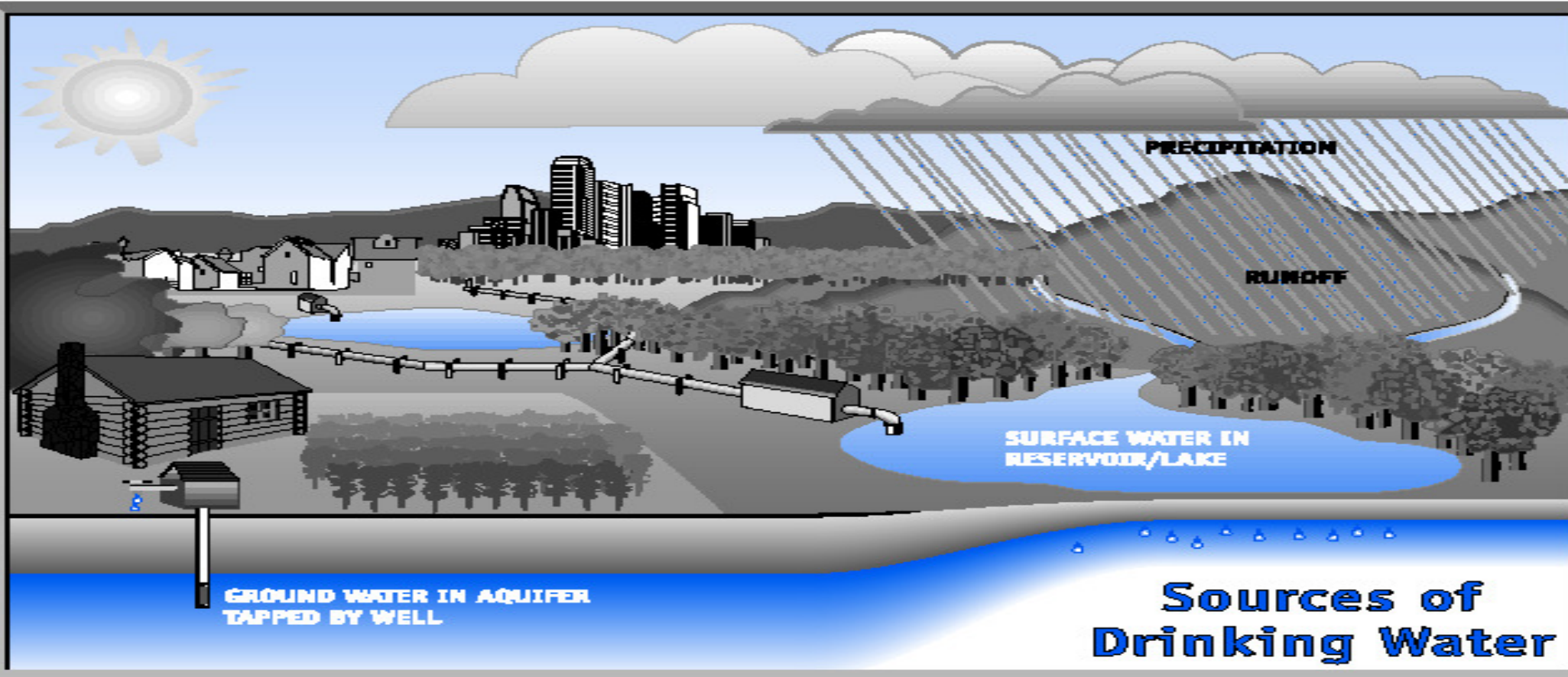


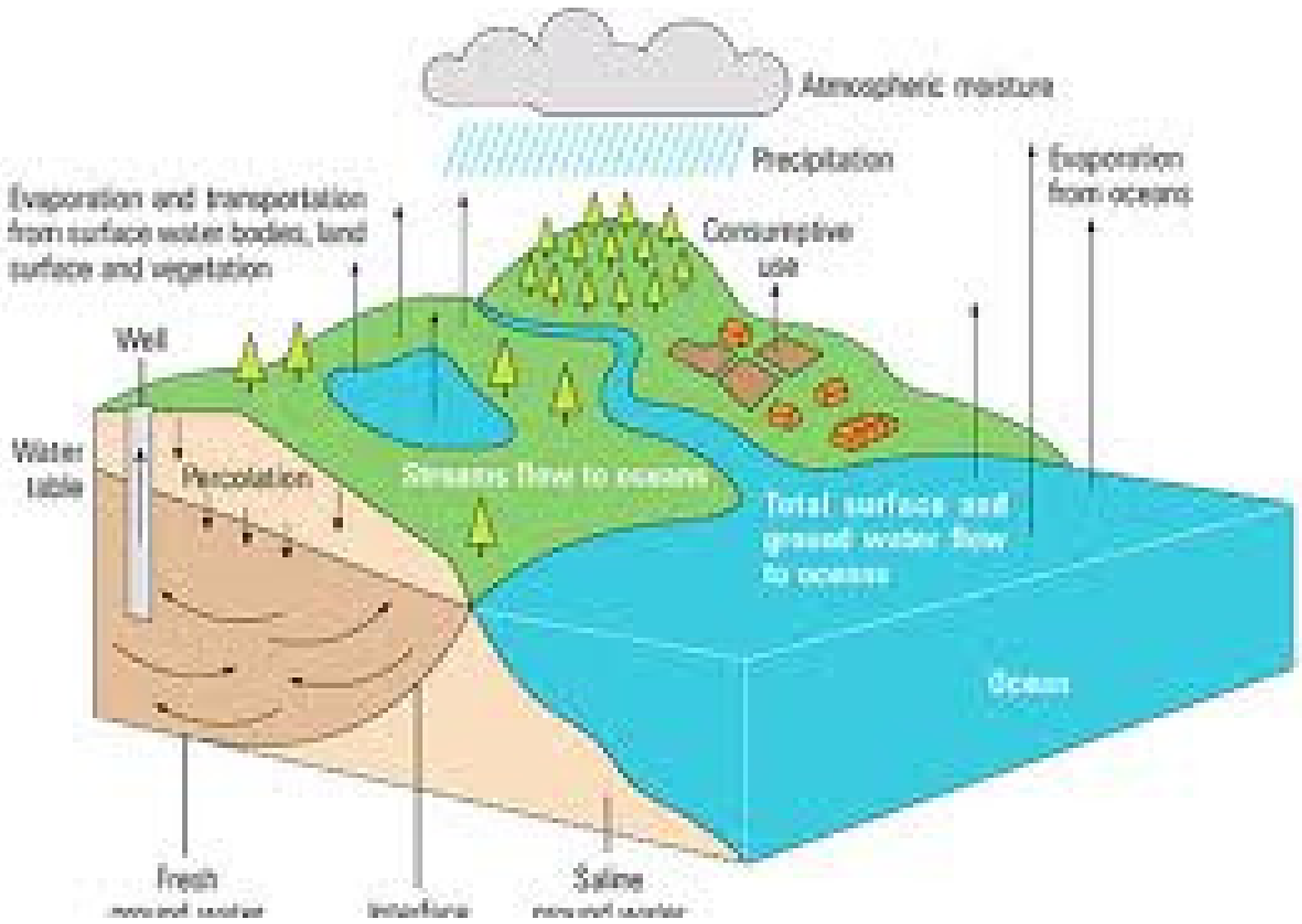
The background of the slide features a light gray gradient with several realistic water droplets and bubbles of various sizes scattered across the surface. Some are in the top left, some in the bottom right, and others are smaller and more numerous in the center and bottom. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# **WATER TREATMENT**

APPLICATIONS AND PROCESS BASIC INTRODUCTION

# WHERE DOES WATER COME FROM ?





Evaporation and transportation from surface water bodies, land surface and vegetation

