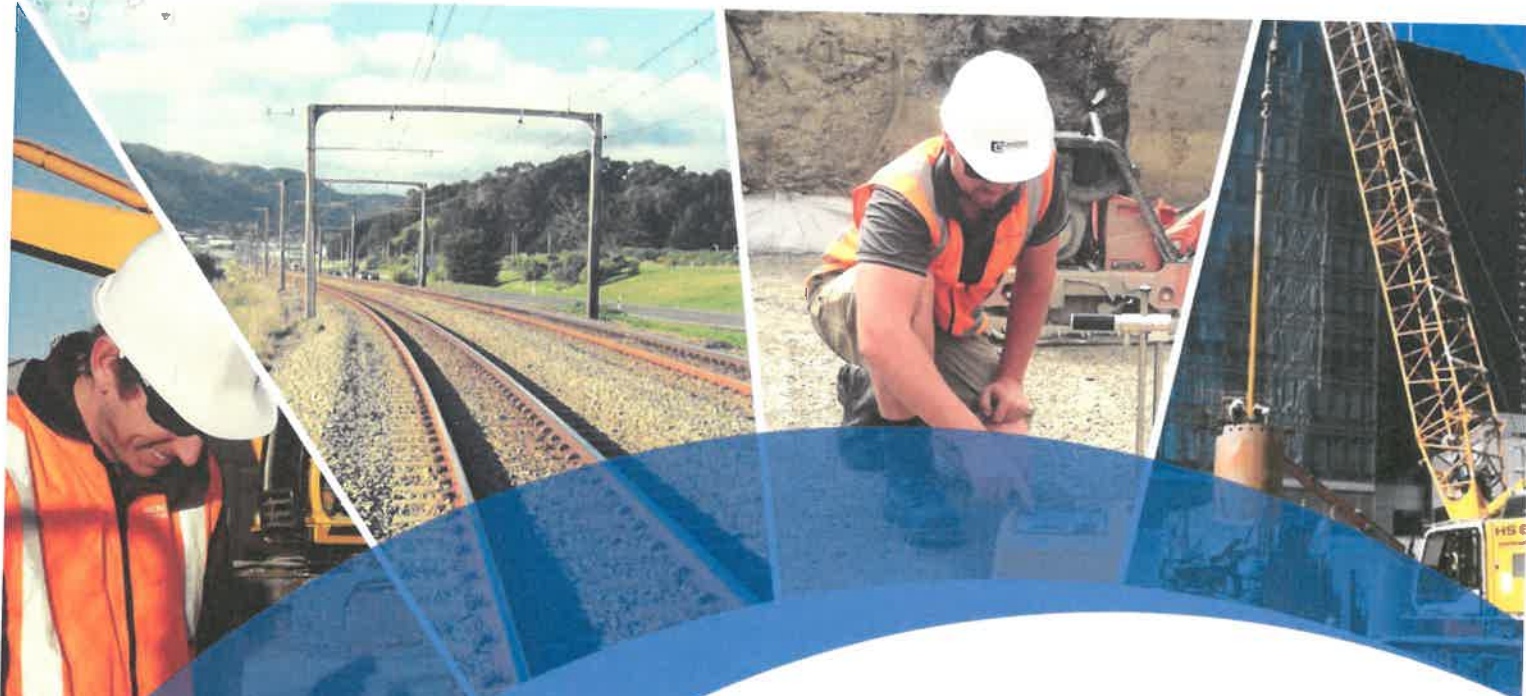


## **Appendix 3: Contamination - Detailed site investigation (EnGeo)**

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# ENGEO

*Expect Excellence*

## Detailed Environmental Site Investigation

Wallaceville Subdivision  
Upper Hutt  
Wellington

Submitted to:  
Mr Malcolm Gillies  
Wallaceville Developments Ltd  
C/- Harrison Grierson  
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## Appendices (at the rear of this report)

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Appendix 2:	Soil Test Results Summary Tables
Appendix 3:	Hill Laboratories Reports

### ENGEO Document Control:

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## 1 Introduction

ENGEO (NZ) Ltd (ENGEO) was requested by Richard Peterson of Harrison Grierson, on behalf of Malcolm Gillies of Wallaceville Developments Ltd, to undertake a Detailed Environmental Site Investigation (DSI) at the Wallaceville site, immediately east of Trentham Racecourse in Upper Hutt (Figure 1 - herein referred to as “the site”). Details of this engagement with the client are outlined in our letter proposal reference P2014.001.457 dated 11 November 2014.

A Preliminary environmental Site Investigation (PSI) report was issued by Geoscience (now ENGEO) on 3 December 2014 which identified that a number of activities on the Hazardous Activities and Industries List (HAIL) had occurred on the site following its use as an AgResearch Institute. Previous investigations and remediation on the site had been undertaken by Tonkin and Taylor between 2003 and 2008.

This DSI was undertaken in accordance with Ministry for the Environment (MfE) 2011, Guidelines for Reporting on Contaminated Sites<sup>1</sup>.

## 2 Site Description and Geology

The site is located immediately east of the Trentham Racecourse in a ‘special activity’ zoned area of Upper Hutt. The site is located approximately 1.7 km south east of the Hutt River and groundwater is likely to flow towards the Hutt River in a north westerly direction. The site is generally flat. The Upper Hutt foothills are located immediately south east of the site. The site elevation is approximately 25 m above sea level. An uncontrolled fill site is located immediately to the east of the racecourse which is not part of the proposed development.

The proposed development site covers seven legal boundaries with a combined area of 68,222 m<sup>2</sup>, and is predominantly occupied by grassed areas, previously used for pastoral purposes associated with the AgResearch facility. Gravel roads are located throughout the site. Disused former office, campus and laboratory buildings are to the west of the site.

The site is bounded by the Wairarapa Railway Line (trending southwest to northeast) to the north, Ward Street (trending northwest to southeast) to the east, Trentham Racecourse to the west and Alexander Road to the south, which trends southwest to northeast (Figure 1).

The geological map<sup>2</sup> of the area indicates that the site is underlain by alluvium deposited by the Hutt River. A GNS Borehole in Trentham Memorial Park located 1.5 km northwest of the site indicates gravel and silt to at least 200 m depth. Groundwater levels have been measured at between 8.5 m and 10.2 m below existing ground level across the site.

<sup>1</sup> MfE 2011: *Contaminated Land Management Guidelines No.1 - Reporting on Contaminated Sites in New Zealand*

<sup>2</sup> Begg, J.G., Mazengarb, C., 1996. *Geology of the Wellington Area, scale 1:50,000. Institute of Geological and Nuclear Sciences geological map 22. 1 sheet + 28p.* Lower Hutt, New Zealand: Institute of Geological and Nuclear Sciences Limited

### 3 Site History

A number of sources of information were contacted for information relating to the site regarding its past and present uses and to identify any other environmental issues which may be on record. This included querying the Greater Wellington Regional Council (GWRC) Selected Land Use Register (SLUR) and reviewing records held by Upper Hutt City Council (UHCC) Archives including the property file. A review of a number of historic and current aerial photographs was also undertaken using images from New Zealand Aerial Mapping and Google Earth.

A review of historic aerial photographs from 1943 to 2008 indicates that the site has been used for pastoral purposes since at least the 1940s. Small square structures, however, indicate the site may have been used for munitions storage during and/or post-World War II.

For its more recent uses, the site appears on the Wellington Regional Council Selected Land Use Register (SLUR) as a site with a verified history of manufacturing and storage of chemicals, pesticides and animal pharmaceuticals during the site's history as an AgResearch Facility.

A detailed history of the site is summarised in Tables 3 to 6 of the Geoscience PSI and concluded that the following potentially hazardous former activities, as listed on the HAIL, had occurred on site:

- A1 – Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application;
- A2 – Chemical manufacture, formulation or bulk storage;
- A3 – Commercial analytical laboratory sites;
- A8 – Livestock dip or spray race operations;
- A10 – Persistent pesticide bulk storage or use including sports turfs, market gardens, orchards, glass houses or spray sheds;
- A14 – Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges;
- A16 – Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products;
- A17 – Storage tanks or drums for fuel, chemical or liquid waste;
- F7 – Service stations including retail or commercial refuelling facilities; and
- G3 – Landfill sites.

A review of the previous investigations undertaken between 2003 and 2008 by Tonkin and Taylor was undertaken. Since their investigations, the National Environmental Standard (NES)<sup>3</sup> legislation has been enforced (2012). Several soil samples, which were previously below residential guidelines, were identified as being above the current NES Residential Soil Contaminant Standards (SCSs). Figure 10 of the PSI report indicated the areas of concern which were identified for further investigation and is presented as Figure 2 in this report.

<sup>3</sup> MfE, National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

## 4 Soil Contamination Investigation

### 4.1 Objectives

The objectives of the investigation were to determine:

- The type, extent and level of contamination within the areas of concern identified on site, as shown in Table 1 and Figure 2;
- Potential effects of contaminants on public health, the environment and structures;
- Disposal options for the soil that may be removed from site during development; and
- Whether the soils remaining on site are suitable for the proposed end use.

**Table 1: Areas of concern assessed in this DSIR**

Area Ref	Location	Contaminants of Concern (COC)	Reason
1	Stables - stabling and paddocks to the east of the racecourse	Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides	No previous sampling undertaken (2 ha)
2	Paddock X	Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides	No near surface sampling previously undertaken. Aerial photos on Google Earth since 2004 indicate stockpiles in some areas and disturbed ground (1 ha)
3	Paddock 39	Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides	No testing previously undertaken in this area
4	Paddock 2	Arsenic and lead	To identify the vertical and lateral extents of the arsenic and lead contamination identified above the SCSs
5	Paddocks 70, 71 and extra 1	Lead	One previous composite sample was above lead SCS. Samples to pinpoint location of elevated lead

Area Ref	Location	Contaminants of Concern (COC)	Reason
6	Paddocks C3 and C4	Heavy Metals (including mercury boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides	Limited sampling undertaken previously
7	Former staff housing area	Heavy metals (including arsenic, cadmium, chromium, copper, nickel, lead and zinc) and polycyclic aromatic hydrocarbons (PAH)	Limited sampling undertaken previously
8	SABU building	Lead	Lead residues recorded above residential SCSs
9	Animal pens	Lead	Lead residues recorded above residential SCSs
10	ESAU, MU, EML (small animal unit, metabolism unit, electron microscope lab)	Lead	Lead residues recorded above residential SCSs
11	SS (solvent store and gas cylinder store)	Lead	Lead residues recorded above residential SCSs
12	Library	Lead	Samples below 300mm above SCS for lead
13	Histology	Arsenic and PAH	Arsenic at former incinerator above residential SCS
14	Carpenters	Lead	Lead residues recorded above residential SCSs
15	Caretaker	Lead	No testing previously undertaken
16	Farm Workshop	Arsenic	No testing previously undertaken



## 4.2 Scope of Work

To achieve the objectives, the following scope of work was undertaken:

- Collection of 209 near surface soil samples between 24 and 26 November 2014 from the locations indicated on the plans in Figure 2 and Appendix 1;
- Submission of all samples to Hill Laboratories to be tested individually, combined into composite samples or held in cold storage; and
- Issuing this Detailed Site Investigation Report.

## 4.3 Sampling Methodology

The following methodology was used for taking the samples:

- The majority of samples were taken using a hand auger or a stainless steel trowel;
- The hand auger/trowel were decontaminated before each sample was taken using a triple wash method with Decon90, tap water and de-ionised water;
- Each soil sample was inspected for visual and olfactory indicators of contamination; and
- Each sample was placed into a laboratory supplied sample container, which in turn was placed directly into chilled storage for transport.

## 4.4 Sample Nomenclature

Table 2 shows the sample nomenclature chosen to distinguish the samples from the various areas. All samples tested were taken from a depth of 0.1 m below existing ground level except for the samples at the library building (L1 to L6) which were taken from 0.4 m depth.

**Table 2: Sample Nomenclature**

Location	Sample Names	Number of Samples	Tested as Composite Samples?	Contaminants of Concern (COC)
Stables - stabling and paddocks to the east of the racecourse	ST1 to ST31	31	✓	Heavy Metals (including mercury boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides
Paddock X	PX.1 to PX.20	20	X	Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides

Location	Sample Names	Number of Samples	Tested as Composite Samples?	Contaminants of Concern (COC)
Paddock 39	P39.1 to P39.3	3	X	Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides
Paddock 2	P2.1 to P2.6	6	X	Arsenic and lead
Paddock 70	P70.1 to P70.5	5	X	Lead
Paddock 71	P71.1 to P71.5	5	X	Lead
Extra 1	X1.1 and X1.2	2	X	Lead
Paddocks C3 and C4	C3/C4.1 to C3/C4.8	8	✓	Heavy Metals (including mercury boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides
Former staff housing area	FH1 to FH16	16	✓	Heavy metals (including arsenic, cadmium, chromium, copper, nickel, lead and zinc) and polycyclic aromatic hydrocarbons (PAH)
SABU building	SABU1 to SABU8	8	X	Lead
Animal pens	AP1 to AP4	4	X	Lead
ESAU (small animal unit)	ESAU1 to ESAU6	6	X	Lead
MU (metabolism unit)	MU1 to MU3	3	X	Lead
EML (electron microscope lab)	EML1 to EML3	3	X	Lead
SS (solvent store and gas cylinder store)	SS1 to SS4	4	X	Lead
Library	L1 to L6	6	X	Lead
Histology	H1 to H5	5	X	Arsenic and PAH

Location	Sample Names	Number of Samples	Tested as Composite Samples?	Contaminants of Concern (COC)
Carpenters	CARP1 to CARP6	6	X	Lead
Caretaker	C1 to C4	4	✓	Lead
Farm Workshop	FW1 to FW4	4	✓	Arsenic

#### 4.5 Soil Testing

The soil samples were tested for the COCs from each area as described in Table 2. The sample locations are shown on the sample location plans in Appendix 1.

#### 4.6 Quality Assurance and Quality Control

The quality assurance / quality control (QA / QC) procedures undertaken during the works included:

- The use of standard sample registers and chain of custody records for all samples;
- Each soil sample was given a unique identification number, which consisted of a sample location identifier (e.g. S1) and the sample depth, where relevant;
- The hand auger and trowel were decontaminated before each sample was taken using a triple-wash technique;
- The excavator machine bucket was scraped and any excess soil brushed off after each sample was taken and new samples were collected from the undisturbed soil in the centre of the bucket; and
- Hill Laboratories is an International Accredited and New Zealand (IANZ) Accredited laboratory and were engaged to conduct all laboratory analysis. To maintain their International Accreditation, Hills undertakes rigorous cross checking and routine duplicate sampling testing to ensure the accuracy of their results.

#### 4.7 Investigation Guidelines

The following guidelines have been selected for the analysis of the results:

- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health<sup>4</sup> (NES);
- Ministry for the Environment, 1999, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand Revised 2011 (MfE1999);
- Waste Acceptance Guidelines, Silverstream Landfill<sup>5</sup>;
- Hazardous Waste Guidelines<sup>6</sup>; and

<sup>4</sup> Ministry for the Environment (2012) *Users' Guide: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*

<sup>5</sup> As supplied by Penny Kneebone, Tonkin and Taylor, November 2013.

- Background soil concentrations for the Wellington Region.<sup>7</sup>

The site's proposed land use is predominantly residential, with some high density residential and commercial areas. For the majority of the site, the Soil Contaminant Standards for Health for Residential (10% produce ingestion), High Density Residential and Commercial/Industrial outdoor workers has been used for the proposed land use and for protection of the workers during the site development. The Guidelines for Managing Total Petroleum Hydrocarbons (TPHs) in residential and commercial/industrial sectors has also been used to reflect the future site use and protection of workers.

As outlined in the MfE Contaminated Land Management Guidelines No. 5 - Site Investigation and Analysis of Soils<sup>8</sup>, guideline values have been adjusted to take account of the potential dilution of contaminants in composite samples. In this instance, the composite samples consisted of between two and four sub-samples, therefore the original guideline criteria were divided by either two, three or four, depending on the number of sub-samples.

The results of the analysis were also compared to the Silverstream Landfill waste acceptance guidelines, and the Ministry for the Environment Hazardous Waste Guidelines, to give disposal options, during the redevelopment.

## 5 Results

### 5.1 Surface Soil Encountered

The soils encountered during the investigation generally consisted of silt, sand or silt/sand mixtures. The soil encountered in Paddock 2 was gravel fill. Stockpiles of soil were observed on the western side of the former housing area.

### 5.2 Sample Results

A summary of all the results from the laboratory analyses, compared with the relevant guidelines (the NES, MfE 1999, background soil concentrations, and other international risk based guidelines, where no New Zealand guidelines exist, in accordance with MfE 2011: Contaminated Land Management Guidelines No.5) are included in Appendix 2.

The raw laboratory results are presented in Appendix 3.

After the initial results were analysed, further testing was undertaken on six of the individual samples that comprised the composite samples tested. This was done as the results of six of the composite samples were above the adjusted guideline values. These samples were from the following locations:

- FH1-4, FH5-8 in the former staff housing area (arsenic and lead);
- FH9-12 in the former staff housing area (arsenic);

<sup>6</sup> Ministry for the Environment, 2004. *Hazardous Waste Guidelines Module 2. Landfill Waste Acceptance Criteria and Landfill Classification*

<sup>7</sup> URS, 2003, *Determination of Common Pollutant Background Soil Concentrations for the Wellington Region*, prepared for Greater Wellington Regional Council

<sup>8</sup> MfE, 2011. *Contaminated Land Management Guidelines No. 5, Site Investigation and Analysis of Soils*

- FH13-16 in the former staff housing area (arsenic)
- FW1-4 behind the farm workshop (arsenic);
- ST28-31 in the stables area (arsenic); and,
- C1-C4 around the caretakers building (lead).

### 5.2.1 Residential (10% produce) Results

Tables 3 and 4 give the results of the soil samples which exceeded the relevant NES SCSs. Table 3 gives the composite results exceeding the adjusted SCSs for residential use. The individual sub-samples were subsequently tested and the results of all individual samples exceeding the SCSs, are given in Table 4.

**Table 3: Summary of composite results compared to the Residential (10% Produce) SCSs**

Location	Sample Reference	Analyte	Result (mg/kg)	Adjusted NES SCSs – Residential use (mg/kg)	Comment
Stables, composite	St28, St29, St30, St31	Arsenic	7	5	All individual sample results subsequently tested below SCS for Arsenic
Farm Workshop, composite	FW1, FW2, FW3, FW4	Arsenic	7	5	All individual sample results subsequently tested below SCS for Arsenic
Caretakers, composite	C1, C2, C3, C4	Lead	70	52.5	All individual sample results subsequently tested below SCS for Lead
	FH1, FH2, FH3, FH4		57		2 samples above SCS (see Table 4)
	FH5, FH6, FH7, FH8		12		1 sample above SCS(see Table 4)
Former Housing, composite	FH9, FH10, FH11, FH12	Arsenic	6	5	All individual sample results subsequently tested below SCS for Arsenic
	FH13, FH14, FH15, FH16		6		1 sample above SCS(see Table 4)
	FH1, FH2, FH3, FH4	Lead	94	52.5	All individual sample results subsequently tested below SCS for Lead
	FH5, FH6, FH7, FH8		57		All individual sample results subsequently tested below SCS for Lead

**Table 4: Summary of individual results compared to the Residential (10% Produce) SCSs**

Location	Sample Reference	Analyte	Result (mg/kg)	NES Soil Contaminant Standards – Residential use (mg/kg)	Comment
Paddock 2	P2.3	Arsenic	25	20	Further assessment/remediation required
	P2.5		25		
Former Housing, individual	FH1	Arsenic	200	20	
	FH4		26		
	FH5		36		
	FH14		21		

Table 4 indicates that of all the samples taken, six samples exceed the SCS for residential use for Arsenic.

### 5.2.2 High Density Residential Results

Of all the soil samples tested, only one of the samples (FH1) at the former housing area exceeded the SCS for arsenic (see tables in Appendix 2). The arsenic result from that sample was 200 mg/kg, compared to the High Density Residential SCS of 45 mg/kg.

### 5.2.3 Commercial/Industrial Results

Of all the soil samples tested, only one of the samples (FH1) at the former housing area exceeded the SCS for arsenic (see tables in Appendix 2). The arsenic result from that sample was 200 mg/kg, compared to the Commercial/Industrial SCS of 70 mg/kg.

### 5.2.4 Background Soil Concentration Results

Eighty of the sample results from the site are above the background soil concentrations for the Wellington Region for one, or more, analytes (see tables in Appendix 2).

### 5.2.5 Landfill Disposal Results

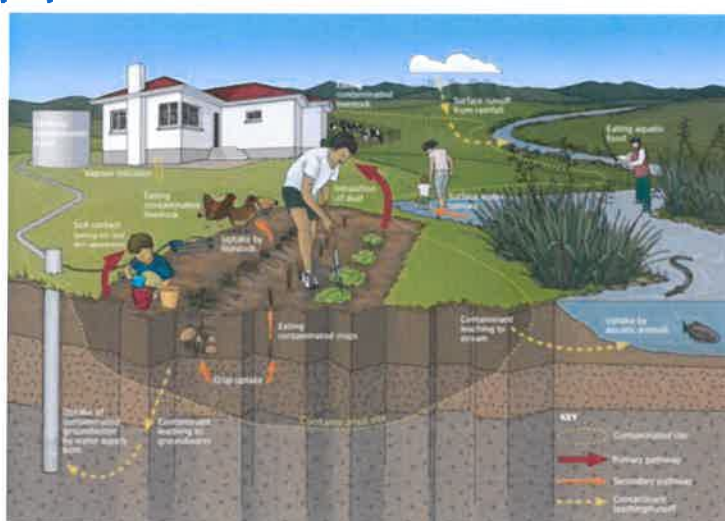
The results have been compared to the waste acceptance criteria for the Class A Silverstream Landfill and the more stringent Class B Landfill (see tables in Appendix 2). As eighty of the sample results are above the background concentrations for the Wellington Region, the soil is not generally suitable to be disposed of as cleanfill. All of the samples that were tested for a full suite of heavy metals returned results above the Class B Landfill acceptance criteria. Only ten of the samples tested returned results above the Silverstream Landfill soil screening acceptance criteria. Therefore, it is considered that the majority of the soil on site could be disposed of to Silverstream Landfill. This should be confirmed with the Landfill operator, who is likely to require further soil testing in some areas.

## 6 Conceptual Site Model

A contamination conceptual site model consists of three primary components to allow the potential for risk to be determined, these are:

- Source of contamination;
- Pathway to allow the contamination to mobilise; and
- Sensitive receptors which may be impacted by the contamination.

