National Laboratory Service

Analytical Report

Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Rose Buckley
Hydrographic Surveys Ltd
The Cobbles
Crosshaven
Co Cork
218058

Dear Rose

Please find attached the results for the batch of samples described below.

Samples Taken on:	12-Feb-2010
Samples Registered on:	15-Feb-2010
Results for Batch Number	20018891
Your Purchase Order Number:	00 0026

You will be invoiced shortly by our accounts department.

If we can be of further assistance then please do not hesitate to contact us.

Yours sincerely

William Fardon
Customer Services Team Leader
Tel: (0113) 231 2177
nls@environment-agency.gov.uk

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation. Details of analytical procedures and performance data are available on request. The date of sample analysis is available on request.

The Environment Agency carries out analytical work to high standards and within the scope of its UKAS accreditation, but has no knowledge of whether the circumstances or the validity of the procedures used to obtain the samples provided to the laboratory were representative of the need for which the information was required.
The Environment Agency and/or its staff does not therefore accept any liability for the consequences of any acts or omissions made on the basis of the analysis or advice or interpretation provided.

National Laboratory Service

Analytical Report

Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Client:	Hydrographic Surveys Ltd	Project:	Monkstown Dredging analysis
Folder No:	001249716	Sampled on:	12-Feb-10 @ (Time not supplied)
Comments:	Monk-1-10		
Quote No:	5868	Matrix:	Sediment

Analyte	Result	Units	MRV	Accred	Lab ID	Testcode
Density	1.72	g/ml	0.1	None	LE	881
Dry Solids @ 105°C	61.3	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	4.83	%	0.5	UKAS	LE	911
Total Organic Carbon (TOC) : Dry Wt as C	1.02	%	0.8	UKAS	LE	535
Grain Size Inclusive Kurtosis	0.574	mm	-12	UKAS	LL	994
Grain Size Inclusive Mean	0.0280	mm	0	UKAS	LL	994
Inclusive Graphic Skewness :- {SKI}	-0.100	Unitless	-1	UKAS	LL	994
Grain Size Fraction : < 63 microns	66.0	%	0	UKAS	LL	994
Grain Size Fraction : < 20 microns	41.4	%	0	UKAS	LL	994
Grain Size Fraction : > 8000 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 1000 to 2000 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 125 to 249 microns	11.4	%	0	UKAS	LL	994
Grain Size Fraction : 2000 to 3999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 250 to 499 microns	2.92	%	0	UKAS	LL	994
Grain Size : 4000 to 7999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 500 to 999 microns	0.150	%	0	UKAS	LL	994
Grain Size Fraction : 63 to 125 microns	19.6	%	0	UKAS	LL	994
Kurtosis	7.81	Unitless	-12	UKAS	LL	994
Particle Diameter : Mean	0.0610	mm	0	UKAS	LL	994
Particle Diameter : Median	0.0310	mm	0	UKAS	LL	994
Sorting Coefficient	2.01	Unitless	-3	UKAS	LL	994
Mercury : Dry Wt	0.156	mg/kg	0.001	UKAS	LL	1042
Aluminium : Dry Wt	19300	mg/kg	0.4	UKAS	LL	1043
Arsenic : Dry Wt	4.69	mg/kg	0.1	UKAS	LL	1041
Cadmium : Dry Wt	0.175	mg/kg	0.01	UKAS	LL	1041
Chromium : Dry Wt	27.4	mg/kg	0.05	UKAS	LL	1041
Copper : Dry Wt	11.9	mg/kg	0.1	UKAS	LL	1041
Lead : Dry Wt	23.0	mg/kg	0.2	UKAS	LL	1041
Lithium : Dry Wt	27.2	mg/kg	0.1	UKAS	LL	1041
Nickel : Dry Wt	15.6	mg/kg	0.3	UKAS	LL	1041
Zinc : Dry Wt	80.4	mg/kg	0.2	UKAS	LL	1041
Dibutyl Tin : Dry Wt as cation	< 0.00500	mg/kg	0.003	UKAS	LE	897
Tributyl Tin : Dry Wt as cation	< 0.00500	mg/kg	0.003	UKAS	LE	897
Dry Solids @ 30°C	61.1	%	0.5	None	LE	1130
Extended Sample Description	Report	Text		None	LE	1067

I visually inspected the sample and found it to be a grey/black coloured wet smooth sticky soft sediment. The 'soil/sediment' content of the sample was 100%.

