



Web: www.regenwaters.com

REGEN WATERS

LABORATORY • LABORATORIUM

CK. 89/14418/23

4 Woltemade Street
P.O. Box 8328
EMALAHLENI 1035

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HENDRINA POWER STATION

Private Bag X 1003
PULLENSHOPE
1096

CERTIFICATE OF CHEMICAL ANALYSIS

Our Ref: HPS / 223 - 227 / B / 05 / 13

Attention: Mr. G. Coertze

Date received : 7 May 2013

Date reported : 7 June 2013

Quantity Analyzed: 5

Lab No :

B 223

B 224

Analysis Results mg/l	TEST METHOD	Optimum Tap	Pumpstation Tap	SANS Standards -241 (2011) Domestic Water
				Standard Limits
Total Dissolved Solids	LPM 2	118	96	≤ 1 200
Nitrate & Nitrite as N	LPM 32	0.31	0.23	≤ 11
Chlorides as Cl	LPM 10	13	10.0	≤ 300
Total Alkalinity as CaCO ₃	LPM 11	61	59	
Fluoride as F	LPM 27	<0.20	<0.20	≤ 1.5
Sulphate as SO ₄	LPM 28	16.2	11.2	Acute Health ≤ 500 - Aesthetic ≤ 250
Calcium as Ca	LPM 15	12.3	10.6	
Magnesium as Mg	LPM 15	8.08	6.99	
Sodium as Na	LPM 15	14.7	12.2	≤ 200
Potassium as K	LPM 15	1.37	0.94	
Iron as Fe	LPM 15	0.04	0.14	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	LPM 15	0.02	0.04	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	LPM 4	18.0	16.0	≤ 170
pH-Value at 25 ° C	LPM 51	8.01	7.70	≥ 5.0 to ≤ 9.7
pHs by 21°Celsius	Calculation	8.60	8.65	
Langelier Saturation Index	Calculation	-0.59	-0.95	
Turbidity as N.T.U	LPM 23	0.46	1.10	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free & Saline Ammonia NH ₃ as N	LPM 29	<0.20	<0.20	≤ 1.5
Cyanide as CN *	LPM 27	<0.07	<0.07	≤ 0.07
Total Organic Carbon (TOC)	LPM 68	2.98	2.76	
Total Chromium as Cr	LPM 15	<0.01	<0.01	≤ 0.05
Lead as Pb	LPM 15	<0.01	<0.01	≤ 0.01
Mercury as Hg	LPM 15	<0.001	<0.001	≤ 0.006
Aluminium as Al	LPM 15	0.08	0.15	≤ 0.30



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Analysis Results mg/l	TEST METHOD	Optimum Tap	Pumpstation Tap	SANS Standards -241 (2011) Domestic Water
				Standard Limits
Colour as Pt-Co*	LPM 68	<5.0	<5.0	≤ 15
Odour*	-	Not Applicable	Not Applicable	
Zinc as Zn	LPM 15	0.03	0.02	≤ 5
Antimony as Sb	LPM 15	<0.005	<0.005	≤ 0.02
Arsenic as As	LPM 15	<0.01	<0.01	≤ 0.01
Cadmium as Cd	LPM 15	<0.003	<0.003	≤ 0.03
Cobalt as Co	LPM 15	<0.01	<0.01	≤ 0.5
Copper as Cu	LPM 15	0.02	0.01	≤ 2.0
Nickel as Ni	LPM 15	<0.01	<0.01	≤ 0.07
Selenium as Se	LPM 15	<0.01	<0.01	≤ 0.01
Vanadium as V	LPM 15	<0.01	<0.01	≤ 0.20
Trihalomethanes (THM)*	-	Attached	Attached	
Phenolic Compounds*	-	Attached	Attached	≤ 0.01

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

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QUALITY CONTROL CHECKS

Cation Balance	1.96	1.68
Anion Balance	1.95	1.71
% Difference	0.5	-0.8
Measured TDS	118	96
Calculated TDS	104	89
Limits > 1.0 - <1.2	1.1	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6	0.6

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



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Attention: Mr. G. Coertze

Date received : 7 May 2013
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Quantity Analyzed: 5
Lab No :

B 225

B 226

Analysis Results mg/l	TEST METHOD	Lap Tap	Waterplant Tap	SANS Standards -241 (2011) Domestic Water
				Standard Limits
Total Dissolved Solids	LPM 2	112	94	≤ 1 200
Nitrate & Nitrite as N	LPM 32	0.23	0.27	≤ 11
Chlorides as Cl	LPM 10	12	10	≤ 300
Total Alkalinity as CaCO ₃	LPM 11	61	55	
Fluoride as F	LPM 27	<0.20	<0.20	≤ 1.5
Sulphate as SO ₄	LPM 28	14.8	10.5	Acute Health ≤ 500 - Aesthetic ≤ 250
Calcium as Ca	LPM 15	11.4	10.1	
Magnesium as Mg	LPM 15	7.60	6.78	
Sodium as Na	LPM 15	13.6	12.2	≤ 200
Potassium as K	LPM 15	1.25	0.89	
Iron as Fe	LPM 15	0.14	0.03	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	LPM 15	0.01	<0.01	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	LPM 4	17.3	15.8	≤ 170
pH-Value at 25 ° C	LPM 51	7.78	7.68	≥ 5.0 to ≤ 9.7
pHs by 21°Celsius	Calculation	8.62	8.70	
Langelier Saturation Index	Calculation	-0.84	-1.02	
Turbidity as N.T.U	LPM 23	0.77	0.83	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free & Saline Ammonia NH ₃ as N	LPM 29	<0.20	<0.20	≤ 1.5
Cyanide as CN *	LPM 27	<0.07	<0.07	≤ 0.07
Total Organic Carbon (TOC)	LPM 68	3.04	2.71	
Total Chromium as Cr	LPM 15	<0.01	<0.01	≤ 0.05
Lead as Pb	LPM 15	<0.01	<0.01	≤ 0.01
Mercury as Hg	LPM 15	<0.001	<0.001	≤ 0.006
Aluminium as Al	LPM 15	0.08	0.08	≤ 0.30



