	-	-	-	-	-	-	-	-	2	<1	<1	-	-	<3	4.5
MW98/6	MW98/6	Normal	13/09/2007		<20	-	-	320	-	3900	-	4300	-	400	-	4620	-	-	-	-	-	-	-	-	2	<1	<1	-	-	<1	3.5
MW98/6	MW98/6	Normal	22/02/2008		30	-	-	400	-	7900	-	9200	-	1300	-	9600	-	-	-	-	-	-	-	-	1	<1	<1	-	-	<1	2.5
MW98/6	MW98/6	Normal	22/06/2010	268407	<20	-	-	500	-	6100	-	7100	-	1000	-	7600	-	-	-	-	-	-	-	-	<50	<50	<50	-	-	<50	<200
MW98/6	MW98/6	Normal	26/11/2010		<20	-	-	200	-	400	-	1500	-	1100	-	1700	-	-	-	-	-	-	-	-	<40	<40	<40	<40	<40	<40	<160
MW98/6	MW98/6	Normal	7/06/2011		70	-	-	1400	-	14,000	-	18,700	-	4700	-	20,000 - 20,100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/6	MW98/6	Normal	13/10/2011	315268	<20	-	-	2000	-	-	-	-	-	-	-	2000 - 26,000	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/6	MW98/6	Normal	19/06/2012	341447	<20	-	-	180	-	2100	-	2800	-	700	-	2980 - 3000	-	<20	<20	390	390	2600	-	300	<1	<1	<1	<1	<2	<3	<6
MW98/6	MW98/6	Normal	6/12/2012	362203	20	-	-	1600	-	23,000	-	32,700	-	9700	-	34,000 - 34,300	-	30	30	6100	6100	24,000	-	3300	<1	<1	<1	<1	<2	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
MW98/6	MW98/6	Normal	9/12/2014	441766	<20	-	-	<50	-	500	-	-	-	<100	-	500	-	<20	<20	50	50	600	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/6	MW98/6	Normal	19/08/2016	512679	<20	-	<20	230	-	2500	-	-	-	700	-	3430	-	<20	<20	390	390	2800	-	300	<1	<1	<1	<1	<2	<3	-
MW98/6	MW98/6	Normal	15/12/2016	528403	-	-	<20	70	-	1200	-	-	-	400	-	1670	-	<20	<20	180	180	1400	-	300	<1	<1	<1	<1	<2	<3	-
MW98/6	MW98/6	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	840	-	-	-	140	-	980	-	<20	<20	<100	<100	900	900	<100	<1	<2	<2	<2	<2	<2	<1
MW98/6	MW98/6	Normal	8/12/2017	ES1731268	<20	-	-	140	-	1480	-	-	-	270	-	1890	-	<20	<20	360	360	1510	1990	120	<1	<2	<2	<2	<2	<2	<1
MW98/6	MW98/6	Normal	20/06/2018	ES1818158	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
MW98/6	MW98/6	Normal	7/12/2018	ES1836989	<20	-	-	150	-	1480	-	-	-	960	-	2590	-	<20	<20	270	270	2320	3000	410	<1	<2	<2	<2	<2	<2	<1
QC3	MW98/6	Field_D	13/09/2007		<20	-	-	780	-	8700	-	10,600	-	1900	-	11,380	-	-	-	-	-	-	-	-	2	<1	<1	-	-	<1	3.5
D_131011_01	MW98/6	Field_D	13/10/2011	315268	20	-	-	3000	-	-	-	-	-	-	-	3000 - 40,000	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
D01_200618	MW98/6	Field_D	20/06/2018	ES1818158	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
D02_151216_PM	MW98/6	Field_D	15/12/2016	528403	-	-	<20	170	-	700	-	-	-	200	-	1070	-	<20	<20	120	120	700	-	200	<1	<1	<1	<1	<2	<3	-
DUP_04	MW98/6	Field_D	6/12/2012	362203	30	-	-	1200	-	20,000	-	26,800	-	6800	-	28,000	-	40	40	4100	4100	20,000	-	2700	<1	<1	<1	<1	<2	<3	<6
DUP_08	MW98/6	Field_D	19/06/2012	341447	30	-	-	100	-	1400	-	1600	-	200	-	1700	-	30	30	190	190	1500	-	100	<1	<1	<1	<1	<2	<3	<6
QC12	MW98/6	Field_D	26/11/2010		<20	-	-	330	-	5400	-	7100	-	1700	-	7430	-	-	-	-	-	-	-	-	<40	<40	<40	<40	<40	<40	<160
T_131011_01	MW98/6	Interlab_D	13/10/2011		<20	-	-	1210	-	9170	-	11,670	-	2500	-	12,880 - 12,900	-	<20	<20	2830	-	9130	13,300	1320	<1	<5	<2	<2	<2	<2	<1
T02_151216	MW98/6	Interlab_D	15/12/2016	ES1629585	<20	-	-	<50	-	820	-	-	-	60	-	880	-	<20	<20	<100	<100	720	720	<100	<1	<2	<2	<2	<2	<2	<1
TRIP-03	MW98/6	Interlab_D	6/12/2012	ES1228932	-	-	<20	7810	-	32,900	-	35,920	-	3020	-	43,730	-	<20	<20	9800	-	33,400	47,500	4340	<1	<2	<2	<2	<2	<2	<1
MW98/7	MW98/7	Normal	1/07/2000		<20	-	-	50	-	400	-	600	-	200	-	650	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	30/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	28/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/7	MW98/7	Normal	14/09/2007		<20	-	-	<100	-	<200	-	<400	-	<200	-	<500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/7	MW98/7	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/7	MW98/7	Normal	14/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/7	MW98/7	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/7	MW98/7	Normal	18/11/2009	255440	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/7	MW98/7	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/7	MW98/7	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<1	<2	<3	-
MW98/8	MW98/8	Normal	1/07/2000		<20	-	-	<40	-	400	-	600	-	200	-	620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/8	MW98/8	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/8	MW98/8	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/8	MW98/8	Normal	30/03/2006		<20	-	-	<40	-	159	-	209	-	<100	-	229	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/8	MW98/8	Normal	4/10/2006		<20	-	-	<40	-	500	-	670	-	170	-	690	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/09	MW98/9	Normal	19/06/2013	383198	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	1/07/2000		<20	-	-	<40	-	200	-	250	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	1/12/2003		<20	-	-	80	-	600	-	900	-	300	-	980	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	1/07/2004		<20	-	-	<40	-	800	-	850	-	<100	-	870	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	14/09/2005		<20	-	-	<40	-	341	-	391	-	<100	-	411	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	30/03/2006		<20	-	-	40	-	167	-	217	-	<100	-	257	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	27/09/2006		<20	-	-	<40	-	300	-	400	-	100	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/9	MW98/9	Normal	25/02/2008		-	-	-	-	-	-	-	150	-	-	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/9	MW98/9	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/9	MW98/9	Normal	17/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/9	MW98/9	Normal	20/11/2009	255816	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW98/9	MW98/9	Normal	23/06/2010	268583	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
MW98/9	MW98/9	Normal	26/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	6/10/2011	314462	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	13/06/2012	340833	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	10/12/2012	362587	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	9/12/2013	403002	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	23/05/2014	419484	<20	-	-	60	-	<100	-	<200	-	<100	-	<100 - 160	-	<20	<20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
MW98/9	MW98/9	Normal	10/12/2014	442003	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
QC02	MW98/9	Field_D	7/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
SW12/01	SW12/01	Normal	27/03/2012	331763	20	-	-	<50	-	-	-	-	-	-	-	<50 - 100	-	40	40	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP03	SW12/01	Field_D	27/03/2012	331763	<20	-	-	<50	-	-	-	-	-	-	-	<50 - 200	-	30	30	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
SW12/02	SW12/02	Normal	27/03/2012	331763	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW12/03	SW12/03	Normal	27/03/2012	331763	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/01	SW15/01	Normal	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
D01	SW15/01	Field_D	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/02	SW15/02	Normal	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/03	SW15/03	Normal	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/04	SW15/04	Normal	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/05	SW15/05	Normal	17/07/2015	465651	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/06	SW15/06	Normal	23/09/2015	473601	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/07	SW15/07	Normal	23/09/2015	473601	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW15/08	SW15/08	Normal	23/09/2015	473601	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW16/01	SW16/01	Normal	13/01/2016	485391	<20	-	-	110	-	100	-	-	-	100	-	310	-	<20	<20	50	50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
SW16/02	SW16/02	Normal	13/01/2016	485391	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
D01_130116	SW16/02	Field_D	13/01/2016	485391	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
SW16/03	SW16/03	Normal	13/01/2016	485391	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	1/06/2001		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	22/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	26/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/1	TW94/1	Normal	12/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/1	TW94/1	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/1	TW94/1	Normal	14/11/2008		<100	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<5	<5	<5	-	-	<5	<20
TW94/1	TW94/1	Normal	17/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/1	TW94/1	Normal	20/11/2009	255548	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/1	TW94/1	Normal	25/11/2010		<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<3
TW94/1	TW94/1	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	5/12/2012	362018	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	9/12/2013	402999	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	9/12/2014	441766	<20	-	-	<50	-	100	-	-	-	<100	-	100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/1	TW94/1	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
TW94/1	TW94/1	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC1	TW94/1	Field_D	12/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/2	TW94/2	Normal	1/12/2000		<20	-	-	40	-	300	-	500	-	200	-	540	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number																											
TW94/2	TW94/2	Normal	1/12/2003		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	1/07/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	22/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	26/09/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/2	TW94/2	Normal	12/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/2	TW94/2	Normal	28/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/2	TW94/2	Normal	14/11/2008		<100	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<5	<5	<5	-	-	<5	<20
TW94/2	TW94/2	Normal	16/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/2	TW94/2	Normal	20/11/2009	255548	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/2	TW94/2	Normal	25/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/2	TW94/2	Normal	5/10/2011	314284	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/2	TW94/2	Normal	5/12/2012	362018	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/2	TW94/2	Normal	9/12/2014	441766	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/2	TW94/2	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/2	TW94/2	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
TW94/2	TW94/2	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/2	TW94/2	Normal	8/12/2017	ES1731268	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/2	TW94/2	Normal	25/06/2018	ES1818590	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/2	TW94/2	Normal	5/12/2018	ES1836989	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/3	TW94/3	Normal	1/12/2003		4200	-	-	4800	-	2800	-	3757	-	957	-	8557	-	-	-	-	-	-	-	-	470	24	170	-	-	404	1068
TW94/3	TW94/3	Normal	1/07/2004		880	-	-	9100	-	2200	-	2500	-	300	-	11,600	-	-	-	-	-	-	-	-	650	<1	36	-	-	200	886.5
TW94/3	TW94/3	Normal	1/03/2005		6700	-	-	10,638	-	3980	-	4500	-	520	-	15,138	-	-	-	-	-	-	-	-	3700	260	220	-	-	490	4670
TW94/3	TW94/3	Normal	14/09/2005		2600	-	-	7700	-	2930	-	3237	-	307	-	10,937	-	-	-	-	-	-	-	-	2000	<1	120	-	-	310	2430.5
TW94/3	TW94/3	Normal	23/03/2006		3000	-	-	4200	-	1250	-	1350	-	100	-	5550	-	-	-	-	-	-	-	-	2100	70	110	-	-	304	2584
TW94/3	TW94/3	Normal	27/09/2006		4680	-	-	7240	-	2300	-	2580	-	280	-	9820	-	-	-	-	-	-	-	-	2140	148	51	-	-	255	2594
TW94/3	TW94/3	Normal	1/09/2007		6200	-	-	6000	-	1600	-	1800	-	200	-	7800	-	-	-	-	-	-	-	-	2900	260	130	-	-	450	3740
TW94/3	TW94/3	Normal	12/09/2007		6200	-	-	6000	-	1600	-	1800	-	200	-	7800	-	-	-	-	-	-	-	-	2900	260	130	-	-	450	3740
TW94/3	TW94/3	Normal	27/02/2008		6900	-	-	3400	-	1000	-	1050	-	<100	-	4450	-	-	-	-	-	-	-	-	1800	130	120	-	-	330	2380
TW94/3	TW94/3	Normal	17/11/2008		5600	-	-	3200	-	800	-	850	-	<100	-	4050	-	-	-	-	-	-	-	-	610	4	<1	-	-	7	621.5
TW94/3	TW94/3	Normal	22/04/2009		4000	-	-	3800	-	1300	-	1500	-	200	-	5300	-	-	-	-	-	-	-	-	1400	68	90	-	-	200	1758
TW94/3	TW94/3	Normal	19/11/2009	255519	5100	-	-	4100	-	1300	-	1350	-	<100	-	5450	-	-	-	-	-	-	-	-	380	24	15	-	-	56	475
TW94/3	TW94/3	Normal	25/06/2010	268866	6000	-	-	2900	-	700	-	750	-	<100	-	3650	-	-	-	-	-	-	-	-	980	<100	<100	-	-	<100	1130
TW94/3	TW94/3	Normal	25/11/2010		5100	-	-	2200	-	1300	-	1400	-	100	-	3600	-	-	-	-	-	-	-	-	350	<100	<100	<100	<100	<100	500
TW94/3	TW94/3	Normal	10/06/2011		1700	-	-	2700	-	1300	-	1350	-	<100	-	4000 - 4050	-	-	-	-	-	-	-	-	620	70	31	20	100	120	840 - 841
TW94/3	TW94/3	Normal	8/12/2011	321281	2900	-	-	2200	-	-	-	-	-	-	-	2200 - 2800	-	3300	2700	2300	2300	300	-	<100	450	46	19	19	58	77	590 - 592
TW94/3	TW94/3	Normal	14/06/2012	340975	1200	-	-	2300	-	700	-	750	-	<100	-	3000 - 3050	-	1400	1300	2300	2300	500	-	<100	63	17	8	13	41	53 - 54	140 - 141
TW94/3	TW94/3	Normal	12/12/2012	363008	1000	-	-	2100	-	1100	-	1150	-	<100	-	3200 - 3250	-	1200	1100	2100	2100	700	-	<100	26	<20	<20	<20	<40	<60	<60 - 76
TW94/3	TW94/3	Normal	24/06/2013	383701	1200	-	-	2600	-	1200	-	1400	-	200	-	4000	-	1400	1100	2400	2400	1300	-	<100	230	19	<10	10	28	38	292
TW94/3	TW94/3	Normal	10/12/2013	403166	1600	-	-	2100	-	1200	-	1250	-	<100	-	3300 - 3350	-	1900	1600	2400	2400	1000	-	<100	240	19	13	<10	21	<30 - 26	287
TW94/3	TW94/3	Normal	22/05/2014	419285	2200	-	-	2000	-	1000	-	1050	-	<100	-	3000 - 3050	-	2400	2000	1900	1900	800	-	<100	290	22	<10	<10	23	<30 - 28	332
TW94/3	TW94/3	Normal	25/11/2015		1900	-	-	1500	-	700	-	-	-	<100	-	2200	-	2400	2300	1500	1500	600	-	<100	22	9	12	13	40	53	96
TW94/3	TW94/3	Normal	15/12/2016	528305	-	-	1000	1400	-	300	-	-	-	200	-	1900	-	1200	1100	1400	1400	200	-	600	15	8	19	8	25	33	-
TW94/3	TW94/3	Normal	26/05/2017	ES1712963	730	-	-	700	-	330	-	-	-	<50	-	1030	-	830	810	830	830	240	1070	<100	4	2	<2	5	8	13	19
TW94/3	TW94/3	Normal	8/12/2017	ES1731268	620	-	-	770	-	260	-	-	-	<50	-	1030	-	780	740	780	770	220	1000	<100	4	<2	5	6	21	27	36
TW94/3	TW94/3	Normal	25/06/2018	ES1818602	460	-	-	460	-	170	-	-	-	140	-	770	-	460	450	490	490	240	730	<100	3	<2	<2	2	5	7	10
TW94/3	TW94/3	Normal	7/12/2018	ES1836989	610	-	-	460	-	<100	-	-	-	140	-	600	-	780	760	500	500	150	650	<100	2	<2	<2	4	10	14	16
QC11	TW94/3	Field_D	10/06/2011		1700	-	-	1000	-	2500	-	2800	-	300	-	3800	-	-	-	-	-	-	-	-	620	69	29	19	95	110 - 114	828 - 830
QC7A	TW94/3	Field_D	27/02/2008		8300	-	-	3400	-	1100	-	1150	-	<100	-	4550	-	-	-	-	-	-	-	-	3400	160	140	-	-	300	4000
QC8	TW94/3	Interlab_D	27/02/2008	EM0801549	5000	-	-	2860	-	1900	-	2090	-	190	-	4950	-	-	-	-	-	-	-	-	2400	124	99	34	179	213	2623
TW94/4	TW94/4	Normal	1/12/2000		70	-	-	1500	-	1000	-	1050	-	<100	-	2550	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/4	TW94/4	Normal	1/06/2001		1400	-	-	1200	-	600	-	650	-	<100	-	1850	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/4	TW94/4	Normal	1/12/2003		540	-	-	910	-	400	-	450	-	<100	-	1360	-	-	-	-	-	-	-	-	150	<5	<5	-	-	28	183
TW94/4	TW94/4	Normal	1/07/2004		650	-	-	860	-	400	-	450	-	<100	-	1310	-	-	-	-	-	-	-	-	3	1	<1	-	-	15	19.5
TW94/4	TW94/4	Normal	1/03/2005		860	-	-	900	-	176	-	226	-	<100	-	1126	-	-	-	-	-	-	-	-	9	2	2	-	-	18	31
TW94/4	TW94/4	Normal	14/09/2005		5200	-	-	680	-	160	-	210	-	<100	-	890	-	-	-	-	-	-	-	-	2	1	<1	-	-	9	12.5
TW94/4	TW94/4	Normal	22/03/2006		360	-	-	640	-	132	-	182	-	<100	-	822	-	-	-	-	-	-	-	-	4.8	1	<1	-	-	14	20.3
TW94/4	TW94/4	Normal	26/09/2006		610	-	-	1090	-	1000	-	1380	-	380	-	2470	-	-	-	-	-	-	-	-	135	<1	<1	-	-	16	152
TW94/4	TW94/4	Normal	1/09/2007		520	-	-	710	-	200	-	250	-	<100	-	960	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	12	13.5
TW94/4	TW94/4	Normal	12/09/2007		520	-	-	710	-	200	-	250	-	<100	-	960	-	-	-	-	-	-	-	-	<2	<2	<2	-	-	12	15
TW94/4	TW94/4	Normal	27/02/2008		<20	-	-	780	-	400	-	450	-	<100	-	1230	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
TW94/4	TW94/4	Normal	17/11/2008		1200	-	-	340	-	<100	-	<200	-	<100	-	440	-	-	-	-	-	-	-	-	2	<1	<1	-	-	8	11
TW94/4	TW94/4	Normal	16/04/2009		1200	-	-	660	-	400	-	450	-	<100	-	1110	-	-	-	-	-	-	-	-	1	<1	<1	-	-	8	10
TW94/4	TW94/4	Normal	9/12/2014	441766	190	-	-	130	-	<100	-	-	-	<100	-	130	-	230	230	160	160	100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/4	TW94/4	Normal	15/12/2016	528405	-	-	120	200	-	200	-	-	-	200	-	600	-	130	130	160	160	300	-	800	<1	<1	<1	<1	<2	<3	-
TW94/4	TW94/4	Normal	19/06/2018	ES1818045	120	-	-	<50	-	<100	-	-	-	<50	-	<50	-	70	70	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/4	TW94/4	Normal	4/12/2018	ES1836402	110	-	-	<50	-	<100	-	-	-	<50	-	<50	-	80	80	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
QC1	TW94/4	Field_D	16/04/2009		1200	-	-	670	-	300	-	350	-	<100	-	1020	-	-	-	-	-	-	-	-	2	<1	<1	-	-	9	12
TW94/5	TW94/5	Normal	1/12/2000		<20	-	-	150	-	400	-	450	-	<100	-	600	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	1/12/2003		<20	-	-	120	-	<100	-	<200	-	<100	-	220	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	1/07/2004		<20	-	-	150	-	300	-	350	-	<100	-	500	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	1/03/2005		<20	-	-	40	-	131	-	181	-	<100	-	221	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	14/09/2005		<20	-	-	120	-	<100	-	<200	-	<100	-	220	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	21/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	25/09/2006		<20	-	-	<40	-	200	-	260	-	60	-	280	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/5	TW94/5	Normal	25/02/2008		-	-	-	-	-	-	-	250	-	-	-	275	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/5	TW94/5	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/5	TW94/5	Normal	16/04/2009		90	-	-	50	-	200	-	250	-	<100	-	300	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/5	TW94/5	Normal	20/11/2009	255548	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/5	TW94/5	Normal	24/06/2010	268696	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/5	TW94/5	Normal	25/11/2010		40	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	7/06/2011		40	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	6/12/2011	320972	40	-	-	<50	-	-	-	-	-	-	-	<50	-	40	40	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
TW94/5	TW94/5	Normal	5/12/2012	362018	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	9/12/2013	402999	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	9/12/2014	441766	<20	-	-	<50	-	200	-	-	-	<100	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	25/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/5	TW94/5	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
TW94/5	TW94/5	Normal	26/05/2017	ES1712963	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/5	TW94/5	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/5	TW94/5	Normal	25/06/2018	ES1818590	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
TW94/5	TW94/5	Normal	4/12/2018	ES1836402	<20	-	-	70	-	<100	-	-	-	440	-	510	-	<20	<20	<100	<100	380	520	140	<1	<2	<2	<2	<2	<2	<1
QC4	TW94/5	Field_D	13/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
D01_151216_PM	TW94/5	Field_D	15/12/2016	528405	-	-	-	240	-	3800	-	-	-	100	-	4140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW94/6	TW94/6	Normal	9/12/2013	402999	250	-	-	1000	-	<100	-	<200	-	<100	-	1000 - 1100	-	560	550	980	980	<100	-	<100	<1	<1	<1	1	3	4	5.5

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
TW94/6	TW94/6	Normal	1/12/2003		130,000	-	-	31,000	-	3800	-	4200	-	400	-	35,200	-	-	-	-	-	-	-	-	26,000	49,000	7400	-	-	47,000	129,400
TW94/6	TW94/6	Normal	1/07/2004		260,000	-	-	41,000	-	2200	-	2400	-	200	-	43,400	-	-	-	-	-	-	-	-	68,000	120,000	10,000	-	-	59,000	257,000
TW94/6	TW94/6	Normal	1/03/2005		104,000	-	-	67,600	-	6040	-	6685	-	645	-	74,285	-	-	-	-	-	-	-	-	17,000	34,000	7300	-	-	47,000	105,300
TW94/6	TW94/6	Normal	14/09/2005		87,000	-	-	34,106	-	2780	-	3137	-	357	-	37,243	-	-	-	-	-	-	-	-	8400	15,000	9600	-	-	53,000	86,000
TW94/6	TW94/6	Normal	21/03/2006		42,000	-	-	13,783	-	1230	-	1365	-	135	-	15,148	-	-	-	-	-	-	-	-	2600	3600	6000	-	-	28,800	41,000
TW94/6	TW94/6	Normal	25/09/2006		47,000	-	-	25,200	-	900	-	1080	-	180	-	26,280	-	-	-	-	-	-	-	-	633	562	4500	-	-	27,250	32,945
TW94/6	TW94/6	Normal	1/09/2007		5200	-	-	7300	-	400	-	450	-	<100	-	7750	-	-	-	-	-	-	-	-	140	38	860	-	-	3700	4738
TW94/6	TW94/6	Normal	13/09/2007		5200	-	-	7300	-	400	-	450	-	<100	-	7750	-	-	-	-	-	-	-	-	140	38	860	-	-	3700	4738
TW94/6	TW94/6	Normal	25/02/2008		-	-	-	-	-	-	-	550	-	-	-	7350	-	-	-	-	-	-	-	-	110	21	280	-	-	1700	2111
TW94/6	TW94/6	Normal	17/11/2008		6100	-	-	5600	-	200	-	250	-	<100	-	5850	-	-	-	-	-	-	-	-	1400	1300	570	-	-	2900	6170
TW94/6	TW94/6	Normal	16/04/2009		5600	-	-	6300	-	400	-	450	-	<100	-	6750	-	-	-	-	-	-	-	-	190	72	510	-	-	2900	3672
TW94/6	TW94/6	Normal	23/07/2009		3700	-	-	2800	-	600	-	650	-	<100	-	3450	-	-	-	-	-	-	-	-	52	11	490	-	-	3100	3653
TW94/6	TW94/6	Normal	19/11/2009	255519	2600	-	-	4400	-	<100	-	<200	-	<100	-	4500	-	-	-	-	-	-	-	-	31	4	260	-	-	710	1005
TW94/6	TW94/6	Normal	24/06/2010	268696	1200	-	-	4000	-	<100	-	<200	-	<100	-	4100	-	-	-	-	-	-	-	-	2	1	92	-	-	370	465
TW94/6	TW94/6	Normal	25/11/2010		570	-	-	1600	-	100	-	150	-	<100	-	1750	-	-	-	-	-	-	-	-	3	<1	42	<1	140	140 - 140.5	185.5
TW94/6	TW94/6	Normal	7/06/2011		390	-	-	1200	-	<100	-	<200	-	<100	-	1200 - 1300	-	-	-	-	-	-	-	-	<1	<1	12	<1	25	25 - 25.5	38 - 40
TW94/6	TW94/6	Normal	6/12/2011	320972	13,000	-	-	5900	-	-	-	-	-	-	-	5900 - 6900	-	18,000	8900	3300	3100	500	-	<100	310	1300	970	1500	4600	6100	8600 - 8680
TW94/6	TW94/6	Normal	13/06/2012	340833	3800	-	-	2400	-	300	-	350	-	<100	-	2700 - 2750	-	4900	2700	1500	1400	100	-	<100	39	<10	450	11	1700	1700 - 1711	2194 - 2200
TW94/6	TW94/6	Normal	5/12/2012	362018	740	-	-	1600	-	200	-	250	-	<100	-	1800 - 1850	-	1000	880	1000	980	100	-	<100	4	<1	32	2	96	98	130 - 134.5
TW94/6	TW94/6	Normal	24/06/2013	383701	570	-	-	1800	-	200	-	250	-	<100	-	2000 - 2050	-	890	880	1400	1400	100	-	<100	2	<1	3	1	7	8	13.5
TW94/6	TW94/6	Normal	22/05/2014	419285	310	-	-	650	-	200	-	250	-	<100	-	900	-	560	560	620	620	100	-	<100	<1	<1	<1	<1	<2	<3 - 1	2.5
TW94/6	TW94/6	Normal	9/12/2014	441766	740	-	-	790	-	300	-	-	-	<100	-	1100	-	860	850	990	970	300	-	<100	<1	<1	1	2	5	6	8
TW94/6	TW94/6	Normal	24/11/2015		30	-	-	50	-	200	-	-	-	<100	-	250	-	40	40	60	60	200	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/6	TW94/6	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	100	<1	<1	<1	<1	<2	<3	-
TW94/6	TW94/6	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
DUP_10	TW94/6	Field_D	24/06/2013	383701	530	-	-	1800	-	100	-	150	-	<100	-	1900 - 1950	-	820	810	1400	1400	<100	-	<100	2	<1	3	<1	6	6.5 - 7	12.5
DUP_10	TW94/6	Field_D	9/12/2013	402999	320	-	-	1000	-	<100	-	<200	-	<100	-	1000 - 1100	-	860	860	1000	1000	<100	-	<100	<1	<1	1	1	3	4	6
DUP_10_091214	TW94/6	Field_D	9/12/2014	441766	660	-	-	400	-	100	-	-	-	<100	-	500	-	780	770	480	480	100	-	<100	<1	<1	<1	2	6	7	8.5
DUP_10_220514	TW94/6	Field_D	22/05/2014	419484	370	-	-	490	-	100	-	150	-	<100	-	600 - 640	-	740	740	500	500	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
DUP_13	TW94/6	Field_D	5/12/2012	362018	640	-	-	1900	-	300	-	350	-	<100	-	2200 - 2250	-	880	760	1200	1100	200	-	<100	3	<1	27	1	82	83	110 - 113.5
QC03	TW94/6	Field_D	7/06/2011		710	-	-	1300	-	<100	-	<200	-	<100	-	1300 - 1400	-	-	-	-	-	-	-	-	<1	<1	13	<1	26	26 - 26.5	40
TW94/7	TW94/7	Normal	1/12/2003		2600	-	-	2700	-	<100	-	<200	-	<100	-	2800	-	-	-	-	-	-	-	-	6.3	6	<1	-	-	<3	14.3
TW94/7	TW94/7	Normal	1/07/2004		<20	-	-	1200	-	200	-	250	-	<100	-	1450	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
TW94/7	TW94/7	Normal	1/03/2005		5800	-	-	1.8136E7	-	216,800	-	222,310	-	5510	-	1.835831E7	-	-	-	-	-	-	-	-	5.2	<5	<5	-	-	20	30.2
TW94/7	TW94/7	Normal	14/09/2005		1300	-	-	3100	-	408	-	606	-	198	-	3706	-	-	-	-	-	-	-	-	1.8	1	4	-	-	9	15.8
TW94/7	TW94/7	Normal	30/03/2006		740	-	-	860	-	<100	-	<200	-	<100	-	960	-	-	-	-	-	-	-	-	3.4	2	<1	-	-	12	17.9
TW94/7	TW94/7	Normal	26/09/2006		510	-	-	2960	-	400	-	480	-	80	-	3440	-	-	-	-	-	-	-	-	3	<1	<1	-	-	12	16
TW94/7	TW94/7	Normal	1/09/2007		1100	-	-	620	-	<100	-	<200	-	<100	-	720	-	-	-	-	-	-	-	-	2	1	<1	-	-	12	15.5
TW94/7	TW94/7	Normal	14/09/2007		1100	-	-	620	-	<100	-	<200	-	<100	-	720	-	-	-	-	-	-	-	-	2	1	<1	-	-	12	15.5
TW94/7	TW94/7	Normal	25/02/2008		-	-	-	-	-	-	-	350	-	-	-	1750	-	-	-	-	-	-	-	-	3	2	1	-	-	15	21
TW94/7	TW94/7	Normal	17/11/2008		170	-	-	260	-	<100	-	<200	-	<100	-	360	-	-	-	-	-	-	-	-	1	<1	<1	-	-	2	4
TW94/7	TW94/7	Normal	16/04/2009		550	-	-	350	-	100	-	150	-	<100	-	500	-	-	-	-	-	-	-	-	1	<1	<1	-	-	4	6
TW94/7	TW94/7	Normal	23/07/2009		200	-	-	260	-	300	-	350	-	<100	-	610	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/7	TW94/7	Normal	20/11/2009	255548	20	-	-	170	-	<100	-	<200	-	<100	-	270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
TW94/7	TW94/7	Normal	24/06/2010	268696	<20	-	-	270	-	<100	-	<200	-	<100	-	370	-	-	-	-	-	-	-	-	<50	<50	<50	-	-	<50	<200
TW94/7	TW94/7	Normal	25/11/2010		80	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	7/06/2011		440	-	-	390	-	<100	-	<200	-	<100	-	400 - 490	-	-	-	-	-	-	-	-	<1	<1	<1	2	2	4	<10 - 5.5
TW94/7	TW94/7	Normal	6/12/2011	320972	240	-	-	630	-	-	-	-	-	-	-	600 - 630	-	290	290	620	620	<100	-	<100	<1	<1	<1	1	<2	<3 - 2	<10 - 3
TW94/7	TW94/7	Normal	13/06/2012	340826	420	-	-	530	-	<100	-	<200	-	<100	-	500 - 630	-	530	520	540	540	<100	-	<100	<1	<1	<1	2	3	5	<10 - 6.5
TW94/7	TW94/7	Normal	5/12/2012	362018	150	-	-	80	-	<100	-	<200	-	<100	-	<100 - 180	-	170	170	60	50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	25/06/2013	383856	350	-	-	180	-	<100	-	<200	-	<100	-	200 - 280	-	370	370	190	190	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	10/12/2013	403166	110	-	-	170	-	<100	-	<200	-	<100	-	200 - 270	-	550	550	220	220	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	23/05/2014	419458	60	-	-	100	-	<100	-	<200	-	<100	-	100 - 200	-	70	70	100	100	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	9/12/2014	441766	200	-	-	<50	-	<100	-	-	-	<100	-	<100	-	220	220	50	50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	25/11/2015		60	-	-	60	-	100	-	-	-	<100	-	160	-	60	60	50	50	200	-	<100	<1	<1	<1	<1	<2	<3	<6
TW94/7	TW94/7	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
TW94/7	TW94/7	Normal	7/12/2017	ES1731188	<20	-	-	<50	-	190	-	-	-	<50	-	190	-	<20	<20	<100	<100	210	210	<100	<1	<2	<2	<2	<2	<2	<1
W91/1	W91/1	Normal	1/01/1993		21,000	-	-	10,000	-	<100	-	9250	-	9200	-	19,250	-	-	-	-	-	-	-	-	530	530	4900	-	-	5200	11,160
W91/1	W91/1	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13,000	1500	6200	-	-	5000	25,700
W91/1	W91/1	Normal	1/09/1993		30,000	-	-	15,000	-	5000	-	5050	-	<100	-	20,050	-	-	-	-	-	-	-	-	10,000	2100	6100	-	-	9300	27,500
W91/1	W91/1	Normal	1/12/1993		27,000	-	-	10,000	-	<100	-	<200	-	<100	-	10,100	-	-	-	-	-	-	-	-	5800	540	4200	-	-	3600	14,140
W91/1	W91/1	Normal	1/03/2005		7500	-	-	10,838	-	3320	-	3920	-	600	-	14,758	-	-	-	-	-	-	-	-	3300	87	1100	-	-	1120	5607
W91/1	W91/1	Normal	14/09/2005		5000	-	-	10,861	-	2740	-	3035	-	295	-	13,896	-	-	-	-	-	-	-	-	2400	46	870	-	-	1520	4836
W91/1	W91/1	Normal	22/03/2006		3000	-	-	9800	-	1830	-	2180	-	350	-	11,980	-	-	-	-	-	-	-	-	1400	52	620	-	-	577	2649
W91/1	W91/1	Normal	27/09/2006		3680	-	-	20,700	-	4400	-	4640	-	240	-	25,340	-	-	-	-	-	-	-	-	1670	55	483	-	-	528	2736
W91/10	W91/10	Normal	1/08/1999		<20	-	-	111	-	990	-	2080	-	1090	-	2191	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	1/07/2000		<20	-	-	<40	-	300	-	350	-	<100	-	370	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	1/12/2000		<20	-	-	<40	-	300	-	400	-	100	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/10	W91/10	Normal	11/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/10	W91/10	Normal	21/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/10	W91/10	Normal	18/11/2009	255440	<20	-	-	80	-	500	-	550	-	<100	-	630	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/10	W91/10	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/10	W91/10	Normal	24/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	8/06/2011		<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	15/06/2012	341117	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	11/12/2012	362822	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	20/06/2013	383357	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	6/12/2013	402721	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/10	W91/10	Normal	21/05/2014	419285	<20	-	-	<50	-	100	-	150	-	<100	-	100 - 175	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<1	<4
W91/10	W91/10	Normal	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	200	-	200	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	-
W91/2	W91/2	Normal	13/09/2007		30	-	-	3100	-	12,000	-	12,050	-	<100	-	15,150	-	-	-	-	-	-	-	-	<5	<5	<5	-	-	<5	<20
W91/2	W91/2	Normal	1/01/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	-	-	-	<3	<5
W91/2	W91/2	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/09/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/12/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/07/2000		<20	-	-	<40	-	400	-	600	-	200	-	620	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/12/2000		<20	-	-	<40	-	600	-	800	-	200	-	820	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/12/2003		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	14/09/2005		320	-	-	96,078	-	210,700	-	210,930	-	230	-	307,008	-	-	-	-	-	-	-	-	31	44	21	-	-	194	290
W91/2	W91/2	Normal	30/03/2006		70	-	-	5600	-	15,980	-	16,030	-	<100	-	21,630	-	-	-	-	-	-	-	-	1	<1	10	-	-	6	17.5
W91/2	W91/2	Normal	3/10/2006		30	-	-	430	-	2600	-	2840	-	240	-	3270	-	-	-	-	-	-	-	-	<1	<1	4	-	-	<3	6.5
W91/2	W91/2	Normal	1/09/2007		30	-	-	3100	-	12,000	-	12,050	-	<100	-	15,150	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/2	W91/2	Normal	25/02/2008		-	-	-	-	-	-	-	1650	-	-	-	2050	-	-	-	-	-	-	-	-	<1	<1	1	-	-	1	3
QC3	W91/2	Field_D	25/02/2008		-	-	-	-	-	-	-	1250	-	-	-	1550	-	-	-	-	-	-	-	-	<1	<1	3	-	-	2	6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
W91/5	W91/5	Normal	1/01/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/09/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/12/1993		20,000	-	-	2000	-	<100	-	<200	-	<100	-	2100	-	-	-	-	-	-	-	-	1800	5100	490	-	-	3200	10,590
W91/5	W91/5	Normal	1/08/1999		96	-	-	404	-	1670	-	1720	-	<100	-	2124	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/07/2000		<20	-	-	250	-	600	-	800	-	200	-	1050	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/12/2000		<20	-	-	360	-	700	-	900	-	200	-	1260	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/06/2001		<20	-	-	170	-	500	-	550	-	<100	-	720	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	1/03/2005		30	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	14/09/2005		6700	-	-	1700	-	1030	-	1080	-	<100	-	2780	-	-	-	-	-	-	-	-	1400	1500	570	-	-	2800	6270
W91/5	W91/5	Normal	23/03/2006		<20	-	-	380	-	840	-	890	-	<100	-	1270	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/5	W91/5	Normal	5/10/2006		30	-	-	50	-	400	-	470	-	70	-	520	-	-	-	-	-	-	-	-	4	<1	4	-	-	<3	10
W91/6	W91/6	Normal	1/01/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/12/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	5/10/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/6	W91/6	Normal	17/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
MW91/7	W91/7	Normal	17/11/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/7	W91/7	Normal	1/01/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/12/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/08/1999		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/07/2000		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/12/2000		<20	-	-	<40	-	100	-	150	-	<100	-	170	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/01/2004		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/03/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	14/09/2005		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	24/03/2006		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	1/09/2007		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	17/09/2007		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<2	<1	<1	-	-	<1	<5
W91/7	W91/7	Normal	27/02/2008		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<2	<5
W91/7	W91/7	Normal	17/04/2009		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/7	W91/7	Normal	23/11/2009	255816	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/7	W91/7	Normal	23/06/2010	268583	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/7	W91/7	Normal	26/11/2010		<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	7/06/2011		20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	6/12/2011	320985	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
W91/7	W91/7	Normal	13/06/2012	340833	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	5/12/2012	362014	<20	-	-	<50	-	<100	-	<100	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	23/05/2014	419458	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	8/12/2014	441637	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/7	W91/7	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
W91/7	W91/7	Normal	15/12/2016	528405	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
W91/7	W91/7	Normal	29/05/2017	ES1713176	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
W91/7	W91/7	Normal	20/06/2018	ES1818158	<20	-	-	100	-	<100	-	-	-	780	-	880	-	<20	<20	<100	<100	600	1140	540	<1	<2	<2	<2	<2	<2	<1
W91/7	W91/7	Normal	4/12/2018	ES1836402	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
W91/8	W91/8	Normal	1/01/1993		1100	-	-	1900	-	<100	-	680	-	630	-	2580	-	-	-	-	-	-	-	-	<1	-	700	-	-	340	1040.5
W91/8	W91/8	Normal	1/09/1993		5000	-	-	4000	-	21,000	-	24,000	-	3000	-	28,000	-	-	-	-	-	-	-	-	3700	30	70	-	-	250	4050
W91/8	W91/8	Normal	1/12/1993		3300	-	-	700	-	<100	-	<200	-	<100	-	800	-	-	-	-	-	-	-	-	1400	<1	10	-	-	60	1470.5
W91/8	W91/8	Normal	1/08/1999		404	-	-	2620	-	6620	-	7308	-	688	-	9928	-	-	-	-	-	-	-	-	4.1	4	14	-	-	18	40.1
W91/8	W91/8	Normal	1/07/2000		430	-	-	1300	-	2400	-	3000	-	600	-	4300	-	-	-	-	-	-	-	-	3	5	<1	-	-	6	14.5
W91/8	W91/8	Normal	1/12/2000		430	-	-	2500	-	7700	-	9000	-	1300	-	11,500	-	-	-	-	-	-	-	-	6	2	<1	-	-	13	21.5
W91/8	W91/8	Normal	1/06/2001		300	-	-	2000	-	8400	-	10,400	-	2000	-	12,400	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	9	10.5
W91/8	W91/8	Normal	1/12/2003		260	-	-	940	-	2620	-	3202	-	582	-	4142	-	-	-	-	-	-	-	-	1.2	<1	<1	-	-	3	5.2
W91/8	W91/8	Normal	1/03/2005		320	-	-	1100	-	10,511	-	13,211	-	2700	-	14,311	-	-	-	-	-	-	-	-	1.2	<1	<1	-	-	8	10.2
W91/8	W91/8	Normal	14/09/2005		100	-	-	820	-	8570	-	10,200	-	1630	-	11,020	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	2	3.5
W91/8	W91/8	Normal	21/03/2006		100	-	-	160	-	2400	-	2815	-	415	-	2975	-	-	-	-	-	-	-	-	0.7	<1	<1	-	-	5	6.7
W91/8	W91/8	Normal	25/09/2006		80	-	-	480	-	6000	-	7410	-	1410	-	7890	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/8	W91/8	Normal	1/09/2007		130	-	-	130	-	1000	-	1200	-	200	-	1330	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/8	W91/8	Normal	14/09/2007		130	-	-	130	-	1000	-	1200	-	200	-	1330	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/8	W91/8	Normal	27/02/2008		520	-	-	230	-	1900	-	2900	-	1000	-	3130	-	-	-	-	-	-	-	-	510	4	<1	-	-	<1	515
W91/8	W91/8	Normal	14/11/2008		50	-	-	90	-	200	-	250	-	<100	-	340	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/8	W91/8	Normal	17/04/2009		100	-	-	90	-	300	-	350	-	<100	-	440	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/8	W91/8	Normal	18/11/2009	255440	50	-	-	230	-	2100	-	2150	-	<100	-	2380	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/8	W91/8	Normal	24/11/2010		50	-	-	<50	-	1700	-	2000	-	300	-	2025	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/8	W91/8	Normal	10/06/2011		80	-	-	70	-	300	-	350	-	<100	-	400 - 420	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/8	W91/8	Normal	8/12/2011	321281	6200	-	-	360	-	-	-	-	-	-	-	360 - 2000	-	6200	2500	440	<50	1500	-	<100	1100	1800	98	300	430	730	3728 - 3800
W91/8	W91/8	Normal	12/06/2012	340670	3600	-	-	370	-	2500	-	3200	-	700	-	3570 - 3600	-	4400	1900	540	540	3200	-	300	780	460	<200	460	870	1300 - 1330	2600 - 2640
W91/8	W91/8	Normal	4/12/2012	362018	800	-	-	450	-	2000	-	2300	-	300	-	2750 - 2800	-	870	310	510	490	1800	-	<100	130	<10	<10	<10	350	355 - 360	490 - 500
W91/8	W91/8	Normal	24/06/2013	383701	440	-	-	620	-	3600	-	4600	-	1000	-	5200 - 5220	-	460	130	810	810	4700	-	300	230	<10	16	<10	88	88 - 93	339
W91/8	W91/8	Normal	11/12/2013	403332	220	-	-	630	-	13,000	-	16,700	-	3700	-	17,000 - 17,330	-	790	780	1700	1700	16,000	-	1000	5	<1	<1	<1	<2	<3	7.5
W91/8	W91/8	Normal	21/05/2014	419285	50	-	-	240	-	3600	-	4800	-	1200	-	5000 - 5040	-	50	50	500	500	4400	-	400	<1	<1	<1	<1	<2	<1	<4
W91/8	W91/8	Normal	8/12/2014	441637	20	-	-	300	-	1300	-	-	-	<100	-	1600	-	20	20	450	450	1500	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/8	W91/8	Normal	24/11/2015		30	-	-	<50	-	1300	-	-	-	200	-	1500	-	40	40	80	80	1400	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/8	W91/8	Normal	15/12/2016	528405	-	-	<20	<50	-	300	-	-	-	<100	-	300	-	<20	<20	<50	<50	200	-	<100	<1	<1	<1	<1	<2	<3	-
W91/8	W91/8	Normal	6/12/2017	ES1731188	110	-	-	<50	-	720	-	-	-	70	-	790	-	90	40	<100	<100	730	730	<100	47	<2	<2	<2	<2	<2	47
W91/8	W91/8	Normal	18/06/2018	ES1818045	70	-	-	<50	-	560	-	-	-	<50	-	560	-	40	40	<100	<100	550	550	<100	4	<2	<2	<2	<2	<2	4
W91/8	W91/8	Normal	4/12/2018	ES1836402	1660	-	-	<50	-	400	-	-	-	<50	-	400	-	1980	610	<100	<100	370	370	<100	1340	19	8	6	<5	6	1370
QC6	W91/8	Field_D	14/09/2007		130	-	-	180	-	900	-	1000	-	100	-	1180	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC8	W91/8	Field_D	17/09/2007		2800	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<10	<10	<10	-	-	<10	<40
QC4A	W91/8	Field_D	27/02/2008		470	-	-	260	-	1300	-	1800	-	500	-	2060	-	-	-	-	-	-	-	-	450	2	<1	-	-	<1	453
QC7	W91/8	Field_D	14/11/2008		30	-	-	70	-	300	-	350	-	<100	-	420	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
QC8	W91/8	Field_D	14/11/2008	EM0809833	30	-	-	180	-	1700	-	2090	-	390	-	2270	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<4	<5
MW91/9	W91/9	Normal	17/11/2009	255428	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	1	2.5
W91/9	W91/9	Normal	1/01/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/05/1993		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/09/1993		<20	-	-	300	-	700	-	750	-	<100	-	1050	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/12/1993		<20	-	-	<40	-	<100	-	<200	-	<100	-	<240	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/08/1999		<20	-	-	430	-	386	-	436	-	<100	-	866	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/07/2000		<20	-	-	560	-	500	-	550	-	<100	-	1110	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6

					TRH NEPM (1999)													TRH NEPM (2013)							BTEX						
					TRH C6-C9 Fraction	TRH C6-C9 Fraction (Filtered)	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C10-C14 Fraction (Filtered)	TRH >C15-C28 Fraction	TRH >C15-C28 Fraction (Filtered)	TRH >C15-C36 Fraction	TRH >C15-C36 Fraction (Filtered)	TRH >C29-C36 Fraction	TRH >C29-C36 Fraction (Filtered)	TRH >C10-C36 Fraction	TRH >C10-C36 Fraction (Filtered)	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					20	20	0.02	50	50	100	100			50	100	50		0.02	0.02	50	0.05	100	100	100	0.001	0.001	0.001	0.001	0.002	0.003	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**																											
W91/9	W91/9	Normal	1/12/2000		<20	-	-	520	-	700	-	800	-	100	-	1320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/06/2001		<20	-	-	440	-	400	-	450	-	<100	-	890	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	2	3.5
W91/9	W91/9	Normal	1/12/2003		500	-	-	500	-	<100	-	1050	-	1000	-	1550	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/03/2005		<20	-	-	340	-	267	-	317	-	<100	-	657	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	1	2.5
W91/9	W91/9	Normal	14/09/2005		<20	-	-	540	-	351	-	401	-	<100	-	941	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	2	3.5
W91/9	W91/9	Normal	21/03/2006		<20	-	-	380	-	241	-	291	-	<100	-	671	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	25/09/2006		<20	-	-	100	-	200	-	260	-	60	-	360	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	1/09/2007		<20	-	-	130	-	300	-	350	-	<100	-	480	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	27/02/2008		<20	-	-	90	-	200	-	250	-	<100	-	340	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/9	W91/9	Normal	14/11/2008		<20	-	-	70	-	200	-	250	-	<100	-	320	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/9	W91/9	Normal	21/04/2009		20	-	-	<50	-	100	-	150	-	<100	-	175	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<1	<4
W91/9	W91/9	Normal	24/06/2010	268700	<20	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	<3	<6
W91/9	W91/9	Normal	24/11/2010		30	-	-	<50	-	<100	-	<200	-	<100	-	<250	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	8/06/2011		<20	-	-	70	-	<100	-	250	-	200	-	300 - 320	-	-	-	-	-	-	-	-	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	6/12/2011	320982	<20	-	-	<50	-	-	-	-	-	-	-	<50	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3 - 1.5	<10 - 3
W91/9	W91/9	Normal	15/06/2012	341115	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	11/12/2012	362822	<20	-	-	70	-	100	-	150	-	<100	-	200 - 220	-	<20	<20	160	160	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	20/06/2013	383357	<20	-	-	50	-	<100	-	<200	-	<100	-	<100 - 150	-	<20	<20	100	100	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	12/12/2013	403490	<20	-	-	<50	-	<100	-	<200	-	<100	-	<100	-	<20	<20	60	60	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	21/05/2014	419285	<20	-	-	60	-	100	-	150	-	<100	-	200 - 210	-	<20	<20	120	120	<100	-	<100	<1	<1	<1	<1	<2	<1	<4
W91/9	W91/9	Normal	8/12/2014	441642	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	23/06/2015	462630	<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	24/11/2015		<20	-	-	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	<6
W91/9	W91/9	Normal	18/08/2016	512488	<20	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	100	-	<100	<1	<1	<1	<1	<2	<3	-
W91/9	W91/9	Normal	14/12/2016	528589	-	-	<20	<50	-	<100	-	-	-	<100	-	<100	-	<20	<20	<50	<50	<100	-	<100	<1	<1	<1	<1	<2	<3	-
W91/9	W91/9	Normal	25/05/2017	ES1712813	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
W91/9	W91/9	Normal	6/12/2017	ES1731188	<20	-	-	<50	-	<100	-	-	-	<50	-	<50	-	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1
W91/9	W91/9	Normal	20/06/2018	ES1818158	<20	-	-	<60	-	230	-	-	-	450	-	680	-	<20	<20	<100	<100	600	700	100	<1	<2	<2	<2	<2	<2	<1
W91/9	W91/9	Normal	5/12/2018	ES1836989	<20	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-	-	<1	<2	<2	<2	<2	<2	<1
QC10	W91/9	Interlab_D	21/04/2009	EM0903580	<20	-	-	50	-	200	-	225	-	<50	-	275	-	-	-	-	-	-	-	-	<1	<2	<2	<2	<2	<4	<5

Statistical Summary

Number of Results	2439	1	198	2540	1	2373	1	1693	1	2373	1	2552	1	1337	1337	1330	1310	1330	316	1330	2576	2575	2575	1561	1561	2576	2391
Number of Detects	711	0	42	962	0	1041	0	788	0	478	0	1311	0	410	396	533	514	654	194	141	449	275	348	219	218	474	552
Minimum Concentration	<20	<20	<20	1.24	<50	<100	<100	<100	<200	<50	<100	<0	<250	<20	<20	1.02	0	<100	1.1	<100	0.7	<1	<1	<1	<2	<1	<1
Minimum Detect	20	ND	20	1.24	ND	100	ND	110	ND	50	ND	1.461025	ND	20	20	1.02	50	100	1.1	100	0.7	1	1	1	2	1	1
Maximum Concentration	260000	<20	97600	96078	<50	221000	<100	222310	<200	9700	<100	307008	<250	138000	90400	100000	100000	78900	47500	5900	68000	120000	10000	7310	17500	59000	257000
Maximum Detect	260000	ND	97600	96078	ND	221000	ND	222310	ND	9700	ND	307008	ND	138000	90400	100000	100000	78900	47500	5900	68000	120000	10000	7310	17500	59000	257000
Average Concentration	1455		1550	881		935		1363		164		1756		1178	794	643	573	682	1126	94	169	173	72	28	84	247	689
Median Concentration	10	10	10	25	25	50	50	100	100	50	50	125	125	10	10	50	50	50	215	50	0.5	0.5	0.5	0.5	1	1.5	3
Standard Deviation	8318		8061	4127		7947		9591		575		8021		6079	4197	3158	3600	3286	3855	297	1659	2810	520	273	747	2408	7070
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number						
	BH1	Normal	20/11/2003		18	-	-	-	-	-
BH116	BH116	Normal	7/10/2011	314682	120	12	<1	-	120	-
	BH14	Normal	20/11/2003		<1	-	-	-	-	-
	BH16	Normal	20/11/2003		7	-	-	-	-	-
BH210	BH210	Normal	7/10/2011	314682	85	-	<1	-	85	-
	BH23	Normal	20/11/2003		8	-	-	-	-	-
	BH26	Normal	20/11/2003		660	-	-	-	-	-
BH341	BH341	Normal	7/10/2011	314682	41	<1	<1	-	41	-
D_071011-02	BH341	Field_D	7/10/2011	314682	9	<1	<1	-	9.1	-
T_071011_02	BH341	Interlab_D	7/10/2011		-	<1	-	-	-	-
	BH9	Normal	20/11/2003		2	-	-	-	-	-
BH90/12	BH90/12	Normal	1/03/2005		9	-	-	-	-	-
BH90/12	BH90/12	Normal	1/08/2005		12	-	<50	-	-	-
BH90/12	BH90/12	Normal	1/03/2006		<1	-	-	-	-	-
BH90/12	BH90/12	Normal	25/09/2006		1	-	2	-	-	-
BH90/12	BH90/12	Normal	1/09/2007		15	-	-	-	-	-
BH90/12	BH90/12	Normal	14/09/2007		15	-	<5	-	15	-
BH90/7	BH90/7	Normal	1/01/2003		1	-	-	-	-	-
BH90/7	BH90/7	Normal	1/03/2005		441	-	-	-	-	-
BH90/7	BH90/7	Normal	1/08/2005		326	-	<50	-	-	-
BH90/7	BH90/7	Normal	1/03/2006		<1	-	-	-	-	-
BH90/7	BH90/7	Normal	25/09/2006		124	-	<1	-	-	-
BH90/7	BH90/7	Normal	1/09/2007		210	-	-	-	-	-
BH90/7	BH90/7	Normal	17/09/2007		210	-	<5	-	210	-
BH90/7	BH90/7	Normal	27/02/2008		-	-	<5	-	-	-
BH90/7	BH90/7	Normal	12/11/2008		370	-	<5	-	370	-
BH90/7	BH90/7	Normal	17/11/2008		140	-	<1	-	140	-
BH90/7	BH90/7	Normal	21/04/2009		380	-	<1	-	380	-
BH90/7	BH90/7	Normal	18/11/2009	255440	650	-	<1	-	650	-
BH90/7	BH90/7	Normal	24/06/2010	268700	930	-	100	-	830	-
BH90/7	BH90/7	Normal	24/11/2010		-	367	38	-	329	-
BH90/7	BH90/7	Normal	8/06/2011		520	-	<5	-	520	-
BH90/7	BH90/7	Normal	6/12/2011	320982	-	780	<1	-	780	-
BH90/7	BH90/7	Normal	15/06/2012	341117	-	430	<1	-	430	-
BH90/7	BH90/7	Normal	11/12/2012	362822	-	780	<1	-	780	-
BH90/7	BH90/7	Normal	20/06/2013	383357	-	560	<1	-	<1	-
BH90/7	BH90/7	Normal	6/12/2013	402721	-	590	-	<10	590	-
BH90/7	BH90/7	Normal	21/05/2014	419285	-	680	-	<20	680	-
BH90/7	BH90/7	Normal	8/12/2014	441642	-	1300	-	<50	-	1300
BH90/7	BH90/7	Normal	23/06/2015	462630	-	1900	-	<10	-	1900
BH90/7	BH90/7	Normal	24/11/2015		-	2400	-	<10	-	2400
BH90/7	BH90/7	Normal	18/08/2016	512488	-	3200	-	2	-	3200
BH90/7	BH90/7	Normal	14/12/2016	528589	4000	-	<10	-	4000	-
BH90/7	BH90/7	Normal	24/05/2017	ES1712813	-	4260	121	<200	-	4260
BH90/7	BH90/7	Normal	20/06/2018	ES1818158	-	1300	<20	-	1300	-
QC10	BH90/7	Field_D	17/09/2007		320	-	<5	-	320	-
QC04	BH90/7	Field_D	18/11/2009	255440	640	-	7	-	630	-
QC05	BH90/7	Field_D	24/11/2010		-	369	35	-	334	-
MW01/1	MW01/1	Normal	1/04/2006		-	-	<1	-	-	-
MW01/2	MW01/2	Normal	28/03/2006		<10	-	<1	-	-	-
MW01/2	MW01/2	Normal	27/09/2006		<1	-	<1	-	-	-
MW04/1	MW04/1	Normal	28/03/2006		<1	-	-	-	-	-
MW04/1	MW04/1	Normal	29/09/2006		<1	-	<1	-	-	-
MW04/02	MW04/2	Normal	19/11/2009	255526	3	-	<1	-	3	-
MW04/02	MW04/2	Normal	11/09/2014	432186	-	1	-	<1	-	1
MW04/2	MW04/2	Normal	28/03/2006		5	-	-	-	-	-
MW04/2	MW04/2	Normal	29/09/2006		8	-	4	-	-	-
MW04/2	MW04/2	Normal	22/02/2008		-	-	<5	-	-	-
MW04/2	MW04/2	Normal	12/11/2008		2	-	<1	-	2	-
MW04/2	MW04/2	Normal	22/04/2009		<1	-	<1	-	<1	-
MW04/2	MW04/2	Normal	9/06/2011		1100	-	<5	-	1100	-
MW04/2	MW04/2	Normal	6/12/2011	321117	-	11	<1	-	11	-
MW04/2	MW04/2	Normal	18/06/2012	341298	-	<1	-	-	-	-
MW04/2	MW04/2	Normal	7/12/2012	362294	-	3	<1	-	3	-
MW04/2	MW04/2	Normal	21/06/2013	383497	-	18	11	-	7	-
MW04/2	MW04/2	Normal	6/12/2013	402721	420	-	<1	-	420	-
MW04/2	MW04/2	Normal	26/05/2014	419614	-	-	-	<1	-	-
MW04/2	MW04/2	Normal	5/12/2014	441476	-	6	-	2	-	4
D03_260514	MW04/2	Field_D	26/05/2014	419614	-	-	-	<1	-	-
DUP_03	MW04/2	Field_D	21/06/2013	383497	-	16	8	-	8	-
DUP_03	MW04/2	Field_D	6/12/2013	402721	310	-	<1	-	310	-
DUP_03_051214	MW04/2	Field_D	5/12/2014	441476	-	6	-	2	-	4
T03_260514	MW04/2	Interlab_D	26/05/2014	ES1411791	-	-	<1	-	-	-
TRIP_03	MW04/2	Interlab_D	6/12/2013	ES1326809	-	34	-	<10	-	30
TRIP-03	MW04/2	Interlab_D	21/06/2013	ES1314333	-	24	8	-	16	-
MW09/1	MW09/1	Normal	24/11/2010		-	5	6	-	<1	-
MW09/1	MW09/1	Normal	8/12/2011	321281	-	25	<1	-	25	-
MW09/1	MW09/1	Normal	12/12/2012	363008	-	8	-	-	-	-
MW09/1	MW09/1	Normal	10/12/2013	403166	-	7	-	-	-	-
MW09/1	MW09/1	Normal	10/12/2014	441997	-	5	-	-	-	-
DUP_01_101214	MW09/1	Field_D	10/12/2014	441997	-	5	-	-	-	-
QC07	MW09/1	Field_D	24/11/2010		-	5	3	-	2	-
MW09/14	MW09/14	Normal	7/01/2010	257678	8	-	<1	-	8	-
MW09/15	MW09/15	Normal	7/01/2010	257678	-	7700	-	59	-	7600
MW09/15	MW09/15	Normal	24/06/2010	268593	-	4600	-	2800	-	1800
MW09/15	MW09/15	Normal	24/11/2010		-	3	-	1	-	2
MW09/15	MW09/15	Normal	9/06/2011		-	21,000	-	5700	-	15,000
MW09/15	MW09/15	Normal	6/12/2011	320985	-	6100	-	4200	-	1900
MW09/15	MW09/15	Normal	18/06/2012	341298	-	78	-	77	-	1
MW09/15	MW09/15	Normal	7/12/2012	362294	-	7300	-	380	-	6900

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**						
MW09/15	MW09/15	Normal	21/06/2013	383497	-	540	540	-	<1	-
MW09/15	MW09/15	Normal	4/12/2013	402604	-	81	-	19	62	-
MW09/15	MW09/15	Normal	20/05/2014	419480	-	<1	-	<1	<5	-
MW09/15	MW09/15	Normal	11/09/2014	432186	-	8	-	<1	-	8
MW09/15	MW09/15	Normal	5/12/2014	441476	-	-	2	-	-	-
DUP_01	MW09/15	Field_D	18/06/2012	341298	-	36	-	36	-	<1
QC03	MW09/15	Field_D	24/11/2010		-	5	-	<1	-	5
TRIP_01	MW09/15	Field_D	18/06/2012	341298	-	27	-	28	-	<1
TRIP-01	MW09/15	Interlab_D	7/12/2012	ES1229053	-	-	-	420	-	-
MW09/16	MW09/16	Normal	7/01/2010	257678	1400	-	<1	-	1400	-
MW09/16	MW09/16	Normal	24/11/2010		-	7	9	-	<1	-
MW09/16	MW09/16	Normal	7/12/2011	321116	-	11	<1	-	11	-
MW09/16	MW09/16	Normal	11/12/2012	362822	-	<1	<1	-	<1	-
MW09/16	MW09/16	Normal	12/09/2014	432186	-	48	-	3	-	45
MW09/16	MW09/16	Normal	10/12/2014	441997	-	20	-	<1	-	20
MW09/17	MW09/17	Normal	7/01/2010	257678	410	-	<1	-	410	-
MW09/17	MW09/17	Normal	24/11/2010		-	7	3	-	4	-
MW09/17	MW09/17	Normal	7/12/2011	321116	-	7	<1	-	7	-
MW09/17	MW09/17	Normal	11/12/2012	362822	-	<1	<1	-	<1	-
MW09/17	MW09/17	Normal	10/12/2013	403166	-	3	-	<1	3	-
MW09/17	MW09/17	Normal	10/12/2014	441997	-	4	-	<1	-	4
MW09/17	MW09/17	Normal	24/11/2015		-	9	-	<10	-	<10
DUP_11	MW09/17	Field_D	10/12/2013	403166	<5	-	<5	-	<5	-
MW09/18	MW09/18	Normal	7/01/2010	257678	38,000	-	19,000	-	19,000	-
MW09/18	MW09/18	Normal	24/06/2010	268700	35,000	-	32,000	-	3100	-
MW09/18	MW09/18	Normal	24/11/2010		-	33,000	4280	-	28,700	-
MW09/18	MW09/18	Normal	8/06/2011		18,000	-	<5	-	18,000	-
MW09/18	MW09/18	Normal	6/12/2011	320982	-	52,000	<1	-	52,000	-
QC06	MW09/18	Field_D	24/11/2010		-	39,000	23	-	39,000	-
MW09/19	MW09/19	Normal	7/01/2010	257678	18,000	-	<1	-	18,000	-
MW09/19	MW09/19	Normal	24/11/2010		-	6	2	-	4	-
MW09/19	MW09/19	Normal	7/12/2011	321116	-	5	<1	-	5	-
MW09/19	MW09/19	Normal	11/12/2012	362822	-	2	<1	-	2.1	-
MW09/19	MW09/19	Normal	10/12/2014	441997	-	5	-	<1	-	5
QC1	MW09/19	Field_D	7/01/2010	257678	22,000	-	<1	-	22,000	-
MW09/2	MW09/2	Normal	22/04/2009		<1	-	<1	-	<1	-
MW09/2	MW09/2	Normal	19/11/2009	255519	5	-	<5	-	5	-
MW09/2	MW09/2	Normal	25/11/2010		<5	-	<5	-	<5	-
MW09/2	MW09/2	Normal	7/12/2011	321118	-	2	1	-	1	-
QC11	MW09/2	Field_D	22/04/2009		<1	-	<1	-	<1	-
TRIP_01_101214	MW09/2	Interlab_D	10/12/2014	ES1427737	-	<1	-	-	-	-
MW09/20	MW09/20	Normal	7/01/2010	257678	430	-	<1	-	430	-
MW09/20	MW09/20	Normal	24/11/2010		-	8	3	-	5	-
MW09/20	MW09/20	Normal	6/12/2011	320982	-	21	<1	-	21	-
MW09/20	MW09/20	Normal	8/12/2014	441642	-	10	-	<5	-	10
MW09/03	MW09/3	Normal	19/11/2009	255526	<1	-	<1	-	<1	-
MW09/3	MW09/3	Normal	16/04/2009		<1	-	<1	-	<1	-
MW09/3	MW09/3	Normal	26/11/2010		-	<1	-	-	-	-
MW09/3	MW09/3	Normal	6/12/2011	320972	-	16	<1	-	16	-
DUP_02	MW09/3	Field_D	6/12/2011	320972	-	14	<1	-	14	-
TRIP_01	MW09/3	Interlab_D	6/12/2011	ES1126906	-	<1	-	-	-	-
MW09/4	MW09/4	Normal	21/04/2009		<1	-	<1	-	<1	-
MW09/4	MW09/4	Normal	23/11/2009	255816	50	-	5	-	45	-
MW09/4	MW09/4	Normal	23/06/2010	268583	110	-	<1	-	110	-
MW09/4	MW09/4	Normal	26/11/2010		-	8	-	-	-	-
MW09/4	MW09/4	Normal	9/06/2011		55	-	<5	-	55	-
MW09/4	MW09/4	Normal	8/12/2011	321280	-	24	1	-	23	-
MW09/4	MW09/4	Normal	14/06/2012	340975	-	<1	1	-	<1	-
MW09/4	MW09/4	Normal	13/12/2012	363230	-	<1	-	-	-	-
MW09/4	MW09/4	Normal	26/06/2013	384108	-	1	<1	-	1	-
MW09/4	MW09/4	Normal	11/12/2013	403332	-	<1	-	-	-	-
MW09/4	MW09/4	Normal	21/05/2014	419285	-	<1	-	<1	<1	-
MW09/4	MW09/4	Normal	11/12/2014	442349	<5	-	-	-	-	-
DUP_05	MW09/4	Field_D	13/12/2012	363230	-	<1	-	-	-	-
MW09/5	MW09/5	Normal	22/04/2009		<1	-	<1	-	<1	-
MW09/5	MW09/5	Normal	19/11/2009	255519	4	-	<5	-	4	-
MW09/5	MW09/5	Normal	26/11/2010		-	1	-	-	-	-
MW09/5	MW09/5	Normal	7/12/2011	321118	-	3	<1	-	3	-
MW09/5	MW09/5	Normal	13/12/2012	363171	-	4	-	-	-	-
MW09/5	MW09/5	Normal	11/12/2013	403332	-	<1	-	-	-	-
MW09/5	MW09/5	Normal	10/12/2014	441997	-	<1	-	-	-	-
DUP_03	MW09/5	Field_D	7/12/2011	321118	-	4	<1	-	4	-
QC13	MW09/5	Field_D	26/11/2010		-	<1	-	-	-	-
QC6	MW09/5	Field_D	19/11/2009	255519	3	-	<5	-	3	-
MW11/01	MW11/01	Normal	5/10/2011	314283	-	4	-	-	-	-
MW11/02	MW11/02	Normal	5/10/2011	314283	-	9	-	-	-	-
MW11/03	MW11/03	Normal	7/10/2011	314682	83	42	<1	-	83	-
D_071011_03	MW11/03	Field_D	7/10/2011	314682	68	32	<1	-	68	-
MW11/04	MW11/04	Normal	5/10/2011	314283	-	11	-	-	-	-
MW11/05	MW11/05	Normal	5/10/2011	314283	-	13	-	-	-	-
MW11/06	MW11/06	Normal	5/10/2011	314283	-	1800	-	-	-	-
MW11/06	MW11/06	Normal	8/12/2011	321280	-	110	49	-	60	-
MW11/06	MW11/06	Normal	13/06/2012	340826	-	4100	3900	-	200	-
MW11/06	MW11/06	Normal	26/06/2013	384105	-	4400	4400	-	<1	-
MW11/06	MW11/06	Normal	11/12/2013	403328	-	370	-	210	160	-
MW11/06	MW11/06	Normal	27/05/2014	419785	-	1800	-	1800	<50	-
MW11/06	MW11/06	Normal	5/12/2014	441493	-	12	-	<1	-	12
MW11/06	MW11/06	Normal	25/11/2015		-	140	-	44	-	100
MW11/06	MW11/06	Normal	19/08/2016	512679	-	350	-	370	-	<5
MW11/06	MW11/06	Normal	16/12/2016	528402	34	-	<1	-	34	-

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					Metals					
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
MW11/06	MW11/06	Normal	29/05/2017	ES1713176	-	80	79	90	-	<10
MW11/06	MW11/06	Normal	11/12/2017	ES1731349	-	-	<1	-	407	-
MW11/06	MW11/06	Normal	22/06/2018	ES1818457	-	-	220	-	9	-
MW11/06	MW11/06	Normal	6/12/2018	ES1836989	-	-	<1	-	-	-
DUP_07	MW11/06	Field_D	8/12/2011	321280	-	110	53	-	60	-
DUP_09	MW11/06	Field_D	11/12/2013	403328	-	350	-	220	130	-
DUP09	MW11/06	Field_D	26/06/2013	384105	-	4600	4600	-	<1	-
D05_251115_TT	MW11/06	Interlab_D	25/11/2015	ES1537290	-	98	-	60	-	40
MW11/07	MW11/07	Normal	5/10/2011	314283	-	21	-	-	-	-
MW11/07	MW11/07	Normal	19/08/2016	512679	-	3	-	5	-	<5
MW11/07	MW11/07	Normal	16/12/2016	528402	<1	-	<1	-	<1	-
MW11/07	MW11/07	Normal	11/12/2017	ES1731349	-	-	<1	-	<1	-
MW11/07	MW11/07	Normal	22/06/2018	ES1818457	-	-	<1	-	3	-
D01_111217	MW11/07	Field_D	11/12/2017	ES1731349	-	-	<1	-	2	-
D01_161216_PM	MW11/07	Field_D	16/12/2016	528402	-	-	<1	-	-	-
D04_190816_TT	MW11/07	Field_D	19/08/2016	512679	-	3	-	2	-	<5
T01_111217	MW11/07	Interlab_D	11/12/2017	577517	-	<1	-	<1	-	<1
MW11/08	MW11/08	Normal	5/10/2011	314283	-	9	-	-	-	-
MW11/09	MW11/09	Normal	5/10/2011	314283	-	5	-	-	-	-
MW11/10	MW11/10	Normal	5/10/2011	314284	17	17	<1	-	17	-
D_051011_01	MW11/10	Field_D	5/10/2011	314284	21	20	<5	-	21	-
MW11/11	MW11/11	Normal	6/10/2011	314462	18	6	<1	-	18	-
D_061011_01	MW11/11	Field_D	6/10/2011	314462	82	6	<1	-	82	-
T_061011_01	MW11/11	Field_D	6/10/2011	314462	77	5	<1	-	77	-
MW11/12	MW11/12	Normal	4/10/2011	314284	39	45	<1	-	39	-
MW11/13	MW11/13	Normal	6/10/2011	314462	78	3	<1	-	78	-
MW11/14	MW11/14	Normal	4/10/2011	314106	53	-	<5	-	53	-
MW11/15	MW11/15	Normal	4/10/2011	314106	21	9	<5	-	21	-
MW11/16	MW11/16	Normal	5/10/2011	314682	56	20	<1	-	56	-
MW11/17	MW11/17	Normal	4/10/2011	314106	32	9	<5	-	32	-
D_041011_01	MW11/17	Field_D	4/10/2011	314106	27	10	<5	-	27	-
MW11/18	MW11/18	Normal	5/10/2011	314284	11	5	<1	-	11	-
MW11/19	MW11/19	Normal	4/10/2011	314106	20	13	<5	-	20	-
MW11/20	MW11/20	Normal	5/10/2011	314284	12	3	<1	-	12	-
MW11/21	MW11/21	Normal	13/10/2011	315268	29	0	<1	-	29	-
MW11/22	MW11/22	Normal	5/10/2011	314284	-	29	-	-	-	-
MW11/23	MW11/23	Normal	6/10/2011	314462	100	<20	<1	-	100	-
MW11/24	MW11/24	Normal	6/10/2011	314462	130	<20	<1	-	130	-
MW11/25	MW11/25	Normal	14/10/2011	315334	<1	<1	<1	-	<1	-
MW11/26	MW11/26	Normal	5/10/2011	314284	290	3	<1	-	290	-
MW11/27	MW11/27	Normal	6/10/2011	314462	100	<20	<1	-	100	-
MW11/28	MW11/28	Normal	13/10/2011	315268	<1	0	<1	-	<1	-
MW11/29	MW11/29	Normal	14/10/2011	315334	<1	<1	<1	-	<1	-
MW11/30	MW11/30	Normal	5/10/2011	314284	39	31	<1	-	39	-
MW11/31	MW11/31	Normal	6/10/2011	314462	80	<20	<1	-	80	-
MW11/32	MW11/32	Normal	14/10/2011	315334	<1	<1	<1	-	<1	-
MW11/33	MW11/33	Normal	5/10/2011	314283	-	9	-	-	-	-
MW11/34	MW11/34	Normal	5/10/2011	314283	-	16	-	-	-	-
MW11/35	MW11/35	Normal	13/10/2011	315268	<1	<1	<1	-	<1	-
MW11/36	MW11/36	Normal	13/10/2011	315268	<1	0	<1	-	<1	-
MW11/37	MW11/37	Normal	5/10/2011	314284	35	18	<1	-	35	-
D_051011_02	MW11/37	Field_D	5/10/2011	314284	40	23	<1	-	40	-
MW11/39	MW11/39	Normal	5/10/2011	314283	-	10	-	-	-	-
MW11/40	MW11/40	Normal	5/10/2011	314283	-	8	-	-	-	-
MW11/42	MW11/42	Normal	5/10/2011	314283	-	48	-	-	-	-
MW11/43	MW11/43	Normal	5/10/2011	314283	-	23	-	-	-	-
MW11/44	MW11/44	Normal	7/10/2011	314682	120	66	<1	-	120	-
D_071011_01	MW11/44	Field_D	7/10/2011	314682	130	89	<1	-	130	-
T_071011_01	MW11/44	Interlab_D	7/10/2011		-	<10	-	-	-	-
MW11/45	MW11/45	Normal	5/10/2011	314284	37	27	<5	-	37	-
MW11/46	MW11/46	Normal	5/10/2011	314284	16	10	<1	-	16	-
D_051011_03	MW11/46	Field_D	5/10/2011	314284	13	14	<1	-	13	-
D_051011_04	MW11/46	Interlab_D	5/10/2011		-	4	-	-	-	-
MW12/01	MW12/01	Normal	22/03/2012	331294	-	12	<1	-	12	-
DUP01	MW12/01	Field_D	22/03/2012	331294	-	12	<1	-	12	-
TRIP_01	MW12/01	Interlab_D	22/03/2012	ES1206987	-	11	-	<10	-	-
MW12/02	MW12/02	Normal	23/03/2012	331456	-	1	<1	-	1	-
MW12/03	MW12/03	Normal	23/03/2012	331456	-	<1	<1	-	<1	-
MW12/04	MW12/04	Normal	23/03/2012	331456	-	<1	<1	-	<1	-
MW12/05	MW12/05	Normal	20/03/2012	331010	-	<1	<1	-	<1	-
MW12/05	MW12/05	Normal	23/03/2012	331455	-	<1	-	-	-	-
MW12/05	MW12/05	Normal	10/09/2014	432186	-	<1	-	<1	-	<1
MW12/06	MW12/06	Normal	20/03/2012	331010	-	<1	<1	-	<1	-
MW12/06	MW12/06	Normal	23/03/2012	331455	-	6	-	-	-	-
MW12/06	MW12/06	Normal	10/09/2014	432186	-	2	-	<1	-	2
MW12/06	MW12/06	Normal	6/12/2018	ES1836989	-	-	18	-	-	-
MW12/07	MW12/07	Normal	20/03/2012	331010	-	1200	160	-	1000	-
MW12/07	MW12/07	Normal	23/03/2012	331455	-	50	-	-	-	-
MW12/07	MW12/07	Normal	18/06/2012	341298	-	1400	65	-	1300	-
MW12/07	MW12/07	Normal	13/12/2012	363171	-	2200	240	-	2000	-
MW12/07	MW12/07	Normal	18/06/2013	383198	-	2800	350	-	2400	-
MW12/07	MW12/07	Normal	4/12/2013	402604	-	3200	-	250	3000	-
MW12/07	MW12/07	Normal	26/05/2014	419614	-	970	-	150	820	-
MW12/07	MW12/07	Normal	10/09/2014	432186	-	3100	-	<1	-	3100
MW12/07	MW12/07	Normal	5/12/2014	441476	-	14	-	5	-	9
MW12/07	MW12/07	Normal	24/06/2015	462945	-	1900	-	220	-	1680
MW12/07	MW12/07	Normal	23/11/2015		-	1400	-	150	-	1200
MW12/07	MW12/07	Normal	19/08/2016	512679	-	540	-	42	-	500
MW12/07	MW12/07	Normal	14/12/2016	528403	610	-	2	-	600	-
MW12/07	MW12/07	Normal	24/05/2017	ES1712813	-	245	<10	<100	-	240

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**						
MW12/07	MW12/07	Normal	7/12/2017	ES1731188	-	3140	164	-	2980	-
MW12/07	MW12/07	Normal	22/06/2018	ES1818457	-	-	4500	-	4190	-
MW12/07	MW12/07	Normal	5/12/2018	ES1836989	-	-	2800	-	-	-
D03_240615	MW12/07	Field_D	24/06/2015	462945	-	1900	-	240	-	1660
DUP_05	MW12/07	Field_D	18/06/2012	341298	-	1400	70	-	1300	-
TRIP_05	MW12/07	Field_D	18/06/2012	341298	-	1400	66	-	1300	-
TRIP_05_051214	MW12/07	Interlab_D	5/12/2014	ES1427452	-	13	-	<1	-	13
MW12/08	MW12/08	Normal	20/03/2012	331010	-	8200	<1	-	8200	-
MW12/08	MW12/08	Normal	23/03/2012	331455	-	86,000	-	-	-	-
MW12/08	MW12/08	Normal	18/06/2012	341298	-	33,000	290	-	33,000	-
MW12/08	MW12/08	Normal	13/12/2012	363171	-	3600	60	-	3500	-
MW12/08	MW12/08	Normal	21/06/2013	383497	-	22	<1	-	22	-
MW12/08	MW12/08	Normal	6/12/2013	402721	-	89,000	-	84,000	5000	-
MW12/08	MW12/08	Normal	26/05/2014	419614	-	18	-	<1	18	-
MW12/08	MW12/08	Normal	10/09/2014	432186	-	2900	-	<5	-	2900
MW12/08	MW12/08	Normal	5/12/2014	441476	-	79	-	<5	-	79
MW12/08	MW12/08	Normal	18/08/2016	512488	-	8700	-	6200	-	2500
MW12/08	MW12/08	Normal	14/12/2016	528403	330	-	<1	-	330	-
MW12/08	MW12/08	Normal	24/05/2017	ES1712813	-	6160	5540	5850	-	310
MW12/08	MW12/08	Normal	7/12/2017	ES1731188	-	3360	81	-	3280	-
MW12/08	MW12/08	Normal	22/06/2018	ES1818457	-	-	<1	-	201	-
MW12/08	MW12/08	Normal	5/12/2018	ES1836989	-	-	<1	-	-	-
D01_100914	MW12/08	Field_D	10/09/2014	432186	-	3000	-	<5	-	3000
D01_240517	MW12/08	Field_D	24/05/2017	ES1712813	-	5930	4960	5800	-	130
DUP_10	MW12/08	Field_D	13/12/2012	363171	-	3800	55	-	3700	-
T01_100914	MW12/08	Interlab_D	10/09/2014	ES1421084	-	2750	-	912	-	1820
TRIP_04_051214	MW12/08	Interlab_D	4/12/2014	ES1427452	-	82	-	<1	-	82
TRIP-06	MW12/08	Interlab_D	13/12/2012	ES1229652	-	4180	-	60	-	4120
MW12/09	MW12/09	Normal	20/03/2012	331010	-	<1	<1	-	<1	-
MW12/09	MW12/09	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW12/10	MW12/10	Normal	20/03/2012	331010	-	52	<1	-	52	-
MW12/10	MW12/10	Normal	18/06/2012	341298	-	<1	<1	-	<1	-
MW12/10	MW12/10	Normal	7/12/2012	362294	-	87	<1	-	87	-
MW12/10	MW12/10	Normal	21/06/2013	383497	-	<1	<1	-	<1	-
MW12/10	MW12/10	Normal	6/12/2013	402721	-	95	-	<1	95	-
MW12/10	MW12/10	Normal	20/05/2014	419480	-	63	-	<1	63	-
MW12/10	MW12/10	Normal	11/09/2014	432186	-	81	-	31	-	50
MW12/10	MW12/10	Normal	5/12/2014	441476	-	-	<10	-	-	-
MW12/11	MW12/11	Normal	20/03/2012	331010	-	1.1	<1	-	1.1	-
MW12/11	MW12/11	Normal	10/09/2014	432186	-	2	-	<1	-	2
DUP_03	MW12/11	Field_D	20/03/2012	331010	-	<1	<1	-	<1	-
MW12/12	MW12/12	Normal	21/03/2012	331150	-	<1	<1	-	<1	-
MW12/13	MW12/13	Normal	21/03/2012	331150	-	2	<1	-	1.6	-
MW12/13	MW12/13	Normal	18/08/2016	512488	-	14	-	1	-	10
MW12/14	MW12/14	Normal	21/03/2012	331150	-	6	<1	-	5.8	-
MW12/16	MW12/16	Normal	22/03/2012	331294	-	<1	<1	-	<1	-
DUP02	MW12/16	Field_D	22/03/2012	331294	-	<1	<1	-	<1	-
MW12/17	MW12/17	Normal	22/03/2012	331294	-	<1	1	-	<1	-
MW12/20	MW12/20	Normal	21/03/2012	331142	-	1	<1	-	1.1	-
MW12/21	MW12/21	Normal	22/03/2012	331294	-	<1	1	-	<1	-
MW12/21	MW12/21	Normal	10/12/2014	442003	-	<1	-	<1	-	<1
MW12/22	MW12/22	Normal	21/03/2012	331142	-	<1	<1	-	<1	-
MW12/23	MW12/23	Normal	21/03/2012	331142	-	<1	<1	-	<1	-
MW12/24	MW12/24	Normal	21/03/2012	331142	-	<1	<1	-	<1	-
MW12/25	MW12/25	Normal	22/03/2012	331294	-	<1	2	-	<1	-
MW12/26	MW12/26	Normal	21/03/2012	331150	-	<1	<1	-	<1	-
MW12/12B	MW12/26	Field_D	21/03/2012	331150	-	2	<1	-	2.4	-
MW14/01	MW14/01	Normal	15/09/2014	432186	-	<1	-	<1	-	<1
MW14/02	MW14/02	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW14/03	MW14/03	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW14/04	MW14/04	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW14/05	MW14/05	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW14/06	MW14/06	Normal	11/09/2014	432186	-	<1	-	<1	-	<1
MW91/1	MW91/1	Normal	28/03/2006		3	-	<1	-	-	-
MW91/1	MW91/1	Normal	12/10/2006		<1	-	<1	-	-	-
MW91/1	MW91/1	Normal	1/09/2007		6	-	-	-	-	-
MW91/1	MW91/1	Normal	28/09/2007		6	-	<5	-	-	-
MW91/1	MW91/1	Normal	28/02/2008		-	-	<5	-	-	-
MW91/1	MW91/1	Normal	14/11/2008		2	-	2	-	<1	-
MW91/1	MW91/1	Normal	20/04/2009		<1	-	<1	-	<1	-
MW91/1	MW91/1	Normal	17/11/2009	255428	2	-	<1	-	2	-
MW91/1	MW91/1	Normal	23/06/2010	268593	39	-	<1	-	39	-
MW91/1	MW91/1	Normal	23/11/2010		<5	-	<5	-	<5	-
MW91/1	MW91/1	Normal	9/06/2011		27	-	<5	-	27	-
MW91/1	MW91/1	Normal	7/12/2011	321117	-	14	<1	-	14	-
MW91/1	MW91/1	Normal	19/06/2012	341447	-	<1	2	-	<1	-
MW91/1	MW91/1	Normal	12/12/2012	362997	-	<1	<1	-	<1	-
MW91/1	MW91/1	Normal	20/06/2013	383357	-	<1	<1	-	<1	-
MW91/1	MW91/1	Normal	4/12/2013	402613	-	<1	-	<1	<1	-
MW91/1	MW91/1	Normal	22/05/2014	419480	-	<1	-	<1	<5	-
MW91/1	MW91/1	Normal	8/12/2014	441637	-	<1	-	<1	-	<5
QC10	MW91/1	Field_D	28/02/2008		-	-	<5	-	-	-
QC5	MW91/1	Field_D	14/11/2008		4	-	<1	-	4	-
QC11	MW91/1	Interlab_D	29/02/2008	EM0801626	-	-	-	<10	-	-
MW91/10	MW91/10	Normal	6/12/2011	320982	-	18	<1	-	18	-
MW91/2	MW91/2	Normal	28/03/2006		<5	-	<1	-	-	-
MW91/2	MW91/2	Normal	12/10/2006		1	-	<1	-	-	-
MW91/2	MW91/2	Normal	1/09/2007		7	-	-	-	-	-
MW91/2	MW91/2	Normal	28/09/2007		7	-	<5	-	-	-
MW91/2	MW91/2	Normal	28/02/2008		-	-	<5	-	-	-

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					Metals					
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
MW91/2	MW91/2	Normal	12/11/2008		5	-	<1	-	5	-
MW91/2	MW91/2	Normal	20/04/2009		2	-	<1	-	2	-
MW91/2	MW91/2	Normal	17/11/2009	255428	2	-	<1	-	2	-
MW91/2	MW91/2	Normal	23/06/2010	268593	49	-	<1	-	49	-
MW91/2	MW91/2	Normal	23/11/2010		2	-	<1	-	2	-
MW91/2	MW91/2	Normal	9/06/2011		29	-	<5	-	29	-
MW91/2	MW91/2	Normal	7/12/2011	321117	-	12	<1	-	12	-
MW91/2	MW91/2	Normal	19/06/2012	341447	-	<1	2	-	<1	-
MW91/2	MW91/2	Normal	12/12/2012	362997	-	<1	<1	-	<1	-
MW91/2	MW91/2	Normal	20/06/2013	383357	-	<1	<1	-	<1	-
MW91/2	MW91/2	Normal	4/12/2013	402613	-	1	-	<1	<1	-
MW91/2	MW91/2	Normal	22/05/2014	419480	-	1	-	<1	<5	-
MW91/2	MW91/2	Normal	12/09/2014	432186	-	<1	-	<1	-	<1
MW91/2	MW91/2	Normal	8/12/2014	441637	-	2	-	<1	-	1.9
MW91/3	MW91/3	Normal	28/03/2006		3	-	<1	-	-	-
MW91/3	MW91/3	Normal	11/10/2006		<1	-	<1	-	-	-
MW91/3	MW91/3	Normal	1/09/2007		<1	-	<1	-	-	-
MW91/3	MW91/3	Normal	27/09/2007		-	-	<5	-	-	-
MW91/3	MW91/3	Normal	28/02/2008		-	-	<5	-	-	-
MW91/3	MW91/3	Normal	12/11/2008		<1	-	<1	-	<1	-
MW91/3	MW91/3	Normal	20/04/2009		<1	-	<1	-	<1	-
MW91/3	MW91/3	Normal	17/11/2009	255428	3	-	<1	-	3	-
MW91/3	MW91/3	Normal	23/06/2010	268593	15	-	<1	-	15	-
MW91/3	MW91/3	Normal	23/11/2010		<5	-	<5	-	<5	-
MW91/3	MW91/3	Normal	9/06/2011		14	-	<5	-	14	-
MW91/3	MW91/3	Normal	7/12/2011	321117	-	6	<1	-	6	-
MW91/3	MW91/3	Normal	12/09/2014	432186	-	<1	-	<1	-	<1
D02_120914	MW91/3	Field_D	12/09/2014	432186	-	<1	-	<1	-	<1
QC3	MW91/3	Field_D	12/11/2008		<1	-	<1	-	<1	-
MW91/4	MW91/4	Normal	28/03/2006		<1	-	-	-	-	-
MW91/4	MW91/4	Normal	11/10/2006		1	-	<1	-	-	-
MW91/4	MW91/4	Normal	1/09/2007		<1	-	<1	-	-	-
MW91/4	MW91/4	Normal	27/09/2007		<1	-	<5	-	-	-
MW91/4	MW91/4	Normal	28/02/2008		-	-	<5	-	-	-
MW91/4	MW91/4	Normal	12/11/2008		3	-	<1	-	3	-
MW91/4	MW91/4	Normal	20/04/2009		<1	-	<1	-	<1	-
MW91/4	MW91/4	Normal	17/11/2009	255428	<1	-	<1	-	<1	-
MW91/4	MW91/4	Normal	23/11/2010		<5	-	<5	-	<5	-
MW91/4	MW91/4	Normal	9/06/2011		16	-	<5	-	16	-
MW91/4	MW91/4	Normal	7/12/2011	321117	-	20	<1	-	20	-
MW91/4	MW91/4	Normal	19/06/2012	341447	-	<1	2	-	<1	-
MW91/4	MW91/4	Normal	12/12/2012	362997	-	<1	<1	-	<1	-
MW91/4	MW91/4	Normal	20/06/2013	383357	-	<1	<1	-	<1	-
MW91/4	MW91/4	Normal	5/12/2013	402613	-	<1	-	<1	<1	-
MW91/4	MW91/4	Normal	22/05/2014	419480	<5	-	<5	-	<5	-
MW91/4	MW91/4	Normal	12/09/2014	432186	-	<1	-	<1	-	<1
MW91/4	MW91/4	Normal	8/12/2014	441637	-	<1	-	<1	-	<5
MW91/5	MW91/5	Normal	28/03/2006		<1	-	-	-	-	-
MW91/5	MW91/5	Normal	11/10/2006		<1	-	<1	-	-	-
MW91/5	MW91/5	Normal	1/09/2007		<1	-	<1	-	-	-
MW91/5	MW91/5	Normal	27/09/2007		-	-	<5	-	-	-
MW91/5	MW91/5	Normal	28/02/2008		-	-	<5	-	-	-
MW91/5	MW91/5	Normal	12/11/2008		3	-	<1	-	3	-
MW91/5	MW91/5	Normal	20/04/2009		<1	-	<1	-	<1	-
MW91/5	MW91/5	Normal	17/11/2009	255428	2	-	<1	-	2	-
MW91/5	MW91/5	Normal	23/06/2010	268593	13	-	<1	-	13	-
MW91/5	MW91/5	Normal	23/11/2010		<5	-	<5	-	<5	-
MW91/5	MW91/5	Normal	9/06/2011		8	-	<5	-	8	-
MW91/5	MW91/5	Normal	7/12/2011	321117	-	15	<1	-	15	-
QC01	MW91/5	Field_D	17/11/2009	255428	<1	-	<1	-	<1	-
QC6	MW91/5	Field_D	20/04/2009		<1	-	<1	-	<1	-
MW91/6	MW91/6	Normal	28/03/2006		<5	-	2	-	-	-
MW91/6	MW91/6	Normal	11/10/2006		<1	-	<1	-	-	-
MW91/6	MW91/6	Normal	1/09/2007		4	-	-	-	-	-
MW91/6	MW91/6	Normal	27/09/2007		-	-	<5	-	-	-
MW91/6	MW91/6	Normal	28/02/2008		-	-	<5	-	-	-
MW91/6	MW91/6	Normal	12/11/2008		1	-	<1	-	1	-
MW91/6	MW91/6	Normal	20/04/2009		<1	-	<1	-	<1	-
MW91/6	MW91/6	Normal	17/11/2009	255428	3	-	<1	-	2	-
MW91/6	MW91/6	Normal	23/06/2010	268593	18	-	2	-	16	-
MW91/6	MW91/6	Normal	23/11/2010		<5	-	<5	-	<5	-
MW91/6	MW91/6	Normal	9/06/2011		6	-	<5	-	6	-
MW91/6	MW91/6	Normal	7/12/2011	321117	-	6	<1	-	6	-
MW91/6	MW91/6	Normal	19/06/2012	341447	-	<1	2	-	<1	-
MW91/6	MW91/6	Normal	20/06/2013	383357	-	<1	<1	-	<1	-
MW91/6	MW91/6	Normal	5/12/2013	402613	-	<1	-	<1	<1	-
MW91/6	MW91/6	Normal	22/05/2014	419480	-	<1	-	<1	<5	-
MW91/9	MW91/9	Normal	8/12/2011	321280	-	4	-	-	-	-
MW94/12	MW94/12	Normal	6/12/2011	320982	-	15	-	-	-	-
MW94/14	MW94/14	Normal	1/01/2004		4	-	-	-	-	-
MW94/14	MW94/14	Normal	1/03/2005		4	-	-	-	-	-
MW94/14	MW94/14	Normal	1/09/2005		7	-	<50	-	-	-
MW94/14	MW94/14	Normal	1/03/2006		<1	-	-	-	-	-
MW94/14	MW94/14	Normal	25/09/2006		5	-	<1	-	-	-
MW94/2	MW94/2	Normal	5/10/2011	314284	8000	16	<1	-	8000	-
MW94/2	MW94/2	Normal	13/06/2012	340826	-	<1	<1	-	<1	-
MW94/2	MW94/2	Normal	25/06/2013	383856	-	<1	<5	-	<1	-
MW94/2	MW94/2	Normal	27/05/2014	419785	-	<1	-	<1	<5	-
MW94/3	MW94/3	Normal	6/10/2011	314462	23	2	<1	-	23	-
MW94/4	MW94/4	Normal	1/09/2005		1	-	<50	-	-	-

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**						
MW94/4	MW94/4	Normal	13/09/2007		<1	-	<5	-	-	-
MW94/4	MW94/4	Normal	5/10/2011	314284	20	20	<1	-	20	-
MW94/4	MW94/4	Normal	19/08/2016	512679	-	2	-	3	-	<5
MW94/4	MW94/4	Normal	16/12/2016	528402	<1	-	<1	-	<1	-
MW94/4	MW94/4	Normal	29/05/2017	ES1713176	-	<1	<1	<10	-	<10
MW94/4	MW94/4	Normal	11/12/2017	ES1731349	-	-	<1	-	<1	-
MW94/4	MW94/4	Normal	22/06/2018	ES1818457	-	-	2	-	41	-
MW94/4	MW94/4	Normal	6/12/2018	ES1836989	-	-	<1	-	-	-
D02_111217	MW94/4	Field_D	11/12/2017	ES1731349	-	-	<1	-	<1	-
D02_290517	MW94/4	Field_D	29/05/2017	ES1713176	-	2	<1	<10	-	<10
D03_20181206	MW94/4	Field_D	6/12/2018	ES1836989	-	-	<1	-	-	-
T01_290517	MW94/4	Interlab_D	29/05/2017	548413	-	-	<0.5	-	-	-
BH94/5	MW94/5	Normal	12/11/2008		2	-	<1	-	2	-
MW94/5	MW94/5	Normal	28/03/2006		<1	-	<1	-	-	-
MW94/5	MW94/5	Normal	29/09/2006		<1	-	<1	-	-	-
MW94/5	MW94/5	Normal	1/09/2007		<1	-	<1	-	-	-
MW94/5	MW94/5	Normal	27/09/2007		9	-	<5	-	9	-
MW94/5	MW94/5	Normal	22/02/2008		<1	-	<5	-	<5	-
MW94/5	MW94/5	Normal	22/04/2009		<1	-	<1	-	<1	-
MW94/5	MW94/5	Normal	17/11/2009	255428	-	-	<1	-	-	-
MW94/5	MW94/5	Normal	22/06/2010	268407	<5	-	<1	-	<5	-
MW94/5	MW94/5	Normal	23/11/2010		<5	-	<5	-	<5	-
MW94/5	MW94/5	Normal	9/06/2011		93	-	<5	-	93	-
MW94/5	MW94/5	Normal	7/10/2011	314682	34	-	<1	-	34	-
MW94/6	MW94/6	Normal	28/03/2006		<10	-	<1	-	-	-
MW94/6	MW94/6	Normal	28/09/2006		<1	-	3	-	-	-
MW94/6	MW94/6	Normal	1/09/2007		11	-	-	-	-	-
MW94/6	MW94/6	Normal	13/09/2007		11	-	<5	-	11	-
MW94/6	MW94/6	Normal	22/02/2008		8	-	<5	-	8	-
MW94/6	MW94/6	Normal	13/11/2008		9	-	<1	-	9	-
MW94/6	MW94/6	Normal	21/04/2009		<1	-	<1	-	<1	-
MW94/6	MW94/6	Normal	19/11/2009	255526	34	-	<5	-	30	-
MW94/6	MW94/6	Normal	25/06/2010	268864	10	-	<1	-	10	-
MW94/6	MW94/6	Normal	25/11/2010		<5	-	<5	-	<5	-
MW94/6	MW94/6	Normal	8/06/2011		65	-	<5	-	65	-
MW94/6	MW94/6	Normal	7/10/2011	314682	96	74	<1	-	96	-
MW94/6	MW94/6	Normal	13/06/2012	340826	-	<1	<3	-	<1	-
MW94/6	MW94/6	Normal	6/12/2012	362203	-	<1	<1	-	<1	-
MW94/6	MW94/6	Normal	24/06/2013	383714	-	<1	<1	-	<1	-
MW94/6	MW94/6	Normal	10/12/2013	403171	-	<1	-	<1	<1	-
MW94/6	MW94/6	Normal	27/05/2014	419782	-	<1	-	<1	<5	-
MW94/6	MW94/6	Normal	10/12/2014	442003	-	2	-	<1	-	2
MW94/6X	MW94/6X	Normal	28/03/2006		4	-	<1	-	-	-
MW94/6X	MW94/6X	Normal	3/10/2006		<1	-	<1	-	-	-
MW94/6X	MW94/6X	Normal	1/09/2007		<1	-	-	-	-	-
MW94/6X	MW94/6X	Normal	13/09/2007		<1	-	<5	-	-	-
MW94/6X	MW94/6X	Normal	22/02/2008		<1	-	<5	-	<5	-
MW94/6X	MW94/6X	Normal	13/11/2008		6	-	<1	-	6	-
MW94/6X	MW94/6X	Normal	17/04/2009		<1	-	<1	-	<1	-
MW94/6X	MW94/6X	Normal	22/04/2009		<1	-	<1	-	<1	-
MW94/6x	MW94/6X	Normal	17/11/2009	255428	12	-	<1	-	12	-
MW94/6X	MW94/6X	Normal	23/06/2010	268583	<5	-	<1	-	<5	-
MW94/6X	MW94/6X	Normal	26/11/2010		<5	<1 - 1	<1	-	<5 - 1	-
MW94/6X	MW94/6X	Normal	7/06/2011		13	-	<5	-	13	-
MW94/6X	MW94/6X	Normal	6/10/2011	314462	9	7	<1	-	9	-
MW94/6X	MW94/6X	Normal	14/06/2012	340986	-	<1	<1	-	<1	-
MW94/6X	MW94/6X	Normal	11/12/2012	362827	-	<1	<1	-	<1	-
MW94/6X	MW94/6X	Normal	25/06/2013	383856	-	<1	<5	-	<1	-
MW94/6X	MW94/6X	Normal	11/12/2013	403328	-	<1	-	<1	<1	-
MW94/6X	MW94/6X	Normal	27/05/2014	419782	-	<1	-	<1	<5	-
QC4	MW94/6X	Field_D	17/04/2009		<1	-	<1	-	<1	-
MW94/7	MW94/7	Normal	28/03/2006		<5	-	-	-	-	-
MW94/7	MW94/7	Normal	1/09/2007		11	-	-	-	-	-
MW94/7	MW94/7	Normal	13/09/2007		11	-	<5	-	-	-
MW94/7	MW94/7	Normal	13/11/2008		12	-	<1	-	12	-
MW94/7	MW94/7	Normal	21/04/2009		<1	-	<1	-	<1	-
MW94/7	MW94/7	Normal	17/11/2009	255428	5	-	<1	-	5	-
MW94/7	MW94/7	Normal	25/06/2010	268864	6	-	4	-	2	-
MW94/7	MW94/7	Normal	25/11/2010		19	-	<5	-	<1	-
MW94/7	MW94/7	Normal	8/06/2011		29	-	<5	-	29	-
MW94/7	MW94/7	Normal	6/10/2011	314462	610	14	<1	-	610	-
MW94/7	MW94/7	Normal	14/06/2012	340986	-	1	1	-	<1	-
MW94/7	MW94/7	Normal	21/06/2013	383502	-	2	<1	-	2	-
MW94_7	MW94/7	Normal	22/02/2008		56	-	<5	-	56	-
MW94/8	MW94/8	Normal	28/03/2006		6	-	6	-	-	-
MW94/8	MW94/8	Normal	27/09/2006		<1	-	2	-	-	-
MW94/8	MW94/8	Normal	25/02/2008		84	-	<5	-	84	-
MW94/8	MW94/8	Normal	13/11/2008		17	-	<1	-	17	-
MW94/8	MW94/8	Normal	21/04/2009		<1	-	<1	-	<1	-
MW94/8	MW94/8	Normal	19/11/2009	255526	6	-	<5	-	4	-
MW94/8	MW94/8	Normal	23/06/2010	268583	160	-	4	-	160	-
MW94/8	MW94/8	Normal	26/11/2010		5	5 - 10	5	-	<1	-
MW94/8	MW94/8	Normal	7/06/2011		190	-	<5	-	190	-
MW94/8	MW94/8	Normal	6/10/2011	314462	210	13	<1	-	210	-
MW94/8	MW94/8	Normal	14/06/2012	340986	-	1	<1	-	1.4	-
MW94/8	MW94/8	Normal	11/12/2012	362827	-	2	<1	-	2	-
MW94/8	MW94/8	Normal	24/06/2013	383714	-	1	<1	-	1	-
MW94/8	MW94/8	Normal	11/12/2013	403328	-	2	-	<1	2	-
MW94/8	MW94/8	Normal	27/05/2014	419782	-	2	-	<1	<5	-
QC01	MW94/8	Field_D	7/06/2011		85	-	<5	-	85	-

