rants, such basement flooding admits sewage which could cause disease to spread rapidly to many persons and, if communicable, thence to others over wide geographic areas. In industrial and commercial areas, basement flooding, from combined sewers, frequently causes serious damage to mechanical, electric and process equipment, such as power generating equipment, heating and cooling equipment, transformers, mechanical shop equipment and stored equipment, goods, and supplies.

There are, in many communities, low-lying areas which flood frequently due to the runoff from local storms. There are also areas which are inundated by rising waters of natural watercourses. In the latter case, the protective measures to be employed involve the construction of flood control facilities, which are beyond the scope of, and are not included in, this report. In either of the above cases, funds required to minimize property damage are often not available. In such cases a logical solution to the flooding problem is the use of flood plain zoning. This procedure limits the usage of such areas in a manner which minimizes damages. The construction of permanent structures and improvements are prohibited, in favor of the type of development or usage which will suffer only temporary and relatively small damages. The development of parks and recreational areas in flood plains, in lieu of residential, commercial, and industrial development, is an example. Such zoning does, however, meet with considerable opposition from landowners and, in some cases, persons in the government responsible for fiscal matters.

(c) *Quantitative Standards of Performance and Design*

The measurement of the standard of performance of storm sewer systems is mainly a quantitative one. A system which is entirely adequate would carry off, without damage, all drainage from miscellaneous sources and the runoff resulting from any conceivable storm that may occur in the future, no matter how rare in frequency of recurrence. To conceive and design such a system would be impractical and economically unsound. In fact, a greater storm than heretofore experienced may occur after such a system is constructed. The system is then no longer completely satisfactory.

Today, storm sewer systems are designed for hypothetical rainstorms of an "intensity, duration, and frequency of recurrence" which appears economically justified for the particular locality. At some future date, when sufficient and accurate data are available for a given geographic locality, and after somewhat more refined methods of data analysis and design procedures have been developed, it will be possible to design a storm sewer system for such a locality in a more precise and meaningful manner than is now possible.

The customary design procedure now used is to design storm sewer systems protecting residential areas for the storm likely to be equaled or exceeded, on the average, once in a given period of time. The period used ranges from 2 to 10 years (five is common). Whether the 2-year or 10-year frequency, or another, is selected depends upon the relative value of the property being protected, and the ability to pay. Systems protecting industrial and commercial areas are sometimes designed for storms of greater intensity.

Whether or not a storm sewer system should be built, or improved, should be based, in part, upon a thorough survey and analysis of annual