

STEVE TSHWETE MUNICIPALITY

P.O. Box 14
MIDDELBURG

CHEMICAL ANALYSIS

Date Received : 27 September 2013
Date Reported : 10 October 2013
Quantity Analyzed: 13+ 4

Our Ref: STE / 132 A, 134 A , 136 A / F / 13

Att : Me Zelda Louw / Mr Kobus Swart

F 132 A

	Analysis Results mg/l	Hendrina Potable Raw	SANS Standards -241 (2011) Domestic Water
			Standard Limits
Physical requirements			
	Colour as Pt-Co	5	≤ 15
	Conductivity at 25° C in mS/m	27.0	≤ 170
	Total Dissolved Solids	198	≤ 1 200
	Odour	Not Applicable	Inoffensive
	pH-Value at 25 ° C	8.62	≥ 5.0 to ≤ 9.7
	Taste	Not Applicable	Inoffensive
	Turbidity as N.T.U.	0.60	Operational ≤ 1.0 - Aesthetic ≤ 5.0
	Total Alkalinity as CaCO ₃	40	
Macro Determinants			
	Free & Saline Ammonia NH ₃ as N	<0.20	
	Calcium as Ca	26.7	
	Chlorides as Cl	15.1	≤300
	Fluoride as F	<0.20	≤1.5
	Magnesium as Mg	7.77	
	Nitrate & Nitrite as N	0.52	≤ 11
	Potassium as K	4.36	
	Sodium as Na	25.0	≤ 200
	Sulphate as SO ₄	77.8	Acute Health ≤ 500 - Aesthetic ≤ 250
	Zinc as Zn	0.01	≤5

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

These results must be read in conjunction with the Uncertainty of Measurement list as provided by Regen Waters Laboratory

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F 132 A

	Analysis Results µg/l	Hendrina Potable Raw	SANS Standards -241 (2011) Domestic Water Standard Limits
Micro Determinants µg/l			
	Aluminium as Al	100	≤ 300
	Antimony as Sb	10.3	≤20
	Arsenic as As	<1.0	≤10
	Cadmium as Cd	<1.0	≤3
	Total Chromium as Cr	<1.0	≤50
	Cobalt as Co	<1.0	≤500
	Copper as Cu	<1.0	≤2000
	Cyanide as CN *	<70	≤70
	Iron as Fe	90	Chronic Health ≤ 2000 - Aesthetic ≤ 300
	Lead as Pb	<1.0	≤10
	Manganese as Mn	<10	Chronic Health ≤ 500 - Aesthetic ≤ 100
	Mercury as Hg	<1.0	≤6
	Nickel as Ni	<1.0	≤70
	Selenium as Se	<1.0	≤10
	Vanadium as V	<1.0	≤200
Organics Determinand mg/l			
	Total Organic Carbon	0.24	≤ 10
Total Trihalomethanes mg/l			
	Phenolic Compounds	Attached	≤ 0.01

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QUALITY CONTROL CHECKS

Cation Balance	3.17
Anion Balance	2.88
% Difference	4.8
Measured TDS	198
Calculated TDS	183
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.7

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

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F 134 A

	Analysis Results mg/l	Presidentsrus Raw	SANS Standards -241 (2011) Domestic Water
			Standard Limits
Physical requirements			
	Colour as Pt-Co	5	≤ 15
	Conductivity at 25° C in mS/m	105	≤ 170
	Total Dissolved Solids	828	≤ 1 200
	Odour	Not Applicable	Inoffensive
	pH-Value at 25 ° C	7.70	≥ 5.0 to ≤ 9.7
	Taste	Not Applicable	Inoffensive
	Turbidity as N.T.U.	3.95	Operational ≤ 1.0 - Aesthetic ≤ 5.0
	Total Alkalinity as CaCO ₃	155	
Macro Determinants			
	Free & Saline Ammonia NH ₃ as N	<0.20	
	Calcium as Ca	88.3	
	Chlorides as Cl	60.0	≤300
	Fluoride as F	0.85	≤1.5
	Magnesium as Mg	68.5	
	Nitrate & Nitrite as N	0.18	≤ 11
	Potassium as K	22.9	
	Sodium as Na	76.4	≤ 200
	Sulphate as SO ₄	374	Acute Health ≤ 500 - Aesthetic ≤ 250
	Zinc as Zn	<0.01	≤5
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F 134 A

	Analysis Results µg/l	Presidentsrus Raw	SANS Standards -241 (2011) Domestic Water
			Standard Limits
Micro Determinants µg/l			
	Aluminium as Al	120	≤ 300
	Antimony as Sb	8.84	≤20
	Arsenic as As	1.42	≤10
	Cadmium as Cd	<1.0	≤3
	Total Chromium as Cr	<1.0	≤50
	Cobalt as Co	<1.0	≤500
	Copper as Cu	<1.0	≤2000
	Cyanide as CN *	<70	≤70
	Iron as Fe	160	Chronic Health ≤ 2000 - Aesthetic ≤ 300
	Lead as Pb	<1.0	≤10
	Manganese as Mn	20	Chronic Health ≤ 500 - Aesthetic ≤ 100
	Mercury as Hg	<1.0	≤6
	Nickel as Ni	4.52	≤70
	Selenium as Se	<1.0	≤10
	Vanadium as V	2.86	≤200
Organics Determinand mg/l			
	Total Organic Carbon	7.78	≤ 10
Total Trihalomethanes mg/l			
	Phenolic Compounds	Attached	≤ 0.01

