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Paper # waste water Engineering

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Q1

What is waste water Engineering? Briefly describe its Application safeguarding environment?

Ans:

waste water Engineering:

The application of Engineering method to improve sanitation of human communities primarily by providing the removal and disposal of human waste, Treatment and reuse Application for various purposes and in condition to the supply of safe potable water

→ waste water Engineering is also called sanitation Engineering.

→ waste water Engineering is also called public health Engineering.

Application

→ waste water Engineering related Improving environments by disposing of treated waste water and thus reducing the risk of ground water contamination and safeguarding of aquatic life

→ Protect nature's beneficial ecosystem

→ The less water you use the less run off and waste water that eventually end up in the ocean.

Q2: Briefly describe the relationship of waste water generation with water supply of a locality?

Ans

relationship of waste water with water supply:

there main^{two} Areas in which waste is generated from water supply

- (i) domestic Area
- (ii) industrial Area

domestic Area are divided into four / 4 classes

domestic Area

- (i) Residential Area
- (ii) Commercial facilities
- (iii) institutional facilities
- (iv) Recreational facilities

→ The water which is supplied to such type of Areas 60-80% of that water is waste and 20% is used

→ So waste water have deep relation with water supply.

→ if we want to calculate waste water we should know the supply of water quantity.

→ For calculation of water, first we calculate population of Area from given below method.

(1) Arithmetic increase method

(2) ~~as~~ geometric increase method.

Aritmetic increase method

$$P_n = P + n \cdot C$$

P_n = Population of upcoming

P = Present population

C = Rate of change of population with respect to time

n = number of years

Geometric increase method

$$P_n = P(1 + I_g/100)^n$$

I_g = geometric mean

P = Present Population

N = no. of decade or year

→ through these formulae we calculate population then calculate fresh water

→ ~~so the~~ waste water is ~~calculated~~ calculate from fresh water

→ waste water is totally depend on fresh water

→ if water supply is not available then there will be no waste water.

→ so waste water is great relation with water supply.

Q3:

What is the Importance of waste water characterization.

Ans:

Importance of waste water characterization:

A characterization of the waste water which provides a wide variety of information regarding the type and concentration of the contaminants present must be carried out to determine the type of contamination concerned.

With characterization of waste water we determine the nature of contaminant (Physical, chemical and biological) and then design waste water treatment plant according to the nature of contaminants.

it will have an important role in waste water treatment plant because it will provide a physical, chemical and biological resources for treatment of waste water in plants.

Q4 - Enlist physical, chemical and biological characteristics of waste water.

Ans: Physical, chemical and biological characteristics of ~~water~~ waste water are given below:

Physical characteristics of waste water:

- (1) settleable solids
- (2) Total solids
- (3) Total suspended solids (TSS)
- (4) Total dissolved solids (TDS)

(5) volatile and fixed solids
(VS and FS)

(6) odor

(7) temperature

(8) density and specific gravity

(9) turbidity

(10) color

Chemical Characteristics:

(1) ~~PH~~ Chemical characteristics
of waste water are
given below.

(1) PH.

(2) organic matter (OM).

(3) Nitrogen contents.

(4) fats, oil and greases.

(5) sulphides, sulphates and
hydrogen gas.

(6) TOXICS.

(7) Dissolved oxygen (DO)

Biological characteristics.

biological characteristics of waste water are given below.

- (1) Bacteria
- (2) Fungi
- (3) Algae
- (4) Protozoa
- (5) Viruses
- (6) Pathogenic microorganisms groups.

Q5: what are the advantages and disadvantages of combine and separate system?

which sewerage will you recommend for a new proposed township. support your answer with justification.

Ans: The advantages and disadvantages of combine and separate system are given below below

combined SYSTEM

advantages:

advantage of combine SYSTEM are given below.

- (1) both domestic sewage and storm water are carried in a single sewer. So construction cost is less.
- (2) The strength of domestic sewage is reduced because of dilution of storm water.
- (3) The sewers are of large size and therefore the chances of their choking are rare. It is easy to clean them.
- (4) In town with narrow streets this system is preferred.

Disadvantages.

(1) Initial cost is high because of large dimension

(2) Because of size of sewers their handling and transportation is difficult.

(3) Due to the inclusion of storm water the load on the treatment plant increases and ultimately increases treatment costs

(4) During heavy rain the sewer may be overflow and thus create ~~an~~ unhygienic condition.

(5) If the whole sewage is to be disposed off by pumping it is uneconomical.

SEPARATE SEWERAGE SYSTEM.

advantages & and disadvantages of separate sewerage system are given below.

advantages:

advantages of separate sewerage system are given below.

- (1) Size of sewers is generally less
- (2) Since the sanitary sewage and storm water flows in a separate pipes the quantity of sewage to be treated is less
- (3) as the sewer are smaller in section they can be easily ventilated
- (4) Rain water can be discharged into the streams or can be reused / recycled without any ~~loss~~

Treatment.

Disadvantages:

(1) Since the sewers are of smaller size it is difficult to clean them.

(2) They are likely to get choked / blocked.

(3) initial cost is high when two separate sets are used.

(4) maintenance cost of system is also high.

recommendation of sewerage system

I will recommend separate sewerage system for a new town ship because

→ Rain water can be discharge into the ~~system~~ stream or can be reused / recycled with out any treatment.

→ as sewer are smaller in section they can be easily ventilated

→ Since the sanitary sewerage and storm water flow in a separate pipe the quantity of sewage to be treated is less

→ During heavy rain the sewer ~~cannot~~ cannot over flow because the storm water and sanitary sewage have separate pipe.

→ less degree of sanitation is achieved in this system