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BALANCE THE P^H OF THE WASTE WATER BY USING WET LAND CONSTRUCTION AS LOW COST WASTEWATER TREATMENT PLANT

Asst prof Pravin Namdev Pharne[1] , Miss. Nilam Suresh Chavan[2], Miss. Rohini Jagannath Joshi[3]

[1,2,3]*Department Of Civil Engineering, NMCE Peth. (India)*

ABSTRACT

Balance a P^H is the necessity part in waste water for good land quality and better crop production, charcoal is the best material used to balance P^H in waste water. Simple and easily available in local places

Key words- Charcoal, Plants, P^H

I.INTRODUCTION

P^H means potential of hydrogen in given water it is measured in terms of negative log to the base 10 of H^+ ions. If given waste water is from domestic sources NACL and other salts it also consists of foods so P^H is automatically increases or decreases . Charcoal has property of mineral carbons to maintain a P^H level

II.LITRETURE REVIEW

1. G.Baskar, V.T.et.al. (2014)

The wetland is constructed in shallow pits installed with a drain pipe in a bed of pebbles or gravels and sand layers planted with native vegetation. An impermeable membrane is provided at the bottom to prevent percolation of wastewater into the soil or aquifer below. The vegetation may be emergent macrophyte, floating plant or submerged plant species. The main characteristics affect the removal efficiency of constructed wetland are the vegetation type, hydraulic residence time and substrate. The aim of the present study is to examine effect of vegetation type on organic and nutrient removal under varying hydraulic residence time in constructed wetlands. A 6-day hydraulic residence time is suggested for an acceptable level of treatment in these systems.

2. Kavya S Kallimani, et.al. (2015)

The constructed wetlands have gained significance for treatment of wastewater and is considered as successful optional for treatment system. The major components of the constructed wetland are vegetation type, hydraulic retention time (HRT) and bed media. The main aim of the present study was treatment of untreated wastewater from campus through horizontal subsurface flow constructed wetland and compare the efficiency of two different plants. Sand and gravels were used as bed media and plants were used for experiment were PhragmitesAustrails (CW1) and Canna Indica (CW2). In this paper we are evaluated performance of

PharagmitesAustrails and Canna Indica in subsurface flow systems for removal percentage of pollutants such as Chemical oxygen demand(COD), Biochemical oxygen demand (BOD3) ,Total solids (TS) , Total suspended solids (TSS) , Total dissolved solids (TDS) and Phosphate at different Hydraulic retention time.

3. Mr. Rajnikant Prasad, et.al.(2016)

The municipal treatment plant generally treats the wastewater of cities and disposes off safely nearby in the developing and the developed countries. The condition of the rural areas remains a problem where the treatments are not given to the wastewater in such areas the constructed wetland is option for the treatment of wastewater. Constructed wetlands are engineering systems which are designed to treat wastewater from various sources. The aim of this study is to find out the economical method of treatment of domestic wastewater and to compare the efficiency of naturally aerated and artificially aerated constructed wetland. study was done for the mundhwa area by constructing lab scale model. The parameter like colour, odour, pH, COD and DO was checked. 4. Chethana S. L, et.al. (2016) The natural method of refining the problem has been a suitable method in comparison to other refinery methods. Natural method is applied by means of Phragmites and Persicariaamphibia. This method has good advantages such as, easy management, low cost, low technology required, and finally yet importantly, low energy consumption. Enhancing the Phragmites refinement efficiency, other kind of weeds has been used, persicaria has unique morphological, genetic, and physiological features. a comparison between the refinability of Karanji lake water by persicaria and phragmites was made. The results were based on the findings obtained from this research the removal rate of nutrients.

5. Urmila M. Bhanuse1, et.al. (2017)

Horizontal sub-surface flow constructed wetland have been used from 30 years. The classification of constructed wetland is based on the vegetation of constructed wetland is based on the vegetation type, hydrology & subsurface flow can be further classified according to the flow direction. The consumption of large volumes of water and the generation of organic compounds as liquid effluents are major environmental problems in milk processing industry.