A representative sub sample was taken to dry as the sample was too wet to sieve without drying. The dry sample weighing 100 g, was sieved to 10 mm and 2mm.

Accreditation Assessment	2	No.	1	None	LE	924
Sample Preparation	Report	Text		None	LE	924

National Laboratory Service

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Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Folder Number: 1249716
The sample was received in a bin bag weighing over 2200g in total.
The sample appeared to be grey/black, smooth, sticky, soft sediment.

215.22g of the sample was taken for drying at <30degC which gave 133.68g of dried sample(weights include tray weight)
The sample was sieved to <10mm before being crushed using a pestle and mortar.
No waste was discarded after sieving at 10mm.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

National Laboratory Service

Analytical Report

Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Client: Hydrographic Surveys Ltd
Folder No: 001249717
Comments: Monk-2-10
Quote No: 5868

Project: Monkstown Dredging analysis
Sampled on: 12-Feb-10 @ (Time not supplied)
Matrix: Sediment

Analyte	Result	Units	MRV	Accred	Lab ID	Testcode
Density	1.55	g/ml	0.1	None	LE	881
Dry Solids @ 105°C	44.2	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	8.24	%	0.5	UKAS	LE	911
Total Organic Carbon (TOC) : Dry Wt as C	1.75	%	0.8	UKAS	LE	535
Grain Size Inclusive Kurtosis	0.712	mm	-12	UKAS	LL	994
Grain Size Inclusive Mean	0.142	mm	0	UKAS	LL	994
Inclusive Graphic Skewness :- {SKI}	0.360	Unitless	-1	UKAS	LL	994
Grain Size Fraction : < 63 microns	51.9	%	0	UKAS	LL	994
Grain Size Fraction : < 20 microns	39.3	%	0	UKAS	LL	994
Grain Size Fraction : > 8000 microns	37.6	%	0	UKAS	LL	994
Grain Size Fraction : 1000 to 2000 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 125 to 249 microns	1.90	%	0	UKAS	LL	994
Grain Size Fraction : 2000 to 3999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 250 to 499 microns	1.92	%	0	UKAS	LL	994
Grain Size : 4000 to 7999 microns	3.36	%	0	UKAS	LL	994
Grain Size Fraction : 500 to 999 microns	0.420	%	0	UKAS	LL	994
Grain Size Fraction : 63 to 125 microns	1.82	%	0	UKAS	LL	994
Kurtosis	-1.79	Unitless	-12	UKAS	LL	994
Particle Diameter : Mean	3.85	mm	0	UKAS	LL	994
Particle Diameter : Median	0.0500	mm	0	UKAS	LL	994
Sorting Coefficient	4.44	Unitless	-3	UKAS	LL	994
Mercury : Dry Wt	0.0820	mg/kg	0.001	UKAS	LL	1042
Aluminium : Dry Wt	17800	mg/kg	0.4	UKAS	LL	1043
Arsenic : Dry Wt	6.08	mg/kg	0.1	UKAS	LL	1041
Cadmium : Dry Wt	0.184	mg/kg	0.01	UKAS	LL	1041
Chromium : Dry Wt	29.0	mg/kg	0.05	UKAS	LL	1041
Copper : Dry Wt	18.6	mg/kg	0.1	UKAS	LL	1041
Lead : Dry Wt	34.6	mg/kg	0.2	UKAS	LL	1041
Lithium : Dry Wt	31.2	mg/kg	0.1	UKAS	LL	1041
Nickel : Dry Wt	17.3	mg/kg	0.3	UKAS	LL	1041
Zinc : Dry Wt	88.0	mg/kg	0.2	UKAS	LL	1041
Dibutyl Tin : Dry Wt as cation	< 0.00600	mg/kg	0.003	UKAS	LE	897
Tributyl Tin : Dry Wt as cation	< 0.00600	mg/kg	0.003	UKAS	LE	897
Dry Solids @ 30°C	49.8	%	0.5	None	LE	1130
Extended Sample Description	Report	Text		None	LE	1067

I visually inspected the sample and found it to be a grey/black coloured wet soft smooth sticky sediment with stones. The 'soil/sediment' content of the sample was more than 55%.

A representative sub sample was taken to dry as the sample was too wet to sieve without drying. The dry sample weighing 100 g, was sieved to 10mm. The resulting portion, weighing 44.47g was found to contain stones

The remaining portion was then sieved to 2mm. The resulting portion, weighing 1.05g was found to contain small stones.

