Eurofins Miljø A/S
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DANAK
RM Reg. nr. 535

VKI
REFERENCE MATERIALS

CERTIFICATE FOR

QC SEWAGE SLUDGE B

TRACE ELEMENTS/METALS IN SEWAGE SLUDGE

BATCH: VKI-19-3-0712

INSTRUCTIONS FOR USE OF THE REFERENCE MATERIAL

Description
This reference material consists of dried sewage sludge. The certificate includes documentation for the analytical parameters Ag, As, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Sb, Tl, U, V, Zn, Al, Ca, Fe, K, Mg, total nitrogen, total phosphorus, pH and loss on ignition.

Use
The reference material is intended for quality control, i.e. measurement and control of the trueness and precision of analyses. It is typically intended for analyses of trace elements/metals, pH and loss on ignition in sewage sludge. It may also be used for the validation of analytical methods. It is important that the batch numbers of the reference material and on the certificate are identical.

Preparation for Use
Mix the contents of the container thoroughly before taking a subsample. Certified values are expressed on a dry weight basis. As the material is hygroscopic, it is recommended to determine the dry matter fraction at the same time as the analysis of certified parameters.

Digest samples for determination of trace elements/metals, total nitrogen and total phosphorus. Certified values are given for aqua regia and nitric acid digestion. The minimum test portion is 200 mg.

Analysis
For quality control the reference material is analysed at the same time and in the same manner as other samples.

Storage and Shelf-life
Store the reference material protected from sunlight at room temperature in the original brown glass container. Keep the container tightly closed.

The certificate is valid until **1st of April 2027** provided that the material is stored under the recommended conditions.

PRODUCTION OF THE REFERENCE MATERIAL AND DOCUMENTATION

Production
The reference material consists of lime stabilised sewage sludge from a wastewater treatment plant receiving mainly domestic sewage. The sludge has been aerated, dehydrated, dried at 80°C, ground and sieved to less

than < 90 µm, and homogenised again. The production of this reference material is in accordance with the quality management procedures of Eurofins Miljø A/S, with the aim of obtaining the intended quality of the material.

Documentation of Content
Documentation of the reference material's content of trace elements/metals is based on measurements in digested samples. The measured concentrations are calculated on the basis of dry matter.

Internal control
The analytical quality of Eurofins Miljø has been documented and found satisfactory by regular participation in international proficiency tests.

Homogeneity:
The homogeneity has been investigated by measurements of all certified trace elements/metals and pH in randomly selected containers of QC Sewage Sludge B. Tests for homogeneity have been performed by comparing the standard deviation between the reference material units with the within batch standard deviation obtained from duplicate measurements of the reference material in the same container (F-test, 95%). The material was found to be homogeneous for all parameters. In addition, homogeneity was followed up in accordance with ISO Guide 35 /1/ for all parameters as a part of the certification. Homogeneity was confirmed for all parameters except for Cu, Hg, Fe, K, Mg and total phosphorus in the external control. For these parameters the between bottle standard deviation was taken into account in the uncertainty of the certified values.

Stability:
The stability of the reference material is being followed by periodical control measurements in reference materials stored at 20°C and 37°C, and no indication of instability was observed at the date of this certificate.

External documentation
The external laboratory documentation was performed by selected European laboratories. The laboratories were requested to analyse three containers of QC Sewage Sludge B: one container as duplicate determinations in the same analytical series, the other two as single measurements. This was followed by analysis of the materials in one more analytical series as single determinations. In addition, the laboratories were requested to analyse two control samples (sewage sludge) sent together with the reference material. The statistics are in accordance with the international standard: ISO Guide 35 /1/. On the basis of the analytical results submitted by the laboratories the following statistical parameters have been calculated:

y_{char}: average, calculated in accordance with ISO Guide 35 (section A.2.4)

s(y): standard deviation between the laboratories, calculated in accordance with ISO Guide 35 (section A.2.5.3):

$$\sqrt{\frac{\sum (y_i - y_{char})^2}{p-1}}$$

The 95% confidence interval of the true mean value of analytical results is:

$$y_{char} \pm t_{0,025}(\nu).\frac{s(y)}{\sqrt{p}}$$

where

p: number of laboratories included in calculations

ν: p-1, degrees of freedom

$t_{0,025}(\nu)$: t value of 0,025 level at ν degrees of freedom.

The certification for trace elements/metals is based on measurements for samples digested with either 7 N nitric acid or a mixture of nitric and hydrochloric acids (aqua regia). All methods are included in the certified value for total nitrogen, total phosphorus, pH, and loss on ignition.

Nitric acid and aqua regia digestion gives no significant difference for most trace elements/metals. Certified values are therefore based on the combined results for both procedures as well as other similar procedures.

For Cr and Ni the results after digestion with nitric acid and aqua regia were significantly different. Therefore separate certified values are given for each digestion procedure.

The certified values are based on results from selected laboratories.

The criteria for selection of laboratories were as follows:

- the laboratory holds accreditation for the parameter, or analyses more than 20 analytical series each year.
- the laboratory result for both control samples in the certification deviated less than 25% from the nominal value (10% for loss on ignition and 0.2 pH-units for pH), and
- the laboratory results in the certification are not Cochran or Grubbs outliers.

The data included in the certification and names of the participating laboratories are listed in annexes to this certificate. On the basis of the selected results, the following has been calculated:

