

COMMONWEALTH OF KENTUCKY

Energy and Environment Cabinet

2019

Wastewater Laboratory Certification Program
In Accordance with KRS 224.10-670 and 401 KAR Chapter 5:320



THIS CERTIFIES THAT

Microbac Laboratories Inc
3323 Gilmore Industrial Blvd
Louisville, KY 40213

Laboratory ID Number: KY00074



The above laboratory has complied with Kentucky Administrative Regulation 401 KAR 5:320, Wastewater Laboratory Certification Program, for the analyses of wastewater samples, as specified in 33 U.S.C. 1342, for the method-analyte pairs specified on the attached certification list.

Effective From: January 1, 2019

To: December 31, 2019

Handwritten signature of Kevin Stewart in cursive script.

Certification Program Manager

Microbac Laboratories Inc
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KY Category	CAS #	Analyte	Status	Reference Method	MDL	MDL Units	MRL	MRL Units	ATP	Method Mod
Field	7782-50-5	Chlorine, Free Available	Certified	SM 4500-Cl G-2000		N/A	0.02	mg/L	N/A	N
Field	7782-50-5	Chlorine, Total Residual	Certified	HACH 8167		N/A	0.02	mg/L	N/A	N
Field		Oxygen, Dissolved	Certified	SM 4500-O G-2011		N/A	0.1	mg/L	N/A	N
Field		Specific Conductance	Certified	SM 2510 B-2011		N/A	10	umhos/cm	N/A	N
Field	14265-45-3	Sulfite (as SO ₃)	Certified	SM 4500-SO ₃ ⁻ B-2011	0.3564	mg/L	2	mg/L	N/A	N
Field		Temperature	Certified	SM 2550 B-2000		N/A		degrees Celsius	N/A	N
Field		Turbidity	Certified	SM 2130 B-2011		N/A	1	NTU	N/A	N
Field		pH	Certified	SM 4500-H+ B-2011		N/A	1	S.U.	N/A	N
Inorganic/General Chemistry		Acidity, Total (as CaCO ₃)	Certified	SM 2310 B-2011		N/A	5	mg/L	N/A	N
Inorganic/General Chemistry		Alkalinity, Total (as CaCO ₃)	Certified	SM 2320 B-2011		N/A	5	mg/L	N/A	N
Inorganic/General Chemistry	7664-41-7	Ammonia	Certified	SM 4500-NH ₃ G-2011	0.0943	mg/L	0.25	mg/L	N/A	N
Inorganic/General Chemistry		BOD, 5-day	Certified	SM 5210 B-2011		N/A	5	mg/L	N/A	Y
Inorganic/General Chemistry	24959-67-9	Bromide	Certified	EPA 300.0 Rev 2.1 (1993)	0.25	mg/L	0.50	mg/L	N/A	N
Inorganic/General Chemistry		Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	Certified	SM 5210 B-2001		N/A	5	mg/L	N/A	N
Inorganic/General Chemistry		Chemical Oxygen Demand (COD)	Certified	SM 5220 D-2011	9.3456	mg/L	25	mg/L	N/A	N
Inorganic/General Chemistry	16887-00-6	Chloride	Certified	EPA 300.0 Rev 2.1 (1993)	0.25	mg/L	0.50	mg/L	N/A	N
Inorganic/General Chemistry	16887-00-6	Chloride	Certified	SM 4500-Cl ⁻ E-1997	6.7969	mg/L	10	mg/L	N/A	N
Inorganic/General Chemistry		Chromium (VI)	Certified	SM 3500-Cr B-2011	0.007	mg/L	0.01	mg/L	N/A	N