Atmospheric moisture

Precipitation

Evaporation from oceans

Consumptive use

Well

Water table

Percolation

Groundwater flow to oceans

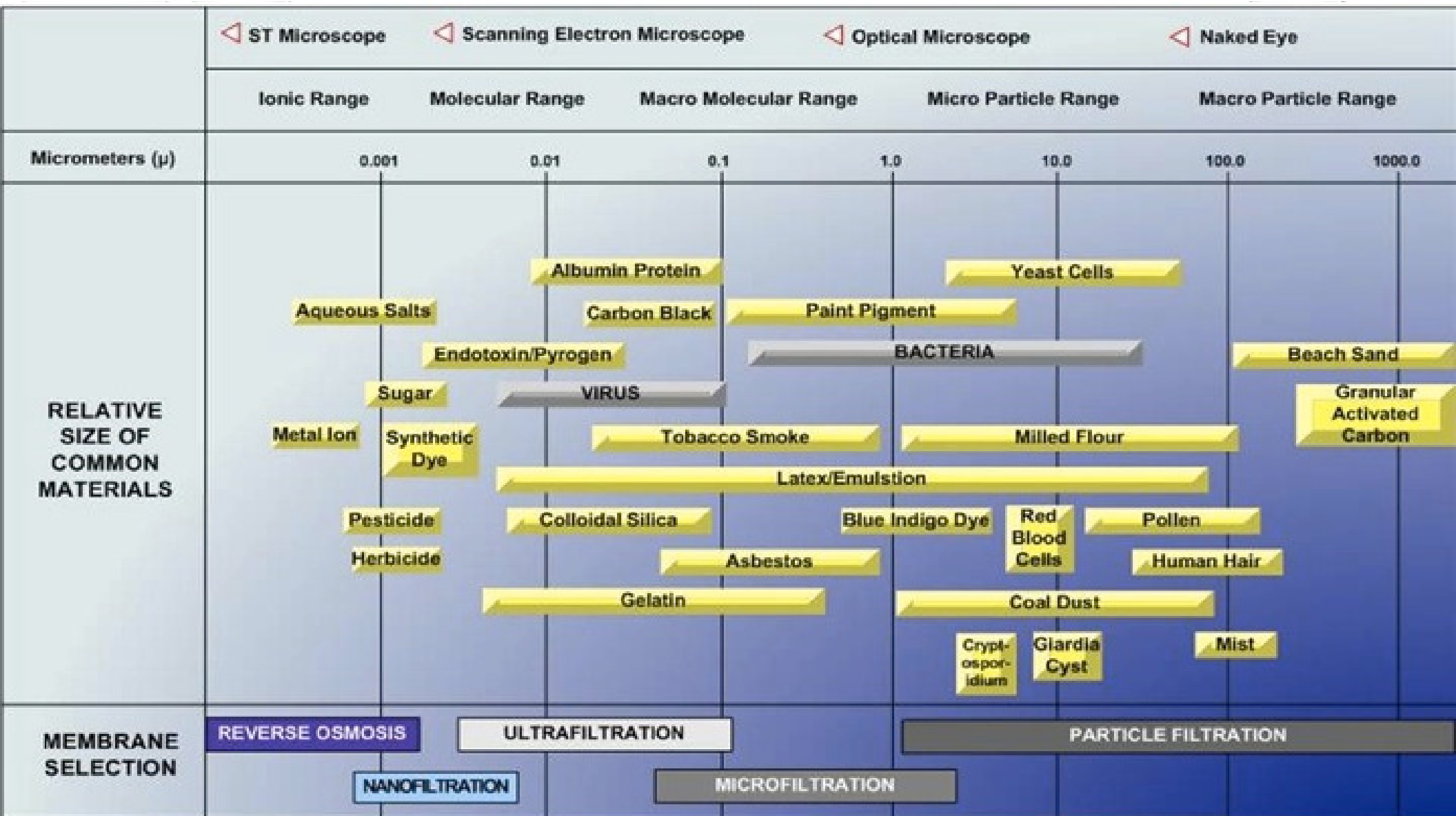
Total surface and ground water flow to oceans