Accreditation Assessment	2	No.	*1*	None	LE	924
Sample Preparation	Report	Text		None	LE	924

Folder Number: 1249717
The sample was received in a bin bag weighing over 2200g in total.
The sample appeared to be grey/black, smooth, sticky, soft sediment with stones present.

145.61g of the sample was taken for drying at <30degC which gave 75.21g of dried sample(weights include tray weight)
The sample was sieved to <10mm before being crushed using a pestle and mortar.
No waste was discarded after sieving at 10mm.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

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Analytical Report

Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Client:	Hydrographic Surveys Ltd	Project:	Monkstown Dredging analysis
Folder No:	001249718	Sampled on:	12-Feb-10 @ (Time not supplied)
Comments:	Monk-3-10		
Quote No:	5868	Matrix:	Sediment

Analyte	Result	Units	MRV	Accred	Lab ID	Testcode
Density	1.42	g/ml	0.1	None	LE	881
Dry Solids @ 105°C	44.3	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	9.13	%	0.5	UKAS	LE	911
Total Organic Carbon (TOC) : Dry Wt as C	1.88	%	0.8	UKAS	LE	535
Grain Size Inclusive Kurtosis	0.483	mm	-12	UKAS	LL	994
Grain Size Inclusive Mean	0.0110	mm	0	UKAS	LL	994
Inclusive Graphic Skewness :- {SKI}	0.0100	Unitless	-1	UKAS	LL	994
Grain Size Fraction : < 63 microns	96.4	%	0	UKAS	LL	994
Grain Size Fraction : < 20 microns	75.1	%	0	UKAS	LL	994
Grain Size Fraction : > 8000 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 1000 to 2000 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 125 to 249 microns	0.660	%	0	UKAS	LL	994
Grain Size Fraction : 2000 to 3999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 250 to 499 microns	0.0200	%	0	UKAS	LL	994
Grain Size : 4000 to 7999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 500 to 999 microns	0.00	%	0	UKAS	LL	994
Grain Size Fraction : 63 to 125 microns	2.92	%	0	UKAS	LL	994
Kurtosis	26.1	Unitless	-12	UKAS	LL	994
Particle Diameter : Mean	0.0170	mm	0	UKAS	LL	994
Particle Diameter : Median	0.0100	mm	0	UKAS	LL	994
Sorting Coefficient	1.42	Unitless	-3	UKAS	LL	994
Mercury : Dry Wt	0.0980	mg/kg	0.001	UKAS	LL	1042
Aluminium : Dry Wt	21600	mg/kg	0.4	UKAS	LL	1043
Arsenic : Dry Wt	7.88	mg/kg	0.1	UKAS	LL	1041
Cadmium : Dry Wt	0.249	mg/kg	0.01	UKAS	LL	1041
Chromium : Dry Wt	34.3	mg/kg	0.05	UKAS	LL	1041
Copper : Dry Wt	18.8	mg/kg	0.1	UKAS	LL	1041
Lead : Dry Wt	31.1	mg/kg	0.2	UKAS	LL	1041
Lithium : Dry Wt	34.0	mg/kg	0.1	UKAS	LL	1041
Nickel : Dry Wt	19.5	mg/kg	0.3	UKAS	LL	1041
Zinc : Dry Wt	98.9	mg/kg	0.2	UKAS	LL	1041
Dibutyl Tin : Dry Wt as cation	< 0.00700	mg/kg	0.003	UKAS	LE	897
Tributyl Tin : Dry Wt as cation	< 0.00700	mg/kg	0.003	UKAS	LE	897
Dry Solids @ 30°C	41.7	%	0.5	None	LE	1130
Extended Sample Description	Report	Text		None	LE	1067

I visually inspected the sample and found it to be a grey/black coloured wet smooth sticky soft sediment. The 'soil/sediment' content of the sample was 100%.

A representative sub sample was taken to dry as the sample was too wet to sieve without drying. The dry sample weighing 100 g, was sieved to 10 mm and 2mm.

Accreditation Assessment	2	No.	1	None	LE	924
Sample Preparation	Report	Text		None	LE	924

Folder Number: 1249718
The sample was received in a bin bag weighing approx. 1835g in total.
The sample appeared to be grey/black,smooth,sticky,soft sediment.

