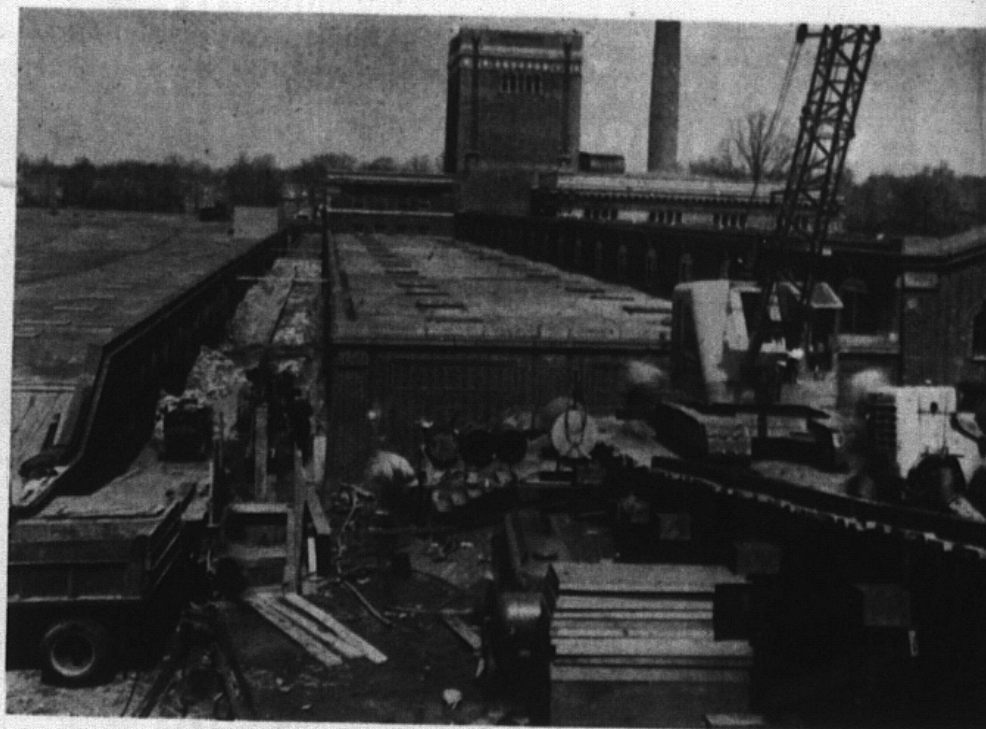




Samuel S. Baxter is overseer of a \$52 million rebuilding of a twice-great water system. Conversion of Queen Lane Waterworks (right) into a modern facility is symbolic of a . . .



Golden Decade for Philadelphia Water

Philadelphia is a particularly appropriate host city for next week's annual convention of the American Public Works Association. For in three big areas of municipal public works—sewage disposal, refuse disposal and water supply—the City of Brotherly Love is once again in a "golden era" after many years of torpor and desultory action.

By 1960 all of the city's sewage will be treated before being discharged into those two historically famous rivers, the Delaware and the Schuylkill. Under a ten-year, \$80 million anti-pollution program, three treatment plants with a total capacity of 400 mgd and numerous interceptors have been constructed (ENR Mar. 8, 1956, p. 37). A few more miles of interceptors to complete the program are scheduled to be in operation by 1960.

Since 1952 when it had only 600 tons per day of incinerator capacity, Philadelphia has spent \$10 million to add 1,350 tons daily capacity in four new or expanded plants in its attack on open burning. Another 2,400 tons worth of incinerators is scheduled for completion by 1964, when capacity will have caught up with refuse collection (ENR July 18, p. 56).

But the city's brightest accomplishment, nostalgically, if for no other reason, is its current ten-year, \$52 million reconstruction program, coupled with a revitalization of the Philadelphia Water Department. When completed in 1960, 400 mgd of slow sand filter capacity will have been replaced by 487 mgd of modern rapid sand filtration plants, ca-

pable of 730 mgd at continuous overload, and Philadelphia can again take its place among the first rank of water suppliers.

