

WATER QUALITY CHARACTERISTICS OF RIVER GANGA AT RISHIKESH & HARDIWAR

RIVER GANGA AT RISHIKESH U/S LAXMANJHULA, SWARGAASHRAM, U/S RISHIKESH

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/ 100 mL)	Temp °C	DO mg/L	Alkalinity CaCO ₃ mg/L	Chlori des mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO ₃ mg/L	TDS mg/L
2018												
Jan-18	7.38	<1	4	40	16	9.8	74	5	42	38	80	92
Feb-18	7.82	<1	4	60	16	10.2	70	5	42	34	76	105
Mar-18	7.32	<1	4	30	18	10.4	76	5	40	30	70	96
Apr-18	7.48	<1	4	40	19	9.8	70	5	42	32	74	87
May-18	7.5	<1	4	60	20	10.2	68	5	38	34	72	82
Jun-18	7.42	<1	4	70	20	9.8	64	5	40	34	74	84
Jul-18	7.45	<1	4	40	20	10	74	5	46	34	80	86
Aug-18	7.56	<1	4	30	22	9.8	76	5	44	38	82	80
Sep-18	7.68	<1	4	30	18	9.8	68	5	44	34	78	74
Oct-18	8.4	<1	4	60	18	9	74	5	42	40	82	126
Nov-18	7.62	<1	4	26	17	9.6	70	5	40	36	76	80
Dec-18	7.71	<1	4	30	17	10	68	5	40	34	74	84
Average	7.55		4.00	41.33	18.58	9.92	71.00	5.00	41.83	34.83	76.67	85.50
Min-Max	7.32-8.4			26-70	16-22	9-10.4	64-76		38-46	30-40	70-82	74-126
2019												
Jan-19	8.02	<1	4	40	17	10.4	64	5	38	32	70	114
Feb-19	7.42	<1	4	50	16	10	70	5	46	32	78	96
Mar-19	7.48	<1	4	40	19	9.8	62	4	42	30	72	66
Apr-19	7.62	<1	4	40	17	9.8	60	5	36	32	68	88
May-19	7.54	<1	4	50	18	10.2	68	5	38	34	72	80
June-19	7.62	<1	4	40	19	9.8	66	5	42	32	74	82
July-19	7.7	<1	4	50	18	10.2	62	4	44	26	70	78
Aug-19	7.48	<1	4	401	18	10.4	64	5	46	26	72	80
Sep-19	8.23	<1	4	50	20	9.8	58	7	40	28	68	73
Oct-19	8.12	<1	4	60	20	10	60	6	42	24	66	62
Nov-19	7.95	<1	4	58	19	11.8	50	5	40	20	60	69
Dec-19	7.94	<1	4	73	18	10.4	40	8	44	22	66	79

GANGA AT D/S OF RISHIKESH, NEAR PASHULOK, UTTARAKHAND

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/100 mL)	Temp °C	DO mg/L	Alkalinity CaCO3 mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO3 mg/L	TDS mg/L
2018												
Jan-18	7.54	<1	4	60	16	9.6	72	5	42	36	78	102
Feb-18	7.74	<1	4	70	16	9.8	68	6	40	34	74	108
Mar-18	7.52	<1	4	40	19	9.6	64	6	38	32	70	94
Apr-18	7.56	<1	4	60	20	9.6	66	4	38	34	72	90
May-18	7.52	<1	4	90	21	9.8	70	6	40	36	76	94
Jun-18	7.58	<1	4	110	20	9.2	72	6	42	32	74	92
Jul-18	7.38	<1	4	70	20	9.6	76	6	46	40	86	96
Aug-18	7.48	<1	4	60	20	9.6	72	5	44	40	84	88
Sep-18	7.42	<1	4	70	20	9.4	74	5	46	40	86	92
Oct-18	7.85	<1	4	60	19	9.6	72	6	44	40	84	88
Nov-18	7.76	<1	4	40	17	9.4	68	6	42	36	78	92
Dec-18	7.82	<1	4	50	17	9.8	70	5	42	40	82	94
Average	7.60		4.00	65.00	18.75	9.58	70.33	5.50	42.00	36.67	78.67	94.17
Min-Max	7.38-7.85			40-110	16-21	9.2-9.8	64-76	4-6	38-46	32-40	70-86	88-108
2019												
Jan-19	7.92	<1	4	60	17	10	68	5	40	38	78	110
Feb-19	7.62	<1	5	60	16	9.8	72	5	44	36	80	105
March-19	7.56	<1	4	70	20	9	68	4	40	34	74	90
Apr-19	7.68	<1	4	70	19	9.6	64	5	40	36	76	94
May-19	7.52	<1	4	80	19	9.8	70	5	36	32	78	90
June-19	7.68	<1	4	90	20	9.6	74	6	46	34	80	88
July-19	7.86	<1	4	80	19	9.6	76	5	44	28	72	84
Aug-19	7.32	<1	4	90	18	10	72	5	42	36	78	85
Sep-19	8.29	<1	4	80	22	9	64	7	42	30	72	76
Oct-19	7.78	<1	4	70	20	9.6	62	6	44	26	70	66
Nov-19	8.04	<1	4	60	19	11.2	68	5	46	24	70	72
Dec-19	8.04	<1	4	50	18	10	71	8	42	18	60	100

