Lower Delaware Estuary-Water Quality Management Planning

The water quality of the estuary at Trenton, New Jersey, is generally excellent, but begins to deteriorate rapidly below that point. From Torresdale to below the Pennsylvania-Delaware State Line the deterioration becomes extreme. As a result of waste discharges, dissolved oxygen is almost completely depleted in some locations and gases from anaerobic decomposition of organic deposits are produced regularly during the summer. Coliform bacteria concentrations are very high in this same stretch of river. Acid conditions in the river caused by industrial waste discharges have been observed for several miles above and below the State Line. Surface discoloration due to the release of oil from vessels and surrounding refineries is a common occurrence. Overflows from combined severage systems result in a discharge of fecal matter and other offensive solids. floating material and miscellaneous floats which would normally be trapped by the treatment plant. Intrusion of salt water from the bay, while not caused by pollutional discharges, also imposes a limitation on municipal and industrial water uses during periods of extended low flows. Figure 1 outlines the Delaware River Basin.

The Water Quality Standards set to improve the existing quality were evolved in close coordination with parties forming the Delaware River Basin Commission, the States of Pennsylvania, New York, New Jersey and Delaware and the Federal Government. The Standards set forth general requirements Basinwide and specific criteria for nontidal and tidal interstate waters. Furthermore, they state that water uses shall be paramount in determining stream quality objectives, which in turn, shall be the basis for determining effluent quality requirements. The tidal portion of the Delaware Basin is divided into five zones as shown in Figure 2. Water uses and stream quality objectives for the Basin are contained in Article 301, Water Quality Criteria, Rules and Regulations, Sanitary Water Board. Of the specific criteria mentioned dissolved oxygen is the most critical (See Figure 3). An allocation of the assimilative capacity of the estuary was adopted with a reserve portion set aside. Carbonaceous oxygen demand formed the basis for initially allocating the capacity of receiving waters to assimilate the oxygen demand generated by wastes.

For the 86-mile long estuary, the total carbonaceous oxygen demand permitted to be discharged by all wastes is specified in Table 2. Figure 4 shows the name and location of the major dischargers

TABLE 2

Zone 2	18,600 lbs./day
Zone 3	144,800 lbs./day
Zone 4	91,000 lbs./day
Zone 5	67,000 lbs./day
TOTAL:	322,000 lbs./day

The Department and the Delaware River Basin Commission encouraged the development of wastewater management plans on a regional basis. A number of dischargers in the Lower Delaware Estuary (Delaware County) expressed interest in regionalization. The first meeting of regulatory agencies and dischargers took place on September 6, 1968. In April of 1969, the Delaware County Commissioners passed a resolution to enable an application to be filed with the Federal Department of Housing and Urban Development for an advance planning grant.

The purpose of the proposed study was to determine the feasibility of development of a practical, effective and economical regional system for the collection and treatment of sanitary and industrial wastewater presently generated in and anticipated from the Delaware County Basic Sewerage Region.

The County Commissioners elected to expand upon the original intent for Regionalization along the Estuary and include the watersheds draining the County to the Delaware. Formal approval of the HUD grant came in July of 1970. A contract between the consultant and the County Commissioner was also signed in July. A Technical Advisory Committee and a Regional Coordinating Committee was created to work with the engineers.

The principle engineering items to be addressed in this study were:

1. Preliminary determination of a treatment process capable of accepting both sanitary and industrial process wastewater and producing an effluent which will meet applicable water quality standards of the Delaware River Basin Commission and appropriate state regulations.

2. Preliminary determination of capability of Wilmington, Delaware and Philadelphia sewerage systems to take all or part of collected wastes for treatment and discharge.

3. Preliminary design of the regional collection system including selection of recommended treatment plant site or sites and preliminary layout of regional interceptors and connections to designated dischargers.

In addition, the following nonengineering considerations were to be addressed in the study:

1. Alternate organizational and administrative approaches to development and operation of the recommended regional system.

