Appendices

Appendix A – Tonkin & Taylor Ground Contamination Factual Report

REPORT

Tonkin+Taylor

Whenuapai-Redhills Wastewater Servicing Rising Main/ Gravity Main and Interim Pump Station - Package 1

Ground contamination factual report

Prepared for
Watercare Services Limited
Prepared by
Tonkin & Taylor Ltd
Date
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Exceptional thinking together
www.tonkintaylor.co.nz

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1 Introduction

Tonkin & Taylor Ltd (T+T) has been commissioned by Watercare Services Limited (Watercare) to collect soil and groundwater contamination testing data during the geotechnical investigation for the proposed Whenuapai-Redhills Wastewater Servicing Rising Main/Gravity Main and Interim Pump Station - Package 1.

The location of the proposed Package 1 works is shown in Section 3 below. The geotechnical data is provided under a separate cover[1].

T+T provided ground contamination investigation services in accordance with our proposal dated 21st October 2020[2].

The persons undertaking, managing, reviewing, and certifying this investigation are suitably qualified and experienced practitioners as defined in the NES Soil regulations[3].

[1] T+T, January 2021, Whenuapai-Redhills Wastewater Servicing Rising Main/ Gravity Main and Interim Pump Station – Package 1, Geotechnical Ground Investigation Factual Report.
[2] Tonkin + Taylor Ltd (21 October 2020), Whenuapai-Redhills Wastewater Servicing Rising Main/Gravity Main and Interim Pump Station - Package 1 - Geotechnical Ground Investigation. Job Ref: 1014985.
[3] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

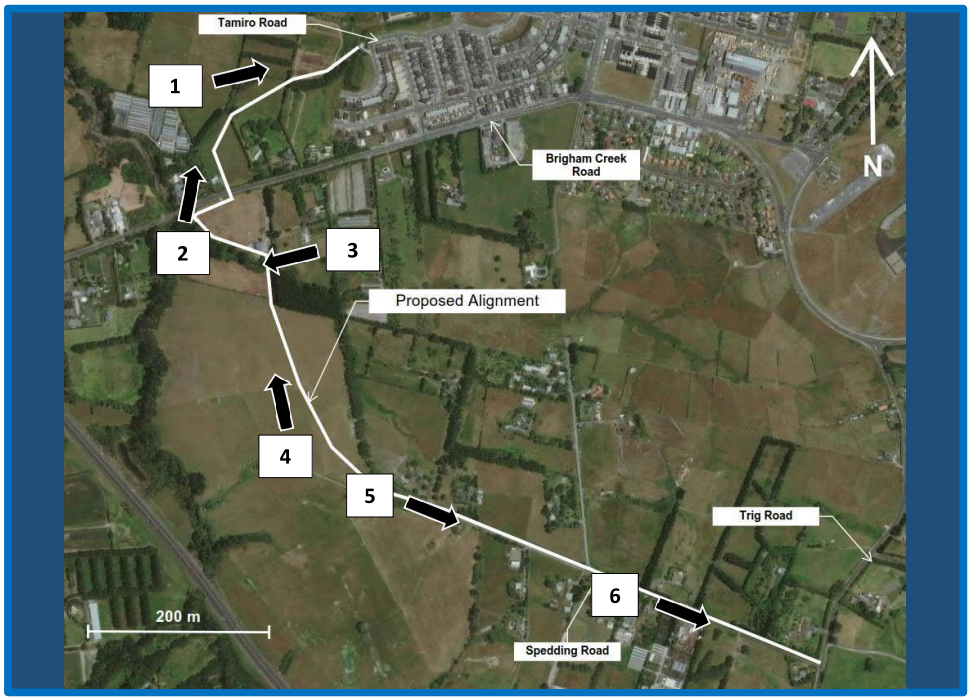
2 Scope of work

The ground contamination investigation included the following scope of works based on the scope provided by GHD[4] and in response to observations of suspected contamination during drilling:

- Collection of soil samples for contamination testing during the geotechnical investigation programme from:
  - Three surface sample locations.
  - Twenty-three hand auger locations.
  - Ten machine borehole locations.
- Laboratory testing of soil samples for contaminants of concern. In total, testing comprised 97 soil samples for various analytes generally as per the GHD scope (some additional analyses were conducted based on observations during the works).
- The collection of nine groundwater samples from piezometers installed within BH05a, BH05b, BH06, BH08, BH110, BH111, BH113, BH116 and BH117.
- Laboratory testing was undertaken on all groundwater samples for heavy metals (dissolved), PAH and TPH with the exception of BH113 which was analysed for heavy metals (dissolved) and SVOCs.
- Preparation of this factual report.

[4] GHD, October 2020 – Watercare Service Limited, Whenuapai-Redhills Wastewater Servicing Rising Main/ Gravity Main and Interim Pump Station, Ground Investigation Scope (Package 1) REVISION 2.

3 Site description



Site Description

The Package 1 ground investigation site is located in Whenuapai Auckland, between Tamiro Road at the northern end and Trig Road at the southern end.

This section of the proposed alignment is approximately 2.5 km in length.

The alignment crosses private residential properties at the northern end of the alignment between Tamiro Road and Brigham Creek Road. This section is relatively flat and crosses paddocks and farmland with occasional minor gully features.

The section of the alignment from Brigham Creek Road to Spedding Road consists of gently rolling hills and is across farmland with a gully in the centre.

The section of the alignment between Spedding Road and Trig Road extends along the road berm and is flat with a small hill at the Trig Road end.

4 Field investigation

4.1 Investigation programme

The scope and location of the investigations were defined by GHD in their geotechnical scope and supporting ground contamination sampling plan. The sampling works were completed over the period from 2 November 2020 – 18 December 2020. The overall investigation programme comprised:

- Three environmental surface sample locations along the southern side of Spedding Road:
  - ENVR-SS03, ENVR-SS04 and ENVR-SS05.
- Twenty-two hand augered boreholes:
  - HA03 and HA04 south of the properties at 23-31 Brigham Creek Road.
  - HA05, HA06, HA07 and HA08 along Spedding Road.
  - ENVR-HA03, ENVR-HA04, ENVR-HA05 along the northern side of Spedding Road.
  - HA107 at 28 Brigham Creek Road.
  - HA108, HA109 and HA119 at 26 Brigham Creek Road.
  - HA114, HA115 at 20-22 Brigham Creek Road.
  - ENVR-HA101, HA110 and HA111 north of Tamiro Road.
  - HA112, HA113, HA116 and HA117 at 23-27 Brigham Creek Road.
- Eleven machine drilled boreholes:
  - BH05a and BH05b at 23-27 Brigham Creek Road.
  - BH06 and BH07 south of the properties at 23-31 Brigham Creek Road.
  - BH08 south of 14 Spedding Road.
  - BH110, BH111 (and BH111A), and BH117 at 23-27 Brigham Creek Road.
  - BH113 and BH116 west of Tamiro Road.
- Fifteen cone pentameter tests (CPTs):
  - CPT02, CPT03, CPT04, CPT05, CPT06, CPT07, CPT08, CPT111, CPT112, CPT117, CPT121, CPT126, CPT128, CPT129 and CPT131.
- Piezometers were installed in nine of the machine drilled boreholes:
  - BH05a, BH05b, BH06, BH08, BH110, BH111, BH113, BH116 and BH117.

All sampling locations are presented in Figures 1 in Appendix A and logs of the boreholes and hand augers are presented in Appendix B.

Soil samples were collected from all boreholes and hand augered locations at the surface and at intervals throughout the soil profile. Soil samples were collected to the environmental target depth specified by GHD. Groundwater samples were collected from all nine piezometers.

4.2 Sampling methodology

4.2.1 Soil sample collection

Soil sampling was completed by T+T field staff under the guidance of a Suitably Qualified and Experienced Practitioner as defined in the Users' Guide for the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (SQEP). Soil samples were collected in general accordance with MfE Contaminated Land Guideline No. 5 as follows:

- Freshly gloved hands were used to collect soil samples from the hand auger or borehole core after first removing the smeared outer zone.
- Photoionisation Detector (PID) readings were taken from soil samples collected at each location at 0.5 and 1.0 m below ground level (bgl).
- All samples were placed immediately into laboratory supplied sample containers – 500 ml plastic sample containers for asbestos testing and 300 ml glass jars for chemical analyses.
- One duplicate sample was collected for every 10 samples.
- One split sample was collected for at least every 20 samples.
- Any non-dedicated/ non-disposable equipment used to collect the samples was decontaminated between sample locations using a three-stage decontamination process including initial scrub in tap water with Decon 90 (a phosphate-free detergent), a rinse in tap water and a final rinse using deionised water.
- Samples were shipped in chilled containers to Hill Laboratories and Analytica Laboratories under chain of custody documentation.

4.2.2 Groundwater sampling

Groundwater sampling was undertaken by SQEP and in accordance industry best practice and the GHD scope. Prior to sampling groundwater wells were developed to remove suspended fines and water affected by the drilling and installation works.

Groundwater sampling was conducted using low flow procedures. A peristaltic pump was used for sampling from BH05b, BH06, BH08, BH111, BH113 and BH116 on 27 November 2020. On 2 December 2020 a bladder pump was used for sampling deeper wells BH05a, BH110 and BH117.The following methodology was followed:

- Depth to water was measured using an oil/water interface probe.
- Prior to sampling, purging was conducted following low flow procedures.
- Water quality parameters including electrical conductivity, temperature, redox, dissolved oxygen (DO), and pH were measured and recorded at regular intervals.
- Samples were collected following the stabilisation of the observed water quality parameters.
- Two sets of groundwater samples were collected into laboratory supplied sample containers from each of the monitoring wells.
- One duplicate sample, field blank and trip blank were collected per each sampling day. Additional to this a rinsate sample was collected from the bladder pump used on 2 December 2020.
- Any non-dedicated/ non-disposable equipment used to collect the samples was decontaminated between sample locations using a three-stage decontamination process including initial scrub in tap water with Decon 90 (a phosphate-free detergent), a rinse in tap water and a final rinse using deionised water.

- Samples were shipped in chilled containers to Hill Laboratories under chain of custody documentation.

4.3 Field observations

4.3.1 Soil observations

4.3.1.1 Borehole and hand auger observations

Borehole and hand auger logs are presented in Appendix B. Fill materials were encountered in a number of investigation locations as summarised in Table 5.1. The fill ranged between 0.1 m and 3.4 m thick. Materials interpreted as fill typically comprised reworked local soils, containing gravel and/or sand. The fill materials encountered in HA112 were distinguishable by a strong chemical odour associated with a white/ cream coloured powder (at depths of 1.8 mbgl, and 2.0 mbgl).

No anthropogenic materials such as waste or demolition fill was observed in the fill at any of the sampling locations.

No other indicators of contamination were observed in soil during the investigation programme.

4.3.1.2 Surface samples Spedding Road

Three surface samples (ENVR-SS03, ENVR-SS04 and ENVR-SS05) were collected along the southern side of Spedding Road. The material sampled was collected from a depth between 0.1-0.2 mbgl. The material encountered was described as clayey silt, dark brown, soft, moist, low plasticity.

4.3.2 Groundwater observations

Field parameters prior to sampling and depth to groundwater prior to pumping are summarised in Table 4.1. Complete field parameters and depth to groundwater recorded during the investigation are provided on groundwater sampling field sheets in Appendix C.

Table 4.1: Stabilised parameters prior to collecting groundwater samples

Date Sampled	Borehole ID	GW level prior to pumping (m)	Dissolved Oxygen (DO) % (final)	Electrical Conductivity (EC) (µs/cm) (final)	pH (final)	Oxidation-reduction potential (mV) (final)
2 December 2020	BH05a	1.001	0.54	376.9	7.23	117.2
	BH110	5.329	0.41	338.9	8.04	56.7
	BH117	2.965	1.70	497.1	6.58	64.4
27 November 2020	BH05b	3.330	1.58	287.7	5.68	190.5
	BH06	3.185	1.08	269.1	3.73	450.0
	BH08	1.829	1.17	282.4	6.51	150.3
	BH111	2.819	0.70	140.3	4.95	253.4
	BH113	2.655	0.41	223.7	5.68	237.7
	BH116	1.286	3.22	400.5	5.63	238.2

No indicators of contamination were observed in groundwater during the investigation programme.

5 Laboratory testing

5.1 Soil

Soil samples were selected for laboratory analysis based on both the GHD scope and on observations of suspected contamination identified during drilling. A total of 97 samples were tested. The samples were analysed as per the original scope with any deviations summarised in Table 5.1.

Table 5.1: Soil sample testing

Investigation location	Depth of sample(s) tested (m)	Analysis suite	Purpose
BH05A	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.2 mbgl.
	1.0	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
BH06	0.1-0.3	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.4 mbgl
	0.35-0.6	Heavy metals, TPH, PAH, asbestos	
	1.0-1.2	Heavy metals, TPH, PAH, asbestos	
BH07	0.1-0.4	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.5 mbgl
	0.5-0.65	Heavy metals, TPH, PAH, asbestos	
	1.0-1.35	Heavy metals, TPH, PAH, asbestos	
BH08	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.7 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
BH110	0.1-0.35	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.35 mbgl
	0.5-0.75	Heavy metals, TPH, PAH, asbestos	
	0.9-1.15	Heavy metals, TPH, PAH, asbestos	
BH111/ BH111A	0.05-0.2 (BH111)	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.35 mbgl
	0.4-0.7 (BH111A)	Heavy metals, TPH, PAH, asbestos	
	1.0-1.3 (BH11A)	Heavy metals, TPH, PAH, asbestos	

Investigation location	Depth of sample(s) tested (m)	Analysis suite	Purpose
BH113/ ENVR-HA102	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.1 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
BH116	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.6 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
BH117	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.4 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
HA03	0.0	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.25 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
HA04	0.0	Heavy metals, SVOCs	As per GHD scope. Fill to 0.2 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA05	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.25 mbgl
	1.0	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
HA06	0	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.2 mbgl
	0.4-0.6	Heavy metals, TPH, PAH	
	1.0	Heavy metals, TPH, PAH, asbestos	
	2.0	asbestos	
HA07	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.25 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	

Investigation location	Depth of sample(s) tested (m)	Analysis suite	Purpose
HA08	0.1	Heavy metals, SVOCs	As per GHD scope. Fill to 0.6 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA107a	0.1	Heavy metals, SVOCs	As per GHD scope. Fill to 0.5 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA108	0.1	Heavy metals, SVOCs	As per GHD scope. Fill to 0.4 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA109	0.0	Heavy metals, SVOCs	As per GHD scope. Fill to 0.3 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA110a	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 3.4 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
HA111	0.1	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 2.6 mbgl
	1.0	Heavy metals, TPH, PAH, asbestos	
	2.0	Heavy metals, TPH, PAH, asbestos	
HA112	0.1	Heavy metals, VOCS, SVOCS, ONOPS, ammonium	Scheduling was adjusted as per GHDs request from the original Suite 3 testing to Heavy metals, VOCS, SVOCS, ONOPS, asbestos due to site observations. A strong chemical odour was present at 1.8 mbgl with a white/cream coloured powder present at 2.0 m. Ammonium was also tested for. Fill to 2.00 mbgl. Refusal at 2.0 mbgl.
	0.5	Asbestos	
	1.8	Heavy metals, VOCS, SVOCS, ONOPS, ammonium	
	1.0	Asbestos	
	2.0	Heavy metals, VOCS, SVOCS, ONOPS, ammonium	
HA113	0	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.4 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
HA114	0.0	Heavy metals, SVOCs	As per GHD scope. Fill to 0.4 mbgl
	0.5	Heavy metals, SVOCs	

Investigation location	Depth of sample(s) tested (m)	Analysis suite	Purpose
	1.0	Heavy metals, SVOCs	
HA115	0.1	Heavy metals, SVOCs	As per GHD scope. Fill to 0.6 mbgl
	0.5	Heavy metals, SVOCs	
	1.0	Heavy metals, SVOCs	
HA116	0	Heavy metals, TPH, PAH, asbestos	As per GHD scope. Fill to 0.25 mbgl
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
HA117	0.1	Heavy metals, VOCS, SVOCS, ONOPS, asbestos	Scheduling was adjusted as per GHDs request from the original Suite 3 testing to Heavy metals, VOCS, SVOCS, ONOPS, asbestos due to site observations. Fill to 1.05 mbgl.
	0.5	Heavy metals, VOCS, SVOCS, ONOPS, asbestos	
	2.0	Heavy metals, VOCS, SVOCS, ONOPS, asbestos	
ENVR-HA03	0.0-0.1	Heavy metals, TPH, PAH, OCPs, asbestos	Scheduling was adjusted as per GHDs request from the original Suite 2 testing to Suite 3 because the location was moved from the southern side of the road to the northern side, OCP testing was added to the surface sample. Fill to 0.80 mbgl.
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
ENVR-HA04	0.0-0.1	Heavy metals, TPH, PAH, OCPs, asbestos	Scheduling was adjusted as per GHDs request from the original Suite 2 testing to Suite 3 because the location was moved from the southern side of the road to the northern side, OCP testing was added to the surface sample. Fill to 0.10 mbgl.
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
ENVR-HA05	0.0-0.1	Heavy metals, TPH, PAH, OCPs, asbestos	Scheduling was adjusted as per GHDs request from the original Suite 2 testing to Suite 3 because the location was moved from the southern side of the road to the northern side, OCP testing was added to the surface sample. Fill to 0.30 mbgl.
	0.5	Heavy metals, TPH, PAH, asbestos	
	1.0	Heavy metals, TPH, PAH, asbestos	
ENVR-HA101	0.0-0.1	Heavy metals, SVOCs	As per GHD scope. Fill to 0.5 mbgl
	0.5-0.6	Heavy metals, SVOCs	
	1.6-1.8	Heavy metals, SVOCs	

5.2 Groundwater

Groundwater samples were collected from nine boreholes where piezometers were installed and tested for the suite of contaminants listed in to Table 5.2.

Table 5.2: Groundwater sample testing

Investigation location	Screen depth	Analysis suite [5]
BH05a	8.5-11.8 m bgl	Suite 3
BH05b	3.5-5.5 m bgl	Suite 3
BH06	3.5-5.0 m bgl	Suite 3
BH08	3-6 m bgl	Suite 3
BH110	8-11 m bgl	Suite 3
BH111	3-5 m bgl	Suite 3
BH113	2.0-4.0 m bgl	Suite 2
BH116	2.0-5.0 m bgl	Suite 3
BH117	9.5-12 m bgl	Suite 3

5.3 Acid Sulphate Soil Testing

Select samples were scheduled for pH, acid soluble sulphate and sulphate content (refer to the results in Appendix E.

[5] Suite 3 - pH, dissolved metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc, polyaromatic hydrocarbons and total petroleum hydrocarbons.

Suite 2 – pH, dissolved metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc, and semi-volatile organic compounds.

5.4 Data quality

A Quality Assurance and Quality Control (QA/QC) programme was implemented during sample collection and testing, which included:

- Non-dedicated sampling equipment decontamination between sampling locations (following a three-stage decontamination procedure as outlined in Section 4.2.1 and Section 4.2.2).
- All samples were collected and placed directly into laboratory-supplied sample containers labelled with the unique sample location, depth, and date of collection.
- Following collection all samples were placed directly into chilled storage and managed under standard T+T chain of custody procedures (copies of chain of custody documentation is provided Appendix D).
- Sample analysis was conducted by Hill Laboratories and Analytica Laboratories, both of which are accredited by International Accreditation New Zealand (IANZ). As such, these Laboratories are expected to comply with the accreditation requirements that include the confirmation of validity and suitability of results. Any breaches in laboratory control would be expected to be notified at the time of release of the analytical results. No breaches were reported.
- Duplicate soil samples were obtained at approximately one per ten soil samples. Of these samples nine were analysed.
- Split soil samples were obtained at approximately one per twenty soil samples. Of these samples two were analysed.
- A rinsate sample was collected each day that hand augers were undertaken. A total of eight hand auger rinsate samples were collected with one analysed.
- Filed blanks, trip blanks and duplicate samples were collected during the groundwater sampling and analysed per consignment.

5.4.1 Duplicate analysis

5.4.1.1 Soil

It is typically considered acceptable (refer to MfE Guideline No. 5) if a relative percentage difference (RPD) range of less than 50% is achieved for soil samples. As shown in Table 5.3, concentrations in soil in the duplicate samples generally reported RPDs within this range indicating that variability in sample collection, handling and analysis is acceptable. The RPDs for some organic compounds were higher than 50% and consideration should be given to these results during data interpretation.

Table 5.3: Duplicate soil sampling results

Sample ID	**ENVR-HA101-0.01-0.1m**	**Duplicate 1 – 4/11/2020**	**RPD %**	**ENVR-SS05-0.1-0.2**	**Duplicate 1 – 10/11/2020**	**RPD %**
Arsenic	< 2	<2	0	< 2	< 2	0
Cadmium	0.16	0.15	6	< 0.10	< 0.10	0
Chromium	7	7	0	4	5	22
Copper	10	10	0	42	39	7
Lead	5.3	5.5	4	10	10.6	6
Mercury	< 0.10	<0.10	0	< 0.10	< 0.10	0
Nickel	< 2	<2	0	6	6	0
Zinc	12	10	18	42	43	2
Sample ID	**HA06-0.0m**	**Dup A**	**RPD %**	**HA04-0.0m**	**Dup B**	**RPD %**
Arsenic	6	6	0	< 2	< 2	0
Cadmium	0.26	0.3	14	0.34	0.34	0
Chromium	13	14	7	6	7	15
Copper	26	26	0	9	9	0
Lead	21	21	0	7.3	7.4	1
Mercury	0.13	0.14	7	< 0.10	< 0.10	0
Nickel	7	8	13	< 2	< 2	0
Zinc	42	42	0	13	15	14
Fluoranthene	<0.016	0.021	NA	<0.5	<0.5	0
C15 - C36	55	110	**67**	-	-	-
Total hydrocarbons (C7 - C36)	<70	121	NA	-	-	-

Sample ID	HA113-0m	Dup C	RPD %	HA114-0m	Dup D	RPD %
Arsenic	< 2	< 2	0	4	5	22
Cadmium	0.29	0.3	3	0.15	0.15	0
Chromium	8	7	13	11	10	10
Copper	5	4	22	78	72	8
Lead	11	10.5	5	14.9	13.2	12
Mercury	< 0.10	< 0.10	0	<0.10	<0.10	0
Nickel	< 2	< 2	0	22	11	67
Zinc	13	12	8	53	54	2
Benzo[a]anthracene	0.016	<0.013	NA	-	-	-
Benzo[a]pyrene (BAP)	0.018	<0.013	NA	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	0.02	<0.013	NA	-	-	-
Chrysene	0.014	<0.013	NA	-	-	-
Fluoranthene	0.041	0.014	98	-	-	-
C15 - C36	<40	59	NA	-	-	-
Total hydrocarbons (C7 - C36)	<70	<70	0	-	-	-
Sample ID	**HA119-0m**	**Dup E**	**RPD %**	**HA108-0.5m**	**HA108 duplicate**	**RPD %**
Arsenic	<2	<2	0	2	<2	0
Cadmium	0.23	0.23	0	<0.10	<0.10	0
Chromium	6	6	0	8	8	12

Copper	9	9	0	6	6	15
Lead	4.2	4.4	5	8.4	8.4	10
Mercury	<0.10	<0.10	0	<0.10	<0.10	0
Nickel	<2	<2	0	2	2	0
Zinc	8	8	0	5	5	0
Sample ID	**HA115-1.0m**	**HA115 duplicate**	**RPD %**			
Arsenic	2	2	0			
Cadmium	<0.10	<0.10	0			
Chromium	10	9	11			
Copper	6	6	0			
Lead	9.8	10.4	6			
Mercury	0.11	0.1	10			
Nickel	2	3	40			
Zinc	8	7	13			

NA: RPD% could not be calculated correctly due to compound in either the sample or the duplicate detected at a concentration less than the laboratory limit of reporting.

Where both results were below the laboratory limit of reporting the RPD has been recorded as 0%.

5.4.1.2 Groundwater

Groundwater results reported limited variability as shown below in Table 5.4.

Table 5.4: Duplicate groundwater sampling results

Sample ID	BH111	Dup 1	RPD %	BH110	Duplicate 2	RPD %
Arsenic	< 0.0010	< 0.0010	0	< 0.0010	< 0.0010	0
Cadmium	< 0.00005	< 0.00005	0	< 0.00005	< 0.00005	0
Chromium	< 0.0005	< 0.0005	0	< 0.0005	< 0.0005	0
Copper	< 0.0005	< 0.0005	0	0.0012	0.0012	0
Lead	< 0.00010	< 0.00010	0	< 0.00010	< 0.00010	0
Nickel	0.0022	0.002	10	0.0012	0.0011	9
Zinc	0.0136	0.0131	4	< 0.0010	< 0.0010	0

Where both results were below the laboratory limit of reporting the RPD has been recorded as 0%.

5.5 Analytical results

A summary of the laboratory testing data is provided in Appendix E with full laboratory transcripts provided in Appendix F.

6 Applicability

This report has been prepared for the exclusive use of our client Watercare Services Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Report prepared by:

.....

Rebecca van der Krogt

Contaminated Land Consultant

Authorised for Tonkin & Taylor Ltd by:

.....

Robert Hillier

Project Director

Report reviewed by:

.....

Lucy Hine

Contaminated Land Specialist

RVDK
\\ttgroup.local\files\aklprojects\1014985\issueddocuments\contam land\updated following feedback from ghd\whenuapai redhills_factual_contamrep_march 2021.docx

Appendix A: Figure

\\ttgroup.local\infrastructure\CAD\1014985\WorkingMaterial\CAD\FIG\1014985-F1.dwg 2020-Dec-18 12:25:15 PM Plotted By: JONALD CASTRO

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Exceptional thinking together www.tonkintaylor.co.nz

NOTE:

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PROJECT No.	1014985	
DESIGNED	CBM	Dec.20
DRAWN	JC	Dec.20
CHECKED	CBM	Dec.20
APPROVED		DATE

CLIENT **WATERCARE SERVICES LIMITED**

PROJECT **WHENUAPAI AND REDHILLS WASTEWATER SCHEME**

TITLE GEOTECHNICAL INVESTIGATION
SITE INVESTIGATION PLAN

SCALE (A3) 1:7500 FIG No. FIGURE 1 REV 1

Appendix B: Hand auger and machine drilled borehole logs

Refer to the geotechnical draft report for copies of the hand auger and machine drilled borehole logs.

Appendix C: Groundwater sampling field sheets

BH05a 12.230 Stick up = 0.55m RVDK

removed level logger 1:06pm

Monitoring Well	Water level	Time	Cumulative purge volume	Controller pressure	Drive duration	Refill duration (purge)	Temp	Dissolved Oxygen	Conductivity	pH	ORP	Comments
	mbTOC	NZST	L	(psi)	(sec)	(sec)	°C	mg/L	µS/cm		mV	
	1.001m	1:06pm										
	0.981m	1:20pm										
	0.980m	1:28pm	0.150L	40	6	114	23.4	2.48	390.7	7.71	199.9	Slightly silty no odour
	0.984m	1.30pm	0.30L	40	6	114	23.4	2.26	390.7	7.61	202.4	"
	0.985m	1:32pm	0.45L	40	6	114	22.5	2.18	383.5	7.48	192.4	"
	1.01m	1:34pm	0.60L	40	6	114	22.5	2.00	384.5	7.45	186.8	"
	0.990m	1:36pm	0.75L	40	6	"	22.7	1.89	386.6	7.42	181.1	"
	0.985m	1:38pm	0.9L	40	6	"	22.7	1.20	389.5	7.35	171.0	"
	0.985m	1:40pm	1.05L	40	6	"	22.8	1.14	390.5	7.35	169.8	"
	0.970m	1:42pm	1.2	40	6	"	22.7	0.94	392.4	7.28	161.4	"
	0.995m	1:44pm	1.35	40	6	"	22.3	0.76	390.0	7.26	151.4	"
	1.002m	1:46pm	1.5	40	6	"	22.1	0.74	388.9	7.25	143.5	"
	1.015m	1:48pm	1.65	40	6	"	21.4	0.68	385.0	7.24	135.6	"
	0.995m	1:50pm	1.8	40	6	"	20.8	0.59	379.7	7.23	126.2	"
	0.994m	1:52pm	1.95	40	6	"	20.9	0.55	380.4	7.23	123.9	"
	0.994m	1:54pm	2.1	40	6	"	20.8	0.57	377.1	7.23	119.3	"
	0.983m	1:56pm	2.25	40	6	"	20.8	0.54	376.9	7.23	117.2	"
			Stabilised parameters			samples collected			from 1:57pm			
		WL	after collecting samples			= 1.012m btoc						

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Groundwater Sampling Field Sheet

Site:		Job Number: 1014985	Date: 27/11/20
Well ID: BH056	Well Location: N: E:		Field Staff: RVDK

EQUIPMENT

Water meter: Interface/dip meter/other _____ **Water Quality Meter type:** YSI

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: Peri

Bailer type: disposable/stainless steel

Weather Conditions: Sunny / Cloudy / Rain Warm / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up:	0.66m	**Depth to PSH (m bTOC):**	NA
Standing Water Level (m bTOC):	3.333m	**PSH visually confirmed**	Yes / No
Total well depth (m bTOC):	6.08m	**PID Headspace(ppm):**	NA
Water column (m) :		**Well head condition:**	Good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

*Slowed pump rate

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µg/cm)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	3.330	11:10am						
0.5L	3.614	11:13am	0.75	285.7	6.03	203.0	15.2	mostly clear, slightly silty no odour
1	3.698	11:16am	0.54	282.2	5.84	209.6	15.1	mostly clear, slightly silty no odour
1.5	3.745m	11.19am	3.57	264.9	5.58	211.4	15.3	same
2	3.882m	11:22	2.82	303.0	5.69	196.8	15.4	same
2.5	3.932	11:25	2.51	297.8	5.68	193.5	15.3	same
3	4.156	11:28	1.58	287.7	5.68	190.5	15.2	same
			Stabilised parameters collected					2 sets of suite
					3	bottles	@	11:30am
								SWL after sampling (pump removed) 4.472m
Stabilisation Criteria (3 readings)				+/- 3%	+/- 0.1		+/- 0.2	

SAMPLING

Equipment decontaminated prior to use: Yes/No

Samples stored on ice: Yes/No

Metals samples filtered: Yes/No

QC Sample ID (if any): No

Containers collected:

☐ Organics ☐ Inorganics ☐ Biological

☐ VOC (Vial) ☐ Nutrients ☐

☐ Metals ☐ Cyanide ☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~4.5m Pump pressure regulator:

Fill timer: Discharge timer:

COMMENTS Was only able to field filter 1x metal bottle used 3 x filter kits - collected 2nd metal bottle unfiltered

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Groundwater Sampling Field Sheet

Site:		Job Number: 1014985	Date: 27/11/20
Well ID: BH06	Well Location: N: E:		Field Staff: RVDK

EQUIPMENT

Water meter: Interface/dip meter/other YSI **Water Quality Meter type:** _____

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: peri

Bailer type: disposable/stainless steel

Weather Conditions: Sunny / Cloudy / Rain Warm / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up:	0.61	**Depth to PSH (m bTOC):**	NA
Standing Water Level (m bTOC):	3.193	**PSH visually confirmed**	Yes / No
Total well depth (m bTOC):	5.660	**PID Headspace(ppm):**	NA
Water column (m) :		**Well head condition:**	Good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µS/cm)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	3.185	2.09pm						
0.5	3.430	2.13pm	1.45	267.2	3.97	420.8	17.0	Clear no odour
1	3.535	2.16pm	1.38	269.6	3.77	452.7	16.8	Clear no odour
1.5	3.602	2.18pm	1.21	271.7	3.70	456.9	16.8	Clear no odour
2	3.692	2:20pm	1.08	269.1	3.73	450.0	17.0	Clear no odour
			Stabilised parameters collected					
			2 sets of bottles Suite 3					
								SWL after sampling (pump removed) 3.810
Stabilisation Criteria (3 readings)				+/- 3%	+/- 0.1		+/- 0.2	

SAMPLING

Equipment decontaminated prior to use: Yes/No

Samples stored on ice: Yes/No

Metals samples filtered: Yes/No

QC Sample ID (if any): No

Containers collected:

- ☒ Organics ☒ Inorganics ☐ Biological
- ☐ VOC (Vial) ☐ Nutrients ☐
- ☒ Metals ☐ Cyanide ☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~4.0m Pump pressure regulator:

Fill timer: Discharge timer:

COMMENTS

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Groundwater Sampling Field Sheet

Site:		Job Number: 1014985	Date: 27/11/20
Well ID: BH08	Well Location: N: E:		Field Staff: RVDK

EQUIPMENT

Water meter: Interface/dip meter/other _____ **Water Quality Meter type:** YSI

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: Peri

Bailer type: disposable/stainless steel

Weather Conditions: Sunny / Cloudy / Rain Warm / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up: 0.64m **Depth to PSH (m bTOC):** NA

Standing Water Level (m bTOC): 1.844m **PSH visually confirmed** Yes / No

Total well depth (m bTOC): 6.800m **PID Headspace(ppm):** NA

Water column (m) : _____ **Well head condition:** Good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µscm)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	1.820m	1:00pm						
0.5	2.124	1:05pm	1.29	285.6	6.75	175.0	17.3	mostly cleary, v slightly turbid no odour
1	2.420	1:08	0.98	285.7	6.71	161.3	17.2	same
1.5	2.685	1:10	0.97	285.5	6.64	155.3	17.2	same
2.0	2.780	1:13	1.08	283.8	6.58	151.6	17.3	same
2.5		1:16	1.17	282.4	6.51	150.3	17.3	
								SWL after sampling (pump removed) 3.645m
Stabilisation Criteria (3 readings)				+/- 3%	+/- 0.1		+/- 0.2	

* Slow speed of pump

stabilised parameters collected 2 sets of suite 3 bottle samples @ 1:18pm

SAMPLING

Equipment decontaminated prior to use: Yes/No

Samples stored on ice: Yes/No

Metals samples filtered: Yes/No

QC Sample ID (if any): None

Containers collected:

- ☒ Organics
- ☒ Inorganics
- ☐ Biological
- ☐ VOC (Vial)
- ☐ Nutrients
- ☐
- ☒ Metals
- ☐ Cyanide
- ☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~4.5m Pump pressure regulator:

Fill timer: Discharge timer:

COMMENTS

BH110 Bottom = 11.59m btoc Stick up = 0.575m

Field staff : RVOK

Monitoring Well	Water level	Time	Cumulative purge volume	Controller pressure	Drive duration	Refill duration (purge)	Temp	Dissolved Oxygen	Conductivity	pH	ORP	Comments
	mbTOC	NZST	L	(psi)	(sec)	(sec)	°C	mg/L	µS/cm		mV	
	5.329	11:33am	0.30	40	6	114	19.5	2.13	347.7	8.06	116.1	Slightly silty no odo
		11:49am →										
	5.320	11:51	0.45	"	"	"	19.6	1.67	342.6	8.02	109.3	"
		11:53	Unable to record readings									"
		11:55										"
	5.365	12:00	1.00	40	6	114	19.4	0.64	336.0	8.01	73.7	"
	5.396	12:03	1.15	40	6	114	19.5	0.59	337.2	8.02	67.3	"
	5.415	12:05	1.30	40	6	114	19.8	0.54	340.2	8.02	64.1	"
	5.419	12:07	1.45	40	6	114	19.6	0.54	340.0	8.01	62.2	"
	5.401	12:09	1.60	40	6	114	19.9	0.53	340.8	8.03	60.1	"
	5.405	12:11	1.75	40	6	114	19.2	0.52	338.2	8.03	59.3	"
	5.412	12:13	1.90	40	6	114	19.8	0.53	341.7	8.03	58.9	"
	5.409	12:15	2.05	40	6	114	19.5	0.48	340.1	8.04	58.2	"
	5.443	12:17	2.20	40	6	114	19.5	0.42	339.2	8.04	57.7	"
	5.390	12:19	2.35	40	6	114	19.5	0.41	338.9	8.04	56.7	"
				Stabilised parameters samples collected from 12:20pm								
				- not able to field filter water is too								
					silty collected lab filtered bottles instead							
		WL after collecting samples				5.632m btoc						

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Groundwater Sampling Field Sheet

Site:		Job Number: 1014985	Date: 27/11/20
Well ID: BH11g	Well Location: N: E:		Field Staff: RVDK

EQUIPMENT

Water meter: (Interface)/dip meter/other _____ **Water Quality Meter type:** YSI

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: peristaltic pump

Bailer type: disposable/stainless steel

Weather Conditions: (Sunny) / (Cloudy) / Rain (Warm) / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up:	0.56m	**Depth to PSH (m bTOC):**	Na
Standing Water Level (m bTOC):	2.817m	**PSH visually confirmed**	Yes / (No)
Total well depth (m bTOC):	5.555m	**PID Headspace(ppm):**	Na
Water column (m) :		**Well head condition:**	Good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µscm⁻¹)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	2.819	10:02 am						
0.5	3.025	10:05	0.97	140.0	5.17	252.0	16.6	clear, no odour
1	3.211	10:08	0.67	138.7	4.97	271.7	16.6	clear, no odour
1.5	3.347	10:11	0.69	140.4	4.96	258.0	16.8	clear, no odour
2.0	3.395	10:14	0.70	140.3	4.95	253.4	16.8	clear, no odour
		Stabilised	parameters		collected			
		2	sets	of	suite	3	sample	
			bottles		@	10:16 am		
								SWL after sampling (pump removed) 3.326m
Stabilisation Criteria (3 readings)				**+/- 3%**	**+/- 0.1**		**+/- 0.2**	

SAMPLING

Equipment decontaminated prior to use: (Yes)/No

Samples stored on ice: (Yes)/No

Metals samples filtered: (Yes)/No

QC Sample ID (if any): Dup1

Containers collected:

- ☒ Organics
- ☒ Inorganics
- ☐ Biological
- ☐ VOC (Vial)
- ☐ Nutrients
- ☐
- ☒ Metals
- ☐ Cyanide
- ☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~4m

Fill timer: 0.5L per 3 min

Pump pressure regulator:

Discharge timer:

COMMENTS

Tonkin+Taylor

Groundwater Sampling Field Sheet

and ENVRHATION

Site:	**Job Number:** 1014985	**Date:** 27/11/20
Well ID: BH113	**Well Location: N:** **E:**	**Field Staff:** RVDK

EQUIPMENT

Water meter: Interface/dip meter/other _____ **Water Quality Meter type:** YSI

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: Peri pump

Bailer type: disposable/stainless steel

Weather Conditions: Sunny / Cloudy / Rain Warm / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up:	0.47m	**Depth to PSH (m bTOC):**	Na
Standing Water Level (m bTOC):	2.660m	**PSH visually confirmed**	Yes / No
Total well depth (m bTOC):	4.530m	**PID Headspace(ppm):**	Na
Water column (m) :		**Well head condition:**	Good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µS/cm)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	2.655m	8:35am						
0.5L	2.745	8:38am	0.62	227.8	5.80	228.9	16.6°C	clear no odour
1L	2.785	8:41am	0.50	221.5	5.72	238.0	16.5°	clear no odour
1.5L	2.839	8:44am	0.45	222.5	5.70	238.4	16.5°	clear no odour
2.0L	2.879	8:47am	0.41	223.7	5.68	237.7	16.5	clear no odour
			Stabilised	parameters	collected	2 sets		
				of	suite	2	sample	bottles
					@	8:45am		
								SWL after sampling (pump removed) 2.910m
Stabilisation Criteria (3 readings)				+/- 3%	+/- 0.1		+/- 0.2	

SAMPLING

Equipment decontaminated prior to use: Yes/No

Samples stored on ice: Yes/No

Metals samples filtered: Yes/No

QC Sample ID (if any): None

Containers collected:

☐ Organics	☒ Inorganics	☐ Biological
☐ VOC (Vial)	☐ Nutrients	☐
☒ Metals	☐ Cyanide	☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~3.0m Pump pressure regulator:

Fill timer: Discharge timer:

COMMENTS

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Groundwater Sampling Field Sheet

Site:		Job Number: 1014985	Date: 27/11/20
Well ID: BH116	Well Location: N: E:		Field Staff: RVDK

EQUIPMENT

Water meter: Interface/dip meter/other _____ **Water Quality Meter type:** 451

Pump type: Micropurge / wattera / bailer / downhole submersible / Hydrasleeve / other: Pevi

Bailer type: disposable/stainless steel

Weather Conditions: Sunny / Cloudy / Rain Warm / Hot / Cold

PRE-PURGE INFORMATION

TOC Stick-up:	0.46m	**Depth to PSH (m bTOC):**	Na
Standing Water Level (m bTOC):	1.302 m	**PSH visually confirmed**	Yes / No
Total well depth (m bTOC):	5.540 m	**PID Headspace(ppm):**	Na
Water column (m) :		**Well head condition:**	good

PURGE VOLUME CALCULATIONS

Well Volume (approximate) _____ **(L)**

nb Well volume (L) = Water column (m) x conversion factor (L/m), assuming well screened across water table

Casing diameter	25mm	50mm	100 mm	125m
Conversion factor (L/m):	0.98	1.96	7.85	31.4

WATER QUALITY PARAMETERS

Vol (L)	SWL (m bTOC)	Time	DO (mg/L)	Conduct. (µS/cm)	pH	Redox (mV)	Temp (°C)	Comments (e.g., colour, turbidity, odour)
0	1.286m	7:28 am						
0.15	1.642	7:31 am	2.32	476.3	5.86	220.6	14.9°C	clear, no odour
1	1.725	7:33 am	2.81	426.6	5.75	227.5	14.9°C	clear, no odour
1.5	1.975	7.35 am	3.27	403.3	5.65	235.6	15.0°C	clear, no odour
2.0	2.110	7:37 am	3.22	400.5	5.63	238.2	15.0°C	Clear, no odour
		Stabilised parameters collected 2 sets						
			of suite	3	sample	bottles		
				@	7:45 am			
								SWL after sampling (pump removed) 2.540m
Stabilisation Criteria (3 readings)				+/- 3%	+/- 0.1		+/- 0.2	

getting sunny

SAMPLING

Equipment decontaminated prior to use: Yes/No

Samples stored on ice: Yes/No

Metals samples filtered: Yes/No

QC Sample ID (if any): trip blank filled here

Containers collected:

- ☒ Organics
- ☒ Inorganics
- ☐ Biological
- ☐ VOC (Vial)
- ☐ Nutrients
- ☐
- ☒ Metals
- ☐ Cyanide
- ☐

MICROPURGE SETTINGS

Depth of pump inlet (mTOC): ~2.5

Fill timer: 1L per 5 minutes

Pump pressure regulator:

Discharge timer:

COMMENTS

BH117 8:39am removed level logger 0.53 stick up 12.785m to bottom RVDK

→ issue w/ nitrogen seal Field staff: XIJI

Monitoring Well	Water level	Time	Cumulative purge volume	Controller pressure	Drive duration	Refill duration (purge)	Temp	Dissolved Oxygen	Conductivity	pH	ORP	Comments
	mbTOC	NZST	L	(psi)	(sec)	(sec)	°C	mg/L	µS/cm		mV	
* 8:39am	2.965			40								
10:10	2.732		0.25 L	36	6	114	20.6	2.65	574	6.60	99.6	Clear no odour
10:13	2.785		0.30 L	36	6	114	19.6	1.76	547	6.57	91.5	"
10:16	2.836		0.45 L	36	6	114						"
10:19	2.876		0.60 L	36	6	114	17.9	2.31	501	6.61	87.4	"
10:20	2.915		0.75 L	"	"	"	18.1	2.16	501	6.60	83.8	"
10:22	2.957		0.90 L	"	"	"	18.0	2.06	502	6.59	80.1	"
10:24	2.972		1.05 L	"	"	"	18.0	2.06	503	6.59	77.1	"
10:26	3.002		1.20 L	"	"	"	17.8	2.06	501	6.58	74.3	"
10:28	3.026		1.35 L	"	"	"	17.6	2.01	500	6.58	72.9	"
10:30	3.051		1.50 L	"	"	"	17.8	1.85	500	6.58	70.9	"
10:32	3.076		1.65 L	"	"	"	17.6	1.87	497	6.58	69.8	"
10:34	3.105		1.80 L	"	"	"	17.8	1.80	498.0	6.58	68.0	"
10:36	3.125		1.95 L	"	"	"	17.6	1.75	499.1	6.58	66.7	"
10:38	3.146		2.20 L	"	"	"	17.5	1.72	496.5	6.58	65.6	"
10:40	3.172		2.35 L	"	"	"	17.4	1.70	498.1	6.58	64.7	"
10:42	3.189		2.50 L	"	"	"	17.5	1.70	497.1	6.58	64.4	"
			Stabilised parameters collected samples from 10:49am									
11:22	3.629	WL after collecting samples										

Equipment = Bladder pump, YSI, Interface probe

Field Blank 2 sample filled here

Appendix D: Chain of custody documentation

- **Soil**
- **Groundwater**
- **Soil (Acid Sulphate)**

Not registered yet

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Tel +64 7 858 2000
Fax +64 7 858 2001
Email mail@hill-labs.co.nz
Web www.hill-labs.co.nz

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 8am 10/12/20

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*

☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E Effluent	G Geothermal	Pot1 Potable Water (LAS/EU)	Pot2 Potable Water (NZDWS)
	GW Ground Water	L Leachate	☐ Audit Monitoring	Pot3 Potable Water (other)
	SW Surface Water	S Saline	☐ Check Monitoring	Pool Swimming/Spa Pool
	TW Trade Waste			
Solids	ES Soil	SE Sediment	SL Sludge	PL Plant
Other	O O Oil	M Miscellaneous	FS FS Fish/shellfish/biota	BM BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA110a-0.1m	8/12/20	ES	Asbestos Semi Q will update
2	" -0.5m	↓	↓	Asbestos Semi Q
3	" -1.0m			Hold
4	" -2.0m			Asbestos Semi Q
5	HA110b-0.1m	7/12/20		Hold
6	" -0.5m	↓		↓
7	" -1.0m			
8	" -2.0m			
9	HA110a 3.0m	8/12/20		
10	HA110a-Duplicate	↓	↓	↓

Hill Laboratories
BETTER TESTING BETTER RESULTS

Job No: 249 1712 Date Recv: 11-Dec-20 06:03

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Kyah Flynn

3124917125

Client

Name: Tonkin & Taylor
Address: 105 Carlton Gore Road, Newmarket, Auckland

Phone: 273040134 Fax:
Client Reference: 1014985
Quote No: Order Number:

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 8am 10/12/20
Name: Rebecca van der Krogt
☒ Please tick if you require COC to be faxed back
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen
Temp: 11.6
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority
☐ Low ☐ Normal ☑ High
☐ Urgent (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E Effluent	G Geothermal	Pot1 Potable Water (LAS/EU)		Pot2 Potable Water (NZDWS)		
	GW Ground Water	L Leachate	☐ Audit Monitoring		Pot3 Potable Water (other)		
	SW Surface Water	S Saline	☐ Check Monitoring		Pool Swimming/Spa Pool		
	TW Trade Waste						
Solids	ES Soil	SE Sediment	SL Sludge		PL Plant		
Other	O O Oil	M Miscellaneous	FS FS Fish/shellfish/biota		BM BM Biological Material		

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA110a-0.1m	8/12/20	ES	Hold cold will update
2	" -0.5m	↓	↓	
3	" -1.0m			
4	" -2.0m	↓		
5	HA110b-0.1m	7/12/20		
6	" -0.5m	↓		
7	" -1.0m			
8	" -2.0m	↓		
9	HA110a 3.0m	8/12/20		
10	HA110a-Duplicate	↓	↓	

Hills CHCH

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

ANALYSIS Job No: **249 0317** Date Recv: 09-Dec-20 11:00

Received by: Torin Wilson

3124903176

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No.