**Diagram 1: Pathways by which Contaminants in Soil Can Affect Human Health**



**Table 5: Conceptual Site Model**

Source	Pathway	Receptor
Soil impacted by Heavy Metals (including mercury, boron, arsenic, cadmium, cobalt, chromium, copper, nickel, lead and zinc), Organochlorine, Organonitrogen and organophosphorus pesticides, TPH and PAH	Direct contact (dermal absorption)	Site development workers Future site users
	Ingestion (either of soil or produce grown in the soil)	Future maintenance / excavation workers Surrounding environment
	Inhalation (dust)	
	Stormwater run-off	Local surface water receptors Council owned stormwater infrastructure

**Risk of Contamination**

**Site End Users:**

Moderate – five of the soil samples were found to have levels of arsenic which exceeded the Residential use soil contaminant standards.



Source	Pathway	Receptor
<p><b>Site Development Workers and Future Maintenance/Excavation Workers:</b></p> <p><u>Low</u> – Only one of the soil samples was found to have levels of arsenic which were above the commercial/industrial soil contaminant standard which can be applied to these workers.</p> <p><b>Surrounding Environment:</b></p> <p><u>Low</u> - In general, the results of the soil samples across the site were found to contain low levels of contamination.</p>		

## 7 Conclusions and Recommendations

A Preliminary environmental Site Investigation (PSI) report was issued by Geoscience (now ENGEO) on 3 December 2014 which identified that a number of activities on the Hazardous Activities and Industries List (HAIL) had occurred on the site following its use as an AgResearch Institute.

Previous investigations and remediation on the site had been undertaken by Tonkin and Taylor between 2003 and 2008. However, since their investigations, the National Environmental Standard (NES)<sup>9</sup> legislation has been enforced (2012). Several soil samples which were previously below residential guidelines were identified as being above the current NES Residential Soil Contaminant Standards (SCSs). A number of areas (Figure 2) were identified as requiring further investigation and for this DSI, soil samples were tested for the COCs from each area as described in Table 2.

The results of the testing indicate that:

- Six samples from the former housing area and Paddock 2 exceed the SCS for residential use for arsenic;
- One sample from the former housing area exceeds the SCS for high density residential use for arsenic;
- One sample from the former housing area exceeds the SCS for commercial/industrial use for arsenic; and
- Eighty of the sample results from the site are above the background soil concentrations for the Wellington Region for one or more analytes.

It is considered that the majority of the soil on site could be disposed of to Silverstream Landfill. This should be confirmed with the Landfill operator, who is likely to require further soil testing in some areas

Table 6 summarises the areas investigated and their suitability for future use.

<sup>9</sup> MfE, National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

**Table 6: Suitability for future use**

Area Ref	Location	Suitability – future use			
		Residential	High Density Residential	Commercial / Industrial	Recreational
1	Stables - stabling and paddocks to the east of the racecourse	✓	✓	✓	NA
2	Paddock X	✓	✓	✓	NA
3	Paddock 39	✓	✓	✓	NA
4	Paddock 2	X	✓	✓	NA
5	Paddocks 70, 71 and extra 1	✓	✓	✓	NA
6	Paddocks C3 and C4	✓	✓	✓	NA
7	Former staff housing area	X	X	X	NA
8	SABU building	✓	✓	✓	NA
9	Animal pens	✓	✓	✓	NA
10	ESAU, MU, EML (small animal unit, metabolism unit, electron microscope lab)	✓	✓	✓	NA
11	SS (solvent store and gas cylinder store)	✓	✓	✓	NA
12	Library	✓	✓	✓	NA
13	Histology	✓	✓	✓	NA
14	Carpenters	✓	✓	✓	NA
15	Caretaker	✓	✓	✓	NA
16	Farm Workshop	✓	✓	✓	NA

**Notes:**

NA = area not considered for recreational use

Based on the soil sample results, the areas tested are generally suitable for future residential site use.

Four sample results from the area of former housing, and two sample results from Paddock 2, indicate levels of arsenic above the residential SCS. The soil in these areas will require further assessment and remediation before development into residential use.

The following options may be considered:

- **Option 1:** Further sampling and testing in the areas where elevated results were identified to determine the vertical and lateral extent of the contamination required to be removed. This may involve several rounds of sampling and testing to determine the extents. Remediation would comprise removal and disposal of the previously delineated contaminated soils. Validation testing of the remaining soils would be required to confirm suitability for residential use.
- **Option 2:** Use of an X-Ray Fluorescence Analyser to determine the extent of contamination at the site. This would comprise sampling and testing a limited number of samples around the areas of the exceedances using both laboratory testing and XRF testing to calibrate the XRF. The XRF would then be used on-site during remediation and soil removal to confirm the volumes required to be removed and delineate the extent of the contamination. Validation testing of the remaining soils would be required to confirm suitability for residential use.
- **Option 3:** Earmark the areas exceeding the Residential SCSs (Paddock 2 and former Housing areas) for a less stringent future land use, i.e. High Density Residential or Commercial/Industrial. Only one result exceeded the SCSs for these land uses (FH1) and further assessment may result in no remediation being required.

For Options 1 and 2, any soil to be removed from site will be required to be disposed of at a suitably licensed Landfill. From the results obtained, it is considered that the soil is likely to be able to be disposed of at Silverstream Landfill. We would recommend that all soil to be removed from site is stockpiled and tested to confirm disposal options during site remediation.

It is recommended that the existing groundwater monitoring boreholes located around the non-engineered fill site are tested for the presence of ground gas to assess the potential for ground gas migration to the surrounding development areas.

## 8 Limitations

- i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Wallaceville Developments Limited, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.
- ii. The recommendations in this report are based on the ground conditions indicated from published sources, site inspections and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the Client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it must be appreciated that actual conditions could vary from the assumed model.

- iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.
- iv. This Limitation should be read in conjunction with the IPENZ/ACENZ Standard Terms of Engagement.
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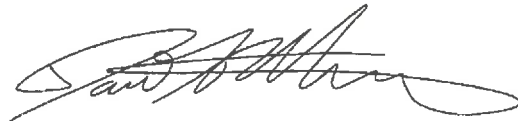
We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on 04 4720820 if you require any further information.

Report prepared by



**Karen Jones**  
Senior Geologist

Reviewed by



**David Robotham**  
Associate Environmental Scientist

## **FIGURES**



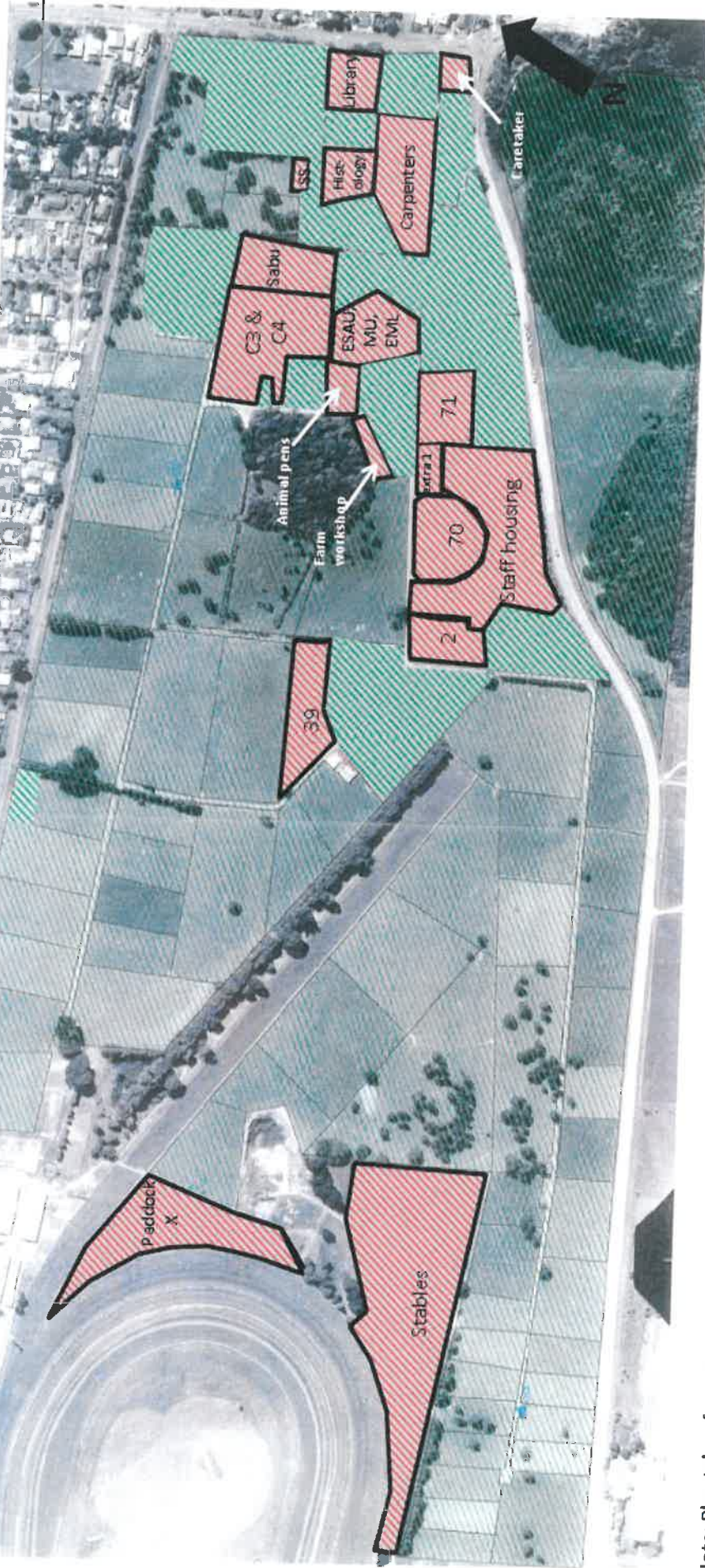
Note: Location map sourced from Google. Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	CG	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Site Location Plan
Scale	NTS	Figure Number	1
		Project Number	11307

**Notes:**

- Green hash** = Currently suitable for residential use (10% produce)
- Red hash** = Suitable for residential plan change but requires further investigation/remediation at resource consent stage



Note: Plan taken from Tonkin and Taylor Ground Contamination Assessment, Validation Report, December

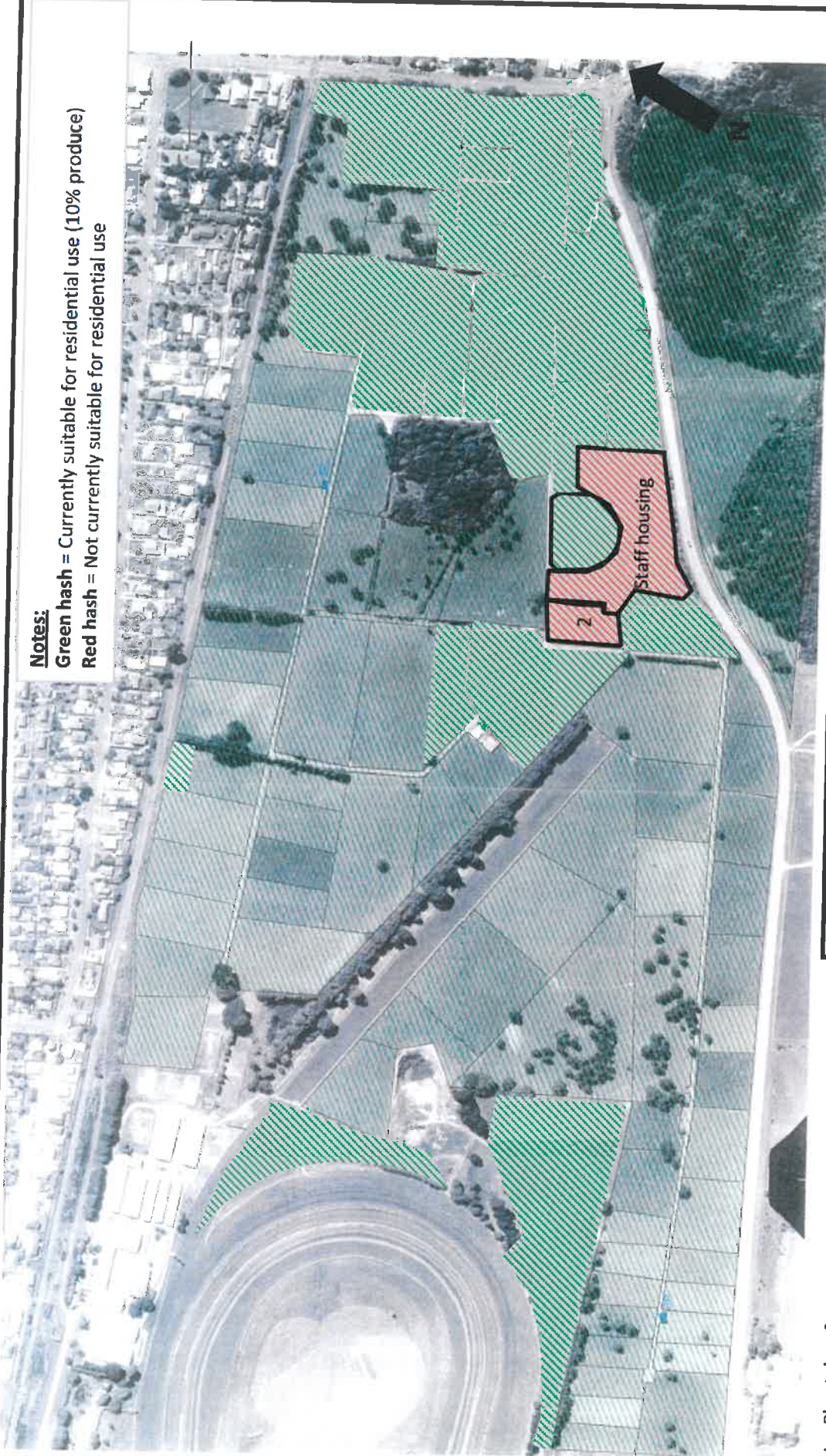


Date	Nov-14	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Areas Requiring Further Investigation (Figure 10 from PSIR)
Scale	NTS	Figure Number	2
		Project Number	11307

**Notes:**

Green hash = Currently suitable for residential use (10% produce)

Red hash = Not currently suitable for residential use



Note: Plan taken from Tonkin and Taylor Ground Contamination Assessment, Validation Report, December 2004



Date	Feb-15	Client	Wallaceville Developments Ltd		
Drawn by	KJ	Project	Wallaceville Subdivision DSIR		
Approved by	DR	Description	Suitability for Residential Use		
Scale	NTS	Figure Number	3	Project Number	11307





## **APPENDIX 1**

### Sampling Location Plans



Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Paddock 39
Scale	NTS	Figure Number	App 1A
		Project Number	11307

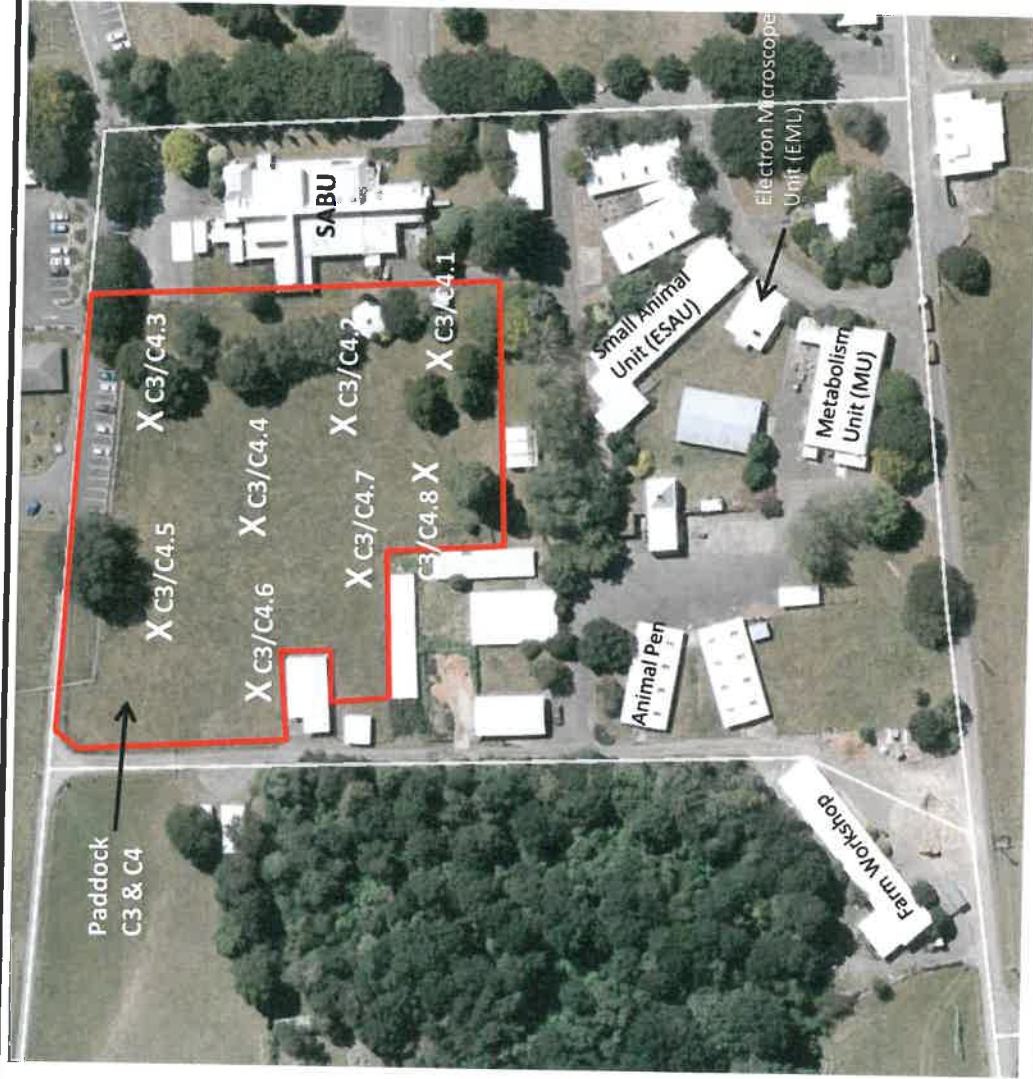


**Notes:**

- Aerial photograph sourced from Greater Wellington Regional Council WebMap
- Sample locations highlighted in red tested above the



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Paddock 2
Scale	NTS	Figure Number	App 1B
		Project Number	11307



Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Paddock C3/C4
Scale	NTS	Figure Number	App 1C
		Project Number	11307





Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Buildings
Scale	NTS	Figure Number	App 1E
		Project Number	11307



Notes:  
 - Aerial photograph sourced from Greater Wellington Regional Council WebMap  
 - Sample locations highlighted in red tested above the SCS for arsenic for residential use



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Former Housing
Scale	NTS	Figure Number	App 1F
		Project Number	11307



Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Paddock X
Scale	NTS	Figure Number	App 1G
		Project Number	11307





Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Stables
Scale	NTS	Figure Number	App 1H
		Project Number	11307



Note: Aerial photograph sourced from Greater Wellington Regional Council WebMap



Date	Feb 15	Client	Wallaceville Developments Ltd
Drawn by	KJ	Project	Wallaceville Subdivision DSIR
Approved by	DR	Description	Sampling Locations - Paddock 70, 71 and Extra1
Scale	NTS	Figure Number	App 11
		Project Number	11307



**APPENDIX 2**  
Soil Test Results Summary Tables

**Appendix 2: Soil Analysis Results – Individual Sample Results Compared to Relevant NES Soil Contaminant Standards and Background Soil Concentrations for the Wellington Region**

Sample Name	Sample Depth (m bgl)	Lead, mg/kg	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/ Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Carp1		85				
Carp2		93				
Carp3		102				
Carp4		210				
Carp5		6.5				
Carp6		3.5				
SABU1		22				
SABU2		16.2				
SABU3		17.1				
SABU4		17.8				
SABU5		19.8				
SABU6		46				
SABU7		11.8				
SABU8		18.9				
EML1		26				
EML2		24				
EML3		29				
ESAU1	0.1	27	210	500	3,300	16.7-73.3
ESAU2		47				
ESAU3		56				
ESAU4		24				
ESAU5		25				
ESAU6		22				
SS1		96				
SS2		55				
SS3		43				
SS4		90				
MU1		26				
MU2		30				
MU3		33				
AP1		42				
AP2		43				
AP3		23				
AP4		29				
P71.1		21				

Sample Name	Sample Depth (m bgl)	Lead, mg/kg	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
P71.2		11.8				
P71.3		12.9				
P71.4		15.1				
P71.5		13.5				
X1		41				
X2		105				
P70.1		162				
P70.2		160				
P70.3	0.1	75	210	500	3,300	16.7-73.3
P70.4		197				
P70.5		40				
L1		21				
L2		21				
L3	0.4	20				
L4		35				
L5		22				
L6		78				

Notes:

<sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MfE, 2012. Soil Contaminant Standards, High Density Residential Use. Exceeded concentrations are underlined.

<sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**.

<sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

Appendix 2: Soil Analysis Results – Compared to Relevant NES Soil Contaminant Standards and Background Soil Concentrations for the Wellington Region

Sample Name	P2.1	P2.2	P2.3	P2.4	P2.5	P2.6	NES Soil Contaminant Standards – Residential use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (mbgl)	0.1	0.1	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>										
Arsenic	13	9	<b>25</b>	19	<b>25</b>	13	20	45	70	<2-7
Lead	58	31	37	21	56	28	210	500	3,300	5.9-78.6

Notes:

<sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MFE, 2012. Soil Contaminant Standards, High Density Residential Use. Exceeded concentrations are underlined.

<sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

**Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	PX1	PX2	PX3	PX4	PX5	PX6	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>										
Arsenic	4	7	13	8	11	4	20	45	70	2-7
Cadmium <sup>5</sup>	<0.10	<0.10	0.23	0.16	0.14	<0.10	3	400	1,300	<0.1-0.2
Chromium <sup>6</sup>	16	16	18	17	19	11	460	2,700	6,300	9-18
Copper	10	54	17	15	13	11	>10,000	>10,000	>10,000	5-19
Lead	22	29	59	63	42	16.7	210	880	3,300	16.7-73.3
Mercury	0.11	0.27	0.14	0.14	<0.10	<0.10	310	1,000	4,200	<0.1-2.6
Nickel	12	13	10	11	11	9	600 <sup>7</sup>	2,400 <sup>7</sup>	3,000 <sup>7</sup>	5-14
Zinc	64	91	116	99	93	58	7,000 <sup>7</sup>	28,000 <sup>7</sup>	35,000 <sup>7</sup>	38-201
Boron	<20	<20	<20	<20	<20	<20	>10,000	>10,000	>10,000	0.3-1.6
Cobalt	6.4	6.0	5.3	5.7	5.8	5.3	100 <sup>7</sup>	400 <sup>7</sup>	500 <sup>7</sup>	-
<b>Organochlorine Pesticides in soil, mg/kg</b>										
Sum DDT	0.12	<0.06	0.11	0.1	0.11	<0.06	70	240	1,000	-
Dieldrin	<i>All amounts below detectable levels.</i>									
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>	<i>All amounts below detectable levels.</i>									

**Notes:**

<sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup>MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup>URS, 2003, for The Greater Wellington Regional Council; Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Assumes soil pH of 5

<sup>6</sup> Criteria for Chromium VI were conservatively selected. <sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level

Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region

Sample Name	PX7	PX8	PX9	PX10	PX11	PX12	PX13	NES Soil Contaminant Standards – Residential Use <sup>1</sup>		NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>		NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>		Background Soil Concentrations for the Wellington Region <sup>4</sup>	
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1								
<b>Heavy Metals in soil, mg/kg</b>															
Arsenic	8	5	14	3	4	6	4	20	45	70					2-7
Cadmium <sup>5</sup>	0.15	0.26	0.13	0.24	0.77	0.20	0.24	3	400	1,300					<0.1-0.2
Chromium <sup>6</sup>	16	16	20	13	17	17	15	460	2,700	6,300					9-18
Copper	12	10	16	6	16	10	7	>10,000	>10,000	>10,000					5-19
Lead	33	31	38	18.6	47	96	22	210	880	3,300					16.7-73.3
Mercury	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	310	1,000	4,200					<0.1-2.6
Nickel	11	10	11	8	9	12	8	600 <sup>7</sup>	2,400 <sup>7</sup>	3,000 <sup>7</sup>					5-14
Zinc	81	71	102	56	480	96	66	7,000 <sup>7</sup>	28,000 <sup>7</sup>	35,000 <sup>7</sup>					38-201
Boron	<20	<20	<20	<20	<20	<20	<20	>10,000	>10,000	>10,000					0.3-1.6
Cobalt	6.0	4.7	5.9	3.6	4.6	6.7	4.1	100 <sup>7</sup>	400 <sup>7</sup>	500 <sup>7</sup>					-
<b>Organochlorine Pesticides in soil, mg/kg</b>															
Sum DDT	0.09	0.26	0.08	<0.06	0.17	0.36	0.07	70	240	1,000					-
Dieldrin	<i>All amounts below detectable levels.</i>														
Organonitro & Organophosphorus Pesticides in soil, mg/kg	<i>All amounts below detectable levels.</i>														

Notes:

- <sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.
- <sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined
- <sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**
- <sup>4</sup> IURS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.
- <sup>5</sup> Assumes soil pH of 5. <sup>6</sup> Criteria for Chromium VI were conservatively selected
- <sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level



**Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	PX14	PX15	PX16	PX17	PX18	PX19	PX20	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>											
Arsenic	7	4	6	8	10	8	10	20	45	70	2-7
Cadmium <sup>5</sup>	0.16	0.17	<0.10	0.18	0.18	<0.10	0.18	3	400	1,300	<0.1-0.2
Chromium <sup>6</sup>	15	15	12	18	19	17	21	460	2,700	6,300	9-18
Copper	9	8	8	13	26	14	19	>10,000	>10,000	>10,000	5-19
Lead	64	19.3	17.4	40	57	37	58	210	880	3,300	16.7-73.3
Mercury	<0.10	<0.10	<0.10	<0.10	0.15	<0.10	<0.10	310	1,000	4,200	<0.1-2.6
Nickel	10	10	11	11	11	11	11	600 <sup>7</sup>	2,400 <sup>7</sup>	3,000 <sup>7</sup>	5-14
Zinc	82	52	50	82	129	91	120	7,000 <sup>7</sup>	28,000 <sup>7</sup>	35,000 <sup>7</sup>	38-201
Boron	<20	<20	<20	<20	<20	<20	<20	>10,000	>10,000	>10,000	0.3-1.6
Cobalt	5.4	4.7	5.3	5.5	6.3	7.0	6.1	100 <sup>7</sup>	400 <sup>7</sup>	500 <sup>7</sup>	-
<b>Organochlorine Pesticides in soil, mg/kg</b>											
Sum DDT	0.15	0.06	<0.06	0.08	0.1	<0.06	<0.28	70	240	1,000	-
Dieldrin	<i>All amounts below detectable levels.</i>										
Organonitro & Organophosphorus Pesticides in soil, mg/kg	<i>All amounts below detectable levels.</i>										

**Notes:**

- <sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.
- <sup>2</sup> MfE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined
- <sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**
- <sup>4</sup>URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.
- <sup>5</sup> Assumes soil pH of 5; <sup>6</sup> Criteria for Chromium VI were conservatively selected
- <sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level

**Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	St1, St2, St3, St4	St5, St8, St9, St10	St6, St7, St13, St14	St11, St12, St24, St25	St15, St16, St17, St18	St28, St29, St30, St31	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>										
Arsenic	5	5	5	5	5	7	5	11.25	17.5	2-7
Cadmium <sup>5</sup>	<0.10	<0.10	<0.10	0.21	<0.10	<0.10	0.75	100	325	<0.1-0.2
Chromium <sup>6</sup>	16	12	16	15	18	17	115	675	1,575	9-18
Copper	12	9	13	13	18	13	>2,500	>2,500	>2,500	5-19
Lead	29	21	37	35	27	27	52.5	220	825	16.7-73.3
Mercury	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	77.5	250	1,050	<0.1-2.6
Nickel	11	8	8	8	14	13	150 <sup>7</sup>	600 <sup>7</sup>	750 <sup>7</sup>	5-14
Zinc	76	60	89	87	96	77	1,750 <sup>7</sup>	7,000 <sup>7</sup>	8,750 <sup>7</sup>	38-201
Boron	<20	<20	<20	<20	<20	<20	>2,500	>2,500	>2,500	0.3-1.6
Cobalt	6.7	5.1	5.0	4.1	9.3	8.4	25 <sup>7</sup>	100 <sup>7</sup>	125 <sup>7</sup>	-
<b>Organochlorine Pesticides in soil, mg/kg</b>										
Sum DDT	0.23	0.06	<0.06	0.09	0.07	<0.06	17.5	60	1000	-
Dieldrin	<i>All amounts below detectable levels.</i>									
Organonitro & Organophosphorus Pesticides in soil, mg/kg	<i>All amounts below detectable levels.</i>									

**Notes:**

- <sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.
- <sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined
- <sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are highlighted
- <sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Assumes soil pH of 5

<sup>6</sup> Criteria for Chromium VI were conservatively selected

<sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level  
The guideline values have been adjusted to reflect the composite samples in accordance with MIE Contaminated Land Guidelines No. 5, Site investigation and Analysis of Soils

**Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	St19, St20	St26, St27	NES Soil Contaminant Standards – Residential Use <sup>1</sup>		NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1					
<b>Heavy Metals in soil, mg/kg</b>							
Arsenic	3	5	10		22.5	35	2-7
Cadmium <sup>5</sup>	0.29	0.22	1.5		200	650	<0.1-0.2
Chromium <sup>6</sup>	13	16	230		1,350	3,150	9-18
Copper	13	11	>5,000		>5,000	>5,000	5-19
Lead	25	16.1	105		440	1,650	16.7-73.3
Mercury	<0.10	<0.10	155		500	2,100	<0.1-2.6
Nickel	6	6	300 <sup>7</sup>		1,200 <sup>7</sup>	1,500 <sup>7</sup>	5-14
Zinc	68	77	3,500 <sup>7</sup>		14,000 <sup>7</sup>	17,500 <sup>7</sup>	38-201
Boron	<20	<20	>5,000		>5,000	>5,000	0.3-1.6
Cobalt	3.6	3.1	50 <sup>7</sup>		200 <sup>7</sup>	250 <sup>7</sup>	-
<b>Organochlorine Pesticides in soil, mg/kg</b>							
Sum DDT	<0.06	0.3	35 <sup>7</sup>		120 <sup>7</sup>	125 <sup>7</sup>	-
Dieldrin	<0.010	<0.010	1.3		22.5	20	-
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>							
	<i>All amounts below detectable levels.</i>						

**Notes:**

- <sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.
- <sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined
- <sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**
- <sup>4</sup> JRS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.
- <sup>5</sup> Assumes soil pH of 5; <sup>6</sup> Criteria for Chromium VI were conservatively selected
- <sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level. The guideline values have been adjusted to reflect the composite samples in accordance with MFE Contaminated Land Guidelines No. 5, Site Investigation and Analysis of Soils

**Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	P39.1, P39.2, P39.3		S121, S122, S123		NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>								
Arsenic	5	4	7	15	23	2-7		
Cadmium <sup>5</sup>	0.23	<0.10	1	133	433	<0.1-0.2		
Chromium <sup>6</sup>	14	14	153	900	2100	9-18		
Copper	8	11	3333	3333	3333	5-19		
Lead	17	15.2	70	293	1100	16.7-73.3		
Mercury	<0.10	<0.10	103	333	1400	<0.1-2.6		
Nickel	5	9	200 <sup>7</sup>	800 <sup>7</sup>	1000 <sup>7</sup>	5-14		
Zinc	62	66	2333 <sup>7</sup>	9333 <sup>7</sup>	11667 <sup>7</sup>	38-201		
Boron	<20	<20	3333	3333	3333	0.3-1.6		
Cobalt	2.9	5.1	33 <sup>7</sup>	133 <sup>7</sup>	167 <sup>7</sup>	-		
<b>Organochlorine Pesticides in soil, mg/kg</b>								
Sum DDT	0.07	<0.06	23	80	333	-		
Dieldrin	<0.010	<0.010	1	15	53	-		
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>								
<i>All amounts below detectable levels.</i>								

**Notes:**

- <sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.
- <sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined
- <sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**
- <sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.
- <sup>5</sup> Assumes soil pH of 5; <sup>6</sup> Criteria for Chromium VI were conservatively selected
- <sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level

The guideline values have been adjusted to reflect the composite samples in accordance with MFE Contaminated Land Guidelines No. 5, Site Investigation and Analysis of Soils

Appendix 2: Soil Analysis Results – Heavy metals and Pesticides Compared to NES Soil Contaminant Standards, other International Standards, and Background Soil Concentrations for the Wellington Region

Sample Name	C1, C2, C3, C4	FW1, FW2, FW3, FW4	NES Soil Contaminant Standards – Residential Use <sup>1</sup>				NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
			C3/4.1, C3/4.2, C3/3.3, C3/4.4	C3/4.5, C3/4.6, C3/3.7, C3/4.8	NES Soil Contaminant Standards – Residential Use <sup>1</sup>				
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1				
<b>Heavy Metals in soil, mg/kg</b>									
Arsenic	-	<b>7</b>	<b>5</b>	<b>5</b>	<b>5</b>	11.25	17.5	2-7	
Cadmium <sup>5</sup>	-	-	0.27	0.18	0.75	100	325	<0.1-0.2	
Chromium <sup>6</sup>	-	-	17	16	115	675	1,575	9-18	
Copper	-	-	9	10	>2,500	>2,500	>2,500	5-19	
Lead	<b>70</b>	-	21	21	52.5	220	825	16.7-73.3	
Mercury	-	-	<0.10	<0.10	77.5	250	1,050	<0.1-2.6	
Nickel	-	-	9	8	150 <sup>7</sup>	600 <sup>7</sup>	750 <sup>7</sup>	5-14	
Zinc	-	-	68	72	1,750 <sup>7</sup>	7,000 <sup>7</sup>	8,750 <sup>7</sup>	38-201	
Boron	-	-	<20	<20	>2,500	>2,500	>2,500	0.3-1.6	
Cobalt	-	-	4.9	4.6	25 <sup>7</sup>	100 <sup>7</sup>	125 <sup>7</sup>	-	
<b>Organochlorine Pesticides in soil, mg/kg</b>									
Sum DDT	-	-	<0.06	0.08	17.5	60	1000	-	
Dieldrin	-	-	All amounts below detectable levels.			11.25	160	-	
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>									
	-	-	All amounts below detectable levels.						

Notes:

<sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup>MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are highlighted

<sup>4</sup>URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Assumes soil pH of 5

<sup>6</sup> Criteria for Chromium VI were conservatively selected

<sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level

The guideline values have been adjusted to reflect the composite samples in accordance with MfE Contaminated Land Guidelines No. 5, Site Investigation and Analysis of Soils

**Appendix 2: Soil Analysis Results – Heavy metals and PAH Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	H1	H2	H3	H4	H5	NES Soil Contaminant Standards – Residential use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/ Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1	0.1	0.1	0.1	20	45	70	2-7
<b>Heavy Metals in soil, mg/kg</b>									
Arsenic	8	5	7	7	7	20	45	70	2-7
<b>Polycyclic Aromatic Hydrocarbons in soil, mg/kg</b>									
Acenaphthene	0.03	<0.03	<0.03	<0.03	<0.04	-	-	-	-
Acenaphthylene	0.58	0.06	0.05	<0.03	0.08	-	-	-	-
Anthracene	0.61	0.06	0.08	0.04	0.10	-	-	-	0.002 – 0.005
Benzo[a]anthracene	1.10	0.11	0.30	0.31	0.46	-	-	-	-
Benzo[a]pyrene (BAP)	2.3	0.19	0.36	0.51	0.59	-	-	-	0.002 – 0.005
Benzo[b]fluoranthene + Benzo[k]fluoranthene	2.5	0.25	0.53	0.76	0.89	-	-	-	-
Benzo[g,h,i]perylene	1.63	0.16	0.25	0.36	0.38	-	-	-	-
Benzo[k]fluoranthene	0.99	0.09	0.22	0.33	0.41	-	-	-	-
Chrysene	1.00	0.11	0.31	0.33	0.42	-	-	-	-
Dibenzo[a,h]anthracene	0.33	0.03	0.05	0.07	0.08	-	-	-	-
Fluoranthene	1.44	0.18	0.62	0.43	0.80	-	-	-	0.002 – 0.005
Fluorene	0.03	<0.03	0.03	<0.03	<0.04	-	-	-	-
Indeno(1,2,3-c,d)pyrene	2.2	0.19	0.31	0.49	0.55	-	-	-	-



Sample Name	H1	H2	H3	H4	H5	NES Soil Contaminant Standards – Residential use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	0.1	0.1	0.1	0.1	0.1				
Benzo(a)Pyrene Equivalent	3.1	0.27	0.52	0.72	0.85	10	24	35	-
Naphthalene	<b>0.323</b>	<b>&lt;0.15</b>	<b>&lt;0.14</b>	<b>&lt;0.15</b>	<b>&lt;0.17</b>	<b>58<sup>5</sup></b>	-	(190) <sup>5</sup>	0.002 – 0.005
Phenanthrene	<b>0.46</b>	<b>0.07</b>	<b>0.32</b>	<b>0.08</b>	<b>0.14</b>	-	-	-	0.002 – 0.005
Pyrene	<b>1.45</b>	<b>0.17</b>	<b>0.54</b>	<b>0.43</b>	<b>0.71</b>	(1,600) <sup>5</sup>	-	NA <sup>5</sup>	0.002 – 0.005

<sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MfE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup> JRS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Ministry for the Environment, 1999, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno[1,2,3-c,d]pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).

Appendix 2: Soil Analysis Results – Heavy metals and PAH Compared to NES Soil Contaminant Standards, other International Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region

Sample Name	FH	FH	FH	FH	FH	NES Soil Contaminant Standards – Residential use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	1-4	5-8	9-12	13-16	6				
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1				
<b>Heavy metals in soil, mg/kg</b>									
Arsenic	<b>57</b>	12	6	6	6	5	11.25	17.5	2-7
Cadmium <sup>5</sup>	0.27	0.27	0.14	0.25	0.25	0.75	100	325	<0.1-0.2
Chromium <sup>6</sup>	30	19	15	15	15	115	675	1,575	9-18
Copper	50	15	15	14	14	>2,500	>2,500	>2,500	5-19
Lead	94	57	37	44	44	52.5	220	825	16.7-73.3
Nickel	6	9	9	8	8	150 <sup>7</sup>	600 <sup>7</sup>	750 <sup>7</sup>	5-14
Zinc	280	143	64	100	100	1,750 <sup>7</sup>	7,000 <sup>7</sup>	8,750 <sup>7</sup>	38-201
<b>Polycyclic Aromatic Hydrocarbons in soil, mg/kg</b>									
Acenaphthene	<0.03	<0.03	<0.04	<0.03	<0.03	-	-	-	-
Acenaphthylene	<0.03	<0.03	<0.04	<0.03	<0.03	-	-	-	-
Anthracene	<0.03	<0.03	<0.04	0.04	0.04	-	-	-	0.002 – 0.005
Benzo[a]anthracene	0.08	0.03	<0.04	0.44	0.44	-	-	-	-
Benzo[a]pyrene (BAP)	0.15	0.05	<0.04	0.64	0.64	-	-	-	0.002 – 0.005
Benzo[b]fluoranthene + Benzo[k]fluoranthene	0.18	0.07	<0.04	0.83	0.83	-	-	-	-
Benzo[g,h,i]perylene	0.12	0.04	<0.04	0.36	0.36	-	-	-	-
Benzo[k]fluoranthene	0.07	0.03	<0.04	0.36	0.36	-	-	-	-

Sample Name	FH	FH	FH	FH	NES Soil Contaminant Standards – Residential use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	1-4	5-8	9-12	13-16				
Sample Depth (m bgl)	0.1	0.1	0.1	0.1				
Chrysene	0.12	0.04	<0.04	0.55	-	-	-	-
Dibenzo[a,h]anthracene	<0.03	<0.03	<0.04	0.09	-	-	-	-
Fluoranthene	0.20	0.07	<0.04	0.87	-	-	0.002 – 0.005	-
Fluorene	<0.03	<0.03	<0.04	<0.03	-	-	-	-
Indeno(1,2,3-c,d)pyrene	0.12	0.05	<0.04	0.48	-	-	-	-
<b>Benzo(a)Pyrene Equivalent</b>	0.21	0.09	<0.09	0.9	2.5	6	9	-
Naphthalene	<0.14	<0.14	<0.17	<0.13	58 <sup>5</sup>	-	(190) <sup>8</sup>	0.002 – 0.005
Phenanthrene	0.06	<0.03	<0.04	0.15	-	-	-	0.002 – 0.005
Pyrene	0.22	0.07	<0.04	0.78	(1,600) <sup>8</sup>	-	NA <sup>8</sup>	0.002 – 0.005

<sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MfE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup> JRS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Assumes soil pH of 5

<sup>6</sup> Criteria for Chromium VI were conservatively selected

<sup>7</sup> Guideline on the Investigation Levels for Soils and Groundwater (NEPC, 1999); Health Investigation Level

<sup>8</sup> Ministry for the Environment, 1999, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno(1,2,3-c,d)pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).

Appendix 2: Subsequent testing - Heavy metals Compared to NES Soil Contaminant Standards and Background Soil Concentrations for the Wellington Region

Sample Name	C1	C2	C3	C4	FW1	FW2	FW3	FW4	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
Heavy Metals in soil, mg/kg												
Arsenic	-	-	-	-	6	6	5	5	20	45	70	2-7
Lead	43	67	38	105	-	-	-	-	210	880	3,300	16.7-73.3

Sample Name	ST28	ST29	ST30	ST31	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1				

Heavy Metals in soil, mg/kg

Arsenic	6	5	5	5	20	45	70	2-7
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<sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MfE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

Appendix 2: Soil Analysis Results – Heavy metals and PAH Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region

Sample Name	FH1	FH2	FH3	FH4	FH5	FH6	FH7	FH8	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	20	45	70	2-7
Heavy Metals in soil, mg/kg												
Arsenic	200	3	3	26	36	3	8	6	20	45	70	2-7
Lead	92	110	22	106	173	31	32	28	210	880	3,300	16.7-73.3
Polycyclic Aromatic Hydrocarbons in soil, mg/kg mg/kg												
Acenaphthene	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	-	-	-
Acenaphthylene	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	-	-	-
Anthracene	< 0.03	0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	-	0.002 – 0.005	-
Benzo[a]anthracene	0.06	0.22	< 0.03	0.04	0.04	< 0.03	< 0.03	0.03	-	-	-	0.002 – 0.005
Benzo[a]pyrene	0.08	0.34	< 0.03	0.06	0.06	< 0.03	< 0.03	0.04	-	-	-	0.002 – 0.005
Benzo[b]fluoranthene	0.08	0.3	0.03	0.07	0.07	< 0.03	< 0.03	0.04	-	-	-	-
Benzo[g,h,i]perylene	0.06	0.32	< 0.03	0.07	0.06	< 0.03	< 0.03	0.03	-	-	-	-
Benzo[k]fluoranthene	0.04	0.13	< 0.03	0.03	0.03	< 0.03	< 0.03	< 0.03	-	-	-	-
Chrysene	0.07	0.26	0.03	0.06	0.07	< 0.03	< 0.03	0.04	-	-	-	-
Dibenzo[a,h]anthracene	< 0.03	0.04	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	-	-	-
Fluoranthene	0.12	0.48	0.04	0.13	0.1	< 0.03	< 0.03	0.05	-	-	-	0.002 – 0.005
Fluorene	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	-	-	-	-

Sample Name	FH1	FH2	FH3	FH4	FH5	FH6	FH7	FH8	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
Indeno(1,2,3-	0.05	0.27	<0.03	0.04	0.05	<0.03	<0.03	0.03	-	-	-	-
<b>Benzo(a)Pyrene Equivalent</b>	0.13	0.45	0.07	0.1	0.1	<0.07	<0.07	0.08	10	24	35	-
Naphthalene	<0.13	<0.14	<0.13	<0.14	<0.14	<0.15	<0.14	<0.13	58 <sup>5</sup>	-	(190) <sup>5</sup>	0.002 – 0.005
Phenanthrene	0.03	0.13	<0.03	0.06	0.04	<0.03	<0.03	<0.03	-	-	-	0.002 – 0.005
Pyrene	0.12	0.56	0.04	0.14	0.12	0.03	<0.03	0.06	(1,600) <sup>5</sup>	-	NA <sup>5</sup>	0.002 – 0.005

<sup>1</sup> MfE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in bold.

<sup>2</sup> MfE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup> MfE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. Exceeded concentrations are **highlighted**

<sup>4</sup> URS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Ministry for the Environment, 1999, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno(1,2,3-c,d)pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).

