



KNOXVILLE DIVISION
 505 EAST BROADWAY AVE.
 MARYVILLE, TN 37804
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 http://www.microbac.com
 E-Mail: knoxville@microbac.com

STATE CERT ID.
 TN 02017

CHEMISTRY · MICROBIOLOGY · FOOD SAFETY · CONSUMER PRODUCTS
 WATER · AIR · WASTES · FOOD · PHARMAUTICALS · NUTRACEUTICALCES

CERTIFICATE OF ANALYSIS

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

Date Reported 12/3/2009
 Date Received 11/24/2009
 Cust P.O.
 Invoice No. 75861
 Cust # C120
 Sample Date 11/24/2009
 Permit No. 0000360

Work Order Number: 0911-00987

Subject: KINGSTON WTP RAW AND FINISHED WATER SAMPLES

Test	Method	Result	Qual	Date	Time	Tech
001 RAW 11/24/09 0630						
[TAL METALS]				12/02/2009	11:45	SRR
ALUMINUM	EPA 200.7	0.164 MG/L		11/25/2009	18:40	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		12/02/2009	11:45	MCD
ARSENIC	EPA 200.8	<0.005 MG/L		12/02/2009	11:45	MCD
BARIUM	EPA 200.7	0.0196 MG/L		11/25/2009	18:40	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
COBALT	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
COPPER	EPA 200.7	0.0013 MG/L		11/25/2009	18:40	SRR
IRON	EPA 200.7	0.227 MG/L		11/25/2009	18:40	SRR
LEAD	EPA 200.8	<0.005 MG/L		12/02/2009	11:45	MCD
MAGNESIUM	EPA 200.7	3.41 MG/L	J+	11/25/2009	16:46	SRR
MANGANESE	EPA 200.7	0.0368 MG/L	J	11/25/2009	18:40	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		11/24/2009	19:19	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		12/02/2009	11:45	MCD
SILVER	EPA 200.7	<0.0010 MG/L		11/25/2009	18:40	SRR
TIN	EPA 200.7	0.0026 MG/L		11/25/2009	18:40	SRR
TITANIUM	EPA 200.7	0.0043 MG/L		11/25/2009	18:40	SRR
THALLIUM	EPA 200.8	0.0022 MG/L		12/02/2009	11:45	MCD
ZINC	EPA 200.7	0.0316 MG/L		11/25/2009	18:40	SRR
BORON	EPA 200.7	0.0038 MG/L		11/25/2009	18:40	SRR
SOLIDS, TOTAL SUSPENDED	SM 2540,D.	6.10 MG/L		11/24/2009	09:10	KDW
HARDNESS, TOTAL AS CaCO3	EPA 200.7;2340,B.	51.5 MG/L	J+	11/25/2009	16:46	SRR

002 RAW 11/24/09 0630 DISSOLVED METALS





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002 **RAW 11/24/09 0630 DISSOLVED METALS**
continued

[TAL METALS]				12/02/2009	17:07	SRR
ALUMINUM	EPA 200.7	<0.0050 MG/L		11/25/2009	19:12	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		12/02/2009	17:07	MCD
ARSENIC	EPA 200.8	<0.005 MG/L		12/02/2009	17:07	MCD
BARIUM	EPA 200.7	0.0177 MG/L		11/25/2009	19:12	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L	J-	11/25/2009	19:12	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
COBALT	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
COPPER	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
IRON	EPA 200.7	0.0156 MG/L		11/25/2009	19:12	SRR
LEAD	EPA 200.8	<0.005 MG/L		12/02/2009	17:07	MCD
MAGNESIUM	EPA 200.7	3.16 MG/L		11/25/2009	17:51	SRR
MANGANESE	EPA 200.7	<0.0050 MG/L		11/25/2009	19:12	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		11/24/2009	19:19	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		12/02/2009	17:07	MCD
SILVER	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
TIN	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
TITANIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	19:12	SRR
THALLIUM	EPA 200.8	<0.002 MG/L		12/02/2009	17:07	MCD
ZINC	EPA 200.7	0.0242 MG/L		11/25/2009	19:12	SRR
BORON	EPA 200.7	0.0035 MG/L	J-	11/25/2009	19:12	SRR
SILICA (SiO2)	EPA 200.7	5.64 MG/L		11/25/2009	17:51	SRR

003 **FINISHED 11/24/09 0630**





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003 **FINISHED 11/24/09 0630**
continued

[TAL METALS]				12/02/2009	17:11	SRR
ALUMINUM	EPA 200.7	0.0108 MG/L		11/25/2009	18:48	SRR
ANTIMONY	EPA 200.8	<0.005 MG/L		12/02/2009	17:11	MCD
ARSENIC	EPA 200.8	<0.005 MG/L		12/02/2009	17:11	MCD
BARIUM	EPA 200.7	0.0185 MG/L		11/25/2009	18:48	SRR
BERYLLIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
CADMIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
CHROMIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
COBALT	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
COPPER	EPA 200.7	0.0025 MG/L		11/25/2009	18:48	SRR
IRON	EPA 200.7	<0.0060 MG/L		11/25/2009	18:48	SRR
LEAD	EPA 200.8	<0.005 MG/L		12/02/2009	17:11	MCD
MAGNESIUM	EPA 200.7	3.52 MG/L	J+	11/25/2009	17:43	SRR
MANGANESE	EPA 200.7	<0.0050 MG/L		11/25/2009	18:48	SRR
MOLYBDENUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
MERCURY	EPA 245.1	<0.0002 MG/L		11/24/2009	19:19	SRR
NICKEL	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
SELENIUM	EPA 200.8	<0.005 MG/L		12/02/2009	17:11	MCD
SILVER	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
TIN	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
TITANIUM	EPA 200.7	<0.0010 MG/L		11/25/2009	18:48	SRR
THALLIUM	EPA 200.8	<0.002 MG/L		12/02/2009	17:11	MCD
ZINC	EPA 200.7	0.0081 MG/L		11/25/2009	18:48	SRR
BORON	EPA 200.7	0.0038 MG/L		11/25/2009	18:48	SRR
SOLIDS, TOTAL SUSPENDED	SM 2540,D.	<4.00 MG/L		11/24/2009	09:10	KDW
HARDNESS, TOTAL AS CaCO3	EPA 200.7;2340,B.	54.8 MG/L	J+	11/25/2009	17:43	SRR

004 **FINISHED 11/24/09 0630 DISSOLVED METALS**



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Test Method Result Qual Date Time Tech

004 FINISHED 11/24/09 0630 DISSOLVED METALS

Table with columns: Test, Method, Result, Qual, Date, Time, Tech. Rows include various metals like ALUMINUM, ANTIMONY, ARSENIC, etc., with their respective test methods and results.

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 12-03-09.





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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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Table with 7 columns: Test, Method, Result, Qual, Date, Time, Tech

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
UG/L = Micrograms per Liter (PPB)
MG/KG = Milligrams per Kilogram (PPM)
CFU = Colony Forming Unit

