

removes no dissolved or colloidal organic matter. It utilizes monel metal cloth with 35 micron (0.0014 inch) openings. Finer mesh can be obtained.

L. DEMINERALIZATION/DESALINATION

If dissolved salts are to be removed, one of the following methods must be used.

- **Distillation:** The water is vaporized, leaving the salt behind. The vapor is reclaimed by condensation.
- **Electrodialysis:** Positive and negative ions flow through selective membranes under the influence of an induced electrical current.
- **Ion exchange:** This is the same process as described for water softening.
- **Reverse osmosis:** This is the least expensive method of demineralization. In operation, a thin membrane of cellulose acetate plastic separates two salt solutions of different concentrations. Although ions would normally flow through the membrane into the solution with the lower concentration, the migration direction can be reversed by applying pressure to the low concentration fluid. Typical reverse osmosis units operate at 400 psi and produce about 2 gallons per day of fresh water for each square foot of surface.

14 TYPICAL MUNICIPAL SYSTEMS

The processes employed in treating incoming water will depend on the characteristics of the water. However, some sequences work better than others due to the physical and chemical nature of the processes. Listed in this section are some typical sequences. Not present in the lists are the usual system hardware items such as intake screens, pumps, pipes, hydrants, reservoirs, and holding basins.

Table 7.25 provides guidelines for choosing processes required to achieve satisfactory water quality. This table bases the required processes on the incoming water quality.

Additives and chemicals can be applied to the water supply at various points along the treatment path. Figure 7.10 indicates typical application points.

- **For Well Ground Water** (typically cleaner than surface water)

sequence #1: intake
chlorination
fluoridation

sequence #2: intake
aeration
oxidation(chlorine or potassium permanganate)
settling
filtering
chlorination
fluoridation

sequence #3: intake
aeration
lime addition
soda ash addition
rapid mix
flocculation
settling
recarbonation
filtering
chlorination
fluoridation

- **For Lake or Surface Water** (typically turbid, and carrying odor and color)

sequence #1: intake
chlorination
coagulation
rapid mixing
flocculation
optional chlorination
addition of activated carbon
settling
addition of activated carbon
filtering
chlorination
fluoridation

- **For River Surface Water** (very turbid)

sequence #1: intake
presedimentation (holding basin)
chlorination
coagulation
rapid mix
flocculation
settling
coagulation
rapid mix
flocculation
addition of activated carbon
settling
addition of activated carbon
filtering
chlorination
fluoridation