

STEVE TSHWETE MUNICIPALITY

P.O. Box 14
MIDDELBURG
1050

CHEMICAL ANALYSIS

Our Ref: STE / 158 - 169 / B / 09 / 11

Date received: 13 September 2011

Attention: Mr. R. Bouwer

Date reported: 23 September 2011

Attention: Me. Z. Louw

Quantity Analyzed: 12

Lab No :

B 166

Analysis Results mg/l	Vaalbank WTP Raw	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	612	≤ 1 200
Nitrate & Nitrite as N	0.12	≤ 11
Chlorides as Cl	22	≤ 300
Total Alkalinity as CaCO ₃	93	
Fluoride as F	0.44	≤ 1.5
Sulphate as SO ₄	379	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	437	
Calcium Hardness as CaCO ₃	181	
Magnesium Hardness as CaCO ₃	256	
Calcium as Ca	72.4	
Magnesium as Mg	62.1	
Sodium as Na	34.9	≤ 200
Potassium as K	9.55	
Iron as Fe	0.02	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	<0.01	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	89.0	≤ 170
pH-Value at 25° C	8.26	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	7.82	
Langelier Saturation Index	+0.44	
Turbidity as N.T.U	0.69	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free Residual Chlorine Cl ₂	<0.1	≤ 5
Total Residual Chlorine Cl ₂	<0.1	
Free & Saline Ammonia as N	0.21	≤ 1.5
Aluminium as Al	<0.01	≤ 0.30

All heavy metal analyses have been performed on filtered samples

Tests marked with an asterisk * are not SANAS accredited

These results are related only to the items tested

QUALITY CONTROL CHECKS

Cation Balance	10.49
Anion Balance	10.40
% Difference	0.4
Measured TDS	612
Calculated TDS	638
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.7



P.L.G. UYS (M.D.)

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Analysis Results mg/l	Vaalbank WTP Raw	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Selenium as Se	<0.01	≤0.01
Vanadium as V	<0.01	≤0.20
Dissolved Organic Carbon (DOC)	9.84	
Phenolic Compounds	<0.005	
Cyanide as CN	<0.01	≤10
Cadmium as Cd	<0.003	≤0.003
Cobalt as Co	<0.01	≤0.5
Total Chromium as Cr	<0.01	≤0.05
Copper as Cu	<0.01	≤2.0
Antimony as Sb	<0.005	≤0.02
Nickel as Ni	<0.01	≤0.07
Lead as Pb	<0.01	≤0.01
Zinc as Zn	<0.01	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	15	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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B 167

Analysis Results mg/l	Vaalbank WTP Final	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	618	≤ 1 200
Nitrate & Nitrite as N	0.12	≤ 11
Chlorides as Cl	28	≤ 300
Total Alkalinity as CaCO ₃	89	
Fluoride as F	0.51	≤ 1.5
Sulphate as SO ₄	380	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	428	
Calcium Hardness as CaCO ₃	178	
Magnesium Hardness as CaCO ₃	250	
Calcium as Ca	71.2	
Magnesium as Mg	60.8	
Sodium as Na	35.6	≤ 200
Potassium as K	9.44	
Iron as Fe	0.03	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	<0.01	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	90.2	≤ 170
pH-Value at 25° C	7.77	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	7.85	
Langelier Saturation Index	-0.08	
Turbidity as N.T.U	0.85	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free Residual Chlorine Cl ₂	0.1	≤ 5
Total Residual Chlorine Cl ₂	0.2	
Free & Saline Ammonia as N	<0.20	≤ 1.5
Aluminium as Al	<0.01	≤ 0.30

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QUALITY CONTROL CHECKS

Cation Balance	10.35
Anion Balance	10.52
% Difference	-0.8
Measured TDS	618
Calculated TDS	640
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.7



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Total Chromium as Cr	<0.01	≤0.05
Copper as Cu	<0.01	≤2.0
Antimony as Sb	<0.005	≤0.02
Nickel as Ni	<0.01	≤0.07
Lead as Pb	<0.01	≤0.01
Zinc as Zn	<0.01	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	<5.0	≤15
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