



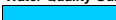

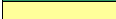


**Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)**

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	13.30	40	0.58	212	12.0	3.03	54	329	68	7.46	675672
		11.43	49	0.35	117	1.5	1.97	62	58	52	7.49	20896.66667
		18.60	70	0.36	200	1.4	4.40	59	68	76	7.39	810
		16.53	60	0.25	170	4.6	3.03	67	50	72	7.15	80663
S-DENEYSVILLE	Final Effluent of Deneysville WWTW 26°53'06.29"S 28°06'42.35"E	6.22	56	0.34	105	9.8	2.86	35	59	46	7.38	14187
		3.11	29	0.26	77	9.2	2.63	39	42	43	7.18	4910.166667
		7.08	28	0.19	79	11.1	2.48	30	57	43	7.16	14936
		42.83	11	27.17	0	94.0	9.65	3	31	44	7.14	119053.3333
S-FRANKF_NAMAHA	Final Effluent of Frankfort Namadi 27°15'41.58"S 28°29'29.22"E	11.13	32	0.40	139	3.4	3.25	32	66	49	7.72	118
		10.40	32	0.17	101	4.3	3.36	41	27	44	7.40	138120
		11.65	46	0.34	115	6.1	3.30	32	50	52	7.45	96
		15.60	41	0.33	122	8.7	3.84	39	42	54	7.49	860
S-FRANKF_OXI_P	Final Effluent of Frankfort Oxidation Ponds 27°17'27.44"S 28°29'16.83"E	3.75	74	0.43	208	0.5	3.53	67	76	79	7.79	628
		<0.2	96	0.41	92	<0.1	4.10	11	43	69	8.34	461
		0.47	100	0.31	154	0.2	2.90	17	104	66	7.68	1556.6
		2.48	83	0.27	185	1.1	3.54	28	62	68	8.27	1111
S-ORANJEVILLE	Final Effluent of Oranjeville WWTW 26°58'47.06"S 28°12'35.72"E	9.26	26	0.80	92	10.0	3.55	20	38	43	7.20	270987.3333
		8.38	28	0.19	87	6.9	3.12	26	35	41	7.53	306842
		12.47	29	0.32	111	6.6	3.33	26	38	46	7.26	275577
		15.40	26	0.30	99	7.2	3.94	23	28	44	7.15	242246
S-VAAL_MARINA	Final Effluent of Vaal Marina WWTW 26°53'19.35"S 28°12'50.50"E	0.36	54	0.34	71	13.0	1.63	48	22	54	7.62	912
		<0.5	32	0.26	70	16.5	2.53	36	24	48	7.57	32.5
		0.10	32	0.18	74	13.0	3.10	49	30	56	7.30	9.2
		0.21	33	0.23	46	4.0	3.40	44	18	49	7.20	1130
S-VILLIERS	Final Effluent of Villiers WWTW 27°01'54.43"S 28°35'21.89"E	2.73	23	0.50	143	1.0	33.85	47	23	49	7.79	1204
		23.40	83	0.44	246	5.1	4.00	51	89	86	7.40	651420.2
		26.17	75	0.41	267	2.4	4.48	52	158	95	7.34	1541443.333
		32.17	96	0.34	300	0.1	2.9	60	191	108	7.37	132340

**Key**

VD11	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 Oct 1 - 31 Dec 15
		0.12	-	1 Jan 16 - 31 Mar 16
		0.12	-	1 Apr 16 - 30 Jun 16
		0.12	-	1 July 16 - 30 Sept 16

**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