**Appendix 2: Soil Analysis Results – Heavy metals and PAH Compared to NES Soil Contaminant Standards, other International Guidelines (as shown) and Background Soil Concentrations for the Wellington Region**

Sample Name	FH9	FH10	FH11	FH12	FH13	FH14	FH15	FH16	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
	6	7	2	2	7	21	6	4				
<b>Heavy Metals in soil, mg/kg</b>												
Arsenic												
<b>Polycyclic Aromatic Hydrocarbons in soil, mg/kg mg/kg</b>												
Acenaphthene					< 0.03	< 0.04	< 0.03	< 0.03	-	-	-	-
Acenaphthylene					< 0.03	< 0.04	< 0.03	0.05	-	-	-	-
Anthracene					< 0.03	< 0.04	< 0.03	0.12	-	-	-	0.002 – 0.005
Benzo[a]anthracene					< 0.03	0.39	0.07	1.78	-	-	-	-
Benzo[a]pyrene					< 0.03	0.56	0.08	1.9	-	-	-	0.002 – 0.005
Benzo[b]fluoranthene					< 0.03	0.61	0.1	2.2	-	-	-	-
Benzo[g,h,i]perylene					< 0.03	0.42	0.06	1.21	-	-	-	-
Benzo[k]fluoranthene					< 0.03	0.26	0.05	0.91	-	-	-	-
Chrysene					< 0.03	0.44	0.09	1.67	-	-	-	-
Dibenzo[a,h]anthrac					< 0.03	0.08	< 0.03	0.25	-	-	-	-
Fluoranthene					< 0.03	0.67	0.13	3	-	-	-	0.002 – 0.005
Fluorene					< 0.03	< 0.04	< 0.03	< 0.03	-	-	-	-

Sample Name	FH9	FH10	FH11	FH12	FH13	FH14	FH15	FH16	NES Soil Contaminant Standards – Residential Use <sup>1</sup>	NES Soil Contaminant Standards – High Density Residential use <sup>2</sup>	NES Soil Contaminant Standards – Commercial/Industrial use <sup>3</sup>	Background Soil Concentrations for the Wellington Region <sup>4</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1				
Indeno(1,2,3-					< 0.03	0.37	0.05	1.37	-	-	-	-
<b>Benzo(a)Pyrene Equivalent<sup>7</sup></b>					< 0.07	0.77	0.13	2.66	2.5	6	9	-
Naphthalene					< 0.13	< 0.17	< 0.14	< 0.14	58 <sup>5</sup>	-	(190) <sup>5</sup>	0.002 – 0.005
Phenanthrene					< 0.03	0.05	0.03	0.55	-	-	-	0.002 – 0.005
Pyrene					< 0.03	0.98	0.13	2.6	(1,600) <sup>5</sup>	-	NA <sup>5</sup>	0.002 – 0.005

Indeno(1,2,3-

**Benzo(a)Pyrene Equivalent<sup>7</sup>**

Naphthalene

Phenanthrene

Pyrene

<sup>1</sup> MFE, 2012. Soil Contaminant Standards, Residential Land Use (with 10% produce consumption). Exceeded concentrations are in **bold**.

<sup>2</sup> MFE, 2012. Soil Contaminant Standards, Recreational Land Use. Exceeded concentrations are underlined

<sup>3</sup> MFE, 2012. Soil Contaminant Standards, Commercial/Industrial Use. **Exceeded concentrations are highlighted**

<sup>4</sup> JRS, 2003, for The Greater Wellington Regional Council, Determination of Common Pollutant Background Soil Concentrations for the Wellington Region. Exceeded concentrations are written in *italics*.

<sup>5</sup> Ministry for the Environment, 1999, Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno[1,2,3-c,d]pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).



**Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines**

Sample Name	Sample Depth (m bgl)	Lead, mg/kg	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Carp1	0.1	<u>85</u>	100	10
Carp2		<u>93</u>		
Carp3		<u>102</u>		
Carp4		<u>210</u>		
Carp5		6.5		
Carp6		3.5		
SABU1		<u>22</u>		
SABU2		<u>16.2</u>		
SABU3		<u>17.1</u>		
SABU4		<u>17.8</u>		
SABU5		<u>19.8</u>		
SABU6		<u>46</u>		
SABU7		<u>11.8</u>		
SABU8		<u>18.9</u>		
EML1		<u>26</u>		
EML2		<u>24</u>		
EML3		<u>29</u>		
ESAU1		<u>27</u>		
ESAU2		<u>47</u>		
ESAU3		<u>56</u>		
ESAU4	<u>24</u>			
ESAU5	<u>25</u>			
ESAU6	<u>22</u>			
SS1	<u>96</u>			
SS2	<u>55</u>			
SS3	<u>43</u>			
SS4	<u>90</u>			

Sample Name	Sample Depth (m bgl)	Lead, mg/kg	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
MU1		<u>26</u>		
MU2		<u>30</u>		
MU3		<u>33</u>		
AP1		<u>42</u>		
AP2		<u>43</u>		
AP3		<u>23</u>		
AP4		<u>29</u>		
C1 – C4		<u>70</u>		
P71.1		<u>21</u>		
P71.2		<u>11.8</u>		
P71.3		<u>12.9</u>		
P71.4		<u>15.1</u>		
P71.5	0.1	<u>13.5</u>	100	10
X1		<u>41</u>		
X1		<u>105</u>		
P70.1		<u>162</u>		
P70.1		<u>160</u>		
P70.1		<u>75</u>		
P70.1		<u>197</u>		
P70.1		<u>40</u>		
L1		<u>21</u>		
L2		<u>21</u>		
L3	0.4	<u>20</u>		
L4		<u>35</u>		
L5		<u>22</u>		
L6		<u>78</u>		

<sup>1</sup> Waste Acceptance Guidelines, Silverstream Landfill

<sup>2</sup> MFE, 2004 Module 2: Hazardous Waste Guidelines

**Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines**

Sample Name	P2.1	P2.2	P2.3	P2.4	P2.5	P2.6	FW 1-4	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Sample Depth (mbgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

**Heavy Metals in soil, mg/kg**

Arsenic	<u>13</u>	9	<u>25</u>	<u>19</u>	<u>25</u>	13	7	100	10
Lead	<u>58</u>	<u>31</u>	<u>37</u>	<u>21</u>	<u>56</u>	<u>28</u>	-	100	10

Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines

Sample Name	PX1	PX2	PX3	PX4	PX5	PX6	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1		
<b>Heavy Metals in soil, mg/kg</b>								
Arsenic	4	7	<u>13</u>	8	<u>11</u>	4	100	10
Cadmium	<0.10	<0.10	0.23	0.16	0.14	<0.10	20	2
Chromium	<u>16</u>	<u>16</u>	<u>18</u>	<u>17</u>	<u>19</u>	<u>11</u>	100	10
Copper	10	<u>54</u>	<u>17</u>	<u>15</u>	<u>13</u>	<u>11</u>	100	10
Lead	<u>22</u>	<u>29</u>	<u>59</u>	<u>63</u>	<u>42</u>	<u>16.7</u>	100	10
Mercury	0.11	0.27	0.14	0.14	<0.10	<0.10	4	0.4
Nickel	12	13	10	11	11	9	200	20
Zinc	<u>64</u>	<u>91</u>	<u>116</u>	<u>99</u>	<u>93</u>	<u>58</u>	200	20
Boron	<20	<20	<20	<20	<20	<20	400	40
Cobalt	6.4	6.0	5.3	5.7	5.8	5.3	-	-
<b>Organochlorine Pesticides in soil, mg/kg</b>								
Sum DDT	<0.12	<0.06	<0.10	<0.1	<0.11	<0.06	-	-
Dieldrin	<i>All amounts below detectable levels.</i>						8	0.8
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>								
	<i>All amounts below detectable levels.</i>						-	-







Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines

Sample Name	St 19,20	St 21, 22, 23	St 26, 27	St28,29, 30,31	P39.1-3	C3/C4 1-4	C3/C4 5-8	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
<b>Heavy Metals in soil, mg/kg</b>									
Arsenic	3	4	5	7	5	5	5	100	10
Cadmium	0.29	<0.10	0.22	<0.10	0.23	0.27	0.18	20	2
Chromium	<u>13</u>	<u>14</u>	<u>16</u>	<u>17</u>	<u>14</u>	<u>17</u>	<u>16</u>	100	10
Copper	<u>13</u>	<u>11</u>	<u>11</u>	<u>13</u>	8	9	10	100	10
Lead	<u>25</u>	<u>15.2</u>	<u>16.1</u>	<u>27</u>	<u>17.0</u>	<u>21</u>	<u>21</u>	100	10
Mercury	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	4	0.4
Nickel	6	9	6	13	5	9	8	200	20
Zinc	<u>68</u>	<u>66</u>	<u>77</u>	<u>77</u>	<u>62</u>	<u>68</u>	<u>72</u>	200	20
Boron	<20	<20	<20	<20	<20	<20	<20	400	40
Cobalt	3.6	5.1	3.1	8.4	2.9	4.9	4.6	-	-
<b>Organochlorine Pesticides in soil, mg/kg</b>									
Sum DDT	<0.06	<0.06	<0.3	<0.06	0.07	<0.06	0.08	-	-
Dieldrin								8	0.8
<i>All amounts below detectable levels.</i>									
<b>Organonitro &amp; Organophosphorus Pesticides in soil, mg/kg</b>									
								-	-
<i>All amounts below detectable levels.</i>									



## Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines

Sample Name	H1	H2	H3	H4	H5	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1	0.1		
<b>Polycyclic Aromatic Hydrocarbons in soil, mg/kg</b>							
Acenaphthene	0.03	<0.03	<0.03	<0.03	<0.04	-	-
Acenaphthylene	0.58	0.06	0.05	<0.03	0.08	-	-
Anthracene	0.61	0.06	0.08	0.04	0.10	-	-
Benzo[a]anthracene	1.10	0.11	0.30	0.31	0.46	-	-
Benzo[a]pyrene (BaP)	2.3	0.19	0.36	0.51	0.59	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	2.5	0.25	0.53	0.76	0.89	-	-
Benzo[g,h,i]perylene	1.63	0.16	0.25	0.36	0.38	-	-
Benzo[k]fluoranthene	0.99	0.09	0.22	0.33	0.41	-	-
Chrysene	1.00	0.11	0.31	0.33	0.42	-	-
Dibenzo[a,h]anthracene	0.33	0.03	0.05	0.07	0.08	-	-
Fluoranthene	1.44	0.18	0.62	0.43	0.80	-	-
Fluorene	0.03	<0.03	0.03	<0.03	<0.04	-	-
Indeno(1,2,3-	2.2	0.19	0.31	0.49	0.55	-	-
Benzo(a)Pyrene	3.1	0.27	0.52	0.72	0.85	-	-
Naphthalene	0.32	<0.15	<0.14	<0.15	<0.17	1	20
Phenanthrene	0.46	0.07	0.32	0.08	0.14	-	-
Pyrene	1.45	0.17	0.54	0.43	0.71	-	-
<b>Arsenic in soil, mg/kg</b>	<b>8</b>	<b>5</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>100</b>	<b>10</b>

Note 7: For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno(1,2,3-c,d)pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).

**Appendix 2: Soil Analysis Results – Compared to Landfill Guidelines**

Sample Name	FH 1-4	FH 5-8	FH 9-12	FH 13-16	Landfill Acceptance Guidelines for Silverstream Landfill <sup>1</sup> (Class A)	Landfill Screening Criteria for Class B Landfill <sup>2</sup>
Sample Depth (m bgl)	0.1	0.1	0.1	0.1		

**Heavy metals in soil, mg/kg**

Arsenic	<u>57</u>	12	6	6	100	10
Cadmium	0.27	0.27	0.14	0.25	20	2
Chromium	<u>30</u>	<u>19</u>	<u>15</u>	<u>15</u>	100	10
Copper	<u>50</u>	<u>15</u>	<u>15</u>	<u>14</u>	100	10
Lead	<u>94</u>	<u>57</u>	<u>37</u>	<u>44</u>	100	10
Nickel	6	9	9	8	200	20
Zinc	<u>280</u>	<u>143</u>	<u>64</u>	<u>100</u>	200	20

**Polycyclic Aromatic Hydrocarbons in soil, mg/kg**

Acenaphthene	<0.03	<0.03	<0.04	<0.03	-	-
Acenaphthylene	<0.03	<0.03	<0.04	<0.03	-	-
Anthracene	<0.03	<0.03	<0.04	0.04	-	-
Benzo[a]anthracene	0.08	0.03	<0.04	0.44	-	-
Benzo[a]pyrene (BAP)	0.15	0.05	<0.04	0.64	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	0.18	0.07	<0.04	0.83	-	-
Benzo[g,h,i]perylene	0.12	0.04	<0.04	0.36	-	-
Benzo[k]fluoranthene	0.07	0.03	<0.04	0.36	-	-
Chrysene	0.12	0.04	<0.04	0.55	-	-
Dibenzo[a,h]anthracene	<0.03	<0.03	<0.04	0.09	-	-
Fluoranthene	0.20	0.07	<0.04	0.87	-	-
Fluorene	<0.03	<0.03	<0.04	<0.03	-	-
Indeno(1,2,3-c,d)pyrene	0.12	0.05	<0.04	0.48	-	-
<b>Benzo(a)Pyrene Equivalent</b>	0.21	0.09	<0.09	0.9	-	-
Naphthalene	<0.14	<0.14	<0.17	<0.13	1	20
Phenanthrene	0.06	<0.03	<0.04	0.15	-	-
Pyrene	0.22	0.07	<0.04	0.78	-	-

Note 7: For benzo(a)pyrene (BaP), the equivalent BaP concentration is calculated as the sum of each of the detected concentrations of nine carcinogenic PAHs (Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Chrysene, Dibenzo[a,h]anthracene, Fluoranthene and Indeno(1,2,3-c,d)pyrene), multiplied by their respective potency equivalency factors (in table 40 of Ministry for the Environment, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health).



**APPENDIX 3**  
Hills Laboratories Reports



## ANALYSIS REPORT

<b>Client:</b> Engeo Limited	<b>Lab No:</b> 1355871	SPV2
<b>Contact:</b> K Jones	<b>Date Registered:</b> 26-Nov-2014	
C/- Engeo Limited	<b>Date Reported:</b> 29-Jan-2015	
PO Box 25047	<b>Quote No:</b> 64275	
WELLINGTON 6146	<b>Order No:</b>	
	<b>Client Reference:</b>	
	<b>Submitted By:</b> K Jones	

### Amended Report

This report replaces an earlier report issued on the 08 Dec 2014 at 1:20 pm  
At the client's request, extra testing has been added.

#### Sample Type: Soil

<b>Sample Name:</b>	Carp1 0.1m	Carp2 0.1m	Carp3 0.1m	Carp4 0.1m	Carp5 0.1m
	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>	1355871.1	1355871.2	1355871.3	1355871.4	1355871.5

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	85	93	102	210	6.5
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<b>Sample Name:</b>	Carp6 0.1m	C1 0.1m	C2 0.1m	C3 0.1m	C4 0.1m
	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>	1355871.6	1355871.7	1355871.8	1355871.9	1355871.10

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	3.5	43	67	38	105
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<b>Sample Name:</b>	SABU 1 0.1m	SABU 2 0.1m	SABU 3 0.1m	SABU 4 0.1m	SABU 5 0.1m
	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>	1355871.11	1355871.12	1355871.13	1355871.14	1355871.15

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	22	16.2	17.1	17.8	19.8
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<b>Sample Name:</b>	SABU 6 0.1m	SABU 7 0.1m	SABU 8 0.1m	EML1 0.1m	EML2 0.1m
	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>	1355871.16	1355871.17	1355871.18	1355871.19	1355871.20

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	46	11.8	18.9	26	24
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<b>Sample Name:</b>	EML3 0.1m	H1 0.1m	H2 0.1m	H3 0.1m	H4 0.1m
	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>	1355871.21	1355871.22	1355871.23	1355871.24	1355871.25

#### Individual Tests

<b>Dry Matter</b>	g/100g as rcvd	-	81	74	81	76
<b>Total Recoverable Arsenic</b>	mg/kg dry wt	-	8	5	7	7
<b>Total Recoverable Lead</b>	mg/kg dry wt	29	-	-	-	-

#### Polycyclic Aromatic Hydrocarbons Screening in Soil

Acenaphthene	mg/kg dry wt	-	0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	mg/kg dry wt	-	0.58	0.06	0.05	< 0.03
Anthracene	mg/kg dry wt	-	0.61	0.06	0.08	0.04
Benzo[a]anthracene	mg/kg dry wt	-	1.10	0.11	0.30	0.31
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	2.3	0.19	0.36	0.51
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	2.5	0.25	0.53	0.76
Benzo[g,h,i]perylene	mg/kg dry wt	-	1.63	0.16	0.25	0.36
Benzo[k]fluoranthene	mg/kg dry wt	-	0.99	0.09	0.22	0.33
Chrysene	mg/kg dry wt	-	1.00	0.11	0.31	0.33
Dibenzo[a,h]anthracene	mg/kg dry wt	-	0.33	0.03	0.05	0.07



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.

The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked \*, which are not accredited.

Sample Type: Soil						
<b>Sample Name:</b>		EML3 0.1m	H1 0.1m	H2 0.1m	H3 0.1m	H4 0.1m
		24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>		1355871.21	1355871.22	1355871.23	1355871.24	1355871.25
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Fluoranthene	mg/kg dry wt	-	1.44	0.18	0.62	0.43
Fluorene	mg/kg dry wt	-	0.03	< 0.03	0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	2.2	0.19	0.31	0.49
Naphthalene	mg/kg dry wt	-	0.32	< 0.15	< 0.14	< 0.15
Phenanthrene	mg/kg dry wt	-	0.46	0.07	0.32	0.08
Pyrene	mg/kg dry wt	-	1.45	0.17	0.54	0.43
<b>Sample Name:</b>		H5 0.1m	SS1 0.1m	SS2 0.1m	SS3 0.1m	SS4 0.1m
		24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>		1355871.26	1355871.27	1355871.28	1355871.29	1355871.30
Individual Tests						
Dry Matter	g/100g as rcvd	69	-	-	-	-
Total Recoverable Arsenic	mg/kg dry wt	7	-	-	-	-
Total Recoverable Lead	mg/kg dry wt	-	96	55	43	90
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Acenaphthene	mg/kg dry wt	< 0.04	-	-	-	-
Acenaphthylene	mg/kg dry wt	0.08	-	-	-	-
Anthracene	mg/kg dry wt	0.10	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	0.46	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.59	-	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	0.89	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.38	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	0.41	-	-	-	-
Chrysene	mg/kg dry wt	0.42	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	0.08	-	-	-	-
Fluoranthene	mg/kg dry wt	0.80	-	-	-	-
Fluorene	mg/kg dry wt	< 0.04	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.55	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.17	-	-	-	-
Phenanthrene	mg/kg dry wt	0.14	-	-	-	-
Pyrene	mg/kg dry wt	0.71	-	-	-	-
<b>Sample Name:</b>		FW1 0.1m	FW2 0.1m	FW3 0.1m	FW4 0.1m	ESAU1 0.1m
		24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>		1355871.31	1355871.32	1355871.33	1355871.34	1355871.35
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	6	6	5	5	-
Total Recoverable Lead	mg/kg dry wt	-	-	-	-	27
<b>Sample Name:</b>		ESAU2 0.1m	ESAU3 0.1m	ESAU4 0.1m	ESAU5 0.1m	ESAU6 0.1m
		24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>		1355871.36	1355871.37	1355871.38	1355871.39	1355871.40
Individual Tests						
Total Recoverable Lead	mg/kg dry wt	47	56	24	25	22
<b>Sample Name:</b>		MU1 0.1m	MU2 0.1m	MU3 0.1m	AP1 0.1m	AP2 0.1m
		24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014	24-Nov-2014
<b>Lab Number:</b>		1355871.44	1355871.45	1355871.46	1355871.47	1355871.48
Individual Tests						
Total Recoverable Lead	mg/kg dry wt	26	30	33	42	43
<b>Sample Name:</b>		AP3 0.1m	AP4 0.1m	Composite of C1 0.1m, C2 0.1m, C3 0.1m & C4 0.1m	Composite of FW1 0.1m, FW2 0.1m, FW3 0.1m & FW4 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m
		24-Nov-2014	24-Nov-2014			
<b>Lab Number:</b>		1355871.49	1355871.50	1355871.51	1355871.52	1355871.53
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	-	73
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	7	-
Total Recoverable Boron	mg/kg dry wt	-	-	-	-	< 20

Sample Type: Soil						
Sample Name:	AP3 0.1m 24-Nov-2014	AP4 0.1m 24-Nov-2014	Composite of C1 0.1m, C2 0.1m, C3 0.1m & C4 0.1m	Composite of FW1 0.1m, FW2 0.1m, FW3 0.1m & FW4 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m
Lab Number:	1355871.49	1355871.50	1355871.51	1355871.52	1355871.53	1355871.53
<b>Individual Tests</b>						
Total Recoverable Cobalt	mg/kg dry wt	-	-	-	-	2.9
Total Recoverable Lead	mg/kg dry wt	23	29	70	-	-
<b>Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg</b>						
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	-	5
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	-	0.23
Total Recoverable Chromium	mg/kg dry wt	-	-	-	-	14
Total Recoverable Copper	mg/kg dry wt	-	-	-	-	8
Total Recoverable Lead	mg/kg dry wt	-	-	-	-	17.0
Total Recoverable Mercury	mg/kg dry wt	-	-	-	-	< 0.10
Total Recoverable Nickel	mg/kg dry wt	-	-	-	-	5
Total Recoverable Zinc	mg/kg dry wt	-	-	-	-	62
<b>Organochlorine Pesticides Screening in Soil</b>						
Aldrin	mg/kg dry wt	-	-	-	-	< 0.010
alpha-BHC	mg/kg dry wt	-	-	-	-	< 0.010
beta-BHC	mg/kg dry wt	-	-	-	-	< 0.010
delta-BHC	mg/kg dry wt	-	-	-	-	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	-	< 0.010
cis-Chlordane	mg/kg dry wt	-	-	-	-	< 0.010
trans-Chlordane	mg/kg dry wt	-	-	-	-	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	-	-	-	-	< 0.04
2,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.010
4,4'-DDD	mg/kg dry wt	-	-	-	-	< 0.010
2,4'-DDE	mg/kg dry wt	-	-	-	-	< 0.010
4,4'-DDE	mg/kg dry wt	-	-	-	-	0.017
2,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.010
4,4'-DDT	mg/kg dry wt	-	-	-	-	< 0.010
Dieldrin	mg/kg dry wt	-	-	-	-	< 0.010
Endosulfan I	mg/kg dry wt	-	-	-	-	< 0.010
Endosulfan II	mg/kg dry wt	-	-	-	-	< 0.010
Endosulfan sulphate	mg/kg dry wt	-	-	-	-	< 0.010
Endrin	mg/kg dry wt	-	-	-	-	< 0.010
Endrin aldehyde	mg/kg dry wt	-	-	-	-	< 0.010
Endrin ketone	mg/kg dry wt	-	-	-	-	< 0.010
Heptachlor	mg/kg dry wt	-	-	-	-	< 0.010
Heptachlor epoxide	mg/kg dry wt	-	-	-	-	< 0.010
Hexachlorobenzene	mg/kg dry wt	-	-	-	-	< 0.010
Methoxychlor	mg/kg dry wt	-	-	-	-	< 0.010
<b>Organonitro&amp;phosphorus Pesticides Screen in Soil by GCMS</b>						
Acetochlor	mg/kg	-	-	-	-	< 0.07
Alachlor	mg/kg	-	-	-	-	< 0.05
Atrazine	mg/kg	-	-	-	-	< 0.07
Atrazine-desethyl	mg/kg	-	-	-	-	< 0.07
Atrazine-desisopropyl	mg/kg	-	-	-	-	< 0.13
Azaconazole	mg/kg	-	-	-	-	< 0.04
Azinphos-methyl	mg/kg	-	-	-	-	< 0.13
Benalaxyl	mg/kg	-	-	-	-	< 0.04
Bitertanol	mg/kg	-	-	-	-	< 0.13
Bromacil	mg/kg	-	-	-	-	< 0.07
Bromopropylate	mg/kg	-	-	-	-	< 0.07
Butachlor	mg/kg	-	-	-	-	< 0.07
Captan	mg/kg	-	-	-	-	< 0.13
Carbaryl	mg/kg	-	-	-	-	< 0.07

