



KNOXVILLE DIVISION
 505 EAST BROADWAY AVE.
 MARYVILLE, TN 37804
 (865) 977-1200 FAX (865) 984-8616
 http://www.microbac.com
 E-Mail: knoxville@microbac.com

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 1/31/2010
 Date Received 1/24/2010
 Cust P.O.
 Invoice No. 78067
 Cust # C120
 Sample Date 1/24/2010
 Permit No.

Work Order Number: 1001-00821

Subject: KINGSTON WTP RAW AND FINISHED WATER SAMPLES

Test	Method	Result	Qual	Date	Time	Tech
001 RAW 1/24/10 0600						
[TAL METALS]				01/27/2010	12:47	SRR
ALUMINUM	EPA 200.7	0.206 MG/L		01/26/2010	15:41	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
ARSENIC	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
BARIUM	EPA 200.7	0.0204 MG/L		01/26/2010	15:41	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
COBALT	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
COPPER	EPA 200.7	0.0027 MG/L		01/26/2010	15:41	SRR
IRON	EPA 200.7	0.241 MG/L		01/26/2010	15:41	SRR
LEAD	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
MAGNESIUM	EPA 200.7	1.25 MG/L	J+*	01/25/2010	17:13	SRR
MANGANESE	EPA 200.7	0.0278 MG/L		01/26/2010	15:41	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		01/25/2010	14:58	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
SILVER	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
TIN	EPA 200.7	<0.0010 MG/L		01/26/2010	15:41	SRR
TITANIUM	EPA 200.7	0.0040 MG/L		01/26/2010	15:41	SRR
THALLIUM	EPA 200.8	<0.001 MG/L		01/27/2010	12:47	MTC
ZINC	EPA 200.7	0.0199 MG/L		01/26/2010	15:41	SRR
BORON	EPA 200.7	0.0057 MG/L		01/26/2010	15:41	SRR
SOLIDS, TOTAL SUSPENDED	SM 2540,D.	<4.00 MG/L		01/25/2010	09:00	KDW
HARDNESS, TOTAL AS CaCO3	EPA 200.7;2340,B.	43.8 MG/L	J+*	01/25/2010	17:13	SRR

002 RAW 1/24/10 0600 DISSOLVED METALS



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Test Method Result Qual Date Time Tech

002 RAW 1/24/10 0600 DISSOLVED METALS

.....continued

[TAL METALS]

Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech. Rows include ALUMINUM, ANTIMONY, ARSENIC, BARIUM, BERYLLIUM, CADMIUM, CHROMIUM, COBALT, COPPER, IRON, LEAD, MAGNESIUM, MANGANESE, MOLYBDENUM, MERCURY, NICKEL, SELENIUM, SILVER, TIN, TITANIUM, THALLIUM, ZINC, BORON, SILICA (SiO2).

003 FINISHED 1/24/10 0600





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Test	Method	Result	Qual	Date	Time	Tech
003 FINISHED 1/24/10 0600						
.....continued						
[TAL METALS]				01/27/2010	12:47	SRR
ALUMINUM	EPA 200.7	0.0069 MG/L		01/26/2010	15:48	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
ARSENIC	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
BARIUM	EPA 200.7	0.0196 MG/L		01/26/2010	15:48	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
COBALT	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
COPPER	EPA 200.7	0.0038 MG/L		01/26/2010	15:48	SRR
IRON	EPA 200.7	<0.0060 MG/L		01/26/2010	15:48	SRR
LEAD	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
MAGNESIUM	EPA 200.7	1.31 MG/L	J+*	01/25/2010	18:01	SRR
MANGANESE	EPA 200.7	<0.0050 MG/L		01/26/2010	15:48	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		01/25/2010	15:27	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		01/27/2010	12:47	MTC
SILVER	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
TIN	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
TITANIUM	EPA 200.7	<0.0010 MG/L		01/26/2010	15:48	SRR
THALLIUM	EPA 200.8	<0.001 MG/L		01/27/2010	12:47	MTC
ZINC	EPA 200.7	0.0053 MG/L		01/26/2010	15:48	SRR
BORON	EPA 200.7	0.0052 MG/L		01/26/2010	15:48	SRR
SOLIDS, TOTAL SUSPENDED	SM 2540,D.	<4.00 MG/L		01/25/2010	09:00	KDW
HARDNESS, TOTAL AS CaCO3	EPA 200.7;2340,B.	45.9 MG/L	J+*	01/25/2010	18:01	SRR

004 FINISHED 1/24/10 0600 DISSOLVED METALS





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Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech. Row 1: 004 FINISHED 1/24/10 0600 DISSOLVED METALS. Rows 2-33: Various metals (Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Mercury, Nickel, Selenium, Silver, Tin, Titanium, Thallium, Zinc, Boron, Silica) with corresponding EPA methods, results, and quality indicators.

REVISED REPORT TO CONTAIN BACK-UP STATE CERTIFIED DATA FOR SB, AS, PB, SE AND TL. ANALYSIS SUBCONTRACTED TO MICROBAC LABORATORIES TRI-CITIES DIVISION (TN LAB ID#04017). LL 02-01-10.





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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, Ashley Morris, 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

