

Wastewater Engineering

SKAB2922

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What do you expect from this course ?

- Basic concepts of microbiology, wastewater characteristics, sewer system, wastewater and sludge treatment system.
- Solve some of wastewater parameters.
- Design each unit of process in sewage treatment plant.
- Current environmental problems.

CHAPTER 1.0

INTRODUCTION

What is wastewater?

“Wastewater”, also known as “sewage” originates from residential, commercial, and industrial area.

Why treat wastewater?





- Untreated wastewater harmful to health
- Breeding sites for insects, pests and micro organisms
- Can cause environmental pollution and affect ecosystem

Water Loop
Nutrient Loop

Water Sources

Purification

Water Distribution

Agricultural Use

Domestic Use

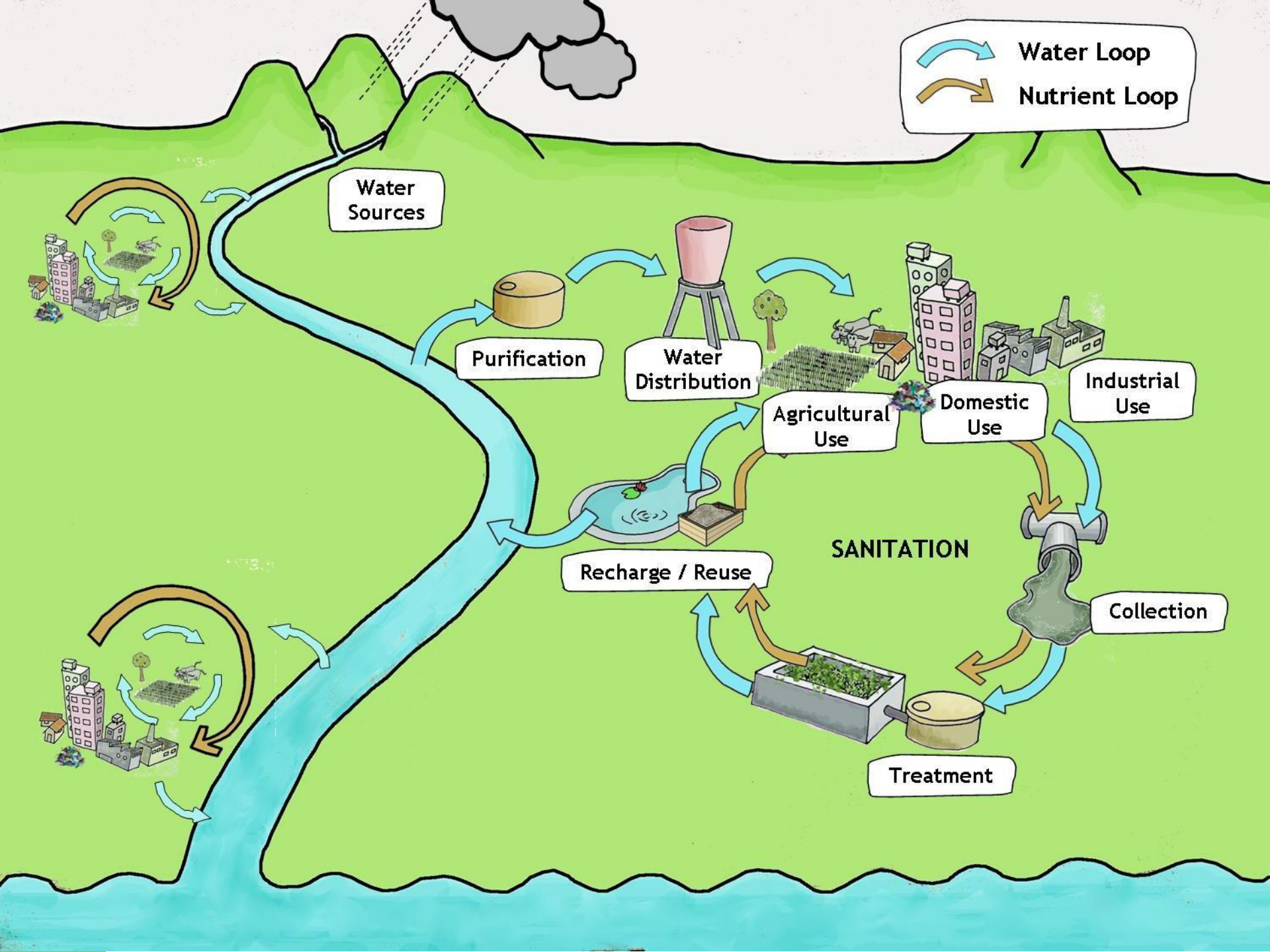
Industrial Use

Recharge / Reuse

SANITATION

Collection

Treatment



The Role of the Engineer



- Wastewater engineers are involved in the conception, planning, evaluation, design, construction, and operation and maintenance of the systems.
- An understanding of the nature of wastewaters is essential in the design and operation of collection, treatment, and disposal facilities.
- The elements of wastewater systems and the associated engineering task are listed in Table 1.0

Table 1.0 Elements of wastewater management systems and associated engineering task

Element	Engineering Task
Wastewater Generation	Estimation of the quantities of wastewater, determination of wastewater characteristics
Collection system	Design of sewers
Treatment (wastewater and sludge)	Selection, analysis, and design of treatment operation and processes to meet specified treatment objectives
Disposal and reuse (wastewater and sludge)	Design of facilities used for the disposal and reuse of treated effluent in the aquatic and land environment, and the disposal and reuse of sludge