Sample Type: Soil

<b>Sample Name:</b>	AP3 0.1m 24-Nov-2014	AP4 0.1m 24-Nov-2014	Composite of C1 0.1m, C2 0.1m, C3 0.1m & C4 0.1m	Composite of FW1 0.1m, FW2 0.1m, FW3 0.1m & FW4 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m
<b>Lab Number:</b>	1355871.49	1355871.50	1355871.51	1355871.52	1355871.53

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Pesticide Name	Unit	AP3 0.1m 24-Nov-2014	AP4 0.1m 24-Nov-2014	Composite of C1 0.1m, C2 0.1m, C3 0.1m & C4 0.1m	Composite of FW1 0.1m, FW2 0.1m, FW3 0.1m & FW4 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m
Carbofuran	mg/kg	-	-	-	-	< 0.07
Chlorfluazuron	mg/kg	-	-	-	-	< 0.07
Chlorothalonil	mg/kg	-	-	-	-	< 0.07
Chlorpyrifos	mg/kg	-	-	-	-	< 0.07
Chlorpyrifos-methyl	mg/kg	-	-	-	-	< 0.07
Chlortoluron	mg/kg	-	-	-	-	< 0.13
Cyanazine	mg/kg	-	-	-	-	< 0.07
Cyfluthrin	mg/kg	-	-	-	-	< 0.07
Cyhalothrin	mg/kg	-	-	-	-	< 0.07
Cypermethrin	mg/kg	-	-	-	-	< 0.13
Deltamethrin (including Tralomethrin)	mg/kg	-	-	-	-	< 0.07
Diazinon	mg/kg	-	-	-	-	< 0.04
Dichlofuanid	mg/kg	-	-	-	-	< 0.07
Dichloran	mg/kg	-	-	-	-	< 0.2
Dichlorvos	mg/kg	-	-	-	-	< 0.09
Difenoconazole	mg/kg	-	-	-	-	< 0.09
Dimethoate	mg/kg	-	-	-	-	< 0.13
Diphenylamine	mg/kg	-	-	-	-	< 0.13
Diuron	mg/kg	-	-	-	-	< 0.07
Fenpropimorph	mg/kg	-	-	-	-	< 0.07
Fluazifop-butyl	mg/kg	-	-	-	-	< 0.07
Fluometuron	mg/kg	-	-	-	-	< 0.07
Flusilazole	mg/kg	-	-	-	-	< 0.07
Fluvalinate	mg/kg	-	-	-	-	< 0.05
Furalaxyl	mg/kg	-	-	-	-	< 0.04
Haloxifop-methyl	mg/kg	-	-	-	-	< 0.07
Hexaconazole	mg/kg	-	-	-	-	< 0.07
Hexazinone	mg/kg	-	-	-	-	< 0.04
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	-	-	-	< 0.4
Kresoxim-methyl	mg/kg	-	-	-	-	< 0.04
Linuron	mg/kg	-	-	-	-	< 0.07
Malathion	mg/kg	-	-	-	-	< 0.07
Metalaxyl (Mefenoxam)	mg/kg	-	-	-	-	< 0.07
Methamidophos	mg/kg	-	-	-	-	< 0.4
Metolachlor	mg/kg	-	-	-	-	< 0.05
Metribuzin	mg/kg	-	-	-	-	< 0.07
Molinate	mg/kg	-	-	-	-	< 0.13
Myclobutanil	mg/kg	-	-	-	-	< 0.07
Naled	mg/kg	-	-	-	-	< 0.4
Norflurazon	mg/kg	-	-	-	-	< 0.13
Oxadiazon	mg/kg	-	-	-	-	< 0.07
Oxyfluorfen	mg/kg	-	-	-	-	< 0.04
Paclobutrazol	mg/kg	-	-	-	-	< 0.07
Parathion-ethyl	mg/kg	-	-	-	-	< 0.07
Parathion-methyl	mg/kg	-	-	-	-	< 0.07
Pendimethalin	mg/kg	-	-	-	-	< 0.07
Permethrin	mg/kg	-	-	-	-	< 0.03
Pirimicarb	mg/kg	-	-	-	-	< 0.07
Pirimiphos-methyl	mg/kg	-	-	-	-	< 0.07
Prochloraz	mg/kg	-	-	-	-	< 0.4
Procymidone	mg/kg	-	-	-	-	< 0.07
Prometryn	mg/kg	-	-	-	-	< 0.04
Propachlor	mg/kg	-	-	-	-	< 0.07



**Sample Type: Soil**

<b>Sample Name:</b>	AP3 0.1m 24-Nov-2014	AP4 0.1m 24-Nov-2014	Composite of C1 0.1m, C2 0.1m, C3 0.1m & C4 0.1m	Composite of FW1 0.1m, FW2 0.1m, FW3 0.1m & FW4 0.1m	Composite of P39.1 0.1m, P39.2 0.1m & P39.3 0.1m
<b>Lab Number:</b>	1355871.49	1355871.50	1355871.51	1355871.52	1355871.53

Organonitro&phosphorus Pesticides Screen in Soil by GCMS					
Propanil	mg/kg	-	-	-	< 0.2
Propazine	mg/kg	-	-	-	< 0.04
Propiconazole	mg/kg	-	-	-	< 0.05
Pyriproxyfen	mg/kg	-	-	-	< 0.07
Quizalofop-ethyl	mg/kg	-	-	-	< 0.07
Simazine	mg/kg	-	-	-	< 0.07
Simetryn	mg/kg	-	-	-	< 0.07
Sulfentrazone	mg/kg	-	-	-	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	-	-	-	< 0.13
Tebuconazole	mg/kg	-	-	-	< 0.07
Terbacil	mg/kg	-	-	-	< 0.07
Terbufos	mg/kg	-	-	-	< 0.07
Terbumeton	mg/kg	-	-	-	< 0.07
Terbuthylazine	mg/kg	-	-	-	< 0.04
Terbuthylazine-diesethyl	mg/kg	-	-	-	< 0.07
Terbutryn	mg/kg	-	-	-	< 0.07
Thiabendazole	mg/kg	-	-	-	< 0.4
Thiobencarb	mg/kg	-	-	-	< 0.07
Tolyfluanid	mg/kg	-	-	-	< 0.04
Triazophos	mg/kg	-	-	-	< 0.07
Trifluralin	mg/kg	-	-	-	< 0.07
Vinclozolin	mg/kg	-	-	-	< 0.07

**Analyst's Comments**

It has been noted that the method performance for Iprodione for ONOP analysis is not acceptable therefore we are unable to report this compound at this present time.

**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 clean 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.

**Sample Type: Soil**

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-40, 44-53
Heavy metals, screen As, Cd, Cr, Cu, Ni, Pb, Zn, Hg	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	53
Organochlorine/nitro&phosphorus Pest.s Screen in Soils, GCMS	Sonication extraction, Dilution cleanup, GC-MS analysis. Tested on as received sample	-	53
Polycyclic Aromatic Hydrocarbons Screening in Soil	Sonication extraction, Dilution or SPE cleanup (if required), GC-MS SIM analysis (modified US EPA 8270). Tested on as received sample. [KBs:5786,2805,2695]	0.010 - 0.05 mg/kg dry wt	22-26
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) . gravimetry. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	22-26, 53
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1-40, 44-53
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	7-10, 31-34, 41-43
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	22-26, 31-34, 52
Total Recoverable Boron	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	20 mg/kg dry wt	53
Total Recoverable Cobalt	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	53

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	1-21, 27-30, 35-40, 44-51

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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Ara Heron BSc (Tech)  
Client Services Manager - Environmental Division



## ANALYSIS REPORT

<b>Client:</b> Engeo Limited	<b>Lab No:</b> 1356524	SPV2
<b>Contact:</b> K Jones	<b>Date Registered:</b> 27-Nov-2014	
C/- Engeo Limited	<b>Date Reported:</b> 30-Jan-2015	
PO Box 25047	<b>Quote No:</b> 64275	
WELLINGTON 6146	<b>Order No:</b>	
	<b>Client Reference:</b>	
	<b>Submitted By:</b> K Jones	

### Amended Report

This report replaces an earlier report issued on the 12 Dec 2014 at 3:56 pm  
At the client's request, extra testing has been added to samples 1356524.37  
- .52.

#### Sample Type: Soil

<b>Sample Name:</b>	P71.1 0.1m	P71.2 0.1m	P71.3 0.1m	P71.4 0.1m	P71.5 0.1m
	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014
<b>Lab Number:</b>	1356524.26	1356524.27	1356524.28	1356524.29	1356524.30

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	21	11.8	12.9	15.1	13.5
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<b>Sample Name:</b>	L1 0.4m	L2 0.4m	L3 0.4m	L4 0.4m	L5 0.4m
	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014
<b>Lab Number:</b>	1356524.31	1356524.32	1356524.33	1356524.34	1356524.35

#### Individual Tests

<b>Total Recoverable Lead</b>	mg/kg dry wt	21	21	20	35	22
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<b>Sample Name:</b>	L6 0.4m	FH1 0.1m	FH2 0.1m	FH3 0.1m	FH4 0.1m
	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014
<b>Lab Number:</b>	1356524.36	1356524.37	1356524.38	1356524.39	1356524.40

#### Individual Tests

<b>Dry Matter</b>	g/100g as rcvd	-	84	77	86	79
<b>Total Recoverable Arsenic</b>	mg/kg dry wt	-	200	3	3	26
<b>Total Recoverable Lead</b>	mg/kg dry wt	78	92	110	22	106

#### Polycyclic Aromatic Hydrocarbons Screening in Soil

Acenaphthene	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	mg/kg dry wt	-	< 0.03	0.03	< 0.03	< 0.03
Benzo[a]anthracene	mg/kg dry wt	-	0.06	0.22	< 0.03	0.04
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.08	0.34	< 0.03	0.06
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	0.08	0.30	0.03	0.07
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.06	0.32	< 0.03	0.07
Benzo[k]fluoranthene	mg/kg dry wt	-	0.04	0.13	< 0.03	0.03
Chrysene	mg/kg dry wt	-	0.07	0.26	0.03	0.06
Dibenzo[a,h]anthracene	mg/kg dry wt	-	< 0.03	0.04	< 0.03	< 0.03
Fluoranthene	mg/kg dry wt	-	0.12	0.48	0.04	0.13
Fluorene	mg/kg dry wt	-	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.05	0.27	< 0.03	0.04
Naphthalene	mg/kg dry wt	-	< 0.13	< 0.14	< 0.13	< 0.14
Phenanthrene	mg/kg dry wt	-	0.03	0.13	< 0.03	0.06
Pyrene	mg/kg dry wt	-	0.12	0.56	0.04	0.14

<b>Sample Name:</b>	FH5 0.1m	FH6 0.1m	FH7 0.1m	FH8 0.1m	FH9 0.1m
	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014	25-Nov-2014
<b>Lab Number:</b>	1356524.41	1356524.42	1356524.43	1356524.44	1356524.45

#### Individual Tests



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked \*, which are not accredited.

Sample Type: Soil						
Sample Name:		FH5 0.1m 25-Nov-2014	FH6 0.1m 25-Nov-2014	FH7 0.1m 25-Nov-2014	FH8 0.1m 25-Nov-2014	FH9 0.1m 25-Nov-2014
Lab Number:		1356524.41	1356524.42	1356524.43	1356524.44	1356524.45
Individual Tests						
Dry Matter	g/100g as rcvd	81	77	81	83	-
Total Recoverable Arsenic	mg/kg dry wt	36	3	8	6	6
Total Recoverable Lead	mg/kg dry wt	173	31	32	28	-
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Acenaphthene	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	-
Acenaphthylene	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	-
Anthracene	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	-
Benzo[a]anthracene	mg/kg dry wt	0.04	< 0.03	< 0.03	0.03	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.06	< 0.03	< 0.03	0.04	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	0.07	< 0.03	< 0.03	0.04	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.06	< 0.03	< 0.03	0.03	-
Benzo[k]fluoranthene	mg/kg dry wt	0.03	< 0.03	< 0.03	< 0.03	-
Chrysene	mg/kg dry wt	0.07	< 0.03	< 0.03	0.04	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	-
Fluoranthene	mg/kg dry wt	0.10	< 0.03	< 0.03	0.05	-
Fluorene	mg/kg dry wt	< 0.03	< 0.03	< 0.03	< 0.03	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.05	< 0.03	< 0.03	0.03	-
Naphthalene	mg/kg dry wt	< 0.14	< 0.15	< 0.14	< 0.13	-
Phenanthrene	mg/kg dry wt	0.04	< 0.03	< 0.03	< 0.03	-
Pyrene	mg/kg dry wt	0.12	0.03	< 0.03	0.06	-
Sample Name:		FH10 0.1m 25-Nov-2014	FH11 0.1m 25-Nov-2014	FH12 0.1m 25-Nov-2014	FH13 0.1m 25-Nov-2014	FH14 0.1m 25-Nov-2014
Lab Number:		1356524.46	1356524.47	1356524.48	1356524.49	1356524.50
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	84	66
Total Recoverable Arsenic	mg/kg dry wt	7	2	2	7	21
Polycyclic Aromatic Hydrocarbons Screening in Soil						
Acenaphthene	mg/kg dry wt	-	-	-	< 0.03	< 0.04
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.03	< 0.04
Anthracene	mg/kg dry wt	-	-	-	< 0.03	< 0.04
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.03	0.39
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.03	0.56
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	-	-	< 0.03	0.61
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.03	0.42
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.03	0.26
Chrysene	mg/kg dry wt	-	-	-	< 0.03	0.44
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.03	0.08
Fluoranthene	mg/kg dry wt	-	-	-	< 0.03	0.67
Fluorene	mg/kg dry wt	-	-	-	< 0.03	< 0.04
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.03	0.37
Naphthalene	mg/kg dry wt	-	-	-	< 0.13	< 0.17
Phenanthrene	mg/kg dry wt	-	-	-	< 0.03	0.05
Pyrene	mg/kg dry wt	-	-	-	< 0.03	0.98
Sample Name:		FH15 0.1m 25-Nov-2014	FH16 0.1m 25-Nov-2014	PX1 0.1m 25-Nov-2014	PX2 0.1m 25-Nov-2014	PX3 0.1m 25-Nov-2014
Lab Number:		1356524.51	1356524.52	1356524.53	1356524.54	1356524.55
Individual Tests						
Dry Matter	g/100g as rcvd	82	79	87	93	77
Total Recoverable Arsenic	mg/kg dry wt	6	4	-	-	-
Total Recoverable Boron	mg/kg dry wt	-	-	< 20	< 20	< 20
Total Recoverable Cobalt	mg/kg dry wt	-	-	6.4	6.0	5.3
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Arsenic	mg/kg dry wt	-	-	4	7	13

Sample Type: Soil						
Sample Name:	FH15 0.1m 25-Nov-2014	FH16 0.1m 25-Nov-2014	PX1 0.1m 25-Nov-2014	PX2 0.1m 25-Nov-2014	PX3 0.1m 25-Nov-2014	
Lab Number:	1356524.51	1356524.52	1356524.53	1356524.54	1356524.55	
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Cadmium	mg/kg dry wt	-	-	< 0.10	< 0.10	0.23
Total Recoverable Chromium	mg/kg dry wt	-	-	16	16	18
Total Recoverable Copper	mg/kg dry wt	-	-	10	54	17
Total Recoverable Lead	mg/kg dry wt	-	-	22	29	59
Total Recoverable Mercury	mg/kg dry wt	-	-	0.11	0.27	0.14
Total Recoverable Nickel	mg/kg dry wt	-	-	12	13	10
Total Recoverable Zinc	mg/kg dry wt	-	-	64	91	116
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
alpha-BHC	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
beta-BHC	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
delta-BHC	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
cis-Chlordane	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
trans-Chlordane	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	-	-	< 0.04	< 0.04	< 0.04
2,4'-DDD	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
4,4'-DDD	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
2,4'-DDE	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
4,4'-DDE	mg/kg dry wt	-	-	0.055	< 0.010	0.051
2,4'-DDT	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
4,4'-DDT	mg/kg dry wt	-	-	0.025	< 0.010	0.015
Dieldrin	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endosulfan I	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endosulfan II	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endosulfan sulphate	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endrin	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endrin aldehyde	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Endrin ketone	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Heptachlor	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Heptachlor epoxide	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Hexachlorobenzene	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
Methoxychlor	mg/kg dry wt	-	-	< 0.010	< 0.010	< 0.010
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	-	-	< 0.11	< 0.11	< 0.13
Azaconazole	mg/kg	-	-	< 0.03	< 0.03	< 0.04
Azinphos-methyl	mg/kg	-	-	< 0.11	< 0.11	< 0.13
Benalaxyl	mg/kg	-	-	< 0.03	< 0.03	< 0.04
Bitertanol	mg/kg	-	-	< 0.11	< 0.11	< 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	-	-	< 0.11	< 0.11	< 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	-	-	< 0.11	< 0.11	< 0.13

Sample Type: Soil						
Sample Name:	FH15 0.1m 25-Nov-2014	FH16 0.1m 25-Nov-2014	PX1 0.1m 25-Nov-2014	PX2 0.1m 25-Nov-2014	PX3 0.1m 25-Nov-2014	
Lab Number:	1356524.51	1356524.52	1356524.53	1356524.54	1356524.55	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Cyanazine	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Cyfluthrin	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Cyhalothrin	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Cypermethrin	mg/kg	-	-	< 0.11	< 0.11	< 0.13
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	< 0.09
Dimethoate	mg/kg	-	-	< 0.11	< 0.11	< 0.13
Diphenylamine	mg/kg	-	-	< 0.11	< 0.11	< 0.13
Diuron	mg/kg	-	-	< 0.06	< 0.06	< 0.07
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
Haloxifop-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	-	-	< 0.11	< 0.11	< 0.13
Myclobutanil	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Naled	mg/kg	-	-	< 0.3	< 0.3	< 0.4
Norflurazon	mg/kg	-	-	< 0.11	< 0.11	< 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

**Sample Type: Soil**

Sample Name:	FH15 0.1m 25-Nov-2014	FH16 0.1m 25-Nov-2014	PX1 0.1m 25-Nov-2014	PX2 0.1m 25-Nov-2014	PX3 0.1m 25-Nov-2014
Lab Number:	1356524.51	1356524.52	1356524.53	1356524.54	1356524.55

**Organonitro&phosphorus Pesticides Screen in Soil by GCMS**

Pesticide Name	Unit	FH15 0.1m	FH16 0.1m	PX1 0.1m	PX2 0.1m	PX3 0.1m
Sulfentrazone	mg/kg	-	-	< 0.3	< 0.3	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	-	-	< 0.11	< 0.11	< 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
Tolyfluanid	mg/kg	-	-	< 0.03	< 0.03	< 0.04
Triazophos	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Trifluralin	mg/kg	-	-	< 0.06	< 0.06	< 0.07
Vinclozolin	mg/kg	-	-	< 0.06	< 0.06	< 0.07

**Polycyclic Aromatic Hydrocarbons Screening in Soil**

PAH Name	Unit	FH15 0.1m	FH16 0.1m	PX1 0.1m	PX2 0.1m	PX3 0.1m
Acenaphthene	mg/kg dry wt	< 0.03	< 0.03	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.03	0.05	-	-	-
Anthracene	mg/kg dry wt	< 0.03	0.12	-	-	-
Benzo[a]anthracene	mg/kg dry wt	0.07	1.78	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.08	1.90	-	-	-
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	0.10	2.2	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.06	1.21	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	0.05	0.91	-	-	-
Chrysene	mg/kg dry wt	0.09	1.67	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.03	0.25	-	-	-
Fluoranthene	mg/kg dry wt	0.13	3.0	-	-	-
Fluorene	mg/kg dry wt	< 0.03	< 0.03	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.05	1.37	-	-	-
Naphthalene	mg/kg dry wt	< 0.14	< 0.14	-	-	-
Phenanthrene	mg/kg dry wt	0.03	0.55	-	-	-
Pyrene	mg/kg dry wt	0.13	2.6	-	-	-

Sample Name:	PX4 0.1m 25-Nov-2014	PX5 0.1m 25-Nov-2014	PX6 0.1m 25-Nov-2014	PX7 0.1m 25-Nov-2014	PX8 0.1m 25-Nov-2014
Lab Number:	1356524.56	1356524.57	1356524.58	1356524.59	1356524.60

**Individual Tests**

Test Name	Unit	PX4 0.1m	PX5 0.1m	PX6 0.1m	PX7 0.1m	PX8 0.1m
Dry Matter	g/100g as rcvd	80	78	89	81	88
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
Total Recoverable Cobalt	mg/kg dry wt	5.7	5.8	5.3	6.0	4.7

**Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg**

Heavy Metal	Unit	PX4 0.1m	PX5 0.1m	PX6 0.1m	PX7 0.1m	PX8 0.1m
Total Recoverable Arsenic	mg/kg dry wt	8	11	4	8	5
Total Recoverable Cadmium	mg/kg dry wt	0.16	0.14	< 0.10	0.15	0.26
Total Recoverable Chromium	mg/kg dry wt	17	19	11	16	16
Total Recoverable Copper	mg/kg dry wt	15	13	11	12	10
Total Recoverable Lead	mg/kg dry wt	63	42	16.7	33	31
Total Recoverable Mercury	mg/kg dry wt	0.14	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	11	11	9	11	10
Total Recoverable Zinc	mg/kg dry wt	99	93	58	81	71

**Organochlorine Pesticides Screening in Soil**

Organochlorine Pesticide	Unit	PX4 0.1m	PX5 0.1m	PX6 0.1m	PX7 0.1m	PX8 0.1m
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010