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**						
QC14	MW94/8	Field_D	26/11/2010		5	5	5	-	<1	-
MW95/10	MW95/10	Normal	28/03/2006		1	-	<1	-	-	-
MW95/10	MW95/10	Normal	29/09/2006		1	-	<1	-	-	-
MW95/10	MW95/10	Normal	22/02/2008		<1	-	<5	-	<5	-
MW95/10	MW95/10	Normal	17/11/2008		1	-	<1	-	1	-
MW95/10	MW95/10	Normal	22/04/2009		<1	-	<1	-	<1	-
MW95/10	MW95/10	Normal	17/11/2009	255428	4	-	<1	-	4	-
MW95/10	MW95/10	Normal	22/06/2010	268407	<5	-	<1	-	<5	-
MW95/10	MW95/10	Normal	23/11/2010		<5	-	<5	-	<5	-
MW95/10	MW95/10	Normal	9/06/2011		13	-	<5	-	13	-
MW95/10	MW95/10	Normal	19/06/2012	341448	-	<1	2	-	<1	-
MW95/10	MW95/10	Normal	13/12/2012	363171	-	<1	3	-	<1	-
MW95/10	MW95/10	Normal	19/06/2013	383201	-	1	<1	-	<1	-
MW95/10	MW95/10	Normal	5/12/2013	402604	-	1	-	<1	1	-
MW95/10	MW95/10	Normal	20/05/2014	419285	-	<1	-	<1	<1	-
MW95/10	MW95/10	Normal	5/12/2014	441476	-	<1	-	<1	-	<1
MW95/12	MW95/12	Normal	28/03/2006		<1	-	<1	-	-	-
MW95/12	MW95/12	Normal	29/09/2006		1	-	<1	-	-	-
MW95/12	MW95/12	Normal	1/09/2007		2	-	-	-	-	-
MW95/12	MW95/12	Normal	27/09/2007		2	-	<5	-	<5	-
MW95/12	MW95/12	Normal	22/02/2008		<1	-	<5	-	<5	-
MW95/12	MW95/12	Normal	14/11/2008		<1	-	<1	-	<1	-
MW95/12	MW95/12	Normal	22/04/2009		<1	-	<1	-	<1	-
MW95/13	MW95/13	Normal	1/03/2005		4	-	-	-	-	-
MW95/14	MW95/14	Normal	26/09/2006		<1	-	3	-	-	-
MW95/14	MW95/14	Normal	28/02/2008		-	-	<5	-	-	-
MW95/14	MW95/14	Normal	12/11/2008		6	-	<1	-	6	-
MW95/14	MW95/14	Normal	22/04/2009		<1	-	<1	-	<1	-
MW95/14	MW95/14	Normal	19/11/2009	255519	2	-	<5	-	2	-
MW95/14	MW95/14	Normal	25/06/2010	268866	<20	-	<1	-	<20	-
MW95/14	MW95/14	Normal	24/11/2010		-	<1	<1	-	<1	-
MW95/14	MW95/14	Normal	9/06/2011		320	-	<5	-	320	-
MW95/14	MW95/14	Normal	7/12/2011	321118	-	2	<1	-	2	-
DUP_04	MW95/14	Field_D	7/12/2011	321118	-	2	<1	-	2	-
MW95/4	MW95/4	Normal	28/02/2008		-	-	<5	-	-	-
MW95/4	MW95/4	Normal	12/11/2008		44	-	<1	-	44	-
MW95/4	MW95/4	Normal	22/04/2009		9	-	<1	-	9	-
MW96/1	MW96/1	Normal	27/02/2008		-	-	<5	-	-	-
MW96/1	MW96/1	Normal	8/12/2011	321281	-	7	-	-	-	-
MW96/3	MW96/3	Normal	7/12/2011	321281	-	46	-	-	-	-
MW97/2A	MW97/2A	Normal	28/03/2006		<10	-	<100	-	-	-
MW97/2A	MW97/2A	Normal	25/09/2006		2	-	<1	-	-	-
MW97/2A	MW97/2A	Normal	1/09/2007		20	-	-	-	-	-
MW97/2A	MW97/2A	Normal	14/09/2007		20	-	<5	-	20	-
MW97/2A	MW97/2A	Normal	27/02/2008		-	-	<5	-	-	-
MW97/2A	MW97/2A	Normal	14/11/2008		11	-	<1	-	11	-
MW97/2A	MW97/2A	Normal	16/04/2009		<1	-	<1	-	<1	-
MW97/2A	MW97/2A	Normal	19/11/2009	255526	3	-	<1	-	3	-
MW97/2A	MW97/2A	Normal	22/06/2010	268407	<5	-	<1	-	<5	-
MW97/2A	MW97/2A	Normal	26/11/2010		<5	1 - 2	<1	-	<5 - 1	-
MW97/2A	MW97/2A	Normal	8/06/2011		<10	-	<5	-	<5	-
MW97/2A	MW97/2A	Normal	6/12/2011	320972	-	18	<1	-	18	-
MW97/2B	MW97/2B	Normal	28/03/2006		<10	-	<1	-	-	-
MW97/2B	MW97/2B	Normal	25/09/2006		<1	-	<1	-	-	-
MW97/2B	MW97/2B	Normal	1/09/2007		9	-	-	-	-	-
MW97/2B	MW97/2B	Normal	14/09/2007		9	-	<5	-	9	-
MW97/2B	MW97/2B	Normal	27/02/2008		-	-	<5	-	-	-
MW97/2B	MW97/2B	Normal	14/11/2008		7	-	<10	-	7	-
MW97/2B	MW97/2B	Normal	16/04/2009		8	-	4	-	4	-
MW97/3	MW97/3	Normal	1/08/2005		5	-	<50	-	-	-
MW97/3	MW97/3	Normal	1/03/2006		1	-	-	-	-	-
MW97/3	MW97/3	Normal	25/09/2006		4	-	<1	-	-	-
MW97/3	MW97/3	Normal	1/09/2007		15	-	-	-	-	-
MW97/3	MW97/3	Normal	14/09/2007		15	-	<5	-	15	-
MW97/3	MW97/3	Normal	27/02/2008		-	-	<5	-	-	-
MW97/3	MW97/3	Normal	11/11/2008		13	-	<1	-	13	-
MW97/3	MW97/3	Normal	21/04/2009		3	-	<1	-	3	-
MW97/3	MW97/3	Normal	18/11/2009	255440	8	-	<1	-	8	-
MW97/3	MW97/3	Normal	24/06/2010	268700	<20	-	1	-	<20	-
MW97/3	MW97/3	Normal	24/11/2010		10	7	3	-	4	-
MW97/3	MW97/3	Normal	8/06/2011		12	-	<5	-	12	-
MW97/3	MW97/3	Normal	6/12/2011	320982	-	35	<1	-	35	-
MW97/3	MW97/3	Normal	15/06/2012	341117	-	3	<1	-	2.6	-
MW97/3	MW97/3	Normal	11/12/2012	362822	-	7	<1	-	7.2	-
MW97/3	MW97/3	Normal	20/06/2013	383357	-	5	<1	-	<1	-
MW97/3	MW97/3	Normal	6/12/2013	402721	-	5	-	<1	5	-
MW97/3	MW97/3	Normal	8/12/2014	441642	-	6	-	<1	-	5.9
QC05	MW97/3	Field_D	8/06/2011		<10	-	<5	-	<5	-
MW97/4	MW97/4	Normal	1/08/2005		10	-	<50	-	-	-
MW97/4	MW97/4	Normal	1/03/2006		<10	-	-	-	-	-
MW97/4	MW97/4	Normal	25/09/2006		16	-	<1	-	-	-
MW97/4	MW97/4	Normal	27/02/2008		-	-	<5	-	-	-
MW97/4	MW97/4	Normal	11/11/2008		33	-	<1	-	33	-
MW97/4	MW97/4	Normal	21/04/2009		28	-	4	-	24	-
MW97/4	MW97/4	Normal	18/11/2009	255440	26	-	<1	-	26	-
MW97/4	MW97/4	Normal	24/06/2010	268700	<20	-	10	-	<20	-
MW97/4	MW97/4	Normal	24/11/2010		-	10	8	-	2	-
MW97/4	MW97/4	Normal	8/06/2011		85	-	<5	-	85	-
MW97/4	MW97/4	Normal	6/12/2011	320982	-	53	<1	-	53	-
MW97/4	MW97/4	Normal	18/06/2012	341308	-	34	1	-	33	-

Field_ID	Location_Code	Sample_Type	Sampled_Date_Time	Lab_Report_Number	Metals: Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
MW97/4	MW97/4	Normal	11/12/2012	362822	-	24	<1	-	24	-
MW97/4	MW97/4	Normal	20/06/2013	383357	-	15	<1	-	<1	-
MW97/4	MW97/4	Normal	6/12/2013	402721	-	19	-	<1	19	-
MW97/4	MW97/4	Normal	21/05/2014	419285	-	11	-	<1	11	-
MW97/4	MW97/4	Normal	8/12/2014	441642	-	14	-	<1	-	14
QC04	MW97/4	Field_D	24/11/2010		-	8	<1	-	8	-
QC1	MW97/4	Field_D	11/11/2008		30	-	<1	-	30	-
MW98/4	MW98/4	Normal	28/03/2006		<5	-	-	-	-	-
MW98/4	MW98/4	Normal	13/11/2008		<1	-	<1	-	<1	-
MW98/4	MW98/4	Normal	4/10/2011	314106	18	<1	<5	-	18	-
MW98/6	MW98/6	Normal	28/03/2006		2	-	<1	-	-	-
MW98/6	MW98/6	Normal	27/09/2006		<1	-	<1	-	-	-
MW98/6	MW98/6	Normal	1/09/2007		6	-	-	-	-	-
MW98/6	MW98/6	Normal	13/09/2007		6	-	-	-	-	-
MW98/6	MW98/6	Normal	22/02/2008		2	-	<5	-	<5	-
MW98/6	MW98/6	Normal	22/06/2010	268407	<5	-	<1	-	<5	-
MW98/6	MW98/6	Normal	26/11/2010		<5	<1	<5 - 1	-	<1	-
MW98/6	MW98/6	Normal	7/06/2011		16	-	<5	-	16	-
MW98/6	MW98/6	Normal	13/10/2011	315268	<1	0	<1	-	<1	-
MW98/6	MW98/6	Normal	19/06/2012	341447	-	<1	<1	-	<1	-
MW98/6	MW98/6	Normal	6/12/2012	362203	-	<1	<1	-	<1	-
QC3	MW98/6	Field_D	13/09/2007		5	-	-	-	-	-
D_131011_01	MW98/6	Field_D	13/10/2011	315268	<1	0	<1	-	<1	-
DUP_04	MW98/6	Field_D	6/12/2012	362203	-	<1	<1	-	<1	-
DUP_08	MW98/6	Field_D	19/06/2012	341447	-	<1	<1	-	<1	-
T_131011_01	MW98/6	Interlab_D	13/10/2011		-	<1	-	-	-	-
TRIP-03	MW98/6	Interlab_D	6/12/2012	ES1228932	-	-	-	<10	-	-
MW98/9	MW98/9	Normal	28/03/2006		2	-	<1	-	-	-
MW98/9	MW98/9	Normal	27/09/2006		<1	-	<1	-	-	-
MW98/9	MW98/9	Normal	1/09/2007		<1	-	-	-	-	-
MW98/9	MW98/9	Normal	13/09/2007		<1	-	-	-	-	-
MW98/9	MW98/9	Normal	25/02/2008		<1	-	<5	-	<5	-
MW98/9	MW98/9	Normal	17/11/2008		<1	-	<1	-	<1	-
MW98/9	MW98/9	Normal	17/04/2009		<1	-	<1	-	<1	-
MW98/9	MW98/9	Normal	20/11/2009	255816	10	-	10	-	<1	-
MW98/9	MW98/9	Normal	26/11/2010		-	2	-	-	-	-
MW98/9	MW98/9	Normal	6/10/2011	314462	28	8	<1	-	28	-
QC02	MW98/9	Field_D	7/06/2011		13	-	-	-	-	-
STW1	STW1	Normal	18/11/2009	255436	-	-	<1	-	-	-
STW2	STW2	Normal	18/11/2009	255436	-	-	<1	-	-	-
STW3	STW3	Normal	18/11/2009	255436	-	-	4	-	-	-
STW5	STW5	Normal	19/11/2009	255511	-	-	2	-	-	-
STW6	STW6	Normal	19/11/2009	255511	-	-	<1	-	-	-
SUW1	SUW1	Normal	18/11/2009	255436	-	-	<1	-	-	-
SUW2	SUW2	Normal	18/11/2009	255436	-	-	2	-	-	-
SUW3	SUW3	Normal	18/11/2009	255436	-	-	8	-	-	-
SUW4	SUW4	Normal	18/11/2009	255436	-	-	1300	-	-	-
SUW5	SUW5	Normal	18/11/2009	255436	-	-	<1	-	-	-
SUW6	SUW6	Normal	18/11/2009	255436	-	-	1	-	-	-
SW12/01	SW12/01	Normal	27/03/2012	331763	-	22	18	-	4	-
DUP03	SW12/01	Field_D	27/03/2012	331763	-	23	21	-	2	-
SW12/02	SW12/02	Normal	27/03/2012	331763	-	21	20	-	1	-
SW12/03	SW12/03	Normal	27/03/2012	331763	-	1100	750	-	350	-
SW15/01	SW15/01	Normal	17/07/2015	465651	-	270	-	250	-	<10
D01	SW15/01	Field_D	17/07/2015	465651	-	260	-	250	-	<10
SW15/02	SW15/02	Normal	17/07/2015	465651	-	43	-	40	-	<10
SW15/03	SW15/03	Normal	17/07/2015	465651	-	14	-	<1	-	14
SW15/04	SW15/04	Normal	17/07/2015	465651	-	44	-	42	-	<10
SW15/05	SW15/05	Normal	17/07/2015	465651	-	44	-	42	-	<10
SW15/06	SW15/06	Normal	23/09/2015	473601	-	8	-	5	-	3
SW15/07	SW15/07	Normal	23/09/2015	473601	-	9	-	5	-	4
SW15/08	SW15/08	Normal	23/09/2015	473601	-	40	-	20	-	20
SW16/01	SW16/01	Normal	13/01/2016	485385	-	11	-	<1	-	11
SW16/01	SW16/01	Normal	13/01/2016	485391	-	15	-	-	-	-
SW16/02	SW16/02	Normal	13/01/2016	485385	-	9	-	<1	-	9
SW16/02	SW16/02	Normal	13/01/2016	485391	-	13	-	-	-	-
D01_130116	SW16/02	Field_D	13/01/2016	485385	-	9	-	<1	-	9
D01_130116	SW16/02	Field_D	13/01/2016	485391	-	12	-	-	-	-
SW16/03	SW16/03	Normal	13/01/2016	485385	-	12	-	<1	-	12
SW16/03	SW16/03	Normal	13/01/2016	485391	-	13	-	-	-	-
TW94/1	TW94/1	Normal	5/10/2011	314284	44	53	<1	-	44	-
TW94/2	TW94/2	Normal	5/10/2011	314284	15	5	<5	-	15	-
W91/10	W91/10	Normal	1/03/2005		9	-	-	-	-	-
W91/10	W91/10	Normal	1/08/2005		13	-	<50	-	-	-
W91/10	W91/10	Normal	1/03/2006		15	-	<1	-	-	-
W91/10	W91/10	Normal	25/09/2006		10	-	<1	-	-	-
W91/10	W91/10	Normal	27/02/2008		-	-	<5	-	-	-
W91/10	W91/10	Normal	11/11/2008		7	-	<10	-	7	-
W91/10	W91/10	Normal	17/11/2008		10	-	<1	-	10	-
W91/10	W91/10	Normal	21/04/2009		6	-	<1	-	6	-
W91/10	W91/10	Normal	18/11/2009	255440	8	-	1	-	7	-
W91/10	W91/10	Normal	24/06/2010	268700	<20	-	1	-	<20	-
W91/10	W91/10	Normal	24/11/2010		-	4	4	-	<1	-
W91/10	W91/10	Normal	8/06/2011		14	-	<5	-	14	-
W91/10	W91/10	Normal	15/06/2012	341117	-	8	<1	-	8.3	-
W91/10	W91/10	Normal	11/12/2012	362822	-	8	<1	-	7.9	-
W91/10	W91/10	Normal	20/06/2013	383357	-	6	<1	-	<1	-
W91/10	W91/10	Normal	6/12/2013	402721	-	7	-	<1	7	-
W91/10	W91/10	Normal	21/05/2014	419285	-	10	-	<1	10	-
W91/6	W91/6	Normal	28/03/2006		<1	-	<1	-	-	-

					Metals					
					Chromium	Chromium (Filtered)	Chromium (hexavalent)	Chromium (hexavalent) (Filtered	Chromium (Trivalent)	Chromium (Trivalent) (Filtered)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					1	1	1	1	1	1
Field_ID	**Location_Code**	**Sample_Type**	**Sampled_Date_Time**	**Lab_Report_Number**						
W91/6	W91/6	Normal	5/10/2006		<1	-	<1	-	-	-
W91/6	W91/6	Normal	1/09/2007		4	-	-	-	-	-
W91/6	W91/6	Normal	17/09/2007		4	-	<5	-	-	-
W91/7	W91/7	Normal	6/12/2011	320985	-	150	-	-	-	-
DUP_01		Field_D	7/12/2012	362294	-	7700	460	-	7200	-

Statistical Summary

Number of Results	343	381	505	133	428	91
Number of Detects	226	277	95	48	272	59
Minimum Concentration	<1	0	<0.5	<1	<1	<1
Minimum Detect	1	1	1	1	1	1
Maximum Concentration	38000	89000	32000	84000	52000	15000
Maximum Detect	38000	89000	32000	84000	52000	15000
Average Concentration	467	1335	183	913	744	771
Median Concentration	6	8	0.5	0.5	5.4	5
Standard Deviation	3340	7640	1742	7342	4254	2065
Number of Guideline Exceedances	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0

					Per- and Polyfluoroalkyl Subst									PFOS and PFOA																						
					N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOS	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	PFOS	Perfluorooctanoate	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamidoacetic acid (Et	N-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoropentane acid	Perfluoroundecanoic acid (PFUnA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonamide (PFOSA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	ug/L	ug/L	µg/L	ug/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L	ug/L
EQL					0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Clyde SSTL PFAS - Intrusive Maintenance Worker (Direct Contact) #1													7		56																					
NEMP (2018) PFAS SL - Non Potable/Recreational Use													0.7		5.6																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (95%)														0.13	220																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (99%) #2														**0.00023**	**19**																					
Location_Code	**Field_ID**	**Sampled_Date_Time**	**Monitoring_Zone**	**Sample_Type**																																
MW09/16	MW09/16	7/12/2011	CSM1	Normal	-	-	-	-	-	-	-	-	-	<0.02	<0.02	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/16	MW09/16	10/12/2014	CSM1	Normal	-	-	-	-	-	-	-	-	-	0.07	0.15	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/14	MW12/14	16/12/2016	CSM1	Normal	-	-	-	-	-	-	-	-	-	0.1	0.43	<0.01	<0.05	<0.01	-	<0.05	<0.05	0.04	<0.05	<0.01	0.21	-	<0.01	<0.01	0.6	0.77	0.21	<0.01	<0.01	<0.01	0.05	<0.05
MW09/11	MW09/11	7/12/2011	CSM2	Normal	-	-	-	-	-	-	-	-	-	0.05	0.24	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/11	MW09/11	12/12/2012	CSM2	Normal	-	-	-	-	-	-	0.254	-	0.3319	0.0369	0.217	-	<0.0375	-	-	-	-	0.04	0.0762	-	0.295	0.117	-	<0.025	0.318	0.144	-	-	-	-	<0.025	-
MW09/11	MW09/11	9/12/2013	CSM2	Normal	-	-	-	-	-	-	-	-	-	<0.1	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/13	MW09/13	8/12/2014	CSM2	Normal	-	-	-	-	-	-	-	-	-	0.02	0.72	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/3	MW09/3	15/12/2016	CSM2	Normal	-	-	<0.05	-	-	-	-	-	-	0.04	0.04	<0.01	<0.05	<0.01	-	<0.05	-	<0.01	<0.05	<0.01	0.03	-	<0.01	<0.01	0.06	0.05	0.03	<0.01	<0.01	<0.01	<0.01	<0.05
MW09/3	MW09/3	29/05/2017	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.21	0.21	0.07	0.03	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	0.07	0.04	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/3	MW09/3	8/12/2017	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.35	0.35	0.08	0.03	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.05	-	<0.02	<0.02	0.1	0.06	0.07	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/3	MW09/3	22/06/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.05	0.05	0.01	0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/3	MW09/3	7/12/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/8	MW09/8	18/08/2016	CSM2	Normal	-	-	<0.05	-	-	-	-	-	-	0.02	<0.01	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.02	-	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
MW09/9	MW09/9	6/12/2011	CSM2	Normal	-	-	-	-	-	-	-	-	-	0.03	0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/9	MW09/9	5/12/2012	CSM2	Normal	-	-	-	-	-	-	0.177	-	0.1581	0.0761	0.101	-	<0.0375	-	-	-	-	<0.0375	0.0768	-	0.082	0.104	-	<0.025	0.147	0.0894	-	-	-	-	0.0307	-
MW09/9	MW09/9	9/12/2013	CSM2	Normal	-	-	-	-	-	-	-	-	-	<0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/9	MW09/09	9/12/2014	CSM2	Normal	-	-	-	-	-	-	-	-	-	<0.01	0.03	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/23	MW12/23	13/08/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	0.06	<0.02	1.15	1.09	0.65	0.09	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.03	<0.1	<0.02	0.56	-	<0.02	<0.02	0.11	0.18	0.06	<0.05	<0.02	<0.02	<0.02	<0.02
MW12/24	MW12/24	18/08/2016	CSM2	Normal	-	-	<0.05	-	-	-	-	-	-	0.1	<0.01	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.03	-	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
MW12/25	MW12/25	16/12/2016	CSM2	Normal	-	-	-	-	-	-	-	-	-	0.08	0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	<0.01	<0.05	<0.01	0.01	-	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
MW12/25	MW12/25	25/05/2017	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/25	MW12/25	6/12/2017	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.32	0.32	0.16	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	0.07	0.09	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/25	MW12/25	21/06/2018	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/25	D02_210618	21/06/2018	CSM2	Field_D	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/25	MW12/25	4/12/2018	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW94/10	MW94/10	26/05/2017	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.4	0.4	0.29	0.22	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.07	-	<0.02	<0.02	0.04	0.03	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/10	MW94/10	22/06/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.18	0.18	0.16	0.12	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/11	MW94/11	4/12/2018	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW94/11	D02_20181204	4/12/2018	CSM2	Field_D	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/12	MW94/12	4/12/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	0.03	<0.02	1.35	1.28	0.96	0.63	0.08	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.33	-	<0.02	<0.02	0.12	0.09	0.03	<0.05	<0.02	<0.02	0.04	<0.02
MW96/3	MW96/3	26/05/2017	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW96/3	MW96/3	21/06/2018	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
W91/8	W91/8	15/12/2016	CSM2	Normal	-	-	<0.05	-	-	-	-	-	-	5.7	0.11	<0.01	<0.05	0.16	-	<0.05	-	0.02	<0.05	<0.01	0.17	-	<0.01	<0.01	0.19	0.11	0.06	<0.01	<0.01	<0.01	0.03	<0.05
W91/8	W91/8	25/05/2017	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	0.02	<0.02	1.53	1.47	0.38	0.17	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.02	<0.1	<0.02	0.21	-	<0.02	<0.02	0.43	0.22	0.22	<0.05	<0.02	<0.02	0.04	<0.02
W91/8	D01_250517	25/05/2017	CSM2	Field_D	<0.05	<0.05	<0.05	<0.05	0.02	<0.02	1.52	1.46	0.39	0.18	0.21	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.21	-	<0.02	<0.02	0.43	0.23	0.2	<0.05	<0.02	<0.02	0.04	<0.02
W91/8	T01_250517	25/05/2017	CSM2	Interlab_D	<0.05	<0.05	<0.05	<0.05	0.02	<0.01	-	-	-	0.18	0.18	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	0.02	0.08	<0.01	0.18	-	<0.01	<0.01	0.32	0.19	0.22	<0.01	<0.01	<0.01	0.03	<0.05
W91/8	W91/8	6/12/2017	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.78	0.78	0.22	0.08	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.14	-	<0.05	<0.05	0.19	0.12	0.15	<0.12	<0.05	<0.05	<0.05	<0.05
W91/8	W91/8	18/06/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.42	0.42	0.14	0.06	0.07	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.08	-	<0.02	<0.02	0.13	0.08	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
W91/8	W91/8	4/12/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	1.5	1.46	0.37	0.11	0.17	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.26	-	<0.02	<0.02	0.47	0.32	0.13	<0.05	<0.02	<0.02	0.04	<0.02
W91/9	W91/9	24/11/2015	CSM2	Normal	-	-	-	-	-	-	-	-	-	<0.01	<2	-	<10	<2	-	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<10
W91/9	W91/9	18/08/2016	CSM2	Normal	-	-	<0.05	-	-	-	-	-	-	0.08	0.02	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.01	-	<0.01	<0.01	0.02	0.02	<0.01	<0.01	<0.01	<0.01	0.01	<0.05
W91/9	W91/9	14/12/2016	CSM2	Normal	-	-	<0.1	-	-	-	-	-	-	0.12	<0.02	<0.02	<0.1	<0.02	-	<0.1	-	<0.02	<0.1	<0.02	0.03	-	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1
W91/9	W91/9	25/05/2017	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.05	0.05	0.05	0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
W91/9	W91/9	6/12/2017	CSM2	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	1.67	1.58	0.52	0.34	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.18	-	<0.05	<0.05	0.25	0.26	0.26	<0.12	<0.05	<0.05	0.09	<0.05
W91/9	W91/9	25/06/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.03	0.03	0.03	0.03	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
W91/9	W91/9	5/12/2018	CSM2	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.12	0.12	0.05	0.05	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	0.02	0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW09/6	MW09/6	8/12/2011	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	8.11	4.83	-	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/6	MW09/6	12/12/2012	CSM2 - Fire Training	Normal	-	-	-	-	-	-	12.7	-	26.28	8.18	4.53	-	0.725	-	-	-	-	3.73	1.37	-	18.1	4.22	-	0.0415	3.03	7.27	-	-	-	-	1.49	-
MW09/6	MW09/6	10/12/2013	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	0.9	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/6	MW09/6	8/12/2014	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	9.2	3.1	-	0.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09/6	MW09/6	15/12/2016	CSM2 - Fire Training	Normal	-	-	<0.05	-	-	-	-	-	-	8.9	1.6	<0.01	0.2	0.07	-	<0.05	-	1	0.57	<0.01	5.3	-	<0.01	0.02	1.2	3.3	1.1	<0.01	<0.01	<0.01	0.58	<0.05
MW09/6	MW09/6	26/05/2017	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	1.29	0.13	26.6	24.6	15	6.72	1.43	<0.05	0.2	0.07	<0.05	<0.02	<0.02	1.54	<0.1	<0.02	8.33	-	<0.02	0.02	1.16	3.3	1.83	<0.05	<0.02	<0.02	0.62	<0.02
MW09/6	MW09/6	8/12/2017	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	0.88	0.3	24.2	22.4	12.4	6.95	1.55	<0.05	0.17	0.12	<0.05	<0.02	<0.02	0.97	0.6	<0.02	5.47	-	<0.02	0.04	1.86	3.13	1.54	<0.05	<0.02	<0.02	0.61	<0.02
MW09/6	D01_081217	8/12/2017	CSM2 - Fire Training	Field_D	<0.05	<0.05	<0.05	<0.05	0.91	0.32	24.9	23	12.6	6.92	1.66	<0.05	0.2	0.13	<0.05	<0.02	<0.02	1.06	0.6	<0.02	5.69	-	<0.02	0.04	1.99	3.1	1.69	<0.05	<0.02	<0.02	0.62	<0.02
MW09/6	MW09/6	22/06/2018	CSM2 - Fire Training	Normal	<0.12	<0.12	<0.12	<0.12	0.68	0.28	19.2	17.6	9.45	4.55	1.39	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.88	<0.2	<0.05	4.9	-	<0.05	<0.05	1.48	3	1.41	<0.12	<0.05	<0.05	0.64	<0.05
MW09/6	MW09/6	4/12/2018	CSM2 - Fire Training	Normal	<0.12	<0.12	<0.12	<0.12	1.7	0.44	43.1	39.8	21.7	10	2.6	<0.05	0.52	0.13	<0.05	<0.05	<0.05	2.4	<0.2	<0.05	11.7	-	<0.05	0.06	3.24	6.83	2.36	<0.12	<0.05	<0.05	1.14	<0.05
MW12/12	MW12/12	11/12/2012	CSM2 - Fire Training	Normal	-	-	-	-	-	-	286	-	382	260	25.8	-	22.2	-	-	-	-	18.4	6.5	-	122	13	-	<0.5	10.8	42.7	-	-	-	-	39.1	-
MW12/12	MW12/12	6/12/2013	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	84	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/12	MW12/12	8/12/2014	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	340	34	-	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/12	MW12/12	24/11/2015	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	330	31	-	26	14	-	-	-	24	14	<2	140	22	2.2	<2	18	74	-	<2	<2	<2	40	<10
MW12/12	MW12/12	18/08/2016	CSM2 - Fire Training	Normal	-	-	<0.05	-	-	-	-	-	-	390	19	0.06	31	12	-	-	-	18	4.5	<0.01	85	-	1.1	0.57	10	46	12	<0.01	<0.01	<0.01	30	0.05
MW12/12	MW12/12	16/12/2016	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	210	18	<1.5	24	<1.5	-	<7.5	<7.5	23	<7.5	<1.5	110	-	<1.5	<1.5	10	39	9.8	<1.5	<1.5	<1.5	27	<7.5

Location_Code	Field_ID	Sampled_Date_Time	Monitoring_Zone	Sample_Type	Per- and Polyfluoroalkyl Subst									PFOS and PFOA																						
					N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOS	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	PFOS	Perfluorooctanoate	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamidoacetic acid (Et	N-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoropentane acid	Perfluoroundecanoic acid (PFUnA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonamide (PFOSA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	ug/L	ug/L	µg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	ug/L
EQL					0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Clyde SSTL PFAS - Intrusive Maintenance Worker (Direct Contact) #1													7		56																					
NEMP (2018) PFAS SL - Non Potable/Recreational Use													0.7		5.6																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (95%)														0.13	220																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (99%) #2														**0.00023**	**19**																					
MW12/12	MW12/12	25/05/2017	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	11.2	7.69	477	424	283	264	17.5	0.16	24.4	13.9	<0.05	<0.02	<0.02	11.2	25.7	<0.02	19	-	1.46	1.46	8.87	27	12.5	<0.05	<0.02	<0.02	31	0.16
MW12/12	D02_250517	25/05/2017	CSM2 - Fire Training	Field_D	<0.05	<0.05	<0.05	<0.05	10.3	6.23	547	498	359	268	18.8	0.14	23.3	13.5	<0.05	<0.02	<0.02	13.3	22.5	<0.02	90.8	-	1.09	1.39	7.57	30.6	10.1	<0.05	<0.02	<0.02	29.1	0.15
MW12/12	MW12/12	7/12/2017	CSM2 - Fire Training	Normal	<0.12	<0.12	<0.12	<0.12	11.4	9.18	476	426	302	227	19.1	0.12	21	13.3	<0.05	<0.05	<0.05	12	4	<0.05	74.6	-	1.58	0.81	9.66	35.4	10.5	<0.12	<0.05	<0.05	26.3	<0.05
MW12/12	MW12/12	25/06/2018	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	11.3	7.17	442	395	254	172	18.4	0.16	21.5	15.3	<0.05	<0.02	<0.02	10.8	9.8	0.2	82.4	-	2.82	0.74	11.4	39	14.8	<0.05	<0.02	<0.02	23.5	0.24
MW12/12	MW12/12	4/12/2018	CSM2 - Fire Training	Normal	<2.5	<2.5	<2.5	<2.5	11.9	6.8	518	468	315	231	20.7	<1	30.8	16.2	<1	<1	<1	13	<5	<1	83.6	-	2.2	<1	11.8	43.4	17	<2.5	<1	<1	30	<1
MW12/13	MW12/13	18/08/2016	CSM2 - Fire Training	Normal	-	-	<0.05	-	-	-	-	-	-	46	29	<0.01	8.8	25	-	-	-	8.9	5.3	<0.01	38	-	0.05	0.31	18	25	17	<0.01	<0.01	<0.01	3.7	<0.05
MW12/13	MW12/13	16/12/2016	CSM2 - Fire Training	Normal	-	-	-	-	-	-	-	-	-	23	19	<0.02	7.2	12	-	<0.05	<0.05	12	4.8	<0.02	34	-	<0.02	0.1	19	24	17	<0.01	<0.01	<0.01	1.9	<0.05
MW12/13	D01_161216HB	16/12/2016	CSM2 - Fire Training	Field_D	-	-	-	-	-	-	-	-	-	25	23	<0.02	5.9	10	-	<0.05	<0.05	9.2	4.1	<0.01	26	-	<0.02	0.09	16	21	16	<0.01	<0.01	<0.01	1.5	<0.05
MW12/13	MW12/13	7/12/2017	CSM2 - Fire Training	Normal	-	<0.05	<0.05	-	7.84	1.52	217	205	-	24.1	30.7	<0.05	8.52	28.5	<0.05	<0.02	<0.02	8.46	-	-	26.3	-	<0.02	0.24	22.8	32	18.7	<0.05	<0.02	<0.02	2.04	<0.02
MW12/13	D01_071217	7/12/2017	CSM2 - Fire Training	Field_D	<0.12	<0.12	<0.12	<0.12	6.86	1.3	220	210	54.9	21.9	22.7	<0.05	6.4	22.1	<0.05	<0.05	<0.05	10.8	7.4	<0.05	33	-	<0.05	0.24	19.9	42.7	23.4	<0.12	<0.05	<0.05	1.78	<0.05
MW12/13	MW12/13	25/06/2018	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	2.59	1	153	146	43.3	31.8	11.3	<0.05	1.88	48.3	0.34	<0.02	<0.02	4.47	4	0.06	11.5	-	0.1	0.64	7.96	14.3	10.2	<0.05	<0.02	<0.02	2.72	<0.02
MW12/13	MW12/13	4/12/2018	CSM2 - Fire Training	Normal	<0.12	<0.12	<0.12	<0.12	8.3	1.68	288	274	80.7	37.2	25.3	<0.05	7.88	38.7	0.2	<0.05	<0.05	16	8.7	<0.05	43.5	-	0.08	0.6	22.6	44	29.7	<0.12	<0.05	<0.05	4.02	<0.05
MW12/26	MW12/26	11/12/2012	CSM2 - Fire Training	Normal	-	-	-	-	-	-	4.82	-	45.9	2.5	2.32	-	2.04	-	-	-	-	13.8	3.68	-	43.4	7.52	-	<0.25	2.58	25.2	-	-	-	-	0.43	-
MW12/26	MW12/26	19/12/2016	CSM2 - Fire Training	Normal	-	-	<0.1	-	-	-	-	-	-	41	9.6	0.06	17	3.4	-	<0.1	-	19	4.1	<0.02	120	-	<0.02	0.05	5.3	36	7.8	<0.02	<0.02	<0.02	2.7	<0.1
MW12/26	MW12/26	24/05/2017	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	13.5	1.18	220	201	112	35.3	6.29	0.06	12.2	6.63	<0.05	<0.02	<0.02	15.8	7.9	<0.02	76.6	-	<0.02	0.08	3.54	28.6	8.37	<0.05	<0.02	<0.02	3.55	<0.02
MW12/26	MW12/26	7/12/2017	CSM2 - Fire Training	Normal	<0.12	<0.12	<0.12	<0.12	5	1.16	110	102	58.4	24.5	3.02	<0.05	4.44	6.88	<0.05	<0.05	<0.05	6.02	1.9	<0.05	33.9	-	0.06	0.13	2.26	15.2	3.88	<0.12	<0.05	<0.05	1.82	<0.05
MW12/26	MW12/26	25/06/2018	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	4.65	2.35	104	93.2	54.8	22.6	5.84	<0.05	4.26	5.89	<0.05	<0.02	<0.02	4.14	1.7	<0.02	32.2	-	<0.02	0.13	3.96	8.15	4.51	<0.05	<0.02	<0.02	3.62	<0.02
MW12/26	MW12/26	4/12/2018	CSM2 - Fire Training	Normal	<0.05	<0.05	<0.05	<0.05	2.57	1.2	80.6	73.9	43.3	26	3.58	<0.05	4.02	6.01	0.09	<0.02	<0.02	3.2	<0.1	<0.02	17.3	-	0.1	0.21	2.07	7.87	3.84	<0.05	<0.02	<0.02	2.46	0.08
BH116	BH116	17/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.07	0.02	<0.01	<0.05	<0.01	-	-	-	0.02	<0.05	<0.01	0.05	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.05
MW11/01	MW11/01	11/12/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/02	MW11/02	8/12/2011	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.02	<0.02	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/02	MW11/02	5/12/2014	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/18	MW11/18	15/12/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.1	0.13	<0.01	<0.05	0.34	-	<0.05	-	0.01	<0.05	<0.01	0.05	-	<0.01	<0.01	0.2	0.13	0.07	<0.01	<0.01	<0.01	0.02	<0.05
MW11/18	MW11/18	13/08/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.21	0.04	7.18	6.87	2.78	1.48	0.56	<0.05	<0.05	0.11	<0.05	<0.02	<0.02	0.26	0.4	<0.02	1.3	-	<0.02	<0.02	1.07	0.91	0.78	<0.05	<0.02	<0.02	0.06	<0.02
MW11/19	MW11/19	8/12/2011	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.02	<0.02	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/20	MW11/20	13/08/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	1.05	1.05	0.5	0.16	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.34	-	<0.05	<0.05	0.16	0.16	0.14	<0.12	<0.05	<0.05	<0.05	<0.05
MW11/20	MW11/20	6/12/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.02	<0.02	0.49	0.47	0.13	<0.01	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.03	<0.1	<0.02	0.13	-	<0.02	<0.02	0.08	0.11	0.09	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/25	MW11/25	11/12/2014	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.01	<0.01	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/28	MW11/28	6/12/2011	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.02	<0.02	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/30	MW11/30	19/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.06	-	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
MW11/31	MW11/31	19/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.04	0.02	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.04	-	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.09	<0.05
MW11/36	MW11/36	19/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.24	0.05	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.12	-	<0.01	<0.01	0.05	0.1	0.02	<0.01	<0.01	<0.01	0.02	<0.05
MW11/36	MW11/36	15/12/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.15	0.04	<0.01	<0.05	<0.01	-	<0.05	-	0.02	<0.05	<0.01	0.12	-	<0.01	<0.01	0.04	0.09	0.01	<0.01	<0.01	<0.01	0.01	<0.05
MW11/41	MW11/41	16/12/2016	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05
MW11/41	MW11/41	29/05/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/41	MW11/41	8/12/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.01	0.01	<0.01	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/41	MW11/41	22/06/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW11/41	MW11/41	6/12/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW11/43	MW11/43	8/12/2011	CSM3	Normal	-	-	-	-	-	-	-	-	-	<0.02	<0.02	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/46	MW11/46	16/12/2016	CSM3	Normal	-	-	-	-	-	-	-	-	-	0.08	0.03	<0.01	<0.05	<0.01	-	<0.05	<0.05	<0.01	<0.05	<0.01	0.05	-	<0.01	<0.01	0.04	0.04	0.02	<0.01	<0.01	<0.01	<0.01	<0.05
MW11/46	MW11/46	29/05/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.42	0.4	0.23	0.13	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.1	-	<0.02	<0.02	0.08	0.05	<0.02	<0.05	<0.02	<0.02	0.02	<0.02
MW11/46	MW11/46	8/12/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.62	0.62	0.24	0.1	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.14	-	<0.02	<0.02	0.13	0.11	0.08	<0.05	<0.02	<0.02	<0.02	<0.02
MW11/46	MW11/46	6/12/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	0.5	0.2	0.08	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.12	-	<0.02	<0.02	0.1	0.08	0.07	<0.05	<0.02	<0.02	0.02	<0.02
MW12/20	MW12/20	17/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.31	0.02	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.06	-	<0.01	<0.01	0.01	0.02	0.01	<0.01	<0.01	<0.01	0.02	<0.05
MW12/20	MW12/20	15/12/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.25	0.03	<0.01	<0.05	<0.01	-	<0.05	-	0.02	<0.05	<0.01	0.13	-	<0.01	<0.01	0.02	0.04	0.02	<0.01	<0.01	<0.01	0.03	<0.05
MW12/20	MW12/20	29/05/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.98	0.92	0.74	0.47	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.04	<0.1	<0.02	0.27	-	<0.02	<0.02	0.04	0.06	<0.02	<0.05	<0.02	<0.02	0.06	<0.02
MW12/20	MW12/20	13/08/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.12	0.12	0.12	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.06	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/20	D01_140818	13/08/2018	CSM3	Field_D	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.15	0.15	0.15	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.06	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/20	MW12/20	5/12/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.16	0.16	0.16	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/21	MW12/21	18/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.52	0.11	<0.01	<0.05	<0.01	-	-	-	0.06	<0.05	<0.01	0.25	-	<0.01	<0.01	0.15	0.2	0.05	<0.01	<0.01	<0.01	0.03	<0.05
MW12/21	MW12/21	15/12/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.47	0.12	<0.01	<0.05	<0.01	-	<0.05	-	0.05	0.09	<0.01	0.23	-	<0.01	<0.01	0.14	0.2	0.06	<0.01	<0.01	<0.01	0.03	<0.05
MW12/21	MW12/21	29/05/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.07	<0.02	1.63	1.53	0.73	0.39	0.13	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.09	<0.1	<0.02	0.34	-	<0.02	<0.02	0.22	0.24	0.12	<0.05	<0.02	<0.02	0.03	<0.02
MW12/21	MW12/21	21/06/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	0.08	<0.05	1.94	1.86	0.97	0.5	0.19	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	<0.2	<0.05	0.47	-	<0.05	<0.05	0.28	0.32	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/21	MW12/21	4/12/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	0.09	<0.05	3.06	2.97	1.78	1.01	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.18	<0.2	<0.05	0.77	-	<0.05	<0.05	0.32	0.42	0.11	<0.12	<0.05	<0.05	<0.05	<0.05
MW12/22	MW12/22	19/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	0.01	0.01	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.02	-	<0.01	<0.01	0.03	0.05	0.02	<0.01	<0.01	<0.01	<0.01	<0.05
MW18/06	MW18/06_180219	19/02/2018	CSM3	Normal	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<0.05	-	-	-	<0.05	<0.05	<0.05	-	-	-	-	-
MW18/07	MW18/07_180219	19/02/2018	CSM3	Normal	-	-	-	-	-	-	-	0.58	0.06	0.06	0.04	<0.05	0.23	<0.05	<0.05	-	-	<0.02	<0.1	-	<0.02	-	-	-	0.03	0.07	0.15	-	-	-	-	-
MW18/07	QC18/100_180219	19/02/2018	CSM3	Field_D	-	-	-	-	-	-	-	0.68	0.06	0.06	0.05	<0.05	0.27	<0.05	<0.05	-	-	<0.02	<0.1	-	<0.02	-	-	-	0.04	0.08	0.18	-	-	-	-	-
MW18/10	MW18/10_180219	19/02/2018	CSM3	Normal	-	-	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<0.05	-	-	-	<0.05	<0.05	<0.05	-	-	-	-	-
MW18/23	QC18/200	19/02/2018	CSM3	Interlab_D	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	0.25	0.25	0.02	0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	0.01	<0.05	<0.01	0.01	-	<0.01	<0.01	0.04	0.08	0.1	<0.01	<0.01	<0.01	<0.01	<0.05
MW18/23	MW18/23_180219	19/02/2018	CSM3	Normal	-	-	-	-	-	-	-	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<0.05	-	-	-	<0.05	0.06	0.08	-	-	-	-	-
MW18/23	MW18/23	5/12/2018	CSM3	Normal	<0.12	<0.12	<0.12	<0.12	<0.05	<0.05	0.62	0.62	0.22	0.1	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.12	-	<0.05	<0.05	0.1	0.12	0.11	<0.12	<0.05	<0.05	<0.05	<0.05

					Per- and Polyfluoroalkyl Subst									PFOS and PFOA																						
					N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOS	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	PFOS	Perfluorooctanoate	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamidoacetic acid (Et	N-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoropentane acid	Perfluoroundecanoic acid (PFUnA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonamide (PFOSA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	ug/L	µg/L	ug/L	ug/L	µg/L	ug/L	ug/L	µg/L	µg/L	ug/L	µg/L	µg/L	ug/L	ug/L	ug/L
EQL					0.05	0.05	0.05	0.05	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.02	0.02	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Clyde SSTL PFAS - Intrusive Maintenance Worker (Direct Contact) #1													7		56																					
NEMP (2018) PFAS SL - Non Potable/Recreational Use													0.7		5.6																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (95%)														0.13	220																					
NEMP (2018) Interim Marine PFAS SL - Based on Freshwater (99%) #2														**0.00023**	**19**																					
Location_Code	**Field_ID**	**Sampled_Date_Time**	**Monitoring_Zone**	**Sample_Type**																																
MW18/24	MW18/24_180219	19/02/2018	CSM3	Normal	-	-	-	-	-	-	-	2.69	0.75	**0.42**	0.56	<0.05	0.19	<0.05	<0.05	-	-	0.04	<0.1	-	0.33	-	-	-	0.52	0.31	0.32	-	-	-	-	-
MW94/3	MW94/3	19/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	**0.39**	0.01	<0.01	<0.05	<0.01	-	-	-	0.05	<0.05	<0.01	0.27	-	<0.01	<0.01	0.01	0.09	0.02	<0.01	<0.01	<0.01	<0.01	<0.05
MW94/3	MW94/3	16/12/2016	CSM3	Normal	-	-	-	-	-	-	-	-	-	**0.39**	0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	0.07	<0.05	<0.01	0.28	-	<0.01	<0.01	0.01	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.05
MW94/3	MW94/3	29/05/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.11	0.02	1.75	1.62	1.23	**0.67**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.14	<0.1	<0.02	0.56	-	<0.02	<0.02	0.03	0.2	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/3	MW94/3	11/12/2017	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.22	<0.02	1.89	1.67	0.85	**0.24**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.45	<0.1	<0.02	0.61	-	<0.02	<0.02	0.02	0.29	0.04	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/3	D03_111217	11/12/2017	CSM3	Field_D	<0.05	<0.05	<0.05	<0.05	0.2	0.02	1.65	1.43	0.89	**0.27**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.23	<0.1	<0.02	0.62	-	<0.02	<0.02	0.03	0.26	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/3	T02_111217	11/12/2017	CSM3	Interlab_D	<0.05	<0.05	<0.05	<0.05	0.49	0.01	2.27	1.77	0.99	**0.33**	0.02	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	0.44	<0.05	<0.01	0.66	-	<0.01	<0.01	0.02	0.26	0.04	<0.01	<0.01	<0.01	<0.01	<0.05
MW94/3	MW94/3	25/06/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.28	0.02	1.83	1.53	0.98	**0.21**	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.44	<0.1	<0.02	0.77	-	<0.02	<0.02	<0.02	0.11	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW94/3	MW94/3	7/12/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	0.38	<0.02	2.24	1.86	1.03	**0.16**	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	<0.1	<0.02	0.87	-	<0.02	<0.02	0.02	0.25	0.03	<0.05	<0.02	<0.02	<0.02	<0.02
MW98/4	MW98/4	8/12/2011	CSM3	Normal	-	-	-	-	-	-	-	-	-	**0.19**	0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW98/4	MW98/4	10/12/2012	CSM3	Normal	-	-	-	-	-	-	0.356	-	0.332	**0.232**	0.124	-	<0.015	-	-	-	-	<0.015	0.028	-	0.1	0.0559	-	<0.01	0.195	0.0866	-	-	-	-	0.0501	-
MW98/4	MW98/4	10/12/2013	CSM3	Normal	-	-	-	-	-	-	-	-	-	**0.2**	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW98/4	MW98/4	10/12/2014	CSM3	Normal	-	-	-	-	-	-	-	-	-	**0.29**	0.12	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW98/4	MW98/4	17/08/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	**0.31**	0.07	<0.01	<0.05	<0.01	-	-	-	<0.01	<0.05	<0.01	0.06	-	<0.01	<0.01	0.1	0.08	0.05	<0.01	<0.01	<0.01	0.04	<0.05
MW98/4	MW98/4	14/12/2016	CSM3	Normal	-	-	<0.05	-	-	-	-	-	-	**0.48**	0.11	<0.01	<0.05	<0.01	-	<0.05	-	<0.01	<0.05	<0.01	0.07	-	<0.01	<0.01	0.12	0.09	0.07	<0.01	<0.01	<0.01	0.04	<0.05
MW98/4	MW98/4	6/12/2018	CSM3	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.49	0.46	0.22	**0.16**	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	-	<0.02	<0.02	0.09	0.06	0.03	<0.05	<0.02	<0.02	0.03	<0.02
MW09/14	MW09/14	12/12/2012	CSM4 -PTA	Normal	-	-	-	-	-	-	0.07	-	0.3785	**0.0265**	0.0435	-	0.144	-	-	-	-	0.0845	0.203	-	0.352	0.705	-	<0.025	0.292	0.57	-	-	-	-	<0.025	-
MW91/1	MW91/1	6/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	0.98	0.47	20	18.5	15.1	**3.94**	0.58	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	1	<0.1	<0.02	11.2	-	<0.02	<0.02	0.31	1.2	0.27	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/11	MW91/11	6/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.08	0.08	<0.01	**<0.01**	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	0.03	0.05	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/2	MW91/2	5/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.18	0.18	0.07	**0.03**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	0.03	0.03	0.03	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/3	MW91/3	6/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	**<0.01**	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/4	MW91/4	5/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	0.37	0.03	285	284	3.59	**0.75**	2.86	<0.05	0.45	0.17	<0.05	<0.02	<0.02	0.56	31	<0.02	2.84	-	<0.02	<0.02	19.5	93.2	133	<0.05	<0.02	<0.02	0.04	<0.02
MW91/4	D01-20181205	5/12/2018	CSM4 -PTA	Field_D	<0.05	<0.05	<0.05	<0.05	0.42	0.03	250	250	3.27	**0.71**	2.78	<0.05	0.44	0.17	<0.05	<0.02	<0.02	0.52	28.9	<0.02	2.56	-	<0.02	<0.02	18.3	85.5	110	<0.05	<0.02	<0.02	0.04	<0.02
MW91/4	T01_20181205	5/12/2018	CSM4 -PTA	Interlab_D	-	<0.05	<0.05	-	0.41	0.04	266.03	265.54	3.01	**0.81**	2.5	<0.01	0.39	0.17	<0.01	<0.05	<0.05	0.47	-	-	2.2	-	<0.01	<0.01	18	75	130	<0.01	<0.01	<0.01	0.04	<0.05
MW91/8	MW91/8	7/12/2017	CSM4 -PTA	Normal	<0.12	<0.12	<0.12	<0.12	0.86	<0.05	10.2	9.38	3.64	**0.3**	0.12	<0.05	0.19	<0.05	<0.05	<0.05	<0.05	1.42	0.6	<0.05	3.34	-	<0.05	<0.05	0.47	1.66	1.28	<0.12	<0.05	<0.05	<0.05	<0.05
MW91/8	MW91/8	6/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	1.57	0.04	13.1	11.5	5.07	**0.41**	0.14	<0.05	0.11	<0.05	<0.05	<0.02	<0.02	2.47	<0.1	<0.02	4.66	-	<0.02	<0.02	0.49	1.71	1.51	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/9	MW91/9	8/12/2011	CSM4 -PTA	Normal	-	-	-	-	-	-	-	-	-	**<0.02**	0.07	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW91/9	MW91/9	5/12/2013	CSM4 -PTA	Normal	-	-	-	-	-	-	-	-	-	**<0.1**	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW91/9	MW91/9	8/12/2014	CSM4 -PTA	Normal	-	-	-	-	-	-	-	-	-	**0.25**	0.04	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW91/9	MW91/9	6/12/2018	CSM4 -PTA	Normal	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.52	0.52	0.13	**0.07**	0.03	<0.05	0.2	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.06	-	<0.02	<0.02	0.03	0.06	0.07	<0.05	<0.02	<0.02	<0.02	<0.02
MW91/9	T03_20181206	6/12/2018	CSM4 -PTA	Field_D	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	0.45	0.45	0.12	**0.08**	0.03	<0.05	0.14	<0.05	<0.05	<0.02	<0.02	<0.02	<0.1	<0.02	0.04	-	<0.02	<0.02	0.03	0.06	0.07	<0.05	<0.02	<0.02	<0.02	<0.02

Statistical Summary

Number of Results	81	83	107	81	83	83	89	88	94	155	155	121	149	123	89	101	91	130	128	115	130	9	117	124	130	130	121	117	117	117	124	117
Number of Detects	0	0	0	0	40	28	76	73	76	120	115	7	45	30	3	0	0	64	32	2	103	8	12	23	95	102	78	0	0	0	60	5
Minimum Concentration	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	0.028	<0.01	<0.01	0.0559	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02
Minimum Detect	ND	ND	ND	ND	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.01	0.07	0.09	ND	ND	0.01	0.028	0.06	0.01	0.0559	0.05	0.02	0.01	0.01	0.01	ND	ND	ND	0.01	0.05
Maximum Concentration	<2.5	<2.5	<2.5	<2.5	13.5	9.18	547	498	382	390	34	<1.5	31	48.3	<1	<7.5	<7.5	24	31	<2	140	22	2.82	<2	22.8	93.2	133	<2.5	<2	<2	40	<10
Maximum Detect	ND	ND	ND	ND	13.5	9.18	547	498	382	390	34	0.16	31	48.3	0.34	ND	ND	24	31	0.2	140	22	2.82	1.46	22.8	93.2	133	ND	ND	ND	40	0.24
Average Concentration	0.051	0.051	0.045	0.051	1.5	0.62	58	51	27	21	3.1	0.034	2.4	2.6	0.036	0.059	0.063	2.3	1.7	0.042	11	5.4	0.14	0.1	2.5	7.7	5.3	0.06	0.039	0.039	2.6	0.14
Median Concentration	0.025	0.025	0.025	0.025	0.025	0.025	0.98	0.73	0.33195	0.13	0.06	0.025	0.025	0.025	0.025	0.01	0.01	0.025	0.05	0.01	0.14	1	0.01	0.01	0.1	0.11	0.05	0.025	0.01	0.01	0.025	0.025
Standard Deviation	0.14	0.13	0.12	0.14	3.3	1.8	130	118	79	68	7.6	0.082	6.6	7.4	0.063	0.37	0.39	5.2	5.1	0.15	28	7.6	0.46	0.26	5.5	18	20	0.18	0.15	0.15	8.1	0.73
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	39	155	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	39	120	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX F GWSAP

Well ID	Location	Quarter 2 and Quarter 4				Rationale
		CSM Sub-area	Gauging	Sampling	Analysis	
Boundary Monitoring						
BH116	Autonexus	3	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well, downgradient of LNAPL impacts within MW12/01. LNAPL globules and historical maximum concentrations of TRH C10-C36 fractions identidied in Q4 2017.
BH90/7	Clyde Terminal Operations (Nth Wetland)	1	√	√	Spec Cr	Within wetland area, elevated chromium concentration in excess of screening criteria including intermittent Cr (VI) concentrations
MW09/20	Clyde Terminal Operations (Nth Wetland)	1	√	-	-	Downgradient boundary monitoring well
MW09/6	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG), PFAS	Downgradient former Fire Training area, elevated concentration of PFAS reported in 2017
MW09/7	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Within former solvent plant area. Elevated TRH concentrations
MW09/8	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well. Historical maximum concentrations of TRH C10-C36 fractions identidied in Q4 2017.
MW09/9	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient monitoring well for historic LNAPL detection in MW95/14
MW10/01	Clyde Terminal Operations	2	√	-	-	Known release event within T92 (data gap closed). Gauging for site coverage.
MW10/02	Clyde Terminal Operations	2	√	-	-	Known release event within T92 (data gap closed). Gauging for site coverage.
MW11/01	Clyde Terminal Operations	3	√	-	-	Upgradient boundary monitoring well
MW11/41	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well
MW11/42	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG)	Downgradient monitoring well for historic LNAPL detection in MW98/6
MW11/46	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well
MW12/07	SUEZ	1	√	√	TRH, BTEXN (SG), Spec Cr	Down-gradient Tankfarm K, Historically phenol and Cr concentrations exceeding screening criteria
MW12/08	SUEZ	1	√	√	TRH, BTEXN (SG), Spec Cr	Adjacent Former Mobil Tankfarm. Increasing trends of benzene identified during Q2 2016
MW12/20	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well. PFAS detections greater than recreational criteria in Q2 2017
MW12/21	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well. PFAS detections greater than recreational criteria in Q2 2017
MW12/22	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well.
MW12/23	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW12/24	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW12/25	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well
MW91/2	Parramatta Terminal	4	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well. PFAS characterisation (Parramatta Terminal)
MW91/4	Parramatta Terminal	4	√	√	PFAS	Downgradient boundary monitoring well. PFAS characterisation (Parramatta Terminal)
MW91/5	Parramatta Terminal	4	√	√	TRH, BTEXN (SG), PFAS	PFAS characterisation - Parramatta Terminal, CVRO refuelling operations
MW91/6	Parramatta Terminal	4	√	√	TRH, BTEXN (SG), PFAS	PFAS characterisation - Parramatta Terminal (recreational exceedance at MW91/8), CVRO refuelling operations
MW91/7	Parramatta Terminal	4	√	√	TRH, BTEXN (SG), PFAS	PFAS characterisation - Parramatta Terminal (recreational exceedance at MW91/8), CVRO refuelling operations
MW91/8	Parramatta Terminal	4	√	√	TRH, BTEXN (SG), PFAS	PFAS concentrations exceeding recreational criteria identified Q4 2017. Monitor for changes in conditions., CVRO refuelling operations
MW94/10	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well
MW94/11	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW94/12	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG), PFAS	Downgradient boundary monitoring well for historic LNAPL detection in MW94/16
MW94/3	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG), PFAS	Upgradient boundary monitoring well. PFAS concentrations exceeding recreational criteria identified Q4 2017. Monitor for changes in conditions.
MW94/6	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well for historic LNAPL detection in MW12/01
MW94/8	Clyde Terminal Operations	3	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW96/1	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well for historic LNAPL detection in MW94/16
MW96/3	Clyde Terminal Operations (East Wetlands)	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well of PFAS detects in W91/8
MW96/7	Clyde Terminal Operations (sth wetlands)	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW97/3	Clyde Terminal Operations (Nth Wetland)	1	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW97/4	Clyde Terminal Operations (Nth Wetland)	1	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
MW98/6	Former Process East	3	√	√	TRH, BTEXN (SG)	Historical LNAPL observed, assess for changes in conditions
W91/7	Clyde Terminal Operations (LPG)	2	√	√	TRH, BTEXN (SG)	Downgradient boundary monitoring well
W91/8	Clyde Terminal Operations	2	√	√	PFAS	Satisfy Data Gap #11. Elevated PFAS concentrations within close proximity to site boundary
W91/9	Clyde Terminal Operations	2	√	√	TRH, BTEXN (SG), PFAS	Boundary monitoring well, downgradient of elevated PFAS concentrations within former Fire Training Area. PFAS detection in Q4 2017

Well ID	Location	Quarter 2 and Quarter 4				Rationale
		CSM Sub-area	Gauging	Sampling	Analysis	
Internal Operations Monitoring						
MW02/1	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Within area of bulk fuel storage and former solvent plant, elevated concentration in excees of screening criteria.
MW09/1	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Coverage within area of Tankfarm K. Historical LNAPL Identfied. Benzene concentration > ecological criteria in 2017
MW09/10	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Downgradient of Tankfarm
MW09/11	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas
MW09/13	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas
MW09/14	Parramatta Terminal	4	√	√	PFAS	PFAS characterisation - Parramatta Terminal
MW09/16	Clyde Terminal Operations	1	√	-	-	Downgradient monitoring well for historic LNAPL detection in MW12/15
MW09/2	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas. Measurable LNAPL identified for first time in Q4 2017.
MW09/3	Lyondell Basell	2	√	√	TRH, BTEXN, PFAS	Assessment for changes in groundwater conditions. Downgadient monitoring of PFAS impacted areas. Adjacent MW94/16 with recent fluctuating NAPL Thicknesses
MW11/02	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas
MW11/03	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Downgradient of Tankfarm A3, monitor TRH C6-10 fraction detected for the first time during the Q2 2016 GME
MW11/04	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas. Increasing TRH C10-C36 trends identified in Q2 2018.
MW11/06	Clyde Terminal Operations	3	√	√	TRH, BTEXN, Spec Cr	Downgradient of Tankfarm A2, historic Cr (VI) concentrations in excesss of screening criteria. Establish suitable dataset for decision making purposes
MW11/07	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Downgradient of Tankfarm A2. Increasing TRH C10-C36 trends identified in Q2 2018.
MW11/08	Clyde Terminal Operations	3	√	√	-	Crossgradient tankfarn A2, spatial coverage
MW11/17	Clyde Terminal Operations	3	√	√	TRH, BTEXN	LNAPL identified since Q1 2013
MW11/24	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Increasing TRH C10-C36 trends identified in Q2 2018. Located adjacent LNAPL impacts at MW12/26.
MW11/26	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Downgradient assessment of historic LNAPL impacts identified in MW12/18
MW11/30	Clyde Terminal Operations	3	√	√	TRH, BTEXN	Downgradient assessment of historic LNAPL impacts identified in MW12/18
MW11/31	Former Process West	3	√	√	TRH, BTEXN	Downgradient assessment of historic LNAPL impacts identified in MW12/16
MW11/37	Former Process East	3	√	√	TRH, BTEXN	Downgradient assessment of historic LNAPL impacts identified in MW12/19
MW11/39	Clyde Terminal Operations	3	√	-	-	Downgradient assessment of historic LNAPL impacts identified in MW98/6
MW12/01	Autonexus	3	√	√	TRH, BTEXN	LNAPL identified since installation in 2012
MW12/03	Autonexus	3	√	√	TRH, BTEXN	Increasing trend for TRH C6-C9 fractions identified in Q4 2017. Elevated naphthalene concentrations > eco screening criteria
MW12/05	SITA	1	√	√	Spec Cr	MW12/07 reported as historical maximum during the Q2 (2018) GME. Modified to address Data Gap 4
MW12/12	Former Fire Training Area	1	√	√	TRH, BTEXN, PFAS	Downgradient LNAPL at MW12/26. Elevated PFAS concentrations exceeding human health criteria, included to establish trend for decision making purposes.
MW12/13	Former Fire Training Area	1	√	√	TRH, BTEXN, PFAS	Downgradient former Mobil Tankfarm. PFAS concentrations exceeding human health criteria identified during 2017
MW12/14	Former Fire Training Area	1	√	-	-	Downgradient of LNAPL in MW12/15
MW12/15	Clyde Terminal Operations	1	√	√	TRH, BTEXN	LNAPL Present since installation - note not located since 2017
MW12/16	Former Process West	3	√	√	TRH, BTEXN	Historical LNAPL observed, assess for changes in conditions
MW12/26	Former Fire Training Area	1	√	√	TRH, BTEXN, PFAS	Within former fire training facility. Fluctuating presence of LNAPL. Elevated concentrations of COCs exceeding human health screening criteria.
MW18/06	Former Process West (AECOM, 2018)	3	√	√	TRH, BTEXN	Downgradient observed LNAPL at MW12/16, increasing TRH C10-C36 in nearby well (MW11/31)
MW18/23	Clyde Terminal Operations (AECOM, 2018)	3	√	√	TRH, BTEXN, PFAS	Trend Establishment - Downgradient CSM3 PFAS source area
MW18/24	Clyde Terminal Operations (AECOM, 2018)	3	√	√	TRH, BTEXN, PFAS	Trend Establishment - Downgradient CSM3 PFAS source area
MW91/1	Parramatta Terminal	4	√	√	PFAS	PFAS characterisation - Parramatta Terminal
MW91/11	Parramatta Terminal	4	√	√	PFAS	Upgradient site boundary PFAS characterisation - Parramatta Terminal
MW91/3	Parramatta Terminal	4	√	√	PFAS	PFAS characterisation - Parramatta Terminal
MW91/9	Parramatta Terminal	4	√	√	TRH, BTEXN, PFAS	Downgradient truck gantry area, PFAS Characterisation (Parramatta Terminal)
MW94/16	Bassell	2	√	√	TRH, BTEXN	Historic LNAPL
MW94/18	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Downgradient monitoring well for historic LNAPL detection in MW95/14 and MW09/2
MW94/4	Clyde Terminal Operations	3	√	√	TRH, BTEXN, Spec Cr	Downgradient operational tankfarm. Assessment of extent of Cr impacts identified in adjacent well MW11/06
MW95/13	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Within former solvent plant area. Elevated TRH concentrations in excess of screening criteria
MW95/4	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Within former solvent plant area. Elevated TRH concentrations in excess of screening criteria
MW98/4	Autonexus	3	√	√	PFAS	PFAS Trend anaysis, downgradient potential PFAS source (Former Tank 24)
TW94/1	Clyde Terminal Operations	3	√	-	-	Downgradient of Tankfarm C
TW94/2	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Downgradient of Tankfarm C
TW94/3	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Coverage surrounding bulk fuel storage areas
TW94/4	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Downgradient of bulk fuel storage areas (Tankfarm E1). Replacement well for MW95/7, downgradient LNAPL at MW09/2
TW94/5	Clyde Terminal Operations	2	√	√	TRH, BTEXN	Downgradient monitoring well for historic LNAPL detection in MW95/14 and MW09/2
TW94/6	Clyde Terminal Operations	2	√	-	-	Downgradient monitoring well for historic LNAPL detection in MW95/14
TW94/7	Clyde Terminal Operations	2	√	-	-	Downgradient of bulk fuel storage areas

Well ID	Location	Quarter 2 and Quarter 4 CSM Sub-area	Gauging	Sampling	Analysis	Rationale
Monitoring Wells Not Included in the Program						
BH115	Autonexus	3	-	-	-	-
BH209	Autonexus	3	-	-	-	Lost/Destroyed
BH210	Autonexus	3	-	-	-	Lost/Destroyed
BH341	Autonexus	3	-	-	-	-
MW04/2	Former Patricks	1	-	-	-	-
MW09/12	Clyde Terminal Operations	2	-	-	-	-
MW09/15	Former Patricks	1	-	-	-	-
MW09/17	Clyde Terminal Operations	1	-	-	-	-
MW09/18	Clyde Terminal Operations (Nth Wetland)	1	-	-	-	Destroyed
MW09/19	Clyde Terminal Operations (Nth Wetland)	1	-	-	-	-
MW09/5	Clyde Terminal Operations	2	-	-	-	-
MW11/09	Clyde Terminal Operations	3	-	-	-	Trivalent Cr reported > Eco SL upgradient at MW94/4 in Q2 2018. Location not suitably aligned for downgradient delineation
MW11/10	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/11	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/13	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/14	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/16	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/18	Clyde Terminal Operations	3	-	-	-	-
MW11/19	Clyde Terminal Operations	3	-	-	-	-
MW11/20	Clyde Terminal Operations	3	-	-	-	-
MW11/21	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/22	Clyde Terminal Operations	3	-	-	-	-
MW11/23	Clyde Terminal Operations	3	-	-	-	-
MW11/25	Former Process East	3	-	-	-	-
MW11/27	Former Process West	3	-	-	-	Lost/Destroyed
MW11/28	Former Process East	3	-	-	-	Lost/Destroyed
MW11/29	Former Process East	3	-	-	-	Lost/Destroyed
MW11/32	Former Process East	3	-	-	-	Lost/Destroyed
MW11/33	Former Process West	3	-	-	-	Lost/Destroyed
MW11/34	Clyde Terminal Operations	3	-	-	-	-
MW11/35	Clyde Terminal Operations	3	-	-	-	Lost/Destroyed
MW11/36	Former Process East	3	-	-	-	-
MW11/38	Former Process West	3	-	-	-	Lost/Destroyed
MW11/40	Clyde Terminal Operations	3	-	-	-	-
MW11/43	Clyde Terminal Operations	3	-	-	-	-
MW12/02	Autonexus	3	-	-	-	-
MW12/04	Autonexus	3	-	-	-	-
MW12/06	SITA	1	-	-	-	-
MW12/06	SITA	1	-	-	-	-
MW12/10	Former Patricks	1	-	-	-	-
MW12/11	Former Patricks	1	-	-	-	-
MW12/17	Former Process West	3	-	-	-	-
MW12/18	Former Process East	3	-	-	-	Lost/Destroyed
MW12/19	Former Process East	3	-	-	-	Lost/Destroyed
MW14/01	Former Patricks	1	-	-	-	-
MW14/02	Former Patricks	1	-	-	-	-
MW14/03	Former Patricks	1	-	-	-	-
MW14/04	Former Patricks	1	-	-	-	-
MW14/05	Former Patricks	1	-	-	-	-
MW14/06	Former Patricks	1	-	-	-	-
MW94/1	Carpark Area	2	-	-	-	-
MW94/15	Former Process East	2	-	-	-	-
MW94/2	Clyde Terminal Operations	3	-	-	-	-
MW94/6X	Former Process West	3	-	-	-	Noted to be destryoyed during demolition in 2015
MW94/7	Clyde Terminal Operations (Former Flare Area)	3	-	-	-	Established as lost/destroyed in 2015
MW95/10	Autonexus	3	-	-	-	-
MW95/14	Clyde Terminal Operations	2	-	-	-	Lost/Destroyed
MW95/15	Clyde Terminal Operations	2	-	-	-	-
MW95/16	External Carpark Area	2	-	-	-	-
MW95/7	Clyde Terminal Operations	2	-	-	-	Inaccessible - pipework constructed over well head
MW95/8	Tank Farm (E1)	2	-	-	-	-
MW96/2	Clyde Terminal Operations (East Wetlands)	2	-	-	-	-
MW96/4	Clyde Terminal Operations (East Wetlands)	2	-	-	-	-
W91/10	Clyde Terminal Operations (Nth Wetland)	1	-	-	-	-
MW98/7	Clyde Terminal Operations	2	-	-	-	Well noted as damaged and unable to be opened during Q2 2017
MW98/9	Former Process West	3	-	-	-	Lost/Destroyed
MW18/07	Former Process East (AECOM, 2018)	3	-	-	-	-
MW18/10	Former Process East (AECOM, 2018)	3	-	-	-	-

Notes:

TRH	Total Recoverable Hydrocarbons (C6-C40 Fractions)
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene
Spec Cr	Speciated Chromium (Cr6+ LOR must be 1 ug/L)
PFAS	Per- and Polyfluoroalkyl Substances
SG	Silica Gel Cleanup

APPENDIX G DATA GAPS

Data Gap ID	Event	Data Gap Description	Proposed Action	Completed Action	Event Completed	Status
1	Q1 (2010) GME	Incomplete groundwater gauging data collected during GME due to site activity, including key wells in which LNAPL has previously been identified.	Ensure completion of gauging (particularly MW94/16 and MW98/6) during Q2(2010) GME	Completion of gauging (including key wells MW94/16 and MW98/6) during Q2 (2010) GME	Q2 (2010) GME	Reconciled
2	Q1 (2010) GME	MW98/6 was identified as requiring repair	Complete well restoration works	Well restoration works completed	Q2 (2010) GME	Reconciled
3	Q2 (2010) GME	Changing Environmental Conditions - increasing trends in TPH within a number of wells in the central refinery area	LOPC investigation to be initiated with Refinery Operators	Refinery personnel confirmed there are no anomalies in product reconciliation data for Tank 90 within tank farm K, nor has there been any reported spills or leakages in this area to suggest that loss of primary containment (LOPC)	Q4 (2010) GME	Reconciled
3(a)	Q4 (2010) GME	Changing Environmental Conditions - identification of LNAPL and increasing trends in TRH and benzene within a small number of wells in the central refinery area (and a limited number of other locations).	Continued monitoring of impacted and down gradient wells, along with continued efforts to identify potential primary sources. In order to understand the relative contribution of non-petroleum related polar compounds to TRH results across the Site, it is recommended that all TRH C10-40 analysis be undertaken pre and post silica gel cleanup for groundwater samples collected from monitoring wells designated for sampling during the Q2 2019 GME. Should a significant influence of polar compounds on reported TRH fractions be identified, the future analytical suite will be modified to incorporate silica gel cleanup on all semi-volatile TRH analysis in future GMEs.	Continued monitoring undertaken during 2012 - 2017 groundwater monitoring events. During the Q4 (2018) GME, a statistically significant increasing trend for TRH C10-C36 Fractions were reported for monitoring wells MW11/04, MW11/07, MW11/08, MW11/24 and MW11/30. A statistically increasing trend for TRH C6-C9 Fractions was also identified at MW12/03; and Historical maximum concentrations were reported during the Q4 2018 GME for TRH C10-C36 Fractions at monitoring wells MW09/11, MW09/13, MW11/03, MW12/12, MW12/13. Benzene and TRH C6-C9 concentrations were also reported as a historical maximum at MW09/1 and MW12/03, respectively. The incorporation of Silica Gel Clean-up analysis on boundary monitoring locations has indicated TRH C10-C36 fractions to be comprised largely of polar (non-petroleum) compounds. These compounds are likely by-products of biodegradation processes. The removal of polar, non-petroleum hydrocarbons following silica gel cleanup is indicative of the natural attenuation processes occurring on site. In light of this information, the reliability of trend analysis conducted on TRH C10-C36 fractions is to be reviewed in the context of additional silica gel cleanup analysis to be conducted during 2019 GMEs;	Q4 (2014) GME	Reconciled (ongoing monitoring to assess for changes in conditions)
4	Q2 (2010) GME	Hexavalent Chromium was reported at concentrations exceeding adopted screening criteria and/or recently reported conditions within a number of monitoring wells (notably MW09/18, MW09/15, BH90/7, MW12/07 and MW12/08) within CSM1, and at locations MW11/06 and MW11/07 within CSM3.	Full speciated chromium analytical suite to be reported for wells selected for analysis during Q2 (2019) GME Continue monitoring as per SAP to further develop understanding of conditions	Continued monitoring of impacted monitoring wells and select down-gradient locations to be undertaken biannually. During the Q4 (2018) GME MW12/05 was unable to be sampled due to a damaged well head. In lieu of this sampling location, MW12/06 was sampled as an alternative downgradient location for MW12/07. BH90/7 was unable to be accessed for sampling. Trivalent chromium analysis was unable to be completed as part of the Q4 GME, due to the use of inappropriate sample containers and preservations. Consistent with previous GMEs, concentrations of hexavalent chromium were reported above adopted ecological criteria at MW12/07. Hexavalent chromium concentrations also exceeded adopted ecological criteria at MW12/06. Elevated concentrations at these locations are likely attributed from leaching of historically imported fill associated with the Chrome Chemicals Company. Due to fluctuating concentrations noted, biannual monitoring of these wells and some down-gradient locations is scheduled to continue to further develop the site characterisation.	Q4 (2014) GME	Reconciled (ongoing monitoring to assess for changes in conditions)
4(a)	Q2 (2012) GME	MW09/18 was confirmed to be destroyed during road resurfacing works	Potential replacement of monitoring well. Monitor MW09/19 instead for spatial coverage of area until well replaced.	Alternate sampling location adopted	Q4 (2014) GME	Reconciled
5	Q2 (2010) GME	W91/8 was identified as requiring repair	Complete well restoration works during Q3 (2010) GME	Well restoration works completed	Q4 (2010) GME	Reconciled
6	Q2 (2010) GME	Insufficient QA/QC sampling was completed (omission of Type II and Chromium field duplicates) as part of the GME.	Ensure sample/duplicate frequency addressed during Q4 (2010) GME	Additional QA/QC samples collected	Q4 (2010) GME	Reconciled

Data Gap ID	Event	Data Gap Description	Proposed Action	Completed Action	Event Completed	Status
7	Known Release Event	A release event was reported for Tank T92 resulting in uncharacterised impacts to soil and groundwater and uncertainty over the adequacy of the current internal operating area monitoring well network to monitor and manage any potential impact observed outside of the bunded area.	Completion of an ESA to investigate shallow soil and groundwater impact within the bunded area (including the installation of three temporary monitoring wells to assess the subsurface LNAPL impact) and the installation of two permanent monitoring wells down gradient of the release location. Gauging and sampling frequency of MW10/01 and 02 will be conducted consistent with other internal operations tankfarm monitoring wells from 2016 (gauge biannually, sample annually).	Installation of three temporary and two permanent monitoring wells to be incorporated into routine monitoring activities completed under the SGMP/GW SAP. Ongoing monitoring was undertaken during 2010 to 2012, with no evidence to suggest impact to groundwater beyond the tank bund, however results in 2012 to 2014 have idemtified longer chain hydrocarbon impact to groundwater outside of the tank bund. Based upon the analytical results from MW10/01 and MW10/02 reported over the past 24 months (including a historical maximum for TRH fractions during Q4 (2014) GME), this formerly reconciled data gap was reopened given the identification of sub-surface conditions that may be related to a formally identified loss of containment. Results of groundwater gauging and sampling of these wells undertaken in 2016 did not indicate the presence of LNAPL or changing environmental conditions from data collected in the past 24 months. On the basis of the above rationale, along with the completion of decommissioning and removal of upgradient source of impacts, this data gap is considered reconciled. Biannual gauging, without sampling will be continued throughout 2017 to assess for changes in conditions, primarily associated with residual soil impacts.	Q4 (2016) GME	Reconciled
7(a)	Known Release Event	New permanent wells MW10/01 and MW10/02 are required to be surveyed as well as MW09/14 located in Parramatta Terminal.	To be surveyed by subcontractor	MW10/01 and MW10/02 surveyed. MW09/14 located, gauged and sampled.	Q4 (2011) GME	Reconciled
8	Q4 (2010) GME	Unknown constituent contributing to elevated TPH concentrations and odour within MW95/4	Additional analysis completed for VOC scan and review of chromatograms	In consultation with the laboratory, review of the chromatograms tentatively identified the constituent as tetrahydrothiophene (a solvent, or odorant in natural gas).	Q4 (2010) GME	Reconciled
9	Auditor Comments	The relevance of deeper flow paths should be clarified in future to confirm that there are not separate pathways'.	The potential for existence and contamination of deeper aquifers, and their relevance in providing pathways for contaminants of concern to sensitive receptors, has been, and will continue to be investigated through intrusive investigations and routine groundwater monitoring.	The presence of a discrete deeper aquifer has not been identified through ESAs (comprising soil bores to 8m depth) completed during 2011 and 2012. The potential for groundwater impacts are also considered limited in vertical extent given the presence of a low-permeability layer of clay found consistently across the Site from a depth of 1 to 1.5mbgs down to the depth the deepest borings advanced (8mbgs), and the absence of COCs in groundwater samples collected from wells screened deeper than 4mbgs (historically referred to as 'deep' wells) during current and historic sampling. Ongoing monitoring of 'deep' wells will continue under the SGMP; however, separate pathways of contaminant migration in deeper flow paths is not considered likely based on the available ESA data.	NA	Reconciled (ongoing monitoring to assess for changes in conditions)
10	Known Release Event	A release event was reported for Tank 30 resulting in potential impacts to soil and groundwater and uncertainty over the adequacy of the current internal operating area monitoring well network to monitor and manage any potential impact observed.	Completion of an ESA to investigate shallow soil and groundwater impact within the bunded area (including the installation of two temporary monitoring wells to assess the subsurface LNAPL impact) and the gauging and sampling of existing permanent monitoring wells up and down gradient of the release location.	Advancement of six shallow soil bores within the bunded area of Tankfarm A1 (locations of release) and conversion of two of these soils bores to temporary groundwater monitoring wells. Gauging and sampling of recently installed groundwater monitoring wells, including wells up and down gradient of the release. ESA concluded impacts limited to shallow soils and that migration beyond the tank bund was unlikely. Ongoing monitoring has been undertaken during 2012, with no evidence to suggest impact to groundwater beyond the tank bund.	Q4 (2011) GME / Q1,Q2, Q3 and Q4 (2012) GME	Reconciled

Data Gap ID	Event	Data Gap Description	Proposed Action	Completed Action	Event Completed	Status
11a	Q4 (2011) GME	Emerging Contaminants of Concern - Per and Polyfluoro alkyl Substances (PFAS), including PFOS and PFOA.	Continue monitoring as per SAP to further develop understanding of conditions. Perform continual review of updated published regulatory guidance as it becomes available to fulfil regulatory requirements.	Based on the current dataset for PFAS in groundwater at the Site, the following was noted during the Q4 GME: - Concentrations of PFAS compounds reported in groundwater exceeding human health criteria for incidental direct contact were limited to monitoring wells within the Former Fire Training Area and one well within the southeast of Parramatta Terminal (MW91/1). - In addition to the above wells, recreational water quality criteria for PFOS + PFHxS were exceeded in monitoring wells in the following areas: - Former fire training area; - Upgradient boundary of CSM3; - Southwest portion of CSM3; - Eastern site boundary of CSM2 (MW94/12); - Northern and eastern boundaries of Parramatta Terminal (MW91/8, MW91/1, MW91/4). - Ecological direct toxicity trigger values were exceeded for PFOS at the above locations. The reported exceedances of adopted human health and ecological screening criteria are consistent with historical data (where available). Elevated PFAS concentrations identified during a first round of PFAS sampling within areas of Parramatta Terminal and the eastern site boundary have not been fully delineated, but are consistent with the source-pathway-receptor linkages previously identified for the Site. Modifications of the Groundwater Sampling and Analysis Plan are proposed to further characterise the nature and extent of these impacts during 2019 GMEs.	--	Ongoing (ongoing monitoring to assess for changes in conditions and assess against new published guidance criteria as it becomes available)

Data Gap ID	Event	Data Gap Description	Proposed Action	Completed Action	Event Completed	Status
11b		Elevated PFAS concentrations within On site groundwater Monitoring Wells.	Ongoing Groundwater Monitoring to further identify and delineate source areas. Mass-flux Assessment to determine potential for off-site migration Source Removal (if required)	A detailed summary of the current understanding of PFAS conditions at the site, I ncluding a mass flux estimate of potential off-site contriobution is provided with a PFAS Specific Preliminary Site Investigation Report, ERM (December 2018).	PFAS Specific PSI and Conceptual Site Model (ERM 2018)	Complete (ongoing monitoring to assess for changes in conditions)
12	Q1 (2013) GME	Changing Environmental Conditions - initial identification of LNAPL within MW12/16, MW12/26 and MW11/17.	Continued monitoring of impacted and down gradient wells, along with continued efforts to identify potential primary sources.	Continued monitoring undertaken during 2013 and 2014. Results of groundwater gauging of these wells undertaken as part of the Q2 (2016) GME indicated the continued presence of measureable LNAPL within MW12/16 and MW11/17, with dissolved phase concentrations of petroleum hydrocarbon constituents reported above solubility limits, representing the intermittent presence of LNAPL. Statistically increasing trend of dissolved phase TRH (C10-C36 Fraction) were identified in MW11/24, located adjacent LNAPL impacted monitoring well MW12/16 during the Q2 (2016) GME. This may represent a change in environmental conditions and given proximity to MW12/16, will be monitored and managed under this data gap. Results of groundwater gauging of these wells undertaken as part of the Q4 (2016) GME indicated the continued presence of LNAPL within these wells. Statistically increasing trends of benzene were identified in MW12/12, located adjacent LNAPL impacted monitoring well MW12/26 during the Q2 (2016) GME. This may represent a change in environmental conditions and given proximity to MW12/26, will be monitored and managed under this data gap.	Q4 (2014) GME	Reconciled (ongoing monitoring to assess for changes in conditions)
13	Q4 (2013) GME	Unknown constituent contributing to increasing trends in volatile TRH and odour within MW94/8 (CSM3 Southern Boundary)	Additional analysis completed for VOC scan and review of chromatograms	In consultation with the laboratory, review of the chromatograms tentatively identified the constituent as tetrahydrothiophene (a solvent, or odorant in natural gas).	Q2 and Q4 (2013) GMEs	Reconciled
14	Q4 (2013) GME	Changing Environmental Conditions - increasing trends in TRH within MW94/8 (CSM3 Southern Boundary) and MW96/7 (CSM2 Southern Boundary)	Continued monitoring of impacted and down gradient wells, along with continued efforts to identify potential primary sources.	Constituent contributing to TRH concentrations in MW94/8 identified. Detection of benzene at laboratory LOR in Q2 2016. Continued monitoring undertaken during2017 to confirm the presence of increasing trends or reconcile data gap. Benezene non-detaect in Q4 2017 and no trends reported. Q4 (2014) - Two additional rounds of data collected for MW96/7 confirmed to be non-detect for TRH.	MW96/7 - Reconciled Q4 (2014) MW94/8 - Reconciled Q4 (2017) Continued monitoring via SGMP	Reconciled
15	Q2 (2016) GME	Monitoring Wells Destroyed During Demolition Works in areas of identified LNAPL Impacts - MW95/14, MW12/18, MW12/19, MW11/21, MW11/27, MW11/29.	Assess the condition of the monitoring well and the need for replacement following the completion of the demolition works in the area.	Alteration to the GW SAP to incorporate monitoring of nearest downgradient wells biannually to assess for changes in environmental conditions until montioring well is repaired of reinstalled or remediation is undertaken.	Q2 and Q4 (2017) GMEs	Reconciled
16	Q4 (2017) GME	Potentially changing environmental conditions - The Q4 (2017) GME has reported increasing trends for COCs at locations MW11/07, MW11/04 and MW12/03, as well as histroical maximum concentrations at BH116 and MW09/08.	Ongoing efforts to identify the source of increasing trends (and historical maximums) of dissolved phase COPCs in this well will be conducted via biannual gauging and sampling of these wells.	Identified monitoring wells reported increasing trends in Q2 (2018) GME. Monitoring well BH116 was inaccessible.	--	Reconciled (ongoing monitoring to assess for changes in conditions)
17	Q4 (2017) GME	Potentially changing environmental conditions - LNAPL was observed for the first time at a measurable thickness (0.016m) within monitoring well MW09/2, located on a raised roadway between Tankfarm E1 and Tankfarm E2 within CSM2.	Ongoing assessment via biannual gauging and sampling of this well (noting current understanding of this area of the site is well established via previous investigations).	No LNAPL was recorded during the Q2 (2018) GME at MW09/2.	--	Reconciled (ongoing monitoring to assess for changes in conditions)
18	Q4 (2018) GME	Potentially changing environmental conditions - LNAPL was observed for the first time at a measurable thickness (0.045m) within monitoring well MW18/24, located in the former footprint of a laboratory, within the south-western portion of CSM3.	Ongoing assessment via biannual gauging and sampling of this well (noting current understanding of this area of the site is well established via previous investigations).	Ongoing monitoring	Q4 (2018) GME	Reconciled (ongoing monitoring to assess for changes in conditions)

	Ongoing
	Reconciled

APPENDIX H CRC EXTENSION MODEL

CRC CARE

RISK / HEALTH SCREENING LEVEL MODEL
GROUNDWATER SOURCE

INPUT SCREEN

Enter number of simulation columns (1-20)
12

SIMULATION NO.	1	2	3	4	5	6	7	8	9	10	11	12
CALCULATION TYPE												
0-Forward Risk, 1-HSL	1	1	1	1	1	1	1	1	1	1	1	1
Select default scenario parameters	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D	HSL-D
Select default chemical parameters	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	TPH >C6-C8 aliphatic	TPH >C8-C10 aliphatic	TPH >C10-C12 aliphatic	TPH >C12-C16 aliphatic	TPH >C8-C10 aromatic	TPH >C10-C12 aromatic	TPH >C12-C16 aromatic
Comments												
Groundwater source concentration (µg/L)	1	1	1	1	1	1	1	1	1	1	1	1
CHEMICAL DATA												
PHYSICAL PROPERTIES												
Molecular weight (g/mol)	78.11	92.14	106.17	106.17	128.18	110	130	160	210	120	140	150
Diffusivity in air (cm^2/s)	0.088	0.087	0.075	0.0714	0.059	0.07	0.06	0.05	0.04	0.07	0.06	0.06
Diffusivity in water (cm^2/s)	9.80E-06	8.60E-06	7.80E-06	9.34E-06	7.50E-06	1.00E-05	8.00E-06	6.00E-06	5.00E-06	8.00E-06	8.00E-06	8.00E-06
Henry's Law Constant at Ref Temp (atm-m^3/mol)	5.537E-03	6.610E-03	7.856E-03	6.610E-03	4.390E-04	1.878E+00	3.902E+00	3.902E+00	3.902E+00	1.024E-02	8.293E-03	2.366E-03
Reference temperature (^oC)	25	25	25	25	25	25	25	25	25	25	25	25
Organic carbon partition coefficient (Koc) (cm^3/g)	1.66E+02	2.69E+02	5.13E+02	4.47E+02	1.82E+03	3.16E+03	3.16E+04	3.16E+05	5.01E+06	1.26E+03	3.16E+03	6.31E+03
Pure component solubility in water (mg/L)	1.75E+03	5.26E+02	1.69E+02	1.98E+02	3.10E+01	1.60E+01	6.90E-01	5.30E-02	3.50E-04	1.10E+02	3.00E+01	9.30E+00
Solubility Adjustment for Mixtures												
0-mass fraction, 1-mole fraction calculation	1	1	1	1	1	1	1	1	1	1	1	1
Mass or mole fraction	0.0336	0.11508	0.02282	0.10458	0.00546	0.13104	0.28	0.2058	0.4732	0.06048	0.0504	0.1624
Fuel/TPH average molecular weight (g/mol)												
Henry's Law Temperature Adjustment												
Enthalpy of vaporization at the normal boiling point (cal/mol)	7342	7930	8501	8569.666667	10373	6895.15	8130	12260	10400	9344.9	10373	12155
Normal boiling point (^oK)	353.24	383.78	409.34	413.7966667	491.14	341.7	399	447	489	440.095	491.14	550.54
Critical temperature (^oK)	562.16	591.79	617.2	621.1833333	748.4	508	569	617	658	643.21	748.4	803.15
TOXICOLOGICAL / EXPOSURE PROPERTIES												
0-cancer endpoint, 1-non-cancer endpoint	0	1	1	1	1	1	1	1	1	1	1	1
Inhalation cancer unit risk ($(\mu g/m^3)^{-1}$)	6.00E-06											
Inhalation reference concentration ($\mu g/m^3$)	30	5000	1300	870	3	18400	1000	1000	1000	200	200	200
Fraction of RfC to background exposure	0.2	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
VAPOUR EMISSION SCENARIO PARAMETERS												
Average temperature of groundwater (^oC)	25	25	25	25	25	25	25	25	25	25	25	25
Advection depth (cm)	50	50	50	50	50	50	50	50	50	50	50	50
Number of soil texture layers	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous	homogeneous
Thickness of soil stratus A (cm)	100	100	100	100	100	100	100	100	100	100	100	100
Thickness of soil stratus B (cm)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Thickness of soil stratus C (cm)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Depth of groundwater from ground surface (cm) (calculated sum of soil layer thicknesses)	100	100	100	100	100	100	100	100	100	100	100	100
Selected soil layer properties for groundwater table	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A	Layer A
Maximum capillary thickness - by layer (cm)	50	50	50	50	50	50	50	50	50	50	50	50
Capillary thickness (cm)	20	20	20	20	20	20	20	20	20	20	20	20
Stratus A Properties												
Default soil properties	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND
Soil dry bulk density (g/cm^3)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625
Soil air porosity (unitless)	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Soil water porosity (unitless)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Fraction organic carbon content	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
Stratus B Properties												
Default soil properties												
Soil dry bulk density (g/cm^3)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Soil air porosity (unitless)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Soil water porosity (unitless)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Fraction organic carbon content	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled

Stratus C Properties												
Default soil properties												
Soil dry bulk density (g/cm^3)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Soil air porosity (unitless)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Soil water porosity (unitless)	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Fraction organic carbon content	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
Capillary Zone Properties												
Default soil properties	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND
Soil dry bulk density (g/cm^3)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625
Soil air porosity (unitless)	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039
Soil water porosity (unitless)	0.348	0.348	0.348	0.348	0.348	0.348	0.348	0.348	0.348	0.348	0.348	0.348
Dirt in Cracks Properties												
Default soil properties	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND	SAND
Soil dry bulk density (g/cm^3)	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625	1.625
Soil air porosity (unitless)	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257	0.257
Soil water porosity (unitless)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Building												
Floor length (cm)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Floor width (cm)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
Foundation thickness (cm)	15	15	15	15	15	15	15	15	15	15	15	15
Enclosed space height (cm)	300	300	300	300	300	300	300	300	300	300	300	300
Air exchange rate (h^{-1})	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Aerial crack fraction	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Advective Transport												
0-Qs/Qb, 1-specifiy Qs, 2-Pressure Diff calculate	0	0	0	0	0	0	0	0	0	0	0	0
Qsoil/Qbuilding	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Average vapour flowrate into building (Qsoil) (L/min)												
Soil-building pressure differential (g/cm/s^2)												
Soil-vapour permeability in upper soil profile (kv) (cm^2)	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08	6.0E-08
Building Type												
0-slab on ground or basement, 1-crawl space	0	0	0	0	0	0	0	0	0	0	0	0
Crawl space to indoor air attenuation factor												
Vapour Degradation												
Applied attenuation factor for vapour degradation	1	1	1	1	1	1	1	1	1	1	1	1
EXPOSURE / RISK DATA												
Exposure frequency (d/yr)	240	240	240	240	240	240	240	240	240	240	240	240
Average time (cancer) (yr)	70	70	70	70	70	70	70	70	70	70	70	70
Average time (non-cancer) (yr)	30	30	30	30	30	30	30	30	30	30	30	30
Exposure duration (yr)	30	30	30	30	30	30	30	30	30	30	30	30
Exposure time (hr/d)	8	8	8	8	8	8	8	8	8	8	8	8
HSL RISK TARGETS												
Target cancer risk	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05
Target non-cancer HI	1	1	1	1	1	1	1	1	1	1	1	1
COMBINE RISK SCENARIOS												
0												

CRC CARE

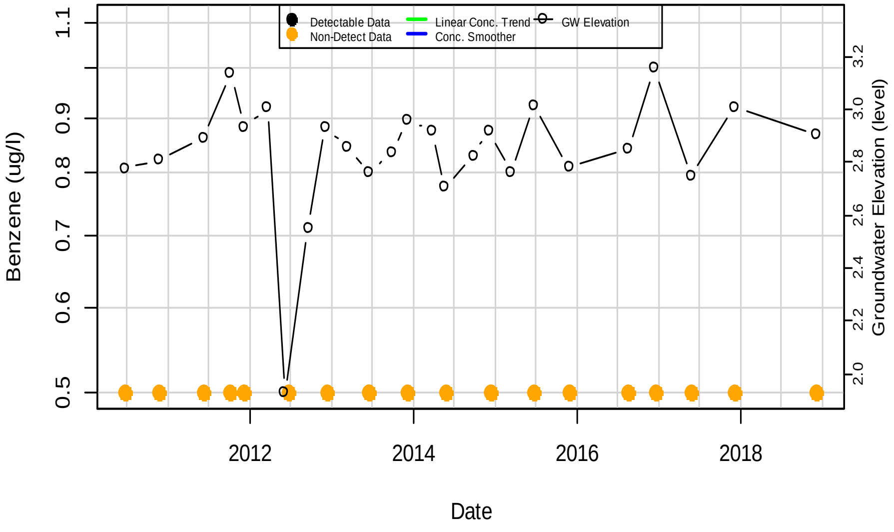
RISK / HEALTH SCREENING LEVEL MODEL
GROUNDWATER SOURCE

RESULTS SCREEN

SIMULATION NO.	1	2	3	4	5	6	7	8	9	10	11	12
VOLATILSATION FACTOR (noncapped) (ug/m3)/(ug/L)	3.67E-03	3.87E-03	3.81E-03	3.53E-03	1.24E-03	5.79E-01	1.03E+00	8.59E-01	6.87E-01	4.40E-03	3.44E-03	1.87E-03
EFFECTIVE SOLUBILITY LIMIT (ug/L)	5.88E+04	6.05E+04	3.86E+03	2.07E+04	1.69E+02	2.10E+03	1.93E+02	1.09E+01	1.66E-01	6.65E+03	1.51E+03	1.51E+03
THEORETICAL MAXIMUM AIR CONCENTRATION (ug/m3)	2.16E+02	2.34E+02	1.47E+01	7.31E+01	2.10E-01	1.21E+03	1.99E+02	9.37E+00	1.14E-01	2.93E+01	5.20E+00	2.82E+00
THEORETICAL MAXIMUM AIR CONCENTRATION WITH ATTENUATION (ug/m3)	2.16E+02	2.34E+02	1.47E+01	7.31E+01	2.10E-01	1.21E+03	1.99E+02	9.37E+00	1.14E-01	2.93E+01	5.20E+00	2.82E+00
GROUNDWATER CONCENTRATION (ug/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BREATHABLE AIR CONCENTRATION - vapour non-limited (ug/m3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BREATHABLE AIR CONCENTRATION - vapour limited (ug/m3)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CANCER RISK - vapour non-limited	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CANCER RISK - vapour limited	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HSL - vapour non-limited (ug/L)	4.84E+03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HSL - vapour limited (ug/L)	4.84E+03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NONCANCER HAZARD INDEX - vapour non-limited	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NONCANCER HAZARD INDEX - vapour limited	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HSL - vapour non-limited (ug/L)	NA	5.90E+06	1.56E+06	1.12E+06	1.10E+04	1.30E+05	3.99E+03	4.78E+03	5.98E+03	1.87E+05	2.39E+05	4.40E+05
HSL - vapour limited (ug/L)	NA	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
	4.84E+00	5.90E+03	1.56E+03	1.12E+03	1.10E+01	1.30E+02	3.99E+00	4.78E+00	5.98E+00	1.87E+02	2.39E+02	4.40E+02
						0.231	0.641	0.208	0.598	0.128	0.04	0.153
						1.77E-03	1.61E-01	4.35E-02	1.00E-01	6.86E-04	1.67E-04	3.48E-04
										1	0.999	
										6.12E+00	6.94E+00	
	1.75E+03	5.26E+02	1.69E+02	1.98E+02	3.10E+01	1.60E+01	6.90E-01	5.30E-02	3.50E-04	1.10E+02	3.00E+01	9.30E+00
	0.0336	0.11508	0.02282	0.10458	0.00546	0.13104	0.28	0.2058	0.4732	0.06048	0.0504	0.1624
		PSH	PSH	PSH		PSH	PSH	PSH	PSH	PSH	PSH	PSH
	5.88E+01	6.05E+01	3.86E+00	2.07E+01	1.69E-01	2.10E+00	1.93E-01	1.09E-02	1.66E-04	6.65E+00	1.51E+00	1.51E+00
		PSH	PSH	PSH	PSH	PSH	PSH	PSH	PSH	PSH	PSH	PSH

