

Ground Water Quality Analysis

S. N	Parameters	IS 10500 (Acceptable Limit/Permissible Limit)	Water Samples					
			GW-1	GW-2	GW-3	GW-4	GW-5	GW-6
1.	pH (at 25 °C)	6.5-8.5	8.3	7.6	8.1	8.1	8.3	8.3
2.	Temperature (°C)	-	23	24	22	21	23	24
3.	Turbidity, NTU	1 (5)	< 1	2.1	11.4	< 1	< 1	< 1
4.	Colour, Hazen	5 (15)	Colorless	Colorless	Colorless	Colorless	2390	Colorless
5.	Conductivity (µS/cm)	-	5580	4020	7580	638	< 1	1510
6.	Total Alkalinity, mg/l	200 (600)	620	600	400	200	320	400
7.	Total Dissolved Solids, mg/l	500 (2000)	3644	2584	4954	424	1594	996
8.	Total Suspended Solids, mg/l	-	6	7	12	6	8	7
9.	Salinity, mg/l	-	2050	972	251.8	70.7	320	220
10.	Oil & Grease, mg/l	-	1.5	3	1	1	1.5	1.5
11.	Dissolved Oxygen,	-	4	3.6	4.2	4	6.7	3.9
12.	Chloride (as Cl), mg/l	250 (1000)	1134.9	53.9	1396.2	39.2	293.9	122.5
13.	Total Hardness, mg/l	200 (600)	590	570	1600	170	500	270
14.	Calcium (as Ca), mg/l	75 (200)	92	88	360	36	92	72
15.	Magnesium (as Mg), mg/l	30 (100)	87.5	85.1	170.1	19.4	65.6	21.9
16.	Sulphate (as SO ₄), mg/l	200 (400)	50.1	111.2	66.5	12.6	119.4	49.9
17.	Fluoride (as F), mg/l	1 (1.5)	0.6	0.9	0.8	0.7	0.6	1.2
18.	Nitrate (as NO ₃), mg/l	45	ND	27.6	43.4	< 1	41.9	13
19.	Total Iron (as Fe), mg/l	0.3	ND	ND	0.5	ND	1.3	ND
20.	Phenolic Compound, mg/l	0.001 (0.002)-	ND	ND	ND	ND	ND	ND
21.	Phosphate (as PO ₄), mg/l	-	ND	ND	ND	ND	ND	ND
22.	Anionic Detergents, mg/l	0.2 (1.0)	ND	ND	ND	ND	ND	ND
23.	PCB, mg/l	-	ND	ND	ND	ND	ND	ND
24.	Total Petroleum Hydrocarbons, mg/l	-	ND	ND	ND	ND	ND	ND
25.	Copper (as Cu), mg/l	0.05 (1.5)	ND	ND	ND	ND	ND	ND
26.	Mercury (as Hg), mg/l	0.001	ND	ND	ND	ND	ND	ND
27.	Barium (as Ba), mg/l	0.7	ND	ND	ND	ND	ND	ND
28.	Cadmium (as Cd), mg/l	0.003	ND	ND	ND	ND	ND	ND
29.	Arsenic (as As), mg/l	0.01(0.05)	ND	ND	ND	ND	ND	ND
30.	Lead (as Pb), mg/l	0.01	ND	ND	ND	ND	ND	ND
31.	Zinc (as Zn), mg/l	5 (15)	ND	ND	6	0.2	ND	ND

32	Chromium (as Cr), mg/l	0.05	ND	ND	ND	ND	ND	ND
33	Manganese (as Mn), mg/l	0.1(0.3)	ND	ND	ND	ND	0.1	ND
34	Total Coliform, cfu/100ml	Nil -	Absent	Absent	Absent	5	Absent	50
35	Faecal Coliform, cfu/100ml	-Nil	Absent	Absent	Absent	Present	Absent	Present

Surface Water Quality

The results of surface water quality monitoring are presented in the **Table 4-10** below.

Table 4-10: Surface Water Quality

S. N.	Parameters	SW1
1	pH (at 25 °C)	8.7
2	Temperature (°C)	20
4	Turbidity, NTU	1460
5	Colour, Hazen	36.4
3	Conductivity (µS/cm)	Colorless
6	Total Alkalinity, mg/l	250.0
7	Total Dissolved Solids, mg/l	964.0
8	Total Suspended Solids, mg/l	45.0
9	Salinity, mg/l	26.4
10	Oil & Grease, mg/l	1.5
11	Dissolved Oxygen (DO), mg/l	7.1
12	Chloride (as Cl), mg/l	150.0
13	Total Hardness, mg/l	230.0
14	Calcium (as Ca), mg/l	68.0
15	Magnesium (as Mg), mg/l	14.6
16	Sulphate (as SO ₄), mg/l	61.3
17	Fluoride (as F), mg/l	0.7
18	Nitrate (as NO ₃), mg/l	< 1
19	Total Iron (as Fe), mg/l	ND
20	Phenolic Compound, mg/l	ND
21	Chemical Oxygen Demand (COD) (as O ₂), mg/l	8.0
22	Biochemical Oxygen Demand (BOD), mg/l	2.6
23	Phosphate (as PO ₄), mg/l	ND
24	Anionic Detergents, mg/l	ND
25	PCB, mg/l	ND

26	Total Petroleum Hydrocarbons, mg/l	ND
27	Copper (as Cu), mg/l	ND
28	Mercury (as Hg), mg/l	ND
29	Barium (as Ba), mg/l	ND

S. N.	Parameters	SW1
30	Cadmium (as Cd), mg/l	ND
31	Arsenic (as As), mg/l	ND
32	Lead (as Pb), mg/l	ND
33	Zinc (as Zn), mg/l	ND
34	Chromium (as Cr), mg/l	ND
35	Manganese (as Mn), mg/l	ND
36	Total Coliform, cfu/100ml	40
37	Faecal Coliform, cfu/100ml	Present

Q. Interpret the data from EIA view Point.

Q Identify mistakes in above analytical results

Waste Water Quality

Liquid Effluents

The effluent levels presented in table below are for which industry?

Suggest a treatment Flow sheet. .

Parameter

Maximum value (Mg/l except pH)

pH	6–9
TSS	200- 2000
TDS	5000- 10000

Oil and grease	10- 50
COD	1500-5000
BOD	1000- 3000
Phenol	100- 1000
Cyanide	10 – 50
Ammonia(N)	500- 1000
Chlorides	1000-1500
Temperature increase – > 65 deg C	