73.93g of the sample was taken for drying at <30degC which gave 34.04g of dried sample(weights include tray weight)
The sample was sieved to <10mm before being crushed using a pestle and mortar.
No waste was discarded after sieving at 10mm.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

National Laboratory Service

Analytical Report

Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Client:	Hydrographic Surveys Ltd	Project:	Monkstown Dredging analysis
Folder No:	001249719	Sampled on:	12-Feb-10 @ (Time not supplied)
Comments:	Monk-4-10		
Quote No:	5868	Matrix:	Sediment

Analyte	Result	Units	MRV	Accred	Lab ID	Testcode
Density	1.82	g/ml	0.1	None	LE	881
Dry Solids @ 105°C	62.7	%	0.5	UKAS	LE	911
Loss on Ignition @ 500°C	6.13	%	0.5	UKAS	LE	911
Total Organic Carbon (TOC) : Dry Wt as C	<0.800	%	0.8	UKAS	LE	535
Grain Size Inclusive Kurtosis	0.702	mm	-12	UKAS	LL	994
Grain Size Inclusive Mean	0.818	mm	0	UKAS	LL	994
Inclusive Graphic Skewness :- {SKI}	-0.930	Unitless	-1	UKAS	LL	994
Grain Size Fraction : < 63 microns	37.6	%	0	UKAS	LL	994
Grain Size Fraction : < 20 microns	29.2	%	0	UKAS	LL	994
Grain Size Fraction : > 8000 microns	43.2	%	0	UKAS	LL	994
Grain Size Fraction : 1000 to 2000 microns	0.910	%	0	UKAS	LL	994
Grain Size Fraction : 125 to 249 microns	0.930	%	0	UKAS	LL	994
Grain Size Fraction : 2000 to 3999 microns	1.24	%	0	UKAS	LL	994
Grain Size Fraction : 250 to 499 microns	0.750	%	0	UKAS	LL	994
Grain Size : 4000 to 7999 microns	11.8	%	0	UKAS	LL	994
Grain Size Fraction : 500 to 999 microns	0.740	%	0	UKAS	LL	994
Grain Size Fraction : 63 to 125 microns	1.43	%	0	UKAS	LL	994
Kurtosis	-1.86	Unitless	-12	UKAS	LL	994
Particle Diameter : Mean	4.92	mm	0	UKAS	LL	994
Particle Diameter : Median	7.44	mm	0	UKAS	LL	994
Sorting Coefficient	4.32	Unitless	-3	UKAS	LL	994
Mercury : Dry Wt	0.0140	mg/kg	0.001	UKAS	LL	1042
Aluminium : Dry Wt	13900	mg/kg	0.4	UKAS	LL	1043
Arsenic : Dry Wt	5.76	mg/kg	0.1	UKAS	LL	1041
Cadmium : Dry Wt	0.114	mg/kg	0.01	UKAS	LL	1041
Chromium : Dry Wt	22.5	mg/kg	0.05	UKAS	LL	1041
Copper : Dry Wt	10.3	mg/kg	0.1	UKAS	LL	1041
Lead : Dry Wt	18.6	mg/kg	0.2	UKAS	LL	1041
Lithium : Dry Wt	22.8	mg/kg	0.1	UKAS	LL	1041
Nickel : Dry Wt	16.4	mg/kg	0.3	UKAS	LL	1041
Zinc : Dry Wt	61.7	mg/kg	0.2	UKAS	LL	1041
Dibutyl Tin : Dry Wt as cation	< 0.00400	mg/kg	0.003	UKAS	LE	897
Tributyl Tin : Dry Wt as cation	< 0.00400	mg/kg	0.003	UKAS	LE	897
Dry Solids @ 30°C	76.1	%	0.5	None	LE	1130
Extended Sample Description	Report	Text		None	LE	1067

I visually inspected the sample and found it to be a grey/black/light brown coloured wet soft smooth very sticky clay like sediment with stones. The 'soil/sediment' content of the sample was less than 45%.

A representative sub sample was taken to dry as the sample was too wet to sieve without drying. The dry sample weighing 100 g, was sieved to 10mm. The resulting portion, weighing 84.38g was found to contain a large stone

The remaining portion was then sieved to 2mm. The resulting portion, weighing 5.36g was found to contain small stones and shells.

Accreditation Assessment	2	No.	*1*	None	LE	924
Sample Preparation	Report	Text		None	LE	924

Folder Number: 1249719
The sample was received in a bin bag weighing over 2200g in total.
The sample appeared to be grey/black/light brown, smooth, sticky, soft sediment with stones present.