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 8/12/20 12:30pm

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1** ☐	Potable Water (LAS/EU) Audit Monitoring	**Pot2** Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Check Monitoring	**Pot3** Potable Water (other)
	SW	Surface Water	**S**	Saline			**Pool** Swimming/Spa Pool
	TW	Trade Waste					
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL** Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM** BM Biological Material

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	HA111-0.1m	7/12/20	ES	Hold
2	" -0.5m	↓	↓	↓
3	" -1.0m			
4	" -2.0m			
5	" -3.0m			
6				
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 9833** Date Recv: 09-Dec-20 05:45

Received by: Simon Argent

3124898337

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 8/12/20 12:30pm

Name: Rebecca van der Krogt

☐ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 12.7

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email

lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA111-0.5m	8/12/20	ES	Hold cold
2	" -0.5m			
3	" -1.0m			
4	" -2.0m			
5	" -3.0m			
6				
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 9832**
Date Recv: 09-Dec-20 05:45
Received by: Simon Argent
3124898325

Client

Name Tonkin & Taylor
Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*
Client Reference 1014985
Quote No *Order Number*

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No.

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 8/12/20 12:30 pm
Name: Rebecca van der Krogt
☒ *Please tick if you require COC to be faxed back*
Signature: Rvd Krogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 12.7
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HAIII Rinsate	8/12/20	rinsate	hold cold
2				
3				
4				
5				
6				
7				
8				
9				
10				

Chilly bin 1 of 2

Hills CHCH

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 9334**
Date Recv: 08-Dec-20 11:37
Received by: Torin Wilson
3124893348

Client

Name	Tonkin & Taylor
Address	105 Carlton Gore Road, Newmarket, Auckland
Phone	273040134 *Fax*
Client Reference	1014985
Quote No	*Order Number*

Primary Contact	Rebecca van der Krogt
Submitted By	Rebecca van der Krogt
Charge To	T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 7/12/20 3:30pm
Name: Rebecca van der Krogt
☒ *Please tick if you require COC to be faxed back*
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition *Temp:*
☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*
☐ Sample Analysis details checked
Signature:

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA109-0m	as per jar	ES	Hold will update scheduling
2	" -0.5m			
3	" -1.0m			
4	" -2.0m			
5	" -3.0m			
6	" -4.0m			
7	" -5.0m			
8	HA114-0m			
9	" -0.5m			
10	" -1.0m			

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA114 - -2			
12	" - -3			
13	" - -4			
14	" - -5			
15	HA119- 0			
16	" - 0.5			
17	" -1			
18	" -2			
19	" -3			
20	" -4			
21	" -5			
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 9094**

Date Recv: 08-Dec-20 09:24

Received by: Reshmi Kumar

3124890948

Client

Name: Tonkin & Taylor

Address: 105 Carlton Gore Road, Newmarket, Auckland

Phone: 273040134 Fax:

Client Reference: 1014985 1014985

Quote No: Order Number:

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 3:30pm 4/12/20

Name: Rebecca van der Krogt

☒ Please tick if you require COC to be faxed back

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen Temp:

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email
lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E Effluent	G Geothermal	Pot1 Potable Water (LAS/EU)	☐ Audit Monitoring	☐ Check Monitoring	Pot2 Potable Water (NZDWS)	Pot3 Potable Water (other)	Pool Swimming/Spa Pool
	GW Ground Water	L Leachate						
	SW Surface Water	S Saline						
	TW Trade Waste							
Solids	ES Soil	SE Sediment	SL Sludge			PL Plant		
Other	O O Oil	M Miscellaneous	FS FS Fish/shellfish/biota			BM BM Biological Material		

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA115 rinsate	3/12/20	rinsate	Hold cold
2	HA1076 rinsate	4/12/20	rinsate	Hold cold
3				
4				
5				
6				
7				
8				
9				
10				

Chilly bin 1 of 2

Hills Ham

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Tel +64 7 858 2000
Fax +64 7 858 2001
Email mail@hill-labs.co.nz
Web www.hill-labs.co.nz

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014986

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 3:30pm 7/12/20

Name: Rebecca van der Krogt

☑ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA107a-0.1m	as per jar	ES	hold cold
2	" -0.5m			hold cold
3	" -1.0m			hold cold
4	" -2.0m			hold cold
5	HA107b-0.1m			hold cold
6	" -0.5m			hold cold
7	" -1.0m			hold cold
8	" -2.0m			hold cold
9	HA108-0.1m			hold cold
10	" -0.5m	✓	✓	hold cold

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA108 - 1.0m			hold cold
12	" - 2.0m			hold cold
13	HA109 - 0m			heavy metals+Hg+SVOCS
14	" - 0.5m			heavy metals+Hg+SVOCS
15	" - 1.0m			heavy metals+Hg+SVOCS
16	" - 2.0m			hold cold
17	" - 3.0m			hold cold
18	" - 4.0m			hold cold
19	" - 5.0m			hold cold
20	HA114 - 0.5m			heavy metals+Hg+SVOCS
21	" - 0.5m			heavy metals+Hg+SVOCS
22	" - 1.0m			heavy metals+Hg+SVOCS
23	" - 2.0m			hold cold
24	" - 3.0m			hold cold
25	" - 4.0m			hold cold
26	" - 5.0m			hold cold
27	HA116 - 0.1m			heavy metals+Hg+SVOCS
28	" - 0.5m			heavy metals+Hg+SVOCS
29	" - 1.0m			heavy metals+Hg+SVOCS
30	" - 2.0m			hold cold
31	HA119 - 0m			heavy metals+Hg+SVOCS
32	" - 0.5m			heavy metals+Hg+SVOCS
33	" - 1m			heavy metals+Hg+SVOCS
34	" - 2m			hold cold
35	" - 4m			hold cold
36	" - 5m			hold cold
37	HA107b - dupe			heavy metals+Hg+SVOCS
38	HA108 duplicate			heavy metals+Hg+SVOCS
39	Dup D			heavy metals+Hg+SVOCS
40	Dup E			heavy metals+Hg+SVOCS
41	HA115 Duplicate			heavy metals+Hg+SVOCS

CHILLY 1/2

Hills CHCH

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYS

Job No: **248 7331**

Date Recv: 04-Dec-20 11:56

R J Hill Laboratories Limite
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zeala

Received by: Courtney Case

3124873310

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 3/12/20 7:30am

Name: Rebecca van der Krogt

☑ *Please tick if you require COC to be faxed back*

Signature: Rvdkrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email lhume@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA03-0m	2/12/20	ES	semi Q asbestos
2	" -0.5			semi Q asbestos
3	" -1.0m			semi Q asbestos
4	" -3.0m			Hold
5	" -5m			Hold
6	HA04-0m			Hold
7	" -0.5m			Hold
8	" -1.0m			Hold
9	" -3.0m			Hold
10	" -5.0m	↓	↓	Hold

CHLEY 1/2

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA05-0m	1/12/20	ES	semi Q asbestos
12	" -1m			semi Q asbestos
13	" -2m			semi Q asbestos
14	" -3m			Hold
15	" -5m			Hold
16	HA06-0m			semi Q asbestos
17	" -1m			semi Q asbestos
18	" -2m			semi Q asbestos
19	" -3m			Hold
20	" -5m			Hold
21	HA07-0.1m			Hold
22	" -0.5m			Hold
23	" -1.0m			Hold
24	" -2.0m			Hold
25	" -3.0m			Hold
26	" -4.0m			Hold
27	" -5.0m			Hold
28	HA112-0.5m	2/12/20		Hold
29	" -1.0m			Hold
30	HA113-0m			semi Q asbestos
31	" -0.5m			semi Q asbestos
32	" -1.0m			semi Q asbestos
33	HA116-0m			semi Q asbestos
34	" -0.5m			semi Q asbestos
35	" -1.0m			semi Q asbestos
36	HA117-0.1m			Semi Q asbestos
37	" -0.5m			Semi Q asbestos
38	" -1.0m			Semi Q asbestos
39				
40				

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYS

Job No: **248 6815**

Date Recv: 04-Dec-20 05:42

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Simon Argent

3124868157

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 3/12/20 11am

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 11.6

☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email

lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E	Effluent	G	Geothermal	Pot1	Potable Water (LAS/EU)	Pot2	Potable Water (NZDWS)
	GW	Ground Water	L	Leachate	☐	Audit Monitoring	Pot3	Potable Water (other)
	SW	Surface Water	S	Saline	☐	Check Monitoring	Pool	Swimming/Spa Pool
	TW	Trade Waste						
Solids	ES	Soil	SE	Sediment	SL	Sludge	PL	Plant
Other	O	O Oil	M	Miscellaneous	FS	FS Fish/shellfish/biota	BM	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA112 Rinsate	2/12/20	rinsate	Hold cold
2	HA07 Rinsate	↓	rinsate	Hold cold
3				
4				
5				
6				
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 6812**
Date Recv: 04-Dec-20 05:42
Received by: Simon Argent

3124866120

Client

Name: Tonkin & Taylor
Address: 105 Carlton Gore Road, Newmarket, Auckland
Phone: 273040134 Fax:
Client Reference:
Quote No: Order Number:

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No.

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 3/12/20 11am
Name: Rebecca van der Krogt
☑ Please tick if you require COC to be faxed back
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen Temp: 9.2
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email
lhare@tonkintaylor.co.nz

Priority
☐ Low ☐ Normal ☑ High
☐ Urgent (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E	Effluent	G	Geothermal	Pot1	Potable Water (LAS/EU)	Pot2	Potable Water (NZDWS)
	GW	Ground Water	L	Leachate	☐	Audit Monitoring	Pot3	Potable Water (other)
	SW	Surface Water	S	Saline	☐	Check Monitoring	Pool	Swimming/Spa Pool
	TW	Trade Waste						
Solids	ES	Soil	SE	Sediment	SL	Sludge	PL	Plant
Other	O	Oil	M	Miscellaneous	FS	Fish/shellfish/biota	BM	Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	Dup A	1/12/20	ES	heavy metals+Hg+TPH+PAH
2	HA05-0m			heavy metals+Hg+TPH+PAH
3	" -0.5m			heavy metals+Hg+TPH+PAH
4	" -1.0m			heavy metals+Hg+TPH+PAH
5	" -2.0m			hold cold
6	" -3.0m			hold cold
7	" -4.0m			hold cold
8	" -5.0m			hold cold
9	HA06-0m			heavy metals+Hg+TPH+PAH
10	" -0.4-0.6			heavy metals+Hg+TPH+PAH

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA06 - 1.0m			heavy metals+Hg+TPH+PAH
12	" - 2.0m			hold cold
13	" - 3.0m			hold cold
14	" - 4.0m			hold cold
15	" - 5.0m			hold cold
16	HA07 - 0.1m			hold cold
17	" - 0.5m			hold cold
18	" - 1.0m			hold cold
19	" - 2.0m			hold cold
20	" - 3.0m			hold cold
21	" - 4.0m			hold cold
22	" - 5.0m			hold cold
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 6806**
Date Recv: 04-Dec-20 05:42
Received by: Simon Argent

3124868068

Client

Name Tonkin & Taylor
Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*
Client Reference 1014995
Quote No *Order Number*

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 3/12/20 7:30am
Name: Rebecca van der Krogt
☑ *Please tick if you require COC to be faxed back*
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 4.6
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	Oil	**M**	Miscellaneous	**FS**	Fish/shellfish/biota	**BM**	Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA03-0m	2/12/20	ES	heavy metals+Hg+TPH+PAH
2	" -0.5m			heavy metals+Hg+TPH+PAH
3	" -1m			heavy metals+Hg+TPH+PAH
4	" -2m			Hold cold
5	" -3m			Hold cold
6	" -4m			Hold cold
7	" -5m			Hold cold
8	HA04-0m			heavy metals+Hg+SVOCS
9	" -0.5m			heavy metals+Hg+SVOCS
10	" -1.0m	"	"	heavy metals+Hg+SVOCS

rescheduling

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA04 - 2.0m			Hold cold
12	" - 3.0m			Hold cold
13	" - 4.0m			Hold cold
14	" - 5.0m			Hold cold
15	HA12 - 0.1m			Hold cold
16	" - 0.5m			Hold cold
17	" - 1.0m			Hold cold
18	" - 1.5m			Hold cold
19	" - 2.0m			Hold cold
20	HA13 - 0m			heavy metals+Hg+TPH+PAH
21	" - 0.5m			heavy metals+Hg+TPH+PAH
22	" - 1.0m			heavy metals+Hg+TPH+PAH
23	" - 2.0m			Hold cold
24	HA16 - 0m			heavy metals+Hg+TPH+PAH
25	" - 0.5m			heavy metals+Hg+TPH+PAH
26	" - 1.0m			heavy metals+Hg+TPH+PAH
27	" - 2.0m			Hold cold
28	HA17 - 0.1m			heavy metals + Hg+TPH+PAH
29	" - 0.5m			heavy metals + Hg+TPH+PAH
30	" - 1.0m			Hold cold
31	" - 2.0m			heavy metals + Hg+TPH+PAH
32	Dup B			heavy metals+Hg+SVOCS
33	Dup C	"	"	heavy metals+Hg+TPH+PAH
34				
35				
36				
37				
38				
39				
40				

Job No: Date Recv: 27-Nov-20 17:42

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS 248 2696

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Alexa Badenhorst

3124826969

Client

Name	Tonkin & Taylor
Address	105 Carlton Gore Road, Newmarket, Auckland
Phone	273040134 *Fax*
Client Reference	1014985
Quote No	*Order Number*
Primary Contact	Rebecca van der Krogt
Submitted By	Rebecca van der Krogt
Charge To	T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
☑ *Please tick if you require COC to be faxed back*
Date & Time: 5pm 27/11/20
Name: Rebecca van der Krogt
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*
☐ Sample Analysis details checked
Signature:

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA07a-0.1-0.3	25/11/20	ES	Hold
2	-0.5			
3	-1.0			
4	-1.8			
5	-3.0			
6	-5.0			
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 2695**

Date Recv: 27-Nov-20 17:42

Received by: Alexa Badenhorst

3124826957

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email

lhine@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☒ *Please tick if you require COC to be faxed back*

Date & Time: 27/11/20 5pm

Name: Rebecca van der Krogt

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition

☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

Temp: 8°C

☐ Sample Analysis details checked

Signature:

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E	Effluent	G	Geothermal	Pot1	Potable Water (LAS/EU)	Pot2	Potable Water (NZDWS)
	GW	Ground Water	L	Leachate	☐	Audit Monitoring	Pot3	Potable Water (other)
	SW	Surface Water	S	Saline	☐	Check Monitoring	Pool	Swimming/Spa Pool
	TW	Trade Waste						
Solids	ES	Soil	SE	Sediment	SL	Sludge	PL	Plant
Other	O	O Oil	M	Miscellaneous	FS	FS Fish/shellfish/biota	BM	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA07a - 0.1m	23/11/20	ES	Hold cold
2	" - 0.5m			
3	- 1.0m			
4	- 2.0m			
5	- 3.0m			
6	- 4.0m			
7	- 5.0m			
8				
9				
10				

Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 2687**

Date Recv: 27-Nov-20 17:25

Received by: Alexa Badenhorst

3124826870

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 5pm 27/11/20

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKroegf

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

Temp: °C 1.3 C

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

Hold frozen we intend to schedule for corrosivity in future please add to current job number

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2** Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3** Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool** Swimming/Spa Pool
	TW	Trade Waste					
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL** Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM** BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA07a	25/11/20	ES	Hold frozen (500g jar)
2	HA08a	↓	↓	↓ (500g jar)
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING BETTER RESULTS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

ANALYSIS REQUEST

Job No: **248 2686**

Date Recv: 27-Nov-20 17:25

Received by: Alexa Badenhorst

3124826866

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 27/11/20 5pm

Name: Rebecca van der Krogt

☐ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 17 °C

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email Nhinehine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	Ha08a rinsate	25/11/20	Rinsate	Hold cold
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING **BETTER RESULTS**

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 1821**
Date Recv: **27-Nov-20 05:30**
Received by: Joe Varey

3124818214

Client

Name Tonkin & Taylor
Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*
Client Reference 1014985
Quote No *Order Number*

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 26/11/20 11am
Name: Rebecca van der Krogt
☐ *Please tick if you require COC to be faxed back*
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 11.0
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

Please hold samples frozen we intend to schedule future as a large batch for acid sulphate analysis - also email lhine@tonkintaylor.co.nz

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E** Effluent	**G** Geothermal	**Pot1** Potable Water (LAS/EU)		**Pot2** Potable Water (NZDWS)		
	GW Ground Water	**L** Leachate	☐ Audit Monitoring		**Pot3** Potable Water (other)		
	SW Surface Water	**S** Saline	☐ Check Monitoring		**Pool** Swimming/Spa Pool		
	TW Trade Waste						
Solids	**ES** Soil	**SE** Sediment	**SL** Sludge		**PL** Plant		
Other	**O** O Oil	**M** Miscellaneous	**FS** FS Fish/shellfish/biota		**BM** BM Biological Material		

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	HA08a-1.2m	24/11/20	ES	Hold frozen
2	HA08a-3.5	↓	ES	Hold frozen
3				
4				
5				
6				
7				
8				
9				
10				

Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 1820**
Date Recv: 27-Nov-20 05:30
Received by: Joe Varey

3124818202

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 26/11/20 11am
Name: Rebecca van der Krogt
☒ Please tick if you require COC to be faxed back
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen
Temp: 11.0

☐ Sample Analysis details checked
Signature:

Client

Name Tonkin & Taylor
Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*
Client Reference 1014985
Quote No *Order Number*

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E** Effluent	**G** Geothermal	**Pot1** Potable Water (LAS/EU)	**Pot2** Potable Water (NZDWS)
	GW Ground Water	**L** Leachate	☐ Audit Monitoring	**Pot3** Potable Water (other)
	SW Surface Water	**S** Saline	☐ Check Monitoring	**Pool** Swimming/Spa Pool
	TW Trade Waste			
Solids	**ES** Soil	**SE** Sediment	**SL** Sludge	**PL** Plant
Other	**O** O Oil	**M** Miscellaneous	**FS** FS Fish/shellfish/biota	**BM** BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA08 Rinsate	24/11/20	Rinsate	hold cold will update scheduling
2				
3				
4				
5				
6				
7				
8				
9				
10				

Hamilton

HOLD/COLD

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

20-47057

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email lhine@tonkintaylor.co.nz			
Project Leader							
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY									
Laboratory Job #		20-47057	Seal Status		Priority (mark with X)				
Date Received	10/12/20 --/--/--	Received By	KW	Sample Temp Status		Routine		Urgent	

TESTS REQUESTED														
								Analysis Requests/Suites						
Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Metals (7)	PAH	[Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
	Split	HA107b - 1.0 m			0:00	S or W							
	Split	HA108 - 0.5 m			0:00	S or W		Hold cold all					
	Split	HA109 - 0 m			0:00	S or W							
	Split	HA115 - 1.0 m			0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt		Relinquished by	KW		Courier	NZC
Date		Time		Date	--/--/--	Time	0:00	Courier #	JDQ00003461

7/12/20 3:30pm sealed/chilled

Analytica Laboratories Ltd
Ruakura Research Centre

10 Bisley Road, Private Bag 3123
Hamilton 3240, New Zealand

Phone +64 7 974 4740
Email enviro.reception@analytica.co.nz

analytica.co.nz

8/12/20 6.58am

HOLD COLD

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

20-47783

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email lhine@tonkintaylor.co.nz			
Project Leader							
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY									
Laboratory Job #		20-47783	Seal Status		Priority (mark with X)				
Date Received	11/12/20	Received By	KW	Sample Temp Status		Routine		Urgent	

TESTS REQUESTED

Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Metals (7)	PAH	[Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
8/12/20	Split HA 110a-2.0m				0:00	S or W		Hold cold					
7/12/20	Split HA 110b-2.0m				0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
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					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt		Relinquished by	KW	Courier	NZC
Date	10/12/20	Time	9am	Date	11/12/20 --/--/--	Time 6:45am	0:00	Courier # JDQ000003462

sealed/chilled

Analytica Laboratories Ltd
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analytica.co.nz

Analytica Hamilton

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

20-46634

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email lhine@tonkintaylor.co.nz			
Project Leader							
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY							
Laboratory Job #	20-46634	Seal Status		Priority (mark with X)			
Date Received	--/--/--	Received By		Sample Temp Status		Routine		Urgent	

TESTS REQUESTED

Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Metals (7)	PAH	[Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
	Split	HA03 - 0m		2/12/20	0:00	S or W							
	Split	HA116 - 0m		2/12/20	0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt		Relinquished by	Cobd		Courier	NZC
Date		Time	7:30	Date	--/--/-- 3/12/20	Time	0:00	Courier #	JDQU00034?1

Analytica Laboratories Ltd
Ruakura Research Centre
10 Bisley Road, Private Bag 3123
Hamilton 3240, New Zealand
Phone +64 7 974 4740
Email enviro.reception@analytica.co.nz
analytica.co.nz

HOLD/COLD

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

20-46738

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email lhine@tonkintaylor.co.nz			
Project Leader							
Project ID	p14985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY								
Laboratory Job #	20-46738		Seal Status		Priority (mark with X)			
Date Received	4/12/20 --/--/--	Received By	KW	Sample Temp Status		Routine		Urgent

TESTS REQUESTED

	Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Metals (7)	PAH	[Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
1/12/20			HA05-0m Split			0:00	S or W		Hold cold					
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
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						0:00	S or W							
						0:00	S or W							
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						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							
						0:00	S or W							

Relinquished by		R van der Krogt	Relinquished by	Ginny	Courier	5D1400003472
Date		Time 1130	Date 4/12	Time 0:00	Courier #	

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

20-41900

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email Lhine@tonkintaylor.co.nz			
Project Leader							
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY								
Laboratory Job #		20-41900	Seal Status		Priority (mark with X)			
Date Received	--/-/-- 5/11/20	Received By	KW	Sample Temp Status		Routine		Urgent

TESTS REQUESTED

Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Metals (7)	PAH	[Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
	Split	ENVRHA101-	0.0-0.1m	4/11/20	0:00	S or W		Hold cold					
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
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					0:00	S or W							
					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt	Relinquished by	[illegible]		Courier	NZC	
Date		Time	2:30pm	Date	--/-/-- 4/11/20	Time	0:00	Courier # JDQ0000 1461

KW 5/11/20 7:30am

Analytica Laboratories Ltd
Ruakura Research Centre

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Hamilton 3240, New Zealand

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analytica.co.nz

Hamilton

20-42713

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland						
Project Leader	Rebecca van der Krogt						
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY								
Laboratory Job #		20-42713	Seal Status		Priority (mark with X)			
Date Received	11/11/20	Received By: Ginny	Sample Temp Status		Routine		Urgent	

TESTS REQUESTED

19/11/20

Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Analysis Requests/Suites: Metals (7)	PAH	Hold [Enter Test Name]	[Enter Test Name]	[Enter Test Name]	Sample Comments
		BH113-5.0m Split		9/11/20	0:00	S or W		hold					
		Split Envr-SS03	0.1-0.2m		0:00	S or W		heavy metals + Hg, SVOCS					
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
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					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt		Relinquished by				Courier	
Date		Time		Date	--/--/--	Time	0:00	Courier #	

HOLD COLD

ENVIRONMENTAL TESTING:

CHAIN OF CUSTODY

ANALYTICA LABORATORIES

CLIENT INFORMATION				Page #		of	
Client	Tonkin and Taylor			Customer Comments / Instructions			
Address	105 Carlton Gore Road, Newmaket, Auckland			also email lhine@tonkintaylor.co.nz 20-44791			
Project Leader							
Project ID	1014985	PO #					
Site							
Sampler	Rebecca van der Krogt						
Phone	273040134						
Email	rvanderkrogt@tonkintaylor.co.nz						
Invoice Email							

LABORATORY USE ONLY								
Laboratory Job #		20-44791	Seal Status		Priority (mark with X)			
Date Received	24/11/2020	Received By	Cobb	Sample Temp Status		Routine		Urgent

TESTS REQUESTED

Lab ID	Location ID	Sample ID	Depth	Date	Time	Matrix	# Cont.	Analysis Requests/Suites: Metals (7)	PAH	Hold cold	[Enter Test Name]	[Enter Test Name]	Sample Comments
		BH05a-2.0 split			0:00	S or W				x			
		BH07-0.1-0.4m split			0:00	S or W				x			
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
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					0:00	S or W							
					0:00	S or W							
					0:00	S or W							
					0:00	S or W							

Relinquished by		R van der Krogt	Relinquished by	KW		Courier	NZC	
Date		Time		Date	--/--/--	Time	0:00	Courier # JD00000 3532

24/11/20 6:45 sealed/chilled

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 6837** Date Recv: **04-Dec-20 06:37**

Received by: Simon Argent

3124868373

Office use only Job No:

CHAIN OF CUSTODY RECORD

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Sent to Hill Laboratories

☒ *Please tick if you require COC to be faxed back*

Date & Time: 3/12/20 7:30am

Name: Rebecca van der Krogt

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 16.5

☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

also email
lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E	Effluent	G	Geothermal	Pot1	Potable Water (LAS/EU)	Pot2	Potable Water (NZDWS)
	GW	Ground Water	L	Leachate	☐	Audit Monitoring	Pot3	Potable Water (other)
	SW	Surface Water	S	Saline	☐	Check Monitoring	Pool	Swimming/Spa Pool
	TW	Trade Waste						
Solids	ES	Soil	SE	Sediment	SL	Sludge	PL	Plant
Other	O	O Oil	M	Miscellaneous	FS	FS Fish/shellfish/biota	BM	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	Trip blank 2	2/12/20	GW	Hold cold
2	Field blank 2			Hold cold
3	BH110			pH, diss metals(7) + Hg + PAH + TPH
4	BH117			pH, diss metals(7) + Hg + PAH + TPH
5	BH05a			pH, diss metals(7) + Hg + PAH + TPH
6	Rinsate	3/12/20	GW	Hold cold
7				
8				
9				
10				

Job No: 248 2688 Date Recv: 27-Nov-20 17:25

Received by: Alexa Badenhorst

3124826882

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories *Date & Time:*

Name: Rebecca van der Krogt

☐ *Please tick if you require COC to be faxed back* *Signature:*

Received at Hill Laboratories *Date & Time:*

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 17°C

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz
* Please can the second set of samples be placed on hold cold

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	E Effluent	G Geothermal	Pot1 Potable Water (LAS/EU)		Pot2 Potable Water (NZDWS)		
	GW Ground Water	L Leachate	☐ Audit Monitoring		Pot3 Potable Water (other)		
	SW Surface Water	S Saline	☐ Check Monitoring		Pool Swimming/Spa Pool		
	TW Trade Waste						
Solids	ES Soil	SE Sediment	SL Sludge		PL Plant		
Other	O O Oil	M Miscellaneous	FS FS Fish/shellfish/biota		BM BM Biological Material		

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	dup 1	27/11/20	GW	dissolved metals (7) + Hg, pH, PAH, TPH
2	field blank 27/11/20			diss metals (7) + Hg, pH, PAH, TPH + SVOCs
3	trip blank 27/11/20			diss metals (7) + Hg, pH, PAH, TPH + SVOCs
4	~~BH05~~ BH05b			diss metals (7) + Hg, pH, PAH, TPH + SVOCs
5	BH06			diss metals (7) + Hg, pH, PAH, TPH + SVOCs
6	BH08			diss metals (7) + Hg + pH, PAH, TPH, SVOCs
7	BH111			diss metals (7) + Hg + pH, PAH, TPH, SVOCs
8	BH113			diss metals (7) + Hg + pH, SVOCs
9	BH116	↓	↓	diss metals (7) + Hg, pH, PAH, TPH, SVOCs
10				

Job No: 247 3291 Date Recv: 14-Nov-20 07:33

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYS

R J Hill Laboratories Limite
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealan

Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

Please hold samples frozen we intend to schedule in future as a large batch for acid sulphate analysis.
- also email lhine@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 13/11/20 9:45am

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 5.2°C

☐ Sample Analysis details checked
Signature:

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	BH111-3.7-3.9m	11/11/20		Please hold frozen
2	BH111-3.9-4.1m	11/11/20		Please hold frozen
3				
4				
5				
6				
7				
8				
9				
10				

Job No: 247 3291 Date Recv: 14-Nov-20 07:33

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results also lhine@tonkintaylor.co.nz

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☒ *Please tick if you require COC to be faxed back*

Date & Time: 12:30pm 13/11/20

Name: Rebecca van der Krogt

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* 9.9°C

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

Please freeze samples on arrival we intend to schedule for acid sulphate analysis at a future date.

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date: Please can we add to same job no as BH111 frozen samples

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1** ☐	Potable Water (LAS/EU)	**Pot2** Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3** Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool** Swimming/Spa Pool
	TW	Trade Waste					
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL** Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM** BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	BH113-0.45-0.55m	13/11/20	ES	Freeze all please
2	BH113-2.2-2.3m			
3	BH113-5.5-5.6m			
4	BH116-0.75-0.85m			
5	BH116-5.0-5.1m			
6	BH117-0.7-0.8m			
7	BH117-3.45-3.55m			
8	BH117-5.9-6.0m			
9				
10				

Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS REQUEST

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **247 3291**
Date Recv: 14-Nov-20 07:33
Received by: Joe Varey

3124732918

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time:
Name: Rebecca van der Krogt
☐ Please tick if you require COC to be faxed back
Signature:

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ Room Temp ☐ Chilled ☐ Frozen
Temp:
☐ Sample Analysis details checked
Signature:

Client

Name	Tonkin & Taylor
Address	105 Carlton Gore Road, Newmarket, Auckland
Phone	273040134
Fax	
Client Reference	1014985
Fax	1014985
Quote No	
Order Number	

Primary Contact	Rebecca van der Krogt
Submitted By	Rebecca van der Krogt
Charge To	T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results lhine@tonkintaylor.co.nz
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

Please hold frozen and add to job number 2473291
Thankyou

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	BH110-0.8-0.9m	13/11/20	ES	Hold frozen please
2	BH110-2.3-2.45m	↓	↓	↓
3				
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

Job No: 247 3291

Date Recv: 14-Nov-20 07:33

Received by: Joe Varey

3124732918

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Client

Name	Tonkin & Taylor
Address	105 Carlton Gore Road, Newmarket, Auckland
Phone	273040134 *Fax*
Client Reference	1014985
Quote No	108286 *Order Number*

Primary Contact	Rebecca van der Krogt
Submitted By	Rebecca van der Krogt
Charge To	T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz please hold samples frozen we intend to schedule in future as a large bvatch for acid sulphate analysis. Please add to job number 247 3291

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories *Date & Time:*

Name: Rebecca van der Krogt

☐ *Please tick if you require COC to be faxed back* *Signature:*

Received at Hill Laboratories *Date & Time:*

Name:

Signature:

Condition *Temp:* 1.9

☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

☐ Sample Analysis details checked

Signature:

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	BH05a-0.35		ES	Hold frozen will update scheduling
2	BH05a-2.9		ES	Hold frozen will update scheduling
3	BH06-0.85-1.0		ES	Hold frozen will update scheduling
4	BH06-2.7-2.9		ES	Hold frozen will update scheduling
5	BH07-0.9-1.0		ES	Hold frozen will update scheduling
6	BH07-2.7-2.8		ES	Hold frozen will update scheduling
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING **BETTER RESULTS**

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

ANALYSIS

Job No: **247 3291**

Date Recv: **14-Nov-20 07:33**

Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 3:35pm 25/11/20

Name: Rebecca van der Krogt

☑ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition

☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

Temp: 7.2 °C

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

Please hold samples frozen we intend to schedule in future as a large batch for acid sulphate analysis - also email lhine@tonkintaylor.co.nz Please add to job number 247 3291.

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	BH08-0.25m		ES	Hold frozen
2	BH08-2.3m		ES	Hold frozen
3				
4				
5				
6				
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **247 3291**
Date Recv: 14-Nov-20 07:33
Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor
Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*
Client Reference 1014985
Quote No *Order Number*

Primary Contact Rebecca van der Krogt
Submitted By Rebecca van der Krogt
Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 7:30am 3/12/20
Name: Rebecca van der Krogt
☒ *Please tick if you require COC to be faxed back*
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*
☐ Sample Analysis details checked
Signature:

ADDITIONAL INFORMATION

Please freeze all samples + add to job number 2473291 - we intend to analyze for conductivity as a bulk batch

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1** ☐	Potable Water (LAS/EU) Audit Monitoring	**Pot2** Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Check Monitoring	**Pot3** Potable Water (other)
	SW	Surface Water	**S**	Saline			**Pool** Swimming/Spa Pool
	TW	Trade Waste					
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL** Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM** BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA03-2m	as per jar	ES	Hold FROZEN Please
2	HA03-4m			
3	HA04-2m			
4	HA04-4m			
5	HA05-0.5m			
6	HA05-4m			
7	HA06-0.4-0.6m			
8	HA06-4m			
9	HA07-1.8m			
10	HA07-2.4m			

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA112-0.1m			
12	HA113-2m			
13	HA116-2m			
14	HA117-2m			
15				
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17				
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Hills Hamilton

Hill Laboratories
BETTER TESTING **BETTER RESULTS**

ANALYSIS R

Job No: 247 3291

Date Recv: 14-Nov-20 07:33

Received by: Joe Varey

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand
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Em
We

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

☒ *Please tick if you require COC to be faxed back*

Date & Time: 3:30pm 7/12/20

Name: Rebecca van der Krogt

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:*

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

Please hold frozen
add to job number : 2473291
also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E** Effluent	**G** Geothermal	**Pot1** Potable Water (LAS/EU)		**Pot2** Potable Water (NZDWS)		
	GW Ground Water	**L** Leachate	☐ Audit Monitoring		**Pot3** Potable Water (other)		
	SW Surface Water	**S** Saline	☐ Check Monitoring		**Pool** Swimming/Spa Pool		
	TW Trade Waste						
Solids	**ES** Soil	**SE** Sediment	**SL** Sludge		**PL** Plant		
Other	**O** O Oil	**M** Miscellaneous	**FS** FS Fish/shellfish/biota		**BM** BM Biological Material		

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	HA107a - 2.2m	as per jar	ES	Hold frozen
2	" - 3.5m			
3	HA107b - 1.2m			
4	" - 2.7m			
5	HA108 - 1.0m			
6	HA115 - 2.0m			
7				
8				
9				
10				

Hills Hamilton

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

Job No: **247 3291**

Date Recv: 14-Nov-20 07:33

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Joe Varey

3124732918

Client

Name: Tonkin & Taylor

Address: 105 Carlton Gore Road, Newmarket, Auckland

Phone: 273040134 Fax:

Client Reference: 1014985

Quote No: Order Number:

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 8/12/20 12:30pm

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

Temp: 12.7

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz
Please hold frozen and add to job no: 2473291

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA111 - 1.2m	7/12/20	ES	Hold FROZEN
2	HA111 - 2.4m	↓	↓	↓
3				
4				
5				
6				
7				
8				
9				
10				

Job No: 2473291 Date Recv: 14-Nov-20 07:33

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 273040134 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca van der Krogt

Submitted By Rebecca van der Krogt

Charge To T+T

Results To ☐ Mail Client ☐ Mail Submitter

☐ Fax Results

☑ Email Results rvanderkrogt@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 8am 10/12/20

Name: Rebecca van der Krogt

☒ *Please tick if you require COC to be faxed back*

Signature: RvdKrogt

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition ☐ *Room Temp* ☐ *Chilled* ☐ *Frozen* *Temp:* //

☐ Sample Analysis details checked

Signature:

ADDITIONAL INFORMATION

Please add to job 2473291

also email lhine@tonkintaylor.co.nz

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA110a-2.4m	8/12/20	ES	Hold all FROZEN please
2	HA110b-0.6m	7/12/20	↓	
3	HA110b-2.9m	↓	↓	
4				
5				
6				
7				
8				
9				
10				

Hill Laboratories

Kelly Mahar <kelly.mahar@hill-labs.co.nz>

Quote 108315 T+T ref 1014985

1 message

Sami Hutchings <SHutchings@tonkintaylor.co.nz> 21 December 2020 at 13:28
To: Kelly Mahar <kelly.mahar@hill-labs.co.nz>
Cc: Rebecca van der Krogt <RvanderKrogt@tonkintaylor.co.nz>, Alice Tilley <ATilley@tonkintaylor.co.nz>, Lucy Hine <LHine@tonkintaylor.co.nz>

Hi Kelly,

Happy Monday! Only 1.25 more days to go!!!!

Rebecca has finished up for the year and the client has asked for the testing of the samples Hills have frozen (plus some additional ones) to be tested.

Alice has arranged for the final samples to be put on the courier this morning. Can we please schedule everything at once with one set up fee under quote number 108315? Please only analyse for pH and acid soluble sulphate and sulphate content.

