Aquaritin

4th Generation Nanotechnology

A River Saved!

Advanced Phyco-remediation of Wastewater Drain – Punjab India

Aquaritin
WATER SOLUTIONS

Executive Summary

The Kiratpur-Kalyanpuri drain is located in Kiratpur Sahib, Rupnagar, Punjab, India and **joins the Sutlej River, a major source of irrigation and drinking water**.

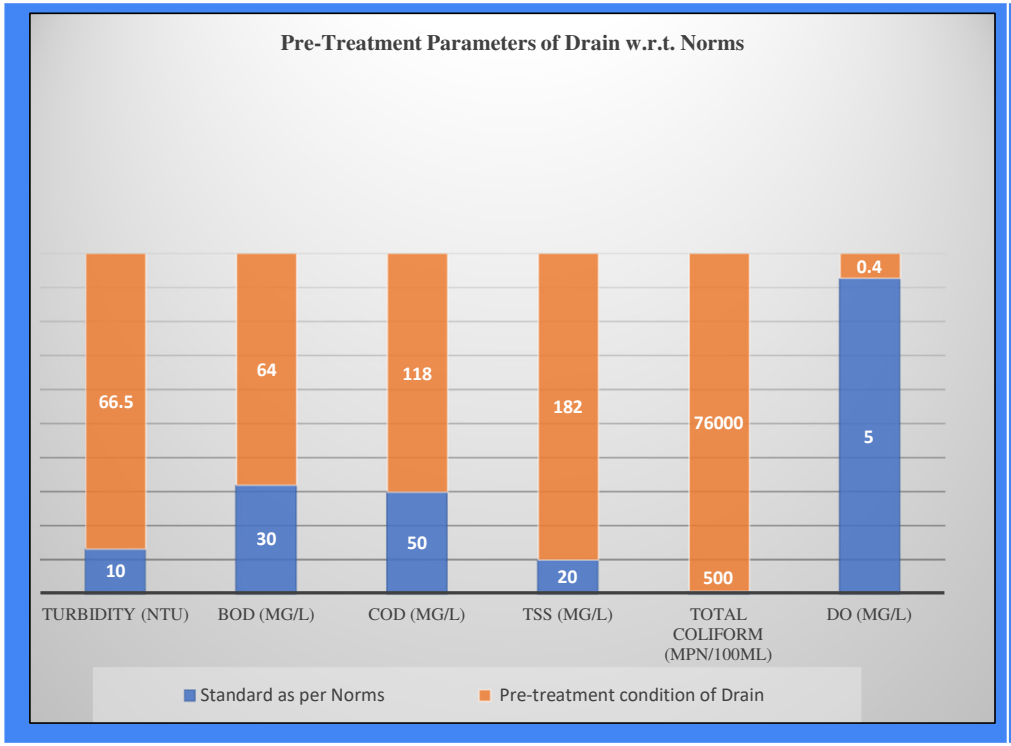
It faces significant water quality issues due to sewage from nearby towns and commercial enterprises.

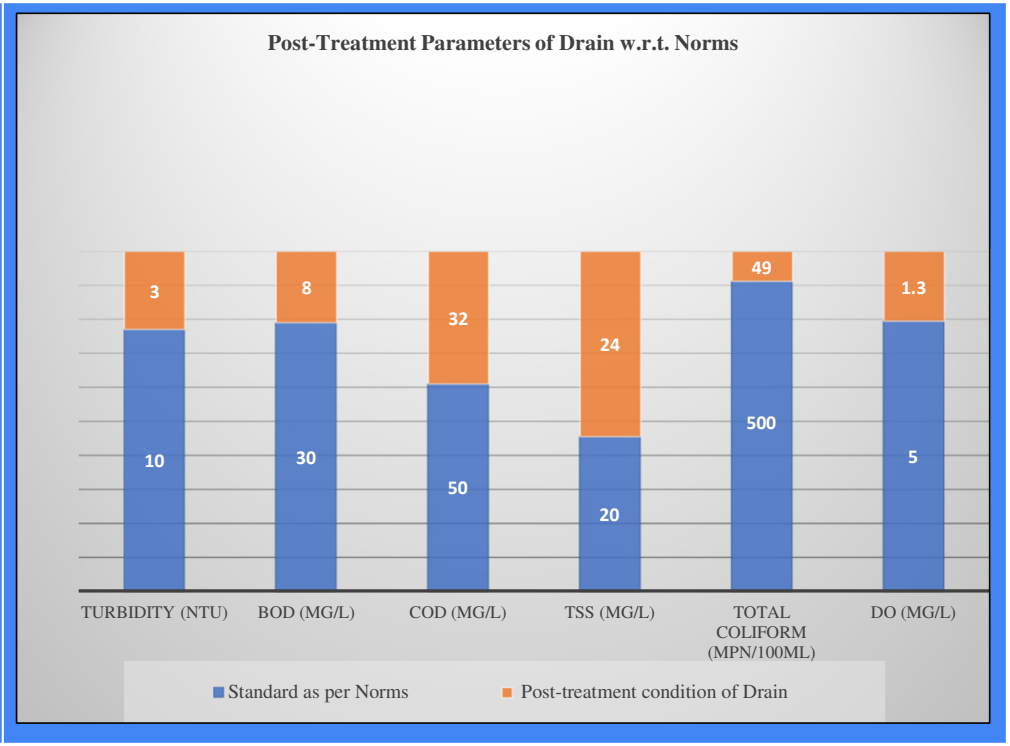
The drain is characterized by high levels of benthic sludge buildup, foul smell, and contamination from solid waste and falling leaves and debris.

