



RAND WATER

Victor Khanye (Delmas System) Water Quality Report
1 Month

22 August 2020 to 21 September 2020

Date generated: 13 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 | 23 | 99.0% | 100% | 0 | 0.00 | 0 |
| Total Coliforms | (mpn per 100 mL) | Operational | ≤ 10 | 23 | 95.0% | 100% | 0 | 0.00 | 0 |
| Heterotrophic Plate Count | (cfu per 1 mL) | Operational | ≤ 1000 | 23 | 95.0% | 100% | 2 | 5.30 | 17 |
| <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 | 0.71 | 9.62 |
| Conductivity | (mS / m) | Aesthetic | ≤ 170 | 23 | 95.0% | 100% | 21.30 | 2.27 | 28.10 |
| Total Dissolved Solids | (mg / L) | Aesthetic | ≤ 1200 | 2 | 95.0% | 100% | 140.00 | 7.07 | 161.21 |
| Turbidity | (NTU) | Operational | ≤ 1 | 23 | 95.0% | 100% | 0.29 | 0.05 | 0.45 |
| Turbidity | (NTU) | Aesthetic | ≤ 5 | 23 | 95.0% | 100% | 0.29 | 0.05 | 0.45 |
| pH | (pH units) | Operational | ≥ 5 to ≤ 9.7 | 23 | 95.0% | 100% | 8.12 | 0.15 | 8.58 |
| Chemical Properties: Macro determinands | | | | | | | | | |
| Ammonia | (mg / L as N) | Aesthetic | ≤ 1.5 | 23 | 95.0% | 100% | 0.35 | 0.08 | 0.59 |
| Chloride | (mg / L as Cl) | Aesthetic | ≤ 300 | 2 | 95.0% | 100% | 11.00 | 0.00 | 11.00 |
| Free chlorine | (mg / L as Cl ₂) | Chronic health | ≤ 5 | 23 | 97.0% | 100% | 0.08 | 0.02 | 0.14 |
| Monochloramine | (mg / L as Cl ₂) | Chronic health | ≤ 4.1 | 23 | 97.0% | 100% | 1.79 | 0.13 | 2.17 |
| Fluoride | (mg / L as F) | Chronic health | ≤ 1.5 | 2 | 97.0% | 100% | 0.20 | 0.00 | 0.20 |
| Nitrate | (mg / L as N) | Acute health | ≤ 11 | 23 | 99.0% | 100% | 0.62 | 0.07 | 0.83 |
| Nitrite | (mg / L as N) | Acute health | ≤ 0.9 | 23 | 99.0% | 100% | 0.02 | 0.01 | 0.04 |
| Combined nitrate plus nitrite (3) | (mg / L as N) | Acute health | ≤ 1 | 20 | 99.0% | 100% | 0.14 | 0.19 | 0.72 |
| Residual disinfectant (4) | (mg / L as Cl ₂) | Operational | ≥ 0.1 | 23 | 95.0% | 100% | 1.86 | 0.14 | 2.28 |
| Sodium | (mg / L as Na) | Aesthetic | ≤ 200 | 2 | 95.0% | 100% | 9.30 | 0.00 | 9.30 |
| Sulphate | (mg / L as SO ₄) | Aesthetic | ≤ 250 | 2 | 95.0% | 100% | 16.00 | 0.00 | 16.00 |
| Sulphate | (mg / L as SO ₄) | Acute health | ≤ 500 | 2 | 99.0% | 100% | 16.00 | 0.00 | 16.00 |
| 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% | 35.00 | 9.90 | 64.70 |
| 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% | 35.00 | 2.83 | 43.49 |
| Boron | (µg / L as B) | Chronic health | ≤ 2400 | 2 | 97.0% | 100% | 5.65 | 0.92 | 8.41 |
| 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% | 12.50 | 6.36 | 31.59 |
| Iron | (µg / L as Fe) | Aesthetic | ≤ 300 | 2 | 95.0% | 100% | 12.50 | 6.36 | 31.59 |
| 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% | 4.65 | 0.78 | 6.98 |
| Phenols as C ₆ H ₅ OH | (µg / L) | Aesthetic | ≤ 10 | 4 | 95.0% | 100% | 3.00 | 0.00 | 3.00 |
| Chloroform - CHCl ₃ | (µg / L) | Chronic health | ≤ 300 | 2 | 97.0% | 100% | 36.50 | 0.71 | 38.62 |
| 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% | 16.00 | 0.00 | 16.00 |
| Combined trihalomethanes (5) | (µg / L) | Chronic health | ≤ 1 | 2 | 97.0% | 100% | 0.41 | 0.01 | 0.43 |
| 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% | 20.00 | 2.83 | 28.49 |
| Hardness (7) | (mg / L as CaCO ₃) | Operational | ≥ 20 to ≤ 200 | 2 | not applicable | 100% | 72.00 | 8.49 | 97.46 |
| Magnesium (6) | (mg / L as Mg) | Aesthetic | ≤ 70 | 2 | not applicable | 100% | 6.40 | 0.42 | 7.67 |
| Potassium (6) | (mg / L as K) | Aesthetic | ≤ 50 | 2 | not applicable | 100% | 2.85 | 0.07 | 3.06 |
| Rand Water Risk Determinands (RWRD) (6) | | | | | | | | | |
| Odour | TON | RWRD | ≤ 2 | 7 | not applicable | 100% | 1.00 | 0.00 | 1.00 |
| Taste | FTN | RWRD | ≤ 2 | 7 | 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% | 98.18% |
| 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****