Sample location & interval		Lab job number	Lab sample number	Comment
BH05a	0.35	2473291	2473291.13	
BH05a	6.5			With the courier today. COC requests for these samples to be added to job 2473291
BH06	1	2473291	2473291.15	
BH06	2.9	2473291	2473291.16	
BH07	1	2473291	2473291.17	
BH07	4.5			With the courier today. COC requests for these samples to be added to job 2473291
BH08	0.3	2473291	2473291.19	
BH08	7			With the courier today. COC requests for these samples to be added to job 2473291
BH110	0.8-0.9	2473291	2473291.11	
BH110	3			With the courier today. COC requests for these samples to be added to job 2473291
BH111	2			With the courier today. COC requests for these samples to be added to job 2473291
BH111	3.7	2473291	2473291.1	
BH113	2.3	2473291	2473291.4	
BH113	5.8			With the courier today. COC requests for these samples to be added to job 2473291
BH116	0.75	2473291	2473291.6	
BH116	5	2473291	2473291.7	
BH117	3.45	2473291	2473291.9	
BH117	5.9	2473291	2473291.10	
HA108	1	2473291	2473291.39	
HA109	4	2489334	2489334.6	

HA111	2.4	2473291	2473291.42	
HA114	3	2489334	2489334.12	
HA115	2	2473291	2473291.40	
HA119	5	2489334	2489334.21	

Thanks,

Sami

Sami Hutchings | Contaminated Land Consultant
BSc PGDip (Geology)
Tonkin + Taylor - *Exceptional thinking together*
Level 2, 105 Carlton Gore Rd, Newmarket, Auckland 1023 | PO Box 5271, Wellesley Street, Auckland 1142, New Zealand
T + M +64276409639 www.tonkintaylor.co.nz T+T profile

Tonkin+Taylor

To send me large files you can use my file drop

Job No: 247 3291 Date Recv: 14-Nov-20 07:33

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Web www.hill-labs.co.nz

Received by: Joe Varey

3124732918

Client

Name Tonkin & Taylor

Address 105 Carlton Gore Road, Newmarket, Auckland

Phone 09 3622038 *Fax*

Client Reference 1014985

Quote No *Order Number*

Primary Contact Rebecca Van der Krogt

Submitted By Sami Hutchings

Charge To

Results To ☑ Mail Client ☑ Mail Submitter

☐ Fax Results

☑ Email Results Shutchings@tonkintaylor.co.nz

ADDITIONAL INFORMATION

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories

Date & Time: 21/12/2020

Name: Sami Hutchings

☑ *Please tick if you require COC to be faxed back*

Signature:

Received at Hill Laboratories

Date & Time:

Name:

Signature:

Condition *Temp:*

☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*

☐ Sample Analysis details checked

Signature:

Priority

☐ **Low** ☐ **Normal** ☑ **High**

☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E** Effluent	**G** Geothermal	**Pot1** Potable Water (LAS/EU)		**Pot2** Potable Water (NZDWS)		
	GW Ground Water	**L** Leachate	☐ Audit Monitoring		**Pot3** Potable Water (other)		
	SW Surface Water	**S** Saline	☐ Check Monitoring		**Pool** Swimming/Spa Pool		
	TW Trade Waste						
Solids	**ES** Soil	**SE** Sediment	**SL** Sludge		**PL** Plant		
Other	**O** O Oil	**M** Miscellaneous	**FS** FS Fish/shellfish/biota		**BM** BM Biological Material		

No.	*Sample Name*	*Sample Date & Time*	*Sample Type*	*Tests Required*
1	BH5a 6.5m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
2	BH07 4.5m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
3	BH08 7m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
4	BH110 ~~1.5m~~ 1.2m - 1.3m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
5	BH110 3m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
6	BH111 2m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
7	BH113 5.8m	21/12/2020	ES	Please add samples to job number 2473291 & freeeze please
8	~~BH117 5.9m~~	~~21/12/2020~~	~~ES~~	~~Please add samples to job number 2473291 & freeeze please~~
9				
10				

Chilly bin 1 of 2

Hills CHCH

Hill Laboratories
BETTER TESTING BETTER RESULTS

ANALYSIS

R J Hill Laboratories Limited
1 Clyde Street
Private Bag 3205
Hamilton 3240, New Zealand

Job No: **248 9334**
Date Recv: 08-Dec-20 11:37
Received by: Torin Wilson
3124893348

Client

Name	Tonkin & Taylor
Address	105 Carlton Gore Road, Newmarket, Auckland
Phone	273040134 *Fax*
Client Reference	1014985
Quote No	*Order Number*

Primary Contact	Rebecca van der Krogt
Submitted By	Rebecca van der Krogt
Charge To	T+T

Results To ☐ Mail Client ☐ Mail Submitter
☐ Fax Results
☑ Email Results rvanderkrogt@tonkintaylor.co.nz

ADDITIONAL INFORMATION

also email lhine@tonkintaylor.co.nz

Office use only Job No:

CHAIN OF CUSTODY RECORD

Sent to Hill Laboratories
Date & Time: 7/12/20 3:30pm
Name: Rebecca van der Krogt
☒ *Please tick if you require COC to be faxed back*
Signature: RvdKrogt

Received at Hill Laboratories
Date & Time:
Name:
Signature:

Condition *Temp:*
☐ *Room Temp* ☐ *Chilled* ☐ *Frozen*
☐ Sample Analysis details checked
Signature:

Priority
☐ **Low** ☐ **Normal** ☑ **High**
☐ **Urgent** (ASAP, extra charge applies, please contact the lab first)

Requested Reporting Date:

Sample Types

Waters	**E**	Effluent	**G**	Geothermal	**Pot1**	Potable Water (LAS/EU)	**Pot2**	Potable Water (NZDWS)
	GW	Ground Water	**L**	Leachate	☐	Audit Monitoring	**Pot3**	Potable Water (other)
	SW	Surface Water	**S**	Saline	☐	Check Monitoring	**Pool**	Swimming/Spa Pool
	TW	Trade Waste						
Solids	**ES**	Soil	**SE**	Sediment	**SL**	Sludge	**PL**	Plant
Other	**O**	O Oil	**M**	Miscellaneous	**FS**	FS Fish/shellfish/biota	**BM**	BM Biological Material

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	HA109-0m	as per jar	ES	Hold will update scheduling
2	" -0.5m			
3	" -1.0m			
4	" -2.0m			
5	" -3.0m			
6	" -4.0m			
7	" -5.0m			
8	HA114-0m			
9	" -0.5m			
10	" -1.0m			

No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
11	HA114 - -2			
12	" - -3			
13	" - -4			
14	" - -5			
15	HA119- 0			
16	" - 0.5			
17	" -1			
18	" -2			
19	" -3			
20	" -4			
21	" -5			
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40				

Hill Laboratories

Kelly Mahar <kelly.mahar@hill-labs.co.nz>

Quote 108315 T+T ref 1014985

1 message

Sami Hutchings <SHutchings@tonkintaylor.co.nz> 21 December 2020 at 13:28
To: Kelly Mahar <kelly.mahar@hill-labs.co.nz>
Cc: Rebecca van der Krogt <RvanderKrogt@tonkintaylor.co.nz>, Alice Tilley <ATilley@tonkintaylor.co.nz>, Lucy Hine <LHine@tonkintaylor.co.nz>

Hi Kelly,

Happy Monday! Only 1.25 more days to go!!!!

Rebecca has finished up for the year and the client has asked for the testing of the samples Hills have frozen (plus some additional ones) to be tested.

Alice has arranged for the final samples to be put on the courier this morning. Can we please schedule everything at once with one set up fee under quote number 108315? Please only analyse for pH and acid soluble sulphate and sulphate content.

Sample location & interval		Lab job number	Lab sample number	Comment
BH05a	0.35	2473291	2473291.13	
BH05a	6.5			With the courier today. COC requests for these samples to be added to job 2473291
BH06	1	2473291	2473291.15	
BH06	2.9	2473291	2473291.16	
BH07	1	2473291	2473291.17	
BH07	4.5			With the courier today. COC requests for these samples to be added to job 2473291
BH08	0.3	2473291	2473291.19	
BH08	7			With the courier today. COC requests for these samples to be added to job 2473291
BH110	0.8-0.9	2473291	2473291.11	
BH110	3			With the courier today. COC requests for these samples to be added to job 2473291
BH111	2			With the courier today. COC requests for these samples to be added to job 2473291
BH111	3.7	2473291	2473291.1	
BH113	2.3	2473291	2473291.4	
BH113	5.8			With the courier today. COC requests for these samples to be added to job 2473291
BH116	0.75	2473291	2473291.6	
BH116	5	2473291	2473291.7	
BH117	3.45	2473291	2473291.9	
BH117	5.9	2473291	2473291.10	
HA108	1	2473291	2473291.39	
HA109	4	2489334	2489334.6	

HA111	2.4	2473291	2473291.42	
HA114	3	2489334	2489334.12	
HA115	2	2473291	2473291.40	
HA119	5	2489334	2489334.21	

Thanks,

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Appendix E: Summary of laboratory testing results

- **Soil**
- **Groundwater**
- **Acid Sulphate soil results**

Table E1: Summary of soil sampling

Location		BH05A	BH05A	BH05A	BH06	BH06	BH06	HA03	HA03	HA03	BH07	BH07	BH07	HA04
Sample		BH05a - 0.1m 17-Nov-2020	BH05a - 1.0m 17-Nov-2020	BH05a - 2.0m 17-Nov-2020	BH06 - 0.1-0.3m 19-Nov-2020	BH06 - 0.35-0.6m 19-Nov-2020	BH06 - 1.0-1.2m 19-Nov-2020	HA03 0m 02-Dec-2020 9:25 am	HA03 0.5m 02-Dec-2020 9:32 am	HA03 1m 02-Dec-2020 9:41 am	BH07 - 0.1-0.4m 20-Nov-2020	BH07 - 0.5-0.65m 20-Nov-2020	BH07 - 1.0-1.35m 20-Nov-2020	HA04 0m 02-Dec-2020 7:10 am
Date		17/11/2020	17/11/2020	17/11/2020	19/11/2020	19/11/2020	19/11/2020	2/12/2020	2/12/2020	2/12/2020	20/11/2020	20/11/2020	20/11/2020	2/12/2020
Lab number	**Maximum**	2478987.2/ 2479563.1	2478987.3/ 2479563.2	2478987.4/ 2479563.3	2478987.9/ 2479563.7	2478987.10/ 2479563.8	2478987.11/ 2479563.9	2486806.1/ 2487331.1	2486806.2/ 2487331.2	2486806.3/ 2487331.3	2478987.17/ 2479563.15	2478987.18/ 2479563.16	2478987.19/ 2479563.17	2486806.8
Soil suite		Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 2
Asbestos type		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Asbestos form														
Asbestos as ACM (w/w%)														
Asbestos Fibres/Fine (w/w%)														
Heavy Metals with Mercury, Screen Level														
Total Recoverable Arsenic	8	< 2	2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	0.49	< 0.10	< 0.10	< 0.10	0.33	< 0.10	< 0.10	0.49	< 0.10	< 0.10	0.21	< 0.10	< 0.10	0.34
Total Recoverable Chromium	101	8	7	7	5	3	4	6	5	4	3	3	8	6
Total Recoverable Copper	78	22	5	6	9	4	7	8	< 2	< 2	3	3	3	9
Total Recoverable Lead	31	6.1	9.5	9	7.7	11.5	11.6	7.1	6.7	5.9	4.1	6.4	7.1	7.3
Total Recoverable Mercury	0.42	< 0.10	< 0.10	0.12	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	51	16	< 2	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Total Recoverable Zinc	57	23	6	4	6	< 4	< 4	13	< 4	< 4	< 4	< 4	< 4	13
Polycyclic Aromatic Hydrocarbons Screening in Soil														
Total of Reported PAHs in Soil	9.5	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4	< 0.3	< 0.4	< 0.4	< 0.3	< 0.3	< 0.3	< 0.4	-
1-Methylnaphthalene	0	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
2-Methylnaphthalene	0	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Acenaphthylene	0.065	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Acenaphthene	0.02	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Anthracene	0.123	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]anthracene	0.74	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]pyrene (BAP)	0.94	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04	< 0.04	< 0.04	< 0.04	< 0.03	< 0.03	< 0.03	< 0.04	-
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04	< 0.03	< 0.04	< 0.04	< 0.03	< 0.03	< 0.03	< 0.04	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[e]pyrene	0.65	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[g,h,i]perylene	0.72	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[k]fluoranthene	0.38	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Chrysene	0.7	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Dibenzo[a,h]anthracene	0.132	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Fluoranthene	1.19	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Fluorene	0.016	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Indeno(1,2,3-c,d)pyrene	0.68	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Naphthalene	0	< 0.07	< 0.07	< 0.08	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.06	< 0.06	< 0.07	-
Perylene	0.24	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Phenanthrene	0.38	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Pyrene	1.48	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.013	< 0.012	< 0.012	< 0.014	-
Total Petroleum Hydrocarbons in Soil														
C7 - C9	0	< 9	< 9	< 10	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 8	< 9	-
C10 - C14	69	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-
C15 - C36	2300	< 40	< 40	< 40	< 40	< 40	< 40	57	< 40	< 40	< 40	< 40	< 40	-
Total hydrocarbons (C7 - C36)	2300	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70	-
Organochlorine Pesticides Screening in Soil														
Aldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS		<LoR where tested												
Nitrogen containing compounds in SVOC Soil Samples by GC-MS		<LoR where tested												
Organochlorine Pesticides in SVOC Soil Samples by GC-MS		<LoR where tested												
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS		<LoR where tested												
Phenols in SVOC Soil Samples by GC-MS		<LoR where tested												
Plasticisers in SVOC Soil Samples by GC-MS		<LoR where tested												
Other Halogenated compounds in SVOC Soil Samples by GC-MS		<LoR where tested												
Other compounds in SVOC Soil Samples by GC-MS		<LoR where tested												
Organonitro&phosphorus Pesticides Screen in Soil by GCMS		<LoR where tested												
BTEX in VOC Soils by Headspace GC-MS		<LoR where tested												
Halogenated Aliphatics in VOC Soils by Headspace GC-MS		<LoR where tested												
Haloaromatics in VOC Soils by Headspace GC-MS		<LoR where tested												
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS		<LoR where tested												
Ketones in VOC Soils by Headspace GC-MS		<LoR where tested												
Trihalomethanes in VOC Soils by Headspace GC-MS		<LoR where tested												
Other VOC in Soils by Headspace GC-MS		<LoR where tested												

Location	Maximum	HA04	HA04	BH08	BH08	BH08	HA05	HA05	HA05	HA05	HA06	HA06	HA06	HA06	HA07
Sample		HA04 0.5m 02-Dec-2020 7:25 am	HA04 1m 02-Dec-2020 7:33 am	0.1	0.5	1	HA05 - 0m 01-Dec-2020 1:15 pm	HA05 - 0.5m 01-Dec-2020 1:30 pm	HA05 - 1.0m 01-Dec-2020 1:36 pm	HA05-2m 01-Dec-2020	HA06 - 0m 01-Dec-2020 10:45 am	HA06 - 0.4-0.6m 01-Dec-2020 11:00 am	HA06 - 1.0m 01-Dec-2020 11:12 am	HA06-2m 01-Dec-2020	HA07 - 0.1m 01-Dec-2020
Date		2/12/2020	2/12/2020	BH08-0.1m	BH08-0.5m	BH08-1.0m	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020
Lab number		2486806.9	2486806.1	2481161.1/ 2480946.1	2481161.2/ 2480946.2	2481161.3/ 2480946.3	2486812.2/ 2487331.11	2486812.3	2486812.4/ 2487331.12	2487331.13	2486812.9/ 2487331.16	2486812.10	2486812.11/ 2487331.17	2487331.18	2486812.16/ 2487331.21
Soil suite		Soil suite 2	Soil suite 2	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3
Asbestos type		-	-	ND	ND	ND	ND	-	ND	ND	ND	-	ND	ND	ND
Asbestos form															
Asbestos as ACM (w/w%)															
Asbestos Fibres/Fine (w/w%)															
Heavy Metals with Mercury, Screen Level															
Total Recoverable Arsenic	8	< 2	< 2	7	< 2	< 2	2	< 2	< 2	-	6	5	2	-	4
Total Recoverable Cadmium	0.49	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.1	< 0.10	< 0.10	-	0.26	< 0.10	< 0.10	-	0.17
Total Recoverable Chromium	101	4	7	101	5	3	6	6	7	-	13	21	11	-	9
Total Recoverable Copper	78	2	5	66	6	3	43	3	2	-	26	12	16	-	31
Total Recoverable Lead	31	6	9.3	11.3	11.8	6.3	20	9.2	5.5	-	21	26	24	-	15.7
Total Recoverable Mercury	0.42	< 0.10	0.11	0.1	0.11	< 0.10	< 0.10	0.16	< 0.10	-	0.13	0.19	0.3	-	< 0.10
Total Recoverable Nickel	51	< 2	4	51	< 2	< 2	8	3	< 2	-	7	11	8	-	6
Total Recoverable Zinc	57	< 4	5	18	4	< 4	40	< 4	< 4	-	42	12	5	-	49
Polycyclic Aromatic Hydrocarbons Screening in Soil															
Total of Reported PAHs in Soil	9.5	-	-	< 0.4	< 0.4	< 0.4	9.5	< 0.4	< 0.4	-	< 0.4	< 0.4	< 0.4	-	< 0.4
1-Methylnaphthalene	0	-	-	< 0.014	< 0.014	< 0.013	< 0.012	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
2-Methylnaphthalene	0	-	-	< 0.014	< 0.014	< 0.013	< 0.012	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Acenaphthylene	0.065	-	-	< 0.014	< 0.014	< 0.013	0.065	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Acenaphthene	0.02	-	-	< 0.014	< 0.014	< 0.013	0.02	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Anthracene	0.123	-	-	< 0.014	< 0.014	< 0.013	0.123	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[a]anthracene	0.74	-	-	< 0.014	< 0.014	< 0.013	0.74	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[a]pyrene (BAP)	0.94	-	-	< 0.014	< 0.014	< 0.013	0.94	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	-	-	< 0.04	< 0.04	< 0.04	1.37	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	-	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	-	-	< 0.04	< 0.04	< 0.04	1.36	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	-	< 0.04
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	-	-	< 0.014	< 0.014	< 0.013	1.01	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[e]pyrene	0.65	-	-	< 0.014	< 0.014	< 0.013	0.65	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[g,h,i]perylene	0.72	-	-	< 0.014	< 0.014	< 0.013	0.72	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Benzo[k]fluoranthene	0.38	-	-	< 0.014	< 0.014	< 0.013	0.38	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Chrysene	0.7	-	-	< 0.014	< 0.014	< 0.013	0.7	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Dibenzo[a,h]anthracene	0.132	-	-	< 0.014	< 0.014	< 0.013	0.132	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Fluoranthene	1.19	-	-	< 0.014	< 0.014	< 0.013	1.19	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Fluorene	0.016	-	-	< 0.014	< 0.014	< 0.013	0.016	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Indeno(1,2,3-c,d)pyrene	0.68	-	-	< 0.014	< 0.014	< 0.013	0.68	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Naphthalene	0	-	-	< 0.07	< 0.07	< 0.07	< 0.06	< 0.07	< 0.08	-	< 0.08	< 0.07	< 0.08	-	< 0.07
Perylene	0.24	-	-	< 0.014	< 0.014	< 0.013	0.24	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Phenanthrene	0.38	-	-	< 0.014	< 0.014	< 0.013	0.38	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Pyrene	1.48	-	-	< 0.014	< 0.014	< 0.013	1.48	< 0.014	< 0.015	-	< 0.016	< 0.014	< 0.015	-	< 0.014
Total Petroleum Hydrocarbons in Soil															
C7 - C9	0	-	-	< 9	< 8	< 8	< 8	< 8	< 9	-	< 10	< 9	< 9	-	< 8
C10 - C14	69	-	-	< 20	< 20	< 20	< 20	< 20	< 20	-	< 20	< 20	< 20	-	< 20
C15 - C36	2300	-	-	< 40	< 40	< 40	123	< 40	< 40	-	55	< 40	< 40	-	< 40
Total hydrocarbons (C7 - C36)	2300	-	-	< 70	< 70	< 70	126	< 70	< 70	-	< 70	< 70	< 70	-	< 70
Organochlorine Pesticides Screening in Soil															
Aldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS										<LoR where tested					
Nitrogen containing compounds in SVOC Soil Samples by GC-MS										<LoR where tested					
Organochlorine Pesticides in SVOC Soil Samples by GC-MS										<LoR where tested					
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS										<LoR where tested					
Phenols in SVOC Soil Samples by GC-MS										<LoR where tested					
Plasticisers in SVOC Soil Samples by GC-MS										<LoR where tested					
Other Halogenated compounds in SVOC Soil Samples by GC-MS										<LoR where tested					
Other compounds in SVOC Soil Samples by GC-MS										<LoR where tested					
Organonitro&phosphorus Pesticides Screen in Soil by GCMS										<LoR where tested					
BTEX in VOC Soils by Headspace GC-MS										<LoR where tested					
Halogenated Aliphatics in VOC Soils by Headspace GC-MS										<LoR where tested					
Haloaromatics in VOC Soils by Headspace GC-MS										<LoR where tested					
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS										<LoR where tested					
Ketones in VOC Soils by Headspace GC-MS										<LoR where tested					
Trihalomethanes in VOC Soils by Headspace GC-MS										<LoR where tested					
Other VOC in Soils by Headspace GC-MS										<LoR where tested					

Location		HA07	HA07	HA08	HA08	HA08	ENVR-HA03	ENVR-HA03	ENVR-HA03	ENVR-SS03	ENVR-HA04	ENVR-HA04	ENVR-HA04	ENVR-SS04	ENVR-HA05
Sample		HA07 - 0.5m 01-Dec-2020	HA07 - 1.0m 01-Dec-2020	HA08-0.1m 24-Nov-2020	HA08-0.5m 24-Nov-2020	HA08-1.0m 24-Nov-2020	ENVR-HA03-0.0-0.1m 10-Nov-2020	ENVR-HA03-0.5m 10-Nov-2020	ENVR-HA03-1.0m 10-Nov-2020	ENVR-SS03-0.1-0.2m 10-Nov-2020	ENVR-HA04-0.0-0.1m 10-Nov-2020	ENVR-HA04-0.5m 10-Nov-2020	ENVR-HA04-1.0m 10-Nov-2020	ENVR-SS04-0.1-0.2m 10-Nov-2020	ENVR-HA05-0.0-0.1m 10-Nov-2020
Date	**Maximum**	1/12/2020	1/12/2020	24/11/2020	24/11/2020	24/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020	10/11/2020
Lab number		2486812.17/ 2487331.22	2486812.18/ 2487331.23	2481819.8	2481819.9	2481819.10	2470910.1/ 2471363.1	2470910.2/ 2471363.2	2470910.3/ 2471363.3	2470910.4	2470910.5/ 2471363.5	2470910.6/ 2471363.6	2470910.7/ 2471363.7	2470910.8	2470910.9/ 2471363.9
Soil suite		Soil suite 3	Soil suite 3	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 3 + OCPs	Soil suite 3	Soil suite 3	Soil suite 2	Soil suite 3 + OCPs	Soil suite 3	Soil suite 3	Soil suite 2	Soil suite 3 + OCP
Asbestos type		ND	ND	-	-	-	ND	ND	ND	-	Chrysotile (White Asbestos) detected.	ND	ND	-	ND
Asbestos form											Loose fibres				
Asbestos as ACM (w/w%)											< 0.001				
Asbestos Fibres/Fine (w/w%)											< 0.001				
Heavy Metals with Mercury, Screen Level															
Total Recoverable Arsenic	8	2	< 2	4	< 2	2	< 2	< 2	< 2	< 2	< 5	2	< 2	< 2	< 2
Total Recoverable Cadmium	0.49	< 0.10	< 0.10	0.18	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.3	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	101	7	10	9	< 2	4	3	3	7	2	< 5	7	5	3	5
Total Recoverable Copper	78	6	5	21	4	5	24	< 2	2	20	12	2	2	35	16
Total Recoverable Lead	31	13.8	8.5	11.3	3.7	5.9	7.6	3.3	6.6	7.5	31	10.6	8.9	7.8	7.1
Total Recoverable Mercury	0.42	0.1	0.16	< 0.10	< 0.10	0.22	< 0.10	0.24	0.25	< 0.10	< 0.3	0.2	0.17	< 0.10	< 0.10
Total Recoverable Nickel	51	2	3	8	< 2	2	3	< 2	< 2	< 2	< 5	< 2	3	4	2
Total Recoverable Zinc	57	5	5	38	5	10	18	< 4	5	20	17	< 4	< 4	22	20
Polycyclic Aromatic Hydrocarbons Screening in Soil															
Total of Reported PAHs in Soil	9.5	< 0.4	< 0.4	-	-	-	< 0.4	< 0.3	< 0.4	-	< 0.5	< 0.4	< 0.4	-	< 0.4
1-Methylnaphthalene	0	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
2-Methylnaphthalene	0	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Acenaphthylene	0.065	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Acenaphthene	0.02	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Anthracene	0.123	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[a]anthracene	0.74	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[a]pyrene (BAP)	0.94	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	< 0.04	< 0.04	-	-	-	< 0.04	< 0.03	< 0.04	-	< 0.05	< 0.04	< 0.04	-	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	< 0.04	< 0.04	-	-	-	< 0.04	< 0.03	< 0.04	-	< 0.05	< 0.04	< 0.04	-	< 0.04
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[e]pyrene	0.65	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[g,h,i]perylene	0.72	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Benzo[k]fluoranthene	0.38	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Chrysene	0.7	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Dibenzo[a,h]anthracene	0.132	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Fluoranthene	1.19	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Fluorene	0.016	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Indeno(1,2,3-c,d)pyrene	0.68	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Naphthalene	0	< 0.07	< 0.08	-	-	-	< 0.07	< 0.07	< 0.08	-	< 0.09	< 0.08	< 0.08	-	< 0.07
Perylene	0.24	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Phenanthrene	0.38	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Pyrene	1.48	< 0.014	< 0.016	-	-	-	< 0.013	< 0.013	< 0.015	-	< 0.017	< 0.016	< 0.015	-	< 0.014
Total Petroleum Hydrocarbons in Soil															
C7 - C9	0	< 8	< 10	-	-	-	< 8	< 8	< 9	-	< 11	< 10	< 9	-	< 8
C10 - C14	69	< 20	< 20	-	-	-	< 20	< 20	< 20	-	69	< 20	< 20	-	< 20
C15 - C36	2300	< 40	< 40	-	-	-	< 40	< 40	< 40	-	2,300	< 40	46	-	< 40
Total hydrocarbons (C7 - C36)	2300	< 70	< 70	-	-	-	< 70	< 70	< 70	-	2,300	< 70	< 70	-	< 70
Organochlorine Pesticides Screening in Soil															
Aldrin	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
alpha-BHC	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
beta-BHC	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
delta-BHC	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
cis-Chlordane	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
trans-Chlordane	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
2,4'-DDD	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
4,4'-DDD	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
2,4'-DDE	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
4,4'-DDE	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
2,4'-DDT	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
4,4'-DDT	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Total DDT Isomers	<LoR	-	-	-	-	-	< 0.08	-	-	-	< 0.11	-	-	-	< 0.08
Dieldrin	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endosulfan I	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endosulfan II	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endosulfan sulphate	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endrin	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endrin aldehyde	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Endrin ketone	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Heptachlor	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Heptachlor epoxide	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Hexachlorobenzene	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Methoxychlor	<LoR	-	-	-	-	-	< 0.013	-	-	-	< 0.017	-	-	-	< 0.014
Haloethers in SVOC Soil Samples by GC-MS											<LoR where tested				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organochlorine Pesticides in SVOC Soil Samples by GC-MS											<LoR where tested				
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS											<LoR where tested				
Phenols in SVOC Soil Samples by GC-MS											<LoR where tested				
Plasticisers in SVOC Soil Samples by GC-MS											<LoR where tested				
Other Halogenated compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Other compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organonitro&phosphorus Pesticides Screen in Soil by GCMS											<LoR where tested				
BTEX in VOC Soils by Headspace GC-MS											<LoR where tested				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Haloaromatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS											<LoR where tested				
Ketones in VOC Soils by Headspace GC-MS											<LoR where tested				
Trihalomethanes in VOC Soils by Headspace GC-MS											<LoR where tested				
Other VOC in Soils by Headspace GC-MS											<LoR where tested				

Location		ENVR-HA05	ENVR-HA05	ENVR-SS05	BH110	BH110	BH110	BH111	BH111A	BH111A	ENVR-HA101	ENVR-HA101	ENVR-HA101	BH113/ ENVR-HA102	BH113/ ENVR-HA102
Sample		ENVR-HA05-0.5m 10-Nov-2020	ENVR-HA05-1.0m 10-Nov-2020	ENVR-SS05-0.1-0.2m 10-Nov-2020	BH110-0.1-0.35m 13-Nov-2020	BH110-0.5-0.75m 13-Nov-2020	BH110-0.9-1.15m 13-Nov-2020	BH111-0.05-0.2m 10-Nov-2020	BH111A-0.4-0.7m 13-Nov-2020	BH111A-1.0-1.3m 13-Nov-2020	ENVR - HA101 - 0.0-0.1m 04-Nov-2020	ENVR - HA101 - 0.5-0.6m 04-Nov-2020	ENVR - HA101 - 1.6-1.8m 04-Nov-2020	BH113 - 0.1m 09-Nov-2020	BH113 - 0.5m 09-Nov-2020
Date		10/11/2020	10/11/2020	10/11/2020	13/11/2020	13/11/2020	13/11/2020	10/11/2020	13/11/2020	13/11/2020	4/12/2020	4/12/2020	4/12/2020	9/11/2020	9/11/2020
Lab number	**Maximum**	2470910.10/ 2471363.10	2470910.11/ 2471363.11	2470910.12	2474527.1/ 2474175.1	2474527.2/ 2474175.2	2474527.3/ 2474175.3	2472606.1/ 2473434.1	2474175.8/ 2474527.8	2474175.9/ 2474527.9	2467662.5	2467662.6	2467662.8	2470943.5	2470943.6
Soil suite		Soil suite 3	Soil suite 3	Soil suite 2	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 3	Soil suite 3
Asbestos type		ND	ND	-	ND	ND	ND	ND	ND	ND	-	-	-	-	-
Asbestos form															
Asbestos as ACM (w/w%)															
Asbestos Fibres/Fine (w/w%)															
Heavy Metals with Mercury, Screen Level															
Total Recoverable Arsenic	8	< 2	< 2	< 2	< 2	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	0.49	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10	0.31	< 0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	101	5	6	4	5	8	6	7	5	4	7	7	5	6	7
Total Recoverable Copper	78	5	4	42	2	5	4	4	5	5	10	9	6	11	6
Total Recoverable Lead	31	5.6	8.2	10	6.1	11.2	8.4	7	8.1	11.2	5.3	10.7	8.5	4.2	6.7
Total Recoverable Mercury	0.42	0.18	0.21	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	51	< 2	4	6	< 2	3	< 2	< 2	< 2	< 2	< 2	< 2	2	< 2	< 2
Total Recoverable Zinc	57	5	11	42	6	5	< 4	11	5	< 4	12	5	5	8	5
Polycyclic Aromatic Hydrocarbons Screening in Soil															
Total of Reported PAHs in Soil	9.5	< 0.3	< 0.4	-	< 0.3	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	-	-	-	-	-
1-Methylnaphthalene	0	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
2-Methylnaphthalene	0	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Acenaphthylene	0.065	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Acenaphthene	0.02	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Anthracene	0.123	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[a]anthracene	0.74	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[a]pyrene (BAP)	0.94	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	-	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	< 0.03	< 0.04	-	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	-	-	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[e]pyrene	0.65	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[g,h,i]perylene	0.72	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Benzo[k]fluoranthene	0.38	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Chrysene	0.7	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Dibenzo[a,h]anthracene	0.132	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Fluoranthene	1.19	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Fluorene	0.016	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	0.68	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Naphthalene	0	< 0.07	< 0.07	-	< 0.07	< 0.07	< 0.07	< 0.08	< 0.07	< 0.07	-	-	-	-	-
Perylene	0.24	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Phenanthrene	0.38	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Pyrene	1.48	< 0.013	< 0.014	-	< 0.013	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014	-	-	-	-	-
Total Petroleum Hydrocarbons in Soil															
C7 - C9	0	< 8	< 8	-	< 8	< 9	< 8	< 9	< 8	< 8	-	-	-	-	-
C10 - C14	69	< 20	< 20	-	< 20	< 20	< 20	< 20	< 20	< 20	-	-	-	-	-
C15 - C36	2300	108	< 40	-	< 40	< 40	< 40	53	< 40	101	-	-	-	-	-
Total hydrocarbons (C7 - C36)	2300	110	< 70	-	< 70	< 70	< 70	< 70	< 70	102	-	-	-	-	-
Organochlorine Pesticides Screening in Soil															
Aldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS											<LoR where tested				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organochlorine Pesticides in SVOC Soil Samples by GC-MS											<LoR where tested				
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS											<LoR where tested				
Phenols in SVOC Soil Samples by GC-MS											<LoR where tested				
Plasticisers in SVOC Soil Samples by GC-MS											<LoR where tested				
Other Halogenated compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Other compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organonitro&phosphorus Pesticides Screen in Soil by GCMS											<LoR where tested				
BTEX in VOC Soils by Headspace GC-MS											<LoR where tested				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Haloaromatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS											<LoR where tested				
Ketones in VOC Soils by Headspace GC-MS											<LoR where tested				
Trihalomethanes in VOC Soils by Headspace GC-MS											<LoR where tested				
Other VOC in Soils by Headspace GC-MS											<LoR where tested				

Location	Maximum	BH113/ ENVR-HA102	HA107a	HA107a	HA107a	HA108	HA108	HA108	HA109	HA109	HA109	HA110a	HA110a	HA110a	HA111	HA111
Sample		BH113 - 2.0m 09-Nov-2020	HA107a - 0.1m 04-Nov-2020	HA107a - 0.5m 04-Nov-2020	HA107a - 1.0m 04-Nov-2020	HA108 - 0.1m 03-Dec-2020	HA108 - 0.5m 03-Dec-2020	HA108 - 1.0m 03-Dec-2020	HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA110a - 0.1m 08-Dec-2020	HA110a - 0.5m 08-Dec-2020	HA110a - 2.0m 08-Dec-2020	HA111-0.1m 07-Dec-2020	HA111-1.0m 07-Dec-2020
Date		9/11/2020	4/11/2020	4/11/2020	4/11/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	8/12/2020	8/12/2020	8/12/2020	7/12/2020	7/12/2020
Lab number		2470943.7	2470943.1	2470943.2	2470943.3	2488783.9	2488783.10	2488783.11	2488783.13	2488783.14	2488783.15	2491712.1/ 2492155.1	2491712.2/ 2492155.2	2491712.4/ 2492155.4	2490317.1/ 2489833.1	2490317.3/ 2489833.3
Soil suite		Soil suite 3	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3
Asbestos type		-	-	-	-	-	-	-	-	-	-	ND	ND	ND	ND	ND
Asbestos form																
Asbestos as ACM (w/w%)																
Asbestos Fibres/Fine (w/w%)																
Heavy Metals with Mercury, Screen Level																
Total Recoverable Arsenic	8	< 2	< 2	< 2	< 2	< 2	2	3	< 2	< 2	8	< 2	< 2	2	7	3
Total Recoverable Cadmium	0.49	< 0.10	0.15	< 0.10	< 0.10	0.16	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.24	< 0.10
Total Recoverable Chromium	101	5	6	6	8	5	8	8	6	8	11	7	10	10	14	10
Total Recoverable Copper	78	8	19	5	11	10	6	8	9	6	12	4	8	10	16	10
Total Recoverable Lead	31	9.8	4.9	5.7	12.5	3.7	8.4	11.3	4.3	9.1	22	7.8	13.2	10.9	19.3	12.1
Total Recoverable Mercury	0.42	< 0.10	< 0.10	< 0.10	0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.18	0.13	0.21	0.15	0.42	0.13
Total Recoverable Nickel	51	< 2	< 2	< 2	< 2	< 2	2	2	< 2	2	6	2	4	4	5	3
Total Recoverable Zinc	57	5	10	< 4	9	7	5	6	8	6	10	6	12	8	18	14
Polycyclic Aromatic Hydrocarbons Screening in Soil																
Total of Reported PAHs in Soil	9.5	-	-	-	-	-	-	-	-	-	-	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
1-Methylnaphthalene	0	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
2-Methylnaphthalene	0	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Acenaphthylene	0.065	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Acenaphthene	0.02	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Anthracene	0.123	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Benzo[a]anthracene	0.74	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.02	< 0.014
Benzo[a]pyrene (BAP)	0.94	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.027	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	-	-	-	-	-	-	-	-	-	-	< 0.04	< 0.04	< 0.04	0.03	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	-	-	-	-	-	-	-	-	-	-	< 0.04	< 0.04	< 0.04	0.03	< 0.04
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.025	< 0.014
Benzo[e]pyrene	0.65	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.017	< 0.014
Benzo[g,h,i]perylene	0.72	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.019	< 0.014
Benzo[k]fluoranthene	0.38	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Chrysene	0.7	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.016	< 0.014
Dibenzo[a,h]anthracene	0.132	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Fluoranthene	1.19	-	-	-	-	-	-	-	-	-	-	0.014	< 0.013	< 0.015	0.035	< 0.014
Fluorene	0.016	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Indeno(1,2,3-c,d)pyrene	0.68	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	0.017	< 0.014
Naphthalene	0	-	-	-	-	-	-	-	-	-	-	< 0.07	< 0.07	< 0.08	< 0.08	< 0.07
Perylene	0.24	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Phenanthrene	0.38	-	-	-	-	-	-	-	-	-	-	< 0.013	< 0.013	< 0.015	< 0.015	< 0.014
Pyrene	1.48	-	-	-	-	-	-	-	-	-	-	0.018	0.014	< 0.015	0.036	< 0.014
Total Petroleum Hydrocarbons in Soil																
C7 - C9	0	-	-	-	-	-	-	-	-	-	-	< 8	< 8	< 9	< 9	< 9
C10 - C14	69	-	-	-	-	-	-	-	-	-	-	< 20	< 20	< 20	< 20	< 20
C15 - C36	2300	-	-	-	-	-	-	-	-	-	-	< 40	< 40	< 40	47	< 40
Total hydrocarbons (C7 - C36)	2300	-	-	-	-	-	-	-	-	-	-	< 70	< 70	< 70	< 70	< 70
Organochlorine Pesticides Screening in Soil																
Aldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS												<LoR where tested				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS												<LoR where tested				
Organochlorine Pesticides in SVOC Soil Samples by GC-MS												<LoR where tested				
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS												<LoR where tested				
Phenols in SVOC Soil Samples by GC-MS												<LoR where tested				
Plasticisers in SVOC Soil Samples by GC-MS												<LoR where tested				
Other Halogenated compounds in SVOC Soil Samples by GC-MS												<LoR where tested				
Other compounds in SVOC Soil Samples by GC-MS												<LoR where tested				
Organonitro&phosphorus Pesticides Screen in Soil by GCMS												<LoR where tested				
BTEX in VOC Soils by Headspace GC-MS												<LoR where tested				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS												<LoR where tested				
Haloaromatics in VOC Soils by Headspace GC-MS												<LoR where tested				
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS												<LoR where tested				
Ketones in VOC Soils by Headspace GC-MS												<LoR where tested				
Trihalomethanes in VOC Soils by Headspace GC-MS												<LoR where tested				
Other VOC in Soils by Headspace GC-MS												<LoR where tested				

Location		HA111	HA112	HA112	HA112	HA112	HA112	HA113	HA113	HA113	BH116	BH116	BH116	BH117	BH117
Sample		HA111-2.0m 07-Dec-2020	HA112 0.1m 02-Dec-2020	HA112-0.5m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112-1.0m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am	HA113 0.5m 02-Dec-2020 12:00 pm	HA113 1.0m 02-Dec-2020 12:07 pm	BH116 - 0.1m 02-Nov-2020	BH116 - 0.5m 02-Nov-2020	BH116 - 2.0m 02-Nov-2020	BH117 - 0.1m 09-Nov-2020	BH117 - 0.5m 09-Nov-2020
Date	**Maximum**	7/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/11/2020	2/11/2020	2/11/2020	9/11/2020	9/11/2020
Lab number		2490317.4/ 2489833.4	2486806.15	2487331.28	2486806.18	2487331.29	2486806.19	2486806.2/ 2487331.3	2486806.21/ 2487331.31	2486806.22/ 2487331.32	2467662.1/ 2471441.8	2467662.2/ 2471441.9	2467662.4/ 2471441.10	2470943.8/ 2471441.14	2470943.9/ 2471441.15
Soil suite		Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3	Soil suite 3
Asbestos type		ND	-	ND	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Asbestos form															
Asbestos as ACM (w/w%)															
Asbestos Fibres/Fine (w/w%)															
Heavy Metals with Mercury, Screen Level															
Total Recoverable Arsenic	8	4	5	-	< 2	-	< 2	< 2	< 2	< 2	3	4	< 2	< 2	< 2
Total Recoverable Cadmium	0.49	< 0.10	< 0.10	-	< 0.10	-	< 0.10	0.29	< 0.10	< 0.10	0.1	< 0.10	< 0.10	0.26	< 0.10
Total Recoverable Chromium	101	12	5	-	6	-	6	8	5	7	10	12	6	5	4
Total Recoverable Copper	78	13	3	-	4	-	3	5	< 2	4	14	22	7	5	< 2
Total Recoverable Lead	31	13.1	7.1	-	6.7	-	5.8	11	4.4	7.7	11.9	11.3	7.7	10.8	5.3
Total Recoverable Mercury	0.42	0.14	< 0.10	-	0.13	-	0.11	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	51	4	< 2	-	< 2	-	< 2	< 2	< 2	< 2	8	10	< 2	2	< 2
Total Recoverable Zinc	57	18	7	-	5	-	5	13	< 4	4	20	30	6	11	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil															
Total of Reported PAHs in Soil	9.5	< 0.4	-	-	-	-	-	< 0.4	< 0.3	< 0.4	0.6	< 0.3	< 0.4	0.8	< 0.3
1-Methylnaphthalene	0	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2-Methylnaphthalene	0	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Acenaphthylene	0.065	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Acenaphthene	0.02	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Anthracene	0.123	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	0.019	< 0.013	< 0.014	< 0.014	< 0.013
Benzo[a]anthracene	0.74	< 0.015	-	-	-	-	-	0.016	< 0.013	< 0.015	0.038	< 0.013	< 0.014	0.048	< 0.013
Benzo[a]pyrene (BAP)	0.94	< 0.015	-	-	-	-	-	0.018	< 0.013	< 0.015	0.04	< 0.013	< 0.014	0.07	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	< 0.04	-	-	-	-	-	< 0.04	< 0.03	< 0.04	0.05	< 0.03	< 0.04	0.1	< 0.03
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	< 0.04	-	-	-	-	-	< 0.04	< 0.03	< 0.04	0.05	< 0.03	< 0.04	0.1	< 0.03
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	< 0.015	-	-	-	-	-	0.02	< 0.013	< 0.015	0.044	< 0.013	< 0.014	0.079	< 0.013
Benzo[e]pyrene	0.65	< 0.015	-	-	-	-	-	0.014	< 0.013	< 0.015	0.03	< 0.013	< 0.014	0.047	< 0.013
Benzo[g,h,i]perylene	0.72	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	0.027	< 0.013	< 0.014	0.05	< 0.013
Benzo[k]fluoranthene	0.38	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	0.018	< 0.013	< 0.014	0.033	< 0.013
Chrysene	0.7	< 0.015	-	-	-	-	-	0.014	< 0.013	< 0.015	0.034	< 0.013	< 0.014	0.061	< 0.013
Dibenzo[a,h]anthracene	0.132	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Fluoranthene	1.19	< 0.015	-	-	-	-	-	0.041	< 0.013	< 0.015	0.088	< 0.013	< 0.014	0.118	< 0.013
Fluorene	0.016	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Indeno(1,2,3-c,d)pyrene	0.68	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	0.026	< 0.013	< 0.014	0.05	< 0.013
Naphthalene	0	< 0.08	-	-	-	-	-	< 0.07	< 0.07	< 0.08	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Perylene	0.24	< 0.015	-	-	-	-	-	< 0.014	< 0.013	< 0.015	0.017	< 0.013	< 0.014	0.015	< 0.013
Phenanthrene	0.38	< 0.015	-	-	-	-	-	0.023	< 0.013	< 0.015	0.078	< 0.013	< 0.014	0.037	< 0.013
Pyrene	1.48	< 0.015	-	-	-	-	-	0.036	< 0.013	< 0.015	0.081	< 0.013	< 0.014	0.135	< 0.013
Total Petroleum Hydrocarbons in Soil															
C7 - C9	0	< 9	-	-	-	-	-	< 8	< 8	< 9	< 8	< 8	< 8	< 9	< 8
C10 - C14	69	< 20	-	-	-	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
C15 - C36	2300	< 40	-	-	-	-	-	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	2300	< 70	-	-	-	-	-	< 70	< 70	< 70	< 70	< 70	< 70	< 70	< 70
Organochlorine Pesticides Screening in Soil											-	-			
Aldrin	<LoR	-	-	-	-	-	-	-	-	-					
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR	-	-	-	-	-	-	-	-	-					
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR	-	-	-	-	-	-	-	-	-					
Haloethers in SVOC Soil Samples by GC-MS											<LoR where tested				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organochlorine Pesticides in SVOC Soil Samples by GC-MS											<LoR where tested				
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS											<LoR where tested				
Phenols in SVOC Soil Samples by GC-MS											<LoR where tested				
Plasticisers in SVOC Soil Samples by GC-MS											<LoR where tested				
Other Halogenated compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Other compounds in SVOC Soil Samples by GC-MS											<LoR where tested				
Organonitro&phosphorus Pesticides Screen in Soil by GCMS											<LoR where tested				
BTEX in VOC Soils by Headspace GC-MS											<LoR where tested				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Haloaromatics in VOC Soils by Headspace GC-MS											<LoR where tested				
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS											<LoR where tested				
Ketones in VOC Soils by Headspace GC-MS											<LoR where tested				
Trihalomethanes in VOC Soils by Headspace GC-MS											<LoR where tested				
Other VOC in Soils by Headspace GC-MS											<LoR where tested				