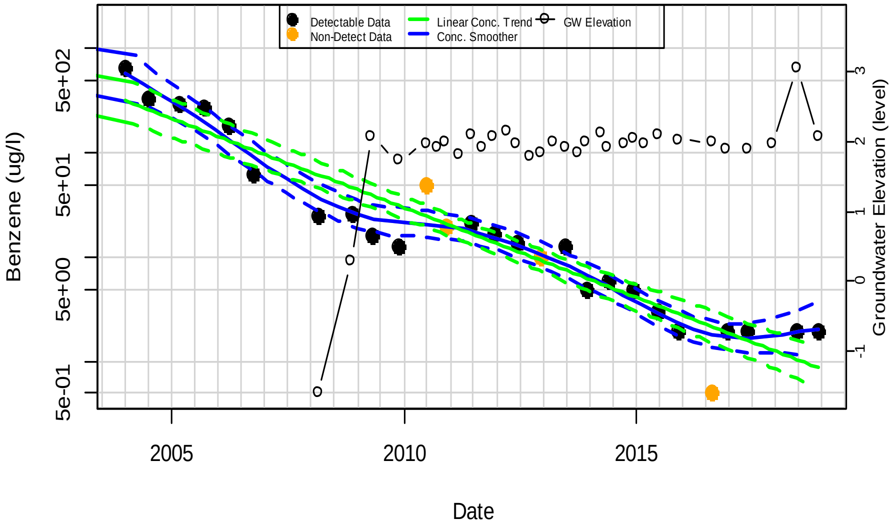
APPENDIX I GWSDAT TREND PLOT

Benzene in BH116



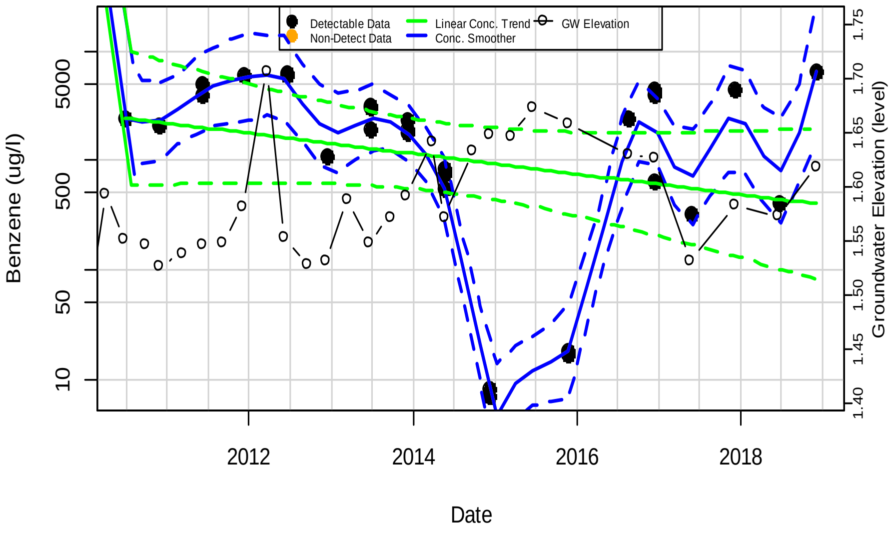
Benzene in MW02/1

Mann-Kendall P.Value= <0.01; Half-Life= 642 days

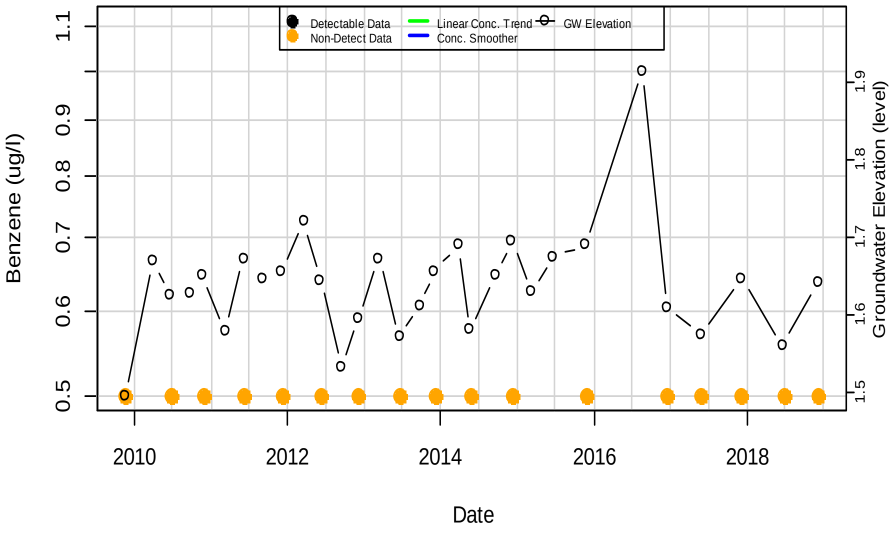


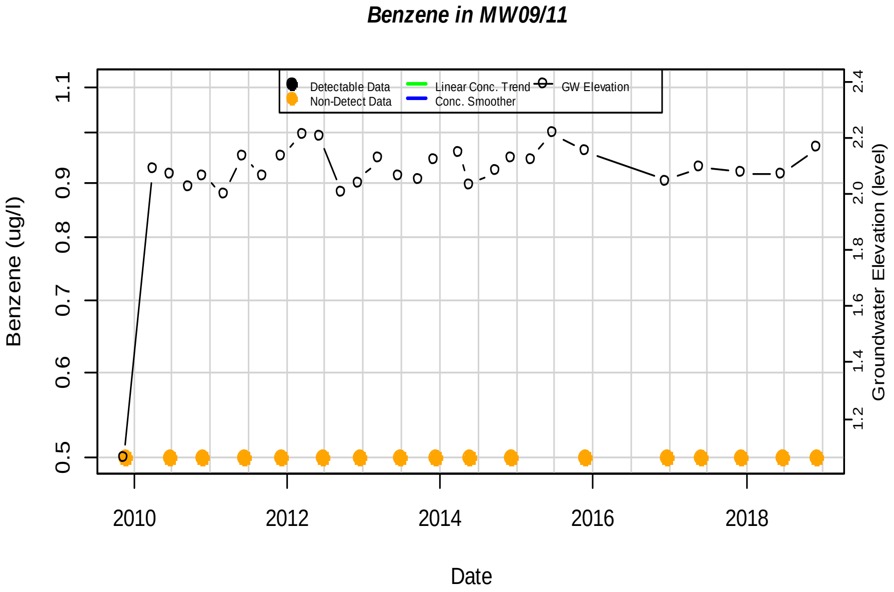
Benzene in MW09/1

Mann-Kendall P.Value= 0.0824; Half-Life= 1181 days

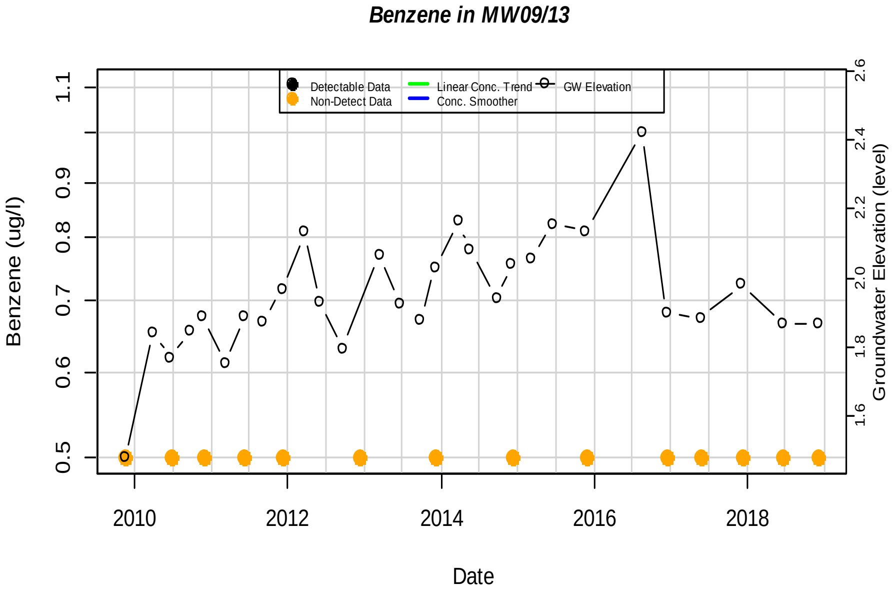


Benzene in MW09/10

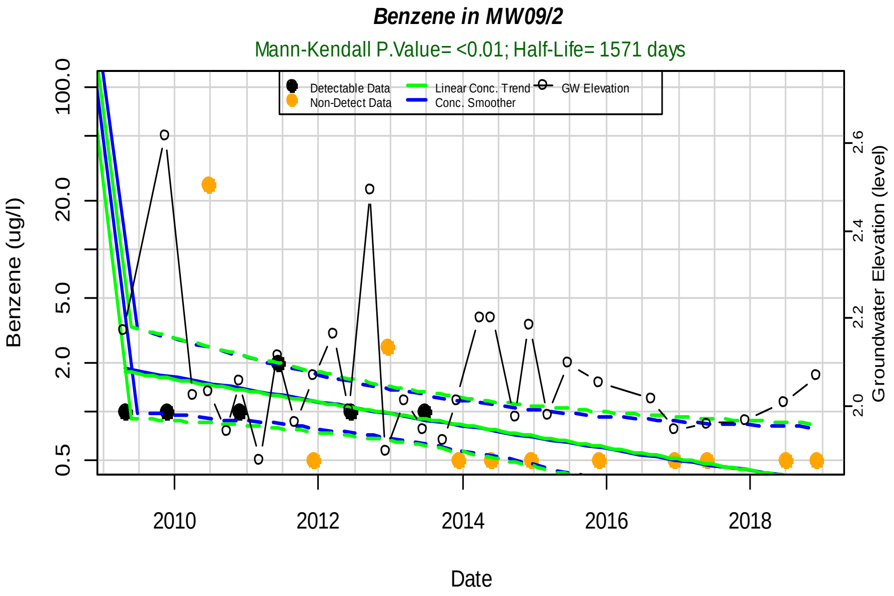




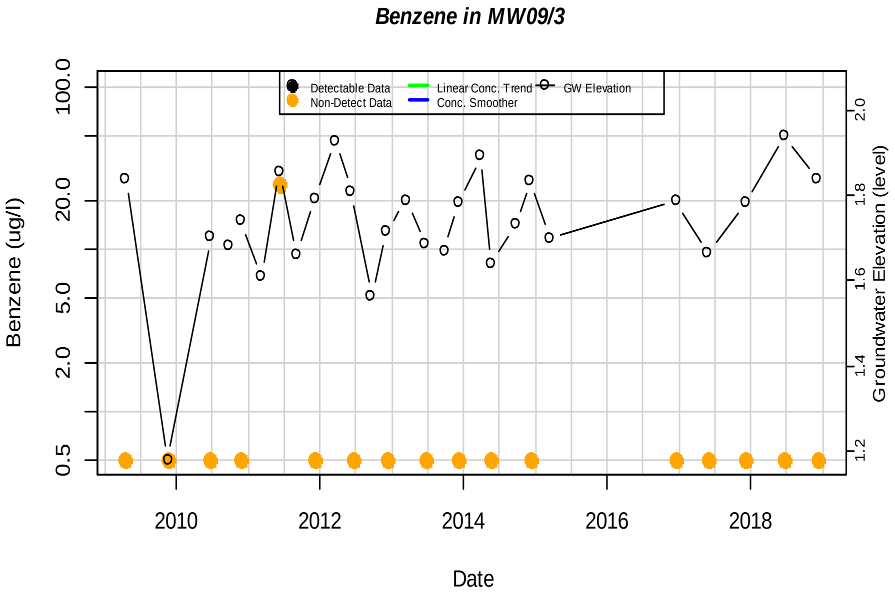
Benzene in MW09/11
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



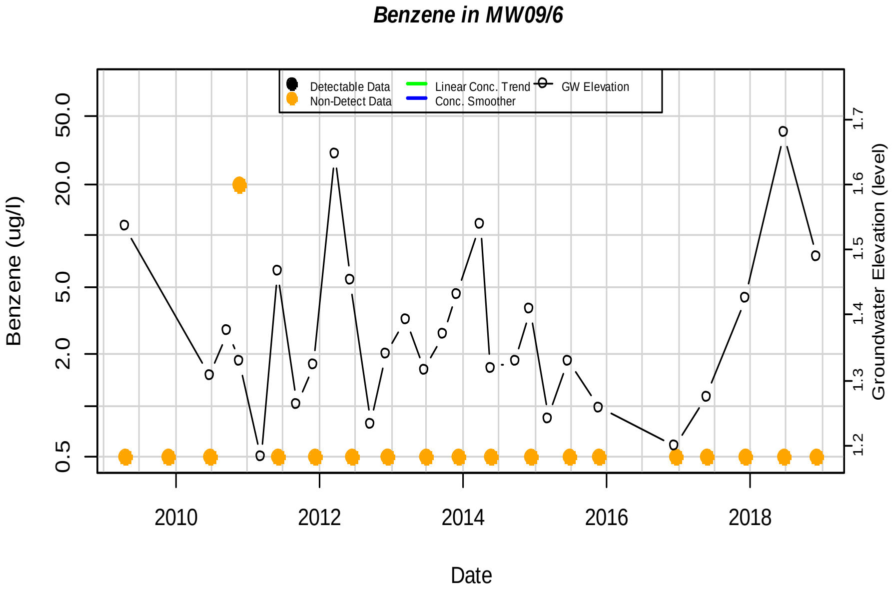
Benzene in MW09/13
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

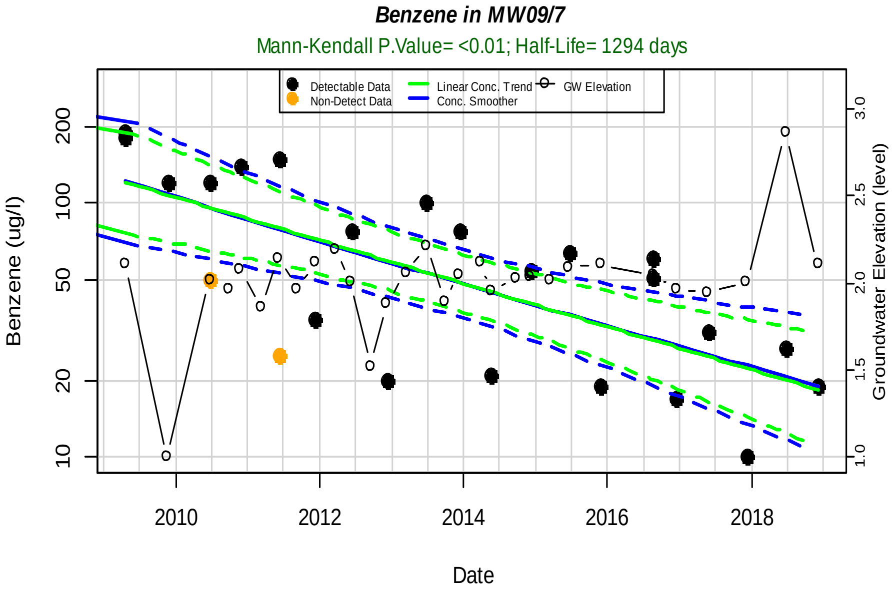


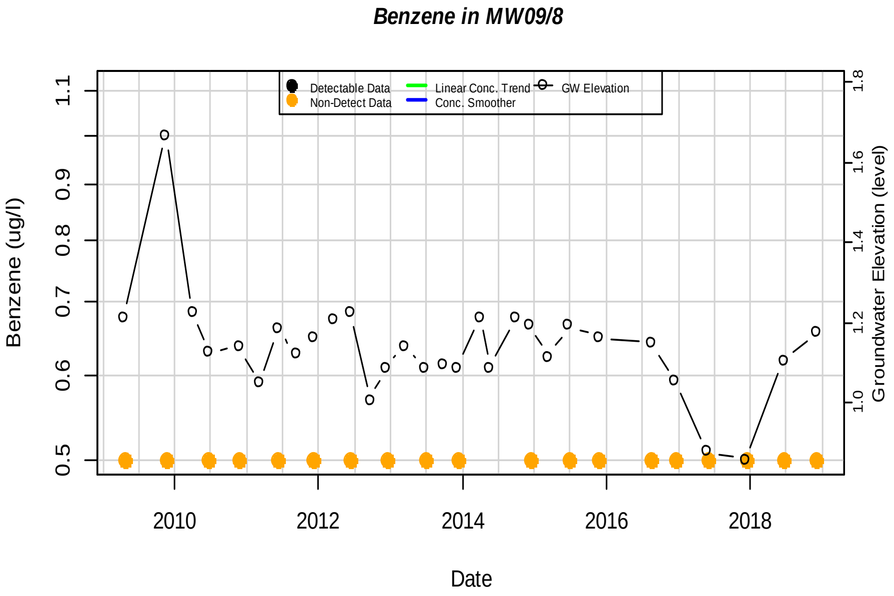
Benzene in MW09/2
Mann-Kendall P.Value= <0.01; Half-Life= 1571 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

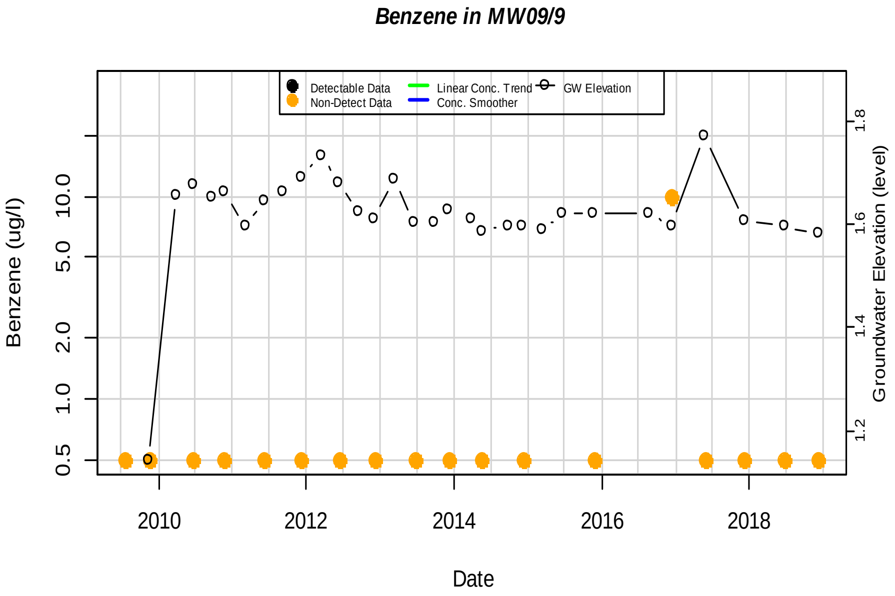


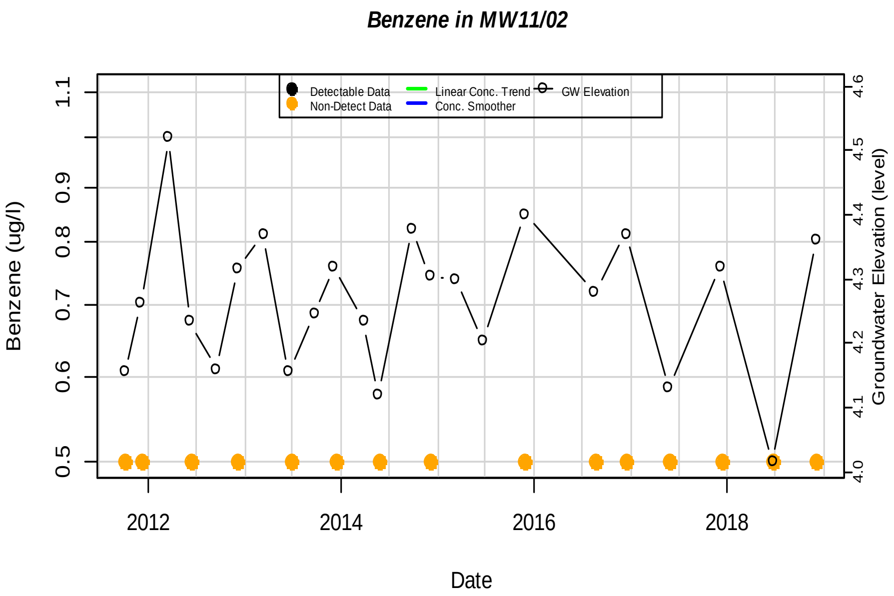
Benzene in MW09/3
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

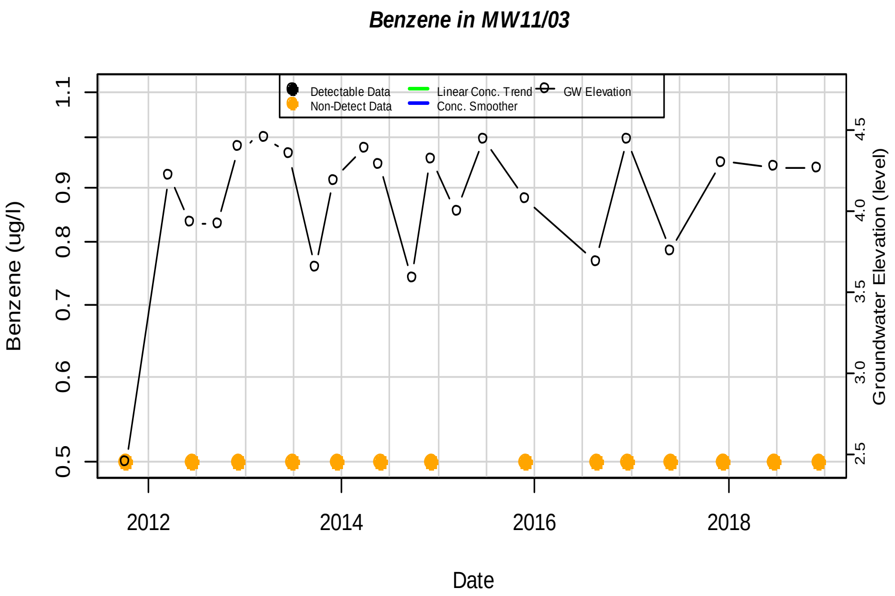

Benzene in MW09/6
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
0.5
2.0
5.0
20.0
50.0
1.2
1.3
1.4
1.5
1.6
1.7
2010
2012
2014
2016
2018

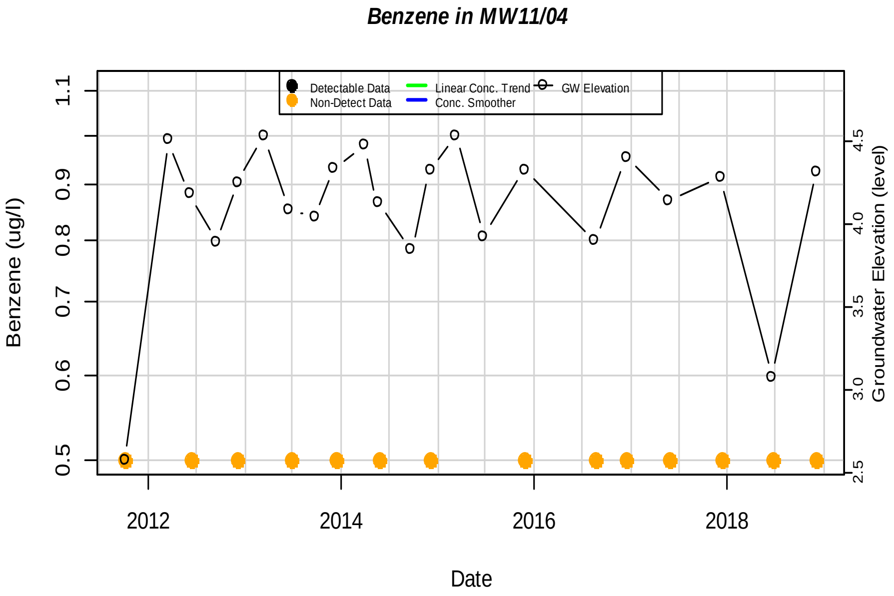

Benzene in MW09/7
Mann-Kendall P.Value= <0.01; Half-Life= 1294 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
10
20
50
100
200
1.0
1.5
2.0
2.5
3.0
2010
2012
2014
2016
2018

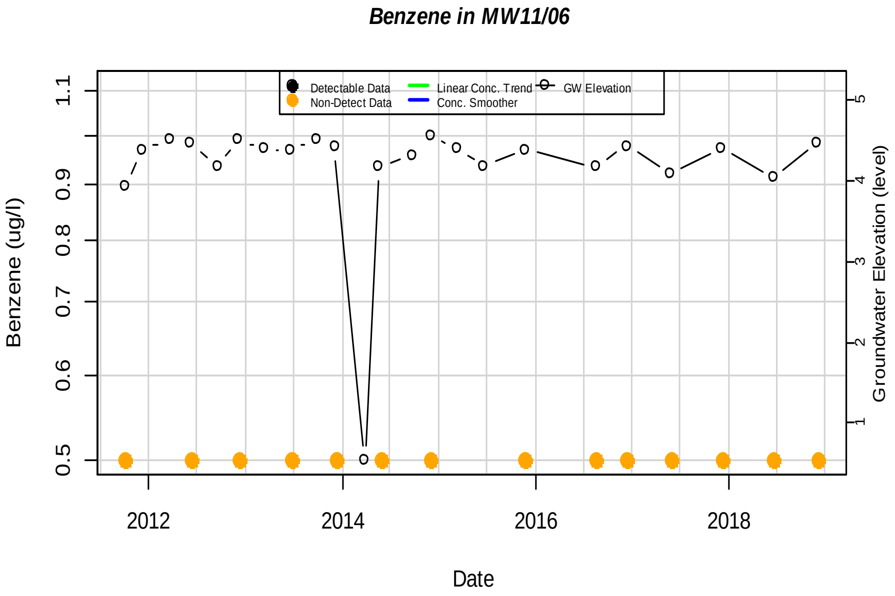

Benzene in MW09/8
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
0.5
0.6
0.7
0.8
0.9
1.1
1.0
1.2
1.4
1.6
1.8
2010
2012
2014
2016
2018

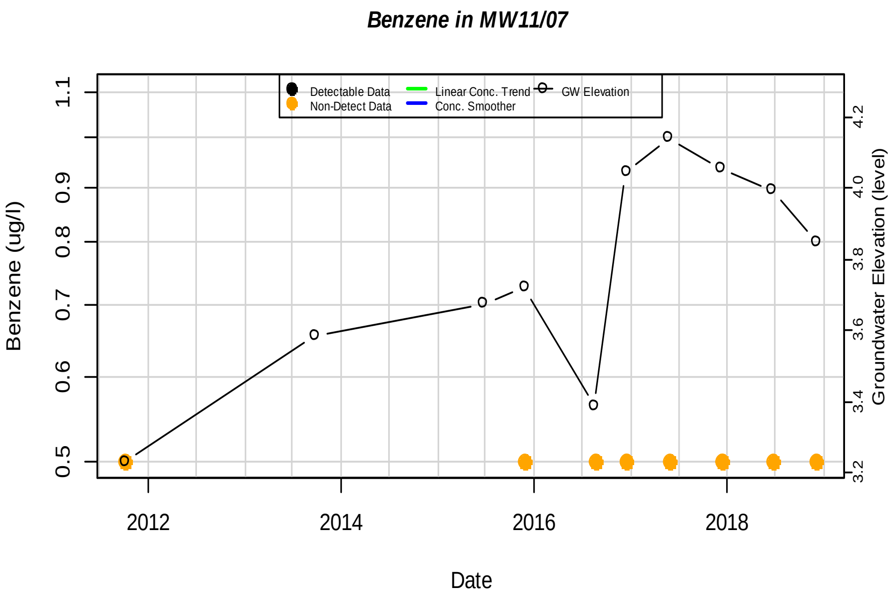

Benzene in MW09/9
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
0.5
1.0
2.0
5.0
10.0
1.2
1.4
1.6
1.8
2010
2012
2014
2016
2018

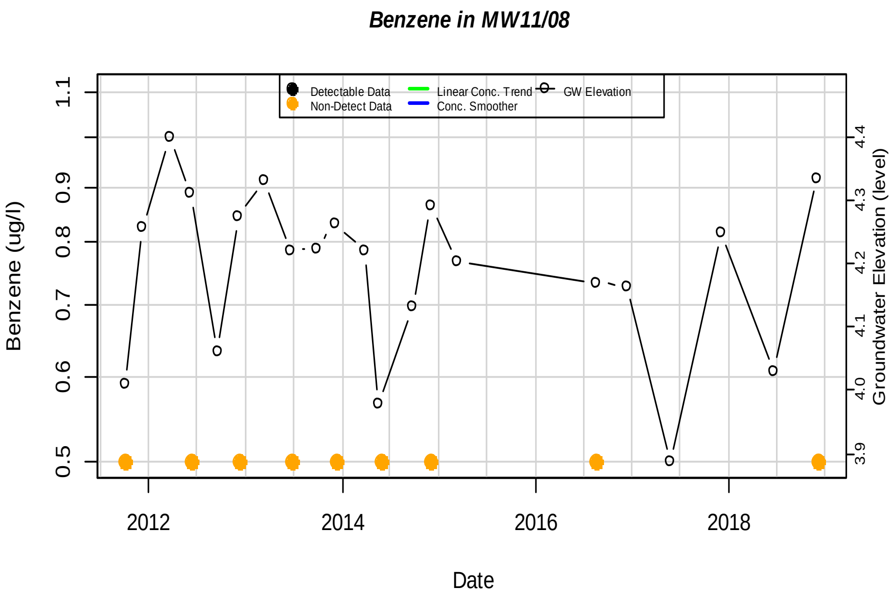

Benzene in MW11/02
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

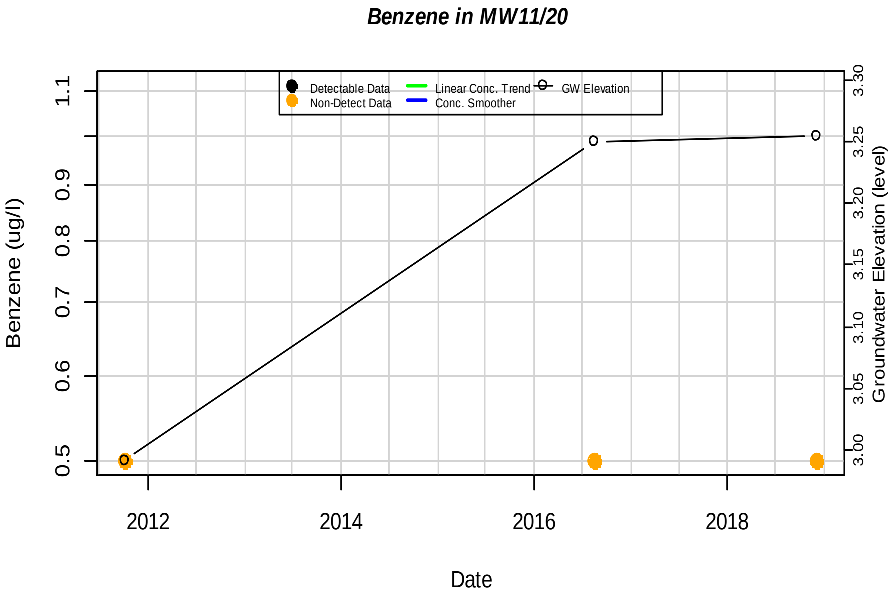

Benzene in MW11/03
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

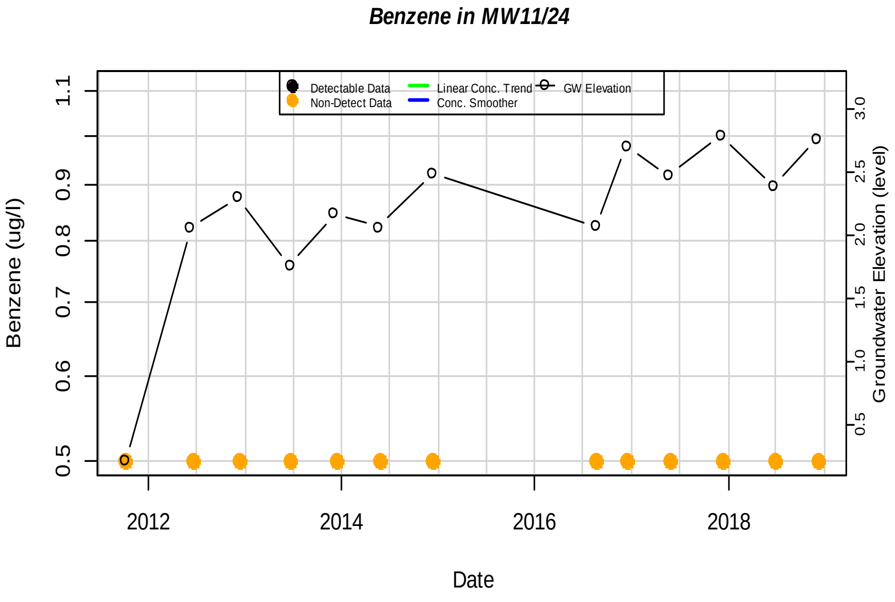

Benzene in MW11/04
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

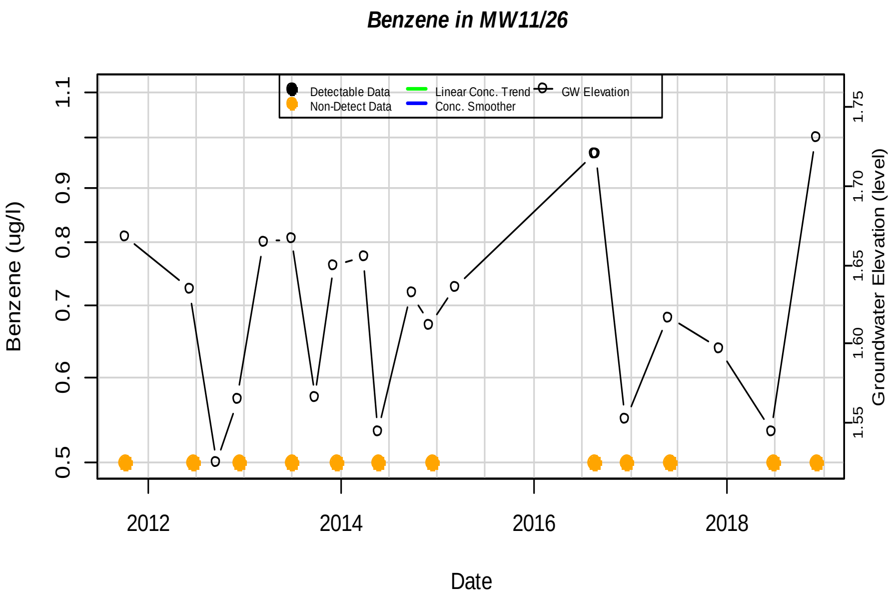

Benzene in MW11/06
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

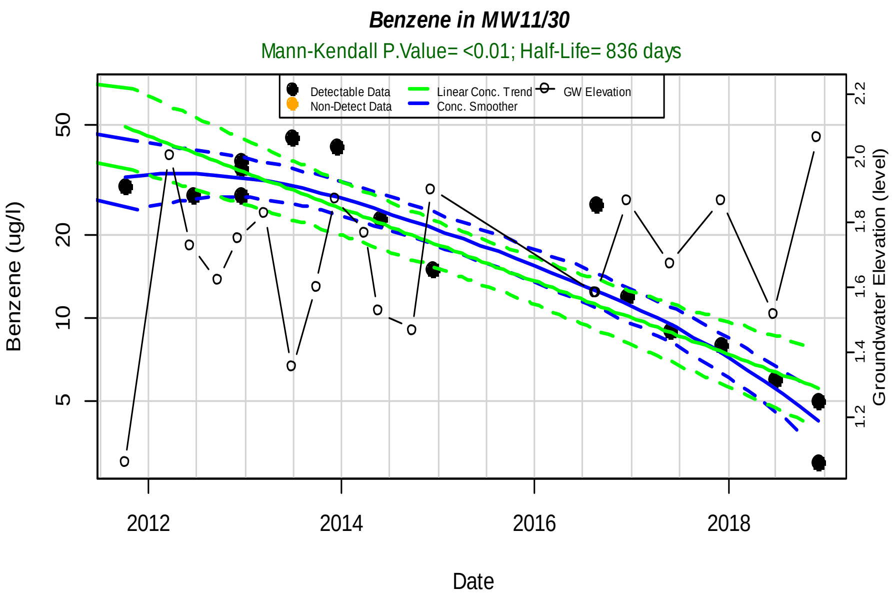

Benzene in MW11/07
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

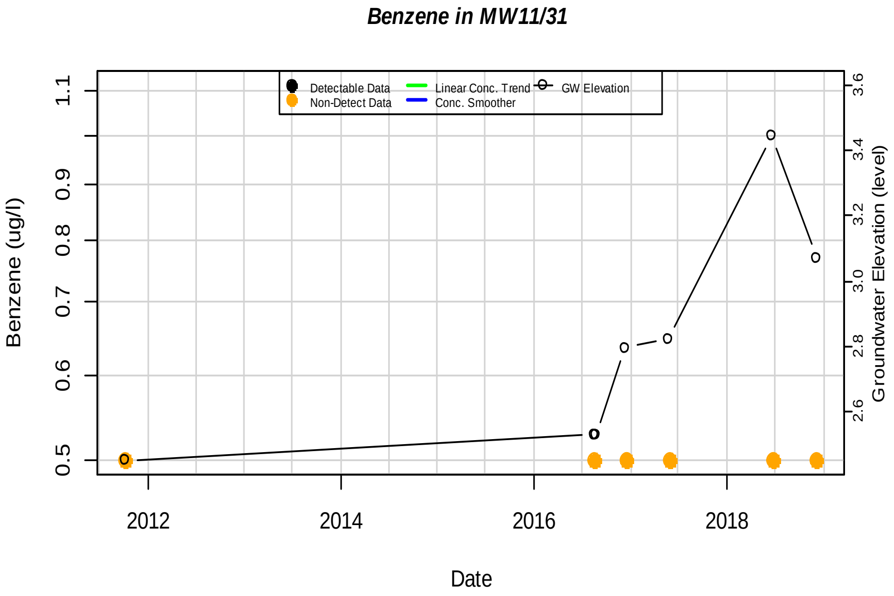

Benzene in MW11/08
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

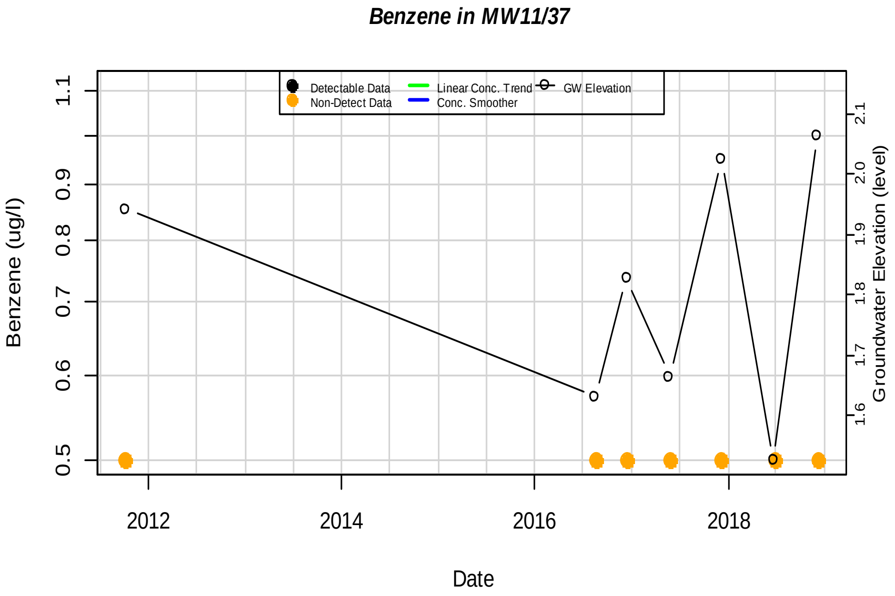

Benzene in MW11/20
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018


Benzene in MW11/24
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

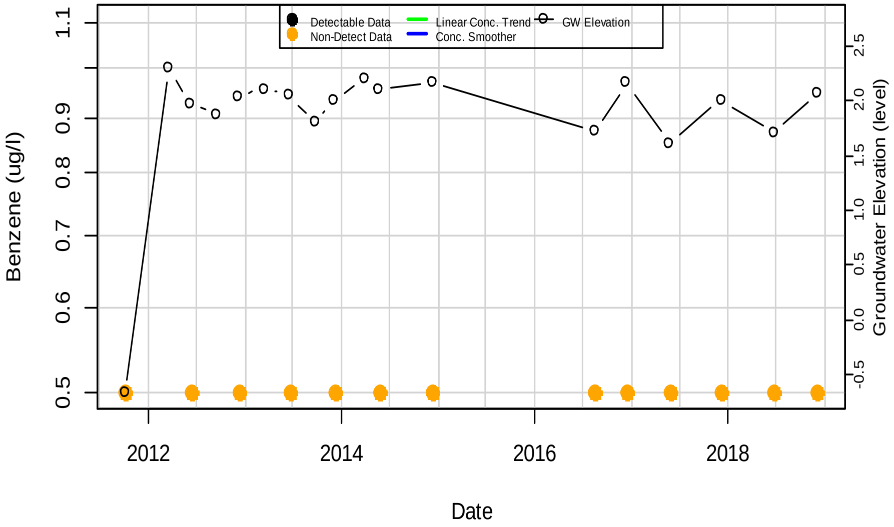

Benzene in MW11/26
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW11/30
Mann-Kendall P.Value= <0.01; Half-Life= 836 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

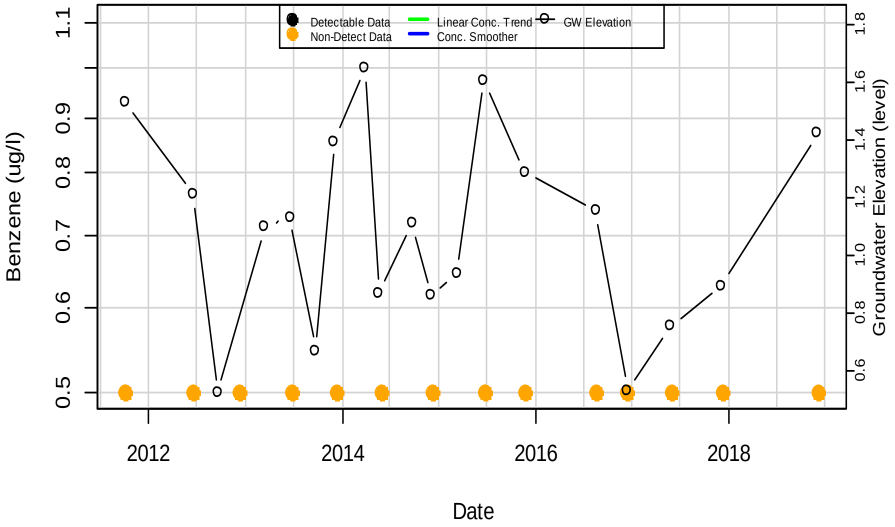

Benzene in MW11/31
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW11/37
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

Benzene in MW11/41

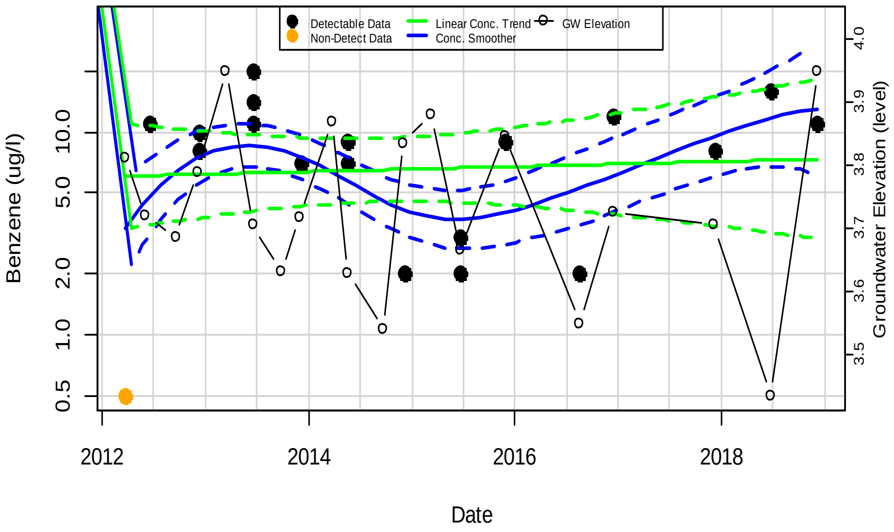


Benzene in MW11/46



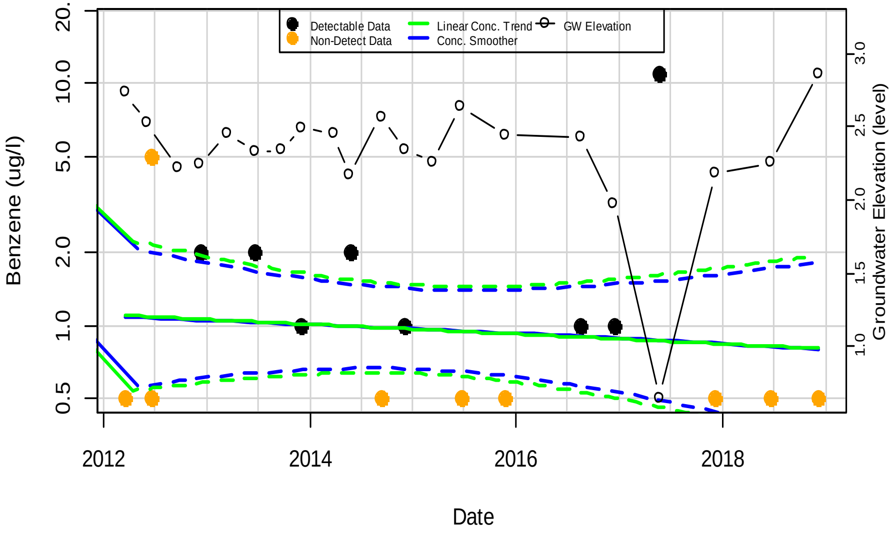
Benzene in MW12/03

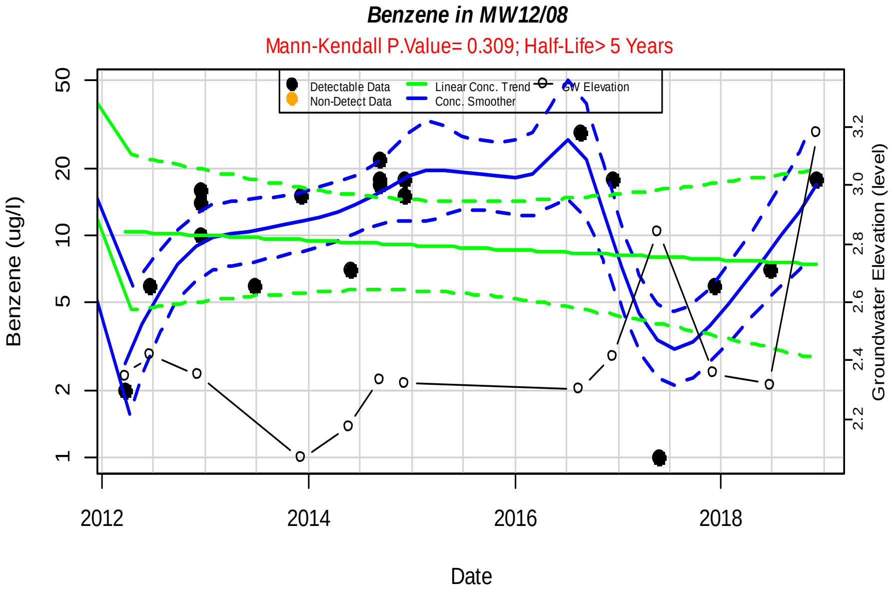
Mann-Kendall P.Value= 0.508; Half-Life> -5 Years

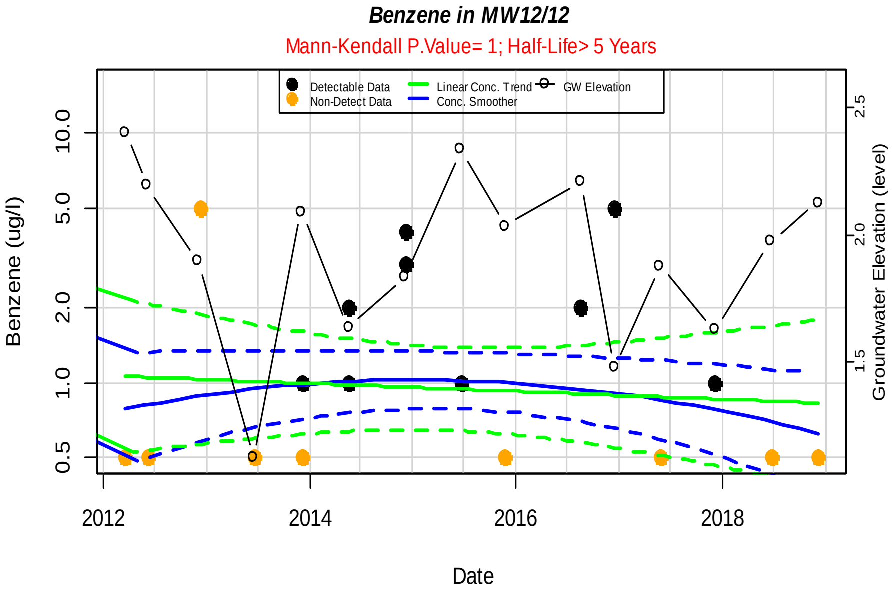


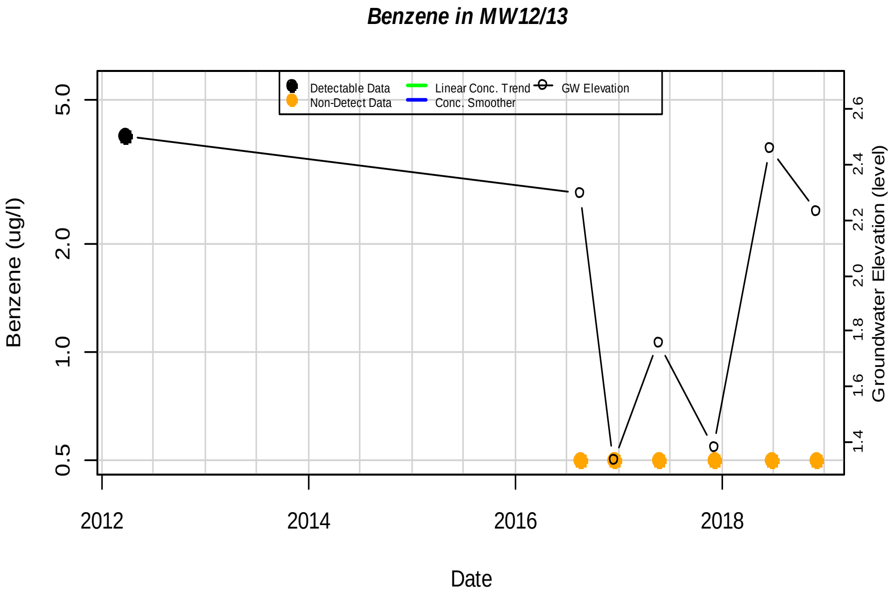
Benzene in MW12/07

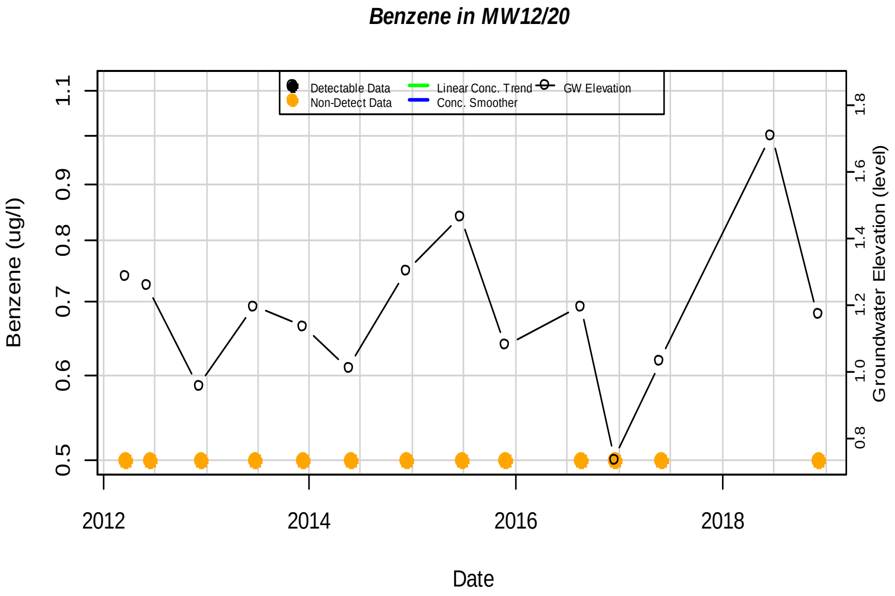
Mann-Kendall P.Value= 0.377; Half-Life> 5 Years



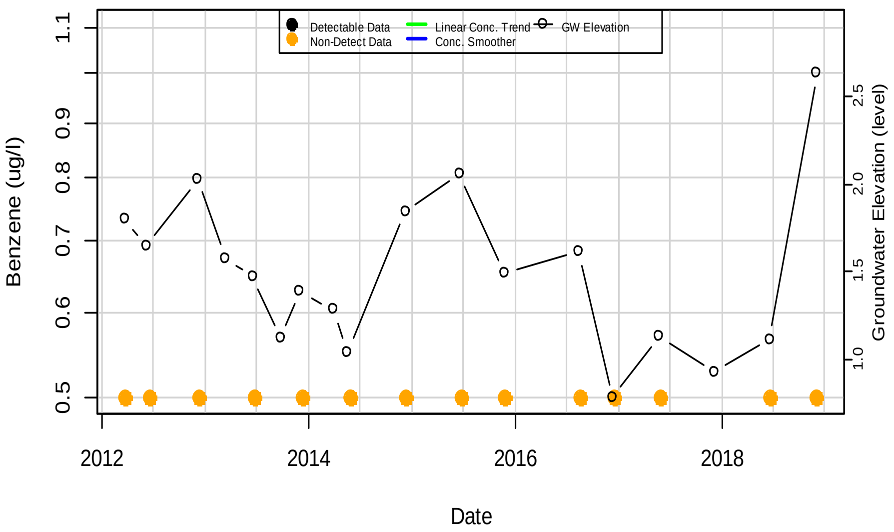

Benzene in MW12/08
Mann-Kendall P.Value= 0.309; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW12/12
Mann-Kendall P.Value= 1; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

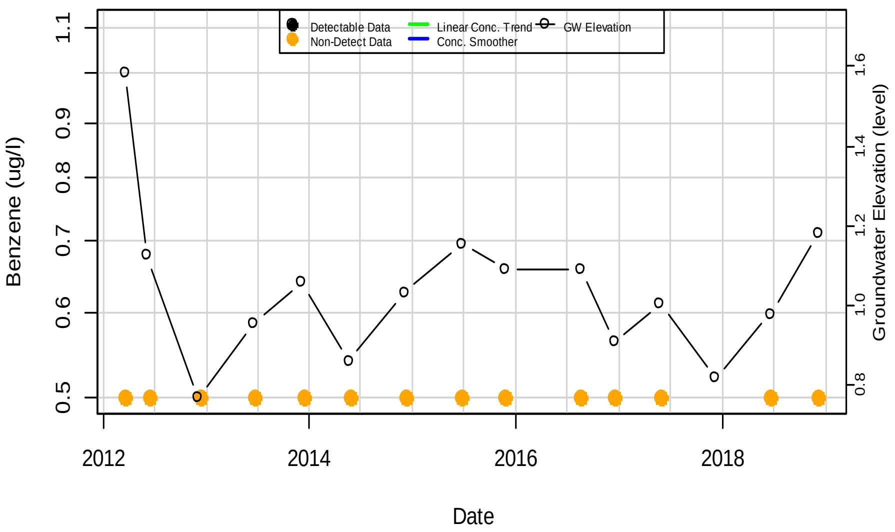

Benzene in MW12/13
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW12/20
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

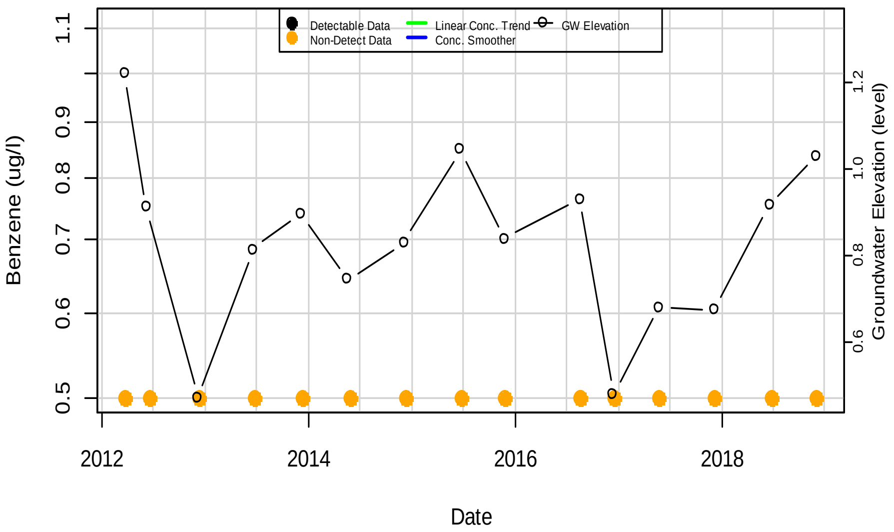
Benzene in MW12/21



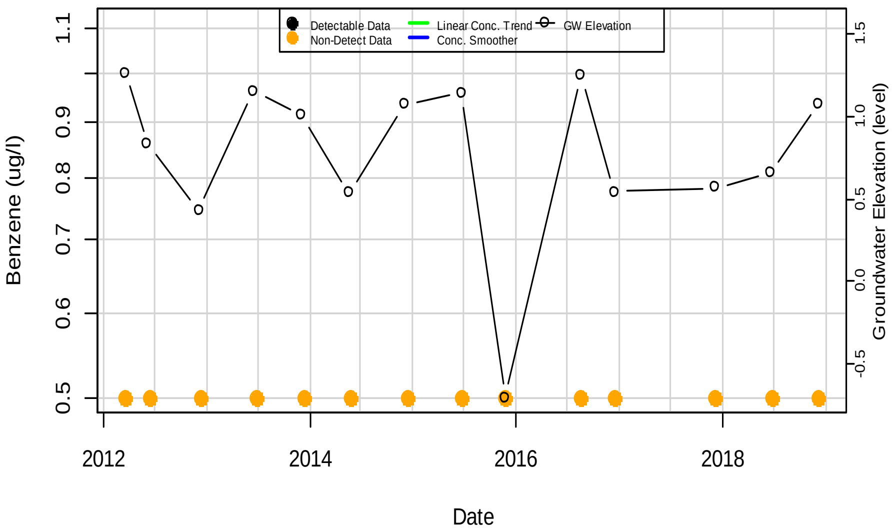
Benzene in MW12/22

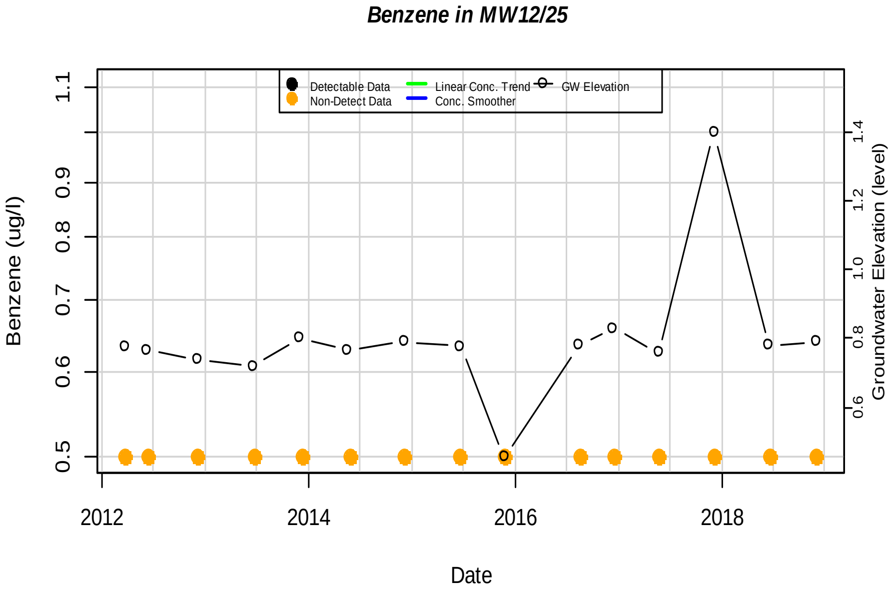


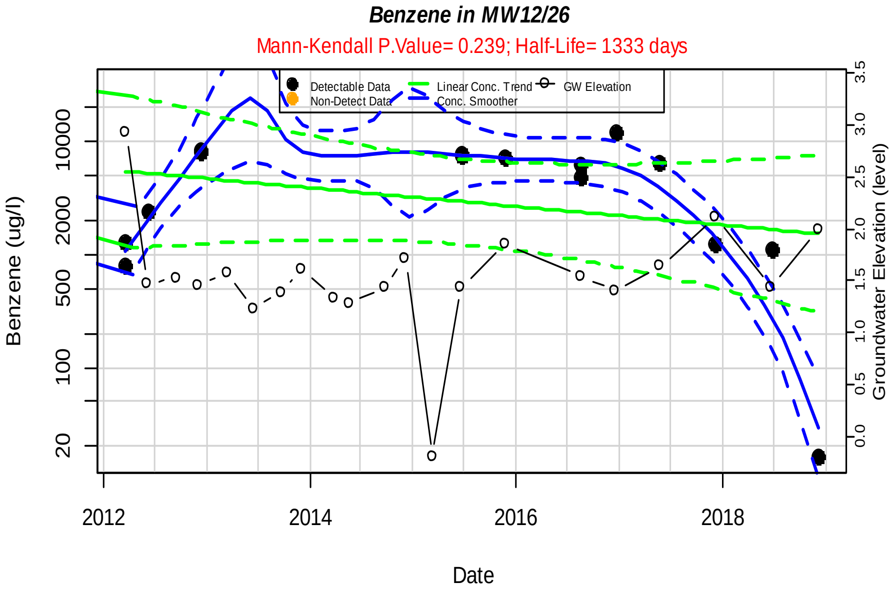
Benzene in MW12/23

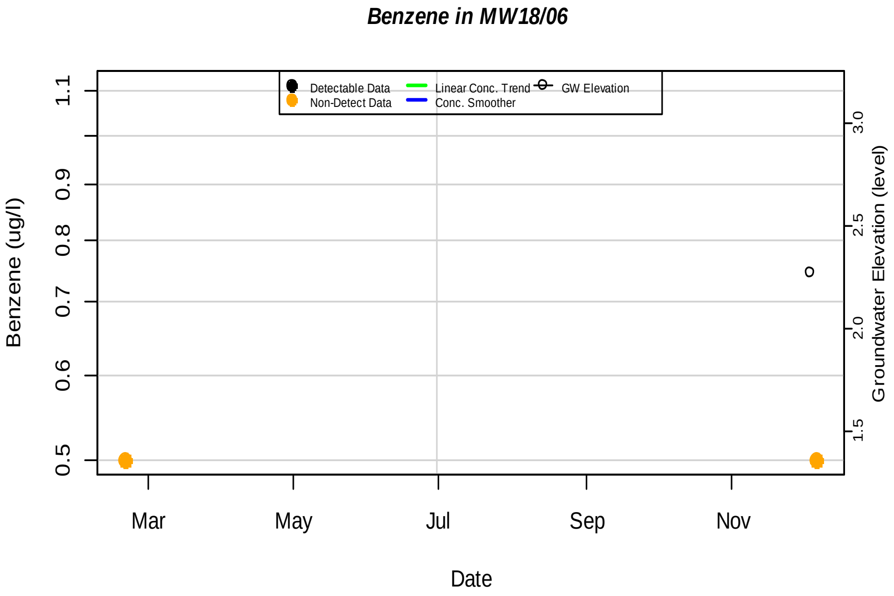


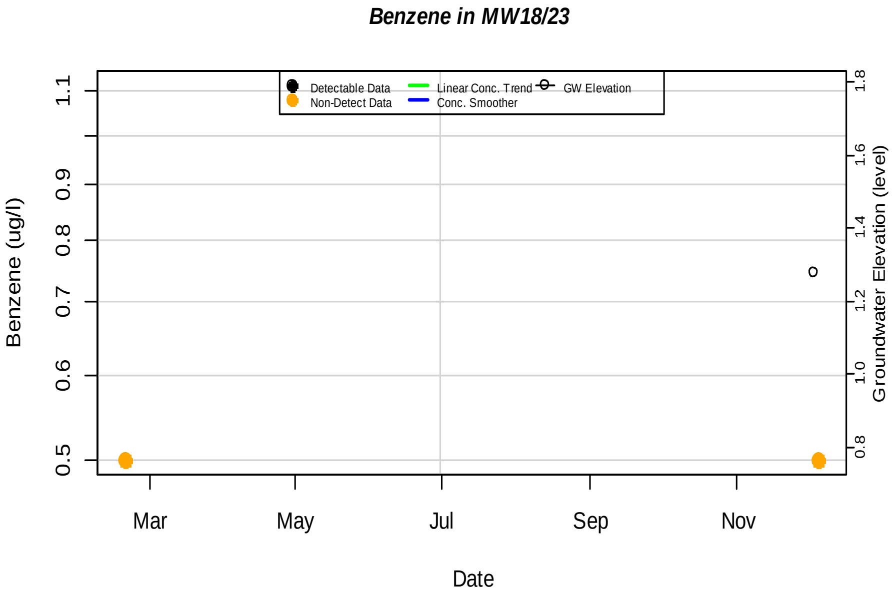
Benzene in MW12/24

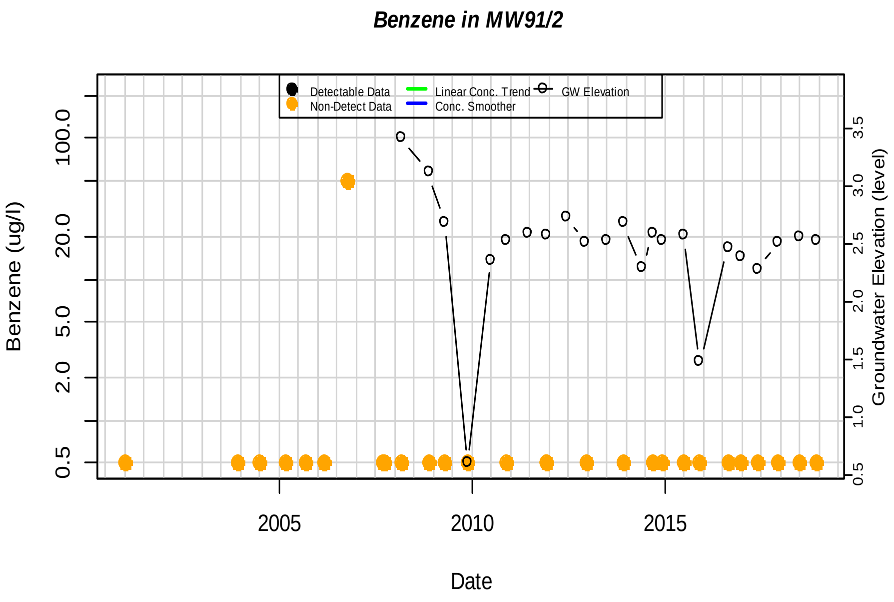


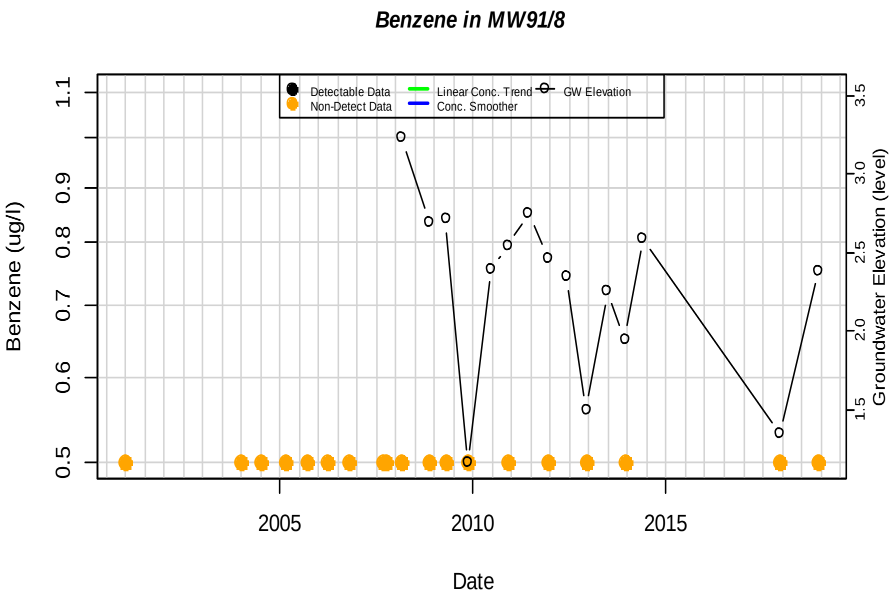

Benzene in MW12/25
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

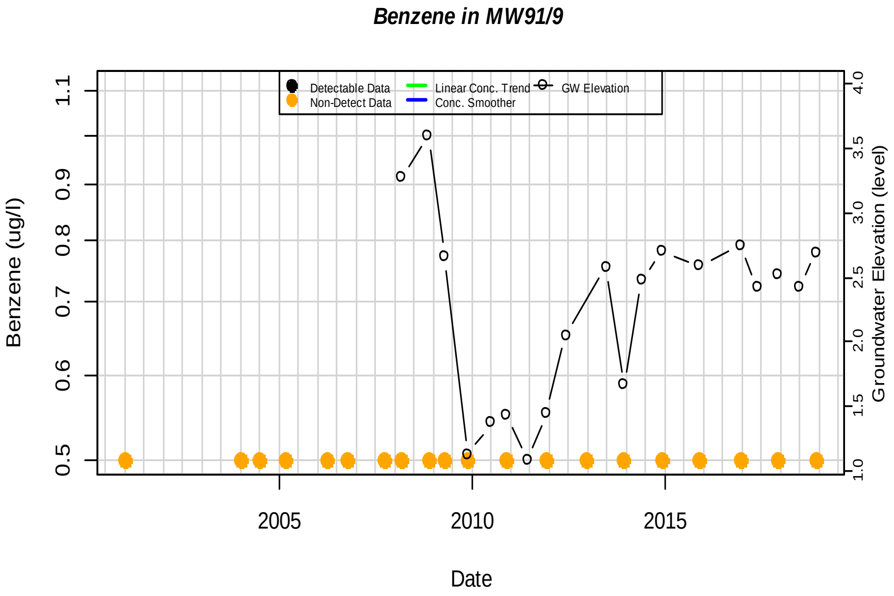

Benzene in MW12/26
Mann-Kendall P.Value= 0.239; Half-Life= 1333 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

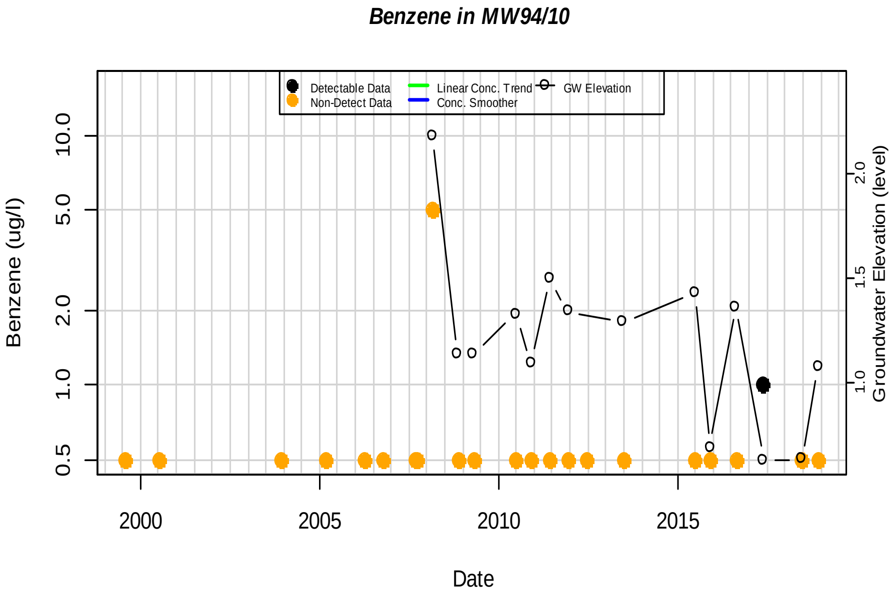

Benzene in MW18/06
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW18/23
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

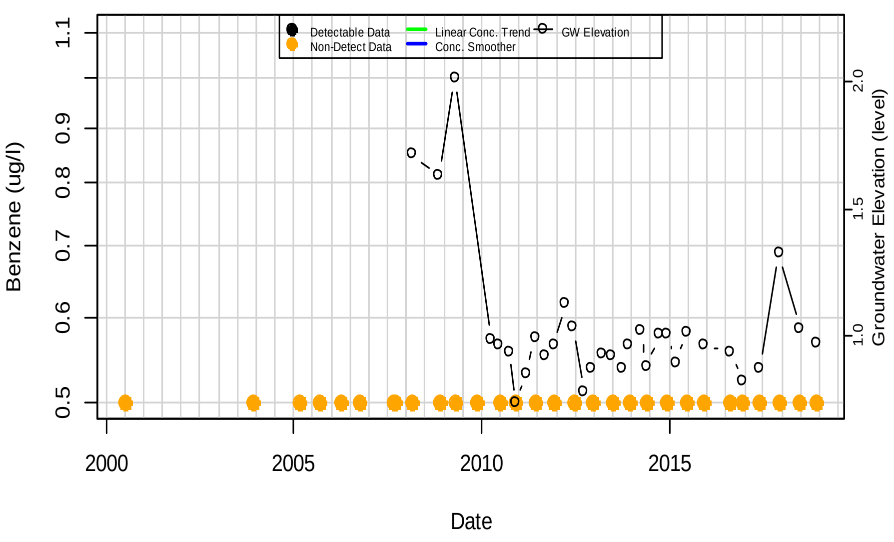

Benzene in MW91/2
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW91/8
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

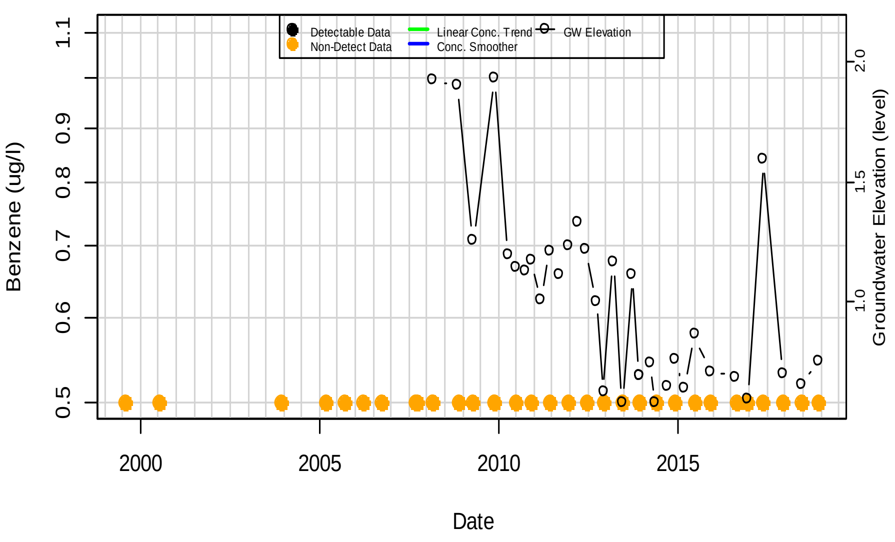

Benzene in MW91/9
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW94/10
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

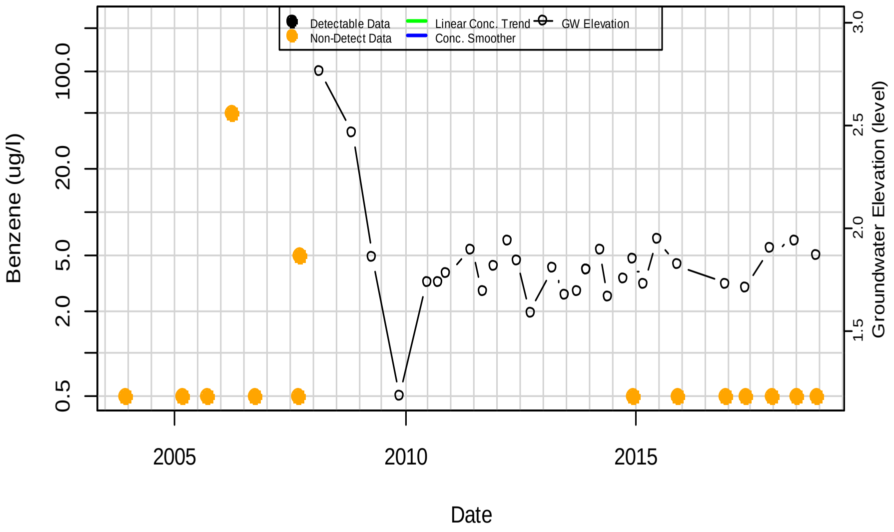
Benzene in MW94/11



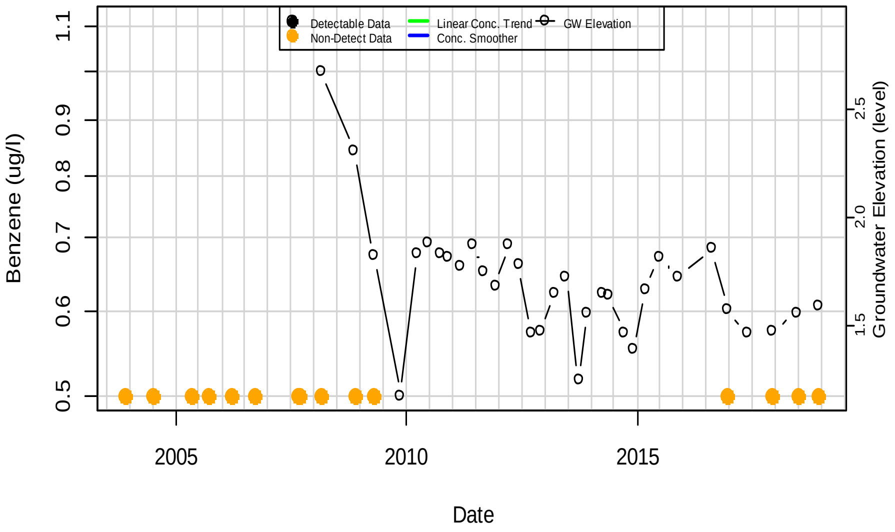
Benzene in MW94/12

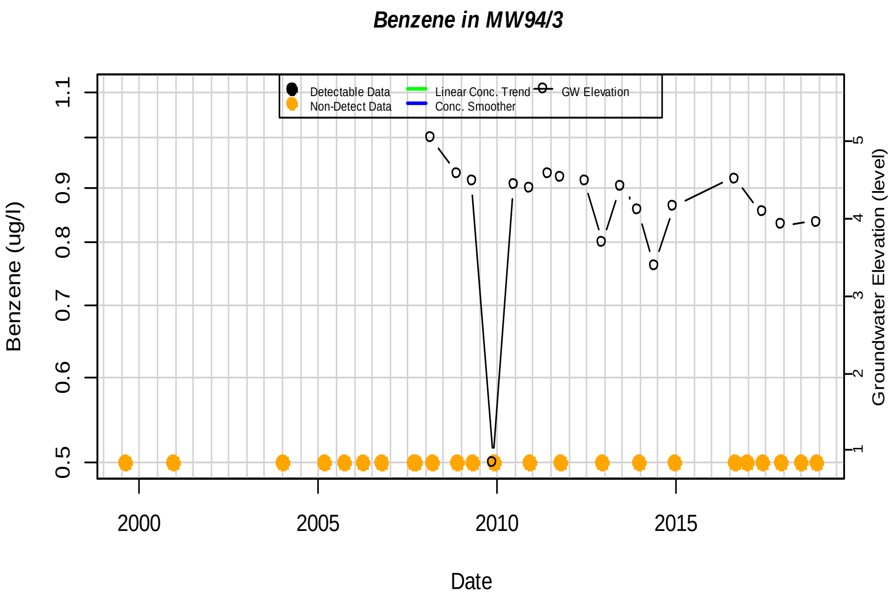


Benzene in MW94/16

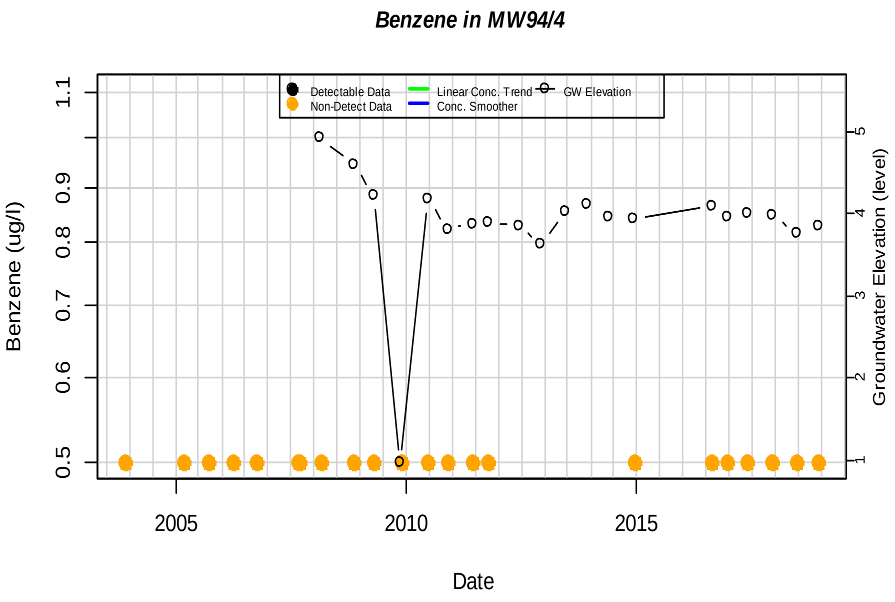


Benzene in MW94/18

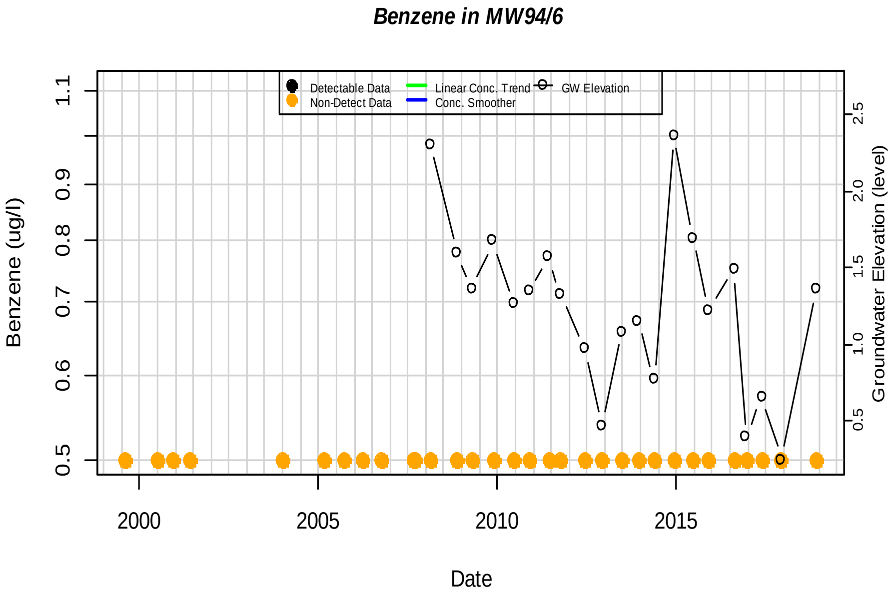




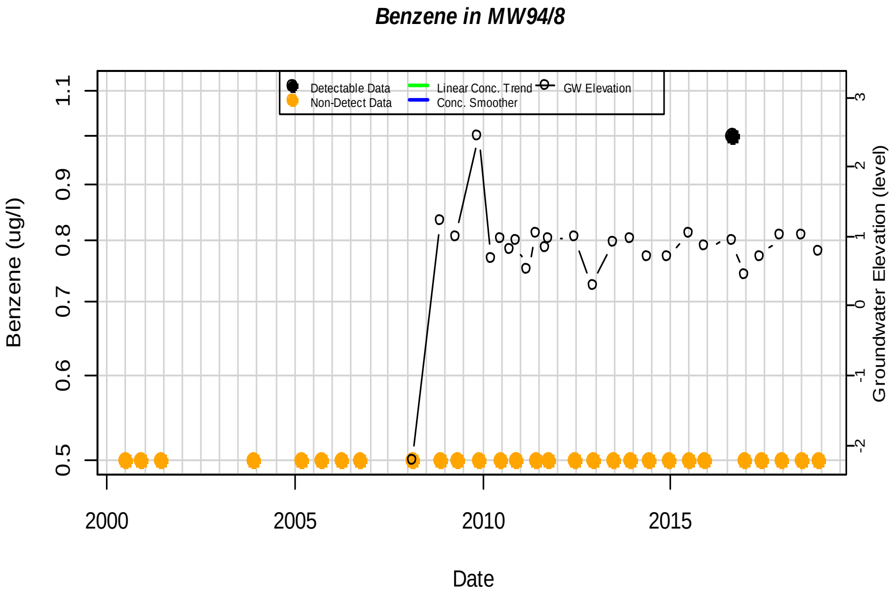
Benzene in MW94/3
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



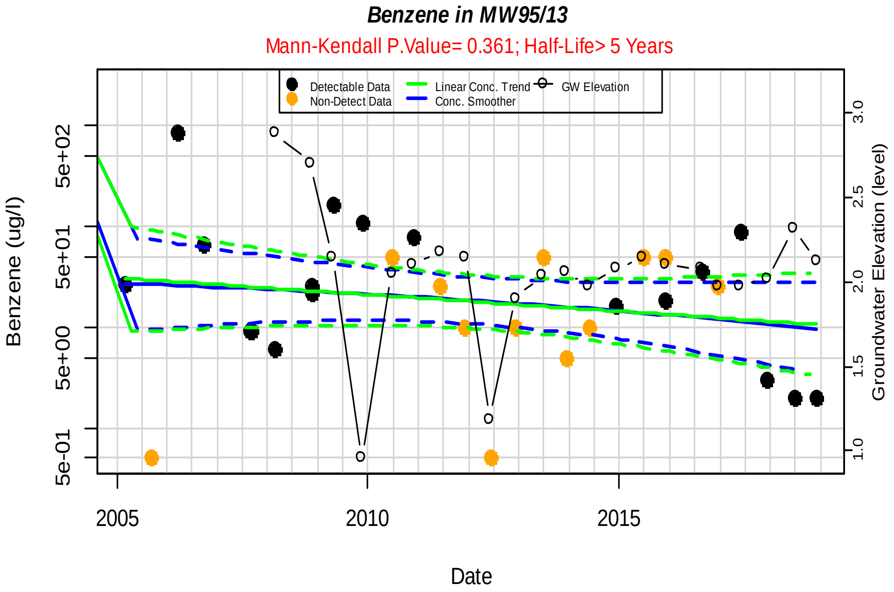
Benzene in MW94/4
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

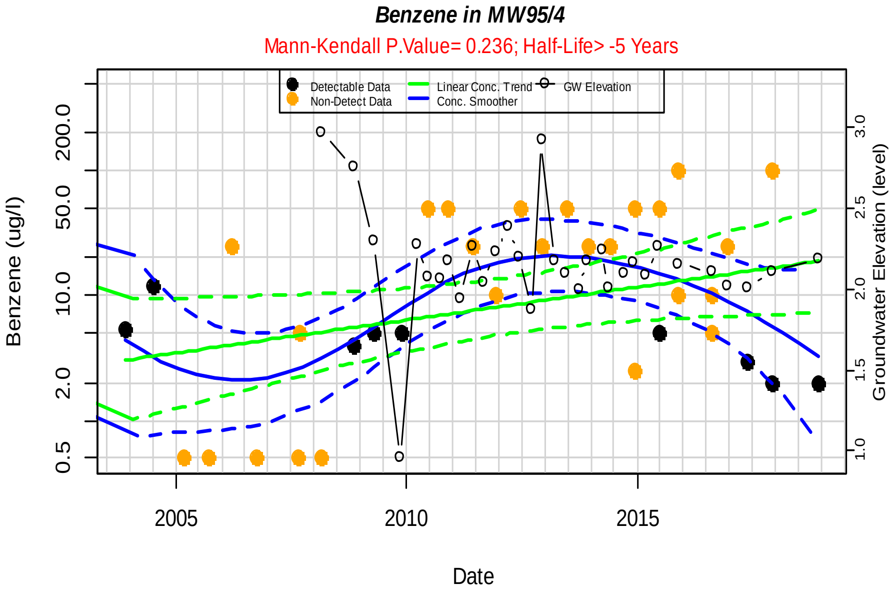


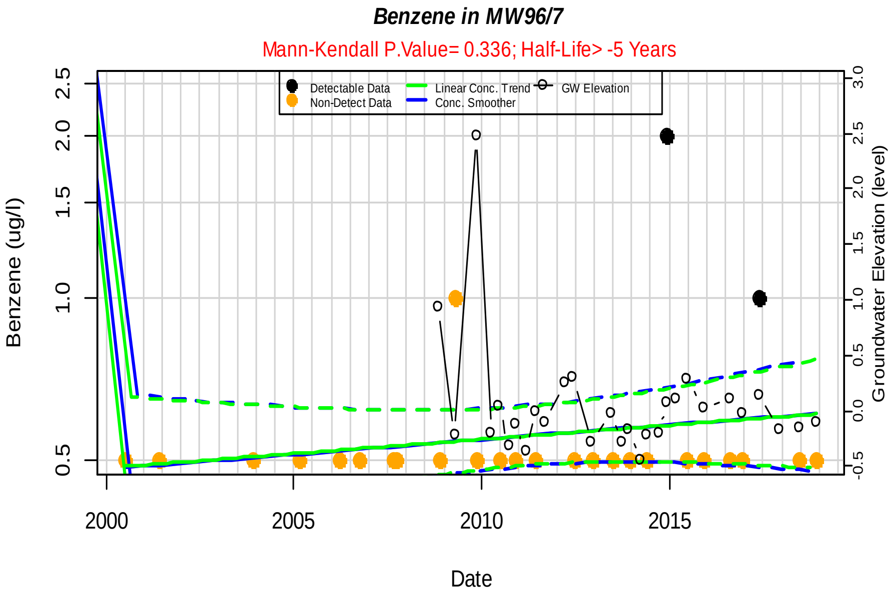
Benzene in MW94/6
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

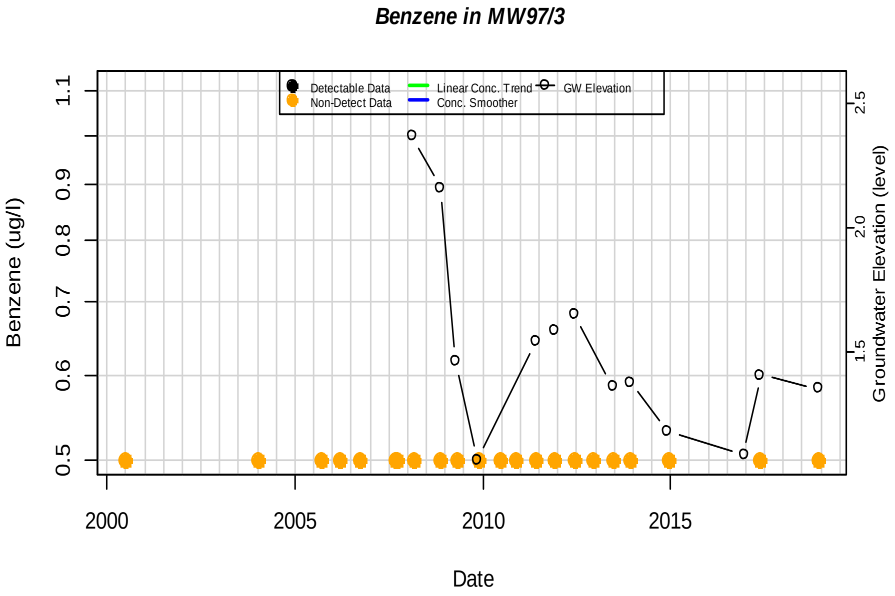


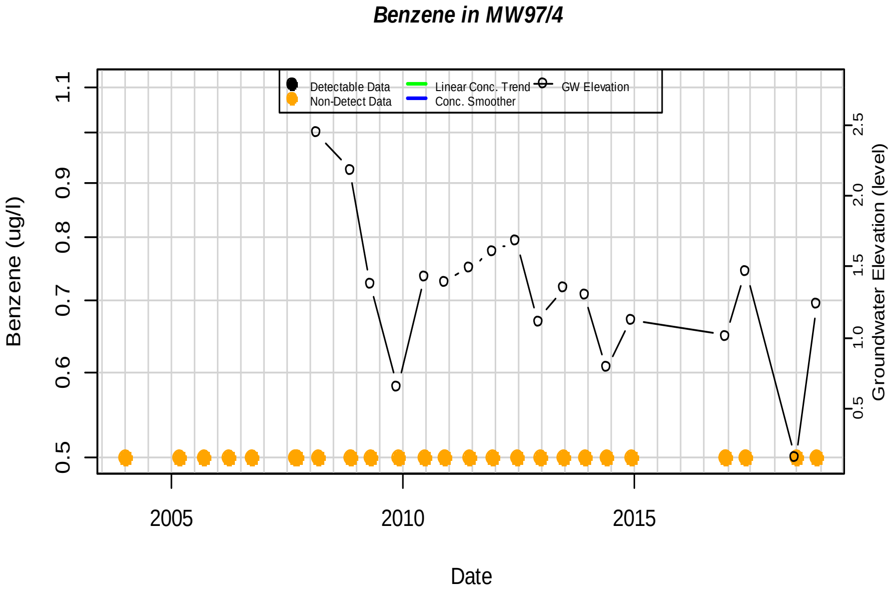
Benzene in MW94/8
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

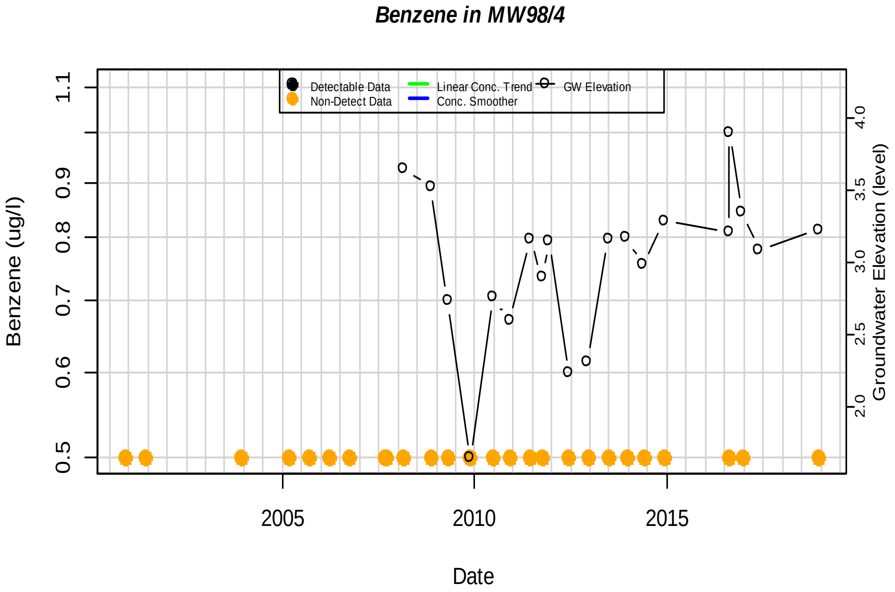

Benzene in MW95/13
Mann-Kendall P.Value= 0.361; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015
5e-01
5e+00
5e+01
5e+02

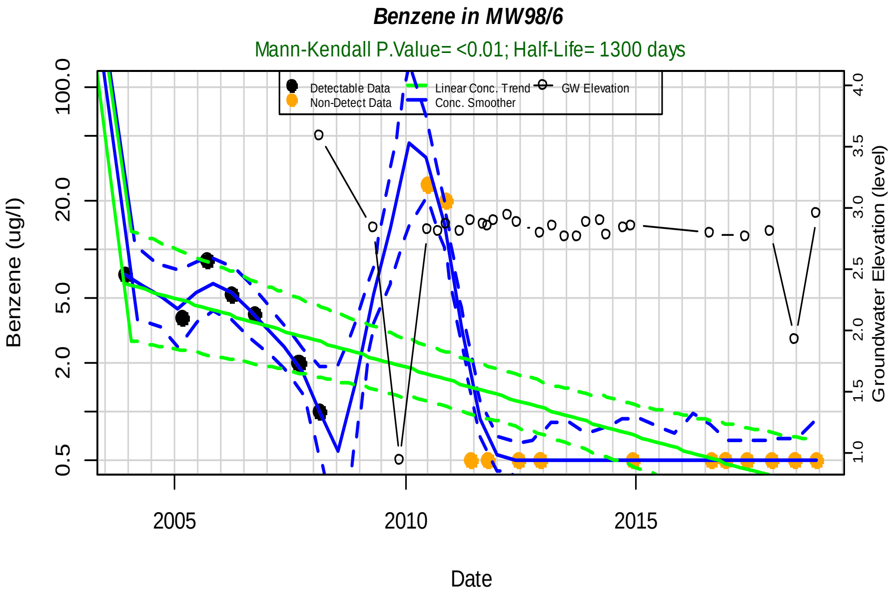

Benzene in MW95/4
Mann-Kendall P.Value= 0.236; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015
0.5
2.0
10.0
50.0
200.0

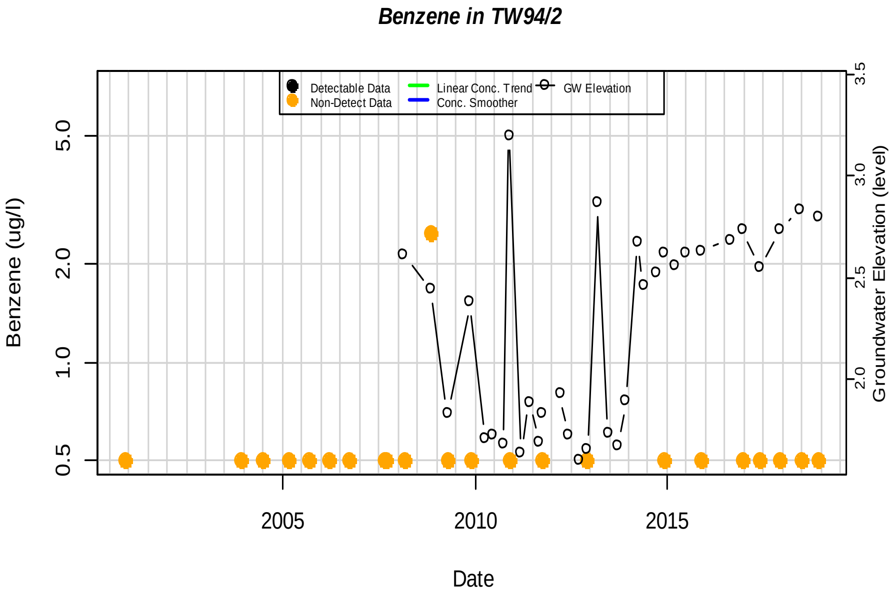

Benzene in MW96/7
Mann-Kendall P.Value= 0.336; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2000
2005
2010
2015
0.5
1.0
1.5
2.0
2.5

