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QTS Environmental Report No: 14-26506

Site Reference:	Lawrence Landfill
Project / Job Ref:	None Supplied
Order No:	None Supplied
Sample Receipt Date:	12/11/2014
Sample Scheduled Date:	12/11/2014
Report Issue Number:	1
Reporting Date:	20/11/2014

Authorised by:

Russell Jarvis
Director
On behalf of QTS Environmental Ltd

Authorised by:

Kevin Old
Director
On behalf of QTS Environmental Ltd

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Soil Analysis Certificate							
QTS Environmental Report No: 14-26506	**Date Sampled**	10/11/14					
Track Environmental Consultancy Ltd	**Time Sampled**	None Supplied					
Site Reference: Lawrence Landfill	**TP / BH No**	Compost like Material					
Project / Job Ref: None Supplied	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	None Supplied					
Reporting Date: 20/11/2014	**QTSE Sample No**	125622					

Determinand	Unit	RL	Accreditation					
Arsenic (As)	mg/kg	< 2	MCERTS	3				
Cadmium (Cd)	mg/kg	< 0.5	MCERTS	< 0.5				
Chromium (Cr)	mg/kg	< 2	MCERTS	22				
Lead (Pb)	mg/kg	< 3	MCERTS	118				
Mercury (Hg)	mg/kg	< 1	NONE	< 1				
Nickel (Ni)	mg/kg	< 3	MCERTS	15				
Selenium (Se)	mg/kg	< 3	NONE	< 3				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				
EPH (C10 - C40)	mg/kg	< 6	MCERTS	202				

Analytical results are expressed on a dry weight basis where samples are dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content
Subcontracted analysis $^{(S)}$

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Soil Analysis Certificate - BTEX / MTBE							
QTS Environmental Report No: 14-26506	**Date Sampled**	10/11/14					
Track Environmental Consultancy Ltd	**Time Sampled**	None Supplied					
Site Reference: Lawrence Landfill	**TP / BH No**	Compost like Material					
Project / Job Ref: None Supplied	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	None Supplied					
Reporting Date: 20/11/2014	**QTSE Sample No**	125622					

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2				
Toluene	ug/kg	< 5	MCERTS	17				
Ethylbenzene	ug/kg	< 10	MCERTS	< 10				
p & m-xylene	ug/kg	< 10	MCERTS	< 10				
o-xylene	ug/kg	< 10	MCERTS	< 10				

Analytical results are expressed on a dry weight basis where samples are dried at less than 30^{O}C

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Soil Analysis Certificate - PCB (7 Congeners)							
QTS Environmental Report No: 14-26506	**Date Sampled**	10/11/14					
Track Environmental Consultancy Ltd	**Time Sampled**	None Supplied					
Site Reference: Lawrence Landfill	**TP / BH No**	Compost like Material					
Project / Job Ref: None Supplied	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	None Supplied					
Reporting Date: 20/11/2014	**QTSE Sample No**	125622					

Determinand	**Unit**	**RL**	**Accreditation**					
PCB Congener 28	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 52	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 101	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 118	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 138	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 153	mg/kg	< 0.008	NONE	< 0.008				
PCB Congener 180	mg/kg	< 0.008	NONE	< 0.008				
Total PCB (7 Congeners)	mg/kg	< 0.1	NONE	< 0.1				

Analytical results are expressed on a dry weight basis where samples are dried at less than 30^{O}C

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Soil Analysis Certificate - TRL 447 Standard							
QTS Environmental Report No: 14-26506	**Date Sampled**	10/11/14					
Track Environmental Consultancy Ltd	**Time Sampled**	None Supplied					
Site Reference: Lawrence Landfill	**TP / BH No**	Compost like Material					
Project / Job Ref: None Supplied	**Additional Refs**	None Supplied					
Order No: None Supplied	**Depth (m)**	None Supplied					
Reporting Date: 20/11/2014	**QTSE Sample No**	125622					

General Inorganics	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	7.1				
Organic Matter	%	< 0.1	NONE	9.5				
W/S Sulphur (as S)	%	< 0.001	NONE	0.002				
Water Soluble Sulphate as SO4 (2:1)	g/l	< 0.01	**MCERTS**	0.03				
Acid Soluble Sulphur (as S)	%	< 0.01	NONE	0.03				
Acid Soluble Sulphate (as SO_4)	%	< 0.01	NONE	0.10				
Total Sulphur (as S)	%	< 0.01	NONE	0.08				
Total Potential Sulphate (as SO_4)	%	< 0.01	NONE	0.24				
Oxidisable Sulphide (as SO_4)	%	< 0.01	NONE	0.14				

Analytical results are expressed on a dry weight basis where samples are dried at less than $30^{O}C$

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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 14-26506	
Track Environmental Consultancy Ltd	
Site Reference: Lawrence Landfill	
Project / Job Ref: None Supplied	
Order No: None Supplied	
Reporting Date: 20/11/2014	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
& 125622	Compost like Material	None Supplied	None Supplied	19.8	Brown clayey gravel with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

& samples received in inappropriate containers for hydrocarbon analysis

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Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 14-26506
Track Environmental Consultancy Ltd
Site Reference: Lawrence Landfill
Project / Job Ref: None Supplied
Order No: None Supplied
Reporting Date: 20/11/2014

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	TPH LQM	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6 - C10)	Determination of hydrocarbons C6-C10 by headspace GC-MS	E001

D Dried
AR As Received