Location	Maximum	BH117	HA114	HA114	HA114	HA115	HA115	HA115	HA116	HA116	HA116	HA117	HA117	HA117	HA117
Sample		BH117 - 2.0m 09-Nov-2020	HA114 - 0.0m 03-Dec-2020 8:12 am	HA114 - 0.5m 03-Dec-2020 8:25 am	HA114 - 1.0m 03-Dec-2020 8:32 am	HA115 - 0.1m 03-Dec-2020	HA115 - 0.5m 03-Dec-2020	HA115 - 1.0m 03-Dec-2020	HA116 0m 02-Dec-2020 1:10 pm	HA116 0.5m 02-Dec-2020 1:17 pm	HA116 1.0m 02-Dec-2020 1:23 pm	HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117-1.0m 02-Dec-2020	HA117 2.0m 02-Dec-2020
Date		9/11/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020
Lab number		2470943.10/ 2471441.16	2488783.20	2488783.21	2488783.22	2488783.27	2488783.28	2488783.29	2486806.24/ 2487331.33	2486806.25/ 2487331.34	2486806.26/ 2487331.35	2486806.28/ 2487331.36	2486806.29/ 2487331.37	2487331.38	2486806.31
Soil suite		Soil suite 3	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 2	Soil suite 3	Soil suite 3	Soil suite 3	Heavy metals, VOCS, SVOCS, ONOPS, asbestos	Heavy metals, VOCS, SVOCS, ONOPS, asbestos	Asbestos	Heavy metals, VOCS, SVOCS, ONOPS
Asbestos type		ND	-	-	-	-	-	-	ND	ND	ND	ND	ND	ND	-
Asbestos form															
Asbestos as ACM (w/w%)															
Asbestos Fibres/Fine (w/w%)															
Heavy Metals with Mercury, Screen Level															
Total Recoverable Arsenic	8	< 2	4	< 2	< 2	3	< 2	2	2	< 2	< 2	< 2	< 2	-	< 2
Total Recoverable Cadmium	0.49	< 0.10	0.15	< 0.10	< 0.10	0.15	< 0.10	< 0.10	0.28	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10
Total Recoverable Chromium	101	2	11	8	10	15	7	10	8	4	4	7	7	-	6
Total Recoverable Copper	78	2	78	4	7	34	4	6	9	2	5	7	4	-	5
Total Recoverable Lead	31	3.9	14.9	4.8	9.6	22	5.8	9.8	16.3	4.4	8.4	8.8	9.4	-	12.5
Total Recoverable Mercury	0.42	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10
Total Recoverable Nickel	51	2	22	< 2	2	11	< 2	2	5	< 2	< 2	4	3	-	< 2
Total Recoverable Zinc	57	24	53	4	7	57	7	8	19	< 4	< 4	11	7	-	5
Polycyclic Aromatic Hydrocarbons Screening in Soil															
Total of Reported PAHs in Soil	9.5	< 0.4	-	-	-	-	-	-	1.6	< 0.4	< 0.4	-	-	-	-
1-Methylnaphthalene	0	< 0.016	-	-	-	-	-	-	< 0.014	< 0.013	< 0.014	-	-	-	-
2-Methylnaphthalene	0	< 0.016	-	-	-	-	-	-	< 0.014	< 0.013	< 0.014	-	-	-	-
Acenaphthylene	0.065	< 0.016	-	-	-	-	-	-	< 0.014	< 0.013	< 0.014	-	-	-	-
Acenaphthene	0.02	< 0.016	-	-	-	-	-	-	< 0.014	< 0.013	< 0.014	-	-	-	-
Anthracene	0.123	< 0.016	-	-	-	-	-	-	0.018	< 0.013	< 0.014	-	-	-	-
Benzo[a]anthracene	0.74	< 0.016	-	-	-	-	-	-	0.114	< 0.013	< 0.014	-	-	-	-
Benzo[a]pyrene (BAP)	0.94	< 0.016	-	-	-	-	-	-	0.152	< 0.013	< 0.014	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	< 0.04	-	-	-	-	-	-	0.23	< 0.04	< 0.04	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	< 0.04	-	-	-	-	-	-	0.22	< 0.04	< 0.04	-	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	< 0.016	-	-	-	-	-	-	0.171	< 0.013	< 0.014	-	-	-	-
Benzo[e]pyrene	0.65	< 0.016	-	-	-	-	-	-	0.11	< 0.013	< 0.014	-	-	-	-
Benzo[g,h,i]perylene	0.72	< 0.016	-	-	-	-	-	-	0.129	< 0.013	< 0.014	-	-	-	-
Benzo[k]fluoranthene	0.38	< 0.016	-	-	-	-	-	-	0.068	< 0.013	< 0.014	-	-	-	-
Chrysene	0.7	< 0.016	-	-	-	-	-	-	0.123	< 0.013	< 0.014	-	-	-	-
Dibenzo[a,h]anthracene	0.132	< 0.016	-	-	-	-	-	-	0.022	< 0.013	< 0.014	-	-	-	-
Fluoranthene	1.19	< 0.016	-	-	-	-	-	-	0.25	< 0.013	< 0.014	-	-	-	-
Fluorene	0.016	< 0.016	-	-	-	-	-	-	< 0.014	< 0.013	< 0.014	-	-	-	-
Indeno(1,2,3-c,d)pyrene	0.68	< 0.016	-	-	-	-	-	-	0.122	< 0.013	< 0.014	-	-	-	-
Naphthalene	0	< 0.08	-	-	-	-	-	-	< 0.07	< 0.07	< 0.07	-	-	-	-
Perylene	0.24	0.154	-	-	-	-	-	-	0.034	< 0.013	< 0.014	-	-	-	-
Phenanthrene	0.38	< 0.016	-	-	-	-	-	-	0.076	< 0.013	< 0.014	-	-	-	-
Pyrene	1.48	< 0.016	-	-	-	-	-	-	0.25	< 0.013	< 0.014	-	-	-	-
Total Petroleum Hydrocarbons in Soil															
C7 - C9	0	< 10	-	-	-	-	-	-	< 9	< 8	< 9	-	-	-	-
C10 - C14	69	< 20	-	-	-	-	-	-	< 20	< 20	< 20	-	-	-	-
C15 - C36	2300	< 40	-	-	-	-	-	-	41	< 40	< 40	-	-	-	-
Total hydrocarbons (C7 - C36)	2300	< 70	-	-	-	-	-	-	< 70	< 70	< 70	-	-	-	-
Organochlorine Pesticides Screening in Soil															
Aldrin	<LoR		-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-Chlordane	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-Chlordane	<LoR		-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDD	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDE	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4,4'-DDT	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total DDT Isomers	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	<LoR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	<LoR		-	-	-	-	-	-	-	-	-	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS		<LoR where tested													
Nitrogen containing compounds in SVOC Soil Samples by GC-MS		<LoR where tested													
Organochlorine Pesticides in SVOC Soil Samples by GC-MS		<LoR where tested													
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS		<LoR where tested													
Phenols in SVOC Soil Samples by GC-MS		<LoR where tested													
Plasticisers in SVOC Soil Samples by GC-MS		<LoR where tested													
Other Halogenated compounds in SVOC Soil Samples by GC-MS		<LoR where tested													
Other compounds in SVOC Soil Samples by GC-MS		<LoR where tested													
Organonitro&phosphorus Pesticides Screen in Soil by GCMS		<LoR where tested													
BTEX in VOC Soils by Headspace GC-MS		<LoR where tested													
Halogenated Aliphatics in VOC Soils by Headspace GC-MS		<LoR where tested													
Haloaromatics in VOC Soils by Headspace GC-MS		<LoR where tested													
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS		<LoR where tested													
Ketones in VOC Soils by Headspace GC-MS		<LoR where tested													
Trihalomethanes in VOC Soils by Headspace GC-MS		<LoR where tested													
Other VOC in Soils by Headspace GC-MS		<LoR where tested													

Location	Maximum	HA119	HA119	HA119
Sample		HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm
Date		3/12/2020	3/12/2020	3/12/2020
Lab number		2488783.31	2488783.32	2488783.33
Soil suite		Soil suite 2	Soil suite 2	Soil suite 2
Asbestos type		-	-	-
Asbestos form				
Asbestos as ACM (w/w%)				
Asbestos Fibres/Fine (w/w%)				
Heavy Metals with Mercury, Screen Level				
Total Recoverable Arsenic	8	< 2	< 2	< 2
Total Recoverable Cadmium	0.49	0.23	< 0.10	< 0.10
Total Recoverable Chromium	101	6	9	6
Total Recoverable Copper	78	9	6	4
Total Recoverable Lead	31	4.2	8.7	7.1
Total Recoverable Mercury	0.42	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	51	< 2	< 2	< 2
Total Recoverable Zinc	57	8	5	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil				
Total of Reported PAHs in Soil	9.5	-	-	-
1-Methylnaphthalene	0	-	-	-
2-Methylnaphthalene	0	-	-	-
Acenaphthylene	0.065	-	-	-
Acenaphthene	0.02	-	-	-
Anthracene	0.123	-	-	-
Benzo[a]anthracene	0.74	-	-	-
Benzo[a]pyrene (BAP)	0.94	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	1.37	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)	1.36	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	1.01	-	-	-
Benzo[e]pyrene	0.65	-	-	-
Benzo[g,h,i]perylene	0.72	-	-	-
Benzo[k]fluoranthene	0.38	-	-	-
Chrysene	0.7	-	-	-
Dibenzo[a,h]anthracene	0.132	-	-	-
Fluoranthene	1.19	-	-	-
Fluorene	0.016	-	-	-
Indeno(1,2,3-c,d)pyrene	0.68	-	-	-
Naphthalene	0	-	-	-
Perylene	0.24	-	-	-
Phenanthrene	0.38	-	-	-
Pyrene	1.48	-	-	-
Total Petroleum Hydrocarbons in Soil				
C7 - C9	0	-	-	-
C10 - C14	69	-	-	-
C15 - C36	2300	-	-	-
Total hydrocarbons (C7 - C36)	2300	-	-	-
Organochlorine Pesticides Screening in Soil				
Aldrin	<LoR	-	-	-
alpha-BHC	<LoR	-	-	-
beta-BHC	<LoR	-	-	-
delta-BHC	<LoR	-	-	-
gamma-BHC (Lindane)	<LoR	-	-	-
cis-Chlordane	<LoR	-	-	-
trans-Chlordane	<LoR	-	-	-
2,4'-DDD	<LoR	-	-	-
4,4'-DDD	<LoR	-	-	-
2,4'-DDE	<LoR	-	-	-
4,4'-DDE	<LoR	-	-	-
2,4'-DDT	<LoR	-	-	-
4,4'-DDT	<LoR	-	-	-
Total DDT Isomers	<LoR	-	-	-
Dieldrin	<LoR	-	-	-
Endosulfan I	<LoR	-	-	-
Endosulfan II	<LoR	-	-	-
Endosulfan sulphate	<LoR	-	-	-
Endrin	<LoR	-	-	-
Endrin aldehyde	<LoR	-	-	-
Endrin ketone	<LoR	-	-	-
Heptachlor	<LoR	-	-	-
Heptachlor epoxide	<LoR	-	-	-
Hexachlorobenzene	<LoR	-	-	-
Methoxychlor	<LoR	-	-	-
Haloethers in SVOC Soil Samples by GC-MS				
Nitrogen containing compounds in SVOC Soil Samples by GC-MS				
Organochlorine Pesticides in SVOC Soil Samples by GC-MS				
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS				
Phenols in SVOC Soil Samples by GC-MS				
Plasticisers in SVOC Soil Samples by GC-MS				
Other Halogenated compounds in SVOC Soil Samples by GC-MS				
Other compounds in SVOC Soil Samples by GC-MS				
Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
BTEX in VOC Soils by Headspace GC-MS				
Halogenated Aliphatics in VOC Soils by Headspace GC-MS				
Haloaromatics in VOC Soils by Headspace GC-MS				
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS				
Ketones in VOC Soils by Headspace GC-MS				
Trihalomethanes in VOC Soils by Headspace GC-MS				
Other VOC in Soils by Headspace GC-MS				

Table E2: Summary of groundwater sampling

Location	Maximum	BH05A	BH05B	BH06	BH08	BH110	BH111	BH113	BH116	BH117
Sample		BH05A	BH05B	BH06	BH08	BH110	BH111	BH113	BH116	BH117
Date		2/12/2020	27/11/2020	27/11/2020	27/11/2020	2/12/2020	27/11/2020	27/11/2020	27/11/2020	2/12/2020
Lab number		2486837.7/ 2486837.8	2482688.4	2482688.5	2482688.6	2486837.3	2482688.7	2482688.8	2482688.9	2486837.5
Groundwater suite		Suite 3	Suite 3	Suite 3	Suite 3	Suite 3	Suite 3	Suite 2	Suite 3	Suite 3
pH	8.1	7.5	6.4	4	6.8	8.1	5.5	6.3	6.2	6.8
Dissolved Mercury	0	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn										
Dissolved Arsenic	0.0016	0.0016	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0016
Dissolved Cadmium	0.00023	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.00023	< 0.00005
Dissolved Chromium	0.0007	< 0.0005	< 0.0005	0.0007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Dissolved Copper	0.003	< 0.0005	0.0007	0.003	0.0006	0.0012	< 0.0005	0.0008	0.0025	< 0.0005
Dissolved Lead	0.00052	< 0.00010	0.00011	0.00052	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dissolved Nickel	0.072	0.0015	0.0014	0.072	0.0009	0.0012	0.0022	0.0025	0.0099	0.0048
Dissolved Zinc	0.042	0.0026	0.022	0.042	0.0081	< 0.0010	0.0136	0.0071	0.036	0.022
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq										
Acenaphthene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Acenaphthylene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Anthracene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[a]anthracene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo[j]fluoranthene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[k]fluoranthene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Chrysene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Fluoranthene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Fluorene	0	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	0	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Naphthalene	0	< 0.0005	< 0.0006	< 0.0006	< 0.0006	< 0.0005	< 0.0006	-	< 0.0006	< 0.0005
Phenanthrene	0	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004	-	< 0.0004	< 0.0004
Pyrene	0	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	-	< 0.0002	< 0.0002
Haloethers in SVOC Water Samples by GC-MS										
Bis(2-chloroethoxy) methane	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Bis(2-chloroethyl)ether	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Bis(2-chloroisopropyl)ether	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
4-Bromophenyl phenyl ether	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
4-Chlorophenyl phenyl ether	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Nitrogen containing compounds in SVOC Water Samples by GC-MS										
2,4-Dinitrotoluene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
2,6-Dinitrotoluene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Nitrobenzene	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
N-Nitrosodi-n-propylamine	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
N-Nitrosodiphenylamine + Diphenylamine	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Organochlorine Pesticides in SVOC Water Samples by GC-MS										
Aldrin	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
alpha-BHC	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
beta-BHC	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
delta-BHC	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
gamma-BHC (Lindane)	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
4,4'-DDD	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
4,4'-DDE	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
4,4'-DDT	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Dieldrin	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Endosulfan I	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Endosulfan II	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Endosulfan sulfate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Endrin	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Endrin ketone	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Heptachlor	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Heptachlor epoxide	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Hexachlorobenzene	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS										
Acenaphthene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Acenaphthylene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Anthracene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[a]anthracene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[a]pyrene (BAP)	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[g,h,i]perylene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[k]fluoranthene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
1&2-Chloronaphthalene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Chrysene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Dibenzo[a,h]anthracene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Fluoranthene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Fluorene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Indeno(1,2,3-c,d)pyrene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
2-Methylnaphthalene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Naphthalene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Phenanthrene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Pyrene	0	-	< 0.003	< 0.003	< 0.003	-	< 0.003	< 0.003	< 0.003	-
Benzo[a]pyrene Toxic Equivalence (TEF)	0	-	< 0.008	< 0.008	< 0.008	-	< 0.008	< 0.008	< 0.008	-
Phenols in SVOC Water Samples by GC-MS										
4-Chloro-3-methylphenol	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
2-Chlorophenol	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
2,4-Dichlorophenol	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
2,4-Dimethylphenol	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
3 & 4-Methylphenol (m- + p-cresol)	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
2-Methylphenol (o-Cresol)	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
2-Nitrophenol	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Pentachlorophenol (PCP)	0	-	< 0.10	< 0.10	< 0.10	-	< 0.10	< 0.10	< 0.10	-
Phenol	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
2,4,5-Trichlorophenol	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
2,4,6-Trichlorophenol	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Plasticisers in SVOC Water Samples by GC-MS										
Bis(2-ethylhexyl)phthalate	0	-	< 0.03	< 0.03	< 0.03	-	< 0.03	< 0.03	< 0.03	-
Butylbenzylphthalate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Di(2-ethylhexyl)adipate	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Diethylphthalate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Dimethylphthalate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Di-n-butylphthalate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Di-n-octylphthalate	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Other Halogenated compounds in SVOC Water Samples by GC-MS										
1,2-Dichlorobenzene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
1,3-Dichlorobenzene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
1,4-Dichlorobenzene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Hexachlorobutadiene	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
Hexachloroethane	0	-	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	-
1,2,4-Trichlorobenzene	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Other compounds in SVOC Water Samples by GC-MS										
Benzyl alcohol	0	-	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	-
Carbazole	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Dibenzofuran	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Isophorone	0	-	< 0.005	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	-
Total Petroleum Hydrocarbons in Water										
C7 - C9	0.14	< 0.10	0.14	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10	< 0.10
C10 - C14	0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	-	< 0.2	< 0.2
C15 - C36	0	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	-	< 0.4	< 0.4
Total hydrocarbons (C7 - C36)	0	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	-	< 0.7	< 0.7

Table E3: Summary of acid sulphate soil results

Sample	BH05a-0.35m	BH05a-6.5m	BH06-0.85-1.0m	BH06-2.7-2.9m	BH07-0.9-1.0m	BH07-4.5m	BH08-0.25m	BH08-7m	BH110-0.8-0.9m
Lab number	2473291.13	2473291.46	2473291.15	2473291.16	2473291.17	2473291.47	2473291.19	2473291.48	2473291.11
pH	4.8	5.3	4.6	3.8	4.3	5	4.9	6.6	4.6
Acid Soluble Sulphate and Sulphate Content									
Acid Soluble Sulphate	0.036	0.044	0.026	0.3	0.024	0.017	0.026	0.026	0.017
Sulphate Content	0.036	0.035	0.026	0.3	0.024	0.017	0.026	0.026	0.017

Sample	BH110 - 3m	BH111 - 2m	BH111-3.7-3.9m	BH113-2.2-2.3m	BH113 - 5.8m	BH116-0.75-0.85m	BH116-5.0-5.1m	BH117-3.45-3.55m	BH117-5.9-6.0m
Lab number	2473291.5	2473291.51	2473291.1	2473291.4	2473291.52	2473291.6	2473291.7	2473291.9	2473291.1
pH	3.8	4.6	4.6	5.1	5.2	6.5	5.9	6.9	6.8
Acid Soluble Sulphate and Sulphate Content									
Acid Soluble Sulphate	0.43	0.035	0.197	0.034	0.152	0.016	0.024	0.027	0.025
Sulphate Content	0.43	0.035	0.197	0.034	0.151	0.013	0.024	0.027	0.024

Sample	HA108-1.0m	HA109-4.0m	HA111-2.4m	HA114-3.0m	HA115-2.0m	HA119-5.0m
Lab number	2473291.39	2489334.6	2473291.42	2489334.12	2473291.4	2489334.21
pH	4.7	5.3	6.4	4.8	4.7	5.4
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	0.033	0.043	0.026	0.033	0.172	0.043
Sulphate Content	0.033	0.043	0.024	0.033	0.171	0.043

Appendix F: Laboratory transcripts

Note: .csv files have also been provided.

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2478987 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	24-Nov-2020
		Date Reported:	27-Nov-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		BH05a - 0.1m 17-Nov-2020	BH05a - 1.0m 17-Nov-2020	BH05a - 2.0m 17-Nov-2020	BH06 - 0.1-0.3m 19-Nov-2020	BH06 - 0.35-0.6m 19-Nov-2020
Lab Number:		2478987.2	2478987.3	2478987.4	2478987.9	2478987.10
Individual Tests						
Dry Matter	g/100g as rcvd	73	70	63	78	77
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.33	< 0.10
Total Recoverable Chromium	mg/kg dry wt	8	7	7	5	3
Total Recoverable Copper	mg/kg dry wt	22	5	6	9	4
Total Recoverable Lead	mg/kg dry wt	6.1	9.5	9.0	7.7	11.5
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.12	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	16	< 2	< 2	3	< 2
Total Recoverable Zinc	mg/kg dry wt	23	6	4	6	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Acenaphthene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Anthracene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[a]anthracene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[e]pyrene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Chrysene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Fluoranthene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Fluorene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.08	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Phenanthrene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013
Pyrene	mg/kg dry wt	< 0.014	< 0.014	< 0.016	< 0.013	< 0.013

Sample Type: Soil						
Sample Name:		BH05a - 0.1m 17-Nov-2020	BH05a - 1.0m 17-Nov-2020	BH05a - 2.0m 17-Nov-2020	BH06 - 0.1-0.3m 19-Nov-2020	BH06 - 0.35-0.6m 19-Nov-2020
Lab Number:		2478987.2	2478987.3	2478987.4	2478987.9	2478987.10
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 9	< 9	< 10	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	< 70

Sample Name:		BH06 - 1.0-1.2m 19-Nov-2020	BH07 - 0.1-0.4m 20-Nov-2020	BH07 - 0.5-0.65m 20-Nov-2020	BH07 - 1.0-1.35m 20-Nov-2020	
Lab Number:		2478987.11	2478987.17	2478987.18	2478987.19	
Individual Tests						
Dry Matter	g/100g as rcvd	78	87	83	73	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.21	< 0.10	< 0.10	-
Total Recoverable Chromium	mg/kg dry wt	4	3	3	8	-
Total Recoverable Copper	mg/kg dry wt	7	3	3	3	-
Total Recoverable Lead	mg/kg dry wt	11.6	4.1	6.4	7.1	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	-
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Total Recoverable Zinc	mg/kg dry wt	< 4	< 4	< 4	< 4	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.4	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.03	< 0.03	< 0.04	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.04	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Chrysene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Fluoranthene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Fluorene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.06	< 0.06	< 0.07	-
Perylene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Pyrene	mg/kg dry wt	< 0.013	< 0.012	< 0.012	< 0.014	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 9	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	2-4, 9-11, 17-19
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2-4, 9-11, 17-19
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	2-4, 9-11, 17-19
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	2-4, 9-11, 17-19
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	2-4, 9-11, 17-19
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	2-4, 9-11, 17-19
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	2-4, 9-11, 17-19
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	2-4, 9-11, 17-19
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2-4, 9-11, 17-19
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2-4, 9-11, 17-19
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2-4, 9-11, 17-19

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 26-Nov-2020 and 27-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2479563 A2Pv1
Contact:	Rebecca van der Krogt	**Date Received:**	24-Nov-2020
	C/- Tonkin & Taylor	**Date Reported:**	27-Nov-2020
	PO Box 5271	**Quote No:**	108286
	Auckland 1141	**Order No:**	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		BH05a-0.1m	BH05a-1.0m	BH05a-2.0m	BH06-0.1-0.3m	BH06-0.35-0.6m
Lab Number:		2479563.1	2479563.2	2479563.3	2479563.7	2479563.8
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	590.4	621.6	629.5	691.4	789.7
Dry Weight	g	458.0	436.4	396.7	554.9	602.3
Moisture	%	22	30	37	20	24
Sample Fraction >10mm	g dry wt	89.0	< 0.1	< 0.1	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	188.5	123.8	212.7	54.8	21.2
Sample Fraction <2mm	g dry wt	180.5	312.1	182.9	499.1	581.0
<2mm Subsample Weight	g dry wt	59.2	52.3	57.0	55.3	51.0
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		BH06-1.0-1.2m	BH07-0.1-.04m	BH07-0.5-0.65m	BH07-1.35m	
Lab Number:		2479563.9	2479563.15	2479563.16	2479563.17	
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
As Received Weight	g	961.9	829.9	976.2	717.0	-
Dry Weight	g	720.0	669.1	814.7	527.0	-
Moisture	%	25	19	17	27	-
Sample Fraction >10mm	g dry wt	< 0.1	< 0.1	< 0.1	< 0.1	-

Sample Type: Soil						
Sample Name:		BH06-1.0-1.2m	BH07-0.1-.04m	BH07-0.5-0.65m	BH07-1.35m	
Lab Number:		2479563.9	2479563.15	2479563.16	2479563.17	
Sample Fraction <10mm to >2mm	g dry wt	27.8	35.7	176.3	62.0	-
Sample Fraction <2mm	g dry wt	691.6	632.1	636.1	464.3	-
<2mm Subsample Weight	g dry wt	52.6	55.0	50.5	55.3	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3, 7-9, 15-17
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 7-9, 15-17
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 7-9, 15-17
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3, 7-9, 15-17
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 7-9, 15-17
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 7-9, 15-17
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 7-9, 15-17
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3, 7-9, 15-17
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3, 7-9, 15-17

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 7-9, 15-17
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 7-9, 15-17
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 7-9, 15-17
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 7-9, 15-17
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 7-9, 15-17
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 7-9, 15-17
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 7-9, 15-17

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 27-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2480946 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	26-Nov-2020
		Date Reported:	08-Dec-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

		Sample Name:	BH08-0.1m	BH08-0.5m	BH08-1.0m		
		Lab Number:	2480946.1	2480946.2	2480946.3		
Individual Tests							
Dry Matter	g/100g as rcvd		73	75	78	-	-
Heavy Metals with Mercury, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt		7	< 2	< 2	-	-
Total Recoverable Cadmium	mg/kg dry wt		< 0.10	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt		101	5	3	-	-
Total Recoverable Copper	mg/kg dry wt		66	6	3	-	-
Total Recoverable Lead	mg/kg dry wt		11.3	11.8	6.3	-	-
Total Recoverable Mercury	mg/kg dry wt		0.10	0.11	< 0.10	-	-
Total Recoverable Nickel	mg/kg dry wt		51	< 2	< 2	-	-
Total Recoverable Zinc	mg/kg dry wt		18	4	< 4	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*							
Total of Reported PAHs in Soil	mg/kg dry wt		< 0.4	< 0.4	< 0.4	-	-
1-Methylnaphthalene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
2-Methylnaphthalene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Acenaphthylene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Acenaphthene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Anthracene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[a]anthracene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt		< 0.04	< 0.04	< 0.04	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt		< 0.04	< 0.04	< 0.04	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[e]pyrene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[g,h,i]perylene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Benzo[k]fluoranthene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Chrysene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Fluoranthene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Fluorene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Naphthalene	mg/kg dry wt		< 0.07	< 0.07	< 0.07	-	-
Perylene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Phenanthrene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-
Pyrene	mg/kg dry wt		< 0.014	< 0.014	< 0.013	-	-

Sample Type: Soil						
Sample Name:		BH08-0.1m	BH08-0.5m	BH08-1.0m		
Lab Number:		2480946.1	2480946.2	2480946.3		
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 9	< 8	< 8	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-3
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-3
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-3
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-3
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-3
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 08-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2481161	A2Pv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	26-Nov-2020 07-Dec-2020 80842 1014985 1014985 Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH08-0.1m 23-Nov-2020	BH08-0.5m 23-Nov-2020	BH08-1.0m 23-Nov-2020		
Lab Number:		2481161.1	2481161.2	2481161.3		
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
As Received Weight	g	519.5	580.8	700.6	-	-
Dry Weight	g	381.5	432.4	547.8	-	-
Moisture	%	27	26	22	-	-
Sample Fraction >10mm	g dry wt	49.7	< 0.1	< 0.1	-	-
Sample Fraction <10mm to >2mm	g dry wt	154.4	166.3	135.4	-	-
Sample Fraction <2mm	g dry wt	175.7	263.8	410.0	-	-
<2mm Subsample Weight	g dry wt	54.0	58.0	55.7	-	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-

Glossary of Terms

• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 07-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2474527	A2Pv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	17-Nov-2020	
		Date Reported:	26-Nov-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH110-0.1-0.35m 13-Nov-2020	BH110-0.5-0.75m 13-Nov-2020	BH110-0.9-1.15m 13-Nov-2020		
Lab Number:		2474527.1	2474527.2	2474527.3		
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	-	-
As Received Weight	g	910.3	863.7	885.2	-	-
Dry Weight	g	688.8	640.6	650.3	-	-
Moisture	%	24	26	27	-	-
Sample Fraction >10mm	g dry wt	< 0.1	< 0.1	171.6	-	-
Sample Fraction <10mm to >2mm	g dry wt	166.9	10.4	249.9	-	-
Sample Fraction <2mm	g dry wt	519.8	628.7	227.1	-	-
<2mm Subsample Weight	g dry wt	59.6	58.9	58.4	-	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-

Glossary of Terms

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• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
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• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 26-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Technical Manager - Asbestos

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Certificate of Analysis

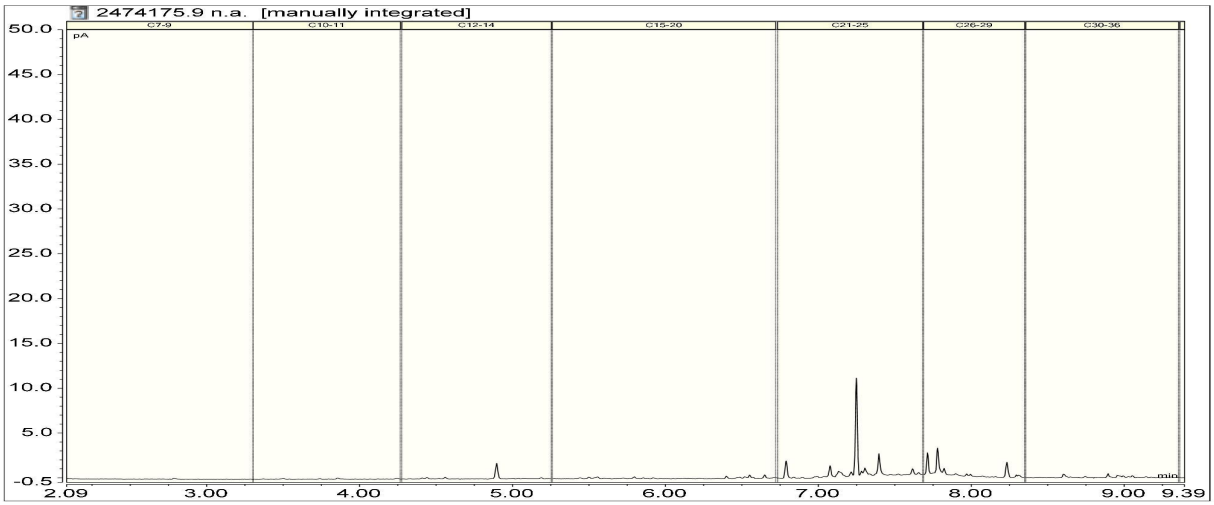
Client:	Tonkin & Taylor	**Lab No:**	2474175 SPv2
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	17-Nov-2020
		Date Reported:	27-Nov-2020 **(Amended)**
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		BH110-0.1-0.35m 13-Nov-2020	BH110-0.5-0.75m 13-Nov-2020	BH110-0.9-1.15m 13-Nov-2020	BH111A-0.4-0.7m 13-Nov-2020	BH111A-1.0-1.3m 13-Nov-2020
Lab Number:		2474175.1	2474175.2	2474175.3	2474175.8	2474175.9
Individual Tests						
Dry Matter	g/100g as rcvd	77	74	75	75	75
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	5	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.15	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	5	8	6	5	4
Total Recoverable Copper	mg/kg dry wt	2	5	4	5	5
Total Recoverable Lead	mg/kg dry wt	6.1	11.2	8.4	8.1	11.2
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	3	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	6	5	< 4	5	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.4	< 0.4	< 0.4	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Acenaphthene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Chrysene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Fluorene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Phenanthrene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014
Pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.014

Sample Type: Soil						
Sample Name:		BH110-0.1-0.35m 13-Nov-2020	BH110-0.5-0.75m 13-Nov-2020	BH110-0.9-1.15m 13-Nov-2020	BH111A-0.4-0.7m 13-Nov-2020	BH111A-1.0-1.3m 13-Nov-2020
Lab Number:		2474175.1	2474175.2	2474175.3	2474175.8	2474175.9
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 9	< 8	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	101
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	102

2474175.9
BH111A-1.0-1.3m 13-Nov-2020
Client Chromatogram for TPH by FID



Analyst's Comments

Amended Report: This certificate of analysis replaces report '2474175-SPv1' issued on 19-Nov-2020 at 4:20 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-3, 8-9
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3, 8-9
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3, 8-9
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-3, 8-9
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-3, 8-9
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-3, 8-9

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 8-9
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	9
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-3, 8-9
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3, 8-9
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3, 8-9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3, 8-9

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 18-Nov-2020 and 27-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2474527	A2Pv2
Contact:	Rebecca van der Krogt	**Date Received:**	17-Nov-2020	
	C/- Tonkin & Taylor	**Date Reported:**	10-Dec-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH110-0.1-0.35m 13-Nov-2020	BH110-0.5-0.75m 13-Nov-2020	BH110-0.9-1.15m 13-Nov-2020	BH11A-0.4-0.7m 13-Nov-2020	BH11A-1.0-1.3m 13-Nov-2020
Lab Number:		2474527.1	2474527.2	2474527.3	2474527.8	2474527.9
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	910.3	863.7	885.2	747.1	982.0
Dry Weight	g	688.8	640.6	650.3	549.4	712.0
Moisture	%	24	26	27	26	27
Sample Fraction >10mm	g dry wt	< 0.1	< 0.1	171.6	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	166.9	10.4	249.9	177.8	218.6
Sample Fraction <2mm	g dry wt	519.8	628.7	227.1	369.5	491.6
<2mm Subsample Weight	g dry wt	59.6	58.9	58.4	52.0	54.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace - Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Analyst's Comments

Amended Report: This certificate of analysis replaces report '2474527-A2Pv1' issued on 26-Nov-2020 at 3:35 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3, 8-9
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 8-9
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 8-9
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3, 8-9
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 8-9
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 8-9
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 8-9
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3, 8-9
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3, 8-9
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 8-9
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 8-9
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 8-9
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 8-9
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 8-9
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 8-9
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 8-9

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 26-Nov-2020 and 10-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

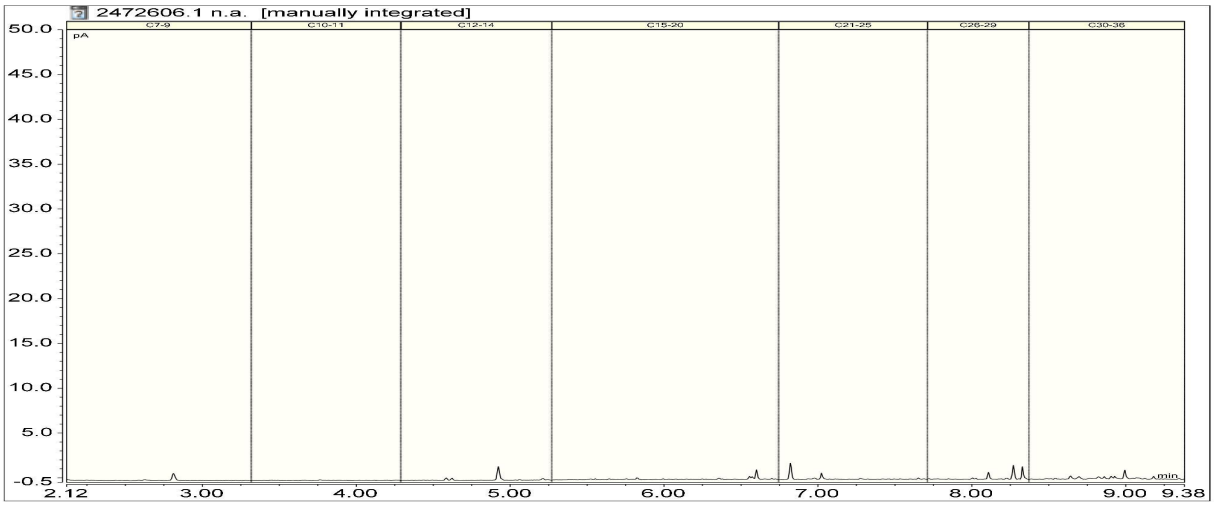
Client:	Tonkin & Taylor	**Lab No:**	2472606 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	13-Nov-2020
		Date Reported:	18-Nov-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		BH111-0.05-0.2m 10-Nov-2020				
Lab Number:		2472606.1				
Individual Tests						
Dry Matter	g/100g as rcvd	68	-	-	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	-	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.31	-	-	-	-
Total Recoverable Chromium	mg/kg dry wt	7	-	-	-	-
Total Recoverable Copper	mg/kg dry wt	4	-	-	-	-
Total Recoverable Lead	mg/kg dry wt	7.0	-	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	-	-	-	-
Total Recoverable Nickel	mg/kg dry wt	< 2	-	-	-	-
Total Recoverable Zinc	mg/kg dry wt	11	-	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.015	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.015	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.015	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.015	-	-	-	-
Anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.015	-	-	-	-
Chrysene	mg/kg dry wt	< 0.015	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.015	-	-	-	-
Fluorene	mg/kg dry wt	< 0.015	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.015	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.08	-	-	-	-
Perylene	mg/kg dry wt	< 0.015	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.015	-	-	-	-
Pyrene	mg/kg dry wt	< 0.015	-	-	-	-

Sample Type: Soil							
Sample Name:		BH111-0.05-0.2m 10-Nov-2020					
Lab Number:		2472606.1					
Total Petroleum Hydrocarbons in Soil							
C7 - C9	mg/kg dry wt	< 9	-	-	-	-	
C10 - C14	mg/kg dry wt	< 20	-	-	-	-	
C15 - C36	mg/kg dry wt	53	-	-	-	-	
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	-	-	-	-	

2472606.1
BH111-0.05-0.2m 10-Nov-2020
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2473431	A2Pv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	14-Nov-2020	
		Date Reported:	20-Nov-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH111-0.05-0.2m 10-Nov-2020				
Lab Number:		2473431.1				
Asbestos Presence / Absence		Asbestos NOT detected.	-	-	-	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	-	-	-	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	-	-	-	-
As Received Weight	g	554.0	-	-	-	-
Dry Weight	g	389.6	-	-	-	-
Moisture	%	30	-	-	-	-
Sample Fraction >10mm	g dry wt	< 0.1	-	-	-	-
Sample Fraction <10mm to >2mm	g dry wt	158.0	-	-	-	-
Sample Fraction <2mm	g dry wt	229.5	-	-	-	-
<2mm Subsample Weight	g dry wt	55.8	-	-	-	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	-	-	-	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 20-Nov-2020. For completion dates of individual analyses please contact the laboratory.