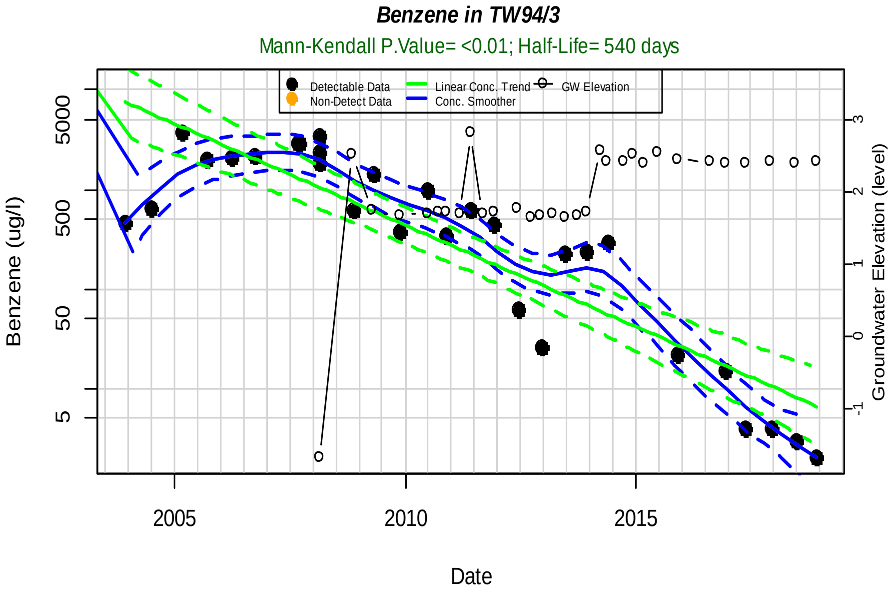

Benzene in MW97/3
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date
2000
2005
2010
2015
0.5
0.6
0.7
0.8
0.9
1.1


Benzene in MW97/4
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

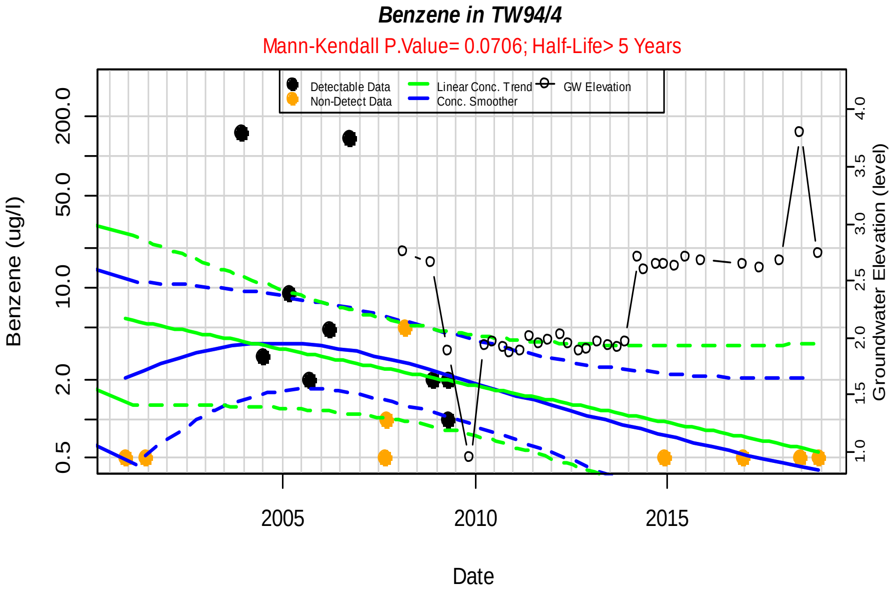

Benzene in MW98/4
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date


Benzene in MW98/6
Mann-Kendall P.Value= <0.01; Half-Life= 1300 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

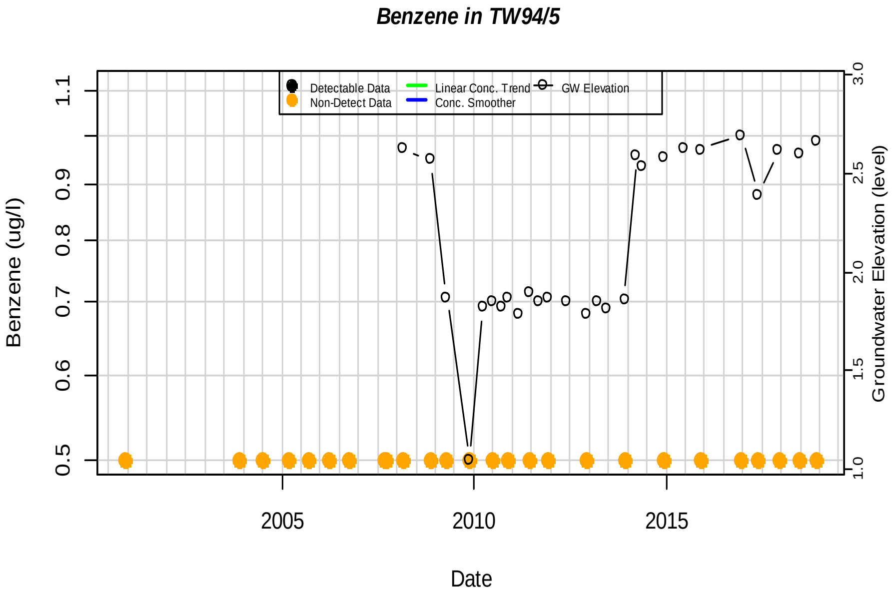

Benzene in TW94/2
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



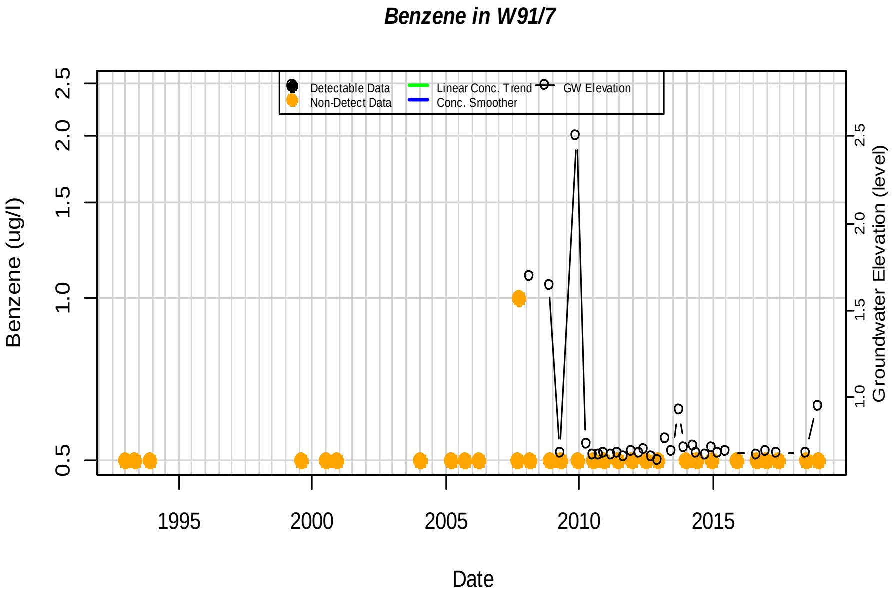
Benzene in TW94/3
Mann-Kendall P.Value= <0.01; Half-Life= 540 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



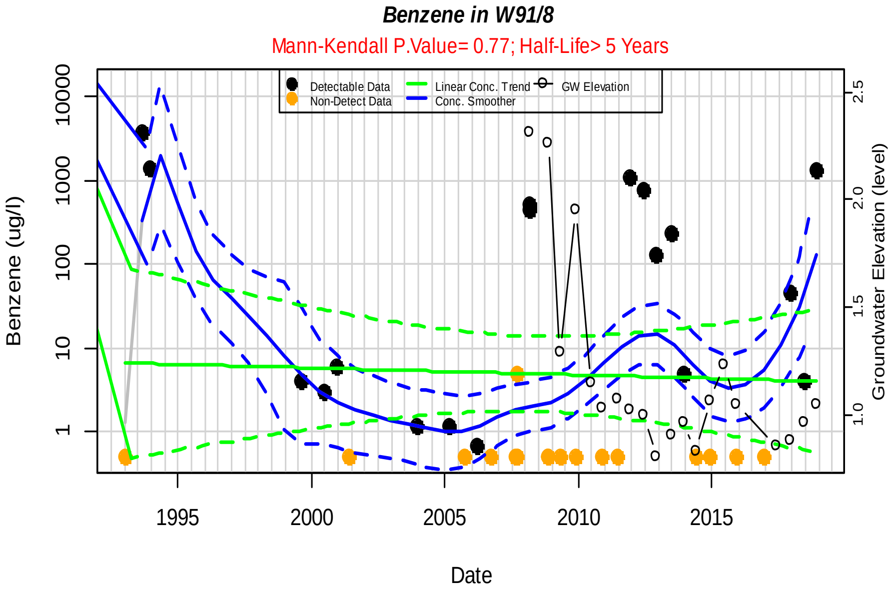
Benzene in TW94/4
Mann-Kendall P.Value= 0.0706; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



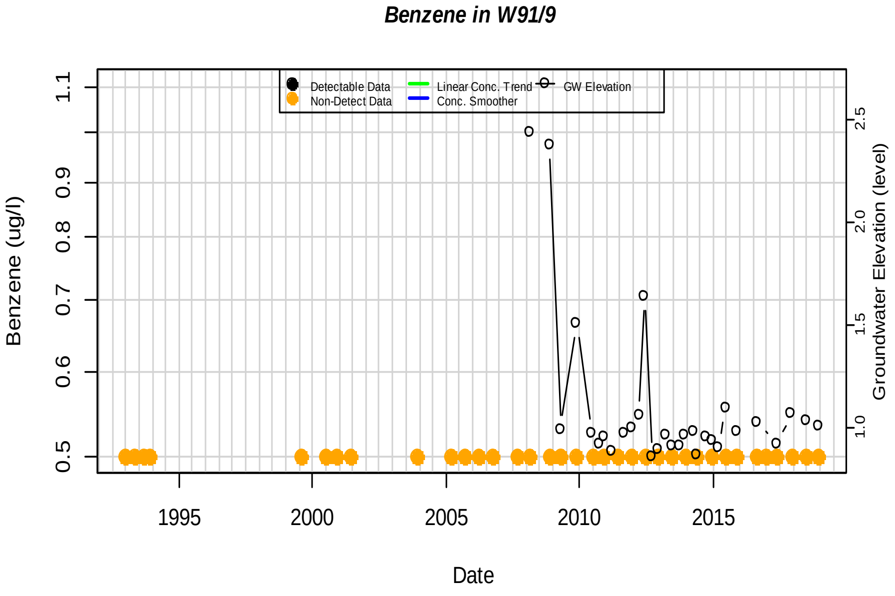
Benzene in TW94/5
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



Benzene in W91/7
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

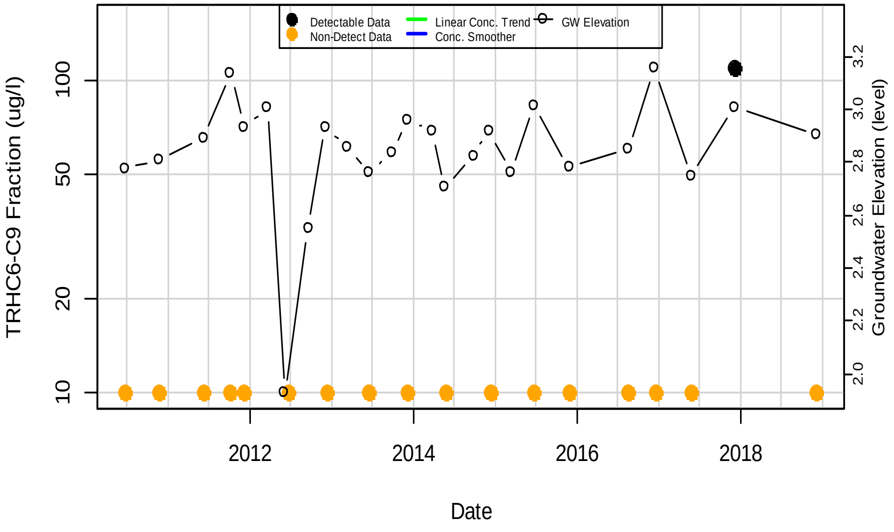


Benzene in W91/8
Mann-Kendall P.Value= 0.77; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date



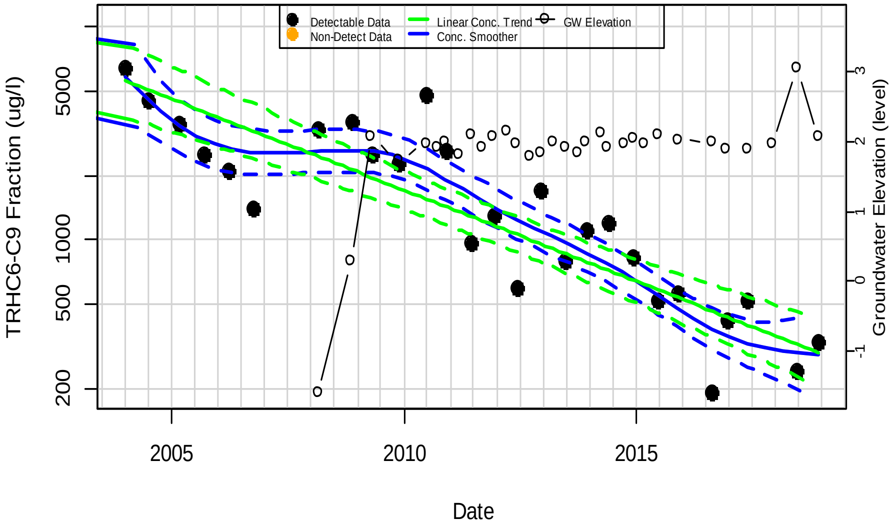
Benzene in W91/9
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
Benzene (ug/l)
Groundwater Elevation (level)
Date

TRHC6-C9 Fraction in BH116



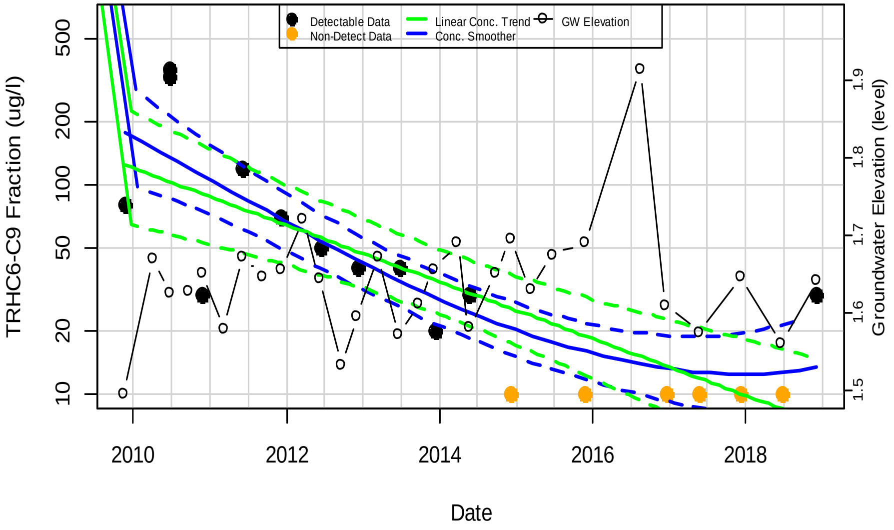
TRHC6-C9 Fraction in MW02/1

Mann-Kendall P.Value= <0.01; Half-Life= 1287 days

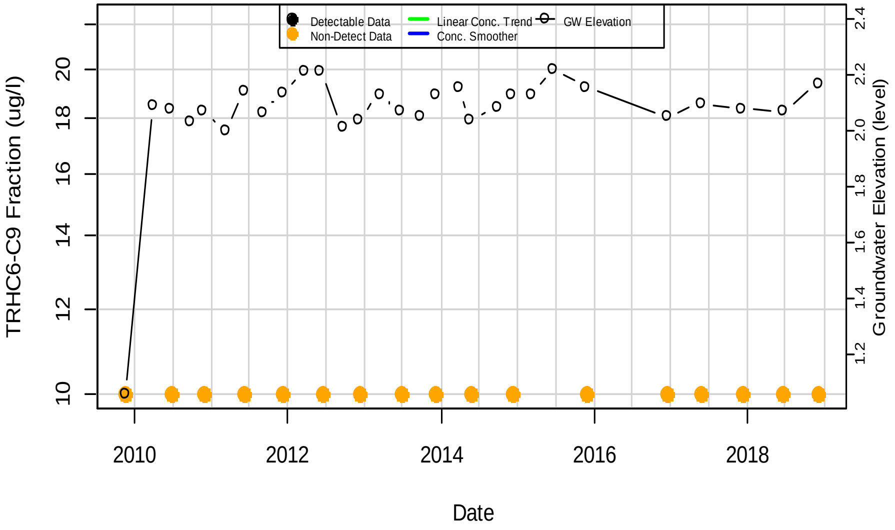


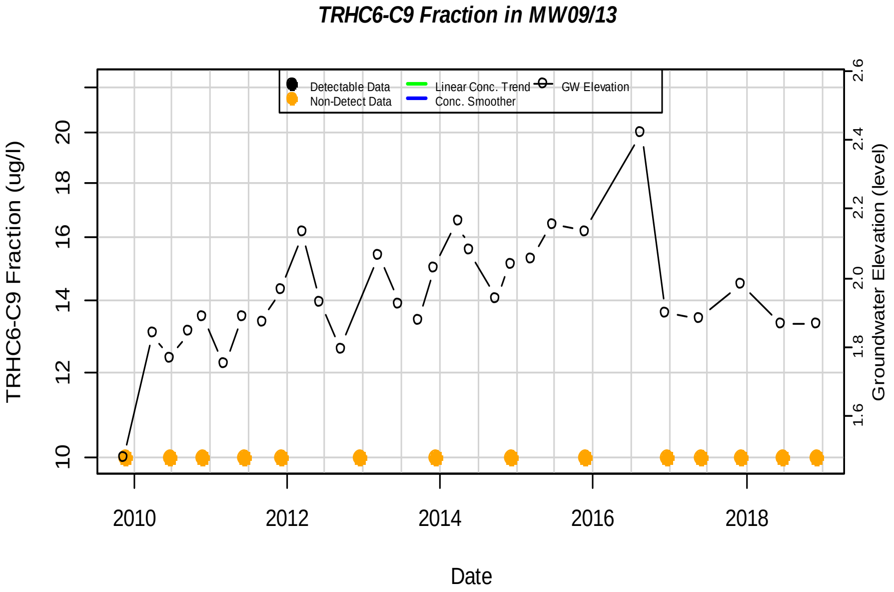
TRHC6-C9 Fraction in MW09/10

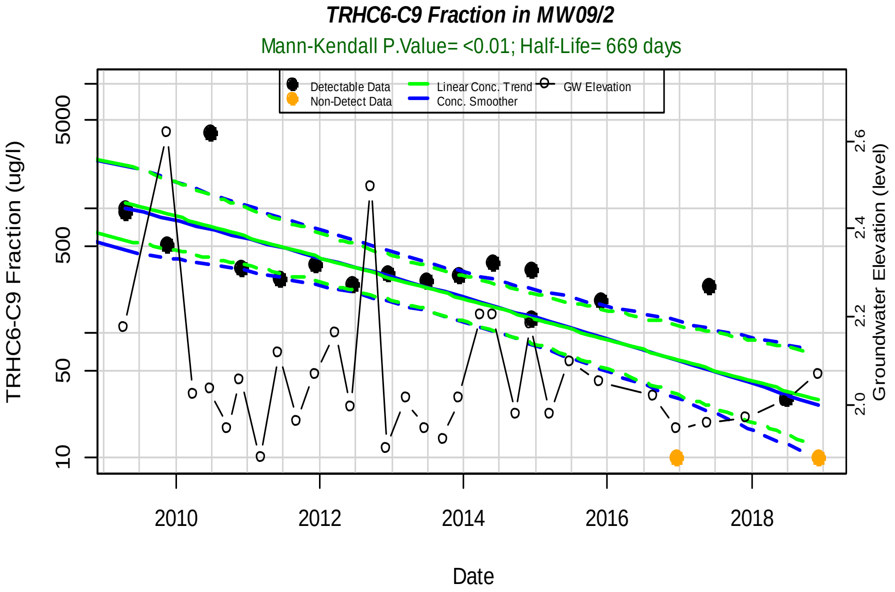
Mann-Kendall P.Value= <0.01; Half-Life= 808 days

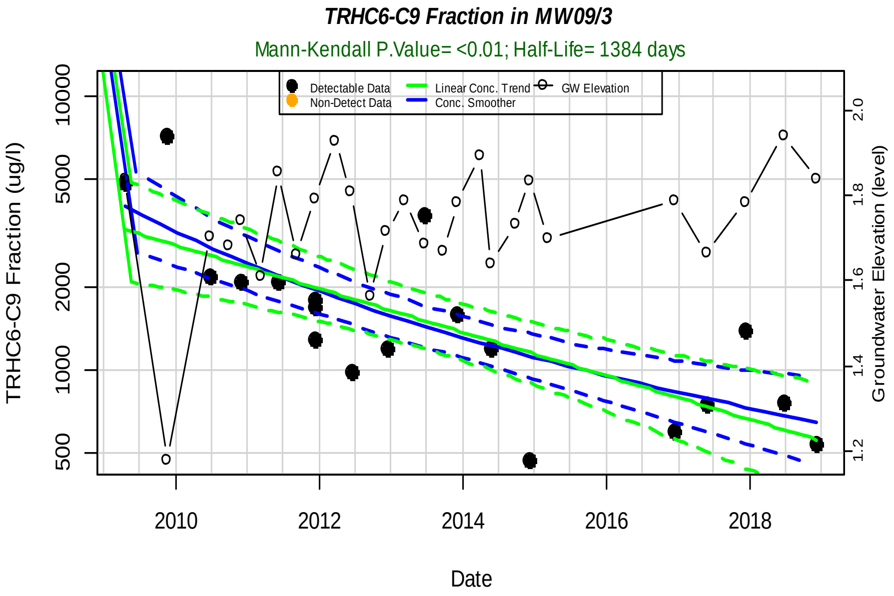


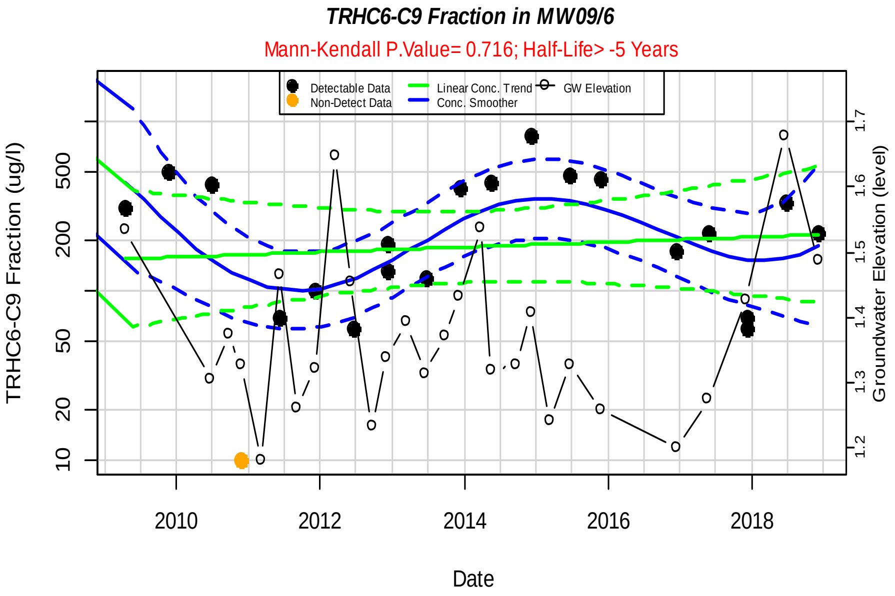
TRHC6-C9 Fraction in MW09/11




TRHC6-C9 Fraction in MW09/13
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

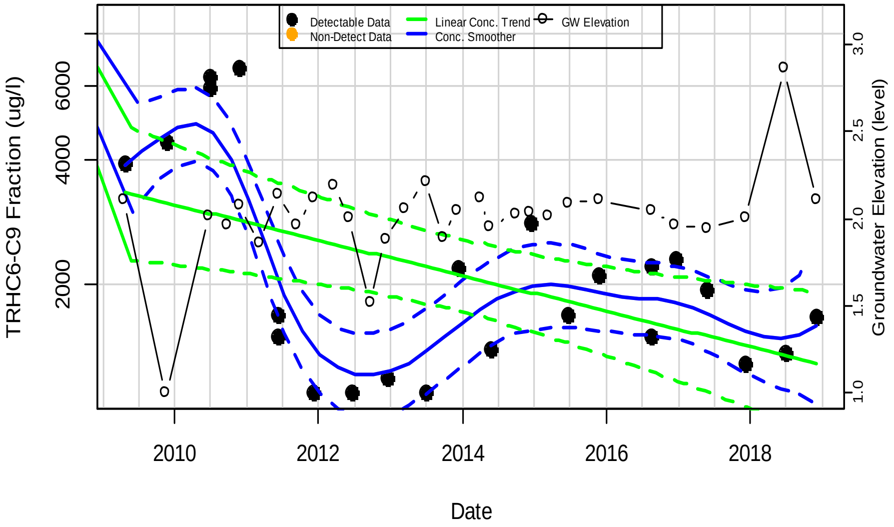

TRHC6-C9 Fraction in MW09/2
Mann-Kendall P.Value= <0.01; Half-Life= 669 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRHC6-C9 Fraction in MW09/3
Mann-Kendall P.Value= <0.01; Half-Life= 1384 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

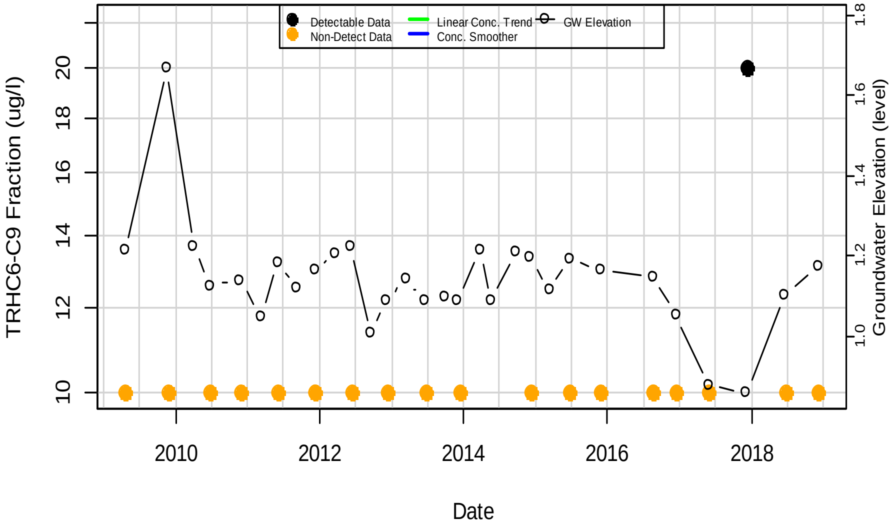

TRHC6-C9 Fraction in MW09/6
Mann-Kendall P.Value= 0.716; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

TRHC6-C9 Fraction in MW09/7

Mann-Kendall P.Value= 0.106; Half-Life> 5 Years

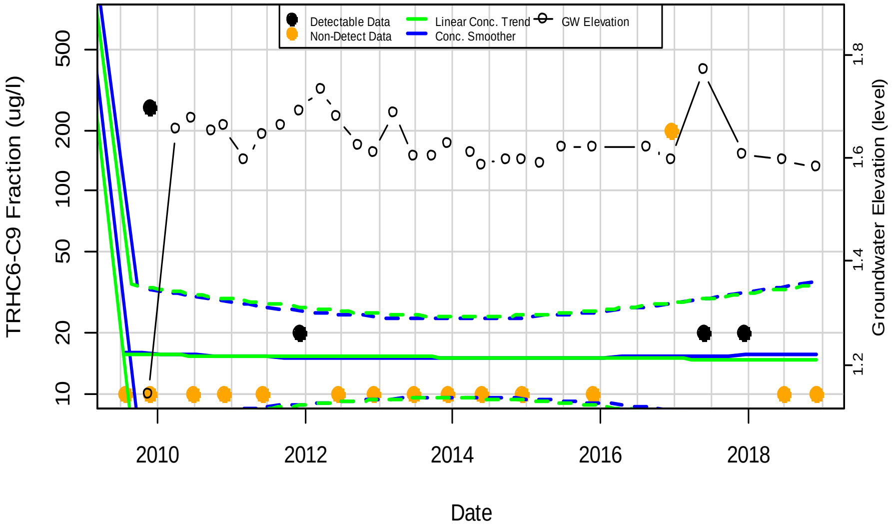


TRHC6-C9 Fraction in MW09/8



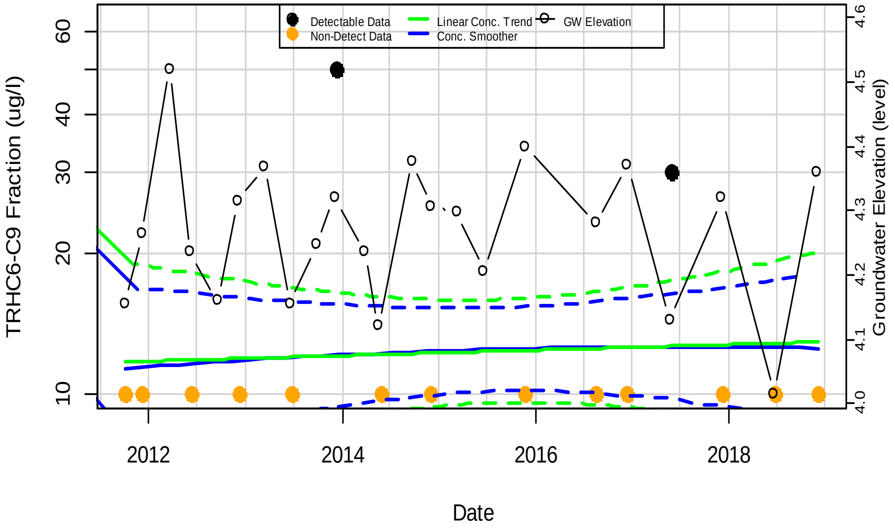
TRHC6-C9 Fraction in MW09/9

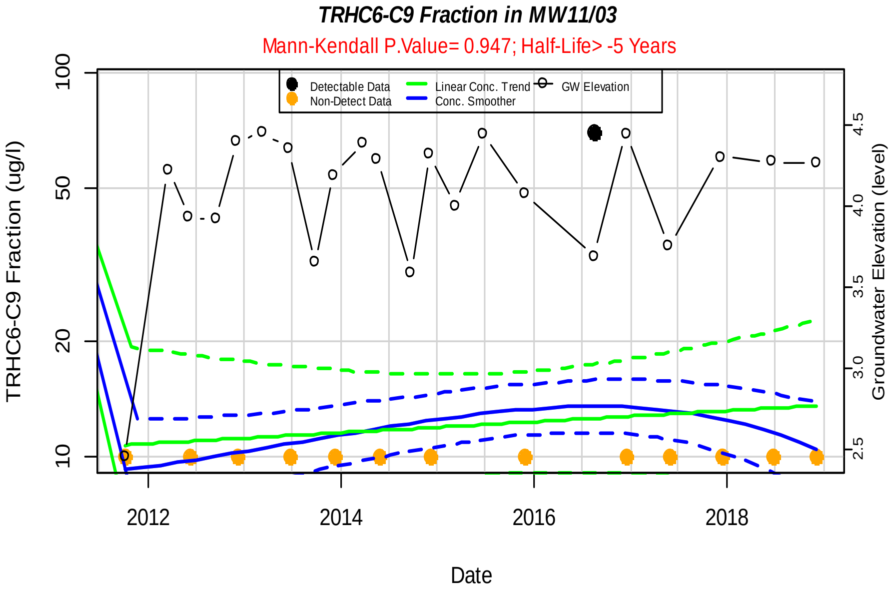
Mann-Kendall P.Value= 0.863; Half-Life> 5 Years



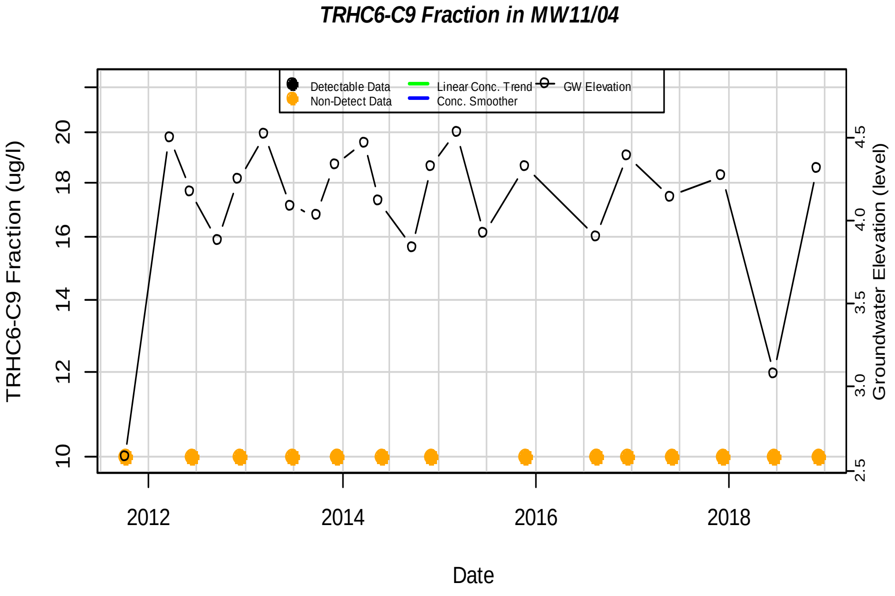
TRHC6-C9 Fraction in MW11/02

Mann-Kendall P.Value= 0.723; Half-Life> -5 Years

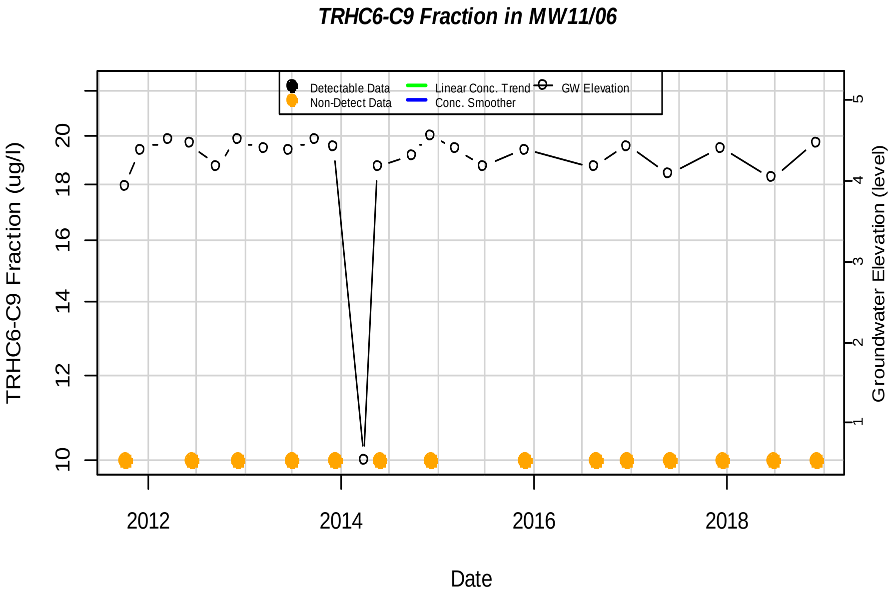




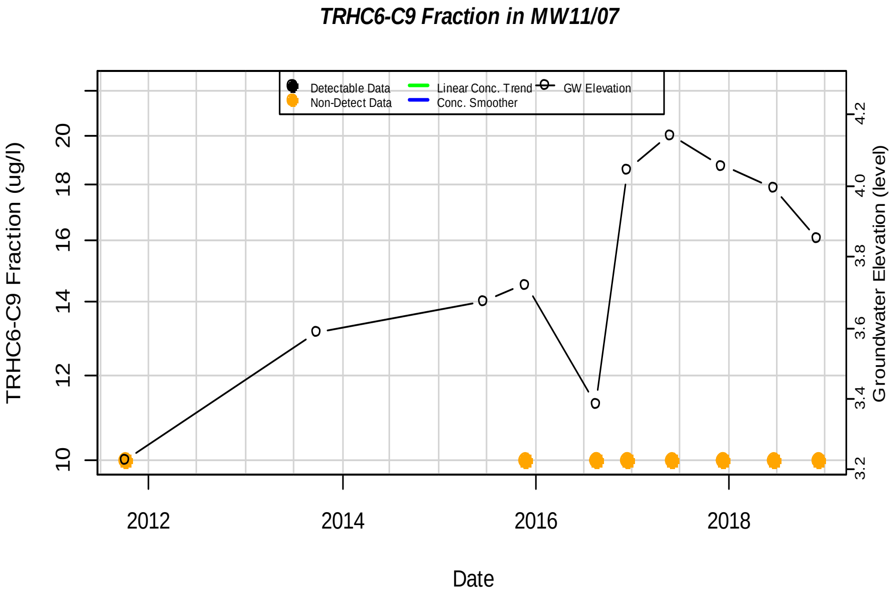
TRHC6-C9 Fraction in MW11/03
Mann-Kendall P.Value= 0.947; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date



TRHC6-C9 Fraction in MW11/04
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

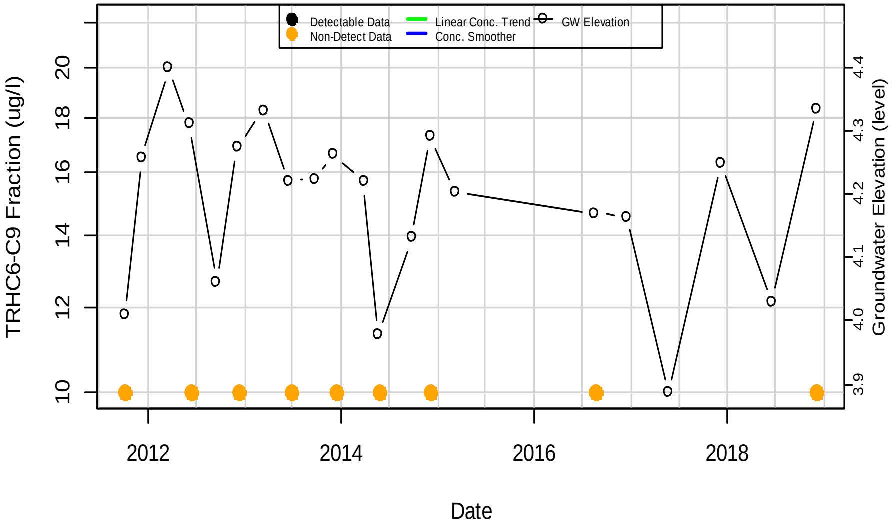


TRHC6-C9 Fraction in MW11/06
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

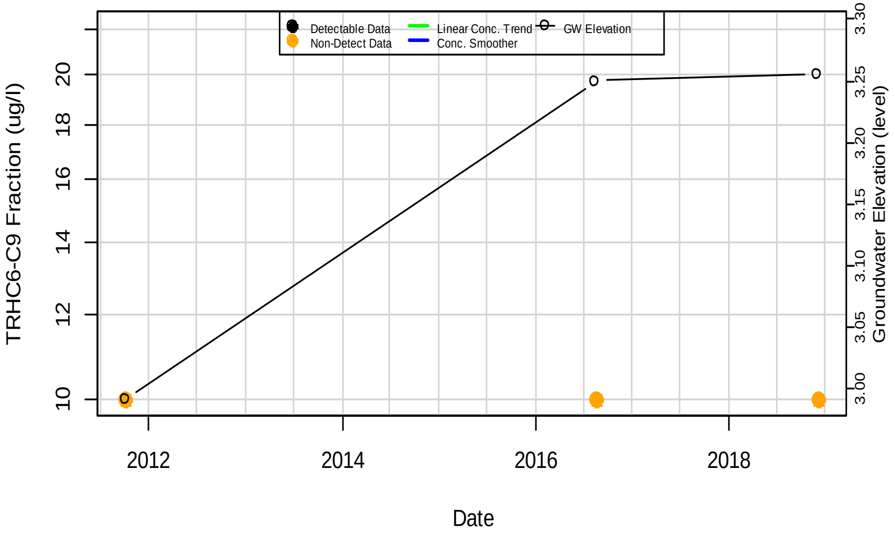


TRHC6-C9 Fraction in MW11/07
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

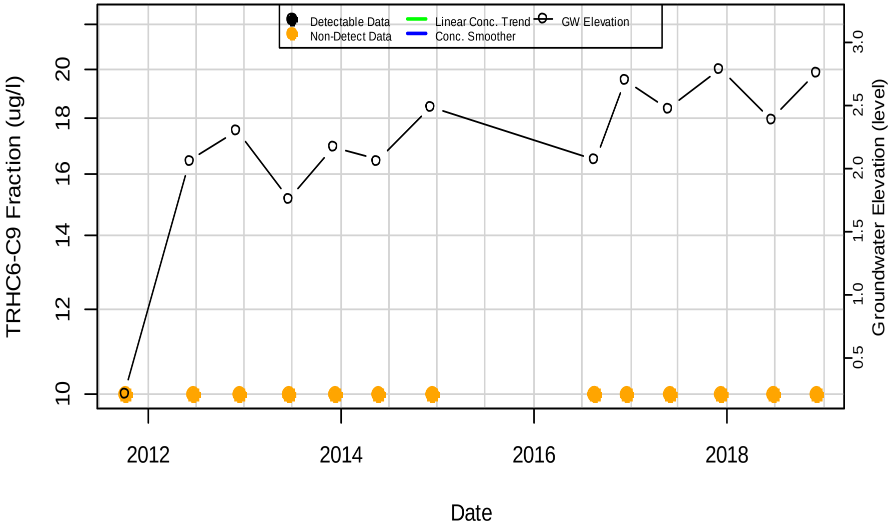
TRHC6-C9 Fraction in MW11/08



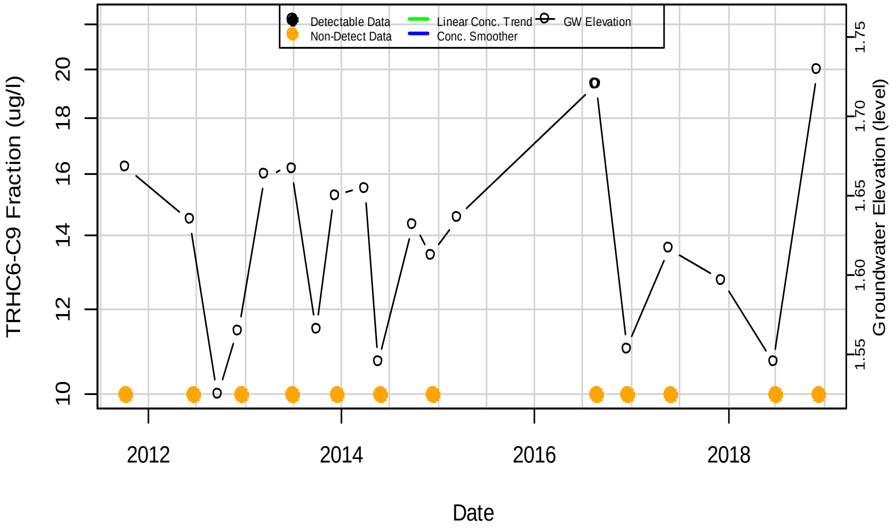
TRHC6-C9 Fraction in MW11/20

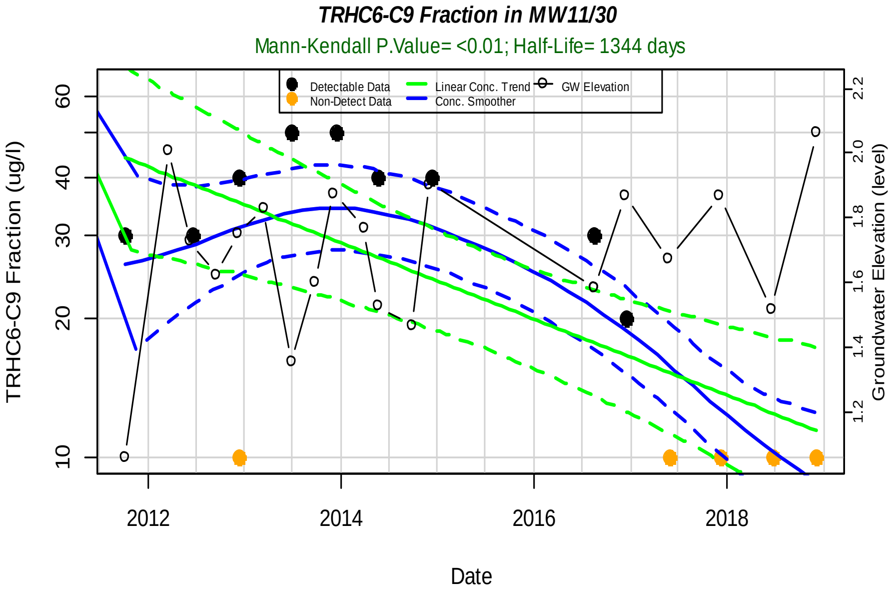


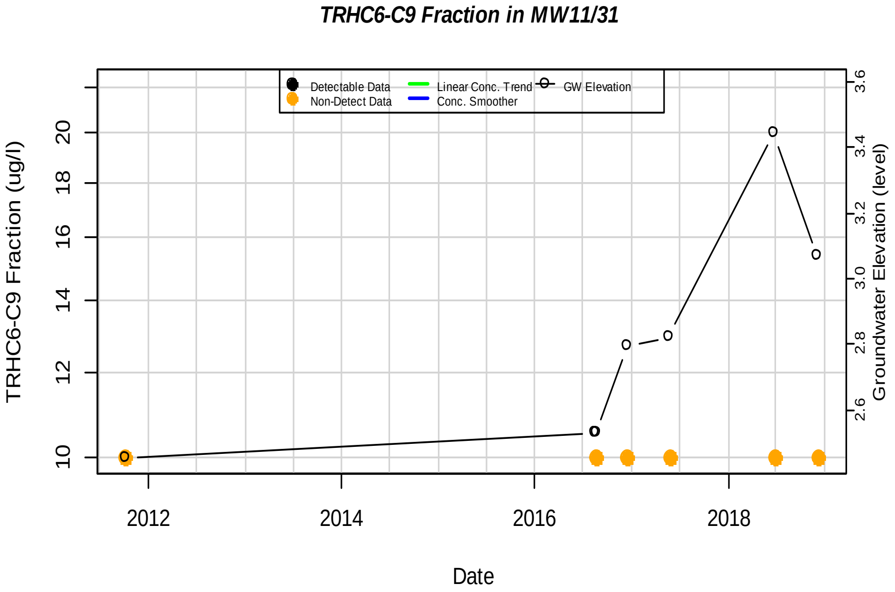
TRHC6-C9 Fraction in MW11/24

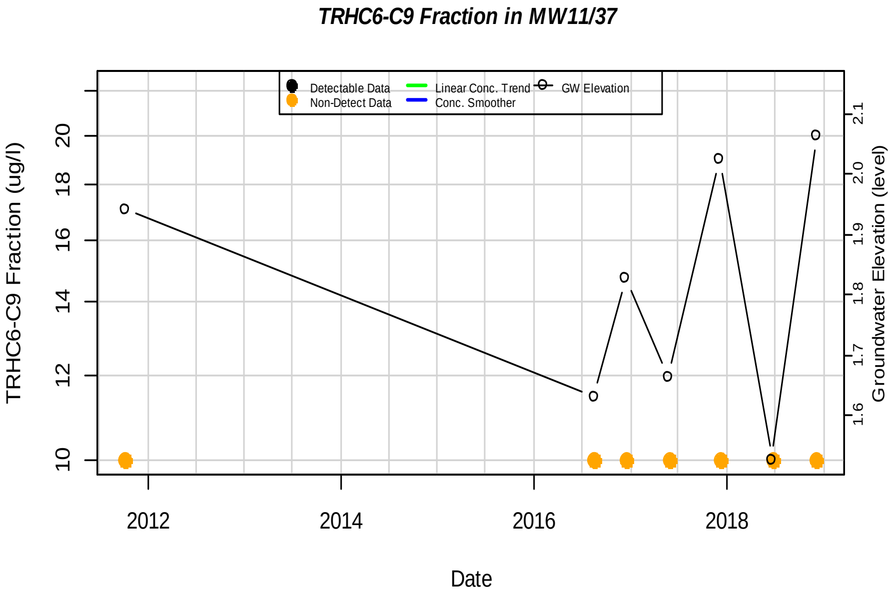


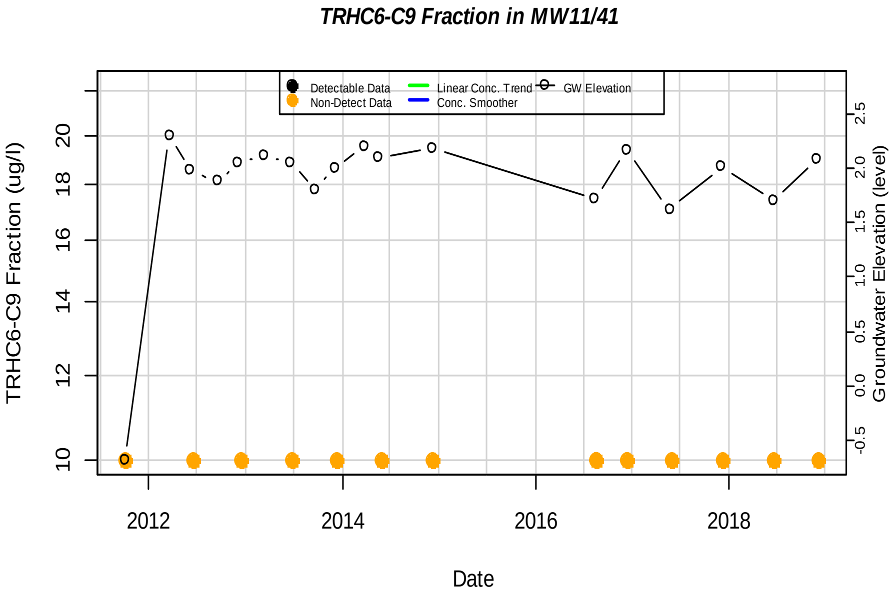
TRHC6-C9 Fraction in MW11/26



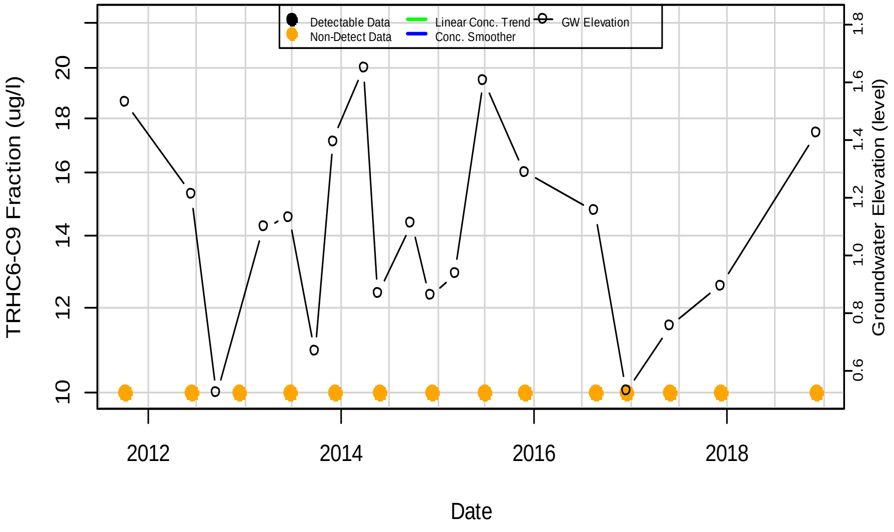

TRHC6-C9 Fraction in MW11/30
Mann-Kendall P.Value= <0.01; Half-Life= 1344 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018


TRHC6-C9 Fraction in MW11/31
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018


TRHC6-C9 Fraction in MW11/37
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

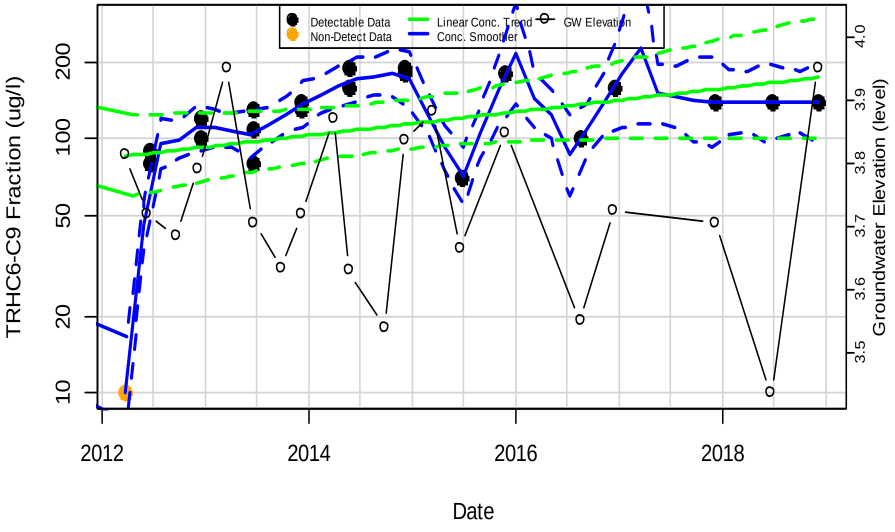

TRHC6-C9 Fraction in MW11/41
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

TRHC6-C9 Fraction in MW11/46



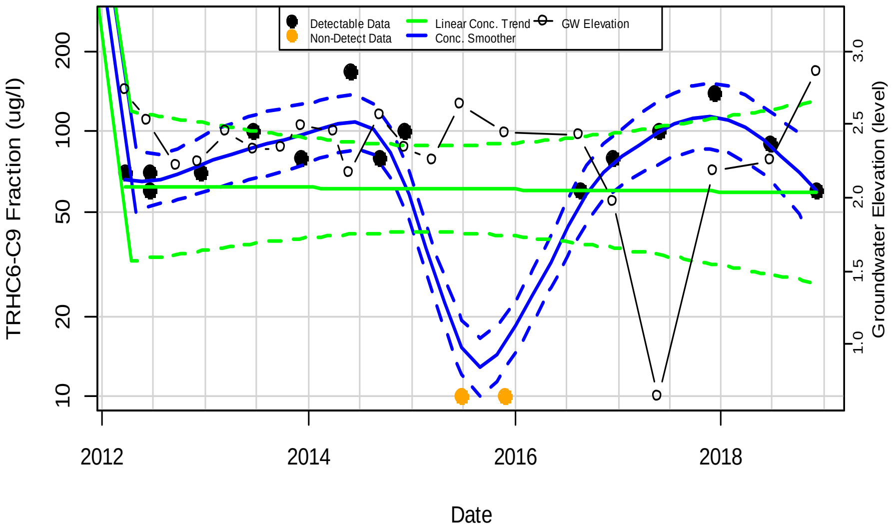
TRHC6-C9 Fraction in MW12/03

Mann-Kendall P.Value= 0.017; Half-Life> -5 Years



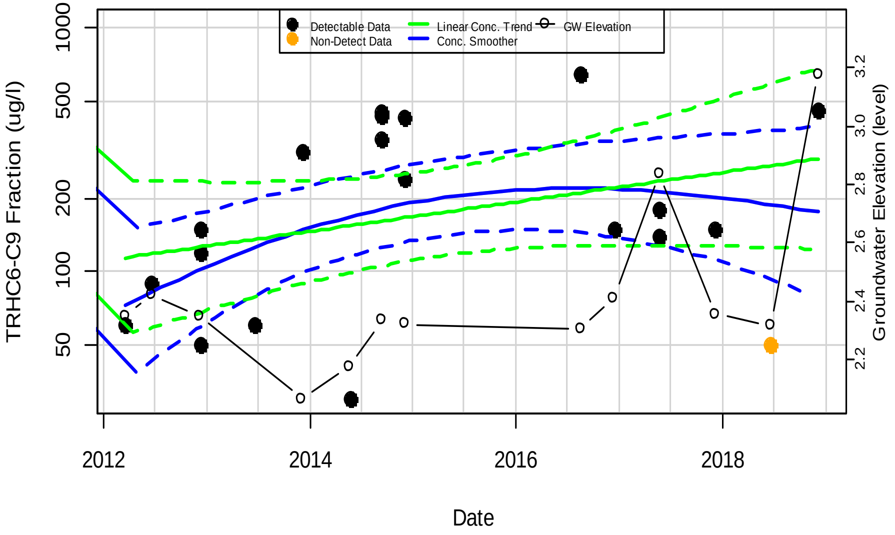
TRHC6-C9 Fraction in MW12/07

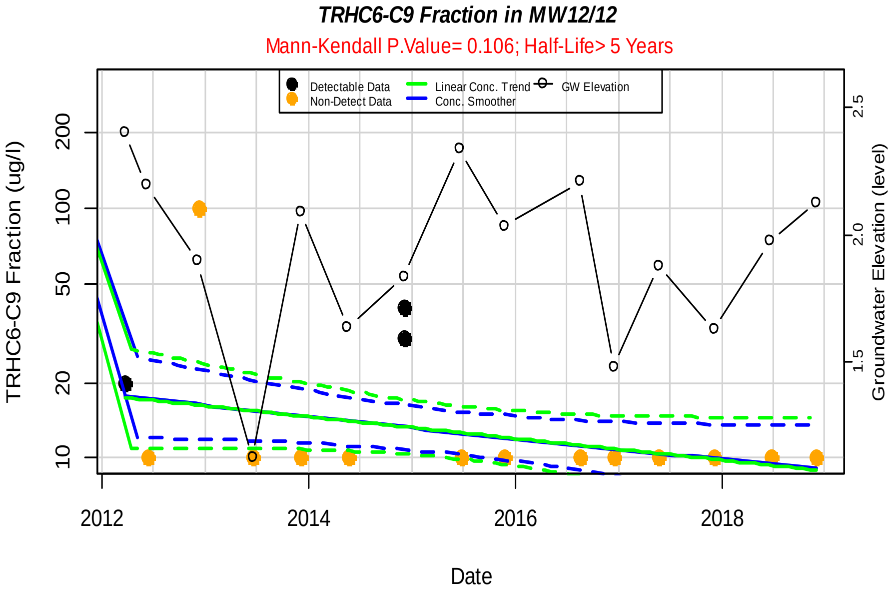
Mann-Kendall P.Value= 0.622; Half-Life> 5 Years

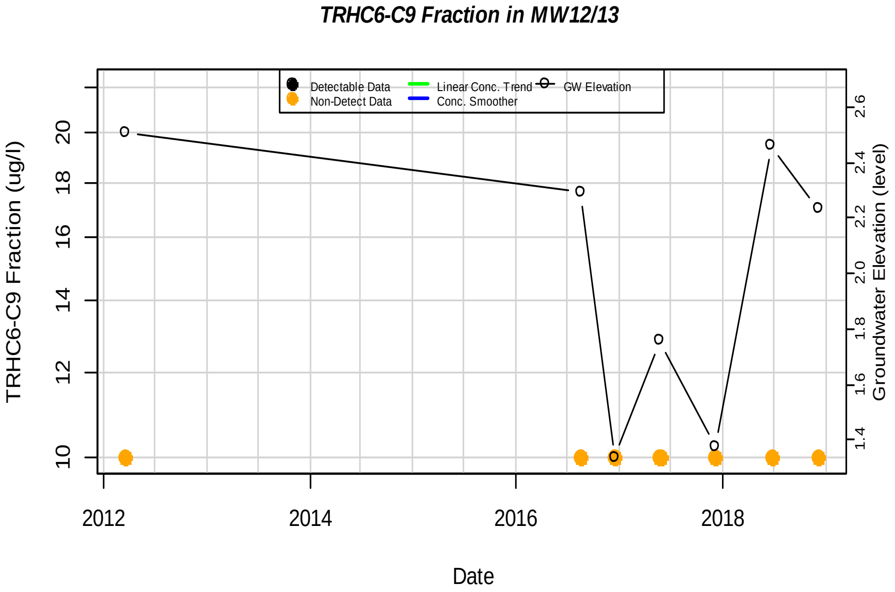


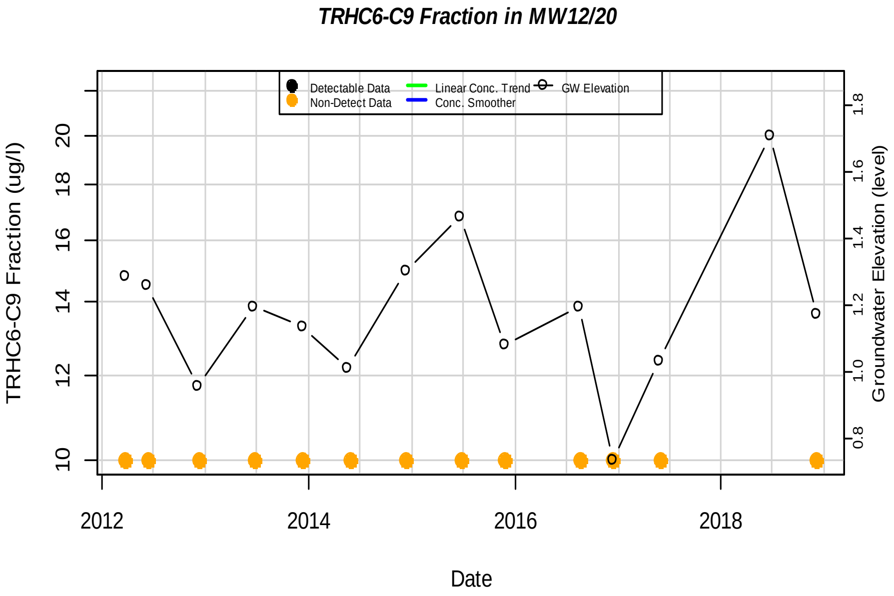
TRHC6-C9 Fraction in MW12/08

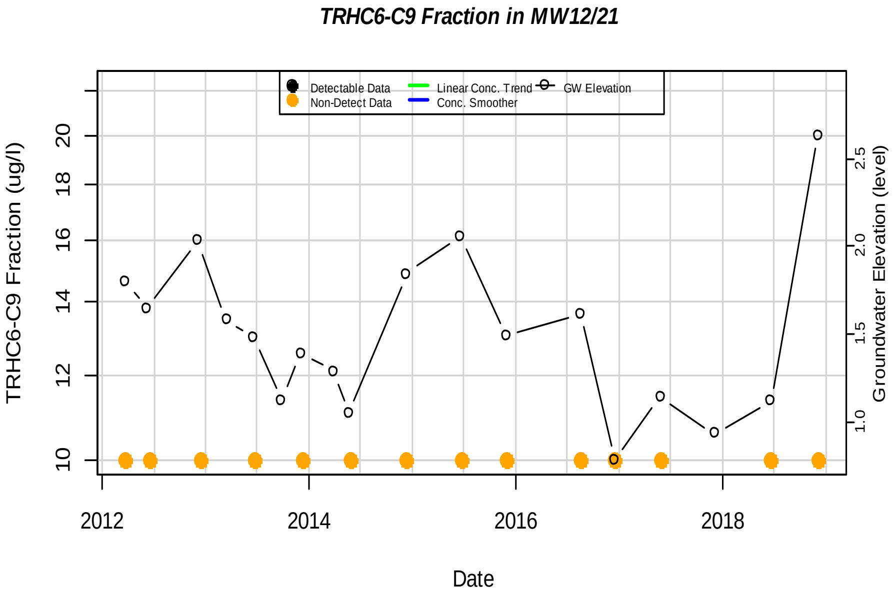
Mann-Kendall P.Value= 0.114; Half-Life= -1816 days

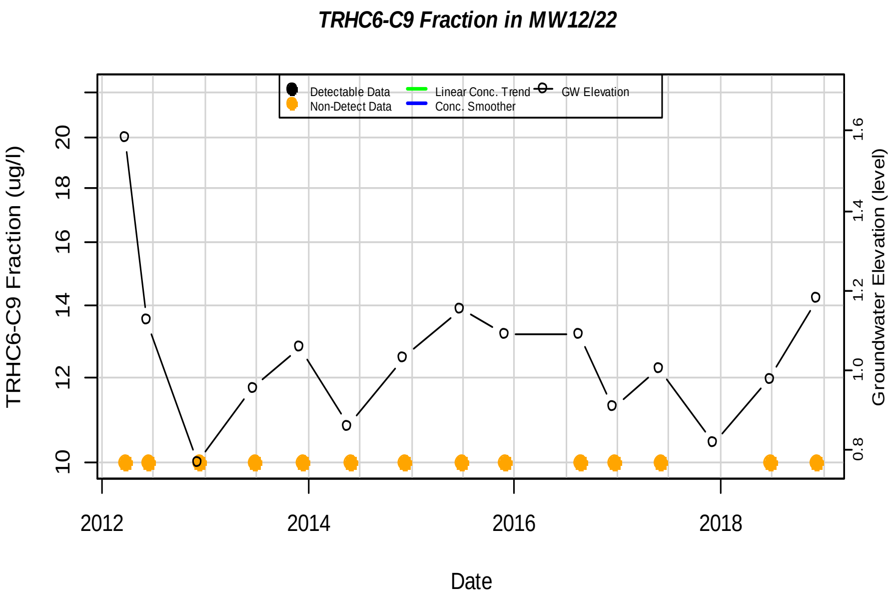


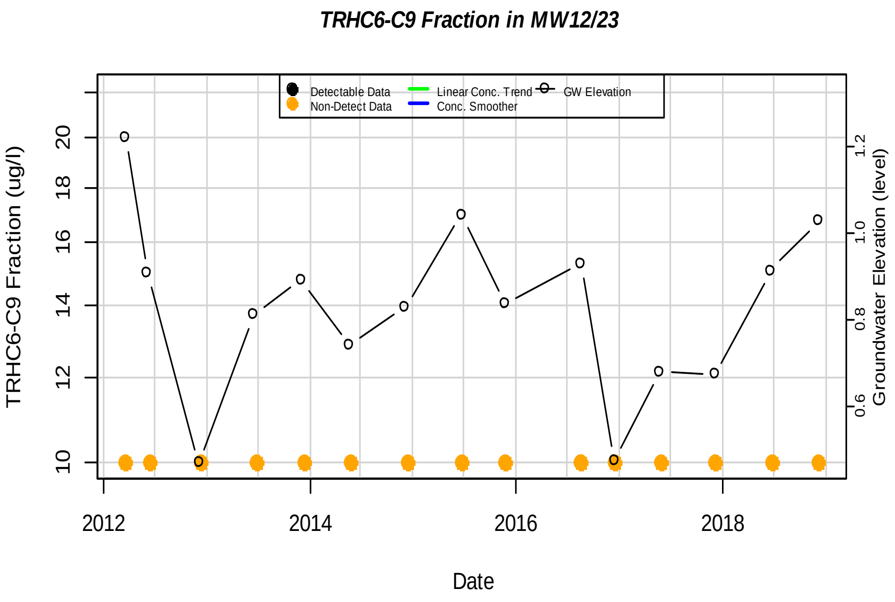

TRHC6-C9 Fraction in MW12/12
Mann-Kendall P.Value= 0.106; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

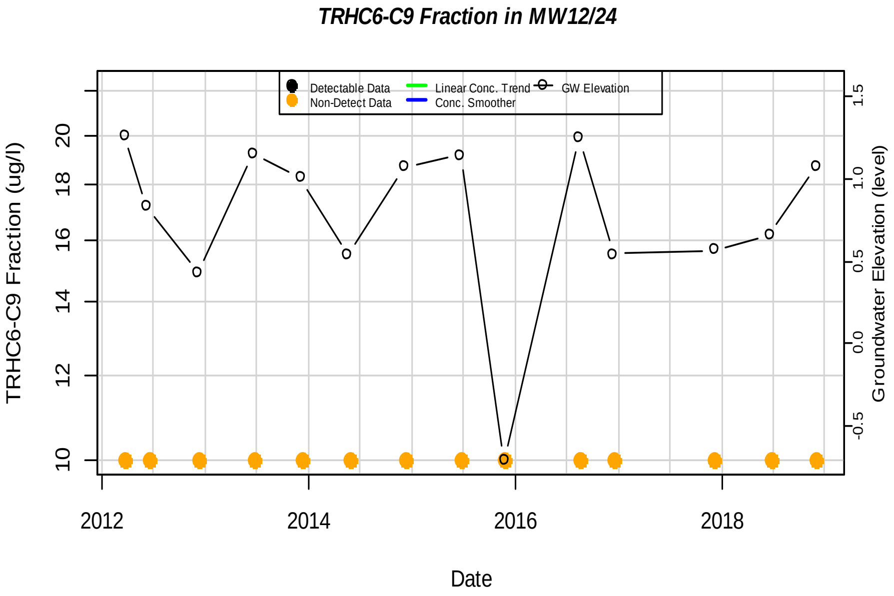

TRHC6-C9 Fraction in MW12/13
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

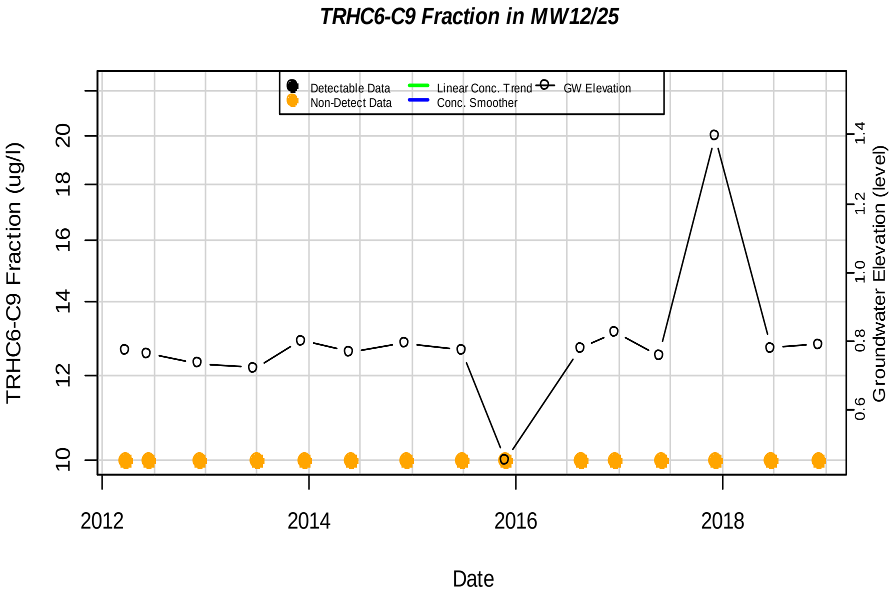

TRHC6-C9 Fraction in MW12/20
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

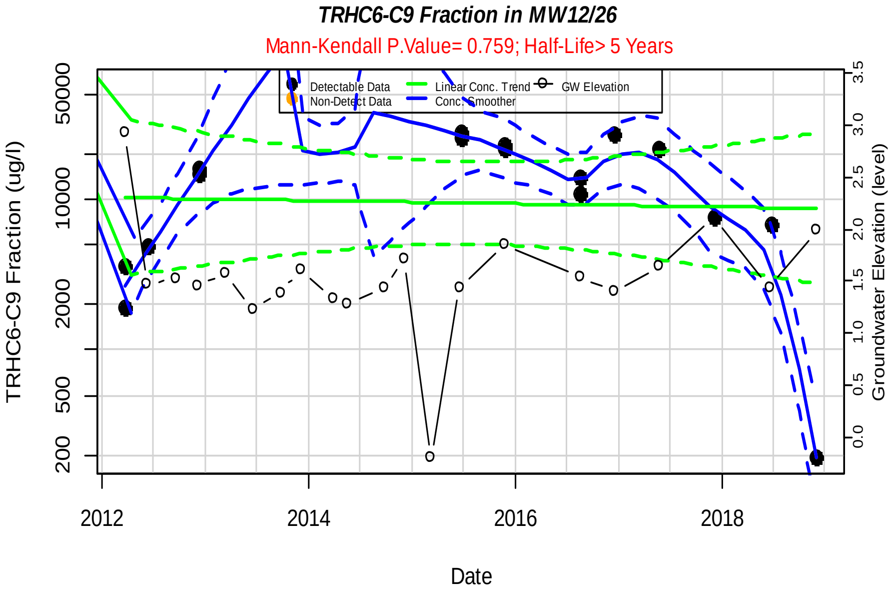

TRHC6-C9 Fraction in MW12/21
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

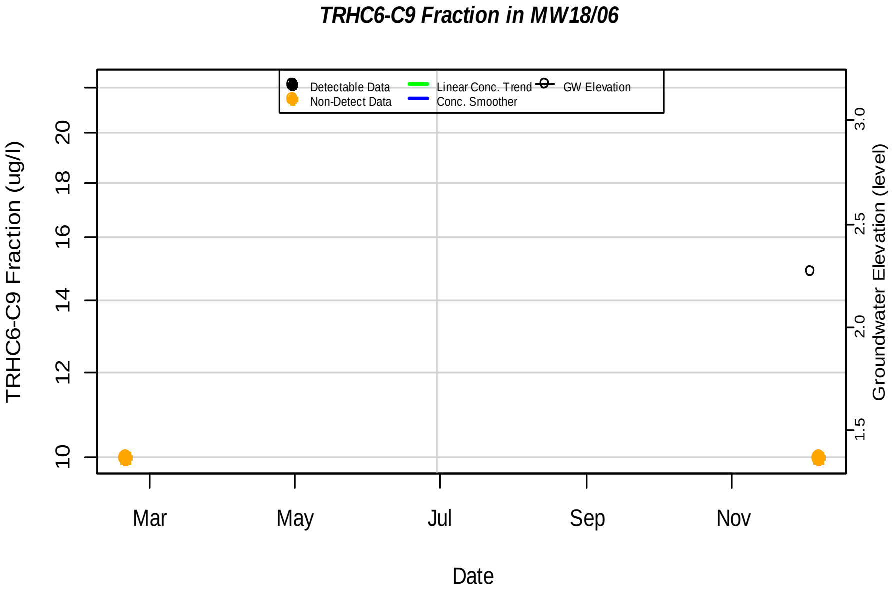

TRHC6-C9 Fraction in MW12/22
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

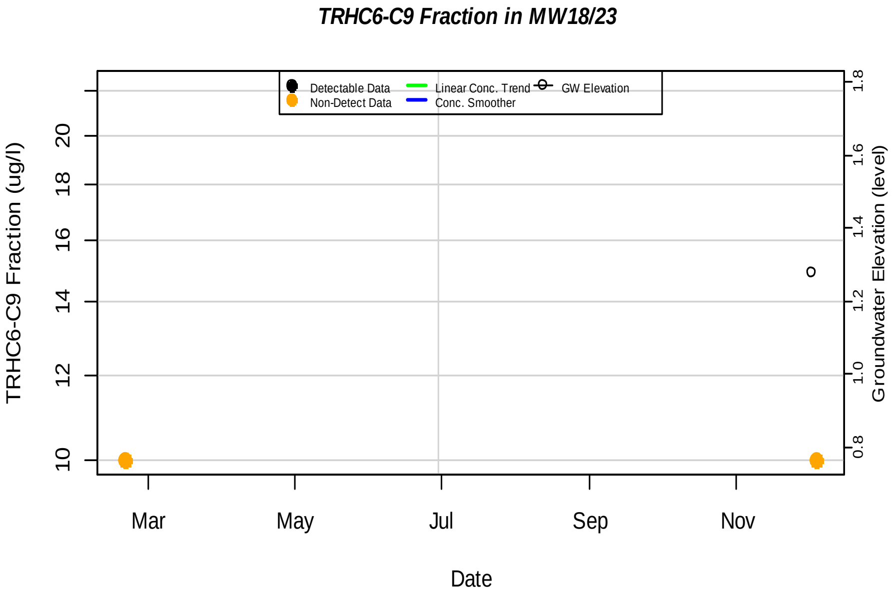

TRHC6-C9 Fraction in MW12/23
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

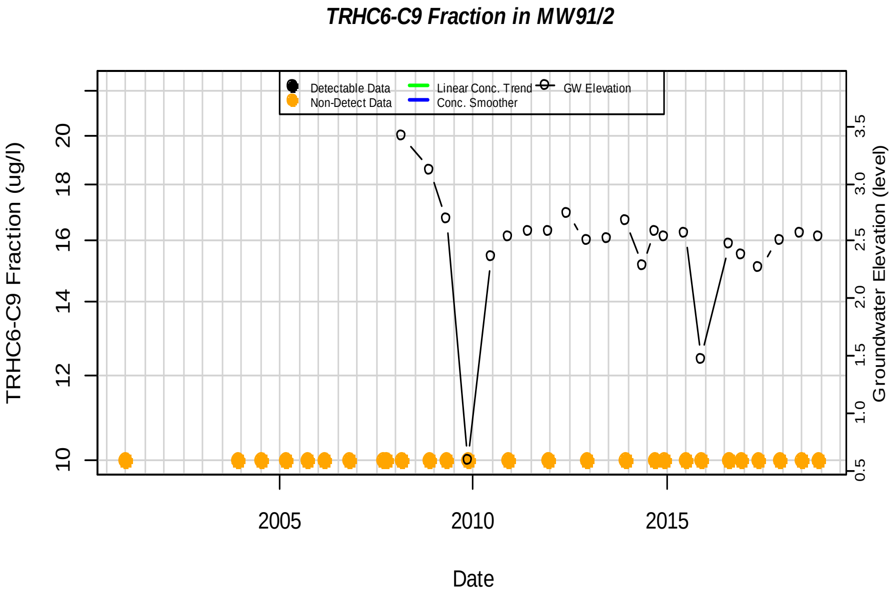

TRHC6-C9 Fraction in MW12/24
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

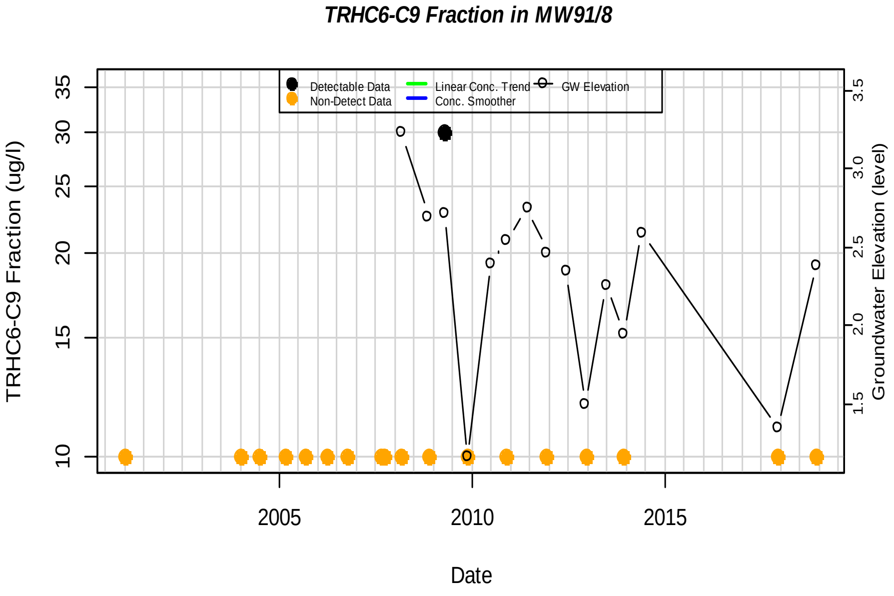

TRHC6-C9 Fraction in MW12/25
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

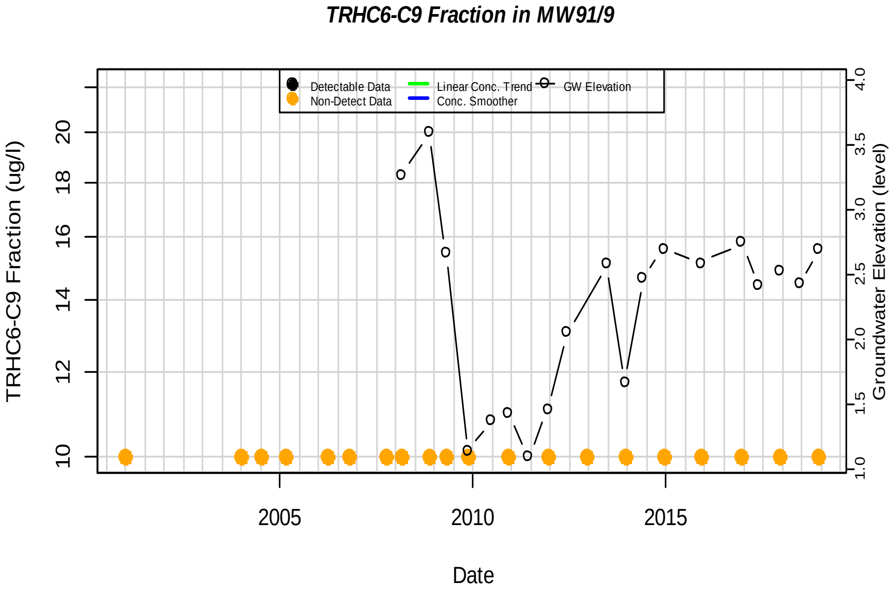

TRHC6-C9 Fraction in MW12/26
Mann-Kendall P.Value= 0.759; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

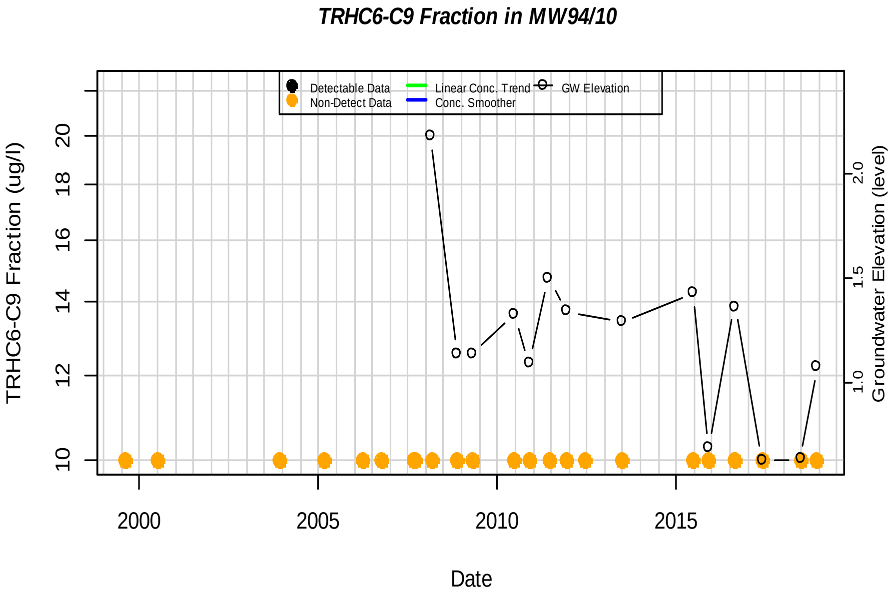

TRHC6-C9 Fraction in MW18/06
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
Mar
May
Jul
Sep
Nov

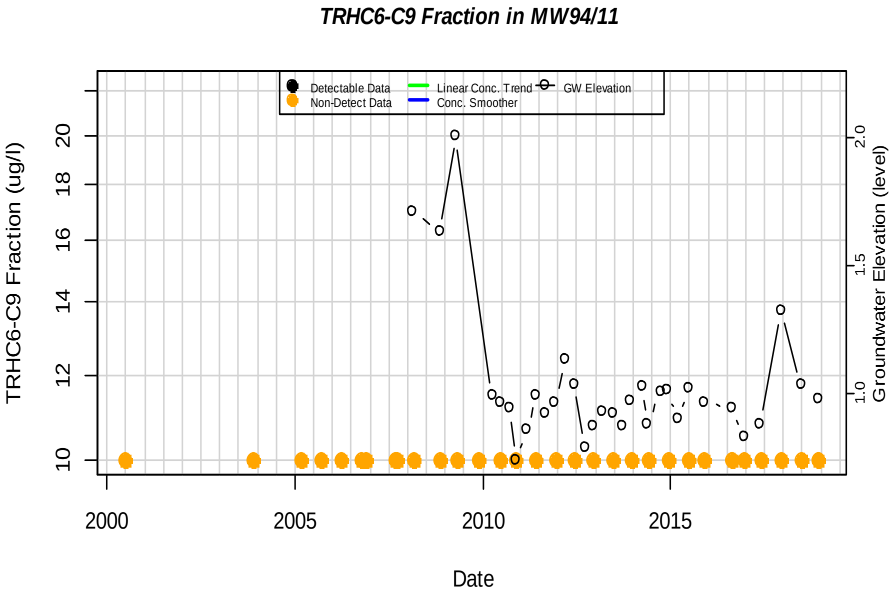

TRHC6-C9 Fraction in MW18/23
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
Mar
May
Jul
Sep
Nov

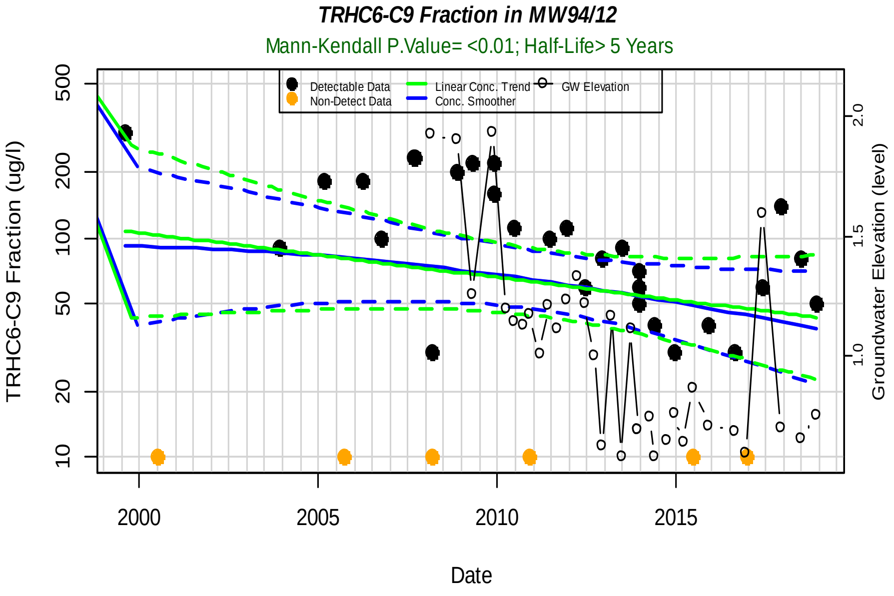

TRHC6-C9 Fraction in MW91/2
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015

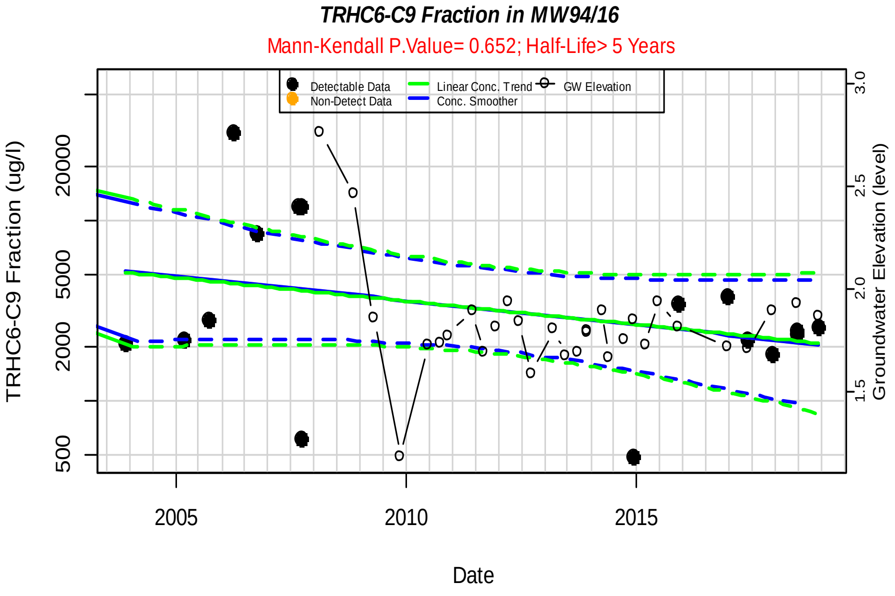

TRHC6-C9 Fraction in MW91/8
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

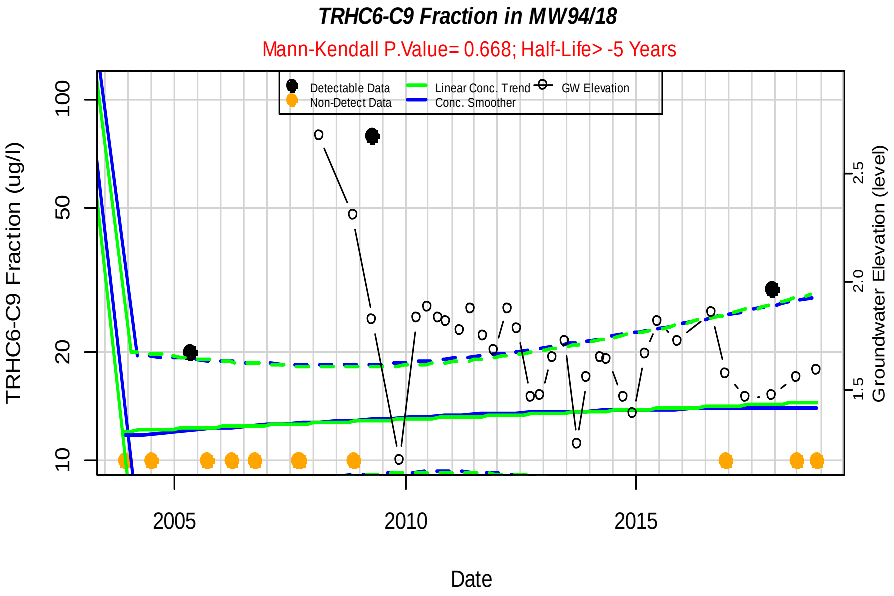

TRHC6-C9 Fraction in MW91/9
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

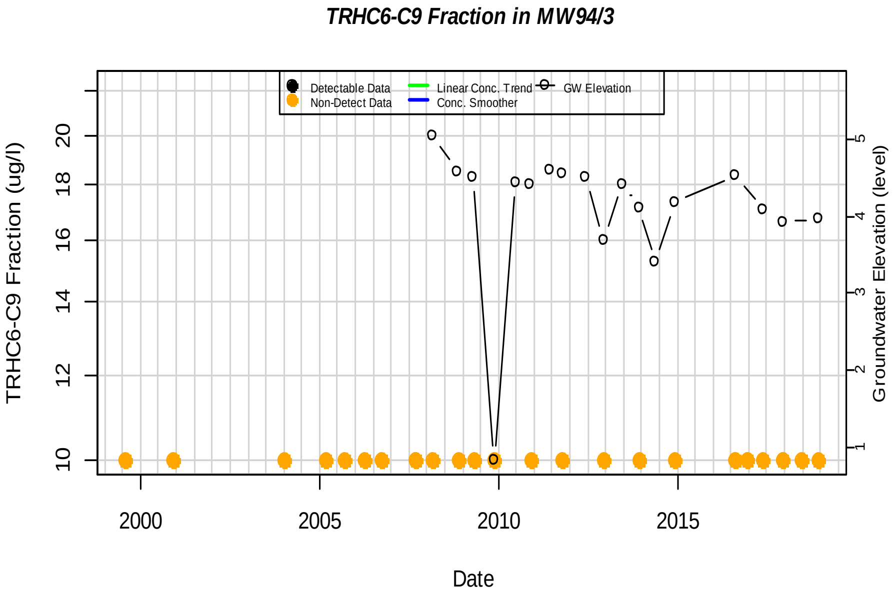

TRHC6-C9 Fraction in MW94/10
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRHC6-C9 Fraction in MW94/11
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

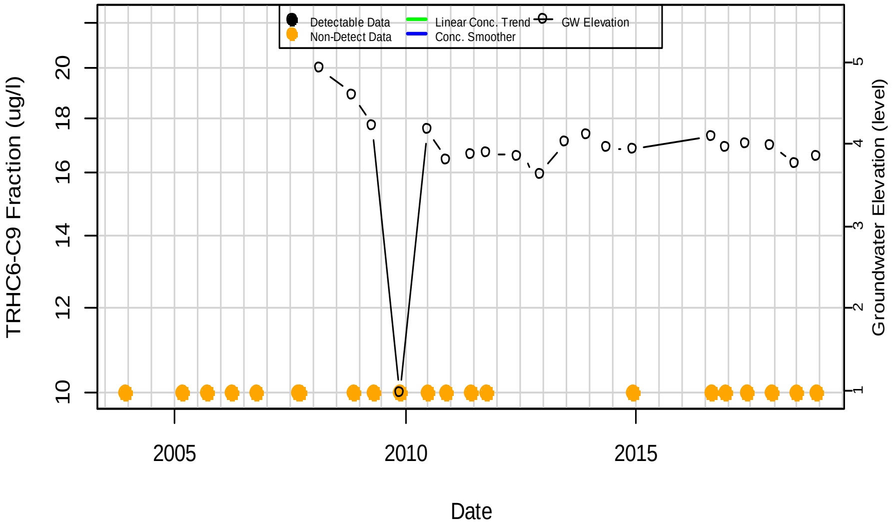

TRHC6-C9 Fraction in MW94/12
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRHC6-C9 Fraction in MW94/16
Mann-Kendall P.Value= 0.652; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

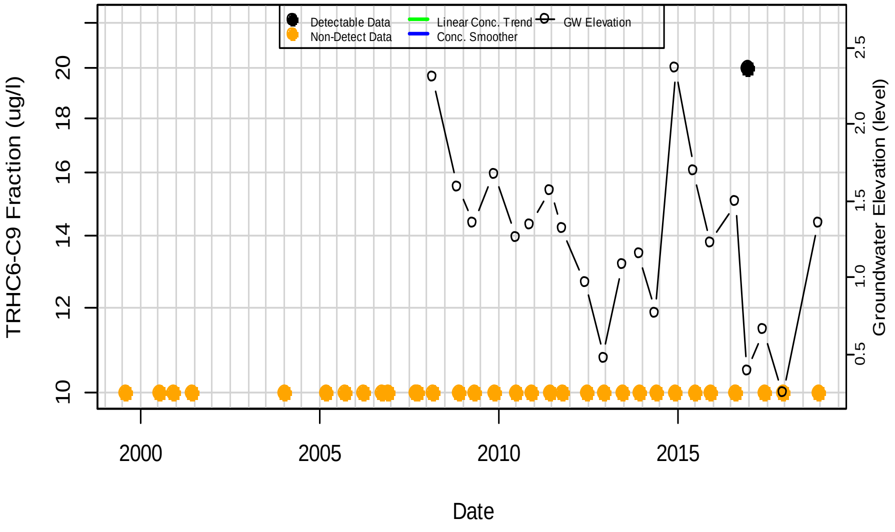

TRHC6-C9 Fraction in MW94/18
Mann-Kendall P.Value= 0.668; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRHC6-C9 Fraction in MW94/3
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

TRHC6-C9 Fraction in MW94/4

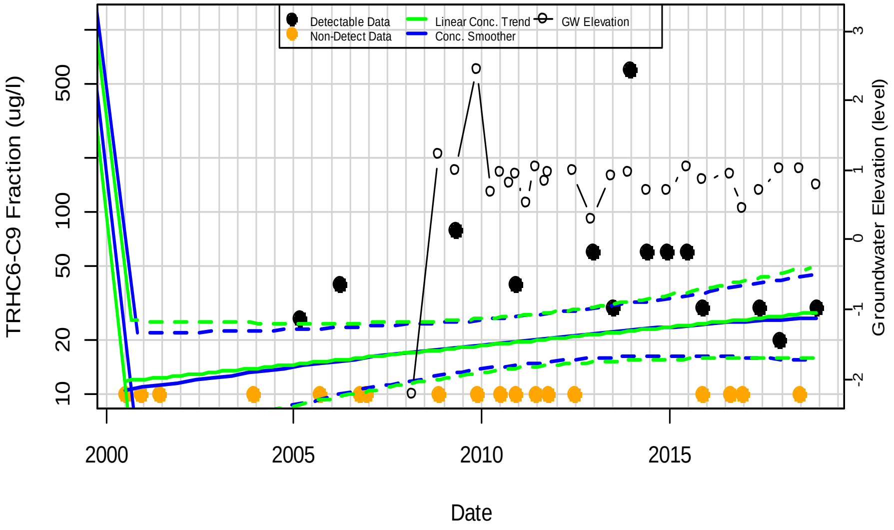


TRHC6-C9 Fraction in MW94/6



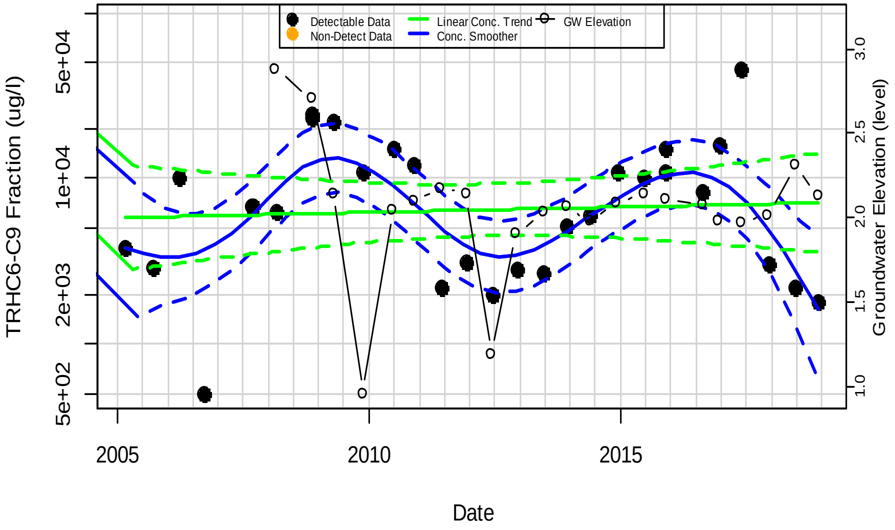
TRHC6-C9 Fraction in MW94/8

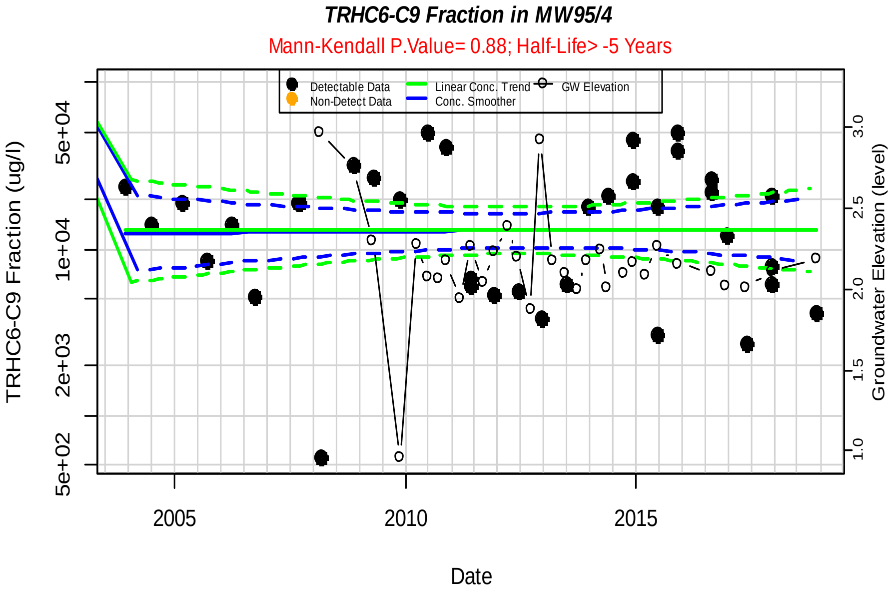
Mann-Kendall P.Value= 0.182; Half-Life> -5 Years



