Drainage Treament Process With Natural Method (Cooum River)

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Abstract- *The Cooum river is one of the shortest classified rivers draining into the Bay of Bengal. The river is about 72 km in length, flowing 32 km in the Urban part. The river is highly polluted in the urban area (Chennai). Nearly 30 per cent of the estimated 55 million litres of untreated sewage being let into the waterways of Chennai. More than 130 sewage outfalls were in the cooum River. Now the cooum River certified as dead River. The project is to recover the cooum River to the liver river.*

In this project we are going to treat the sewage water by the Biological method which emitted from Chennai which mixed with the cooum river. Also we are very careful about the process that should not contain any chemicals for treatment process.

By this project the scarcity of water will be redused with low power consumption and economical in usage of raw materials. The treatment is basically using plants to utilize nutrients in addition such plants may also extract or permit the possibility of transforming materials containing heavy metals and toxic organic compounds that may appear difficult to treat.

I. INTRODUCTION

Chennai was one of the most beautiful cities of India with lots of greens, lake, ponds and rivers. The most important river that watered Chennai was considered as Adayar, Cooum and the Kosasthaliyar. But it also had many tanks, and ponds to its credit. All the important water resources of Chennai is lost forever. This paper focus on the main water resource, the Cooum River. It traces the origin its decline and also fo-cus on the restoration projects started from 1967 onwards. But there is no final solution to the retrieval of the water source.

Pure water is not easily available to all. The society consumes contaminated water and takes ill periodically. The water may be contaminated by natural sources or by industrial effluents.

In order to succeed in such treatment option, a selection of plants should first be carried out, which is based on some criteria such as:

(i) good natural adaptation to the local climate
(ii) rapid growth and high biomass production
(iii) nutrient absorption capacity
(iv) adaptation and ease of propagation
(v) good root development
(vi) oxygen transfer capacity to the roots by creating aerobic environment.

OBJECTIVES OF THE PROPOSED PROJECT

- Recovery of Cooum river.
- Reduces the scarcity of water.
- Supplying good water for irrigation.
- Recharging of ground water table.
- Water supply to the public after advanced treatment.
- Helps in recreation activities.

SCOPE

- The project is to make the filtration pipeline system for the sewage water in the outfall of the cooum River.
- Normally raw material used for the filtration process will be natural materials as well as those materials taken to the further process for agricultural usage after the completion of filtration.
- Finally this makes zero percent wastage from this process and more economical than other.

II. LAB TEST FOR QUALITY OF WATER

1.BIOCHEMICAL OXYGEN DEMAND(BOD)

BOD is the traditional, most widely used test to establish concentration of organic matter in wastewater samples. BOD is based on the principle that if sufficient oxygen is available, aerobic biological decomposition (stabilization of organic waste) by micro-oganisms will continue until all waste is consumed.

The BOD test is also known as "BOD since it is based on the accurate measure of do (dissolved oxygen) at the beginning and end of a give-day period in which the sample is held in dark, incubated conditions.

The chance in DO concentration over five days represents the "oxygen demend" for respiration by the aerobic biological microorganism in the sample.

The five-day completion window is an inherent disadvantage of the test because wastewater treatment system personnel cannot use it to make real-time operational adjustments. An extended UBOD (ultimate BOD) test that measures oxygen consumption after 60 days or more is sometimes required in wastewater permits.

2. PH (POTENTIAL OF HYDROGEN)

Wastewater treatment often consists of removing heavy metals and or organic compounds from effluent streams. PH adjustmen5t by addition of acidic basic chemicals is an important part of any wastewater treatment system as it allows dissolved waste to be separated from water during the process.

Water is composed of a positively charged hydrogen ion and a negatively charged hydroxide ion. In acidic (pH<7) water there is a high concentration of positive hydrogen ions while in neutral water, the concentration of hydrogen and hydroxide ions is balanced. Basic(pH<7) water, contains an excess of negative hydroxide ions.

3. TOTAL SOLIDS (TS)

Total solids (TS) are a measurement often used in the waste water treatment that includes the combination of total dissolved solids and total suspended solids in a liquid. Total solids are composed of all the suspended, colloidal and dissolved solids in the sample. The mixture included any dissolved salts such as sodium chloride (NaCL) and solid particles such as silt and plankton.

4. AMMONIA TEST

Nitrification is the most common way to biologically remove ammonia in waste water lagoons. In this process, ammonia treatment occurs via bacteria already resent in the water. These bacteria break down the ammonia and eventually promote the release of nitrogen gas into the atmosphere. Removing ammonia from wastewater lagoons has become a hot topic over the past few year. State environmental protection agencies have been introducing new ammonia limits for aerated wastewater lagoons. This is a problem because most wastewater lagoons systems were not originally designed for ammonia treatment. As a result, most lagoon systems will require some kind of upgrade.