Ocean

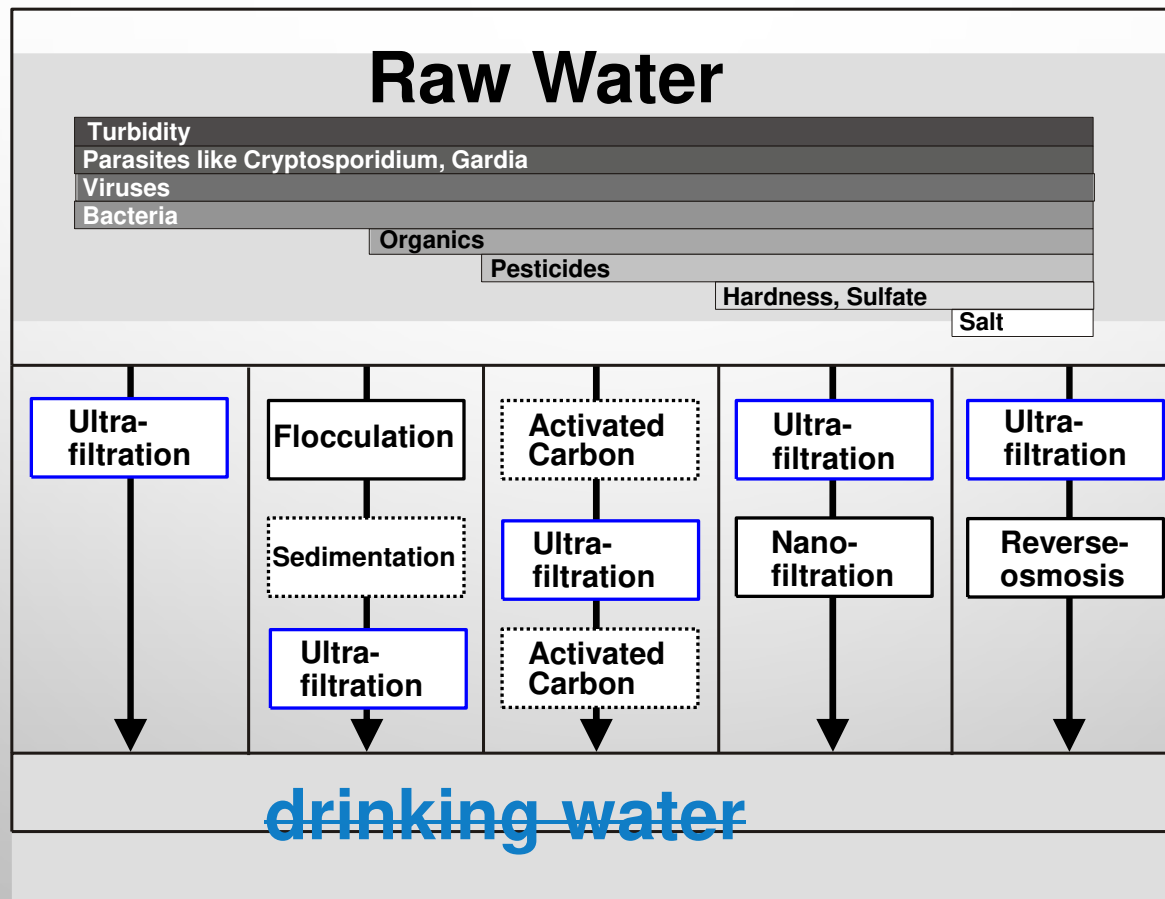
Fresh mineral aquifer

Saltwater interface

Saline mineral aquifer



# PROCESS COMBINATIONS



## Water Related Problems :

- Suspended Solids - Flocculation / Ultra Filtration
- PH – Acid or Caustic addition
- Colour – Flocculation / Filtration
- Odour – Granular Activated Carbon / Ozone / Chlorine
- Ammonia – Ozone
- Taste – Granular activated carbon
- Salts – Ca, Mg , Na , Cl , SO<sub>4</sub> etc – RO / NF / IX / Distillation
- Fluoride – Activated Alumina / IX / RO / NF
- Iron / Manganese – KDF / Birm / Greensand / Ozone
- Bacteria and Viruses – Chlorine / UF / UV / Ozone chlorine dioxide