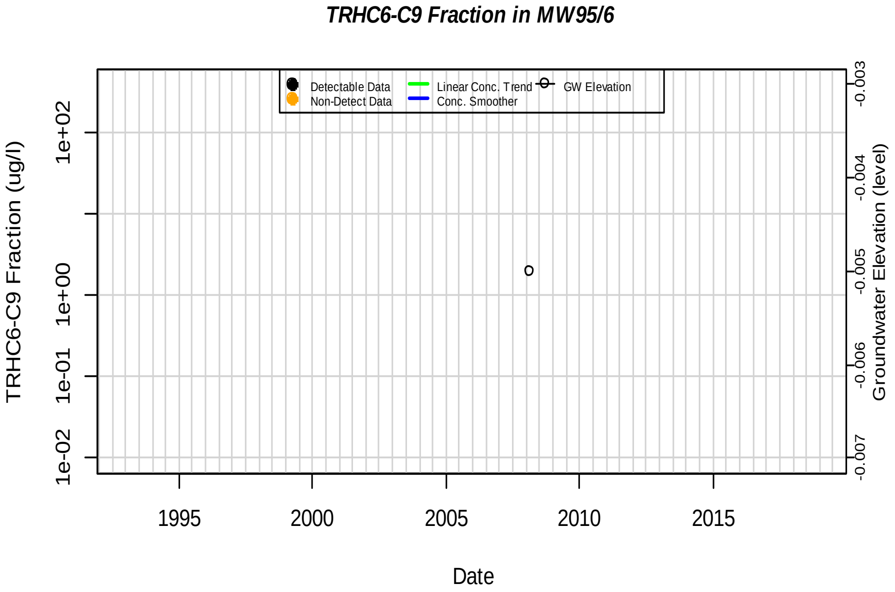
TRHC6-C9 Fraction in MW95/13

Mann-Kendall P.Value= 1; Half-Life> -5 Years

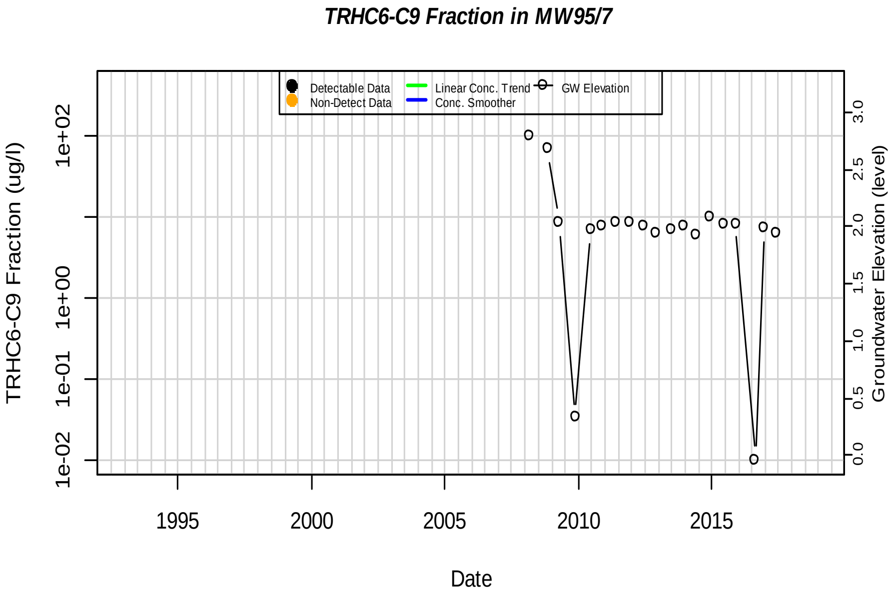




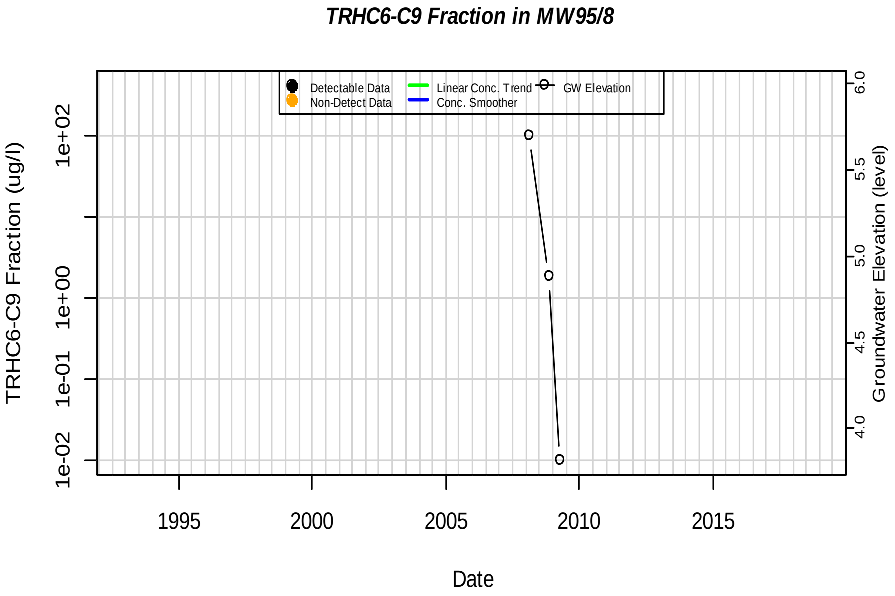
TRHC6-C9 Fraction in MW95/4
Mann-Kendall P.Value= 0.88; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date



TRHC6-C9 Fraction in MW95/6
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

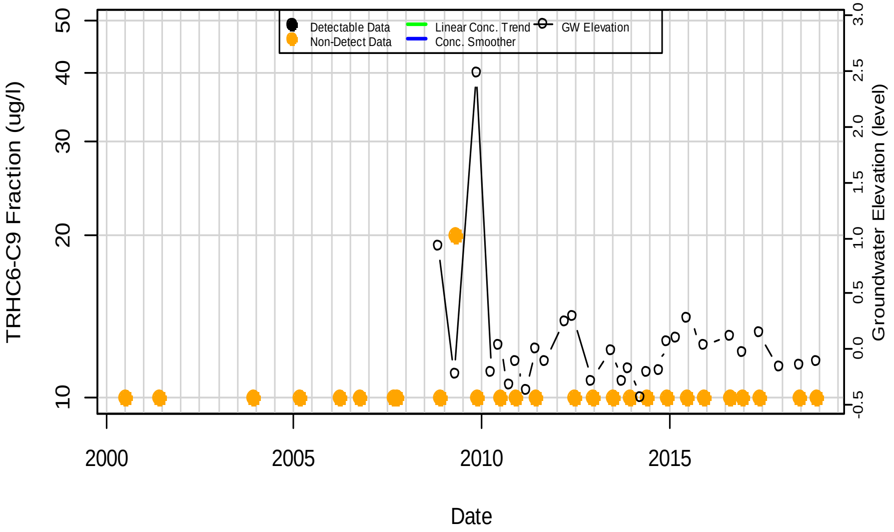


TRHC6-C9 Fraction in MW95/7
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

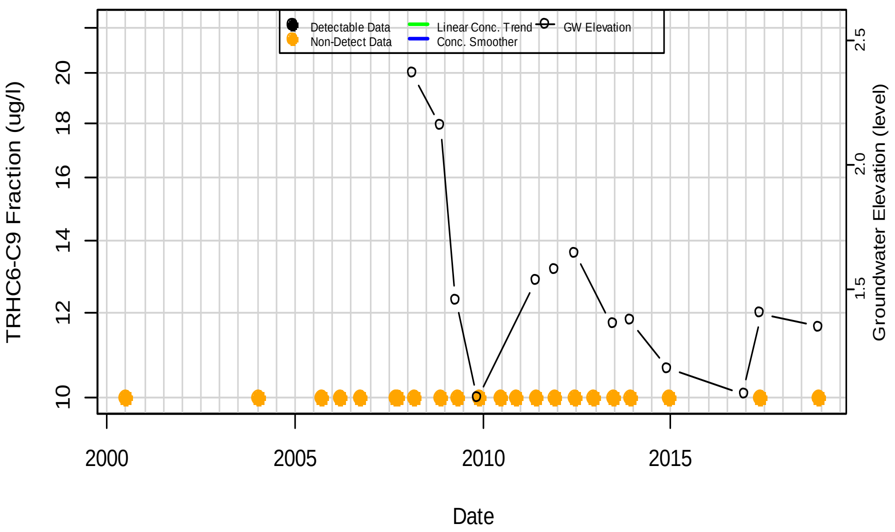


TRHC6-C9 Fraction in MW95/8
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

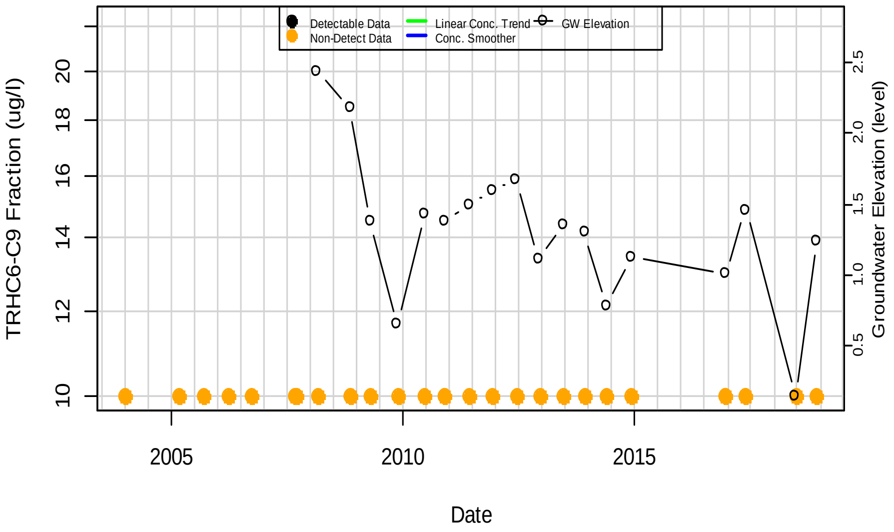
TRHC6-C9 Fraction in MW96/7



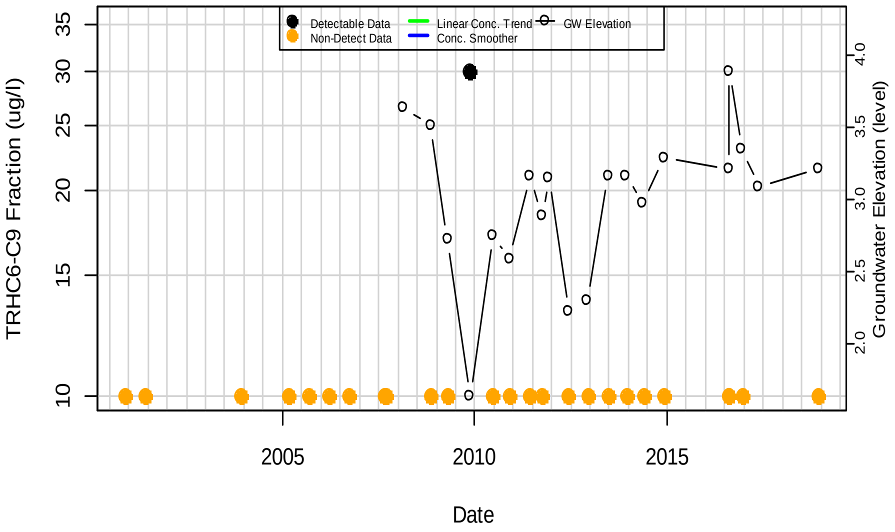
TRHC6-C9 Fraction in MW97/3

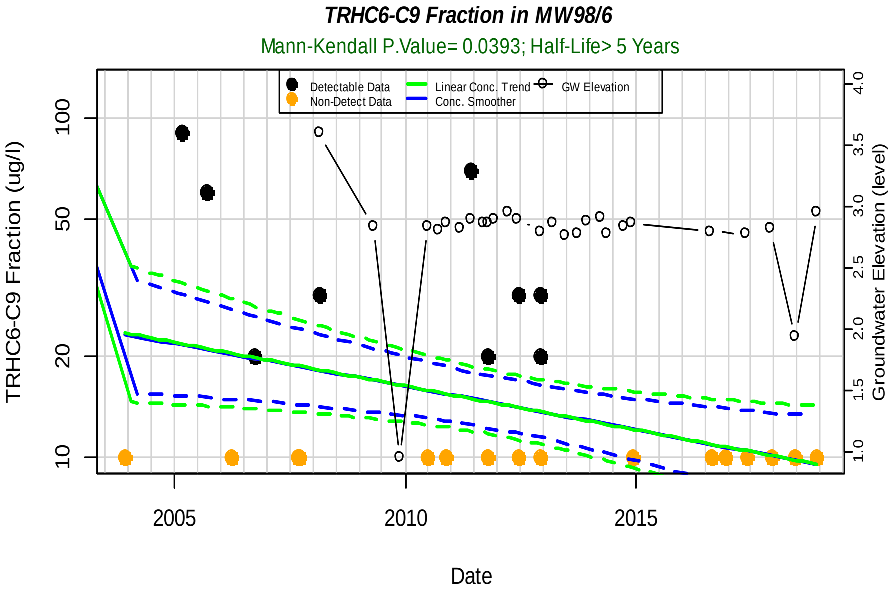


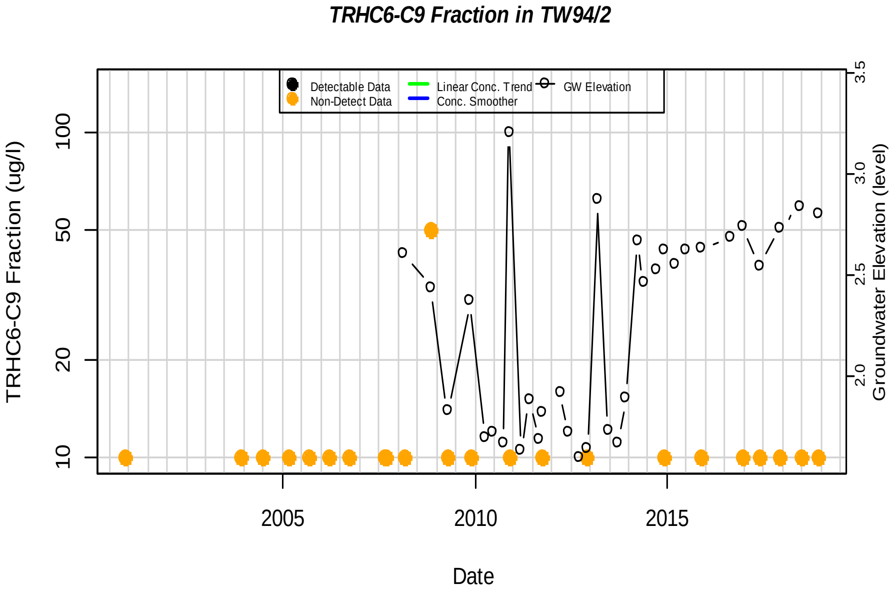
TRHC6-C9 Fraction in MW97/4

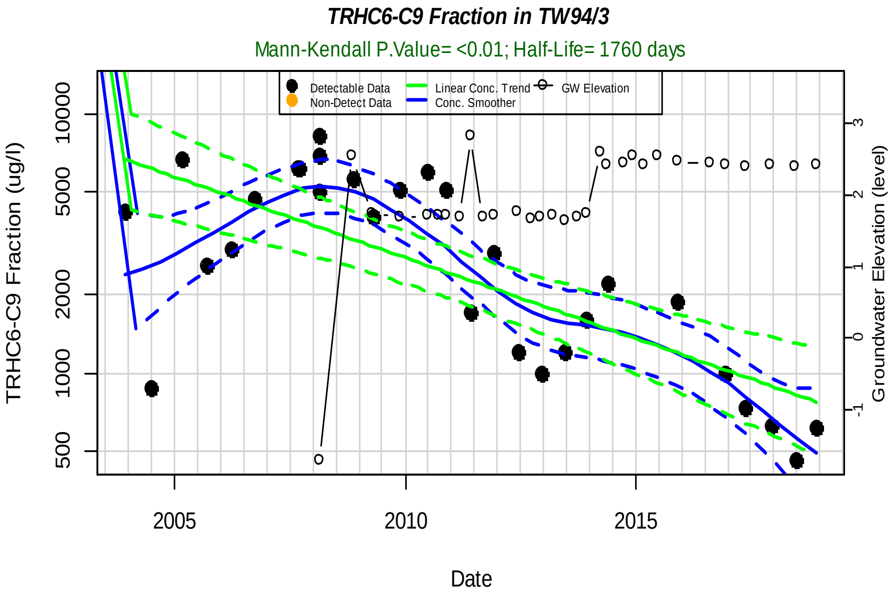


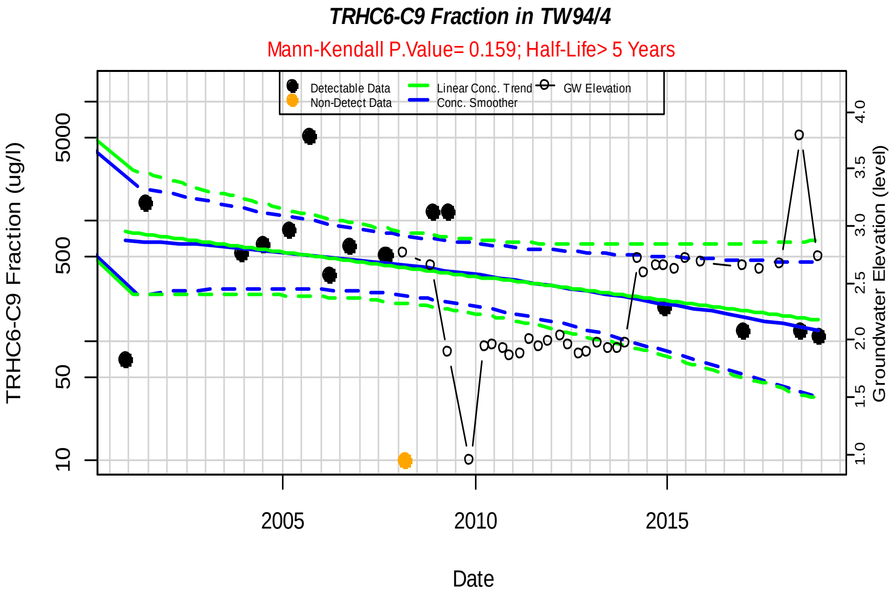
TRHC6-C9 Fraction in MW98/4

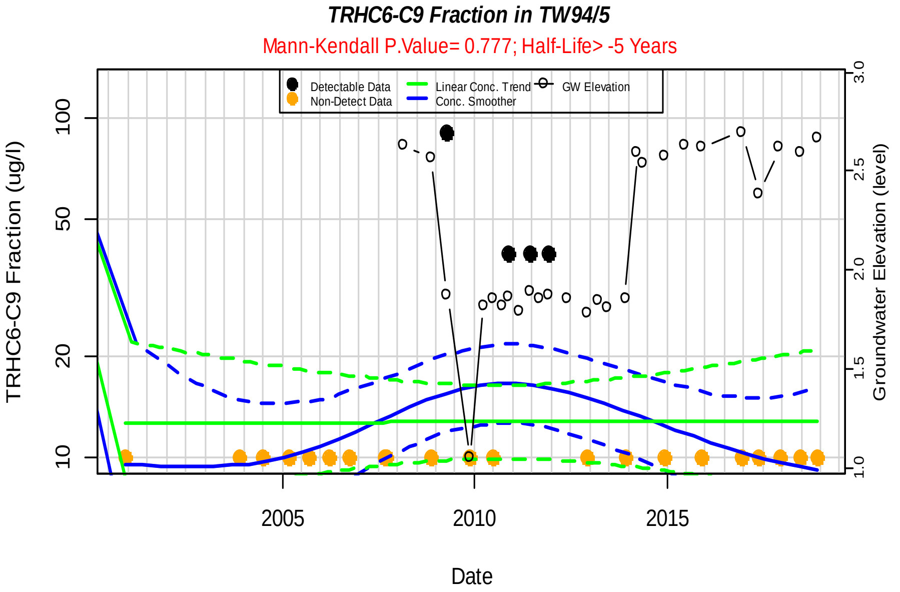



TRHC6-C9 Fraction in MW98/6
Mann-Kendall P.Value= 0.0393; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015

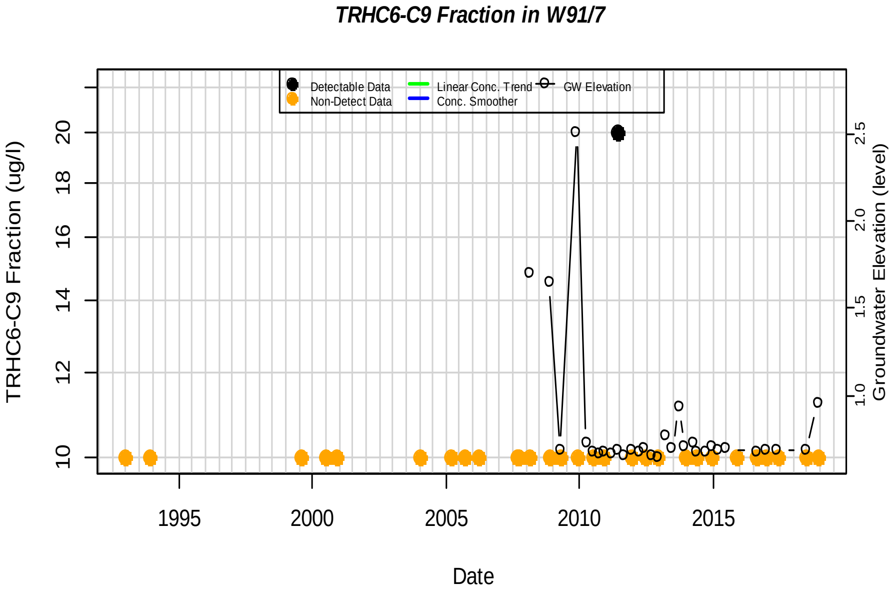

TRHC6-C9 Fraction in TW94/2
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015


TRHC6-C9 Fraction in TW94/3
Mann-Kendall P.Value= <0.01; Half-Life= 1760 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015

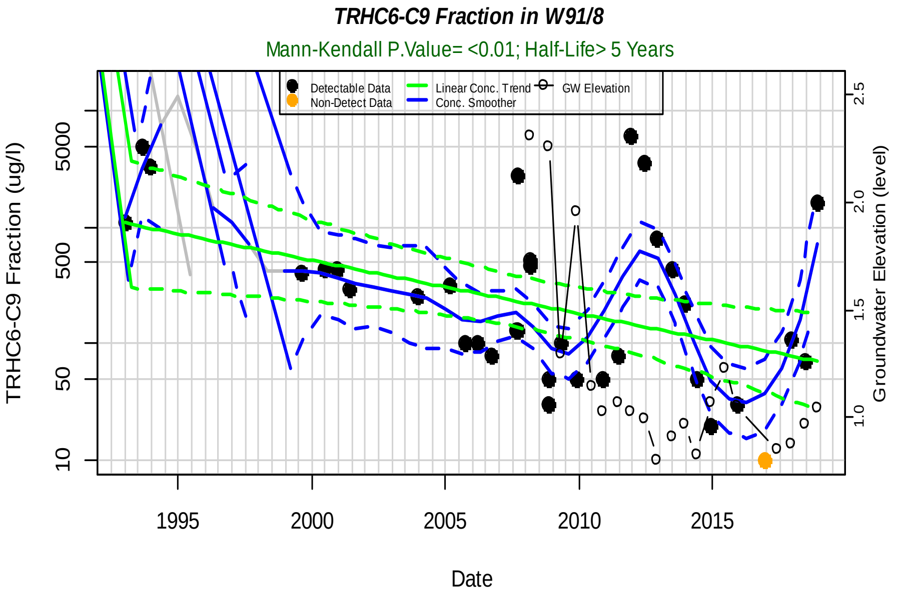

TRHC6-C9 Fraction in TW94/4
Mann-Kendall P.Value= 0.159; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015



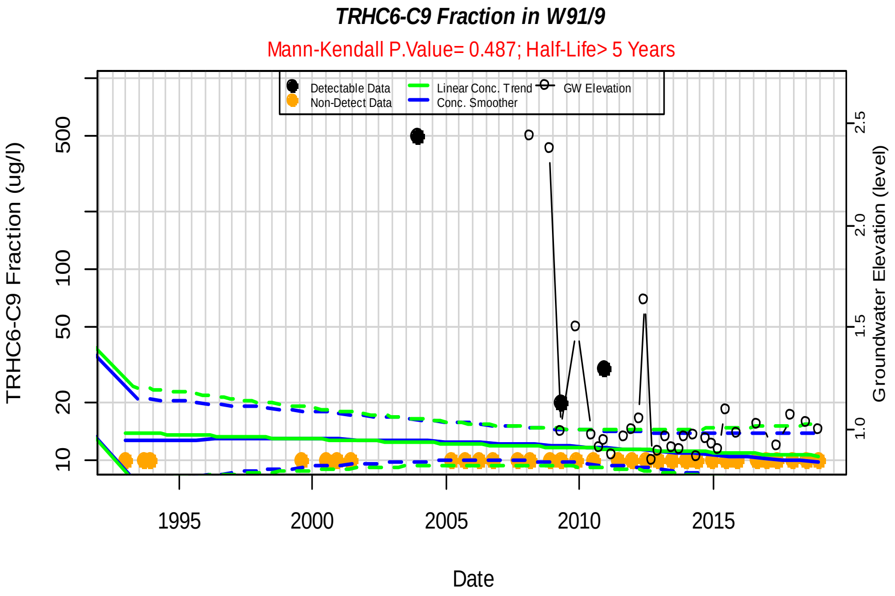
TRHC6-C9 Fraction in TW94/5
Mann-Kendall P.Value= 0.777; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date



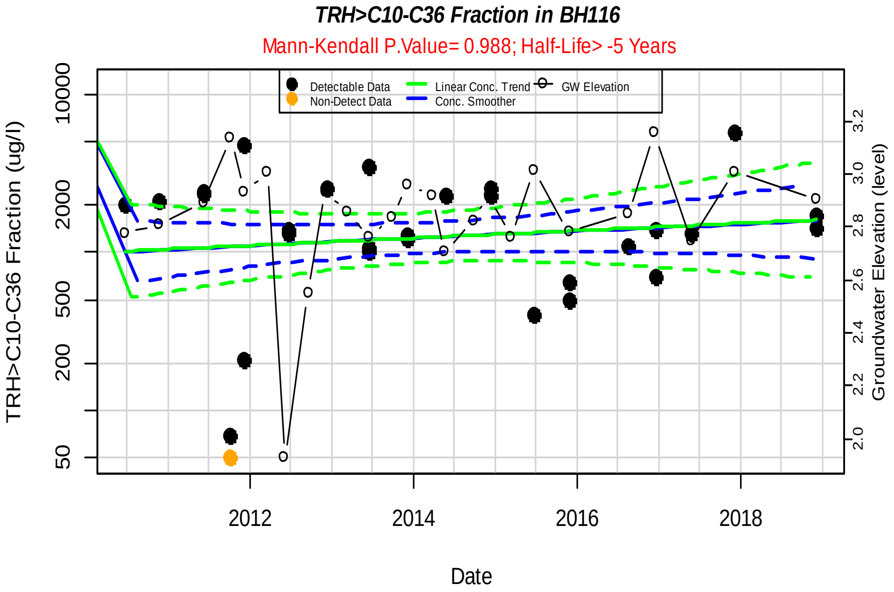
TRHC6-C9 Fraction in W91/7
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

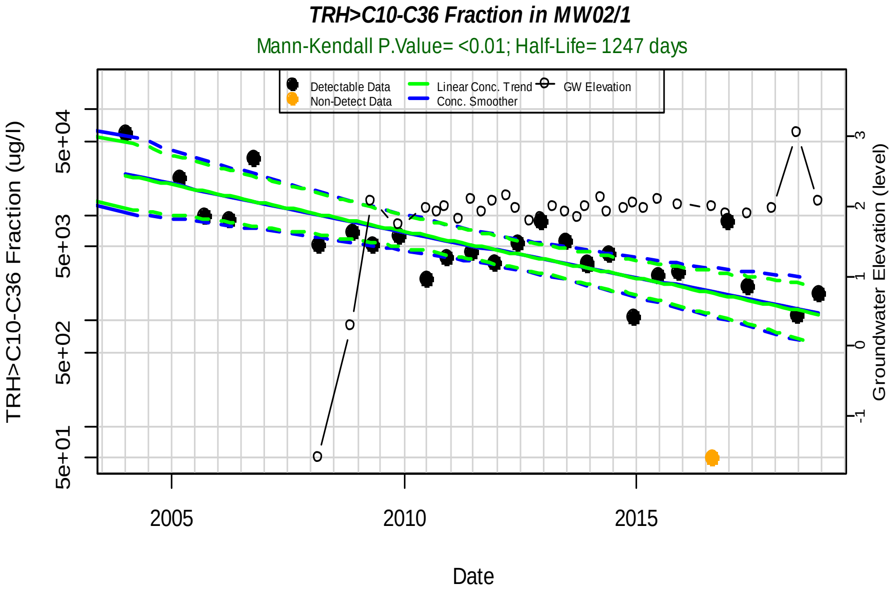


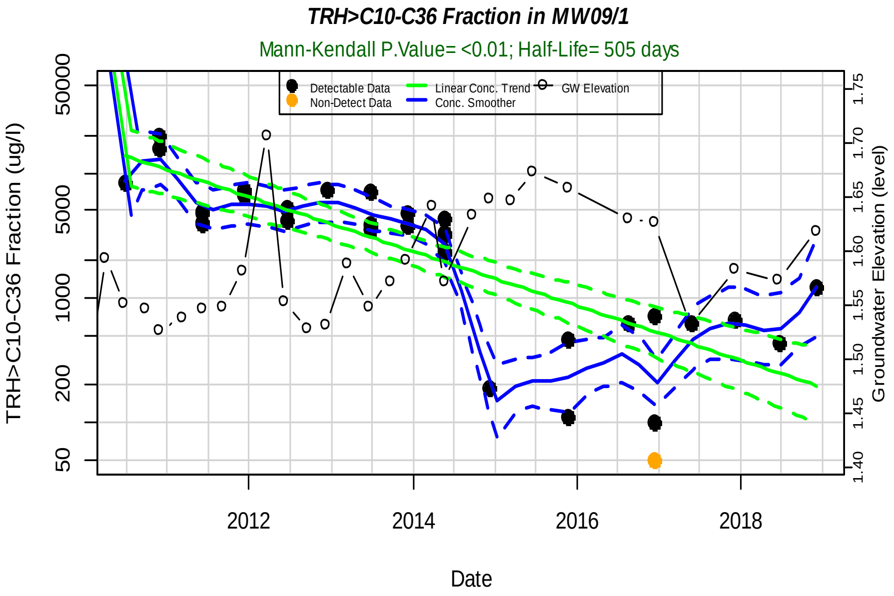
TRHC6-C9 Fraction in W91/8
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date

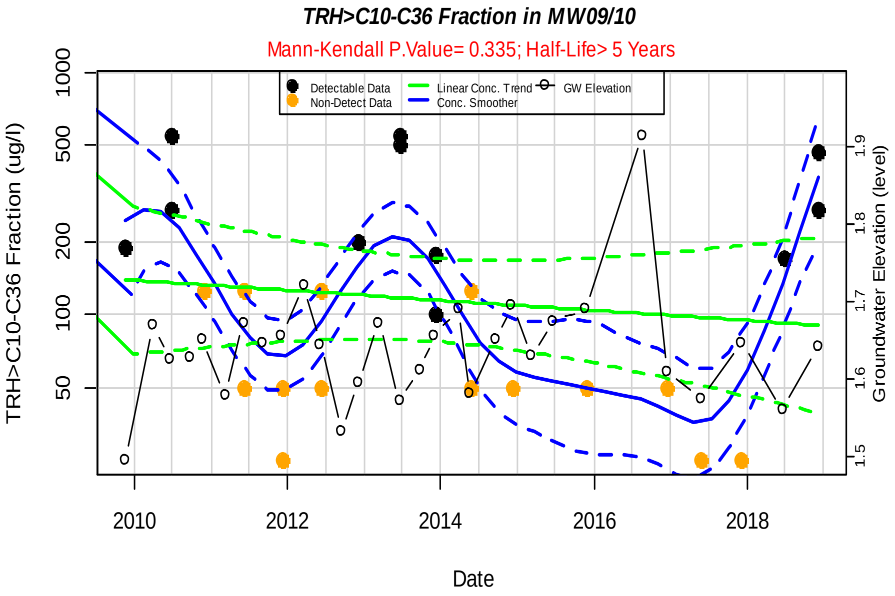


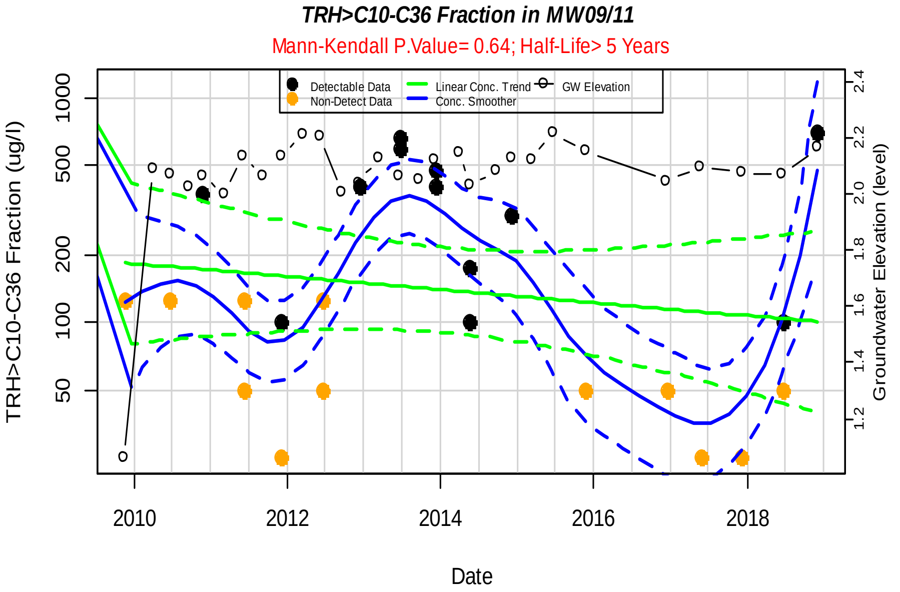
TRHC6-C9 Fraction in W91/9
Mann-Kendall P.Value= 0.487; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRHC6-C9 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRH>C10-C36 Fraction in BH116
Mann-Kendall P.Value= 0.988; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

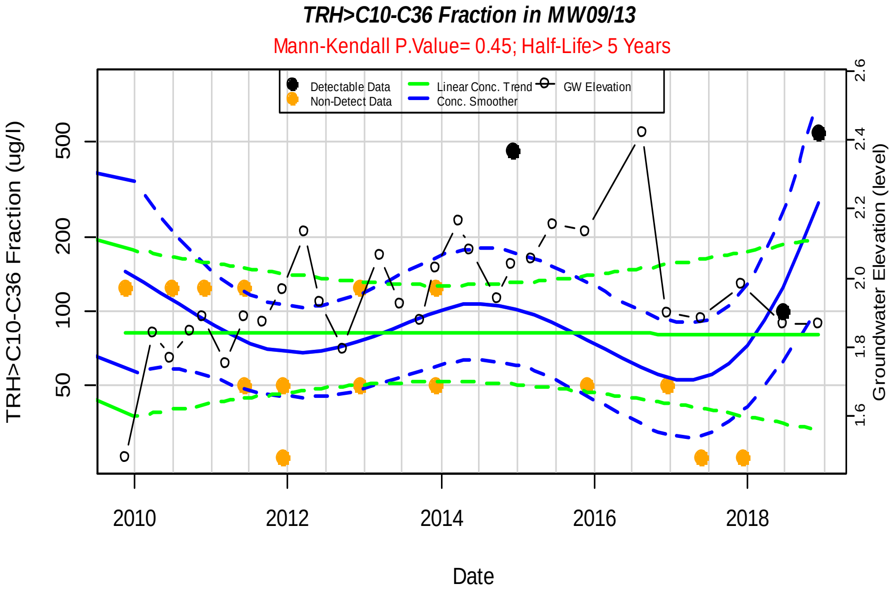

TRH>C10-C36 Fraction in MW02/1
Mann-Kendall P.Value= <0.01; Half-Life= 1247 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRH>C10-C36 Fraction in MW09/1
Mann-Kendall P.Value= <0.01; Half-Life= 505 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

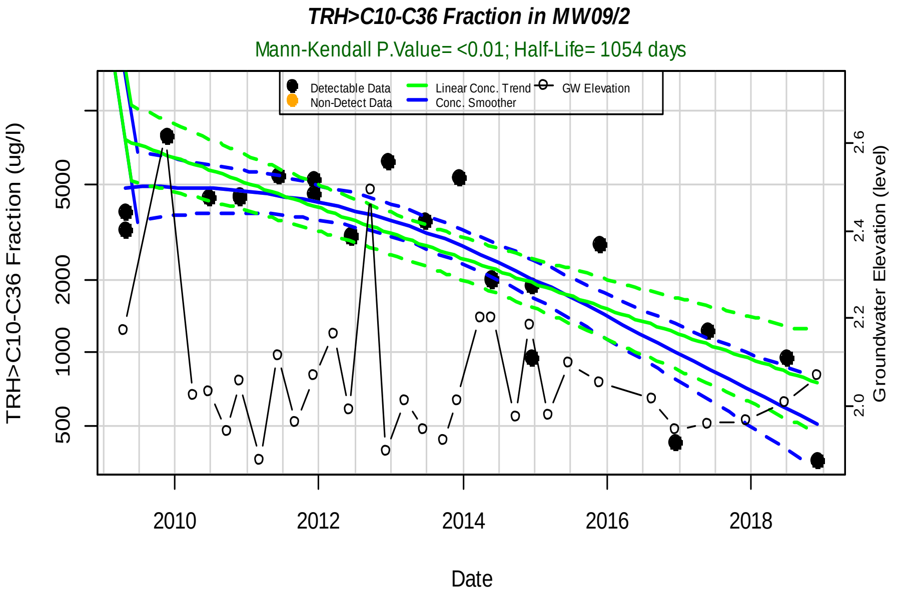

TRH>C10-C36 Fraction in MW09/10
Mann-Kendall P.Value= 0.335; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date



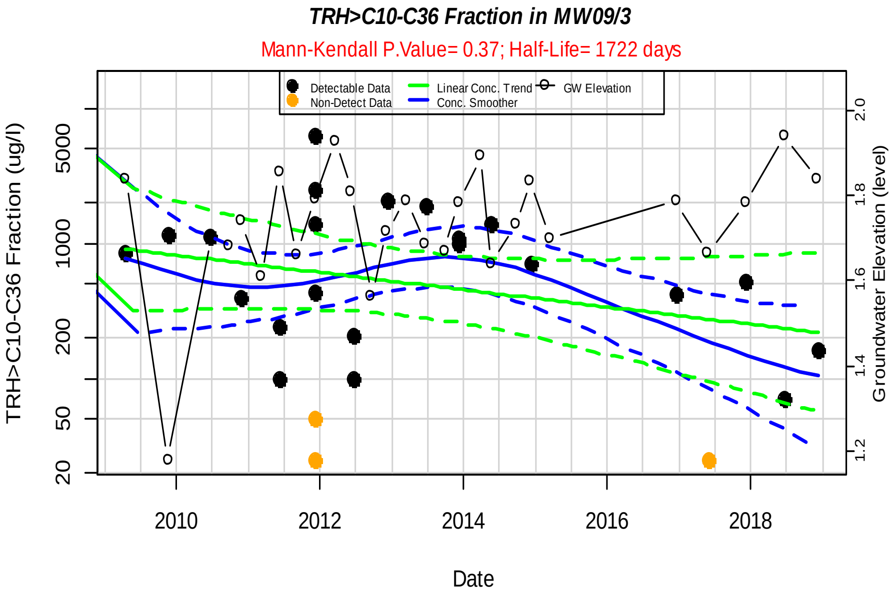
TRH>C10-C36 Fraction in MW09/11
Mann-Kendall P.Value= 0.64; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date



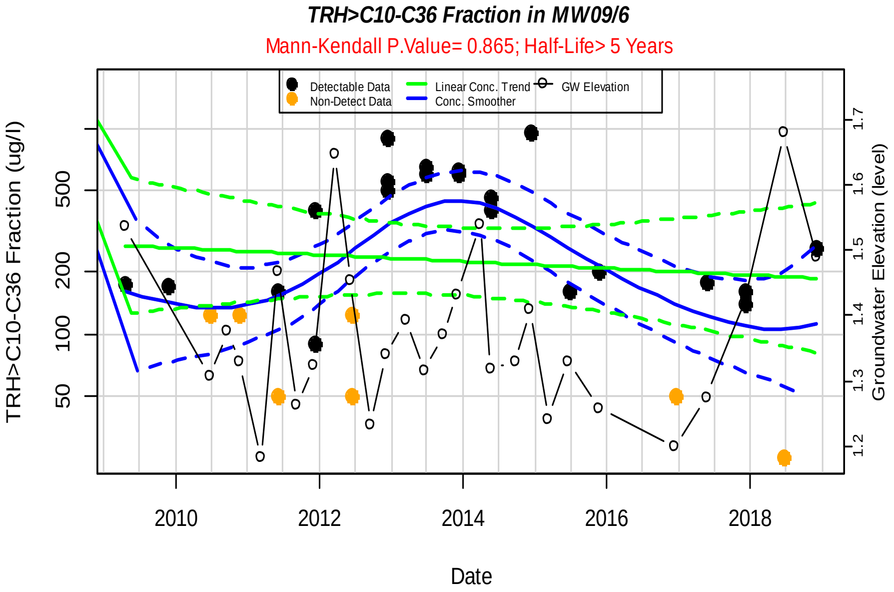
TRH>C10-C36 Fraction in MW09/13
Mann-Kendall P.Value= 0.45; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

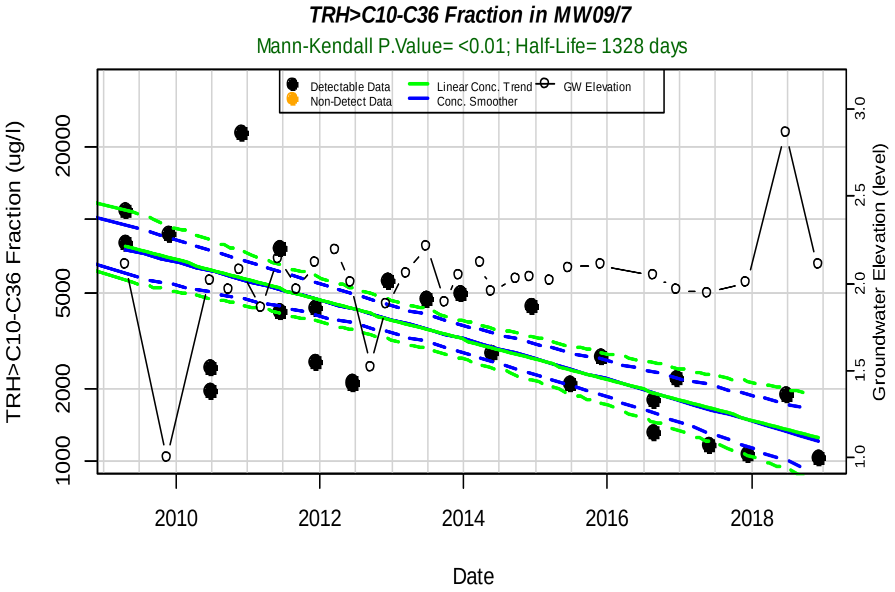


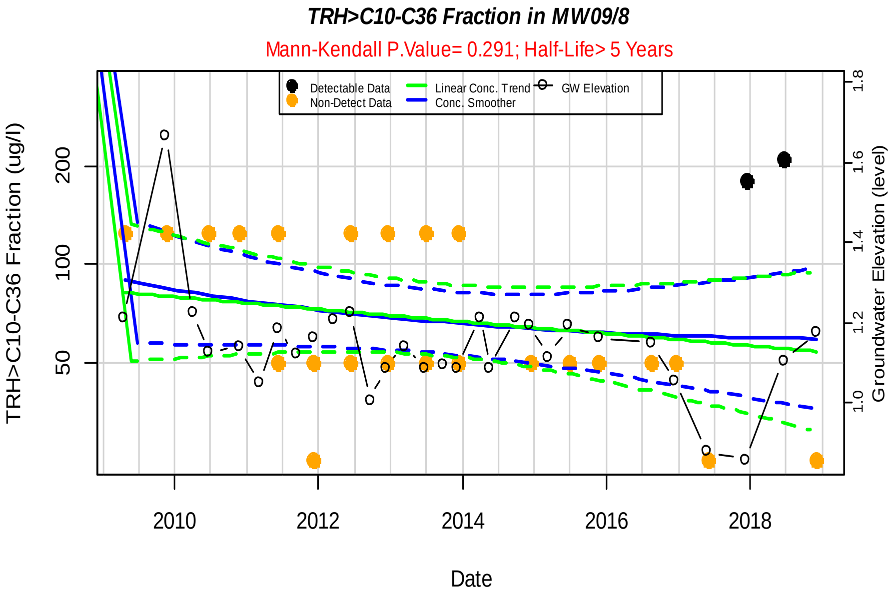
TRH>C10-C36 Fraction in MW09/2
Mann-Kendall P.Value= <0.01; Half-Life= 1054 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

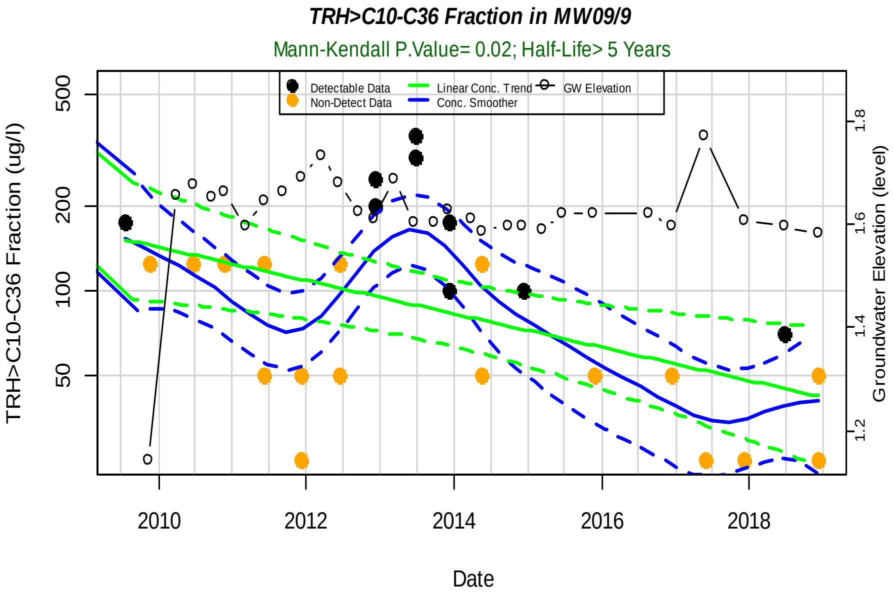


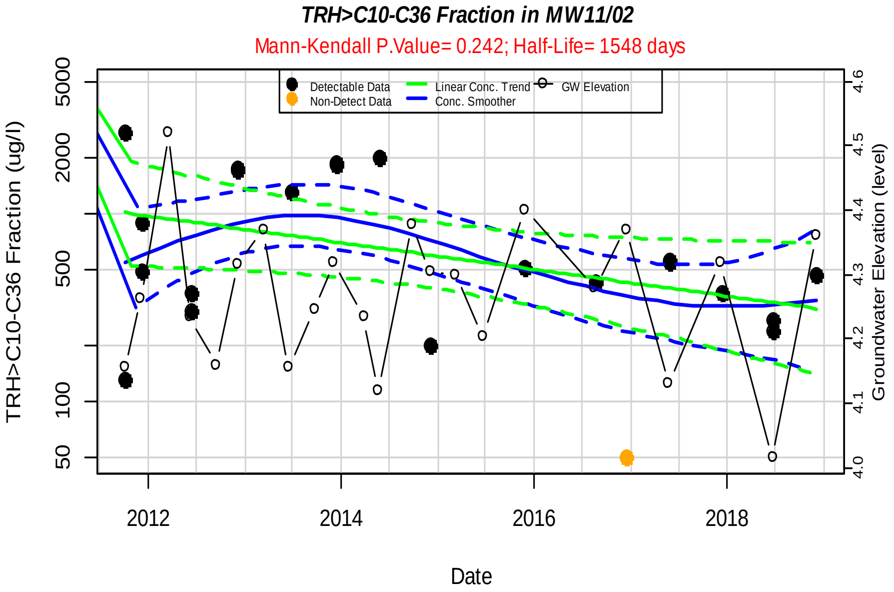
TRH>C10-C36 Fraction in MW09/3
Mann-Kendall P.Value= 0.37; Half-Life= 1722 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

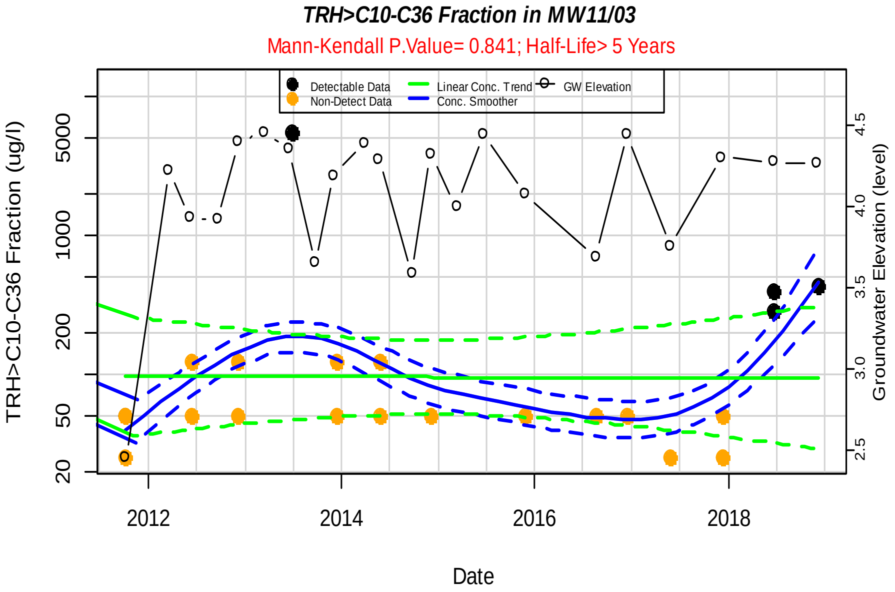

TRH>C10-C36 Fraction in MW09/6
Mann-Kendall P.Value= 0.865; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2010
2012
2014
2016
2018

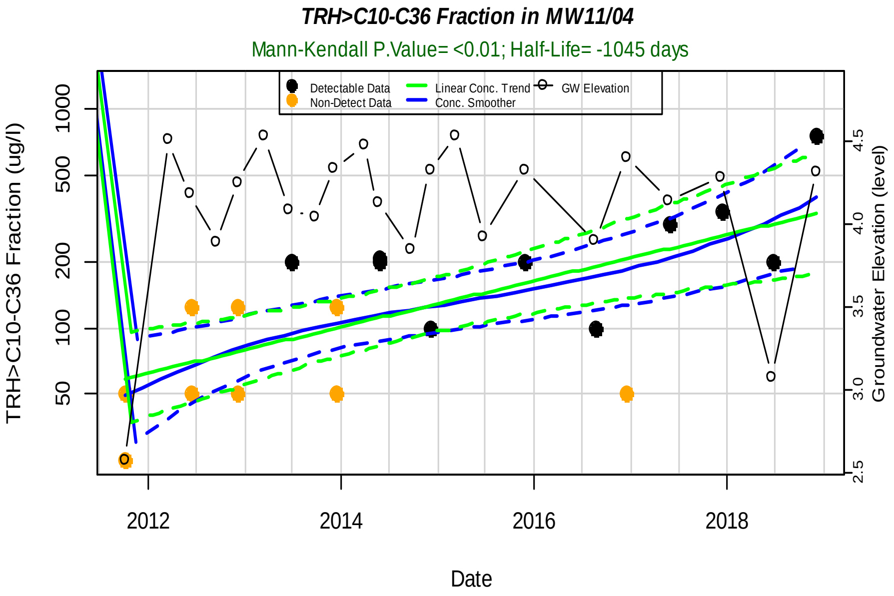

TRH>C10-C36 Fraction in MW09/7
Mann-Kendall P.Value= <0.01; Half-Life= 1328 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2010
2012
2014
2016
2018

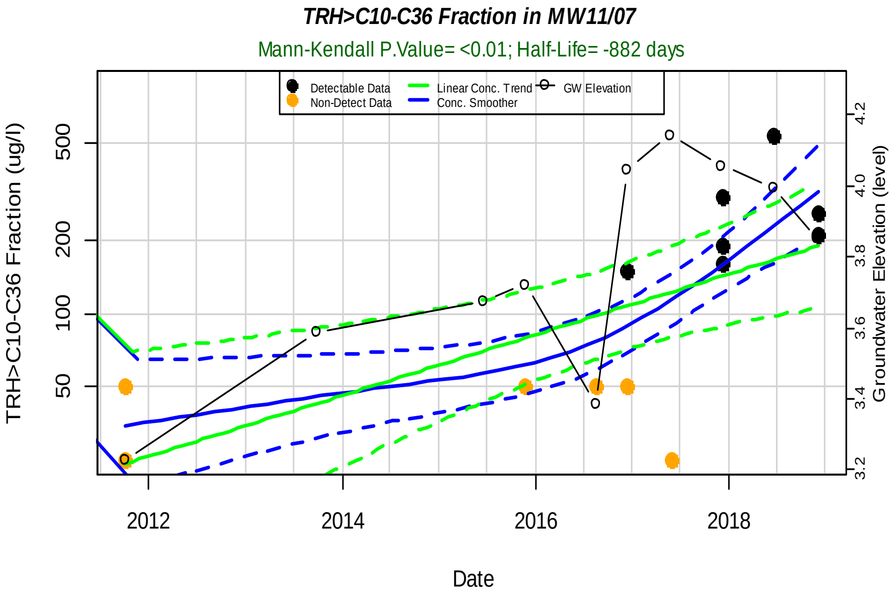

TRH>C10-C36 Fraction in MW09/8
Mann-Kendall P.Value= 0.291; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2010
2012
2014
2016
2018


TRH>C10-C36 Fraction in MW09/9
Mann-Kendall P.Value= 0.02; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2010
2012
2014
2016
2018


TRH>C10-C36 Fraction in MW11/02
Mann-Kendall P.Value= 0.242; Half-Life= 1548 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

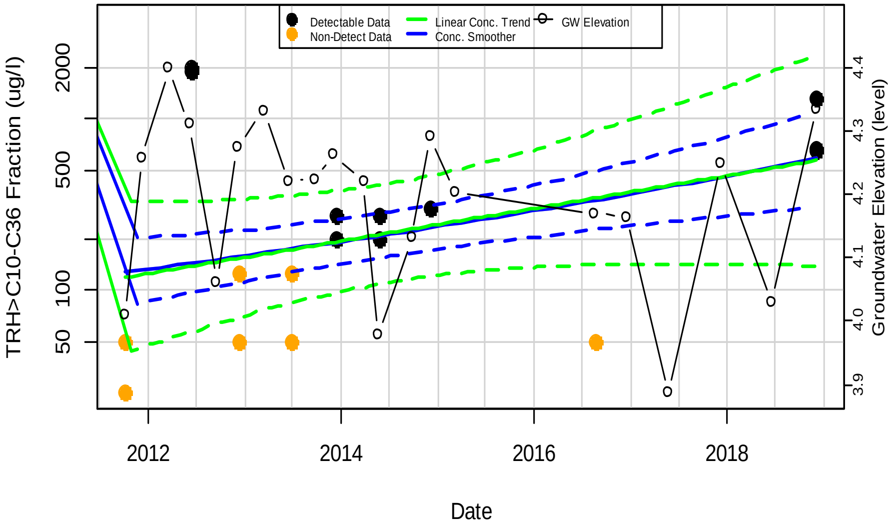

TRH>C10-C36 Fraction in MW11/03
Mann-Kendall P.Value= 0.841; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date


TRH>C10-C36 Fraction in MW11/04
Mann-Kendall P.Value= <0.01; Half-Life= -1045 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

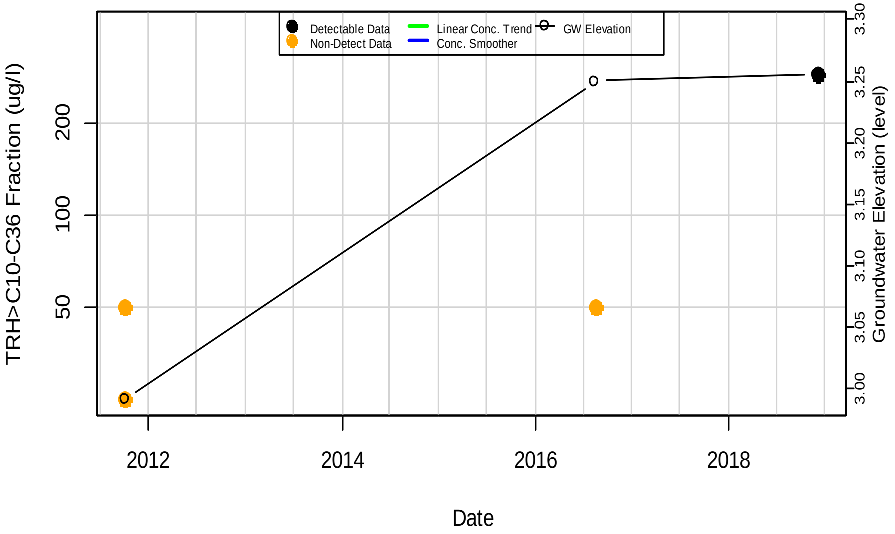

TRH>C10-C36 Fraction in MW11/07
Mann-Kendall P.Value= <0.01; Half-Life= -882 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

TRH>C10-C36 Fraction in MW11/08

Mann-Kendall P.Value= 0.0487; Half-Life= -1152 days

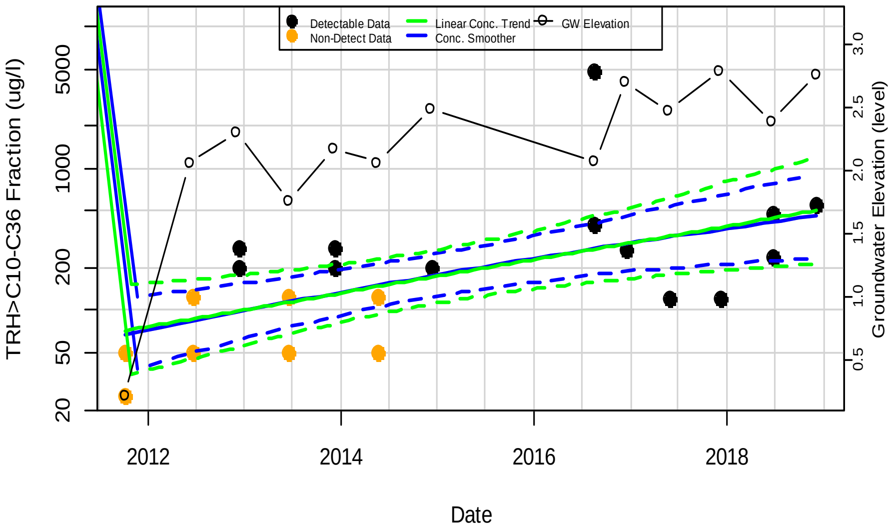


TRH>C10-C36 Fraction in MW11/20



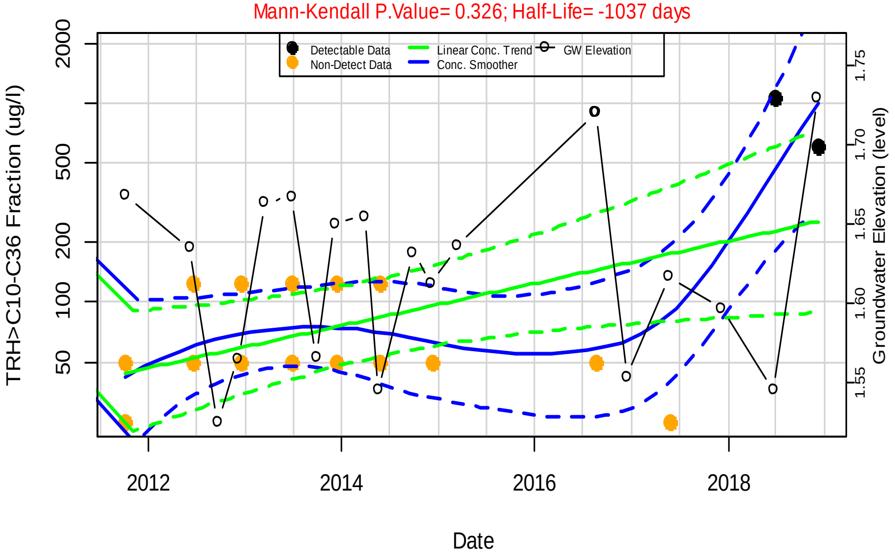
TRH>C10-C36 Fraction in MW11/24

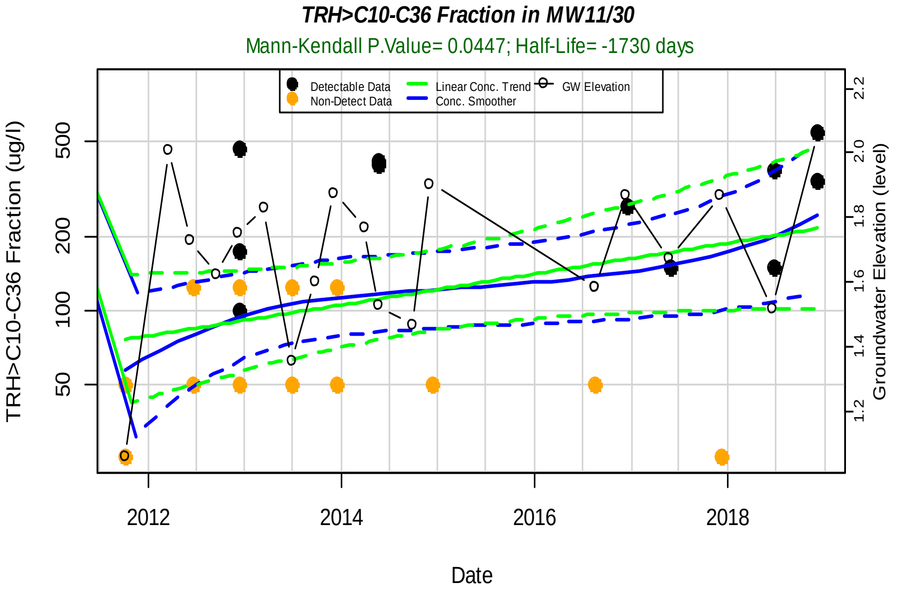
Mann-Kendall P.Value= <0.01; Half-Life= -933 days

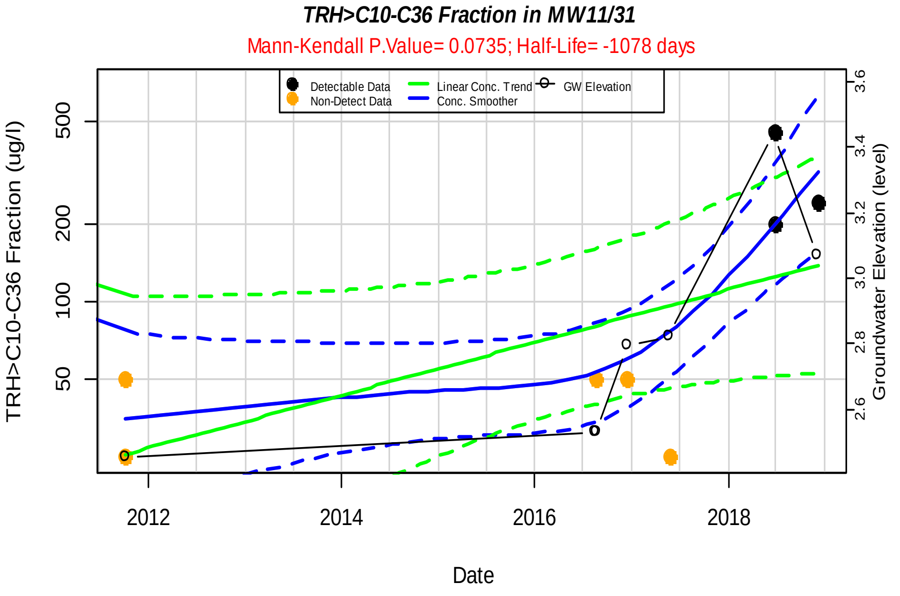


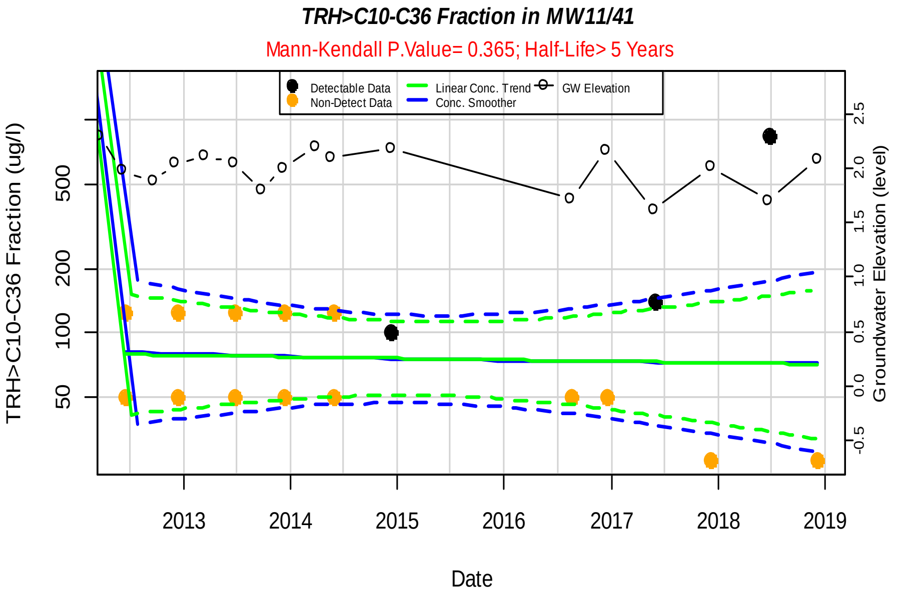
TRH>C10-C36 Fraction in MW11/26

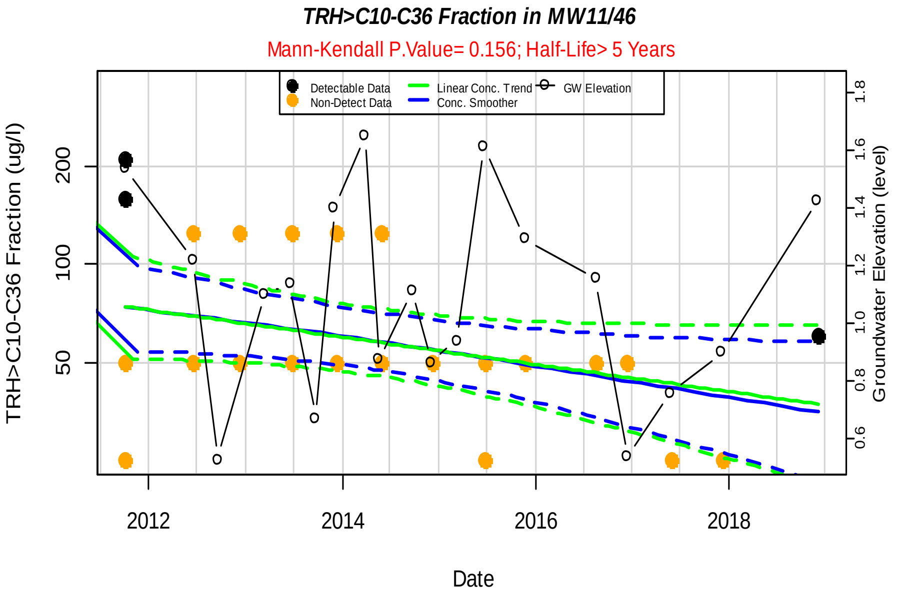
Mann-Kendall P.Value= 0.326; Half-Life= -1037 days

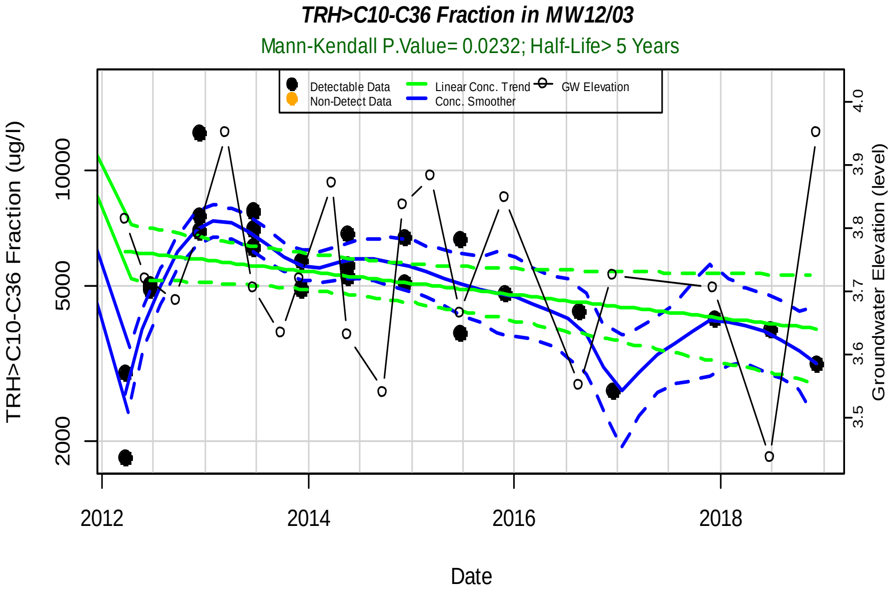


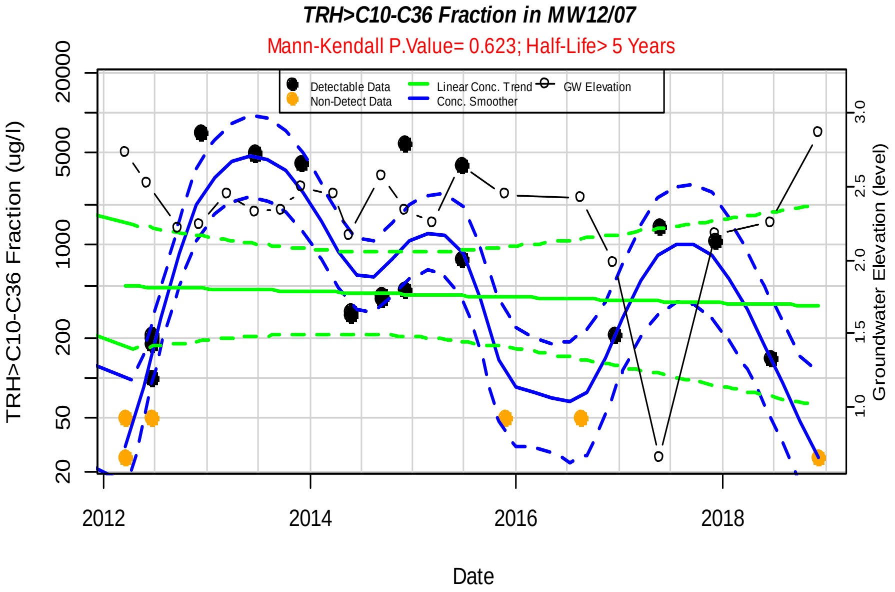

TRH>C10-C36 Fraction in MW11/30
Mann-Kendall P.Value= 0.0447; Half-Life= -1730 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50
100
200
500
2012
2014
2016
2018
Date
Groundwater Elevation (level)
1.2
1.4
1.6
1.8
2.0
2.2

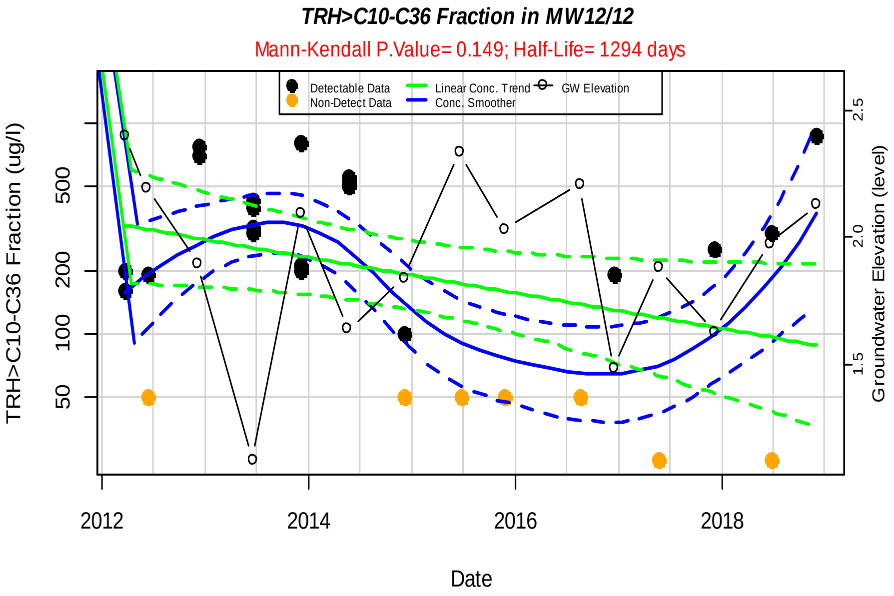

TRH>C10-C36 Fraction in MW11/31
Mann-Kendall P.Value= 0.0735; Half-Life= -1078 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50
100
200
500
2012
2014
2016
2018
Date
Groundwater Elevation (level)
2.6
2.8
3.0
3.2
3.4
3.6

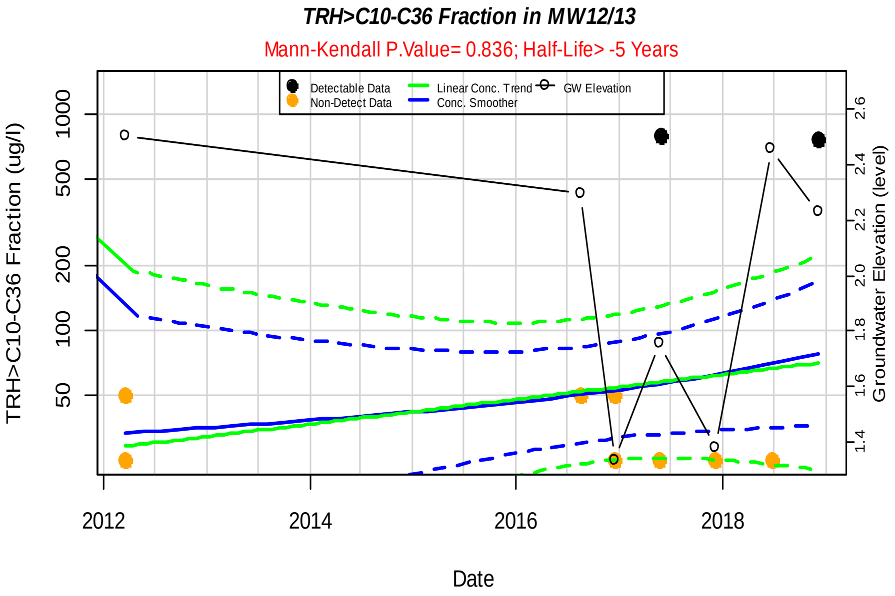

TRH>C10-C36 Fraction in MW11/41
Mann-Kendall P.Value= 0.365; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50
100
200
500
2013
2014
2015
2016
2017
2018
2019
Date
Groundwater Elevation (level)
-0.5
0.0
0.5
1.0
1.5
2.0
2.5

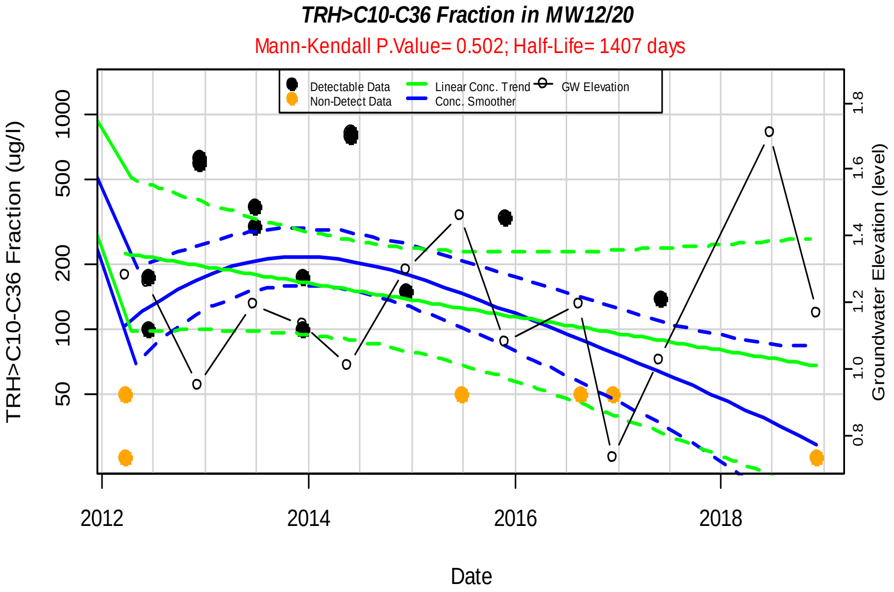

TRH>C10-C36 Fraction in MW11/46
Mann-Kendall P.Value= 0.156; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50
100
200
2012
2014
2016
2018
Date
Groundwater Elevation (level)
0.6
0.8
1.0
1.2
1.4
1.6
1.8

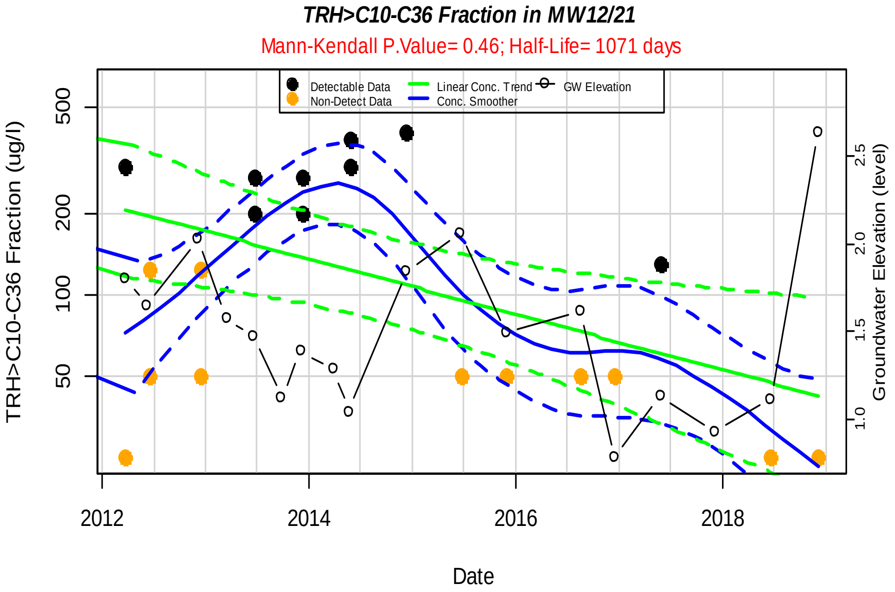

TRH>C10-C36 Fraction in MW12/03
Mann-Kendall P.Value= 0.0232; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

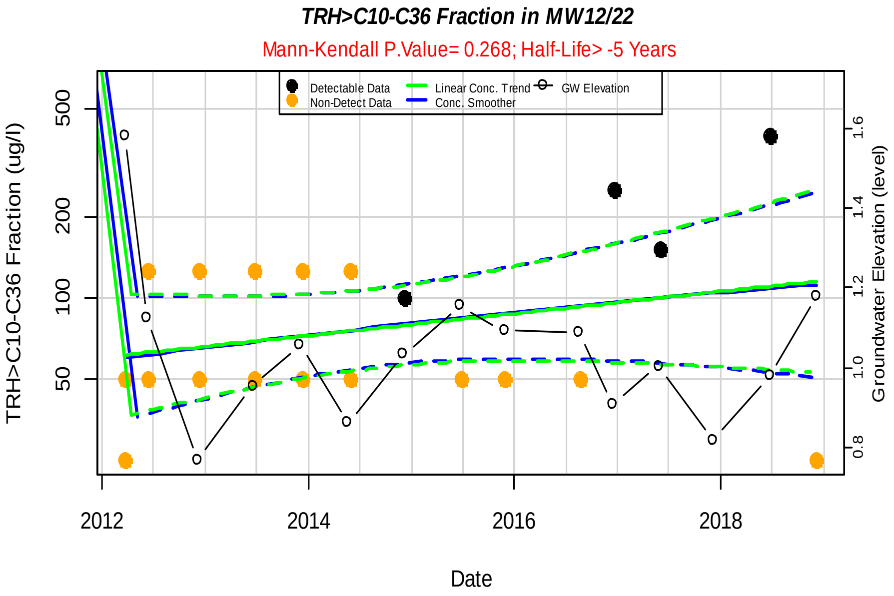

TRH>C10-C36 Fraction in MW12/07
Mann-Kendall P.Value= 0.623; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

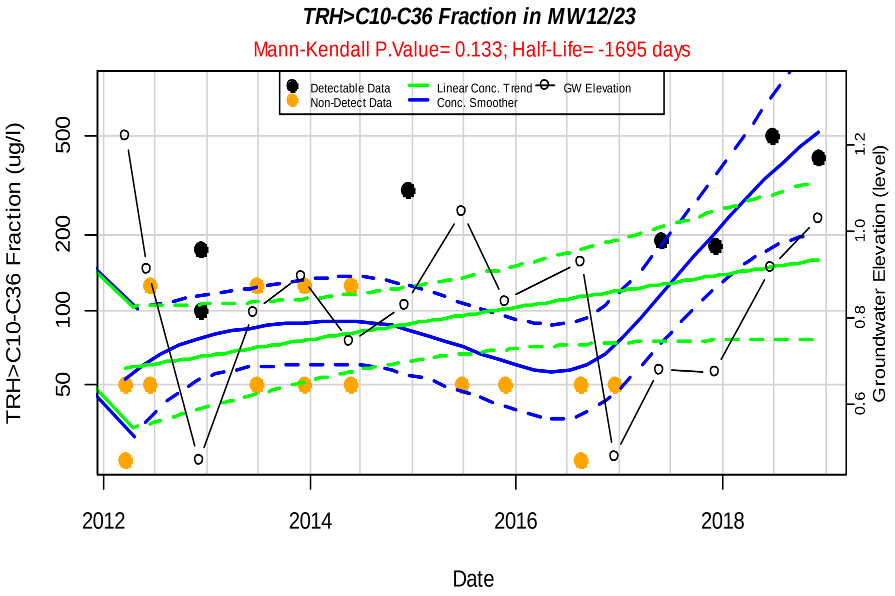

TRH>C10-C36 Fraction in MW12/12
Mann-Kendall P.Value= 0.149; Half-Life= 1294 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

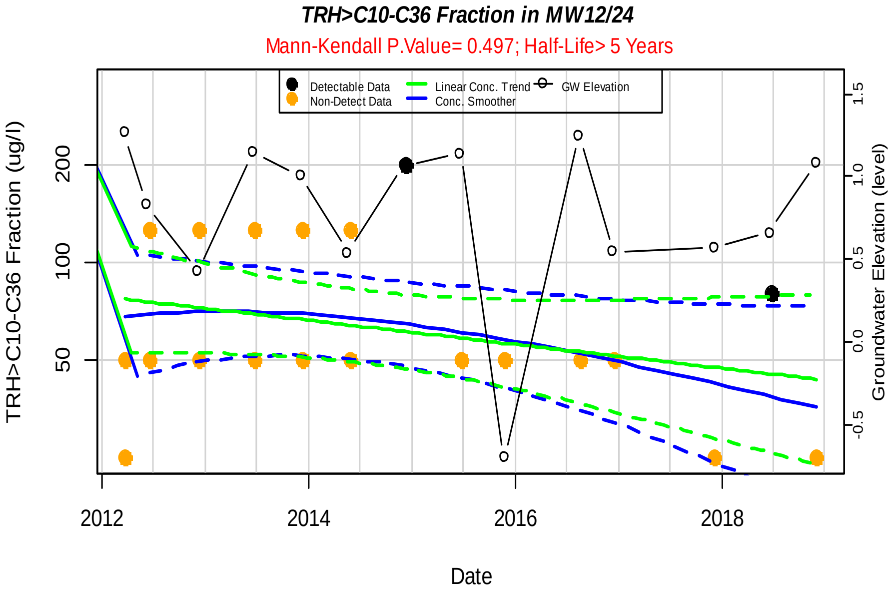

TRH>C10-C36 Fraction in MW12/13
Mann-Kendall P.Value= 0.836; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

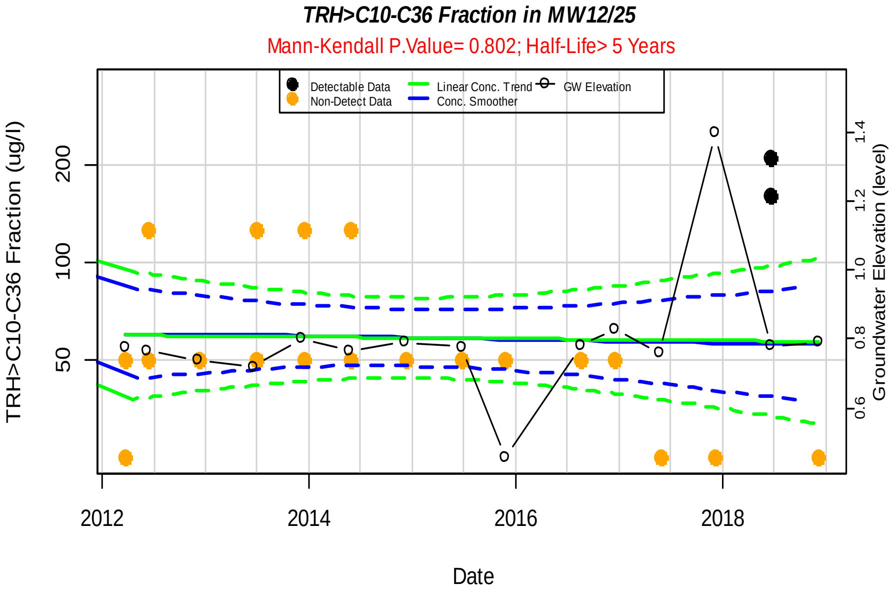

TRH>C10-C36 Fraction in MW12/20
Mann-Kendall P.Value= 0.502; Half-Life= 1407 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

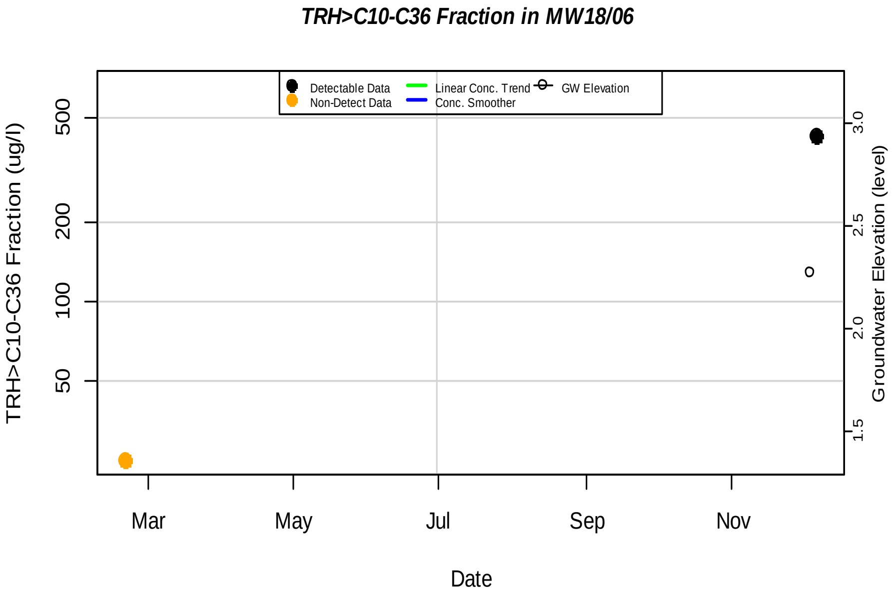

TRH>C10-C36 Fraction in MW12/21
Mann-Kendall P.Value= 0.46; Half-Life= 1071 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

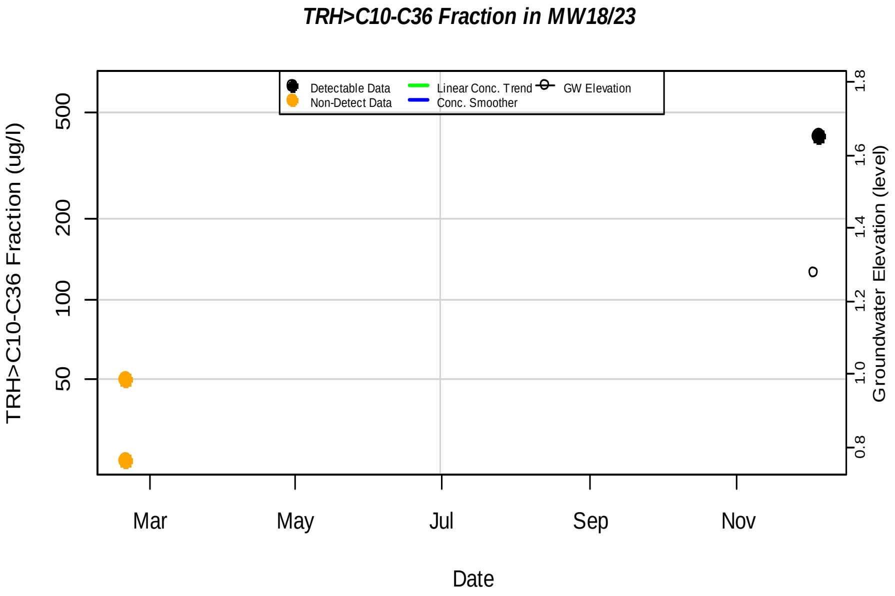

TRH>C10-C36 Fraction in MW12/22
Mann-Kendall P.Value= 0.268; Half-Life> -5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

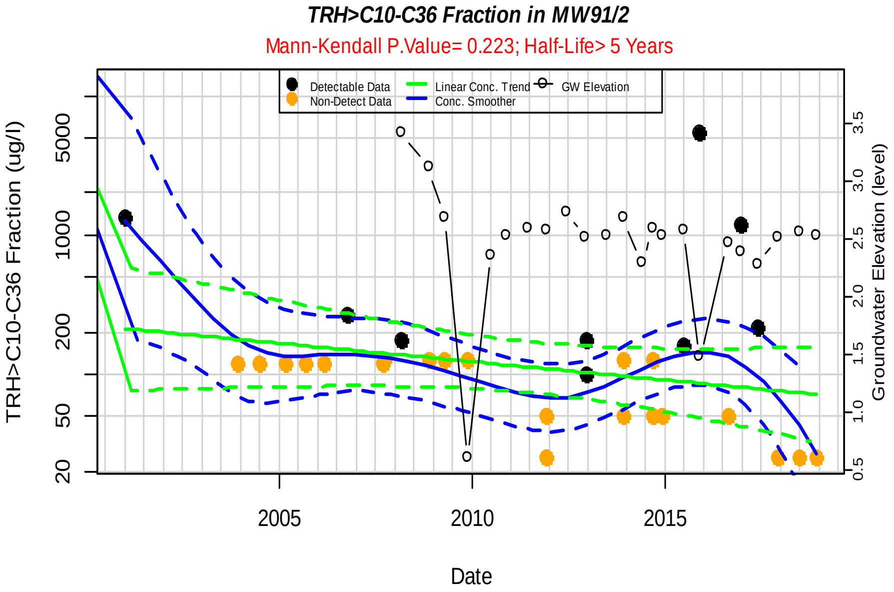

TRH>C10-C36 Fraction in MW12/23
Mann-Kendall P.Value= 0.133; Half-Life= -1695 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

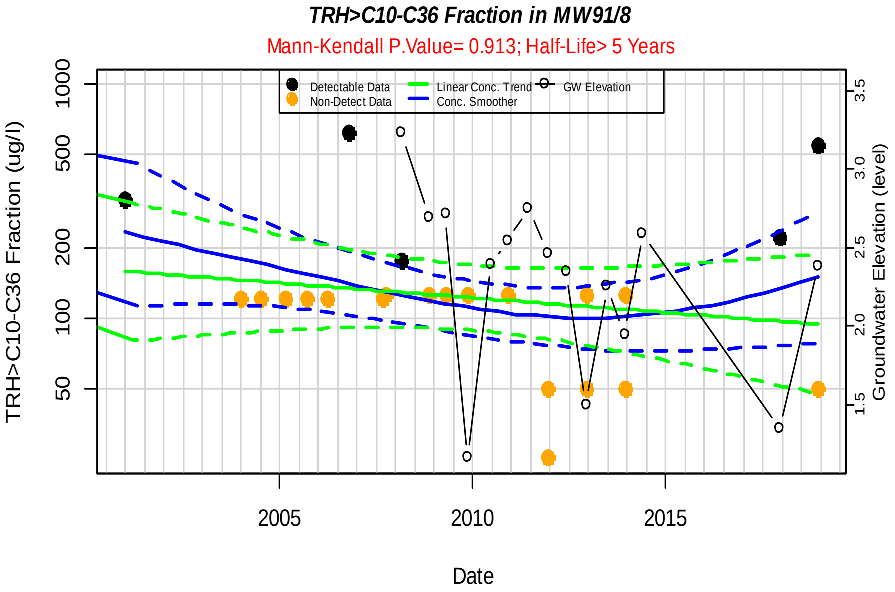

TRH>C10-C36 Fraction in MW12/24
Mann-Kendall P.Value= 0.497; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

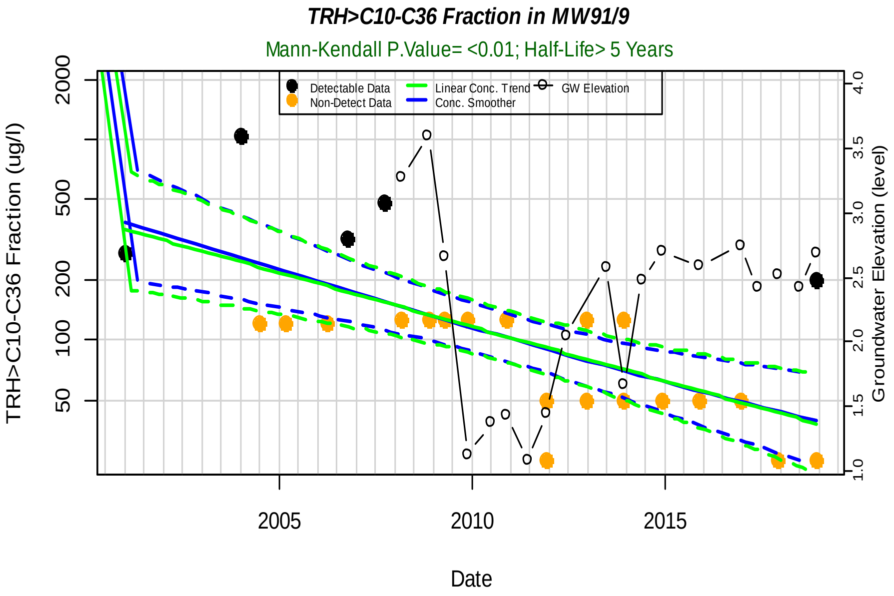

TRH>C10-C36 Fraction in MW12/25
Mann-Kendall P.Value= 0.802; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2012
2014
2016
2018

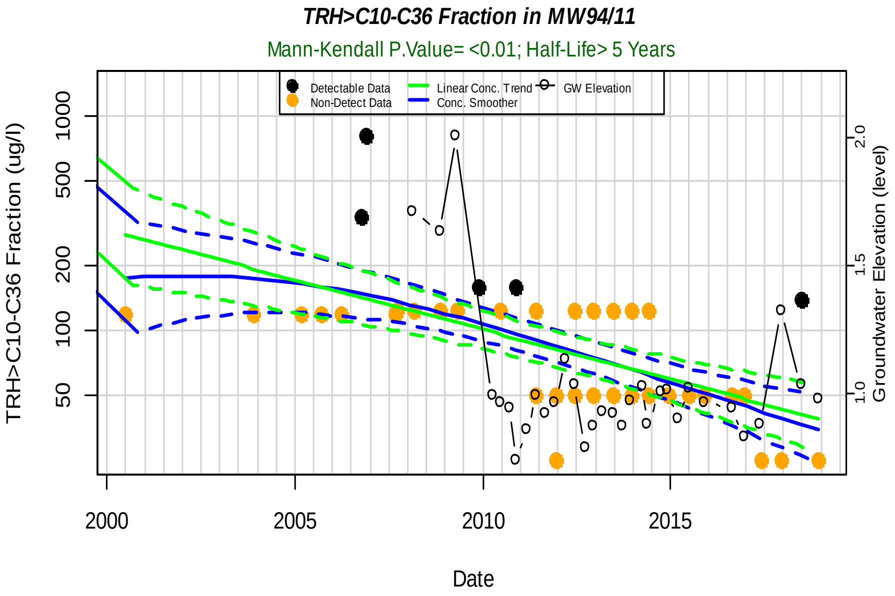

TRH>C10-C36 Fraction in MW18/06
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
Mar
May
Jul
Sep
Nov

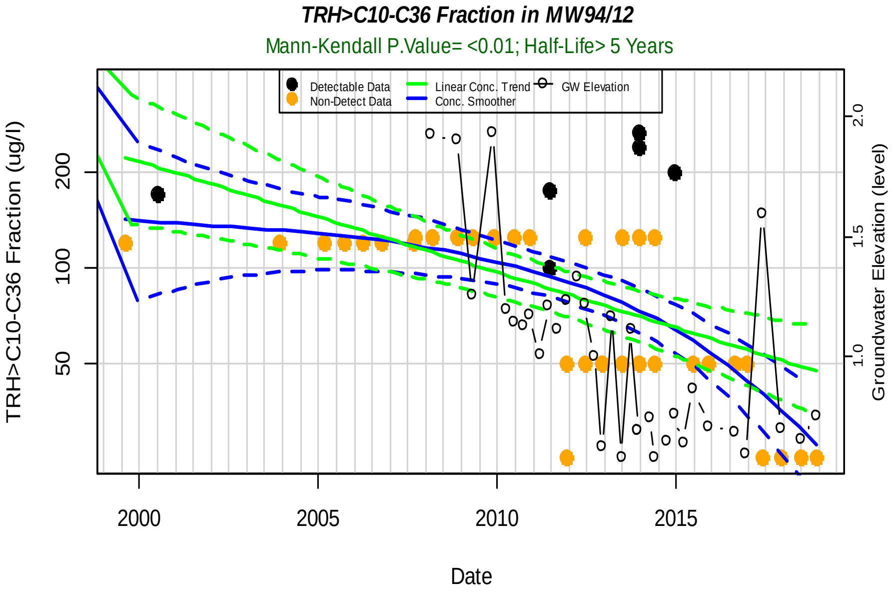

TRH>C10-C36 Fraction in MW18/23
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
Mar
May
Jul
Sep
Nov