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Technical Manager - Asbestos

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Certificate of Analysis

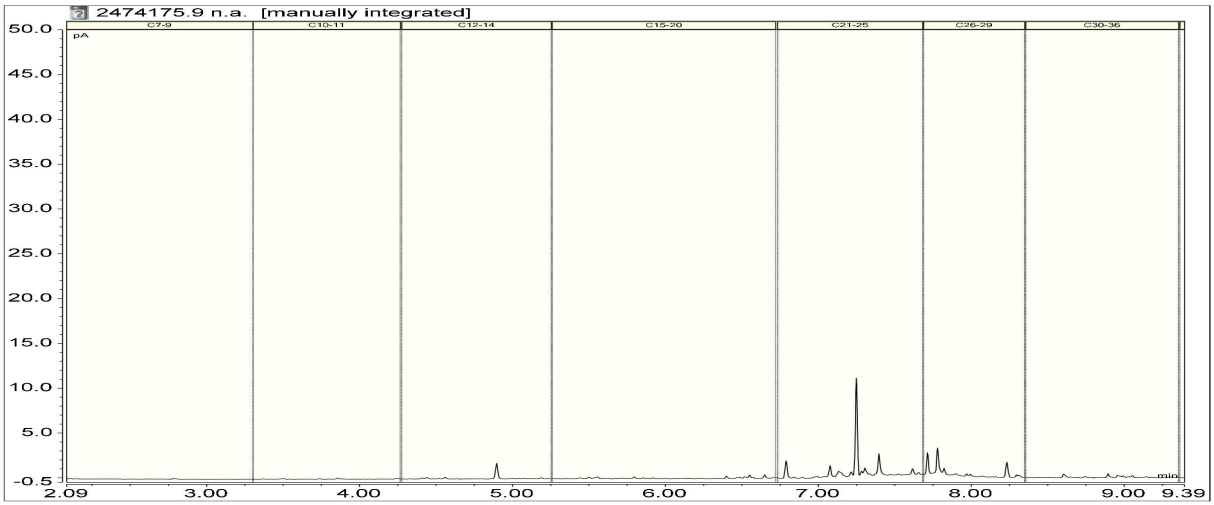
Client:	Tonkin & Taylor	**Lab No:**	2474175	SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	17-Nov-2020	
		Date Reported:	19-Nov-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH111A-0.4-0.7m 13-Nov-2020	BH111A-1.0-1.3m 13-Nov-2020			
Lab Number:		2474175.8	2474175.9			
Individual Tests						
Dry Matter	g/100g as rcvd	75	75	-	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	5	4	-	-	-
Total Recoverable Copper	mg/kg dry wt	5	5	-	-	-
Total Recoverable Lead	mg/kg dry wt	8.1	11.2	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	-	-	-
Total Recoverable Zinc	mg/kg dry wt	5	< 4	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Acenaphthene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Anthracene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Chrysene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Fluoranthene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Fluorene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	-	-	-
Perylene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Phenanthrene	mg/kg dry wt	< 0.014	< 0.014	-	-	-
Pyrene	mg/kg dry wt	< 0.014	< 0.014	-	-	-

Sample Type: Soil							
Sample Name:		BH111A-0.4-0.7m 13-Nov-2020	BH111A-1.0-1.3m 13-Nov-2020				
Lab Number:		2474175.8	2474175.9				
Total Petroleum Hydrocarbons in Soil							
C7 - C9	mg/kg dry wt	< 8	< 8	-	-	-	
C10 - C14	mg/kg dry wt	< 20	< 20	-	-	-	
C15 - C36	mg/kg dry wt	< 40	101	-	-	-	
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	102	-	-	-	

2474175.9
BH111A-1.0-1.3m 13-Nov-2020
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	8-9
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	8-9
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	8-9
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	8-9
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	8-9
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	8-9
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	8-9

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	9
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	8-9
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	8-9
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	8-9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	8-9

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 18-Nov-2020 and 19-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Martin Cowell - BSc
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2467662 SPv1
Contact:	Lucy Hine	**Date Received:**	05-Nov-2020
	C/- Tonkin & Taylor	**Date Reported:**	11-Nov-2020
	PO Box 13055	**Quote No:**	80842
	Christchurch 8141	**Order No:**	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		BH116 - 0.1m 02-Nov-2020	BH116 - 0.5m 02-Nov-2020	BH116 - 2.0m 02-Nov-2020	ENVR - HA101 - 0.0-0.1m 04-Nov-2020	ENVR - HA101 - 0.5-0.6m 04-Nov-2020
Lab Number:		2467662.1	2467662.2	2467662.4	2467662.5	2467662.6
Individual Tests						
Dry Matter	g/100g as rcvd	74	80	75	82	78
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	4	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.10	< 0.10	< 0.10	0.16	< 0.10
Total Recoverable Chromium	mg/kg dry wt	10	12	6	7	7
Total Recoverable Copper	mg/kg dry wt	14	22	7	10	9
Total Recoverable Lead	mg/kg dry wt	11.9	11.3	7.7	5.3	10.7
Total Recoverable Mercury	mg/kg dry wt	0.11	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	8	10	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	20	30	6	12	5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	0.6	< 0.3	< 0.4	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
Acenaphthene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
Anthracene	mg/kg dry wt	0.019	< 0.013	< 0.014	-	-
Benzo[a]anthracene	mg/kg dry wt	0.038	< 0.013	< 0.014	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.040	< 0.013	< 0.014	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.05	< 0.03	< 0.04	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.05	< 0.03	< 0.04	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.044	< 0.013	< 0.014	-	-
Benzo[e]pyrene	mg/kg dry wt	0.030	< 0.013	< 0.014	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.027	< 0.013	< 0.014	-	-
Benzo[k]fluoranthene	mg/kg dry wt	0.018	< 0.013	< 0.014	-	-
Chrysene	mg/kg dry wt	0.034	< 0.013	< 0.014	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
Fluoranthene	mg/kg dry wt	0.088	< 0.013	< 0.014	-	-
Fluorene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.026	< 0.013	< 0.014	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	-	-
Perylene	mg/kg dry wt	0.017	< 0.013	< 0.014	-	-
Phenanthrene	mg/kg dry wt	0.078	< 0.013	< 0.014	-	-
Pyrene	mg/kg dry wt	0.081	< 0.013	< 0.014	-	-

Sample Type: Soil						
Sample Name:		BH116 - 0.1m 02-Nov-2020	BH116 - 0.5m 02-Nov-2020	BH116 - 2.0m 02-Nov-2020	ENVR - HA101 - 0.0-0.1m 04-Nov-2020	ENVR - HA101 - 0.5-0.6m 04-Nov-2020
Lab Number:		2467662.1	2467662.2	2467662.4	2467662.5	2467662.6
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	-	-	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	-	-	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	-	-	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	-	-	-	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Endrin	mg/kg dry wt	-	-	-	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Chrysene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Fluorene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Pyrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	< 1.3	< 1.3

Sample Type: Soil							
Sample Name:		BH116 - 0.1m 02-Nov-2020	BH116 - 0.5m 02-Nov-2020	BH116 - 2.0m 02-Nov-2020	ENVR - HA101 - 0.0-0.1m 04-Nov-2020	ENVR - HA101 - 0.5-0.6m 04-Nov-2020
Lab Number:		2467662.1	2467662.2	2467662.4	2467662.5	2467662.6
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	-	-	< 5	< 5
2-Chlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	-	-	-	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	-	-	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	-	-	-	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	-	-	-	< 30	< 30
Phenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	-	-	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	-	-	-	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	-	-	-	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	-	-	< 10	< 10
Carbazole	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Isophorone	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	-

Sample Name:		ENVR - HA101 - 1.6-1.8m 04-Nov-2020	Duplicate 1 - 4/11/20 04-Nov-2020			
Lab Number:		2467662.8	2467662.9			
Individual Tests						
Dry Matter	g/100g as rcvd	78	83	-	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.15	-	-	-
Total Recoverable Chromium	mg/kg dry wt	5	7	-	-	-
Total Recoverable Copper	mg/kg dry wt	6	10	-	-	-
Total Recoverable Lead	mg/kg dry wt	8.5	5.5	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Nickel	mg/kg dry wt	2	< 2	-	-	-
Total Recoverable Zinc	mg/kg dry wt	5	10	-	-	-

Sample Type: Soil						
Sample Name:		ENVR - HA101 - 1.6-1.8m 04-Nov-2020	Duplicate 1 - 4/11/20 04-Nov-2020			
Lab Number:		2467662.8	2467662.9			
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	-	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	-	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.8	-	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.8	-	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	-	-	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	-	-	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	-	-	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	-	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Endosulfan II	mg/kg dry wt	< 2	< 2	-	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Endrin	mg/kg dry wt	< 0.8	< 0.8	-	-	-
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	-	-	-

Sample Type: Soil							
Sample Name:		ENVR - HA101 - 1.6-1.8m 04-Nov-2020	Duplicate 1 - 4/11/20 04-Nov-2020			
Lab Number:		2467662.8	2467662.9			
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	-	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	-	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	-	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	-	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	-	-	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	-	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	-	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.8	-	-	-
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.8	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	-	-	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	-	-	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-2, 4-6, 8-9
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2, 4
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2, 4-6, 8-9
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-2, 4

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-2, 4
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-2, 4
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2, 4-6, 8-9
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	5-6, 8-9
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-2, 4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2, 4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2, 4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2, 4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 10-Nov-2020 and 11-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Martin Cowell - BSc
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2471441	A2Pv2
Contact:	Rebecca van der Krogt	**Date Received:**	11-Nov-2020	
	C/- Tonkin & Taylor	**Date Reported:**	26-Nov-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH116-0.1m 09-Nov-2020	BH116-0.5m 09-Nov-2020	BH116-2.0m 09-Nov-2020	BH117-0.1m 09-Nov-2020	BH117-0.5m 09-Nov-2020
Lab Number:		2471441.8	2471441.9	2471441.10	2471441.14	2471441.15
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	408.0	448.7	522.4	488.4	484.8
Dry Weight	g	293.8	374.1	390.4	363.2	389.2
Sample Fraction >10mm	g dry wt	13.1	76.7	6.2	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	137.4	172.1	125.1	1.6	0.7
Sample Fraction <2mm	g dry wt	142.5	124.3	257.3	361.1	386.8
<2mm Subsample Weight	g dry wt	58.7	55.2	57.6	53.2	58.4
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		BH117-2.0m 09-Nov-2020				
Lab Number:		2471441.16				
Asbestos Presence / Absence		Asbestos NOT detected.	-	-	-	-
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	394.4	-	-	-	-
Dry Weight	g	263.6	-	-	-	-
Sample Fraction >10mm	g dry wt	< 0.1	-	-	-	-
Sample Fraction <10mm to >2mm	g dry wt	1.5	-	-	-	-
Sample Fraction <2mm	g dry wt	259.7	-	-	-	-
<2mm Subsample Weight	g dry wt	58.7	-	-	-	-
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Testing has been carried out under the assumption that the weight of asbestos in the sample is unaffected by the ashing process.

Analyst's Comments

Amended Report: This certificate of analysis replaces report '2471441-A2Pv1' issued on 20-Nov-2020 at 3:51 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Semi Quantitative Asbestos in Soil	Based on approximately 100g of sample provided.	-	8-10, 14-16
Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	8-10, 14-16
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	8-10, 14-16
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	8-10, 14-16
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	8-10, 14-16
Weight of Asbestos in >10mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16
Weight of Asbestos in <10mm to >2mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16
Weight of Asbestos in <2mm Sample Fraction	Measurement on analytical balance. Asbestos weight in <2mm subsample, if <2mm subsample weight is not "Entire Fraction". Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 20-Nov-2020 and 26-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2486812	SPv2
Contact:	Rebecca van der Krogt	**Date Received:**	04-Dec-2020	
	C/- Tonkin & Taylor	**Date Reported:**	16-Dec-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

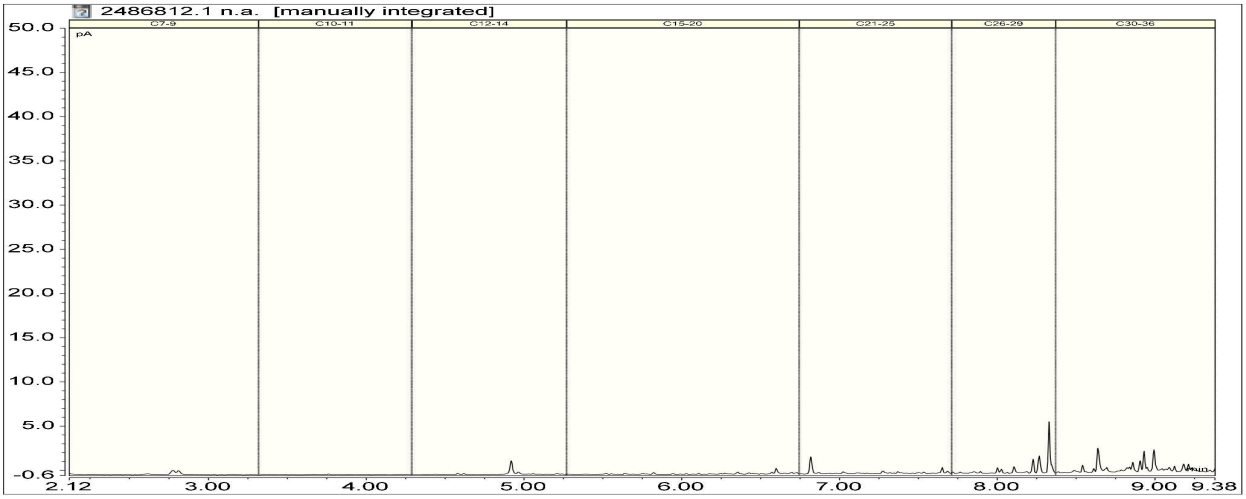
Sample Type: Soil

Sample Name:		DUP A 01-Dec-2020	HA05 - 0m 01-Dec-2020 1:15 pm	HA05 - 0.5m 01-Dec-2020 1:30 pm	HA05 - 1.0m 01-Dec-2020 1:36 pm	HA06 - 0m 01-Dec-2020 10:45 am
Lab Number:		2486812.1	2486812.2	2486812.3	2486812.4	2486812.9
Individual Tests						
Dry Matter	g/100g as rcvd	62	82	74	69	63
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	6	2	< 2	< 2	6
Total Recoverable Cadmium	mg/kg dry wt	0.30	0.10	< 0.10	< 0.10	0.26
Total Recoverable Chromium	mg/kg dry wt	14	6	6	7	13
Total Recoverable Copper	mg/kg dry wt	26	43	3	2	26
Total Recoverable Lead	mg/kg dry wt	21	20	9.2	5.5	21
Total Recoverable Mercury	mg/kg dry wt	0.14	< 0.10	0.16	< 0.10	0.13
Total Recoverable Nickel	mg/kg dry wt	8	8	3	< 2	7
Total Recoverable Zinc	mg/kg dry wt	42	40	< 4	< 4	42
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	9.5	< 0.4	< 0.4	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.012	< 0.014	< 0.015	< 0.016
2-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.012	< 0.014	< 0.015	< 0.016
Acenaphthylene	mg/kg dry wt	< 0.016	0.065	< 0.014	< 0.015	< 0.016
Acenaphthene	mg/kg dry wt	< 0.016	0.020	< 0.014	< 0.015	< 0.016
Anthracene	mg/kg dry wt	< 0.016	0.123	< 0.014	< 0.015	< 0.016
Benzo[a]anthracene	mg/kg dry wt	< 0.016	0.74	< 0.014	< 0.015	< 0.016
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.016	0.94	< 0.014	< 0.015	< 0.016
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	1.37	< 0.04	< 0.04	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	1.36	< 0.04	< 0.04	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.016	1.01	< 0.014	< 0.015	< 0.016
Benzo[e]pyrene	mg/kg dry wt	< 0.016	0.65	< 0.014	< 0.015	< 0.016
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.016	0.72	< 0.014	< 0.015	< 0.016
Benzo[k]fluoranthene	mg/kg dry wt	< 0.016	0.38	< 0.014	< 0.015	< 0.016
Chrysene	mg/kg dry wt	< 0.016	0.70	< 0.014	< 0.015	< 0.016
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.016	0.132	< 0.014	< 0.015	< 0.016
Fluoranthene	mg/kg dry wt	0.021	1.19	< 0.014	< 0.015	< 0.016
Fluorene	mg/kg dry wt	< 0.016	0.016	< 0.014	< 0.015	< 0.016
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.016	0.68	< 0.014	< 0.015	< 0.016
Naphthalene	mg/kg dry wt	< 0.08	< 0.06	< 0.07	< 0.08	< 0.08
Perylene	mg/kg dry wt	< 0.016	0.24	< 0.014	< 0.015	< 0.016
Phenanthrene	mg/kg dry wt	< 0.016	0.38	< 0.014	< 0.015	< 0.016
Pyrene	mg/kg dry wt	0.017	1.48	< 0.014	< 0.015	< 0.016

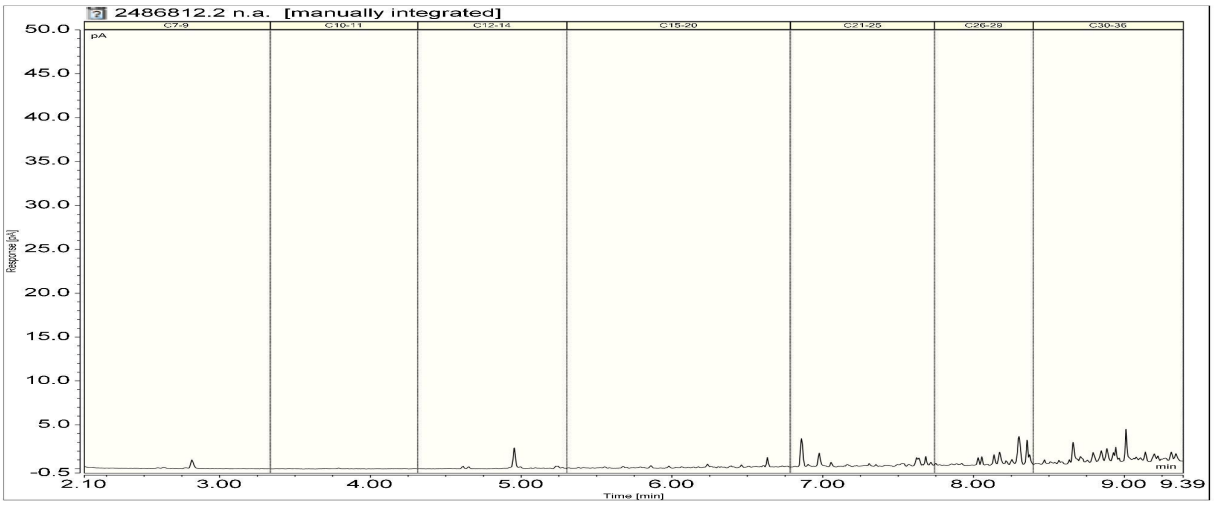
Sample Type: Soil						
Sample Name:		DUP A 01-Dec-2020	HA05 - 0m 01-Dec-2020 1:15 pm	HA05 - 0.5m 01-Dec-2020 1:30 pm	HA05 - 1.0m 01-Dec-2020 1:36 pm	HA06 - 0m 01-Dec-2020 10:45 am
Lab Number:		2486812.1	2486812.2	2486812.3	2486812.4	2486812.9
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 10	< 8	< 8	< 9	< 10
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	110	123	< 40	< 40	55
Total hydrocarbons (C7 - C36)	mg/kg dry wt	121	126	< 70	< 70	< 70

Sample Name:		HA06 - 0.4-0.6m 01-Dec-2020 11:00 am	HA06 - 1.0m 01-Dec-2020 11:12 am	HA07 - 0.1m 01-Dec-2020	HA07 - 0.5m 01-Dec-2020	HA07 - 1.0m 01-Dec-2020
Lab Number:		2486812.10	2486812.11	2486812.16	2486812.17	2486812.18
Individual Tests						
Dry Matter	g/100g as rcvd	70	67	74	74	65
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	2	4	2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.17	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	21	11	9	7	10
Total Recoverable Copper	mg/kg dry wt	12	16	31	6	5
Total Recoverable Lead	mg/kg dry wt	26	24	15.7	13.8	8.5
Total Recoverable Mercury	mg/kg dry wt	0.19	0.30	< 0.10	0.10	0.16
Total Recoverable Nickel	mg/kg dry wt	11	8	6	2	3
Total Recoverable Zinc	mg/kg dry wt	12	5	49	5	5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Acenaphthene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Anthracene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[a]anthracene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[e]pyrene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Chrysene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Fluoranthene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Fluorene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Naphthalene	mg/kg dry wt	< 0.07	< 0.08	< 0.07	< 0.07	< 0.08
Perylene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Phenanthrene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Pyrene	mg/kg dry wt	< 0.014	< 0.015	< 0.014	< 0.014	< 0.016
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 9	< 9	< 8	< 8	< 10
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	< 70

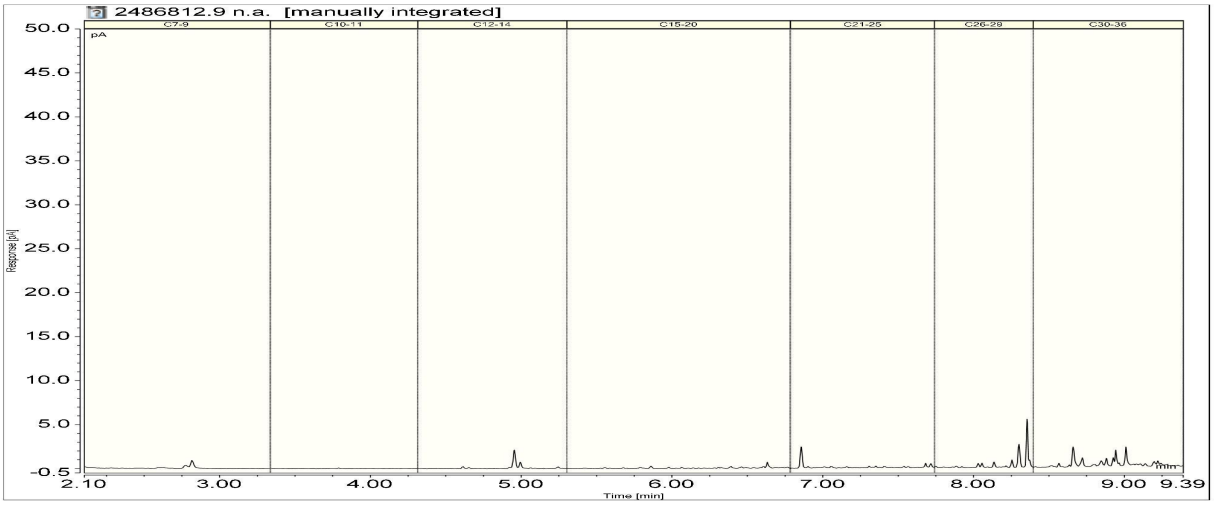
2486812.1
DUP A 01-Dec-2020
Client Chromatogram for TPH by FID



2486812.2
HA05 - 0m 01-Dec-2020 1:15 pm
Client Chromatogram for TPH by FID



2486812.9
HA06 - 0m 01-Dec-2020 10:45 am
Client Chromatogram for TPH by FID



Analyst's Comments

Amended Report: This certificate of analysis replaces report '2486812-SPv1' issued on 10-Dec-2020 at 2:29 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-4, 9-11, 16-18
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-4, 9-11, 16-18
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-4, 9-11, 16-18
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-4, 9-11, 16-18
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-4, 9-11, 16-18
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-4, 9-11, 16-18
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-4, 9-11, 16-18
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1-2, 9
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-4, 9-11, 16-18
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-4, 9-11, 16-18
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-4, 9-11, 16-18
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-4, 9-11, 16-18

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Dec-2020 and 16-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2470910 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	11-Nov-2020
		Date Reported:	17-Nov-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		ENVR-HA03-0.0-0.1m 10-Nov-2020	ENVR-HA03-0.5 m 10-Nov-2020	ENVR-HA03-1.0m 10-Nov-2020	ENVR-SS03-0.1-0.2m 10-Nov-2020	ENVR-HA04-0.0-0.1m 10-Nov-2020
Lab Number:		2470910.1	2470910.2	2470910.3	2470910.4	2470910.5
Individual Tests						
Dry Matter	g/100g as rcvd	77	82	69	70	59
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	< 5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.3
Total Recoverable Chromium	mg/kg dry wt	3	3	7	2	< 5
Total Recoverable Copper	mg/kg dry wt	24	< 2	2	20	12
Total Recoverable Lead	mg/kg dry wt	7.6	3.3	6.6	7.5	31
Total Recoverable Mercury	mg/kg dry wt	< 0.10	0.24	0.25	< 0.10	< 0.3
Total Recoverable Nickel	mg/kg dry wt	3	< 2	< 2	< 2	< 5
Total Recoverable Zinc	mg/kg dry wt	18	< 4	5	20	17
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	-	-	-	< 0.017
alpha-BHC	mg/kg dry wt	< 0.013	-	-	-	< 0.017
beta-BHC	mg/kg dry wt	< 0.013	-	-	-	< 0.017
delta-BHC	mg/kg dry wt	< 0.013	-	-	-	< 0.017
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	-	-	-	< 0.017
cis-Chlordane	mg/kg dry wt	< 0.013	-	-	-	< 0.017
trans-Chlordane	mg/kg dry wt	< 0.013	-	-	-	< 0.017
2,4'-DDD	mg/kg dry wt	< 0.013	-	-	-	< 0.017
4,4'-DDD	mg/kg dry wt	< 0.013	-	-	-	< 0.017
2,4'-DDE	mg/kg dry wt	< 0.013	-	-	-	< 0.017
4,4'-DDE	mg/kg dry wt	< 0.013	-	-	-	< 0.017
2,4'-DDT	mg/kg dry wt	< 0.013	-	-	-	< 0.017
4,4'-DDT	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Total DDT Isomers	mg/kg dry wt	< 0.08	-	-	-	< 0.11
Dieldrin	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endosulfan I	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endosulfan II	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endosulfan sulphate	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endrin	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endrin aldehyde	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Endrin ketone	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Heptachlor	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Heptachlor epoxide	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Hexachlorobenzene	mg/kg dry wt	< 0.013	-	-	-	< 0.017
Methoxychlor	mg/kg dry wt	< 0.013	-	-	-	< 0.017

Sample Type: Soil						
Sample Name:		ENVR-HA03-0.0-0.1m 10-Nov-2020	ENVR-HA03-0.5m 10-Nov-2020	ENVR-HA03-1.0m 10-Nov-2020	ENVR-SS03-0.1-0.2m 10-Nov-2020	ENVR-HA04-0.0-0.1m 10-Nov-2020
Lab Number:		2470910.1	2470910.2	2470910.3	2470910.4	2470910.5
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.3	< 0.4	-	< 0.5
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Acenaphthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.03	< 0.04	-	< 0.05
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.03	< 0.04	-	< 0.05
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Chrysene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Fluoranthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Fluorene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.08	-	< 0.09
Perylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Phenanthrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Pyrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	< 0.017
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	-	-	< 0.5	-
Bis(2-chloroethyl)ether	mg/kg dry wt	-	-	-	< 0.5	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	-	-	< 0.5	-
4-Bromophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.5	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.5	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	-
2,6-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	-
Nitrobenzene	mg/kg dry wt	-	-	-	< 0.5	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	-	-	< 0.9	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	-	-	< 0.9	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	-	-	< 0.5	-
alpha-BHC	mg/kg dry wt	-	-	-	< 0.5	-
beta-BHC	mg/kg dry wt	-	-	-	< 0.5	-
delta-BHC	mg/kg dry wt	-	-	-	< 0.5	-
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.5	-
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.5	-
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.5	-
4,4'-DDT	mg/kg dry wt	-	-	-	< 1.0	-
Dieldrin	mg/kg dry wt	-	-	-	< 0.5	-
Endosulfan I	mg/kg dry wt	-	-	-	< 1.0	-
Endosulfan II	mg/kg dry wt	-	-	-	< 2	-
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 1.0	-
Endrin	mg/kg dry wt	-	-	-	< 0.9	-
Endrin ketone	mg/kg dry wt	-	-	-	< 1.0	-
Heptachlor	mg/kg dry wt	-	-	-	< 0.5	-

Sample Type: Soil						
Sample Name:		ENVR-HA03-0.0-0.1m 10-Nov-2020	ENVR-HA03-0.5m 10-Nov-2020	ENVR-HA03-1.0m 10-Nov-2020	ENVR-SS03-0.1-0.2m 10-Nov-2020	ENVR-HA04-0.0-0.1m 10-Nov-2020
Lab Number:		2470910.1	2470910.2	2470910.3	2470910.4	2470910.5
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.5	-
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.5	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	-	-	< 0.5	-
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.5	-
Anthracene	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.5	-
1&2-Chloronaphthalene	mg/kg dry wt	-	-	-	< 0.5	-
Chrysene	mg/kg dry wt	-	-	-	< 0.5	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.5	-
Fluoranthene	mg/kg dry wt	-	-	-	< 0.5	-
Fluorene	mg/kg dry wt	-	-	-	< 0.5	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.5	-
2-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.5	-
Naphthalene	mg/kg dry wt	-	-	-	< 0.5	-
Phenanthrene	mg/kg dry wt	-	-	-	< 0.5	-
Pyrene	mg/kg dry wt	-	-	-	< 0.5	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	< 1.3	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	< 1.3	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	-	-	< 5	-
2-Chlorophenol	mg/kg dry wt	-	-	-	< 1.0	-
2,4-Dichlorophenol	mg/kg dry wt	-	-	-	< 1.0	-
2,4-Dimethylphenol	mg/kg dry wt	-	-	-	< 3	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	-	-	< 3	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	-	-	-	< 1.0	-
2-Nitrophenol	mg/kg dry wt	-	-	-	< 5	-
Pentachlorophenol (PCP)	mg/kg dry wt	-	-	-	< 30	-
Phenol	mg/kg dry wt	-	-	-	< 1.0	-
2,4,5-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	-
2,4,6-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	-	-	< 5	-
Butylbenzylphthalate	mg/kg dry wt	-	-	-	< 1.0	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	-	-	< 1.0	-
Diethylphthalate	mg/kg dry wt	-	-	-	< 1.0	-
Dimethylphthalate	mg/kg dry wt	-	-	-	< 1.0	-
Di-n-butylphthalate	mg/kg dry wt	-	-	-	< 1.0	-
Di-n-octylphthalate	mg/kg dry wt	-	-	-	< 1.0	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.9	-
1,3-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.9	-
1,4-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.9	-
Hexachlorobutadiene	mg/kg dry wt	-	-	-	< 0.9	-
Hexachloroethane	mg/kg dry wt	-	-	-	< 0.9	-
1,2,4-Trichlorobenzene	mg/kg dry wt	-	-	-	< 0.5	-

Sample Type: Soil						
Sample Name:		ENVR-HA03-0.0-0.1m 10-Nov-2020	ENVR-HA03-0.5 m 10-Nov-2020	ENVR-HA03-1.0m 10-Nov-2020	ENVR-SS03-0.1-0.2m 10-Nov-2020	ENVR-HA04-0.0-0.1m 10-Nov-2020
Lab Number:		2470910.1	2470910.2	2470910.3	2470910.4	2470910.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	-	-	< 10	-
Carbazole	mg/kg dry wt	-	-	-	< 0.5	-
Dibenzofuran	mg/kg dry wt	-	-	-	< 0.5	-
Isophorone	mg/kg dry wt	-	-	-	< 0.5	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 9	-	< 11
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	69
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	2,300
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	2,300

Sample Name:		ENVR-HA04-0.5 m 10-Nov-2020	ENVR-HA04-1.0 m 10-Nov-2020	ENVR-SS04-0.1-0 .2m 10-Nov-2020	ENVR-HA05-0.0-0.1m 10-Nov-2020	ENVR-HA05-0.5 m 10-Nov-2020
Lab Number:		2470910.6	2470910.7	2470910.8	2470910.9	2470910.10
Individual Tests						
Dry Matter	g/100g as rcvd	65	67	77	73	78
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	7	5	3	5	5
Total Recoverable Copper	mg/kg dry wt	2	2	35	16	5
Total Recoverable Lead	mg/kg dry wt	10.6	8.9	7.8	7.1	5.6
Total Recoverable Mercury	mg/kg dry wt	0.20	0.17	< 0.10	< 0.10	0.18
Total Recoverable Nickel	mg/kg dry wt	< 2	3	4	2	< 2
Total Recoverable Zinc	mg/kg dry wt	< 4	< 4	22	20	5
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	< 0.014	-
alpha-BHC	mg/kg dry wt	-	-	-	< 0.014	-
beta-BHC	mg/kg dry wt	-	-	-	< 0.014	-
delta-BHC	mg/kg dry wt	-	-	-	< 0.014	-
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.014	-
cis-Chlordane	mg/kg dry wt	-	-	-	< 0.014	-
trans-Chlordane	mg/kg dry wt	-	-	-	< 0.014	-
2,4'-DDD	mg/kg dry wt	-	-	-	< 0.014	-
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.014	-
2,4'-DDE	mg/kg dry wt	-	-	-	< 0.014	-
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.014	-
2,4'-DDT	mg/kg dry wt	-	-	-	< 0.014	-
4,4'-DDT	mg/kg dry wt	-	-	-	< 0.014	-
Total DDT Isomers	mg/kg dry wt	-	-	-	< 0.08	-
Dieldrin	mg/kg dry wt	-	-	-	< 0.014	-
Endosulfan I	mg/kg dry wt	-	-	-	< 0.014	-
Endosulfan II	mg/kg dry wt	-	-	-	< 0.014	-
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 0.014	-
Endrin	mg/kg dry wt	-	-	-	< 0.014	-
Endrin aldehyde	mg/kg dry wt	-	-	-	< 0.014	-
Endrin ketone	mg/kg dry wt	-	-	-	< 0.014	-
Heptachlor	mg/kg dry wt	-	-	-	< 0.014	-
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.014	-
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.014	-
Methoxychlor	mg/kg dry wt	-	-	-	< 0.014	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	-	< 0.4	< 0.3
1-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
2-Methylnaphthalene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013

Sample Type: Soil						
Sample Name:		ENVR-HA04-0.5 m 10-Nov-2020	ENVR-HA04-1.0 m 10-Nov-2020	ENVR-SS04-0.1-0 .2m 10-Nov-2020	ENVR-HA05-0.0-0.1m 10-Nov-2020	ENVR-HA05-0.5 m 10-Nov-2020
Lab Number:		2470910.6	2470910.7	2470910.8	2470910.9	2470910.10
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Acenaphthylene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Acenaphthene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Anthracene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[a]anthracene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	-	< 0.04	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	-	< 0.04	< 0.03
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[e]pyrene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Benzo[k]fluoranthene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Chrysene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Fluoranthene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Fluorene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Naphthalene	mg/kg dry wt	< 0.08	< 0.08	-	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Phenanthrene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Pyrene	mg/kg dry wt	< 0.016	< 0.015	-	< 0.014	< 0.013
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	-	< 0.5	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	-	-	< 0.5	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	-	< 0.5	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	-	-	< 0.4	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	-	< 0.5	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	-	< 1.0	-	-
2,6-Dinitrotoluene	mg/kg dry wt	-	-	< 1.0	-	-
Nitrobenzene	mg/kg dry wt	-	-	< 0.5	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	-	< 0.8	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	-	< 0.8	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	-	< 0.5	-	-
alpha-BHC	mg/kg dry wt	-	-	< 0.5	-	-
beta-BHC	mg/kg dry wt	-	-	< 0.5	-	-
delta-BHC	mg/kg dry wt	-	-	< 0.5	-	-
gamma-BHC (Lindane)	mg/kg dry wt	-	-	< 0.5	-	-
4,4'-DDD	mg/kg dry wt	-	-	< 0.5	-	-
4,4'-DDE	mg/kg dry wt	-	-	< 0.5	-	-
4,4'-DDT	mg/kg dry wt	-	-	< 1.0	-	-
Dieldrin	mg/kg dry wt	-	-	< 0.5	-	-
Endosulfan I	mg/kg dry wt	-	-	< 1.0	-	-
Endosulfan II	mg/kg dry wt	-	-	< 2	-	-
Endosulfan sulphate	mg/kg dry wt	-	-	< 1.0	-	-
Endrin	mg/kg dry wt	-	-	< 0.8	-	-
Endrin ketone	mg/kg dry wt	-	-	< 1.0	-	-
Heptachlor	mg/kg dry wt	-	-	< 0.5	-	-
Heptachlor epoxide	mg/kg dry wt	-	-	< 0.5	-	-
Hexachlorobenzene	mg/kg dry wt	-	-	< 0.5	-	-

Sample Type: Soil						
Sample Name:		ENVR-HA04-0.5 m 10-Nov-2020	ENVR-HA04-1.0 m 10-Nov-2020	ENVR-SS04-0.1-0 .2m 10-Nov-2020	ENVR-HA05-0.0-0.1m 10-Nov-2020	ENVR-HA05-0.5 m 10-Nov-2020
Lab Number:		2470910.6	2470910.7	2470910.8	2470910.9	2470910.10
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	-	< 0.5	-	-
Acenaphthylene	mg/kg dry wt	-	-	< 0.5	-	-
Anthracene	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[a]anthracene	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[k]fluoranthene	mg/kg dry wt	-	-	< 0.5	-	-
1&2-Chloronaphthalene	mg/kg dry wt	-	-	< 0.5	-	-
Chrysene	mg/kg dry wt	-	-	< 0.5	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	< 0.5	-	-
Fluoranthene	mg/kg dry wt	-	-	< 0.5	-	-
Fluorene	mg/kg dry wt	-	-	< 0.5	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	< 0.5	-	-
2-Methylnaphthalene	mg/kg dry wt	-	-	< 0.5	-	-
Naphthalene	mg/kg dry wt	-	-	< 0.5	-	-
Phenanthrene	mg/kg dry wt	-	-	< 0.5	-	-
Pyrene	mg/kg dry wt	-	-	< 0.5	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	< 1.3	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	< 1.3	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	-	< 5	-	-
2-Chlorophenol	mg/kg dry wt	-	-	< 1.0	-	-
2,4-Dichlorophenol	mg/kg dry wt	-	-	< 1.0	-	-
2,4-Dimethylphenol	mg/kg dry wt	-	-	< 3	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	-	< 3	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	-	-	< 1.0	-	-
2-Nitrophenol	mg/kg dry wt	-	-	< 5	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	-	-	< 30	-	-
Phenol	mg/kg dry wt	-	-	< 1.0	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	-	-	< 1.0	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	-	-	< 1.0	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	-	< 5	-	-
Butylbenzylphthalate	mg/kg dry wt	-	-	< 1.0	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	-	< 1.0	-	-
Diethylphthalate	mg/kg dry wt	-	-	< 1.0	-	-
Dimethylphthalate	mg/kg dry wt	-	-	< 1.0	-	-
Di-n-butylphthalate	mg/kg dry wt	-	-	< 1.0	-	-
Di-n-octylphthalate	mg/kg dry wt	-	-	< 1.0	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	-	< 0.8	-	-
1,3-Dichlorobenzene	mg/kg dry wt	-	-	< 0.8	-	-
1,4-Dichlorobenzene	mg/kg dry wt	-	-	< 0.8	-	-
Hexachlorobutadiene	mg/kg dry wt	-	-	< 0.8	-	-
Hexachloroethane	mg/kg dry wt	-	-	< 0.8	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	-	-	< 0.5	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	-	< 10	-	-
Carbazole	mg/kg dry wt	-	-	< 0.5	-	-
Dibenzofuran	mg/kg dry wt	-	-	< 0.5	-	-

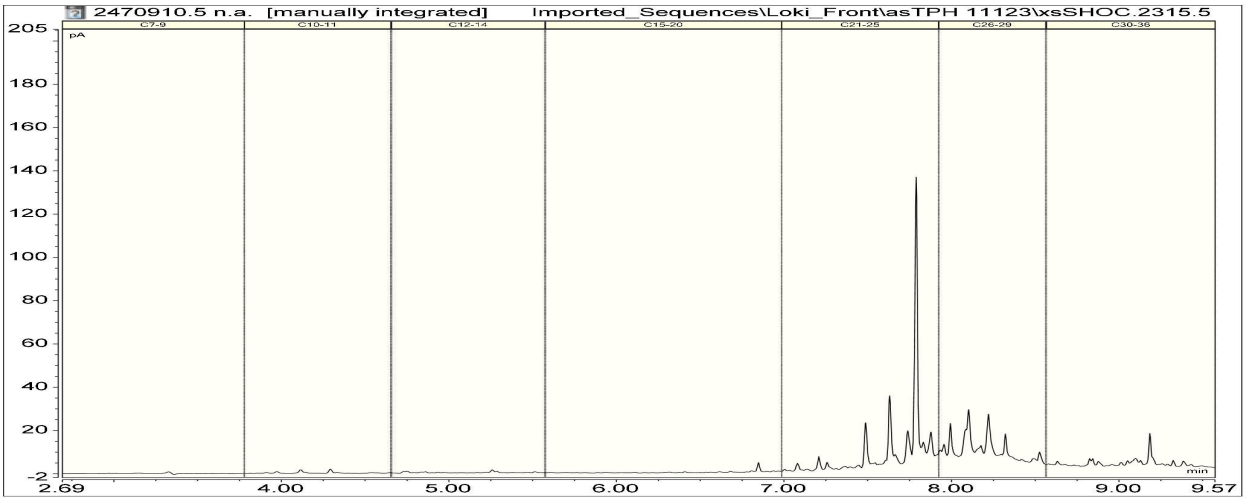
Sample Type: Soil						
Sample Name:		ENVR-HA04-0.5 m 10-Nov-2020	ENVR-HA04-1.0 m 10-Nov-2020	ENVR-SS04-0.1-0 .2m 10-Nov-2020	ENVR-HA05-0.0-0.1m 10-Nov-2020	ENVR-HA05-0.5 m 10-Nov-2020
Lab Number:		2470910.6	2470910.7	2470910.8	2470910.9	2470910.10
Other compounds in SVOC Soil Samples by GC-MS						
Isophorone	mg/kg dry wt	-	-	< 0.5	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 10	< 9	-	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	-	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	46	-	< 40	108
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	-	< 70	110

Sample Name:		ENVR-HA05-1.0 m 10-Nov-2020	ENVR-SS05-0.1-0.2m 10-Nov-2020	Duplicate 1 -10/11/20 10-Nov-2020		
Lab Number:		2470910.11	2470910.12	2470910.13		
Individual Tests						
Dry Matter	g/100g as rcvd	72	71	70	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	6	4	5	-	-
Total Recoverable Copper	mg/kg dry wt	4	42	39	-	-
Total Recoverable Lead	mg/kg dry wt	8.2	10.0	10.6	-	-
Total Recoverable Mercury	mg/kg dry wt	0.21	< 0.10	< 0.10	-	-
Total Recoverable Nickel	mg/kg dry wt	4	6	6	-	-
Total Recoverable Zinc	mg/kg dry wt	11	42	43	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.014	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.014	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.014	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.014	-	-	-	-
Anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.014	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Chrysene	mg/kg dry wt	< 0.014	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.014	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.014	-	-	-	-
Fluorene	mg/kg dry wt	< 0.014	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.014	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.07	-	-	-	-
Perylene	mg/kg dry wt	< 0.014	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.014	-	-	-	-
Pyrene	mg/kg dry wt	< 0.014	-	-	-	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	< 0.5	< 0.5	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	-	< 0.5	< 0.5	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	< 0.5	< 0.5	-	-

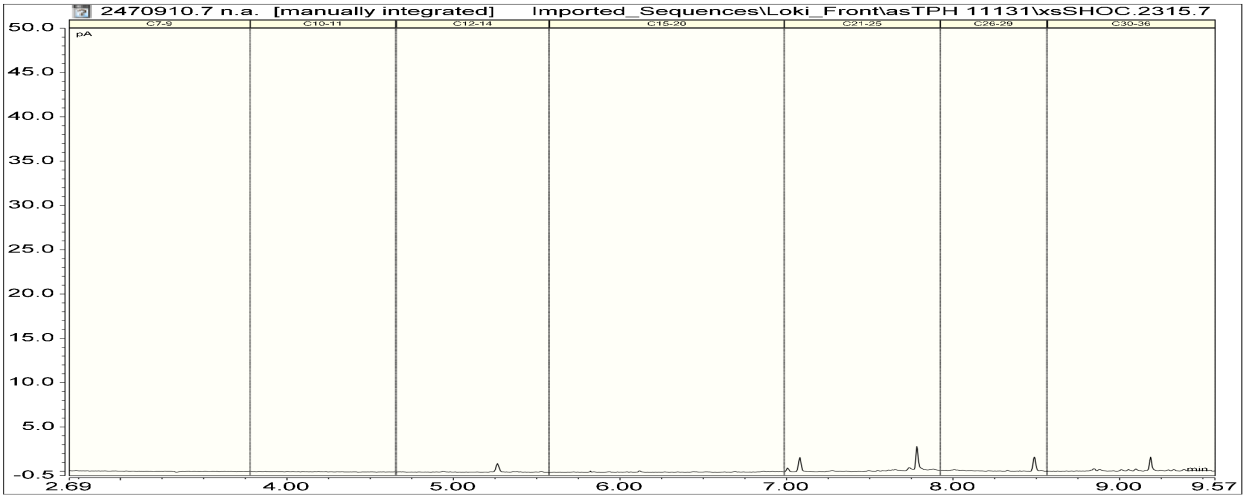
Sample Type: Soil							
Sample Name:		ENVR-HA05-1.0 m 10-Nov-2020	ENVR-SS05-0.1-0.2m 10-Nov-2020	Duplicate 1 -10/11/20 10-Nov-2020		
Lab Number:		2470910.11	2470910.12	2470910.13		
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2,6-Dinitrotoluene	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Nitrobenzene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	< 0.9	< 0.9	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	< 0.9	< 0.9	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	< 0.5	< 0.5	-	-
alpha-BHC	mg/kg dry wt	-	< 0.5	< 0.5	-	-
beta-BHC	mg/kg dry wt	-	< 0.5	< 0.5	-	-
delta-BHC	mg/kg dry wt	-	< 0.5	< 0.5	-	-
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.5	< 0.5	-	-
4,4'-DDD	mg/kg dry wt	-	< 0.5	< 0.5	-	-
4,4'-DDE	mg/kg dry wt	-	< 0.5	< 0.5	-	-
4,4'-DDT	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Dieldrin	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Endosulfan I	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Endosulfan II	mg/kg dry wt	-	< 2	< 2	-	-
Endosulfan sulphate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Endrin	mg/kg dry wt	-	< 0.9	< 0.9	-	-
Endrin ketone	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Heptachlor	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Heptachlor epoxide	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Hexachlorobenzene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Acenaphthylene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Anthracene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[a]anthracene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[k]fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
1&2-Chloronaphthalene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Chrysene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Fluoranthene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Fluorene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
2-Methylnaphthalene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Naphthalene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Phenanthrene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Pyrene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	< 1.3	< 1.3	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	< 1.3	< 1.3	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	< 5	< 5	-	-
2-Chlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2,4-Dichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2,4-Dimethylphenol	mg/kg dry wt	-	< 3	< 3	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	< 3	< 3	-	-

