

The DISTRIBUTION system

A distribution system:- the components through which water is contained and transported from source to tap (From groundwater or surface water to an end use device eg. kitchen tap).

Distribution system elements consist of storage tanks, pumps, pipes, meters and control devices.

The **design of a distribution** system is essential in providing and maintaining an adequate water quantity and quality to the end user. It is also necessary to have an appropriate design to aid **efficient and effective operation** of the distribution system.

Three main components are normally incorporated in a distribution system.

1. **Trunk main** – a main pipe line
2. **Storage tank/s**
3. **Pipe Network**- pipe lines, service lines, connections

TRUNK MAIN

This is a main pipeline that transports water from one place to another.

This can include:

- Source water to pump station
- Pump station to treatment plant
- Treatment plant to storage tank/s
- Treated water storage to the Pipe Network

A trunk main will not normally have a service connection direct to an end user.

STORAGE TANK/S

Storage will provide a buffer during high demand and is designed based on water used by the consumers and also incorporates the projected demand of the end users in the future (eg community use now and estimated use in 10-20 years – a multiplication factor is used in most cases to provide peak demand volumes).

At least 24 hours of treated water storage is found in most municipal water supplies. This is to provide a reliable and adequate supply in case of emergency.

An emergency situation could include:

- Loss of power
- Maintenance on trunk main
- Contamination spill in source water catchment
- Pump maintenance



PIPE NETWORK

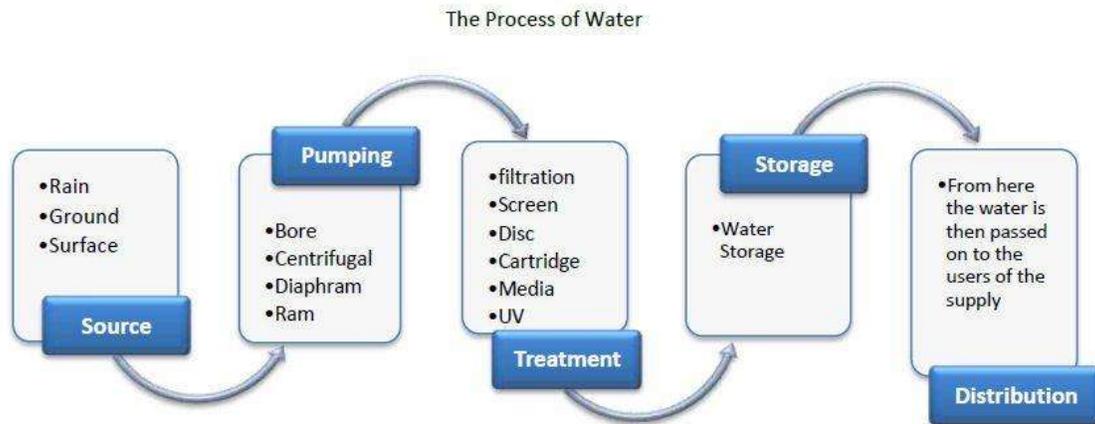
As suggested, this is a network of pipes that provide for the safe and reliable delivery of drinking water to an end user.

Common pipe work and components include:

- Water main, Rider main, Ring or Loop main, Dead ends, Low pressure zones, High pressure zones, Valves, Hydrant, Non-return valves, Tee's, Crosses, Bends, Service lines, Service Connections (which may include a dual check manifold, with or without a meter), Backflow prevention devices, Flow restrictors, Pressure reducing valves and Dedicated water quality sampling points.

It is important that a pipe network is designed properly. This will help overcome dead ends or having low pressure zones - both of which create water quality issues.

Pipe sizes and quality are especially important and a good design will alleviate maintenance and operation problems by purely minimising the number of pipe sizes and quality in a system design.



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