

Royal Bafokeng Nation Water Quality Report - 12 Month

23 October 2017 to 22 October 2018

Date generated: 05 November 2018

Determinand	Measurement units	Risk	Required compliance to SANS 241: 2015 standard (%)	SANS 241: 2015 standard limits (1)	No of results	Achieved Compliance to SANS 241: 2015 Spec(%)	Descriptive statistics		
							Mean	Standard Deviation	Mean + 3 standard deviations
Microbiological determinands									
E. coli	(mpn per 100 mL)	Acute health	99.0%	0	257	99.2%	0	1.20	4
Total Coliforms	(mpn per 100 mL)	Operational	95.0%	10	257	93.0%	8	35.25	114
Heterotrophic Plate Count	(cfu per 1 mL)	Operational	95.0%	≤1000	257	80.9%	766	2815.77	9213
Cryptosporidium spp (5)	(org / 10 Litre)	Acute health	99.0%	0	24	100.0%	0	0.00	0
Giardia spp (5)	(org / 10 Litre)	Acute health	99.0%	0	24	100.0%	0	0.00	0
Somatic Coliphages (5)	(count per 10 mL)	Operational	95.0%	0	97	100.0%	0	0.00	0
Physical and Aesthetic determinands									
Colour	(mg / L as Pt-Co)	Aesthetic	95.0%	≤15	110	98.2%	6.20	3.75	17.45
Conductivity	(mS / m)	Aesthetic	95.0%	≤170	256	100.0%	69.55	12.31	106.48
Total Dissolved Solids	(mg / L)	Aesthetic	95.0%	≤1200	83	100.0%	434.76	52.56	592.44
Turbidity	(NTU)	Operational	95.0%	≤1	252	97.2%	0.44	0.71	2.56
Turbidity	(NTU)	Aesthetic	95.0%	≤5	252	99.2%	0.44	0.71	2.56
pH	(pH units)	Operational	95.0%	≥ 5 to ≤ 9.7	256	100.0%	7.88	0.20	8.47
Chemical Properties									
Macro determinands									
Ammonia	(mg / L as N)	Aesthetic	95.0%	≤1.5	241	100.0%	0.27	0.14	0.70
Chloride	(mg / L as Cl)	Aesthetic	95.0%	≤300	108	100.0%	98.23	21.33	162.24
Free chlorine (2)	(mg / L as Cl ₂)	Chronic health	97.0%	≤5	256	100.0%	0.18	0.24	0.91
Monochloramine (3)	(mg / L as Cl ₂)	Chronic health	97.0%	≤4.1	256	100.0%	0.83	0.54	2.44
Fluoride	(mg / L as F)	Chronic health	97.0%	≤1.5	110	100.0%	0.26	0.04	0.38
Nitrate	(mg / L as N)	Acute health	99.0%	≤11	256	100.0%	0.46	0.05	0.60
Nitrite	(mg / L as N)	Acute health	99.0%	≤0.9	257	100.0%	0.05	0.11	0.38
Combined nitrate plus nitrite (7)	(mg / L as N)	Acute health	99.0%	≤1	253	100.0%	0.10	0.12	0.47
Residual disinfectant (4)	(mg / L)	Operational	95.0%	≥0.1 Sum of Free and Monochloramine	256	95.7%	1.00	0.57	2.72
Sodium	(mg / L as Na)	Aesthetic	95.0%	≤200	110	100.0%	57.66	17.09	108.92
Sulphate	(mg / L as SO ₄)	Aesthetic	95.0%	≤250	107	100.0%	98.06	16.77	148.37
Sulphate	(mg / L as SO ₄)	Acute health	99.0%	≤500	107	100.0%	98.06	16.77	148.37
Zinc	(mg / L as Zn)	Aesthetic	95.0%	≤5	110	100.0%	0.07	0.21	0.69
Micro determinands									
Aluminium	(µg / L as Al)	Operational	95.0%	≤300	110	100.0%	36.53	22.91	105.26
Antimony	(µg / L as Sb)	Chronic health	97.0%	≤20	71	100.0%	0.51	0.16	1.00
Arsenic	(µg / L as As)	Chronic health	97.0%	≤10	69	100.0%	2.31	2.63	10.20
Barium	(µg / L as Ba)	Chronic health	97.0%	≤700	110	100.0%	76.52	19.12	133.89
Boron	(µg / L as B)	Chronic health	97.0%	≤2400	110	100.0%	48.64	12.66	86.63
Cadmium	(µg / L as Cd)	Chronic health	97.0%	≤3	68	100.0%	2.33	0.45	3.67