GANGA AT HARIDWAR U/S BHINDHUGHAT, DUDHIYABAN, HARIDWAR

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/ 100 mL)	Temp °C	DO mg/L	Alkalinity CaCO ₃ mg/L	Chlorid es mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO ₃ mg/L	TDS mg/L
2018												
Jan-18	7.92	<1	4	110	16	9.8	70	5	40	38	78	97
Feb-18	8.2	1	6	140	16	9.6	68	6	40	36	76	127
Mar-18	7.91	1	4	90	18	9.4	70	6	40	34	74	88
Apr-18	7.82	1	4	110	19	9.2	72	5	42	36	78	98
May-18	7.82	1	4	140	22	9.4	70	6	40	36	76	90
Jun-18	7.92	1	6	170	20	9.2	72	6	44	34	78	98
Jul-18	7.62	1	6	130	20	9	80	6	52	38	90	110
Aug-18	8.13	1	6	220	20	8.8	76	6	52	40	92	101
Sep-18	8.22	1	6	170	20	9.4	78	6	48	42	90	111
Oct-18	8.18	<1	6	140	18	9.6	72	6	44	38	82	121
Nov-18	8.41	<1	4	110	18	9	74	5	44	40	84	126
Dec-18	8.2	<1	4	140	17	10.2	70	5	42	40	82	100
Average	8.03	1.00	5.00	139.17	18.67	9.38	72.67	5.67	44.00	37.67	81.67	105.58
Min-Max	7.62-8.41		4-6	90-220	16-22	8.8-10.2	68-80	5-6	40-52	34-42	74-92	88-127
2019												
Jan-19	8.12	<1	4	130	17	9.8	72	5	44	40	84	102
Feb-19	8.12	<1	4	140	16	9.6	70	6	42	36	78	136
Mar-19	7.62	1	4	110	19	9.2	72	5	42	38	80	108
Apr-19	7.64	1	4	130	19	9	74	5	42	40	82	98
May-19	7.82	1	4	140	20	9.2	70	5	40	36	76	90
June-19	7.92	1	6	170	20	9	72	6	44	34	78	94
July-19	7.7	1.2	6	130	19	8.2	75	5	54	30	84	95
Aug-19	7.92	1	6	140	19	8.8	61	5	42	38	80	90
Sep-19	8.44	1	6	170	20	9.8	74	7	44	34	78	92
Oct-19	8.3	1	6	140	20	10.8	110	11	44	24	68	140
Nov-19	8.4	1	6	140	19	10.6	90	10	44	28	72	113
Dec-19	8.02	1	6	110	19	10.4	91	5	44	29	73	80

RIVER GANGA AT HAR-KI -PAURI, HARIDWAR (UPPER GANGA CANAL)

