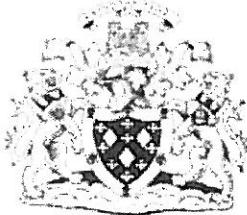


Stephen Wignall

From: Stephen Wignall
Sent: 27 January 2010 09:58
To: Jim Seymour;
Cc: Karen Dyson
Subject: DC/024357: Reddish North Primary school & Children's Centre



STOCKPORT

METROPOLITAN BOROUGH COUNCIL

**COMMUNITIES, REGENERATION & ENVIRONMENT DIRECTORATE
MEMORANDUM**

To: Jim Seymour
Your Ref: DC/024357
Date: 27/01/10
From: Stephen Wignall. (Environmental Health Officer)
Tel No: 474- 4264

Subject: Reddish North Primary school & Children's Centre

I write further to my review of Report Ground Investigation Report UV000174 & Remediation Strategy Report UV000174 produced by Urbanvision in support of the following conditions under approved planning permission DC/024357

Condition: - Non Standard Condition Prior to the commencement of development approved by this planning permission (or such other date or stage in development as may be agreed in writing with the Local Planning Authority), the following components of a scheme to deal with the risks associated with contamination of the site shall each be submitted to and approved, in writing, by the local planning authority:

1. A preliminary risk assessment which has identified:

- all previous uses
- potential contaminants associated with those uses
- a conceptual model of the site indicating sources, pathways and receptors
- potentially unacceptable risks arising from contamination at the site.

2. A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.

3. The site investigation results and the detailed risk assessment (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.

4. A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Further to my review of the reports detailed above, in accordance with the proposed Remediation Strategy for the development site I would like the following measures to be

incorporated into the proposed remediation scheme.

In accordance with guidance recommended guidance provided under CIRIA C665 The building structure shall be constructed with:

- A Reinforced concrete cast *in situ* floor slab (suspended, non-suspended or raft) with at least 1200 g DPM². The membrane shall go across any cavity, with all joints and penetrations sealed in accordance with manufactures installation instructions. The installation of this membrane shall be subsequently validated during installation to ensure that the integrating of the membrane has been preserved throughout the slabs construction (validation for the membrane installation, shall be included in verification report for the site).

Throughout the installation of the proposed cover system:

- Any site won materials intended for reuse on site shall be validated for their suitability,
- A sampling regime shall be employed of not less than 1 sample per 30m³ of material, samples shall be screened against PAH derived guidance values & CLEA guidance values.
- Screened material found to suitable for use shall only be used as subsoil.
- All top soil shall be imported to site and sampled prior to use.
- Throughout the installation of the cover system, soils shall be compacted during deposition in order to prevent settlement. The specification of the installed cover system shall be in accordance with the Remediation Strategy Report UV000174.
- The depth of the cover system shall be validated during installation, (validation of the cover depth shall be included as part of the verification report)
- Analytical documentation for any site won material as well as imported soils shall be included within the verification report for the site.
- The disposal of any contaminated material off site shall be supported with waste transfer documentation and shall be included within the verification report for the site.

To summarise the validation of the cover system shall provide complete traceability for the excavation of materials from site, sampling and reuse of any site won materials, disposal of materials off site, as well as the importation of materials to site.

Stephen Wignall

From:
Sent: 12 July 2010 12:23
To: Stephen Wignall
Cc:
Subject: Reddish Primary School - Ground Remediation
Attachments: Re-use of Topsoil Proposals - rev A.doc
Stephen

We have now commenced work on site on the new Reddish Primary school scheme.

Prior to commencing we undertook further topsoil sampling in line with earlier discussions between Urban Vision and yourselves. The analysis of this sampling found 18 samples to be clear but one to be contaminated with asbestos.

Our preference is still to use the topsoil won from site as a subsoil in the remediation system to minimise the cost and disruption arising from the removal of this material and replacement with topsoil sourced elsewhere. We have therefore investigated methods by which contamination could be removed from the soil. These proposals are set out in the attached document. The proposals have been reviewed by Urban Vision who has accepted the proposed methodology. The proposals attached are a revision A version, incorporating Urban Vision's recommendations for verification testing.

Can you please consider the arrangements suggested and advise whether these would be acceptable to you.

If the principle of the re-use of the on site topsoil is acceptable, could you please liaise with Urban Vision to agree a testing frequency.

If you require further clarification of our proposals please do not hesitate to contact me.

Regards

BAM Construction Ltd

| www.bam.co.uk

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Reddish North Primary School

Remediation Works: Re-use of on site Topsoil

07.07.10 (revision A, 12.07.10)

Existing Topsoil History

- 19 soil samples were taken from the on site topsoil on 14.06.10, in advance of the topsoil strip exercise.
- Prior to receipt of the results the topsoil was stripped and built into stockpiles.
- Urban Vision advised on 23.06.10 that analysis of the samples showed 18 samples to be clear whilst one sample showed contamination by a material containing asbestos.
- At a visit to inspect the surface material on these stockpiles on 25.06.10 Urban Vision found a further 5 pieces of suspect material, 4 of which appeared to be asbestos cement, one being a fibrous material. The latter sample was sent for analysis.
- Urban Vision confirmed on 30.06.10 that analysis of the fibrous material had found it to contain Amosite and Chrysotile.
- Meeting held between BAM and Urban Vision on 02.07.10 to discuss possible options for de-contamination of the topsoil to permit re-use.
- The re-use of the topsoil has been discussed with the HSE. Their guidance was that contamination with asbestos cement should not be a concern, given the binding of the fibre content into the cement matrix. They also pointed out the threshold levels below which the topsoil would not be considered to be contaminated (0.1% w/w for hazardous waste, 0.001% w/w controlled waste).