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Inorganic/General Chemistry	16984-48-8	Fluoride	Certified	EPA 300.0 Rev 2.1 (1993)	0.25	mg/L	0.5	mg/L	N/A	N
Inorganic/General Chemistry		Hardness, Total (as CaCO ₃)	Certified	SM 2340 B-2011		N/A		mg/L	N/A	N
Inorganic/General Chemistry	84145-82-4	Nitrate	Certified	EPA 300.0 Rev 2.1 (1993)	0.055	mg/L	0.11	mg/L	N/A	N
Inorganic/General Chemistry		Nitrate-Nitrite (as N)	Certified	EPA 300.0 Rev 2.1 (1993)	0.0075	mg/L	0.015	mg/L	N/A	N
Inorganic/General Chemistry	14797-65-0	Nitrite	Certified	EPA 300.0 Rev 2.1 (1993)	0.075	mg/L	0.15	mg/L	N/A	N
Inorganic/General Chemistry		Nitrogen, Kjeldahl Total (TKN)	Certified	SM 4500-NH ₃ G-2011	0.2588	mg/L	0.4	mg/L	N/A	N
Inorganic/General Chemistry		Nitrogen, Organic Total (as N)	Certified	Calculation		N/A		mg/L	N/A	N
Inorganic/General Chemistry	7727-37-9	Nitrogen, Total	Certified	Calculation		N/A		mg/L	N/A	N
Inorganic/General Chemistry		Oil and Grease	Certified	EPA 1664 Rev. B	1.0559	mg/L	5	mg/L	N/A	N
Inorganic/General Chemistry	7723-14-0	Phosphorus, Total (as P)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0512	mg/L	0.1	mg/L	N/A	N
Inorganic/General Chemistry	7723-14-0	Phosphorus, Total (as P)	Certified	EPA 365.1 Rev. 2.0 (1993)	0.0065	mg/L	0.05	mg/L	N/A	Y
Inorganic/General Chemistry		Solids, Settleable	Certified	SM 2540 F-2011		N/A	0.1	ml/l/hr	N/A	N
Inorganic/General Chemistry		Solids, Total	Certified	USGS B5, Ch A1 (1989) I-3750-85		N/A	20	mg/L	N/A	N
Inorganic/General Chemistry		Solids, Total Dissolved	Certified	SM 2540 C-2011		N/A	50	mg/L	N/A	N
Inorganic/General Chemistry		Solids, Total Suspended (TSS)	Certified	USGS I-3765-85 (1989)		N/A	5	mg/L	N/A	N
Inorganic/General Chemistry		Solids, Volatile (Residue, Volatile)	Certified	USGS B5, Ch A1 (1989) I-3753-85		N/A	20	mg/L	N/A	N

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Inorganic/General Chemistry	14808-79-8	Sulfate, Total (as SO4)	Certified	EPA 300.0 Rev 2.1 (1993)	0.25	mg/L	0.5	mg/L	N/A	N
Inorganic/General Chemistry	18496-25-8	Sulfide, Total (as S)	Certified	SM 4500-S2 ⁻ D-2000	0.0083	mg/L	0.04	mg/L	N/A	N
Inorganic/General Chemistry		Surfactants (MBAS)	Certified	SM 5540 C-2011	0.089	mg/L	0.2	mg/L	N/A	N
Inorganic/General Chemistry	264888-19-9	o-Phosphate	Certified	EPA 300.0 Rev 2.1 (1993)	0.0078	mg/L	0.16	mg/L	N/A	N
Inorganic/General Chemistry	264888-19-9	o-Phosphate	Certified	EPA 365.1 Rev. 2.0 (1993)	0.025	mg/L	0.05	mg/L	N/A	Y
Inorganic/Metals	7429-90-5	Aluminum, Total (as Al)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.096	mg/L	0.1	mg/L	N/A	N
Inorganic/Metals	7429-90-5	Aluminum, Total (as Al)	Certified	EPA 200.8, Rev. 5.4 (1994)	5.7673	ug/L	50	ug/L	N/A	N
Inorganic/Metals	7440-36-0	Antimony, Total (as Sb)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0075	mg/L	0.05	mg/L	N/A	N
Inorganic/Metals	7440-36-0	Antimony, Total (as Sb)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.5677	ug/L	6	ug/L	N/A	N
Inorganic/Metals	7440-38-2	Arsenic, Total (as As)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.013	mg/L	0.05	mg/L	N/A	N
Inorganic/Metals	7440-38-2	Arsenic, Total (as As)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.6211	ug/L	10	ug/L	N/A	N
Inorganic/Metals	7440-39-3	Barium, Total (as Ba)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.003	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-39-3	Barium, Total (as Ba)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3767	ug/L	2	ug/L	N/A	N
Inorganic/Metals	7440-41-7	Beryllium, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0024	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-41-7	Beryllium, Total	Certified	EPA 200.8, Rev. 5.4 (1994)	0.5353	ug/L	4	ug/L	N/A	N
Inorganic/Metals	7440-42-8	Boron	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0322	mg/L	0.50	mg/L	N/A	N
Inorganic/Metals	7440-43-9	Cadmium, Total (as Cd)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0015	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-43-9	Cadmium, Total (as Cd)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3052	ug/L	5	ug/L	N/A	N
Inorganic/Metals	7440-70-2	Calcium, total [as Ca]	Certified	EPA 200.7, Rev. 4.4 (1994)	0.3614	mg/L	0.5	mg/L	N/A	N
Inorganic/Metals	7440-47-3	Chromium, Total (as Cr)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0031	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-47-3	Chromium, Total (as Cr)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.4017	ug/L	100	ug/L	N/A	N

