

REED BED SYSTEM AN EFFICIENT TREATMENT REMOVAL OF SEWAGE WASTEWATER PARAMETERS

By Amol B. Mankoskar¹, Prof. Sagar M. Gawande²

^{1,2}Anantrao Pawar College of Engineering & Research, Pune, Maharashtra, India.

Abstract- Now a day's increase in rapid growth of urbanization and industrialization is high intake of water and great generation of wastewater. The aim of this study is to find the effective cost method for wastewater treatment as comparative to conventional method of wastewater treatment. The conventional method is not suitable in rural area due to high expensive. The foundation and improvement of healthy life water is one of the most important fundamentals. The reed bed system is one of the alternative technic for wastewater treatment. Reed bed system has been proven to be an efficient and low cost alternative for conventional wastewater treatment technologies. Constructed wetland system for wastewater treatment has been proven to be effective and sustainable alternative for conventional wastewater treatment technologies. This present study is the performance of the fabricated model on which the local ambegaon budurk pune area sewer. The effluent characteristics like pH, colour, odour, conductivity, Do, COD, BOD with the help of model. This system is having with filter media and soil for the detention period of 5 days, 10 days, 15 days and 20 days. The result shows reduction of parameters such as pH, colour, odour, temperature, conductivity. The removal rate is increases due increase in detention period.

Key Words: - Removal of pH, color, odor, conductivity, DO, COD, BOD and Effective cost for wastewater treatment.

1. INTRODUCTION

The water is basic source of life. Out 100% quantity of the water 93% is the Vast Oceans, 4% underground water, 2% stored in the form of ice burgs and ice caps and less than 1% is available as fresh water. The last era is the great deal of attention to environmental protection due to world globalization. The major water bodies are polluted by the hapazardards discharge of domestic sewage, and industrial wastewater in the world. The wastewater treatment technology is having with an efficient and eco-friendly for

environment. Now a day's major environmental issue is due improper disposal of wastewater. Water pollution has become a major environmental issue while as economic development has increased. The municipal wastewater is disposal directly in to the river body without any treatment. In the metro polities city facilities are provided wastewater treatment plant, but in rural area sewage drains are directly connected to water bodies. The reed bed system has sure to be a favorable treatment and alternative treatment technology for wastewater treatment. The construction of this system is having surface flow and subsurface flow. The subsurface flow is having Vertical flow, Horizontal flow and Hybrid flow. The water passing through the filter media in reed bed system is the basic working. There is no requirement of machineries and electricity treatment under gravity. The project is analysis the wastewater characteristics in ambeagaon budurk pune area sewer with reed bed system.

2. METHOD AND MATERIAL

Collect the wastewater sample for treatment from the near ambegaon sewage drain. The lab model for reed bed system made up of plastic. The plastic container have with dimension of 60cm × 40cm × 30 cm for wastewater flow through the bed assembly having 60cm.lenght,40cm width and 30cm height. The inlet unit is provided with a PVC pipe along with a calibration knob. The height of model was divided into four parts with filter media. The bottom most part is having 10cm with aggregates with 10 to 20 mm size, above this bed use sand up to 5cm, soil layer used up to 10cm. The laboratory scale model calibrated for the various discharge like 5days, 10days, 15days and 20days. The lab model was cultivated with canna indica and cyperucus plant.

