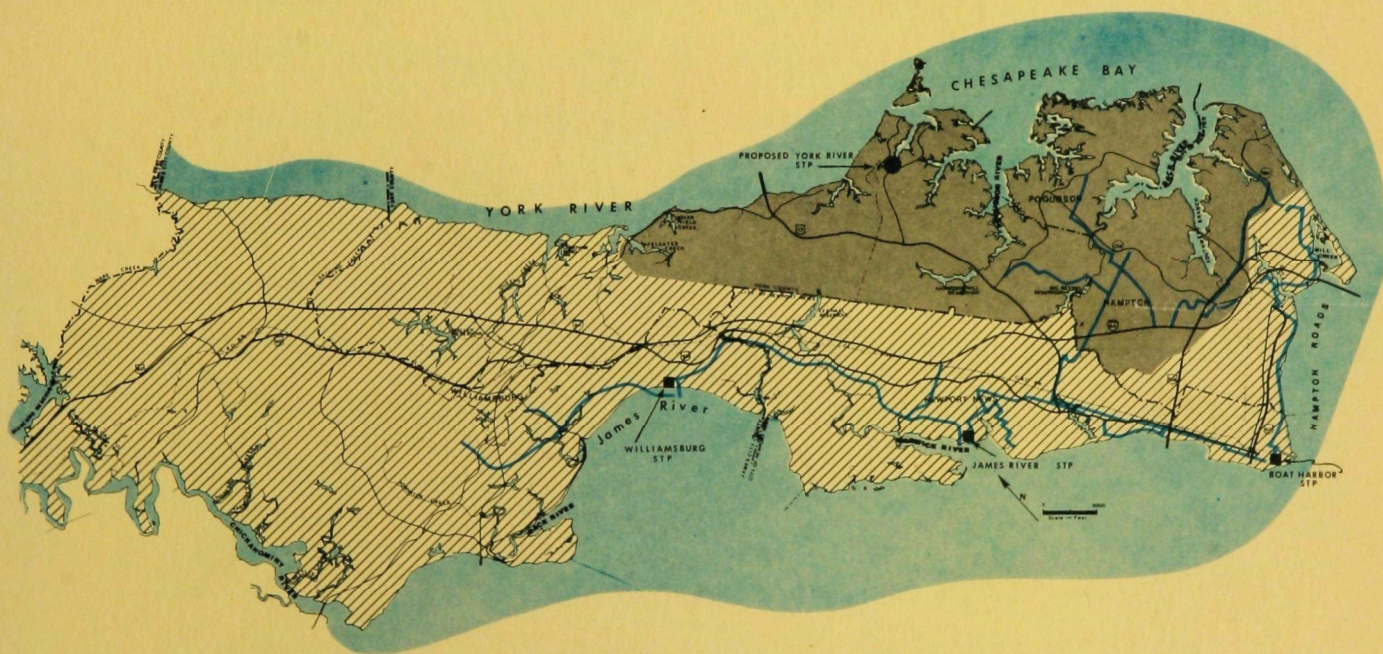


# FINAL

## ENVIRONMENTAL IMPACT STATEMENT

### YORK RIVER WASTEWATER TREATMENT FACILITY YORK COUNTY, VIRGINIA



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III

6TH AND WALNUT STREETS  
PHILADELPHIA, PENNSYLVANIA 19106



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
6TH AND WALNUT STREETS  
PHILADELPHIA, PENNSYLVANIA 19106

OCT 31 1977

TO ALL INTERESTED AGENCIES, PUBLIC GROUPS AND CITIZENS:

Enclosed is a copy of the Final Environmental Impact Statement (EIS) for the proposed construction of the York River Wastewater Treatment Facility, York County, Virginia.

Pursuant to the National Environmental Policy Act of 1969 and regulations promulgated by this Agency (40 CFR 6, April 14, 1975), the public comment period for this Final EIS will remain open until November 30, 1977. All comments should be submitted to the above address for the attention of the Environmental Impact Branch - EIS Preparation Section.

This Final EIS addresses all substantive comments received during the public review period on the Draft EIS including the testimony received at the Public Hearing of June 20, 1977. Rather than repeat the entire Draft EIS here in the Final EIS, we have referenced the Draft EIS as an appendix while making the appropriate changes and additions in the Final EIS.

I welcome your interest and participation in the EIS process.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Jack J. Schramm", is written over a horizontal line.