Sample Type: Soil						
Sample Name:	PX4 0.1m 25-Nov-2014	PX5 0.1m 25-Nov-2014	PX6 0.1m 25-Nov-2014	PX7 0.1m 25-Nov-2014	PX8 0.1m 25-Nov-2014	
Lab Number:	1356524.56	1356524.57	1356524.58	1356524.59	1356524.60	
<b>Organochlorine Pesticides Screening in Soil</b>						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDE	mg/kg dry wt	0.045	0.047	< 0.010	0.034	0.166
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDT	mg/kg dry wt	0.014	0.021	< 0.010	0.012	0.051
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
<b>Organonitro&amp;phosphorus Pesticides Screen in Soil by GCMS</b>						
Acetochlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Atrazine-desisopropyl	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Azinphos-methyl	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Bitertanol	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Bromacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Butachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Captan	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Chlortoluron	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Cyanazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cyfluthrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Cypermethrin	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Deltamethrin (including Tralomethrin)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Diazinon	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dichlofluanid	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Dichloran	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Dimethoate	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Diphenylamine	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11



Sample Type: Soil

Sample Name:	PX4 0.1m 25-Nov-2014	PX5 0.1m 25-Nov-2014	PX6 0.1m 25-Nov-2014	PX7 0.1m 25-Nov-2014	PX8 0.1m 25-Nov-2014
Lab Number:	1356524.56	1356524.57	1356524.58	1356524.59	1356524.60

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Diuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Haloxifop-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Linuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Malathion	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Molinate	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Naled	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Prometryn	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Simetryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.12	< 0.12	< 0.11	< 0.12	< 0.11
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbufos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbutylazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Terbutylazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Tolyfluanid	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03

**Sample Type: Soil**

<b>Sample Name:</b>	PX4 0.1m 25-Nov-2014	PX5 0.1m 25-Nov-2014	PX6 0.1m 25-Nov-2014	PX7 0.1m 25-Nov-2014	PX8 0.1m 25-Nov-2014
<b>Lab Number:</b>	1356524.56	1356524.57	1356524.58	1356524.59	1356524.60

Organonitro&phosphorus Pesticides Screen in Soil by GCMS					
Triazophos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.06

<b>Sample Name:</b>	PX9 0.1m 25-Nov-2014	PX10 0.1m 25-Nov-2014	PX11 0.1m 25-Nov-2014	PX12 0.1m 25-Nov-2014	PX13 0.1m 25-Nov-2014
<b>Lab Number:</b>	1356524.61	1356524.62	1356524.63	1356524.64	1356524.65

Individual Tests					
Dry Matter	g/100g as rcvd	76	72	62	84
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	< 20
Total Recoverable Cobalt	mg/kg dry wt	5.9	3.6	4.6	6.7

Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg					
Total Recoverable Arsenic	mg/kg dry wt	14	3	4	6
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.24	0.77	0.20
Total Recoverable Chromium	mg/kg dry wt	20	13	17	15
Total Recoverable Copper	mg/kg dry wt	16	6	16	10
Total Recoverable Lead	mg/kg dry wt	38	18.6	47	96
Total Recoverable Mercury	mg/kg dry wt	0.12	< 0.10	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	11	8	9	12
Total Recoverable Zinc	mg/kg dry wt	102	56	480	96

Organochlorine Pesticides Screening in Soil					
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	0.013
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDE	mg/kg dry wt	0.025	< 0.010	0.109	0.176
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
4,4'-DDT	mg/kg dry wt	0.011	< 0.010	0.025	0.140
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010

Organonitro&phosphorus Pesticides Screen in Soil by GCMS					
Acetochlor	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Atrazine	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06
Atrazine-desethyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06
Atrazine-desisopropyl	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12
Azaconazole	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03
Azinphos-methyl	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12
Benalaxyl	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03

Sample Type: Soil						
Sample Name:	PX9 0.1m 25-Nov-2014	PX10 0.1m 25-Nov-2014	PX11 0.1m 25-Nov-2014	PX12 0.1m 25-Nov-2014	PX13 0.1m 25-Nov-2014	
Lab Number:	1356524.61	1356524.62	1356524.63	1356524.64	1356524.65	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Bitertanol	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Bromacil	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Bromopropylate	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Butachlor	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Captan	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Carbaryl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Carbofuran	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Chlorfluazuron	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Chlorothalonil	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Chlorpyrifos	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Chlorpyrifos-methyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Chlortoluron	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Cyanazine	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Cyfluthrin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Cyhalothrin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Cypermethrin	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Deltamethrin (including Traiomethrin)	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Diazinon	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Dichlofuanid	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Dichloran	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg	< 0.09	< 0.10	< 0.11	< 0.09	< 0.09
Dimethoate	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Diphenylamine	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Diuron	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Fenpropimorph	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Fluazifop-butyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Fluometuron	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Flusilazole	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05
Furalaxyl	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Haloxypop-methyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Hexaconazole	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Hexazinone	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
Kresoxim-methyl	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Linuron	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Malathion	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Metalaxyl (Mefenoxam)	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Methamidophos	mg/kg	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Molinate	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Myclobutanil	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Naled	mg/kg	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
Norflurazon	mg/kg	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Oxadiazon	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Oxyfluorfen	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Paclobutrazol	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Parathion-ethyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Parathion-methyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Pendimethalin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07

**Sample Type: Soil**

Sample Name:	PX9 0.1m 25-Nov-2014	PX10 0.1m 25-Nov-2014	PX11 0.1m 25-Nov-2014	PX12 0.1m 25-Nov-2014	PX13 0.1m 25-Nov-2014
Lab Number:	1356524.61	1356524.62	1356524.63	1356524.64	1356524.65

Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Pirimiphos-methyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Prochloraz	mg/kg	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
Procymidone	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Prometryn	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Propachlor	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05
Pyriproxyfen	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Quizalofop-ethyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Simazine	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Simetryn	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Sulfentrazone	mg/kg	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	< 0.13	< 0.13	< 0.16	< 0.12	< 0.13
Tebuconazole	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Terbacil	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Terbufos	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Terbumeton	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Terbuthylazine	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Terbuthylazine-desethyl	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Terbutryn	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Thiabendazole	mg/kg	< 0.4	< 0.4	< 0.4	< 0.3	< 0.4
Thiobencarb	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Totylfluanid	mg/kg	< 0.04	< 0.04	< 0.04	< 0.03	< 0.04
Triazophos	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Trifluralin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07
Vinclozolin	mg/kg	< 0.07	< 0.07	< 0.08	< 0.06	< 0.07

Sample Name:	PX14 0.1m 25-Nov-2014	PX15 0.1m 25-Nov-2014	PX16 0.1m 25-Nov-2014	PX17 0.1m 25-Nov-2014	P70.1 0.1m 25-Nov-2014
Lab Number:	1356524.66	1356524.67	1356524.68	1356524.69	1356524.70

Individual Tests						
Dry Matter	g/100g as rcvd	87	83	89	77	-
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	< 20	-
Total Recoverable Cobalt	mg/kg dry wt	5.4	4.7	5.3	5.5	-
Total Recoverable Lead	mg/kg dry wt	-	-	-	-	162

Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Arsenic	mg/kg dry wt	7	4	6	8	-
Total Recoverable Cadmium	mg/kg dry wt	0.16	0.17	< 0.10	0.18	-
Total Recoverable Chromium	mg/kg dry wt	15	15	12	18	-
Total Recoverable Copper	mg/kg dry wt	9	8	8	13	-
Total Recoverable Lead	mg/kg dry wt	64	19.3	17.4	40	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	-
Total Recoverable Nickel	mg/kg dry wt	10	10	11	11	-
Total Recoverable Zinc	mg/kg dry wt	82	52	50	82	-

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	< 0.04	-

**Sample Type: Soil**

Sample Name:	PX14 0.1m 25-Nov-2014	PX15 0.1m 25-Nov-2014	PX16 0.1m 25-Nov-2014	PX17 0.1m 25-Nov-2014	P70.1 0.1m 25-Nov-2014
Lab Number:	1356524.66	1356524.67	1356524.68	1356524.69	1356524.70

**Organochlorine Pesticides Screening in Soil**

Pesticide	Unit	PX14	PX15	PX16	PX17	P70.1
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
4,4'-DDE	mg/kg dry wt	0.059	0.010	< 0.010	0.025	-
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
4,4'-DDT	mg/kg dry wt	0.047	< 0.010	< 0.010	< 0.010	-
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	< 0.010	-

**Organonitro&phosphorus Pesticides Screen in Soil by GCMS**

Pesticide	Unit	PX14	PX15	PX16	PX17	P70.1
Acetochlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	-
Atrazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Atrazine-desisopropyl	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Azinphos-methyl	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Bitertanol	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Bromacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Butachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Captan	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Chlortoluron	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Cyanazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Cyfluthrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Cypermethrin	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Deltamethrin (including Traiomethrin)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Diazinon	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Dichlofuanid	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Dichloran	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	-
Dichlorvos	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	-
Difenoconazole	mg/kg	< 0.09	< 0.09	< 0.09	< 0.09	-
Dimethoate	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Diphenylamine	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Diuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-

Sample Type: Soil

Sample Name:		PX14 0.1m 25-Nov-2014	PX15 0.1m 25-Nov-2014	PX16 0.1m 25-Nov-2014	PX17 0.1m 25-Nov-2014	P70.1 0.1m 25-Nov-2014
Lab Number:		1356524.66	1356524.67	1356524.68	1356524.69	1356524.70
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	-
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Haloxypop-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	< 0.4	-
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Linuron	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Malathion	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.3	< 0.4	-
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	-
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Molinate	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Naled	mg/kg	< 0.3	< 0.3	< 0.3	< 0.4	-
Norflurazon	mg/kg	< 0.11	< 0.12	< 0.11	< 0.13	-
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	-
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.3	< 0.4	-
Procymidone	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Prometryn	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Propachlor	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	-
Propazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	-
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Simazine	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Simetryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.3	< 0.4	-
TCM/TB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.11	< 0.12	< 0.11	< 0.13	-
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Terbacil	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Terbufos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Terbutylazine	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Terbutylazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.3	< 0.4	-
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Tolyfluanid	mg/kg	< 0.03	< 0.03	< 0.03	< 0.04	-
Triazophos	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.06	< 0.07	-

**Sample Type: Soil**

<b>Sample Name:</b>	P70.2 0.1m 25-Nov-2014	P70.3 0.1m 25-Nov-2014	P70.4 0.1m 25-Nov-2014	P70.5 0.1m 25-Nov-2014	X1 0.1m 25-Nov-2014
<b>Lab Number:</b>	1356524.71	1356524.72	1356524.73	1356524.74	1356524.75

**Individual Tests**

<b>Total Recoverable Lead</b>	<b>mg/kg dry wt</b>	160	75	197	40	41
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<b>Sample Name:</b>	X2 0.1m 25-Nov-2014	Composite of ST1 0.1m + ST2 0.1m + ST3 0.1m + ST4 0.1m	Composite of ST5 0.1m + ST8 0.1m + ST9 0.1m + ST10 0.1m	Composite of ST6 0.1m + ST7 0.1m + ST13 0.1m + ST14 0.1m	Composite of ST11 0.1m + ST12 0.1m + ST24 0.1m + ST25 0.1m
<b>Lab Number:</b>	1356524.76	1356524.77	1356524.78	1356524.79	1356524.80

**Individual Tests**

<b>Dry Matter</b>	<b>g/100g as rcvd</b>	-	88	88	81	79
<b>Total Recoverable Boron</b>	<b>mg/kg dry wt</b>	-	< 20	< 20	< 20	< 20
<b>Total Recoverable Cobalt</b>	<b>mg/kg dry wt</b>	-	6.7	5.1	5.0	4.1
<b>Total Recoverable Lead</b>	<b>mg/kg dry wt</b>	105	-	-	-	-

**Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg**

<b>Total Recoverable Arsenic</b>	<b>mg/kg dry wt</b>	-	5	5	5	5
<b>Total Recoverable Cadmium</b>	<b>mg/kg dry wt</b>	-	< 0.10	< 0.10	< 0.10	0.21
<b>Total Recoverable Chromium</b>	<b>mg/kg dry wt</b>	-	16	12	16	15
<b>Total Recoverable Copper</b>	<b>mg/kg dry wt</b>	-	12	9	13	13
<b>Total Recoverable Lead</b>	<b>mg/kg dry wt</b>	-	29	21	37	35
<b>Total Recoverable Mercury</b>	<b>mg/kg dry wt</b>	-	< 0.10	< 0.10	< 0.10	< 0.10
<b>Total Recoverable Nickel</b>	<b>mg/kg dry wt</b>	-	11	8	8	8
<b>Total Recoverable Zinc</b>	<b>mg/kg dry wt</b>	-	76	60	89	87

**Organochlorine Pesticides Screening in Soil**

<b>Aldrin</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>alpha-BHC</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>beta-BHC</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>delta-BHC</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>gamma-BHC (Lindane)</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>cis-Chlordane</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>trans-Chlordane</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Total Chlordane [(cis+trans)* 100/42]</b>	<b>mg/kg dry wt</b>	-	< 0.04	< 0.04	< 0.04	< 0.04
<b>2,4'-DDD</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>4,4'-DDD</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>2,4'-DDE</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>4,4'-DDE</b>	<b>mg/kg dry wt</b>	-	0.090	0.012	< 0.010	0.043
<b>2,4'-DDT</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>4,4'-DDT</b>	<b>mg/kg dry wt</b>	-	0.098	< 0.010	< 0.010	< 0.010
<b>Dieldrin</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endosulfan I</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endosulfan II</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endosulfan sulphate</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endrin</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endrin aldehyde</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Endrin ketone</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Heptachlor</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Heptachlor epoxide</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Hexachlorobenzene</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010
<b>Methoxychlor</b>	<b>mg/kg dry wt</b>	-	< 0.010	< 0.010	< 0.010	< 0.010

**Organonitro&phosphorus Pesticides Screen in Soil by GCMS**

<b>Acetochlor</b>	<b>mg/kg</b>	-	< 0.06	< 0.06	< 0.06	< 0.06
<b>Alachlor</b>	<b>mg/kg</b>	-	< 0.05	< 0.05	< 0.05	< 0.05
<b>Atrazine</b>	<b>mg/kg</b>	-	< 0.06	< 0.06	< 0.06	< 0.06
<b>Atrazine-desethyl</b>	<b>mg/kg</b>	-	< 0.06	< 0.06	< 0.06	< 0.06
<b>Atrazine-desisopropyl</b>	<b>mg/kg</b>	-	< 0.11	< 0.11	< 0.12	< 0.12
<b>Azaconazole</b>	<b>mg/kg</b>	-	< 0.03	< 0.03	< 0.03	< 0.03
<b>Azinphos-methyl</b>	<b>mg/kg</b>	-	< 0.11	< 0.11	< 0.12	< 0.12

Sample Type: Soil

Sample Name:	X2 0.1m 25-Nov-2014	Composite of ST1 0.1m + ST2 0.1m + ST3 0.1m + ST4 0.1m	Composite of ST5 0.1m + ST8 0.1m + ST9 0.1m + ST10 0.1m	Composite of ST6 0.1m + ST7 0.1m + ST13 0.1m + ST14 0.1m	Composite of ST11 0.1m + ST12 0.1m + ST24 0.1m + ST25 0.1m
Lab Number:	1356524.76	1356524.77	1356524.76	1356524.79	1356524.80

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Benalaxyl	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Bitertanol	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Bromacil	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Bromopropylate	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Butachlor	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Captan	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Carbaryl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Carbofuran	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Chlorfluazuron	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Chlorothalonil	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Chlorpyrifos-methyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Chlortoluron	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Cyanazine	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Cyfluthrin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Cyhalothrin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Cypermethrin	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Deltamethrin (including Tralomethrin)	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Diazinon	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Dichlofuanid	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Dichloran	mg/kg	-	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorvos	mg/kg	-	< 0.09	< 0.09	< 0.09	< 0.09
Difenoconazole	mg/kg	-	< 0.09	< 0.09	< 0.09	< 0.09
Dimethoate	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Diphenylamine	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Diuron	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Fenpropimorph	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Fluazifop-butyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Fluometuron	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Flusilazole	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Fluvalinate	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Furalaxyl	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Haloxypop-methyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Hexaconazole	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Hexazinone	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	< 0.3	< 0.3	< 0.3	< 0.3
Kresoxim-methyl	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Linuron	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Malathion	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Metalaxyl (Mefenoxam)	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Methamidophos	mg/kg	-	< 0.3	< 0.3	< 0.3	< 0.3
Metolachlor	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Metribuzin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Molinate	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Myclobutanil	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Naled	mg/kg	-	< 0.3	< 0.3	< 0.3	< 0.3
Norflurazon	mg/kg	-	< 0.11	< 0.11	< 0.12	< 0.12
Oxadiazon	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Oxyfluorfen	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Paclobutrazol	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-ethyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Parathion-methyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06



Sample Type: Soil						
Sample Name:	X2 0.1m 25-Nov-2014	Composite of ST1 0.1m + ST2 0.1m + ST3 0.1m + ST4 0.1m	Composite of ST5 0.1m + ST8 0.1m + ST9 0.1m + ST10 0.1m	Composite of ST6 0.1m + ST7 0.1m + ST13 0.1m + ST14 0.1m	Composite of ST11 0.1m + ST12 0.1m + ST24 0.1m + ST25 0.1m	
Lab Number:	1356524.76	1356524.77	1356524.78	1356524.79	1356524.80	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Pendimethalin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Permethrin	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Pirimicarb	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Pirimiphos-methyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Prochloraz	mg/kg	-	< 0.3	< 0.3	< 0.3	< 0.3
Procymidone	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Prometryn	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Propachlor	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Propanil	mg/kg	-	< 0.2	< 0.2	< 0.2	< 0.2
Propazine	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Propiconazole	mg/kg	-	< 0.05	< 0.05	< 0.05	< 0.05
Pyriproxyfen	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Quizalofop-ethyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Simazine	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Simetryn	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Sulfentrazone	mg/kg	-	< 0.3	< 0.3	< 0.3	< 0.3
TCMTB [2-(thiocyanomethylthio)benzothiazole,Busan]	mg/kg dry wt	-	< 0.11	< 0.11	< 0.12	< 0.12
Tebuconazole	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Terbacil	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Terbufos	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Terbumeton	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Terbuthylazine	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Terbuthylazine-desethyl	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Terbutryn	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Thiabendazole	mg/kg	-	< 0.3	< 0.3	< 0.3	< 0.3
Thiobencarb	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Tolylfluanid	mg/kg	-	< 0.03	< 0.03	< 0.03	< 0.03
Triazophos	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Trifluralin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Vinclozolin	mg/kg	-	< 0.06	< 0.06	< 0.06	< 0.06
Sample Name:		Composite of ST15 0.1m + ST16 0.1m + ST17 0.1m + ST18 0.1m	Composite of ST19 0.1m + ST20 0.1m	Composite of ST21 0.1m + ST22 0.1m + ST23 0.1m	Composite of FH1 0.1m + FH2 0.1m + FH3 0.1m + FH4 0.1m	Composite of FH5 0.1m + FH6 0.1m + FH7 0.1m + FH8 0.1m
Lab Number:		1356524.81	1356524.82	1356524.83	1356524.84	1356524.85
Individual Tests						
Dry Matter	g/100g as rcvd	91	86	84	78	78
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	-	-
Total Recoverable Cobalt	mg/kg dry wt	9.3	3.6	5.1	-	-
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Arsenic	mg/kg dry wt	5	3	4	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	0.29	< 0.10	-	-
Total Recoverable Chromium	mg/kg dry wt	18	13	14	-	-
Total Recoverable Copper	mg/kg dry wt	18	13	11	-	-
Total Recoverable Lead	mg/kg dry wt	27	25	15.2	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	< 0.10	-	-
Total Recoverable Nickel	mg/kg dry wt	14	6	9	-	-
Total Recoverable Zinc	mg/kg dry wt	96	68	66	-	-
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	57	12
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	0.27	0.27

Sample Type: Soil						
Sample Name:	Composite of ST15 0.1m + ST16 0.1m + ST17 0.1m + ST18 0.1m	Composite of ST19 0.1m + ST20 0.1m	Composite of ST21 0.1m + ST22 0.1m + ST23 0.1m	Composite of FH1 0.1m + FH2 0.1m + FH3 0.1m + FH4 0.1m	Composite of FH5 0.1m + FH6 0.1m + FH7 0.1m + FH8 0.1m	
Lab Number:	1356524.81	1356524.82	1356524.83	1356524.84	1356524.85	
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Chromium	mg/kg dry wt	-	-	-	30	19
Total Recoverable Copper	mg/kg dry wt	-	-	-	50	15
Total Recoverable Lead	mg/kg dry wt	-	-	-	94	57
Total Recoverable Nickel	mg/kg dry wt	-	-	-	6	9
Total Recoverable Zinc	mg/kg dry wt	-	-	-	280	143
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	-	-
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDE	mg/kg dry wt	0.020	< 0.010	< 0.010	-	-
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Organonitro&phosphorus Pesticides Screen In Soil by GCMS						
Acetochlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Atrazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Atrazine-desisopropyl	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Azinphos-methyl	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Bitertanol	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Bromacil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Butachlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Captan	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorotoluron	mg/kg	< 0.11	< 0.11	< 0.12	-	-

Sample Type: Soil

Sample Name:	Composite of ST15 0.1m + ST16 0.1m + ST17 0.1m + ST18 0.1m	Composite of ST19 0.1m + ST20 0.1m	Composite of ST21 0.1m + ST22 0.1m + ST23 0.1m	Composite of FH1 0.1m + FH2 0.1m + FH3 0.1m + FH4 0.1m	Composite of FH5 0.1m + FH6 0.1m + FH7 0.1m + FH8 0.1m
Lab Number:	1356524.81	1356524.82	1356524.83	1356524.84	1356524.85

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Cyanazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Cyfluthrin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Cypermethrin	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Deltamethrin (including Tralomethrin)	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Diazinon	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Dichlofluanid	mg/kg	< 0.06	< 0.06	< 0.06	-	-
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	< 0.09	-	-
Dimethoate	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Diphenylamine	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Diuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Haloxifop-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.03	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Linuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Malathion	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Molinate	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Naled	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Norflurazon	mg/kg	< 0.11	< 0.11	< 0.12	-	-
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Procymidone	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Prometryn	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Propachlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	-	-
Propazine	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of ST15 0.1m + ST16 0.1m + ST17 0.1m + ST18 0.1m	Composite of ST19 0.1m + ST20 0.1m	Composite of ST21 0.1m + ST22 0.1m + ST23 0.1m	Composite of FH1 0.1m + FH2 0.1m + FH3 0.1m + FH4 0.1m	Composite of FH5 0.1m + FH6 0.1m + FH7 0.1m + FH8 0.1m
<b>Lab Number:</b>	1356524.81	1356524.82	1356524.83	1356524.84	1356524.85

**Organonitro&phosphorus Pesticides Screen in Soil by GCMS**

Simazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Simetryn	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.3	-	-
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	< 0.11	< 0.11	< 0.12	-	-
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbacil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbufos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbuthiazine	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Terbuthiazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Tolyfluanid	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Triazophos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.06	-	-

**Polycyclic Aromatic Hydrocarbons Screening in Soil**

Acenaphthene	mg/kg dry wt	-	-	-	< 0.03	< 0.03
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.03	< 0.03
Anthracene	mg/kg dry wt	-	-	-	< 0.03	< 0.03
Benzo[a]anthracene	mg/kg dry wt	-	-	-	0.08	0.03
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	0.15	0.05
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	-	-	-	0.18	0.07
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	0.12	0.04
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	0.07	0.03
Chrysene	mg/kg dry wt	-	-	-	0.12	0.04
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.03	< 0.03
Fluoranthene	mg/kg dry wt	-	-	-	0.20	0.07
Fluorene	mg/kg dry wt	-	-	-	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	0.12	0.05
Naphthalene	mg/kg dry wt	-	-	-	< 0.14	< 0.14
Phenanthrene	mg/kg dry wt	-	-	-	0.06	< 0.03
Pyrene	mg/kg dry wt	-	-	-	0.22	0.07

<b>Sample Name:</b>	Composite of FH9 0.1m + FH10 0.1m + FH11 0.1m + FH12 0.1m	Composite of FH13 0.1m + FH14 0.1m + FH15 0.1m + FH16 0.1m
<b>Lab Number:</b>	1356524.86	1356524.87

**Individual Tests**

Dry Matter	g/100g as rcvd	67	87	-	-	-
<b>Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn</b>						
Total Recoverable Arsenic	mg/kg dry wt	6	6	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.14	0.25	-	-	-
Total Recoverable Chromium	mg/kg dry wt	15	15	-	-	-
Total Recoverable Copper	mg/kg dry wt	15 #1	14	-	-	-
Total Recoverable Lead	mg/kg dry wt	37 #1	44	-	-	-
Total Recoverable Nickel	mg/kg dry wt	9	8	-	-	-
Total Recoverable Zinc	mg/kg dry wt	64	100	-	-	-
<b>Polycyclic Aromatic Hydrocarbons Screening in Soil</b>						
Acenaphthene	mg/kg dry wt	< 0.04	< 0.03	-	-	-

Sample Type: Soil			
<b>Sample Name:</b>	Composite of FH9 0.1m + FH10 0.1m + FH11 0.1m + FH12 0.1m	Composite of FH13 0.1m + FH14 0.1m + FH15 0.1m + FH16 0.1m	
<b>Lab Number:</b>	1356524.86	1356524.87	
Polycyclic Aromatic Hydrocarbons Screening in Soil			
Acenaphthylene	mg/kg dry wt	< 0.04	< 0.03
Anthracene	mg/kg dry wt	< 0.04	0.04
Benzo[a]anthracene	mg/kg dry wt	< 0.04	0.44
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.04	0.64
Benzo[b]fluoranthene + Benzo[j]fluoranthene	mg/kg dry wt	< 0.04	0.83
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.04	0.36
Benzo[k]fluoranthene	mg/kg dry wt	< 0.04	0.36
Chrysene	mg/kg dry wt	< 0.04	0.55
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.04	0.09
Fluoranthene	mg/kg dry wt	< 0.04	0.87
Fluorene	mg/kg dry wt	< 0.04	< 0.03
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.04	0.48
Naphthalene	mg/kg dry wt	< 0.17	< 0.13
Phenanthrene	mg/kg dry wt	< 0.04	0.15
Pyrene	mg/kg dry wt	< 0.04	0.78

### Analyst's Comments

It has been noted that the method performance for Iprodione for ONOP analysis is not acceptable therefore we are unable to report this compound at this present time.