217.79g of the sample was taken for drying at <30degC which gave 166.97g of dried sample(weights include tray weight)
The sample was sieved to <10mm before being crushed using a pestle and mortar.
No waste was discarded after sieving at 10mm.
The sample was received unpreserved.

All parameters are determined on the air-dried (<30degC) portion except those requiring a wet sample fraction where as received (wet) sample was used.

Dry Weight (DW) results are reported as determined at <30degC.

National Laboratory Service

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Final Report

Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Client:	Hydrographic Surveys Ltd	Project:	Monkstown Dredging analysis
Folder No:	001255460	Sampled on:	21-Feb-10 @ (Time not supplied)
Comments:	CRM		
Quote No:	5868	Matrix:	Sediment

Analyte	Result	Units	MRV	Accred	Lab ID	Testcode
Grain Size Fraction : 125 to 249 microns	49.4	%	0	UKAS	LL	994
Grain Size Fraction : 63 to 125 microns	29.0	%	0	UKAS	LL	994
Mercury : Dry Wt	0.0837	mg/kg	0.001	UKAS	LL	1042
Aluminium : Dry Wt	57300	mg/kg	0.4	UKAS	LL	1043
Arsenic : Dry Wt	16.3	mg/kg	0.1	UKAS	LL	1041
Cadmium : Dry Wt	0.180	mg/kg	0.01	UKAS	LL	1041
Chromium : Dry Wt	72.2	mg/kg	0.05	UKAS	LL	1041
Copper : Dry Wt	27.3	mg/kg	0.1	UKAS	LL	1041
Lead : Dry Wt	18.3	mg/kg	0.2	UKAS	LL	1041
Lithium : Dry Wt	54.6	mg/kg	0.1	UKAS	LL	1041
Nickel : Dry Wt	36.6	mg/kg	0.3	UKAS	LL	1041
Zinc : Dry Wt	127	mg/kg	0.2	UKAS	LL	1041
Dibutyl Tin : Dry Wt as cation	0.78300	mg/kg	0.003	UKAS	LE	897
Tributyl Tin : Dry Wt as cation	0.24200	mg/kg	0.003	UKAS	LE	897

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Report ID - 20018891 - 1

Batch description: Monkstown PH10008

UKAS TESTING
0754

Reported on:
09-Mar-2010

Method Description Summary for all samples in batch Number 20018891

Testcode	Method Reference and Description
535	LE I TOC 01 - combusted with oxygen; thermal conductivity detection
881	Density - volume taken; mass determined; density calculated
897	LE O Organotins (GCMS) 01 - acetic acid/methanol extracted; derivatised; determined GCMS (SIM); from "as received" sample
911	LE I Dry Solids & LoI 01 - Dry Solids (105C), Loss on Ignition (500C) - thermally treated; determined by gravimetry
924	Sample Preparation; Dry Solids (30°C); from "as received" sample
994	NLS I Particle Size Laser LL I 9.4 - bands - determined by laser light diffraction
1041	LL ME ICPMS 12.1 & 12.4- Metals - microwave aqua regia digested; determined by ICPMS
1042	LL ME Hg 10.8 - Mercury - microwave aqua regia digeste; acidic SnCl2 reduced; determined by CV-AFS
1043	LL ME ICP-OES 22.1 & 22.2 - Metals - microwave aqua regia digested; determined by ICPOES
1067	Sample Description of "as received" sample
1130	Not Available

Chris Hunter
Laboratory Site Manager

All reporting limits quoted are those achievable for clean samples of the relevant matrix. No allowance is made for instances when dilutions are necessary owing to the nature of the sample or insufficient volume of the sample being available. In these cases higher reporting limits may be quoted and will be above the MRV.

Solid sample results are determined on a "dried" sample fraction except for parameters where the method description identifies that "as received" sample was used.

Please note all samples will be retained for thirty working days after reporting unless otherwise agreed with Customer Services

Key to Accreditation: UKAS = Methodology accredited to ISO/IEC 17025:2005, MCertS = Methodology accredited to MCertS Performance Standard for testing of soils, none = Methodology not accredited
Key to Lab ID: LE = Leeds, LL = Llanelli, NM = Nottingham, SX = Starcross, SC = Sub-Contracted outside NLS, FI = Field Data, NLS = Calculated

END OF TEST REPORT