



REPORTS FOR JOHANNESBURG METRO

21 NOVEMBER 2015 TO 22 DECEMBER 2015

DATE GENERATED : 05 JANUARY 2016

Johannesburg Metro Water Quality Report

21 November 2015 to 22 December 2015

Date generated : 05 January 2016

| Parameter | Units of measure | Specifications (based on SANS241: 2005) | | No of results | Achieved compliance levels | |
|--|------------------|---|---|---------------|----------------------------|----------|
| | | Required compliance | | | Class I | Class II |
| | | 95% min to Class I | 99% min to Class II | | | |
| SPECIFICATIONS | | | | | | |
| Chemical and Physical properties | | | | | | |
| Colour | (mg / l as Pt) | < 20 | ≤ 50 | 119 | 100.0% | 100.0% |
| Conductivity | (mS / m) | < 150 | ≤ 370 | 223 | 100.0% | 100.0% |
| pH | (pH units) | ≥ 5 to ≤ 9.5 | ≥ 4 to ≤ 10 | 223 | 100.0% | 100.0% |
| Turbidity | (NTU) | < 1 | ≤ 5 | 376 | 100.0% | 100.0% |
| Total Dissolved Solids | (mg / l) | < 1000 | ≤ 2400 | 223 | 100.0% | 100.0% |
| Taste | (FTN) | < 5 | ≤ 10 | 119 | 100.0% | 100.0% |
| Odour | (TON) | < 5 | ≤ 10 | 119 | 100.0% | 100.0% |
| Organic Determinants | | | | | | |
| Total Trihalomethanes | (ug / l) | < 200 | ≤ 300 | 123 | 100.0% | 100.0% |
| Phenols as C6H5OH | (ug / l) | < 10 | ≤ 70 | 66 | 100.0% | 100.0% |
| Dissolved Organic Carbon | (mg / l) | < 10 | ≤ 20 | 123 | 100.0% | 100.0% |
| Micro Elements | | | | | | |
| Antimony | (ug / l as Sb) | < 10 | ≤ 50 | 125 | 100.0% | 100.0% |
| Arsenic | (ug / l as As) | < 10 | ≤ 50 | 125 | 100.0% | 100.0% |
| Cadmium | (ug / l as Cd) | < 5 | ≤ 10 | 125 | 100.0% | 100.0% |
| Chromium (Total) | (ug / l as Cr) | < 100 | ≤ 500 | 124 | 100.0% | 100.0% |
| Cobalt | (ug / l as Co) | < 500 | ≤ 1000 | 124 | 100.0% | 100.0% |
| Cyanide (Recoverable) | (ug / l as CN) | < 50 | ≤ 70 | 119 | 100.0% | 100.0% |
| Lead | (ug / l as Pb) | < 20 | ≤ 50 | 125 | 100.0% | 100.0% |
| Mercury | (ug / l as Hg) | < 1 | ≤ 5 | 125 | 100.0% | 100.0% |
| Nickel | (ug / l as Ni) | < 150 | ≤ 350 | 124 | 100.0% | 100.0% |
| Selenium | (ug / l as Se) | < 20 | ≤ 50 | 125 | 100.0% | 100.0% |
| Vanadium | (ug / l as V) | < 200 | ≤ 500 | 124 | 100.0% | 100.0% |
| Macro Elements & Miscellaneous Determinants | | | | | | |
| Aluminium | (mg / l as Al) | < 0.3 | ≤ 0.5 | 124 | 100.0% | 100.0% |
| Ammonia | (mg / l as N) | < 1 | ≤ 2 | 144 | 100.0% | 100.0% |
| Calcium | (mg / l as Ca) | < 150 | ≤ 300 | 125 | 100.0% | 100.0% |
| Chloride | (mg / l as Cl) | < 200 | ≤ 600 | 124 | 100.0% | 100.0% |
| Copper | (mg / l as Cu) | < 1 | ≤ 2 | 124 | 100.0% | 100.0% |
| Fluoride | (mg / l as F) | < 1 | ≤ 1.5 | 124 | 100.0% | 100.0% |
| Iron | (mg / l as Fe) | < 0.2 | ≤ 2 | 124 | 100.0% | 100.0% |
| Magnesium | (mg / l as Mg) | < 70 | ≤ 100 | 125 | 100.0% | 100.0% |
| Manganese | (mg / l as Mn) | < 0.1 | ≤ 1 | 124 | 100.0% | 100.0% |
| Nitrate & Nitrite | (mg / l as N) | < 10 | ≤ 20 | 144 | 100.0% | 100.0% |
| Potassium | (mg / l as K) | < 50 | ≤ 100 | 125 | 100.0% | 100.0% |
| Sodium | (mg / l as Na) | < 200 | ≤ 400 | 125 | 100.0% | 100.0% |
| Sulphate | (mg / l as SO4) | < 400 | ≤ 600 | 124 | 100.0% | 100.0% |
| Zinc | (mg / l as Zn) | < 5 | ≤ 10 | 124 | 100.0% | 100.0% |
| Microbiological | | | | | | |
| E. Coli | (cfu per 100 ml) | minimum of 95% of the original results shall be non-detected | minimum of 99% of the original and repeat/consecutive results shall be non-detected | 376 | 100.0% | 100.0% |
| Other Determinants as required by supply contract (3),(4) | | | | | | |
| Free chlorine and monochloramine | (mg / l) | Chloraminated system: ≥ 0.1 min 95% compliance; Chlorinated system: ≥ 0.2 min 95% compliance | | 376 | 96.0% | |