This project, began on 20th November and concluded a month later on 22nd December 2023.
Water tests were conducted independently by the client as well as by Aquaritin.

As per the client specified lab (NABL) pre-treatment analysis revealed several key parameters exceeding the permissible limits, including Biochemical Oxygen Demand (BOD) at 64 mg/l, Chemical Oxygen Demand (COD) at 118 mg/l, Total Suspended Solids (TSS) at 182 mg/l, Turbidity at 66.5 NTU, and Phosphate (P) at 5.6 mg/l. Dissolved Oxygen (DO) level was recorded at an alarmingly low 0.4 mg/l.

Through Aquaritin intervention, significant improvements were achieved during the 30-day trial. BOD was reduced by 87%, TSS by 86%, Total Coliform by 99.9%, Ammonia, TKN, and TP by 70%, 76%, and 93% respectively. Biodegradation of settled sludge was also achieved, reducing the entire channel by 4.5 cm.


Pre-Treatment Parameters of Drain w.r.t. Norms
66.5
64
118
182
76000
0.4
10
30
50
20
500
5
TURBIDITY (NTU)
BOD (MG/L)
COD (MG/L)
TSS (MG/L)
TOTAL COLIFORM (MPN/100ML)
DO (MG/L)
Standard as per Norms
Pre-treatment condition of Drain


Post-Treatment Parameters of Drain w.r.t. Norms
3
8
32
24
49
1.3
10
30
50
20
500
5
TURBIDITY (NTU)
BOD (MG/L)
COD (MG/L)
TSS (MG/L)
TOTAL COLIFORM (MPN/100ML)
DO (MG/L)
Standard as per Norms
Post-treatment condition of Drain

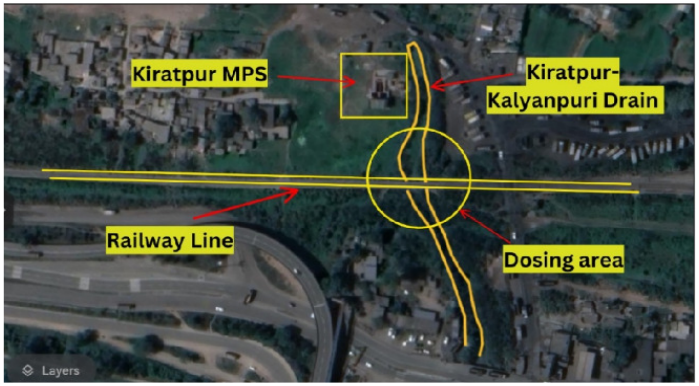
Sampling: Samples were collected by client's lab on day 0, day 15 and day 30.

Treatment: A combination of our diatom promoter and aerobic beneficial bacteria was applied using a truck mounted spray equipment with a high-pressure nozzle.

Moving Bed Biofilm Reactor (MBBR) media was deployed at the drain's mid and end point for bacterial colonies growth and multiplication.

Weeds and plants growing on the edge of the drain were removed

Accumulated solid waste was removed using excavators. Bar screens deployed to prevent entry of solids from entering the drain.


Kiratpur MPS
Kiratpur-
Kalyanpuri Drain
Railway Line
Dosing area
Layers

		(20.11.2023)	(05.12.2023) After 15 days	(21.12.2023) After 30 Days		
1.	pH	7.8	7.61	7.30	5.5-9	
2.	Odour	Foul smell	Odourless	Odourless	Odour Shouldn't be objectionable	The foul smell has diminished since the degradation process turned to Aerobic.
3.	TSS (mg/L)	182	22	24	< 20	**86% Improvement** of suspended solids, which has the potential to further improve over time.
4.	TDS (ppm)	505	195	175	< 500	**65% Improvement** in dissolved salts, which has the potential to further improve over time.
5.	COD (mg/L)	118	68	32	< 50	**73% Improvement** Enhanced aeration has led to reduced organic & inorganic matter.
6.	BOD (mg/L)	64	27	8	< 30	**87% Improvement**

		(20.11.2023)	(05.12.2023) After 15 days	(21.12.2023) After 30 Days		
						In bio-degradable matter due to presence of higher dissolved O2,
7.	Ammonical Nitrogen (mg/L)	2.61	0.3	0.8	< 5	**70% Improvement** Expected to reach less than 5 mg/l with the treatment in progress.
8.	Total Nitrogen, TKN (mg/L)	5	1.5	1.2	< 5	**76% Improvement** Reduction in TKN level, indicating that nitrogen compounds are now migrating downwards into the sediment.
9.	Phosphate (mg/mL)	5.6	0.3	0.4	< 2	**93% Improvement** The diatomaceous action of Diaotoms
10.	Turbidity (NTU)	66.5	39	3	< 10	Turbidity improved by 95.48%, indicating the clarity of water comes after treatment with Aquaritin & Bioritin products
11.	Total coliform (MPN/100 ml)	76000	90	49	500 MPN/100 ml	**99.9% Decrement** in total coliform count.
12.	E. coli	Present	Absent	Present	Absent	E. coli is present after treatment

THANK YOU!
QUESTIONS?

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