Chromium (Total)	(µg / L as Cr)	Chronic health	97.0%	≤50	109	100.0%	13.72	3.36	23.80
Copper	(µg / L as Cu)	Chronic health	97.0%	≤2000	110	100.0%	11.27	6.41	30.50
Cyanide (Recoverable)	(µg / L as CN)	Acute health	99.0%	≤200	109	100.0%	11.94	7.61	34.78
Iron	(µg / L as Fe)	Chronic health	97.0%	≤2000	110	100.0%	18.27	21.87	83.87
Iron	(µg / L as Fe)	Aesthetic	95.0%	≤300	110	100.0%	18.27	21.87	83.87
Lead	(µg / L as Pb)	Chronic health	97.0%	≤10	70	100.0%	1.08	2.00	7.08
Manganese	(µg / L as Mn)	Chronic health	97.0%	≤400	109	100.0%	26.23	27.00	107.22
Manganese	(µg / L as Mn)	Aesthetic	95.0%	≤100	109	98.2%	26.23	27.00	107.22
Mercury	(µg / L as Hg)	Chronic health	97.0%	≤6	71	100.0%	0.78	0.19	1.35
Nickel	(µg / L as Ni)	Chronic health	97.0%	≤70	110	100.0%	9.36	1.67	14.39
Selenium	(µg / L as Se)	Chronic health	97.0%	≤40	69	100.0%	1.94	2.14	8.36
Uranium	(µg / L as U)	Chronic health	97.0%	≤30	71	100.0%	0.36	0.19	0.92
Organic determinands									
Total Organic Carbon	(mg / L)	Chronic health	97.0%	≤10	70	100.0%	4.63	0.89	7.29
Phenols as C ₆ H ₅ OH	(µg / L)	Aesthetic	95.0%	≤10	70	100.0%	4.74	0.67	6.77
Chloroform - CHCl ₃	(µg / L)	Chronic health	97.0%	≤300	70	100.0%	18.74	7.98	42.69
Bromoform - CHBr ₃	(µg / L)	Chronic health	97.0%	≤100	70	100.0%	3.17	2.85	11.73
Dibromochloromethane - CHBr ₂ Cl	(µg / L)	Chronic health	97.0%	≤100	70	100.0%	12.12	4.06	24.31
Bromodichloromethane - CHBrCl ₂	(µg / L)	Chronic health	97.0%	≤60	70	100.0%	16.66	4.30	29.57
Combined trihalomethanes (8)	(µg / L)	Chronic health	97.0%	≤1	70	100.0%	0.49	0.13	0.89
Total Microcystin (5)	(µg / L)	Chronic health	97.0%	≤1	68	100.0%	0.31	0.00	0.31
For monitoring/reporting purposes only (6)									
Calcium	(mg / L as Ca)	Aesthetic	not applicable	≤150	110	100.0%	35.34	7.50	57.82407504
Hardness	(mg / L as CaCO ₃)	Operational	not applicable	≥ 20 to ≤ 200	110	91.8%	166.03	36.39	275.21
Magnesium	(mg / L as Mg)	Aesthetic	not applicable	≤70	110	100.0%	22.41	5.52	38.96
Potassium	(mg / L as K)	Aesthetic	not applicable	≤50	110	100.0%	8.09	1.75	13.34
Rand Water Risk Determinands (RWRD)									
Odour	TON	RWRD	95.0%	≤2	145	100.0%	1.02	0.08	1.26
Taste	FTN	RWRD	95.0%	≤2	145	100.0%	1.01	0.07	1.23

Risk	Required compliance to SANS 241: 2015 standard	Overall Compliance-SANS 241
Acute health microbiological	99.00%	99.34%
Acute health chemical	99.00%	100.00%
Chronic health	97.00%	100.00%
Aesthetic	95.00%	99.64%
Operational	95.00%	94.28%

Notes:

- (1) Specification date of effect : 1 July 2016
- (2) Free chlorine : Results from chloraminated system
- (3) Monochloramine : Results are from the chloraminated systems
- (4) Residual disinfectant : Results from chloraminated system
- (5) Measured at water treatment works exit points
- (6) Customer request: Results not included in the risk indices compliance calculations
- (7) (NO₂/0.9 + NO₃/11)
- (8) (CHCl₃/300 + CHBr₃/100 + CHBr₂Cl/100 + CHBrCl₂/60)