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Inorganic/Metals	7440-48-4	Cobalt, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0036	mg/L	0.02	mg/L	N/A	N
Inorganic/Metals	7440-48-4	Cobalt, Total	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3891	ug/L	4.7	ug/L	N/A	N
Inorganic/Metals	7440-50-8	Copper, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0041	mg/L	0.02	mg/L	N/A	N
Inorganic/Metals	7440-50-8	Copper, Total	Certified	EPA 200.8, Rev. 5.4 (1994)	1.0386	ug/L	25	ug/L	N/A	N
Inorganic/Metals	7439-89-6	Iron, Total (as Fe)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0055	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7439-89-6	Iron, Total (as Fe)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3381	ug/L	100	ug/L	N/A	N
Inorganic/Metals	7439-92-1	Lead, Total (as Pb)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0026	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7439-92-1	Lead, Total (as Pb)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3604	ug/L	15	ug/L	N/A	N
Inorganic/Metals	7439-95-4	Magnesium, Total (as Mg)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0932	mg/L	0.2	mg/L	N/A	N
Inorganic/Metals	7439-96-5	Manganese, Total (as Mn)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0009	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7439-96-5	Manganese, Total (as Mn)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.2897	ug/L	50	ug/L	N/A	N
Inorganic/Metals	7439-98-7	Molybdenum, Total (as Mo)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0104	mg/L	0.1	mg/L	N/A	N
Inorganic/Metals	7439-98-7	Molybdenum, Total (as Mo)	Certified	EPA 200.8, Rev. 5.4 (1994)	1.4685	ug/L	78	ug/L	N/A	N
Inorganic/Metals	7440-02-0	Nickel, Total (as Ni)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0023	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-02-0	Nickel, Total (as Ni)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.3086	ug/L	100	ug/L	N/A	N
Inorganic/Metals	7440-09-7	Potassium, Total (as K)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.1806	mg/L	0.2	mg/L	N/A	N
Inorganic/Metals	7782-49-2	Selenium, Total (as Se)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0066	mg/L	0.05	mg/L	N/A	N
Inorganic/Metals	7782-49-2	Selenium, Total (as Se)	Certified	EPA 200.8, Rev. 5.4 (1994)	0.6684	ug/L	1	ug/L	N/A	N
Inorganic/Metals	7440-22-4	Silver, Total (as Ag)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0039	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-23-5	Sodium, Total (as Na)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.207	mg/L	0.5	mg/L	N/A	N
Inorganic/Metals	7440-28-0	Thallium, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0081	mg/L	0.05	mg/L	N/A	N
Inorganic/Metals	7440-28-0	Thallium, Total	Certified	EPA 200.8, Rev. 5.4 (1994)	1.3932	ug/L	2	ug/L	N/A	N
Inorganic/Metals	7440-31-5	Tin, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0064	mg/L	0.04	mg/L	N/A	N

