



TECHNICAL FIELD VISIT REPORT



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ENGINEERING COLLEGE, BALLARI 2022-23**



DEPARTMENT OF CIVIL ENGINEERING

BATCH NO: 06

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Name of Project:

Date of visit:

Objective of visit:

Organized by: Department of Civil Engineering RYMEC Ballari

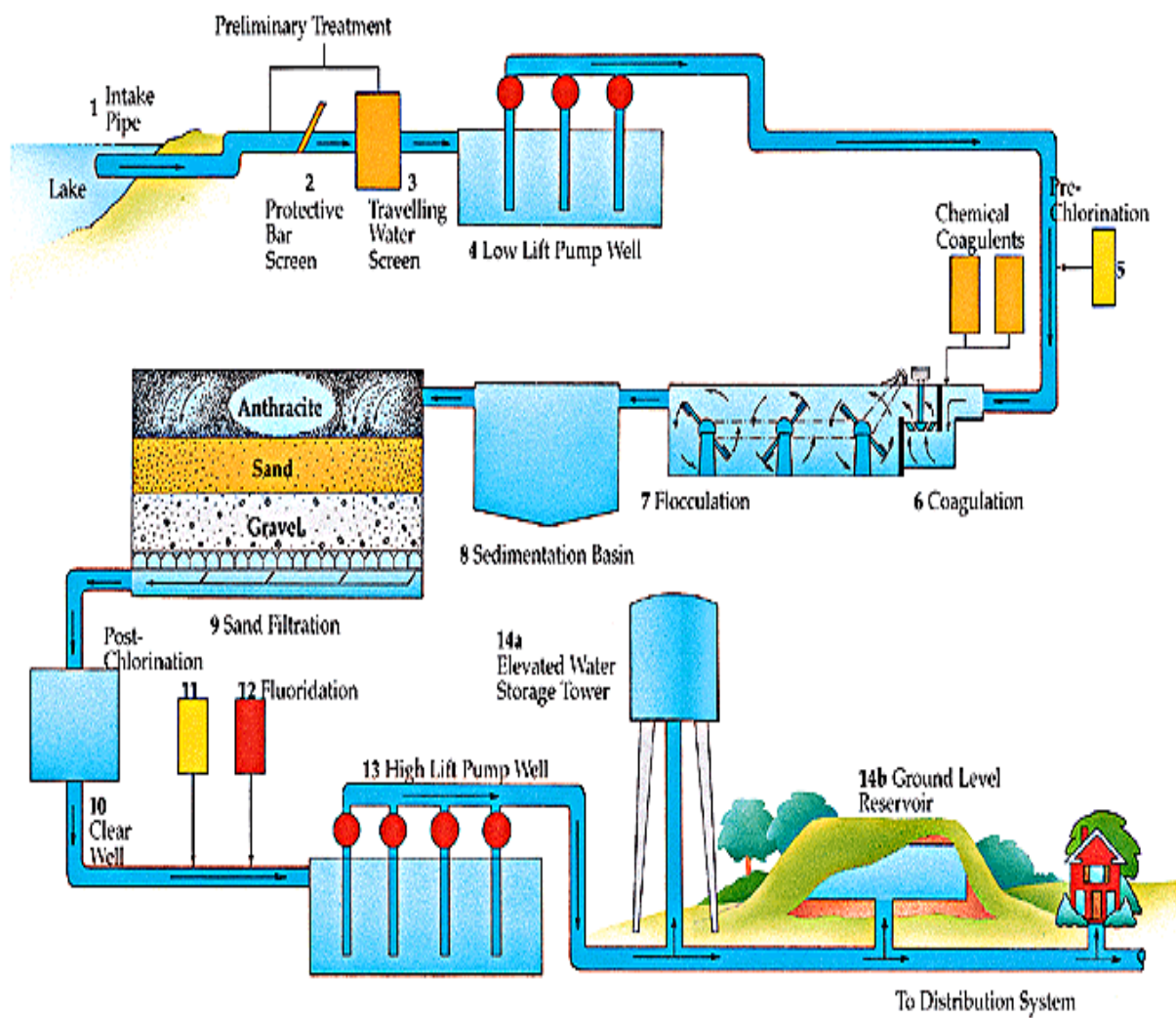
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WATER TREATMENT PLANT

WATER TREATMENT PLANT SURFACE WATER SUPPLY



SOURCES OF WATER



The source of water location is Moka road National Highway Tungabhadra right canal to take the water it is running at 9 months and also inlet pipe .

SCREENING



The source or canal to take the water inlet and also Screening . The screening process in water treatment plants **employs screens that have clear openings less than 6mm called fine screens**. They are made of wire cloth, wedge wire or perforated plates. Like micro screens, they are tools for

screening in wastewater treatment that are used to remove fine solids. All particles removed .

INLET TO SUMP



The water is after screening water stored in a sump , because water again pumping another unit .

A sump is an underground (or partially underground) tank that is popular in India. It is usually used for large water tank storage and can be built cheaply using cement-like materials. It

is usually part of a rainwater harvesting system, where the rainwater gets channeled into the tank, then pumped out for use.

PUMPING



Large-volume pumping—In water/wastewater operations, the primary use of centrifugal pumps is large-volume pumping. Generally, in large-volume pumping, low-speed, moderate-head, vertically shafted pumps are used. Centrifugal pumps are well suited for water/wastewater system operations because they can be used in conditions where high volumes are required and a change in flow is not a problem. As the discharge pressure on a centrifugal pump is increased, the quantity of water/wastewater pumped is reduced. Also,

centrifugal pumps can be operated for short periods with the discharge valve closed.