Sample Type: Soil							
Sample Name:		ENVR-HA05-1.0 m 10-Nov-2020	ENVR-SS05-0.1-0.2m 10-Nov-2020	Duplicate 1 -10/11/20 10-Nov-2020		
Lab Number:		2470910.11	2470910.12	2470910.13		
Phenols in SVOC Soil Samples by GC-MS						
2-Methylphenol (o-Cresol)	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2-Nitrophenol	mg/kg dry wt	-	< 5	< 5	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	-	< 30	< 30	-	-
Phenol	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	< 5	< 5	-	-
Butylbenzylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Diethylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Dimethylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Di-n-butylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Di-n-octylphthalate	mg/kg dry wt	-	< 1.0	< 1.0	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	< 0.9	< 0.9	-	-
1,3-Dichlorobenzene	mg/kg dry wt	-	< 0.9	< 0.9	-	-
1,4-Dichlorobenzene	mg/kg dry wt	-	< 0.9	< 0.9	-	-
Hexachlorobutadiene	mg/kg dry wt	-	< 0.9	< 0.9	-	-
Hexachloroethane	mg/kg dry wt	-	< 0.9	< 0.9	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	< 10	< 10	-	-
Carbazole	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Dibenzofuran	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Isophorone	mg/kg dry wt	-	< 0.5	< 0.5	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	-	-	-	-
C10 - C14	mg/kg dry wt	< 20	-	-	-	-
C15 - C36	mg/kg dry wt	< 40	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	-	-	-	-

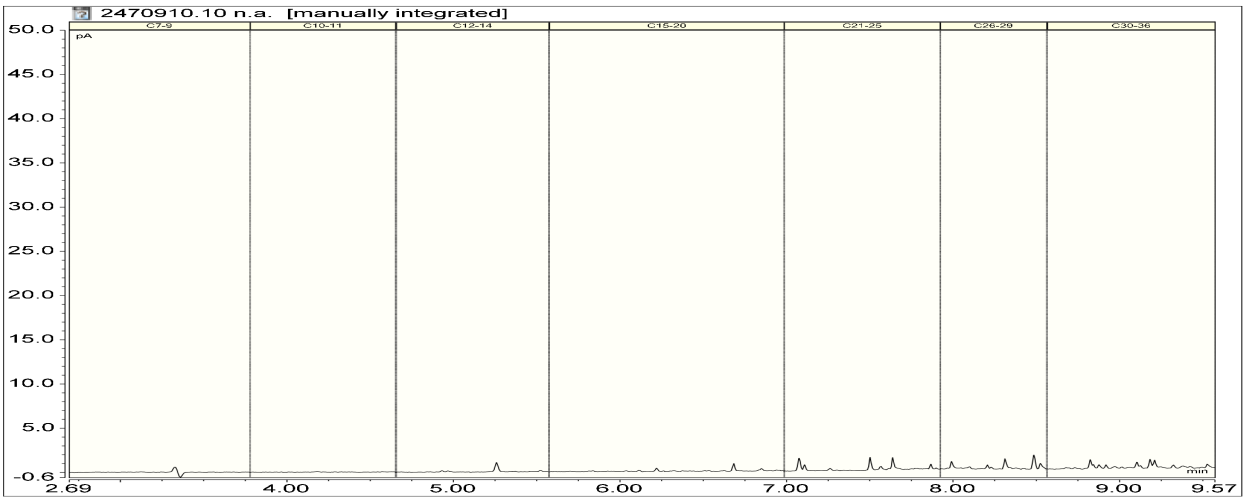
2470910.5
ENVR-HA04-0.0-0.1m 10-Nov-2020
Client Chromatogram for TPH by FID



2470910.7
ENVR-HA04-1.0m 10-Nov-2020
Client Chromatogram for TPH by FID



2470910.10
ENVR-HA05-0.5m 10-Nov-2020
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-13
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3, 5-7, 9-11
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-13
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-3, 5-7, 9-11

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-3, 5-7, 9-11
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-3, 5-7, 9-11
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-13
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1, 5, 9
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	4, 8, 12-13
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	5, 7, 10
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-3, 5-7, 9-11
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3, 5-7, 9-11
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3, 5-7, 9-11
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3, 5-7, 9-11

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 12-Nov-2020 and 17-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Christchurch 8042 New Zealand

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2471363 A2Pv1
Contact:	Rebecca van der Krogt	**Date Received:**	11-Nov-2020
	C/- Tonkin & Taylor	**Date Reported:**	20-Nov-2020
	PO Box 5271	**Quote No:**	80842
	Auckland 1141	**Order No:**	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		ENVR-HA-03-0.0-0.1m 10-Nov-2020	ENVR-HA-03-0.5m 10-Nov-2020	ENVR-HA-03-1.0m 10-Nov-2020	ENVR-HA-04-0.0-0.1m 10-Nov-2020	ENVR-HA-04-0.5m 10-Nov-2020
Lab Number:		2471363.1	2471363.2	2471363.3	2471363.5	2471363.6
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Chrysotile (White Asbestos) detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	Loose fibres	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	667.7	573.6	579.5	296.8	551.9
Dry Weight	g	527.5	488.6	422.0	193.5	396.6
Moisture	%	21	15	27	35	28
Sample Fraction >10mm	g dry wt	94.3	44.2	< 0.1	3.4	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	98.0	54.5	93.1	30.5	24.4
Sample Fraction <2mm	g dry wt	333.3	388.9	326.0	159.0	371.4
<2mm Subsample Weight	g dry wt	56.8	51.3	52.0	50.4	51.7
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	0.00004	< 0.00001

Sample Name:		ENVR-HA-04-1.0m 10-Nov-2020	ENVR-HA-05-0.0-0.1m 10-Nov-2020	ENVR-HA-05-0.5m 10-Nov-2020	ENVR-HA-05-1.0m 10-Nov-2020	
Lab Number:		2471363.7	2471363.9	2471363.10	2471363.11	
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
As Received Weight	g	505.1	689.4	572.2	516.7	-
Dry Weight	g	329.4	481.6	466.7	360.7	-

Sample Type: Soil						
Sample Name:		ENVR-HA-04-1.0m 10-Nov-2020	ENVR-HA-05-0.0-0.1m 10-Nov-2020	ENVR-HA-05-0.5m 10-Nov-2020	ENVR-HA-05-1.0m 10-Nov-2020	
Lab Number:		2471363.7	2471363.9	2471363.10	2471363.11	
Moisture	%	35	30	18	30	-
Sample Fraction >10mm	g dry wt	< 0.1	9.1	< 0.1	< 0.1	-
Sample Fraction <10mm to >2mm	g dry wt	20.8	82.6	67.8	79.9	-
Sample Fraction <2mm	g dry wt	308.1	389.3	396.6	277.9	-
<2mm Subsample Weight	g dry wt	51.8	50.3	51.9	50.1	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

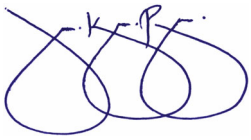
Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3, 5-7, 9-11
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 5-7, 9-11
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 5-7, 9-11
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3, 5-7, 9-11
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 5-7, 9-11
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 5-7, 9-11
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 5-7, 9-11
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3, 5-7, 9-11

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3, 5-7, 9-11
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 5-7, 9-11
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 5-7, 9-11
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 5-7, 9-11
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 5-7, 9-11
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 5-7, 9-11
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 5-7, 9-11
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 5-7, 9-11

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 19-Nov-2020 and 20-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.



John Keneth Paglingayen
Bachelor of Applied Science
Laboratory Technician - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2481819	SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	27-Nov-2020	
		Date Reported:	08-Dec-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA08-0.1m 24-Nov-2020	HA08-0.5m 24-Nov-2020	HA08-1.0m 24-Nov-2020		
Lab Number:		2481819.8	2481819.9	2481819.10		
Individual Tests						
Dry Matter	g/100g as rcvd	67	78	72	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	< 2	2	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.18	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	9	< 2	4	-	-
Total Recoverable Copper	mg/kg dry wt	21	4	5	-	-
Total Recoverable Lead	mg/kg dry wt	11.3	3.7	5.9	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.22	-	-
Total Recoverable Nickel	mg/kg dry wt	8	< 2	2	-	-
Total Recoverable Zinc	mg/kg dry wt	38	5	10	-	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.4	< 0.5	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Endrin	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-

Sample Type: Soil						
Sample Name:		HA08-0.1m 24-Nov-2020	HA08-0.5m 24-Nov-2020	HA08-1.0m 24-Nov-2020		
Lab Number:		2481819.8	2481819.9	2481819.10		
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	-	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
Hexachloroethane	mg/kg dry wt	< 0.9	< 0.8	< 0.9	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-

Sample Type: Soil						
Sample Name:		HA08-0.1m 24-Nov-2020	HA08-0.5m 24-Nov-2020	HA08-1.0m 24-Nov-2020		
Lab Number:		2481819.8	2481819.9	2481819.10		
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	-	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	8-10
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	8-10
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	8-10
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	8-10

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Dec-2020 and 08-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2470943 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	11-Nov-2020
		Date Reported:	16-Nov-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		HA107a - 0.1m 04-Nov-2020	HA107a - 0.5m 04-Nov-2020	HA107a - 1.0m 04-Nov-2020	BH113 - 0.1m 09-Nov-2020	BH113 - 0.5m 09-Nov-2020
Lab Number:		2470943.1	2470943.2	2470943.3	2470943.5	2470943.6
Individual Tests						
Dry Matter	g/100g as rcvd	80	82	64	80	81
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.15	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	6	6	8	6	7
Total Recoverable Copper	mg/kg dry wt	19	5	11	11	6
Total Recoverable Lead	mg/kg dry wt	4.9	5.7	12.5	4.2	6.7
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.13	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	10	< 4	9	8	5
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Type: Soil						
Sample Name:		HA107a - 0.1m 04-Nov-2020	HA107a - 0.5m 04-Nov-2020	HA107a - 1.0m 04-Nov-2020	BH113 - 0.1m 09-Nov-2020	BH113 - 0.5m 09-Nov-2020
Lab Number:		2470943.1	2470943.2	2470943.3	2470943.5	2470943.6
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.8	< 0.9	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA107a - 0.1m 04-Nov-2020	HA107a - 0.5m 04-Nov-2020	HA107a - 1.0m 04-Nov-2020	BH113 - 0.1m 09-Nov-2020	BH113 - 0.5m 09-Nov-2020
Lab Number:		2470943.1	2470943.2	2470943.3	2470943.5	2470943.6
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		BH113 - 2.0m 09-Nov-2020	BH117 - 0.1m 09-Nov-2020	BH117 - 0.5m 09-Nov-2020	BH117 - 2.0m 09-Nov-2020	
Lab Number:		2470943.7	2470943.8	2470943.9	2470943.10	
Individual Tests						
Dry Matter	g/100g as rcvd	77	72	80	63	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.26	< 0.10	< 0.10	-
Total Recoverable Chromium	mg/kg dry wt	5	5	4	2	-
Total Recoverable Copper	mg/kg dry wt	8	5	< 2	2	-
Total Recoverable Lead	mg/kg dry wt	9.8	10.8	5.3	3.9	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	-
Total Recoverable Nickel	mg/kg dry wt	< 2	2	< 2	2	-
Total Recoverable Zinc	mg/kg dry wt	5	11	< 4	24	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	0.8	< 0.3	< 0.4	-
1-Methylnaphthalene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
2-Methylnaphthalene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Acenaphthylene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Acenaphthene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Anthracene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Benzo[a]anthracene	mg/kg dry wt	-	0.048	< 0.013	< 0.016	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.070	< 0.013	< 0.016	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	0.10	< 0.03	< 0.04	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	0.10	< 0.03	< 0.04	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	0.079	< 0.013	< 0.016	-
Benzo[e]pyrene	mg/kg dry wt	-	0.047	< 0.013	< 0.016	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.050	< 0.013	< 0.016	-
Benzo[k]fluoranthene	mg/kg dry wt	-	0.033	< 0.013	< 0.016	-
Chrysene	mg/kg dry wt	-	0.061	< 0.013	< 0.016	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Fluoranthene	mg/kg dry wt	-	0.118	< 0.013	< 0.016	-
Fluorene	mg/kg dry wt	-	< 0.014	< 0.013	< 0.016	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.050	< 0.013	< 0.016	-
Naphthalene	mg/kg dry wt	-	< 0.07	< 0.07	< 0.08	-
Perylene	mg/kg dry wt	-	0.015	< 0.013	0.154	-
Phenanthrene	mg/kg dry wt	-	0.037	< 0.013	< 0.016	-
Pyrene	mg/kg dry wt	-	0.135	< 0.013	< 0.016	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	-	-	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	-	-	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	-	-	-	-
Nitrobenzene	mg/kg dry wt	< 0.5	-	-	-	-

Sample Type: Soil						
Sample Name:		BH113 - 2.0m 09-Nov-2020	BH117 - 0.1m 09-Nov-2020	BH117 - 0.5m 09-Nov-2020	BH117 - 2.0m 09-Nov-2020	
Lab Number:		2470943.7	2470943.8	2470943.9	2470943.10	
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	-	-	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	-	-	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	-	-	-	-
alpha-BHC	mg/kg dry wt	< 0.5	-	-	-	-
beta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
delta-BHC	mg/kg dry wt	< 0.5	-	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	-	-	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	-	-	-	-
Dieldrin	mg/kg dry wt	< 0.5	-	-	-	-
Endosulfan I	mg/kg dry wt	< 1.0	-	-	-	-
Endosulfan II	mg/kg dry wt	< 2	-	-	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	-	-	-	-
Endrin	mg/kg dry wt	< 0.8	-	-	-	-
Endrin ketone	mg/kg dry wt	< 1.0	-	-	-	-
Heptachlor	mg/kg dry wt	< 0.5	-	-	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	-	-	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	-	-	-	-
Anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Chrysene	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.5	-	-	-	-
Fluorene	mg/kg dry wt	< 0.5	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.5	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.5	-	-	-	-
Pyrene	mg/kg dry wt	< 0.5	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	-	-	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	-	-	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	-	-	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	-	-	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	-	-	-	-
2-Nitrophenol	mg/kg dry wt	< 5	-	-	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	-	-	-	-
Phenol	mg/kg dry wt	< 1.0	-	-	-	-

Sample Type: Soil						
Sample Name:		BH113 - 2.0m 09-Nov-2020	BH117 - 0.1m 09-Nov-2020	BH117 - 0.5m 09-Nov-2020	BH117 - 2.0m 09-Nov-2020	
Lab Number:		2470943.7	2470943.8	2470943.9	2470943.10	
Phenols in SVOC Soil Samples by GC-MS						
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	-	-	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	-	-	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	-	-	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	-	-	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	-	-	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	-	-	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	-	-	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.8	-	-	-	-
Hexachloroethane	mg/kg dry wt	< 0.8	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	-	-	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	-	-	-	-
Carbazole	mg/kg dry wt	< 0.5	-	-	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	-	-	-	-
Isophorone	mg/kg dry wt	< 0.5	-	-	-	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	< 9	< 8	< 10	-
C10 - C14	mg/kg dry wt	-	< 20	< 20	< 20	-
C15 - C36	mg/kg dry wt	-	< 40	< 40	< 40	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	< 70	< 70	< 70	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-3, 5-10
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	8-10
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3, 5-10
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	8-10
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	8-10

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	8-10
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 5-10
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	1-3, 5-7
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	8-10
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	8-10
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	8-10
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	8-10

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 12-Nov-2020 and 16-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

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TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2471441	A2Pv2
Contact:	Rebecca van der Krogt	**Date Received:**	11-Nov-2020	
	C/- Tonkin & Taylor	**Date Reported:**	26-Nov-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		BH116-0.1m 09-Nov-2020	BH116-0.5m 09-Nov-2020	BH116-2.0m 09-Nov-2020	BH117-0.1m 09-Nov-2020	BH117-0.5m 09-Nov-2020
Lab Number:		2471441.8	2471441.9	2471441.10	2471441.14	2471441.15
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	408.0	448.7	522.4	488.4	484.8
Dry Weight	g	293.8	374.1	390.4	363.2	389.2
Sample Fraction >10mm	g dry wt	13.1	76.7	6.2	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	137.4	172.1	125.1	1.6	0.7
Sample Fraction <2mm	g dry wt	142.5	124.3	257.3	361.1	386.8
<2mm Subsample Weight	g dry wt	58.7	55.2	57.6	53.2	58.4
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		BH117-2.0m 09-Nov-2020				
Lab Number:		2471441.16				
Asbestos Presence / Absence		Asbestos NOT detected.	-	-	-	-
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	394.4	-	-	-	-
Dry Weight	g	263.6	-	-	-	-
Sample Fraction >10mm	g dry wt	< 0.1	-	-	-	-
Sample Fraction <10mm to >2mm	g dry wt	1.5	-	-	-	-
Sample Fraction <2mm	g dry wt	259.7	-	-	-	-
<2mm Subsample Weight	g dry wt	58.7	-	-	-	-
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	-	-	-	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Testing has been carried out under the assumption that the weight of asbestos in the sample is unaffected by the ashing process.

Analyst's Comments

Amended Report: This certificate of analysis replaces report '2471441-A2Pv1' issued on 20-Nov-2020 at 3:51 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Semi Quantitative Asbestos in Soil	Based on approximately 100g of sample provided.	-	8-10, 14-16
Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	8-10, 14-16
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	8-10, 14-16
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	8-10, 14-16
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	8-10, 14-16
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	8-10, 14-16
Weight of Asbestos in >10mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16
Weight of Asbestos in <10mm to >2mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16
Weight of Asbestos in <2mm Sample Fraction	Measurement on analytical balance. Asbestos weight in <2mm subsample, if <2mm subsample weight is not "Entire Fraction". Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	8-10, 14-16

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 20-Nov-2020 and 26-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2488783 SPv1
Contact:	Rebecca van der Krogt	**Date Received:**	08-Dec-2020
	C/- Tonkin & Taylor	**Date Reported:**	11-Dec-2020
	PO Box 5271	**Quote No:**	80842
	Auckland 1141	**Order No:**	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA114 - 0.0m 03-Dec-2020 8:12 am	HA114 - 0.5m 03-Dec-2020 8:25 am
Lab Number:		2488783.13	2488783.14	2488783.15	2488783.20	2488783.21
Individual Tests						
Dry Matter	g/100g as rcvd	75	74	66	87	79
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	8	4	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.11	< 0.10	< 0.10	0.15	< 0.10
Total Recoverable Chromium	mg/kg dry wt	6	8	11	11	8
Total Recoverable Copper	mg/kg dry wt	9	6	12	78	4
Total Recoverable Lead	mg/kg dry wt	4.3	9.1	22	14.9	4.8
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.18	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	2	6	22	< 2
Total Recoverable Zinc	mg/kg dry wt	8	6	10	53	4
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.5	< 0.5	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8

Sample Type: Soil						
Sample Name:		HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA114 - 0.0m 03-Dec-2020 8:12 am	HA114 - 0.5m 03-Dec-2020 8:25 am
Lab Number:		2488783.13	2488783.14	2488783.15	2488783.20	2488783.21
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.7	< 0.8

Sample Type: Soil						
Sample Name:		HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA114 - 0.0m 03-Dec-2020 8:12 am	HA114 - 0.5m 03-Dec-2020 8:25 am
Lab Number:		2488783.13	2488783.14	2488783.15	2488783.20	2488783.21
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		HA114 - 1.0m 03-Dec-2020 8:32 am	HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020
Lab Number:		2488783.22	2488783.31	2488783.32	2488783.33	2488783.37
Individual Tests						
Dry Matter	g/100g as rcvd	69	82	71	72	77
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.23	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	10	6	9	6	8
Total Recoverable Copper	mg/kg dry wt	7	9	6	4	8
Total Recoverable Lead	mg/kg dry wt	9.6	4.2	8.7	7.1	9.7
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	2	< 2	< 2	< 2	2
Total Recoverable Zinc	mg/kg dry wt	7	8	5	< 4	6
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.4	< 0.5	< 0.5	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA114 - 1.0m 03-Dec-2020 8:32 am	HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020
Lab Number:		2488783.22	2488783.31	2488783.32	2488783.33	2488783.37
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.9	< 0.7	< 0.9	< 0.9	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA114 - 1.0m 03-Dec-2020 8:32 am	HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020
Lab Number:		2488783.22	2488783.31	2488783.32	2488783.33	2488783.37
Other compounds in SVOC Soil Samples by GC-MS						
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		HA108 - dup 03-Dec-2020	Dup - D	Dup - E	HA115 Duplicate	
Lab Number:		2488783.38	2488783.39	2488783.40	2488783.41	
Individual Tests						
Dry Matter	g/100g as rcvd	69	85	82	71	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	5	< 2	2	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.15	0.23	< 0.10	-
Total Recoverable Chromium	mg/kg dry wt	9	10	6	9	-
Total Recoverable Copper	mg/kg dry wt	7	72	9	6	-
Total Recoverable Lead	mg/kg dry wt	9.3	13.2	4.4	10.4	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.10	-
Total Recoverable Nickel	mg/kg dry wt	< 2	11	< 2	3	-
Total Recoverable Zinc	mg/kg dry wt	5	54	8	7	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.4	< 0.4	< 0.5	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Endrin	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-

Sample Type: Soil						
Sample Name:		HA108 - dup 03-Dec-2020	Dup - D	Dup - E	HA115 Duplicate	
Lab Number:		2488783.38	2488783.39	2488783.40	2488783.41	
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
Hexachlorobutadiene	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
Hexachloroethane	mg/kg dry wt	< 0.9	< 0.7	< 0.8	< 0.9	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	13-15, 20-22, 31-33, 37-41
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	13-15, 20-22, 31-33, 37-41
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	13-15, 20-22, 31-33, 37-41
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	13-15, 20-22, 31-33, 37-41

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 09-Dec-2020 and 11-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2491712 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	11-Dec-2020
		Date Reported:	16-Dec-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		HA110a - 0.1m 08-Dec-2020	HA110a - 0.5m 08-Dec-2020	HA110a - 2.0m 08-Dec-2020		
Lab Number:		2491712.1	2491712.2	2491712.4		
Individual Tests						
Dry Matter	g/100g as rcvd	77	78	69	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	2	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	7	10	10	-	-
Total Recoverable Copper	mg/kg dry wt	4	8	10	-	-
Total Recoverable Lead	mg/kg dry wt	7.8	13.2	10.9	-	-
Total Recoverable Mercury	mg/kg dry wt	0.13	0.21	0.15	-	-
Total Recoverable Nickel	mg/kg dry wt	2	4	4	-	-
Total Recoverable Zinc	mg/kg dry wt	6	12	8	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.4	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	< 0.04	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Chrysene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Fluoranthene	mg/kg dry wt	0.014	< 0.013	< 0.015	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.08	-	-
Perylene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.013	< 0.015	-	-
Pyrene	mg/kg dry wt	0.018	0.014	< 0.015	-	-

Sample Type: Soil						
Sample Name:		HA110a - 0.1m 08-Dec-2020	HA110a - 0.5m 08-Dec-2020	HA110a - 2.0m 08-Dec-2020		
Lab Number:		2491712.1	2491712.2	2491712.4		
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 9	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-2, 4
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2, 4
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2, 4
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-2, 4
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-2, 4
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-2, 4
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2, 4
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-2, 4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2, 4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2, 4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2, 4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 15-Dec-2020 and 16-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

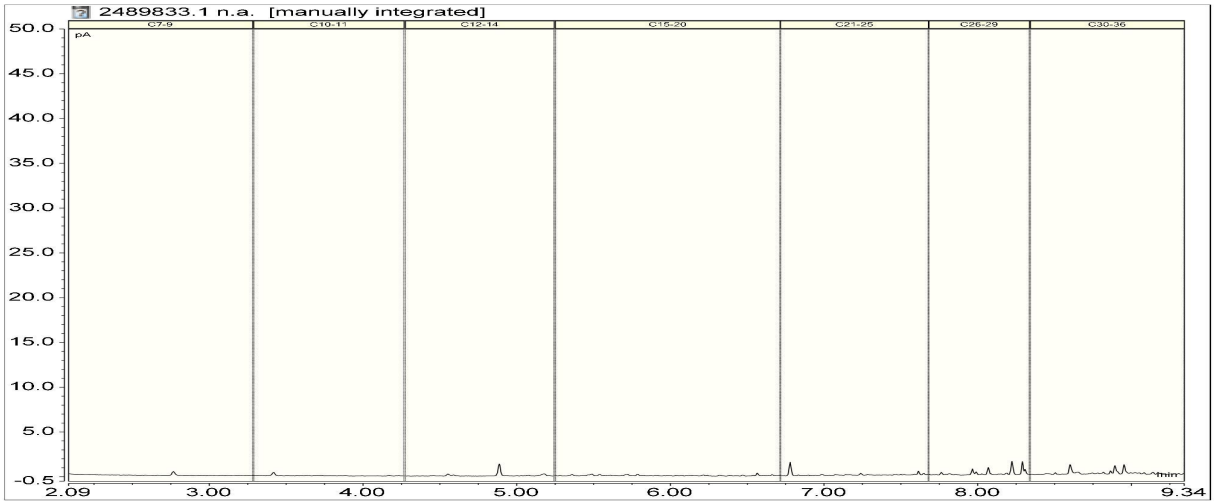
Client:	Tonkin & Taylor	**Lab No:**	2489833	SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:** **Date Reported:** **Quote No:** **Order No:** **Client Reference:** **Submitted By:**	09-Dec-2020 16-Dec-2020 80842 1014985 1014985 Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA111-0.1m 07-Dec-2020	HA111-1.0m 07-Dec-2020	HA111-2.0m 07-Dec-2020		
Lab Number:		2489833.1	2489833.3	2489833.4		
Individual Tests						
Dry Matter	g/100g as rcvd	69	72	69	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	7	3	4	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.24	< 0.10	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	14	10	12	-	-
Total Recoverable Copper	mg/kg dry wt	16	10	13	-	-
Total Recoverable Lead	mg/kg dry wt	19.3	12.1	13.1	-	-
Total Recoverable Mercury	mg/kg dry wt	0.42	0.13	0.14	-	-
Total Recoverable Nickel	mg/kg dry wt	5	3	4	-	-
Total Recoverable Zinc	mg/kg dry wt	18	14	18	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.4	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Acenaphthylene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Acenaphthene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Anthracene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Benzo[a]anthracene	mg/kg dry wt	0.020	< 0.014	< 0.015	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.027	< 0.014	< 0.015	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.03	< 0.04	< 0.04	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.03	< 0.04	< 0.04	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.025	< 0.014	< 0.015	-	-
Benzo[e]pyrene	mg/kg dry wt	0.017	< 0.014	< 0.015	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.019	< 0.014	< 0.015	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Chrysene	mg/kg dry wt	0.016	< 0.014	< 0.015	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Fluoranthene	mg/kg dry wt	0.035	< 0.014	< 0.015	-	-
Fluorene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.017	< 0.014	< 0.015	-	-
Naphthalene	mg/kg dry wt	< 0.08	< 0.07	< 0.08	-	-
Perylene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Phenanthrene	mg/kg dry wt	< 0.015	< 0.014	< 0.015	-	-
Pyrene	mg/kg dry wt	0.036	< 0.014	< 0.015	-	-

Sample Type: Soil							
Sample Name:		HA111-0.1m 07-Dec-2020	HA111-1.0m 07-Dec-2020	HA111-2.0m 07-Dec-2020		
Lab Number:		2489833.1	2489833.3	2489833.4		
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 9	< 9	< 9	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	47	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	-

2489833.1
HA111-0.1m 07-Dec-2020
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1, 3-4
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1, 3-4
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1, 3-4
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1, 3-4
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1, 3-4
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1, 3-4
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1, 3-4

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1, 3-4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 3-4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1, 3-4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1, 3-4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 15-Dec-2020 and 16-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2467651 SPv1
Contact:	Lucy Hine	**Date Received:**	05-Nov-2020
	C/- Tonkin & Taylor	**Date Reported:**	13-Nov-2020
	PO Box 13055	**Quote No:**	80842
	Christchurch 8141	**Order No:**	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Aqueous

Sample Name:		Rinsate 4/11/20 04-Nov-2020 10:40 am				
Lab Number:		2467651.1				
Individual Tests						
Total Mercury	g/m³	< 0.00008	-	-	-	-
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Arsenic	g/m³	< 0.0011	-	-	-	-
Total Cadmium	g/m³	< 0.000053	-	-	-	-
Total Chromium	g/m³	0.00071	-	-	-	-
Total Copper	g/m³	0.00076	-	-	-	-
Total Lead	g/m³	0.00048	-	-	-	-
Total Nickel	g/m³	0.00195	-	-	-	-
Total Zinc	g/m³	0.0031	-	-	-	-
Haloethers in SVOC Water Samples by GC-MS						
Bis(2-chloroethoxy) methane	g/m³	< 0.005	-	-	-	-
Bis(2-chloroethyl)ether	g/m³	< 0.005	-	-	-	-
Bis(2-chloroisopropyl)ether	g/m³	< 0.005	-	-	-	-
4-Bromophenyl phenyl ether	g/m³	< 0.005	-	-	-	-
4-Chlorophenyl phenyl ether	g/m³	< 0.005	-	-	-	-
Nitrogen containing compounds in SVOC Water Samples by GC-MS*						
2,4-Dinitrotoluene	g/m³	< 0.010	-	-	-	-
2,6-Dinitrotoluene	g/m³	< 0.010	-	-	-	-
Nitrobenzene	g/m³	< 0.005	-	-	-	-
N-Nitrosodi-n-propylamine	g/m³	< 0.010	-	-	-	-
N-Nitrosodiphenylamine + Diphenylamine*	g/m3	< 0.010	-	-	-	-
Organochlorine Pesticides in SVOC Water Samples by GC-MS						
Aldrin	g/m³	< 0.005	-	-	-	-
alpha-BHC	g/m³	< 0.005	-	-	-	-
beta-BHC	g/m³	< 0.005	-	-	-	-
delta-BHC	g/m³	< 0.005	-	-	-	-
gamma-BHC (Lindane)	g/m³	< 0.005	-	-	-	-
4,4'-DDD	g/m³	< 0.005	-	-	-	-
4,4'-DDE	g/m³	< 0.005	-	-	-	-
4,4'-DDT	g/m³	< 0.010	-	-	-	-
Dieldrin	g/m³	< 0.005	-	-	-	-
Endosulfan I	g/m³	< 0.010	-	-	-	-
Endosulfan II	g/m³	< 0.010	-	-	-	-
Endosulfan sulfate	g/m³	< 0.010	-	-	-	-
Endrin	g/m³	< 0.010	-	-	-	-
Endrin ketone	g/m³	< 0.010	-	-	-	-

Sample Type: Aqueous						
Sample Name:		Rinsate 4/11/20 04-Nov-2020 10:40 am				
Lab Number:		2467651.1				
Organochlorine Pesticides in SVOC Water Samples by GC-MS						
Heptachlor	g/m³	< 0.005	-	-	-	-
Heptachlor epoxide	g/m³	< 0.005	-	-	-	-
Hexachlorobenzene	g/m³	< 0.005	-	-	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS*						
Acenaphthene	g/m³	< 0.003	-	-	-	-
Acenaphthylene	g/m³	< 0.003	-	-	-	-
Anthracene	g/m³	< 0.003	-	-	-	-
Benzo[a]anthracene	g/m³	< 0.003	-	-	-	-
Benzo[a]pyrene (BAP)	g/m³	< 0.003	-	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.003	-	-	-	-
Benzo[g,h,i]perylene	g/m³	< 0.003	-	-	-	-
Benzo[k]fluoranthene	g/m³	< 0.003	-	-	-	-
1&2-Chloronaphthalene	g/m³	< 0.003	-	-	-	-
Chrysene	g/m³	< 0.003	-	-	-	-
Dibenzo[a,h]anthracene	g/m³	< 0.003	-	-	-	-
Fluoranthene	g/m³	< 0.003	-	-	-	-
Fluorene	g/m³	< 0.003	-	-	-	-
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.003	-	-	-	-
2-Methylnaphthalene	g/m³	< 0.003	-	-	-	-
Naphthalene	g/m³	< 0.003	-	-	-	-
Phenanthrene	g/m³	< 0.003	-	-	-	-
Pyrene	g/m³	< 0.003	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	g/m³	< 0.008	-	-	-	-
Phenols in SVOC Water Samples by GC-MS						
4-Chloro-3-methylphenol	g/m³	< 0.010	-	-	-	-
2-Chlorophenol	g/m³	< 0.005	-	-	-	-
2,4-Dichlorophenol	g/m³	< 0.005	-	-	-	-
2,4-Dimethylphenol	g/m³	< 0.005	-	-	-	-
3 & 4-Methylphenol (m- + p-cresol)	g/m³	< 0.010	-	-	-	-
2-Methylphenol (o-Cresol)	g/m³	< 0.005	-	-	-	-
2-Nitrophenol	g/m³	< 0.010	-	-	-	-
Pentachlorophenol (PCP)	g/m³	< 0.10	-	-	-	-
Phenol	g/m³	< 0.010	-	-	-	-
2,4,5-Trichlorophenol	g/m³	< 0.010	-	-	-	-
2,4,6-Trichlorophenol	g/m³	< 0.010	-	-	-	-
Plasticisers in SVOC Water Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	g/m³	< 0.03	-	-	-	-
Butylbenzylphthalate	g/m³	< 0.010	-	-	-	-
Di(2-ethylhexyl)adipate	g/m³	< 0.005	-	-	-	-
Diethylphthalate	g/m³	< 0.010	-	-	-	-
Dimethylphthalate	g/m³	< 0.010	-	-	-	-
Di-n-butylphthalate	g/m³	< 0.010	-	-	-	-
Di-n-octylphthalate	g/m³	< 0.010	-	-	-	-
Other Halogenated compounds in SVOC Water Samples by GC-MS						
1,2-Dichlorobenzene	g/m³	< 0.010	-	-	-	-
1,3-Dichlorobenzene	g/m³	< 0.010	-	-	-	-
1,4-Dichlorobenzene	g/m³	< 0.010	-	-	-	-
Hexachlorobutadiene	g/m³	< 0.010	-	-	-	-
Hexachloroethane	g/m³	< 0.010	-	-	-	-
1,2,4-Trichlorobenzene	g/m³	< 0.005	-	-	-	-
Other compounds in SVOC Water Samples by GC-MS						
Benzyl alcohol	g/m³	< 0.05	-	-	-	-
Carbazole	g/m³	< 0.005	-	-	-	-

Sample Type: Aqueous						
Sample Name:	Rinsate 4/11/20 04-Nov-2020 10:40 am					
Lab Number:	2467651.1					
Other compounds in SVOC Water Samples by GC-MS						
Dibenzofuran	g/m³	< 0.005	-	-	-	-
Isophorone	g/m³	< 0.005	-	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Heavy metals, totals, trace As,Cd,Cr,Cu,Ni,Pb,Zn	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.	0.000053 - 0.0011 g/m³	1
Semivolatile Organic Compounds Screening in Water by GC-MS	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) 23rd ed. 2017.	-	1
Total Mercury	Bromine Oxidation followed by Atomic Fluorescence. US EPA Method 245.7, Feb 2005.	0.00008 g/m³	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 11-Nov-2020 and 13-Nov-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Carole Rodgers-Carroll BA, NZCS
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2487331	A2Pv2
Contact:	Rebecca van der Krogt	**Date Received:**	04-Dec-2020	
	C/- Tonkin & Taylor	**Date Reported:**	22-Dec-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA03-0m 02-Dec-2020	HA03-0.5m 02-Dec-2020	HA03-1.0m 02-Dec-2020	HA05-0m 01-Dec-2020	HA05-1m 01-Dec-2020
Lab Number:		2487331.1	2487331.2	2487331.3	2487331.11	2487331.12
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	820.9	864.6	976.6	896.6	913.3
Dry Weight	g	641.6	648.1	790.1	695.7	633.8
Moisture	%	22	25	19	22	31
Sample Fraction >10mm	g dry wt	2.0	23.4	< 0.1	15.3	171.5
Sample Fraction <10mm to >2mm	g dry wt	8.8	265.4	26.1	96.6	222.5
Sample Fraction <2mm	g dry wt	628.6	357.0	763.0	582.5	238.4
<2mm Subsample Weight	g dry wt	57.8	58.1	57.8	58.3	53.6
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		HA05-2m 01-Dec-2020	HA06-0m 01-Dec-2020	HA06-1m 01-Dec-2020	HA06-2m 01-Dec-2020	HA07-0.1m 01-Dec-2020
Lab Number:		2487331.13	2487331.16	2487331.17	2487331.18	2487331.21
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	-
As Received Weight	g	1,080.7	817.3	997.3	895.4	422.3
Dry Weight	g	817.2	518.2	666.6	664.6	320.4
Moisture	%	24	37	33	26	-

Sample Type: Soil						
Sample Name:		HA05-2m 01-Dec-2020	HA06-0m 01-Dec-2020	HA06-1m 01-Dec-2020	HA06-2m 01-Dec-2020	HA07-0.1m 01-Dec-2020
Lab Number:		2487331.13	2487331.16	2487331.17	2487331.18	2487331.21
Sample Fraction >10mm	g dry wt	< 0.1	5.8	101.5	93.4	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	1.7	49.0	252.4	229.9	113.7
Sample Fraction <2mm	g dry wt	815.0	462.3	310.1	339.5	204.7
<2mm Subsample Weight	g dry wt	57.7	52.4	53.8	57.6	56.5
Weight of Asbestos in >10mm Sample Fraction	g dry wt	-	-	-	-	< 0.00001
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	-	-	-	-	< 0.00001
Weight of Asbestos in <2mm Sample Fraction	g dry wt	-	-	-	-	< 0.00001
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-

Sample Name:		HA07-0.5m 01-Dec-2020	HA07-1.0m 01-Dec-2020	HA112-0.5m 02-Dec-2020	HA112-1.0m 02-Dec-2020	HA113-0m 02-Dec-2020
Lab Number:		2487331.22	2487331.23	2487331.28	2487331.29	2487331.30
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	-	-	-	-	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	-	-	-	-	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	-	-	-	-	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	-	-	-	-	< 0.001
As Received Weight	g	451.3	528.0	427.5	426.6	786.3
Dry Weight	g	323.9	347.2	309.1	311.4	593.1
Moisture	%	-	-	-	-	25
Sample Fraction >10mm	g dry wt	< 0.1	2.5	0.3	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	117.7	151.0	95.9	95.5	153.0
Sample Fraction <2mm	g dry wt	204.5	191.6	211.6	215.0	439.6
<2mm Subsample Weight	g dry wt	58.3	51.5	57.0	53.0	57.8
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	-
Weight of Asbestos in ACM (Non-Friable)	g dry wt	-	-	-	-	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	-	-	-	-	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	-	-	-	-	< 0.00001

Sample Name:		HA113-0.5m 02-Dec-2020	HA113-1.0m 02-Dec-2020	HA116-0m 02-Dec-2020	HA116-0.5m 02-Dec-2020	HA116-1.0m 02-Dec-2020
Lab Number:		2487331.31	2487331.32	2487331.33	2487331.34	2487331.35
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Sample Type: Soil						
Sample Name:		HA113-0.5m 02-Dec-2020	HA113-1.0m 02-Dec-2020	HA116-0m 02-Dec-2020	HA116-0.5m 02-Dec-2020	HA116-1.0m 02-Dec-2020
Lab Number:		2487331.31	2487331.32	2487331.33	2487331.34	2487331.35
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	824.4	762.4	785.3	921.7	938.3
Dry Weight	g	660.1	546.6	552.7	681.3	650.7
Moisture	%	20	28	30	26	31
Sample Fraction >10mm	g dry wt	< 0.1	132.4	0.7	< 0.1	< 0.1
Sample Fraction <10mm to >2mm	g dry wt	196.2	222.4	47.8	228.2	88.1
Sample Fraction <2mm	g dry wt	462.2	189.7	503.1	449.5	561.4
<2mm Subsample Weight	g dry wt	57.7	58.8	52.3	56.1	55.7
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Sample Name:		HA117-0.1m 02-Dec-2020	HA117-0.5m 02-Dec-2020	HA117-1.0m 02-Dec-2020		
Lab Number:		2487331.36	2487331.37	2487331.38		
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-	-
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	338.4	410.8	380.2	-	-
Dry Weight	g	280.0	317.5	287.8	-	-
Sample Fraction >10mm	g dry wt	3.9	< 0.1	< 0.1	-	-
Sample Fraction <10mm to >2mm	g dry wt	154.4	169.4	142.3	-	-
Sample Fraction <2mm	g dry wt	120.9	147.4	144.8	-	-
<2mm Subsample Weight	g dry wt	58.6	58.6	52.6	-	-
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-

Glossary of Terms
• Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
• ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
• Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
• Trace - Trace levels of asbestos, as defined by AS4964-2004.
For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil.
https://www.branz.co.nz/asbestos

The following assumptions have been made:

1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.