Treatment Proposals

The following options have been considered for the de-contamination of the topsoil:

- Screening
- Hand picking from a conveyor belt, fed by an excavator
- Hand picking from the material after spreading by Dozer
- Hand picking from the material after spreading by excavator

After consideration of these options

- Screening was considered unsuitable as it could generate dust problems for the surrounding properties and it could be suggested that wind blown dust might be contaminated. Furthermore, the screening process would not remove pieces smaller than the size of a 10p/50p coin and could not be progressed unless the material was absolutely dry.
- Hand picking from a conveyor belt was considered to be unacceptably slow.
- It is considered that material spread by dozer would be too thick to be effectively picked. In addition a significant proportion of the spread material would be tracked-in behind the blade. Use of the dozer in combination with a hand picking exercise would not be economic solution.

Page 2

- Hand picking from material distributed by excavator is considered to provide the greatest control of material depth for effective picking.

Method of Working

- An area would be prepared using a 360 excavator. Topsoil would be spread over the geotextile membrane.
- The machine would then commence the preparation of a second area.
- Hand picking to remove asbestos would be undertaken by operatives from a licenced asbestos removal contractor with any suspect material recovered bagged for safe disposal.
- Segregation would be provided between the separate areas occupied by the pickers and the excavator with crowd barrier fencing.
- The process would be repeated with the topsoil built up in layers to form the sub-soil element of the remediation cover.
- After completion of the distribution and picking of the on-site topsoil, tested and certificated imported material would be blinded over the surface of the on site material in accordance with the recommendations of the Remediation Strategy Report.

Verification

- Urban Vision has recommended that further verification testing be carried out following the remediation, to ensure the work has been successful and the material is suitable for use.
- Their detailed recommendations are that once the visible pieces of asbestos have been removed by the asbestos specialist, additional soil samples are taken and screened for asbestos fibres. Should asbestos fibres be detected, further testing should be carried out to determine the % weight of asbestos per weight of soil. By undertaking this additional testing it will be possible to confirm whether the material is safe to be re-used by classifying the material.

Stephen Wignall

From: [redacted]
Sent: 11 June 2010 11:51
To: Stephen Wignall
Subject: Reddish North Primary School and Children's Centre, Stockport
Attachments: Sampling Strat Reuse of Topsoil (N).pdf

Steve,

Further to our previous conversation, I've been unable to find your comments to our remediation strategy. I have detailed below our sampling strategy for the re-use of topsoil at the above site. I understand I may need to revise our strategy following the comments you are to send me, however I thought it would be useful to let you know what we were proposing.

Our remediation strategy recommended a cover material of 0.4m (topsoil and subsoil) over either a 0.1m granular material or a geotextile membrane. The developer has opted for the geotextile membrane.

The site strip in the northern part of the site is to commence next week. The developer would like to excavate the topsoil in the north of the site and re-use as the subsoil within the cover material in the south of the site. A final imported and verified topsoil will then be placed over the site-won material. We have advised that the material will need to be tested to ensure it is suitable for use. Rather than stockpiling the topsoil it would be more practical to move the material directly into its final location (over a geotextile membrane). It would therefore be preferable to test while that material is still in-situ, before it is moved.

The area to be excavated in the northern part of the site is approximately 12000m², assuming the topsoil is 0.2m deep, this would give a volume of 2400m³. Using the strategy of 1 sample per 50m³ would mean 48 samples would need to be tested. This seems like an excessive amount of sampling to determine the suitability for re-use. Alternatively we suggest taking a sample in situ using a 25m² grid pattern. We will dig to 0.2m, collect the sample, describe the material and take photographs. I have attached a plan showing the sampling locations. We propose taking 19 samples and test for standard suite including asbestos screen, metals, inorganics and organics including speciated PAHs. We will assess the suitability of the material based on the chemical results and the physical condition of the soil.

We have chosen the 25m spacing in line with non-targeted sampling for a main investigation as outlined in BS10175, we believe this strategy should give sufficient data to identify if the material is fit for use.

The attached plan has the base OS map with the proposed development overlaid. The black outline is the area the topsoil will be excavated and the lines are 25m gridlines.

I will await your response with your comments. Let me know if you require any further information.