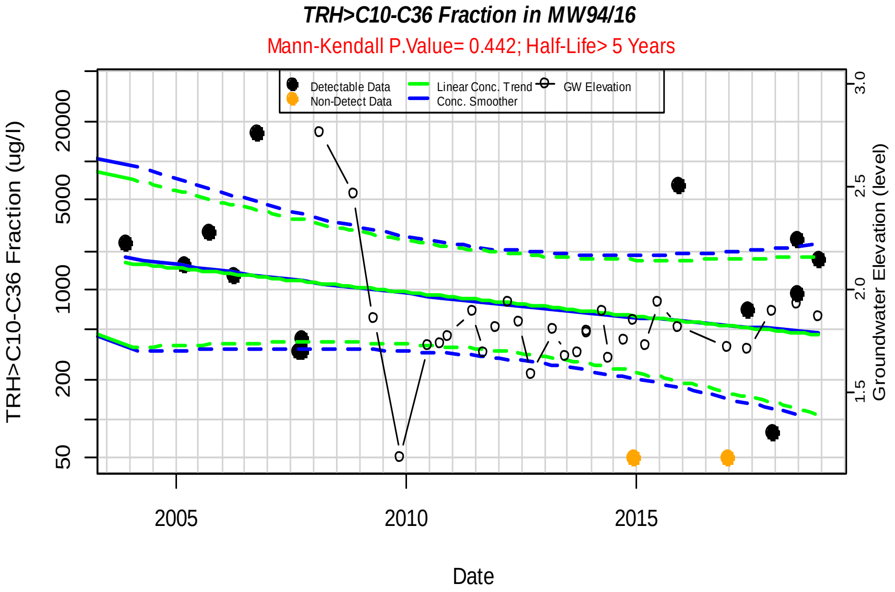

TRH>C10-C36 Fraction in MW91/2
Mann-Kendall P.Value= 0.223; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

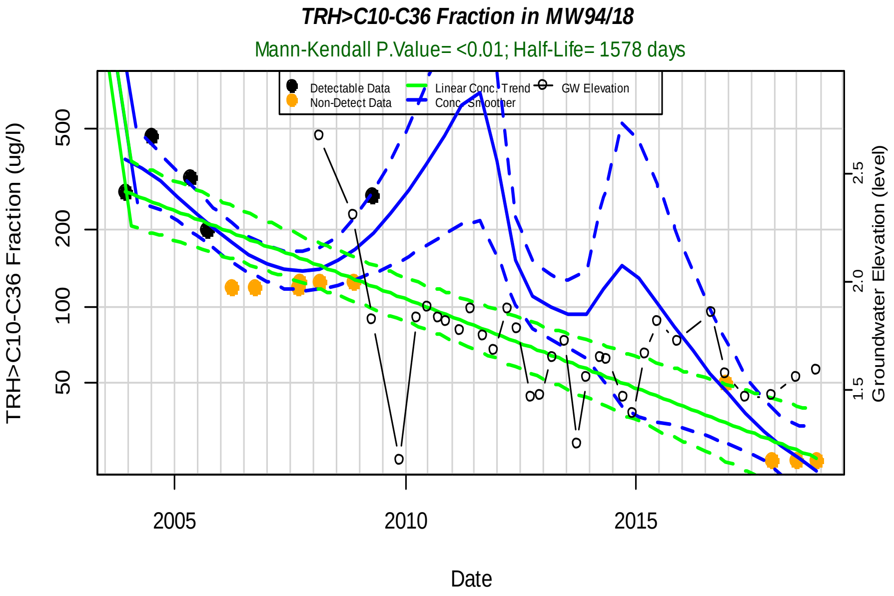

TRH>C10-C36 Fraction in MW91/8
Mann-Kendall P.Value= 0.913; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

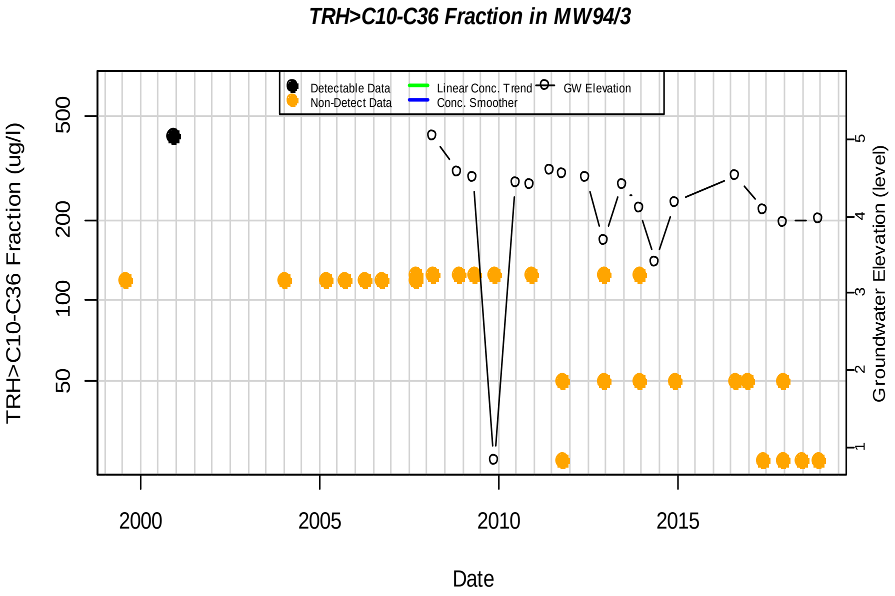

TRH>C10-C36 Fraction in MW91/9
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

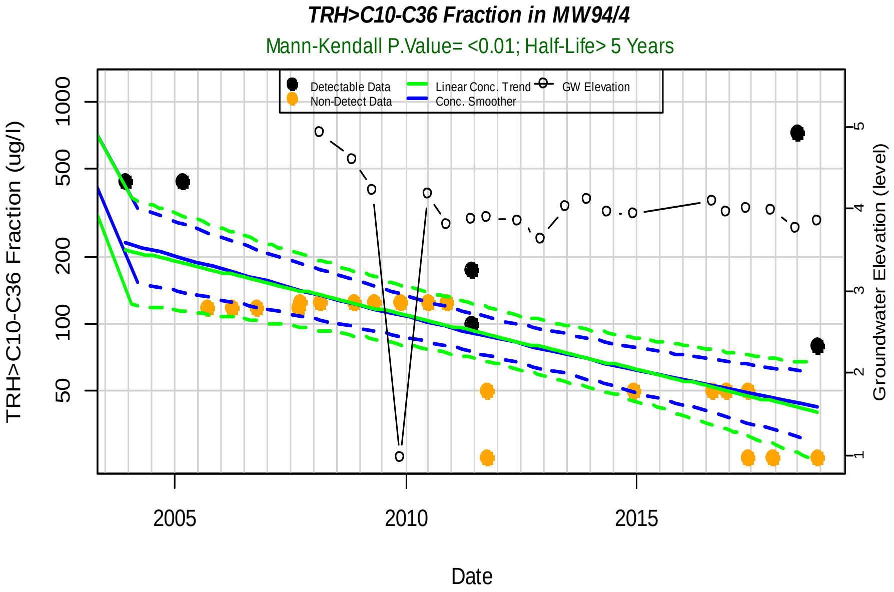

TRH>C10-C36 Fraction in MW94/11
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date

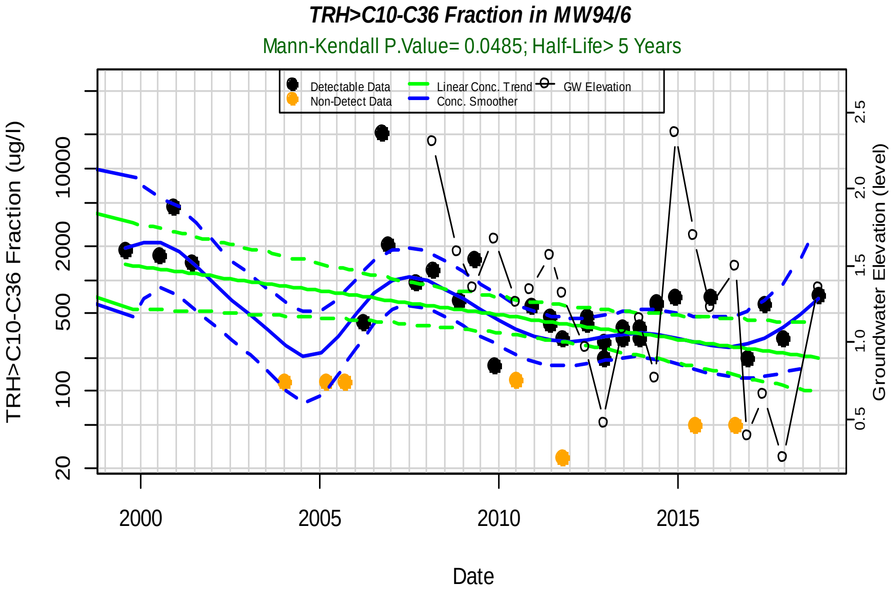

TRH>C10-C36 Fraction in MW94/12
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
50
100
200
1.0
1.5
2.0
2000
2005
2010
2015

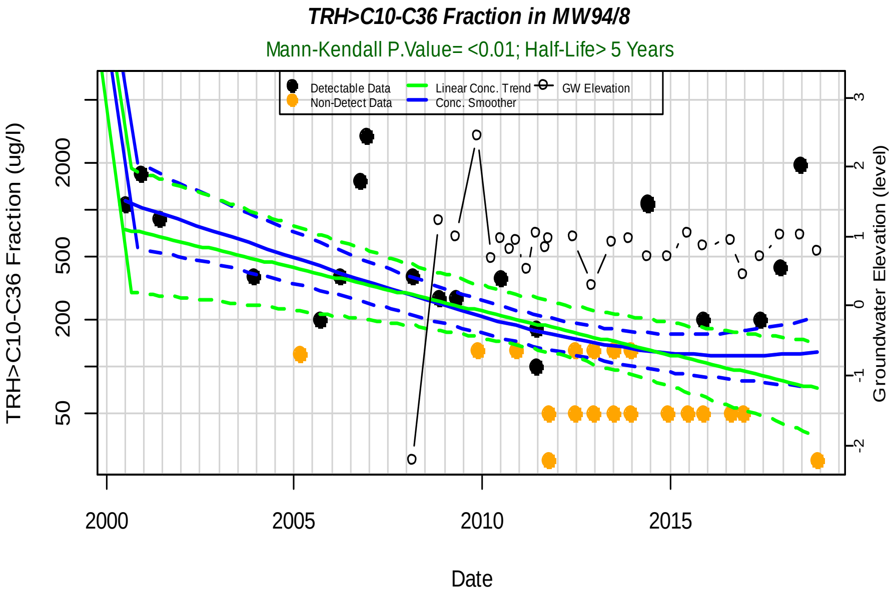

TRH>C10-C36 Fraction in MW94/16
Mann-Kendall P.Value= 0.442; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
50
200
1000
5000
20000
1.5
2.0
2.5
3.0
2005
2010
2015

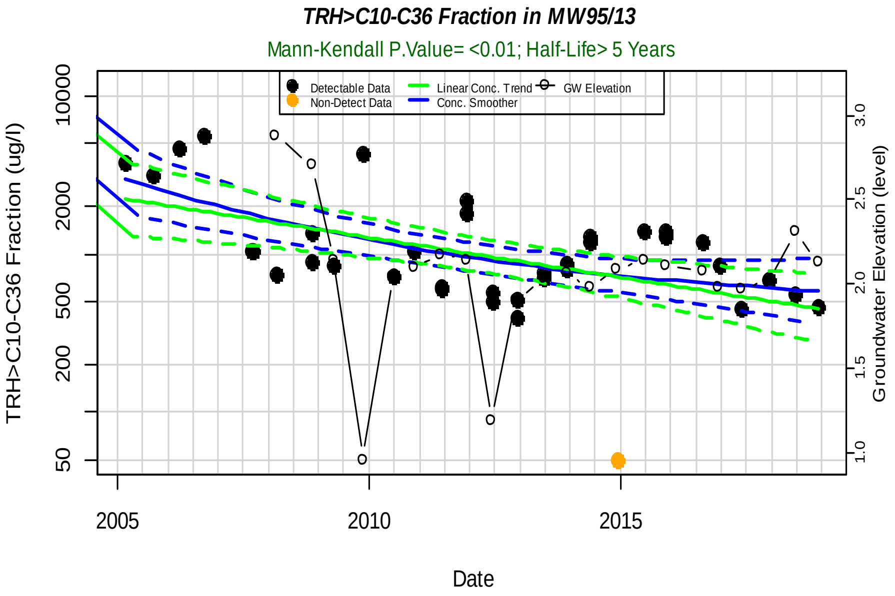

TRH>C10-C36 Fraction in MW94/18
Mann-Kendall P.Value= <0.01; Half-Life= 1578 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
50
100
200
500
1.5
2.0
2.5
2005
2010
2015

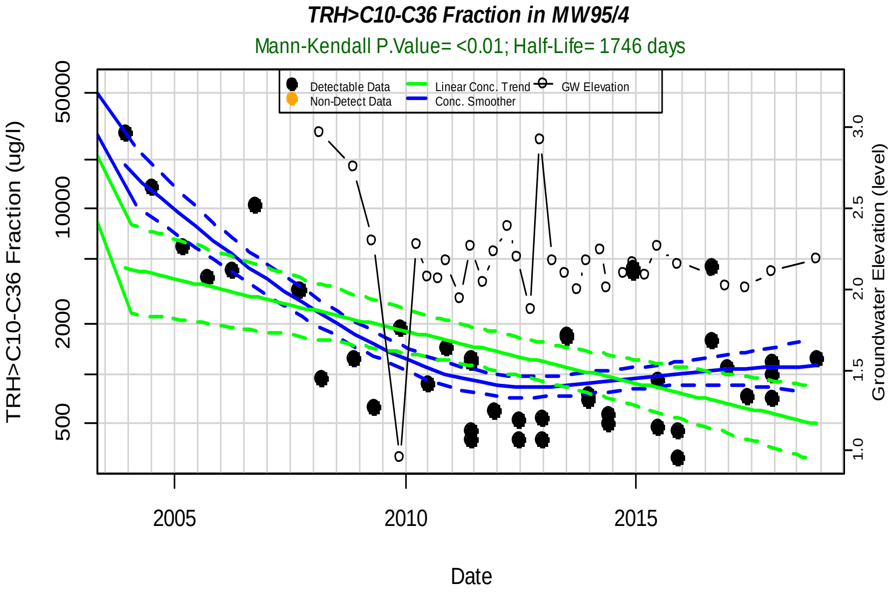

TRH>C10-C36 Fraction in MW94/3
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
50
100
200
500
1
2
3
4
5
2000
2005
2010
2015

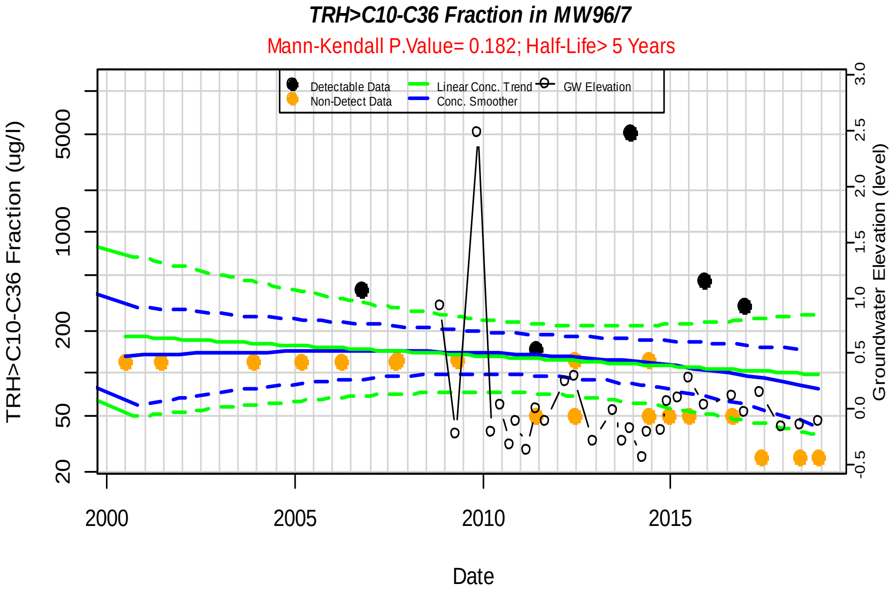

TRH>C10-C36 Fraction in MW94/4
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
1000
500
200
100
50
2005
2010
2015
1
2
3
4
5

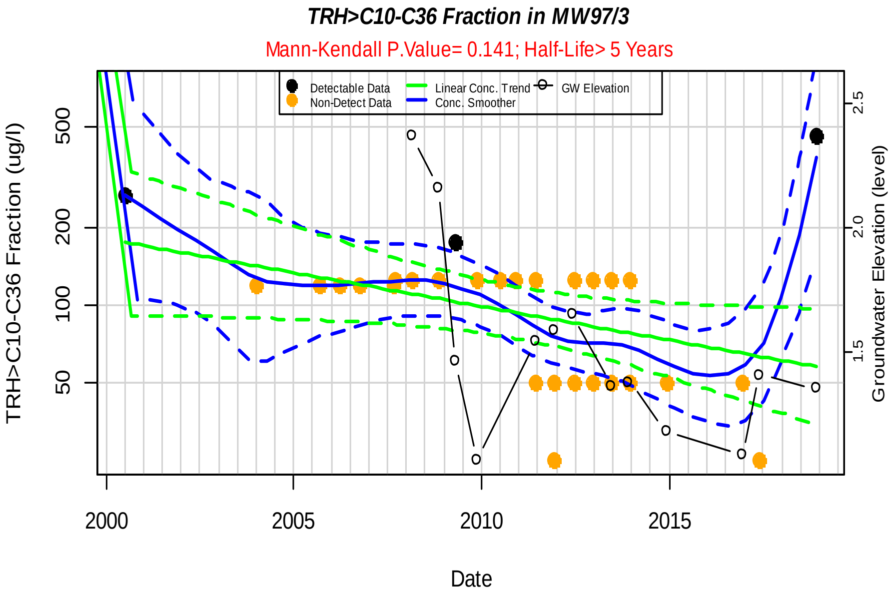

TRH>C10-C36 Fraction in MW94/6
Mann-Kendall P.Value= 0.0485; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
10000
2000
500
100
20
2000
2005
2010
2015
0.5
1.0
1.5
2.0
2.5

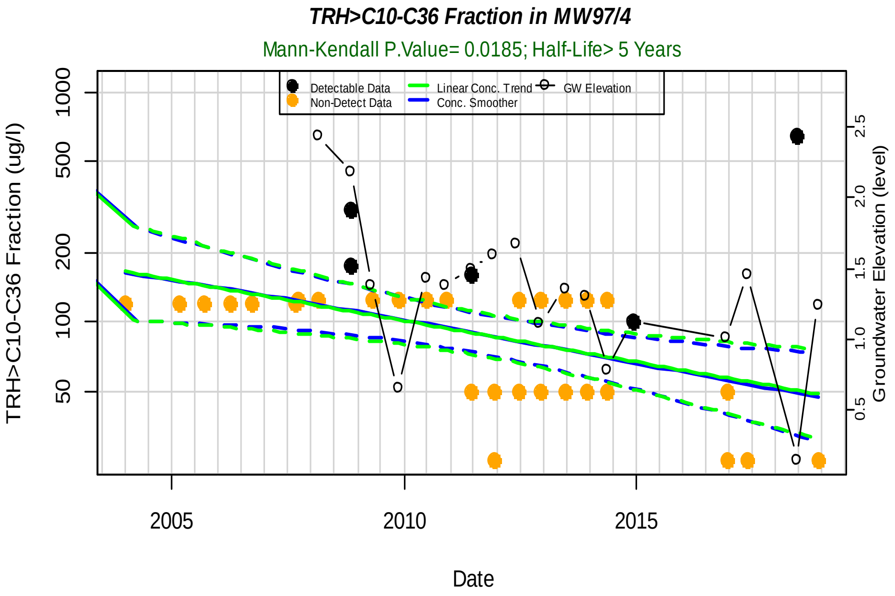

TRH>C10-C36 Fraction in MW94/8
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2000
500
200
50
2000
2005
2010
2015
-2
-1
0
1
2
3

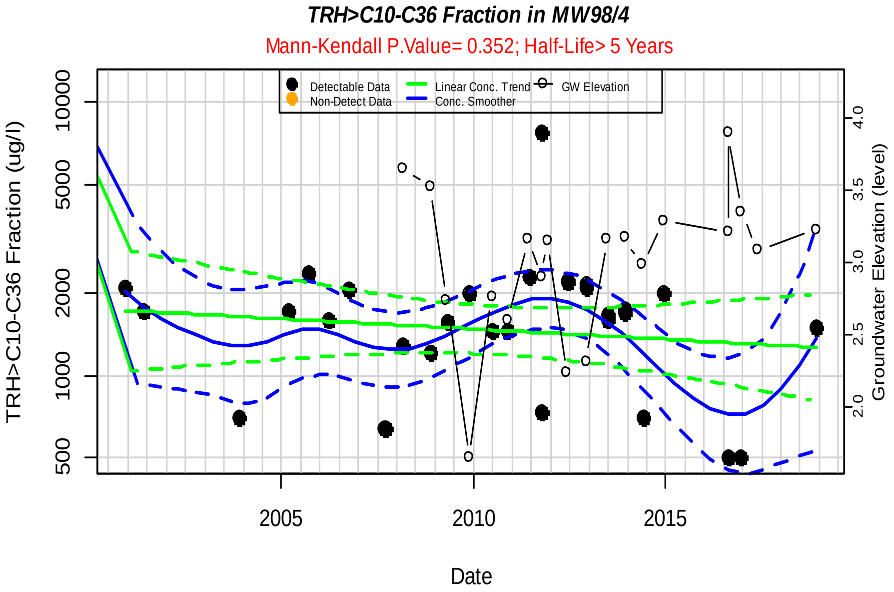

TRH>C10-C36 Fraction in MW95/13
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
10000
2000
500
200
50
2005
2010
2015
1.0
1.5
2.0
2.5
3.0

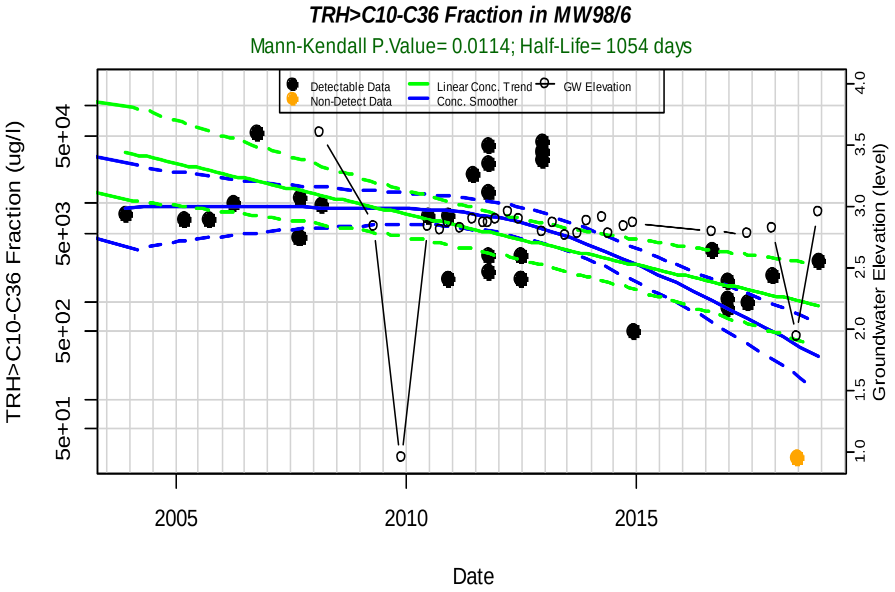

TRH>C10-C36 Fraction in MW95/4
Mann-Kendall P.Value= <0.01; Half-Life= 1746 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50000
10000
2000
500
2005
2010
2015
Date
Groundwater Elevation (level)
1.0
1.5
2.0
2.5
3.0

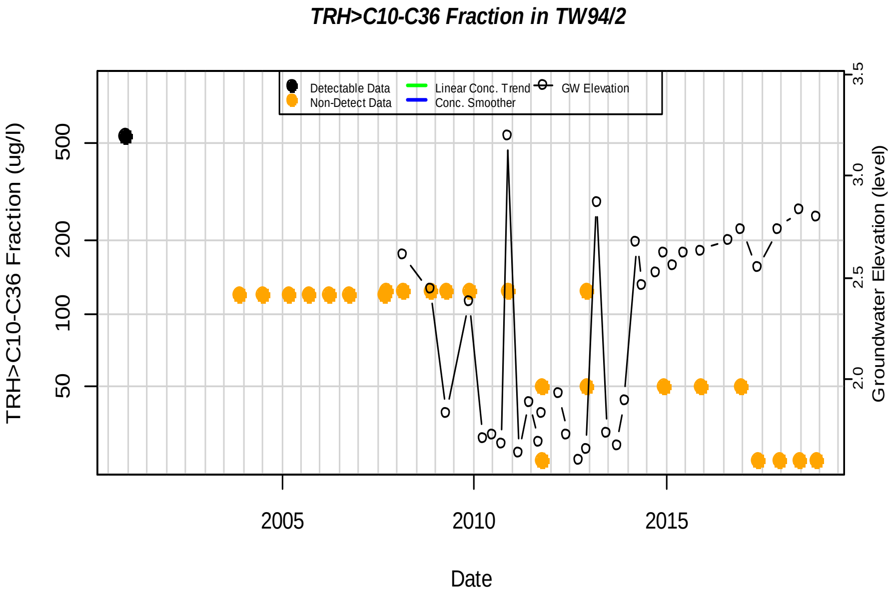

TRH>C10-C36 Fraction in MW96/7
Mann-Kendall P.Value= 0.182; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
5000
1000
200
50
20
2000
2005
2010
2015
Date
Groundwater Elevation (level)
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
3.0

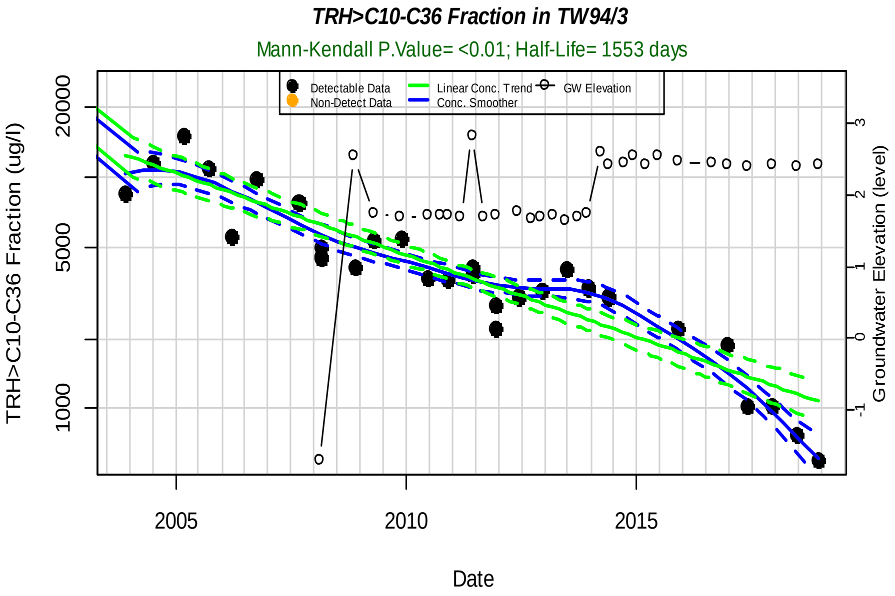

TRH>C10-C36 Fraction in MW97/3
Mann-Kendall P.Value= 0.141; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
500
200
100
50
2000
2005
2010
2015
Date
Groundwater Elevation (level)
1.5
2.0
2.5

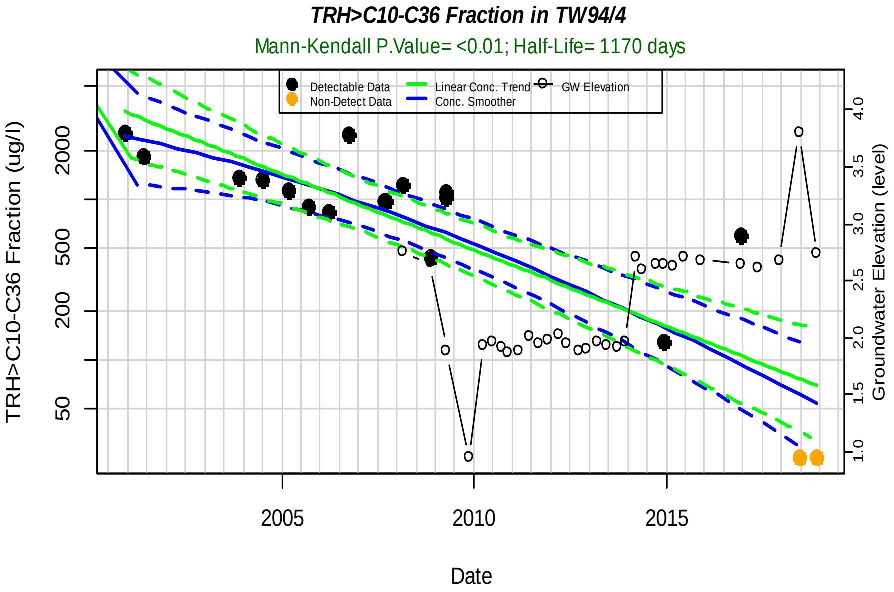

TRH>C10-C36 Fraction in MW97/4
Mann-Kendall P.Value= 0.0185; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
1000
500
200
100
50
2005
2010
2015
Date
Groundwater Elevation (level)
0.5
1.0
1.5
2.0
2.5

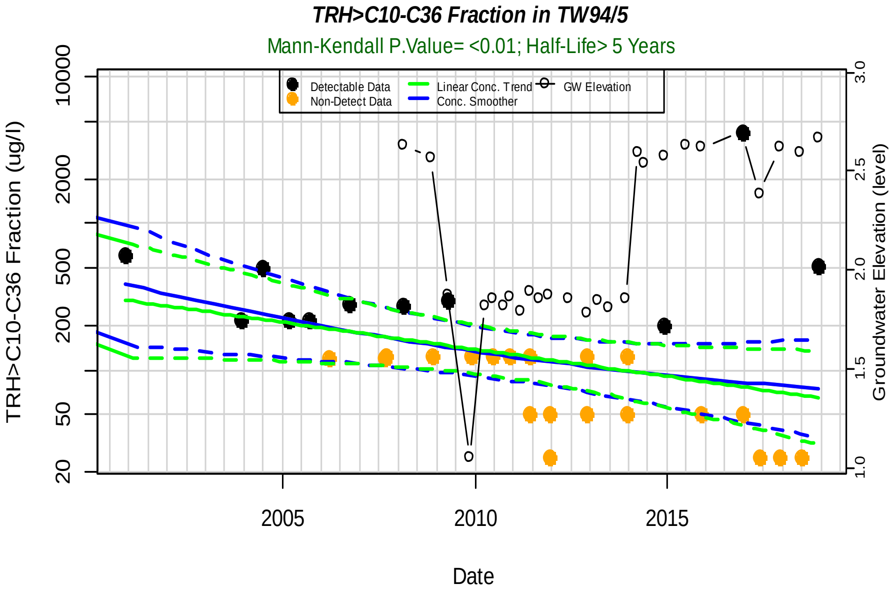

TRH>C10-C36 Fraction in MW98/4
Mann-Kendall P.Value= 0.352; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
500
1000
2000
5000
10000
2005
2010
2015
Date
Groundwater Elevation (level)
2.0
2.5
3.0
3.5
4.0

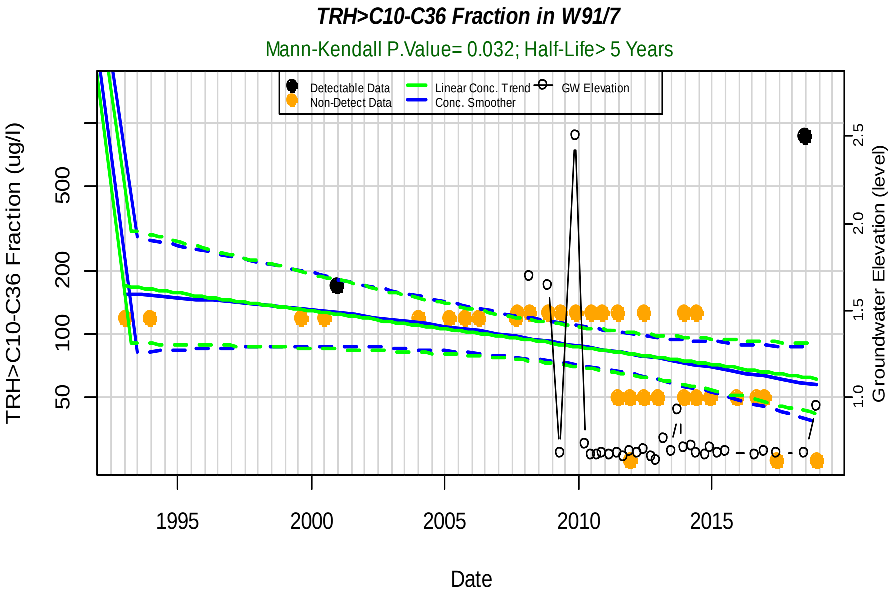

TRH>C10-C36 Fraction in MW98/6
Mann-Kendall P.Value= 0.0114; Half-Life= 1054 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
5e+01
5e+02
5e+03
5e+04
2005
2010
2015
Date
Groundwater Elevation (level)
1.0
1.5
2.0
2.5
3.0
3.5
4.0

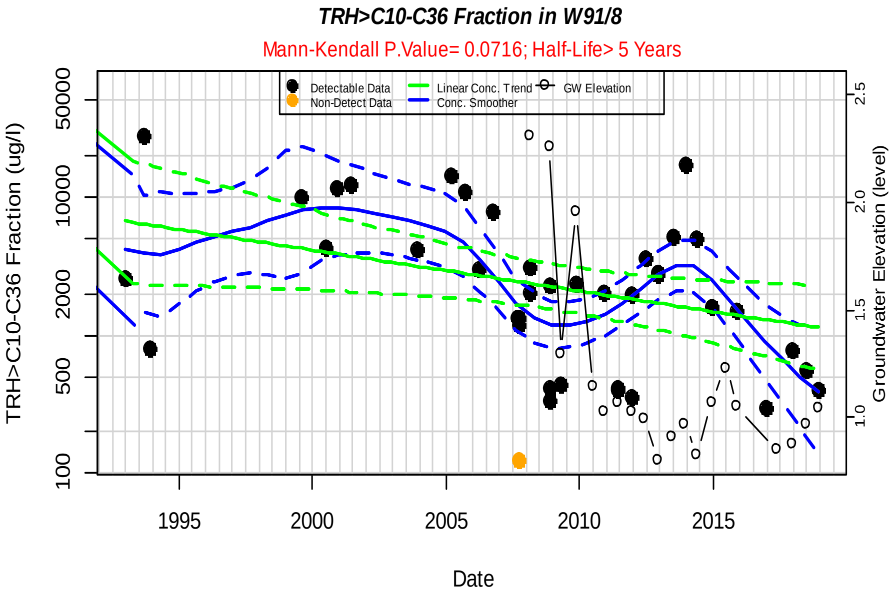

TRH>C10-C36 Fraction in TW94/2
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
50
100
200
500
2005
2010
2015
Date
Groundwater Elevation (level)
2.0
2.5
3.0
3.5


TRH>C10-C36 Fraction in TW94/3
Mann-Kendall P.Value= <0.01; Half-Life= 1553 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
1000
5000
20000
2005
2010
2015
Date
Groundwater Elevation (level)
-1
0
1
2
3


TRH>C10-C36 Fraction in TW94/4
Mann-Kendall P.Value= <0.01; Half-Life= 1170 days
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015


TRH>C10-C36 Fraction in TW94/5
Mann-Kendall P.Value= <0.01; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
2005
2010
2015


TRH>C10-C36 Fraction in W91/7
Mann-Kendall P.Value= 0.032; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
1995
2000
2005
2010
2015


TRH>C10-C36 Fraction in W91/8
Mann-Kendall P.Value= 0.0716; Half-Life> 5 Years
Detectable Data
Non-Detect Data
Linear Conc. Trend
Conc. Smoother
GW Elevation
TRH>C10-C36 Fraction (ug/l)
Groundwater Elevation (level)
Date
1995
2000
2005
2010
2015

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Appendix F

Air Quality Technical Note 1: Revised Odour Assessment

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AQIA Technical Note 1: Revised Odour Modelling Results

1.0 Introduction

The response dated 2 August 2019 from the NSW Environment Protection Authority (EPA) indicated concern with the predicted level of odour concentrations at offsite sensitive receptors (including industrial developments close to the site). A meeting with EPA and Department of Planning, Industry and Environment (DPIE) held on 7 August 2019 reiterated that the initial modelling of odour was showing exceedances above 2 Odour Units (OU) at nearby receptors. To address these comments, some key input parameters were reassessed and the odour modelling rerun.

The key contribution to odour from the Clyde Western Area Remediation Project (the Project) is the proposed excavation areas. For the odour assessment within the Air Quality Impact Assessment (AQIA) (refer to Appendix E of the Environmental Impact Statement (EIS)), the odour emissions from exposed excavation areas contributes over 70% of odour emissions from the Project. A reduction in the previously proposed excavation areas and the inclusion of additional mitigation measures are expected to minimise and/or avoid potential offsite odour impacts from the Project.

As such the following mitigation measures have been included and modelled in a revised odour assessment provided below:

- A reduction in the size of the two excavation areas from 2,500 m^2 (50 m x 50 m) to 900 m^2 (30 m x 30 m) (1,800 m^2 total); and
- Surface treatment of exposed excavation areas at the end of each work day involving an application of an odour suppressing foam to blanket exposed areas that may be a potential odour source.

2.0 Odour Management Measures

The above operational and design mitigation measures would be incorporated into the existing package of odour management measures proposed for the Project. These measures already include a reactive odour management plan and a community awareness program. A brief description of these is provided below.

2.1 Reactive Air Quality Management Plan (Odour)

The reactive air quality management system for odour would run specifically during Stage 2 and Stage 3 of the Project. In the event of an odour complaint or onsite staff odour observation; information would be obtained regarding the character of the odour, frequency, duration and intensity of odour observations and whether impacts of offensive odours are occurring. An investigation into any odour complaint would be conducted as soon as practicable after an odour complaint has been received; beginning with the suspected source of offensive odours. If odour impacts are identified from the Project by workers or through complaints, action would be undertaken to reduce odour impacts. Actions may include:

- spraying odour and VOC suppressant on exposed surface areas and/or stockpiles;
- covering stockpiles; and
- limiting excavation works and materials handling of highly contaminated fill while upwind of sensitive receptors.

2.2 Community Awareness Program

Mitigation and management measure G8 commits to producing a Community Engagement Plan for the Project. This would include measures to keep the local community informed of the Project, provide contact details for questions or complaints and notify the community regarding potential impacts including potentially odorous works.

Prior to commencement of Stage 2 and Stage 3 of the Project, information flyers would be delivered to the surrounding community; noting there may be some potential temporary odour impacts arising from the Project. Additional community notification may also be required when excavating particularly odours material. Flyers would provide contact information directing the community to the operator-run odour complaints management system should they have additional queries.

3.0 Modelling Methodology

A Level 3 Odour Impact Assessment was conducted using the CALPUFF dispersion model in accordance with the following guidelines:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017);
- *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into Approved Methods for Modeling (sic) and Assessments of Air Pollutants in NSW, Australia* (TRC 2011);
- *Technical Framework, Assessment and management of odour from stationary sources in NSW* (DEC 2006); and
- *Technical Notes, Assessment and management of odour from stationary sources in NSW* (DEC 2006).

All modelled input parameters are consistent with Section 5.0 of the AQIA (AECOM 2018) with the exception to source characteristics and emission rates from the excavation areas. These changes are documented in **Section 4.0** of this technical note.

4.0 Changes to Emissions Inventory

This section outlines the changes in source characteristics and emission rates from the two proposed contamination excavation areas within the Project Area. Specifically, a reduction in the maximum exposed area of excavation sites and the application of odour suppressant over exposed areas at the end of work day to reduce potential night time odour emissions. Revised odour emission estimates for excavation areas are based on the following revised and new assumptions:

- Both excavation areas would be reduced from 2,500 m^2 (50 m x 50 m) to 900 m^2 (30 m x 30 m) resulting in a total maximum exposed area of 1,800 m$^{2.}$ This equates to a 64% reduction in odour emissions from exposed excavation areas on the basis of area alone.
- Odour suppressant foam would be applied to excavation areas at the end of day to reduce night time odour emissions. Unmitigated odour emissions have been adjusted in the following ways:
  - An Odour Reaction Factor of 90% has been applied to the excavation area between the hours of 6pm and 7am daily. During construction hours, the excavation areas are unmitigated assuming:
    - An odour suppressant would be applied during the last hour of the daily construction activities (i.e. 5pm to 6pm); and
    - The entire surface area of each active face (i.e. 2 x 900 m^2) would be disturbed within the first hour of construction activities (i.e. 7am to 8am).
  - A control efficiency of 90% has been assumed given the large surface area of the excavations. Research suggest odour suppressants can reduce odour emissions by up to 99% (Kittle and Schmidt 2004), however given the larger area[1] requiring suppressant, a less effective control factor of 90% was assumed to allow for an element of uncertainty.

In the AQIA (AECOM 2018) excavation areas within the model were located near the north western and southern boundaries. Site soil contaminant distribution patterns identified in the TSI (AECOM 2018) have been reaffirmed by the more recent soil sampling undertaken as part of the Remediation Site Investigation (RSI) (refer to Appendix L of the Response to Submissions Report). The data indicated that concentrations of individual odour compounds such as toluene and xylene are more likely to be above the limit of detection at the southern end of the Western Area, particularly, at the south western corner and to a lesser extent near the southern border just east of the bend in Duck River. As such, simultaneous excavation of these areas has been assumed to represent worst case conditions and has been modelled accordingly. The location of excavation areas modelled is shown in **Figure 1**.

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[1] For stockpiles, including the preliminary treatment area and biopile areas that have a smaller more manageable exposed surface area, a 95% efficiency factor has been used in the modelling as a greater level of control would be possible.

Figure 1 Location of Remodelled Excavation Areas.

The following assumptions are consistent with those made in the AQIA for excavation areas and are still relevant:

- Exposed excavation areas were modelled as a continuous source of odour emissions.
- In accordance with the EPA 2017 *Approved Methods,* peak-to-mean ratio was applied to all odour emission rates. A peak-to-mean ration of 2.5 under Pasquil-Gifford (PG) stability classes A, B, C and D and 2.3 under stability class E and F for both excavation areas.
- Odour emission rates were derived from ten odour samples collected within three test pits at the Western Area. These samples were targeted in areas where notable odour was observed and contaminated soil was visibly present to ensure worst case odour emissions were captured.
- The odour sampling regime included samples within the pit and outside the pit for both freshly excavated and aged material (generally a couple of hours after excavation). Odour emissions from exposed excavation areas were assumed to be comprised of 50% freshly excavated and 50% aged material.
- Odour emissions from excavations are assumed to occur concurrently with all other odour generating activities onsite; therefore predicted ground level odour concentrations are considered worst case.

A comparison of odour emission rates per excavation area used in the AQIA and this revised Odour Assessment are shown in **Table 1**. As can be observed in **Table 1**, by adopting the additional proposed mitigation measures, the odour emission contribution from the two excavation areas would be reduced by approximately 64% during construction hours and 94% outside of construction hours.

Table 1 Comparison of AQIA and Revised Odour Emission Rates for Excavation

HOD	AQIA				Revised Odour Assessment			
	SOER[1] ($OU/m^2/s$)		TOER[2] (OU/s)		SOER ($OU/m^2/s$)		TOER (OU/s)	
	Stability Class A-D	Stability Class E-F	Stability Class A-D	Stability Class E-F	Stability Class A-D	Stability Class E-F	Stability Class A-D	Stability Class E-F
1	6.5	6.0	16,225	14,927	0.65	0.6	584	537
2	6.5	6.0	16,225	14,927	0.65	0.6	584	537
3	6.5	6.0	16,225	14,927	0.65	0.6	584	537
4	6.5	6.0	16,225	14,927	0.65	0.6	584	537
5	6.5	6.0	16,225	14,927	0.65	0.6	584	537
6	6.5	6.0	16,225	14,927	0.65	0.6	584	537
7	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
8	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
9	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
10	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
11	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
12	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
13	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
14	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
15	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
16	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
17	6.5	6.0	16,225	14,927	6.5	6.0	5,841	5,374
18	6.5	6.0	16,225	14,927	0.65	0.6	584	537
19	6.5	6.0	16,225	14,927	0.65	0.6	584	537
20	6.5	6.0	16,225	14,927	0.65	0.6	584	537
21	6.5	6.0	16,225	14,927	0.65	0.6	584	537
22	6.5	6.0	16,225	14,927	0.65	0.6	584	537
23	6.5	6.0	16,225	14,927	0.65	0.6	584	537
24	6.5	6.0	16,225	14,927	0.65	0.6	584	537

1: SOER- Specific Odour Emission Rate
2: TOER - Total Odour Emission Rate

5.0 Modelling Results

Results of the revised modelling are presented in **Table 2** and **Figure 2**. **Table 2** shows that the predicted 99th percentile 1 Hour odour concentrations for all sensitive receptor types is below the 2 OU EPA criterion. **Figure 2** also shows that the proposed additional management and mitigation measures have resulted in a reduction in the predicted 99th percentile 1-hour odour concentration contours, with the predicted 2 OU contour largely within the boundary of the Western Area. The only area where the 2 OU contour extends outside of the Western Area is to the east at the Clyde Terminal and to the south extending over a small portion of the Duck River. The 2 OU contour does not affect any sensitive receptors. Therefore no significant odour impacts are anticipated from the Project.

Table 2 Predicted 99th Percentile 1 Hour Odour Concentrations at Sensitive Receptors

Receptor ID	Odour
	1-Hour 99.0%
Criteria (µg/m³)	**2.0**
All Residential Max (µg/m³)	0.7
Mixed Use Max (µg/m³)	0.1
Industrial Max (µg/m³)	1.4
Recreation Max (µg/m³)	0.6

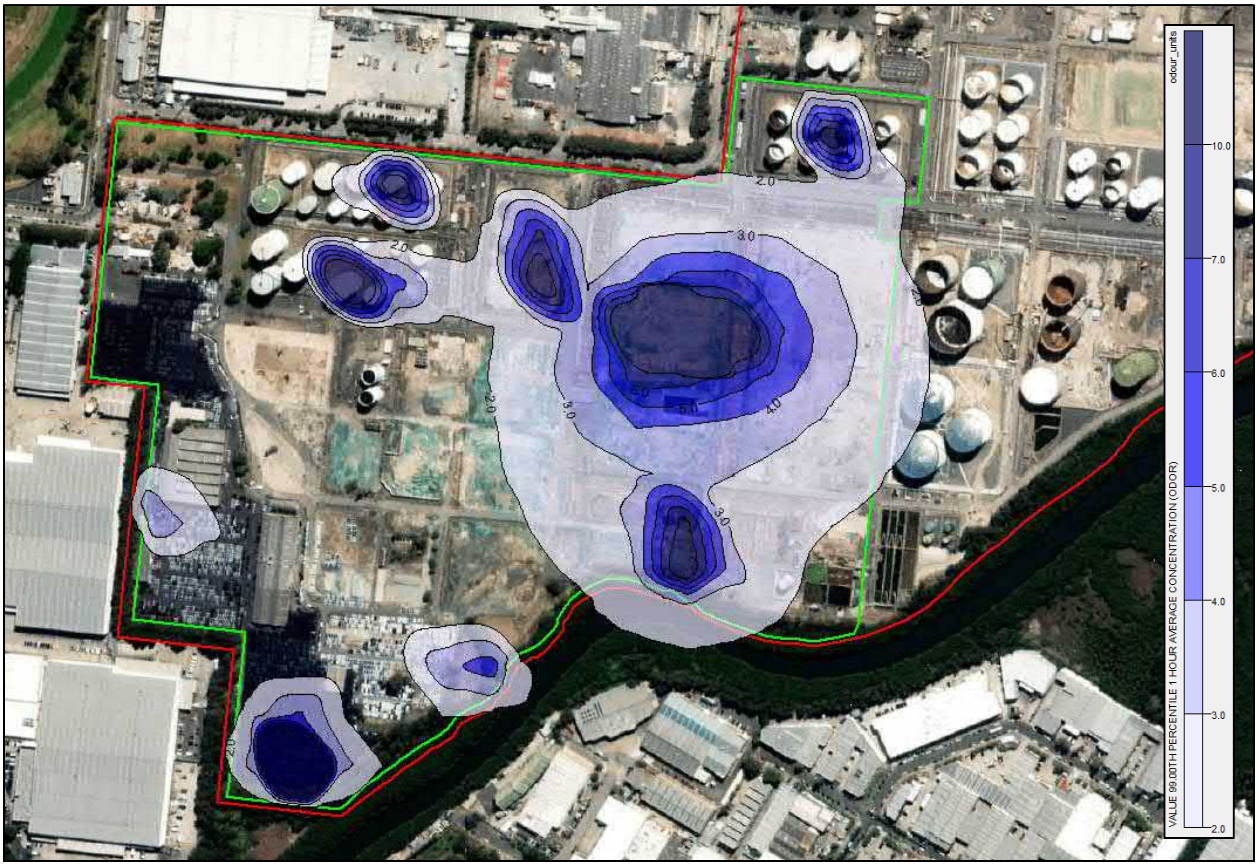

Figure 2 Predicted 99th Percentile Odour Concentration Contours for Revised Odour Modelling

6.0 Conclusion

Based on the above modelling results, the offsite odour 99th percentile 1-hour 2OU criterion would be achieved by the Project by implementing the following additional mitigation measures:

- A reduction in the size of the two excavation areas from 2500 m^2 (50 m x 50 m) to 900 m^2 (30 m x 30 m) (1,800 m^2 total); and
- Surface treatment of exposed excavation areas at end of work day involving the application of an odour suppressing foam to blanket exposed areas that may be a potential odour source.

The above mitigation measures would be implemented alongside a wider package of odour mitigation measures to avoid and mitigate offsite odour impacts from the Project. As noted above, these measures include a Reactive Air Quality Management Program with specific measures for odour monitoring and control and community engagement measures which include notification of potential impacts and measures to receive and respond to complaints or questions. The implementation of these measures is likely to result in no significant odour impacts at offsite sensitive receptors as a result of the Project.

Appendix G

Air Quality Technical Note 2: Revised Dust Assessment

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AQIA Technical Note 2: Revised Dust Modelling Results

1.0 Introduction

The response dated 2 August 2019 from the NSW Environment Protection Authority (EPA) requested that particulate impacts should be further assessed to enable the re-evaluation of the 24-hour PM_{10} and $PM_{2.5}$ concentrations assuming the reduction in emissions associated with the enclosure of the Direct Thermal Desorption (DTD), plant screening area and filtration of emissions from the mobile crushing plant.

In addition, the 'area' input parameter considered for the general excavation of material during the Project has been reduced. The revised excavation area has been included in the updated modelling.

To address the EPA's concerns regarding dust impacts from the Clyde Western Area Remediation Project (the Project), the following additional management and mitigation measures to reduce potential offsite dust emissions during remediation works have been evaluated:

- A reduction in the size of the two excavation areas from 2,500m^2 (50m x 50m) to 900m^2 (30m x 30m) (1,800 m^2 total); and
- Additional mitigation measures for the DTD plant previously identified in the Post-Modelling Analysis in Section 6.2.2 of the Air Quality Impact Assessment (AQIA) (refer to Appendix E of the Environmental Impact Statement (EIS)) including:
  - Enclosing the screen and water sprays placed on the outlet; and
  - Installation of a particulate filter on the mobile crushing plant.

2.0 Dust Contribution

A total of 87 potential sources of dust emissions were identified as part of the AQIA. The modelled annual source emission contributions from dust sources are as follows:

- 1.1% of PM_{10} and 1.4% of $PM_{2.5}$ is attributed to windblown dust from excavation;
- 19.0% of PM_{10} and 11.3% of $PM_{2.5}$ is attributed to screening; and
- 0.6% of PM_{10} and 0.9% of $PM_{2.5}$ is attributed to the mobile crushing plant.

Modelled total emissions contributions from these sources equate to 20.7% of PM_{10} and 13.6% of $PM_{2.5}$ emissions. By targeting a reduction in emissions through a reduction in excavation area and mitigative actions a reduction in offsite dust emissions at sensitive receptors may be achieved. The revised predicted dust impacts due to a commitment to minimise exposed excavation areas and mitigation measures employed at the DTD plant are presented below.

Figure 1 and **Figure 2** below also show the predicted maximum 24 hour PM_{10} and $PM_{2.5}$ concentration contours for the revised dust assessment. The predicted 24 Hour Maximum PM_{10} and $PM_{2.5}$ concentrations previously presented in the AQIA are also shown for comparison. It can be seen that there is a significant reduction in the predicted impacts from particulates when the additional mitigation and management measures have been introduced.

3.0 Dust Management Measures

The above operational and design mitigation measures would be incorporated into the existing package of dust management measures proposed for the Project. This would include development of an Air Quality Management Plan and would include:

- performance objectives for the AQMP to guide the monitoring and management of potential air quality impacts;
- timeframe for implementation of all identified emission controls;
- key performance indicator(s) for emission controls;
- monitoring method(s), including location, frequency and duration;
- response mechanisms to mitigate potential off-site impacts;
- responsibilities for demonstrating and reporting achievement of key performance indicator(s);

- record keeping and complaints response register;
- compliance reporting; and
- a Reactive Air Quality Management Program (RAQMP), including meteorological data and pollutant monitoring if required (such as PM_{10}, particulates) for management purposes, fit for purpose odour monitoring, and the implementation of appropriate triggers to further develop the reactive management strategy for air pollution mitigation.

Measures that could be implemented to reduce emissions from dust generating activities further would include:

- additional water sprays from a water cart to reduce dust emissions from stockpiles;
- additional watering of the haul roads to further decrease haul emissions;
- application of water sprays from other dust generating activities such as conveying and loading and unloading from stockpiles;
- covering of highly dusty material with tarpaulins or other relevant means; and
- erection of wind breaks for dusty areas, e.g. along dusty haul roads, low dusty stockpiles etc.

4.0 Modelling Methodology

A Level 2 Air Quality Impact Assessment was conducted using the CALPUFF dispersion model in accordance with the following guidelines:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017);
- *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into Approved Methods for Modeling (sic) and Assessments of Air Pollutants in NSW, Australia* (TRC 2011);

All modelled input parameters are consistent with Section 5.0 of the AQIA (AECOM 2018) with the exception to source characteristics and emission rates from the excavation areas and mitigation measures applied to screening and crushing at the DTD plant. These changes are documented in **Section 5.0** of this technical note.

5.0 Changes to Emissions Inventory

This section documents the changes in source characteristics and emission rates from the two proposed contamination excavation areas at the Western Area, and the DTD plant area. Specifically a reduction in the maximum exposed area of excavation sites and additional dust mitigation for screening and crushing activities within the thermal desorption plant area. Revised dust emission estimates for excavation areas based on the following new assumptions:

- Both excavation areas will be reduced from 2500 m^2 (50 m x 50 m) to 900 m^2 (30 m x 30 m) resulting in a total maximum exposed area of 1800 $m^{2.}$ This equates to a 64% reduction in windblown emissions from exposed excavation areas on the basis of area alone.
- Additional mitigation measures and associated control factors[1] (DSEWPAC 2012) that would be applied to the DTD plant are as follows:
  - an enclosure can be placed on the screen with water sprays placed on the outlet, resulting in a 90% reduction in dust emissions; and
  - a particulate filter can be used on the mobile crushing plant to reduce emissions by approximately 99%.

The following assumptions are consistent with those made in the AQIA for excavation areas and are still relevant:

- Exposed excavation areas were modelled as a continuous source of dust emissions (8760h/y).

[1] Control factors applied to $PM_{2.5}$ emissions are also applicable to PM_{10} emissions.

- Excavation areas within the model were located near the north western and southern boundaries. Given the Western Area is bound by the Clyde Terminal to the east and north east; this was considered representative of worst case conditions for nearby sensitive receptors.
- A total volume of 35,200 m^3 of contaminated soil was assumed to be screened based on maximum throughput of 15 t/h of contaminated soil 24 hrs per day 6 days per week over 6 month period.
- Approximately 10 percent of the maximum hourly throughput of contaminated soil through the DTD (15 t/h) would require crushing prior to treatment.
- Crushing and screening emissions were modelled as a continuous source of dust emissions (8760h/y) but expected to be operational 6 days per week.

A comparison of particulate emission rates per excavation area and from crushing and screening at the DTD plant used in the AQIA and the revised Dust Assessment are shown in **Table 1**. The reductions below equate to a reduction in 18.4% of total annual PM_{10} emissions and 12.0% on $PM_{2.5}$ emissions from the Project. It should be noted however that the relative contributions of dust from the identified sources are not necessarily a good measure of the effectiveness of mitigation measures on individual sources. i.e. small relative changes to some sources may have a disproportionate effect on the 24-hour dust average concentration.

Table 1 Comparison of AQIA and Revised Dust Emission Rates

Model ID	Activity	AQIA		Revised Dust Assessment	
		PM_{10} (g/s)	$PM_{2.5}$ (g/s)	PM_{10} (g/s)	$PM_{2.5}$ (g/s)
AAFE1	Active Face - Excavation 1	0.0069	0.0010	0.0025	0.0004
AAFE2	Active Face - Excavation 2	0.0069	0.0010	0.0025	0.0004
MHC	Primary crushing of contaminated spoil	0.0083	0.0013	0.00008	0.00001
MHS	Screening of contaminated soil	0.2500	0.0169	0.02500	0.00169

6.0 Modelling Results

Modelling changes for the revised dispersion modelling, including a reduction in excavation area size and additional mitigation measures for the DTD plant area, have resulted in a reduction in predicted PM_{10} and $PM_{2.5}$ concentrations at sensitive receptors. A comparison of 24 hour maximum and annual average incremental contributions in the AQIA for PM_{10} and $PM_{2.5}$ are presented in **Table 2**. Cumulative concentrations are also presented in **Table 2** where maximum cumulative 24-hour particulate concentrations are assessed contemporaneously.

The large reduction in 24 hour maximum and annual average contributions modelled at off site sensitive receptors (particularly nearby industrial receptors) is highly likely attributed to the source contribution of particulates from the DTD Plant. This was identified in the post modelling analysis in Section 6.2.2 of the AQIA, where emissions from the DTD plant were identified as the major contributor (approximately 73%) of $PM_{2.5}$ impacts at the worst affected nearby industrial receptor.

Table 2 Predicted Maximum 24 Hour and Annual Average PM_{10} and $PM_{2.5}$ Concentrations at Sensitive Receptors

Pollutant	Averaging Period	AQIA Concentration (µg/m³)		Revised Dust Assessment Concentration (µg/m³)		Criteria (µg/m³)
		Incremental	Cumulative	Incremental	Cumulative	
PM_{10}	Maximum 24-hour average	43.9	83.3	20.1	65.3	**50**
	Annual average	12.0	32.1	2.8	22.8	**25**
$PM_{2.5}$	Maximum 24-hour average	4.4	45.6	2.8	45.1	**25**
	Annual average	1.1	10.6	0.4	9.9	**8**

It is noted that while the incremental maximum 24 hour and annual average concentrations for PM_{10} and $PM_{2.5}$ have reduced by approximately 50% and comply with the EPA criteria; due to the existing high background levels some exceedances of predicted cumulative concentrations still occur. In terms of compliance, when background PM_{10} and $PM_{2.5}$ levels already exceed EPA criteria, the measure of compliance becomes whether there are additional 24-hour exceedances of the PM_{10} or $PM_{2.5}$ criteria beyond those caused by the background dust levels. The number of additional exceedances predicted by the AQIA and the Revised Dust Assessment have been calculated and are compared below.

A comparison of the number of 24 hour average exceedances between the AQIA and the Revised Dust assessment have been calculated and are presented in **Table 3**. The implementation of the additional mitigation and management measures has reduced the predicted number of additional exceedances of the PM_{10} 24 hour average criteria from 20 to 2. The number of additional exceedances of the $PM_{2.5}$ 24 hour average criteria was shown to reduce from 3 to 2.

Table 3 Predicted Number of Exceedances of Maximum 24 Hour and Annual Average PM_{10} and $PM_{2.5}$ Concentrations

Pollutant	Averaging Period	AQIA No. Exceedances		Revised Dust Assessment No. Exceedances		Criteria (µg/m³)
		Background	Additional	Background	Additional	
PM_{10}	Maximum 24-hour average	4	20	4	2	**50**
$PM_{2.5}$	Maximum 24-hour average	8	3	8	2	**25**

The additional exceedances of the 24 hour maximum PM_{10} and $PM_{2.5}$ criteria shown in the Revised Dust Assessment are attributed to the high background concentrations with relatively minor incremental contributions from the Project. To put the additional exceedances into context with the background concentration and the incremental dust contribution from the operation of the Project, the data for the top 10 predicted dust concentrations was extracted and presented as **Table 4**.

The top 4 predicted cumulative PM_{10} concentrations shown in **Table 4** have background PM_{10} concentrations exceeding the 24-hour average criteria (ranging from 51.3µg/m³ to 63.0µg/m³). As a result, cumulative concentrations for these modelled days are modelled to exceed the EPA criteria regardless of the Project contribution. Given the background concentrations, the first four 24-hour concentrations are not the focus of the assessment, with the focus moving to the next highest 24-hour concentrations.

The 5th and 6th highest cumulative 24-hour concentrations predicted by the modelling also exceed the EPA criteria and represent additional exceedances beyond those caused by background particulate levels. When the background and incremental concentration contribution from the Project are taken into consideration, it can be shown that the Project's contribution to the additional exceedances is low, contributing approximately 6% and 7% respectively for the 5th and 6th highest cumulative particulate concentrations. This data suggests that the Project is not expected to contribute significantly to the regional particulate load in the airshed surrounding the Site.

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Table 4 Ranked Cumulative PM_{10} 24 Hour Concentrations

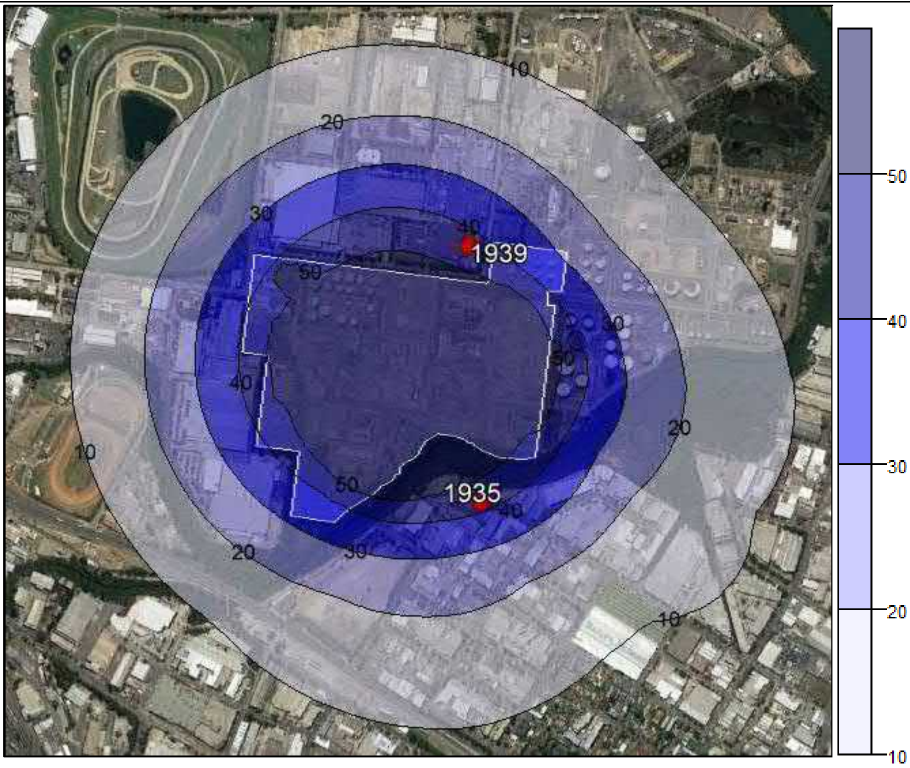
Rank	Concentration (µg/m³)		
	Cumulative	Background	Project Contribution
Maximum	65.3	63.0	2.3
2nd Highest	64.5	57.1	7.4
3rd Highest	57.8	51.9	5.9
4th Highest	52.9	51.3	1.6
5th Highest	51.1	47.9	3.2
6th Highest	50.8	47.2	3.6
Yellow shading denotes the two additional modelled exceedances that may be experienced by receptors around the Site. All subsequent concentrations (7th highest, 8th highest etc) all fall below the criteria			

The top 8 predicted cumulative $PM_{2.5}$ concentrations shown in **Table 5** have background $PM_{2.5}$ concentrations exceeding the 24 hour average criteria (ranging from 25.8µg/m³ to 44.6µg/m³). As a result, cumulative concentrations for these modelled days are modelled to exceed the EPA criteria regardless of the Project contribution. Given the background concentrations, the first eight 24-hour concentrations are not the focus of the assessment, with the focus moving to the next highest 24-hour concentrations.

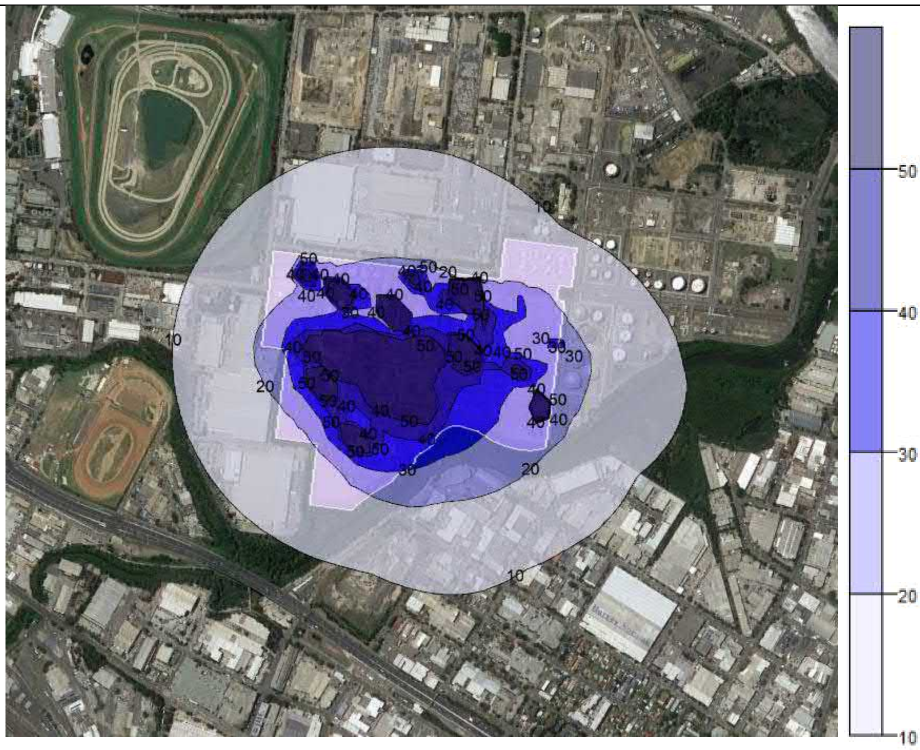
The 9th and 10th highest cumulative 24-hour concentrations predicted by the modelling also exceed the EPA criteria and represent additional exceedances beyond those caused by background particulate levels. When the background and incremental concentration contribution from the Project are taken into consideration, it can be shown that the Project's contribution to the additional exceedances is low, contributing approximately 4% and 11% respectively for the 9th and 10th highest cumulative particulate concentrations. As with $PM_{2.5}$, the data suggests that the Project is not expected to contribute significantly to the regional particulate load in the airshed surrounding the Site.

Table 5 Ranked Cumulative $PM_{2.5}$ 24 Hour Concentrations

Rank	Concentration (µg/m³)		
	Cumulative	Background	Project Contribution
Maximum	45.1	44.6	0.5
2nd Highest	40.8	39.0	1.8
3rd Highest	36.5	35.7	0.8
4th Highest	34.1	33.3	0.8
5th Highest	28.7	28.2	0.5
6th Highest	28.4	27.5	0.9
7th Highest	27.6	26.9	0.7
8th Highest	26.3	25.8	0.5
9th Highest	25.8	24.7	1.1
10th Highest	25.4	22.7	2.7
Yellow shading denotes the two additional exceedances experienced by receptors around the Site. All subsequent concentrations (11th highest, 12th highest etc) all fall below the criteria			

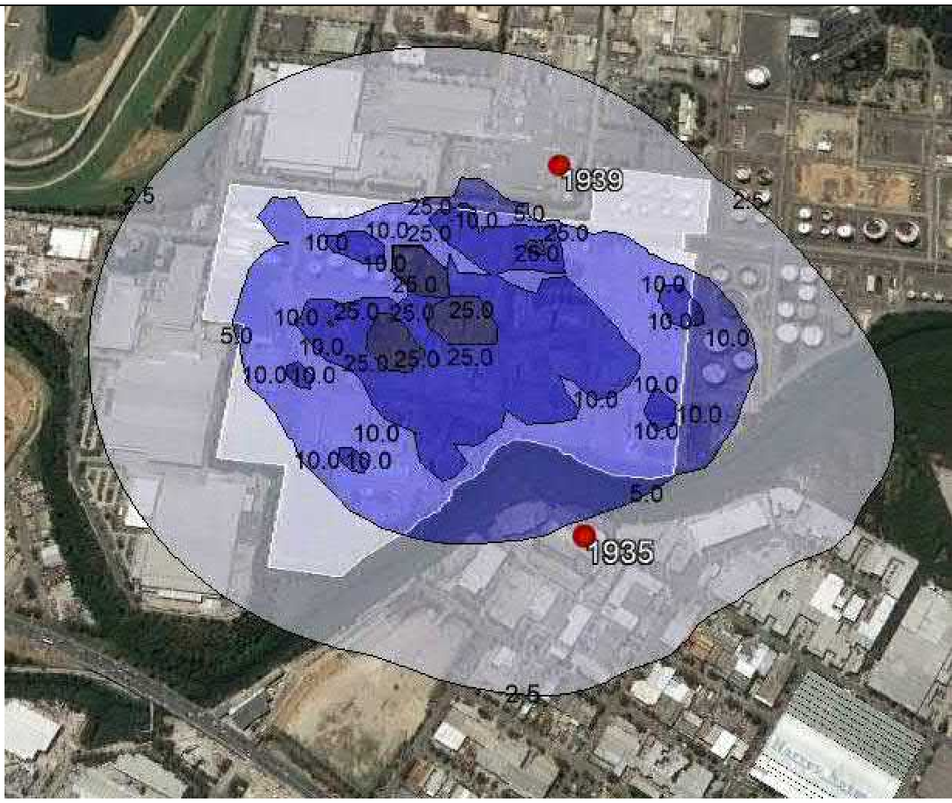


AQIA Results – 24 Hour Maximum ($\mu g/m^3$)



Revised Dust Assessment – 24 Hour Maximum ($\mu g/m^3$)

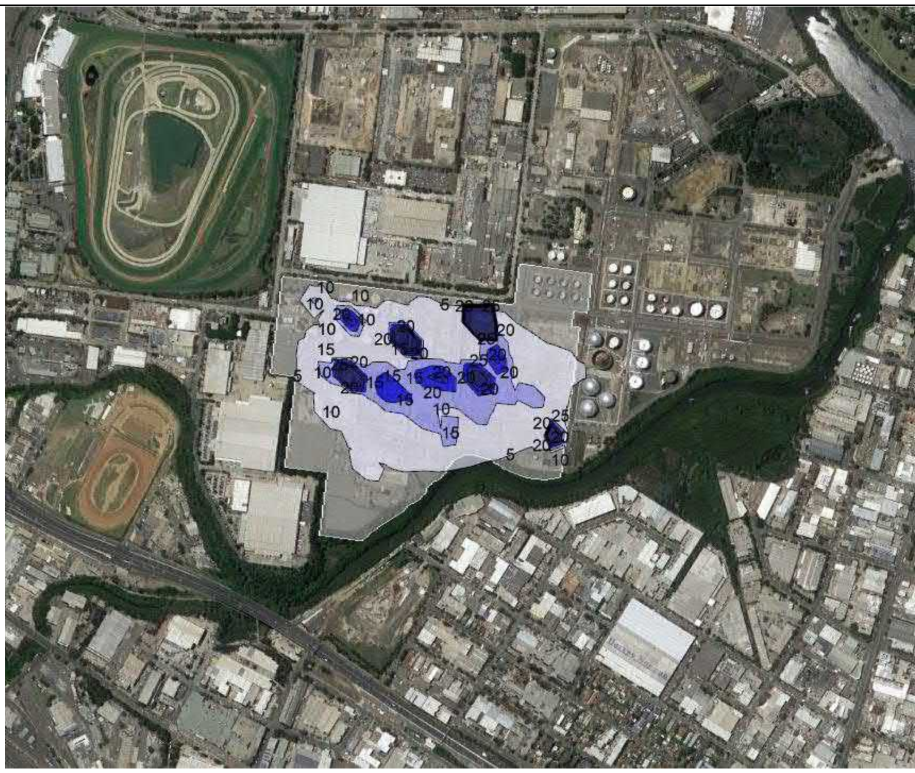
Figure 1 Predicted Maximum 24 Hour Incremental PM_{10} concentration contours comparing the AQIA results and the results from revised dust assessment ($\mu g/m^3$)

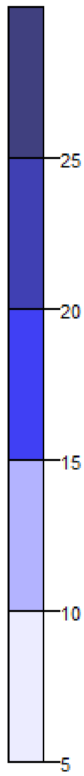


AQIA Results – 24 Hour Maximum ($\mu g/m^3$)

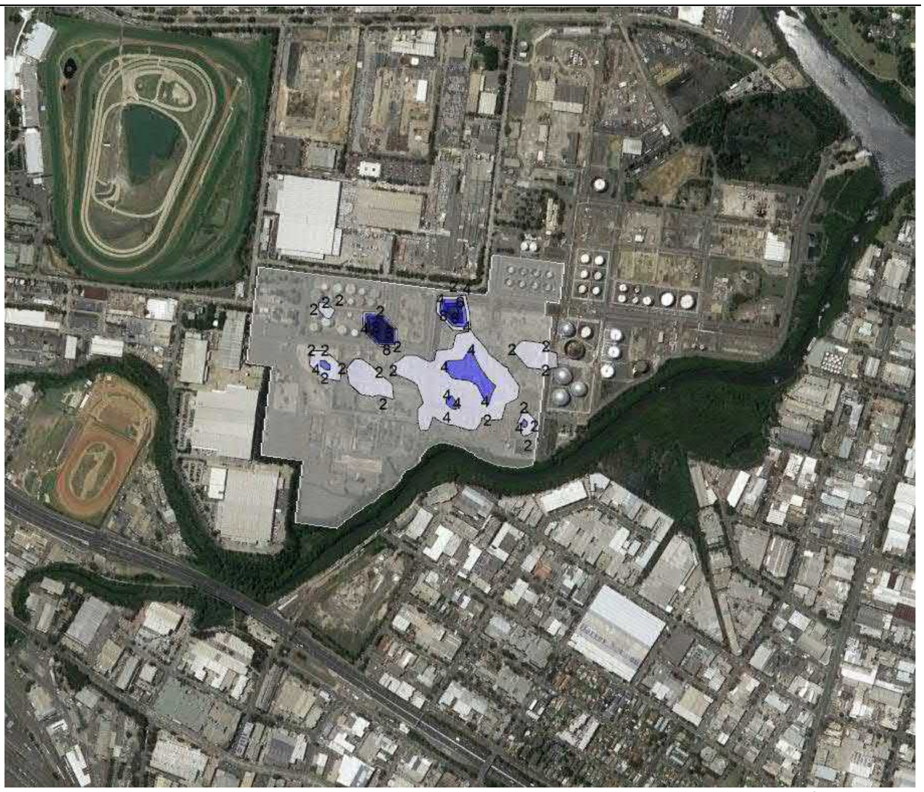
Revised Dust Assessment – 24 Hour Maximum ($\mu g/m^3$)

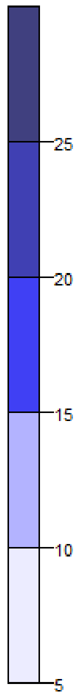
Figure 2 Predicted Maximum 24 Hour Incremental $PM_{2.5}$ concentration contours ($\mu g/m^3$) comparing the AQIA results and the results from revised dust assessment





AQIA Results – Annual Average PM_{10} ($\mu g/m^3$)





Revised Dust Assessment – Annual Average $PM_{2.5}$ ($\mu g/m^3$)

Figure 3 Predicted Annual Average Incremental $PM_{2.5}$ concentration contours (µg/m^3) comparing the AQIA results and the results from revised dust assessment

7.0 Conclusion

Based on the above modelling results, the predicted cumulative maximum 24 hour and annual average concentrations for PM_{10} and $PM_{2.5}$ can be significantly reduced by the introduction of additional mitigation and management measures. Specifically:

- A reduction in the size of the two excavation areas from 2,500 m^2 (50m x 50m) to 900 m^2 (30 m x 30 m); and
- Additional mitigation measures for the DTD plant previously identified in the Post-Modelling Analysis in Section 6.2.2 of the AQIA including:
  - Enclosing the screen and placing water sprays placed on the outlet; and
  - Installation of a particulate filter on the mobile crushing plant

While some minor exceedances of cumulative impacts from particulates remain, these are attributed to high background concentrations. With the introduction of additional mitigation measures the predicted additional exceedances of the 24 hour maximum concentration for PM_{10} and $PM_{2.5}$ have been limited to two additional exceedances (very close to the boundary of the Western Area). Here the incremental contributions from the Project contributing to the two additional exceedances of the PM_{10} 24 hour criterion were minor equating to 7% of the criterion and in the case of $PM_{2.5}$ 24 hour were less than 11% of the criterion.

Offsite predicted impacts for particulates have a high level of conservatism. In AQIA all remediation activities occur concurrently which in not realistic scenario for how the remedial works would be undertaken. Furthermore maximum throughput volumes on a per activity basis have been assumed resulting in an over estimation of the total volume of contaminated soil to be treated on-site (this over-estimation is a 28.6% increase on the total volume of material that may require remediation). As such annual dust emissions modelled have been overestimated and incremental impacts are likely to be lower than predicted.

Implementation of the above mitigation measures in addition to the previously committed AQMP and Reactive Air Quality Management Program is likely to result in no significant impacts during the Project.

Appendix H

Air Quality Technical Note 3: Conservatism Log

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AQIA Technical Note 3: Conservatism Log

1.0 Introduction

The air emissions inventory for the Clyde Western Area Remediation Project (the Project) is a highly complex estimation of air emissions from a number of remedial activities with over a hundred identified contributing sources. As such, a balance between representative and conservative input values were required to ensure the predicted impacts not only accounted for a reasonable amount of uncertainly but did not grossly overestimate the magnitude of the potential air quality impacts from the Project.

While the level of uncertainty in a number of individual calculations has been reduced to achieve a more informed approximation of the predicted air quality impacts from the Project, the resulting layers of upper limit estimations provide a compounding effect which results in a high level of conservatism. A list of upper limiting estimations has been included in the emission estimate calculations. This list is provided in **Section 2.0** and is presented as evidence of the compounding effects that have led to a highly conservative estimate of air emissions.

2.0 Conservatism List

Table 1 List of Conservative Assumptions and Input Parameters for Emissions Estimation

Input Parameter	Value	Units	Assumptions and Additional Comment
Modelled Activity Program			
All Activities Occurring Concurrently	NA	NA	Assumes all remediation activities within the RAP would occur concurrently which is not a realistic expectation of how remediation works would be undertaken. This assumes an unrealistic worst case modelling scenario.
Soil Volumes			
Total Remediated Soil	105,000	m^3	Estimated upper limit.
On-site Remediated Soil	100,000	m^3	Estimated upper limit.
Off-site Remediated Soil	5,000	m^3	Estimated upper limit.
Validated Imported Soils	20,000	m^3	Estimated upper limit.
Total Soil Volume Required for Land Forming	120,000	m^3	Estimated upper limit.
Concrete Volume			
Total Concrete Volume	40,000	m^3	Estimated upper limit.
Duration of Site Activities			
General Activities (Including Excavation)	18	months	• Assumed condensed timeline for activities including; pipeline excavation, soil excavation and transport of spoil to appropriate remedial sites. • The daily emission rate was calculated on the basis of the excavated volume extracted over the 18 month period. The daily emission rate was then applied for each day modelled in the assessment. • Modelled duration of slab removal based on 12 month period; with slab removal occurring at a rate of 2000 m^2 /day seven days per week over 52 weeks, which is a gross over estimate. Actual slab removal duration based on a removal rate of 2000 m^2 /day and total volume of 40,000 m^3 is estimated at 100 days.

Input Parameter	Value	Units	Assumptions and Additional Comment
Soil Mixing	6	months	• Assumption that the soil mixing occurs at the same rate for a 12 month period. Effectively doubling the annual emission rate.
Land Farming	24	months	• Estimated upper limit half-life assumed for each land farm cell (8 weeks). • Land farm remediation time of 24 weeks per cell was assumed based on upper limit soil TPH concentration of 8000 mg/kg. • Estimated upper limit of two consecutive landfill cell cycles completed within modelled year. • Estimated condensed timeline of two weeks for excavation of contaminated soil and transport to the land farm cell, and transport or remediated soil and backfilling.
Biopiling	24	months	• Estimated upper limit half-life assumed for each biopile (6 weeks). • Biopile remediation time of 24 weeks per cell was assumed based on a soil TPH concentration of 16,000 mg/TPH. Assumed TPH concentration has no bearing on estimated upper limit stack concentrations. • Estimated upper limit of 4 active biopiles within modelled year. Two biopiles operating concurrently, with staggered construction and deconstruction events. • Estimated condensed timeline for both construction and deconstruction of biopiles was assumed. Construction periods were staggered throughout the year to ensure seasonal variation in meteorological conditions was factored into model predictions
Direct Thermal Desorption	6	months	• Assumption that operation of the DTD plant occurs over a 12 month period. Effectively doubling the annual emission rate. • Continuous operation of the DTD plant was assumed while transport of contaminated and remediated soil to and from the Western Area was assumed to occur during standard site operational hours.
Stabilisation	16	weeks	• Modelled based on an estimate that all stabilisation occurs over a 12 month period. Effectively more than tripling the annual emission rate.
Concrete Crushing	100	days	• Modelled over a 12 month period. It was assumed ten concrete crushing events would occur over a 12 month period with duration of 10 days per crushing event. • Modelled concrete crushing events were distributed evenly throughout the year (approximately every 27 days) in an effort to avoid selection bias in the variable emission rate files and to ensure seasonal variation in meteorological conditions was factored into model predictions.

Input Parameter	Value	Units	Assumptions and Additional Comment
Land Forming	24	months	• Modelled based on the assumption half of all land forming activities would occur within the modelled year.
<u>Activity Volumes</u>			
General Activities (Contaminated Soil)	90,000	m^3	Estimated upper limit excluding 10,000 m^3 designated for soil mixing and land farming.
General Activities (Concrete)	40,000	m^3	Estimated upper limit
Soil mixing (Contaminated Soil)	5,000	m^3	Assumed volume of soil to be remediated in-situ.
Land Farming (Contaminated Soil)	5,000	m^3	Excavated contaminated soil assumed to be remediated in four 1,250 m^3 batches.
Biopiling (Contaminated Soil)	80,000	m^3	Value allows 30,000 m^3 contingency in the event DTD remediation is not required. Assumed up to 10,625 m^3 per biopile with 42,500 m^3 to be remediated within modelled year
Biopiling (Imported Contaminated Soil)	5000	m^3	Estimated upper limit
DTD & Stabilisation (Contaminated Soil Total)	40000	m^3	Estimated upper limit with anticipated soil volume between 10,000 and 40,000 m^3.
DTD (Contaminated Soil)	35,200	m^3	Estimated on maximum throughput of 15t/h of contaminated soil 24hrs per day 6 days per week over 6 month period. It is currently estimated 75% (30,000 m^3) of the 40,000 m^3 would be treated by the DTD plant.
Stabilisation (Contaminated Soil)	10,000	m^3	Estimated upper limit based on 25% (10,000 m^3) of the 40,000 m^3 to be treated by stabilisation.
Concrete/crushed concrete	40,000	m^3	Estimated upper limit
Landforming (Remediated Soil)	95,000	m^3	Estimated upper limit inclusive of upper limit volume imported contaminated soil treated by biopiling
Landforming (Imported Validated Soil)	20,000	m^3	Estimated upper limit
Landforming (Crushed Concrete)	40,000	m^3	Estimated upper limit
<u>Operational Hours</u>			Construction hours are 7am to 6pm Mon-Fri and 8:00 am to 5:00pm Saturdays equates to 3328 h/y.
General Activities			
• Excavators, Front end loaders, Dump trucks (soil & concrete) and dewatering pump	3,328	h/y	The hourly emission rate was modelled at 11hrs per day 7 hrs per week (4015 hrs per year).
• Pipe Excavation and Active Faces (expose area)	8760	h/y	Continuous source modelled 8760 hrs/y
Soil Mixing	3,328	h/y	The hourly emission rate was modelled at 11hrs per day 7 hrs per week (4015 hrs per year).
Land Farming			
• Excavators (excavation site)and dump trucks	308	h/y	Annual operational hours based on 2 week excavation period per land farm cell
• Excavation site (exposed area)	672	h/y	Continuous source over 2 week excavation/backfilling period
• Excavators (land farm cell site)	1536	h/y	Annual operational hours based one rotation of land farm every 2 weeks over 24 week period, with a

Input Parameter	Value	Units	Assumptions and Additional Comment
			turning rate of 64 hrs (1 week). Two land farms per year. Modelled conservatively at 11hrs per day 7 hrs per week, 12 weeks per land farm cell.
• Land farm cell (exposed area)	8064	h/y	*Continuous source over 24 week period. Two land farm cells per year.*
Biopiling			
• Excavators and Frontend Loaders	2560	h/y	Annual operational hours used to calculate activity rate based on 5 weeks construction and 5 weeks deconstruction per biopile (4 biopiles per year).
• Bulldozer	1280	h/y	Annual operational hours used to calculate activity rate based on 4 weeks construction per biopile (4 biopiles per year). Modelled conservatively at 11hrs per day 7 hrs per week
• Aeration Systems	4032 (per biopile)	h/y	Continuous operation of the biopiling aeration system assumed during 24 week active bio piling period.
• Exposed Biopiles (Construction)	3360	h/y	Continuous source over 5 week construction period per biopile. Assumed four biopiles per year.
• Exposed Biopiles (Deconstruction)	3360	h/y	Continuous source over 4 week deconstruction period per biopile. Assumed four biopiles per year.
DTD & Stabilisation			
• Excavators Mobile crushing plant and DTD Plant (DTD)	7488	h/y	Modelled as a continuous source (8760 h/y). Actually operational 6 days per week.
• Stockpiles (DTD/Stabilisation)	8760	h/y	Continuous source
• Front end loader (DTD/Stabilisation)	3,328	h/y	The hourly emission rate was modelled at 11hrs per day 7 hrs per week (4015 hrs per year).
• Excavator and Soil Mixer (Stabilisation)	1024	h/y	The hourly emission rate was modelled at 11hrs per day 7 hrs per week (4015 hrs per year).
Concrete Crushing			
• Excavator, crushing plant and stockpile area	1100	h/y	Concrete crushing assumed to occur ten times throughout the year between 7am and 6pm Monday to Friday over a ten week period. Modelled concrete crushing events were distributed evenly throughout the year (approximately every 27 days in 10 day blocks) to ensure seasonal variation in meteorological conditions was factored into model predictions
Land Forming			
• Excavators, Front end Loader and Stockpile Area	3,328	h/y	The hourly emission rate was modelled at 11hrs per day 7 hrs per week (4015 hrs per year).
• Rollers	624	h/y	Assumed operational 2 hrs per day 6 days per week modelled at 2hrs per day 7 hrs per week (728 hrs per year).
• Active Face (exposed area)	8760	h/y	Continuous source.
Vehicle Utilisation Rates			

Input Parameter	Value	Units	Assumptions and Additional Comment
Rollers	100	%	Rollers were assumed to be operating only 2 hours per day and thus a 100% utilisation factor was applied during this time.
Dump Trucks	10- 35	%	Dump truck utilisation rates were calculated based on the ratio of VKT per hour and the maximum site speed of 10km/h and rounded up to the nearest 5%.
All other mobile equipment	80	%	Assumes all mobile equipment operating 80% of the time
Stationary Sources Emission Factors			
All combustion pollutants	*Variable*	*g/kWh*	*Assumes emission factors based on U.S. EPA Tier 3 Final/EU Stage III emission standards. Newer stationary equipment may be compliant with the more stringent U.S. EPA Tier 4 Final/EU Stage IV emission standards*
NO_2	*Variable*	*g/kWh*	*Emission factors for all stationary sources have been assumed to be compliant with US EPA Tier 3 and EU Stage III A Non-road Diesel Engine Emission Standards. The emission factor adopted NO2 is an overestimate as it also includes NOx and non-methane hydrocarbons (NMHC)*
Mobile Sources Emission Factors			
All combustion pollutants	*Variable*	*g/kWh*	Assumes emission factors based on U.S. EPA Tier 3 Final/EU Stage III emission standards, Newer equipment within the construction vehicle fleet may be compliant with U.S. EPA Tier 4 Final/EU Stage IV emission standards
NO_2	*Variable*	*g/kWh*	Emission factors for all mobile equipment have been assumed to be compliant with US EPA Tier 3 and EU Stage III A Non-road Diesel Engine Emission Standards. The emission factor adopted NO_2 is an overestimate as it also includes NOx and non-methane hydrocarbons (NMHC)
Biopile Aeration System			
VOC stack concentrations	*10*	*ppm*	Assumes typical constant upper limit (Total VOCs) of operation for typical biopile aeration system outlet stack. Stack emissions from biopile are expected to decrease with aging biopile.
DTD Stack			
VOC emissions concentration	*Variable*	*mg/m3*	Contestant estimated upper limit derived from similar projects at POEO Emission Standards
Odour Concentrations *All Sources*	2.45/ 2.74	OU/m2/s	In-pit and ex-pit odour concentrations obtained from average odour sample data targeted in areas where notable odour was observed and contaminated soil was visibly present to ensure worst case odour emissions were captured
VOCs from Contaminated Spoil			
Exposed Surfaces	Variable	$g/m^2/s$	VOC emission rates obtained from average measured soil vapour sample data targeted in areas where

Input Parameter	Value	Units	Assumptions and Additional Comment
Materials Handling	Variable	g/s	contaminated soil was visibly present to ensure worst case soil vapour emissions were captured Calculated using the US EPA Short-Term Average Emission Rate and soil concentration sample data. Assumptions and conservatism within this equation is discussed in detail in Technical Note 4 (refer to Appendix I of the Response to Submissions Report for the Project).

3.0 Closure

This technical note details the large amount of conservatism within the significant number of input parameters required to estimate the total dust, VOC, and odour emissions from the Project. Upper limit estimates on input parameters such as soil volumes, activity rates, exposed surfaces, and emission factors have all had a compounding effect leading to a highly conservative estimate of air emissions from the Project.

Appendix I

Air Quality Technical Note 4: Pore Space Emission Discussion

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AQIA Technical Note 4: Detailed Explanation of Site Specific Soil Vapour Pore Space Calculations

1.0 Introduction

The response dated 2 August 2019 from the NSW Environment Protection Authority (EPA) and a follow up meeting with the EPA and NSW Department of Planning, Industry and Environment (DPIE) on the 13 August 2019 questioned the conservatism of the Air Quality Impact Assessment (AQIA) (refer to Appendix E of the Environmental Impact Statement (EIS)) and made specific comments on the site-specific soil vapour pore space calculations. The EPA stated that in part, that this was a reason for Viva Energy to commit to the use of enclosures during the Clyde Western Area Remediation Project (the Project).

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As part of a recent meeting with DPIE and EPA, further questions regarding the emission calculations used to calculate Volatile Organic Compounds (VOC) emissions from the excavation of soil as part of the Project were raised. In particular the approach regarding VOC species within the soil pore spaces was questioned. This particular methodology was raised with the EPA at a meeting on 20 November 2018 prior to exhibition. At that time, the EPA raised no concerns regarding this approach including a discussion into the unrealistic over-conservatism from the assumption of a single compound occupying 100% of the pore space.

The original AQIA document (specifically the emissions calculation Appendix) provided a high level of detail in relation to the conservatism that had been included in the assessment to specifically address uncertainty that is inherent with any dispersion modelling assessment of this type. Additional to the information and justification provided to date, this document has been prepared to further describe the calculation methodology used for the determination of VOC emission rates based on the available data at the time of writing the AQIA. The objective of this document is to:

1. Consolidate previous explanations provided both within the AQIA, during post submission documentation or in conversations in relation to VOC emission rate calculation from excavation of soil;
2. Further demonstrate that the methodology used is conservative and representative of a reasonable worse-case estimate; and
3. Provide further evidence quantifying the conservative estimates made in the AQIA and demonstrating that the adopted methodology is in line with the US EPA 1992 guidance document.

It is considered that this document provides suitable evidence to demonstrate that the high level of conservatism regarding VOC emission estimates and associated predicted ground level concentrations largely negates or limits the risk of uncertainty.

It should also be noted that this is only one aspect of the emissions calculation and there are a range of additional conservative assumptions which have also been made to address any potential uncertainty in the modelling. This thorough list of assumptions has also been documented and is included in a separate Technical Note (refer to Technical Note 3, Appendix H of the Response to Submissions Report for the Project).

2.0 Selection of the Appropriate Emission Rate Equation

The US EPA *Estimation of Air Impacts for the Excavation of Contaminated Soil* (US EPA 1992) guidance document was used as the basis for the estimate of emissions from the excavation of contaminated soil. The guidance document provides a number of methods for estimating emission rates from the excavation of contaminated soil, including the following:

- Average Long-Term Emission Rate;
- Short Term Emissions Rate:
  - Average Emission Rate; and
  - Worst Case Emission Rate

The Average Long Term Emission Rate is considered to provide a more realistic average emission rate that is less conservative than the Short Term Emission Rate and was discounted in the AQIA due to the lower level of conservatism.

The Short Term Emissions Rate methodology was designed to enable the estimation of emissions from sequential handling steps as it is expected that elevated levels of VOC emissions are possible each time the soil is handled (i.e. VOCs are released at a higher rate when handled than if in-situ or in a undisturbed stockpile). Given the sequential handling steps associated with the remediation work (i.e. excavation, loading into haul trucks and general materials handling at multiple stages of the remediation works), this equation was considered appropriate for the AQIA.

Two emission rates are provided to assess short term emissions, average emissions and worst case emissions. The ***average emission rate*** provides a detailed estimate of soil pore space and soil diffusion emission rates. The ***worst case scenario*** provides an instantaneous emission rate for contaminated soils when initially excavated and considers the case where a pure chemical is exposed to the atmosphere. It does not take into consideration pore space gas concentrations and diffusion, does not consider complex mixtures of VOC compounds and is not considered appropriate for sequential soil handling steps (as all its emissions are released in one step). Given the nature of these two equations and the expected remediation activities, the average short term emission equation was considered to be more appropriate, while still maintaining a high degree of conservatism as further outlined below.

3.0 US EPA Short-Term Average Emission Rate

The US EPA 1992 document states the best method to estimate VOC emissions from materials handling is to “estimate the emissions using predictive equations with site-specific inputs”, second only to direct measures. Specifically, the US EPA document indicates the following:

> There are several alternative approaches for estimating the emissions from excavafion. The best method is to directly measure the emissions during full-scale or pilot-scale soils handling activities. The next best method is to estimate the emissions using predictive equations with site-specific inputs. If site-specific inputs are not available, a very conservative estimate can be made by using default values for the input parameters. Equations are given below for estimating an average long-term emission rate and a short-term emission rate.

Source: US EPA *Estimation of Air Impacts for the Excavation of Contaminated Soil* (US EPA 1992), Page 5, Paragraph 3

The US EPA Short-Term Emission Rate equation was used to estimate VOC emissions from materials handling of contaminated soil on-site using both site specific data and very conservative default values where site specific data was not available. The average emission rate is equal to the sum of the emission rates from the soil pore space and from soil-gas diffusion as follows:

$$ER = ER_{PS} + ER_{DIFF} \qquad \text{(Equation 1)}$$

Where:

ER	=	Average emission rate (g/s)
ER_{PS}	=	Soil pore space emission rate (g/s)
ER_{DIFF}	=	Diffusion emission rate (g/s)

Individual components of the Short-Term Average Emission Rate are further discussed in **Section 3.1** and **Section 3.2**.

3.1 Soil Pore Space Emission Rate Calculations

The soil pore space emission rate was calculated using the following equation:

$$ER_{PS} = \frac{P \times MW \times 10^6 \times E_a \times Q \times E_X C}{(R \times T)} \qquad \text{(Equation 2)}$$

Where:

ER_{PS}	=	Soil pore space emission rate (g/s)
P	=	Vapour Pressure (mm/Hg)
MW	=	Molecular Weight (g/g-mol)
E_a	=	Air-filled porosity
Q	=	Excavation rate m^3/sec
E_xC	=	Soil-gas to atmosphere exchange constant
R	=	Gas constant (mm Hg-cm^3/g-mol °K)
T	=	Temperature (K)

Estimated Pore Space Emission Rates (ER_{PS}) used in the AQIA for each activity are shown in **Table 1**

Table 1 Unmitigated VOC pore space emission rates (g/s)

Pollutant	Pore Space Emission Rate (g/s)				
	Biopile	Land Farming		DTD Stockpiles	Total Excavation Area
		Excavation	Turning		
n-Hexane	0.0419	0.0419	0.0419	0.0419	0.0568
Cyclohexane	0.0721	0.0721	0.0721	0.0721	0.0979
Benzene	0.0071	0.0071	0.0071	0.0071	0.0097
Toluene	0.0103	0.0103	0.0103	0.0103	0.0139
Ethylbenzene	0.0079	0.0079	0.0079	0.0079	0.0107
Total xylenes	0.0106	0.0106	0.0106	0.0106	0.0143
Naphthalene	0.0071	0.0071	0.0071	0.0071	0.0097
Note: Excavation Area emission rate refers to the total excavation area inclusive of three pipeline trenches and two active excavation areas.					

The non-default parameters in Equation 2 which were used in the calculation of the pore space emission rates have been further discussed in the following sections.

3.1.1 Air Filled Porosity

Air filled porosity (used in Equation 2 above) broadly refers to the amount of air in-between the soil particles. This value can vary significantly depending on how compact the contaminated soil may be and the nature of the soil itself, e.g. sand vs clay. This value is important as the higher the porosity the higher the air space that is available for volatilisation of volatile organic compounds within the soil. The higher the available VOC levels, the higher the amount of VOC released when the soil is disturbed.

An air-filled porosity of 0.55 for dry loose soil (US EPA 1992) was adopted for this study. This measure was considered to be conservative as the excavated material would be expected to be compacted and would likely have high moisture content due to the high water table within the study area and excavation area. It should be noted that the recommended US EPA air filled porosity for compacted wet soil was 0.35.

