

STEVE TSHWETE MUNICIPALITY

P.O. Box 14
MIDDELBURG
1050

CHEMICAL ANALYSIS

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

Date received: 13 September 2011
Date reported: 23 September 2011
Quantity Analyzed: 12
Lab No :

Attention: Mr. R. Bouwer
Attention: Me. Z. Louw

B 164

Analysis Results mg/l	Hendrina WTP Raw	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	238	≤ 1 200
Nitrate & Nitrite as N	0.27	≤ 11
Chlorides as Cl	20	≤ 300
Total Alkalinity as CaCO ₃	13	
Fluoride as F	<0.20	≤ 1.5
Sulphate as SO ₄	128	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	103	
Calcium Hardness as CaCO ₃	42	
Magnesium Hardness as CaCO ₃	61	
Calcium as Ca	16.7	
Magnesium as Mg	14.9	
Sodium as Na	32.0	≤ 200
Potassium as K	4.54	
Iron as Fe	0.01	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	36.2	≤ 170
pH-Value at 25° C	7.33	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	9.25	
Langelier Saturation Index	-1.92	
Turbidity as N.T.U	0.50	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free Residual Chlorine Cl ₂	1.0	≤ 5
Total Residual Chlorine Cl ₂	1.0	
Free & Saline Ammonia as N	0.32	≤ 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	3.57
Anion Balance	3.51
% Difference	0.8
Measured TDS	238
Calculated TDS	225
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6



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

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B 165

Analysis Results mg/l	Hendrina WTP Final	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	228	≤ 1 200
Nitrate & Nitrite as N	0.31	≤ 11
Chlorides as Cl	20	≤ 300
Total Alkalinity as CaCO ₃	13	
Fluoride as F	<0.20	≤ 1.5
Sulphate as SO ₄	124	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	99	
Calcium Hardness as CaCO ₃	41	
Magnesium Hardness as CaCO ₃	58	
Calcium as Ca	16.5	
Magnesium as Mg	14.1	
Sodium as Na	31.9	≤ 200
Potassium as K	4.60	
Iron as Fe	0.10	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	0.05	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	34.9	≤ 170
pH-Value at 25° C	7.21	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	9.25	
Langelier Saturation Index	-2.04	
Turbidity as N.T.U	0.40	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free Residual Chlorine Cl ₂	1.0	≤ 5
Total Residual Chlorine Cl ₂	1.0	
Free & Saline Ammonia as N	0.24	≤ 1.5
Aluminium as Al	<0.01	≤ 0.30

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QUALITY CONTROL CHECKS	
Cation Balance	3.50
Anion Balance	3.43
% Difference	1.0
Measured TDS	228
Calculated TDS	221
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.6



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Attention. Me. Zelda Louw

B 164

Analysis Results mg/l	Hendrina 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)	0.33	
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	0.02	≤0.01
Zinc as Zn	0.66	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	<5.0	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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		Standard Limits
Selenium as Se	<0.01	≤0.01
Vanadium as V	<0.01	≤0.20
Dissolved Organic Carbon (DOC)	0.38	
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	0.07	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	<5.0	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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