

Wastewater Reuse

Nikhil Gupta¹ Dhanesh Sevkani² Prajapati Mukesh³ Sorathiya Vishal⁴

^{1,2,3,4}Department of Civil Engineering

^{1,2,3,4}Sigma Institute of Engineering, Bakrol, Vadodara

Abstract— Waste water is used water and it has physical, chemical and biological impurities in it. This project highlights the testing of the samples of any of the sewage treatment plant for the parameters like pH, colour, turbidity, chloride, hardness, acidity, alkalinity, BOD, COD, etc of the waste water. Effective collection and treatment of wastewater is a critical problem in a developing country like India. An attempt has been made to identify the relevant management strategies to improve the wastewater management by giving various treatments to the STP sample using chemicals and micro-organisms. The results could be made for utilising the treated wastewater for any type of water reuse except drinking.

Key words: STP, SST, PST, BOD, COD, Reuse

I. INTRODUCTION

To treat the waste water from PST, SST and other components of STP if required to reduce their different parameters as per the Indian Standards and reuse and recycle it for different purposes except drinking. If the waste water is directly discharged without treatment as majority STP's do, there is a load on stream as its self-purification capacity is reduced and also aquatic life is endangered.

II. STUDY AREA

Vadodara City is one of the privileged cities in India that has an underground drainage system built in the year 1894. The sewage is collected through a system comprising underground drainage network, Sewage Treatment Plant, auxiliary pumping stations (APS), pressure mains and disposal into the natural nallahs and rivers after treatment. Wastewater generated from all this developments is collected by a network of underground sewers and pumping stations and conveyed to sewage treatment works for physical and biological treatment to meet the parameters prescribed by the Gujarat Pollution Control Board before discharge into nearest water course.

III. METHODOLOGY & RESULTS

We conducted tests of Biological oxygen demand and Chemical oxygen demand along with other tests such as Total dissolved solids, Total suspended solids etc. on the samples to find out their suitability to discharge in the rivers.

Sr.No	Sample	Ph Value By Ph Strips	Remark
1	Pst Sample	9	Ok
2	Sst Sample	8.5	Ok

Table 1: Ph Test

Sr.No	Sample	Tss	Remark
1	Pst	2000 Mg/L	Not Ok.
2	Sst	1000mg/L	Ok

Table 2: Total suspended solids

Sr.No.	Sample	Tds Value	Remark
1	Pst	430 Mg/L	Ok
2	Sst	600 Mg/L	Ok

Table 3: Total dissolved solids

Jar No.	Amount Of Coagulant Added In MI	Observation In Regard To Quality Of Floc Formed
1	15	
2	20	Excellent
3	25	

Table 4: Turbidity test

No.	Sample	Bod	Remark
1	Pst	30 Mg/L	Ok
2	Sst	10 Mg/L	Ok

Table 5: BOD test

No.	Sample	Cod	Remark
1	Pst	600mg/L	Not Ok
2	Sst	100mg/L	Ok

Table 6: COD test

IV. CONCLUSION

The tests performed on the PST and SST sample indicate the following:

- 1) No further treatment is required for the improvement of pH value.
- 2) No further treatment is required to improve the TDS value because it is within the limits.
- 3) Further treatment is required to bring the TSS value below the specified limits.
- 4) No further treatment is required to reduce the turbidity.
- 5) No further treatment is required to improve BOD value.
- 6) No further treatment is required to improve COD value.

REFERENCES

- [1] "Chapter 14: Treatment, reuse and disposal of solids and biosolids". Wastewater engineering : treatment and reuse (4th ed.). Metcalf & Eddy, Inc., McGraw Hill, USA. 2003. ISBN 0-07-112250-8.
- [2] Water Reuse: Potential for Expanding the Nation's Water Supply through Reuse of Municipal Wastewater. National Research Council. 2012. ISBN 978-0-309-25749-7
- [3] "Scientific American Frontiers". Scientific American Frontiers - PBS Programs - PBS. Retrieved 12 March 2016
- [4] Wastewater engineering: treatment and reuse (4th ed.). Metcalf & Eddy, Inc., McGraw Hill, USA. 2003. p. 1412. ISBN 0-07-112250-8.