Certified Values

DETERMINAND	UNIT	AVERAGE	BETWEEN LABORATORY STANDARD DEVIATION	95% CONFIDENCE LIMITS OF THE AVERAGE VALUE $y_{char} \pm t_{0,025}(\nu).\frac{s(y)}{\sqrt{p}}$		NUMBER OF DATA SETS IN CALCULATIONS/ METHOD		EXCLUDED DATA SETS C: Cochran outlier G: Grubbs outlier
		y_{char}	$s(y)$	Lower	Upper	(p)		
Silver	mg/kg DM	1.24	0.12	1.14	1.34	A1 (3) B1 (2)	B3 (2) F (1)	
Arsenic	mg/kg DM	4.2	0.49	4.0	4.4	A1 (7) A2 (1) B1 (1) B2 (2)	B3 (4) D (1) F (2)	2 (C)
Cadmium	mg/kg DM	0.85	0.065	0.83	0.88	A1 (11) A2 (3) B1 (1) B2 (2)	B3 (4) D (2) F (2)	2 (C)
Cobalt	mg/kg DM	3.0	0.23	2.8	3.2	A1 (1) A2 (1) B1 (1)	B3 (4) D (1) F (2)	2 (C)
Chromium (aqua regia digestion)	mg/kg DM	37	1.8	36	39	B1 (1) B2 (4)	B3 (6)	1 (C)
Chromium (nitric acid digestion)	mg/kg DM	29	3.8	27	31	A1 (12)	A2 (2)	
Copper	mg/kg DM	137	11	132	142	A1 (11) A2 (3) B1 (2) B2 (4)	B3 (5) D (2) F (2)	4 (C)
Mercury	mg/kg DM	0.71	0.058	0.65	0.78	A1 (6) A2 (1) B1 (1) B2 (2)	B3 (5) E (2) F (2) H (1)	2 (C)
Manganese	mg/kg DM	360	23	350	380	A1 (8) A2 (1) B1 (1) B2 (1)	B3 (5) D (1) F (2)	2 (C)

DETERMINAND	UNIT	AVERAGE	BETWEEN LABORATORY STANDARD DEVIATION	95% CONFIDENCE LIMITS OF THE AVERAGE VALUE $y_{char} \pm t_{0,025}(\nu).\frac{s(y)}{\sqrt{p}}$		NUMBER OF DATA SETS IN CALCULATIONS/ METHOD		EXCLUDED DATA SETS C: Cochran outlier G: Grubbs outlier
		y_{char}	$s(y)$	Lower	Upper	(p)		
Molybdenum	mg/kg DM	4.3	0.27	4.1	4.5	A1 (2) B1 (2) B2 (1)	B3 (3) F (1)	2 (C)
Nickel (aqua regia digestion)	mg/kg DM	18.6	0.68	18.1	19.0	B1 (2) B2 (5)	B3 (5)	
Nickel (nitric acid digestion)	mg/kg DM	15.7	1.4	14.9	16.5	A1 (11)	A2 (3)	1 (C)
Lead	mg/kg DM	28.6	2.5	27.6	29.5	A1 (10) A2 (3) B1 (1) B2 (4)	B3 (6) D (1) F (2)	5 (C)
Antimony * (aqua regia digestion)	mg/kg DM	(2.5)	(0.14)	(2.3)	(2.6)	B1 (1)	B3 (4)	1 (C)
Thallium *	mg/kg DM	(0.17)	(0.0073)	(0.16)	(0.18)	A1 (2) A2 (1)	B3 (1) F (1)	
Uranium	mg/kg DM	1.04	0.053	1.00	1.08	A1 (3) A2 (1) B1 (1)	B2 (1) B3 (3)	1 (C)
Vanadium	mg/kg DM	12.7	1.4	11.9	13.5	A1 (7) B1 (1) B2 (1)	B3 (3) D (1) F (1)	2 (C)
Zinc	mg/kg DM	530	40	510	540	A1 (11) A2 (1) B1 (2) B2 (4)	B3 (6) D (2) F (2)	6 (C)
Aluminium	g/kg DM	5.0	0.47	4.8	5.3	A1 (7) A2 (2) B1 (1) B2 (2)	B3 (5) D (1) F (1)	1 (C)
Calcium	g/kg DM	113	7.1	110	116	A1 (8) A2 (1) B1 (1) B2 (2)	B3 (5) D (1) F (2) G (1)	2 (C)
Iron	g/kg DM	18	0.95	17	20	A1 (6) A2 (1) B1 (1)	B2 (3) B3 (5) F (2)	3 (C)
Potassium	g/kg DM	6.9	0.37	6.7	7.1	A1 (5) A2 (3) B1 (1)	B2 (1) B3 (4) D (1)	2 (C)
Magnesium	g/kg DM	4.7	0.34	4.5	4.9	A1 (8) A2 (3) B1 (1) B2 (1)	B3 (5) D (1) F (2) G (1)	
Total nitrogen	g/kg DM	48	2.0	47	49	A (8) B (2) C (1)	D (2) F (1)	
Total phosphorus	g/kg DM	24	2.6	22	25	A1 (7) A2 (2) B2 (2)	B3 (3) F (2) H (2)	1 (C)

DETERMINAND	UNIT	AVERAGE	BETWEEN LABORATORY STANDARD DEVIATION	95% CONFIDENCE LIMITS OF THE AVERAGE VALUE $y_{char} \pm t_{0,025}(\nu).\frac{s(y)}{\sqrt{p}}$		NUMBER OF DATA SETS IN CALCULATIONS/ METHOD	EXCLUDED DATA SETS C: Cochran outlier G: Grubbs outlier
		y_{char}	$s(y)$	Lower	Upper	(p)	
pH		11.76	0.17	11.66	11.85	A (9) B2 (1) B1 (3) F (1)	1 (C)
Loss on ignition	g/kg DM	588	13	581	594	A (2) D (7) B (6) F (2) C (1)	5 (C)

*: Values in brackets are indicative.

Methods

Trace elements/metals

A1 Digestion with 7N nitric acid in autoclave, e.g. EN 16173
A2 Digestion with 7N nitric acid in microwave oven, e.g. EN 16173
B1 Digestion with aqua regia (hydrochloric acid+nitric acid; 3+1) in autoclave, e.g. EN 16174
B2 Digestion with aqua regia (hydrochloric acid+nitric acid; 3+1) i microwave over, e.g. EN 16174
B3 Digestion with aqua regia (hydrochloric acid+nitric acid; 3+1) by open reflux, e.g. EN 16174
D Digestion with nitric acid in microwave oven (US-EPA 3051A)
E Digestion with hydrochloric acid+ nitric acid (1+3), e.g. US-EPA 3051A
F Digestion with nitric acid and hydrogen peroxide, e.g. US-EPA 3050B
G Digestion with hydrofluoric acid
H Combustion, amalgamation, followed by release and photometric detection, e.g. US EPA 7473

Analytical techniques used by participants were ICP-MS, ICP-AES, AAS, graphite furnace AAS with hydride generation for some elements. For mercury AFS and for potassium AES were also used.