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Inorganic/Metals	7440-32-6	Titanium, Total (as Ti)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0019	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-62-2	Vanadium, Total	Certified	EPA 200.7, Rev. 4.4 (1994)	0.0012	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-62-2	Vanadium, Total	Certified	EPA 200.8, Rev. 5.4 (1994)	0.4881	ug/L	78	ug/L	N/A	N
Inorganic/Metals	7440-66-6	Zinc, Total (as Zn)	Certified	EPA 200.7, Rev. 4.4 (1994)	0.003	mg/L	0.01	mg/L	N/A	N
Inorganic/Metals	7440-66-6	Zinc, Total (as Zn)	Certified	EPA 200.8, Rev. 5.4 (1994)	1.3529	ug/L	25	ug/L	N/A	N
Microbiology		Coliform, Fecal	Certified	Colilert-18 ®		N/A	1	MPN/100 mL	Reg	N
Microbiology		E. Coli	Certified	Colilert ®		N/A	1	MPN/100 mL	N/A	N
Microbiology		E. Coli	Certified	Colilert-18 ®		N/A	1	MPN/100 mL	N/A	N
Microbiology		Enterococci	Certified	ASTM D6503-99		N/A	1	MPN/100 mL	N/A	N
ORG/Volatiles	71-55-6	1,1,1-Trichloroethane	Certified	EPA 624	0.0003188	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	79-34-5	1,1,2,2-Tetrachloroethane	Certified	EPA 624	0.0004073	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	79-00-5	1,1,2-Trichloroethane	Certified	EPA 624	0.0002913	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-34-3	1,1-Dichloroethane	Certified	EPA 624	0.0002532	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-35-4	1,1-Dichloroethylene	Certified	EPA 624	0.0002885	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	95-50-1	1,2-Dichlorobenzene	Certified	EPA 624	0.0009198	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	107-06-2	1,2-Dichloroethane (EDC)	Certified	EPA 624	0.0003379	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	78-87-5	1,2-Dichloropropane	Certified	EPA 624	0.0003333	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	541-73-1	1,3-Dichlorobenzene	Certified	EPA 624	0.0004113	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	106-46-7	1,4-Dichlorobenzene	Certified	EPA 624	0.0005449	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	110-75-8	2-Chloroethyl Vinyl Ether	Certified	EPA 624	0.0002101	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	107-02-8	Acrolein	Certified	EPA 624	0.0014093	mg/L	0.025	mg/L	N/A	N

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ORG/Volatiles	107-13-1	Acrylonitrile	Certified	EPA 624	0.0003933	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	71-43-2	Benzene	Certified	EPA 624	0.0002745	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-27-4	Bromodichloromethane	Certified	EPA 624	0.0003137	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	74-83-9	Bromomethane (Methyl bromide)	Certified	EPA 624	0.0013649	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	56-23-5	Carbon Tetrachloride	Certified	EPA 624	0.0002461	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	108-90-7	Chlorobenzene	Certified	EPA 624	0.0002732	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	124-48-1	Chlorodibromomethane	Certified	EPA 624	0.0004113	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-00-3	Chloroethane	Certified	EPA 624	0.0004759	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	67-66-3	Chloroform	Certified	EPA 624	0.0001448	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-09-2	Dichloromethane (Methylene chloride)	Certified	EPA 624	0.000315	mg/L	0.01	mg/L	N/A	N
ORG/Volatiles	100-41-4	Ethylbenzene	Certified	EPA 624	0.0002154	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	74-87-3	Methyl chloride	Certified	EPA 624	0.0003796	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	127-18-4	Tetrachloroethylene (PCE)	Certified	EPA 624	0.0003916	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	108-88-3	Toluene	Certified	EPA 624	0.0003189	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-25-2	Tribromomethane	Certified	EPA 624	0.0003469	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	79-01-6	Trichloroethylene	Certified	EPA 624	0.0003079	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-69-4	Trichlorofluoromethane	Certified	EPA 624	0.0002513	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	75-01-4	Vinyl Chloride	Certified	EPA 624	0.000233	mg/L	0.002	mg/L	N/A	N
ORG/Volatiles	10061-01-5	cis-1,3-Dichloropropene	Certified	EPA 624	0.000447	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	156-60-5	trans-1,2-Dichloroethylene	Certified	EPA 624	0.000292	mg/L	0.005	mg/L	N/A	N
ORG/Volatiles	10061-02-6	trans-1,3-Dichloropropene	Certified	EPA 624	0.000305	mg/L	0.005	mg/L	N/A	N