Notes :

- (1) Specification date of effect : July 2006
- (2) Guideline derived from SANS 241: 2005 operations alert and industry practices
- (3) Compliance for Free and monochloramine is against 0.2 mg/l for areas in the chlorinated system
- (4) Compliance for Free and monochloramine is against 0.1 mg/l for areas in the chloraminated system after 30 June 2014
- (5) Compliance for Standard Plate Count is against 100 cfu per 1ml before 30 June 2014 and 500 cfu per 1ml after 30 June 2014 mg/l for areas in the chloraminated system

Johannesburg Metro Water Quality Report

21 November 2015 to 22 December 2015

Date generated : 05 January 2016

| Parameter | Units of measure | Specification | No of samples | Mean - 3 SD | Mean - 1 SD | Mean | Mean + 1 SD | Mean + 3 SD | Standard Deviation |
|---|--------------------------------|--|---------------|-------------|-------------|--------|-------------|-------------|--------------------|
| Chemical and Physical properties | | | | | | | | | |
| Colour | (mg / l as Pt) | < 20 | 119 | 5.00 | 5.00 | 5.05 | 5.31 | 5.82 | 0.26 |
| Conductivity | (mS / m) | < 150 | 223 | 19.00 | 20.11 | 21.16 | 22.21 | 24.00 | 1.05 |
| pH | (pH units) | ≥ 5 to ≤ 9.5 | 223 | 7.69 | 7.94 | 8.06 | 8.19 | 8.29 | 0.12 |
| Turbidity | (NTU) | < 1 | 376 | 0.13 | 0.20 | 0.28 | 0.36 | 0.45 | 0.08 |
| Total Dissolved Solids | (mg / l) | < 1000 | 223 | 135.00 | 139.88 | 146.41 | 152.95 | 165.00 | 6.53 |
| Hardness | (mg / l as CaCO ₃) | > 20 to < 200 | 125 | 46.08 | 62.14 | 70.17 | 78.20 | 94.26 | 8.03 |
| Taste | (FTN) | < 5 | 119 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Odour | (TON) | < 5 | 119 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Organic Determinants | | | | | | | | | |
| Total Trihalomethanes | (ug / l) | < 200 | 123 | 27.00 | 38.21 | 47.80 | 57.38 | 76.55 | 9.59 |
| Phenols as C ₆ H ₅ OH | (ug / l) | < 10 | 66 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 0.00 |
| Dissolved Organic Carbon | (mg / l) | < 10 | 123 | 3.40 | 3.52 | 3.86 | 4.20 | 4.88 | 0.34 |
| Micro Elements | | | | | | | | | |
| Antimony | (ug / l as Sb) | < 10 | 125 | 0.25 | 0.25 | 0.25 | 0.28 | 0.35 | 0.03 |
| Arsenic | (ug / l as As) | < 10 | 125 | 0.05 | 0.05 | 0.54 | 1.04 | 2.02 | 0.49 |
| Cadmium | (ug / l as Cd) | < 5 | 125 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 0.00 |
| Chromium (Total) | (ug / l as Cr) | < 100 | 124 | 7.50 | 7.50 | 7.50 | 7.50 | 7.50 | 0.00 |
| Cobalt | (ug / l as Co) | < 500 | 124 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 0.00 |