• **Fall from pedestal**—The city's water history is one of extremes. In 1801, Philadelphia became the first city in the then infant nation to be served by a central water plant—the Centre Square Works, which was replaced in 1815 by the old Fairmount Works on the Schuylkill River. Subject to much criticism at the time, Fairmount was built to much greater capacity than existing demand while contemporary cities like New York, Boston and Baltimore were trying to undertake waterworks that would be inadequate even before they were completed.

Philadelphia maintained its early advantage by enlarging Fairmount and subsequent works ahead of demand until the 1870's. During this period Philadelphia's action served as a shining example to the rest of the nation. But apparently the local citizenry took things for granted, for the waterworks was allowed to deteriorate badly during the next 30 years.

The period from 1900 to 1913 was a second golden era in Philadelphia's water history. Four large slow sand filtration plants, with chlorination facilities, were constructed and again the city was found to be in the vanguard of water suppliers.

But this state of affairs did not last very long as fate played an unkind trick. Just as the last slow sand plant was be-

ing constructed, the water supply industry turned to rapid sand filtration. The grand system of the early 1900's became old before its time and Philadelphia's water fortunes remained at low ebb until the beginning of the present decade.

• **Big decision**—Basic to Philadelphia's current filter reconstruction program was a decision to continue drawing on Schuylkill and Delaware River in Philadelphia rather than obtain purer upland water (from the upper Delaware River). For a long time both rivers had been receiving large amounts of pollution load, but in recent years Pennsylvania's clean streams program and the Interstate Commission on the Delaware River have reduced pollution considerably. One of the key objectives of Philadelphia's own cleanup program was to protect the Torresdale intake from the discharge of the city's Northeast sewage system.

Anti-pollution measures notwithstanding, coliform organisms for the year 1956 averaged monthly 34,000 as most probable number (MPN) per 100 milliliters at the Queen Lane plant on the Schuylkill and 86,000 MPN per 100 ml at Torresdale on the Delaware. However, even these high counts could be handled by the existing slow sand filtration plants.

The key role in shaping the decision to remain with present water sources was played by Samuel S. Baxter, first as assistant chief engineer and chief engineer of the old Department of Pub-

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WELLPOINT PUMPS HANDLE 22 FT SUCTION LIFT

LOWERING 16 ft of water at this lift would ordinarily mean placing wellpoint system on a berm below ground. Actually, as photo shows, results were achieved in the simplest way, without additional excavation, the wellpoint line and pumps working from street level. Other noteworthy items revealed by the photo include: (a) pre-drainage with wellpoints on only one side of wide trench; (b) the open-cut method, eliminating costly sheeting.

• The foregoing are typical of the efficiencies of the Griffin Wellpoint systems (several used continuously) on this vast project which involved mile on mile of digging, with the majority of the pipelines laid far below ground water table in deep trenches containing water-bearing sands. Progress rate? Even in many of the swampland sections, it topped 500 ft per day. For "quick-dry" . . . specify . . . Griffin.

