



RAND WATER

Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 April 2013 - March 2014

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
VSV	Sandspruit above Volksrust 27°14'26.03"S 29°53'21.78"E	0.77	16	0.16	66	0.83	0.17	32	<10	25	7.40	
		0.10	12	0.20	135	0.10	0.07	35	<10	36	8.30	
		0.25	10	0.33	48	0.37	0.10	27	28	22	7.10	
		0.25	<10	0.22	48	<0.10	0.20	14	26	16	7.00	
VSS	Sandspruit below Vaal River @ Klipplaatdrift 27°12'30.82"S 29°26'12.83"E	0.10	12	0.16	110	0.82	0.05	25	<10	30	7.90	
		0.10	14	0.24	115	0.14	0.05	37	10	31	8.00	
		0.25	13	0.43	150	0.11	0.10	35	17	50	8.40	
		0.25	<10	0.27	87	<0.10	0.15	22	21	24	7.60	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	0.10	<10	0.08	34	<0.10	0.05	7	<10	10	6.90	
		0.10	<10	0.08	58	<0.10	0.05	6	12	14	7.80	
		0.25	<10	0.23	54	0.15	0.18	12	25	21	8.40	
		0.25	<10	0.17	42	<0.10	0.29	<5.0	25	13	7.10	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	0.10	<10	0.13	49	<0.10	0.05	11	<10	14	7.10	
		0.10	<10	0.14	85	0.34	0.05	8	<10	20	7.80	
		0.25	<10	0.24	145	<0.10	0.10	11	12	34	7.80	
		0.25	<10	0.26	94	<0.10	0.52	13	21	24	7.50	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	0.10	<10	0.19	67	0.93	0.05	14	<10	77	6.90	
		0.10	<10	0.15	160	0.31	0.05	15	<10	35	8.20	
		0.25	<10	0.29	155	0.12	0.10	16	23	41	8.00	
		0.25	<10	0.26	92	<0.10	0.25	16	24	24	7.40	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	0.10	20	0.31	205	1.50	0.19	27	16	50	8.10	
		0.10	30	0.28	245	1.20	0.50	42	44	59	9.10	
		0.25	25	0.25	120	0.26	0.52	25	38	51	8.10	
		0.25	<10	0.28	135	0.38	0.24	21	26	34	7.90	
VDS	Vaal River downstream of Standerton 27° 0'55.97"S 29° 1'29.30"E	0.10	<10	0.17	115	0.17	0.05	17	13	29	7.40	
		0.10	14	0.26	155	0.80	0.13	29	19	41	7.90	
		0.43	15	0.30	125	0.72	0.10	26	25	41	7.70	
		0.25	<10	0.30	75	0.31	0.23	21	28	23	7.20	
VGB	Gladdedrft Bridge @ Villiers 26°59'31.24"S 28°43'47.18"E	0.10	13	0.35	100	0.53	0.09	39	18	28	7.70	
		0.10	12	0.26	150	0.12	0.05	34	16	38	7.90	
		0.20	11	0.30	130	1.30	0.08	22	32	39	7.50	
		2.50	30	0.36	97	0.34	0.82	44	32	28	7.40	
VV	Vaal @ Villiers 27°1'20.13"S 28°36'0.32"E	0.10	<10	0.29	105	0.11	0.05	30	14	30	7.70	14
		0.10	15	0.29	130	0.13	0.08	44	19	36	8.00	13
		0.27	16	0.24	100	1.60	0.12	36	28	36	7.50	105
		0.25	<10	0.22	48	<0.10	0.20	14	20	16	7.00	425
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 28°15'0.16"E	0.10	<10	0.30	87	0.20	0.05	31	18	24	7.30	21
		0.10	<10	0.29	87	0.61	0.13	25	18	25	8.30	1
		0.20	<10	0.30	91	0.16	0.07	24	23	30	7.30	15
		0.20	<10	0.34	65	0.59	0.13	28	28	21	7.40	13
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	0.10	<10	0.13	49	0.32	0.05	6	<10	12	7.00	86
		0.10	<10	0.08	44	0.10	0.05	6	<10	11	7.20	71
		0.20	<10	0.08	65	0.62	0.08	11	16	18	7.10	870
		0.20	<10	0.18	53	0.33	0.08	7	16	14	7.30	2,500
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	0.10	<10	0.21	62	0.30	0.07	15	30	17	7.20	14
		0.15	<10	0.19	57	1.10	0.07	15	<10	15	7.50	7
		0.15	<10	0.25	62	0.26	0.07	18	<10	20	7.00	10
		0.25	<10	0.23	59	0.23	0.10	14	16	16	7.60	3,500
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	0.10	<10	0.21	74	0.32	0.05	23	11	18	7.30	3
		0.15	<10	0.23	65	1.10	0.07	19	12	18	7.70	1
		0.15	<10	0.25	67	0.28	0.07	18	31	22	7.10	9
		0.11	<10	0.17	72	0.12	0.06	22	31	22	7.30	3
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28°7'14.35"E	0.10	<10	0.20	77	0.22	0.05	22	<10	21	7.20	365
		0.15	<10	0.24	70	1.10	0.13	21	<10	20	7.70	4
		0.15	<10	0.24	69	0.34	0.07	19	<10	22	7.30	13
		0.25	<10	0.29	67	0.51	0.10	27	16	21	7.60	50
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	36	42	0.40	150	<0.10	3.70	23	215	90	7.90	3,652,870
		14	38	0.31	175	0.19	2.70	30	455	76	7.00	5,081,670
		15	58	0.40	310	0.12	2.00	44	55	89	7.00	5,813,800
		19	38	0.44	250	0.13	2.70	34	155	73	7.30	9,188,000

Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)

Sample Points	Sample Point Description	Ammonia	Fluoride	Nitrate	Phosphate	Chemical Oxygen Demand	Conductivity	pH	E. coli			
S-ST_NEW	Standerton Sewage Works 26°58'24.60"E 29°13'52.87"E	36	42	0.40	150	<0.10	3.70	23	215	90	7.90	3,652,870
		14	38	0.31	175	0.19	2.70	30	455	76	7.00	5,081,670
		15	58	0.40	310	0.12	2.00	44	55	89	7.00	5,813,800
		19	38	0.44	250	0.13	2.70	34	155	73	7.30	9,188,000

Key

VD1I	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 Apr 13 - 30 Jun 13
		0.12	-	1 July 13 - 30 Sept 13
		0.12	-	1 Oct 13 - 31 Dec 13
		0.12	-	1 Jan 14 - 31 Mar 14

Water Quality Guidelines

	-	Ideal
	-	Acceptable
	-	Tolerable
	-	Unacceptable
	-	No sample or result available

In-stream Water Quality Guidelines for the Vaal Dam Catchment

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
Macro Elements					
Ammonia (NH ₄)	mg/l	< 0.2	0.2 - 0.5	0.5 - 1.0	> 1
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 75	> 75
Fluoride (F)	mg/l	< 0.05	0.05 - 0.20	0.2 - 0.4	> 0.4
Alkalinity	CaCO ₃ mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO ₃)	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Phosphate (PO ₄)	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.5
Sulphate (SO ₄)	mg/l	< 20	20 - 45	45 - 70	> 70
Bacteriological					
Faecal coliforms	counts/100ml	< 10	10 - 60	60 - 120	> 120

Sewage Works Compliance to General Standard (GN 1191 Oct 1999)

Variables	Measured as	Acceptable Management Target	Unacceptable
Physical			
Conductivity	mS/m	<150	>=150
pH	pH units	5.5 - 9.5	< 5.5; > 9.5
Organic			
Chemical Oxygen Demand (COD)**	mg/l	<75	>=75
Macro Elements			
Ammonia (NH ₄)	mg/l	<3	>=3
Fluoride (F)	mg/l	<1	>=1
Nitrate (NO ₃)	mg/l	<15	>=15
Phosphate (PO ₄)	mg/l	<10	>10
Bacteriological			
Faecal coliforms	counts/100ml	<1000	>=1000

** After removal of algae