| Cyanide (Recoverable) | (ug / l as CN) | < 50 | 119 | 2.50 | 2.50 | 1.00 | 3.31 | 4.68 | 0.69 |
| Lead | (ug / l as Pb) | < 20 | 125 | 0.10 | 0.10 | 0.10 | 0.13 | 0.20 | 0.03 |
| Mercury | (ug / l as Hg) | < 1 | 125 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.00 |
| Nickel | (ug / l as Ni) | < 150 | 124 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 0.00 |
| Selenium | (ug / l as Se) | < 20 | 125 | 0.25 | 1.59 | 3.60 | 5.61 | 7.90 | 2.01 |
| Vanadium | (ug / l as V) | < 200 | 124 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 0.00 |
| Macro Elements & Miscellaneous Determinants | | | | | | | | | |
| Aluminium | (mg / l as Al) | < 0.3 | 124 | 0.013 | 0.013 | 0.013 | 0.017 | 0.025 | 0.004 |
| Ammonia | (mg / l as N) | < 1 | 144 | 0.025 | 0.146 | 0.270 | 0.393 | 0.567 | 0.123 |
| Calcium | (mg / l as Ca) | < 150 | 125 | 12.495 | 16.091 | 17.890 | 19.688 | 23.000 | 1.798 |
| Chloride | (mg / l as Cl) | < 200 | 124 | 8.900 | 10.030 | 10.902 | 11.773 | 13.000 | 0.872 |
| Copper | (mg / l as Cu) | < 1 | 124 | 0.005 | 0.005 | 0.008 | 0.015 | 0.029 | 0.007 |
| Fluoride | (mg / l as F) | < 1 | 124 | 0.075 | 0.127 | 0.171 | 0.214 | 0.270 | 0.043 |
| Iron | (mg / l as Fe) | < 0.2 | 124 | 0.003 | 0.003 | 0.015 | 0.028 | 0.054 | 0.013 |
| Magnesium | (mg / l as Mg) | < 70 | 125 | 5.357 | 6.660 | 7.312 | 7.800 | 7.800 | 0.652 |
| Manganese | (mg / l as Mn) | < 0.1 | 124 | 0.005 | 0.005 | 0.005 | 0.007 | 0.010 | 0.002 |
| Nitrate & Nitrite | (mg / l as N) | < 10 | 144 | 0.050 | 0.050 | 0.129 | 0.240 | 0.463 | 0.111 |
| Potassium | (mg / l as K) | < 50 | 125 | 2.025 | 2.529 | 2.781 | 3.033 | 3.537 | 0.252 |
| Sodium | (mg / l as Na) | < 200 | 125 | 8.600 | 9.155 | 10.516 | 11.877 | 14.599 | 1.361 |
| Sulphate | (mg / l as SO ₄) | < 400 | 124 | 12.000 | 12.166 | 13.790 | 15.415 | 18.000 | 1.624 |
| Zinc | (mg / l as Zn) | < 5 | 124 | 0.008 | 0.008 | 0.013 | 0.027 | 0.054 | 0.014 |
| Microbiological | | | | | | | | | |
| E. Coli | (cfu per 100 ml) | minimum of 95% of the original results shall be non-detected | 376 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Determinants as required by supply contract (3),(4) | | | | | | | | | |
| Free chlorine and monochloramine | (mg / l) | Chloraminated system: ≥ 0.1 min 95% compliance; Chlorinated system: ≥ 0.2 min 95% compliance | 376 | 0.14 | 1.17 | 1.68 | 2.14 | 2.14 | 0.51 |
| Notes : | | | | | | | | | |
| (1) Specification date of effect : July 2006 | | | | | | | | | |
| (2) Guideline derived from SANS 241: 2005 operations alert and industry practices | | | | | | | | | |