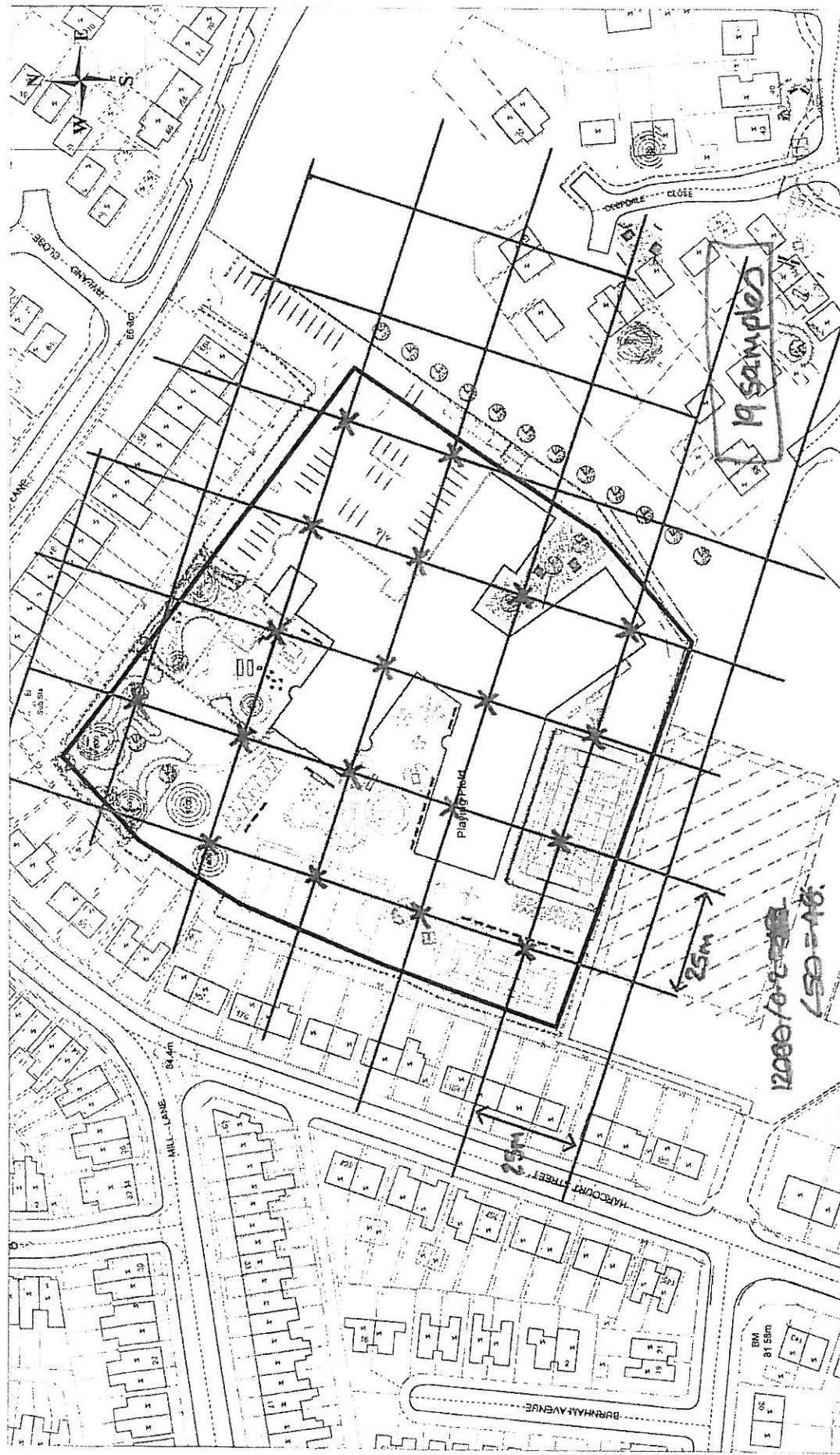
Many Thanks

Geologist
Urban Vision Partnership Ltd

Tel:
Mob:
Fax:
Web: www.urbanvision.org.uk

Environment - 3rd Floor, Emerson House, Albert Street, Eccles, Salford M30 0TE
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**Urban Vision Partnership Ltd
Environment**

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Reddish Primary School

X Sampling locations based on 25m grid

Date: June 2010
Scale: 1:1250
Client: BAM Construction Ltd
Job Ref:

urbanvision

Stephen Wignall

From:
Sent: 11 June 2010 14:07
To: Stephen Wignall
Subject: Reddish North Primary School
Attachments: Soil results - generic assessment criteria.xls
Steve

We were discussing splitting the site into the school and public open space. It got me looking into the investigation again. I split the results into north (BH1 to BH9) and south (BH10, BH11 and TP1 to TP4).

From a review of the results it looks like the majority of the contamination was identified in the south of the site.

The only elevated contaminants in the north against generic assessment criteria were BaP at 1.1mg/kg and 1.3mg/kg. These concentrations fall well below our site derived assessment criteria.

I've attached the spreadsheet for you to have a look at. Thought it might help justify my proposal for testing the topsoil in the north.

Regards

Cath

Geologist
Urban Vision Partnership Ltd

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**Soil Contamination Results Compared to
Human Health Assessment Criteria**

