



KNOXVILLE DIVISION
505 EAST BROADWAY AVE.
MARYVILLE, TN 37804
(865) 977-1200 FAX (865) 984-8616
http://www.microbac.com
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STATE CERT ID.
TN 02017

CHEMISTRY · MICROBIOLOGY · FOOD SAFETY · CONSUMER PRODUCTS
WATER · AIR · WASTES · FOOD · PHARMACEUTICALS · NUTRACEUTICALS

CERTIFICATE OF ANALYSIS

CITY OF KINGSTON
CHUCK MOORE
125 W. CUMBERLAND ST.
KINGSTON, TN 37763

Date Reported 1/29/2010
Date Received 1/2/2010
Cust P.O.
Invoice No. 77986
Cust # C120
Sample Date 1/2/2010
Permit No.

Work Order Number: 0912-01288

Subject: KINGSTON WTP RAW AND FINISHED WATER SAMPLES

Table with columns: Test, Method, Result, Qual, Date, Time, Tech. Includes rows for various metals like ALUMINUM, ANTIMONY, ARSENIC, etc.

002 RAW 1/2/10 0630 DISSOLVED METALS





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Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech. Row 1: RAW 1/2/10 0630 DISSOLVED METALS. Rows 2-36: Various metals (ALUMINUM, ANTIMONY, ARSENIC, etc.) with their respective test methods, results, and dates.

003 FINISHED 1/2/10 0630





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| Test                            | Method            | Result       | Qual | Date       | Time  | Tech |
|---------------------------------|-------------------|--------------|------|------------|-------|------|
| <b>003 FINISHED 1/2/10 0630</b> |                   |              |      |            |       |      |
| .....continued                  |                   |              |      |            |       |      |
| [ TAL METALS ]                  |                   |              |      | 01/08/2010 | 11:01 | SRR  |
| ALUMINUM                        | EPA 200.7         | 0.0341 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| ANTIMONY                        | EPA 200.8         | <0.005 MG/L  |      | 01/08/2010 | 11:01 | MCD  |
| ARSENIC                         | EPA 200.8         | <0.005 MG/L  |      | 01/08/2010 | 11:01 | MCD  |
| BARIUM                          | EPA 200.7         | 0.0194 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| BERYLLIUM                       | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| CADMIUM                         | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| CHROMIUM                        | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| COBALT                          | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| COPPER                          | EPA 200.7         | 0.0017 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| IRON                            | EPA 200.7         | 0.0070 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| LEAD                            | EPA 200.8         | <0.005 MG/L  |      | 01/08/2010 | 11:01 | MCD  |
| MAGNESIUM                       | EPA 200.7         | 4.47 MG/L    | J+,* | 01/04/2010 | 16:41 | SRR  |
| MANGANESE                       | EPA 200.7         | <0.0050 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| MOLYBDENUM                      | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| MERCURY                         | EPA 245.1         | <0.0002 MG/L |      | 01/04/2010 | 15:53 | SRR  |
| NICKEL                          | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| SELENIUM                        | EPA 200.8         | <0.005 MG/L  |      | 01/08/2010 | 11:01 | MCD  |
| SILVER                          | EPA 200.7         | <0.0010 MG/L | J+   | 01/05/2010 | 12:25 | SRR  |
| TIN                             | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| TITANIUM                        | EPA 200.7         | <0.0010 MG/L |      | 01/05/2010 | 12:25 | SRR  |
| THALLIUM                        | EPA 200.8         | <0.001 MG/L  |      | 01/08/2010 | 11:01 | MCD  |
| ZINC                            | EPA 200.7         | 0.0031 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| BORON                           | EPA 200.7         | 0.0086 MG/L  |      | 01/05/2010 | 12:25 | SRR  |
| SOLIDS, TOTAL SUSPENDED         | SM 2540,D.        | <4.00 MG/L   |      | 01/04/2010 | 09:00 | KDW  |
| HARDNESS, TOTAL AS CaCO3        | EPA 200.7;2340,B. | 52.1 MG/L    | J+,* | 01/04/2010 | 16:41 | SRR  |

**004 FINISHED 1/2/10 0630 DISSOLVED METALS**





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Subject: KINGSTON WTP RAW AND FINISHED WATER SAMPLES

Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech. Row 1: 004 FINISHED 1/2/10 0630 DISSOLVED METALS. Rows 2-33: List of metals (ALUMINUM, ANTIMONY, ARSENIC, etc.) with corresponding test methods, results, and dates.

REVISED REPORT TO CONTAIN BACK-UP STATE CERTIFIED DATA FOR SB, AS, PB, SE AND TL. ANALYSIS SUBCONTRACTED TO MICROBAC LABORATORIES CHICAGOLAND DIVISION (TN LAB ID#04017). LL 01-29-10.





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|------|--------|--------|------|------|------|------|
|------|--------|--------|------|------|------|------|

RESPECTFULLY SUBMITTED:

MICROBAC LABORATORIES, INC.

*Thank you for your business. We invite your feedback on our level of service to you. Please contact the Laboratory Director, James Nokes, at 865-977-1200, the COO, Robert Morgan, at rmorgan@microbac.com or the President, James Nokes, at jnokes@microbac.com with any comments or suggestions.*



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As regulatory limits change frequently, Microbac advises the recipient of this report to confirm such limits with the appropriate Federal, state, or local authorities before acting in reliance on the regulatory limits provided.

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QUALIFIER DEFINITIONS:

- B = Detected in the associated Method Blank
C = As Tons CaCO3, equivalent per 1,000 tons material
D = Surrogate recoveries not calculated due to matrix interference and resulting sample dilution
E1 = Elevated detection limits due to sample matrix interference
E2 = Elevated detection limits due to high analyte concentration
H = Analyte was prepared and/or analyzed outside of the analytical method holding time
I = Spike recovery outside control limits due to sample matrix interference or high analyte concentration
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
J+ = The result is an estimated quantity, but the result may be biased high
J- = The result is an estimated quantity, but the result may be biased low
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise
K = Inter-element correction applied due to high concentration of non-target analyte
L1 = Liquid portion of dual phase sample analyzed only
L2 = Solid portion of dual phase sample analyzed only
M = Miscellaneous (see entry below analytical results)
N = Analyte acceptable but matrix spike/matrix spike duplicate outside accepted recovery criteria
\* = Matrix Spike/Matrix Spike Duplicate RPD is outside acceptable limits
P = Sample received improperly preserved
R = Relative Percent Duplicate (RPD) outside accepted recovery limits
S1 = Spike recovery outside recovery limits
S2 = Surrogate recovery outside of control limits. The data was accepted based on the valid recovery of remaining surrogate.
U = Undetected
V = Elevated reporting limits due to insufficient sample volume
W = Results reports on dry weight basis
Z = The parameter is considered a field analysis with an immediate to 15 minute holding time. Laboratory analysis is confirmatory in nature and is performed outside the preferred holding time window.

ABBREVIATIONS:

- TNTC = Too Numerous To Count
MG/KG = Milligrams per Kilogram (PPM)
UG/L = Micrograms per Liter (PPB)
CFU = Colony Forming Unit