2. Recommended programming for further refinement, establishment and development of the regional system.

The firm of Albright add Friel, a Division of Betz Environmental Engineers, Inc., completed a preliminary report entitled, Delaware County Regional Sewerage Project, dated October 28, 1971. The report has been prepared for the Delaware County Board of Commissioners and was jointly financed by the U.S. Department of Housing and Urban Development, and Delaware County. The report contains the results of engineering investigations of various alternative plans for the solution of wastewater problems within Delaware County and southeastern portions of Chester County on a regional basis. The 246 square-mile study area encompasses the watersheds of Darby Creek, Crum Creek, Ridley Creek, Chester Creek and Naaman's Creek and Marcus Hook Creek. It sets forth preliminary design and total cost estimates of all necessary conveyance systems and treatment facilities to serve the study area during the period 1973 to 2020. Recommendations of the report are divided into two sections that apply respectively to the western and eastern portions of the study area.

The western portion of the study area includes the Chester Creek Watershed, the Ridley Creek Watershed and the Upper Crum Creek Watershed above Geist Reservoir. For this area a plan and program is recommended whereby all wastewater would eventually be conveyed to and treated at a new Delaware County Regional Water Quality Control Authority treatment plant that would be located at the site of the existing City of Chester sewage treatmentnplant. Existing treatment plants in this area would be phased out as implementation of the plan progresses.

The eastern section of the study area includes the Darby Creek Watershed and the Lower Crum Creek Watershed below Geist Reservoir. For this area the report recommends that wastewater from the Central Delaware County Authority, Muckinipates Authority, Tinicum Authority, Darby Creek Joint Authority and Radnor-Haverford-Marple Authority service areas be conveyed to and treated at the City of Philadelphia Southwest Treatment Plant. Existing treatment plants in this area would be phased out as implementation of the plan progresses.

Table 25, Recommended Plan for Municipal Systems, denotes the action to be taken with respect to the existing municipal treatment plants.

The Delaware River Basin Commission and the Pennsylvania Department of Environmental Resources held a joint public hearing on Friday, February 4, 1972, on proposals for a regional wastewater management plan and program for Delaware County, Pa.. The purpose of the hearing was to gather expressions and opinions of concerned parties regarding the proposed plan and program, its inclusion in the DRBC's Comprehensive Plan, and its certification (under 18 CFR 601) to the U. S. Environmental Protection Agency by Pennsylvania DER as the official interim pollution abatement plan for the area. Under Docket D-72-8 CP, dated February 23, 1972, the Basin Commission added the proposed plan to Section IX of the Comprehensive Plan. All industrial and municipal abatement schedules, sewerage permits, or orders heretofore approved by PennDER and/or DRBC for surface water discharges within the study area would be modified and such new schedules adopted as necessary to require compliance with and participation in the proposed regional plan. Facilities necessary to effectuate participation by each waste discharger in the proposed regional plan and program shall be consistent with the requirements of the proposed regional plan and program.

Such interconnections as are required by the proposed regional plan and program shall be completed no later than the date that the regional facility is scheduled to be ready to receive the waste/

Under cover of an April 24, 1972 letter, the Department corresponded with the Regional Administrator, EPA, notifying him that the Delaware County Regional Sewerage Project by Albright & Friel, had been adopted by the Department as its interim plan for wastewater management and water quality control in Delaware County. Specifically, that portion of the plan designated as the Immediate Action Phase will provide the basis for decision making by the Department on actions related to water quality management in the plan area. As a result of the adoption of the plan, the Department will not approve any project which connot be shown to be consistent or compitable with the approved comprehensive water quality and wastewater management plant. We anticipate that the provisions of this plan will remain in effect until the fully developed regional basin-wide, and metropolitan plan for the Lower Delaware River Study Area have been completed by the Department in conformance with the Federal Grant Regulations 18CFR601.

The Department issued orders to all dischargers in May of 1972, compelling participation in the regional plan.