3. RESULT AND CONCLUSION.

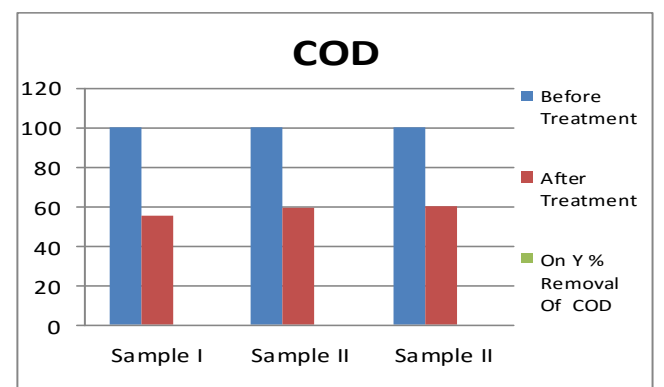
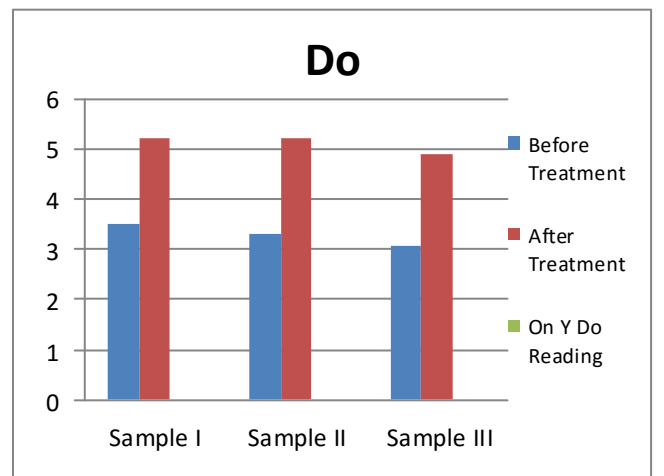
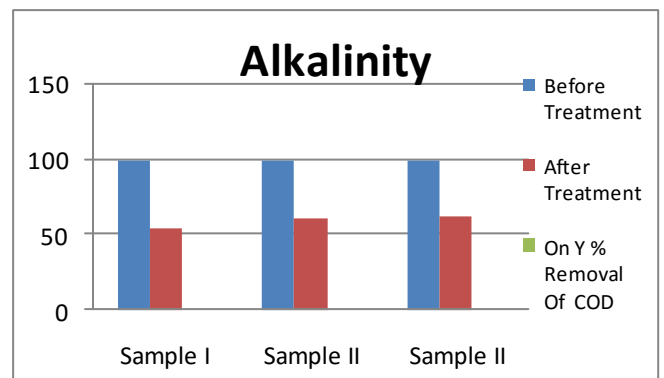
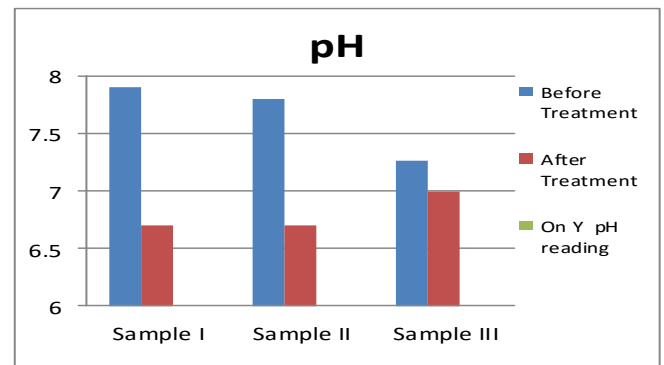
In the laboratory for study purpose wastewater was collected from different location of ambeagaon area. By using as per different standard procedure of the testing method of wastewater the various test were conducted like pH, Color, Odour, DO, BOD, COD,

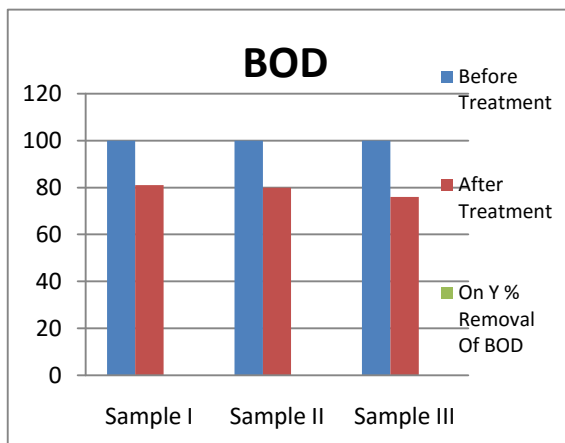
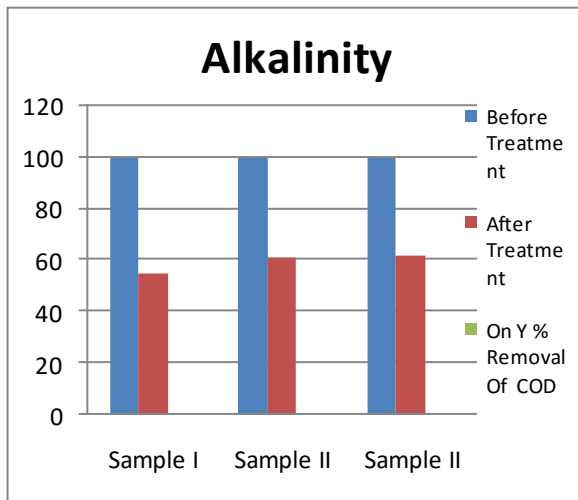
Conductivity, Alkalinity. The following results are getting after treated wastewater test in the laboratory with standard method.