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QUALITY CONTROL CHECKS

Cation Balance	13.95
Anion Balance	12.64
% Difference	4.9
Measured TDS	828
Calculated TDS	786
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.7



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Att : Me Zelda Louw / Mr Kobus Swart

F 136 A

	Analysis Results mg/l	Vaalbank Raw	SANS Standards -241 (2011) Domestic Water Standard Limits
Physical requirements			
	Colour as Pt-Co	5	≤ 15
	Conductivity at 25° C in mS/m	103	≤ 170
	Total Dissolved Solids	884	≤ 1 200
	Odour	Not Applicable	Inoffensive
	pH-Value at 25 ° C	7.99	≥ 5.0 to ≤ 9.7
	Taste	Not Applicable	Inoffensive
	Turbidity as N.T.U.	1.32	Operational ≤ 1.0 - Aesthetic ≤ 5.0
	Total Alkalinity as CaCO ₃	106	
Macro Determinants			
	Free & Saline Ammonia NH ₃ as N	<0.20	
	Calcium as Ca	97.1	
	Chlorides as Cl	33.3	≤300
	Fluoride as F	0.58	≤1.5
	Magnesium as Mg	84.7	
	Nitrate & Nitrite as N	0.25	≤ 11
	Potassium as K	14.7	
	Sodium as Na	55.0	≤ 200
	Sulphate as SO ₄	486	Acute Health ≤ 500 - Aesthetic ≤ 250
	Zinc as Zn	0.01	≤5

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	Analysis Results µg/l	Vaalbank Raw	SANS Standards -241 (2011) Domestic Water Standard Limits
Micro Determinants µg/l			
	Aluminium as Al	160	≤ 300
	Antimony as Sb	6.75	≤20
	Arsenic as As	<1.0	≤10
	Cadmium as Cd	<1.0	≤3
	Total Chromium as Cr	<1.0	≤50
	Cobalt as Co	<1.0	≤500
	Copper as Cu	<1.0	≤2000
	Cyanide as CN *	<70	≤70
	Iron as Fe	120	Chronic Health ≤ 2000 - Aesthetic ≤ 300
	Lead as Pb	<1.0	≤10
	Manganese as Mn	10	Chronic Health ≤ 500 - Aesthetic ≤ 100
	Mercury as Hg	<1.0	≤6
	Nickel as Ni	3.28	≤70
	Selenium as Se	<1.0	≤10
	Vanadium as V	1.06	≤200
Organics Determinand mg/l			
	Total Organic Carbon	6.46	≤ 10
Total Trihalomethanes mg/l			
	Phenolic Compounds	Attached	≤ 0.01

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QUALITY CONTROL CHECKS

Cation Balance	14.58
Anion Balance	13.23
% Difference	4.9
Measured TDS	884
Calculated TDS	837
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.8

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F 172 A

	Analysis Results mg/l	Krugerdam Raw	SANS Standards -241 (2011) Domestic Water
			Standard Limits
Physical requirements			
	Colour as Pt-Co	5	≤ 15
	Conductivity at 25° C in mS/m	98.3	≤ 170
	Total Dissolved Solids	764	≤ 1 200
	Odour	Not Applicable	Inoffensive
	pH-Value at 25 ° C	7.97	≥ 5.0 to ≤ 9.7
	Taste	Not Applicable	Inoffensive
	Turbidity as N.T.U.	1.50	Operational ≤ 1.0 - Aesthetic ≤ 5.0
	Total Alkalinity as CaCO ₃	96	
Macro Determinants			
	Free & Saline Ammonia NH ₃ as N	<0.20	
	Calcium as Ca	81.1	
	Chlorides as Cl	23.9	≤300
	Fluoride as F	0.33	≤1.5
	Magnesium as Mg	69.7	
	Nitrate & Nitrite as N	<0.1	≤ 11
	Potassium as K	12.6	
	Sodium as Na	37.0	≤ 200
	Sulphate as SO ₄	385	Acute Health ≤ 500 - Aesthetic ≤ 250
	Zinc as Zn	<0.01	≤5

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F 172 A

	Analysis Results µg/l	Krugerdam Raw	SANS Standards -241 (2011) Domestic Water Standard Limits
Micro Determinants µg/l			
	Aluminium as Al	50	≤ 300
	Antimony as Sb	5.84	≤20
	Arsenic as As	<1.0	≤10
	Cadmium as Cd	<1.0	≤3
	Total Chromium as Cr	<1.0	≤50
	Cobalt as Co	<1.0	≤500
	Copper as Cu	<1.0	≤2000
	Cyanide as CN *	<70	≤70
	Iron as Fe	30	Chronic Health ≤ 2000 - Aesthetic ≤ 300
	Lead as Pb	<1.0	≤10
	Manganese as Mn	20	Chronic Health ≤ 500 - Aesthetic ≤ 100
	Mercury as Hg	<1.0	≤6
	Nickel as Ni	1.58	≤70
	Selenium as Se	<1.0	≤10
	Vanadium as V	5.23	≤200
Organics Determinand mg/l			
	Total Organic Carbon	5.76	≤ 10
Total Trihalomethanes mg/l			
	Phenolic Compounds	Attached	≤ 0.01
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QUALITY CONTROL CHECKS

Cation Balance	11.71
Anion Balance	10.63
% Difference	4.9
Measured TDS	764
Calculated TDS	668
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.7


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