RAND WATER

Quarterly Water Quality Status of the Wilge River Catchment

01 July 2020 - 30 June 2021

Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	*E.coli*	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
WLA	Lesotho Highlands Ash River Outfall	1	0.05	<10	13	10.1	50	0.22	39	0.63	7.6	<0.25	14.1
		2	<0.1	<10	2	9.5	108	<0.20	33	0.56	7.3	<0.1	6.2
		3											
	28° 26.369'S 28° 23.827'E	4	<0.1	<10	<7.5	10	9	<0.25	40	<0.50	7.5	<0.1	<7
WLB	Wilge Liebenbergsvlei @ Bethlehem	1	0.05	<10	2	10		<0.2	39	<0.5	7.7	<0.25	6
		2	<0.1	<10	5	10		0.22	43	<0.5	7.7	<0.1	7
		3											
	28° 11.448'S 28° 20.616'E	4	<0.1	<7.5	<10	10		<0.25	35	0.70	7.6	<0.1	<7
WJ	Jordaanspruit below Bethlehem	1	6.55	14	31	54		<0.2	165	1.10	7.6	1.55	17
		2	15.00	20	43	55		0.43	193	0.51	7.7	5.30	26
		3											
	28° 10.027'S 28° 18.680'E	4	<0.1	29	41	40		0.40	145	<0.50	7.5	<0.1	14
WLBB	Wilge River below Bethlehem	1	0.03	<10	2	10		<0.2	40	<0.5	7.7	<0.25	6
		2	<0.1	<10	5	11		0.22	43	<0.5	7.7	<0.1	6
		3											
	28° 4.051'S 28° 18.632'E	4	<0.1	<7.5	<10	11		<0.25	44	<0.50	7.8	<0.1	<7
WLR	Wilge River @ Reitz	1	0.03	<10	2	11		<0.2	40	<0.5	7.7	<0.25	7
		2	<0.1	<10	5	10		0.22	43	<0.5	7.8	<0.1	7
		3											
	27° 42.075'S 28° 19.380'E	4	<0.1	<7.5	<10	10		<0.25	36	0.65	7.5	<0.1	<7
WL	Liebenbergsvlei River between Tweeling & Frankfort	1	0.06	44	2	11		<0.2	41	1	7.6	<0.25	8
		2	<0.1	35	5	16		0.22	44	<0.5	7.8	<0.1	7
		3	0.13	23	8	20		0.42	68	0.51	7.5	0.22	14
	27° 28.249'S 28° 31.518'E	4	<0.1	<7.5	<10	11		<0.25	37	0.71	7.3	<0.1	<7
EQQ	Elands River below Qwa-Qwa	1	6.25	46	23	44		0.22	165	4.80	7.7	0.74	17
		2	2.87	44	14	29		0.33	93	1.30	7.1	0.65	13
		3											
	28° 22.557'S 28° 51.635'E	4	0.83	24	13	36		0.41	135	2.00	8.0	0.16	17
WE	Elands River @ Aberfeldy	1	0.77	39	23	40		0.21	135	3.85	7.7	0.30	15
		2	0.41	27	13	26		0.25	90	1.35	7.4	0.33	12
		3											
	28° 13.814'S 28° 51.046'E	4	0.22	22	13	39		0.32	145	2.70	7.9	<0.1	17
STERK	Sterkfontein Dam	1											
		2											
		3											
	28° 24.500'S 29° 2.238'E	4											
WN	Nuwejaarspruit d/s of Sterkfontein Dam	1	0.05	14	6	15		<0.2	61	<0.5	7.7	<0.25	6
		2	<0.1	15	5	10		0.25	37	<0.5	7.3	<0.1	9
		3											
	28° 17.321'S 29° 5.465'E	4	0.15	8	<10	20		<0.25	72	<0.50	7.9	<0.1	<7
WAH	Wilge above Harrismith	1	0.09	46	10	11		<0.2	36	<0.5	7.4	<0.25	13
		2	<0.1	47	6	17		0.22	40	<0.5	7.5	<0.1	7
		3											
	28° 18.366'S 29° 7.968'E	4	<0.1	8	10	14		<0.25	38	<0.50	7.5	<0.1	<7
WH	Wilge River below Harrismith	1	1.72	21	18	32		<0.2	102	1.90	7.4	<0.25	15
		2	0.41	22	13	21		0.22	75	0.79	7.3	<0.1	10.5
		3											
	28° 13.332'S 28° 57.945'E	4	0.16	14	13	16		<0.25	49	<0.5	7.4	<0.1	8

