



REF: 812/02/02/1/982

DATE: 30 JUNE 2007

ATTENTION: LAB MANAGER

SUBJECT: 154th INTER-LABORATORY PROFICIENCY TESTING PROGRAM

We are pleased to present the results of the 154th Inter-laboratory Proficiency Testing Program involving the determination of Water Analysis Using ULTRAcHeck™ Quality Check Samples. As in the previous programs, we have assigned code numbers to participating laboratories in order to protect their identities. For this particular program please contact Dr. Yaser (Tel. No. 3027074) to inform you which code number has been assigned to you.

You are also requested to pay to Dubai Accreditation Centre (DAC), an amount of (DHs 850) in return for your participation in the Inter-laboratory Proficiency Testing Program (please note that the governmental laboratories are exempted from participation fees). We would like to draw your attention that payment can be made through DCLD counter- ground floor by credit card. Should you intend to pay by cheque please address the cheque to Dubai Municipality. After payment, please submit a copy of the invoice to the Accreditation Center (Dr. Yaser Saleh in the administration building on the second floor office no. 314).

You are kindly requested to pay the amount within one month from the date in which the result is posted on our website.

We thank you for your participation and we would welcome any comments or suggestions on this and on future programs.

Please do not hesitate to contact us if you need any clarification on the report.

Kind Regards

Eng. Lina Qudah
Director of Dubai Accreditation Center

رؤيتنا: بناء مدينة متميزة تتوفر فيها رفاهية العيش ومقومات النجاح
Our Vision : To create an excellent city that provides the essence of success and comfort of living



DUBAI ACCREDITATION CENTER

Report on 154th Laboratory Proficiency Testing Water Analysis Using Ultracheck™ Quality Check Samples

30 June 2007

1. INTRODUCTION

This document presents the results of the 154th inter-laboratory proficiency-testing program conducted during the month of May involving the analysis of quality check samples for wastewater analysis with nine laboratories participating.

This program is part of the Interlaboratory Comparison Programs organized by the Accreditation Center of DM for monitoring the validity of test results of laboratories operating in Dubai as a requirement of the Local Order 52/1990 and ISO/IEC 17011: 2004.

2. EXPERIMENTAL DESIGN

2.1 Participants:

Nine private laboratories (eight of them are accredited by DM for environmental wastewater analysis) participated in this program.

2.2 Samples tested:

The following samples were distributed

2.2.1 ULTRAcHeck™ Demand Quality Check Sample Catalog No. QCI-735

This consist of ampules with instructions for dilution and preparation
Tests to be carried out: Biochemical oxygen demand (BOD as per APHA-5210B and
Chemical oxygen demand (COD) as per APHA-5220 B / APHA-5220 C / APHA-
5220 D

2.2.2 ULTRAcHeck™ Trace Metals Quality Check Sample Catalog No. QCI-700A

This consist of ampules with instructions for dilution and preparation
Tests to be carried out: Trace metals, Cu, Cd, Pb, Ni, Zn, Cr, Co, Fe, Mn, Ag as per
APHA-3030 (3111/3113/3120)

2.2.3 ULTRAcHeck™ Solids Quality Check Sample Catalog No. QCI-711

This consist of ready-to-use water samples

Tests to be carried out: Total dissolved solids (TDS) as per APHA-2540C and Total
suspended solids (TSS) as per APHA-2540D



DUBAI ACCREDITATION CENTER

- 2.2.4 ULTRAcHECK™ Oil & Grease Quality Check Sample
Catalog No. QCI-770
This consist of ampules with instructions for dilution and preparation
Tests to be carried out: Oil & grease as per APHA-5520 B / APHA-5520 C / APHA-5520 D

- 2.3 **Sample preparation:**
As per the enclosed ULTRAcHECK™ instructions.

3. CONFIDENTIALITY

Each laboratory is given a code number to maintain confidentiality of results and to protect their identities. Only the concerned laboratory knows its code number.

4. TEST METHOD

Instructions were given to the participants to test the samples for APHA-AWWA- WEF 20th Ed. 1998.

5. TEST RESULTS

- 5.1 Upon receipt of the test results from the participating laboratories, the sealed envelopes containing the Certificate of Analysis of the samples distributed were opened. The certified “Reference value” and “Advisory Range” as given in the Certificates are shown in the first half of Table (1). Copies of the Certificates of Analysis are given in the Appendices.
- 5.2 The test results submitted by the participating laboratories are given in the second half of Table (1). In order to protect the identities of the participating laboratories, each one was assigned a code number.
- 5.3 Table (1) also indicates whether the participating laboratory’s results are within (Pass) or outside (Fail) the “Advisory Range”.



