



# Institute for Groundwater Studies

University of the Free State

IGS Laboratory Services, Dekaan Street (Campus)

339, BLOEMFONTEIN, 9300

+27-(0)51 - 401 2317

+27-(0)51 - 401 3005

E-mail: igslab@ufs.ac.za

Sec 5.10 F1

Revision 9



## Test Report

Case no: 2018 - 210

02/03/2018

Page 2 of 3

Determinand	Units	Methods used	South African National Standard (SANS) 241:2006 & 2015 for drinking water (partial)  Class 1 (Recommended levels) Class 2 (Maximum allowable for limited time) ** EU standard	Livestock Watering Recommended values	Dwarf specifications for irrigation	Client sample name:								
						North Surface	NB 03 B (1) 02-03-18	NB 03 B (2) 02-03-18	NB 03 D (1) 02-03-18	NB 03 D (2) 02-03-18	NB 06 A 02-03-18	NB 06 B (1) 02-03-18	NB 06 B (2) 02-03-18	NB 07 (1) 02-03-18
						Lab number:								
						210-1	210-2	210-3	210-4	210-5	210-6	210-7	210-8	210-9
			Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Chemical report														
COD #	mg/L	Chem-TM04				92	97	64	26	192	72	51	22	726
Total organic carbon as C #	mg/L	Chem-TM24	≤ 10			28.1	18.0	16.7	8.37	7.81	11.5	13.1	12.4	83.0
Ammonia as N #	mg/L	Chem-TM18	≤ 1.5			0.26	<0.5	<0.5	1.58	3.83	2.81	<0.5	<0.5	0.55
pH #	pH units	Chem-TM06	5.5 tot 9.7		6.5 - 8.4	7.68	7.69	7.67	7.91	7.3	7.83	7.51	7.42	7.29
Electrical conductivity #	mS/m	Chem-TM06	≤ 170		<40	47.5	295	295	198	177	210	224	230	644
Calcium as Ca #	mg/L	Chem-TM02	≤150 - 300	≤1000		43	283	274	107	68	180	176	173	449
Magnesium as Mg #	mg/L	Chem-TM02	≤70 - 100	≤500		19	172	167	123	118	117	107	105	520
Sodium as Na #	mg/L	Chem-TM02	≤ 200	≤2000	0 - 70	28	268	261	168	158	169	222	219	351
Potassium as K #	mg/L	Chem-TM02	≤50 - 100			8.31	4.68	4.41	3.72	3.59	1.97	1.80	1.78	9.43
P-Alkalinity #	mg/L	Chem-TM06				0	0	0	0	0	0	0	0	0
M-Alkalinity #	mg/L	Chem-TM06				74.2	362	363	173	74.6	699	700	709	939
Fluoride as F #	mg/L	Chem-TM01	≤ 1.5	≤2		0.39	0.37	0.16	<0.1	<0.1	0.17	0.05	0.24	0.79
Chloride as Cl #	mg/L	Chem-TM01	≤ 300	≤1500	0 - 105	35	317	319	300	299	349	421	439	2190
Nitrite as N #	mg/L	Chem-TM01				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
Bromide as Br #	mg/L	Chem-TM01	**≤3			0.50	1.85	2.01	2.13	1.91	1.71	2.27	1.93	11.33
Nitrate as N #	mg/L	Chem-TM01	≤ 11	≤22.5	0 - 5	<0.5	10.95	10.99	7.77	<0.5	<0.5	<0.5	<0.5	<1
Phosphate as PO <sub>4</sub> #	mg/L	Chem-TM01	*≤15.33			<1	<1	<1	<1	<1	<1	<1	<1	<2
Sulphate as SO <sub>4</sub> #	mg/L	Chem-TM01	≤ 500	≤1000		119	998	998	538	532	19.0	7.0	3.3	31.4
Calcium Hardness #	mg/L	calculated	≤375 - 750			108	708	685	268	171	449	441	432	1122
Magnesium Hardness #	mg/L	calculated	≤287 - 410			80	705	683	504	485	481	440	432	2131
Total Hardness as CaCO <sub>3</sub> #	mg/L	calculated	≤662 - 1160			188	1413	1369	772	656	930	881	864	3253
Total Dissolved Solids #	mg/L	calculated	≤ 1200			324	2453	2435	1450	1256	1537	1634	1648	4494
Sodium Adsorption Ratio(SAR) #		calculated		0 - 1.5		0.88	3.10	3.07	2.63	2.67	2.41	3.25	3.24	2.67
Aluminium as Al #	mg/L	Chem-TM02	≤ 0.300	≤5	0 - 0.5	0.093	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Arsenic as As #	mg/L	Chem-TM02	≤ 0.010	≤1	0 - 0.1	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Barium as Ba #	mg/L	Chem-TM02	≤ 0.700			0.042	<0.020	<0.020	<0.020	<0.020	0.048	0.026	0.025	<0.020
Boron as B #	mg/L	Chem-TM02	≤ 2.400		0 - 0.5	0.036	0.220	0.222	0.121	0.089	0.082	0.098	0.086	0.169
Cadmium as Cd #	mg/L	Chem-TM02	≤ 0.003			<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Cobalt as Co #	mg/L	Chem-TM02	≤ 0.500			<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chromium as Cr #	mg/L	Chem-TM02	≤ 0.050	≤0.05		<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Copper as Cu #	mg/L	Chem-TM02	≤ 2.000	≤0.5	0 - 0.2	0.039	0.029	0.026	0.023	0.033	0.014	0.011	0.017	0.036
Iron as Fe #	mg/L	Chem-TM02	≤ 2.000 (chronic health)	≤10	0 - 0.5	0.159	0.097	0.014	0.036	0.043	0.008	0.007	0.068	0.109
	mg/L	Chem-TM02	≤ 0.300 (aesthetic)			<0.020	<0.020	<0.020	0.227	0.435	1.839	0.089	0.105	5.185
Manganese as Mn #	mg/L	Chem-TM02	≤ 0.400 (Chronic health)											
	mg/L	Chem-TM02	≤ 0.100 (Aesthetic)	≤10		<0.020	0.034	0.034	<0.020	<0.020	0.088	0.028	0.025	0.218
Nickel as Ni #	mg/L	Chem-TM02	≤ 0.070											
Molybdenum as Mo #	mg/L	Chem-TM02		≤0.01	0 - 0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Lead as Pb #	mg/L	Chem-TM02	≤ 0.010	≤0.1	0 - 0.2	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Selenium as Se #	mg/L	Chem-TM02	≤ 0.040			<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Vanadium as V #	mg/L	Chem-TM02	≤ 0.200			0.013	0.008	0.007	0.220	0.426	1.803	0.085	0.100	5.067
Zinc as Zn #	mg/L	Chem-TM02	≤ 5.000	≤20	0 - 1.0	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bacterial report:														
Total coliform	cfu/100ml	BAC-TM02	≤10	≤10	specifications will vary with the kind of crop irrigated.	>2420	>2420	>2420	99	74	22	488	517	>2420
E. coli	cfu/100ml	BAC-TM02	0	0		613	0	0	0	0	0	0	0	0

### Note:

Results marked with (#) in this report, are not included in the SANAS Schedule of Accreditation for this laboratory.

Parameters higher than the specifications, are clearly marked. Tables with specifications included for comparison.

Bacteriological results obtained from samples older than the prescribed 24 hours may be inaccurate.

Signature: \_\_\_\_\_

Dr L. Deyssel (Technical signatory / Technical manager)

END OF REPORT