Total nitrogen

A Reductive Kjeldahl digestion, distillation and determination of ammonium, Nordforsk publication 1975:6
B Dry combustion according to the procedure of Dumas, EN 16168, ISO 13878
C Kjeldahl digestion, distillation and determination of ammonium, EN 13342, EN 16169
D Other Kjeldahl digestion procedures, distillation and determination of ammonium, e.g. DIN 19684-4, SFS 5505
F Other methods

Total phosphorus

Trace element techniques or
H Digestion followed by determination of orthophosphate, EN 14672
F Other methods

pH

A Determination of pH in an aqueous extract, EN 12176
B1 Determination of pH in an aqueous extract, EN 15933
B2 Determination of pH in a calcium chloride extract, EN 15933
F Other methods

Loss on ignition

A Loss on ignition of dry matter at a temperature of 550 ºC, EN 15935
B Loss on ignition of dry matter at a temperature of 550 ºC, EN 12879
C Loss on ignition of dry matter at a temperature of 550 ºC, EN 15169
D Loss on ignition of dry matter at a temperature of 550 ºC, DS204, NS 4764, SFS 3008, SS 28113
F Other methods (temperature 550 ºC)

Use of the Certified Values
For laboratories with an analytical quality that is comparable with that of the laboratories who have contributed to the external documentation of this certificate, the following applies:

1) For single determinations, analytical results will with a probability of 95% be in the interval:

$$y_{char} \pm t_{0,025}(\nu) \cdot s(y)$$

2) Analytical results, calculated as the average of two determinations will with a probability of 95% be in the interval:

$$y_{char} \pm t_{0,025}(\nu) \cdot \frac{s(y)}{\sqrt{2}}$$

REFERENCES

/1/ ISO Guide 35:2017. Reference materials – Guidance for characterization and assessment of homogeneity and stability.

/2/ ISO Guide 31:2015. Reference materials - Contents of certificates, labels and accompanying documentation.

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RESPONSIBLE SCIENTIST

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ANNEX TO CERTIFICATE QC SEWAGE SLUDGE B

Laboratory Measurements

Silver					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
1,20	**0,064**	**7**	**0,035**	**2**	**B1E**
1,29	**0,064**	**7**	**0,035**	**2**	**B3E**
1,38	**0,069**	**7**	**0,018**	**2**	**B3E**
1,03	**0,051**	**7**	**0,035**	**2**	**A1D**
1,24	**0,133**	**7**	**0,067**	**2**	**B1D**
1,20	**0,093**	**7**	**0,018**	**2**	**A1E**
1,40	**0,103**	**7**	**0,048**	**2**	**FE**
1,21	**0,12**	**7**	**0,030**	**2**	**A1E**

Arsenic					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
4,26	**0,07**	**7**	**0,04**	**2**	**A1E**
3,96	**0,14**	**7**	**0,08**	**2**	**A2E**
3,81	**0,09**	**7**	**0,03**	**2**	**A1E**
4,48	**0,09**	**7**	**0,05**	**2**	**FE**
5,12	**0,23**	**7**	**0,25**	**2**	**A1E**
4,27	**0,11**	**7**	**0,05**	**2**	**B3E**
4,41	**0,12**	**7**	**0,12**	**2**	**A1D**
4,04	**0,13**	**7**	**0,10**	**2**	**A1E**
3,91	**0,12**	**7**	**0,07**	**2**	**B3E**
4,09	**0,12**	**7**	**0,07**	**2**	**B3E**
4,39	**0,11**	**7**	**0,14**	**2**	**B3E**
3,75	**0,16**	**7**	**0,16**	**2**	**A1D**
4,06	**0,19**	**7**	**0,17**	**2**	**B1D**
4,43	**0,04**	**7**	**0,10**	**2**	**FE**
3,67	**0,24**	**7**	**0,20**	**2**	**B2C**
4,01	**0,05**	**7**	**0,10**	**2**	**A1E**
5,46	**0,19**	**7**	**0,03**	**2**	**D2D**
3,47	**0,08**	**7**	**0,06**	**2**	**B2C**

Cadmium					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
0,822	**0,018**	**7**	**0,006**	**2**	**A1E**
0,812	**0,019**	**7**	**0,025**	**2**	**A2E**
0,838	**0,051**	**7**	**0,006**	**2**	**A1E**
0,801	**0,044**	**7**	**0,005**	**2**	**A1E**
0,889	**0,017**	**7**	**0,016**	**2**	**FE**
0,881	**0,026**	**7**	**0,014**	**2**	**A1E**
0,927	**0,047**	**7**	**0,019**	**2**	**B3E**
0,789	**0,012**	**7**	**0,002**	**2**	**A1D**
0,823	**0,020**	**7**	**0,045**	**2**	**A1E**
0,795	**0,019**	**7**	**0,002**	**2**	**B3E**
0,852	**0,038**	**7**	**0,023**	**2**	**B3F**
0,796	**0,023**	**7**	**0,001**	**2**	**B3E**
0,754	**0,021**	**7**	**0,028**	**2**	**A1D**
0,761	**0,035**	**7**	**0,039**	**2**	**B1D**
0,953	**0,050**	**7**	**0,015**	**2**	**A1D**
0,800	**0,025**	**7**	**0,003**	**2**	**A1D**
0,933	**0,009**	**7**	**0,013**	**2**	**FE**
0,883	**0,009**	**7**	**0,001**	**2**	**A2A**
0,814	**0,038**	**7**	**0,009**	**2**	**B2D**
0,916	**0,019**	**7**	**0,031**	**2**	**A1A**
1,004	**0,039**	**7**	**0,007**	**2**	**A1E**
0,829	**0,046**	**7**	**0,010**	**2**	**A2D**
0,809	**0,027**	**7**	**0,033**	**2**	**D2AD**
0,943	**0,009**	**7**	**0,002**	**2**	**B2ED**
0,879	**0,025**	**7**	**0,034**	**2**	**D2D**

Cobalt					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
3,14	**0,079**	**7**	**0,071**	**2**	**A1E**
3,30	**0,135**	**7**	**0,056**	**2**	**A2E**
3,21	**0,079**	**7**	**0,085**	**2**	**FE**
2,90	**0,096**	**7**	**0,019**	**2**	**B3E**
2,80	**0,043**	**7**	**0,006**	**2**	**B3E**
2,77	**0,077**	**7**	**0,035**	**2**	**B3E**
3,07	**0,061**	**7**	**0,115**	**2**	**B3E**
2,56	**0,038**	**7**	**0,103**	**2**	**B1D**
3,03	**0,067**	**7**	**0,035**	**2**	**FE**
3,13	**0,068**	**7**	**0,057**	**2**	**D2D**

