

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. Boucher

Attention: Me. Z. Louw

B 158

Analysis Results mg/l	Doornkop 1	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	108	
Nitrate & Nitrite as N	1.73	≤ 1 200
Chlorides as Cl	4.0	≤ 11
Total Alkalinity as CaCO ₃	77	≤ 300
Fluoride as F	<0.20	≤ 1.5
Sulphate as SO ₄	3.63	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	57	
Calcium Hardness as CaCO ₃	30	
Magnesium Hardness as CaCO ₃	27	
Calcium as Ca	12.2	
Magnesium as Mg	6.63	
Sodium as Na	12.3	≤ 200
Potassium as K	1.81	
Iron as Fe	0.04	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	13.0	≤ 170
pH-Value at 25° C	7.76	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	8.47	
Langelier Saturation Index	-0.71	
Turbidity as N.T.U	0.26	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	<0.20	≤ 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	1.74
Anion Balance	1.85
% Difference	-3.2
Measured TDS	108
Calculated TDS	95
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.7



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

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B 158

Analysis Results mg/l	Doornkop 1	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)	1.3	
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*	<5.0	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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B 159

Analysis Results mg/l	Doornkop 2	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	32	≤ 1 200
Nitrate & Nitrite as N	1.00	≤ 11
Chlorides as Cl	3.0	≤ 300
Total Alkalinity as CaCO ₃	17	
Fluoride as F	<0.20	≤ 1.5
Sulphate as SO ₄	1.26	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	14	
Calcium Hardness as CaCO ₃	7	
Magnesium Hardness as CaCO ₃	7	
Calcium as Ca	2.85	
Magnesium as Mg	1.61	
Sodium as Na	5.35	≤ 200
Potassium as K	0.56	
Iron as Fe	0.08	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	4.89	≤ 170
pH-Value at 25 ° C	6.91	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	10.84	
Langelier Saturation Index	-3.93	
Turbidity as N.T.U	0.34	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	0.26	≤ 1.5
Aluminium as Al	<0.01	≤ 0.30

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QUALITY CONTROL CHECKS

Cation Balance	0.53
Anion Balance	0.52
% Difference	0.4
Measured TDS	32
Calculated TDS	30
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6


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Analysis Results mg/l	Doornkop 2	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)	0.53	
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	0.10	≤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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Analysis Results mg/l	Mafube	SANS Standards -241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	152	≤ 1 200
Nitrate & Nitrite as N	0.92	≤ 11
Chlorides as Cl	15	≤ 300
Total Alkalinity as CaCO ₃	93	
Fluoride as F	0.62	≤ 1.5
Sulphate as SO ₄	5.45	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	74	
Calcium Hardness as CaCO ₃	53	
Magnesium Hardness as CaCO ₃	21	
Calcium as Ca	21.1	
Magnesium as Mg	5.03	
Sodium as Na	26.3	≤ 200
Potassium as K	2.83	
Iron as Fe	0.42	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	0.04	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	23.2	≤ 170
pH-Value at 25° C	7.54	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	8.18	
Langelier Saturation Index	-0.64	
Turbidity as N.T.U	0.42	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	<0.20	≤ 1.5
Aluminium as Al	0.07	≤ 0.30

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QUALITY CONTROL CHECKS

Cation Balance	2.72
Anion Balance	2.49
% Difference	4.2
Measured TDS	152
Calculated TDS	138
Limits > 1.0 - < 1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6



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Analysis Results mg/l	Mafube	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)	3.17	
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	0.08	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	5	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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Analysis Results mg/l	Bankfontein	SANS Standards - 241 (2011) Domestic Water
		Standard Limits
Total Dissolved Solids	182	
Nitrate & Nitrite as N	<0.1	≤ 1 200
Chlorides as Cl	7.0	≤ 11
Total Alkalinity as CaCO ₃	135	≤ 300
Fluoride as F	1.76	≤ 1.5
Sulphate as SO ₄	9.06	Acute Health ≤ 500 - Aesthetic ≤ 250
Total Hardness as CaCO ₃	99	
Calcium Hardness as CaCO ₃	65	
Magnesium Hardness as CaCO ₃	34	
Calcium as Ca	25.9	
Magnesium as Mg	8.37	
Sodium as Na	28.5	≤ 200
Potassium as K	1.07	
Iron as Fe	0.06	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	28.0	≤ 170
pH-Value at 25° C	8.01	≥ 5.0 to ≤ 9.7
pHs by 21° Celsius	7.95	
Langelier Saturation Index	+0.06	
Turbidity as N.T.U	0.81	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

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QUALITY CONTROL CHECKS	
Cation Balance	3.25
Anion Balance	3.18
% Difference	1.1
Measured TDS	182
Calculated TDS	164
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6



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Analysis Results mg/l	Bankfontein	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)	4.62	
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	0.13	≤5
Arsenic as As	<0.01	≤0.01
Mercury as Hg	<0.001	≤0.006
Colour as Pt-Co*	5	≤15
Odour*	No offensive odour	Inoffensive
Taste*	Acceptable Taste	Inoffensive

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