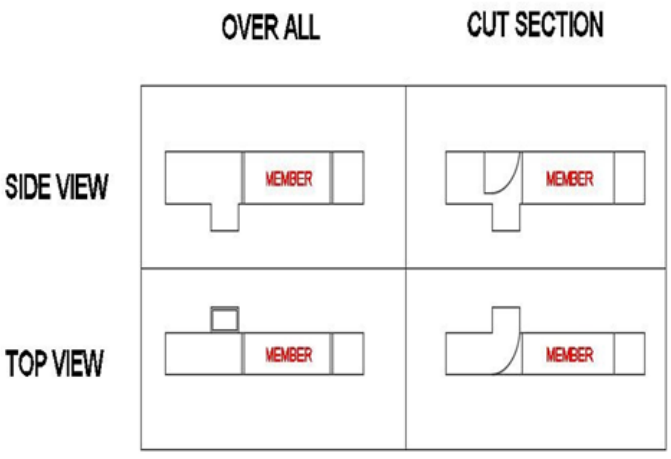
5. RESIDUAL CHLORINE TEST

The presence of chlorine residual in drinking water indicated that in a sufficient amount of chlorine was added initially to the water to inactivate the bacteria and some viruses that cause diarrheal disease and the water is protected from recontamination during storage. When chlorine is added to water, some of the chlorine reacts first with organic materials and metals in the water and is not available for disinfection. The amount of chlorine that has reacted with nitrates and is unavailable for disinfection which is called combined chlorine and the free chlorine, which is the chlorine available to inactivate disease causing organisms, and thus a measure to determine the potability of water.

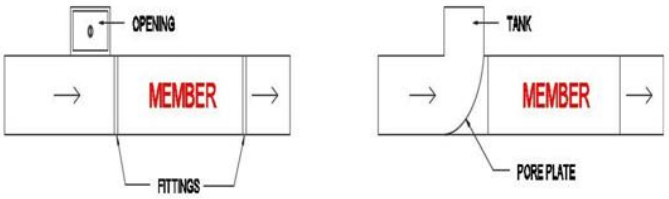
METAL CONTENT TEST

A variety of inorganic techniques can be used to measure trace element in waste water including flame atomic absorption spectrometry (FAAS) and graphite furnace or electro thermal atomic absorption spectrometry (GFAAS or ETAAS), inductively coupled plasma optical emission spectrometry (ICP-OES) and inductively coupled plasma optical emission spectrometry (ICP-MS) anddepending upon the number of elements to be determined, expected, concentration range of analysis and the number of samples to be run, the most suitable technique for business requirements can be chosen.

III. LAYOUT DIAGRAM



LABLE DIAGRAM



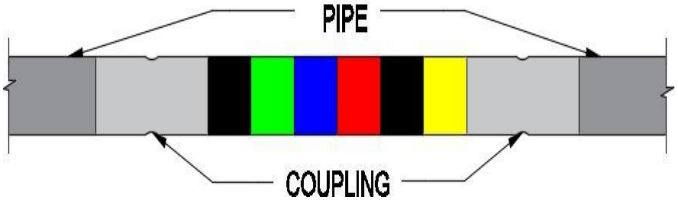
OPENING- It is used to Clear the floation and sludge deposition.

FITTINGS - Its used to Change the member in maintenance process with the bolt Connection.

TANK - Its Used to deposit of sludge with the detectable Limits.

PORE PLATE - Its is Used to Convey the sewage water by resisting Flotation Particles.

DISPLATE MODEL DIAGRAM



BLACK (COARSE AGGREGATE)

Specified size with respective to the diameter of the pipe and use to resist the major soild present in the water**.**

GREEN (VETTIVER)

This organic material changes toxicity and smell of the sewage water**.**

BLUE (SAND)

It is used to resist the micro solid particles present in the sewage water.

RED (ACTIVATED CARBON)

It is used to resist the micro solid particles present in the sewage water**.**

YELLOW(COTTON)

This will make deposition of dust and purely filters.

IV. RESULTS AND DISCUSSION

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CHEMICAL ANALYSIS OF COOUM RIVER WASTEWATER

Table-4.1 shows mean values of, pH, Tubidity, soild seposition concentrations of all examined waste water samples. The results observed for pH,tubildity, soild deposition: pH 7.84 and turbidity 6.2 solid deposition respectively.

Table4.1Wastewatercomponents

VARIABLES	**COOUM RIVER WASTEWATERCOMPONENTS**
PH	7.84
TURBIDITY	6.2
SOLD DEPOSITION	380

Mini – Size Prototype After Filtration

V. CONCLUSION

In this project we are going to treat the sewage water by the Biological method which emitted from Chennai which mixed with the coum river. Also we are very careful about the process that should not contain any chemicals for treatment process. By this project the scarcity of water will be redused with low power consumption and economical in usage of raw materials. The treatment is basically using plants to utilize nutrients in addition such plants may also extract or permit the possibility of transforming materials containing heavy metals and toxic organic compounds that may appear difficult to treat.

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