



RAND WATER
Madibeng Water Quality Report
1 Month

22 August 2020 to 21 September 2020

Date generated: 02 October 2020

							Descriptive Statistics		
Determinands	Measurement Units	Risks	SANS 241:2015 standard limits (1)	No of results	Required compliances to SANS 241:2015 spec(%)	Achieved compliances to SANS 241:2015 spec(%)	Mean	Standard Deviation	Mean + 3 Std deviations
Microbiological determinands									
<i>E. coli</i>	(mpn per 100 mL)	Acute health	Non-detect	30	99.0%	100%	0	0.00	0
Total Coliforms	(mpn per 100 mL)	Operational	≤ 10	30	95.0%	100%	0	0.00	0
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	≤ 1000	30	95.0%	100%	1	1.04	4
<i>Cryptosporidium spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	16	99.0%	93.75%	0	0.50	2
<i>Giardia spp</i> (2)	(org / 10 Litre)	Acute health	Non-detect	16	99.0%	100%	0	0.00	0
Somatic Coliphages (2)	(count per 10 mL)	Operational	Non-detect	64	95.0%	100%	0	0.00	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	≤ 15	2	95.0%	100%	7.50	3.54	18.11
Conductivity	(mS / m)	Aesthetic	≤ 170	30	95.0%	100%	21.20	2.76	29.48
Total Dissolved Solids	(mg / L)	Aesthetic	≤ 1200	2	95.0%	100%	140.00	7.07	161.21
Turbidity	(NTU)	Operational	≤ 1	30	95.0%	100%	0.29	0.05	0.44
Turbidity	(NTU)	Aesthetic	≤ 5	30	95.0%	100%	0.29	0.05	0.44
pH	(pH units)	Operational	≥ 5 to ≤ 9.7	30	95.0%	100%	8.01	0.12	8.35
Chemical Properties: Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	≤ 1.5	30	95.0%	100%	0.30	0.13	0.70
Chloride	(mg / L as Cl)	Aesthetic	≤ 300	3	95.0%	100%	12.33	0.58	14.07
Free chlorine	(mg / L as Cl ₂)	Chronic health	≤ 5	30	97.0%	100%	0.07	0.02	0.13
Monochloramine	(mg / L as Cl ₂)	Chronic health	≤ 4.1	30	97.0%	100%	1.53	0.29	2.39
Fluoride	(mg / L as F)	Chronic health	≤ 1.5	3	97.0%	100%	0.20	0.00	0.20
Nitrate	(mg / L as N)	Acute health	≤ 11	30	99.0%	100%	0.61	0.08	0.86
Nitrite	(mg / L as N)	Acute health	≤ 0.9	31	99.0%	100%	0.03	0.10	0.34
Combined nitrate plus nitrite (3)	(mg / L as N)	Acute health	≤ 1	30	99.0%	100%	0.19	0.26	0.96
Residual disinfectant (4)	(mg / L as Cl ₂)	Operational	≥ 0.1	30	95.0%	100%	1.59	0.29	2.47
Sodium	(mg / L as Na)	Aesthetic	≤ 200	2	95.0%	100%	9.95	1.48	14.40
Sulphate	(mg / L as SO ₄)	Aesthetic	≤ 250	3	95.0%	100%	17.67	0.58	19.40
Sulphate	(mg / L as SO ₄)	Acute health	≤ 500	3	99.0%	100%	17.67	0.58	19.40
Zinc	(mg / L as Zn)	Aesthetic	≤ 5	2	95.0%	100%	0.02	0.00	0.02
Chemical Properties: Micro determinands									
Aluminium	(µg / L as Al)	Operational	≤ 300	2	95.0%	100%	25.00	0.00	25.00
Antimony	(µg / L as Sb)	Chronic health	≤ 20	2	97.0%	100%	0.60	0.00	0.60
Arsenic	(µg / L as As)	Chronic health	≤ 10	2	97.0%	100%	8.00	0.00	8.00
Barium	(µg / L as Ba)	Chronic health	≤ 700	2	97.0%	100%	36.00	0.00	36.00
Boron	(µg / L as B)	Chronic health	≤ 2400	2	97.0%	100%	6.60	2.26	13.39
Cadmium	(µg / L as Cd)	Chronic health	≤ 3	2	97.0%	100%	1.50	0.00	1.50
Chromium (Total)	(µg / L as Cr)	Chronic health	≤ 50	2	97.0%	100%	5.00	0.00	5.00