Jack J. Schramm  
Regional Administrator



## SYNOPSIS

### BACKGROUND

Public Law 92-500 authorizes the United States Environmental Protection Agency (EPA) to be the administering agency for a major Federal environmental program entitled "Grants for Construction of Treatment Works". Under this program, the EPA Administrator may provide up to 75 percent of the funding for the construction of publicly-owned wastewater treatment facilities to any qualifying state, municipality, intermunicipal agency, or interstate agency. Before granting federal funds, the National Environmental Policy Act (NEPA) and Executive Order 11514 require all federal agencies to prepare Environmental Impact Statements (EIS) on any projects which may significantly affect the quality of the environment or may be highly controversial.

EPA Region III has prepared this EIS to assess the environmental impacts associated with the proposal of the Hampton Roads Sanitary District (HRSD) to construct a 15 million gallon per day (mgd) sewage treatment plant (STP) on the York-James Peninsula immediately west of Seaford, York County, Virginia.

The Facilities Plan for the proposed project was completed in 1975 and forwarded to the Virginia State Water Pollution Control Board (SWCB) for the required state certification before EPA could finally approve the construction grant application. During the SWCB review, EPA received copies of the Facilities Plan for internal review. After careful review and consideration, EPA, on March 31, 1976, published a Notice of Intent to prepare an EIS. As a result of a competitive review, Ecol Sciences, Inc. was contracted by EPA to prepare the EIS. Preparation of the Draft EIS was made available for public review on May 19, 1977 and a public hearing to solicit comments concerning the Draft EIS was held on June 20, 1977.

This Final EIS addresses the comments received during the review period of the Draft EIS in an issue-oriented manner and references the Draft EIS as an appendix.

### ***DESCRIPTION OF THE APPLICANT'S PROPOSED PROJECT***

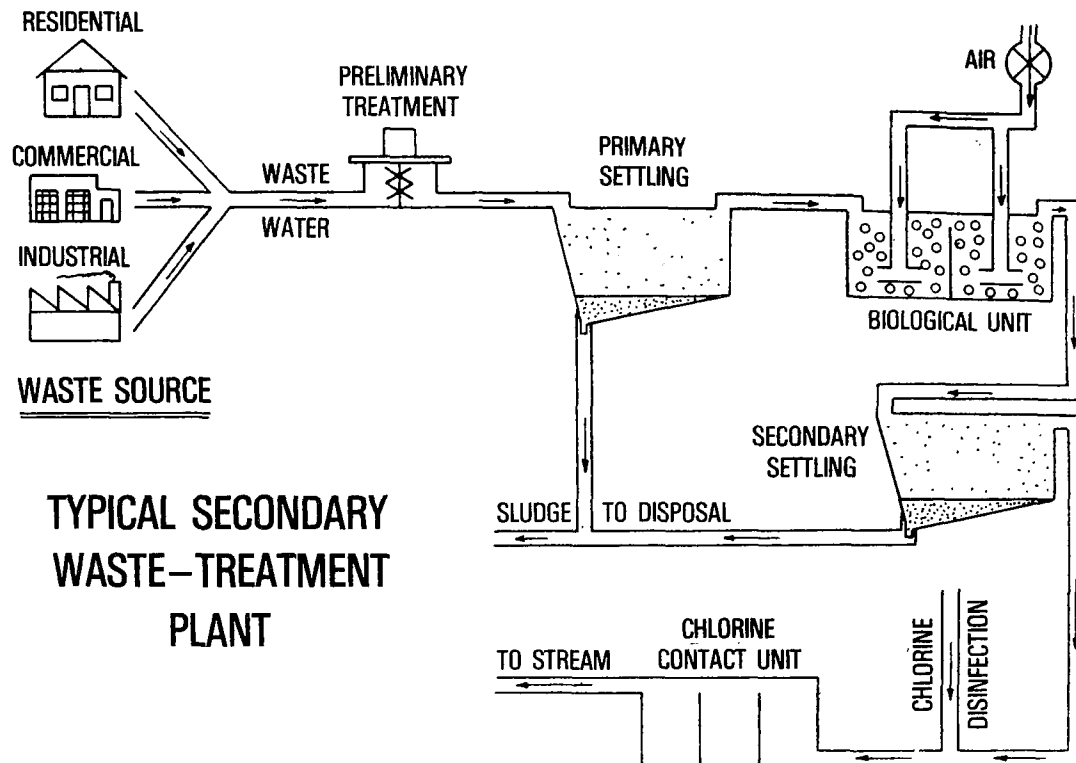
HRSD has proposed to construct a 15 mgd conventional sewage treatment plant by 1980. A simple schematic of a typical secondary wastewater treatment is shown below. Effluent from the facility would be chlorinated, dechlorinated, and discharged to the York River through the cooling water discharge of the nearby Virginia Electric Power Company (VEPCO) electric generating station. Capital costs for the York River STP were estimated to be \$20,031,000 and initial operation and maintenance costs for the facility were estimated to be \$673,000 by GFCC in 1977.

