

in concrete tanks below ground. There are further arguments for the underground storage tank. Such tanks do not occupy space near the power plant, which space is usually needed for other purposes. They are entirely out of sight, as well as protected against the likelihood of fire from lighting or from other origin.

The design and construction of concrete oil tanks is little or not at all different from concrete water tanks. In fact, it is usual to design them for ordinary hydrostatic pressures, and experience shows that, when well constructed, entire confidence may be placed in their ability to hold the oil without leakage. Naturally, where the surface of the tank is level with the ground surface and will have to carry loads, the cover must be designed accordingly, and usually requires the use of columns which rest upon the tank bottom.

### THE FUTURE OF PUBLIC UTILITIES\*

IT is well known that within the last few years all material and labor required for the construction, maintenance and operation of water works systems has advanced very greatly in cost; and in addition, it is the general experience, that the amount of labor output per man in most occupations has decreased, all resulting in a very much higher cost per output of service than existed before the war, which has left in its wake many problems of readjustment and reorganization, upon the wise solution of which the future of the world must be determined. These increased costs exist not only in water supply systems but in all public utilities.

Public utilities generally are a most important factor in our daily lives, ministering directly to our comfort and convenience and affecting our health. If we should eliminate the public utilities to-day, we would go back almost to the dark ages. Every one of them is essential, and rather than eliminate any of them, we could afford to pay for the services which they render, a great deal more than their present cost.

It is, we believe, a fact, however, that utility charges have not increased, because of contract or other legal limitations, or because of public opposition, in anything like the proportion that the cost of the service which they render has increased; many of them which are privately owned are in the hands of receivers; many others are struggling for their lives; and very few of them are in a position to extend and maintain their services as they would be if they could always be assured of adequate return for the services which they render.

The fact is that neither publicly owned nor privately owned utilities can be conducted to best advantage until the public, as a whole grasps the idea that every service must earn its cost and that the recipient of every item of service should always pay the full average cost of the items of service which he absorbs, leaving no portion of said cost to be carried by any who do not receive a service of some character from said utility. Once this idea is generally admitted, it will be easy to induce capital to invest in privately owned public utilities and to maintain said privately owned utilities as well as publicly owned utilities up to any standard of service which the public desires and is willing to buy.

#### Utilities for Scattered Populations

Much more careful study than is usually given is needed for the proper classification of the actual items of service which utilities perform, and there is a wide scope of discretion or option as to the basis of such classifications, especially in publicly owned utilities.

For instance, cities now are tending to a great scattering of population in surrounding suburbs. The cost of a water service for the well-built portion of the city, for adequate domestic and fire supply for its whole population, will be met by a certain definite service charge per meter

and price per 1,000 gallons of water supplied and taxed on assessed values for surplus capacity for fire protection and increased demand; but if one extends the system to double the mileage of mains required to give adequate service to the reasonably well-built portion of the city, in order to give possibly one-fifth as many scattered premises the same character of domestic supply and fire protection, it is obvious that the rates per these various units must be higher for all, or else that one must have two or more rates, the one rate covering the actual cost for the well-built sections of the city, and the other rates the very much higher costs, due to the scattering of population in outlying areas.

Because of the great tendency to scatter population, leaving much unused property sandwiched between occasional improved areas, the actual cost of all municipal improvements and utilities is enormously increased, and property in the well-built and thoroughly served sections of many cities is allowed to depreciate in value and usefulness. More carefully and justly arranged schedules of utility rates and schemes of taxation for municipal improvements based always upon the idea that every beneficiary of every service should pay as far as possible the cost of such service, and that the service should only go to those who do pay their share of its cost, would tend strongly toward the checking of premature development of outlying and unnecessary areas, and thus allow the more consistent and thorough development of all services within such areas as are actually required for the comfortable accommodation of the whole population.

#### Improvements Unduly Delayed

For several years conditions have precluded anything more than the most essential extensions and developments of water supply systems, and to-day the cost of material and labor for improvements is in many cases out of all proportion to the rates which are charged for service, with the result that extensions and improvements which the growth and development of our cities really require are being unduly delayed.

Such delay often shows no obvious depreciation of service up to a certain maximum demand, or breaking point, and the people who are getting all the service they desire are always skeptical of the necessity for improvements of which the plant management is painfully aware. Eventually, however, a big fire, with inadequate water supply to provide proper protection, or a general increase in insurance rates, or deterioration in the character of the water because of the overload imposed upon the purification system, and possibly an outbreak of typhoid, brings the public to attention, and it is found that large expenditures in improvements are a few years past due and will require that many years to complete in the face of a depreciating service due to the further increasing demand while the improvements are in progress.

Water works especially, and other public utilities as well, are essential, economical and vital factors in public comfort, well-being and health. It pays to keep them up to the maximum state of efficiency which the community which they serve can afford to pay for. Both publicly owned and privately owned utilities must fail in service, and even cease to serve at all, if they are not sufficiently compensated for the service which they render to permit them to pay living wages to the large number of employees who are engaged in their service, to provide generally better conditions of employment and compensation for their employees than they have heretofore, and to earn their reasonable interest and depreciation and operating costs.

Conditions since 1913 have changed enormously. A new price level has been reached and is tending toward stabilization on a much higher level than then existed. Labor, especially, is and will remain higher. Improved methods of production or building, and economies or substitutions, it is reasonable to hope, will in some degree lower the general cost of living from its present scale, and the cost of utility developments as well, but if anything is manifest, it is the common belief that the average man must in the future obtain a better opportunity and a better share of the comforts, luxuries and security of life for the service that he renders than heretofore; and if this is to be obtained, general wages, relatively, must remain higher than heretofore.

\*Excerpt from report of the Committee on Water Works of the American Society for Municipal Improvements.