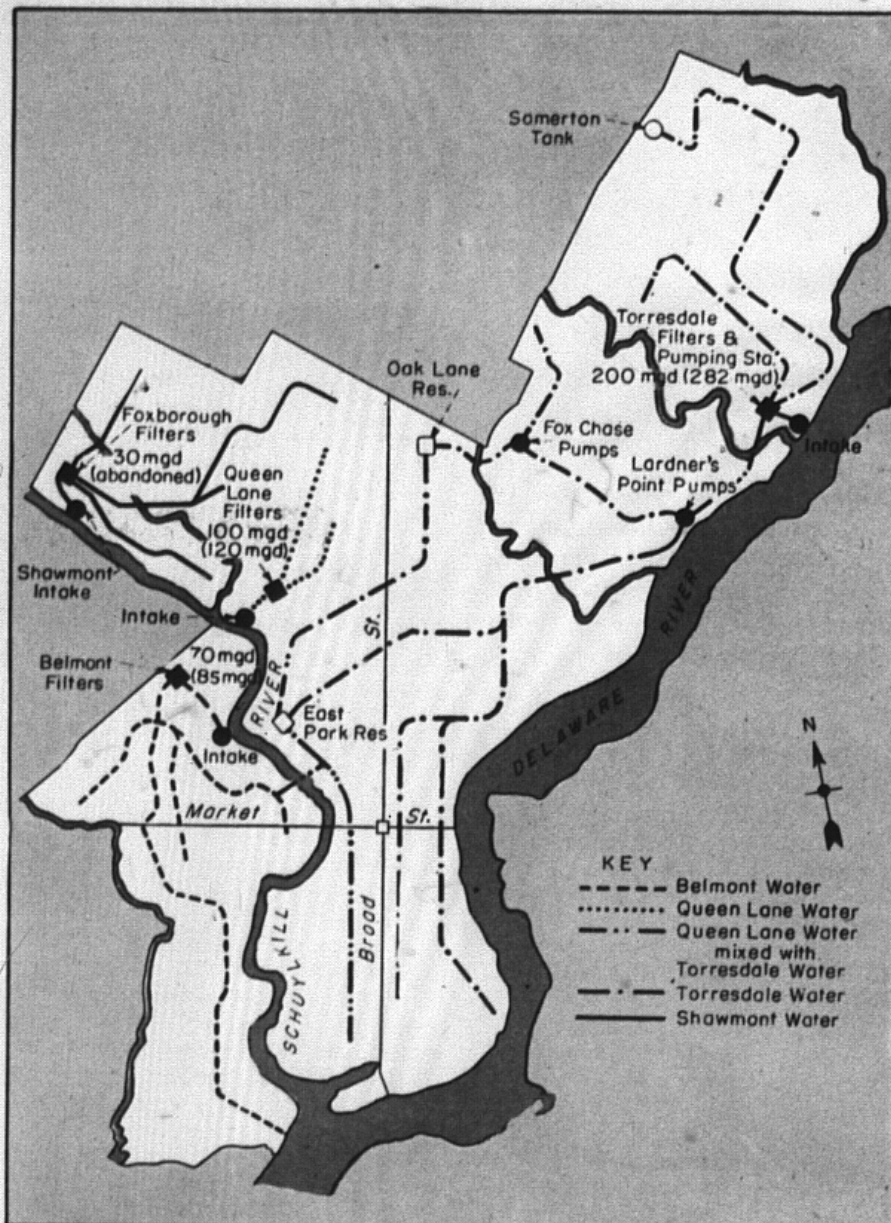
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... Philadelphia's Golden Decade



CONSTRUCTION PROGRAM involves building modern waterworks at existing sites, reconstruction of many mains and pump stations. Numbers in parenthesis are capacities of new treatment plants.

lic Works between 1946 and 1952 and now as Commissioner and Chief Engineer of the new Water Department (see p. 42). Commissioner Baxter reasoned that since the clean streams program had been effective in reducing pollution loads in the Schuylkill and Delaware, the rivers would in all probability further improve in quality or at least hold their own. In addition, technological advances in water treatment would improve the existing ability of treatment works to cope with river pollution.

Although economy was the major factor in the decision to stick with down-river sources, Sam Baxter's stand on the effectiveness of stream pollution control and water treatment plants in safeguarding water quality represents

a courageous, sometimes lonely, position in this day and age.

• **Reconstruction program**—Outmoded, badly deteriorated and undersized plants dictated the current program. At the heart of it are three new filter plants at the Torresdale, Queen Lane and Belmont sites (the Roxborough filters will be abandoned). In addition, a very vital \$16.2 million is being spent on raw and finished water pump stations, mains to the Roxborough service district and throughout the city, and on telemetering equipment for 70 points of the entire system to bring the total cost of the program to \$52 million.

The existing filter plants provide various combinations of facilities for pre-settling, coagulation, pre-filtering,