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Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	*E.coli*	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
MR	Meul River downstream of Ribbokspruit	1											
		2	<0.1	30	6	14		<0.2	36	<0.5	7.1	<0.1	16
		3											
	28° 1.591'S 29° 15.009'E	4											
WM	Mollen River @ Letuka	1											
		2	<0.1	16	4	13		<0.20	36	<0.5	7.1	<0.1	8
		3											
	28° 1.403'S 28° 59.691'E	4											
WMW	Wilge Meul @ Waaiwater	1	0.07	11	4	10.8		<0.2	36	<0.5	7.4	<0.25	7
		2	<0.1	13	6	11		0.22	40	<0.5	7.6	<0.1	12
		3											
	27° 54.204'S 28° 48.452'E	4	0.37	10	14	14		<0.25	38	<0.5	7.5	<0.1	<7
WC	Cornelis River below Warden	1											
		2	0.24	32	13	25		0.31	74	0.69	7.2	<0.1	17
		3											
	27° 50.555'S 28° 57.644'E	4											
WAF	Wilge above Frankfort	1	0.07	29	14	32		0.37	125	2.90	8.0	<0.25	53.0
		2	<0.1	31	7	14		0.22	49	0.70	7.6	<0.1	9
		3											
	27° 18.607'S 28° 31.977'E	4	0.22	<7.5	39	22		<0.25	56	<0.50	7.6	<0.1	10
WF	Wilge River @ Frankfort	1	0.07	23	6	27	512	<0.2	84	4.20	7.8	2.10	8
		2	0.14	62	7	17	39 874	0.28	52	0.56	7.5	0.16	11
		3	0.10	22	9	19	6 279	0.29	68	0.56	7.6	0.19	13
	27° 16.311'S 28° 29.489'E	4	<0.1	10	<7.5	30	4 040	<0.25	55	<0.50	7.7	<0.1	10

Key

WF	Wilge River @ Frankfort	1	0.07	- 1 Jul to 30 Sep 2020	- Ideal
		2	0.14	- 1 Oct to 31 Dec 2020	- Acceptable
		3	0.10	- 1 Jan to 31 Mar 2021	- Tolerable
	27° 16.311'S 28° 29.489'E	4	<0.1	- 1 Apr to 30 Jun 2021	- Unacceptable

Water Quality Guidelines

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

Sample Points	Sample Point Description	Quarter	Ammonia	Chemical Oxygen Demand	Chloride	Conductivity	*Faecal coliforms*	Fluoride	M-Alkalinity	Nitrate	pH	Phosphate	Sulphate
S-BETH	Bethlehem Sewage Works	1	0.05	170	30	69	3 394 000	<0.2	218	<0.5	7.2	<0.25	22
		2	25.00	170	32	54	4 352 000	<0.25	180	<0.5	7.0	5	31
		3											
	28° 12.823'S 28° 18.656'E	4	0.10	240.00	32.00	60.00	1299700.00	0.55	215.00	<0.50	7.18	<0.1	26.00
S-HSW	Harrismith Sewage Works	1											
		2											
		3											
	28° 16.622'S 29° 5.363'E	4											
S-QWAQWA	Qwa-Qwa Sewage Works	1											
		2											
		3											
	28° 30.320'S 28° 49.472'E	4											
S-TSIAME	Tsiame Sewage Works	1	9.30	113	37	67	847 500	<0.2	243	<0.5	7.3	1.45	27
		2	22.50	91	30	62	720 750	0.45	193	<0.5	7.1	4.90	36
		3											
	28° 16.780'S 28° 59.287'E	4											

Key

S-TSIAME	Tsiame Sewage Works	1	9.30	- 1 Jul to 30 Sep 2020		
		2	22.50	- 1 Oct to 31 Dec 2020		
		3		- 1 Jan to 31 Mar 2021		
	28° 16.780'S 28° 59.287'E	4		- 1 Apr to 30 Jun 2021		

Water Quality Guidelines

- Acceptable
- Unacceptable

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	< 1,000	>= 1,000

**After removal of algae*

Visit Visit http://www.reservoir.co.za/ to find the water quality status report and forum dates