Contaminant	KEY:	Result exceeds assessment criteria		No assessment criteria available and result exceeds limit of detection											
		Units	LoD	Sample Identity	Location + depth	TP0205	TH2A	TH2B	TH2C	TH2D	SAMPLE C1	SAMPLE C2	SAMPLE C3	SAMPLE C4	
Cyanide (Total)	mg/kg	1	-	CLEA SGV for residential with plant uptake	CLEA SGV for residential without plant uptake	LQM GAC for residential without plant uptake	-	<1	<1	<1	<1	<1	<1	<1	
Phenols (Total-Mono)	mg/kg	1	-	SOM 1%: 78	SOM 1%: 21,900	-	-	<1	<1	<1	<1	<1	<1	<1	
Sulphide	mg/kg	10	-	SOM 2.5%: 150	SOM 2.5%: 34,400	-	-	<10	<10	<10	<10	<10	<10	<10	
Arsenic	mg/kg	<3.0	-	SOM 5%: 281	SOM 5%: 37,300	-	-	170	9	23	31	19	-	-	
Boron	mg/kg	<3.5	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	
Cadmium	mg/kg	<0.3	-	pH6: 1, pH7: 2, pH8: 5	-	-	-	2	<1	<1	<1	3	2	-	
Chromium	mg/kg	<4.5	-	-	-	-	-	57	17	21	35	32	-	-	
Copper	mg/kg	<6	-	-	-	-	-	370	42	110	200	100	-	-	
Lead	mg/kg	<2	-	-	-	-	-	340	92	190	230	170	-	-	
Mercury	mg/kg	<0.6	-	Elemental: 10;	-	-	-	<1	<1	<1	<1	<1	<1	<1	
Nickel	mg/kg	<0.9	-	Inorganic: 170;	-	-	-	-	-	-	-	-	-	-	
Selenium	mg/kg	<1	-	Methyl: 11	-	-	-	-	-	-	-	-	-	-	
Sulphate (Total)	mg/kg	<100	-	(based on 6% SOM)	-	-	-	-	-	-	-	-	-	-	
Zinc	mg/kg	<2.5	-	-	-	-	-	<2	<2	<2	<2	<2	<2	<2	
pH Value	Units	<1.00	-	-	-	-	-	0.35	0.11	0.17	0.15	0.2	-	-	
Asbestos Presence Screen	NONE	-	-	-	-	-	-	300	92	163	220	170	-	-	
Poly-chlorinated Biphenyls (Total)	µg/kg	0.05	-	-	-	-	-	78	6.6	7.5	7.7	7.6	-	-	
Loss on ignition	%	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	
PAH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Naphthalene	mg/kg	0.1	-	-	-	-	-	SOM 1%: 6.94 SOM 2.5%: 2.5%: 17.10 SOM 5%: 33.70	<0.1	<0.1	0.2	0.3	<0.1	<0.1	
Acenaphthylene	mg/kg	0.1	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	-	-	-	-	-	-	0.1	0.1	0.6	0.7	-	-	-
Fluoranthene	mg/kg	0.1	-	-	-	-	-	SOM 1%: 2.770 SOM 2.5%: 2.5%: 10.40 SOM 5%: 2,700	<0.1	<0.1	0.5	0.6	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	-	-	-	-	-	-	<0.1	1.5	7.7	8.9	0.7	-	-
Anthracene	mg/kg	0.1	-	-	-	-	-	-	<0.1	0.5	2.8	3.2	0.2	-	-
Fluoranthene	mg/kg	0.1	-	-	-	-	-	-	<0.1	3.0	12	11	1.9	-	-
Pyrene	mg/kg	0.1	-	-	-	-	-	-	<0.1	3.6	10	9	1.8	-	-
Benz(a)anthracene	mg/kg	0.1	-	-	-	-	-	-	<0.1	1.5	4.6	4.8	1	-	-
Crysenic	mg/kg	0.1	-	-	-	-	-	-	<0.1	1.2	4.5	4.5	0.9	-	-
Benz(o)fluoranthene	mg/kg	0.1	-	-	-	-	-	-	<0.1	1.6	6.4	6.4	1.2	-	-
Benzo(a)pyrene	mg/kg	0.1	-	-	-	-	-	SOM 1%: 1.30 SOM 2.5%: 1.31 SOM 5%: 1.32	<0.1	1	3.4	3.4	0.6	-	-
Indeno[1,2,3- <i>cd</i>]pyrene	mg/kg	0.1	-	-	-	-	-	-	<0.1	1	2.3	2.1	0.5	-	-
Dibenzo[a,h]anthracene	mg/kg	0.1	-	-	-	-	-	SOM 1%: 1.30 SOM 2.5%: 1.34 SOM 5%: 1.32	<0.1	0.3	0.6	0.5	0.1	-	-
Benzo[ghi]perylene	mg/kg	0.1	-	-	-	-	-	-	<0.1	1.2	2.6	2.3	0.6	-	-