6. Suma, et.al. (2017)

Due to rapid urbanization, mining activities, industrialization, etc. the water resources both surface and subsurface are getting polluted which is difficult to treat, recycle and the treatment requires high cost. The present study deals with the Phytoremediation for the domestic sewage treatment by Hibiscus Rosa and CatharanthusRoseus plant species. two plastic crates were used to plant the Hibiscus Rosa and CatharanthusRoseus in each separate crate. The vertical subsurface flow has been adopted in this study with two beds of aggregates and red soil. The bed consist bottom layer of coarse aggregate with 12 mm size and 6 cm depth, middle layer of fine aggregate with 2.36 mm size and 6 cm depth, Top layer was filled with red soil of size 0.6 mm and 6 cm depth. Then the physico-chemical characteristics of domestic sewage such as Turbidity,

pH, TSS, BOD, COD, Nitrates and Sulphates were done before treatment and after the treatment and compared with the CPCB standard.

7. Swathy M R, et.al. (2017)

Food industry produces large quantities of wastewater from processing, making and cleaning processes. Improper treatment and disposal of wastewater cause many environmental issues. In this study a cost effective method for treatment of food industry wastewater using locally available plants was used. The plants used for this study was cyperus IJSART - Volume 3 Issue 8 –AUGUST 2017 ISSN [ONLINE]: 2395-1052 Page | 596 www.ijsart.com rotundus and pennisetumperpureim which is known as nut grass and Napier grass respectively. Two reed beds and one reed less bed were prepared and wastewater was allowed to pass through it. The effectiveness of these plants in pollutant removal from wastewater was analyzed by varying hydraulic retention time 1,2,3,4,5,6 days. The characteristics of water samples before and after treatment were compared and discussed.

8. Pharne P N, et.al. (2017)

This paper on wet land construction in India. It shows low cost waste water treatment process in less energy consumption**.** Simple filters are provided from locally available materials such as river sand, sea sand, charcoal, aggregates, soil etc. It also consist of use of special plants to filter or remove toxic materials in waste water.

III.OBJECTIVES

The objective of the project are mentioned as below

- To balance the $P^H$of the waste water by this project.

IV.METHODOLOGY

For this work it is proposed to carry out the work in the following phase

Phase- I

Comprehensive review of literature to understand wetland concept

Phase –II

Collection data through visiting wetland site

Phase-III

Analysis the data and determining the parametric standards

Phase -IV

Developing a model

Phase -V

Validation of propose model through case study

V.CHARCOAL REACTION

The research aimed to observe the efficiency of vertical flow constructed wetland system using Para-wood charcoal as the media and to different plant one is Canna Indica and another one is Catharanthus roseus plant to treat domestic wastewater. Charcoal consist of mineral carbons which reacts with acidity as well as alkalinity of wastewater it gives good result of ph contain as nutrient water. Domestic wastewater mostly consists of NACL and other salt. After reaction it gives normality of water.

VI.SEDIMENTARY WORKING

Sedimentation is a physical water treatment process using gravity to remove suspended solid from water. Solid particles entrained by the turbulence of moving water may be removed naturally by sedimentation in the still water. Sedimentation tanks are designed to reduce the velocity of flow of water so as to permit suspended solid to settle out of the water by gravity. When the impurities are separated from suspending fluid by action of natural forces along ,i.e. by gravitation and natural aggregation of the settling particles.

VII.WORKING OF PLANTS

Vegetation plays an important role in wastewater treatment. Plants provide a substrate for micro organisms, which are the most important processes of wastewater contaminants plants also provide microorganisms with a source of carbon stands of vegetation reduce current velocity, allow solid to settle out of the water column. Plants oxygenate the root zone by release of oxygen from their roots and provide microorganisms habitat within the reduced soil.