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/100 mL)	Temp °C	DO mg/L	Alkalinity CaCO3 mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO3 mg/L	TDS mg/L
2018												
Jan-18	7.89	<1	4	80	16	9.4	68	5	40	34	74	112
Feb-18	8.14	<1	4	70	16	9	64	5	38	34	72	121
Mar-18	7.8	<1	6	160	18	9.8	70	5	42	34	76	109
Apr-18	7.56	<1	4	140	20	9.6	74	5	44	34	78	100
May-18	7.62	<1	4	170	21	9.4	72	5	42	38	80	88
Jun-18	7.94	<1	4	110	20	8.8	74	6	44	40	84	86
Jul-18	7.42	<1	4	80	20	9.4	75	6	46	40	86	98
Aug-18	8.04	<1	4	80	20	9	76	5	46	42	88	106
Sep-18	8.24	<1	4	70	20	9	80	5	48	44	92	106
Oct-18	8.18	<1	4	80	18	9.2	78	5	46	40	86	124
Nov-18	8.4	<1	4	60	18	9	74	5	42	40	82	126
Dec-18	8.17	<1	4	80	18	10	72	5	42	38	80	100
Average	7.95		4.17	98.33	18.75	9.30	73.08	5.17	43.33	38.17	81.50	106.3
Min-Max	7.42-8.24		4-6	60-170	16-21	8.8-10	64-80	5-6	38-48	34-44	72-92	86-126
2019												
Jan-19	7.92	<1	4	90	18	9.6	74	5	44	40	84	98
Feb-19	7.68	<1	4	80	17	9.8	72	5	46	34	80	126
Mar-19	7.58	<1	4	70	20	9.6	74	5	44	34	78	100
Apr-19	7.54	<1	4	90	19	9.4	70	5	42	34	76	96
May-19	7.62	<1	4	110	20	9.2	72	5	42	36	78	88
June-19	8.4	<1	4	110	20	9	68	5	42	30	72	85
July-19	8.1	<1	4	90	19	9.8	60	7	42	16	58	81
Aug-19	7.7	<1	4	80	18	10	64	7	38	22	60	83
Sep-19	8.05	<1	4	70	22	10.2	79	8	40	30	70	78
Oct-19	8	<1	4	68	20	9.2	69	10	44	24	60	76
Nov-19	8.2	<1	4	72	19	10	55	9	44	28	50	105
Dec-19	8.13	<1	4	70	19	10.2	86	6	46	24	40	97

GANGA CANAL AT DAMKOTI, HARIDWAR (UPPER RIVER GANGA CANAL AT HARKI PAURI)

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/100 mL)	Temp °C	DO mg/L	Alkalinity CaCO3 mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO3 mg/L	TDS mg/L
Jan-18	7.95	<1	4	60	16	9.8	70	5	42	34	76	97
Mar-18	7.93	<1	4	110	18	10	68	5	42	32	74	81
Apr-18	7.72	<1	4	90	19	9.6	70	5	44	38	82	94
May-18	7.66	<1	4	110	20	9.8	74	5	44	40	84	98
Jun-18	7.94	<1	4	90	20	9	70	5	42	36	78	92
Jul-18	7.58	<1	4	80	20	9.4	84	6	54	42	96	102
Aug-18	8.13	<1	4	70	22	9	78	5	54	38	92	101
Sep-18	8.2	<1	4	90	20	9	74	5	48	38	86	107
Oct-18	8.13	<1	4	80	18	9.2	72	6	44	40	84	122
Nov-18	8.34	<1	4	70	18	9	68	5	42	36	78	126
Dec-18	8.24	<1	4	90	17	10	72	5	42	40	82	100
Average	8.00		4.00	85.00	18.67	9.45	72.17	5.25	44.83	37.17	82.00	104.00
Min-Max	7.66-8.34			60-110	16-22	9-10	66-84	5-6	40-54	32-42	72-96	92-128
2019												
Jan-19	8.05	<1	4	80	17	9.8	70	5	42	38	80	94
Feb-19	7.72	<1	4	60	16	10	72	5	40	36	76	115
Mar-19	7.68	<1	4	70	19	9.6	70	5	42	36	80	94
Apr-19	7.62	<1	4	90	18	10	72	5	44	38	82	90
May-19	7.64	<1	4	110	19	9.8	74	5	42	38	80	96
June-19	8	<1	4	90	20	9.4	78	5	70	28	98	90
July-19	8.12	<1	4	110	19	8.6	58	5	52	18	70	86
Aug-19	7.8	<1	4	90	18	9	60	7	46	26	72	85
Sep-19	8.21	<1	4	80	20	10.4	65	9	44	30	74	80
Oct-19	8.12	<1	4	70	21	10.6	75	15	44	28	72	83
Nov-19	8.2	<1	4	60	19	11	68	8	42	32	74	92
Dec-19	8.04	<1	4	50	19	10.6	74	8	40	32	72	73