Soil Contamination Results Compared to Human Health Assessment Criteria

Contaminant	Key:	Result exceeds assessment criteria	No assessment criteria available and result exceeds limit of detection	SCHOOL												
				Location + depth			SAMPLE C1			SAMPLE C2			SAMPLE C3			SAMPLE C4
Sample Identity	BH01/05	BH01/05	BH1 CB 5m	BH2 5m	BH3 C5	BH3 C5	BH4/05	BH4/05	BH5 4.6m	BH6/05	BH7/C5 5m	BH8/05	BH9/05	BH10 6m	BH11 C6 6m	BH11 5m
Location + depth	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Depth	1.0-1.1	1.0-1.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Cyanide (Total)	mg/kg	1	-	SOM 1%: 21,900 SOM 2.5%: 34,400 SOM 5%: 37,200	Not used	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Phenols (Total-Mono)	Units	LoD	CLEA SGV for residential plant uptake	CLEA SGV for residential without plant uptake	-	-	-	-	-	-	-	-	-	-	-	-
Subphide	mg/kg	10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Arsenic	mg/kg	<3.0	32	-	21	4	1	5	7	11	<1	13	2	6	17	10
Boron	mg/kg	<3.5	-	SOM 6%: 291	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	24	<1
Cadmium	mg/kg	<0.3	Not used	30	Not used	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	<4.5	Not used	200	Not used*	27	14	7	23	27	22	6	16	6	26	16
Copper	mg/kg	<6	-	SOM 6%: 2330	66	14	8	21	24	45	9	46	6	23	44	16
Lead	mg/kg	<2	Not used	450	-	110	22	6	10	18	110	23	89	4	16	69
Mercury	mg/kg	<0.6	Inorganic: 170; Methyl: 11 (based on 6% SOM)	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	mg/kg	<0.9	130	SOM 6%: 351	-	31	16	8	29	36	20	2	15	8	32	25
Selenium	mg/kg	<3	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	22	21
Sulphate (Total)	mg/kg	<100	-	-	0.09	0.09	0.02	0.02	0.02	0.02	0.02	0.05	0.14	0.02	0.11	0.35
Zinc	mg/kg	<2.5	-	SOM 6%: 3750	140	80	21	62	61	100	12	110	17	59	84	12
pH Value	pH Unit:	<1.00	-	-	7.3	10	6.5	8.3	8.3	8.5	8.1	7.9	8.9	6.9	9.9	10.3
Asbestos Presence Screen	None	-	-	-	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Poly-chlorinated Biphenyls (Total)	µg/kg	0.05	-	-	2.6	-	-	-	-	-	-	-	-	-	-	-
Loss on Ignition	%	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAH	mg/kg	-	SOM 1%: SOM 2.5%: SOM 5%;	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	ng/kg	0.1	-	-	SOM 2.5%: 3.7	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	ng/kg	0.1	-	-	SOM 1%: 170	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	ng/kg	0.1	-	-	SOM 2.5%: 400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	ng/kg	0.1	-	-	SOM 1%: 210	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	ng/kg	0.1	-	-	SOM 2.5%: 480	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	ng/kg	0.1	-	-	SOM 5%: 1000	SOM 1%: 160	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Soil Contamination Results Compared to Human Health Assessment Criteria		KEY: Result exceeds assessment criteria	NO ASSESSMENT												SCHOOL														
Contaminant	Units	LoD	CLEA SGV for residential with plant uptake			CLEA SGV for residential without plant uptake			LQM GAC for residential			SAMPLE C1			SAMPLE C2			SAMPLE C3			SAMPLE C4			SAMPLE C5			SAMPLE C6		
			Sample Type	Depth	Soil	Sample C1	Soil	Sample C2	Soil	Sample C3	Soil	Soil	Soil																
Pyrene	mg/kg	0.1	-	-	SOM 1%: 560 SOM 2.5%: 1000 SOM 5%: 1600	0.1	1.2	<0.1	<0.1	0.7	0.7	0.3	<0.1	<0.1	<0.1	<0.1	2.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Benz(a)anthracene	mg/kg	0.1	-	-	SOM 1%: 3.1 SOM 2.5%: 4.7 SOM 5%: 5.9	<0.1	0.9	<0.1	<0.1	0.3	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.3	6.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	-	-	SOM 1%: 6.0 SOM 2.5%: 8.0 SOM 5%: 9.3	<0.1	1.1	<0.1	<0.1	0.4	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.3	2.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(b/k)fluoranthene	mg/kg	0.1	-	-	**SOM 1%: 5.6 SOM 2.5%: 9.6 SOM 5%: 10	0.1	2.3	<0.1	<0.1	0.5	0.5	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.7	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)pyrene	mg/kg	0.1	-	-	SOM 2.5%: 0.94 SOM 5%: 1.0	<0.1	1.3	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	2.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	SOM 1%: 3.2 SOM 2.5%: 3.9 SOM 5%: 4.2	<0.1	1.4	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	0.1	-	-	SOM 1%: 0.76 SOM 2.5%: 0.86	<0.1	0.2	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(ghi)perylene	mg/kg	0.1	-	-	SOM 1%: 0.90 SOM 2.5%: 0.94 SOM 5%: 0.96	0.2	0.6	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

SGV's in bold are 2009 values.

* GACs for Chromium (III) and Chromium (VI) are 3000mg/kg and 4.2mg/kg respectively.

** Worst case GAC for Benzo(a)fluoranthene and Benzo(k)fluoranthene used

**Soil Contamination Results
Compared to Human Health
Assessment Criteria**

KEY:

NO ASSESSMENT

Result exceeds
assessment
criteria

POS

Contaminant	Units	LoD	CLEA SGV for residential without plant uptake	CLEA SGV for residential with plant uptake	LQM GAC for residential	Sample Identity	Location + depth		TP01/05 SAMPLE C1		TP02/05 SAMPLE C2		SAMPLE C3 SAMPLE C2		SAMPLE C1 SAMPLE C2		TP04/05 SAMPLE C1		TP04/05 SAMPLE C1 SAMPLE C1	
							Depth	Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Cyanide (Total)	mg/kg	1	-	SOM 1%; 21,900 SOM 2.5%:13400 SOM 5%: 37,300	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Phenols (Total-Mono)	mg/kg	1	Not used	-	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Sulphide	mg/kg	10	-	-	-	32	19	170	11	14	13	23	9	23	31	19	-	-	-	
Arsenic	mg/kg	<3.0	32	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Boron	mg/kg	<3.5	-	-	SOM 6%:291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	mg/kg	<0.3	Not used	30	-	<1	<1	2	2	<1	<1	5	<1	5	<1	<1	<1	<1	<1	
Chromium	mg/kg	<4.5	Not used	200	Not used*	32	18	57	21	18	19	34	17	21	35	32	-	-	-	
Copper	mg/kg	<6	-	SOM 6%:2330	380	88	370	35	110	52	760	42	110	200	100	-	-	-	-	
Lead	mg/kg	<2	Not used	450	-	180	300	340	62	230	140	370	92	160	230	170	-	-	-	
Mercury	mg/kg	<0.6	Elemental: 1.0; Inorganic: 170; Methyl: 11 (based on 6% SOM)	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Nickel	mg/kg	<0.9	130	-	-	48	20	230	30	18	20	23	16	33	34	33	-	-	-	
Selenium	mg/kg	<3	SOM 6%: 351	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Sulphate (Total)	mg/kg	<100	-	-	SOM 6%: 3750	0.12	0.14	0.35	0.18	0.22	0.08	0.27	0.11	0.17	0.16	0.2	-	-	-	
Zinc	mg/kg	<2.5	-	-	-	250	220	300	70	310	160	840	92	160	220	170	-	-	-	
pH Value	pH Units	<1.00	-	-	-	75	8	7.6	7.4	8.3	7.3	7.5	6.8	7.5	7.7	7.6	-	-	-	
Asbestos Presence Screen	NONE	-	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	
Poly-chlorinated Biphenyls (Total)	µg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Loss on Ignition	%	<0.3	-	-	-	7.4	-	-	-	-	-	-	5.2	-	-	-	-	-	-	
PAH			SOM 1%; SOM 2.5%; SOM 5%		SOM 1%: 1.5	SOM 2.5%; 3.7	<0.1	1.2	<0.1	0.1	0.2	<0.1	<0.1	<0.1	0.2	0.3	<0.1	-	-	
Naphthalene	mg/kg	0.1	-	-	SOM 2.5%; 8.7	SOM 1%: 1.70	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthylene	mg/kg	0.1	-	-	SOM 2.5%:400	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthene	mg/kg	0.1	-	-	SOM 1%:210	SOM 2.5%:480	<0.1	2.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Fluorene	mg/kg	0.1	-	-	SOM 1%:160	SOM 2.5%:350	<0.1	1.4	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Phenanthrene	mg/kg	0.1	-	-	SOM 1%: 92	SOM 2.5%: 200	<0.1	1.4	<0.1	1.1	1.2	<0.1	0.2	1.5	7.7	8.9	0.7	-	-	
Anthracene	mg/kg	0.1	-	-	SOM 1%: 2300	SOM 2.5%: 4900 SOM 5%: 9200	<0.1	4.1	<0.1	0.3	0.6	<0.1	<0.1	0.5	2.8	3.2	0.2	-	-	
Fluoranthene	mg/kg	0.1	-	-	SOM 1%: 260	SOM 2.5%: 460	0.1	1.9	<0.1	2.1	3.4	<0.1	0.1	3.9	12	11	1.9	-	-	

Soil Contamination Results Compared to Human Health Assessment Criteria			KEY:	NO assessment criterion available and result exceeds limit of detection		POS											
Contaminant	Units	LoD	CLEA SGV for residential with plant uptake	Sample Identity	70198 007	70869 008	70198 008	70198 010	70198 011	70198 012	70379 001	73079 002	73079 003	TH2B	TH2C	TH2A	TH2D
				TP0105	TP0205	TP0305	TP0405	TP0505	TP0605	TP0705	SAMPLE C1	SAMPLE C2	SAMPLE C1	SAMPLE C2	SAMPLE C1	SAMPLE C2	
				Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Depth	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pyrene	mg/kg	0.1	-	-	SOM 1%: 560 SOM 2.5%: 3.1 SOM 5%: 1.600	0.2	17	<0.1	2.0	4.0	<0.1	0.2	3.6	10	9	1.8	
Benz(a)anthracene	mg/kg	0.1	-	-	SOM 2.5%: 4.7 SOM 5%: 5.9	0.1	7.5	<0.1	1.2	1.1	<0.1	<0.1	1.5	4.8	4.8	1	
Chrysene	mg/kg	0.1	-	-	SOM 1%: 6.0 SOM 2.5%: 8.0 SOM 5%: 9.3	0.1	7.4	<0.1	1.0	1.0	<0.1	<0.1	1.2	4.5	4.5	0.9	
Benzo(b/k)fluoranthene	mg/kg	0.1	-	-	**SOM 1%: 5.6 SOM 2.5%: 9.6 SOM 5%: 10	0.1	9.3	<0.1	1.2	1.2	<0.1	<0.1	1.6	6.4	6.4	1.2	
Benzo(a)pyrene	mg/kg	0.1	-	-	SOM 1%: 0.83 SOM 1.5%: 0.94	<0.1	6.2	<0.1	0.6	0.6	<0.1	<0.1	1	3.4	3.4	0.6	
Indeno(1,2,3cd)pyrene	mg/kg	0.1	-	-	SOM 1%: 3.2 SOM 2.5%: 3.9 SOM 5%: 4.2	<0.1	3.5	<0.1	0.6	0.8	<0.1	<0.1	1	2.3	2.1	0.5	
Dibenz(a)anthracene	mg/kg	0.1	-	-	SOM 1%: 0.76 SOM 2.5%: 0.86	<0.1	1.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.6	0.6	0.1	
Benzo(ghi)perylene	mg/kg	0.1	-	-	SOM 1%: 0.44 SOM 2.5%: 0.90 SOM 5%: 1.17	<0.1	3.7	<0.1	0.6	0.4	<0.1	<0.1	1.2	2.6	2.3	0.6	

SGVs in bold are 2009 values.