Analyst's Comments

Amended Report: This certificate of analysis replaces report '2487331-A2Pv1' issued on 11-Dec-2020 at 12:50 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Wgt of Asbestos as Asbestos Fines in <10mm >2mm Fraction*	Measurement on analytical balance, from the <10mm >2mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-3, 11-13, 16-18, 30-35
Semi Quantitative Asbestos in Soil	Based on approximately 100g of sample provided.	-	21-23, 28-29, 36-38
Semi Quantitative Asbestos in Soil			
Weight of Asbestos in >10mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	21-23, 28-29, 36-38
Weight of Asbestos in <10mm to >2mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	21-23, 28-29, 36-38
Weight of Asbestos in <2mm Sample Fraction	Measurement on analytical balance. Asbestos weight in <2mm subsample, if <2mm subsample weight is not "Entire Fraction". Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	21-23, 28-29, 36-38
New Zealand Guidelines Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 11-13, 16-18, 21-23, 28-38
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-3, 11-13, 16-18, 21-23, 28-38
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3, 11-13, 16-18, 30-35
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 11-13, 16-18, 21-23, 28-38
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 11-13, 16-18, 21-23, 28-38
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-3, 11-13, 16-18, 21-23, 28-38
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3, 11-13, 16-18, 21-23, 28-38
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3, 11-13, 16-18, 21-23, 28-38
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 11-13, 16-18, 30-35
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 11-13, 16-18, 30-35
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 11-13, 16-18, 30-35
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 11-13, 16-18, 30-35

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3, 11-13, 16-18, 30-35
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 11-13, 16-18, 30-35
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3, 11-13, 16-18, 30-35

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 11-Dec-2020 and 22-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2486806 SPv2
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	04-Dec-2020
		Date Reported:	24-Dec-2020 **(Amended)**
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Soil

Sample Name:		HA03 0m 02-Dec-2020 9:25 am	HA03 0.5m 02-Dec-2020 9:32 am	HA03 1m 02-Dec-2020 9:41 am	HA04 0m 02-Dec-2020 7:10 am	HA04 0.5m 02-Dec-2020 7:25 am
Lab Number:		2486806.1	2486806.2	2486806.3	2486806.8	2486806.9
Individual Tests						
Dry Matter	g/100g as rcvd	77	74	80	82	84
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.49	< 0.10	< 0.10	0.34	< 0.10
Total Recoverable Chromium	mg/kg dry wt	6	5	4	6	4
Total Recoverable Copper	mg/kg dry wt	8	< 2	< 2	9	2
Total Recoverable Lead	mg/kg dry wt	7.1	6.7	5.9	7.3	6.0
Total Recoverable Mercury	mg/kg dry wt	< 0.10	0.14	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	13	< 4	< 4	13	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.4	< 0.4	< 0.3	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.04	< 0.04	< 0.03	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.04	< 0.04	< 0.03	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Chrysene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Fluoranthene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	-	-
Perylene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Phenanthrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-
Pyrene	mg/kg dry wt	< 0.013	< 0.014	< 0.013	-	-

Sample Type: Soil						
Sample Name:		HA03 0m 02-Dec-2020 9:25 am	HA03 0.5m 02-Dec-2020 9:32 am	HA03 1m 02-Dec-2020 9:41 am	HA04 0m 02-Dec-2020 7:10 am	HA04 0.5m 02-Dec-2020 7:25 am
Lab Number:		2486806.1	2486806.2	2486806.3	2486806.8	2486806.9
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	-	-	-	< 0.8	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	-	-	-	< 0.8	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	-	-	-	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	-	-	-	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	-	-	-	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Endrin	mg/kg dry wt	-	-	-	< 0.8	< 0.7
Endrin ketone	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Chrysene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Fluorene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Pyrene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	< 1.3	< 1.3

Sample Type: Soil						
Sample Name:		HA03 0m 02-Dec-2020 9:25 am	HA03 0.5m 02-Dec-2020 9:32 am	HA03 1m 02-Dec-2020 9:41 am	HA04 0m 02-Dec-2020 7:10 am	HA04 0.5m 02-Dec-2020 7:25 am
Lab Number:		2486806.1	2486806.2	2486806.3	2486806.8	2486806.9
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	-	-	-	< 5	< 5
2-Chlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	-	-	-	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	-	-	-	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	-	-	-	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	-	-	-	< 30	< 30
Phenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	-	-	-	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	-	-	-	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	-	-	-	< 0.8	< 0.7
Hexachlorobutadiene	mg/kg dry wt	-	-	-	< 0.8	< 0.7
Hexachloroethane	mg/kg dry wt	-	-	-	< 0.8	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	-	-	-	< 10	< 10
Carbazole	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Isophorone	mg/kg dry wt	-	-	-	< 0.5	< 0.5
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	57	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	-	-

Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Individual Tests						
Dry Matter	g/100g as rcvd	78	72	75	70	74
Ammonium-N*	mg/kg dry wt	-	< 5	22	20	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	5	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	0.29
Total Recoverable Chromium	mg/kg dry wt	7	5	6	6	8
Total Recoverable Copper	mg/kg dry wt	5	3	4	3	5
Total Recoverable Lead	mg/kg dry wt	9.3	7.1	6.7	5.8	11.0
Total Recoverable Mercury	mg/kg dry wt	0.11	< 0.10	0.13	0.11	< 0.10
Total Recoverable Nickel	mg/kg dry wt	4	< 2	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	5	7	5	5	13

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Alachlor	mg/kg	-	< 0.05	< 0.05	< 0.05	-
Atrazine	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Atrazine-desethyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Atrazine-desisopropyl	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Azaconazole	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Azinphos-methyl	mg/kg	-	< 0.14	< 0.13	< 1.4	-
Benalaxyl	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Bitertanol	mg/kg	-	< 0.14	< 0.13	< 1.4	-
Bromacil	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Bromopropylate	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Butachlor	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Captan	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Carbaryl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Carbofuran	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Chlorfluazuron	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Chlorothalonil	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Chlorpyrifos	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Chlorpyrifos-methyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Chlortoluron	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Cyanazine	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Cyfluthrin	mg/kg	-	< 0.08	< 0.08	< 0.9	-
Cyhalothrin	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Cypermethrin	mg/kg	-	< 0.16	< 0.16	< 1.7	-
Deltamethrin (including Tralomethrin)	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Diazinon	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Dichlofluanid	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Dichloran	mg/kg	-	< 0.2	< 0.2	< 0.2	-
Dichlorvos	mg/kg	-	< 0.09	< 0.09	< 0.09	-
Difenoconazole	mg/kg	-	< 0.10	< 0.09	< 1.0	-
Dimethoate	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Diphenylamine	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Diuron	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Fenpropimorph	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Fluazifop-butyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Fluometuron	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Flusilazole	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Fluvalinate	mg/kg	-	< 0.05	< 0.05	< 0.5	-
Furalaxyl	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Haloxyfop-methyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Hexaconazole	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Hexazinone	mg/kg	-	< 0.04	< 0.04	< 0.4	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	< 0.4	< 0.4	< 0.4	-
Kresoxim-methyl	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Linuron	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Malathion	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Metalaxyl (Mefenoxam)	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Methamidophos	mg/kg	-	< 0.4	< 0.4	< 0.4	-
Metolachlor	mg/kg	-	< 0.05	< 0.05	< 0.05	-
Metribuzin	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Molinate	mg/kg	-	< 0.14	< 0.13	< 0.14	-
Myclobutanil	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Naled	mg/kg	-	< 0.4	< 0.4	< 0.4	-
Norflurazon	mg/kg	-	< 0.14	< 0.13	< 0.14	-

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Oxadiazon	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Oxyfluorfen	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Paclobutrazol	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Parathion-ethyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Parathion-methyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Pendimethalin	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Permethrin	mg/kg	-	< 0.03	< 0.03	< 0.19	-
Pirimicarb	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Pirimiphos-methyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Prochloraz	mg/kg	-	< 0.4	< 0.4	< 4	-
Procymidone	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Prometryn	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Propachlor	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Propanil	mg/kg	-	< 0.2	< 0.2	< 0.2	-
Propazine	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Propiconazole	mg/kg	-	< 0.05	< 0.05	< 0.5	-
Pyriproxyfen	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Quizalofop-ethyl	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Simazine	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Simetryn	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Sulfentrazone	mg/kg	-	< 0.4	< 0.4	< 4	-
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	-	< 0.14	< 0.13	< 0.14	-
Tebuconazole	mg/kg	-	< 0.07	< 0.07	< 0.7	-
Terbacil	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Terbufos	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Terbumeton	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Terbuthylazine	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Terbuthylazine-desethyl	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Terbutryn	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Thiabendazole	mg/kg	-	< 0.4	< 0.4	< 0.4	-
Thiobencarb	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Tolylfluanid	mg/kg	-	< 0.04	< 0.04	< 0.04	-
Triazophos	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Trifluralin	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Vinclozolin	mg/kg	-	< 0.07	< 0.07	< 0.07	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	-	< 0.4
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.014
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.014
Acenaphthylene	mg/kg dry wt	-	-	-	-	< 0.014
Acenaphthene	mg/kg dry wt	-	-	-	-	< 0.014
Anthracene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	0.016
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	0.018
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	-	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	-	0.020
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	0.014
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	< 0.014
Chrysene	mg/kg dry wt	-	-	-	-	0.014

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	< 0.014
Fluoranthene	mg/kg dry wt	-	-	-	-	0.041
Fluorene	mg/kg dry wt	-	-	-	-	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	< 0.014
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	< 0.014
Phenanthrene	mg/kg dry wt	-	-	-	-	0.023
Pyrene	mg/kg dry wt	-	-	-	-	0.036
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.5	< 0.5	< 0.5	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 9	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 9	-
Endrin	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 9	-
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 3	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 3	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 3	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 5	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 10	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 10	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 17	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 9	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 5	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 9	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.9	< 0.9	< 0.9	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	-	-	-	< 8
C10 - C14	mg/kg dry wt	-	-	-	-	< 20
C15 - C36	mg/kg dry wt	-	-	-	-	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	-	< 70
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Ethylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Toluene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
m&p-Xylene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
o-Xylene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Carbon tetrachloride	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Chloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Chloromethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2-Dibromo-3-chloropropane	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Dibromomethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,3-Dichloropropane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Dichlorodifluoromethane	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
1,1-Dichloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2-Dichloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,1-Dichloroethene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
cis-1,2-Dichloroethene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
trans-1,2-Dichloroethene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Dichloromethane (methylene chloride)	mg/kg dry wt	-	< 9	< 9	< 10	-
1,2-Dichloropropane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,1-Dichloropropene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
cis-1,3-Dichloropropene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
trans-1,3-Dichloropropene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Hexachlorobutadiene	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
1,1,1,2-Tetrachloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,1,2,2-Tetrachloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,1,1-Trichloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,1,2-Trichloroethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Trichloroethene (trichloroethylene)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Trichlorofluoromethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2,3-Trichloropropane	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Vinyl chloride	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,3-Dichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
4-Chlorotoluene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2-Dichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,4-Dichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
2-Chlorotoluene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2,3-Trichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,3,5-Trichlorobenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
tert-Butylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Isopropylbenzene (Cumene)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	-	< 0.3	16.1	105	-
n-Propylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
sec-Butylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Styrene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
1,2,4-Trimethylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-

Sample Type: Soil						
Sample Name:		HA04 1m 02-Dec-2020 7:33 am	HA112 0.1m 02-Dec-2020	HA112 1.8m 02-Dec-2020	HA112 2.0m 02-Dec-2020	HA113 0m 02-Dec-2020 11:45 am
Lab Number:		2486806.10	2486806.15	2486806.18	2486806.19	2486806.20
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
1,3,5-Trimethylbenzene	mg/kg dry wt	-	< 0.3	< 0.3	3.0	-
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	-	< 50	< 50	< 50	-
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	-	< 9	< 9	< 10	-
Acetone	mg/kg dry wt	-	< 50	< 50	< 50	-
Methyl tert-butylether (MTBE)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Bromoform (tribromomethane)	mg/kg dry wt	-	< 0.5	< 0.5	< 0.5	-
Chloroform (Trichloromethane)	mg/kg as rcvd	-	< 0.3	< 0.3	< 0.3	-
Dibromochloromethane	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-
Naphthalene	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	-

Sample Name:		HA113 0.5m 02-Dec-2020 12:00 pm	HA113 1.0m 02-Dec-2020 12:07 pm	HA116 0m 02-Dec-2020 1:10 pm	HA116 0.5m 02-Dec-2020 1:17 pm	HA116 1.0m 02-Dec-2020 1:23 pm
Lab Number:		2486806.21	2486806.22	2486806.24	2486806.25	2486806.26
Individual Tests						
Dry Matter	g/100g as rcvd	80	69	72	75	71
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.28	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	5	7	8	4	4
Total Recoverable Copper	mg/kg dry wt	< 2	4	9	2	5
Total Recoverable Lead	mg/kg dry wt	4.4	7.7	16.3	4.4	8.4
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	5	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	< 4	4	19	< 4	< 4
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	< 0.3	< 0.4	1.6	< 0.4	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014
Acenaphthene	mg/kg dry wt	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014
Anthracene	mg/kg dry wt	< 0.013	< 0.015	0.018	< 0.013	< 0.014
Benzo[a]anthracene	mg/kg dry wt	< 0.013	< 0.015	0.114	< 0.013	< 0.014
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	< 0.015	0.152	< 0.013	< 0.014
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 0.03	< 0.04	0.23	< 0.04	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.03	< 0.04	0.22	< 0.04	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.013	< 0.015	0.171	< 0.013	< 0.014
Benzo[e]pyrene	mg/kg dry wt	< 0.013	< 0.015	0.110	< 0.013	< 0.014
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	< 0.015	0.129	< 0.013	< 0.014
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	< 0.015	0.068	< 0.013	< 0.014
Chrysene	mg/kg dry wt	< 0.013	< 0.015	0.123	< 0.013	< 0.014
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.015	0.022	< 0.013	< 0.014
Fluoranthene	mg/kg dry wt	< 0.013	< 0.015	0.25	< 0.013	< 0.014
Fluorene	mg/kg dry wt	< 0.013	< 0.015	< 0.014	< 0.013	< 0.014
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	< 0.015	0.122	< 0.013	< 0.014
Naphthalene	mg/kg dry wt	< 0.07	< 0.08	< 0.07	< 0.07	< 0.07
Perylene	mg/kg dry wt	< 0.013	< 0.015	0.034	< 0.013	< 0.014
Phenanthrene	mg/kg dry wt	< 0.013	< 0.015	0.076	< 0.013	< 0.014

Sample Type: Soil						
Sample Name:		HA113 0.5m 02-Dec-2020 12:00 pm	HA113 1.0m 02-Dec-2020 12:07 pm	HA116 0m 02-Dec-2020 1:10 pm	HA116 0.5m 02-Dec-2020 1:17 pm	HA116 1.0m 02-Dec-2020 1:23 pm
Lab Number:		2486806.21	2486806.22	2486806.24	2486806.25	2486806.26
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Pyrene	mg/kg dry wt	< 0.013	< 0.015	0.25	< 0.013	< 0.014
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 9	< 9	< 8	< 9
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40	41	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	< 70

Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Individual Tests						
Dry Matter	g/100g as rcvd	81	79	73	79	75
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.34	0.30
Total Recoverable Chromium	mg/kg dry wt	7	7	6	7	7
Total Recoverable Copper	mg/kg dry wt	7	4	5	9	4
Total Recoverable Lead	mg/kg dry wt	8.8	9.4	12.5	7.4	10.5
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	4	3	< 2	< 2	< 2
Total Recoverable Zinc	mg/kg dry wt	11	7	5	15	12
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Acetochlor	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Atrazine	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Atrazine-desisopropyl	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Azinphos-methyl	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Bitertanol	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Bromacil	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Butachlor	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Captan	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Chlortoluron	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Cyanazine	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Cyfluthrin	mg/kg	< 0.08	< 0.08	< 0.08	-	-
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Cypermethrin	mg/kg	< 0.15	< 0.15	< 0.16	-	-
Deltamethrin (including Tralomethrin)	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Diazinon	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Dichlofluanid	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Dichloran	mg/kg	< 0.2	< 0.2	< 0.2	-	-
Dichlorvos	mg/kg	< 0.09	< 0.09	< 0.09	-	-
Difenoconazole	mg/kg	< 0.09	< 0.09	< 0.10	-	-
Dimethoate	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Diphenylamine	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Diuron	mg/kg	< 0.06	< 0.06	< 0.07	-	-

Sample Type: Soil						
Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Haloxyfop-methyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.04	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.4	-	-
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Linuron	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Malathion	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.4	-	-
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Molinate	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Naled	mg/kg	< 0.3	< 0.3	< 0.4	-	-
Norflurazon	mg/kg	< 0.12	< 0.12	< 0.13	-	-
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.4	-	-
Procymidone	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Prometryn	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Propachlor	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	-	-
Propazine	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Simazine	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Simetryn	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.4	-	-
TCMTB [2-(thiocyanomethylthio) benzothiazole,Busan]	mg/kg dry wt	< 0.12	< 0.12	< 0.13	-	-
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Terbacil	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Terbufos	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Terbuthylazine	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Terbuthylazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.4	-	-
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Tolylfluanid	mg/kg	< 0.03	< 0.03	< 0.04	-	-
Triazophos	mg/kg	< 0.06	< 0.06	< 0.07	-	-

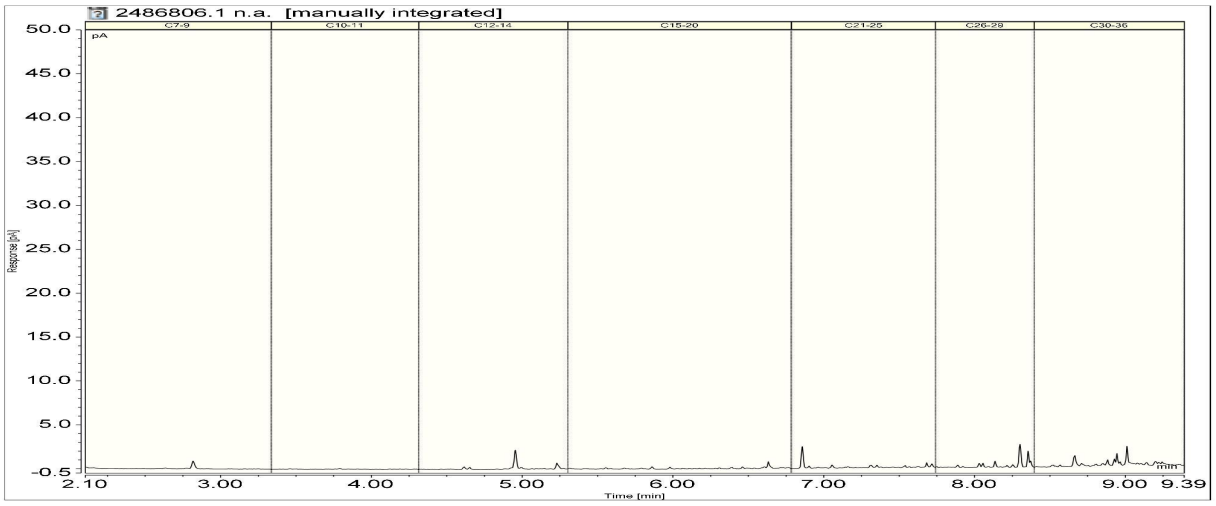
Sample Type: Soil						
Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.07	-	-
Polycyclic Aromatic Hydrocarbons Screening in Soil*						
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	-	< 0.4
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthylene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthene	mg/kg dry wt	-	-	-	-	< 0.013
Anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	-	-	< 0.04
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	< 0.04
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	< 0.013
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	< 0.013
Chrysene	mg/kg dry wt	-	-	-	-	< 0.013
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	< 0.013
Fluoranthene	mg/kg dry wt	-	-	-	-	0.014
Fluorene	mg/kg dry wt	-	-	-	-	< 0.013
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	< 0.013
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	< 0.013
Phenanthrene	mg/kg dry wt	-	-	-	-	< 0.013
Pyrene	mg/kg dry wt	-	-	-	-	< 0.013
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Endrin	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-

Sample Type: Soil						
Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.8	< 0.8	< 0.8	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-

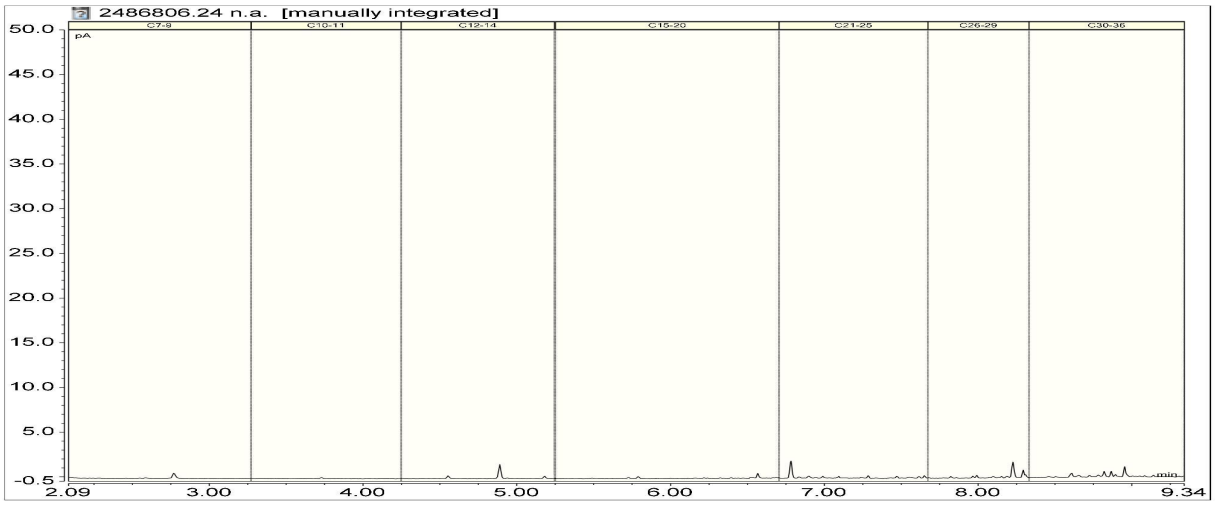
Sample Type: Soil						
Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	-
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	-	-	-	< 8
C10 - C14	mg/kg dry wt	-	-	-	-	< 20
C15 - C36	mg/kg dry wt	-	-	-	-	59
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	-	< 70
BTEX in VOC Soils by Headspace GC-MS						
Benzene	mg/kg dry wt	< 0.19	< 0.2	< 0.3	-	-
Ethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Toluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
m&p-Xylene	mg/kg dry wt	< 0.4	< 0.4	< 0.5	-	-
o-Xylene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Halogenated Aliphatics in VOC Soils by Headspace GC-MS						
Bromomethane (Methyl Bromide)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Carbon tetrachloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Chloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Chloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2-Dibromo-3-chloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
1,2-Dibromoethane (ethylene dibromide, EDB)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Dibromomethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,3-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Dichlorodifluoromethane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
1,1-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2-Dichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
cis-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
trans-1,2-Dichloroethene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Dichloromethane (methylene chloride)	mg/kg dry wt	< 4	< 4	< 5	-	-
1,2-Dichloropropane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
cis-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
trans-1,3-Dichloropropene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1,1,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1,2,2-Tetrachloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Tetrachloroethene (tetrachloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1,1-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,1,2-Trichloroethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Trichloroethene (trichloroethylene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Trichlorofluoromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2,3-Trichloropropane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
1,1,2-Trichlorotrifluoroethane (Freon 113)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Vinyl chloride	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Haloaromatics in VOC Soils by Headspace GC-MS						
Bromobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
4-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-

Sample Type: Soil						
Sample Name:		HA117 0.1m 02-Dec-2020	HA117 0.5m 02-Dec-2020	HA117 2.0m 02-Dec-2020	Dup B 02-Dec-2020	Dup C 02-Dec-2020
Lab Number:		2486806.28	2486806.29	2486806.31	2486806.32	2486806.33
Haloaromatics in VOC Soils by Headspace GC-MS						
Chlorobenzene (monochlorobenzene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
2-Chlorotoluene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2,3-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,3,5-Trichlorobenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Monoaromatic Hydrocarbons in VOC Soils by Headspace GC-MS						
n-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
tert-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Isopropylbenzene (Cumene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
4-Isopropyltoluene (p-Cymene)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
n-Propylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
sec-Butylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Styrene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,2,4-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
1,3,5-Trimethylbenzene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Ketones in VOC Soils by Headspace GC-MS						
2-Butanone (MEK)	mg/kg dry wt	< 40	< 40	< 50	-	-
4-Methylpentan-2-one (MIBK)	mg/kg dry wt	< 8	< 8	< 9	-	-
Acetone	mg/kg dry wt	< 40	< 40	< 50	-	-
Methyl tert-butylether (MTBE)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Trihalomethanes in VOC Soils by Headspace GC-MS						
Bromodichloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Bromoform (tribromomethane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Chloroform (Trichloromethane)	mg/kg as rcvd	< 0.3	< 0.3	< 0.3	-	-
Dibromochloromethane	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Other VOC in Soils by Headspace GC-MS						
Carbon disulphide	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Naphthalene	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-

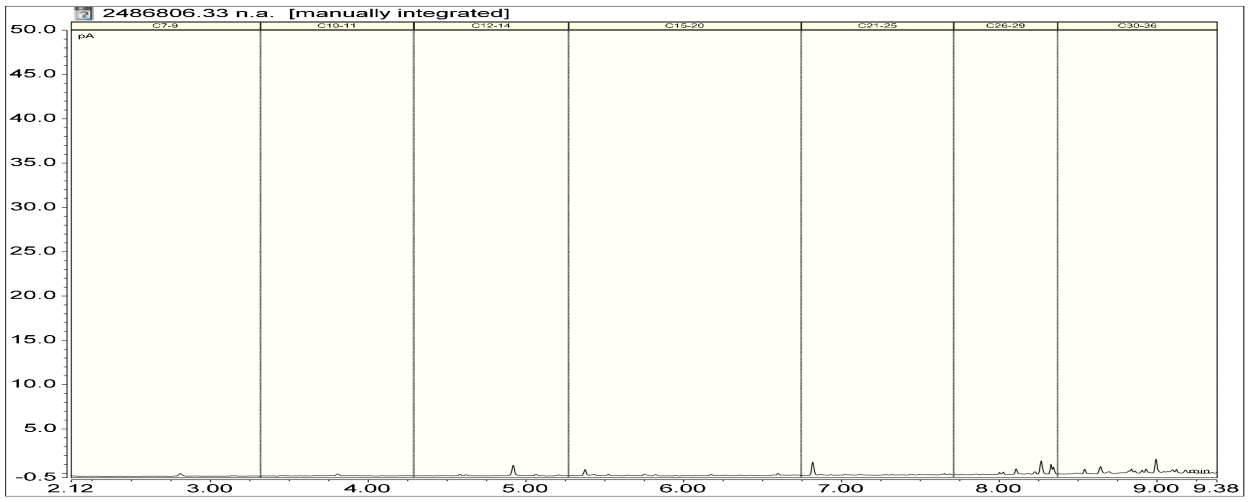
2486806.1
HA03 0m 02-Dec-2020 9:25 am
Client Chromatogram for TPH by FID



2486806.24
HA116 0m 02-Dec-2020 1:10 pm
Client Chromatogram for TPH by FID



2486806.33
Dup C 02-Dec-2020
Client Chromatogram for TPH by FID



Analyst's Comments

It was observed that the container(s) for sample(s) {JOB NUMBER- 2486806/15,18,&19} were not completely filled. Volatile loss may have occurred due to the headspace created in the container.

Amended Report: This certificate of analysis replaces report '2486806-SPv1' issued on 10-Dec-2020 at 3:40 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-3, 8-10, 15, 18-22, 24-26, 28-29, 31-33
Total of Reported PAHs in Soil	Sonication extraction, GC-MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3, 20-22, 24-26, 33

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3, 8-10, 15, 18-22, 24-26, 28-29, 31-33
2M KCl Extraction*	2M potassium chloride extraction of as received fraction for analysis of NH4N, NO2N and NO3N. Analyst, 109, 549, (1984).	-	15, 18-19
Ammonium-N*	2M potassium chloride extraction on as received fraction. Phenol/hypochlorite colorimetry. Flow Injection Analyser. APHA 4500-NH_3 H (modified) 23rd ed. 2017.	5 mg/kg dry wt	15, 18-19
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.002 mg/kg dry wt	1-3, 20-22, 24-26, 33
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.002 mg/kg dry wt	1-3, 20-22, 24-26, 33
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.002 - 70 mg/kg dry wt	1-3, 20-22, 24-26, 33
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 8-10, 15, 18-22, 24-26, 28-29, 31-33
Organonitro&phosphorus Pesticides Screen in Soil by GCMS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	-	15, 18-19, 28-29, 31
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	8-10, 15, 18-19, 28-29, 31-32
Volatile Organic Compounds Screening in Soil by Headspace GC-MS	Sonication extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	-	15, 18-19, 28-29, 31
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1, 24, 33
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	8 mg/kg dry wt	1-3, 20-22, 24-26, 33
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3, 20-22, 24-26, 33
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3, 20-22, 24-26, 33
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3, 20-22, 24-26, 33

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Dec-2020 and 24-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2488783	SPv2
Contact:	Rebecca van der Krogt	**Date Received:**	08-Dec-2020	
	C/- Tonkin & Taylor	**Date Reported:**	18-Dec-2020	**(Amended)**
	PO Box 5271	**Quote No:**	80842	
	Auckland 1141	**Order No:**	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA107a - 0.1m 04-Dec-2020	HA107a - 0.5m 04-Dec-2020	HA107a - 1.0m 04-Dec-2020	HA108 - 0.1m 03-Dec-2020	HA108 - 0.5m 03-Dec-2020
Lab Number:		2488783.1	2488783.2	2488783.3	2488783.9	2488783.10
Individual Tests						
Dry Matter	g/100g as rcvd	84	79	78	79	75
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	< 2	2
Total Recoverable Cadmium	mg/kg dry wt	0.14	< 0.10	< 0.10	0.16	< 0.10
Total Recoverable Chromium	mg/kg dry wt	5	9	6	5	8
Total Recoverable Copper	mg/kg dry wt	19	7	6	10	6
Total Recoverable Lead	mg/kg dry wt	6.5	10.4	8.3	3.7	8.4
Total Recoverable Mercury	mg/kg dry wt	< 0.10	0.12	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	2	2	< 2	< 2	2
Total Recoverable Zinc	mg/kg dry wt	12	4	< 4	7	5
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Type: Soil						
Sample Name:		HA107a - 0.1m 04-Dec-2020	HA107a - 0.5m 04-Dec-2020	HA107a - 1.0m 04-Dec-2020	HA108 - 0.1m 03-Dec-2020	HA108 - 0.5m 03-Dec-2020
Lab Number:		2488783.1	2488783.2	2488783.3	2488783.9	2488783.10
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA107a - 0.1m 04-Dec-2020	HA107a - 0.5m 04-Dec-2020	HA107a - 1.0m 04-Dec-2020	HA108 - 0.1m 03-Dec-2020	HA108 - 0.5m 03-Dec-2020
Lab Number:		2488783.1	2488783.2	2488783.3	2488783.9	2488783.10
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		HA108 - 1.0m 03-Dec-2020	HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA114 - 0.0m 03-Dec-2020 8:12 am
Lab Number:		2488783.11	2488783.13	2488783.14	2488783.15	2488783.20
Individual Tests						
Dry Matter	g/100g as rcvd	70	75	74	66	87
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	< 2	< 2	8	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.11	< 0.10	< 0.10	0.15
Total Recoverable Chromium	mg/kg dry wt	8	6	8	11	11
Total Recoverable Copper	mg/kg dry wt	8	9	6	12	78
Total Recoverable Lead	mg/kg dry wt	11.3	4.3	9.1	22	14.9
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.18	< 0.10
Total Recoverable Nickel	mg/kg dry wt	2	< 2	2	6	22
Total Recoverable Zinc	mg/kg dry wt	6	8	6	10	53
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.4	< 0.5	< 0.5	< 0.4
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA108 - 1.0m 03-Dec-2020	HA109 - 0.0m 03-Dec-2020 10:18 am	HA109 - 0.5m 03-Dec-2020 10:47 am	HA109 - 1.0m 03-Dec-2020 10:55 am	HA114 - 0.0m 03-Dec-2020 8:12 am
Lab Number:		2488783.11	2488783.13	2488783.14	2488783.15	2488783.20
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
1,3-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
1,4-Dichlorobenzene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
Hexachlorobutadiene	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
Hexachloroethane	mg/kg dry wt	< 0.9	< 0.8	< 0.9	< 0.9	< 0.7
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA114 - 0.5m 03-Dec-2020 8:25 am	HA114 - 1.0m 03-Dec-2020 8:32 am	HA115 - 0.1m 03-Dec-2020	HA115 - 0.5m 03-Dec-2020	HA115 - 1.0m 03-Dec-2020
Lab Number:		2488783.21	2488783.22	2488783.27	2488783.28	2488783.29
Individual Tests						
Dry Matter	g/100g as rcvd	79	69	77	81	71
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	3	< 2	2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.15	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	8	10	15	7	10
Total Recoverable Copper	mg/kg dry wt	4	7	34	4	6
Total Recoverable Lead	mg/kg dry wt	4.8	9.6	22	5.8	9.8
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	0.11
Total Recoverable Nickel	mg/kg dry wt	< 2	2	11	< 2	2
Total Recoverable Zinc	mg/kg dry wt	4	7	57	7	8
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.5	< 0.4	< 0.4	< 0.5
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA114 - 0.5m 03-Dec-2020 8:25 am	HA114 - 1.0m 03-Dec-2020 8:32 am	HA115 - 0.1m 03-Dec-2020	HA115 - 0.5m 03-Dec-2020	HA115 - 1.0m 03-Dec-2020
Lab Number:		2488783.21	2488783.22	2488783.27	2488783.28	2488783.29
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
Hexachlorobutadiene	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
Hexachloroethane	mg/kg dry wt	< 0.8	< 0.9	< 0.8	< 0.8	< 0.9
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020	HA108 - dup 03-Dec-2020
Lab Number:		2488783.31	2488783.32	2488783.33	2488783.37	2488783.38
Individual Tests						
Dry Matter	g/100g as rcvd	82	71	72	77	69
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	< 2	3	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.23	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	6	9	6	8	9
Total Recoverable Copper	mg/kg dry wt	9	6	4	8	7

Sample Type: Soil						
Sample Name:		HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020	HA108 - dup 03-Dec-2020
Lab Number:		2488783.31	2488783.32	2488783.33	2488783.37	2488783.38
Heavy Metals with Mercury, Screen Level						
Total Recoverable Lead	mg/kg dry wt	4.2	8.7	7.1	9.7	9.3
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	< 2	< 2	< 2	2	< 2
Total Recoverable Zinc	mg/kg dry wt	8	5	< 4	6	5
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.5	< 0.5	< 0.4	< 0.5
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	< 2	< 2
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Endrin	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Type: Soil						
Sample Name:		HA119 - 0.0m 03-Dec-2020 12:30 pm	HA119 - 0.5m 03-Dec-2020 12:43 pm	HA119 - 1.0m 03-Dec-2020 12:50 pm	HA107b dup 04-Dec-2020	HA108 - dup 03-Dec-2020
Lab Number:		2488783.31	2488783.32	2488783.33	2488783.37	2488783.38
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	< 3	< 3
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	< 30	< 30
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	< 5	< 5
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.9	< 0.9	< 0.8	< 0.9
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	< 10	< 10
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Sample Name:		Dup - D	Dup - E	HA115 Duplicate		
Lab Number:		2488783.39	2488783.40	2488783.41		
Individual Tests						
Dry Matter	g/100g as rcvd	85	82	71	-	-
Heavy Metals with Mercury, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	< 2	2	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.15	0.23	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	10	6	9	-	-
Total Recoverable Copper	mg/kg dry wt	72	9	6	-	-
Total Recoverable Lead	mg/kg dry wt	13.2	4.4	10.4	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	0.10	-	-
Total Recoverable Nickel	mg/kg dry wt	11	< 2	3	-	-
Total Recoverable Zinc	mg/kg dry wt	54	8	7	-	-
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-

Sample Type: Soil						
Sample Name:		Dup - D	Dup - E	HA115 Duplicate		
Lab Number:		2488783.39	2488783.40	2488783.41		
Haloethers in SVOC Soil Samples by GC-MS						
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	< 0.4	< 0.5	-	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Nitrogen containing compounds in SVOC Soil Samples by GC-MS						
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Nitrobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
Organochlorine Pesticides in SVOC Soil Samples by GC-MS						
Aldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
alpha-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
beta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
delta-BHC	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDD	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDE	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
4,4'-DDT	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Dieldrin	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Endosulfan I	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Endosulfan II	mg/kg dry wt	< 2	< 2	< 2	-	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Endrin	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
Endrin ketone	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Heptachlor	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Polycyclic Aromatic Hydrocarbons in SVOC Soil Samples by GC-MS*						
Acenaphthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Acenaphthylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Chrysene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Fluoranthene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Fluorene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Naphthalene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Phenanthrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Pyrene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	< 1.3	< 1.3	-	-
Phenols in SVOC Soil Samples by GC-MS						
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	< 5	< 5	-	-
2-Chlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-

Sample Type: Soil						
Sample Name:		Dup - D	Dup - E	HA115 Duplicate		
Lab Number:		2488783.39	2488783.40	2488783.41		
Phenols in SVOC Soil Samples by GC-MS						
2,4-Dimethylphenol	mg/kg dry wt	< 3	< 3	< 3	-	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	< 3	< 3	-	-
2-Methylphenol (o-Cresol)	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2-Nitrophenol	mg/kg dry wt	< 5	< 5	< 5	-	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	< 30	< 30	-	-
Phenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Plasticisers in SVOC Soil Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	< 5	< 5	-	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Diethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Dimethylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	< 1.0	< 1.0	-	-
Other Halogenated compounds in SVOC Soil Samples by GC-MS						
1,2-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
Hexachlorobutadiene	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
Hexachloroethane	mg/kg dry wt	< 0.7	< 0.8	< 0.9	-	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Other compounds in SVOC Soil Samples by GC-MS						
Benzyl alcohol	mg/kg dry wt	< 10	< 10	< 10	-	-
Carbazole	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Dibenzofuran	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-
Isophorone	mg/kg dry wt	< 0.5	< 0.5	< 0.5	-	-

Analyst's Comments

Amended Report: This certificate of analysis replaces report '2488783-SPv1' issued on 11-Dec-2020 at 2:15 pm.
Reason for amendment: Additional testing added as per clients request.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-3, 9-11, 13-15, 20-22, 27-29, 31-33, 37-41
Heavy Metals with Mercury, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-3, 9-11, 13-15, 20-22, 27-29, 31-33, 37-41
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.002 - 30 mg/kg dry wt	1-3, 9-11, 13-15, 20-22, 27-29, 31-33, 37-41

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-3, 9-11, 13-15, 20-22, 27-29, 31-33, 37-41

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 09-Dec-2020 and 18-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2492155	A2Pv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	11-Dec-2020	
		Date Reported:	19-Dec-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA110a - 0.1m 08-Dec-2020	HA110a - 0.5m 08-Dec-2020	HA110a - 2.0m 08-Dec-2020		
Lab Number:		2492155.1	2492155.2	2492155.4		
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-	-
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	395.0	515.2	478.1	-	-
Dry Weight	g	302.7	397.2	319.4	-	-
Sample Fraction >10mm	g dry wt	2.6	< 0.1	< 0.1	-	-
Sample Fraction <10mm to >2mm	g dry wt	146.1	168.7	138.7	-	-
Sample Fraction <2mm	g dry wt	153.0	227.5	180.6	-	-
<2mm Subsample Weight	g dry wt	53.6	53.2	53.1	-	-
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace - Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Testing has been carried out under the assumption that the weight of asbestos in the sample is unaffected by the ashing process.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Semi Quantitative Asbestos in Soil	Based on approximately 100g of sample provided.	-	1-2, 4
Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2, 4
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1-2, 4

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-2, 4
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-2, 4
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1-2, 4
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2, 4
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2, 4
Weight of Asbestos in >10mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-2, 4
Weight of Asbestos in <10mm to >2mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-2, 4
Weight of Asbestos in <2mm Sample Fraction	Measurement on analytical balance. Asbestos weight in <2mm subsample, if <2mm subsample weight is not "Entire Fraction". Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1-2, 4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed on 19-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Dexter Paguirigan Dip Chem Engineering Tech
Laboratory Technician - Asbestos

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2490317	A2Pv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	09-Dec-2020	
		Date Reported:	21-Dec-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Soil

Sample Name:		HA111-0.1m 07-Dec-2020	HA111-1.0m 07-Dec-2020	HA111-2.0m 07-Dec-2020		
Lab Number:		2490317.1	2490317.3	2490317.4		
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	-	-
Description of Asbestos Form		-	-	-	-	-
As Received Weight	g	246.2	394.7	482.5	-	-
Dry Weight	g	172.5	285.7	332.4	-	-
Sample Fraction >10mm	g dry wt	29.5	9.8	11.7	-	-
Sample Fraction <10mm to >2mm	g dry wt	55.2	111.7	117.8	-	-
Sample Fraction <2mm	g dry wt	87.4	164.0	202.3	-	-
<2mm Subsample Weight	g dry wt	50.7	54.3	53.7	-	-
Weight of Asbestos in >10mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <10mm to > 2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-
Weight of Asbestos in <2mm Sample Fraction	g dry wt	< 0.00001	< 0.00001	< 0.00001	-	-

Glossary of Terms

- Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) - Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) - One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) - Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres - Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace - Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Testing has been carried out under the assumption that the weight of asbestos in the sample is unaffected by the ashing process.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Semi Quantitative Asbestos in Soil	Based on approximately 100g of sample provided.	-	1, 3-4
Semi Quantitative Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1, 3-4
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g	1, 3-4

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The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

Sample Type: Soil			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1, 3-4
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1, 3-4
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.1 g dry wt	1, 3-4
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1, 3-4
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1, 3-4
Weight of Asbestos in >10mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1, 3-4
Weight of Asbestos in <10mm to >2mm Sample Fraction	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1, 3-4
Weight of Asbestos in <2mm Sample Fraction	Measurement on analytical balance. Asbestos weight in <2mm subsample, if <2mm subsample weight is not "Entire Fraction". Analysed at Hill Laboratories - Asbestos; 101c Waterloo Road, Christchurch.	0.00001 g dry wt	1, 3-4

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 19-Dec-2020 and 21-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

Rhodri Williams BSc (Hons)
Technical Manager - Asbestos

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Certificate of Analysis

Tonkin and Taylor Ltd
105 Carlton Gore Road, Newmarket
Auckland

Attention: Rebecca Van der Krogt
Phone: 027 304 0134
Email: rvanderkrogt@tonkintaylor.co.nz

Lab Reference: 20-42713
Submitted by: Rebecca van der Krogt
Date Received: 11/11/2020
Testing Initiated: 11/11/2020
Date Completed: 18/11/2020
Order Number:
Reference: 1014985

Sampling Site:

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Heavy Metals in Soil

			Client Sample ID	Split Envr - SS03 - 0.1-0.2m
			Date Sampled	9/11/2020
Analyte	Unit	*Reporting Limit*		20-42713-2
Arsenic	mg/kg dry wt	*0.125*		0.84
Cadmium	mg/kg dry wt	*0.005*		0.061
Chromium	mg/kg dry wt	*0.125*		2.7
Copper	mg/kg dry wt	*0.075*		19.8
Lead	mg/kg dry wt	*0.25*		7.50
Mercury	mg/kg dry wt	*0.025*		0.047
Nickel	mg/kg dry wt	*0.05*		1.8
Zinc	mg/kg dry wt	*0.05*		20.7

