

Appendix 2.0: Baseline water quality

THE PENTAGON

1072 Meester Street
Mashishing, Lydenburg
Mpumalanga, 1123

CERTIFICATE OF CHEMICAL ANALYSIS

Attention: Johannes Masinga

Date received : 24 February 2020
Date reported : 5 March 2020
Dates Analyzed: 24 Feb - 5 Mar 2020
Quantity Analyzed : 2
Our Ref : PEN / 93 - 94 / H / 02 / 20
Lab No:

H 93

Analysis Results mg/l	LPM METHOD	SANS Standards -241 : 2015 Domestic Water	Upstream
		Standard Limits	
Total Dissolved Solids	LPM 2	≤ 1 200	422
Suspended Solids	LPM 1		278
Nitrate & Nitrite as N	LPM 76		<0.1
Nitrate NO ₃ as N	LPM 76	≤ 11	<0.1
Nitrite NO ₂ as N	LPM 76	≤ 0.9	<0.1
Chlorides as Cl	LPM 76	≤ 300	4.09
Total Alkalinity as CaCO ₃	LPM 11/81		262
Fluoride as F	LPM 76	≤ 1.5	0.27
Sulphate as SO ₄	LPM 76	Acute Health ≤ 500 - Aesthetic ≤ 250	20.9
Total Hardness as CaCO ₃	LPM 85		229
Calcium Hardness as CaCO ₃	LPM 85		113
Magnesium Hardness as CaCO ₃	LPM 85		116
Calcium as Ca	LPM 15		45.4
Magnesium as Mg	LPM 15		28.2
Sodium as Na	LPM 15	≤ 200	16.3
Potassium as K	LPM 15		0.54
Iron as Fe	LPM 15 / 67	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3	0.42
Manganese as Mn	LPM 15 / 67	Chronic Health ≤ 0.4 - Aesthetic ≤ 0.1	0.04
Conductivity at 25° C in mS/m	LPM 51/82	≤ 170	49.8
pH-Value at 25° C (pH Units)	LPM 51/82	≥ 5.0 to ≤ 9.7	7.73
pHs by 21° Celsius	LPM 85		7.34
Langelier Saturation Index	LPM 85		+0.39
Turbidity as N.T.U.	LPM 23/82	Operational ≤ 1.0 - Aesthetic ≤ 5.0	223
Free Residual Chlorine Cl ₂ *	LPM 84		0.12
Aluminium as Al	LPM 15 / 67	≤ 0.30	0.17

QUALITY CONTROL CHECKS:

Cation Balance	5.34
Anion Balance	5.77
% Difference	-3.9
Measured TDS	422
Calculated TDS	436
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.9

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

P.L.G. UYS / A. KOHRS

Technical Signatory

(A signed copy of this report is available)

THE PENTAGON

1072 Meester Street
Mashishing, Lydenburg
Mpumalanga, 1123

CERTIFICATE OF CHEMICAL ANALYSIS

Attention: Johannes Masinga

Date received : 24 February 2020

Date reported : 5 March 2020

Dates Analyzed: 24 Feb - 5 Mar 2020

Quantity Analyzed : 2

Our Ref : PEN / 93 - 94 / H / 02 / 20

Lab No:

H 94

Analysis Results mg/l	LPM METHOD	SANS Standards -241 : 2015 Domestic Water	Downstream
		Standard Limits	
Total Dissolved Solids	LPM 2	≤ 1 200	416
Suspended Solids	LPM 1		959
Nitrate & Nitrite as N	LPM 76		<0.1
Nitrate NO ₃ as N	LPM 76	≤ 11	<0.1
Nitrite NO ₂ as N	LPM 76	≤ 0.9	<0.1
Chlorides as Cl	LPM 76	≤ 300	4.17
Total Alkalinity as CaCO ₃	LPM 11/81		267
Fluoride as F	LPM 76	≤ 1.5	0.24
Sulphate as SO ₄	LPM 76	Acute Health ≤ 500 - Aesthetic ≤ 250	14.4
Total Hardness as CaCO ₃	LPM 85		226
Calcium Hardness as CaCO ₃	LPM 85		115
Magnesium Hardness as CaCO ₃	LPM 85		111
Calcium as Ca	LPM 15		46.0
Magnesium as Mg	LPM 15		26.9
Sodium as Na	LPM 15	≤ 200	14.4
Potassium as K	LPM 15		0.35
Iron as Fe	LPM 15 / 67	Chronic Health ≤ 2.0 - Aesthetic ≤ 0.3	0.34
Manganese as Mn	LPM 15 / 67	Chronic Health ≤ 0.4 - Aesthetic ≤ 0.1	1.19
Conductivity at 25° C in mS/m	LPM 51/82	≤ 170	48.3
pH-Value at 25° C (pH Units)	LPM 51/82	≥ 5.0 to ≤ 9.7	7.53
pHs by 21° Celsius	LPM 85		7.32
Langelier Saturation Index	LPM 85		+0.21
Turbidity as N.T.U.	LPM 23/82	Operational ≤ 1.0 - Aesthetic ≤ 5.0	778
Free Residual Chlorine Cl ₂ *	LPM 84		<0.1
Aluminium as Al	LPM 15 / 67	≤ 0.30	0.02

QUALITY CONTROL CHECKS:

Cation Balance	5.20
Anion Balance	5.74
% Difference	-4.9
Measured TDS	416
Calculated TDS	434
Limits > 1.0 - <1.2	1.0
Calcul TDS / E.C. (0.55 - 0.70)	0.9

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

P.L.G. UYS / A. KOHRS

Technical Signatory

(A signed copy of this report is available)

MICROBIOLOGICAL ANALYSIS TEST REPORT

Sample From: **PENTAGON**

E-Mail: johannes@thepentagon.co.za

Date Received: 24 February 2020

Date Analyzed: 24 February 2020

Date Reported: 26 February 2020

Quantity Analyzed: 2

Ref No: B 1369 - 1370 / 20 B

LAB REF ID	LAB NUMBER	SAMPLE NAME	STERILIZED BOTTLE		STANDARD LIMITS SANS 241:2015 DRINKING WATER			
					≤ 10	Nil	NIL	≤ 1000
					TOTAL COLIFORM BACTERIA PER / 100ML	FAECAL COLIFORM PER / 100 ML	ESCHERICHIA COLIFORM PER 100 ML	HETEROTROPHIC PLATE COUNT PER 1.0 ML
			YES	NO		A / B		
	B 1369	Upstream 1A	x		200	A	130	-
	B 1370	Downstream 2A	x		150	A	2	-
		METHOD USED			A- SANS 5221 (CFU) OR B - COLILERT (MPN)	SANS 5221 (CFU)	COLILERT (MPN)	SANS 5221 (CFU)
					REGEN WATERS METHOD: MLPM 4A AND 4B			

S.A.N.S. 241:2015 MICROBIOLOGICAL REQUIREMENTS Allowable compliance for <i>DRINKING WATER</i>			
Determinant	Risk	Unit	Standard limits
Escherichia Coliform / or Faecal Coliform bacteria	Acute Health - 1	Count per 100 ml	Not Detected
Heterotrophic Plate Count	Operational	Count per 1 ml	≤ 1 000
Total Coliform Bacteria	Operational	Count per 100 ml	≤ 10

Results exceeding alert levels will require immediate remedial action and follow-up sampling.

EFFLUENT WATER
Regional Standard (Department Water Affairs and Forestry) of 26 March 2004 No.399 for Waste water specifies : Waste water or Effluent shall not contain more than 1000 Faecal Coliform per 100 ml.

**SANS 241
2015**

These results relate only to samples tested.

Opinions and interpretations expressed herein are outside the scope of SANAS accreditation.

- Samples highlighted in grey are not within the limits as specified.

REMARKS:

P.L.G UYS / A. KOHRS
Technical Signatory