Copper	(µg / L as Cu)	Chronic health	≤ 2000	2	97.0%	100%	8.00	0.00	8.00
Cyanide (Recoverable)	(µg / L as CN)	Acute health	≤ 200	2	99.0%	100%	5.00	0.00	5.00
Iron	(µg / L as Fe)	Chronic health	≤ 2000	2	97.0%	100%	8.80	1.13	12.19
Iron	(µg / L as Fe)	Aesthetic	≤ 300	2	95.0%	100%	8.80	1.13	12.19
Lead	(µg / L as Pb)	Chronic health	≤ 10	2	97.0%	100%	8.00	0.00	8.00
Manganese	(µg / L as Mn)	Chronic health	≤ 400	2	97.0%	100%	3.00	0.00	3.00
Manganese	(µg / L as Mn)	Aesthetic	≤ 100	2	95.0%	100%	3.00	0.00	3.00
Mercury	(µg / L as Hg)	Chronic health	≤ 6	2	97.0%	100%	1.50	0.00	1.50
Nickel	(µg / L as Ni)	Chronic health	≤ 70	2	97.0%	100%	5.00	0.00	5.00
Selenium	(µg / L as Se)	Chronic health	≤ 40	2	97.0%	100%	8.00	0.00	8.00
Uranium	(µg / L as U)	Chronic health	≤ 30	2	97.0%	100%	0.50	0.00	0.50
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	≤ 10	2	97.0%	100%	4.85	0.78	7.18
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	≤ 10	2	95.0%	100%	3.00	0.00	3.00
Chloroform - CHCl ₃	(µg / L)	Chronic health	≤ 300	2	97.0%	100%	31.00	2.83	39.49
Bromoform - CHBr ₃	(µg / L)	Chronic health	≤ 100	2	97.0%	100%	10.00	0.00	10.00
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	≤ 100	2	97.0%	100%	10.00	0.00	10.00
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	≤ 60	2	97.0%	100%	14.00	1.41	18.24
Combined trihalomethanes (5)	(µg / L)	Chronic health	≤ 1	2	97.0%	100%	0.36	0.03	0.44
Total Microcystin (2)	(µg / L)	Chronic health	≤ 1	16	97.0%	100%	0.31	0.00	0.31
For monitoring/reporting purposes only									
Calcium (6)	(mg / L as Ca)	Aesthetic	≤ 150	2	not applicable	100%	17.50	0.71	19.62
Hardness (7)	(mg / L as CaCO ₃)	Operational	≥ 20 to ≤ 200	2	not applicable	100%	66.00	4.24	78.73
Magnesium (6)	(mg / L as Mg)	Aesthetic	≤ 70	2	not applicable	100%	6.40	0.71	8.52
Potassium (6)	(mg / L as K)	Aesthetic	≤ 50	2	not applicable	100%	3.15	0.21	3.79
Rand Water Risk Determinands (RWRD) (6)									
Odour	TON	RWRD	≤ 2	16	not applicable	100%	1.00	0.00	1.00
Taste	FTN	RWRD	≤ 2	16	not applicable	100%	1.00	0.00	1.00

Risks	Required compliances to SANS 241: 2015 standard	Overall Compliances - SANS 241: 2015 standard
Acute health microbiological	99.0%	98.39%
Acute health chemical	99.0%	100%
Chronic health	97.0%	100%
Aesthetic	95.0%	100%
Operational	95.0%	100%

Notes
(1) Specification SANS 241 date of effect : 1 July 2016
(2) Measured at water treatment works exit points
(3) (NO₂/0.9 + NO₃/11)
(4) Residual disinfectant : Results from the chloraminated system = Sum of Free and Monochloramine
(5) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)
(6) Customer request: Results not included in the risk indices compliance calculations and limits based on SANS 241:2006
(7) Customer request: Results not included in the risk indices compliance calculations and limits based on RW Internal Spec
**** Determinands with no data are due to instrument breakdown****