* GACs for Chromium (III) and Chromium VI are 3000mp/kg and 4.0mg/kg respectively.
** Worst case GAC for Benzo(b/k)fluoranthene and Benzo(a)pyrene used

Soil Contamination Results Compared to United Utilities

Threshold Values

Result exceeds trigger threshold	Result exceeds action / remediation threshold
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Contaminant	Units	LoD	UU trigger concentration	UU action concentration	Depth	Sample Number	Sample Reference	BH01/05 SAMPLE C1	BH1 CS 9m	BH2 5m	BH3 C1 0.9m	BH4 C1 0.9m	BH5 4.6m	Soil	Soil	Soil
							70198 003	70609 009	70609 001	70609 002	70609 003	70609 004	70198 004			
General Inorganics																
pH Value	N/A	<5	<5	<3	7.3	10	8.5	8.3	8.3	8.5	8.5	8.1	7.9	7.9	<1	<1
Cyanide (Total)	mg/kg	1	50	500	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1
Total Sulphate as SO4	mg/kg	0.01	0.2	1	0.09	0.22	0.02	0.02	0.02	0.02	0.05	0.14	0.02	0.02	<10	<10
Sulphide	mg/kg	10	250	1000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	-
Loss on Ignition	%	<0.3	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-
Total Phenols	mg/kg	1	1	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Phenols (Total-Mono)	mg/kg	1	1	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Speciated PAHs																
Naphthalene	mg/kg	0.1	5	50	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	10	100	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	10	100	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	10	100	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	10	100	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	mg/kg	0.1	-	-	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	-	-	<0.1	1.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(b/k)fluoranthene	mg/kg	0.1	-	-	<0.1	2.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)pyrene	mg/kg	0.1	1	10	<0.1	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	<0.1	1.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	0.1	-	-	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(g,h)perylene	mg/kg	0.1	-	-	<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heavy Metals/ Metalloids																
Arsenic	mg/kg	1	20	40	4	4	1	1	5	7	7	5	5	5	13	2
Boron	mg/kg	1	3	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	mg/kg	1	3	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	1	250	800	27	14	7	23	27	22	22	6	6	6	16	6
Copper	mg/kg	1	100	500	66	14	8	21	24	45	9	46	46	46	46	46
Lead	mg/kg	1	150	600	110	22	5	10	18	110	23	23	23	23	23	23
Mercury	mg/kg	1	1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	mg/kg	1	70	500	31	16	8	29	36	20	2	15	15	15	8	8
Selenium	mg/kg	1	3	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	mg/kg	1	300	3000	140	80	21	21	61	62	62	62	62	62	110	110

Soil Contamination Results Compared to United Utilities Threshold Values

Contaminant	Units	LoD	UU trigger concentration	Depth	UU action concentration	Sample Reference		70609 005		70198 001		70609 006		70609 010		70609 007	
						Sample Number	BH7 C5 5m	BH08/05	SAMPLE C1	BH9 6m	Soil	BH10/05	SAMPLE C2	BH10 C6 5m	BH11 5m	Soil	
General Inorganics																	
pH Value	pH Units	N/A	<5	<3	8.9	6.9	9.9	10.3	<1	<1	8.7	8.3					
Cyanide (Total)	mg/kg	1	50	500	<1	<1	<1	<1	0.31	0.35	<10	<10	<1	<1	0.2		
Total Sulphate as SO4	%	0.01	0.2	1	0.11	0.11	0.31	0.35									
Sulphide	mg/kg	10	250	1000	<10	<10	<10	<10	-	-	8.9	<10	<10	<10			
Loss on Ignition	%	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Phenols																	
Phenols (Total-Mono)	mg/kg	1	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Speciated PAHs																	
Naphthalene	mg/kg	0.1	5	50	<0.1	<0.1	0.2	0.2	0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	-	-	<0.1	<0.1	0.1	0.1	0.2	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	-	-	<0.1	<0.1	0.3	0.3	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	-	-	<0.1	<0.1	0.1	0.1	0.2	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	10	100	<0.1	<0.1	0.6	0.6	0.3	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	10	100	<0.1	<0.1	3.0	2.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	10	100	<0.1	<0.1	2.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	10	100	<0.1	<0.1	1.3	5.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	1.3	2.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	-	-	<0.1	<0.1	1.7	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b/k)fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	1.1	2.7	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	1	10	<0.1	<0.1	0.6	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	<0.1	<0.1	0.2	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(o,ah)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	0.7	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h)perylene	mg/kg	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heavy Metals/ Metalloids																	
Arsenic	mg/kg	1	20	40	6	17	17	24	<1	<1	<1	<1	<1	<1	<1	<1	5
Boron	mg/kg	1	3	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium	mg/kg	1	3	20	26	28	25	25	18	18	4	4	19	19	19	19	
Chromium	mg/kg	1	250	800	23	44	57	78	4	4	3	3	11	11	11	11	
Copper	mg/kg	1	100	500	16	69	58	200	3	3	<1	<1	<1	<1	<1	<1	
Lead	mg/kg	1	150	600	1	<1	<1	<1	22	22	5	5	24	24	24	24	
Mercury	mg/kg	1	1	3	70	500	32	25	21	21	5	5	22	22	22	22	
Nickel	mg/kg	1	3	NA	<2	<2	<2	<2	21	21	5	5	24	24	24	24	
Selenium	mg/kg	1	300	3000	59	84	85	190	12	12	47	47	47	47	47	47	
Zinc	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Soil Contamination Results Compared to United Utilities