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split Envr - SS03 - 0.1-0.2m
			Date Sampled	9/11/2020
Analyte	Unit	*Reporting Limit*		20-42713-2
Phenol	mg/kg dry wt	*0.3*		<0.3
2-Chlorophenol	mg/kg dry wt	*0.3*		<0.3
2-Methylphenol	mg/kg dry wt	*0.3*		<0.3
2-Nitrophenol	mg/kg dry wt	*1.0*		<1.0
2,4-Dimethylphenol	mg/kg dry wt	*0.3*		<0.3
2,4-Dichlorophenol	mg/kg dry wt	*0.3*		<0.3

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split Envr - SS03 - 0.1-0.2m
			Date Sampled	9/11/2020
2,6-Dichlorophenol	mg/kg dry wt	*0.3*	<0.3
4-Chloro-3-methylphenol	mg/kg dry wt	*0.3*	<0.3
2,4,5-Trichlorophenol	mg/kg dry wt	*5*	<5
2,4,6-Trichlorophenol	mg/kg dry wt	*5*	<5.0
2,3,4,6-Tetrachlorophenol	mg/kg dry wt	*5*	<5
4-Methylphenol	mg/kg dry wt	*0.3*	<0.3
4-Nitrophenol	mg/kg dry wt	*5*	<5
Naphthalene	mg/kg dry wt	*0.1*	<0.11
2-Methylnaphthalene	mg/kg dry wt	*0.1*	<0.11
2-Chloronaphthalene	mg/kg dry wt	*0.3*	<0.3
Acenaphthene	mg/kg dry wt	*0.1*	<0.11
Acenaphthylene	mg/kg dry wt	*0.1*	<0.11
Fluorene	mg/kg dry wt	*0.1*	<0.11
Phenanthrene	mg/kg dry wt	*0.1*	<0.11
Anthracene	mg/kg dry wt	*0.1*	<0.11
2-Phenylphenol	mg/kg dry wt	*0.5*	<0.5
Fluoranthene	mg/kg dry wt	*0.1*	<0.11
Benzo[a]anthracene	mg/kg dry wt	*0.1*	<0.11
Chrysene	mg/kg dry wt	*0.1*	<0.11
Bis(2-ethylhexyl) adipate	mg/kg dry wt	*0.5*	<0.5
Benzo[b]fluoranthene	mg/kg dry wt	*0.1*	<0.11
Benzo[k]fluoranthene	mg/kg dry wt	*0.1*	<0.11
Benzo[a]pyrene	mg/kg dry wt	*0.1*	<0.11
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	*0.1*	<0.11
Dibenzo[a,h]anthracene	mg/kg dry wt	*0.1*	<0.11
Benzo[g,h,i]perylene	mg/kg dry wt	*0.1*	<0.11
Pyrene	mg/kg dry wt	*0.2*	<0.2
Benzo[a]pyrene TEQ (LOR)	mg/kg dry wt	*0.2*	0.3
Benzo[a]pyrene TEQ (Zero)	mg/kg dry wt	*0.1*	<0.1
4,4'-DDD	mg/kg dry wt	*0.3*	<0.3
4,4'-DDE	mg/kg dry wt	*0.3*	<0.3
4,4'-DDT	mg/kg dry wt	*0.5*	<0.5
alpha-BHC	mg/kg dry wt	*0.3*	<0.3
beta-BHC	mg/kg dry wt	*0.3*	<0.3
gamma-BHC	mg/kg dry wt	*0.3*	<0.3
delta-BHC	mg/kg dry wt	*0.3*	<0.3
Aldrin	mg/kg dry wt	*0.3*	<0.3
cis-Chlordane	mg/kg dry wt	*0.3*	<0.3
trans-Chlordane	mg/kg dry wt	*0.3*	<0.3
Dieldrin	mg/kg dry wt	*0.5*	<0.5
Endosulfan I	mg/kg dry wt	*0.3*	<0.3
Endosulfan II	mg/kg dry wt	*0.5*	<0.5
Endosulfan sulfate	mg/kg dry wt	*0.5*	<0.5
Endrin	mg/kg dry wt	*0.5*	<0.5
Endrin aldehyde	mg/kg dry wt	*0.5*	<0.5
Endrin ketone	mg/kg dry wt	*0.5*	<0.5
Hexachlorobenzene	mg/kg dry wt	*0.3*	<0.3
Heptachlor	mg/kg dry wt	*0.3*	<0.3
Heptachlor epoxide	mg/kg dry wt	*0.3*	<0.3
Methoxychlor	mg/kg dry wt	*0.5*	<0.5

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split Envr - SS03 - 0.1-0.2m
			Date Sampled	9/11/2020
Bis(2-ethylhexyl) phthalate	mg/kg dry wt	*0.5*	<0.5
Butyl benzyl phthalate	mg/kg dry wt	*0.5*	<0.5
Di-n-butyl phthalate	mg/kg dry wt	*1*	<1
Di-n-octyl phthalate	mg/kg dry wt	*0.5*	<0.5
Diethyl phthalate	mg/kg dry wt	*0.3*	<0.3
Dimethyl phthalate	mg/kg dry wt	*0.3*	<0.3
N-Nitrosodiphenylamine	mg/kg dry wt	*0.3*	<0.3
N-Nitrosodi-n-propylamine	mg/kg dry wt	*0.3*	<0.3
2,4-Dinitrotoluene	mg/kg dry wt	*0.3*	<0.3
2,6-Dinitrotoluene	mg/kg dry wt	*0.3*	<0.3
Azobenzene	mg/kg dry wt	*0.5*	<0.5
Isophorone	mg/kg dry wt	*0.5*	<0.5
Nitrobenzene	mg/kg dry wt	*0.3*	<0.3
4-Bromophenyl phenyl ether	mg/kg dry wt	*0.3*	<0.3
4-Chlorophenyl phenyl ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloroethyl) ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloro-1-methylethyl) ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloroethoxy) methane	mg/kg dry wt	*0.3*	<0.3
1,2-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
1,3-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
1,4-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
Hexachlorobutadiene	mg/kg dry wt	*0.3*	<0.3
Hexachlorocylopentadiene	mg/kg dry wt	*0.3*	<0.3
Hexachloroethane	mg/kg dry wt	*0.3*	<0.3
4-Chloroaniline	mg/kg dry wt	*1.0*	<1.0
2-Nitroaniline	mg/kg dry wt	*0.3*	<0.3
3-Nitroaniline	mg/kg dry wt	*0.5*	<0.5
Aniline	mg/kg dry wt	*1.0*	<1.0
3,3'-Dichlorobenzidine	mg/kg dry wt	*0.5*	<0.5
Dibenzofuran	mg/kg dry wt	*0.3*	<0.3
Methyl methanesulfonate	mg/kg dry wt	*1.0*	<1.0
Ethyl methanesulfonate	mg/kg dry wt	*1*	<1
Benzyl alcohol	mg/kg dry wt	*1*	<1
Phenol-d5 (Surrogate)	%	*1*	84.4
2-Fluorophenol (Surrogate)	%	*1*	83.9
2-Fluorobiphenyl (Surrogate)	%	*1*	122.6
2,4,6-Tribromophenol (Surrogate)	%	*1*	109.7
p-Terphenyl-d14 (Surrogate)	%	*1*	101.2
Nitrobenzene-d5 (Surrogate)	%	*1*	100.0

Moisture Content

		Client Sample ID	Split Envr - SS03 - 0.1-0.2m
		Date Sampled	9/11/2020
Analyte	Unit	*Reporting Limit*	20-42713-2
Moisture Content	%	*1*	30

Method Summary

Elements in Soil	Samples dried and passed through a 2 mm sieve followed by acid digestion and analysis by ICP-MS. In accordance with in-house procedure based on US EPA method 200.8.
SVOC in Soil	Solvent extraction, followed by GC-MS analysis.(In-house based on US EPA 8270).
Moisture	Moisture content is determined gravimetrically by drying at 103 °C.

Sharelle Frank, B.Sc. (Tech)
Technologist

Rong Zhang
Technician

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Certificate of Analysis

Tonkin and Taylor Ltd
105 Carlton Gore Road, Newmarket
Auckland

Attention: Rebecca van der Krogt
Phone: 027 304 0134
Email: rvanderkrogt@tonkintaylor.co.nz

Lab Reference: 20-41900
Submitted by: Rebecca van der Krogt
Date Received: 5/11/2020
Testing Initiated: 9/11/2020
Date Completed: 12/11/2020
Order Number:
Reference: 1014985

Sampling Site:

Report Comments

Samples were collected by yourselves (or your agent) and analysed as received at Analytica Laboratories. Samples were in acceptable condition unless otherwise noted on this report.
Specific testing dates are available on request.

Heavy Metals in Soil

			Client Sample ID	Split ENVR HA101_0.0-0.1m 0.0-0.1m
			Date Sampled	4/11/2020
Analyte	Unit	*Reporting Limit*	20-41900-1	
Arsenic	mg/kg dry wt	*0.125*	1.9	
Cadmium	mg/kg dry wt	*0.005*	0.17	
Chromium	mg/kg dry wt	*0.125*	8.4	
Copper	mg/kg dry wt	*0.075*	11.6	
Lead	mg/kg dry wt	*0.25*	5.53	
Mercury	mg/kg dry wt	*0.025*	0.058	
Nickel	mg/kg dry wt	*0.05*	1.7	
Zinc	mg/kg dry wt	*0.05*	14.8	

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split ENVR HA101_0.0-0.1m 0.0-0.1m
			Date Sampled	4/11/2020
Analyte	Unit	*Reporting Limit*	20-41900-1	
Phenol	mg/kg dry wt	*0.3*	<0.3	
2-Chlorophenol	mg/kg dry wt	*0.3*	<0.3	
2-Methylphenol	mg/kg dry wt	*0.3*	<0.3	
2-Nitrophenol	mg/kg dry wt	*1.0*	<1.0	

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation, with the exception of tests marked *, which are not accredited.

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split ENVR HA101_0.0-0.1m 0.0-0.1m
			Date Sampled	4/11/2020
2,4-Dimethylphenol	mg/kg dry wt	*0.3*	<0.3
2,4-Dichlorophenol	mg/kg dry wt	*0.3*	<0.3
2,6-Dichlorophenol	mg/kg dry wt	*0.3*	<0.3
4-Chloro-3-methylphenol	mg/kg dry wt	*0.3*	<0.3
2,4,5-Trichlorophenol	mg/kg dry wt	*5*	<5
2,4,6-Trichlorophenol	mg/kg dry wt	*5*	<5.0
2,3,4,6-Tetrachlorophenol	mg/kg dry wt	*5*	<5
4-Methylphenol	mg/kg dry wt	*0.3*	<0.3
4-Nitrophenol	mg/kg dry wt	*5*	<5
Naphthalene	mg/kg dry wt	*0.1*	<0.1
2-Methylnaphthalene	mg/kg dry wt	*0.1*	<0.1
2-Chloronaphthalene	mg/kg dry wt	*0.3*	<0.3
Acenaphthene	mg/kg dry wt	*0.1*	<0.1
Acenaphthylene	mg/kg dry wt	*0.1*	<0.1
Fluorene	mg/kg dry wt	*0.1*	<0.1
Phenanthrene	mg/kg dry wt	*0.1*	<0.1
Anthracene	mg/kg dry wt	*0.1*	<0.1
2-Phenylphenol	mg/kg dry wt	*0.5*	<0.5
Fluoranthene	mg/kg dry wt	*0.1*	<0.1
Benzo[a]anthracene	mg/kg dry wt	*0.1*	<0.1
Chrysene	mg/kg dry wt	*0.1*	<0.1
Bis(2-ethylhexyl) adipate	mg/kg dry wt	*0.5*	<0.5
Benzo[b]fluoranthene	mg/kg dry wt	*0.1*	<0.1
Benzo[k]fluoranthene	mg/kg dry wt	*0.1*	<0.1
Benzo[a]pyrene	mg/kg dry wt	*0.1*	<0.1
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	*0.1*	<0.1
Dibenzo[a,h]anthracene	mg/kg dry wt	*0.1*	<0.1
Benzo[g,h,i]perylene	mg/kg dry wt	*0.1*	<0.1
Pyrene	mg/kg dry wt	*0.2*	<0.2
Benzo[a]pyrene TEQ (LOR)	mg/kg dry wt	*0.2*	0.2
Benzo[a]pyrene TEQ (Zero)	mg/kg dry wt	*0.1*	<0.1
4,4'-DDD	mg/kg dry wt	*0.3*	<0.3
4,4'-DDE	mg/kg dry wt	*0.3*	<0.3
4,4'-DDT	mg/kg dry wt	*0.5*	<0.5
alpha-BHC	mg/kg dry wt	*0.3*	<0.3
beta-BHC	mg/kg dry wt	*0.3*	<0.3
gamma-BHC	mg/kg dry wt	*0.3*	<0.3
delta-BHC	mg/kg dry wt	*0.3*	<0.3
Aldrin	mg/kg dry wt	*0.3*	<0.3
cis-Chlordane	mg/kg dry wt	*0.3*	<0.3
trans-Chlordane	mg/kg dry wt	*0.3*	<0.3
Dieldrin	mg/kg dry wt	*0.5*	<0.5
Endosulfan I	mg/kg dry wt	*0.3*	<0.3
Endosulfan II	mg/kg dry wt	*0.5*	<0.5
Endosulfan sulfate	mg/kg dry wt	*0.5*	<0.5
Endrin	mg/kg dry wt	*0.5*	<0.5
Endrin aldehyde	mg/kg dry wt	*0.5*	<0.5
Endrin ketone	mg/kg dry wt	*0.5*	<0.5
Hexachlorobenzene	mg/kg dry wt	*0.3*	<0.3
Heptachlor	mg/kg dry wt	*0.3*	<0.3

Semivolatile Organic Compounds - Soil

			Client Sample ID	Split ENVR HA101_0.0-0.1m 0.0-0.1m
			Date Sampled	4/11/2020
Heptachlor epoxide	mg/kg dry wt	*0.3*	<0.3
Methoxychlor	mg/kg dry wt	*0.5*	<0.5
Bis(2-ethylhexyl) phthalate	mg/kg dry wt	*0.5*	<0.5
Butyl benzyl phthalate	mg/kg dry wt	*0.5*	<0.5
Di-n-butyl phthalate	mg/kg dry wt	*1*	<1
Di-n-octyl phthalate	mg/kg dry wt	*0.5*	<0.5
Diethyl phthalate	mg/kg dry wt	*0.3*	<0.3
Dimethyl phthalate	mg/kg dry wt	*0.3*	<0.3
N-Nitrosodiphenylamine	mg/kg dry wt	*0.3*	<0.3
N-Nitrosodi-n-propylamine	mg/kg dry wt	*0.3*	<0.3
2,4-Dinitrotoluene	mg/kg dry wt	*0.3*	<0.3
2,6-Dinitrotoluene	mg/kg dry wt	*0.3*	<0.3
Azobenzene	mg/kg dry wt	*0.5*	<0.5
Isophorone	mg/kg dry wt	*0.5*	<0.5
Nitrobenzene	mg/kg dry wt	*0.3*	<0.3
4-Bromophenyl phenyl ether	mg/kg dry wt	*0.3*	<0.3
4-Chlorophenyl phenyl ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloroethyl) ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloro-1-methylethyl) ether	mg/kg dry wt	*0.3*	<0.3
Bis(2-Chloroethoxy) methane	mg/kg dry wt	*0.3*	<0.3
1,2-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
1,3-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
1,4-Dichlorobenzene	mg/kg dry wt	*0.3*	<0.3
Hexachlorobutadiene	mg/kg dry wt	*0.3*	<0.3
Hexachlorocylopentadiene	mg/kg dry wt	*0.3*	<0.3
Hexachloroethane	mg/kg dry wt	*0.3*	<0.3
4-Chloroaniline	mg/kg dry wt	*1.0*	<1.0
2-Nitroaniline	mg/kg dry wt	*0.3*	<0.3
3-Nitroaniline	mg/kg dry wt	*0.5*	<0.5
Aniline	mg/kg dry wt	*1.0*	<1.0
3,3'-Dichlorobenzidine	mg/kg dry wt	*0.5*	<0.5
Dibenzofuran	mg/kg dry wt	*0.3*	<0.3
Methyl methanesulfonate	mg/kg dry wt	*1.0*	<1.0
Ethyl methanesulfonate	mg/kg dry wt	*1*	<1
Benzyl alcohol	mg/kg dry wt	*1*	<1
Phenol-d5 (Surrogate)	%	*1*	93.9
2-Fluorophenol (Surrogate)	%	*1*	95.3
2-Fluorobiphenyl (Surrogate)	%	*1*	120.4
2,4,6-Tribromophenol (Surrogate)	%	*1*	82.3
p-Terphenyl-d14 (Surrogate)	%	*1*	106.7
Nitrobenzene-d5 (Surrogate)	%	*1*	100.9

Moisture Content

		Client Sample ID	Split ENVR HA101_0.0-0.1m 0.0-0.1m
		Date Sampled	4/11/2020
Analyte	Unit	*Reporting Limit*	20-41900-1
Moisture Content	%	*1*	21

Method Summary

Elements in Soil	Samples dried and passed through a 2 mm sieve followed by acid digestion and analysis by ICP-MS. In accordance with in-house procedure based on US EPA method 200.8.
SVOC in Soil	Solvent extraction, followed by GC-MS analysis.(In-house based on US EPA 8270).
Moisture	Moisture content is determined gravimetrically by drying at 103 °C.

Sharelle Frank, B.Sc. (Tech)
Technologist

Rong Zhang
Technician

Hill Laboratories
TRIED, TESTED AND TRUSTED

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2482688 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	27-Nov-2020
		Date Reported:	10-Dec-2020
		Quote No:	80842
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Rebecca van der Krogt

Sample Type: Aqueous

Sample Name:		Dup 1 27-Nov-2020	Field Blank 27/11/20 27-Nov-2020 7:00 am	Trip Blank 27/11/20 27-Nov-2020	BH05b [A] 27-Nov-2020 11:30 am	BH06 [A] 27-Nov-2020
Lab Number:		2482688.1	2482688.2	2482688.3	2482688.4	2482688.5
Individual Tests						
pH	pH Units	5.6	6.6	5.8	6.4	4.0
Dissolved Mercury	g/m³	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Dissolved Arsenic	g/m³	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Dissolved Cadmium	g/m³	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.0007
Dissolved Copper	g/m³	< 0.0005	< 0.0005	< 0.0005	0.0007	0.0030
Dissolved Lead	g/m³	< 0.00010	< 0.00010	< 0.00010	0.00011	0.00052
Dissolved Nickel	g/m³	0.0020	< 0.0005	< 0.0005	0.0014	0.072
Dissolved Zinc	g/m³	0.0131	< 0.0010	< 0.0010	0.022	0.042
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Acenaphthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Acenaphthylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Chrysene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluorene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Naphthalene	g/m³	< 0.0006	< 0.0006	< 0.0006	< 0.0006	< 0.0006
Phenanthrene	g/m³	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Pyrene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Haloethers in SVOC Water Samples by GC-MS						
Bis(2-chloroethoxy) methane	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Bis(2-chloroethyl)ether	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Bis(2-chloroisopropyl)ether	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
4-Bromophenyl phenyl ether	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
4-Chlorophenyl phenyl ether	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005

Sample Type: Aqueous						
Sample Name:		Dup 1 27-Nov-2020	Field Blank 27/11/20 27-Nov-2020 7:00 am	Trip Blank 27/11/20 27-Nov-2020	BH05b [A] 27-Nov-2020 11:30 am	BH06 [A] 27-Nov-2020
Lab Number:		2482688.1	2482688.2	2482688.3	2482688.4	2482688.5
Nitrogen containing compounds in SVOC Water Samples by GC-MS*						
2,4-Dinitrotoluene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
2,6-Dinitrotoluene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Nitrobenzene	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
N-Nitrosodi-n-propylamine	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
N-Nitrosodiphenylamine + Diphenylamine*	g/m3	-	< 0.010	< 0.010	< 0.010	< 0.010
Organochlorine Pesticides in SVOC Water Samples by GC-MS						
Aldrin	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
alpha-BHC	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
beta-BHC	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
delta-BHC	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
gamma-BHC (Lindane)	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
4,4'-DDD	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
4,4'-DDE	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
4,4'-DDT	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Dieldrin	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Endosulfan I	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan II	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan sulfate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Endrin	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Endrin ketone	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Heptachlor epoxide	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Hexachlorobenzene	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS*						
Acenaphthene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Acenaphthylene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Anthracene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[a]anthracene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[a]pyrene (BAP)	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[g,h,i]perylene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[k]fluoranthene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
1&2-Chloronaphthalene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Chrysene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Dibenzo[a,h]anthracene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Fluoranthene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Fluorene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Indeno(1,2,3-c,d)pyrene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
2-Methylnaphthalene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Naphthalene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Phenanthrene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Pyrene	g/m³	-	< 0.003	< 0.003	< 0.003	< 0.003
Benzo[a]pyrene Toxic Equivalence (TEF)*	g/m³	-	< 0.008	< 0.008	< 0.008	< 0.008
Phenols in SVOC Water Samples by GC-MS						
4-Chloro-3-methylphenol	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
2-Chlorophenol	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
2,4-Dichlorophenol	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
2,4-Dimethylphenol	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
3 & 4-Methylphenol (m- + p-cresol)	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
2-Methylphenol (o-Cresol)	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
2-Nitrophenol	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Pentachlorophenol (PCP)	g/m³	-	< 0.10	< 0.10	< 0.10	< 0.10

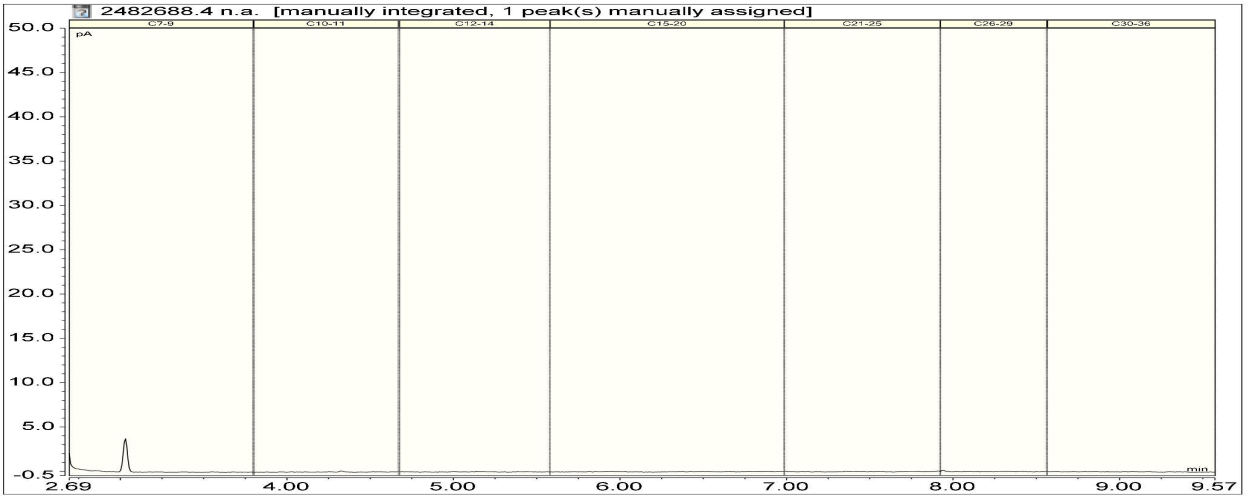
Sample Type: Aqueous						
Sample Name:		Dup 1 27-Nov-2020	Field Blank 27/11/20 27-Nov-2020 7:00 am	Trip Blank 27/11/20 27-Nov-2020	BH05b [A] 27-Nov-2020 11:30 am	BH06 [A] 27-Nov-2020
Lab Number:		2482688.1	2482688.2	2482688.3	2482688.4	2482688.5
Phenols in SVOC Water Samples by GC-MS						
Phenol	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
2,4,5-Trichlorophenol	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
2,4,6-Trichlorophenol	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Plasticisers in SVOC Water Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	g/m³	-	< 0.03	< 0.03	< 0.03	< 0.03
Butylbenzylphthalate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Di(2-ethylhexyl)adipate	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Diethylphthalate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Dimethylphthalate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Di-n-butylphthalate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Di-n-octylphthalate	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Other Halogenated compounds in SVOC Water Samples by GC-MS						
1,2-Dichlorobenzene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
1,3-Dichlorobenzene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
1,4-Dichlorobenzene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Hexachlorobutadiene	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
Hexachloroethane	g/m³	-	< 0.010	< 0.010	< 0.010	< 0.010
1,2,4-Trichlorobenzene	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Other compounds in SVOC Water Samples by GC-MS						
Benzyl alcohol	g/m³	-	< 0.05	< 0.05	< 0.05	< 0.05
Carbazole	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Dibenzofuran	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Isophorone	g/m³	-	< 0.005	< 0.005	< 0.005	< 0.005
Total Petroleum Hydrocarbons in Water						
C7 - C9	g/m³	< 0.10	< 0.10	< 0.10	0.14	< 0.10
C10 - C14	g/m³	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
C15 - C36	g/m³	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Total hydrocarbons (C7 - C36)	g/m³	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7

Sample Name:		BH08 [A] 27-Nov-2020 1:18 pm	BH111 [A] 27-Nov-2020 10:16 am	BH113 [A] 27-Nov-2020 8:45 am	BH116 [A] 27-Nov-2020 7:45 am	
Lab Number:		2482688.6	2482688.7	2482688.8	2482688.9	
Individual Tests						
pH	pH Units	6.8	5.5	6.3	6.2	-
Dissolved Mercury	g/m³	< 0.00008	< 0.00008	< 0.00008	< 0.00008	-
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Dissolved Arsenic	g/m³	< 0.0010	< 0.0010	< 0.0010	< 0.0010	-
Dissolved Cadmium	g/m³	< 0.00005	< 0.00005	< 0.00005	0.00023	-
Dissolved Chromium	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	-
Dissolved Copper	g/m³	0.0006	< 0.0005	0.0008	0.0025	-
Dissolved Lead	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	-
Dissolved Nickel	g/m³	0.0009	0.0022	0.0025	0.0099	-
Dissolved Zinc	g/m³	0.0081	0.0136	0.0071	0.036	-
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Acenaphthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Acenaphthylene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-

Sample Type: Aqueous						
Sample Name:		BH08 [A] 27-Nov-2020 1:18 pm	BH111 [A] 27-Nov-2020 10:16 am	BH113 [A] 27-Nov-2020 8:45 am	BH116 [A] 27-Nov-2020 7:45 am	
Lab Number:		2482688.6	2482688.7	2482688.8	2482688.9	
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Chrysene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Fluorene	g/m³	< 0.0002	< 0.0002	-	< 0.0002	-
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	-
Naphthalene	g/m³	< 0.0006	< 0.0006	-	< 0.0006	-
Phenanthrene	g/m³	< 0.0004	< 0.0004	-	< 0.0004	-
Pyrene	g/m³	< 0.0002	< 0.0002	-	< 0.0002	-
Haloethers in SVOC Water Samples by GC-MS						
Bis(2-chloroethoxy) methane	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Bis(2-chloroethyl)ether	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Bis(2-chloroisopropyl)ether	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
4-Bromophenyl phenyl ether	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
4-Chlorophenyl phenyl ether	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Nitrogen containing compounds in SVOC Water Samples by GC-MS*						
2,4-Dinitrotoluene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
2,6-Dinitrotoluene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Nitrobenzene	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
N-Nitrosodi-n-propylamine	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
N-Nitrosodiphenylamine + Diphenylamine*	g/m3	< 0.010	< 0.010	< 0.010	< 0.010	-
Organochlorine Pesticides in SVOC Water Samples by GC-MS						
Aldrin	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
alpha-BHC	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
beta-BHC	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
delta-BHC	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
gamma-BHC (Lindane)	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
4,4'-DDD	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
4,4'-DDE	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
4,4'-DDT	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Dieldrin	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Endosulfan I	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Endosulfan II	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Endosulfan sulfate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Endrin	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Endrin ketone	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Heptachlor	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Heptachlor epoxide	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Hexachlorobenzene	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS*						
Acenaphthene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Acenaphthylene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Anthracene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[a]anthracene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[a]pyrene (BAP)	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[g,h,i]perylene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[k]fluoranthene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
1&2-Chloronaphthalene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Chrysene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Dibenzo[a,h]anthracene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Fluoranthene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Fluorene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-

Sample Type: Aqueous						
Sample Name:		BH08 [A] 27-Nov-2020 1:18 pm	BH111 [A] 27-Nov-2020 10:16 am	BH113 [A] 27-Nov-2020 8:45 am	BH116 [A] 27-Nov-2020 7:45 am	
Lab Number:		2482688.6	2482688.7	2482688.8	2482688.9	
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS*						
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
2-Methylnaphthalene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Naphthalene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Phenanthrene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Pyrene	g/m³	< 0.003	< 0.003	< 0.003	< 0.003	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	g/m³	< 0.008	< 0.008	< 0.008	< 0.008	-
Phenols in SVOC Water Samples by GC-MS						
4-Chloro-3-methylphenol	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
2-Chlorophenol	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
2,4-Dichlorophenol	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
2,4-Dimethylphenol	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
3 & 4-Methylphenol (m- + p-cresol)	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
2-Methylphenol (o-Cresol)	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
2-Nitrophenol	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Pentachlorophenol (PCP)	g/m³	< 0.10	< 0.10	< 0.10	< 0.10	-
Phenol	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
2,4,5-Trichlorophenol	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
2,4,6-Trichlorophenol	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Plasticisers in SVOC Water Samples by GC-MS						
Bis(2-ethylhexyl)phthalate	g/m³	< 0.03	< 0.03	< 0.03	< 0.03	-
Butylbenzylphthalate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Di(2-ethylhexyl)adipate	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Diethylphthalate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Dimethylphthalate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Di-n-butylphthalate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Di-n-octylphthalate	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Other Halogenated compounds in SVOC Water Samples by GC-MS						
1,2-Dichlorobenzene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
1,3-Dichlorobenzene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
1,4-Dichlorobenzene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Hexachlorobutadiene	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
Hexachloroethane	g/m³	< 0.010	< 0.010	< 0.010	< 0.010	-
1,2,4-Trichlorobenzene	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Other compounds in SVOC Water Samples by GC-MS						
Benzyl alcohol	g/m³	< 0.05	< 0.05	< 0.05	< 0.05	-
Carbazole	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Dibenzofuran	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Isophorone	g/m³	< 0.005	< 0.005	< 0.005	< 0.005	-
Total Petroleum Hydrocarbons in Water						
C7 - C9	g/m³	< 0.10	< 0.10	-	< 0.10	-
C10 - C14	g/m³	< 0.2	< 0.2	-	< 0.2	-
C15 - C36	g/m³	< 0.4	< 0.4	-	< 0.4	-
Total hydrocarbons (C7 - C36)	g/m³	< 0.7	< 0.7	-	< 0.7	-

2482688.4
BH05b [A] 27-Nov-2020 11:30 am
Client Chromatogram for TPH by FID



Analyst's Comments

It has been noted that the System Monitoring Compounds 2-fluorophenol, Phenol-d5 and 2,4,6-tribromophenol in the SVOC analysis on sample 2482688.5, had lower than expected recoveries at 22%, 26% and 38% respectively. Therefore the phenolic related compounds may be underestimated.
The System Monitoring Compounds 2-fluorophenol and Phenol-d5 were also lower than expected at 26% & 37% respectively for sample 2482688.6 and 27% & 35% respectively for sample 2482688.8.

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
pH	pH meter. APHA 4500-H^+ B 23rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1-9
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B 23rd ed. 2017.	-	2-3
Dissolved Mercury	0.45µm filtration, bromine oxidation followed by atomic fluorescence. US EPA Method 245.7, Feb 2005.	0.00008 g/m³	1-9
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.00005 - 0.0010 g/m³	1-9
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m³	1-7, 9
Semivolatile Organic Compounds Screening in Water by GC-MS	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	-	2-9
Total Petroleum Hydrocarbons in Water			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m³	1-7, 9
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m³	1-7, 9
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m³	1-7, 9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m³	1-7, 9

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 01-Dec-2020 and 10-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Ara Heron BSc (Tech)
Client Services Manager - Environmental

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2486837	SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	04-Dec-2020	
		Date Reported:	14-Dec-2020	
		Quote No:	80842	
		Order No:	1014985	
		Client Reference:	1014985	
		Submitted By:	Rebecca van der Krogt	

Sample Type: Aqueous

Sample Name:		Trip Blank 2 02-Dec-2020	Field Blank 2 02-Dec-2020	BH110 02-Dec-2020 12:20 pm	Duplicate 2 02-Dec-2020 12:20 pm	BH117 [A] 02-Dec-2020 10:45 am
Lab Number:		2486837.1	2486837.2	2486837.3	2486837.4	2486837.5
Individual Tests						
pH	pH Units	-	-	8.1	8.1	6.8
Dissolved Mercury	g/m³	-	-	< 0.00008	< 0.00008	< 0.00008
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Dissolved Arsenic	g/m³	-	-	< 0.0010	< 0.0010	0.0016
Dissolved Cadmium	g/m³	-	-	< 0.00005	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	-	-	< 0.0005	< 0.0005	< 0.0005
Dissolved Copper	g/m³	-	-	0.0012	0.0012	< 0.0005
Dissolved Lead	g/m³	-	-	< 0.00010	< 0.00010	< 0.00010
Dissolved Nickel	g/m³	-	-	0.0012	0.0011	0.0048
Dissolved Zinc	g/m³	-	-	< 0.0010	< 0.0010	0.022
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Acenaphthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Acenaphthylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Chrysene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluorene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Naphthalene	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Phenanthrene	g/m³	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Pyrene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Petroleum Hydrocarbons in Water						
C7 - C9	g/m³	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
C10 - C14	g/m³	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
C15 - C36	g/m³	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Total hydrocarbons (C7 - C36)	g/m³	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7

Sample Type: Aqueous						
Sample Name:		BH05a [A] 02-Dec-2020 1:57 pm	BH05a [B] 02-Dec-2020 1:57 pm	Rinsate 03-Oct-2020		
Lab Number:		2486837.7	2486837.8	2486837.9		
Individual Tests						
pH	pH Units	7.5	-	-	-	-
Dissolved Mercury	g/m³	-	< 0.00008	-	-	-
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn						
Dissolved Arsenic	g/m³	-	0.0016	-	-	-
Dissolved Cadmium	g/m³	-	< 0.00005	-	-	-
Dissolved Chromium	g/m³	-	< 0.0005	-	-	-
Dissolved Copper	g/m³	-	< 0.0005	-	-	-
Dissolved Lead	g/m³	-	< 0.00010	-	-	-
Dissolved Nickel	g/m³	-	0.0015	-	-	-
Dissolved Zinc	g/m³	-	0.0026	-	-	-
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq						
Acenaphthene	g/m³	< 0.00010	-	< 0.00010	-	-
Acenaphthylene	g/m³	< 0.00010	-	< 0.00010	-	-
Anthracene	g/m³	< 0.00010	-	< 0.00010	-	-
Benzo[a]anthracene	g/m³	< 0.00010	-	< 0.00010	-	-
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	-	< 0.00010	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	-	< 0.00010	-	-
Benzo[g,h,i]perylene	g/m³	< 0.00010	-	< 0.00010	-	-
Benzo[k]fluoranthene	g/m³	< 0.00010	-	< 0.00010	-	-
Chrysene	g/m³	< 0.00010	-	< 0.00010	-	-
Dibenzo[a,h]anthracene	g/m³	< 0.00010	-	< 0.00010	-	-
Fluoranthene	g/m³	< 0.00010	-	< 0.00010	-	-
Fluorene	g/m³	< 0.0002	-	< 0.0002	-	-
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	-	< 0.00010	-	-
Naphthalene	g/m³	< 0.0005	-	< 0.0005	-	-
Phenanthrene	g/m³	< 0.0004	-	< 0.0004	-	-
Pyrene	g/m³	< 0.0002	-	< 0.0002	-	-
Total Petroleum Hydrocarbons in Water						
C7 - C9	g/m³	< 0.10	-	< 0.10	-	-
C10 - C14	g/m³	< 0.2	-	< 0.2	-	-
C15 - C36	g/m³	< 0.4	-	< 0.4	-	-
Total hydrocarbons (C7 - C36)	g/m³	< 0.7	-	< 0.7	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
Individual Tests			
pH	pH meter. APHA 4500-H^+ B 23rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	3-5, 7
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B 23rd ed. 2017.	-	3-4
Dissolved Mercury	0.45µm filtration, bromine oxidation followed by atomic fluorescence. US EPA Method 245.7, Feb 2005.	0.00008 g/m³	3-5, 8
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.	0.00005 - 0.0010 g/m³	3-5, 8
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m³	1-5, 7, 9
Total Petroleum Hydrocarbons in Water			

Sample Type: Aqueous			
Test	**Method Description**	**Default Detection Limit**	**Sample No**
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m^3	1-5, 7, 9
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m^3	1-5, 7, 9
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m^3	1-5, 7, 9
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m^3	1-5, 7, 9

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 06-Dec-2020 and 14-Dec-2020. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2473291 SPv2
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	14-Nov-2020
		Date Reported:	27-Jan-2021
		Quote No:	108315
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Lucy Hine

Sample Type: Soil

	Sample Name:	BH111-3.7-3.9m 11-Nov-2020	BH113-2.2-2.3m 13-Nov-2020	BH116-0.75-0.85 m 13-Nov-2020	BH116-5.0-5.1m 13-Nov-2020	BH117-3.45-3.55 m 13-Nov-2020
	Lab Number:	2473291.1	2473291.4	2473291.6	2473291.7	2473291.9
Individual Tests						
pH	pH Units	4.6	5.1	6.5	5.9	6.9
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.197	0.034	0.016	0.024	0.027
Sulphate Content	%	0.197	0.034	0.013	0.024	0.027

	Sample Name:	BH117-5.9-6.0m 13-Nov-2020	BH110-0.8-0.9m 13-Nov-2020	BH05a-0.35	BH06-0.85-1.0	BH06-2.7-2.9
	Lab Number:	2473291.10	2473291.11	2473291.13	2473291.15	2473291.16
Individual Tests						
pH	pH Units	6.8	4.6	4.8	4.6	3.8
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.025	0.017	0.036	0.026	0.30
Sulphate Content	%	0.024	0.017	0.036	0.026	0.30

	Sample Name:	BH07-0.9-1.0	BH08-0.25m	HA108-1.0m 03-Dec-2020	HA115-2.0m 03-Dec-2020	HA111-2.4m 07-Dec-2020
	Lab Number:	2473291.17	2473291.19	2473291.39	2473291.40	2473291.42
Individual Tests						
pH	pH Units	4.3	4.9	4.7	4.7	6.4
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.024	0.026	0.033	0.172	0.026
Sulphate Content	%	0.024	0.026	0.033	0.171	0.024

	Sample Name:	BH05a 6.5m 21-Dec-2020	BH07 4.5m 21-Dec-2020	BH 08 7m 21-Dec-2020	BH110 3m 21-Dec-2020	BH111 2m 21-Dec-2020
	Lab Number:	2473291.46	2473291.47	2473291.48	2473291.50	2473291.51
Individual Tests						
pH	pH Units	5.3	5.0	6.6	3.8	4.6
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.044	0.017	0.026	0.43	0.035
Sulphate Content	%	0.035	0.017	0.026	0.43	0.035

	Sample Name:	BH113 5.8m 21-Dec-2020				
	Lab Number:	2473291.52				
Individual Tests						
pH	pH Units	5.2	-	-	-	-
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.152	-	-	-	-
Sulphate Content	%	0.151	-	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Acid Soluble Sulphate and Sulphate Content		-	1, 4, 6-7, 9-11, 13, 15-17, 19, 39-40, 42, 46-48, 50-52
Non-Routine Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1, 4, 6-7, 9-11, 13, 15-17, 19, 39-40, 42, 46-48, 50-52
pH	2.5:1 water:air dried, sub-2mm sieved soil, vol:wt, stand 8 hrs, electrometric with a pH meter. BS 1377: Part 3: 1990 section 9.5.	0.1 pH Units	1, 4, 6-7, 9-11, 13, 15-17, 19, 39-40, 42, 46-48, 50-52
Acid Soluble Sulphate	Gravimetric after HCl acid extn of sub-425um sample, dried at 103°C, and pptn as BaSO4. NZS 4402:1986 Test 3.2 "Determination of the Total Sulphate Content".	0.010 g/100g dry wt	1, 4, 6-7, 9-11, 13, 15-17, 19, 39-40, 42, 46-48, 50-52
Acid Soluble Sulphate Content	Gravimetric after HCl acid extn of sub-425um sample, dried at 103°C, and pptn as BaSO4. NZS 4402:1986 Test 3.2 "Determination of the Total Sulphate Content".	0.010 %	1, 4, 6-7, 9-11, 13, 15-17, 19, 39-40, 42, 46-48, 50-52

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 11-Jan-2021 and 27-Jan-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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Certificate of Analysis

Client:	Tonkin & Taylor	**Lab No:**	2489334 SPv1
Contact:	Rebecca van der Krogt C/- Tonkin & Taylor PO Box 5271 Auckland 1141	**Date Received:**	08-Dec-2020
		Date Reported:	22-Jan-2021
		Quote No:	108315
		Order No:	1014985
		Client Reference:	1014985
		Submitted By:	Lucy Hine

Sample Type: Soil

Sample Name:		HA109-4.0m	HA114-3.0m	HA119-5.0m		
Lab Number:		2489334.6	2489334.12	2489334.21		
Individual Tests						
pH	pH Units	5.3	4.8	5.4	-	-
Acid Soluble Sulphate and Sulphate Content						
Acid Soluble Sulphate	g/100g dry wt	0.043	0.033	0.043	-	-
Sulphate Content	%	0.043	0.033	0.043	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Acid Soluble Sulphate and Sulphate Content		-	6, 12, 21
Non-Routine Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	6, 12, 21
pH	2.5:1 water:air dried, sub-2mm sieved soil, vol:wt, stand 8 hrs, electrometric with a pH meter. BS 1377: Part 3: 1990 section 9.5.	0.1 pH Units	6, 12, 21
Acid Soluble Sulphate	Gravimetric after HCl acid extn of sub-425um sample, dried at 103°C, and pptn as BaSO4. NZS 4402:1986 Test 3.2 "Determination of the Total Sulphate Content".	0.010 g/100g dry wt	6, 12, 21
Acid Soluble Sulphate Content	Gravimetric after HCl acid extn of sub-425um sample, dried at 103°C, and pptn as BaSO4. NZS 4402:1986 Test 3.2 "Determination of the Total Sulphate Content".	0.010 %	6, 12, 21

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 07-Jan-2021 and 22-Jan-2021. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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