What is Operation?

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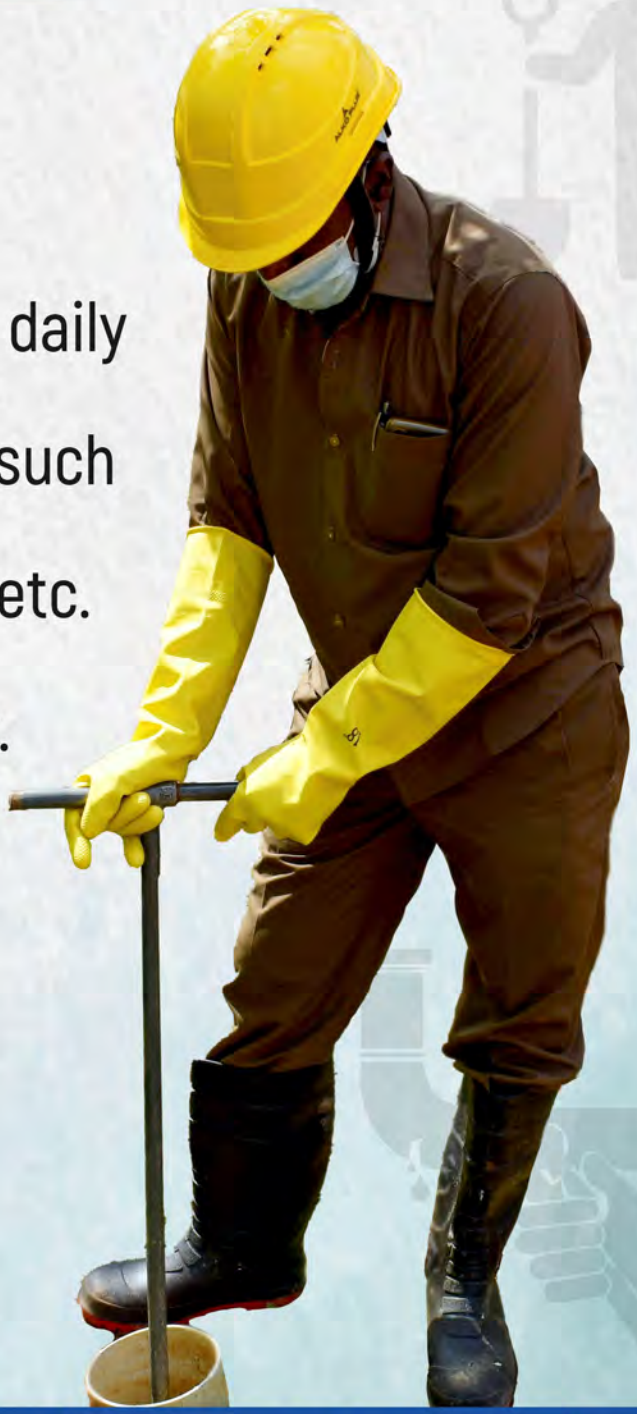
Rural Development & Panchayat Raj Department

Operation of waterworks refers to the hourly and daily operation of certain component parts of the plant such as machinery equipment valves and instruments etc. These are required to be attended to by an operator.



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What is Maintenance?