Chromium (aqua regia digestion)					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
37,3	**1,33**	**7**	**0,73**	**2**	**B3E**
35,4	**0,47**	**7**	**1,40**	**2**	**B3E**
38,8	**0,79**	**7**	**1,79**	**2**	**B3E**
36,1	**1,96**	**7**	**0,04**	**2**	**B3D**
37,9	**0,31**	**7**	**0,89**	**2**	**B3E**
36,9	**0,33**	**7**	**0,26**	**2**	**B1D**
37,4	**2,60**	**7**	**1,17**	**2**	**B2D**
35,8	**0,65**	**7**	**0,50**	**2**	**B3D**
35,9	**0,96**	**7**	**1,27**	**2**	**B2D**
37,6	**1,48**	**7**	**1,77**	**2**	**B2D**
41,8	**1,16**	**7**	**1,50**	**2**	**B2ED**

Chromium (nitric acid digestion)					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
30,0	**0,63**	**7**	**1,43**	**2**	**A1E**
33,5	**2,43**	**7**	**0,08**	**2**	**A1D**
37,6	**1,50**	**7**	**0,34**	**2**	**A1E**
29,5	**0,34**	**7**	**0,25**	**2**	**A1D**
32,0	**0,83**	**7**	**0,02**	**2**	**A2B**
27,3	**0,33**	**7**	**0,05**	**2**	**A1D**
27,8	**1,35**	**7**	**0,55**	**2**	**A1E**
26,2	**0,47**	**7**	**0,02**	**2**	**A1D**
28,8	**1,69**	**7**	**0,91**	**2**	**A1D**
22,2	**0,37**	**7**	**1,37**	**2**	**A1D**
26,9	**0,92**	**7**	**2,73**	**2**	**A1A**
27,3	**0,52**	**7**	**0,62**	**2**	**A2D**
25,6	**0,78**	**7**	**1,16**	**2**	**A1D**
30,3	**0,77**	**7**	**0,19**	**2**	**A1D**

Copper					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
140,3	**3,60**	**7**	**1,59**	**2**	**A1E**
116,8	**2,54**	**7**	**2,41**	**2**	**A1E**
143,9	**1,65**	**7**	**0,18**	**2**	**FE**
131,9	**6,22**	**7**	**2,24**	**2**	**A1D**
134,1	**2,41**	**7**	**10,96**	**2**	**A2B**
146,3	**4,89**	**7**	**1,56**	**2**	**B3E**
120,5	**1,06**	**7**	**0,87**	**2**	**A1D**
132,0	**2,71**	**7**	**6,60**	**2**	**A1E**
127,7	**3,33**	**7**	**3,24**	**2**	**B3E**
140,3	**5,83**	**7**	**2,83**	**2**	**B3D**
141,0	**3,02**	**7**	**4,12**	**2**	**B3D**
137,1	**1,87**	**7**	**1,83**	**2**	**A1D**
138,6	**1,98**	**7**	**1,53**	**2**	**B1D**
138,3	**1,51**	**7**	**7,37**	**2**	**B2D**
155,6	**8,82**	**7**	**4,01**	**2**	**A1D**
141,3	**1,97**	**7**	**3,24**	**2**	**A1D**
145,1	**2,20**	**7**	**9,67**	**2**	**FE**
134,6	**2,80**	**7**	**4,71**	**2**	**A1B**
149,2	**5,84**	**7**	**3,09**	**2**	**B3D**
144,8	**3,07**	**7**	**0,08**	**2**	**B2D**
136,5	**2,21**	**7**	**3,66**	**2**	**A2D**
112,9	**5,32**	**7**	**0,59**	**2**	**B2D**
144,7	**3,18**	**7**	**6,26**	**2**	**A1D**
132,7	**2,81**	**7**	**0,06**	**2**	**A1D**
145,1	**3,45**	**7**	**3,95**	**2**	**A2D**
121,8	**1,13**	**7**	**2,73**	**2**	**D2D**
158,6	**0,56**	**7**	**0,65**	**2**	**B2D**
130,5	**2,45**	**7**	**4,27**	**2**	**D2D**
128,1	**8,73**	**7**	**1,83**	**2**	**B1E**

Mercury					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
0,73	**0,029**	**7**	**0,010**	**2**	**A1E**
0,74	**0,030**	**7**	**0,067**	**2**	**H**
0,72	**0,053**	**7**	**0,091**	**2**	**FC**
0,65	**0,050**	**7**	**0,041**	**2**	**A1C**
0,75	**0,041**	**7**	**0,003**	**2**	**B3E**
0,76	**0,029**	**7**	**0,004**	**2**	**E*C**
0,77	**0,055**	**7**	**0,025**	**2**	**A1E**
0,73	**0,032**	**7**	**0,023**	**2**	**B3E**
0,69	**0,021**	**7**	**0,056**	**2**	**B3E**
0,73	**0,028**	**7**	**0,004**	**2**	**B3G**
0,72	**0,023**	**7**	**0,005**	**2**	**B3G**
0,74	**0,028**	**7**	**0,010**	**2**	**A1C**
0,77	**0,044**	**7**	**0,029**	**2**	**B1C**
0,68	**0,021**	**7**	**0,024**	**2**	**B2D**
0,76	**0,097**	**7**	**0,034**	**2**	**FE**
0,59	**0,040**	**7**	**0,032**	**2**	**A1G**
0,64	**0,039**	**7**	**0,010**	**2**	**A1G**
0,58	**0,072**	**7**	**0,016**	**2**	**A2G**
0,79	**0,026**	**7**	**0,001**	**2**	**B2C**
0,74	**0,089**	**7**	**0,055**	**2**	**E2E**