UPPER GANGA CANAL AT LALITA RAO BRIDGE, HARIDWAR

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/ 100 mL)	Temp °C	DO mg/L	Alkalinity CaCO3 mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO3 mg/L	TDS mg/L
2018												
Jan-18	7.91	<1	4	80	16	9	68	5	42	36	78	112
Feb-18	7.93	<1	4	70	16	9.2	64	6	40	30	70	126
Mar-18	7.77	<1	6	90	18	10.2	62	6	40	38	78	108
Apr-18	7.62	<1	4	130	19	9.4	80	5	44	36	80	102
May-18	7.74	<1	4	170	21	9.4	76	5	42	40	82	96
Jun-18	7.91	<1	4	130	20	8.8	72	5	44	36	80	94
Jul-18	7.52	<1	4	90	20	9.4	82	6	54	44	98	105
Aug-18	8.11	<1	4	110	20	9.2	80	5	56	40	96	104
Sep-18	8.25	<1	4	90	20	9.8	72	5	44	40	84	106
Oct-18	8.05	<1	4	70	18	9.4	68	5	40	38	78	122
Nov-18	8.15	<1	4	80	18	9.2	70	6	42	38	80	125
Dec-18	8.23	<1	4	90	17	10.2	74	6	44	40	84	100
Average	7.93		4.17	100.00	18.58	9.43	72.33	5.42	44.33	38.00	82.33	108.33
Min-Max	7.52-8.25		4-6	70-170	16-21	8.8-10.2	62-82	5-6	40-56	30-44	70-98	94-126
2019												
Jan-19	7.95	<1	4	110	17	9.6	70	5	42	40	82	96
Feb-19	7.85	<1	4	80	17	9.8	72	6	42	36	78	110
Mar-19	7.62	<1	4	90	19	9.4	76	5	44	40	84	102
Apr-19	7.65	<1	4	80	19	9.4	78	5	44	42	86	94
May-19	7.72	<1	4	90	20	9.4	76	6	42	40	82	98
June-19	8.36	<1	4	130	20	9.2	74	5	52	30	82	97
July-19	8.09	<1	4	110	19	9	64	8	48	14	62	84
Aug-19	8	<1	4	90	18	10	76	6	48	30	78	83
Sep-19	8.18	<1	4	80	22	10	78	6	42	32	74	79
Oct-19	8.1	<1	4	90	20	9	76	7	42	28	70	73
Nov-19	8.1	<1	4	60	18	9.2	70	9	46	32	78	93
Dec-19	8.4	<1	4	50	19	9.8	80	6	71	20	91	77