SEDIMENTATION AIDED WITH COAGULATION



Suspended particles cannot be removed completely by plain settling. Large, heavy particles settle out readily, but smaller and lighter particles settle very slowly or in some cases do not settle at all. Because of this, the sedimentation step is usually preceded by a chemical process known as coagulation. Chemicals (coagulants) are added to the water to bring the nonsettling particles together into larger, heavier masses of solids called floc. Aluminum sulfate (alum) is the most common coagulant used for water purification. Other chemicals, such as ferric sulfate or sodium aluminate, may also be used.

SEDIMENTATION



Sedimentation is a **physical water treatment process using gravity to remove suspended solids from water**. Solid particles entrained by the turbulence of moving water may be removed naturally by sedimentation in the still water of lakes and oceans. The settling velocity, defined as the residence time taken for the particles to settle in the tank, enables the calculation of tank volume. Precise design and operation of a sedimentation tank is of high importance in order to keep the amount of sediment entering the diversion system to a minimum threshold by maintaining the transport system and stream stability to remove the sediment diverted from the system. This is achieved by reducing stream velocity as low as possible for the longest period of time possible. This is feasible by widening the approach channel and lowering its floor to reduce flow velocity thus allowing sediment to settle out of

suspension due to gravity. The settling behavior of heavier particulates is also affected by the turbulence

LARGER QUANTITY DISCHARGE PUMPS



Many kinds of pumps are used in distribution systems. Pumps that lift surface water and move it to a nearby treatment plant are called low-lift pumps. These move large volumes of water at relatively low discharge pressures. Pumps that discharge treated water into arterial mains are called high-lift pumps. These operate under higher pressures. Pumps that increase the pressure within the distribution system or raise water into an elevated storage tank are called booster pumps. Well pumps lift water from underground and discharge it directly into a distribution system.

AERATION



Aeration brings water and air in close contact in order to remove dissolved gases and to oxidize dissolved metals, including iron, hydrogen sulfide, and volatile organic chemicals (VOCs). This process is typically the first major process at drinking water treatment plant, and occurs in the secondary treatment processes of activated sludge treatment in wastewater treatment plants. An evenly distributed oxygen supply in an aeration system is essential to effective wastewater treatment for fostering microbial growth.

COAGULATION



Coagulation is the chemical water treatment process used to remove solids from water, by manipulating electrostatic charges of particles suspended in water. This process introduces small, highly charged molecules into water to destabilize the charges on particles, colloids, or oily materials in suspension.

SEDIMENTATION TANK



Sedimentation, or clarification, is the process of letting suspended material settle by gravity. Suspended material may be particles, such as clay or silts, originally present in the source water. More commonly, suspended material or floc is created from material in the water and the chemical used in coagulation or in other treatment processes, such as lime softening.



DISINFECTION AND CHLORINATION

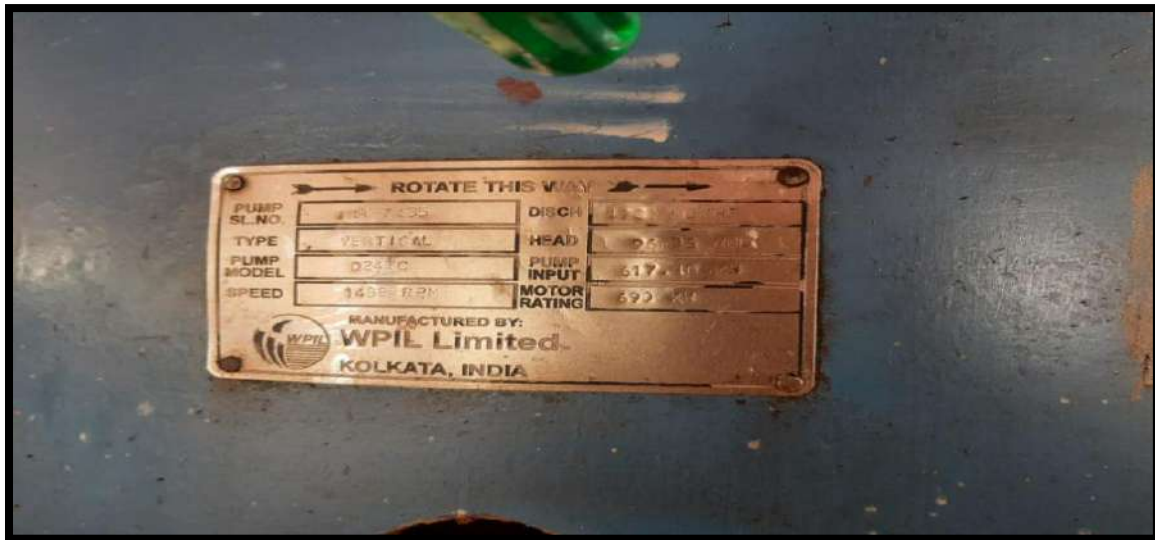


Chlorination is the process of adding chlorine to drinking water to kill parasites, bacteria, and viruses. Different processes can be used to achieve safe levels of chlorine in drinking water. Using or drinking water with small amounts of chlorine does not cause harmful health effects and provides protection against waterborne disease outbreaks.



PUMP HOUSE TO STORE THE WATER





High-pressure pumps generate the operating pressure and supply water to the spraying device. Generally, they can be divided into positive displacement pumps and hydraulic intensifiers. Positive displacement pumps are standard for hydrodemolition applications.





THANK YOU