Manganese					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
375	**6,5**	**7**	**8,0**	**2**	**A1E**
308	**10,6**	**7**	**1,1**	**2**	**A2E**
340	**5,0**	**7**	**7,2**	**2**	**A1D**
338	**5,7**	**7**	**2,1**	**2**	**A1E**
390	**6,3**	**7**	**1,5**	**2**	**FE**
361	**3,8**	**7**	**2,6**	**2**	**A1D**
394	**16,1**	**7**	**2,7**	**2**	**B3E**
382	**13,7**	**7**	**0,4**	**2**	**A1E**
362	**6,4**	**7**	**15,9**	**2**	**B3E**
403	**8,5**	**7**	**5,0**	**2**	**B3E**
361	**11,2**	**7**	**0,4**	**2**	**B3D**
374	**5,2**	**7**	**0,9**	**2**	**B3D**
355	**4,8**	**7**	**0,5**	**2**	**A1D**
357	**4,3**	**7**	**1,3**	**2**	**B1D**
381	**4,4**	**7**	**4,8**	**2**	**FE**
359	**7,6**	**7**	**20,2**	**2**	**A1D**
353	**6,8**	**7**	**0,7**	**2**	**A1D**
380	**2,4**	**7**	**2,3**	**2**	**B2D**
338	**4,1**	**7**	**1,4**	**2**	**D2D**

Molybdenum					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
4,12	**0,083**	**7**	**0,085**	**2**	**A1E**
4,57	**0,069**	**7**	**0,156**	**2**	**A1E**
4,42	**0,154**	**6**	**0,086**	**2**	**B3E**
4,23	**0,107**	**7**	**0,021**	**2**	**B3E**
4,34	**0,043**	**7**	**0,067**	**2**	**B3E**
3,66	**0,085**	**7**	**0,099**	**2**	**B1D**
4,31	**0,041**	**7**	**0,089**	**2**	**B2D**
4,51	**0,065**	**7**	**0,079**	**2**	**FE**
4,32	**0,18**	**7**	**0,038**	**2**	**B1E**

Nickel (aqua regia digestion)					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
19,7	**0,66**	**7**	**0,84**	**2**	**B3E**
18,0	**0,49**	**7**	**0,93**	**2**	**B3E**
19,0	**0,27**	**7**	**2,34**	**2**	**B3E**
18,1	**0,32**	**7**	**0,13**	**2**	**B3D**
19,3	**0,20**	**7**	**0,29**	**2**	**B3E**
17,7	**0,25**	**7**	**0,15**	**2**	**B1D**
18,6	**1,37**	**7**	**1,34**	**2**	**B2D**
17,6	**0,15**	**7**	**0,01**	**2**	**B2D**
18,2	**1,58**	**7**	**1,32**	**2**	**B2D**
18,3	**0,73**	**7**	**0,47**	**2**	**B2D**
19,1	**0,44**	**7**	**1,15**	**2**	**B2ED**
19,3	**1,25**	**7**	**0,27**	**2**	**B1E**

Nickel (nitric acid digestion)					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
17,1	**0,41**	**7**	**0,01**	**2**	**A1E**
16,8	**1,21**	**7**	**0,58**	**2**	**A1D**
16,8	**1,69**	**7**	**0,04**	**2**	**A1E**
18,9	**0,74**	**7**	**1,49**	**2**	**A1E**
14,9	**0,80**	**7**	**0,74**	**2**	**A2B**
14,2	**0,10**	**7**	**0,05**	**2**	**A1D**
15,3	**0,41**	**7**	**0,39**	**2**	**A1E**
14,0	**0,14**	**7**	**0,03**	**2**	**A1D**
16,4	**0,81**	**7**	**0,39**	**2**	**A1D**
16,3	**0,38**	**7**	**0,22**	**2**	**A1D**
14,1	**0,16**	**7**	**0,17**	**2**	**A2D**
15,0	**0,48**	**7**	**1,06**	**2**	**A1D**
16,1	**0,83**	**7**	**1,35**	**2**	**A1D**
14,0	**1,32**	**7**	**0,15**	**2**	**A2D**

Lead					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
26,5	**0,39**	**7**	**0,24**	**2**	**A1E**
25,8	**0,86**	**7**	**1,45**	**2**	**A2E**
26,4	**0,61**	**7**	**0,51**	**2**	**A1E**
30,7	**1,62**	**7**	**1,08**	**2**	**FE**
29,1	**0,51**	**7**	**0,22**	**2**	**A1D**
29,6	**0,85**	**7**	**0,06**	**2**	**B3E**
25,5	**0,14**	**7**	**0,02**	**2**	**A1D**
29,8	**0,71**	**7**	**1,43**	**2**	**A1E**
28,4	**0,48**	**7**	**0,51**	**2**	**B3E**
29,9	**0,55**	**7**	**2,11**	**2**	**B3E**
28,2	**0,93**	**7**	**0,14**	**2**	**B3D**
29,9	**0,67**	**7**	**0,22**	**2**	**B3E**
25,5	**0,74**	**7**	**0,99**	**2**	**A1D**
25,7	**0,65**	**7**	**0,94**	**2**	**B1D**
21,8	**0,44**	**7**	**0,12**	**2**	**B2D**
27,2	**0,68**	**7**	**0,70**	**2**	**A1E**
27,9	**0,74**	**7**	**0,55**	**2**	**A1D**
29,0	**0,44**	**7**	**1,00**	**2**	**FE**
31,2	**0,80**	**7**	**0,56**	**2**	**B3D**
30,6	**0,44**	**7**	**0,02**	**2**	**B2D**
30,9	**1,30**	**7**	**0,08**	**2**	**A2A**
30,6	**0,86**	**7**	**0,12**	**2**	**B2D**
30,9	**1,47**	**7**	**2,19**	**2**	**A1D**
29,4	**0,57**	**7**	**0,63**	**2**	**A1E**
29,1	**2,08**	**7**	**0,48**	**2**	**A2D**
33,7	**0,59**	**7**	**2,11**	**2**	**B2ED**
28,1	**0,65**	**7**	**0,08**	**2**	**D2D**

Antimony (aqua regia digestion)					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
2,41	**0,029**	**7**	**0,038**	**2**	**B2E**
2,27	**0,052**	**7**	**0,001**	**2**	**B3E**
2,41	**0,074**	**7**	**0,004**	**2**	**B3E**
2,66	**0,049**	**7**	**0,026**	**2**	**B3E**
2,52	**0,032**	**7**	**0,016**	**2**	**B3E**

