It should be noted that over 80 percent of all the systems were designed to exclude storm water runoff as well as other surface drainage. The remaining systems which were not so designed pose the single largest problem involving adequate sewage collection facilities which must be resolved during the remainder of this century, if the metropolitan complexes are to continue to grow and prosper. This problem of combined services is discussed in detail later in the chapter.

The physical facilities that made up the 11,655 sewer collection systems included over 270,400 miles of pipe, over 4 million manholes and an indeterminate number of special structures, pumping stations and related appurtenances estimated to have a replacement value in excess of $8.5 billion in 1965 dollars. New systems, additions and extensions of existing systems that have been undertaken since the inventory have increased the total miles of pipe in service to almost 300,000 miles, providing service to over 130 million people living in 12,600 communities. The current replacement cost of 297,500 miles of pipe including all necessary appurtenances is estimated to be in excess of $9.5 billion (1965 dollars).

Though sewers have been constructed in the United States since before the Revolution, comprehensive systems for the collection of water-borne wastes of a domestic nature did not evolve until the mid 1800's.

From its beginning in 1857, the growth in the number of such systems was logarithmic, and closely approximated the growth in the number of communities with populations in excess of 2,500 people, until the mid-1920's. Thereafter though the growth rate continued, many of the systems were built to serve smaller population groups. It is now estimated that over one-third of all the systems serve communities with populations of less than 2,500. Table 2 presents a historical comparison of the number of urban communities and their population, the number of sewer facilities and the population served by them since 1860.

TABLE 2.—*Development of sewer collecting systems in the United States*

Year	Census population (in millions)	Urban communities			Sewer collecting systems			
		Number	Population (in millions)	Population as percent of census population	Number	Population served (in millions)	Population served as percent of—	
							Census population	Urban population
1860	31.4	300	6.0	19	10	1.0	3	17
1870	38.6	650	9.0	23	100	4.5	12	50
1880	50.2	1,050	15.0	30	200	9.5	19	63
1890	62.9	1,420	22.3	35	450	16.1	25	72
1900	76.0	1,800	30.4	40	950	24.5	32	81
1910	92.0	2,310	42.2	46	1,600	34.5	37	82
1920	105.7	2,790	54.3	51	3,000	47.5	45	87
1930	122.8	3,179	69.0	56	5,100	61.5	50	89
1940	131.7	3,485	74.7	57	8,256	70.5	53	94
1950	151.3	4,077	90.1	59	10,600	80.0	53	89
1960	179.3	5,022	113.0	70	11,550	115.1	64	102

Source: Extrapolated data from, "Modern Sewage Disposal" Federation of Sewage Works Association and the "1962 Inventory of Municipal Waste Facilities in the United States," publication No. 1165 (Public Health Service).