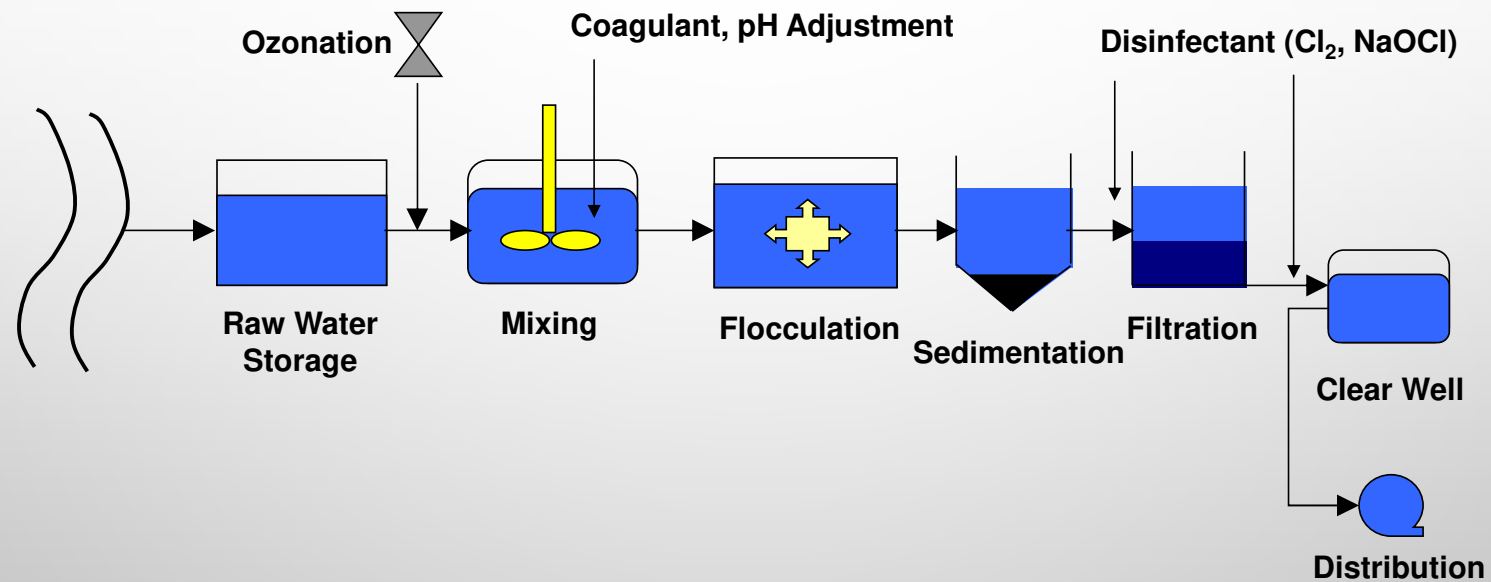


# TREATMENT OPTIONS SEDIMENT AND BACTERIA

- FLOCCULATION AND CLARIFICATION FOLLOWED BY DISINFECTION



# Surface Water Treatment Plant







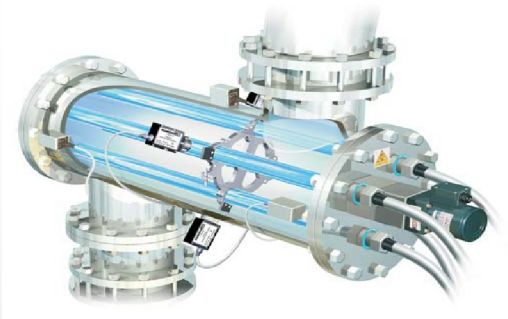
# FILTRATION AND DISINFECTION



- Sand
- Multimedia
- Ag plus
- Self cleaning Fine screen filters
- Bag filters



Chlorine



Ultraviolet  
Light



Ozone

# PROBLEM SALTS

- SALTS – REVERSE OSMOSIS
- HARDNESS – NANOFILTRATION
- IRON – BIRM / GREENSAND
- FLUORIDE – ACTIVATED ALUMINA
- NITRATES / CYANIDE – ION EXCHANGE RESIN



# REQUIREMENTS TO SOLVE WATER PROBLEMS

- WATER SOURCE – MUNICIPAL , WELL , BOREHOLE , RIVER , EFFLUENT , SEA
- WATER TEST ESSENTIAL
- HOW MUCH WATER IS REQUIRED PER DAY OR PER HOUR – WE WORK ON 200 – 250 LITRES / DAY PER PERSON BUT DRINKING WATER IS USUALLY 2 – 5 LITRES / DAY
- DO THEY HAVE INFRASTRUCTURE LIKE POWER , PUMPS , DAMS , BUILDINGS OR ANY SKILLED OR SEMISKILLED LABOUR
- WHAT IS THE FINAL APPLICATION – POTABLE WATER / PHARMACEUTICAL /PROCESS / AGRICULTURE ?

**THE MORE INFORMATION WE HAVE THE EASIER IT IS TO FIND A COST EFFECTIVE SOLUTION**