The adopted air filled porosity value is 25% higher than the default value of 0.44 and 57% higher than the US EPA recommended value for wet or compacted soil of 0.35. This results in a significantly more conservative estimate in terms of air filled porosity.

3.1.2 Soil Vapour Pressures

Soil vapour pressures at 298K for each modelled pollutant are shown in **Table 2**. These values were used to estimate an average soil vapour pressure for use in Equation 2. The average soil vapour pressure was calculated to be 44.8 mmHg. This average vapour pressure is 25% higher than the default value of 35 mmHg, which would result in a higher pore space emission rate than the default value recommended by US EPA.

Table 2 Soil vapour pressure at 298 K (mm Hg)

Pollutant	Soil Vapour Pressure (mm Hg)
n-Hexane	127.5
Cyclohexane	77.2
Benzene	74.61
Toluene	22
Ethylbenzene	6.8
Total xylenes	5.2
Naphthalene	0.00006
Average Soil Vapour Pressure	**44.8**

3.1.3 Excavation Rates

The excavation rate defines the activity rate within the short term emission equation. The excavation rates for Equation 2 refer to the materials handling rate for a single movement of soil, e.g. loading onto a truck. Excavation rates for individual sources (refer to the emissions inventory within the AQIA for VOC sources for each remedial activity) are considered conservative based on the assumed project timelines as follows:

- Many of the remediation activities modelled are expected to occur over less than the modelled 12 month period (e.g. Direct Thermal Desorption). To ensure all meteorological conditions were considered, the modelling emissions for these sources were based on maximum hourly throughputs, which results in an over-estimation of the expected emission rates over a year.
- Emissions from activities with an expected duration of greater than 12 months (e.g. biopiling, land farming and excavation) were calculated using condensed or worst-case time lines, i.e. condensed to a 1 year time frame. This results in higher VOC emission rates over a shorter period of time, which has resulted in conservative emissions estimations.

Conservative assumptions have been adopted for quantities of contaminated material for many of the remedial activities, with upper limit contaminated spoil volumes assigned to many activities such as biopiling and DTD treatment which collectively result in a total activity rate that exceeds the maximum volume of contaminated material expected to be excavated.

3.1.4 Site Specific Amendments to Pore Space Emission Rate Equation

The *Pore Space Emissions Rate Equation* (Equation 2) used as a component of the US EPA 1992 *Short-Term Average Emission Rate Equation (Equation 1)* assumes that the entire soil pore space is occupied by a single pollutant and as such is considered to be unrealistically conservative given that the soil may contained many VOC compounds and other inert gases and water vapour. In an effort to correct the over-conservatism in this equation, site specific soil vapour data has been used to provide an estimate of the expected percentage of soil pore space occupied by each modelled pollutant. This is in line with the US EPA 1992 guideline objective to use site specific inputs where available and makes the adapted emission rate equation fit for purpose and a better representation of onsite emissions. This will reduce the emission rates of the individual VOC species, but is considered to be a reasonable assumption and removes a highly unrealistic outcome for the emitted VOCs.

Estimation of the percentage of soil pore space occupied by individual VOC species was calculated from on-site monitoring data using the average percentage concentration of each pollutant as a fraction of total VOCs[1] identified as potential contaminants of concern in the Targeted Site Investigation (TSI) report (AECOM 2018). Estimated pore space occupied by each pollutant is presented in **Table 3** and **Figure 1**.

[1] Where VOC concentrations where below the LOR; the soil vapour concentration was assumed to be equal to half the LOR.

In noting this assumption, emission estimates are still considered conservative as the presumption that the aforementioned seven VOCs occupy the entire soil pore space is extremely unlikely as other non-toxic gases (nitrogen and oxygen), VOCs less than the limit of detection and water are also likely to occupy the soil pore space resulting in an over estimate of actual soil pore space emissions. The rationale underpinning this assumption is as follows:

- The pore space species breakdown is consistent with the assumed average soil vapour pressure; calculated as an average of n-hexane, cyclohexane, benzene, toluene, ethylbenzene, xylenes and naphthalene as shown in **Table 2**; and
- VOC emissions from materials handling of contaminated soil are a dominant source of emissions from the Project and thus a more accurate approach was considered appropriate for this potentially dominant group of pollutants while still maintaining a high level of conservatism within the soil pore space equation.

Table 3 Soil pore space occupied by individual VOCs

n-Heptane	Cyclohexane	Benzene	Toluene	Ethylbenzene	Total Xylene	Naphthalene
26.7%	46.0%	4.5%	6.5%	5.0%	6.7%	4.5%

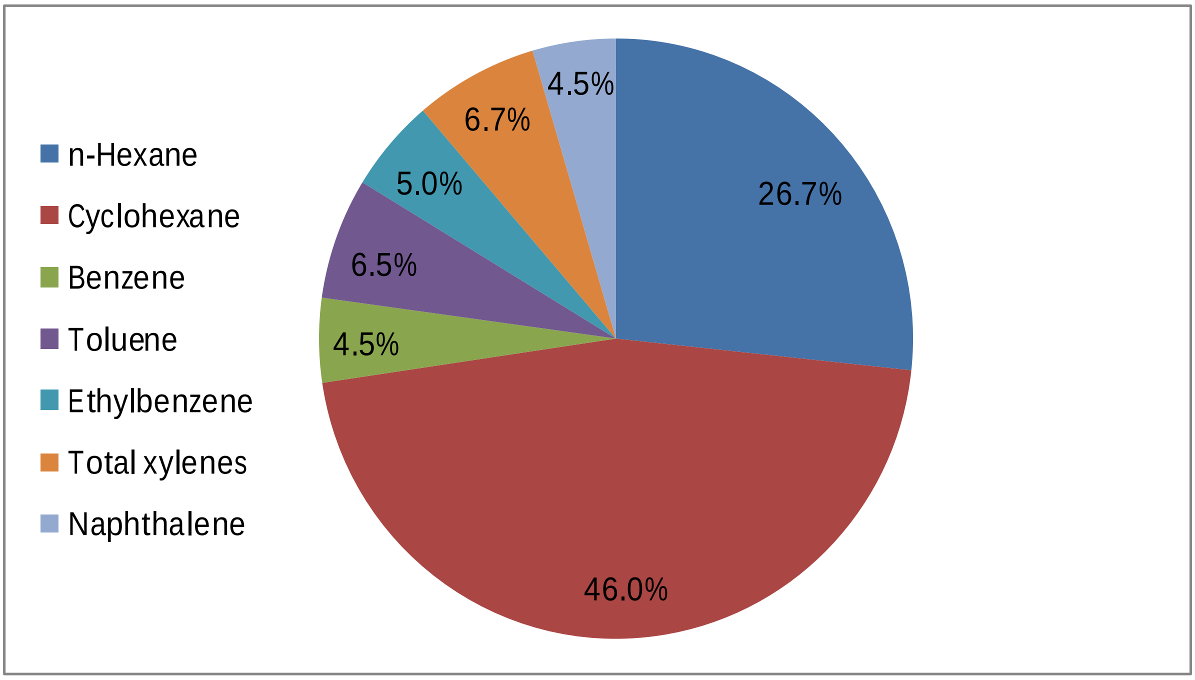

Figure 1 Soil Vapour Pollutant Concentrations as a Percentage of Soil Pore Space Contribution

It should be noted that the US EPA 1992 pore space emission rate equation was designed based on the assumption that the soil pore gas is saturated with the pollutant of interest (as outlined in the US EPA text below) and thus is expected to result in an over-prediction of the emission rate. Given this assumption, the above methodology is considered a more realistic approach to estimating pore space emissions while still remaining conservative.

pressure at 25°C, and diffusivity in air at 25°C are given in Appendix B. Equation 3 is based on the assumption that the soil pore gas is saturated with the compound of interest. If this is not the case, then Equation 3 may overpredict the emission rate. The output from Equation 3 should be multiplied by the duration of excavation and compared to the total mass of contaminants present in the soil:

An example calculation showing the output from the sum of both the soil pore space emission rate (Equation 3) and the diffusion rate for benzene during excavation activities has been multiplied by the duration of the excavation and compared to the average mass of benzene present in the soil in **Section 4.2.2**. The resulting calculation shows that a highly conservative estimate of VOC emissions from excavation has been used within the model for the AQIA.

3.2 Soil Diffusion Emission Rate

The diffusion emission rate (as needed by Equation 1) was calculated using the following equation:

$$ER_{DIFF} = \frac{(C)(10{,}000)(SA)}{\left(\frac{Ea}{Keq\ kg}\right)+\left(\frac{\pi t}{De\ Keq}\right)^{1/2}} \qquad \text{(Equation 3)}$$

Where:

ER_{DIFF} = Diffusion emission rate (g/s)

C = Concentration in soil (g/cm^3)

SA = Emitting surface area (m^2)

E_a = Air filled porosity

K_{eq} = Equilibrium coefficient

K_g = Gas phase mass transfer co-efficient (cm/s)

t = Time (sec)

D_e = Effective diffusivity in air (cm^2/sec)

Estimated Diffusion Emission Rates (ER_{DIFF}) for each activity is shown in **Table 4**.

Table 4 Unmitigated VOC diffusion emission rates (g/s)

Pollutant	Diffusion Emission Rates (g/s)				
	Biopile	Land Farming		DTD Stockpiles	Total Excavation Area
		Excavation	Turning		
n-Hexane	0.0016	0.0010	0.0007	0.0001	0.0026
Cyclohexane	0.0262	0.0161	0.0125	0.0008	0.0432
Benzene	0.0001	0.0001	0.0001	0.0000	0.0002
Toluene	0.0002	0.0001	0.0001	0.0000	0.0004
Ethylbenzene	0.0002	0.0001	0.0001	0.0000	0.0004
Total xylenes	0.0002	0.0001	0.0001	0.0000	0.0004
Naphthalene	0.0004	0.0003	0.0002	0.0000	0.0007
Note: Excavation Area emission rate refers to the total excavation area inclusive of three pipeline trenches and two active excavation areas.					

A discussion of the variables used in Equation 3 has been provided in the following sections.

3.2.1 Air Filled Porosity

This value is the same as assumed for Equation 2.

3.2.2 Equilibrium Coefficient & Gas Phase Mass Transfer Coefficient

US EPA 1992 default values of 0.613 for the equilibrium coefficient and 0.15 for the gas-phase mass transfer coefficient were adopted for the calculation of the diffusion emission rate (USEPA 1992).

3.2.3 Handling Times

Handling times were based on the assumed duration of each activity which were converted to seconds to calculate the diffusion emission rate. Spoil handling times are thought to be an accurate representation of time taken to handle material based on assumed maximum spoil volumes. Spoil handling is assumed to occur generally between the hours of 7am and 6pm on weekdays and a shorter time frame on Saturdays. Outside of these hours, additional spoil handling was considered for the continuous operation of the DTD plant.

3.2.4 Soil Concentrations

Soil concentrations are an area which has not been clearly understood in discussions with NSW EPA. There has been a clear assumption by regulatory authorities that there is a high, site-wide level of VOC contamination due to the historic operations of the former refinery. This is not the case, with very low concentrations of VOC noted across the Western Area with the vast majority of samples returning values less than the limit of detection for the soil analysis method. The assumptions made as part of the AQIA reflected this low level VOC concentration in the ground. These assumptions have been further confirmed by the results from the Remedial Site Investigations (RSI) (ERM, 2019b) (refer to Appendix L of the Response to Submissions Report for the Project).

Average contaminant concentrations for benzene, toluene, ethylbenzene, xylene and naphthalene were estimated from data reported in the TSI (AECOM 2018) report and has been presented in **Table 5**.

Note that soil concentration data for hexane and cyclohexane was limited to the Total Petroleum Hydrocarbon (TPH) C6 to C9 Fraction with an average concentration of 1.34×10^{-4} g/cm^3. As such a Gas Chromatography Mass Spectrometry (GC-MS) library scan was compared to the GCMS scans on two soil samples[2] containing a high TPH C6 to C9 concentration to determine the proportion of n-hexane and cyclohexane in the TPH C6-C9 fraction.

Table 5 Average VOC soil concentrations (g/cm^3)

n-Heptane	Cyclohexane	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene
2.89×10^{-6}	4.83×10^{-5}	2.13×10^{-7}	3.97×10^{-7}	3.97×10^{-7}	3.98×10^{-7}	8.00×10^{-7}
Note: Values below the Limit of Recording (LOR) were calculated at half the LOR.						

To illustrate further the point made above in relation to low overall VOC concentrations across the Western Area, soil concentrations reported within the TSI (AECOM 2018) for benzene have been extracted and analysed. A plot of the data for all available soil samples are shown in **Figure 2**. Recorded soil concentrations above the limit of detection are shown in orange. For soil samples where the benzene concentration was below the limit of detection, half the limit of detection was used to calculate the average (as shown in red in **Figure 2**).

[2] Refers to sample QC18/18_100 and sample TP18/20_0.45_20180208 with TPH C6-C9 concentrations of 526 mg/kg and 3270 mg/kg respectively as documented in the TSI Report (AECOM 2018).

Figure 2 also shows residential and commercial/industrial criterion[3] for soil benzene concentrations. It should be noted based on the historic and TSI data that only 1% of soil samples (3 samples) were above the residential criterion and no samples had a concentration above the commercial / industrial criterion. Thus it is recognised based on the TSI data, soil benzene concentrations are compliant with commercial and industrial criterion (prior to undertaking any remediation works. While an average concentration was used the collective emissions from VOCs across the Western Area are considered conservative as:

- The mode soil concentration for all VOCs was below the limit of detection. For all concentrations below the limit of detection a concentration of half the limit of detection was assumed;
- Soil concentration data for hexane and cyclohexane was considered highly conservative based on Gas Chromatography Mass Spectrometry (GC-MS) library scan of two soil samples with a known high concentration of TPH C6 to C9 in the TSI (AECOM 2018) report.

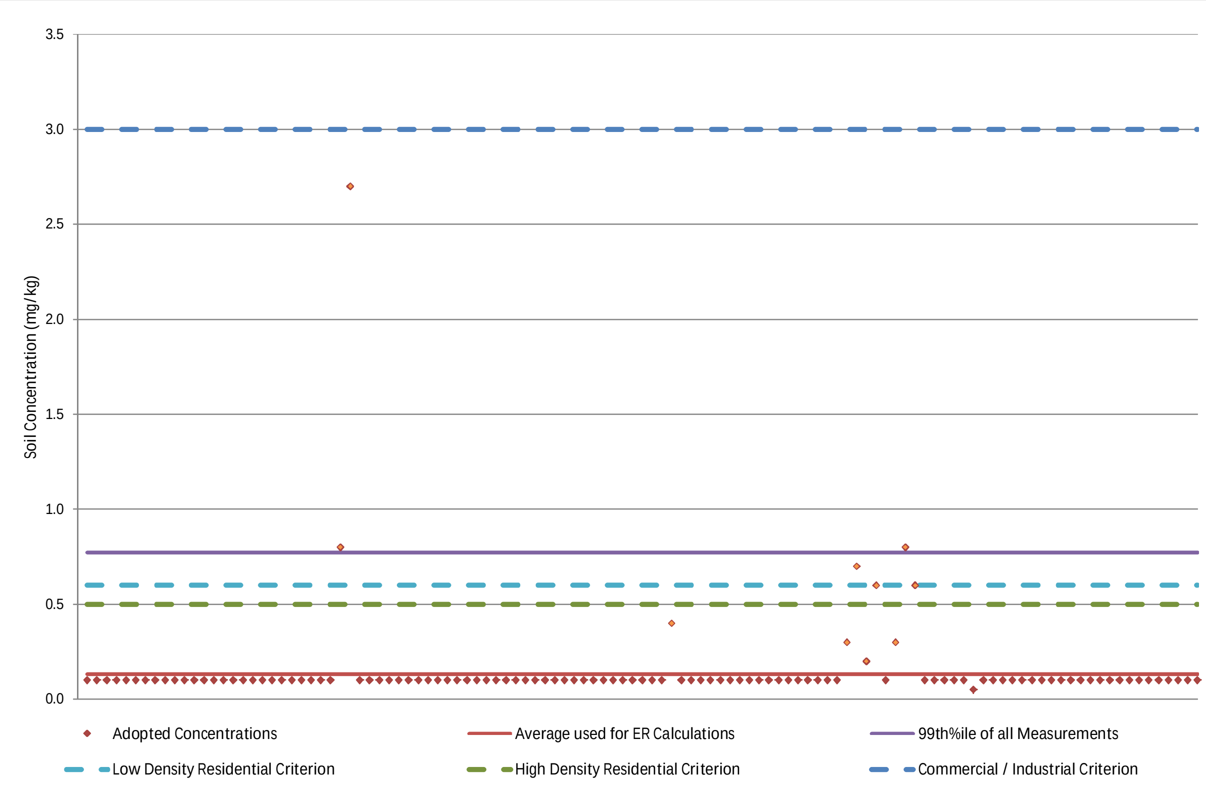

Figure 2 Soil VOC Concentrations from Sample Data in TSI (AECOM 2018)[3]

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[3] The criteria referenced in **Figure 2** correspond with the soil contamination criteria from Schedule B Guideline on Investigation Levels for Soil and Groundwater (Site Contamination NEPM, 2011). The criteria refer to "Health Screening Levels" or HSLs which have been developed to be protective of human health by determining the reasonable maximum exposure from site sources for a range of situations commonly encountered on contaminated sites and for proposed land uses. The criteria used for the above figure are the lowest soil dependent HSL listed in the NEPM document and correspond to the following:

- Low Density Residential Criterion – refers to HSL A: Standard residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake,(no poultry), includes children's day care centres, preschools and primary schools.
- High Density Residential criteria – refers to HSL B: Residential with minimal opportunities for soil access, includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
- Commercial / Industrial criterion – refers to HSL D: Commercial/industrial includes premises such as shops, offices, factories and industrial sites.

On the basis of the data presented above, it is clear that there is not a widespread VOC problem at the Western Area and even where concentrations of Benzene are detected above the laboratory limit of detection, the majority of the concentrations are below a level whereby it would be considered acceptable for residential occupation (purely from a Benzene perspective). Given this low overall soil concentration, it is expected that there will be very low overall quantities of Benzene available for volatilisation and that overall the emissions would be low. Results of the RSI (ERM, 2019b) (refer to Appendix L of the Response to Submissions Report for the Project) were generally in agreement with this assumption; where elevated levels of benzene (at levels higher than the HSL-D criterion) were limited to the Southern Burial Waste area. Material from this area would be appropriately managed (potentially involving the use of ECEs as discussed in Section 3.2.5.1 of the RtS)

3.3 Sequential Handling Steps

As noted above, the Average Short-Term Emission Rate Equation in the US EPA 1992 guidance note is designed to assess potential VOC emissions from the initial excavation of contaminated material. The US EPA guidance document notes that it is important to adjust the starting concentrations for each step to account for the contaminants emitted during both previous materials handling steps.

Due to the many material handling steps associated with excavation and remediation of soil for the Project, the concentration of VOCs at remedial locations are expected to be lower than freshly excavated material due to progressive liberation of VOC pollutants during the initial and subsequent material handling activities.

Excavation of contaminated material, which is then loaded to dump trucks and transported to remedial areas, are assumed to have higher emission rate due to the freshly excavated nature of the soil and no adjustment factor has been applied to such activities. However the proportion of soil vapour released during subsequent transfer activities associated with excavation activities was assumed to be 33% lower than the original concentration (USEPA 1992 and URS 2015). The reduction percentage has been applied to the construction of biopiles, turning of the land farm and stockpiling within the thermal desorption preliminary treatment area. Conservatively no subsequent reductions in the assumed soil vapour emission rates were assumed for consecutive materials handling steps within the remedial activities.

4.0 Summary of Conservative Assumptions and Site Specific Measured Data

This section provides a summary of assumptions used to calculate VOC emission rates from the excavation of contaminated soil for the Project. These assumptions include both inbuilt conservatism and site specific data inputs. An example calculation is also provided which demonstrates the inbuilt conservatism used to estimate VOC emission rates from excavation of contaminated soil.

4.1 Documented Conservatism in Short-Term Average Emission Rate Calculations

Table 6 provides a summary of assumptions used to calculate VOC emission rates from the excavation of contaminated soil as part of the Project, including inbuilt conservatism and the use of site specific data inputs. This methodology is consistent with the recommended approach to estimate emissions under the US EPA 1992 guidance document using site specific inputs, and where site specific inputs are not available adopting a highly conservative estimate using default values for input parameters. An additional level of conservatism has also been adopted in some instances using input parameters above the recommended default values resulting in a higher emission rate estimate for soil pore space emission rates and soil diffusion emission rates.

Table 6 Summary of Soil Pore Space and Soil Diffusion Emission Rate Assumptions

Emission Rate	Input	Assumptions
Soil Pore Space (ER_{PS})	Vapour Pressure	• Soil vapour pressures of each pollutant at 298 K were used to estimate an average soil vapour pressure of 44.8 mm Hg. • Adopted soil vapour pressure is 25% more conservative than the default value of 35 mm Hg.
	Molecular Weight	• Average molecular weight
	Air-filled porosity	• Value of 0.55 for dry loose soil (USEPA 1992) was adopted. • Conservative assumption adopting a higher air-filled porosity value; particularly for excavation as air-filled porosity would be lower due to: - Spoil being compacted; and - High soil moisture content as excavated material would be close to or below the water table. - This is 25% more conservative than the default value of 0.44 and 57% more conservative than the US EPA recommended value for wet or compacted soil of 0.35.
	Excavation rate	• Excavations rates for individual sources are conservative based on assumed timelines as: - Activities expected to occur over less than a 12 month period (e.g. Direct Thermal Desorption and Stabilisation) were based on maximum hourly throughputs - Activities with an expected duration of over 12+ months (e.g. Biopiling, land farming and excavation) were calculated using condensed or worst case time lines. • The quantity of fill for many activities has been estimated conservatively; with upper limit contaminated spoil volumes assigned to many activities such as biopiling and DTD which collectively result in a total activity rate that exceeds the maximum volume of fill to be excavated.
	Soil-gas to atmosphere exchange constant	• US EPA 1992 default value adopted
	Gas constant	• Constant value
	Temperature	• Soil temperature of 298K assumed

Emission Rate	Input	Assumptions
Soil Diffusion (ER_{DIFF})	Concentration in soil	• Average contaminant concentrations for benzene, toluene, ethylbenzene, xylene and naphthalene were estimated from average soil concentrations reported in the TSI (AECOM 2018) report. While an average concentration was used, the collective emissions from VOCs across the Western Area is considered conservative as: - The modal soil concentration for all VOCs was below the limit of detection. For all concentrations below the limit of detection a concentration of half the limit of detection was assumed; and - Soil concentration data for hexane and cyclohexane was considered highly conservative based on Gas Chromatography Mass Spectrometry (GC-MS) library scan of two soil samples with a known high concentration of TPH C6 to C9 in the TSI (AECOM 2018) report.
	Emitting surface area	• Emitting surface areas are assumed to be a conservative estimate of exposed surfaces at any given time.
	Air filled porosity	• Value of 0.55 for dry loose soil (USEPA 1992) was adopted. • Conservative assumption adopting a higher air-filled porosity value, particularly for excavation as air-filled porosity would be lower due to: - Spoil being compacted; and - High soil moisture content as excavated material would be close to or below the water table. • This is 25% more conservative than the default value of 0.44 and 57% more conservative than the US EPA recommended value for wet or compacted soil of 0.35.
	Equilibrium coefficient	• US EPA 1992 default value adopted
	Gas phase mass transfer co-efficient	• US EPA 1992 default value adopted
	Handling Time	• Spoil handling times are assumed to be an adequate representation of time taken to handle material based on assumed maximums spoil volumes.
	Effective diffusivity in air	• US EPA 1992 default value adopted

4.2 Example of Inbuilt Conservatism in Emission Rate Calculation

4.2.1 Emission Rate Calculations

The following calculations provide an example of the inbuilt conservatism used to calculate VOC emissions from excavation of contaminated material for the Project. The equation on the left shows the emission rate calculations used for benzene in the AQIA while the emission rate calculations of the left show the less conservative methodology using the US EPA Default Value for soil vapour pressure (P) and the default air soil porosity value recommended for wet compacted soil. Additional levels of conservatism have been maintained in the equation on the right specifically for excavation rate and emitting surface areas to allow for both flexibility and uncertainty within the remedial program.

AQIA Equation (Highly Conservative) **As used in the AQIA**	**Comparison Equation (Less Conservative)** **(Using US EPA Recommended Values)**
<u>Soil Pore Space Emission Rate</u>	<u>Soil Pore Space Emission Rate</u>
$ER_{PS} = \frac{P \times MW \times 10^6 \times E_a \times Q \times E_x C}{(R \times T)}$	$ER_{PS} = \frac{P \times MW \times 10^6 \times E_a \times Q \times E_x C}{(R \times T)}$
$ER_{PS} = \frac{44.8 \times 97.3 \times 10^6 \times 0.55 \times 0.003689 \times 0.33}{(62361 \times 298)}$	$ER_{PS} = \frac{35.0 \times 97.3 \times 10^6 \times 0.35 \times 0.003689 \times 0.33}{(62361 \times 298)}$
$ER_{PS} = 0.213008$ (Total VOCs)	$ER_{PS} = 0.105997$ (Total VOCs)
$ER_{PS} = 0.213008 \times 0.045$ (Benzene)	$ER_{PS} = 0.105997 \times 0.045$ (Benzene)
$ER_{PS} = \mathbf{0.0097}$ (Benzene)	$ER_{PS} = \mathbf{0.0048}$ (Benzene)
<u>Soil Diffusion Emission Rate</u>	<u>Soil Diffusion Emission Rate</u>
$ER_{DIFF} = \frac{(C)(10{,}000)(SA)}{\left(\frac{E_a}{K_{eq}\,k_g}\right)+\left(\frac{\pi t}{D_e\,K_{eq}}\right)^{1/2}}$	$ER_{DIFF} = \frac{(C)(10{,}000)(SA)}{\left(\frac{E_a}{K_{eq}\,k_g}\right)+\left(\frac{\pi t}{D_e\,K_{eq}}\right)^{1/2}}$
$ER_{DIFF} = \frac{(2.13\times10^{-7})(10{,}000)(5240)}{\left(\frac{0.55}{0.613\times0.15}\right)+\left(\frac{3.14159\times17971200}{0.0269\times0.613}\right)^{1/2}}$	$ER_{DIFF} = \frac{(2.13\times10^{-7})(10{,}000)(5240)}{\left(\frac{0.35}{0.613\times0.15}\right)+\left(\frac{3.14159\times17971200}{0.0269\times0.613}\right)^{1/2}}$
$ER_{DIFF} = \mathbf{0.0001904}$ (Benzene)	$ER_{DIFF} = \mathbf{0.0001904}$ (Benzene)
<u>Short-Term Average Emission Rate</u>	<u>Short-Term Average Emission Rate</u>
• $ER = ER_{PS} + ER_{DIFF}$ • $ER = 0.0097 + 0.0001904$	• $ER = ER_{PS} + ER_{DIFF}$ • $ER = 0.0048 + 0.000190$
$ER = \mathbf{0.0099}$	$ER = \mathbf{0.0050}$
Variables which have been modified from the US EPA recommended values are presented in red text	

The calculations above show for excavation activities, that the emission rate used in the AQIA for benzene was 0.0099 g/s. If we were to use the default value for soil vapour of 35 mmHg and a more realistic default value for wet compacted soil of 0.35, the calculated emission rate for benzene would be reduced to 0.0050 g/s. The above calculations show that the short term emission rates used in the AQIA are higher and hence more conservative, specifically due to the assumptions made in relation to the pore space calculations resulting in nearly double the emission rate. From this comparison it can be deduced that predicted ground level concentrations from VOCs within the AQIA, while already well under the EPA ground level criteria, are likely to be notably lower than worst case predictions made by the model and therefore likely to offer sufficient buffer to counter any uncertainty.

4.2.2 Mass Balance Calculations: Available Benzene in Spoil

One of the simplest methods to determine whether an emission rate is conservative is to compare the calculated emission rate with the available quantity of a VOC compounds that may be released from the soil (assuming 100% of a compound is released). **Table 7** provides a comparison between the total mass of benzene emitted using the US EPA predictive short term equation based on the assumptions made in the AQIA and the less conservative assumptions discussed in **Section 4.2.1**. These two values are then compared against the total available mass of benzene based on the 50th, 99th and 100th percentile concentrations recorded in the TSI (AECOM 2018).

Table 7 **Comparison of Estimated Total Benzene Emitted During Excavation and Total Available Benzene**

Calculation Method	Benzene Soil Concentration (mg/kg)	Concentration Percentile	Total Available Mass of Benzene (kg)
Short Term Average Equation *(Highly Conservative) (AQIA)*	0.133	50	177
Short Term Average Equation *(Less Conservative)*	0.133	50	90
Mass of Benzene Available	0.133	50	19
	0.772	99	111
	2.700	100	389
	1.230	Equivalent to AQIA	177

Note:

- Total mass of benzene available was based on a spoil volume of 90,000 m^3 which excludes 10,000 t of spoil for land farming and soil mixing activates which were modelled as a separate source in the AQIA. An assumed bulk density of 1.6 t m^3 was assumed and is consistent with the AQIA assumptions.
- All soil samples with a benzene concentration less than the limit of detection were assumed to have a concentration of half the limit of detection. As such the average soil concentration assumed in the AQIA may be conservative.

Table 7 shows that the short term emissions equation used in the AQIA significantly over estimate the total mass of benzene emitted (177 kg) when compared to the total available quantity of benzene in the soil (19 kg when an average soil concentration of 0.133 mg/kg is assumed). The 'less conservative' short term emission equation estimate also significantly over estimates the amount of available benzene (90 kg) further demonstrating the high level of conservatism within the AQIA.

The average benzene concentrations across the whole Western Area would need to be 1.23 mg/kg to equate to the total available mass of benzene conservatively assumed by the AQIA (177 kg). Given that the 99th percentile concentration of Benzene record was 0.772 mg/kg and that the modal concentration of Benzene was less than the limit of detection it is considered highly unlikely the average benzene concentration in the spoil would reach a value even approaching the required 1.23 mg/kg. The assumed emission rates result in a highly conservative estimate with sufficient inbuilt conservatism to counter typical modelling uncertainty and the adoption of other conservative measures (for example calculation of emission rates based on the maximum soil concentration) would result in a grossly unrealistic over-estimation of any potential air quality impacts.

Appendix J

Air Quality Technical Note 5: Indicative Remediation Decision Protocol

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AQIA Technical Note 5: Indicative Decision Protocol

1.0 Introduction

Attached to this note is an indicative decision protocol for soils or material that potentially needs to be remediated as part of the Viva Energy Clyde Western Area Remediation Project.

This decision protocol is presented in the form of a flowchart. It consists of four flowcharts broadly addressing the following:

- Flowchart 1 – Overarching flowchart guiding users to the appropriate decision protocol.
- Flowchart 2 – Decision protocol for materials that cannot be managed using landfarming, biopiling or using the Direct Thermal Desorption Unit.
- Flowchart 3 – Decision protocol for materials that are unlikely to contain 'higher risk materials'.
- Flowchart 4 – Decision protocol for materials that could contain 'higher risk materials'.

As discussed in Section 3.2.5.1 of the Response to Submissions Report (RTS) for the Project, higher risk materials are conservatively considered to be soils with a bulk soil concentration that exceeds the HSL-D criteria for benzene (i.e. 'higher risk soils). Following completion of the remedial site investigations (RSI) for the Project (refer to section 3.2.5.3 of the RTS), this material has been confirmed to be limited to the Southern Buried Waste Area in the south western part of the Western Area. As such, the presence of this material has become a key consideration in the decision protocol. The boundary of this South Western Remediation Zone would be confirmed in the Detailed RAP.

The four flowcharts discussed above are provided on the following pages of this Technical Note. For each flowchart the following notes are relevant.

Flowchart 1:

1. This refers to contaminants that cannot be remediated using typical hydrocarbon remediation techniques i.e. In-situ Remediation, Landfarming, Biopiling or Thermal Desorption. Example pollutants may be heavy metals.
2. The South Western Remediation Zone is to be defined in the Detailed RAP.

Flowchart 3:

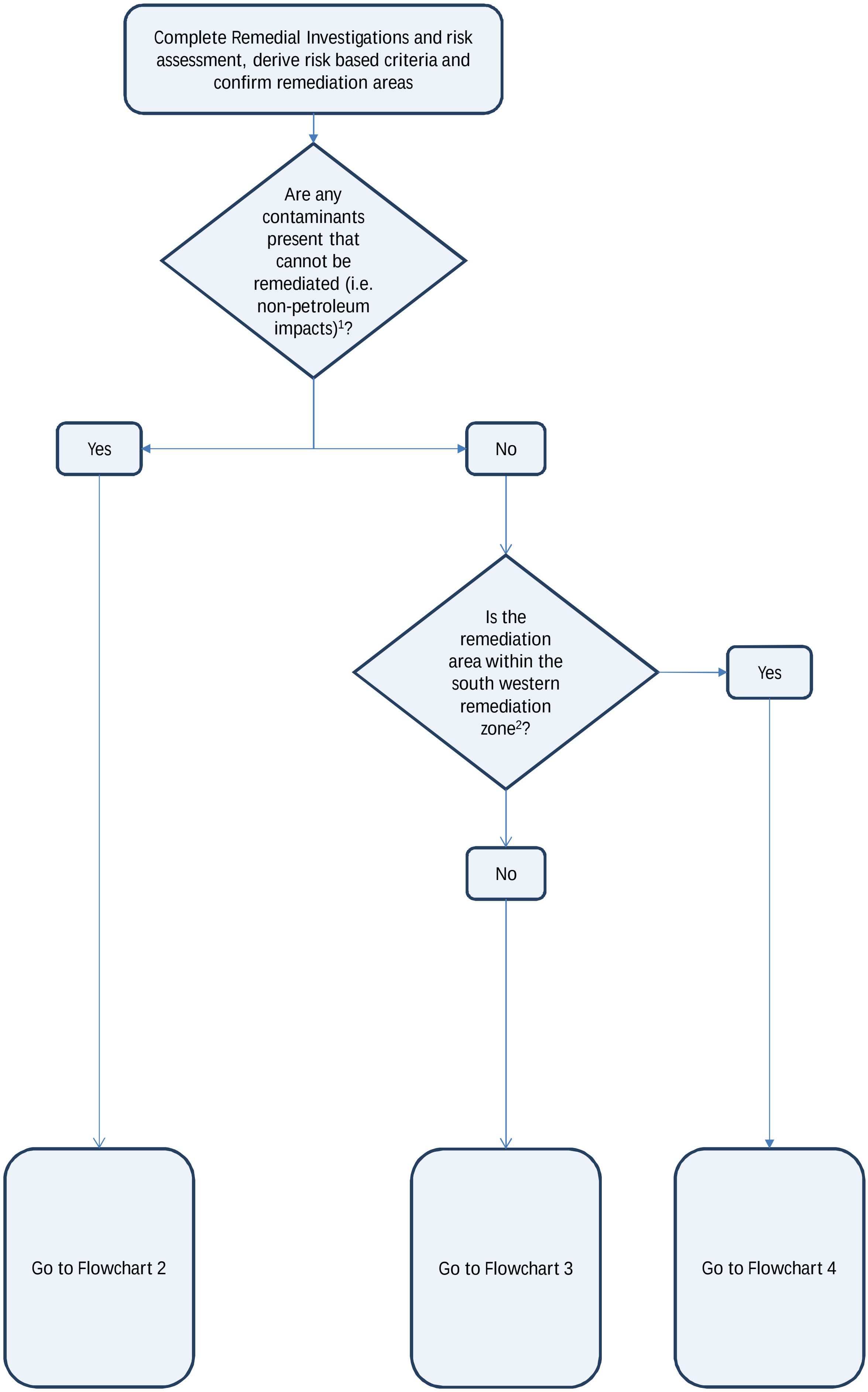
1. VOCs in this context refer to Air Toxics (Benzene and Ethylbenzene) and odorous compounds (Toluene and Xylene). For Landfarming to be considered, the bulk soil concentration of each VOC compound needs to be below the Landfarming criteria, which would be set at the laboratory analysis limit of detection (Limit of Detection to be defined in the Detailed RAP).
2. Materials from outside of the South Western Remediation Zone are unlikely to need to be enclosed during storage or treatment due to the low levels of air toxics present. However, the DTD plant will have an emission control enclosure (ECE) to store soils prior to treatment so if soils are sent to the DTD plant they could be stored in an enclosure for pre-treatment prior to remediation. ECE specifications would be defined once final volumes are known. ECE are likely to consist of environmentally controlled structures with negative pressure environments vented through purpose designed scrubbers (purpose designed for the expected pollutants to be scrubbed). The need for enclosures will be confirmed following a feasibility assessment that will be provided in the Detailed RAP.
3. Materials to be stabilised that are not considered 'higher risk soils' may be stabilised outside an ECE depending on the final staging of the remediation activities.

Flowchart 4:

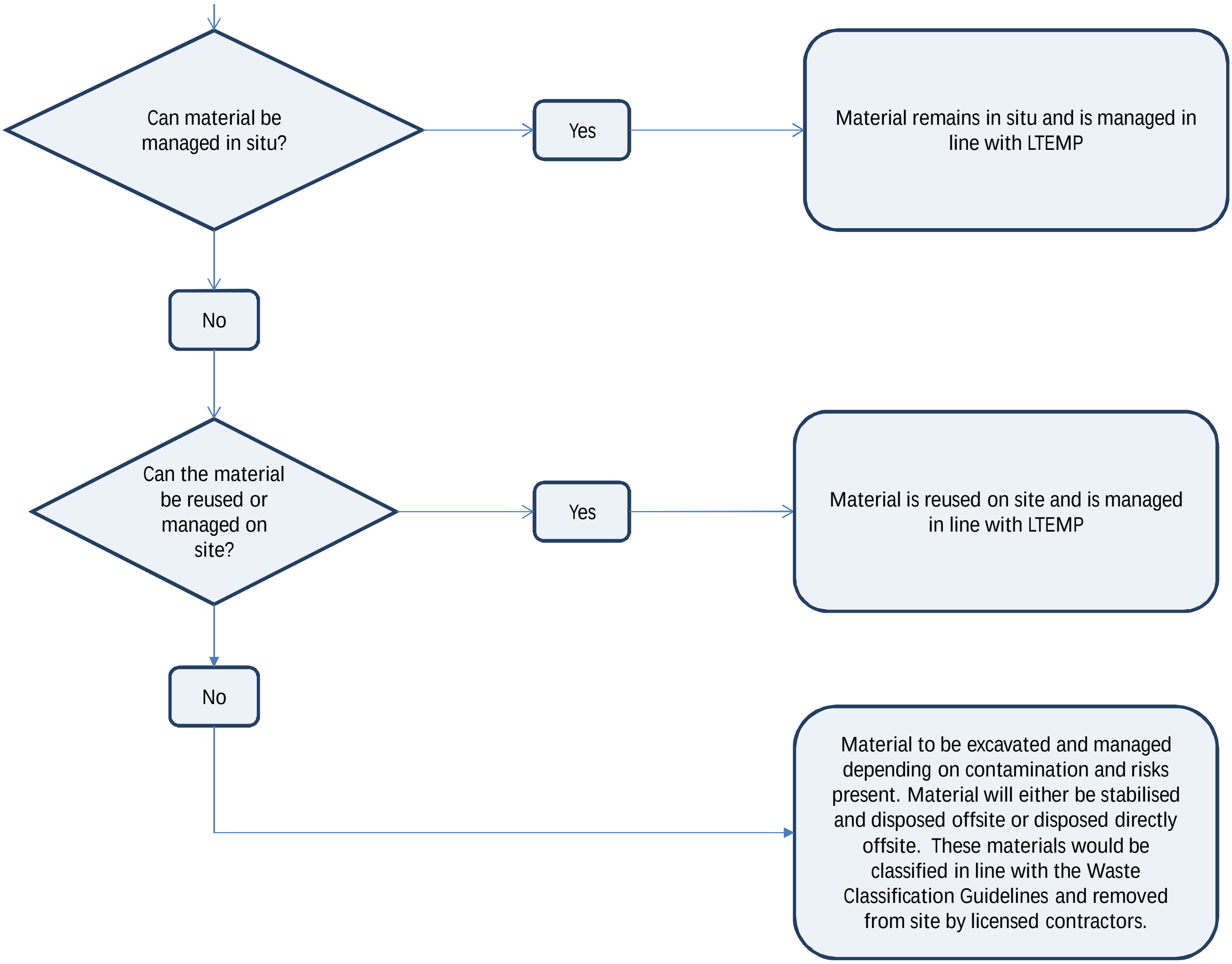
1. ECE specifications to be defined once final remedial methods and volumes are confirmed. ECE are likely to consist of environmentally controlled structures with negative pressure environments vented through purpose designed scrubbers (purpose designed for the expected pollutants to be scrubbed). The need for an enclosure will be confirmed following a feasibility assessment that will be provided in the Detailed RAP.
2. This refers to a biopile that is being actively constructed, which can be covered as part of its construction in a short period of time.

The final decision protocol would be provided as part of the Detailed RAP.

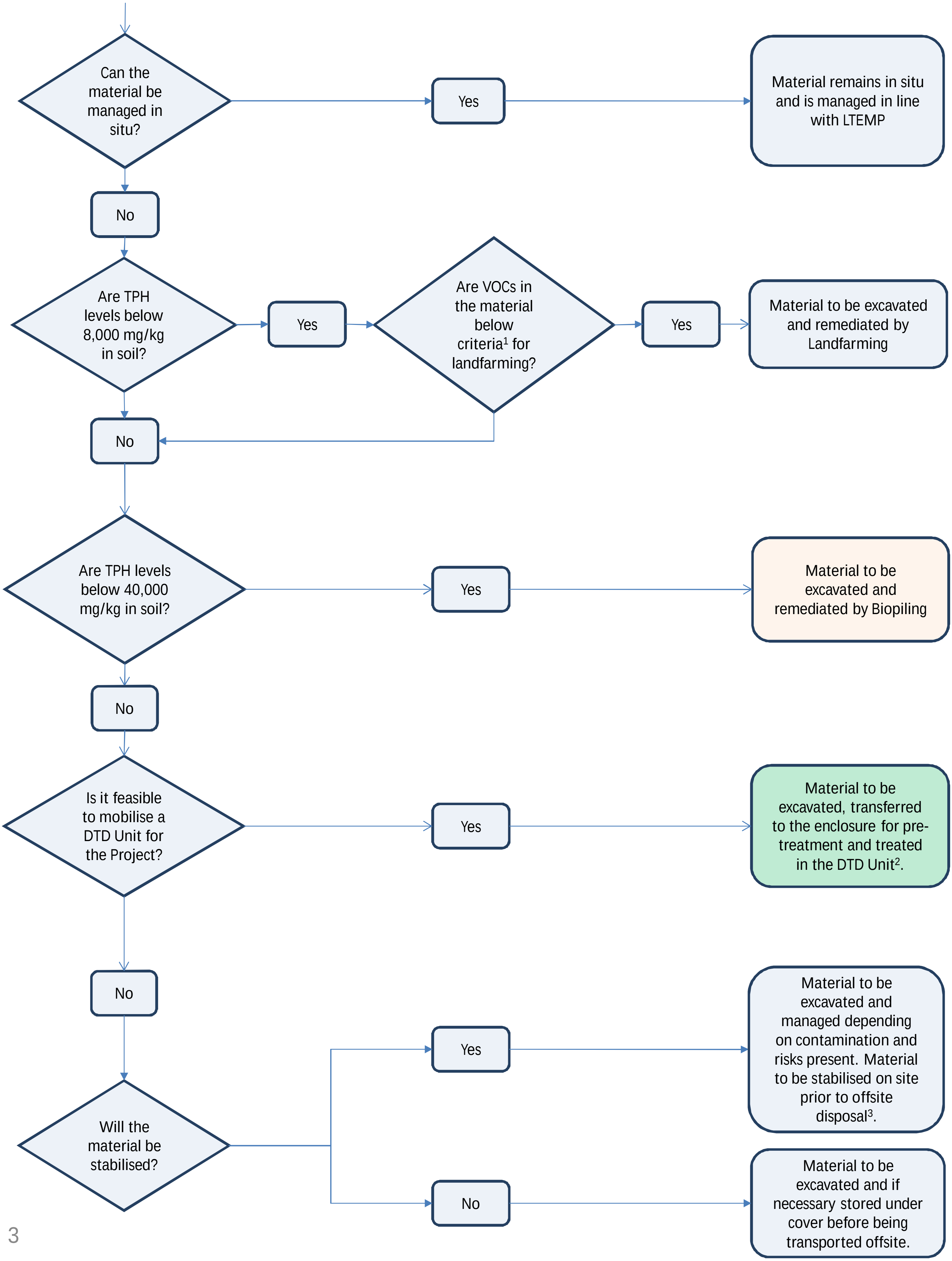
Clyde WARP – Remediation Decision Flowchart 1



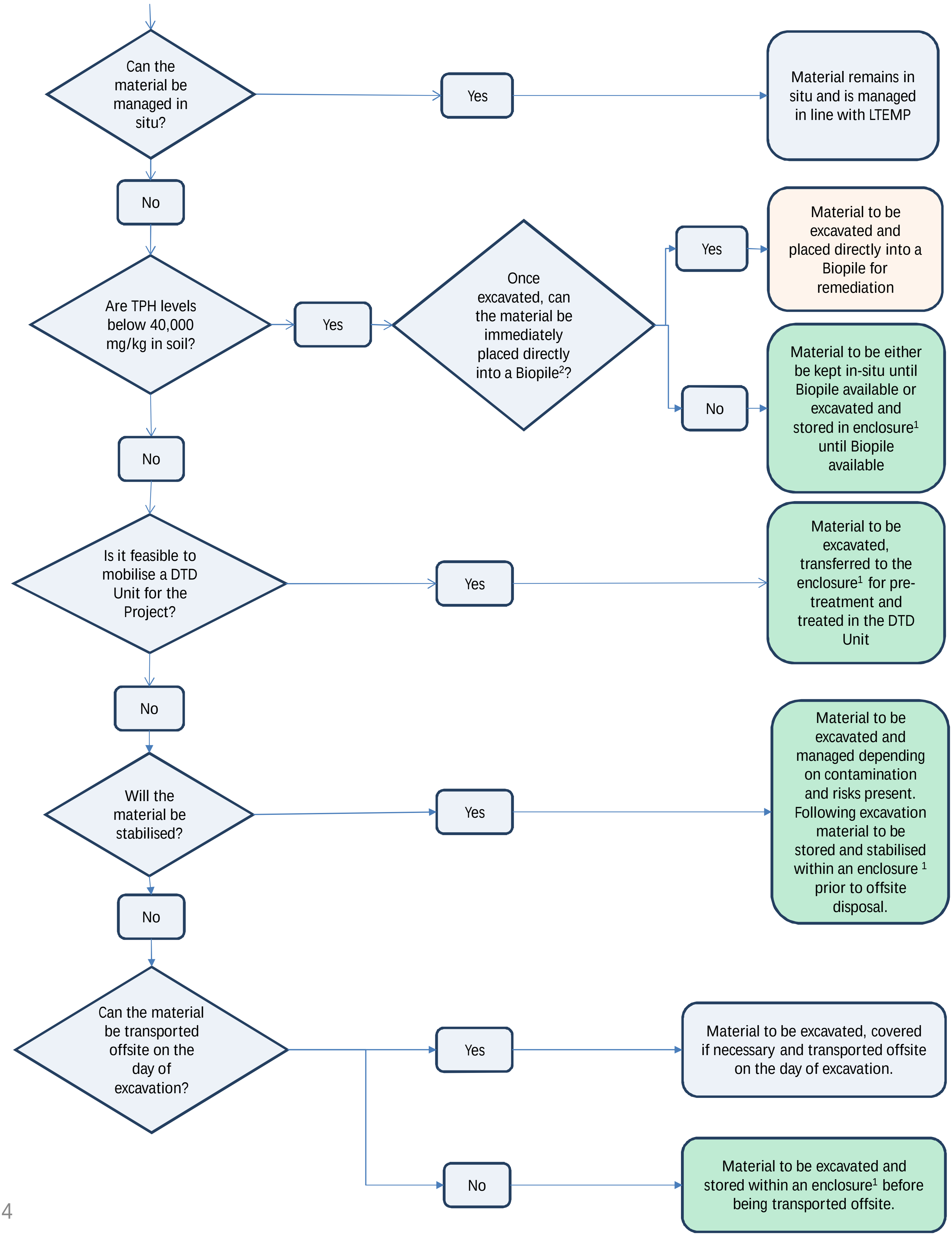
Clyde WARP – Remediation Decision Flowchart 2



Clyde WARP – Remediation Decision Flowchart 3



Clyde WARP – Remediation Decision Flowchart 4



Appendix K

Air Quality Technical Note 6: Draft Reactive Air Quality Management Plan Framework

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AQIA Technical Note 6: Outline for Reactive Air Quality Management Plan

1.0 Introduction

The response dated 2 August 2019 from the NSW Environment Protection Authority (EPA) requested that particulate impacts should be further assessed to enable the re-evaluation of the 24-hour PM_{10} and $PM_{2.5}$ concentrations assuming the reduction in emissions associated with the enclosure and filtration of emissions from the screen and mobile crushing plant associated with the Direct Thermal Desorption (DTD) plant. These measures, in addition to the reduction in the excavation areas for the general material excavation, resulted in a further reduction of dust emissions from the Project (refer to AQIA Technical Note 2 in Appendix G of the Response to Submissions Report for this Project).

In support of the additional dispersion modelling described in Technical Note 2, and following discussions with the EPA and the Department of Planning, Industry and Environment (DPIE), an outline of the proposed Reactive Air Quality Management Plan (RAQMP) has been prepared to describe how the dust (and odour) emissions would be managed to help ensure emissions from the Project match the emissions predicted by the AQIA and associated Technical Notes, and that exceedances due to the Project are avoided.

The RAQMP would form part of the Air Quality Management Plan (AQMP). As such some commentary below has been included regarding the AQMP to provide additional context.

Please note that the following RAQMP is indicative and subject to change depending on the requirements of the Site Auditor and comments from NSW EPA.

2.0 Air Quality Management Plan

2.1 Overview

The Air Quality Management Plan for the Clyde remediation works should include the following information:

- Demonstration of the implementation proactive mitigation strategies and emission controls to ensure emissions are being reduced to the maximum extent practicable for all air pollutant generating activities; and
- An ambient air quality monitoring program and reactive management strategy, including real-time meteorological data and pollutant monitoring (such as PM_{10}, particulates) for management purposes, fit for purpose odour monitoring, and the implementation of appropriate triggers to further develop the reactive management strategy for air pollution mitigation.

Details of all proposed air quality emission control measures including:

- timeframe for implementation of all identified emission controls;
- key performance indicator(s) for emission controls;
- monitoring method(s), including location, frequency and duration;
- response mechanisms;
- responsibilities for demonstrating and reporting achievement of key performance indicator(s);
- record keeping and complaints response register; and
- compliance reporting.

2.2 Air Pollution Mitigation and Management

A range of controls (design mitigations) were listed in the emissions inventory for the Project, ranging from water sprays, baghouses, minimising the area of soil exposure and the use of odour suppressant foam to minimise the generation of dust, VOCs and odour.

While these adopted measures are considered to be effective in the control of emissions, given the results discussed above, it is considered prudent to set in place a management tools to provide a protocol for further adjusting the Project activities to minimise emissions during times when background pollutant concentrations are high or when site activities may be at a maximum resulting in elevated emissions that may migrate off-site and potentially exceed EPA criteria.

A Reactive Air Quality Management Program (RAQMP) is proposed to help ensure that significant air quality impacts do not occur as a result of the Project.

2.2.1 Reactive Air Quality Management Plan

Ideally for the Project, the concentration of pollutants at the boundary of the Site would be maintained at levels below EPA criteria (for example 50µg/m^3 for PM_{10}). In practice, however, there will be times when the activities on the Western Area combined with elevated background concentrations could result in concentrations of pollutants such as PM_{10} above the EPA criteria. The scale and frequency of the exceedance needs to be understood to ensure appropriate management practices are implemented in a timely manner without unnecessarily impacting on the Project. Recommended reactive management measures to mitigate potential significant offsite dust and odour impacts at nearby sensitive receptors are discussed in the following subsections.

PM_{10} Reactive Management

A continuous monitoring system for PM_{10} can provide an early warning of potential criteria exceedances and provide warnings to enable works to be scaled back or stopped. The measured pollutant concentration can be assessed through comparison with a series of trigger levels which dictate the timing of additional measures targeted at sources of dust at the Western Area or the scaling back of Project activities. This system can be used to minimise adverse impacts on the environment and provide a feedback loop for management of elevated pollutant concentrations.

A conceptual[1] PM_{10} reactive air quality management plan (RAQMP) has been developed in the following sections and is based on a multi-stage approach to dust mitigation. The trigger levels used to define different actions or application of mitigation measures are based around PM_{10} concentrations measured at the boundary of the site according to prevailing wind patterns and expected site activities.

The location and number of monitoring stations for the Project would be confirmed following completion of the RAQMP. For discussion purposes however, locations have been designated as shown in **Figure 1** (based on the annual wind rose). Additional details on the recommended monitoring equipment and the standards required for that equipment is provided in **Section 0**.

Data from the monitoring stations would be used to manage Project activities from an air quality perspective. One hour average data would be used along with an automated alarm system to provide feedback to environmental officers for the Project.

The concentrations will be compared with trigger levels designed around the following broad categories:

- ***PM_{10} Concentration less than EPA Criteria – Normal Operations***:

  Normal operational mitigation measures in place and no action is needed at this level.

- ***PM_{10} Concentration Level 1 Trigger – Investigate***:

  Identification of the likely reasons for the elevated pollutant concentration and formulation of a contingency response for the action stage.

- ***PM_{10} Concentration Level 2 Trigger – Action***:

  Implementation of the measures formulated in the investigative stage and review of their effectiveness.

- ***PM_{10} Concentration above Level 3 Trigger – Stop Work***:

  All air polluting works associated with the remediation works identified to be generating particulates should stop until the measured particulate levels are below the relevant trigger level to avoid an exceedance of the pollutant criterion.

The background for the reactive management trigger values for PM_{10} have been discussed in the following section with examples demonstrating the proposed trigger value implementation for a real-world situation.

[1] The final RAQMP will be defined closer to the commencement of the remediation activities. This includes the calculation of the Trigger values based on recent OEH monitoring data.

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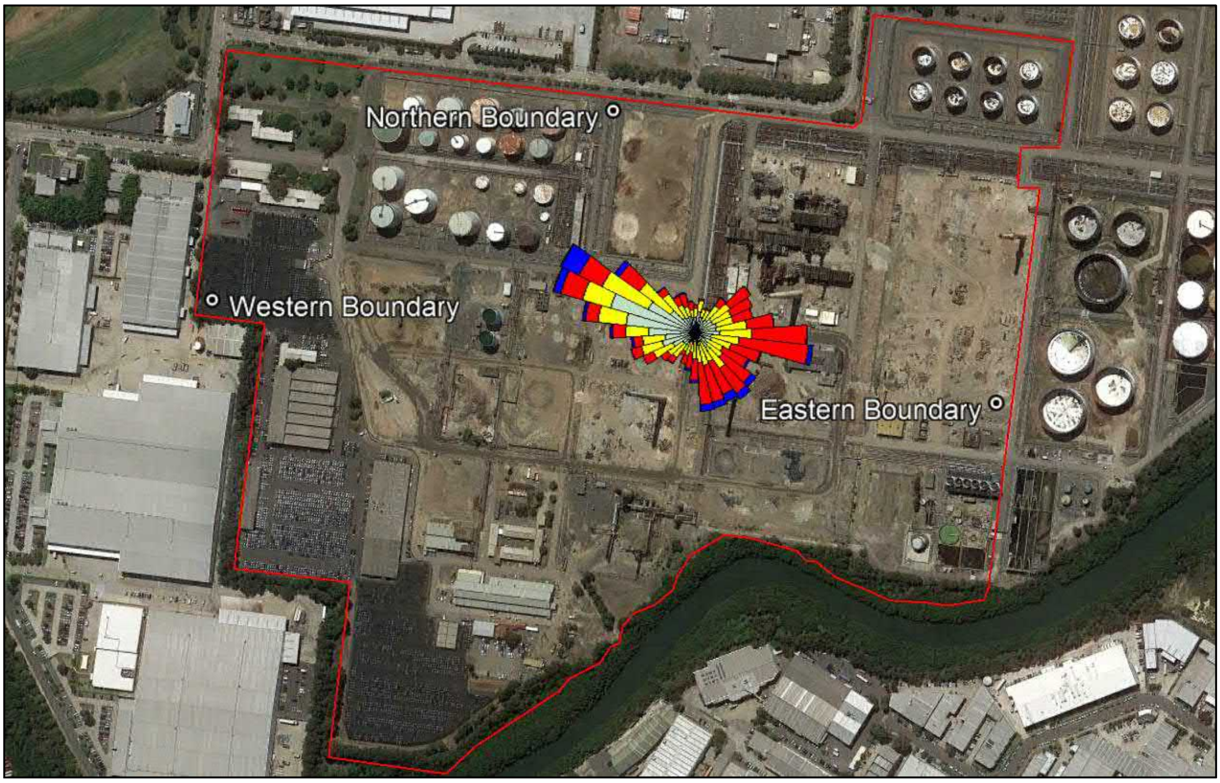


Figure 1 Conceptual RAQMP Monitoring Locations

Table 1 Reactive Management Trigger Values – PM_{10}

Reactive Management Procedure				
Trigger Stage	**Averaging Period**	**Trigger Value (g/m³)**	**Primary Responsibility**	**Action Required**
Normal Operations	1 hour	Hourly Concentration < DRC[1] Daily Cumulative Concentration[2] < 35	Environment Manager	Normal operational mitigation measures in place. No additional actions needed.
1 Investigate	1 hour	Hourly Concentration > DRC[1] 35 < Daily Cumulative Concentration[2] < 40		Environment Manager to undertake review of possible dust sources operating during the average period. Identify possible measures for these activities, action if deemed necessary.
2 Action	1 hour	Hourly Concentration > DRC[1] 40 < Daily Cumulative Concentration[2] <45		Environment Manager to attend site and ensure implementation of the control actions identified in stage 1. Effectiveness of control actions to be reviewed and escalate where appropriate. Identify long-term solutions to dust issues.

Reactive Management Procedure				
3 Stop Work	1 hour	Hourly Concentration > DRC[1] Daily Cumulative Concentration[2] > 45		Targeted shut down of dust-generating activities until the measured pollutant levels are below the stated Action period trigger value.

[1] DRC refers to Daily Rolling Criteria

[2] Daily cumulative concentration refers to calendar day rolling average concentration, e.g. at 1pm the average is calculated from the first 13x1 hourly average concentrations measured for the Project.

Calculation of the above trigger level values is based around the objective of remaining below the 50 $\mu g/m^3$, 24 hour average PM_{10} concentration criteria at the monitoring location(s).

The implementation of the trigger values based on the measured PM_{10} data and a discussion around the derivation of the trigger values is as follows:

- The cumulative daily PM_{10} concentration is calculated based on the measured hour of day. For example, the cumulative concentration for hour two is the average of the first two measurements for that particular day, the cumulative concentration for hour 15 is the average of the first 15 measurements for that particular day etc.
- Following the calculation of the cumulative daily PM_{10} concentration, the Daily Rolling Criterion (DRC) is then calculated to provide a value against which the hourly measured concentration is compared for compliance.

  The DRC is calculated assuming a maximum concentration sum of 1200 $\mu g/m^3$ per day (1 hourly average concentration of 50 $\mu g/m^3$ for 24 hours). The hourly DRC is calculated by subtracting the sum of all hourly concentrations for the day under examination from the 1200 $\mu g/m^3$ per day value and dividing the resultant value by the number of hours remaining in the day.

  Note: *The DRC represents the capacity of the air shed to receive additional PM_{10} and still remain below the 24 hour PM_{10} criteria of 50$\mu g/m^3$. As an example, if hour 1 is 25$\mu g/m^3$, then the capacity of the air shed to receive PM_{10} increases as 25$\mu g/m^3$ is half of the criteria, meaning that provided the concentrations fall below 51.1$\mu g/m^3$ [2] for the rest of the day, then the 24 hour criteria will be met.*
- The measured PM_{10} concentrations for each hour are compared against hour's calculated DRC to determine whether the measured concentration would contribute an acceptable amount of PM_{10} into the environment. If the measured concentration is below the DRC, then no action is needed, and normal operational mitigation measures are applied. If the measured PM_{10} concentration is greater than the DRC, then a decision needs to be made regarding which actions need to be considered to reduce any PM_{10} contribution from the Project.

  The further mitigation actions that would need to be considered are based on the cumulative PM_{10} concentration at the time of the exceedance of the DRC. The higher the cumulative PM_{10} concentration at the hour where the measured concentration exceeds the DRC, the higher the risk that a 24 hour exceedance may occur for that particular 24 hour period.

An example 24 hour period and the calculation of the level of compliance are shown below in **Table 2**. This example uses data extracted from the Chullora OEH monitoring station. The results of the example (which represent potential background in the area around the Western Area) shows that there is the potential for background concentrations to be elevated to a degree whereby site dust generating activities would need to be suspended until dust levels fall to acceptable levels.

[2] Calculation of the 51.1$\mu g/m^3$ is as follows: {(50$\mu g/m^3$ x 24 hours) - 25$\mu g/m^3$} ÷ 23 hours = 51.1$\mu g/m^3$

The example calculation in **Table 2** shows the following:

- The PM_{10} concentration starts high, with a concentration already close to the criteria. This results in the DRC only increasing slightly to 50.2 μg/m^3.
- The next 6 hours concentrations are lower (less than 30 μg/m^3), which resulted in the DRC increasing to 59.0 μg/m^3.
- Hour 8 concentration increases but is still well below the DRC which increased to 60.3 μg/m^3.
- Concentration for hour 8 exceeded the DRC resulting in the DRC falling. As the DRC was exceeded, the cumulative concentration was examined. As the cumulative PM_{10} concentration fell below the Level 1 Trigger level, no additional mitigation was needed to be considered.
- Hour 11 concentration exceeded the DRC and the cumulative concentration was above the Level 2 Trigger Value, which requires additional mitigation measures to be implemented to try and reduce the PM_{10} concentration at the Site boundary.
- Concentrations remained high for hours 12 to 17 during which time the DRC decreased below 40 μg/m^3 and the cumulative concentration increased above 45 μg/m^3 resulting in the triggering of the Level 3 actions or the shutdown condition.
- Dust concentrations fell quickly from hours 18 onward with values in the low 20 μg/m^3 range. This resulted in an increase in the DRC, a decrease in the daily cumulative concentration and the compliance with all trigger values (due to the measured values complying with the hour DRC values.
- The final value for the cumulative concentration for the 24 hour period was 44.9 μg/m^3, which complied with the EPA 50μg/m^3 criteria.

Table 2 Reactive Management Calculation Example – PM_{10}

Time Hour	Measured PM_{10} Concentration μg/m^3	Cumulative PM_{10} Concentration μg/m^3	DRC μg/m^3	Measured Concentration less than DRC	Mitigation Required
1	44.5	44.5	50.2	Yes	Normal Mitigation Only
2	20.6	32.6	51.6	Yes	Normal Mitigation Only
3	23	29.4	52.9	Yes	Normal Mitigation Only
4	27	28.8	54.2	Yes	Normal Mitigation Only
5	29.5	28.9	55.5	Yes	Normal Mitigation Only
6	26.4	28.5	57.2	Yes	Normal Mitigation Only
7	26.3	28.2	59.0	Yes	Normal Mitigation Only
8	38.4	29.5	60.3	Yes	Normal Mitigation Only
9	72	34.2	59.5	No	Normal Mitigation Only
10	58.4	36.6	59.6	Yes	Normal Mitigation Only
11	96.2	42.0	56.7	No	Level 2 Alarm
12	80.9	45.3	54.7	No	Level 3 Alarm
13	58.5	46.3	54.4	No	Level 3 Alarm
14	85.4	49.1	51.3	No	Level 3 Alarm
15	88.4	51.7	47.2	No	Level 3 Alarm
16	82.2	53.6	42.8	No	Level 3 Alarm
17	67.9	54.4	39.2	No	Level 3 Alarm
18	26.1	52.9	41.4	Yes	Normal Mitigation Only

Time Hour	Measured PM_{10} Concentration	Cumulative PM_{10} Concentration	DRC	Measured Concentration less than DRC	Mitigation Required
	µg/m³	µg/m³	µg/m³		
19	23.2	51.3	45.0	Yes	Normal Mitigation Only
20	20.4	49.8	51.2	Yes	Normal Mitigation Only
21	24.1	48.5	60.2	Yes	Normal Mitigation Only
22	20.2	47.3	80.2	Yes	Normal Mitigation Only
23	20.9	46.1	139.5	Yes	Normal Mitigation Only
24	16.8	44.9	-[1]	-[1]	-[1]

[1] These values are not relevant to the last hour of the day

Odour Reactive Management

Offsite odour emissions would be related to level of contamination of exposed surfaces and the age of exposed material at any given point in time. An RAQMP would also be put in place to address potential offsite odour impacts. It is recommended that an operator-run odour complaints management system be developed as a reactive management tool to maintain air quality performance during potential odour generating activities associated with excavation and remediation of contaminated material.

In the event of an odour complaint or onsite staff odour observation, information would be obtained regarding the character of the odour, frequency, duration and intensity of odour observations and whether impacts of offensive odours are occurring. An investigation into any odour complaint would be conducted as soon as practicable after the complaint has been received, beginning with the suspected source of offensive odours. If odour impacts are identified from the Project by workers or through complaints, action would be undertaken to reduce odour impacts. Actions can include:

- Spraying odour and VOC suppressant on exposed surface areas and/or stockpiles;
- Covering stockpiles; and
- Limiting excavation works and materials handling of highly contaminated fill while upwind of sensitive receptors.

Recommended Air Quality Monitoring Equipment and Siting Requirements

The air quality monitoring program outlined above will provide data for the RAQMP and would be undertaken generally in accordance with the EPA's *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2005a)*.

Appendix L

Remediation Site Investigations Summary

Adam Speers
Environment Major Projects
Viva Energy Australia Pty Ltd
Via Email

14 October 2019

Reference: 0515132_L01

Subject: Clyde Western Area RSI Data Summary

Dear Adam,

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned by Viva Energy Pty Ltd (Viva Energy) to undertake a Remediation Site Investigation (RSI) to refine the understanding of the nature and extent of contamination for a portion of the Clyde Terminal Site, known as the "Western Area" (herein referred to as 'the Site').

ERM has been requested by Viva Energy to prepare an interim summary of RSI results, including the historical consolidated dataset for the Site.

1. INTRODUCTION AND OBJECTIVES

ERM have recently completed a Remediation Site Investigation (RSI) in accordance with the Sampling Analysis and Quality Plan (SAQP) for the works. The SAQP has been reviewed and approved by the appointed NSW EPA Accredited Site Auditor (Mr Andrew Kohlrusch, GHD).

The overarching objectives of the RSI were to address remaining data gaps in the Conceptual Site Model and to collect information relevant to the preparation of the Detailed RAP for the Site, including;

- Refinement of vertical and lateral extent of remediation/ management required (LNAPL, Total Recoverable Hydrocarbons (TRH));
- Potential pre-validation of low risk areas to potentially exclude from remediation and/or management;
- Further characterisation of buried waste areas (nature and extent of impacts);
- Further characterisation of non-petroleum COPCs to confirm the remediation methodology/ management;
- Collect data to support HHERA and development of risk-based Site Specific Target Levels (SSTLs) for remediation; and
- Collect data from likely remediation areas to assist with technical specification development for remediation contractors.

2. SCOPE OF WORKS COMPLETED

As stated previously, the RSI works completed were in accordance with the Auditor approved SAQP. Specific Interim Audit Advice was provided on 7th July 2019 (Ref: 2127799/IAA02), with responses provided by ERM prior to SAQP finalisation on 7th August, 2018.

The SAQP was produced to document the data quality objectives (DQO), scope of work, and detailed methodology to enable the works to be completed in accordance with the guidelines made and approved by EPA under the CLM Act including Schedule B(2) of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (the ASC NEPM).

The broad scope of remedial investigations undertaken by ERM in July and August 2019 involved the following:

- Excavation and sampling of 80 test pits to further characterise soils (including areas of buried waste) using a mechanical excavator, to a maximum depth of 4.8m BGL;.
- Advancement of 16 hand auger boreholes to a maximum depth of 2.2m bgl in areas inaccessible to mechanical excavation, including tank farms A2, A3, C and sections of pipe track areas;
- Collection of slug testing data from wells targeting potential remediation areas;
- Monitoring of tidal influence on monitoring wells adjacent the Duck River;
- Calculation of excavation groundwater recharge from selected test pits;
- Sampling of excavation water to improve understanding of potential treatment requirements for discharged water during remediation; and
- Installation and sampling of soil vapour monitoring wells.

Detailed methodologies for the collection of soil, groundwater and soil vapour data in were provided within the Auditor reviewed and approved SAQP.

Laboratory analysis was undertaken for soils for the following petroleum hydrocarbon Contaminants of Potential Concern:

- Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene (BTEXN);
- Total Recoverable Hydrocarbons (TRH) C_6-C_{40} Fractions; and
- Polycyclic Aromatic Hydrocarbons and Phenols.

Additionally, the analytical suite included analysis of the following non-petroleum Contaminants of Potential Concern (COPCs) as per the specifications outlined in the Auditor accepted SAQP:

- 8 Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn);
- Polychlorinated Biphenyls (PCBs);
- Per- and poly- fluoroalkyl substances (PFAS);
- Volatile Organic Compounds (VOC);
- Semi-Volatile Organic Compounds (SVOC);
- Asbestos
- pH; and
- Dioxins - including polychlorinated dibenzo-para-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and dioxin-like PCBs.

3. RESULTS SUMMARY

The spatial extent of BTEX detections and exceedances of adopted site assessment criteria in soils are shown on Figures in *Attachment A*. The complete dataset for these COPCs is provided as *Attachment B.*

In summary, soil concentrations exceeding HSL-D criteria for vapour intrusion have been reported at the following locations across the Site:

- **Benzene:**
  - limited to the Southern Buried Waste Area, situated in the south-western extent of the Site;
- **TRH C6-C10 (minus BTEX):**
  - Former Laboratory Area, and Southern Buried Waste Area situated in the south-western portion of the Site; and
  - Tank farm C and Process West, situated toward the north-eastern extent of the Site.

Concentrations of other volatile COPCs, including toluene, ethylbenzene, xylenes were reported below adopted HSL-D criteria. The spatial extent of laboratory detections of these COPCs in soil are consistent with that of benzene and TRH C6-C10 (minus BTEX) detections. Low concentrations of these COPCs were reported in other isolated portions of the Site as indicated on figures in *Attachment A.*

Overall, the spatial distribution of petroleum hydrocarbon impacts in soil identified during recent investigation works is consistent with previously identified areas of concern and the existing Conceptual Site Model for the Site.

Consistent with historical data, the vertical extent of petroleum hydrocarbon impacts to soils are generally limited to the upper 2m of the soil profile, with the exception of the south-western corner of the Site (southern buried waste area). Impacted soils were found to depths of up to 4m BGL. Deeper impacts within this area of the Site appear to be attributable to the raised profile of the Site due to historical waste burial activities.

Additional investigations did not identify new areas of concern. Additional data has provided further confidence and delineation of previously identified site conditions.

The complete dataset (including non-petroleum COPCs) is to be comprehensively reported within the Remedial Site Investigation Report, including a detailed review and evaluation of Quality Assurance and Quality Control parameters.

4. PRELIMINARY CONCLUSIONS

The following preliminary conclusions have been drawn following a review of the consolidated dataset for the Site:

- The RSI scope was completed in accordance with the approved SAQP. It is considered that no further investigations are required and the RSI dataset is suitable to facilitate the preparation of a HHERA and Detailed RAP for the Site.
- The extent of volatile petroleum hydrocarbon COPCs in soil (TRH C_6-C_{10} fractions and BTEX) are limited to isolated areas within the south-west and north-eastern portions of the Site, and are consistent with the existing understanding on contaminant distribution at the Site.
- Additional investigations did not identify new areas of concern. Additional data has provided further confidence and delineation of previously identified site conditions.
- While the final extent of remediation areas have not yet been defined, ERM considers that the consolidated dataset is suitable to clearly define the remediation areas within the detailed RAP.

Please do not hesitate to contact either of the undersigned should you require further information.

Yours sincerely,

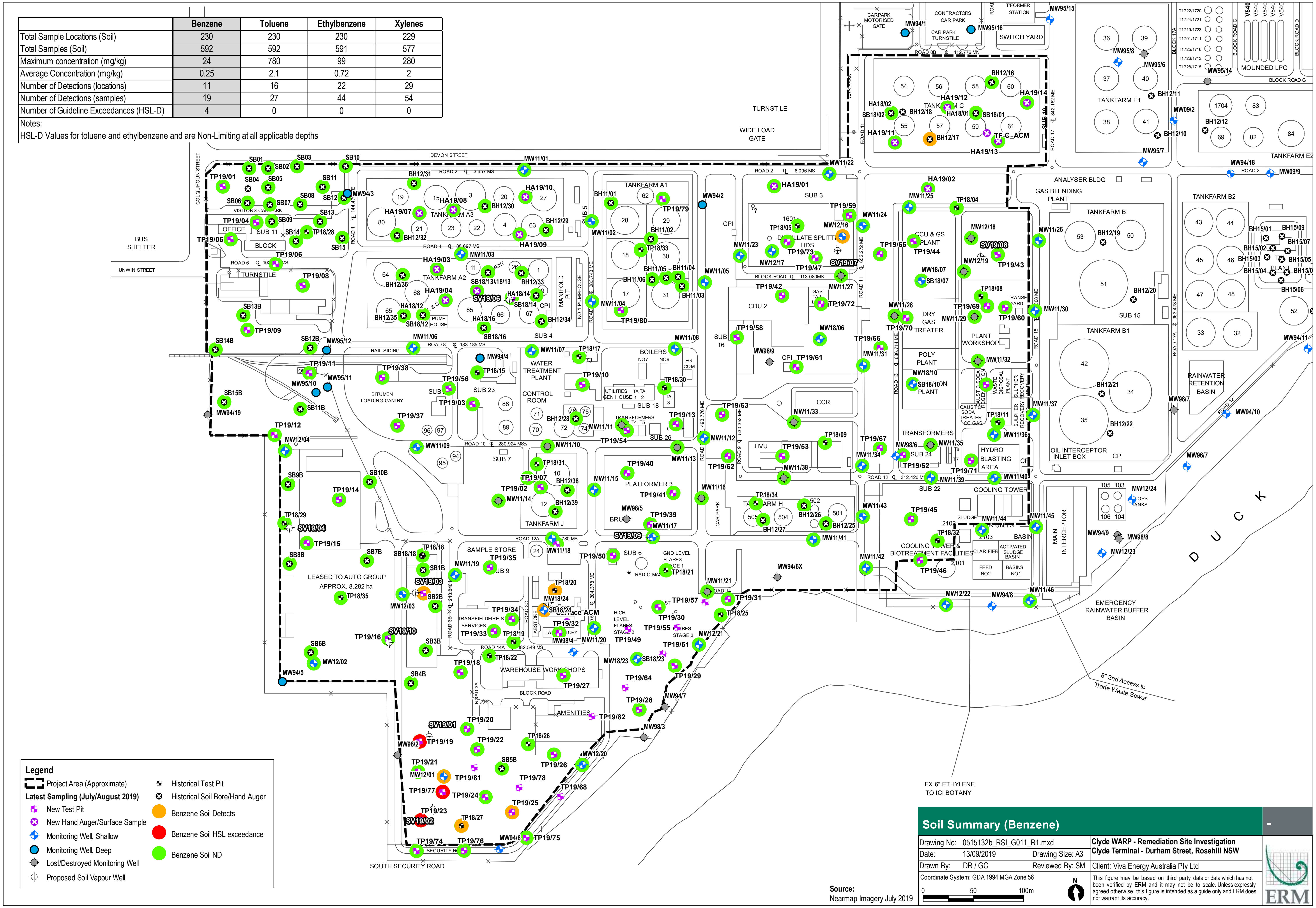
Stephen Mulligan Project Manager	Michael Gaggin Partner

Attachment A –Figures
Attachment B – Western Area Soil Analytical Results (TRH/BTEX)

ATTACHMENT A FIGURES

	Benzene	Toluene	Ethylbenzene	Xylenes
Total Sample Locations (Soil)	230	230	230	229
Total Samples (Soil)	592	592	591	577
Maximum concentration (mg/kg)	24	780	99	280
Average Concentration (mg/kg)	0.25	2.1	0.72	2
Number of Detections (locations)	11	16	22	29
Number of Detections (samples)	19	27	44	54
Number of Guideline Exceedances (HSL-D)	4	0	0	0

Notes:
HSL-D Values for toluene and ethylbenzene and are Non-Limiting at all applicable depths



Legend

- Project Area (Approximate)

Latest Sampling (July/August 2019)

- New Test Pit
- New Hand Auger/Surface Sample
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Lost/Destroyed Monitoring Well
- Proposed Soil Vapour Well
- Historical Test Pit
- Historical Soil Bore/Hand Auger
- Benzene Soil Detects
- Benzene Soil HSL exceedance
- Benzene Soil ND

Source:
Nearmap Imagery July 2019

Soil Summary (Benzene)

Drawing No: 0515132b_RSI_G011_R1.mxd		Clyde WARP - Remediation Site Investigation	
Date: 13/09/2019	Drawing Size: A3	Clyde Terminal - Durham Street, Rosehill NSW	
Drawn By: DR / GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd	
Coordinate System: GDA 1994 MGA Zone 56			

0 50 100m

ERM

	Benzene	Toluene	Ethylbenzene	Xylenes
Total Sample Locations (Soil)	230	230	230	229
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Notes:
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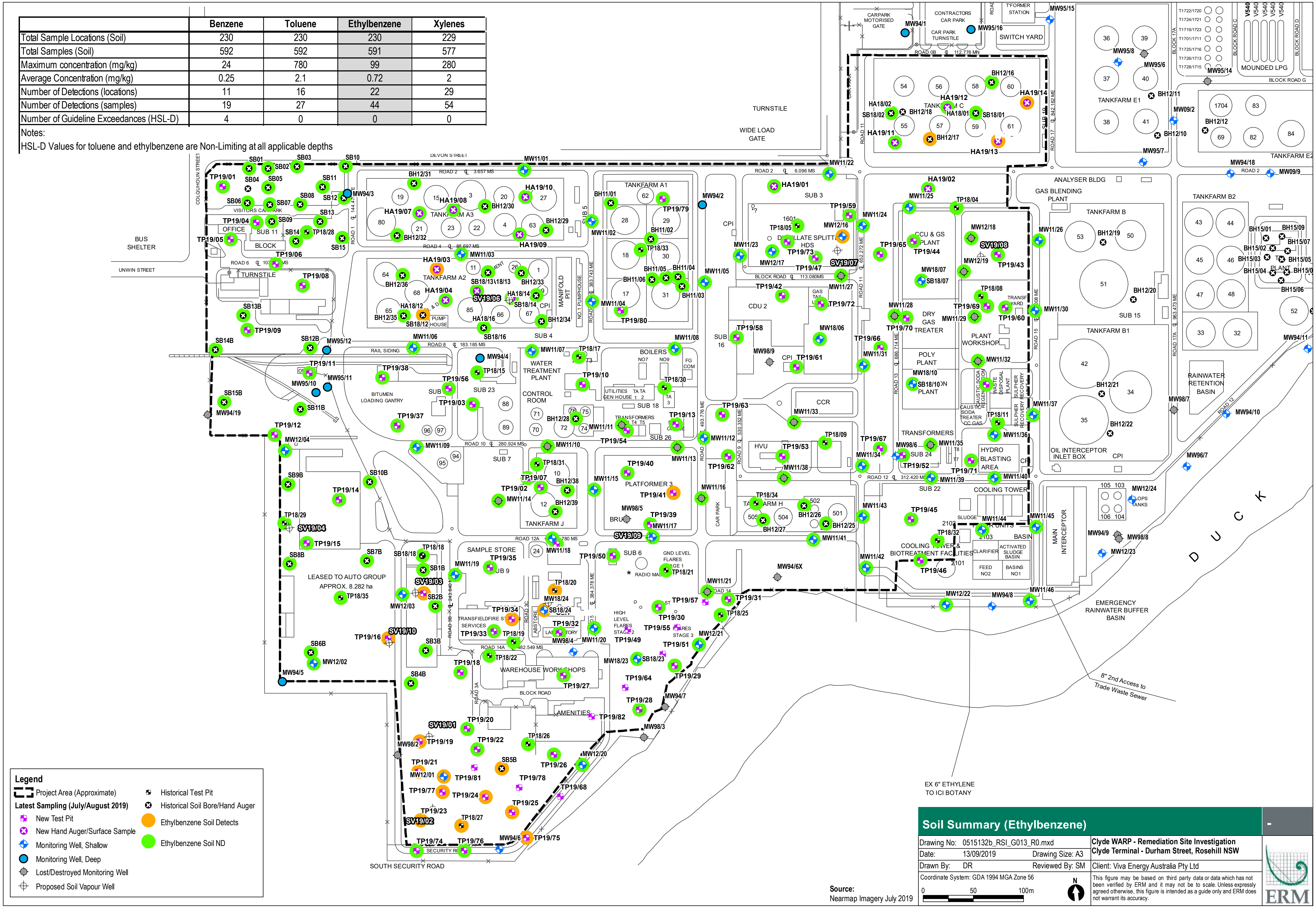

Legend

- Project Area (Approximate)
- Historical Test Pit
- Historical Soil Bore/Hand Auger

Latest Sampling (July/August 2019)

- New Test Pit
- New Hand Auger/Surface Sample
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Lost/Destroyed Monitoring Well
- Proposed Soil Vapour Well
- Ethylbenzene Soil Detects
- Ethylbenzene Soil ND

Source:
Nearmap Imagery July 2019

Soil Summary (Ethylbenzene)

Drawing No: 0515132b_RSI_G013_R0.mxd	Clyde WARP - Remediation Site Investigation
Date: 13/09/2019 Drawing Size: A3	Clyde Terminal - Durham Street, Rosehill NSW
Drawn By: DR Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

0 50 100m

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ERM

	Benzene	Toluene	Ethylbenzene	Xylenes
Total Sample Locations (Soil)	230	230	230	229
Total Samples (Soil)	592	592	591	577
Maximum concentration (mg/kg)	24	780	99	280
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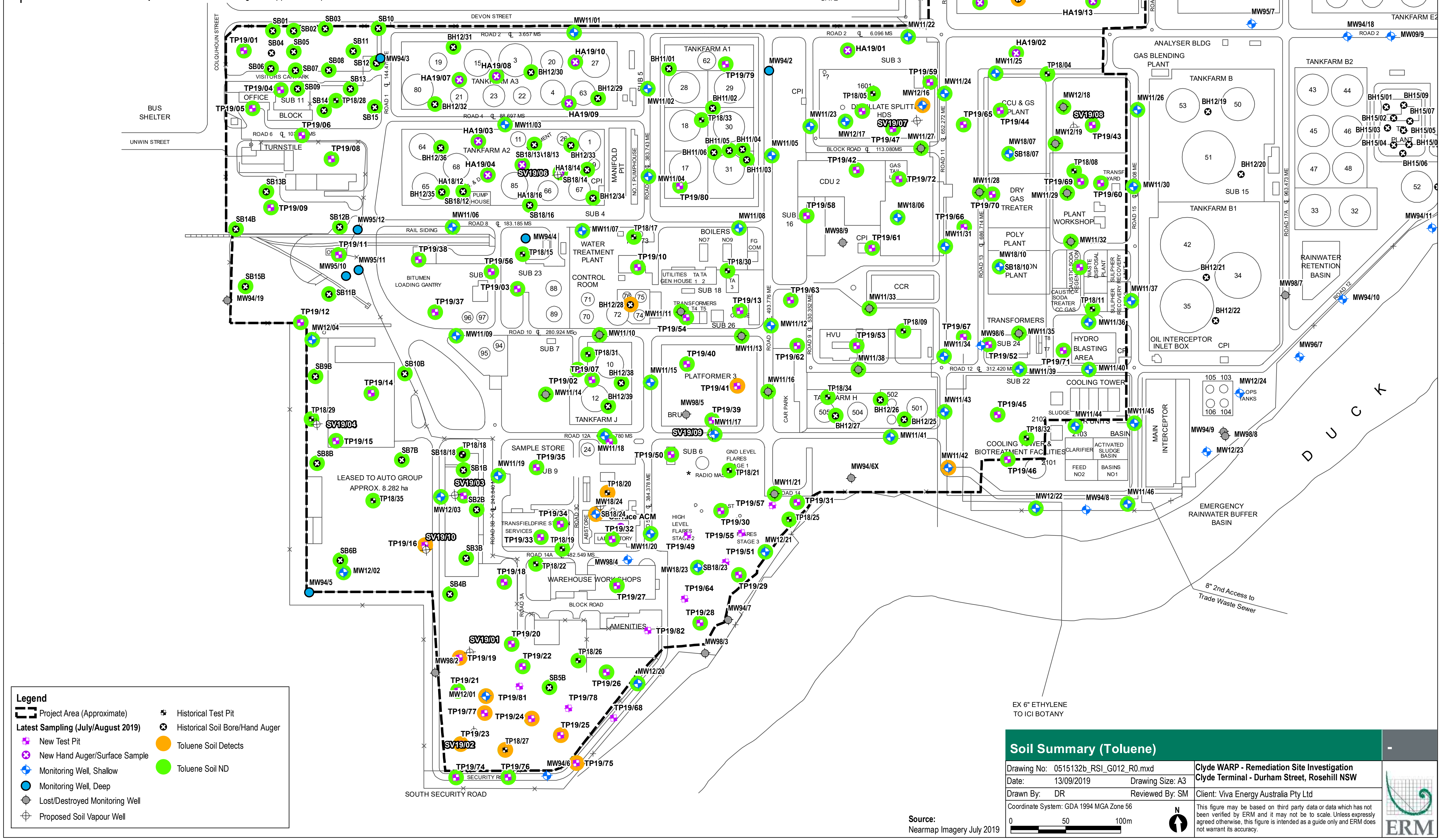
Number of Guideline Exceedances (HSL-D)	4	0	0	0

Notes:
HSL-D Values for toluene and ethylbenzene are Non-Limiting at all applicable depths



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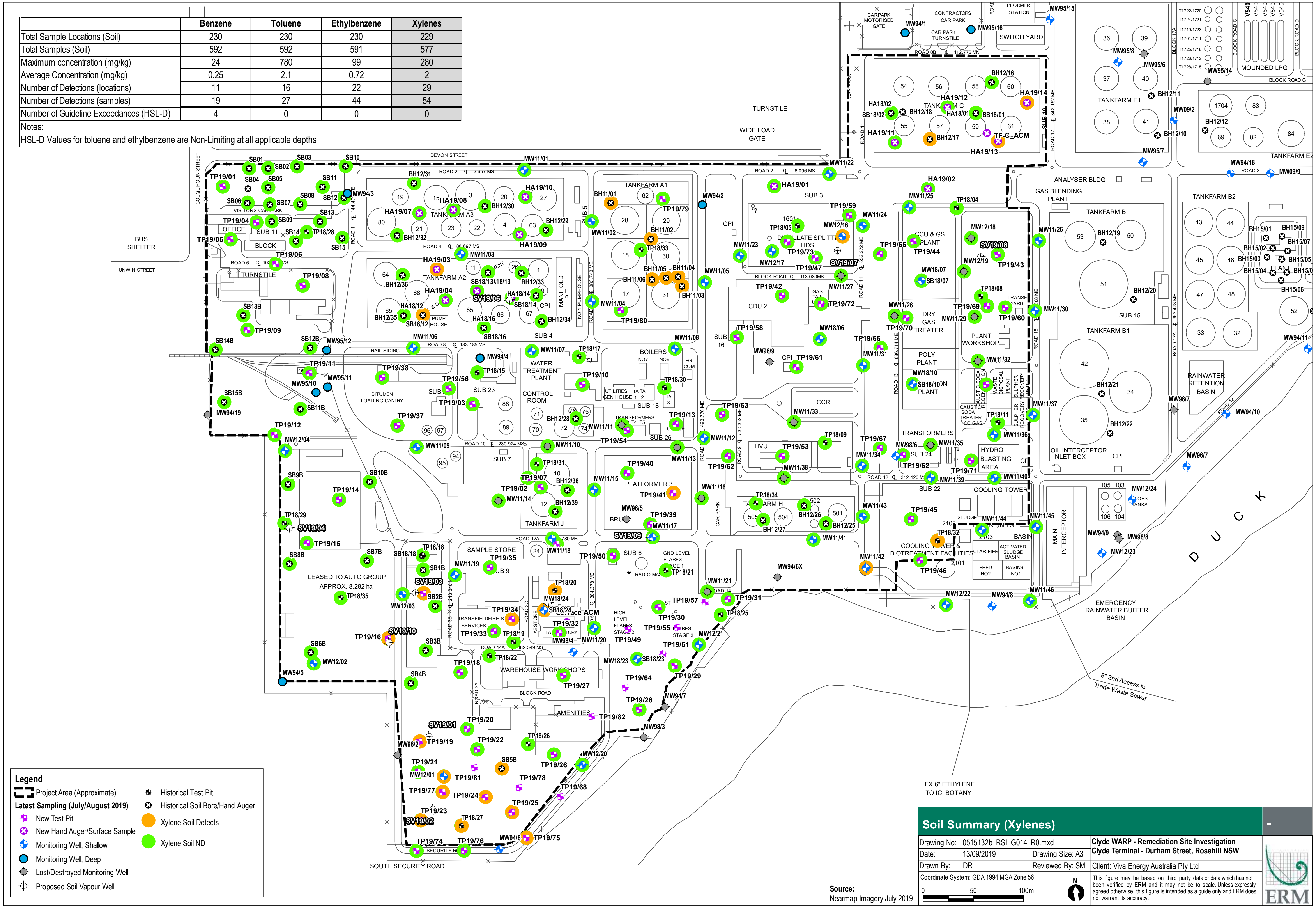

Legend

- Project Area (Approximate)
- Historical Test Pit
- Historical Soil Bore/Hand Auger

Latest Sampling (July/August 2019)

- New Test Pit
- New Hand Auger/Surface Sample
- Monitoring Well, Shallow
- Monitoring Well, Deep
- Lost/Destroyed Monitoring Well
- Proposed Soil Vapour Well
- Xylene Soil Detects
- Xylene Soil ND

Source:
Nearmap Imagery July 2019

0 50 100m

Soil Summary (Xylenes)

Drawing No: 0515132b_RSI_G014_R0.mxd
Date: 13/09/2019 Drawing Size: A3
Drawn By: DR Reviewed By: SM
Coordinate System: GDA 1994 MGA Zone 56

Clyde WARP - Remediation Site Investigation
Clyde Terminal - Durham Street, Rosehill NSW
Client: Viva Energy Australia Pty Ltd

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

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ATTACHMENT B WESTERN AREA SOIL ANALYTICAL RESULTS (TRH/BTEX)