INSTREAM WATER QUALITY GUIDELINES FOR THE WILGE RIVER CATCHMENT

In-stream Water Quality Guidelines for the Wilge River Catchment

MU: **Jordaanspruit (WJ, WJA)**

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	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 20	20 - 35	> 35
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.10 - 0.20	> 0.20
Chloride (Cl)	mg/l	< 10	10 - 25	25 - 45	> 45
Fluoride (F)	mg/l	<0.05	0.05 - 0.10	0.10 - 0.20	>0.20
Alkalinity	CaCO3 mg/l	< 30	30 - 80	80 - 120	> 120
Nitrate (NO_3)	mg/l	< 0.25	0.25 - 0.50	0.50 - 0.75	> 0.75
Phosphate (PO_4)	mg/l	< 0.05	0.05 - 0.15	0.15 - 0.30	> 0.30
Sulphate (SO_4)	mg/l	< 10	10 - 20	20 - 30	> 30
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Wilge River Catchment

MU: **Ash River (WLA, WLB, WLS)**

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 15	15 - 20	> 20
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 5	5 - 15	15 - 25	> 25
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.10 - 0.20	> 0.20
Chloride (Cl)	mg/l	< 5	5 - 10	10 - 15	> 15
Fluoride (F)	mg/l	<0.05	0.05 - 0.10	0.10 - 0.20	>0.20
Alkalinity	CaCO3 mg/l	< 20	20 - 40	40 - 60	> 60
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 - 0.15	0.15 - 0.30	> 0.30
Sulphate (SO_4)	mg/l	< 5	5 - 10	10 - 15	> 15
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Wilge River Catchment

MU: **Elands River (WE, EQQ)**

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 20	20 - 35	> 35
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 5	5 - 15	15 - 25	> 25
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.10 -0.20	> 0.20
Chloride (Cl)	mg/l	< 5	5 - 10	10 - 15	> 15
Fluoride (F)	mg/l	< 0.05	0.05 - 0.10	0.10 -0.20	> 0.20
Alkalinity	CaCO3 mg/l	< 30	30 - 80	80 - 120	> 120
Nitrate (NO_3)	mg/l	< 0.25	0.25 - 0.50	0.5 - 1.0	> 1
Phosphate (PO_4)	mg/l	< 0.05	0.05 -0.25	0.25 -0.50	> 0.50
Sulphate (SO_4)	mg/l	< 5	5 - 10	10 - 15	> 15
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Wilge River Catchment

MU **Upper Wilge (WAH,WH,WM,MR,WN,STERK)**

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 20	20 - 35	> 35
pH	pH units	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 5	5 - 15	15 - 25	> 25
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.1 -0.2	> 0.2
Chloride (Cl)	mg/l	< 5	5 - 10	10 - 15	> 15
Fluoride (F)	mg/l	< 0.05	0.05 - 0.10	0.1 -0.2	> 0.2
Alkalinity	CaCO3 mg/l	< 30	30 - 50	50 - 70	> 70
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 - 0.15	0.15-0.30	> 0.30
Sulphate (SO_4)	mg/l	< 5	5 - 10	10 - 15	> 15
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Wilge River Catchment

MU: **Middle Wilge (WMW,WC,WAF,WF)**

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	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 5	5 - 15	15 - 25	> 25
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.10 - 0.20	> 0.20
Chloride (Cl)	mg/l	< 5	5 - 10	10 - 15	> 15
Fluoride (F)	mg/l	< 0.05	0.05 - 0.10	0.10 - 0.20	> 0.20
Alkalinity	CaCO3 mg/l	< 30	30 - 80	80 - 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 - 0.15	0.15 - 0.30	> 0.30
Sulphate (SO_4)	mg/l	< 5	5 - 10	10 - 15	> 15
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120

In-stream Water Quality Guidelines for the Wilge River Catchment

MU: **Liebenbergsvlei (WL, WLBB, WLR)**

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	6.4 - 8.5			< 6.4; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 5	5 - 15	15 - 25	> 25
Macro Elements					
Ammonia (NH_4)	mg/l	< 0.05	0.05 - 0.10	0.10 -0.20	> 0.20
Chloride (Cl)	mg/l	< 5	5 - 10	10 - 15	> 15
Fluoride (F)	mg/l	< 0.05	0.05 - 0.10	0.10 -0.20	> 0.20
Alkalinity	CaCO3 mg/l	< 30	30 - 80	80 - 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 - 0.15	0.15-0.30	> 0.30
Sulphate (SO_4)	mg/l	< 5	5 - 10	10 - 15	> 15
Bacteriological					
Faecal coliforms	counts/100ml	<10	10 - 60	60 - 120	>120