Thallium					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
0,162	**0,0115**	**7**	**0,0153**	**2**	**A1E**
0,167	**0,0060**	**7**	**0,0116**	**2**	**A2E**
0,181	**0,0037**	**7**	**0,0009**	**2**	**B3E**
0,169	**0,0039**	**7**	**0,0018**	**2**	**FE**
0,175	**0,0090**	**7**	**0,0131**	**2**	**A1E**

Uranium					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
0,99	**0,059**	**7**	**0,055**	**2**	**A2E**
1,11	**0,030**	**7**	**0,057**	**2**	**A1E**
1,06	**0,024**	**7**	**0,028**	**2**	**B3E**
0,96	**0,016**	**7**	**0,006**	**2**	**B3E**
1,07	**0,037**	**7**	**0,003**	**2**	**B3E**
1,00	**0,025**	**6**	**0,023**	**2**	**A1E**
1,07	**0,025**	**7**	**0,058**	**2**	**A1E**
1,11	**0,033**	**7**	**0,015**	**2**	**B2E**
1,01	**0,039**	**7**	**0,002**	**2**	**B1E**

Vanadium					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
10,6	**0,12**	**7**	**0,48**	**2**	**A1E**
12,3	**0,24**	**7**	**0,61**	**2**	**A1E**
12,5	**0,45**	**7**	**0,70**	**2**	**B3E**
12,6	**0,06**	**7**	**0,01**	**2**	**A1D**
12,6	**0,43**	**7**	**0,44**	**2**	**A1E**
13,4	**0,30**	**7**	**1,03**	**2**	**B3E**
13,6	**0,17**	**7**	**0,28**	**2**	**B3E**
11,7	**0,38**	**7**	**0,25**	**2**	**A1D**
13,0	**0,23**	**7**	**0,27**	**2**	**B1D**
15,1	**0,14**	**7**	**0,22**	**2**	**B2D**
13,2	**0,90**	**7**	**0,19**	**2**	**A1D**
12,4	**0,15**	**7**	**0,42**	**2**	**FE**
10,0	**0,09**	**7**	**0,37**	**2**	**A1E**
14,7	**0,18**	**7**	**0,28**	**2**	**D2D**

Zinc					
y_i mg/kg DM	s_{ri} mg/kg DM	n_{ri}	s_{Li} mg/kg DM	n_{Li}	Method
538	**6,9**	**7**	**7,8**	**2**	**A1E**
522	**7,8**	**7**	**4,2**	**2**	**A1D**
429	**19,5**	**7**	**5,0**	**2**	**A1D**
443	**8,5**	**7**	**2,8**	**2**	**A1E**
566	**6,7**	**7**	**2,5**	**2**	**FE**
565	**10,3**	**7**	**5,8**	**2**	**A1D**
556	**13,9**	**7**	**15,6**	**2**	**B3E**
521	**1,7**	**7**	**0,4**	**2**	**A1D**
498	**9,6**	**7**	**21,2**	**2**	**A1E**
488	**4,7**	**7**	**0,0**	**2**	**B3E**
549	**10,7**	**7**	**18,7**	**2**	**B3E**
580	**18,9**	**7**	**8,8**	**2**	**B3D**
578	**7,0**	**7**	**0,7**	**2**	**B3D**
537	**6,0**	**7**	**10,8**	**2**	**A1D**
541	**6,6**	**7**	**7,7**	**2**	**B1D**
493	**5,9**	**7**	**13,9**	**2**	**B2D**
583	**3,9**	**7**	**5,9**	**2**	**FE**
533	**12,9**	**7**	**6,0**	**2**	**A1B**
522	**14,9**	**7**	**5,2**	**2**	**B3D**
556	**8,7**	**7**	**5,0**	**2**	**B2D**
528	**4,7**	**7**	**5,8**	**2**	**A2D**
473	**10,2**	**7**	**6,4**	**2**	**B2D**
574	**15,0**	**7**	**5,4**	**2**	**A1D**
537	**7,8**	**7**	**3,5**	**2**	**A1D**
496	**1,0**	**4**			**D2D**
571	**2,7**	**7**	**0,6**	**2**	**B2D**
529	**3,6**	**7**	**20,1**	**2**	**D2D**
507	**15,4**	**7**	**5,0**	**2**	**B1E**

Aluminium					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
5,03	**0,11**	**7**	**0,14**	**2**	**A1E**
5,86	**0,38**	**7**	**0,10**	**2**	**A1D**
5,04	**0,28**	**7**	**0,29**	**2**	**A2B**
4,66	**0,24**	**7**	**0,03**	**2**	**B3E**
4,40	**0,14**	**7**	**0,08**	**2**	**A1D**
4,93	**0,05**	**7**	**0,11**	**2**	**A1E**
4,33	**0,05**	**7**	**0,03**	**2**	**B3E**
6,06	**0,18**	**7**	**0,13**	**2**	**B3E**
4,82	**0,24**	**7**	**0,02**	**2**	**B3D**
4,83	**0,08**	**7**	**0,05**	**2**	**B3D**
4,68	**0,05**	**7**	**0,06**	**2**	**A1D**
5,03	**0,07**	**7**	**0,09**	**2**	**B1D**
5,07	**0,32**	**7**	**0,04**	**2**	**A1D**
4,79	**0,12**	**7**	**0,13**	**2**	**FE**
5,15	**0,06**	**7**	**0,02**	**2**	**A2D**
5,36	**0,17**	**7**	**0,26**	**2**	**B2D**
4,45	**0,07**	**7**	**0,27**	**2**	**A1D**
5,58	**0,26**	**7**	**0,16**	**2**	**B2D**
5,55	**0,08**	**7**	**0,07**	**2**	**D2D**