DUBAI ACCREDITATION CENTER

6. EVALUATION OF RESULTS

6.1 Outliers Results

Test Parameter	Labs with Outlier Results
TSS	Lab 1; Lab 5; Lab 7; Lab 8
BOD	Lab 2
COD	Lab 2
Trace Metal Cadmium (Cd)	Lab 6
Trace Metal Chromium (Cr)	Lab 6
Trace Metal Cobalt (Co)	Lab 6
Trace Metal Iron (Fe)	Lab 7 & Lab 8
Trace Metal Lead (Pb)	Lab 6
Trace Metal Manganese (Mn)	Lab 3 & Lab 6
Trace Metal Nickel (Ni)	Lab 6
Trace Metal Zinc (Zn)	Lab 6 & Lab 7

7. CONCLUSION AND RECOMMENDATIONS

The test results provided by the above mentioned laboratories are outside the advisory limits. The above mentioned laboratories are requested to investigate the root cause of the outlier results, implement corrective action and email a report within 2 weeks to Accreditation Decisions Section of the Dubai Accreditation Center to the following address: lmqudah@dm.gov.ae.

8. APPENDICES

- 8.1. Appendix A: Table (1) Summary of results
- 8.2. Appendix B: ULTRA Scientific Certificate of Analysis for QCI-711 Code No. 72853
- 8.3. Appendix C: ULTRA Scientific Certificate of Analysis for QCI-770 Code No. 79618
- 8.4. Appendix D: ULTRA Scientific Certificate of Analysis for QCI-735 Code No. 78038
- 8.5. Appendix E: ULTRA Scientific Certificate of Analysis for QCI-700A Code No. 75990

Appendix A : Table (1) Summary of Results

S. No.	Test	ULTRA Check Samples		Participant's Result								
		Reference Value	Advisory Range	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9
1	TDS	3130 ± 35 mg/L	2690 - 3570	3098	3099	3140	3252	3200	3108	3090	3153	3152
2	TSS	120 ± 12 mg/L	106 - 127	136	120	116	116	128	106	134	134	116.5
3	Oil& Grease	50.0 ± 0.1 mg/L	37.0 – 56.2	48.8	50.5	51	54	43	44	49	40.3	N. D.
4	BOD	200 ± 2 mg/L	85 - 168	134	69.8	120	89	141	127	132	132	148
5	COD	205 ± 2 mg/L	171 - 219	201	225	207	195	197	205	202	201	200.24
6	Metal-Cd	250 ± 3 µg/L	225 - 275	0.247	0.239	0.251	0.249	0.23	0.28	0.243	0.25	0.250
7	Metal-Cr	1000 ± 10 µg/L	900 - 1100	1.034	0.983	1.082	1.038	0.97	1.14	1.004	1.0	1.067
8	Metal-Co	650 ± 7 µg/L	585 - 715	0.692	0.640	0.671	0.663	0.64	0.73	0.660	0.69	0.652
9	Metal-Cu	550 ± 6 µg/L	495 -990	0.545	0.520	0.579	0.55	0.54	0.62	0.548	0.58	0.553
10	Metal-Fe	900 ± 9 µg/L	810 - 990	0.990	0.908	0.889	0.96	0.92	0.98	0.996	1.0	0.953
11	Metal-Pb	800 ± 8 µg/L	720 - 880	0.840	0.825	0.834	0.797	0.82	0.92	0.830	0.88	0.780
12	Metal-Mn	850 ± 9 µg/L	765 - 935	0.854	0.807	0.946	0.892	0.83	0.96	0.830	0.90	0.878
13	Metal-Ni	700 ± 7 µg/L	630 - 770	0.658	0.658	0.717	0.710	0.69	0.78	0.730	0.75	0.704
14	Metal-Ag	250 ± 3 µg/L	225 - 275	0.270	0.274	0.265	0.241	0.23	0.27	0.270	0.25	0.247
15	Metal-Zn	800 ± 8 µg/L	720 - 881	0.835	0.731	0.764	0.847	0.77	0.95	0.882	0.78	0.778

Number of parameters determined correctly out of 15	14/15	13/15	14/15	15/15	14/15	8/15	12/15	13/15	15/15
---	-------	-------	-------	-------	-------	------	-------	-------	-------

Certificate of Analysis

Solids Sample

Catalog Number: QCI-711

Code Number: 74747

This ULTRAcHECK™ sample was gravimetrically prepared, and the analyte concentrations were confirmed using the analytical technique listed. Concentrations are traceable to the NIST standard reference materials (SRMs) listed. Reference values are determined experimentally when the sample has been prepared according to instructions.

Test	Reference Value	Analytical Method	NIST Traceability	Advisory Range*
filterable residue (TDS)	3130 ± 35 mg/L	EPA Method 160.1	gravimetric	2690 - 3570
non-filterable residue (TSS)	120 ± 12 mg/L	EPA Method 160.2	gravimetric	106 - 127
total residue (TS)	3270 ± 38 mg/L	EPA Method 160.3	gravimetric	3140 - 3320

* Calculated from "National Standards for Water Proficiency Testing Studies Criteria Document," US EPA, December, 1998, at the 95% confidence level.