VIII.AUTOCAD DESIGN

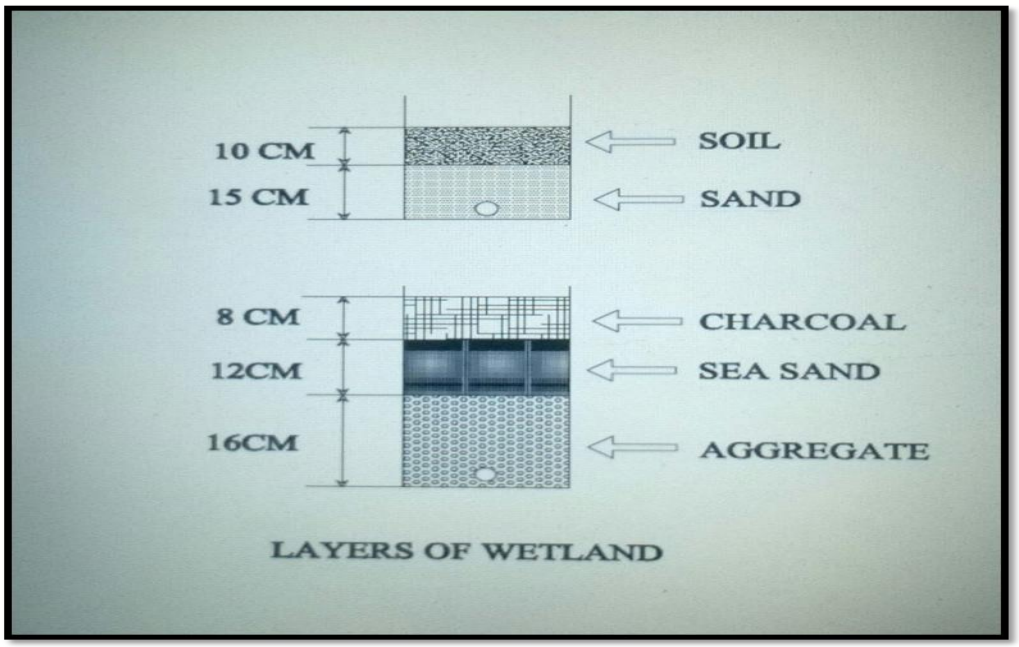

Fig.1 LAYERS OF WETLAND

IX.CONSTRUCTED WETLAND MODEL PHOTOS

Fig.2 CONSTRUCTED WETLAND

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Fig. 3 CANNA INDICA

Fig.4 CATHARANTHUS ROSEUS

X.EXPERIMENT METHOD AND RESULT

10.1 P^H level of waste water = The P^H can be measured by following

10.1.1 P^H Meter

10.1.2 P^H Paper

10.1.3 P^H Pen

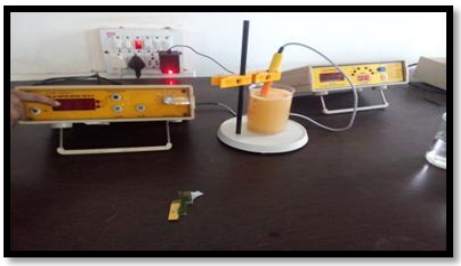

Fig.5 P^HMETER

Fig. 6 P^H PAPER

Fig. 7 P^H PEN

PH is defined as negative logarithm to the base of 10 of hydrogen ion concentration I solution.

We took three sample of wastewater the result we brought from sample is as follows. We figured out that the sample was slightly Acidic. By three methods from three samples we got PH of wastewater was 6. So, the wastewater we collected from Canteen of our college is Acidic.

Table 1

Sample	Reading	Nature	Standard value	After to filtration
Sample 1	6.0	Acidic	7.0	6.9
Sample 2	6.0	Acidic	7.0	6.9
Sample 3	6.0	Acidic	7.0	7.00

XI.CONCLUSION

Charcoal material is the best material to balance the PH of waste water. Charcoal replaces mineral acids with CO2 for pH reduction offers many benefits. Carbon filtering is a method of filtering that uses a bed of activated carbon to remove contaminants and impurities, using chemical adsorption.

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