Calcium					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
106,7	**1,8**	**7**	**2,9**	**2**	**A1E**
105,1	**5,7**	**7**	**4,0**	**2**	**A1D**
113,6	**2,4**	**7**	**2,3**	**2**	**FE**
111,7	**4,5**	**7**	**4,7**	**2**	**B3E**
114,9	**2,5**	**7**	**3,9**	**2**	**A1E**
107,7	**1,8**	**7**	**2,8**	**2**	**B3E**
109,6	**2,3**	**7**	**0,1**	**2**	**B3E**
110,3	**3,7**	**7**	**0,4**	**2**	**B3D**
110,0	**1,0**	**7**	**0,4**	**2**	**B3D**
106,6	**1,8**	**7**	**2,8**	**2**	**A1D**
106,6	**1,2**	**7**	**2,8**	**2**	**B1D**
118,3	**4,9**	**7**	**0,8**	**2**	**A1D**
107,0	**3,4**	**7**	**3,7**	**2**	**A1D**
115,7	**0,8**	**7**	**0,3**	**2**	**FE**
116,1	**1,7**	**7**	**1,5**	**2**	**B2D**
112,4	**2,7**	**7**	**1,6**	**2**	**A2D**
135,7	**5,8**	**7**	**1,2**	**2**	**GD**
112,8	**2,8**	**7**	**1,1**	**2**	**A1D**
114,3	**2,8**	**7**	**6,7**	**2**	**A1D**
122,7	**1,0**	**7**	**0,9**	**2**	**B2D**
120,3	**4,4**	**7**	**0,3**	**2**	**D2D**

Iron					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
18,1	**0,41**	**7**	**1,15**	**2**	**A1E**
17,5	**0,90**	**7**	**0,74**	**2**	**A1D**
19,2	**0,05**	**7**	**0,18**	**2**	**FE**
16,8	**0,90**	**7**	**0,37**	**2**	**B3E**
18,5	**0,23**	**7**	**0,29**	**2**	**A1E**
18,1	**0,31**	**7**	**1,14**	**2**	**B3E**
19,6	**0,37**	**7**	**0,27**	**2**	**B3E**
17,1	**0,30**	**7**	**0,29**	**2**	**B3D**
18,2	**0,35**	**7**	**0,62**	**2**	**B3D**
17,2	**0,22**	**7**	**0,04**	**2**	**A1D**
18,3	**0,20**	**7**	**0,14**	**2**	**B1D**
18,6	**0,11**	**7**	**0,08**	**2**	**FE**
18,9	**0,78**	**7**	**0,29**	**2**	**B2D**
19,3	**0,17**	**7**	**0,59**	**2**	**A2D**
17,0	**0,36**	**7**	**0,26**	**2**	**B2D**
19,5	**0,30**	**7**	**0,03**	**2**	**A1D**
18,6	**0,38**	**7**	**0,17**	**2**	**A1D**
19,8	**0,11**	**7**	**0,19**	**2**	**B2D**

Potassium					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
6,52	**0,11**	**7**	**0,02**	**2**	**A1E**
6,91	**0,40**	**7**	**0,24**	**2**	**A2D**
6,35	**0,11**	**7**	**0,35**	**2**	**A2H**
7,01	**0,26**	**7**	**0,41**	**2**	**B3E**
7,09	**0,17**	**7**	**0,07**	**2**	**A1E**
6,66	**0,13**	**7**	**0,13**	**2**	**B3E**
7,90	**0,22**	**7**	**0,40**	**2**	**B3E**
6,58	**0,04**	**7**	**0,07**	**2**	**B3D**
6,63	**0,16**	**7**	**0,30**	**2**	**A1D**
6,82	**0,11**	**7**	**0,11**	**2**	**B1D**
7,04	**0,12**	**7**	**0,08**	**2**	**B2D**
6,82	**0,09**	**7**	**0,05**	**2**	**A2D**
6,90	**0,11**	**7**	**0,06**	**2**	**A1D**
6,77	**0,15**	**7**	**0,04**	**2**	**A1D**
7,34	**0,15**	**7**	**0,06**	**2**	**D2D**

Magnesium					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
4,68	**0,11**	**7**	**0,26**	**2**	**A1E**
4,32	**0,13**	**7**	**0,02**	**2**	**A2D**
4,65	**0,05**	**7**	**0,18**	**2**	**A1D**
5,10	**0,06**	**7**	**0,10**	**2**	**FE**
4,96	**0,19**	**7**	**0,04**	**2**	**B3E**
5,11	**0,11**	**7**	**0,01**	**2**	**A1E**
4,83	**0,06**	**7**	**0,19**	**2**	**B3E**
5,38	**0,16**	**7**	**0,02**	**2**	**B3E**
4,17	**0,18**	**7**	**0,01**	**2**	**B3D**
5,07	**0,05**	**7**	**0,01**	**2**	**B3D**
4,64	**0,06**	**7**	**0,03**	**2**	**A1D**
4,72	**0,05**	**7**	**0,01**	**2**	**B1D**
5,11	**0,27**	**7**	**0,06**	**2**	**A1D**
4,43	**0,18**	**7**	**0,25**	**2**	**A1D**
4,93	**0,08**	**7**	**0,07**	**2**	**FE**
4,46	**0,07**	**7**	**0,07**	**2**	**A2D**
4,27	**0,10**	**7**	**0,08**	**2**	**GD**
4,51	**0,10**	**7**	**0,02**	**2**	**A1D**
4,51	**0,08**	**7**	**0,14**	**2**	**A1D**
4,25	**0,10**	**7**	**0,21**	**2**	**A2D**
5,12	**0,04**	**7**	**0,06**	**2**	**B2D**
4,57	**0,06**	**7**	**0,10**	**2**	**D2D**

Total nitrogen					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
49,8	**0,79**	**7**	**0,41**	**2**	**A**
49,0	**0,72**	**7**	**0,05**	**2**	**A**
48,1	**0,34**	**7**	**0,02**	**2**	**D**
50,8	**0,23**	**7**	**1,44**	**2**	**B**
47,7	**1,00**	**4**			**A**
48,5	**0,84**	**7**	**0,09**	**2**	**D**
47,2	**0,79**	**7**	**0,57**	**2**	**A**
49,3	**0,39**	**7**	**0,08**	**2**	**C**
47,4	**0,62**	**7**	**0,03**	**2**	**A**
45,0	**1,01**	**7**	**0,12**	**2**	**A**
49,6	**1,50**	**7**	**0,38**	**2**	**F**
50,1	**0,41**	**7**	**0,11**	**2**	**A**
43,1	**1,18**	**7**	**1,16**	**2**	**A**
48,1	**0,25**	**7**	**0,73**	**2**	**B**