GANGA CANAL D/S HAR-KI -PAURI, HARIDWAR AT RISHIKUL BRIDGE

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/ 100 mL)	Temp °C	DO mg/L	Alkalinity CaCO ₃ mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO ₃ mg/L	TDS mg/L
2018												
Jan-18	7.98	<1	4	70	16	9.8	66	5	40	34	74	104
Feb-18	7.72	<1	4	90	16	9.2	68	5	40	32	72	110
Mar-18	7.57	<1	4	140	18	9.6	70	6	42	34	76	111
Apr-18	7.65	<1	4	80	18	9.4	66	5	40	34	74	92
May-18	7.71	<1	4	170	21	9	68	5	40	36	76	95
Jun-18	7.94	<1	4	130	20	9	70	5	40	38	78	94
Jul-18	7.48	<1	4	110	22	9.6	88	5	70	40	110	115
Aug-18	8.11	<1	4	140	22	9.2	82	4	54	44	98	100
Sep-18	8.23	<1	4	110	20	8	76	5	46	44	90	107
Oct-18	8.17	<1	4	90	18	9	70	5	42	40	82	121
Nov-18	8.41	<1	4	70	18	8.8	72	5	44	42	86	126
Dec-18	8.16	<1	4	80	17	9.8	70	5	42	38	80	101
Average	7.93		4.00	106.67	18.83	9.20	72.17	5.00	45.00	38.00	83.00	106.33
Min-Max	7.57-8.41		4	70-170	16-22	8-9.8	66-88	4-6	40-70	32-44	72-110	94-126
2019												
Jan-19	7.96	<1	4	90	17	9.6	72	5	42	40	82	98
Feb-19	7.68	<1	4	70	16	9.4	68	5	44	34	78	128
Mar-19	7.65	<1	4	80	18	9.6	66	5	42	32	74	92
Apr-19	7.58	<1	4	90	18	9.6	68	5	42	36	78	95
May-19	7.71	<1	4	110	20	9.2	66	5	40	36	76	92
June-19	8.4	<1	4	110	20	9	68	5	42	30	72	85
July-19	8.04	<1	4	110	19	10	69	4	50	20	70	88
Aug-19	7.87	<1	4	80	18	10	70	5	46	32	78	89
Sep-19	8.16	<1	4	90	20	10.2	75	6	44	36	80	88
Oct-19	8.05	<1	4	80	20	10.8	80	6	44	22	66	89
Nov-19	8.1	<1	4	70	19	10.4	70	8	44	32	76	102
Dec-19	8.48	<1	4	80	19	10.2	92	9	56	25	81	81

GANGA AT HARIDWAR D/S BALAKUMARI MANDIR, AJEETPUR, HARIDWAR

Month	pH	BOD mg/L	COD mg/L	Total Coliform (MPN/ 100 mL)	Temp °C	DO mg/L	Alkalinity CaCO3 mg/L	Chlorides mg/L	Calcium as Cl mg/L	Magnesium as Mg mg/L	Hardness as CaCO3 mg/L	TDS mg/L
2018												
Jan-18	7.76	1	6	220	16	9.2	76	8	44	40	84	182
Feb-18	7.74	1	6	280	16	9	74	10	46	42	88	242
Mar-18	7.69	1.2	6	220	18	9.2	76	8	44	40	84	232
Apr-18	7.72	1	6	280	19	9	78	8	52	44	96	172
May-18	7.68	1.2	6	350	20	8.8	76	7	50	42	92	124
Jun-18	7.87	1	6	300	20	8.6	74	6	44	38	82	95
Jul-18	7.67	1	6	220	20	9.2	90	8	62	48	110	125
Aug-18	8.04	1.2	6	240	21	8.6	92	7	72	34	106	104
Sep-18	8.29	<1	4	280	20	10.6	78	6	48	42	90	107
Oct-18	8.21	1	4	240	18	9.6	72	5	42	40	82	108
Nov-18	7.8	1	6	220	18	9	74	8	46	38	84	128
Dec-18	8.1	1	6	280	17	9.6	76	7	42	40	82	100
Average	7.88	1.05	5.67	260.83	18.58	9.20	78.00	7.33	49.33	40.67	90.00	143.25
Min-Max	7.69-8.29		4-6	220-350	16-21	8.6-10.6	72-92	5-10	42-72	34-48	82-110	95-242
2019												
Jan-19	7.98	1	6	220	17	9.4	78	6	44	42	86	107
Feb-19	7.82	1	6	300	16	9.2	76	7	44	40	84	116
Mar-19	7.72	1	6	280	19	9	78	8	46	42	88	110
Apr-19	7.76	1	5	220	18	9	80	7	50	40	90	140
May-19	7.68	1	6	350	20	8.8	76	8	46	42	88	124
June-19	7.4	1.2	6	300	19	8.6	78	9	98	34	132	207
July-19	7.18	1.4	6	280	19	8.6	90	9	60	24	84	132
Aug-19	7.37	2	8	350	18	9	100	9	46	42	88	142
Sep-19	7.59	1.4	6	300	22	8.6	110	13	50	40	90	143
Oct-19	8.02	1.2	6	280	20	8.8	148	19	52	22	74	153
Nov-19	7.5	1	6	220	19	9	128	14	50	28	78	173
Dec-19	7.72	1	6	130	19	9.4	118	12	45	30	75	112