#1 It should be noted that the replicate analyses performed on this sample as part of our in-house Quality Assurance procedures showed greater variation than would normally be expected. This may reflect the heterogeneity of the sample.

## 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 clean 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.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	26-87
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	53-69, 77-83
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	84-87
Organochlorine/nitro&phosphorus Pest.s Screen in Soils, GCMS	Sonication extraction. Dilution cleanup, GC-MS analysis. Tested on as received sample	-	53-69, 77-83
Polycyclic Aromatic Hydrocarbons Screening in Soil	Sonication extraction, Dilution or SPE cleanup (if required), GC-MS SIM analysis (modified US EPA 8270). Tested on as received sample. [KBIs:5786,2805,2695]	0.010 - 0.05 mg/kg dry wt	37-44, 49-52, 84-87
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	37-44, 49-69, 77-87
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	26-87
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-25, 37-52
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	37-52
Total Recoverable Boron	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	20 mg/kg dry wt	53-69, 77-83
Total Recoverable Cobalt	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	53-69, 77-83

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	26-44, 70-76

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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



## ANALYSIS REPORT

<b>Client:</b> Engeo Limited	<b>Lab No:</b> 1357128	SPV2
<b>Contact:</b> K Jones	<b>Date Registered:</b> 28-Nov-2014	
C/- Engeo Limited	<b>Date Reported:</b> 30-Jan-2015	
PO Box 25047	<b>Quote No:</b> 64275	
WELLINGTON 6146	<b>Order No:</b>	
	<b>Client Reference:</b>	
	<b>Submitted By:</b> K Jones	

### Amended Report

This report replaces an earlier report issued on the 17 Dec 2014 at 11:27 am  
At the client's request, Arsenic analysis has been added to samples  
1357128.74 - 77.

#### Sample Type: Soil

Sample Name:	TS1 0.1m 26-Nov-2014	TS2 0.1m 26-Nov-2014	TS3 0.1m 26-Nov-2014	TS4 0.1m 26-Nov-2014	TS5 0.1m 26-Nov-2014
Lab Number:	1357128.1	1357128.3	1357128.5	1357128.7	1357128.9
<b>Individual Tests</b>					
Dry Matter	g/100g as rcvd				
	85	88	84	83	88
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn					
Total Recoverable Arsenic	mg/kg dry wt	6	6	6	7
Total Recoverable Cadmium	mg/kg dry wt	0.13	0.12	0.18	0.17
Total Recoverable Chromium	mg/kg dry wt	17	17	16	18
Total Recoverable Copper	mg/kg dry wt	13	13	13	15
Total Recoverable Lead	mg/kg dry wt	57	39	41	43
Total Recoverable Nickel	mg/kg dry wt	11	12	11	10
Total Recoverable Zinc	mg/kg dry wt	85	84	88	83
Total Petroleum Hydrocarbons in Soil					
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 8
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

Sample Name:	TS6 0.1m 26-Nov-2014	TS7 0.1m 26-Nov-2014	TS8 0.1m 26-Nov-2014	TS9 0.1m 26-Nov-2014	TS10 0.1m 26-Nov-2014
Lab Number:	1357128.11	1357128.13	1357128.15	1357128.17	1357128.19
<b>Individual Tests</b>					
Dry Matter	g/100g as rcvd				
	87	86	87	89	82
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn					
Total Recoverable Arsenic	mg/kg dry wt	5	5	5	6
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.23	0.11	0.12
Total Recoverable Chromium	mg/kg dry wt	18	17	13	17
Total Recoverable Copper	mg/kg dry wt	12	12	9	12
Total Recoverable Lead	mg/kg dry wt	21	65	35	21
Total Recoverable Nickel	mg/kg dry wt	13	11	8	14
Total Recoverable Zinc	mg/kg dry wt	71	99	59	76
Total Petroleum Hydrocarbons in Soil					
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 8
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



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised.  
The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked \*, which are not accredited.

Sample Type: Soil						
<b>Sample Name:</b>		TS11 0.1m	TS12 0.1m	TS13 0.1m	TS14 0.1m	TS15 0.1m
<b>Lab Number:</b>		26-Nov-2014 1357128.21	26-Nov-2014 1357128.23	26-Nov-2014 1357128.25	26-Nov-2014 1357128.27	26-Nov-2014 1357128.29
Individual Tests						
Dry Matter	g/100g as rcvd	86	85	88	80	77
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	9	6	8	6	6
Total Recoverable Cadmium	mg/kg dry wt	0.65	0.16	0.14	0.13	0.18
Total Recoverable Chromium	mg/kg dry wt	18	16	21	17	16
Total Recoverable Copper	mg/kg dry wt	15	18	19	11	12
Total Recoverable Lead	mg/kg dry wt	45	55	53	23	37
Total Recoverable Nickel	mg/kg dry wt	16	11	15	12	10
Total Recoverable Zinc	mg/kg dry wt	300	117	125	73	81
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 9	< 9
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	42	< 40	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	< 70	< 70	< 70	< 70
<b>Sample Name:</b>		TS16 0.1m	TS17 0.1m	TS18 0.1m	TS19 0.1m	TS20 0.1m
<b>Lab Number:</b>		26-Nov-2014 1357128.31	26-Nov-2014 1357128.33	26-Nov-2014 1357128.35	26-Nov-2014 1357128.37	26-Nov-2014 1357128.39
Individual Tests						
Dry Matter	g/100g as rcvd	85	86	91	83	84
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	5	5	6	4	12
Total Recoverable Cadmium	mg/kg dry wt	0.12	0.14	0.16	0.17	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	15	19	15	17
Total Recoverable Copper	mg/kg dry wt	9	9	16	8	9
Total Recoverable Lead	mg/kg dry wt	22	26	37	26	97
Total Recoverable Nickel	mg/kg dry wt	7	10	13	9	11
Total Recoverable Zinc	mg/kg dry wt	61	63	85	61	96
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 8	< 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
<b>Sample Name:</b>		TS21 0.1m	TS22 0.1m	TS23 0.1m	TS24 0.1m	TS25 0.1m
<b>Lab Number:</b>		26-Nov-2014 1357128.41	26-Nov-2014 1357128.43	26-Nov-2014 1357128.45	26-Nov-2014 1357128.47	26-Nov-2014 1357128.49
Individual Tests						
Dry Matter	g/100g as rcvd	82	81	67	85	71
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	6	5	5	6	7
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10	0.13	< 0.10	0.19
Total Recoverable Chromium	mg/kg dry wt	17	23	18	19	17
Total Recoverable Copper	mg/kg dry wt	10	12	9	16	11
Total Recoverable Lead	mg/kg dry wt	40	23	27	37	38
Total Recoverable Nickel	mg/kg dry wt	10	12	10	16	10
Total Recoverable Zinc	mg/kg dry wt	75	50	62	82	81
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 10	< 8	< 9
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
<b>Sample Name:</b>		TS26 0.1m	TS27 0.1m	TS28 0.1m	TS29 0.1m	TS30 0.1m
<b>Lab Number:</b>		26-Nov-2014 1357128.51	26-Nov-2014 1357128.53	26-Nov-2014 1357128.55	26-Nov-2014 1357128.57	26-Nov-2014 1357128.59
Individual Tests						



Sample Type: Soil						
Sample Name:	TS26 0.1m 26-Nov-2014	TS27 0.1m 26-Nov-2014	TS28 0.1m 26-Nov-2014	TS29 0.1m 26-Nov-2014	TS30 0.1m 26-Nov-2014	
Lab Number:	1357128.51	1357128.53	1357128.55	1357128.57	1357128.59	
Individual Tests						
Dry Matter	g/100g as rcvd	94	82	70	84	85
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn						
Total Recoverable Arsenic	mg/kg dry wt	6	7	9	7	7
Total Recoverable Cadmium	mg/kg dry wt	0.10	0.17	0.20	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	21	19	22	19	25
Total Recoverable Copper	mg/kg dry wt	18	32	55	17	15
Total Recoverable Lead	mg/kg dry wt	29	80	140	51	28
Total Recoverable Nickel	mg/kg dry wt	15	12	11	15	15
Total Recoverable Zinc	mg/kg dry wt	92	149	230	98	59
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 8	< 8	< 10	< 8	< 8
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	340	75	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 70	340	75	< 70	< 70
Sample Name:	PX18 0.1m 26-Nov-2014	PX19 0.1m 26-Nov-2014	PX20 0.1m 26-Nov-2014	St28 0.1m 26-Nov-2014	St29 0.1m 26-Nov-2014	
Lab Number:	1357128.69	1357128.70	1357128.71	1357128.74	1357128.75	
Individual Tests						
Dry Matter	g/100g as rcvd	82	77	79	-	-
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	6	5
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	< 20	-	-
Total Recoverable Cobalt	mg/kg dry wt	6.3	7.0	6.1	-	-
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Arsenic	mg/kg dry wt	10	8	10	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.18	< 0.10	0.18	-	-
Total Recoverable Chromium	mg/kg dry wt	19	17	21	-	-
Total Recoverable Copper	mg/kg dry wt	26	14	19	-	-
Total Recoverable Lead	mg/kg dry wt	57	37	58	-	-
Total Recoverable Mercury	mg/kg dry wt	0.15	< 0.10	< 0.10	-	-
Total Recoverable Nickel	mg/kg dry wt	11	11	11	-	-
Total Recoverable Zinc	mg/kg dry wt	129	91	120	-	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	< 0.04	-	-
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	0.011	-	-
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDE	mg/kg dry wt	0.040	< 0.010	0.152	-	-
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
4,4'-DDT	mg/kg dry wt	0.017	< 0.010	0.091	-	-
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-

Sample Type: Soil

Sample Name:	PX18 0.1m 26-Nov-2014	PX19 0.1m 26-Nov-2014	PX20 0.1m 26-Nov-2014	St28 0.1m 26-Nov-2014	St29 0.1m 26-Nov-2014
Lab Number:	1357128.69	1357128.70	1357128.71	1357128.74	1357128.75

Organochlorine Pesticides Screening in Soil

Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	< 0.010	-	-

Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Acetochlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Alachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Atrazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Atrazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Atrazine-desisopropyl	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Azaconazole	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Azinphos-methyl	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Benalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Bitertanol	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Bromacil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Bromopropylate	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Butachlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Captan	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Carbaryl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Carbofuran	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorfluazuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorothalonil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorpyrifos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorpyrifos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Chlorzoluron	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Cyanazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Cyfluthrin	mg/kg	< 0.08	< 0.08	< 0.08	-	-
Cyhalothrin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Cypermethrin	mg/kg	< 0.15	< 0.15	< 0.15	-	-
Deltamethrin (including Tralomethrin)	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Diazinon	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Dichlofluanid	mg/kg	< 0.06	< 0.06	< 0.06	-	-
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	< 0.09	-	-
Dimethoate	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Diphenylamine	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Diuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fenpropimorph	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluazifop-butyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluometuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Flusilazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Fluvalinate	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Furalaxyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Haloxifop-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Hexaconazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Hexazinone	mg/kg	< 0.03	< 0.03	< 0.03	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.3	< 0.3	< 0.3	-	-
Iprodione	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Kresoxim-methyl	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Linuron	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Malathion	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Metalaxyl (Mefenoxam)	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Methamidophos	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Metolachlor	mg/kg	< 0.05	< 0.05	< 0.05	-	-

Sample Type: Soil						
Sample Name:	PX18 0.1m	PX19 0.1m	PX20 0.1m	St28 0.1m	St29 0.1m	
Lab Number:	26-Nov-2014 1357128.69	26-Nov-2014 1357128.70	26-Nov-2014 1357128.71	26-Nov-2014 1357128.74	26-Nov-2014 1357128.75	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Metribuzin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Molinate	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Myclobutanil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Naled	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Norflurazon	mg/kg	< 0.12	< 0.12	< 0.12	-	-
Oxadiazon	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Oxyfluorfen	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Paclobutrazol	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Parathion-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Parathion-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Pendimethalin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Permethrin	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Pirimicarb	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Pirimiphos-methyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Prochloraz	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Procymidone	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Prometryn	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Propachlor	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Propanil	mg/kg	< 0.2	< 0.2	< 0.2	-	-
Propazine	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Propiconazole	mg/kg	< 0.05	< 0.05	< 0.05	-	-
Pyriproxyfen	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Quizalofop-ethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Simazine	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Simetryn	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Sulfentrazone	mg/kg	< 0.3	< 0.3	< 0.3	-	-
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	< 0.12	< 0.12	< 0.12	-	-
Tebuconazole	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbacil	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbufos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbumeton	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbuthylazine	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Terbuthylazine-desethyl	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Terbutryn	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Thiabendazole	mg/kg	< 0.3	< 0.3	< 0.3	-	-
Thiobencarb	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Tolyfluanid	mg/kg	< 0.03	< 0.03	< 0.03	-	-
Triazophos	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Trifluralin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Vinclozolin	mg/kg	< 0.06	< 0.06	< 0.06	-	-
Sample Name:	St30 0.1m	St31 0.1m	P2.1 0.1m	P2.2 0.1m	P2.3 0.1m	
Lab Number:	26-Nov-2014 1357128.76	26-Nov-2014 1357128.77	26-Nov-2014 1357128.78	26-Nov-2014 1357128.79	26-Nov-2014 1357128.80	
Individual Tests						
Total Recoverable Arsenic	mg/kg dry wt	5	5	13	9	25
Total Recoverable Lead	mg/kg dry wt	-	-	58	31	37
Sample Name:	P2.4 0.1m	P2.5 0.1m	P2.6 0.1m	Composite of C3/4.1 0.1m, C3/4.2 0.1m, C3/4.3 0.1m and C3/4.4 0.1m	Composite of C3/4.5 0.1m, C3/4.6 0.1m, C3/4.7 0.1m and C3/4.8 0.1m	
Lab Number:	26-Nov-2014 1357128.81	26-Nov-2014 1357128.82	26-Nov-2014 1357128.83	1357128.84	1357128.85	
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	74	71
Total Recoverable Arsenic	mg/kg dry wt	19	25	13	-	-

Sample Type: Soil						
Sample Name:		P2.4 0.1m 26-Nov-2014	P2.5 0.1m 26-Nov-2014	P2.6 0.1m 26-Nov-2014	Composite of C3/4.1 0.1m, C3/4.2 0.1m, C3/4.3 0.1m and C3/4.4 0.1m	Composite of C3/4.5 0.1m, C3/4.6 0.1m, C3/4.7 0.1m and C3/4.8 0.1m
Lab Number:		1357128.81	1357128.82	1357128.83	1357128.84	1357128.85
<b>Individual Tests</b>						
Total Recoverable Boron	mg/kg dry wt	-	-	-	< 20	< 20
Total Recoverable Cobalt	mg/kg dry wt	-	-	-	4.9	4.6
Total Recoverable Lead	mg/kg dry wt	21	56	28	-	-
<b>Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg</b>						
Total Recoverable Arsenic	mg/kg dry wt	-	-	-	5	5
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	0.27	0.18
Total Recoverable Chromium	mg/kg dry wt	-	-	-	17	16
Total Recoverable Copper	mg/kg dry wt	-	-	-	9	10
Total Recoverable Lead	mg/kg dry wt	-	-	-	21	21
Total Recoverable Mercury	mg/kg dry wt	-	-	-	< 0.10	< 0.10
Total Recoverable Nickel	mg/kg dry wt	-	-	-	9	8
Total Recoverable Zinc	mg/kg dry wt	-	-	-	68	72
<b>Organochlorine Pesticides Screening in Soil</b>						
Aldrin	mg/kg dry wt	-	-	-	< 0.010	< 0.010
alpha-BHC	mg/kg dry wt	-	-	-	< 0.010	< 0.010
beta-BHC	mg/kg dry wt	-	-	-	< 0.010	< 0.010
delta-BHC	mg/kg dry wt	-	-	-	< 0.010	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.010	< 0.010
cis-Chlordane	mg/kg dry wt	-	-	-	< 0.010	< 0.010
trans-Chlordane	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	-	-	-	< 0.04	< 0.04
2,4'-DDD	mg/kg dry wt	-	-	-	< 0.010	< 0.010
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.010	< 0.010
2,4'-DDE	mg/kg dry wt	-	-	-	< 0.010	< 0.010
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.010	0.021
2,4'-DDT	mg/kg dry wt	-	-	-	< 0.010	< 0.010
4,4'-DDT	mg/kg dry wt	-	-	-	< 0.010	0.020
Dieldrin	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endosulfan I	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endosulfan II	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endrin	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endrin aldehyde	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Endrin ketone	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Heptachlor	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.010	< 0.010
Methoxychlor	mg/kg dry wt	-	-	-	< 0.010	< 0.010
<b>Organonitro&amp;phosphorus Pesticides Screen in Soil by GCMS</b>						
Acetochlor	mg/kg	-	-	-	< 0.07	< 0.07
Alachlor	mg/kg	-	-	-	< 0.05	< 0.05
Atrazine	mg/kg	-	-	-	< 0.07	< 0.07
Atrazine-desethyl	mg/kg	-	-	-	< 0.07	< 0.07
Atrazine-desisopropyl	mg/kg	-	-	-	< 0.13	< 0.13
Azaconazole	mg/kg	-	-	-	< 0.04	< 0.04
Azinphos-methyl	mg/kg	-	-	-	< 0.13	< 0.13
Benalaxyl	mg/kg	-	-	-	< 0.04	< 0.04
Bitertanol	mg/kg	-	-	-	< 0.13	< 0.13
Bromacil	mg/kg	-	-	-	< 0.07	< 0.07
Bromopropylate	mg/kg	-	-	-	< 0.07	< 0.07
Butachlor	mg/kg	-	-	-	< 0.07	< 0.07
Captan	mg/kg	-	-	-	< 0.13	< 0.13

Sample Type: Soil						
Sample Name:	P2.4 0.1m 26-Nov-2014	P2.5 0.1m 26-Nov-2014	P2.6 0.1m 26-Nov-2014	Composite of C3/4.1 0.1m, C3/4.2 0.1m, C3/4.3 0.1m and C3/4.4 0.1m	Composite of C3/4.5 0.1m, C3/4.6 0.1m, C3/4.7 0.1m and C3/4.8 0.1m	
Lab Number:	1357128.81	1357128.82	1357128.83	1357128.84	1357128.85	

Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Carbaryl	mg/kg	-	-	-	< 0.07	< 0.07
Carbofuran	mg/kg	-	-	-	< 0.07	< 0.07
Chlorfluazuron	mg/kg	-	-	-	< 0.07	< 0.07
Chlorothalonil	mg/kg	-	-	-	< 0.07	< 0.07
Chlorpyrifos	mg/kg	-	-	-	< 0.07	< 0.07
Chlorpyrifos-methyl	mg/kg	-	-	-	< 0.07	< 0.07
Chlortoluron	mg/kg	-	-	-	< 0.13	< 0.13
Cyanazine	mg/kg	-	-	-	< 0.07	< 0.07
Cyfluthrin	mg/kg	-	-	-	< 0.08	< 0.08
Cyhalothrin	mg/kg	-	-	-	< 0.07	< 0.07
Cypermethrin	mg/kg	-	-	-	< 0.16	< 0.16
Deltamethrin (including Tralomethrin)	mg/kg	-	-	-	< 0.07	< 0.07
Diazinon	mg/kg	-	-	-	< 0.04	< 0.04
Dichlofluanid	mg/kg	-	-	-	< 0.07	< 0.07
Dichloran	mg/kg	-	-	-	< 0.2	< 0.2
Dichlorvos	mg/kg	-	-	-	< 0.09	< 0.09
Difenoconazole	mg/kg	-	-	-	< 0.09	< 0.10
Dimethoate	mg/kg	-	-	-	< 0.13	< 0.13
Diphenylamine	mg/kg	-	-	-	< 0.13	< 0.13
Diuron	mg/kg	-	-	-	< 0.07	< 0.07
Fenpropimorph	mg/kg	-	-	-	< 0.07	< 0.07
Fluazifop-butyl	mg/kg	-	-	-	< 0.07	< 0.07
Fluometuron	mg/kg	-	-	-	< 0.07	< 0.07
Flusilazole	mg/kg	-	-	-	< 0.07	< 0.07
Fluvalinate	mg/kg	-	-	-	< 0.05	< 0.05
Furalaxyl	mg/kg	-	-	-	< 0.04	< 0.04
Haloxifop-methyl	mg/kg	-	-	-	< 0.07	< 0.07
Hexaconazole	mg/kg	-	-	-	< 0.07	< 0.07
Hexazinone	mg/kg	-	-	-	< 0.04	< 0.04
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	-	-	-	< 0.4	< 0.4
Iprodione	mg/kg	-	-	-	< 0.07	< 0.07
Kresoxim-methyl	mg/kg	-	-	-	< 0.04	< 0.04
Linuron	mg/kg	-	-	-	< 0.07	< 0.07
Malathion	mg/kg	-	-	-	< 0.07	< 0.07
Metalaxyl (Mefenoxam)	mg/kg	-	-	-	< 0.07	< 0.07
Methamidophos	mg/kg	-	-	-	< 0.4	< 0.4
Metolachlor	mg/kg	-	-	-	< 0.05	< 0.05
Metribuzin	mg/kg	-	-	-	< 0.07	< 0.07
Molinate	mg/kg	-	-	-	< 0.13	< 0.13
Myclobutanil	mg/kg	-	-	-	< 0.07	< 0.07
Naled	mg/kg	-	-	-	< 0.4	< 0.4
Norflurazon	mg/kg	-	-	-	< 0.13	< 0.13
Oxadiazon	mg/kg	-	-	-	< 0.07	< 0.07
Oxyfluorfen	mg/kg	-	-	-	< 0.04	< 0.04
Paclobutrazol	mg/kg	-	-	-	< 0.07	< 0.07
Parathion-ethyl	mg/kg	-	-	-	< 0.07	< 0.07
Parathion-methyl	mg/kg	-	-	-	< 0.07	< 0.07
Pendimethalin	mg/kg	-	-	-	< 0.07	< 0.07
Permethrin	mg/kg	-	-	-	< 0.03	< 0.03
Pirimicarb	mg/kg	-	-	-	< 0.07	< 0.07
Pirimiphos-methyl	mg/kg	-	-	-	< 0.07	< 0.07
Prochloraz	mg/kg	-	-	-	< 0.4	< 0.4

Sample Type: Soil						
<b>Sample Name:</b>	P2.4 0.1m 26-Nov-2014	P2.5 0.1m 26-Nov-2014	P2.6 0.1m 26-Nov-2014	Composite of C3/4.1 0.1m, C3/4.2 0.1m, C3/4.3 0.1m and C3/4.4 0.1m	Composite of C3/4.5 0.1m, C3/4.6 0.1m, C3/4.7 0.1m and C3/4.8 0.1m	
<b>Lab Number:</b>	1357128.81	1357128.82	1357128.83	1357128.84	1357128.85	
Organonitro&phosphorus Pesticides Screen in Soil by GCMS						
Procymidone	mg/kg	-	-	-	< 0.07	< 0.07
Prometryn	mg/kg	-	-	-	< 0.04	< 0.04
Propachlor	mg/kg	-	-	-	< 0.07	< 0.07
Propanil	mg/kg	-	-	-	< 0.2	< 0.2
Propazine	mg/kg	-	-	-	< 0.04	< 0.04
Propiconazole	mg/kg	-	-	-	< 0.05	< 0.05
Pyriproxyfen	mg/kg	-	-	-	< 0.07	< 0.07
Quizalofop-ethyl	mg/kg	-	-	-	< 0.07	< 0.07
Simazine	mg/kg	-	-	-	< 0.07	< 0.07
Simetryn	mg/kg	-	-	-	< 0.07	< 0.07
Sulfentrazone	mg/kg	-	-	-	< 0.4	< 0.4
TCMTB [2-(thiocyanomethylthio) benzothiazole, Busan]	mg/kg dry wt	-	-	-	< 0.13	< 0.13
Tebuconazole	mg/kg	-	-	-	< 0.07	< 0.07
Terbacil	mg/kg	-	-	-	< 0.07	< 0.07
Terbufos	mg/kg	-	-	-	< 0.07	< 0.07
Terbumeton	mg/kg	-	-	-	< 0.07	< 0.07
Terbuthylazine	mg/kg	-	-	-	< 0.04	< 0.04
Terbuthylazine-desethyl	mg/kg	-	-	-	< 0.07	< 0.07
Terbutryn	mg/kg	-	-	-	< 0.07	< 0.07
Thiabendazole	mg/kg	-	-	-	< 0.4	< 0.4
Thiobencarb	mg/kg	-	-	-	< 0.07	< 0.07
Tolyfluanid	mg/kg	-	-	-	< 0.04	< 0.04
Triazophos	mg/kg	-	-	-	< 0.07	< 0.07
Trifluralin	mg/kg	-	-	-	< 0.07	< 0.07
Vinclozolin	mg/kg	-	-	-	< 0.07	< 0.07
<b>Sample Name:</b>	Composite of St26 0.1m and St27 0.1m	Composite of St28 0.1m, St29 0.1m, St30 0.1m and St31 0.1m				
<b>Lab Number:</b>	1357128.86	1357128.87				
Individual Tests						
Dry Matter	g/100g as rcvd	78	86	-	-	-
Total Recoverable Boron	mg/kg dry wt	< 20	< 20	-	-	-
Total Recoverable Cobalt	mg/kg dry wt	3.1	8.4	-	-	-
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg						
Total Recoverable Arsenic	mg/kg dry wt	5	7	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	0.22	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	16	17	-	-	-
Total Recoverable Copper	mg/kg dry wt	11	13	-	-	-
Total Recoverable Lead	mg/kg dry wt	16.1	27	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Nickel	mg/kg dry wt	6	13	-	-	-
Total Recoverable Zinc	mg/kg dry wt	77	77	-	-	-
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.010	< 0.010	-	-	-
alpha-BHC	mg/kg dry wt	< 0.010	< 0.010	-	-	-
beta-BHC	mg/kg dry wt	< 0.010	< 0.010	-	-	-
delta-BHC	mg/kg dry wt	< 0.010	< 0.010	-	-	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010	< 0.010	-	-	-
cis-Chlordane	mg/kg dry wt	< 0.010	< 0.010	-	-	-
trans-Chlordane	mg/kg dry wt	< 0.010	< 0.010	-	-	-

Sample Type: Soil

<b>Sample Name:</b>	Composite of St26 0.1m and St27 0.1m	Composite of St28 0.1m, St29 0.1m, St30 0.1m and St31 0.1m
<b>Lab Number:</b>	1357128.86	1357128.87

Organochlorine Pesticides Screening in Soil				
Total Chlordane [(cis+trans)* 100/42]	mg/kg dry wt	< 0.04	< 0.04	-
2,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	-
4,4'-DDD	mg/kg dry wt	< 0.010	< 0.010	-
2,4'-DDE	mg/kg dry wt	< 0.010	< 0.010	-
4,4'-DDE	mg/kg dry wt	0.21	< 0.010	-
2,4'-DDT	mg/kg dry wt	< 0.010	< 0.010	-
4,4'-DDT	mg/kg dry wt	0.054	< 0.010	-
Dieldrin	mg/kg dry wt	< 0.010	< 0.010	-
Endosulfan I	mg/kg dry wt	< 0.010	< 0.010	-
Endosulfan II	mg/kg dry wt	< 0.010	< 0.010	-
Endosulfan sulphate	mg/kg dry wt	< 0.010	< 0.010	-
Endrin	mg/kg dry wt	< 0.010	< 0.010	-
Endrin aldehyde	mg/kg dry wt	< 0.010	< 0.010	-
Endrin ketone	mg/kg dry wt	< 0.010	< 0.010	-
Heptachlor	mg/kg dry wt	< 0.010	< 0.010	-
Heptachlor epoxide	mg/kg dry wt	< 0.010	< 0.010	-
Hexachlorobenzene	mg/kg dry wt	< 0.010	< 0.010	-
Methoxychlor	mg/kg dry wt	< 0.010	< 0.010	-

Organonitro&phosphorus Pesticides Screen in Soil by GCMS				
Acetochlor	mg/kg	< 0.07	< 0.06	-
Alachlor	mg/kg	< 0.05	< 0.05	-
Atrazine	mg/kg	< 0.07	< 0.06	-
Atrazine-desethyl	mg/kg	< 0.07	< 0.06	-
Atrazine-desisopropyl	mg/kg	< 0.13	< 0.11	-
Azaconazole	mg/kg	< 0.04	< 0.03	-
Azinphos-methyl	mg/kg	< 0.13	< 0.11	-
Benalaxyl	mg/kg	< 0.04	< 0.03	-
Bitertanol	mg/kg	< 0.13	< 0.11	-
Bromacil	mg/kg	< 0.07	< 0.06	-
Bromopropylate	mg/kg	< 0.07	< 0.06	-
Butachlor	mg/kg	< 0.07	< 0.06	-
Captan	mg/kg	< 0.13	< 0.11	-
Carbaryl	mg/kg	< 0.07	< 0.06	-
Carbofuran	mg/kg	< 0.07	< 0.06	-
Chlorfluazuron	mg/kg	< 0.07	< 0.06	-
Chlorothalonil	mg/kg	< 0.07	< 0.06	-
Chlorpyrifos	mg/kg	< 0.07	< 0.06	-
Chlorpyrifos-methyl	mg/kg	< 0.07	< 0.06	-
Chlortoluron	mg/kg	< 0.13	< 0.11	-
Cyanazine	mg/kg	< 0.07	< 0.06	-
Cyfluthrin	mg/kg	< 0.08	< 0.07	-
Cyhalothrin	mg/kg	< 0.07	< 0.06	-
Cypermethrin	mg/kg	< 0.15	< 0.14	-
Deltamethrin (including Tralomethrin)	mg/kg	< 0.07	< 0.06	-
Diazinon	mg/kg	< 0.04	< 0.03	-
Dichlofluanid	mg/kg	< 0.07	< 0.06	-
Dichloran	mg/kg	< 0.2	< 0.2	-
Dichlorvos	mg/kg	< 0.09	< 0.09	-
Difenoconazole	mg/kg	< 0.09	< 0.09	-
Dimethoate	mg/kg	< 0.13	< 0.11	-
Diphenylamine	mg/kg	< 0.13	< 0.11	-
Diuron	mg/kg	< 0.07	< 0.06	-
Fenpropimorph	mg/kg	< 0.07	< 0.06	-

Sample Type: Soil					
Sample Name:		Composite of St26 0.1m and St27 0.1m	Composite of St28 0.1m, St29 0.1m, St30 0.1m and St31 0.1m		
Lab Number:		1357128.86	1357128.87		
Organonitro&phosphorus Pesticides Screen in Soil by GCMS					
Fluazifop-butyl	mg/kg	< 0.07	< 0.06	-	-
Fluometuron	mg/kg	< 0.07	< 0.06	-	-
Flusilazole	mg/kg	< 0.07	< 0.06	-	-
Fluvalinate	mg/kg	< 0.05	< 0.05	-	-
Furalaxyl	mg/kg	< 0.04	< 0.03	-	-
Haloxifop-methyl	mg/kg	< 0.07	< 0.06	-	-
Hexaconazole	mg/kg	< 0.07	< 0.06	-	-
Hexazinone	mg/kg	< 0.04	< 0.03	-	-
IPBC (3-Iodo-2-propynyl-n-butylcarbamate)	mg/kg dry wt	< 0.4	< 0.3	-	-
Iprodione	mg/kg	< 0.07	< 0.06	-	-
Kresoxim-methyl	mg/kg	< 0.04	< 0.03	-	-
Linuron	mg/kg	< 0.07	< 0.06	-	-
Malathion	mg/kg	< 0.07	< 0.06	-	-
Metalaxyl (Mefenoxam)	mg/kg	< 0.07	< 0.06	-	-
Methamidophos	mg/kg	< 0.4	< 0.3	-	-
Metolachlor	mg/kg	< 0.05	< 0.05	-	-
Metribuzin	mg/kg	< 0.07	< 0.06	-	-
Molinate	mg/kg	< 0.13	< 0.11	-	-
Myclobutanil	mg/kg	< 0.07	< 0.06	-	-
Naled	mg/kg	< 0.4	< 0.3	-	-
Norflurazon	mg/kg	< 0.13	< 0.11	-	-
Oxadiazon	mg/kg	< 0.07	< 0.06	-	-
Oxyfluorfen	mg/kg	< 0.04	< 0.03	-	-
Paclobutrazol	mg/kg	< 0.07	< 0.06	-	-
Parathion-ethyl	mg/kg	< 0.07	< 0.06	-	-
Parathion-methyl	mg/kg	< 0.07	< 0.06	-	-
Pendimethalin	mg/kg	< 0.07	< 0.06	-	-
Permethrin	mg/kg	< 0.03	< 0.03	-	-
Pirimicarb	mg/kg	< 0.07	< 0.06	-	-
Pirimiphos-methyl	mg/kg	< 0.07	< 0.06	-	-
Prochloraz	mg/kg	< 0.4	< 0.3	-	-
Procymidone	mg/kg	< 0.07	< 0.06	-	-
Prometryn	mg/kg	< 0.04	< 0.03	-	-
Propachlor	mg/kg	< 0.07	< 0.06	-	-
Propanil	mg/kg	< 0.2	< 0.2	-	-
Propazine	mg/kg	< 0.04	< 0.03	-	-
Propiconazole	mg/kg	< 0.05	< 0.05	-	-
Pyriproxyfen	mg/kg	< 0.07	< 0.06	-	-
Quizalofop-ethyl	mg/kg	< 0.07	< 0.06	-	-
Simazine	mg/kg	< 0.07	< 0.06	-	-
Simetryn	mg/kg	< 0.07	< 0.06	-	-
Sulfentrazone	mg/kg	< 0.4	< 0.3	-	-
TCMTB [2-(thiocyanomethylthio)benzothiazole, Busan]	mg/kg dry wt	< 0.13	< 0.11	-	-
Tebuconazole	mg/kg	< 0.07	< 0.06	-	-
Terbacil	mg/kg	< 0.07	< 0.06	-	-
Terbufos	mg/kg	< 0.07	< 0.06	-	-
Terbumeton	mg/kg	< 0.07	< 0.06	-	-
Terbutylazine	mg/kg	< 0.04	< 0.03	-	-
Terbutylazine-desethyl	mg/kg	< 0.07	< 0.06	-	-
Terbutryn	mg/kg	< 0.07	< 0.06	-	-
Thiabendazole	mg/kg	< 0.4	< 0.3	-	-
Thiobencarb	mg/kg	< 0.07	< 0.06	-	-



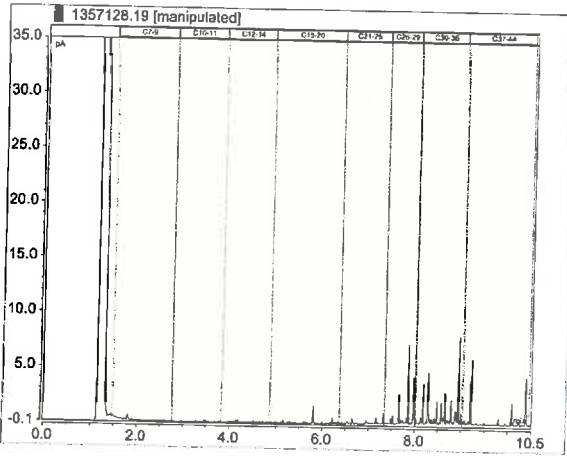
Sample Type: Soil

**Sample Name:** Composite of St26 0.1m and St27 0.1m      Composite of St28 0.1m, St29 0.1m, St30 0.1m and St31 0.1m  
**Lab Number:** 1357128.86      1357128.87

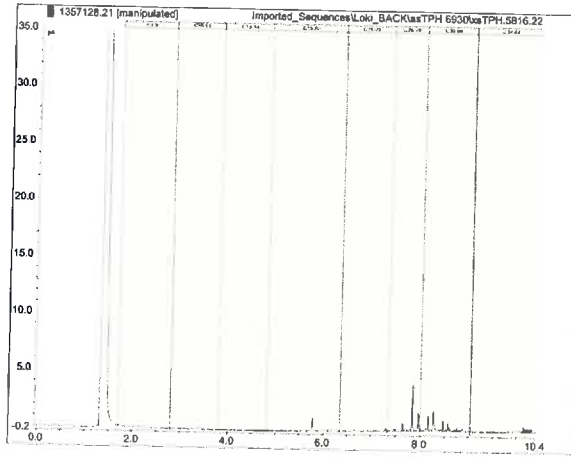
Organonitro&phosphorus Pesticides Screen in Soil by GCMS

Tolyfluanid	mg/kg	< 0.04	< 0.03	-	-	-
Triazophos	mg/kg	< 0.07	< 0.06	-	-	-
Trifluralin	mg/kg	< 0.07	< 0.06	-	-	-
Vinclozolin	mg/kg	< 0.07	< 0.06	-	-	-

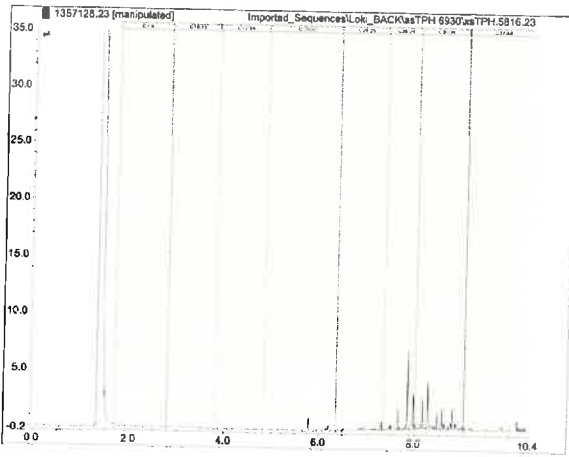
1357128.19  
 TS10 0.1m 26-Nov-2014  
 Client Chromatogram for TPH by FID



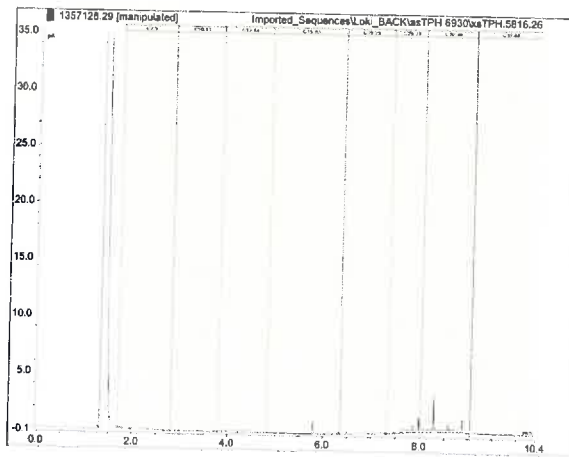
1357128.21  
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 Client Chromatogram for TPH by FID



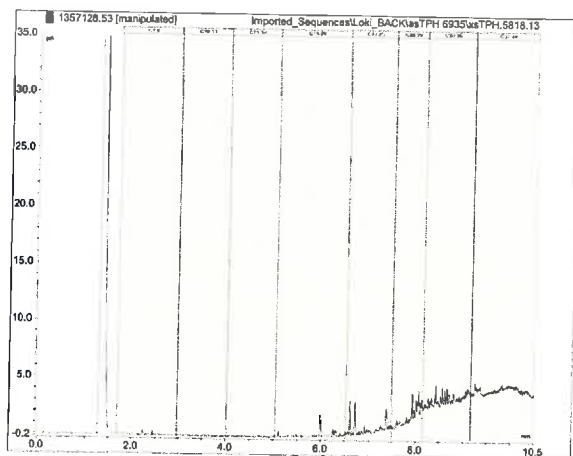
1357128.23  
 TS12 0.1m 26-Nov-2014  
 Client Chromatogram for TPH by FID



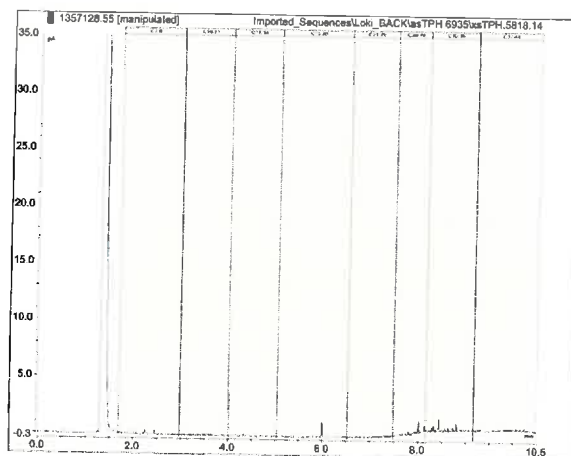
1357128.29  
 TS15 0.1m 26-Nov-2014  
 Client Chromatogram for TPH by FID



1357128.53  
 TS27 0.1m 26-Nov-2014  
 Client Chromatogram for TPH by FID



1357128.55  
 TS28 0.1m 26-Nov-2014  
 Client Chromatogram for TPH by FID



### Analyst's Comments

It has been noted that the spikes for ONOP on sample 1357128.87 was run as part of our in-house QC procedure, had lower than expected recoveries for Fenpropimorph and Chlorfluazuron. Therefore the results may be underestimated.

## 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 clean 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.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 69-71, 74-87
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	69-71, 84-87
Heavy metal screen level As,Cd,Cr,Cu,Ni,Pb,Zn	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59
Organochlorine/nitro&phosphorus Pests Screen in Soils, GCMS	Sonication extraction, Dilution cleanup, GC-MS analysis. Tested on as received sample	-	69-71, 84-87
Total Petroleum Hydrocarbons in Soil	Sonication extraction in DCM, Silica cleanup, GC-FID analysis US EPA 8015B/MfE Petroleum Industry Guidelines. Tested on as received sample [KBis:5786.2805.10734]	6 - 60 mg/kg dry wt	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59

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. US EPA 3550. (Free water removed before analysis).	0.10 g/100g as rcvd	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 69-71, 84-87
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 69-71, 74-87
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	61-68, 72-77
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	74-83
Total Recoverable Boron	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	20 mg/kg dry wt	69-71, 84-87
Total Recoverable Cobalt	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	69-71, 84-87
Total Recoverable Lead	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	78-83

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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