ISO 9001: 2000
Registered
TUV USA Inc.
Cert. No. 06-1004

ISO 17025
Accredited
A2LA
Cert. No. 0851.01

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 401-295-2330
www.ultrasci.com

Edward Fitzgerald
Dr. Edward Fitzgerald,
Senior Scientist

Certificate of Analysis

Oil and Grease Sample

Catalog Number: QCI-770

Code Number: 71035

This ULTRACheck(TM) sample was gravimetrically prepared, and the analyte concentrations were confirmed using the analytical technique listed. Concentrations are traceable to the NIST standard reference materials (SRMs) listed. The reference value represents the determined value when the sample has been prepared according to instructions.

Test	Reference Value	Analytical Method	NIST Traceability	Advisory Range*
Total Grease and Oil	50.0 ± 0.1 mg/L	EPA Method 1664	gravimetric	37.0 - 56.2

* Calculated from the NELAC Non-Potable Water Fields of Testing Document, effective 6/1/05.



ISO 9001: 2000 Registered
TUV USA Inc. Cert. No. 06-1004
ISO 17025 Accredited
A2LA Cert. No. 0851.01

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 401-295-2330
www.ultrasci.com

A handwritten signature in black ink, appearing to read 'Edward Fitzgerald'.

Dr. Edward Fitzgerald,
Senior Scientist

Certificate of Analysis

WP & DMR-QA Demands Sample

Catalog Number: QCI-735

Code Number: 71222

This ULTRACheck(TM) sample was gravimetrically prepared, and the analyte concentrations were confirmed using the analytical technique listed. Concentrations are traceable to the NIST standard reference materials (SRMs) listed. The reference value represents the determined value when the sample has been prepared according to instructions.

Analyte	Assigned Value	Analytical Method	NIST SRM	Advisory Range *
TOC	80.8 ± 0.8 mg/L	EPA Method 415.1	N/A	71.8 - 88.7
COD	205 ± 2 mg/L	EPA Method 410.4	N/A	171 - 219
BOD	200 ± 2 mg/L	EPA Method 405.1	N/A	85 - 168
CBOD	200 ± 2 mg/L	EPA Method 405.1	N/A	69 - 149

Note, the assigned values for BOD and CBOD represent the actual concentration of glucose and glutamic acid present in the sample after preparation. The advisory range represents the range of acceptable values for the parameters based upon the initial concentration of glucose and glutamic acid..

* Calculated from "National Standards for Water Proficiency Testing Studies Criteria Document," US EPA, December, 1998, at the 95% confidence level.



ISO 9001: 2000 Registered
TUV USA Inc. Cert. No. 06-1004
ISO 17025 Accredited
A2LA Cert. No. 0851.01

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 401-295-2330
www.ultrasci.com



Dr. Edward Fitzgerald,
Senior Scientist

Certificate of Analysis

Trace Metals Sample

Catalog Number: QCI-700A

Code Number: 72509

This ULTRAcheck(TM) sample was gravimetrically prepared, and the analyte concentrations were confirmed using the analytical technique listed. Concentrations are traceable to the NIST standard reference materials (SRMs) listed. The true values represent the gravimetrically determined values when the sample has been prepared according to instructions. Uncertainties are calculated as two times the manufacturing precision of the concentrates.

Analyte	True Value	Analytical Method	NIST SRM	Advisory Range*
aluminum	500 ± 5 µg/L	ICP	3171a	424 - 576
antimony	150 ± 2 µg/L	ICP	3102a	110 - 170
arsenic	250 ± 3 µg/L	ICP	3103a	222 - 280
barium	300 ± 3 µg/L	ICP	3104a	270 - 330
beryllium	200 ± 2 µg/L	ICP	3105a	178.6 - 220.0
boron	350 ± 4 µg/L	ICP	3107	315 - 393
cadmium	250 ± 3 µg/L	ICP	3171a	225 - 275
chromium	1000 ± 10 µg/L	ICP	3112a	900 - 1100
cobalt	650 ± 7 µg/L	ICP	3113	585 - 715
copper	550 ± 6 µg/L	ICP	3114	495 - 605
iron	900 ± 9 µg/L	ICP	3171a	810 - 990
lead	800 ± 8 µg/L	ICP	3128	720 - 880
manganese	850 ± 9 µg/L	ICP	3132	765 - 935
molybdenum	650 ± 7 µg/L	ICP	3134	585 - 715
nickel	700 ± 7 µg/L	ICP	3136	630 - 770
selenium	250 ± 3 µg/L	ICP	3149	211 - 275
silver	250 ± 3 µg/L	ICP	3151	225 - 275
strontium	850 ± 9 µg/L	ICP	3153a	765 - 935
thallium	200 ± 2 µg/L	ICP	3158	161 - 235
vanadium	550 ± 6 µg/L	ICP	3165	495 - 605
zinc	800 ± 8 µg/L	ICP	3168a	720 - 881

* Calculated from the NELAC Non-Potable Water Fields of Testing Document, effective 6/1/05.



ISO 9001: 2000 Registered
TUV USA Inc.
Cert. No. 06-1004

ISO 17025 Accredited
A2LA
Cert. No. 0851.01

250 Smith Street, North Kingstown, RI 02852 USA
401-294-9400 Fax: 401-295-2330
www.ultrasci.com



Dr. Edward Fitzgerald,
Senior Scientist