



Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 January 2011 - 31 December 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	0.19	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	
		0.12	13	0.27	81	<0.10	<0.05	37	17	31	7.20	
VSS	Sandspruit below Vaal River @ Klipplaatdrift 27°12'30.82"S 29°26'12.83"E	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	
		0.12	15	0.35	165	0.13	<0.05	35	13	47	8.20	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	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	
		0.12	<10	0.17	56	0.12	<0.05	8	16	19	8.00	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	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	<0.036	16	13	26	7.40	
		0.12	12	0.19	85	0.18	<0.05	26	13	31	7.70	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	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	
		0.17	13	0.24	480	8.10	<0.05	30	15	43	7.70	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	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	
		0.12	31	0.31	195	0.50	0.460	43	26	63	7.90	
VDS	Vaal River downstream of Standerton 27° 0'55.97"S 29° 1'29.30"E	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	
		0.12	15	0.27	105	<0.10	<0.05	20	21	41	8.10	
VGB	Gladdekrift Bridge @ Villiers 26°58'31.24"S 28°43'47.18"E	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	
		0.12	<10	0.34	180	<0.10	<0.05	22	25	46	8.40	
VV	Vaal @ Villiers 27°1'20.13"S 28°36'0.32"E	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
		0.12	17	0.26	205	<0.10	<0.05	38	22	52	8.10	6
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 26°15'0.16"E	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
		0.12	<10	0.54	72	<0.10	<0.05	18	16	25	7.60	8
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	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
		0.12	<10	0.08	135	0.47	<0.05	7	10	14	7.10	335
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	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
		0.12	<10	0.21	59	<0.10	<0.05	14	14	19	7.60	2
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	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
		0.12	<10	1.30	55	<0.10	<0.05	13	14	19	7.40	3
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28°7'14.35"E	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
		0.12	<10	0.21	52	0.20	<0.05	15	15	18	7.40	110
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	21.00	47	0.36	250	0.77	3.900	35	160	78	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	3315530
		33.00	42	0.33	270	<0.10	4.700	15	170	78	7.20	5436670

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	21.00	0.36	0.77	3.900	160	78	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	3315530
		33.00	0.33	<0.10	4.700	170	78	7.20	5436670

Key

VD1I	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 Jan 11 - 31 Mar 11
		0.12	-	1 Apr 11 - 30 Jun 11
		0.12	-	1 July 11 - 30 Sept 11
		0.12	-	1 Oct 11 - 31 Dec 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
<b>Physical</b>					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
<b>Organic</b>					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
<b>Macro Elements</b>					
Ammonia (NH <sub>4</sub> )	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 <sub>3</sub> mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO <sub>3</sub> )	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Phosphate (PO <sub>4</sub> )	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.5
Sulphate (SO <sub>4</sub> )	mg/l	< 20	20 - 45	45 - 70	> 70
<b>Bacteriological</b>					
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
<b>Physical</b>			
Conductivity	mS/m	<150	>=150
pH	pH units	5.5 - 9.5	< 5.5; > 9.5
<b>Organic</b>			
Chemical Oxygen Demand (COD)**	mg/l	<75	>=75
<b>Macro Elements</b>			
Ammonia (NH <sub>4</sub> )	mg/l	<3	>=3
Fluoride (F)	mg/l	<1	>=1
Nitrate (NO <sub>3</sub> )	mg/l	<15	>=15
Phosphate (PO <sub>4</sub> )	mg/l	<10	>10
<b>Bacteriological</b>			
Faecal coliforms	counts/100ml	<1000	>=1000

\*\* After removal of algae