Threshold Values

	Result exceeds trigger threshold		Result exceeds action / remediation threshold		Sample Reference		TP01/05 SAMPLE C1		TP02/05 SAMPLE C2		TP03/05 SAMPLE C5		TP04/05 SAMPLE C1		TP04/05 SAMPLE C2		TH2B SAMPLE C1		TH2C SAMPLE C1		Soil	
	Contaminant	Units	LoD	UU trigger concentration	Depth	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil									
General Inorganics																						
pH Value	pH Units	N/A	<5	50	<3	7.5	8	7.8	<1	<1	8.3	7.3	7.5	6.8	7.5	7.7	7.5	<1	<1	<1	<1	
Cyanide (Total)	mg/kg	1	-	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Sulphide as SO4	%	0.01	0.2	1	0.12	0.14	0.35	0.18	0.22	0.08	0.08	0.27	0.11	0.17	0.15	0.17	0.10	0.15	0.10	0.15	0.10	
Sulphide	mg/kg	10	250	1000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	-	-	-	-	
Loss on Ignition	%	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total Phenols																						
Phenols (Total-Mono)	mg/kg	1	1	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Speciated PAHs																						
Naphthalene	mg/kg	0.1	5	50	<0.1	1.2	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	
Acenaphthylene	mg/kg	0.1	-	-	<0.1	0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Acenaphthene	mg/kg	0.1	-	-	<0.1	2.0	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	
Fluorene	mg/kg	0.1	-	-	<0.1	1.4	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	
Phenanthrene	mg/kg	0.1	10	100	<0.1	14	<0.1	1.1	1.2	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1	0.5	0.5	0.9	
Anthracene	mg/kg	0.1	10	100	<0.1	4.1	<0.1	0.3	0.5	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	0.5	3.2	
Fluoranthene	mg/kg	0.1	10	100	0.1	19	<0.1	2.1	3.4	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	1.1	
Pyrene	mg/kg	0.1	10	100	0.2	17	<0.1	2.0	4.0	<0.1	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	9	
Benz(a)anthracene	mg/kg	0.1	-	-	0.1	7.5	<0.1	1.2	1.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.5	1.5	4.8	
Chrysene	mg/kg	0.1	-	-	0.1	7.4	<0.1	1.0	1.0	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.2	1.2	4.5	
Benzo(b/k)fluoranthene	mg/kg	0.1	-	-	0.1	9.3	<0.1	1.2	1.2	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.6	1.6	6.4	
Benzo(a)pyrene	mg/kg	0.1	1	10	<0.1	6.2	<0.1	0.9	0.9	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	3.4	
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	<0.1	3.5	<0.1	0.6	0.8	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	1	2.1	
Dibenz(a,h)anthracene	mg/kg	0.1	-	-	<0.1	1.1	<0.1	0.1	0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.3	0.5	
Benzo(g,h)perylene	mg/kg	0.1	-	-	<0.1	3.7	<0.1	0.5	0.4	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.2	1.2	2.3	
Heavy Metals/ Metalloids																						
Arsenic	mg/kg	1	20	40	32	19	170	11	14	13	23	9	23	9	23	9	23	9	23	9	31	
Boron	mg/kg	1	3	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Cadmium	mg/kg	1	3	20	1	2	2	1	5	5	5	5	5	5	5	5	5	5	5	5	3	
Chromium	mg/kg	1	250	800	32	18	57	21	18	19	34	17	34	17	34	17	34	17	34	17	35	
Copper	mg/kg	1	100	500	380	88	370	35	110	52	760	42	760	42	760	42	760	42	760	42	760	
Lead	mg/kg	1	150	600	180	300	340	62	230	140	3700	92	3700	92	3700	92	3700	92	3700	92	3700	
Mercury	mg/kg	1	1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Nickel	mg/kg	1	70	500	48	20	230	30	18	20	23	16	23	16	23	16	23	16	23	16	23	
Selenium	mg/kg	1	3	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Zinc	mg/kg	1	300	3000	250	220	300	70	310	70	310	70	310	70	310	70	310	70	310	70	310	

Soil Contamination Results Compared to United Utilities Threshold Values

Contaminant	Units	LoD	UU trigger concentration	UU action concentration	Sample Reference	
					Sample Number	Depth soil
General Inorganics						
pH Value	pH Units	N/A	<5	<3	73079 004	7.6
Cyanide (Total)	mg/kg	1	50	500	TH2D SAMPLE C1	<1
Total Sulphate as SO4	%	0.01	0.2	1		0.2
Sulphide	mg/kg	10	250	1000		<10
Loss on Ignition	%	<0.3	-	-		-
Total Phenols						
Phenols (Total-Mono)	mg/kg	1	1	10		<1
Speciated PAHs						
Naphthalene	mg/kg	0.1	5	50		<0.1
Acenaphthylene	mg/kg	0.1	-	-		<0.1
Acenaphthene	mg/kg	0.1	-	-		<0.1
Fluorene	mg/kg	0.1	-	-		<0.1
Phenanthrene	mg/kg	0.1	10	100		0.7
Anthracene	mg/kg	0.1	10	100		0.2
Fluoranthene	mg/kg	0.1	10	100		1.9
Pyrene	mg/kg	0.1	10	100		1.8
Benz(a)anthracene	mg/kg	0.1	-	-		1
Chrysene	mg/kg	0.1	-	-		0.9
Benzo(b/k)fluoranthene	mg/kg	0.1	-	-		1.2
Benzo(a)pyrene	mg/kg	0.1	1	10		0.6
Indeno(123cd)pyrene	mg/kg	0.1	-	-		0.5
Dibenz(a,h)anthracene	mg/kg	0.1	-	-		0.1
Benzo(g,h,i)perylene	mg/kg	0.1	-	-		0.6
Heavy Metals/ Metalloids						
Arsenic	mg/kg	1	20	40		19
Boron	mg/kg	1	3	NA		<1
Cadmium	mg/kg	1	3	20		2
Chromium	mg/kg	1	250	800		32
Copper	mg/kg	1	100	500		100
Lead	mg/kg	1	150	600		170
Mercury	mg/kg	1	1	3		<1
Nickel	mg/kg	1	70	500		33
Selenium	mg/kg	1	3	NA		<2
Zinc	mg/kg	1	3000	3000		170