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B 225

B 226

Analysis Results mg/l	TEST METHOD	Lap Tap	Waterplant Tap	SANS Standards -241 (2011) Domestic Water
				Standard Limits
Colour as Pt-Co*	LPM 68	<5.0	<5.0	≤ 15
Odour*	-	Not Applicable	Not Applicable	
Zinc as Zn	LPM 15	0.04	0.02	≤ 5
Antimony as Sb	LPM 15	<0.005	<0.005	≤ 0.02
Arsenic as As	LPM 15	<0.01	<0.01	≤ 0.01
Cadmium as Cd	LPM 15	<0.003	<0.003	≤ 0.03
Cobalt as Co	LPM 15	<0.01	<0.01	≤ 0.5
Copper as Cu	LPM 15	<0.01	0.01	≤ 2.0
Nickel as Ni	LPM 15	<0.01	<0.01	≤ 0.07
Selenium as Se	LPM 15	<0.01	<0.01	≤ 0.01
Vanadium as V	LPM 15	<0.01	<0.01	≤ 0.20
Trihalomethanes (THM)*	-	Attached	Attached	
Phenolic Compounds*	-	Attached	Attached	≤ 0.01

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QUALITY CONTROL CHECKS

Cation Balance	1.83	1.63
Anion Balance	1.88	1.62
% Difference	-1.3	0.2
Measured TDS	112	94
Calculated TDS	99	85
Limits > 1.0 - <1.2	1.1	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.6	0.5

P.L.G. UYS (M.D.)
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Analysis Results mg/l	TEST METHOD	Waterplant Raw Water Tap	SANS Standards -241 (2011) Domestic Water
			Standard Limits
Total Dissolved Solids	LPM 2	78	≤ 1 200
Nitrate & Nitrite as N	LPM 32	0.31	≤ 11
Chlorides as Cl	LPM 10	5.5	≤ 300
Total Alkalinity as CaCO ₃	LPM 11	55	
Fluoride as F	LPM 27	<0.20	≤ 1.5
Sulphate as SO ₄	LPM 28	7.99	Acute Health ≤ 500 - Aesthetic ≤ 250
Calcium as Ca	LPM 15	10.1	
Magnesium as Mg	LPM 15	6.80	
Sodium as Na	LPM 15	7.55	≤ 200
Potassium as K	LPM 15	0.77	
Iron as Fe	LPM 15	0.35	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3
Manganese as Mn	LPM 15	0.03	Chronic Health ≤ 0.5 - Aesthetic ≤ 0.1
Conductivity at 25° C in mS/m	LPM 4	13.5	≤ 170
pH-Value at 25 ° C	LPM 51	7.25	≥ 5.0 to ≤ 9.7
pHs by 21°Celsius	Calculation	8.69	
Langelier Saturation Index	Calculation	-1.44	
Turbidity as N.T.U	LPM 23	5.8	Operational ≤ 1.0 - Aesthetic ≤ 5.0
Free & Saline Ammonia NH ₃ as N	LPM 29	<0.20	≤ 1.5
Cyanide as CN *	LPM 27	<0.07	≤ 0.07
Total Organic Carbon (TOC)	LPM 68	3.32	
Total Chromium as Cr	LPM 15	<0.01	≤ 0.05
Lead as Pb	LPM 15	<0.01	≤ 0.01
Mercury as Hg	LPM 15	<0.001	≤ 0.006
Aluminium as Al	LPM 15	0.11	≤ 0.30



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			Standard Limits
Colour as Pt-Co*	LPM 68	<5.0	≤ 15
Odour*	-	Not Applicable	
Zinc as Zn	LPM 15	0.02	≤ 5
Antimony as Sb	LPM 15	<0.005	≤ 0.02
Arsenic as As	LPM 15	<0.01	≤ 0.01
Cadmium as Cd	LPM 15	<0.003	≤ 0.03
Cobalt as Co	LPM 15	<0.01	≤ 0.5
Copper as Cu	LPM 15	0.02	≤ 2.0
Nickel as Ni	LPM 15	<0.01	≤ 0.07
Selenium as Se	LPM 15	<0.01	≤ 0.01
Vanadium as V	LPM 15	<0.01	≤ 0.20
Trihalomethanes (THM)*	-	Attached	
Phenolic Compounds*	-	Attached	≤ 0.01

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QUALITY CONTROL CHECKS

Cation Balance	1.44
Anion Balance	1.44
% Difference	0.0
Measured TDS	78
Calculated TDS	74
Limits > 1.0 - <1.2	1.1
Calcul TDS / E.C. (0.55 - 0.70)	0.5

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