Total phosphorus					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
26,1	**0,43**	**7**	**0,57**	**2**	**A1E**
27,3	**1,16**	**7**	**2,81**	**2**	**A1D**
29,0	**2,23**	**7**	**1,23**	**2**	**A2D**
22,5	**0,98**	**7**	**0,77**	**2**	**A1D**
24,1	**0,18**	**7**	**0,45**	**2**	**FE**
22,9	**0,10**	**7**	**1,41**	**2**	**B2E**
23,0	**1,13**	**7**	**1,67**	**2**	**A1E**
23,2	**0,57**	**7**	**0,20**	**2**	**B3E**
26,6	**0,47**	**7**	**0,80**	**2**	**B3E**
21,8	**0,92**	**7**	**0,06**	**2**	**B3D**
25,7	**1,28**	**7**	**1,41**	**2**	**A1D**
23,0	**1,28**	**7**	**0,08**	**2**	**F**
18,0	**0,91**	**7**	**0,25**	**2**	**H**
22,6	**0,30**	**7**	**1,26**	**2**	**B2D**
23,4	**1,43**	**7**	**0,92**	**2**	**F**
22,8	**0,15**	**7**	**0,71**	**2**	**A1D**
22,6	**0,30**	**7**	**0,49**	**2**	**A1D**
20,7	**1,18**	**7**	**1,91**	**2**	**A2D**

pH					
y_i	s_{ri}	n_{ri}	s_{Li}	n_{Li}	Method
11,80	**0,057**	**7**	**0,037**	**2**	**A**
11,76	**0,067**	**7**	**0,092**	**2**	**A**
11,92	**0,018**	**7**	**0,001**	**2**	**A**
11,67	**0,024**	**7**	**0,021**	**2**	**B1**
11,54	**0,062**	**4**			**A**
12,07	**0,073**	**7**	**0,047**	**2**	**B1**
11,53	**0,053**	**7**	**0,006**	**2**	**A**
11,64	**0,038**	**4**			**B2**
11,93	**0,037**	**7**	**0,047**	**2**	**A**
11,83	**0,069**	**7**	**0,047**	**2**	**B1**
11,74	**0,068**	**7**	**0,034**	**2**	**F**
11,58	**0,106**	**7**	**0,022**	**2**	**A**
11,66	**0,042**	**7**	**0,078**	**2**	**A**
11,94	**0,031**	**7**	**0,009**	**2**	**A**

Loss on ignition					
y_i g/kg DM	s_{ri} g/kg DM	n_{ri}	s_{Li} g/kg DM	n_{Li}	Method
584,3	**1,2**	**7**	**0,8**	**2**	**D**
592,1	**3,7**	**7**	**4,3**	**2**	**D**
552,9	**1,9**	**7**	**0,8**	**2**	**D**
590,4	**3,8**	**7**	**5,4**	**2**	**F**
591,7	**0,7**	**7**	**1,5**	**2**	**D**
589,0	**0,6**	**7**	**0,4**	**2**	**F**
590,0	**0,4**	**7**	**1,6**	**2**	**A**
585,5	**1,4**	**4**			**D**
575,3	**1,7**	**7**	**1,3**	**2**	**B**
597,3	**2,9**	**3**			**C**
593,7	**2,0**	**7**	**4,5**	**2**	**D**
581,5	**1,2**	**7**	**1,3**	**2**	**B**
589,8	**1,3**	**7**	**2,2**	**2**	**A**
600,0	**3,1**	**7**	**4,1**	**2**	**B**
570,3	**1,4**	**7**	**3,7**	**2**	**D**
614,3	**5,8**	**7**	**1,2**	**2**	**B**
586,9	**2,4**	**7**	**1,5**	**2**	**B**
597,7	**0,8**	**7**	**0,4**	**2**	**B**

External Control Values

y_i : average for laboratory i

s_{ri} : standard deviation for laboratory i within an analytical series

n_{ri} : number of results for determination of s_{ri}

s_{Li} : standard deviation for laboratory i between analytical series

n_{Li} : number of results for determination of s_{Li}

Methods: See explanation on page 5.

ANNEX TO CERTIFICATE QC SEWAGE SLUDGE B

Certifying Laboratories

Austria
Amt der Ö. Landesregierung, Dir. Unwelt und Wasserwirtschaft, Abteilung Umweltschutz; Linz

Denmark
Eurofins Miljø A/S; Vejen
FORCE Technology; Brøndby
Højvang Miljølaboratorium; Dianalund
Vandsamarbejdet A/S; Holstebro
VBM Laboratoriet A/S; Aabybro

Finland
Eurofins Scientific Finland Oy, Environment; Tampere
University of Jyväskylä, Institute for Environmental Research; Jyväskylä
Viljavuuspalvelu Oy; Mikkeli
Water Protection Association of the river Kokomënjoki; Tampere

France
Eurofins IPL Nord; Lille Cedex

Germany
AUD - Analytik- und Umweltdienstleistung GmbH; Chemnitz
BIOLAB Umweltanalysen GmbH; Graunschweig
Eurofins Institut Jäger GmbH; Tübingen
Eurofins Umwelt Ost GmbH, NL Freiburg; Halsbrücke, OT Tuttendorf
Eurofins Umwelt West GmbH; Wesseling
Landesbetrieb Hessisches Landeslabor; Kassel

Italy
Eurofins Environment Testing Italy; Padova

The Netherlands
Eurofins Analytico B.V.; Barneveld

Norway
Eurofins Environment Testing Norway AS; Moss
Hardanger Miljøsenter AS; Odda
LabNett Skien; Skien
Molab as, avd. Mo i Rana; Mo
Nedre Romerike Vannverk IKS avd. Noranalyse; Strømmen
Oslo Kommune, Vann- og Avløpsetaten; Oslo
Trondheim Kommune, Analysesenteret; Trondheim
VEAS; Slemmestad
Vestfoldlab A/S; Sem

Spain
Ambitec Laboratorios S.L.; Valencia
Proaguas Costablanca, S.A.; Alicante

Sweden
ALcontrol, Linköping
Eurofins Environment Testing Sweden; Lidköping
INEOS Sverige AB; Stenungsund
VA SYD, Miljölaboratoriet; Malmö
VA-laboratoriet, Jönköpings Kommun; Jönköping