RESULT (Sample I)			
Sr No	Parameters	Before Treatment	After Treatment
		Sample I	Sample I
1	Odour	Pungent Smell	No Odour
2	Colour	Blackish	Colorless
3	pH	7.9	6.7
4	Conductivity	2.25	2.54
5	Alkanity	150.5	67
6	Do (mg/lit)	3.5	5.2
7	COD (mg/lit)	346.9	156.15
8	BOD (mg/lit)	189.65	36.5

RESULT (Sample II)			
Sr No	Parameters	Before Treatment	After Treatment
		Treatment	Treatment
1	Odour	Pungent Smell	No Odour
2	Colour	Blackish	Colorless
3	pH	7.8	6.7
4	Conductivity	2.45	2.69
5	Alkanity	152.6	60.21
6	Do (mg/lit)	3.3	5.2
7	COD (mg/lit)	444.1	182.01
8	BOD (mg/lit)	202.15	39.54

RESULT (Sample III)			
Sr No	Parameters	Before Treatment	After Treatment
		Treatment	Treatment
1	Odour	Pungent Smell	No Odour
2	Colour	Blackish	Colorless
3	pH	7.26	7
4	Conductivity	2.28	2.69
5	Alkanity	148.98	57.08
6	Do (mg/lit)	3.05	4.89
7	COD (mg/lit)	389.54	154.31
8	BOD (mg/lit)	210.08	49.45





4. REFERENCES.

1. Seasonal Study And Its Impact On Sewage Treatment In The Angular Horizontal Subsurface Flow Constructed Wetland Using Aquatic Macrophytes V. P. Dhulap1, I. B. Ghorade2 & S. S. Patil3
2. Optimization Of Pollutant Concentration In Sewage Treatment Using Constructed Wetland Through Phytoremediation B. L. Chavan* V. P. Dhulap**
3. Giraldi D. and Iannelli R (2009), "Short term water content analysis for the optimization of sludge dewatering in dedicated constructed wetlands", Science Direct, 246, pp 9299.
4. Hanshenric, Brix H., Lorenzen B (1990), "Wastewater treatment in constructed reed bed in Denmarkstate of art", Aarhus University, pp 495504.
5. Wastewater Treatment with Vertical Flow Constructed Wetland Borkar.R.P 1 , Mahatme.P.S 2
6. Floating Treatment Wetlands: an Innovative Option for Stormwater Quality Applications T. R. Headley*, C.C. Tanner**
7. Energy-Efficient And Cost-Effective Sewage Treatment Using Phytorid Technology Sanjay Murlidhar Karodpati, Alka Sunil Kote
8. Evaluation Of Sanitation And Wastewater Treatment Technologies: Case Studies From India M. Starkl*, M. Phansalkar**, R.K. Srinivasan, ***, E. Roma****, T.A. Stenström*****
9. Analysis And Design Of Zero Sewage Discharge System for Model Township Ninad B. Bhalerao1, A. R. Kambekar2 IC-Rice Conference Issue | Nov-2013,
10. Manderia, S., " Performance Evaluation of Reed Grass (Phragmites karka) in Constructed Reed Bed System (CRBs) on Domestic sludge, Ujjain city, India", Research Journal of Recent Sciences Vol. 1(ISC-2011),
11. Martel, C.J. (1993). "Fundamentals of sludge dewatering in freezing beds" Water Science andTechnology 28:1, 29-35.
12. Wastewater Treatment with Vertical Flow Constructed Wetland Borkar.R.P, Mahatme.P.S Government College of Engineering, Amravati, Maharashtra, India
13. American Public Health Association, "Standard methods of the examination of water and wastewater", Part 1: 2005.
14. Badalians G., moradhasseli M., Riahi R (2009), Treatment of domestic wastewater in a pilotscale HSFCW in West Iran", Science Direct, 248, pp 977987
15. Bali M., Gueddari M., Boukchina R (2010), "Treatment of secondary wastewater effluent by infiltration percolation", Science Direct, 258, pp 14.