						BTEX							TRH NEPM (1999)							TRH NEPM (2013)							TRH
						Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH (Total)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.001	0.001	0.001	0.001	0.002	0.003	0.2	10	0.02	0.05	0.1		0.1	0.1	0.02	0.02	0.05	0.05	0.1	0.1	0.1	100
CRC Care (2011) Direct Contact HSL D - Comm/Ind						430	99000	27000			81000										26000		20000	27000		38000	
CRC Care (2011) Direct Contact Intrusive Maint. Worker						1100	120000	85000			130000										82000		62000	85000		120000	
NEPM (1999) HIL D - Commercial/Industrial																											
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m						3	NL	NL			230										260		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m						3	NL	NL			NL										370		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m						3	NL	NL			NL										630		NL				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																				700		1000		3500		10000	
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)						77[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)						160[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																						
SB01_0.2-0.5	SB01	0.35	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB02_0.0-0.3	SB02	0.15	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB03_0.45-0.6	SB03	0.525	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB05_0.4-0.6	SB05	0.5	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB06_0.2-0.9	SB06	0.3	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	50	1500	2800	1300	2850	-	-	-	-	-	-	-	-
D091209-01	SB06	0.3	Field_D	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	1200	2400	1200	2425	-	-	-	-	-	-	-	-
SB07_0.1-0.3	SB07	0.2	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
D091208_02	SB07	0.2	Interlab_D	9/12/2008	1	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<2.2	-	<10	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB08_0.0-0.3	SB08	0.15	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB09_0.4-0.7	SB09	0.55	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB10_0.2-0.5	SB10	0.35	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB11_0.15-0.25	SB11	0.2	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB12_0.35-0.5	SB12	0.425	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB13_0.15-0.3	SB13	0.225	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	200	150	225	-	-	-	-	-	-	-	-
SB14_0.1-0.5	SB14	0.3	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
SB15_0.0-0.5	SB15	0.25	Normal	16/12/2008	1	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-
TP18/28_0.3	TP18/28	0.3	Normal	7/02/2018	1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/28_1.2	TP18/28	1.2	Normal	7/02/2018	1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/28_2.2	TP18/28	2.2	Normal	7/02/2018	1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/28_3.0	TP18/28	3	Normal	7/02/2018	1	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/01_0.1	TP19/01	0.1	Normal	18/07/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/01_0.8	TP19/01	0.85	Normal	5/08/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
DOI_050819	TP19/01	0.85	Field_D	5/08/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/04_0.1	TP19/04	0.05	Normal	5/08/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	50	240	-	210	500	<20	<20	61	61	370	601	170	-
TP19/04_0.1	TP19/04	0.1	Normal	31/07/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/05_0.2	TP19/05	0.15	Normal	5/08/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/06_0.5	TP19/06	0.5	Normal	18/07/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/06_1.0	TP19/06	1	Normal	18/07/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/08_0.1	TP19/08	0.1	Normal	18/07/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	130	-	220	350	<20	<20	<50	<50	290	290	<100	290
TP19/08_1.0	TP19/08	1	Normal	18/07/2019	1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
MW12/04_0.1	MW12/04	0.1	Normal	27/02/2012	2	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW12/04_4.7	MW12/04	4.7	Normal	27/02/2012	2	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
SB10B_0.5	SB10B	0.5	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB10B_1.0	SB10B	1	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	440	1250	-	230	1920	<10	<10	560	560	1340	2030	130	-
SB7B_1.0	SB7B	1	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB7B_2.0	SB7B	1.95	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB8B_0.2	SB8B	0.3	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	150	-	300	450	<10	<10	<50	<50	340	580	240	-
SB8B_1.0	SB8B	1	Normal	2/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB9B_1.0	SB9B	1	Normal	1/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	390	-	100	490	<10	<10	60	60	440	500	<100	-
SB9B_2.0	SB9B	1.95	Normal	1/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	1080	-	430	1510	<10	<10	<50	<50	1380	1640	260	-
TP18/29_0.3	TP18/29	0.3	Normal	6/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	90	450	-	210	750	<10	<10	260	260	470	870	140	-
TP18/29_1.2	TP18/29	1.2	Normal	6/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	350	2630	-	780	3760	<10	<10	580	580	2990	4000	430	-
QC18_100	TP18/29	1.2	Field_D	6/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	390	2610	-	850	3850	<10	<10	530	530	3050	4080	500	-
TP18/29_2.2	TP18/29	2.2	Normal	6/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	400	2000	-	460	2860	<10	<10	560	560	2180	3070	330	-
TP18/29_3.0	TP18/29	3	Normal	6/02/2018	2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	220	660	-	<100	880	<10	<10	320	320	590	910	<100	-
TP19/14_1.0	TP19/14	1	Normal	18/07/2019	2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	480	1500	-	160	2140	<20	<20	800	790.9	1200	2000	<100	2000
TP19/14_3.0	TP19/14	3	Normal	18/07/2019	2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/15_0.8	TP19/15	0.8	Normal	18/07/2019	2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	25	2000	-	1500	3525	<20	<20	69	69	2900	3549	580	3549
TP19/15_2.0	TP19/15	2	Normal	18/07/2019	2	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
MW11/18_0.3	MW11/18	0.3	Normal	22/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	430	<50 - 430	-	-	-	-	-	-	-	-
MW11/18_3.2	MW11/18	3.2	Normal	22/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/19_0.4	MW11/19	0.4	Normal	23/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	350	750	-	630	350 - 1700	-	-	-	-	-	-	-	-
D_230911_01	MW11/19	0.4	Field_D	22/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	490	1200	-	920	490 - 2600	-	-	-	-	-	-	-	-
MW11/19_2.3	MW11/19	2.3	Normal	22/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	11	-	1100	1800	-	340	1100 - 3200	-	-	-	-	-	-	-	-
MW11/20_0.2	MW11/20	0.2	Normal	23/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	350	-	860	<50 - 1200	-	-	-	-	-	-	-	-
MW11/20_5.0	MW11/20	5	Normal	22/09/2011	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW12/03_1.0	MW12/03	1	Normal	27/02/2012	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	190	-	1200	1100	1150	<100	2300 - 2350	280	280	1600	1600	600	-	<100	-
MW12/03_3.3	MW12/03	3.3	Normal	27/02/2012	3	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW(SB)18/24_0.3_180209	SB18/24	0.3	Normal	9/02/2018	3	0.8	3.4	1.3	0.9	6.4	7.3	12.8	66	-	160	200	-	<100	360	75	62	190	190	200	390	<100	-
MW(SB)18/24_1.2_180209	SB18/24	1.2	Normal	9/02/2018	3	2.7	<0.5	21.5	1.2	52.8	54	78.2	1480	-	300	530	-	<100	830	1530	1450	430	430	300	730	<100	-
MW(SB)18/24_3.0_180209	SB18/24	3	Normal	9/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	16	-	<50	<100	-	<100	<50	17	17	<50	<50	<100	<50	<100	-
SB1B_0.5	SB1B	0.5	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	10	-	1580	5720	-	120	7420	26	26	2280	2280	5250	7530	<100	-
SB1B_2.0	SB1B	1.95	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
T02_020218	SB1B	1.95	Interlab_D	2/02/2018	3	<0.2	<0.5	<1	<1	<2	<1	-	-	<25	<50	<100	-	<100	-	<25	<25	<50	<50	<100	<50	<100	-
SB2B_1.0	SB2B	1	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	31	-	340	720	-	<100	1060	65	65	460	460	630	1090	<100	-
D02_020218	SB2B	1	Field_D	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	16	-	310	670	-	<100	980	38	38	430	430	580	1010	<100	-
SB2B_2.0	SB2B	1.95	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	280	<100	-	<100	280	14	14	310	310	<100	310	<100	-
SB3B_0.2	SB3B	0.3	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	120	900	-	320	1340	<10	<10	260	260	1010	1440	170	-
SB3B_1.0	SB3B	1	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB3B_2.0	SB3B	1.95	Normal	2/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB4B_0.2	SB4B	0.3	Normal	5/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	110	-	170	280	<10	<10	<50	<50	240	370	130	-
SB4B_2.0	SB4B	1.95	Normal	5/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	100	-	<100	100	<10	<10	<50	<50	140	140	<100	-
TP18/18_0.3	TP18/18	0.3	Normal	6/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	260	-	290	550	<10	<10	<50	<50	460	660	200	-
TP18/18_1.2	TP18/18	1.2	Normal	6/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	160	-	250	410	<10	<10	<50	<50	320	520	200	-
TP18/18_3.0	TP18/18	3	Normal	6/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/19_0.3	TP18/19	0.3	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/19_1.2	TP18/19	1.2	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/19_3.0	TP18/19	3	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/20_0.45_20180208	TP18/20	0.45	Normal	8/02/2018	3	0.4	22.4	2.9	4.2	14.9	19.1	44.8	3270	-	<50	<100	-	320	320	3420	3380	<50	<50	250	710	460	-
TP18/20_0.7_20180208	TP18/20	0.7	Normal	8/02/2018	3	<0.2	3.8	1.4	1.8	6.6	8.4	13.6	816	-	<50	<100	-	<100	<50	851	837	<50	<50	<100	<50	<100	-
TP18/20_1.2_20180208	TP18/20	1.2	Normal	8/02/2018	3	<0.2	<0.5	0.8	0.6	2.8	3.4	4.2	861	-	<50	<100	-	<100	<50	819	814	<50	<50	<100	<50	<100	-
TP18/20_2.3_20180208	TP18/20	2.3	Normal	8/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	19	-	<50	<100	-	<100	<50	20	20	<50	<50	<100	<50	<100	-
TP18/22_0.3	TP18/22	0.3	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/22_1.2	TP18/22	1.2	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/22_3.0	TP18/22	3	Normal	7/02/2018	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/16_0.8	TP19/16	0.8	Normal	17/07/2019	3	<0.1	0.3	0.3	0.9	0.7	1.6	-	-	<20	1200	37,000	-	18,000	56,200	34	32	3200	3194.4	47,000	55,900	5700	-
TP19/16_1.2	TP19/16	1.2	Normal	17/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/17_0.5	TP19/17	0.5	Normal	18/07/2019	3	0.3	<0.1	4.5	<0.1	2.4	2.4	-	-	280	2200	4400	-	260	6860	340	330	3500	3493.7	3000	6500	<100	6500
TP19/17_3.5	TP19/17	3.5	Normal	18/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	69	150	-	<50	219	<20	<20	120	120	130	250	<100	250
TP19/18_0.3	TP19/18	0.3	Normal	17/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/18_0.6	TP19/18	0.6	Normal	17/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/27_0.6	TP19/27	0.6	Normal	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/27_1.5	TP19/27	1.5	Normal	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/32_0.1	TP19/32	0.1	Normal	23/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	110	-	100	210	<20	<20	<50	<50	180	180	<100	-
TP19/32_1.0	TP19/32	1	Normal	23/07/2019	3	<0.2	<0.2	<0.2	<0.2	<0.4	<0.6	-	-	<40	<20	<50	-	<50	<50	<40	<40	<50	<50	<100	<100	<100	-
TP19/33_0.3	TP19/33	0.25	Normal	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
DOI_240719	TP19/33	0.25	Field_D	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	67	67	<20	<20	<50	<50	<100	<100	<100	-
T01_240719	TP19/33	0.25	Interlab_D	24/07/2019	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	120	120	<100	-
TP19/33_0.5	TP19/33	0.5	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/33_1.2	TP19/33	1.1	Normal	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/34_0.3	TP19/34	0.25	Normal	24/07/2019	3	<0.2	<0.2	0.3	0.6	1.2	1.8	-	-	<40	<20	370	-	230	600	<40	<40	<50	<50	530	630	100	-
TP19/34_0.7	TP19/34	0.65	Normal	24/07/2019	3	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/35_0.1	TP19/35	0.2	Normal	23/07/2019	3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	5210	-	9500	14,700	<10	<10	410	410	9470	25,500	15,600	-
TP19/35_0.7	TP19/35	0.7	Normal	23/07/2019	3	<0.5	<2.5	<0.5	<0.5	<1	<1.5	-	-	<100	720	630	-	<50	1350	<100	<100	960	955.9	350	1310	<100	-
MW11/21_0.5	MW11/21	0.5	Normal	5/10/2011	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	150	530	-	120	150 - 800	-	-	-	-	-	-	-	-
D_051011_01	MW11/21	0.5	Field_D	5/10/2011	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	150	420	-	<100	150 - 570	-	-	-	-	-	-	-	-
MW11/21_3.2	MW11/21	3.2	Normal	5/10/2011	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	200	-	460	<100	-	<100	460	-	-	-	-	-	-	-	-
MW11/21_5.0	MW11/21	5	Normal	5/10/2011	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW12/01_0.15	MW12/01	0.15	Normal	27/02/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	180	130	130 - 205	<20	<20	<50	<50	180	-	<100	-
MW12/01_2.0	MW12/01	2	Normal	27/02/2012	4	1.2	780	3.4	6	14	20	800 - 804.6	1200	-	7400	57,000	74,000	17,000	81,000 - 81,400	1300	510	15,000	15,000	61,000	-	7900	-
MW12/01_2.5	MW12/01	2.5	Normal	27/02/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	480	3700	4800	1100	5280 - 5300	<20	<20	930	930	4100	-	490	-
MW12/20_0.4	MW12/20	0.4	Normal	6/03/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	150	350	200	350 - 375	<20	<20	<50	<50	330	-	<100	-
MW12/20_2.0	MW12/20	2	Normal	6/03/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	76	2100	4700	2600	4776 - 4800	<20	<20	180	180	4200	-	1100	-
MW12/21_1.4	MW12/21	1.4	Normal	7/03/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	730	2600	4600	2000	5300 - 5330	<20	<20	1200	1200	3700	-	870	-
MW12/21_2.4	MW12/21	2.4	Normal	7/03/2012	4	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW(SB)18/23_0.3_20180208	SB18/23	0.3	Normal	8/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/23_1.2_20180208	SB18/23	1.2	Normal	8/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	80	1340	-	360	1780	<10	<10	240	240	1440	1890	210	-
MW(SB)18/23_3.0_20180208	SB18/23	3	Normal	8/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	130	1410	-	400	1940	<10	<10	300	300	1510	2070	260	-
SB5B_1.0	SB5B	1	Normal	5/02/2018	4	<0.2	<0.5	0.6	1.6	2.2	3.8	4.4	11	-	240	11,000	-	10,100	21,300	22	18	340	340	19,200	24,000	4440	-
T03_050218	SB5B	1	Interlab_D	5/02/2018	4	<0.2	<0.5	<1	1	<2	1	-	-	<25	220	6200	-	8500	-	<25	<25	300	300	13,000	17,000	4500	-
SB5B_4.0	SB5B	3.95	Normal	5/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	12	-	340	5580	-	2640	8560	24	24	720	720	7090	9350	1540	-
TP18/25_0.3	TP18/25	0.3	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	460	2540	-	1400	4400	<10	<10	650	650	3380	4860	830	-
TP18/25_1.2	TP18/25	1.2	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	22	-	150	6160	-	3470	9780	19	19	270	270	8330	11,000	2380	-
TP18/25_1.6	TP18/25	1.6	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/25_2.2	TP18/25	2.2	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/25_3.1	TP18/25	3.1	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
QC18_201	TP18/25		Field_D	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/26_0.3	TP18/26	0.3	Normal	7/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/26_1.2	TP18/26	1.2	Normal	6/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/26_1.7	TP18/26	1.7	Normal	7/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/27_0.3	TP18/27	0.3	Normal	7/02/2018	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	160	-	180	340	<10	<10	<50	<50	270	440	170	-
TP18/27_1.2	TP18/27	1.2	Normal	7/02/2018	4	0.3	12.6	4.5	6.8	13.5	20.3	37.7	106	-	8400	43,500	-	8420	60,300	169	131	9900	9900	48,200	61,200	3130	-
QC18_102	TP18/27	1.2	Field_D	7/02/2018	4	0.3	12.5	4.5	7.1	13.9	21	38.3	104	-	2040	20,800	-	9380	32,200	168	130	3750	3750	28,100	36,300	4460	-
TP18/27_1.8	TP18/27	1.8	Normal	7/02/2018	4	0.8	<0.5	3.1	0.6	5.1	5.7	9.6	61	-	1660	25,300	-	11,300	38,300	90	81	3240	3240	34,800	43,200	5150	-
TP18/27_3.0	TP18/27	3	Normal	7/02/2018	4	0.6	0.7	5	3.1	5.3	8.4	14.7	246	-	37,000	12,800	-	580	50,400	579	564	37,500	37,500	8170	45,700	<100	-
QC18_103	TP18/27	3	Field_D	7/02/2018	4	0.7	1.1	5.4	4	6	10	17.2	234	-	34,000	11,100	-	480	45,600	521	504	34,400	34,400	6810	41,200	<100	-
TP19/19_0.6	TP19/19	0.6	Normal	16/07/2019	4	14	37	12	22	53	76	-	-	1100	41,000	110,000	-	9000	160,000	2100	2000	67,000	66,953	110,000	186,000	9000	-
TP19/19_2.0	TP19/19	2	Normal	16/07/2019	4	<0.1	0.3	0.2	0.3	0.6	0.9	-	-	22	520	2700	-	250	3470	53	52	950	948.8	3300	4720	470	-
TP19/20_0.1	TP19/20	0.1	Normal	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	380	-	200	580	<20	<20	<50	<50	880	1130	250	-
D01_150719	TP19/20	0.1	Field_D	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	520	-	210	730	<20	<20	<50	<50	1100	1410	310	-
D01_160719	TP19/20	0.1	Field_D	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_160719	TP19/20	0.1	Interlab_D	16/07/2019	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	230	-	590	820	<10	<10	<50	<50	660	1360	700	-
TP19/20_0.4	TP19/20	0.4	Normal	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	78	400	2800	-	480	3680	140	140	860	860	3400	4620	360	-
D02_160719	TP19/20	0.4	Field_D	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	27	170	750	-	71	991	64	64	290	289.3	1100	1620	230	-
T02_160719	TP19/20	0.4	Interlab_D	16/07/2019	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	46	-	260	1910	-	1620	3790	68	68	490	490	2820	4580	1270	-
TP19/21_2.8	TP19/21	2.8	Normal	16/07/2019	4	<1	<1	62	<1	4.1	<3	-	-	520	5400	19,000	-	6100	30,500	930	860	8100	8061	17,000	27,600	2500	-
TP19/21_4.0	TP19/21	4	Normal	16/07/2019	4	<0.2	<0.2	0.7	0.3	<0.4	<0.3	-	-	<40	630	6400	-	1000	8030	<40	<40	1200	1192.7	7200	8790	390	-
TP19/22_0.5	TP19/22	0.5	Normal	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/22_1.2	TP19/22	1.2	Normal	16/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/23_1.5	TP19/23	1.5	Normal	15/07/2019	4	3.8	48	13	23	51	74	-	-	360	5000	36,000	-	15,000	56,000	470	330	7700	7670	41,000	53,500	4800	-
D01_150719	TP19/23	1.5	Field_D	15/07/2019	4	2.7	28	7.9	12	30	42	-	-	190	4300	31,000	-	12,000	47,300	250	170	6700	6678	34,000	45,200	4500	-
T01_150719	TP19/23	1.5	Interlab_D	15/07/2019	4	12.3	67.8	16.6	19.7	65.6	85.3	182	571	-	3050	55,800	-	27,300	86,200	661	479	5680	5650	73,400	92,900	13,800	-
TP19/23_3.5	TP19/23	3.5	Normal	15/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	230	-	140	370	<20	<20	<50	<50	290	290	<100	-
TP19/24_1.5	TP19/24	1.5	Normal	15/07/2019	4	<0.1	0.7	0.4	0.5	0.9	1.4	-	-	<20	140	4100	-	2600	6840	<20	<20	280	280	5600	7180	1300	-
TP19/24_3.0	TP19/24	3	Normal	15/07/2019	4	<0.1	<0.1	2.8	0.7	0.4	1.1	-	-	92	3500	4900	-	710	9110	270	270	4800	4782	3700	8890	390	-
TP19/24_4.2	TP19/24	4.2	Normal	15/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	200	-	150	350	<20	<20	<50	<50	280	280	<100	-
TP19/25_0.5	TP19/25	0.5	Normal	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

						TRH Silica Gel Cleanup									TRH Aliphatic/Aromatic Split													
						TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C5-C7 (Benzene) Aromatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						20	50	50	50	50	100	50	100	50	0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10
CRC Care (2011) Direct Contact HSL D - Comm/Ind																												
CRC Care (2011) Direct Contact Intrusive Maint. Worker																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)																												
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)																												
Field_ID	**Location_Code**	**Sample_Depth_Avg**	**Sample_Type**	**Sampled_Date_Time**	**RSI Area ID**																							
SB01_0.2-0.5	SB01	0.35	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02_0.0-0.3	SB02	0.15	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB03_0.45-0.6	SB03	0.525	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB05_0.4-0.6	SB05	0.5	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB06_0.2-0.9	SB06	0.3	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D091209-01	SB06	0.3	Field_D	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB07_0.1-0.3	SB07	0.2	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D091208_02	SB07	0.2	Interlab_D	9/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB08_0.0-0.3	SB08	0.15	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB09_0.4-0.7	SB09	0.55	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB10_0.2-0.5	SB10	0.35	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB11_0.15-0.25	SB11	0.2	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB12_0.35-0.5	SB12	0.425	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13_0.15-0.3	SB13	0.225	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB14_0.1-0.5	SB14	0.3	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15_0.0-0.5	SB15	0.25	Normal	16/12/2008	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/28_0.3	TP18/28	0.3	Normal	7/02/2018	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/28_1.2	TP18/28	1.2	Normal	7/02/2018	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/28_2.2	TP18/28	2.2	Normal	7/02/2018	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/28_3.0	TP18/28	3	Normal	7/02/2018	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/01_0.1	TP19/01	0.1	Normal	18/07/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/01_0.8	TP19/01	0.85	Normal	5/08/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOI_050819	TP19/01	0.85	Field_D	5/08/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/04_0.1	TP19/04	0.05	Normal	5/08/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/04_0.1	TP19/04	0.1	Normal	31/07/2019	1	500	750	1431	-	840	590	91	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/05_0.2	TP19/05	0.15	Normal	5/08/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/06_0.5	TP19/06	0.5	Normal	18/07/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/06_1.0	TP19/06	1	Normal	18/07/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/08_0.1	TP19/08	0.1	Normal	18/07/2019	1	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/08_1.0	TP19/08	1	Normal	18/07/2019	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/04_0.1	MW12/04	0.1	Normal	27/02/2012	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/04_4.7	MW12/04	4.7	Normal	27/02/2012	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB10B_0.5	SB10B	0.5	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB10B_1.0	SB10B	1	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB7B_1.0	SB7B	1	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB7B_2.0	SB7B	1.95	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB8B_0.2	SB8B	0.3	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB8B_1.0	SB8B	1	Normal	2/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB9B_1.0	SB9B	1	Normal	1/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB9B_2.0	SB9B	1.95	Normal	1/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/29_0.3	TP18/29	0.3	Normal	6/02/2018	2	60	170	280	330	220	160	<100	<100	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/29_1.2	TP18/29	1.2	Normal	6/02/2018	2	<50	80	820	930	580	710	240	140	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_100	TP18/29	1.2	Field_D	6/02/2018	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/29_2.2	TP18/29	2.2	Normal	6/02/2018	2	350	600	1780	1750	1240	1150	190	<100	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/29_3.0	TP18/29	3	Normal	6/02/2018	2	<50	70	240	320	240	250	<100	<100	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/14_1.0	TP19/14	1	Normal	18/07/2019	2	250	400	750	-	500	350	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/14_3.0	TP19/14	3	Normal	18/07/2019	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/15_0.8	TP19/15	0.8	Normal	18/07/2019	2	<20	<50	290	-	180	270	110	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/15_2.0	TP19/15	2	Normal	18/07/2019	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/18_0.3	MW11/18	0.3	Normal	22/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/18_3.2	MW11/18	3.2	Normal	22/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/19_0.4	MW11/19	0.4	Normal	23/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_230911_01	MW11/19	0.4	Field_D	22/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/19_2.3	MW11/19	2.3	Normal	22/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/20_0.2	MW11/20	0.2	Normal	23/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/20_5.0	MW11/20	5	Normal	22/09/2011	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/03_1.0	MW12/03	1	Normal	27/02/2012	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/03_3.3	MW12/03	3.3	Normal	27/02/2012	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/24_0.3_180209	SB18/24	0.3	Normal	9/02/2018	3	60	90	190	220	130	130	<100	<100	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/24_1.2_180209	SB18/24	1.2	Normal	9/02/2018	3	210	260	460	430	250	170	<100	<100	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/24_3.0_180209	SB18/24	3	Normal	9/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB1B_0.5	SB1B	0.5	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB1B_2.0	SB1B	1.95	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T02_020218	SB1B	1.95	Interlab_D	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB2B_1.0	SB2B	1	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D02_020218	SB2B	1	Field_D	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB2B_2.0	SB2B	1.95	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB3B_0.2	SB3B	0.3	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB3B_1.0	SB3B	1	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB3B_2.0	SB3B	1.95	Normal	2/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB4B_0.2	SB4B	0.3	Normal	5/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB4B_2.0	SB4B	1.95	Normal	5/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/18_0.3	TP18/18	0.3	Normal	6/02/2018	3	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/18_1.2	TP18/18	1.2	Normal	6/02/2018	3	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/18_3.0	TP18/18	3	Normal	6/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/19_0.3	TP18/19	0.3	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/19_1.2	TP18/19	1.2	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/19_3.0	TP18/19	3	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/20_0.45_20180208	TP18/20	0.45	Normal	8/02/2018	3	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/20_0.7_20180208	TP18/20	0.7	Normal	8/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/20_1.2_20180208	TP18/20	1.2	Normal	8/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/20_2.3_20180208	TP18/20	2.3	Normal	8/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/22_0.3	TP18/22	0.3	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/22_1.2	TP18/22	1.2	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/22_3.0	TP18/22	3	Normal	7/02/2018	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/16_0.8	TP19/16	0.8	Normal	17/07/2019	3	890	2400	18,290	-	14,000	14,000	3400	810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/16_1.2	TP19/16	1.2	Normal	17/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/17_0.5	TP19/17	0.5	Normal	18/07/2019	3	1200	2000	3694	-	2400	1600	94	<100	-	0.3	190	140	250	1900	1500	510	0.3	<0.1	13	38	560	690	370
TP19/17_3.5	TP19/17	3.5	Normal	18/07/2019	3	27	51	117	-	90	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/18_0.3	TP19/18	0.3	Normal	17/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/18_0.6	TP19/18	0.6	Normal	17/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/27_0.6	TP19/27	0.6	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/27_1.5	TP19/27	1.5	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/32_0.1	TP19/32	0.1	Normal	23/07/2019	3	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/32_1.0	TP19/32	1	Normal	23/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/33_0.3	TP19/33	0.25	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DOI_240719	TP19/33	0.25	Field_D	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_240719	TP19/33	0.25	Interlab_D	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/33_0.5	TP19/33	0.5	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/33_1.2	TP19/33	1.1	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/34_0.3	TP19/34	0.25	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/34_0.7	TP19/34	0.65	Normal	24/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/35_0.1	TP19/35	0.2	Normal	23/07/2019	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/35_0.7	TP19/35	0.7	Normal	23/07/2019	3	610	830	1140	-	530	270	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/21_0.5	MW11/21	0.5	Normal	5/10/2011	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_051011_01	MW11/21	0.5	Field_D	5/10/2011	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/21_3.2	MW11/21	3.2	Normal	5/10/2011	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/21_5.0	MW11/21	5	Normal	5/10/2011	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/01_0.15	MW12/01	0.15	Normal	27/02/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/01_2.0	MW12/01	2	Normal	27/02/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/01_2.5	MW12/01	2.5	Normal	27/02/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/20_0.4	MW12/20	0.4	Normal	6/03/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/20_2.0	MW12/20	2	Normal	6/03/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/21_1.4	MW12/21	1.4	Normal	7/03/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/21_2.4	MW12/21	2.4	Normal	7/03/2012	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/23_0.3_20180208	SB18/23	0.3	Normal	8/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/23_1.2_20180208	SB18/23	1.2	Normal	8/02/2018	4	<50	<50	460	550	460	550	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/23_3.0_20180208	SB18/23	3	Normal	8/02/2018	4	110	130	950	840	710	710	130	<100	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB5B_1.0	SB5B	1	Normal	5/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T03_050218	SB5B	1	Interlab_D	5/02/2018	4	-	-	-	-	6200	-	8500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB5B_4.0	SB5B	3.95	Normal	5/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/25_0.3	TP18/25	0.3	Normal	6/02/2018	4	90	200	1480	1660	880	1130	510	330	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/25_1.2	TP18/25	1.2	Normal	6/02/2018	4	60	200	2670	3010	1740	2220	870	590	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/25_1.6	TP18/25	1.6	Normal	6/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/25_2.2	TP18/25	2.2	Normal	6/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/25_3.1	TP18/25	3.1	Normal	6/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_201	TP18/25		Field_D	6/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/26_0.3	TP18/26	0.3	Normal	7/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/26_1.2	TP18/26	1.2	Normal	6/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/26_1.7	TP18/26	1.7	Normal	7/02/2018	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/27_0.3	TP18/27	0.3	Normal	7/02/2018	4	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/27_1.2	TP18/27	1.2	Normal	7/02/2018	4	1280	2790	19,200	20,200	13,500	15,500	4430	1920	2780	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_102	TP18/27	1.2	Field_D	7/02/2018	4	1390	2320	15,300	16,200	10,000	12,000	3950	1830	2320	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/27_1.8	TP18/27	1.8	Normal	7/02/2018	4	1240	2140	18,700	19,800	12,500	15,300	4990	2330	2140	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/27_3.0	TP18/27	3	Normal	7/02/2018	4	11,200	14,900	22,500	21,900	11,300	7030	<100	<100	14,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_103	TP18/27	3	Field_D	7/02/2018	4	8820	11,500	16,900	16,400	8080	4880	<100	<100	11,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/19_0.6	TP19/19	0.6	Normal	16/07/2019	4	21,000	29,000	72,000	-	38,000	35,000	13,000	6600	-	8.6	<50	1100	9200	19,000	14,000	19,000	-	27	140	1200	7900	9800	15,000
TP19/19_2.0	TP19/19	2	Normal	16/07/2019	4	550	900	3050	-	1800	1800	700	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/20_0.1	TP19/20	0.1	Normal	16/07/2019	4	<20	<50	770	-	200	560	570	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_150719	TP19/20	0.1	Field_D	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_160719	TP19/20	0.1	Field_D	16/07/2019	4	<20	<50	570	-	120	390	450	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_160719	TP19/20	0.1	Interlab_D	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/20_0.4	TP19/20	0.4	Normal	16/07/2019	4	<20	160	960	-	450	670	510	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D02_160719	TP19/20	0.4	Field_D	16/07/2019	4	<20	<50	518	-	78	320	440	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T02_160719	TP19/20	0.4	Interlab_D	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/21_2.8	TP19/21	2.8	Normal	16/07/2019	4	310	460	1340	-	790	730	240	130	-	<0.4	<40	490	180	330	290	330	-	0.8	40	27	240	220	230
TP19/21_4.0	TP19/21	4	Normal	16/07/2019	4	180	340	2600	-	1800	2000	620	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/22_0.5	TP19/22	0.5	Normal	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/22_1.2	TP19/22	1.2	Normal	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/23_1.5	TP19/23	1.5	Normal	15/07/2019	4	1900	2800	21,900	-	14,000	17,000	6000	1100	-	3.6	<100	330	1300	2700	3800	12,000	-	66	140	530	3200	10,000	32,000
D01_150719	TP19/23	1.5	Field_D	15/07/2019	4	1500	2500	27,500	-	16,000	21,000	10,000	1700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_150719	TP19/23	1.5	Interlab_D	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/23_3.5	TP19/23	3.5	Normal	15/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/24_1.5	TP19/24	1.5	Normal	15/07/2019	4	51	120	1981	-	1200	1500	730	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/24_3.0	TP19/24	3	Normal	15/07/2019	4	5000	6000	11,720	-	5800	4200	920	150	-	<0.5	<50	200	2400	3500	2000	910	-	0.8	14	240	1800	1200	460
TP19/24_4.2	TP19/24	4.2	Normal	15/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/25_0.5	TP19/25	0.5	Normal	15/07/2019	4	<20	<50	51	-	51	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

						BTEX							TRH NEPM (1999)							TRH NEPM (2013)							TRH
						Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH (Total)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.001	0.001	0.001	0.001	0.002	0.003	0.2	10	0.02	0.05	0.1		0.1	0.1	0.02	0.02	0.05	0.05	0.1	0.1	0.1	100
CRC Care (2011) Direct Contact HSL D - Comm/Ind						430	99000	27000			81000										26000		20000	27000		38000	
CRC Care (2011) Direct Contact Intrusive Maint. Worker						1100	120000	85000			130000										82000		62000	85000		120000	
NEPM (1999) HIL D - Commercial/Industrial																											
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m						3	NL	NL			230										260		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m						3	NL	NL			NL										370		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m						3	NL	NL			NL										630		NL				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																				700		1000		3500		10000	
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)						77[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)						160[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																						
TP19/25_0.5	TP19/25	0.65	Normal	15/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	400	-	380	780	<20	<20	<50	<50	660	850	190	-
TP19/25_1.3	TP19/25	1.3	Normal	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/25_1.3	TP19/25	1.4	Normal	15/07/2019	4	1.4	28	13	25	45	70	-	-	<400	6900	54,000	-	20,000	80,900	<400	<400	11,000	10,979	58,000	76,500	7500	-
TP19/26_0.5	TP19/26	0.5	Normal	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/26_1.0	TP19/26	1	Normal	16/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/28_0.1	TP19/28	0.1	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	42	2100	-	1800	3942	<20	<20	100	100	3200	4120	820	-
D01_190719	TP19/28	0.1	Field_D	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	57	2700	-	2300	5057	<20	<20	140	140	4000	5130	990	-
T01_190719	TP19/28	0.1	Interlab_D	19/07/2019	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	200	1120	-	150	1470	<10	<10	410	410	1030	1440	<100	-
TP19/28_1.0	TP19/28	1	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	230	-	150	380	<20	<20	<50	<50	300	300	<100	-
TP19/29_1.8	TP19/29	1.8	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	76	-	110	186	<20	<20	<50	<50	150	150	<100	150
TP19/29_2.2	TP19/29	2.2	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	85	-	69	154	<20	<20	<50	<50	120	120	<100	120
TP19/30_0.4	TP19/30	0.4	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
D01_220719	TP19/30	0.4	Field_D	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/30_1.2	TP19/30	1.2	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
T01_220719	TP19/30		Interlab_D	22/07/2019	4	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/31_1.2	TP19/31	1.2	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	89	440	-	120	649	21	21	180	180	410	590	<100	590
TP19/31_2.5	TP19/31	2.5	Normal	22/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/74_1.5	TP19/74	1.5	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/74_2.5	TP19/74	2.5	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/75_1.5	TP19/75	1.5	Normal	19/07/2019	4	<0.2	1	1.2	1.1	2.1	3.2	-	-	290	5700	14,000	-	4600	24,300	590	580	8400	8384	13,000	23,800	2400	-
TP19/75_3.0	TP19/75	3	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/76_1.5	TP19/76	1.5	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/76_2.2	TP19/76	2.2	Normal	19/07/2019	4	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	98	-	77	175	<20	<20	<50	<50	140	140	<100	-
TP19/77_1.5	TP19/77	1.5	Normal	15/07/2019	4	<1	3.2	2	<1	<2	<3	-	-	<200	2400	33,000	-	13,000	48,400	<200	<200	4500	4459	38,000	46,700	4200	-
D02_150719	TP19/77	1.5	Field_D	15/07/2019	4	<0.5	3.2	2	1	2.4	3.4	-	-	<100	1700	25,000	-	9500	36,200	<100	<100	3200	3171	28,000	33,900	2700	-
T02_150719	TP19/77	1.5	Interlab_D	15/07/2019	4	<0.5	5	3.4	1.5	2	3.5	11.9	54	-	2200	38,500	-	17,300	58,000	92	80	5200	5160	49,300	61,800	7270	-
TP19/77_4.0	TP19/77	4	Normal	15/07/2019	4	24	75	99	77	200	280	-	-	3000	45,000	74,000	-	22,000	141,000	5000	4500	58,000	57,850	70,000	136,200	8200	-
MW11/16_0.45	MW11/16	0.45	Normal	22/09/2011	5	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/16_3.3	MW11/16	3.3	Normal	22/09/2011	5	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/17_1.0	MW11/17	1	Normal	22/09/2011	5	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	1200	-	510	<50 - 1700	-	-	-	-	-	-	-	-
D_220911_01	MW11/17	1	Field_D	22/09/2011	5	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	1600	-	740	<50 - 2300	-	-	-	-	-	-	-	-
T-220911-01	MW11/17	1	Interlab_D	22/09/2011	5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	2290	3080	790	3080 - 3105	<10	<10	90	-	2590	3080	400	-
MW11/17_2.5	MW11/17	2.5	Normal	22/09/2011	5	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
TP19/39_0.2	TP19/39	0.25	Normal	29/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/39_0.4	TP19/39	0.35	Normal	29/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/39_0.4	TP19/39	0.4	Normal	29/07/2019	5	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	-	-	<0.02	0.56	27	-	20	47.56	<0.02	<0.02	1.2	1.2	39	45.4	5.2	-
TP19/40_0.1	TP19/40	0.2	Normal	30/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	200	-	200	400	<20	<20	<50	<50	350	350	<100	-
TP19/40_0.2	TP19/40	0.2	Normal	30/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/40_0.2	TP19/40	2	Normal	30/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	260	-	56	316	<20	<20	<50	<50	280	280	<100	-
TP19/41_0.2	TP19/41	0.25	Normal	29/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
D01_290719	TP19/41	0.25	Field_D	29/07/2019	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	68	68	<20	<20	<50	<50	<100	<100	<100	-
TO1_290719	TP19/41	0.25	Interlab_D	29/07/2019	5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	110	110	<10	<10	<50	<50	140	140	<100	-
TP19/41_0.4	TP19/41	0.4	Normal	29/07/2019	5	<0.1	0.8	0.2	5.4	10	16	-	-	<80	290	130	-	130	550	75	59	140	135.5	200	340	<100	-
TP19/41_0.4	TP19/41	0.4	Normal	31/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/32_0.3_20180208	TP18/32	0.3	Normal	8/02/2018	6	<0.2	<0.5	<0.5	<0.5	0.5	0.5	0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/32_1.2_20180208	TP18/32	1.2	Normal	8/02/2018	6	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/32_1.4_20180208	TP18/32	1.4	Normal	8/02/2018	6	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	160	-	<100	160	<10	<10	<50	<50	220	220	<100	-
TP18/32_3.0_20180208	TP18/32	3	Normal	8/02/2018	6	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/45_1.0	TP19/45	1.1	Normal	25/07/2019	6	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/45_3.0	TP19/45	2.9	Normal	25/07/2019	6	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/46_0.05	TP19/46	0.1	Normal	25/07/2019	6	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	5500	-	5200	10,700	<20	<20	55	55	9300	11,055	1700	-
TP19/46_2.0	TP19/46	2	Normal	25/07/2019	6	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/01_0.1	HA19/01	0.05	Normal	2/08/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	110	-	240	350	<20	<20	<50	<50	260	400	140	-
HA19/01_0.1	HA19/01	0.1	Normal	31/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/01_0.5	HA19/01	0.45	Normal	2/08/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/02_0.1	HA19/02	0.15	Normal	2/08/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/02_0.4	HA19/02	0.4	Normal	31/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/02_0.4	HA19/02	0.45	Normal	2/08/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	450	-	910	1360	<20	<20	<50	<50	970	1660	690	-
TP19/62_0.1	TP19/62	0.2	Normal	24/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/63_0.1	TP19/63	0.05	Normal	24/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	1200	-	640	1840	<20	<20	<50	<50	1600	1820	220	-
TP19/63_0.6	TP19/63	0.6	Normal	24/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/65_0.1	TP19/65	0.5	Normal	25/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/66_0.5	TP19/66	0.025	Normal	25/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	160	160	<20	<20	<50	<50	160	160	<100	-
TP19/66_1.0	TP19/66	0.9	Normal	25/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/67_0.1	TP19/67	0.05	Normal	25/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	610	-	510	1120	<20	<20	<50	<50	990	1210	220	-
TP19/67_1.0	TP19/67	0.9	Normal	25/07/2019	7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/07_0.1	TP19/07	0.05	Normal	2/08/2019	8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	41	1500	-	130	1671	<20	<20	220	220	1300	1520	<100	-
TP19/07_0.1	TP19/07	0.1	Normal	31/07/2019	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.4	TP19/07	0.4	Normal	31/07/2019	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.4	TP19/07	0.45	Normal	2/08/2019	8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	550	2300	-	73	2923	<20	<20	1300	1300	1500	2800	<100	-
MW11/23_0.3	MW11/23	0.3	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/23_3.5	MW11/23	3.5	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/24_0.4	MW11/24	0.4	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	180	<50 - 180	-	-	-	-	-	-	-	-
MW11/24_1.6	MW11/24	1.6	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/27_0.6	MW11/27	0.6	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/27_1.9	MW11/27	1.9	Normal	30/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/31_0.5	MW11/31	0.5	Normal	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/31_2.2	MW11/31	2.2	Normal	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/33_0.5	MW11/33	0.5	Normal	28/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	110	<50 - 110	-	-	-	-	-	-	-	-
MW11/33_0.8	MW11/33	0.8	Normal	29/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	140	1200	-	210	140 - 1600	-	-	-	-	-	-	-	-
MW11/33_2.0	MW11/33	2	Normal	29/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/34_0.4	MW11/34	0.4	Normal	27/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/34_3.5	MW11/34	3.5	Normal	28/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/38_0.45	MW11/38	0.45	Normal	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_260911_01	MW11/38	0.45	Field_D	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
T_260911_01	MW11/38	0.45	Field_D	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/38_2.5	MW11/38	2.5	Normal	26/09/2011	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW12/16_0.5	MW12/16	0.5	Normal	5/03/2012	9	<0.5	<0.5	1.5	<0.5	<1	<1.5	1.5 - 2.75	15	-	530	180	230	<100	710 - 760	25	24	630	620	<100	-	<100	-
MW12/16_2.0	MW12/16	2	Normal	5/03/2012	9	1.2	12	5.2	9.1	25	34 - 34.1	52.4 - 53	120	-	400	<100	<200	<100	400 - 500	160	110	400	390	<100	-	<100	-
MW12/16_6.0	MW12/16	6	Normal	5/03/2012	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
D_050312_01	MW12/16		Field_D	5/03/2012	9	<0.5	<0.5	3.2	<0.5	<1	<1.5	3.2 - 4.45	58	-	560	210	260	<100	770 - 820	79	76	690	680	<100	-	<100	-
T_050312_01	MW12/16		Interlab_D	5/03/2012	9	<0.2	<0.5	4	<0.5	<0.5	<0.5	4 - 4.6	89	-	380	160	210	<100	540 - 590	122	118	480	-	<100	480	<100	-
MW12/17_0.4	MW12/17	0.4	Normal	5/03/2012	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW12/17_2.0	MW12/17	2	Normal	5/03/2012	9	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW(SB)18/06_0.3	SB18/06	0.3	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/06_1.2	SB18/06	1.2	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/06_3.0	SB18/06	3	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/06_5.0	SB18/06	5	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/05_0.5	TP18/05	0.5	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/05_1.2	TP18/05	1.2	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/05_2.7	TP18/05	2.7	Normal	7/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/09_0.4_20180207	TP18/09	0.4	Normal	8/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/09_0.6_20180207	TP18/09	0.6	Normal	8/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	130	130	<100	-
TP18/09_0.7_20180207	TP18/09	0.7	Normal	8/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/09_0.85_20180207	TP18/09	0.85	Normal	8/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	100	-	<100	100	<10	<10	50	50	<100	50	<100	-
TP18/09_1.0_20180207	TP18/09	1	Normal	8/02/2018	9	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	90	180	-	<100	270	13	13	140	140	150	290	<100	-
TP19/42_0.4	TP19/42	0.4	Normal	24/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	77	2400	2300	-	220	4920	180	180	2600	2597.7	1800	4400	<100	-
TP19/42_2.2	TP19/42	2.2	Normal	24/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/47_0.3	TP19/47	0.3	Normal	31/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/47_0.3	TP19/47	0.4	Normal	29/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	120	4100	490	-	110	4700	300	300	4200	4182	220	4420	<100	-
TP19/47_2.0	TP19/47	1.9	Normal	29/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/53_0.3	TP19/53	0.4	Normal	29/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/53_1.0	TP19/53	1	Normal	29/07/2019	9	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
MW11/25_0.3	MW11/25	0.3	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/25_3.0	MW11/25	3	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/26_0.4	MW11/26	0.4	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/26_2.3	MW11/26	2.3	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/28_0.2	MW11/28	0.2	Normal	5/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_051011_03	MW11/28	0.2	Field_D	5/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/28_1.2	MW11/28	1.2	Normal	5/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	370	3600	-	<100	370 - 4000	-	-	-	-	-	-	-	-
D_051011_02	MW11/28	1.2	Field_D	5/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	330	3100	-	<100	330 - 3400	-	-	-	-	-	-	-	-
T_051011_01	MW11/28	1.2	Interlab_D	6/10/2011	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	770	4700	4870	170	5640	<10	<10	2210	-	3200	5510	100	-
MW11/28_3.2	MW11/28	3.2	Normal	5/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	23	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/29_0.35	MW11/29	0.35	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/29_4.0	MW11/29	4	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/30_0.35	MW11/30	0.35	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/30_2.9	MW11/30	2.9	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/32_0.4	MW11/32	0.4	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_041011_01	MW11/32	0.4	Field_D	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
T_041011_01	MW11/32	0.4	Interlab_D	4/10/2011	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	<200	<100	<50	<10	<10	<50	-	<100	<50	<100	-
MW11/32_2.8	MW11/32	2.8	Normal	4/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	510	-	180	<50 - 690	-	-	-	-	-	-	-	-
MW11/35_0.25	MW11/35	0.25	Normal	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/35_2.4	MW11/35	2.4	Normal	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	410	-	160	<50 - 570	-	-	-	-	-	-	-	-
MW11/36_0.2	MW11/36	0.2	Normal	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_061011_01	MW11/36	0.2	Field_D	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/36_1.3	MW11/36	1.3	Normal	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	440	3400	-	810	440 - 4700	-	-	-	-	-	-	-	-
MW11/36_3.2	MW11/36	3.2	Normal	6/10/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/37_0.4	MW11/37	0.4	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/37_2.9	MW11/37	2.9	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/39_0.4	MW11/39	0.4	Normal	27/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	280	-	160	<50 - 440	-	-	-	-	-	-	-	-
MW11/39_1.1	MW11/39	1.1	Normal	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	53	1300	-	400	53 - 1800	-	-	-	-	-	-	-	-
MW11/39_2.0	MW11/39	2	Normal	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/40_0.35	MW11/40	0.35	Normal	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/40_1.3	MW11/40	1.3	Normal	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	530	-	720	<50 - 1300	-	-	-	-	-	-	-	-
MW11/40_4.5	MW11/40	4.5	Normal	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_280911_01	MW11/40		Field_D	28/09/2011	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	400	-	570	<50 - 970	-	-	-	-	-	-	-	-
MW12/18_1.0	MW12/18	1	Normal	6/03/2012	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	17	-	120	400	450	<100	520 - 570	26	26	240	240	260	-	<100	-
D_060312_01	MW12/18		Field_D	6/03/2012	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	12	-	180	650	700	<100	830 - 880	<20	<20	380	380	440	-	<100	-
MW12/19_0.2	MW12/19	0.2	Normal	5/03/2012	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	180	230	<100	180 - 255	<20	<20	<50	<50	190	-	<100	-
MW12/19_0.8	MW12/19	0.8	Normal	5/03/2012	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	15	-	220	290	340	<100	510 - 560	24	24	320	320	190	-	<100	-
MW(SB)18/07_1.2	SB18/07	1.2	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	157	-	1450	160	-	<100	1610	234	234	1310	1290	<100	1310	<100	-
MW(SB)18/10_0.3	SB18/10	0.3	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/10_1.2	SB18/10	1.2	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
MW(SB)18/10_3.0	SB18/10	3	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/04_0.3_180209	TP18/04	0.3	Normal	9/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/04_1.2_180209	TP18/04	1.2	Normal	9/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP04_2.1_180209	TP18/04		Normal	9/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-

						TRH Silica Gel Cleanup									TRH Aliphatic/Aromatic Split													
						TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C5-C7 (Benzene) Aromatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						20	50	50	50	50	100	50	100	50	0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10
CRC Care (2011) Direct Contact HSL D - Comm/Ind																												
CRC Care (2011) Direct Contact Intrusive Maint. Worker																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)																												
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)																												
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																							
TP19/25_0.5	TP19/25	0.65	Normal	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/25_1.3	TP19/25	1.3	Normal	15/07/2019	4	2100	3100	17,800	-	10,000	13,000	5700	1100	-	<1	<100	360	1200	2400	2500	6600	-	100	95	130	1700	4500	13,000
TP19/25_1.3	TP19/25	1.4	Normal	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/26_0.5	TP19/26	0.5	Normal	16/07/2019	4	<20	<50	150	-	150	130	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/26_1.0	TP19/26	1	Normal	16/07/2019	4	<20	<50	318	-	98	230	220	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/28_0.1	TP19/28	0.1	Normal	19/07/2019	4	<20	<50	600	-	390	530	210	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_190719	TP19/28	0.1	Field_D	19/07/2019	4	<20	<50	830	-	540	730	290	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_190719	TP19/28	0.1	Interlab_D	19/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/28_1.0	TP19/28	1	Normal	19/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/29_1.8	TP19/29	1.8	Normal	22/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/29_2.2	TP19/29	2.2	Normal	22/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/30_0.4	TP19/30	0.4	Normal	22/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_220719	TP19/30	0.4	Field_D	22/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/30_1.2	TP19/30	1.2	Normal	22/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_220719	TP19/30		Interlab_D	22/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/31_1.2	TP19/31	1.2	Normal	22/07/2019	4	37	91	237	-	200	160	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/31_2.5	TP19/31	2.5	Normal	22/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/74_1.5	TP19/74	1.5	Normal	19/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/74_2.5	TP19/74	2.5	Normal	19/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/75_1.5	TP19/75	1.5	Normal	19/07/2019	4	3300	4800	17,100	-	8100	9500	5700	1400	-	<0.2	<20	310	820	1700	1500	2100	-	1.1	6.3	83	510	740	1500
TP19/75_3.0	TP19/75	3	Normal	19/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/76_1.5	TP19/76	1.5	Normal	19/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/76_2.2	TP19/76	2.2	Normal	19/07/2019	4	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/77_1.5	TP19/77	1.5	Normal	15/07/2019	4	1500	2900	21,800	-	15,000	17,000	5300	1400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D02_150719	TP19/77	1.5	Field_D	15/07/2019	4	1100	2200	17,700	-	12,000	14,000	4600	1700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T02_150719	TP19/77	1.5	Interlab_D	15/07/2019	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/77_4.0	TP19/77	4	Normal	15/07/2019	4	30,000	38,000	76,600	-	37,000	30,000	9600	4800	-	24	1000	2300	16,000	27,000	19,000	22,000	-	75	550	2200	11,000	12,000	23,000
MW11/16_0.45	MW11/16	0.45	Normal	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/16_3.3	MW11/16	3.3	Normal	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/17_1.0	MW11/17	1	Normal	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_220911_01	MW11/17	1	Field_D	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T-220911-01	MW11/17	1	Interlab_D	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/17_2.5	MW11/17	2.5	Normal	22/09/2011	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/39_0.2	TP19/39	0.25	Normal	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/39_0.4	TP19/39	0.35	Normal	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/39_0.4	TP19/39	0.4	Normal	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/40_0.1	TP19/40	0.2	Normal	30/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/40_0.2	TP19/40	0.2	Normal	30/07/2019	5	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/40_0.2	TP19/40	2	Normal	30/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/41_0.2	TP19/41	0.25	Normal	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_290719	TP19/41	0.25	Field_D	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TO1_290719	TP19/41	0.25	Interlab_D	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/41_0.4	TP19/41	0.4	Normal	29/07/2019	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/41_0.4	TP19/41	0.4	Normal	31/07/2019	5	67	64	67	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/32_0.3_20180208	TP18/32	0.3	Normal	8/02/2018	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/32_1.2_20180208	TP18/32	1.2	Normal	8/02/2018	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/32_1.4_20180208	TP18/32	1.4	Normal	8/02/2018	6	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/32_3.0_20180208	TP18/32	3	Normal	8/02/2018	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/45_1.0	TP19/45	1.1	Normal	25/07/2019	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/45_3.0	TP19/45	2.9	Normal	25/07/2019	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/46_0.05	TP19/46	0.1	Normal	25/07/2019	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/46_2.0	TP19/46	2	Normal	25/07/2019	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/01_0.1	HA19/01	0.05	Normal	2/08/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/01_0.1	HA19/01	0.1	Normal	31/07/2019	7	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/01_0.5	HA19/01	0.45	Normal	2/08/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/02_0.1	HA19/02	0.15	Normal	2/08/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/02_0.4	HA19/02	0.4	Normal	31/07/2019	7	600	900	1180	-	580	280	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/02_0.4	HA19/02	0.45	Normal	2/08/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/62_0.1	TP19/62	0.2	Normal	24/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/63_0.1	TP19/63	0.05	Normal	24/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/63_0.6	TP19/63	0.6	Normal	24/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/65_0.1	TP19/65	0.5	Normal	25/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/66_0.5	TP19/66	0.025	Normal	25/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/66_1.0	TP19/66	0.9	Normal	25/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/67_0.1	TP19/67	0.05	Normal	25/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/67_1.0	TP19/67	0.9	Normal	25/07/2019	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.1	TP19/07	0.05	Normal	2/08/2019	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.1	TP19/07	0.1	Normal	31/07/2019	8	<20	<50	470	-	300	430	170	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.4	TP19/07	0.4	Normal	31/07/2019	8	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/07_0.4	TP19/07	0.45	Normal	2/08/2019	8	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	56	820	840	160	-	<0.1	<1	18	130	190	89
MW11/23_0.3	MW11/23	0.3	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/23_3.5	MW11/23	3.5	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/24_0.4	MW11/24	0.4	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/24_1.6	MW11/24	1.6	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/27_0.6	MW11/27	0.6	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/27_1.9	MW11/27	1.9	Normal	30/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/31_0.5	MW11/31	0.5	Normal	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/31_2.2	MW11/31	2.2	Normal	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/33_0.5	MW11/33	0.5	Normal	28/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/33_0.8	MW11/33	0.8	Normal	29/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/33_2.0	MW11/33	2	Normal	29/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/34_0.4	MW11/34	0.4	Normal	27/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/34_3.5	MW11/34	3.5	Normal	28/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/38_0.45	MW11/38	0.45	Normal	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_260911_01	MW11/38	0.45	Field_D	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_260911_01	MW11/38	0.45	Field_D	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/38_2.5	MW11/38	2.5	Normal	26/09/2011	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/16_0.5	MW12/16	0.5	Normal	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/16_2.0	MW12/16	2	Normal	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/16_6.0	MW12/16	6	Normal	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_050312_01	MW12/16		Field_D	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_050312_01	MW12/16		Interlab_D	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/17_0.4	MW12/17	0.4	Normal	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/17_2.0	MW12/17	2	Normal	5/03/2012	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/06_0.3	SB18/06	0.3	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/06_1.2	SB18/06	1.2	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/06_3.0	SB18/06	3	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/06_5.0	SB18/06	5	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/05_0.5	TP18/05	0.5	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/05_1.2	TP18/05	1.2	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/05_2.7	TP18/05	2.7	Normal	7/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/09_0.4_20180207	TP18/09	0.4	Normal	8/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/09_0.6_20180207	TP18/09	0.6	Normal	8/02/2018	9	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/09_0.7_20180207	TP18/09	0.7	Normal	8/02/2018	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/09_0.85_20180207	TP18/09	0.85	Normal	8/02/2018	9	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/09_1.0_20180207	TP18/09	1	Normal	8/02/2018	9	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/42_0.4	TP19/42	0.4	Normal	24/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/42_2.2	TP19/42	2.2	Normal	24/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/47_0.3	TP19/47	0.3	Normal	31/07/2019	9	470	440	470	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/47_0.3	TP19/47	0.4	Normal	29/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/47_2.0	TP19/47	1.9	Normal	29/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/53_0.3	TP19/53	0.4	Normal	29/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/53_1.0	TP19/53	1	Normal	29/07/2019	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/25_0.3	MW11/25	0.3	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/25_3.0	MW11/25	3	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/26_0.4	MW11/26	0.4	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/26_2.3	MW11/26	2.3	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/28_0.2	MW11/28	0.2	Normal	5/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_051011_03	MW11/28	0.2	Field_D	5/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/28_1.2	MW11/28	1.2	Normal	5/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_051011_02	MW11/28	1.2	Field_D	5/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_051011_01	MW11/28	1.2	Interlab_D	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/28_3.2	MW11/28	3.2	Normal	5/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/29_0.35	MW11/29	0.35	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/29_4.0	MW11/29	4	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/30_0.35	MW11/30	0.35	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/30_2.9	MW11/30	2.9	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/32_0.4	MW11/32	0.4	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_041011_01	MW11/32	0.4	Field_D	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_041011_01	MW11/32	0.4	Interlab_D	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/32_2.8	MW11/32	2.8	Normal	4/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/35_0.25	MW11/35	0.25	Normal	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/35_2.4	MW11/35	2.4	Normal	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/36_0.2	MW11/36	0.2	Normal	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_061011_01	MW11/36	0.2	Field_D	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/36_1.3	MW11/36	1.3	Normal	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/36_3.2	MW11/36	3.2	Normal	6/10/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/37_0.4	MW11/37	0.4	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/37_2.9	MW11/37	2.9	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/39_0.4	MW11/39	0.4	Normal	27/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/39_1.1	MW11/39	1.1	Normal	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/39_2.0	MW11/39	2	Normal	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/40_0.35	MW11/40	0.35	Normal	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/40_1.3	MW11/40	1.3	Normal	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/40_4.5	MW11/40	4.5	Normal	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_280911_01	MW11/40		Field_D	28/09/2011	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/18_1.0	MW12/18	1	Normal	6/03/2012	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_060312_01	MW12/18		Field_D	6/03/2012	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/19_0.2	MW12/19	0.2	Normal	5/03/2012	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/19_0.8	MW12/19	0.8	Normal	5/03/2012	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/07_1.2	SB18/07	1.2	Normal	7/02/2018	10	530	590	680	590	150	<100	<100	<100	570	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/10_0.3	SB18/10	0.3	Normal	7/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/10_1.2	SB18/10	1.2	Normal	7/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW(SB)18/10_3.0	SB18/10	3	Normal	7/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/04_0.3_180209	TP18/04	0.3	Normal	9/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/04_1.2_180209	TP18/04	1.2	Normal	9/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04_2.1_180209	TP18/04		Normal	9/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

						BTEX							TRH NEPM (1999)							TRH NEPM (2013)							TRH
						Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH (Total)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.001	0.001	0.001	0.001	0.002	0.003	0.2	10	0.02	0.05	0.1		0.1	0.1	0.02	0.02	0.05	0.05	0.1	0.1	0.1	100
CRC Care (2011) Direct Contact HSL D - Comm/Ind						430	99000	27000			81000										26000		20000	27000		38000	
CRC Care (2011) Direct Contact Intrusive Maint. Worker						1100	120000	85000			130000										82000		62000	85000		120000	
NEPM (1999) HIL D - Commercial/Industrial																											
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m						3	NL	NL			230										260		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m						3	NL	NL			NL										370		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m						3	NL	NL			NL										630		NL				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																				700		1000		3500		10000	
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)						77[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)						160[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																						
TP04_2.5_180209	TP18/04		Normal	9/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/08_0.3	TP18/08	0.3	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	560	-	300	860	<10	<10	<50	<50	760	960	200	-
TP18/08_0.8	TP18/08	0.8	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	360	-	380	740	<10	<10	<50	<50	670	960	290	-
TP18/08_1.2	TP18/08	1.2	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	390	-	<100	390	<10	<10	90	90	380	470	<100	-
TP18/08_1.6	TP18/08	1.6	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/08_2.5	TP18/08	2.5	Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	430	1150	-	490	2070	<10	<10	400	400	1540	2130	190	-
TP08_2.6	TP18/08		Normal	7/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	380	-	360	740	<10	<10	<50	<50	600	820	220	-
TP18/11_0.3_20180208	TP18/11	0.3	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/11_0.4_20180208	TP18/11	0.4	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/11_1.2_20180208	TP18/11	1.2	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	250	2330	-	1020	3600	<10	<10	510	510	2810	3910	590	-
TP18/11_1.9_20180208	TP18/11	1.9	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	90	870	-	620	1580	<10	<10	180	180	1230	1770	360	-
TP18/11_2.25_20180208	TP18/11	2.25	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	170	-	100	270	<10	<10	<50	<50	240	240	<100	-
TP18/11_2.7_20180208	TP18/11	2.7	Normal	8/02/2018	10	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	360	-	400	760	<10	<10	<50	<50	610	920	310	-
TP19/43_1.2	TP19/43	1.2	Normal	25/07/2019	10	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	5000	-	4000	9000	<20	<20	60	60	5400	6560	1100	-
TP19/43_1.8	TP19/43	1.7	Normal	25/07/2019	10	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	170	-	70	240	<20	<20	<50	<50	210	210	<100	-
TP19/44_0.5	TP19/44	0.5	Normal	30/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/44_0.5	TP19/44	0.55	Normal	30/07/2019	10	<0.5	<0.5	<0.5	<0.5	<1	<1.5	-	-	<100	1800	2800	-	200	4800	<100	<100	2700	2680	1900	4600	<100	-
TP19/44_2.5	TP19/44	2.4	Normal	30/07/2019	10	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/48_0.6	TP19/48	0.6	Normal	24/07/2019	10	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	280	1800	-	430	2510	<20	<20	700	700	1600	2300	<100	-
TP19/48_1.0	TP19/48	0.9	Normal	24/07/2019	10	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	64	-	<50	64	<20	<20	<50	<50	<100	<100	<100	-
BH11|01-0.1	BH11/01	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	1200	1480	280	1500 - 1505	<20	<20	160	140	1400	-	<100	-
BH11|01-0.8	BH11/01	0.85	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	17	-	300	810	860	<100	1100 - 1160	29	29	580	490	510	-	<100	-
DUP_01	BH11/01	0.85	Field_D	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	16	-	87	260	310	<100	350 - 397	29	29	190	160	150	-	<100	-
BH11|01-1.5	BH11/01	1.55	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|02-0.1	BH11/02	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	190	140	140 - 215	<20	<20	<50	<50	150	-	<100	-
BH11|02-1.4	BH11/02	1.45	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|03-0.1	BH11/03	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	480	880	400	880 - 905	<20	<20	<50	<50	860	-	120	-
BH11|03-1.5	BH11/03	1.55	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|04-0.1	BH11/04	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	58	530	580	<100	590 - 638	<20	<20	190	160	490	-	<100	-
BH11|04-1.0	BH11/04	1.05	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|04-1.7	BH11/04	1.75	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|05-0.1	BH11/05	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	140	950	1000	<100	1100 - 1140	<20	<20	440	390	680	-	<100	-
BH11|05-1.0	BH11/05	1.05	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|05-1.5	BH11/05	1.55	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH11|06-0.1	BH11/06	0.15	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	280	680	400	680 - 705	<20	<20	<50	<50	640	-	190	-
BH11|06-1.0	BH11/06	1.05	Normal	15/12/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5 - 0.75	<1.5 - 1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/29_0.65	BH12/29	0.65	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	750	1800	2070	270	2800 - 2820	23	23	1200	1200	1600	-	<100	-
BH12/29_1.3	BH12/29	1.3	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
D_140312_02	BH12/29		Field_D	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	370	980	1030	<100	1400	22	22	630	630	810	-	<100	-
T-140312-01	BH12/29		Interlab_D	14/03/2012	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	350	1110	1230	120	1580	25	25	570	-	930	1500	<100	-
BH12/30_0.25	BH12/30	0.25	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/30_1.3	BH12/30	1.3	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/31_0.1	BH12/31	0.1	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	660	710	<100	660 - 735	<20	<20	58	58	680	-	<100	-
BH12/31_0.4	BH12/31	0.4	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	76	110	160	<100	190 - 236	<20	<20	120	120	<100	-	<100	-
BH12/31_1.4	BH12/31	1.4	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/32_0.2	BH12/32	0.2	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	650	600	650	<100	1300	<20	<20	880	880	370	-	<100	-
BH12/32_1.2	BH12/32	1.2	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/33_0.2	BH12/33	0.2	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	57	-	2700	10,000	10,520	520	13,000 - 13,220	92	92	6200	6200	7700	-	230	-
BH12/33_0.6	BH12/33	0.6	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	55	-	2200	8400	8670	270	10,870 - 11,000	83	83	5100	5100	6100	-	110	-
BH12/34_0.3	BH12/34	0.3	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	11	-	200	220	270	<100	420 - 470	25	25	300	300	120	-	<100	-
BH12/34_0.6	BH12/34	0.6	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	85	-	820	860	910	<100	1700 - 1730	200	200	1200	1200	470	-	<100	-
BH12/34_1.1	BH12/34	1.1	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	35	-	93	110	160	<100	200 - 253	67	67	140	140	<100	-	<100	-
D_140312_01	BH12/34		Field_D	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	29	-	460	530	580	<100	990 - 1040	63	63	700	700	300	-	<100	-
BH12/35_0.1	BH12/35	0.1	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	680	3800	4580	780	5260 - 5300	<20	<20	1600	1600	3700	-	290	-
BH12/35_1.05	BH12/35	1.05	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/36_0.7	BH12/36	0.7	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	320	2300	2580	280	2900	<20	<20	700	700	2300	-	100	-
BH12/36_1.3	BH12/36	1.3	Normal	14/03/2012	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
HA19/03_0.05	HA19/03	0.05	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_0.8	HA19/03	0.8	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_0.8	HA19/03	0.85	Normal	31/07/2019	11	<0.1	<0.1	0.5	<0.1	0.5	0.5	-	-	<20	49	200	-	<50	249	24	23	100	94.4	140	240	<100	-
HA19/03_1.5	HA19/03	1.45	Normal	31/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/03_1.5	HA19/03	1.5	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/04_0.4	HA19/04	0.4	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/04_0.4	HA19/04	0.45	Normal	31/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	68	1300	2200	-	220	3720	200	200	2100	2100	1500	3600	<100	-
HA19/04_1.0	HA19/04	0.95	Normal	31/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/04_1.0	HA19/04	1	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/05_0.05	HA19/05	0.025	Normal	31/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	75	-	<50	75	<20	<20	<50	<50	<100	<100	<100	-
HA19/05_0.05	HA19/05	0.05	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/05_0.3	HA19/05	0.25	Normal	31/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	1200	120	-	<50	1320	27	27	1200	1200	<100	1200	<100	-
HA19/05_0.3	HA19/05	0.3	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/06_1.0	HA19/06	1	Normal	1/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/06_2.2	HA19/06	2.1	Normal	1/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/07_0.05	HA19/07	0.025	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	60	5400	-	2100	7560	<20	<20	320	320	6600	7840	920	-
HA19/07_0.05	HA19/07	0.05	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.3	HA19/07	0.3	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.3	HA19/07	0.35	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	31	360	-	88	479	<20	<20	69	69	370	439	<100	-
HA19/08_0.8	HA19/08	0.8	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/08_0.8	HA19/08	0.85	Normal	2/08/2019	11	<0.4	<0.4	<0.4	0.4	<0.8	<1.2	-	-	<80	220	470	-	50	740	<80	<80	310	281	380	690	<100	-
HA19/08_1.2	HA19/08	1.25	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/09_0.8	HA19/09	0.75	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	2300	9700	-	340	12,340	<20	<20	5400	5400	6300	11,900	200	-
HA19/09_0.8	HA19/09	0.8	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/09_1.4	HA19/09	1.4	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/09_1.4	HA19/09	1.4	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	46	190	-	<50	236	<20	<20	100	100	120	220	<100	-
HA19/10_0.05	HA19/10	0.025	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	200	-	190	390	<20	<20	<50	<50	350	350	<100	-
HA19/10_0.05	HA19/10	0.05	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/10_0.2	HA19/10	0.25	Normal	2/08/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
MW11/02_0.5	MW11/02	0.5	Normal	19/09/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	270	-	260	<50 - 530	-	-	-	-	-	-	-	-
MW11/02_2.3	MW11/02	2.3	Normal	19/09/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/03_0.8	MW11/03	0.8	Normal	6/10/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/03_3.0	MW11/03	3	Normal	6/10/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_061011_02	MW11/03	3	Field_D	6/10/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/03_5.8	MW11/03	5.8	Normal	6/10/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/04_1.0	MW11/04	1	Normal	20/09/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	110	-	2100	2700	-	210	2100 - 5000	-	-	-	-	-	-	-	-
MW11/04_2.0	MW11/04	2	Normal	21/09/2011	11	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
SB18/12_0.3_20180214	SB18/12	0.3	Normal	14/02/2018	11	<0.2	<0.5	1.7	<0.5	6.5	6.5	8.2	87	-	2520	6400	-	460	9380	149	141	3700	3680	5500	9350	150	-
SB18/12_1.2_20180214	SB18/12	1.2	Normal	14/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	28	-	660	1660	-	200	2520	66	66	1000	970	1430	2570	140	-
SB18/12_2.1_20180214	SB18/12	2.1	Normal	14/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB18/13_0.3_20180214	SB18/13	0.3	Normal	14/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	660	2310	-	170	3140	14	14	1280	1280	1800	3210	130	-
SB18/13_0.9_20182014	SB18/13	0.9	Normal	14/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	77	-	<50	<100	-	<100	<50	130	130	<50	<50	<100	<50	<100	-
SB18/14_0.3_180209	SB18/14	0.3	Normal	9/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB18/14_1.2_180209	SB18/14	1.2	Normal	9/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB18/14_2.4_180209	SB18/14	2.4	Normal	9/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB18/16_0.3_20180214	SB18/16	0.3	Normal	14/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	44	-	670	3030	-	710	4410	56	56	1150	1150	3050	4550	350	-
TP18/33_0.3_20180208	TP18/33	0.3	Normal	8/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/33_1.2_20180208	TP18/33	1.2	Normal	8/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/33_3.0_20180208	TP18/33	3	Normal	8/02/2018	11	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/79_0.3	TP19/79	0.275	Normal	26/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	930	1700	-	280	2910	<20	<20	1400	1400	1400	2800	<100	-
TP19/79_1.2	TP19/79	1.2	Normal	26/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/80_0.5	TP19/80	0.55	Normal	26/07/2019	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
BH12/16_0.2	BH12/16	0.2	Normal	15/03/2012	12	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	80	-	780	170	220	<100	950 - 1000	130	130	790	780	<100	-	<100	-
BH12/16_0.6	BH12/16	0.6	Normal	15/03/2012	12	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	300	-	490	<100	<200	<100	490 - 590	360	360	430	420	<100	-	<100	-
BH12/17_0.2	BH12/17	0.2	Normal	15/03/2012	12	0.8	1.5	1	<0.5	2.2	2.45 - 2.5	5.7 - 5.8	570	-	1900	330	380	<100	2200 - 2280	700	690	1800	1800	120	-	<100	-
HA19/11_0.05	HA19/11	0.05	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_0.5	HA19/11	0.45	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/11_0.5	HA19/11	0.5	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_1.4	HA19/11	1.35	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/11_1.4	HA19/11	1.4	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/12_0.1	HA19/12	0.1	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50 - 81	-	<50 - 67	<50 - 148	<20	<20	<50	<50	<100 - 120	<100 - 120	<100	-
HA19/12_0.4	HA19/12	0.35	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	270	540	160	-	<50	700	380	380	540	540	110	650	<100	-
HA19/12_0.4	HA19/12	0.4	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/13_0.1	HA19/13	0.05	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/13_0.1	HA19/13	0.1	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/13_0.7	HA19/13	0.65	Normal	31/07/2019	12	<0.1	<0.1	0.2	0.2	0.6	0.7	-	-	230	320	<50	-	<50	320	340	340	280	274.6	<100	280	<100	-
HA19/13_0.7	HA19/13	0.7	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/14_0.2	HA19/14	0.2	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/14_0.2	HA19/14	0.25	Normal	31/07/2019	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
HA19/14_0.5	HA19/14	0.45	Normal	31/07/2019	12	<0.1	<0.1	0.2	0.2	1.2	1.4	-	-	380	1000	80	-	<50	1080	580	580	860	851.8	<100	860	<100	-
D01_310719	HA19/14	0.45	Field_D	31/07/2019	12	<0.1	<0.1	0.2	0.2	1.2	1.4	-	-	300	990	86	-	<50	1076	470	470	850	843.3	<100	850	<100	-
HA19/14_0.5	HA19/14	0.5	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/18/01_0.3_20180214	SB18/01	0.3	Normal	14/02/2018	12	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	355	-	1120	410	-	<100	1530	590	590	1280	1280	190	1470	<100	-
QC18_100	SB18/01	0.3	Field_D	14/02/2018	12	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	526	-	940	460	-	<100	1400	730	730	1110	1110	220	1330	<100	-
SB18/18/02_0.3_20180214	SB18/02	0.3	Normal	14/02/2018	12	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/50_0.1	TP19/50	0.1	Normal	26/07/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/52_0.1	TP19/52	0.2	Normal	25/07/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	<20	<20	-	-	-	-	-	-
TP19/54_0.1	TP19/54	0.2	Normal	1/08/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/56_0.2	TP19/56	0.2	Normal	1/08/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/58_0.2	TP19/58	0.2	Normal	1/08/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/59_0.1	TP19/59	0.2	Normal	1/08/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/60_0.1	TP19/60	0.2	Normal	25/07/2019	13	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	-	-	-	-	-	<20	<20	-	-	-	-	-	-
TP19/02_0.2	TP19/02	0.2	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	250	-	290	540	<20	<20	<50	<50	460	600	140	-
TP19/36_0.4	TP19/36	0.4	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	290	-	280	570	<20	<20	<50	<50	500	500	<100	-
TP19/36_1.6	TP19/36	1.5	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/61_0.4	TP19/61	0.4	Normal	29/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/61_0.8	TP19/61	0.9	Normal	29/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/69_1.0	TP19/69	0.2	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/69_3.5	TP19/69	3.4	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/70_0.4	TP19/70	0.4	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	240	-	200	440	<20	<20	<50	<50	400	400	<100	-
TP19/70_1.0	TP19/70	1	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/71_0.2	TP19/71	0.2	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/71_0.6	TP19/71	0.6	Normal	30/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	220	-	160	380	<20	<20	<50	<50	340	340	<100	-
TP19/72_0.2	TP19/72	0.2	Normal	29/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	62	-	120	182	<20	<20	<50	<50	150	150	<100	-
TP19/72_0.2	TP19/72	0.2	Normal	31/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/72_0.5	TP19/72	0.5	Normal	29/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/73_0.4	TP19/73	0.4	Normal	29/07/2019	14	<0.2	<0.2	<0.2	<0.2	<0.4	<0.6	-	-	140	380	120	-	<50	500	230	230	390	388.5	<100	390	<100	-
TP19/73_0.4	TP19/73	0.4	Normal	31/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/73_0.9	TP19/73	0.9	Normal	29/07/2019	14	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
BH12/25_0.2	BH12/25	0.2	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/25_1.3	BH12/25	1.3	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/26_0.05	BH12/26	0.05	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/26_1.3	BH12/26	1.3	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/27_0.05	BH12/27	0.05	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/27_1.0	BH12/27	1	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/28_0.05	BH12/28	0.05	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	420	3000	4000	1000	4400 - 4420	<20	<20	870	4500	3500	-	340	-
BH12/28_1.4	BH12/28	1.4	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
D_160312_02	BH12/28		Field_D	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	1200	30,000	42,000	12,000	43,000 - 43,200	<20	<20	7300	7300	35,000	-	4800	-
T-160312-01	BH12/28		Interlab_D	16/03/2012	15	<0.2	0.8	<0.5	<0.5	<0.5	<0.5	0.8 - 1.4	13	-	940	16,600	21,080	4480	22,000 - 22,020	22	21	4000	-	16,600	22,700	2120	-
BH12/38_1.0	BH12/38	1	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	59	-	<50	<100	<200	<100	<100	76	76	<50	<50	<100	-	<100	-
BH12/38_1.4	BH12/38	1.4	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
D_160312_01	BH12/38		Field_D	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	120	-	<50	<100	<200	<100	<100	150	150	<50	<50	<100	-	<100	-
BH12/39_0.25	BH12/39	0.25	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
BH12/39_1.1	BH12/39	1.1	Normal	16/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW11/01_0.2	MW11/01	0.2	Normal	23/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	200	<50 - 200	-	-	-	-	-	-	-	-
MW11/01_2.4	MW11/01	2.4	Normal	23/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/05_0.3	MW11/05	0.3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	150	<50 - 150	-	-	-	-	-	-	-	-
MW11/05_2.3	MW11/05	2.3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/06_0.5	MW11/06	0.5	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/06_2.2	MW11/06	2.2	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/07_0.5	MW11/07	0.5	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/07_1.0	MW11/07	1	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	180	350	-	<100	180 - 530	-	-	-	-	-	-	-	-
MW11/07_5.0	MW11/07	5	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/08_0.5	MW11/08	0.5	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	240	<50 - 240	-	-	-	-	-	-	-	-
MW11/08_3.2	MW11/08	3.2	Normal	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_200901_01	MW11/08	3.2	Field_D	20/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/09_1.0	MW11/09	1	Normal	21/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/09_3.3	MW11/09	3.3	Normal	21/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/10_0.450	MW11/10	0.45	Normal	21/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	56	1400	-	990	56 - 2400	-	-	-	-	-	-	-	-
MW11/10_3.4	MW11/10	3.4	Normal	21/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	180	<50 - 180	-	-	-	-	-	-	-	-
MW11/11_0.4	MW11/11	0.4	Normal	26/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	100	780	-	120	100 - 1000	-	-	-	-	-	-	-	-
MW11/11_2.2	MW11/11	2.2	Normal	26/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/12_0.3	MW11/12	0.3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	320	<50 - 320	-	-	-	-	-	-	-	-
MW11/12_3.0	MW11/12	3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	270	<50 - 270	-	-	-	-	-	-	-	-
MW11/13_0.3	MW11/13	0.3	Normal	26/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/13_3.6	MW11/13	3.6	Normal	26/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/14_0.3	MW11/14	0.3	Normal	23/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	430	-	410	<50 - 840	-	-	-	-	-	-	-	-
MW11/14_2.8	MW11/14	2.8	Normal	23/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-

						TRH Silica Gel Cleanup									TRH Aliphatic/Aromatic Split													
						TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C5-C7 (Benzene) Aromatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						20	50	50	50	50	100	50	100	50	0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10
CRC Care (2011) Direct Contact HSL D - Comm/Ind																												
CRC Care (2011) Direct Contact Intrusive Maint. Worker																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)																												
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)																												
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																							
TP04_2.5_180209	TP18/04		Normal	9/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/08_0.3	TP18/08	0.3	Normal	7/02/2018	10	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/08_0.8	TP18/08	0.8	Normal	7/02/2018	10	<50	<50	560	700	290	470	270	230	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/08_1.2	TP18/08	1.2	Normal	7/02/2018	10	<50	<50	170	200	170	200	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/08_1.6	TP18/08	1.6	Normal	7/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/08_2.5	TP18/08	2.5	Normal	7/02/2018	10	250	290	1010	1120	400	610	360	220	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08_2.6	TP18/08		Normal	7/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_0.3_20180208	TP18/11	0.3	Normal	8/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_0.4_20180208	TP18/11	0.4	Normal	8/02/2018	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_1.2_20180208	TP18/11	1.2	Normal	8/02/2018	10	180	300	2590	2690	1700	1970	710	420	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_1.9_20180208	TP18/11	1.9	Normal	8/02/2018	10	<50	60	780	930	400	700	380	170	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_2.25_20180208	TP18/11	2.25	Normal	8/02/2018	10	<50	<50	130	160	130	160	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/11_2.7_20180208	TP18/11	2.7	Normal	8/02/2018	10	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/43_1.2	TP19/43	1.2	Normal	25/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/43_1.8	TP19/43	1.7	Normal	25/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/44_0.5	TP19/44	0.5	Normal	30/07/2019	10	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/44_0.5	TP19/44	0.55	Normal	30/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/44_2.5	TP19/44	2.4	Normal	30/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/48_0.6	TP19/48	0.6	Normal	24/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/48_1.0	TP19/48	0.9	Normal	24/07/2019	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|01-0.1	BH11/01	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|01-0.8	BH11/01	0.85	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DUP_01	BH11/01	0.85	Field_D	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|01-1.5	BH11/01	1.55	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|02-0.1	BH11/02	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|02-1.4	BH11/02	1.45	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|03-0.1	BH11/03	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|03-1.5	BH11/03	1.55	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|04-0.1	BH11/04	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|04-1.0	BH11/04	1.05	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|04-1.7	BH11/04	1.75	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|05-0.1	BH11/05	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|05-1.0	BH11/05	1.05	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|05-1.5	BH11/05	1.55	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|06-0.1	BH11/06	0.15	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11|06-1.0	BH11/06	1.05	Normal	15/12/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/29_0.65	BH12/29	0.65	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/29_1.3	BH12/29	1.3	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_140312_02	BH12/29		Field_D	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T-140312-01	BH12/29		Interlab_D	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/30_0.25	BH12/30	0.25	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/30_1.3	BH12/30	1.3	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/31_0.1	BH12/31	0.1	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/31_0.4	BH12/31	0.4	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/31_1.4	BH12/31	1.4	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/32_0.2	BH12/32	0.2	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/32_1.2	BH12/32	1.2	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/33_0.2	BH12/33	0.2	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/33_0.6	BH12/33	0.6	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/34_0.3	BH12/34	0.3	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/34_0.6	BH12/34	0.6	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/34_1.1	BH12/34	1.1	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_140312_01	BH12/34		Field_D	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/35_0.1	BH12/35	0.1	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/35_1.05	BH12/35	1.05	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/36_0.7	BH12/36	0.7	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/36_1.3	BH12/36	1.3	Normal	14/03/2012	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_0.05	HA19/03	0.05	Normal	31/07/2019	11	2200	5100	11,330	-	8900	5800	230	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_0.8	HA19/03	0.8	Normal	31/07/2019	11	<20 - 21	<50 - 68	190 - 7521	-	190 - 4500	180 - 6800	<50 - 3000	<100 - 750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_0.8	HA19/03	0.85	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	11	41	37	18	-	<0.1	<1	<10	28	57	35
HA19/03_1.5	HA19/03	1.45	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/03_1.5	HA19/03	1.5	Normal	31/07/2019	11	140	320	670	-	530	330	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/04_0.4	HA19/04	0.4	Normal	31/07/2019	11	<20	<50	<50 - 145	-	<50 - 52	<100 - 120	<50 - 93	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/04_0.4	HA19/04	0.45	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	190	430	1100	590	380	-	<0.1	<1	10	240	250	280
HA19/04_1.0	HA19/04	0.95	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/04_1.0	HA19/04	1	Normal	31/07/2019	11	<20	<50	77	-	77	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/05_0.05	HA19/05	0.025	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/05_0.05	HA19/05	0.05	Normal	31/07/2019	11	73	300	9073	-	7100	7300	1900	850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/05_0.3	HA19/05	0.25	Normal	31/07/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	640	540	<10	<10	-	<0.1	<1	<10	40	<10	<10
HA19/05_0.3	HA19/05	0.3	Normal	31/07/2019	11	<20	<50	175 - 370	-	94 - 260	160 - 340	81 - 110	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/06_1.0	HA19/06	1	Normal	1/08/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10
HA19/06_2.2	HA19/06	2.1	Normal	1/08/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.05	HA19/07	0.025	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.05	HA19/07	0.05	Normal	31/07/2019	11	<20	<50	470	-	270	420	200	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.3	HA19/07	0.3	Normal	31/07/2019	11	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/07_0.3	HA19/07	0.35	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	<10	<10	47	110	-	<0.1	<1	<10	<10	11	33
HA19/08_0.8	HA19/08	0.8	Normal	31/07/2019	11	27	60	147	-	120	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/08_0.8	HA19/08	0.85	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	<0.4	<40	<40	63	140	94	59	-	<0.4	<4	37	160	270	170
HA19/08_1.2	HA19/08	1.25	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/09_0.8	HA19/09	0.75	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	310	4300	4000	830	-	<0.1	<1	21	380	800	310
HA19/09_0.8	HA19/09	0.8	Normal	31/07/2019	11	<20	<50	<50	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/09_1.4	HA19/09	1.4	Normal	31/07/2019	11	950	1400	2480	-	1400	960	130	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/09_1.4	HA19/09	1.4	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/10_0.05	HA19/10	0.025	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/10_0.05	HA19/10	0.05	Normal	31/07/2019	11	<20	<50	190	-	110	170	80	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/10_0.2	HA19/10	0.25	Normal	2/08/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10
MW11/02_0.5	MW11/02	0.5	Normal	19/09/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/02_2.3	MW11/02	2.3	Normal	19/09/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/03_0.8	MW11/03	0.8	Normal	6/10/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/03_3.0	MW11/03	3	Normal	6/10/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_061011_02	MW11/03	3	Field_D	6/10/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/03_5.8	MW11/03	5.8	Normal	6/10/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/04_1.0	MW11/04	1	Normal	20/09/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/04_2.0	MW11/04	2	Normal	21/09/2011	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/12_0.3_20180214	SB18/12	0.3	Normal	14/02/2018	11	1530	2040	4430	4270	2730	2230	170	<100	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/12_1.2_20180214	SB18/12	1.2	Normal	14/02/2018	11	480	710	1440	1480	960	770	<100	<100	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/12_2.1_20180214	SB18/12	2.1	Normal	14/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/13_0.3_20180214	SB18/13	0.3	Normal	14/02/2018	11	530	970	1970	2020	1440	1050	<100	<100	970	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/13_0.9_20182014	SB18/13	0.9	Normal	14/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/14_0.3_180209	SB18/14	0.3	Normal	9/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/14_1.2_180209	SB18/14	1.2	Normal	9/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/14_2.4_180209	SB18/14	2.4	Normal	9/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/16_0.3_20180214	SB18/16	0.3	Normal	14/02/2018	11	420	710	2310	2250	1590	1540	300	<100	710	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/33_0.3_20180208	TP18/33	0.3	Normal	8/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/33_1.2_20180208	TP18/33	1.2	Normal	8/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/33_3.0_20180208	TP18/33	3	Normal	8/02/2018	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/79_0.3	TP19/79	0.275	Normal	26/07/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	44	440	310	500	-	<0.1	<1	27	370	330	590
TP19/79_1.2	TP19/79	1.2	Normal	26/07/2019	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/80_0.5	TP19/80	0.55	Normal	26/07/2019	11	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10
BH12/16_0.2	BH12/16	0.2	Normal	15/03/2012	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/16_0.6	BH12/16	0.6	Normal	15/03/2012	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/17_0.2	BH12/17	0.2	Normal	15/03/2012	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_0.05	HA19/11	0.05	Normal	31/07/2019	12	100	150	290	-	190	140	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_0.5	HA19/11	0.45	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10
HA19/11_0.5	HA19/11	0.5	Normal	31/07/2019	12	<50	<50	330	-	170	300	160	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_1.4	HA19/11	1.35	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/11_1.4	HA19/11	1.4	Normal	31/07/2019	12	120	83	350	-	110	180	120	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/12_0.1	HA19/12	0.1	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/12_0.4	HA19/12	0.35	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	<0.1	130	240	330	190	50	30	-	<0.1	1.4	12	36	<10	15
HA19/12_0.4	HA19/12	0.4	Normal	31/07/2019	12	<20	50	5400	-	3600	4800	1800	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/13_0.1	HA19/13	0.05	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/13_0.1	HA19/13	0.1	Normal	31/07/2019	12	9200	8200	9960	-	610	250	150	<100	-	<0.1	<10	700	2300	1300	23	230	-	<0.1	2.3	1900	1700	200	1100
HA19/13_0.7	HA19/13	0.65	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	<0.1	120	210	140	54	<10	<10	-	<0.1	6.4	41	44	<10	<10
HA19/13_0.7	HA19/13	0.7	Normal	31/07/2019	12	<20	<50	<50 - 238	-	<50 - 98	<100 - 190	<50 - 140	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/14_0.2	HA19/14	0.2	Normal	31/07/2019	12	270	330	400	-	130	<100	<50	<100	-	<0.1	<10	780	200	170	20	<10	-	<0.1	23	33	42	13	<10
HA19/14_0.2	HA19/14	0.25	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA19/14_0.5	HA19/14	0.45	Normal	31/07/2019	12	-	-	-	-	-	-	-	-	-	<0.1	190	360	520	240	<10	<10	-	<0.1	19	84	84	<10	<10
D01_310719	HA19/14	0.45	Field_D	31/07/2019	12	-	-	-	-	-	-	-	-	-	<0.1	160	290	540	280	23	<10	-	<0.1	15	48	49	<10	<10
HA19/14_0.5	HA19/14	0.5	Normal	31/07/2019	12	180 - 490	540 - 1000	1930 - 22,690	-	1400 - 13,000	1300 - 19,000	350 - 9200	<100 - 4200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/18/01_0.3_20180214	SB18/01	0.3	Normal	14/02/2018	12	400	500	570	500	170	<100	<100	<100	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_100	SB18/01	0.3	Field_D	14/02/2018	12	410	500	560	500	150	<100	<100	<100	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB18/18/02_0.3_20180214	SB18/02	0.3	Normal	14/02/2018	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/50_0.1	TP19/50	0.1	Normal	26/07/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/52_0.1	TP19/52	0.2	Normal	25/07/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/54_0.1	TP19/54	0.2	Normal	1/08/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/56_0.2	TP19/56	0.2	Normal	1/08/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/58_0.2	TP19/58	0.2	Normal	1/08/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/59_0.1	TP19/59	0.2	Normal	1/08/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/60_0.1	TP19/60	0.2	Normal	25/07/2019	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/02_0.2	TP19/02	0.2	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/36_0.4	TP19/36	0.4	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/36_1.6	TP19/36	1.5	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/61_0.4	TP19/61	0.4	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/61_0.8	TP19/61	0.9	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/69_1.0	TP19/69	0.2	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/69_3.5	TP19/69	3.4	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/70_0.4	TP19/70	0.4	Normal	30/07/2019	14	650	1200	5450	-	3400	3800	1400	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/70_1.0	TP19/70	1	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/71_0.2	TP19/71	0.2	Normal	30/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/71_0.6	TP19/71	0.6	Normal	30/07/2019	14	1500	1500	3120	-	1500	1200	120	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/72_0.2	TP19/72	0.2	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/72_0.2	TP19/72	0.2	Normal	31/07/2019	14	500	450	500	-	<50	<100	<50	<100	-	<0.1	<10	400	330	160	<10	<10	-	<0.1	15	160	97	14	15
TP19/72_0.5	TP19/72	0.5	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/73_0.4	TP19/73	0.4	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/73_0.4	TP19/73	0.4	Normal	31/07/2019	14	150	160	150	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/73_0.9	TP19/73	0.9	Normal	29/07/2019	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/25_0.2	BH12/25	0.2	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/25_1.3	BH12/25	1.3	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/26_0.05	BH12/26	0.05	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/26_1.3	BH12/26	1.3	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/27_0.05	BH12/27	0.05	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/27_1.0	BH12/27	1	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/28_0.05	BH12/28	0.05	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/28_1.4	BH12/28	1.4	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_160312_02	BH12/28		Field_D	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T-160312-01	BH12/28		Interlab_D	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/38_1.0	BH12/38	1	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/38_1.4	BH12/38	1.4	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_160312_01	BH12/38		Field_D	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/39_0.25	BH12/39	0.25	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12/39_1.1	BH12/39	1.1	Normal	16/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/01_0.2	MW11/01	0.2	Normal	23/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/01_2.4	MW11/01	2.4	Normal	23/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/05_0.3	MW11/05	0.3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/05_2.3	MW11/05	2.3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/06_0.5	MW11/06	0.5	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/06_2.2	MW11/06	2.2	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/07_0.5	MW11/07	0.5	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/07_1.0	MW11/07	1	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/07_5.0	MW11/07	5	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/08_0.5	MW11/08	0.5	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/08_3.2	MW11/08	3.2	Normal	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_200901_01	MW11/08	3.2	Field_D	20/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/09_1.0	MW11/09	1	Normal	21/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/09_3.3	MW11/09	3.3	Normal	21/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/10_0.450	MW11/10	0.45	Normal	21/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/10_3.4	MW11/10	3.4	Normal	21/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/11_0.4	MW11/11	0.4	Normal	26/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/11_2.2	MW11/11	2.2	Normal	26/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/12_0.3	MW11/12	0.3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/12_3.0	MW11/12	3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/13_0.3	MW11/13	0.3	Normal	26/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/13_3.6	MW11/13	3.6	Normal	26/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/14_0.3	MW11/14	0.3	Normal	23/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/14_2.8	MW11/14	2.8	Normal	23/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

						BTEX							TRH NEPM (1999)							TRH NEPM (2013)							TRH
						Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH (Total)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.001	0.001	0.001	0.001	0.002	0.003	0.2	10	0.02	0.05	0.1		0.1	0.1	0.02	0.02	0.05	0.05	0.1	0.1	0.1	100
CRC Care (2011) Direct Contact HSL D - Comm/Ind						430	99000	27000			81000										26000		20000	27000		38000	
CRC Care (2011) Direct Contact Intrusive Maint. Worker						1100	120000	85000			130000										82000		62000	85000		120000	
NEPM (1999) HIL D - Commercial/Industrial																											
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m						3	NL	NL			230										260		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m						3	NL	NL			NL										370		NL				
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m						3	NL	NL			NL										630		NL				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																				700		1000		3500		10000	
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)						77[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)						160[#1]	NL#1	NL#1			NL#1										NL#1		NL#1				
Field_ID	**Location_Code**	**Sample_Depth_Avg**	**Sample_Type**	**Sampled_Date_Time**	**RSI Area ID**																						
MW11/15_1.3	MW11/15	1.3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/15_3.0	MW11/15	3	Normal	22/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/22_0.5	MW11/22	0.5	Normal	28/09/2011	15	<0.5	<0.5	-	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/22_3.3	MW11/22	3.3	Normal	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/41_0.35	MW11/41	0.35	Normal	28/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	310	-	680	<50 - 990	-	-	-	-	-	-	-	-
MW11/41_2.3	MW11/41	2.3	Normal	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/42_0.6	MW11/42	0.6	Normal	28/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
D_290911_01	MW11/42	0.6	Field_D	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	180	-	190	<50 - 370	-	-	-	-	-	-	-	-
T_290911-01	MW11/42	0.6	Interlab_D	29/09/2011	15	<0.2	1.1	<0.5	<0.5	2.6	2.6 - 2.85	3.7 - 4.05	<10	-	<50	-	-	-	810 - 835	<10	<10	<50	-	680	970	290	-
MW11/42_2.2	MW11/42	2.2	Normal	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	230	590	-	<100	230 - 820	-	-	-	-	-	-	-	-
MW11/42_2.6	MW11/42	2.6	Normal	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/43_0.2	MW11/43	0.2	Normal	28/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/43_2.3	MW11/43	2.3	Normal	29/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/44_0.2	MW11/44	0.2	Normal	5/10/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/44_2.8	MW11/44	2.8	Normal	5/10/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/45_0.3	MW11/45	0.3	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/45_1.5	MW11/45	1.5	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	190	610	-	240	190 - 1000	-	-	-	-	-	-	-	-
MW11/45_2.4	MW11/45	2.4	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	89	-	110	<100	-	<100	110	-	-	-	-	-	-	-	-
MW11/45_3.2	MW11/45	3.2	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/45_5.0	MW11/45	5	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/46_0.3	MW11/46	0.3	Normal	27/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW11/46_2.0	MW11/46	2	Normal	28/09/2011	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	-	<100	<50	-	-	-	-	-	-	-	-
MW12/02_0.15	MW12/02	0.15	Normal	27/02/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW12/02_5.5	MW12/02	5.5	Normal	27/02/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW12/22_0.4	MW12/22	0.4	Normal	6/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
MW12/22_2.7	MW12/22	2.7	Normal	6/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
D_060312_02	MW12/22		Field_D	6/03/2012	15	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-
T_060312_01	MW12/22		Interlab_D	6/03/2012	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	<200	<100	<50	<10	<10	<50	-	<100	<50	<100	-
TP18/15_0.3-180209	TP18/15	0.3	Normal	9/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/17_0.3_20180208	TP18/17	0.3	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/17_1.2_20180208	TP18/17	1.2	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/17_2.7_20180208	TP18/17	2.7	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/21_0.3	TP18/21	0.3	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	450	-	350	800	<10	<10	<50	<50	700	900	200	-
TP18/21_1.2	TP18/21	1.2	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/21_2.37	TP18/21	2.37	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP21_0.6	TP18/21		Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	360	-	300	660	<10	<10	<50	<50	620	840	220	-
QC18_101	TP18/21		Field_D	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	270	-	240	510	<10	<10	<50	<50	480	630	150	-
TP18/30_0.3	TP18/30	0.3	Normal	5/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	180	-	220	400	<10	<10	<50	<50	310	480	170	-
TP18/30_1.2	TP18/30	1.2	Normal	5/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/30_2.4	TP18/30	2.4	Normal	5/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/31_0.3_20180208	TP18/31	0.3	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	160	1090	-	390	1640	<10	<10	320	320	1220	1730	190	-
TP18/31_1.2_20180208	TP18/31	1.2	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	22	-	300	1390	-	310	2000	38	38	590	590	1320	2070	160	-
TP18/31_3.0_20180208	TP18/31	3	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	100	450	-	<100	550	<10	<10	200	200	430	630	<100	-
TP18/34_0.3_20180208	TP18/34	0.3	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/34_1.2_20180208	TP18/34	1.2	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/34_2.2_20180208	TP18/34	2.2	Normal	8/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/35_0.3	TP18/35	0.3	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP18/35_1.2	TP18/35	1.2	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	22	-	710	380	-	<100	1090	36	36	830	830	120	950	<100	-
TP18/35_2.2	TP18/35	2.2	Normal	6/02/2018	15	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
TP19/03_0.1	TP19/03	0.1	Normal	24/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/09_0.4	TP19/09	0.5	Normal	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/09_0.6	TP19/09	0.6	Normal	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/10_0.3	TP19/10	0.25	Normal	1/08/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	410	11,000	-	8500	19,910	<20	<20	960	960	16,000	21,660	4700	-
TP19/10_0.3	TP19/10	0.3	Normal	31/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/11_0.4	TP19/11	0.4	Normal	18/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	<100
TP19/12_0.1	TP19/12	0.2	Normal	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
D01_170719	TP19/12	0.2	Field_D	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
T01_170719	TP19/12	0.2	Field_D	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/12_0.3	TP19/12	0.3	Normal	17/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/13_0.1	TP19/13	0.2	Normal	24/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	97	-	89	186	<20	<20	<50	<50	150	150	<100	-
TP19/37_0.2	TP19/37	0.15	Normal	24/07/2019	15	<0.2	<0.2	<0.2	<0.2	<0.4	<0.6	-	-	<40	<20	7300	-	3200	10,500	<40	<40	350	350	8800	10,250	1100	-
TP19/37_1.0	TP19/37	1	Normal	24/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
TP19/38_0.3	TP19/38	0.4	Normal	24/07/2019	15	<0.2	<0.2	<0.2	<0.2	<0.4	<0.6	-	-	<40	<20	<50	-	<50	<50	<40	<40	<50	<50	<100	<100	<100	-
TP19/38_2.0	TP19/38	1.9	Normal	24/07/2019	15	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-
SB11B_0.2	SB11B	0.3	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	1350	580	-	<100	1930	<10	<10	1570	1570	200	1770	<100	-
SB11B_1.0	SB11B	1	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	100	770	-	300	1170	<10	<10	150	150	960	1230	120	-
SB11B_2.0	SB11B	1.95	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB12B_1.0	SB12B	1	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB12B_2.0	SB12B	1.95	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB13B_0.5	SB13B	0.5	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	54	-	1190	2040	-	720	3950	78	78	2210	2210	1970	4770	590	-
SB13B_1.0	SB13B	1	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	296	-	980	2410	-	1420	4810	356	356	1960	1960	2530	5340	850	-
SB14B_1.0	SB14B	1	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB15B_1.0	SB15B	1	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB15B_2.0	SB15B	1.95	Normal	1/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB6B_1.0	SB6B	1	Normal	5/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
D03_050218	SB6B	1	Field_D	5/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-
SB6B_2.0	SB6B	1.95	Normal	5/02/2018	ANX - Lease Exit	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-

Statistical Summary

	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH (Total)
Number of Results	548	548	547	533	533	548	377	361	187	542	541	102	541	540	411	411	409	401	409	330	409	19
Number of Detects	18	26	41	34	38	54	39	60	19	151	219	46	182	242	84	84	142	137	183	159	100	8
Minimum Concentration	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003	<0.2	<10	<0.02	0.56	27	160	20	47.56	<0.02	<0.02	1.2	1.2	39	45.4	5.2	<100
Minimum Detect	0.3	0.3	0.2	0.2	0.4	0.5	0.5	10	22	0.56	27	160	20	47.56	13	13	1.2	1.2	39	45.4	5.2	120
Maximum Concentration	24	780	99	77	200	280	804.6	3270	3000	45000	110000	74000	27300	160000	5000	4500	67000	66953	110000	186000	15600	6500
Maximum Detect	24	780	99	77	200	280	804.6	3270	3000	45000	110000	74000	27300	160000	5000	4500	67000	66953	110000	186000	15600	6500
Average Concentration	0.26	2.3	0.75	0.63	1.5	2	4	41	52	554	1939	2146	695	3079	78	73	1021	1029	2746	4481	437	737
Median Concentration	0.1	0.25	0.25	0.25	0.25	0.25	0.75	5	10	25	50	100	50	50	10	10	25	25	50	50	50	50
Standard Deviation	1.3	34	5.2	3.9	10	14	43	216	241	3462	8376	8660	2713	13222	349	322	5226	5271	10423	16751	1537	1651
Number of Guideline Exceedances	4	0	0	0	0	1	0	0	0	0	0	0	0	0	10	27	51	4	44	0	2	0
Number of Guideline Exceedances(Detects Only)	4	0	0	0	0	1	0	0	0	0	0	0	0	0	10	26	51	4	44	0	2	0

Env Stds Comments

#1:CRC CARE (2011) Intrusive
Maintenance Worker

						TRH Silica Gel Cleanup									TRH Aliphatic/Aromatic Split													
						TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C5-C7 (Benzene) Aromatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						20	50	50	50	50	100	50	100	50	0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10
CRC Care (2011) Direct Contact HSL D - Comm/Ind																												
CRC Care (2011) Direct Contact Intrusive Maint. Worker																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - VI Sand 0 to <1 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 1 to <2 m																												
NEPM (1999) HSL D Comm/Indust - VI Sand 2 to <4 m																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												
VI Intrusive Mnt. Worker Sand 0-<2 m - CRC CARE (2011)																												
VI Intrusive Mnt. Worker Sand 2-<4 m - CRC CARE (2011)																												
Field_ID	Location_Code	Sample_Depth_Avg	Sample_Type	Sampled_Date_Time	RSI Area ID																							
MW11/15_1.3	MW11/15	1.3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/15_3.0	MW11/15	3	Normal	22/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/22_0.5	MW11/22	0.5	Normal	28/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/22_3.3	MW11/22	3.3	Normal	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/41_0.35	MW11/41	0.35	Normal	28/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/41_2.3	MW11/41	2.3	Normal	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/42_0.6	MW11/42	0.6	Normal	28/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_290911_01	MW11/42	0.6	Field_D	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_290911-01	MW11/42	0.6	Interlab_D	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/42_2.2	MW11/42	2.2	Normal	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/42_2.6	MW11/42	2.6	Normal	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/43_0.2	MW11/43	0.2	Normal	28/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/43_2.3	MW11/43	2.3	Normal	29/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/44_0.2	MW11/44	0.2	Normal	5/10/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/44_2.8	MW11/44	2.8	Normal	5/10/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/45_0.3	MW11/45	0.3	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/45_1.5	MW11/45	1.5	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/45_2.4	MW11/45	2.4	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/45_3.2	MW11/45	3.2	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/45_5.0	MW11/45	5	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/46_0.3	MW11/46	0.3	Normal	27/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW11/46_2.0	MW11/46	2	Normal	28/09/2011	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/02_0.15	MW12/02	0.15	Normal	27/02/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/02_5.5	MW12/02	5.5	Normal	27/02/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/22_0.4	MW12/22	0.4	Normal	6/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW12/22_2.7	MW12/22	2.7	Normal	6/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D_060312_02	MW12/22		Field_D	6/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T_060312_01	MW12/22		Interlab_D	6/03/2012	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/15_0.3-180209	TP18/15	0.3	Normal	9/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/17_0.3_20180208	TP18/17	0.3	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/17_1.2_20180208	TP18/17	1.2	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/17_2.7_20180208	TP18/17	2.7	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/21_0.3	TP18/21	0.3	Normal	6/02/2018	15	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/21_1.2	TP18/21	1.2	Normal	6/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/21_2.37	TP18/21	2.37	Normal	6/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21_0.6	TP18/21		Normal	6/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC18_101	TP18/21		Field_D	6/02/2018	15	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/30_0.3	TP18/30	0.3	Normal	5/02/2018	15	<50	<50	<50	<50	<100	<100	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/30_1.2	TP18/30	1.2	Normal	5/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/30_2.4	TP18/30	2.4	Normal	5/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/31_0.3_20180208	TP18/31	0.3	Normal	8/02/2018	15	90	120	860	770	610	650	160	<100	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/31_1.2_20180208	TP18/31	1.2	Normal	8/02/2018	15	80	220	850	910	630	690	140	<100	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/31_3.0_20180208	TP18/31	3	Normal	8/02/2018	15	<50	60	250	280	250	220	<100	<100	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/34_0.3_20180208	TP18/34	0.3	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/34_1.2_20180208	TP18/34	1.2	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/34_2.2_20180208	TP18/34	2.2	Normal	8/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/35_0.3	TP18/35	0.3	Normal	6/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/35_1.2	TP18/35	1.2	Normal	6/02/2018	15	200	300	550	570	350	270	<100	<100	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18/35_2.2	TP18/35	2.2	Normal	6/02/2018	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/03_0.1	TP19/03	0.1	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/09_0.4	TP19/09	0.5	Normal	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/09_0.6	TP19/09	0.6	Normal	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/10_0.3	TP19/10	0.25	Normal	1/08/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/10_0.3	TP19/10	0.3	Normal	31/07/2019	15	190	160	190	-	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/11_0.4	TP19/11	0.4	Normal	18/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/12_0.1	TP19/12	0.2	Normal	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D01_170719	TP19/12	0.2	Field_D	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T01_170719	TP19/12	0.2	Field_D	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/12_0.3	TP19/12	0.3	Normal	17/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/13_0.1	TP19/13	0.2	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/37_0.2	TP19/37	0.15	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/37_1.0	TP19/37	1	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/38_0.3	TP19/38	0.4	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/38_2.0	TP19/38	1.9	Normal	24/07/2019	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB11B_0.2	SB11B	0.3	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB11B_1.0	SB11B	1	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB11B_2.0	SB11B	1.95	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB12B_1.0	SB12B	1	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB12B_2.0	SB12B	1.95	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13B_0.5	SB13B	0.5	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13B_1.0	SB13B	1	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB14B_1.0	SB14B	1	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15B_1.0	SB15B	1	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15B_2.0	SB15B	1.95	Normal	1/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB6B_1.0	SB6B	1	Normal	5/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D03_050218	SB6B	1	Field_D	5/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB6B_2.0	SB6B	1.95	Normal	5/02/2018	ANX - Lease Exit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	117	117	117	45	118	117	118	117	45	27	27	27	27	27	27	27	1	27	27	27	27	27	27
Number of Detects	63	69	90	32	86	77	58	35	28	4	6	16	22	22	19	17	1	7	15	20	22	18	18
Minimum Concentration	<20	<50	<50	<50	<50	<100	<50	<100	<50	<0.1	<10	<10	<10	<10	<10	<10	0.3	<0.1	<1	<10	<10	<10	<10
Minimum Detect	27	50	51	160	51	130	80	130	60	0.3	120	140	11	41	20	18	0.3	0.8	1.4	10	28	11	15
Maximum Concentration	30000	38000	76600	21900	38000	35000	13000	6600	14900	24	1000	2300	16000	27000	19000	22000	0.3	100	550	2200	11000	12000	32000
Maximum Detect	30000	38000	76600	21900	38000	35000	13000	6600	14900	24	1000	2300	16000	27000	19000	22000	0.3	100	550	2200	11000	12000	32000
Average Concentration	1029	1415	4406	2773	2564	2593	941	346	959	1.4	76	314	1381	2531	1876	2438		10	40	255	1124	1531	3268
Median Concentration	51	90	518	550	245	270	50	50	120	0.05	5	200	310	330	50	110	0.3	0.05	2.3	33	130	190	89
Standard Deviation	3687	4771	11097	5886	5978	5872	2247	860	2773	4.8	194	484	3429	6114	4422	5814		26	109	573	2554	3400	7998
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:CRC CARE (2011) Intrusive
Maintenance Worker

VIVA EnergyAustralia

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