



Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 October 2010 - 30 September 2011

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	0.12	<10	0.17	93	0.13	0.050	20	16	27	7.40	
		0.12	<10	0.19	86	<0.10	<0.036	12	13	22	7.50	
		0.12	<10	0.26	115	<0.10	<0.036	24	10	30	7.70	
		0.12	13	0.18	130	<0.10	<0.05	26	13	34	7.90	
VSS	Sandspruit below Vaal River @ Kliplaatsdrift 27°12'30.82"S 29°26'12.83"E	0.12	<10	0.24	145	0.11	<0.036	36	15	42	7.70	
		0.12	<10	0.28	140	<0.10	<0.036	19	13	33	7.90	
		0.12	<10	0.32	190	<0.10	<0.036	38	10	43	8.20	
		0.12	13	0.22	225	<0.10	<0.05	43	13	51	8.50	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	0.12	<10	0.17	56	0.12	<0.036	12	21	18	7.30	
		0.12	<10	0.15	56	<0.10	<0.036	<5.0	16	14	6.60	
		0.12	<10	0.19	64	0.12	<0.036	13	14	18	7.30	
		0.12	<10	0.05	56	<0.10	<0.05	9	14	16	7.70	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	0.12	<10	0.16	120	<0.10	0.080	14	21	30	7.50	
		0.12	<10	0.15	70	<0.10	<0.036	5	16	17	6.90	
		0.12	<10	0.24	105	<0.10	<0.036	14	9	26	7.50	
		0.12	11	0.10	99	<0.10	<0.05	16	13	26	7.40	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	0.12	10	0.23	150	0.16	<0.036	28	14	39	7.50	
		0.12	<10	0.17	82	<0.10	<0.036	9	23	19	7.20	
		0.12	<10	0.30	165	<0.10	<0.036	26	10	38	7.90	
		0.12	11	0.19	165	<0.10	<0.05	24	13	39	8.00	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	0.23	27	0.27	165	0.25	0.580	27	22	45	8.00	
		0.12	<10	0.26	145	0.43	0.080	21	21	36	7.90	
		0.12	15	0.31	185	0.62	0.100	32	20	44	8.30	
		0.12	25	0.23	240	0.46	0.150	41	27	56	8.90	
VDS	Vaal River downstream of Standerton 27°05'59.97"S 29°12'29.30"E	0.43	11	0.24	105	0.65	0.070	22	21	31	7.20	
		0.12	<10	0.20	105	<0.10	0.050	11	21	26	7.50	
		0.12	11	0.28	180	0.27	<0.036	29	15	42	8.00	
		0.12	13	0.19	190	0.34	<0.05	27	18	44	8.40	
VGB	Gladdedrift Bridge @ Villiers 26°59'31.24"S 28°43'47.18"E	0.12	14	0.37	190	0.62	<0.036	28	22	53	7.10	
		0.12	<10	0.23	94	0.13	0.180	18	18	27	6.90	
		0.12	<10	0.24	180	<0.10	0.040	22	15	40	8.40	
		0.12	16	0.20	190	0.10	<0.05	37	17	46	8.40	
VV	Vaal @ Villiers 27°12'0.13"S 28°36'0.32"E	0.12	19	0.33	185	0.43	0.090	44	22	52	7.50	
		0.12	<10	0.26	90	0.16	0.040	18	23	26	6.90	200
		0.12	13	0.28	165	0.11	<0.036	33	16	40	8.30	98
		0.12	17	0.15	185	<0.10	<0.05	37	16	47	8.30	47
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 28°15'0.16"E	0.12	<10	0.29	68	0.38	0.050	19	17	22	7.20	65
		0.12	<10	0.22	67	0.30	<0.036	16	31	20	7.50	22
		0.12	<10	0.24	70	0.34	<0.036	15	24	20	7.60	5
		0.12	<10	0.10	72	0.33	<0.05	16	19	20	7.50	6
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	0.12	<10	0.12	45	0.15	<0.036	5	5	12	6.80	135
		0.12	<10	0.18	70	0.19	0.040	7	22	20	6.70	29370
		0.12	<10	0.10	63	0.57	<0.036	8	14	16	7.30	48500
		0.12	<10	<0.05	56	0.29	0.120	8	<10	14	7.10	3560
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	0.12	<10	0.20	61	0.24	0.090	10	9	13	7.30	19
		0.12	<10	0.21	51	0.33	0.090	11	30	16	7.20	47
		0.12	<10	0.20	57	0.30	<0.036	10	22	16	7.60	6
		0.12	<10	0.12	68	0.27	<0.05	10	16	17	7.40	71
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	0.12	<10	0.23	66	0.33	0.060	15	13	19	7.20	33
		0.12	<10	0.18	55	0.35	0.050	14	27	17	7.20	19
		0.12	<10	0.31	57	0.44	<0.036	12	21	16	7.50	8
		0.12	<10	0.10	62	0.36	<0.05	11	16	17	7.40	21
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28°7'14.35"E	0.12	<10	0.21	60	0.35	0.070	13	13	17	7.20	21
		0.12	<10	0.19	54	0.41	0.050	14	19	17	6.90	4
		0.12	<10	0.21	57	0.40	<0.036	13	21	17	7.50	4
		0.12	<10	0.08	59	0.41	0.050	12	16	17	7.30	7
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	28.00	44	0.28	130	<0.10	3.800	29	285	75	7.30	2893970
		21.00	47	0.36	250	0.77	3.900	35	160	79	7.00	3491330
		32.00	44	0.23	260	<0.10	4.700	25	140	76	7.10	3505330
		28.00	47	0.24	240	0.31	4.700	39	240	76	7.10	3315630

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"S 29°13'52.87"E	28.00	0.28	<0.10	3.800	285	75	7.30	2893970
		21.00	0.36	0.77	3.900	160	79	7.00	3491330
		32.00	0.23	<0.10	4.700	140	76	7.10	3505330
		28.00	0.24	0.31	4.700	240	76	7.10	3315630

Key

VD1I	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 Oct 10 - 31 Dec 10
		0.12	-	1 Jan 11 - 31 Mar 11
		0.12	-	1 Apr 11 - 30 Jun 11
		0.12	-	1 July 11 - 30 Sept 11

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