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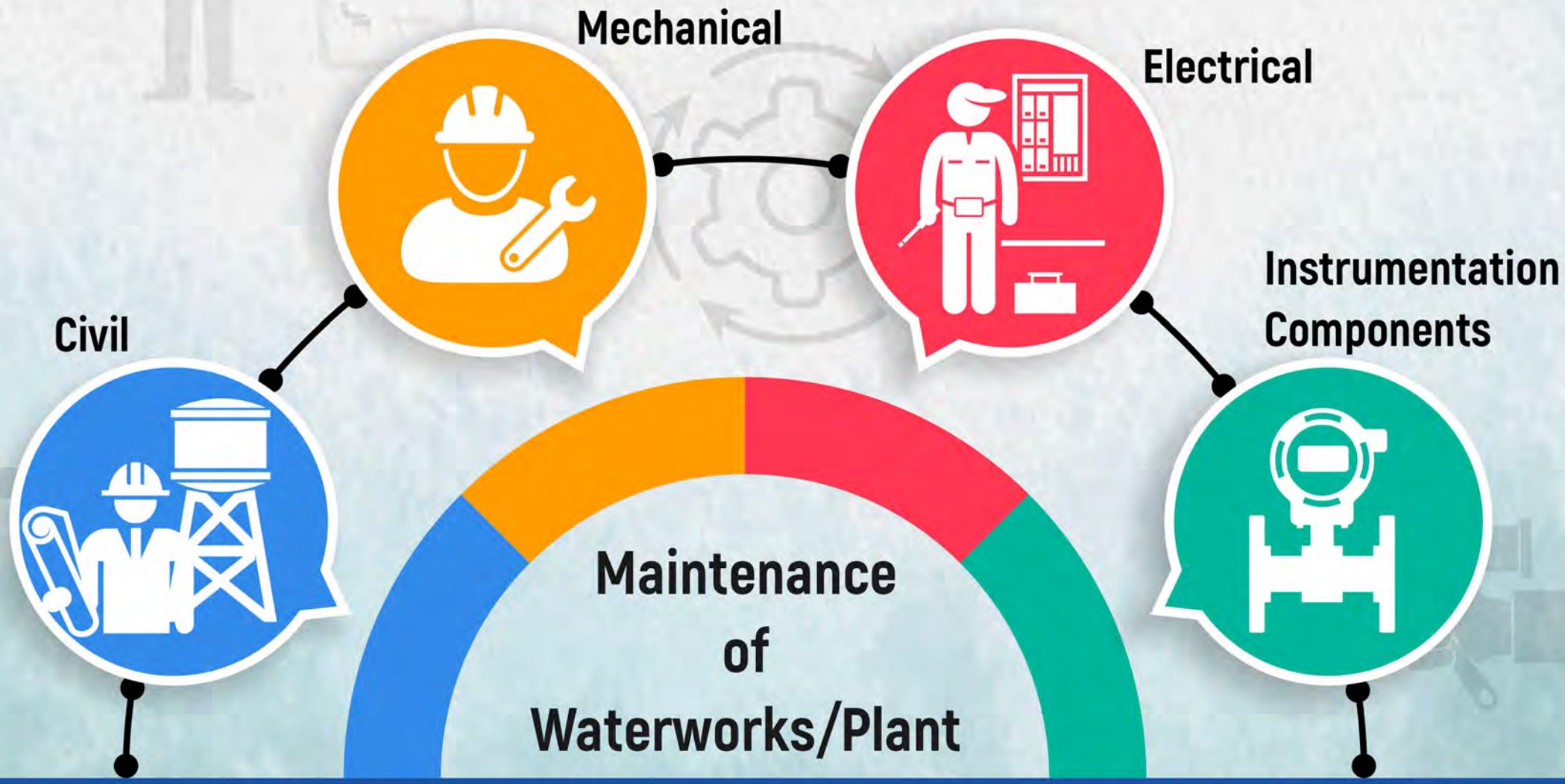
Maintenance of waterworks/Plant to be able to perform normally at the designed capacity for the designed period by up keeping.



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Objectives of Operation & Maintenance

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The objective of an efficient **Operation and Maintenance** of a water supply system is to provide **safe drinking water** as per designed quality and quantity, with adequate pressure at a convenient location and time at a competitive cost on a sustainable basis.

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Types of Maintenance

Preventive Maintenance:

Preventive maintenance is carried out in order to avoid equipment failures..

- ❖ Decreasing downtime.
- ❖ Decreasing the cost of replacement.

Periodic Maintenance:

Periodic Maintenance is a process of overhauling the system component as per the Manufacturers recommendation or field condition.

Breakdown Maintenance:

Breakdown maintenance sudden breakdowns leading to disruption in service.

Factors Affecting O & M

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01 Lack of finance, equipment, material, and inadequate data on Operation & Maintenance.

02 Inappropriate system design and poor Workmanship.

03 Inadequate operating staff.

04 Poor emphasis on preventive maintenance.

05 Absence of O & M Plan/Manual.

06 Lack of real-time field information etc.

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Minimum Requirements for O & M

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Preparation of plan for Operation and Maintenance

Providing appropriate mechanism to operate and maintain.

Availability of Spares and Tools for ensuring maintenance

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How to Develop an Effective O& M Plan

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- O & M Plans are prepared by engineers and managers for each individual facility.
- Procedures must be described in local language.
- A basic level of knowledge and understanding by the operators must be assumed.
- May include Emergency Response Plans, Safety Programs, Water Conservation Programs, Water Safety Plans, etc

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Operation of Hand Pump

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- Use the pump **'gently'** to keep the pumps to perform continuously.
- Keep the area around the hand pump **'clean'.**
- At a time, **'only one person should use'** the hand pump
- Make sure the children **'do not play'** with the hand pump.
- **'Don't Wash'** Clothes and Vessels near hand pump.

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Maintenance of Hand Pump

- Tighten the handle **'axle nut and lock nut'**.
- Open the front cover and **'clean the pump'**.
- Check the **'chain anchor bolt'** for proper fitment, tighten if required.
- Clean the **'chain assembly'** apply graphite grease at regular interval of three months or as hand when required.

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Maintenance of Hand Pump

- Remove the **'rust'** and **'apply paint'** regularly.
- Tighten the **'base plate'** when required.
- Replace **'guide bushes'** at least once a year.
- Replace the **'chain'**, if it is worn out.
- Check and repair **'ruler chain guide'**, if it is worn out.

Technical Issues Pertaining to O&M of the Drinking Water Supply System

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Drying up of water source and its damage.

Failure of machine/ pump that is inside the water source.

Contamination of the water source.

Damage or leakage of storage tank/ place of storage.

Leakage in the pipeline

Power supply issues

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Community Involvement in O & M

- Local technicians and caretakers need to be trained for the proper operation of the infrastructure.
- The aspects to be planned are :

  What: activity to be carried out

  When: frequency of this activity

  Who: human resources required for the task

  With what: what are the materials, spare parts, tools, and equipment needed.

  How: the activity which performed
- O&M activities cost time and money, and therefore a provision for financing of O&M has to be planned before the scheme starts.