The service area of the proposed York River STP encompasses an area of approximately 69,400 acres and would include most of York County, the City of Poquoson, and the northern half of the City of Hampton.

HRSD currently operates three municipal sewage treatment plants on the York-James Peninsula. These facilities, Boat Harbor, James River, and Williamsburg, are connected by a series of force mains, pumping stations, and interceptors. The "interconnect" system was designed to permit HRSD to avoid the discharge of untreated wastewater by diverting flows from an overloaded or malfunctioning facility to another facility in the system for treatment until the problem at the first facility could be corrected. The ability to transfer flows between service areas is regulated by the capacities of the conveyance system and the *excess treatment capacity of the connected treatment facilities*. In its review of wastewater management alternatives for the York-James Peninsula, the Virginia State Water Control Board (SWCB) recommended that the York River STP be included in the interconnect system.

The plant service area is included in the Hampton Roads Air Quality Control Region (AQCR). Two air pollutant sources in the immediate vicinity of the proposed facility, VEPCO and the Amoco refinery, emit more than 90 percent of the sulfur dioxide (SO<sub>2</sub>), particulates, and carbon monoxide (CO) emitted in York County. Both of these sources are currently in compliance with air quality regulations. Odorous pollutants are a problem in the immediate vicinity of the proposed facility. VEPCO and Amoco are the probable sources of these pollutants.

Water quality in the lower York River generally conforms with state water quality standards.



Closures of shellfish harvesting areas have occurred in tributaries to the lower York River and around small sewage outfalls. These closures have been related to contamination from small STP's, marinas, urban runoff, and failing septic tanks.

Aquatic animals of commercial importance include: the blue crab, the hard clam, and numerous fish species. No known endangered plants occur within the primary study area. No endangered animal species have been recently reported in the study area, but endangered or undetermined species which may utilize the area for feeding include the southern bald eagle, the osprey, and the Peregrine falcon.

### ***SOCIAL AND ECONOMIC ENVIRONMENT OF THE STUDY AREA***

In 1975 the population of the service area of the proposed York River STP was 80,902. Approximately 60 percent of the population was concentrated in the City of Hampton which is the urban center of the study area. Approximately 6 percent of the 1975 population was housed on military reservations. The cities of Hampton and Poquoson are the major developed portions of the study area. In contrast, lower York County is principally rural.

Land use in the York River service area is summarized below.

<u>Land Use</u>	<u>Acres</u>	<u>Percent of Total Areas</u>
Residential	10,540	15.3
Commercial	957	1.3
Industrial	1,159	1.7
Public/Semi-public	5,774	8.4
Vacant/Conservation	45,118	65.3
Reserved	4,651	6.7
Water Areas	872	1.3
	<u>69,071</u>	<u>100.0</u>

The economy of the study area is highly dependent, both directly and indirectly, upon federal government expenditures. Military employment includes 23,000 military and 15,000 civilian personnel. The Newport News Shipbuilding and Drydock Company employs approximately 24,500 persons for federal contract construction. Agriculture is not a significant contributor to the Peninsula economy. York County and Poquoson are "bedroom" suburbs of the Newport News-Hampton economic center. Commuting patterns in the area have been dictated by tolls on the major access routes. The recent removal of these tolls may significantly alter previous growth patterns in the area.

Three public services appear to control development in the study area: sewage treatment capacity, water supply, and transportation. The applicant's proposed project is designed to provide adequate sewage treatment capacity for future growth. Water is supplied to the study area by the Newport News Water System. The safe yield of this system, with the completion of the Little Creek Reservoir during 1976, is approximately 65 mgd and is sufficient to satisfy water requirements to the year 2000. Development in the York County Portion of the study area has concentrated along major transportation routes or near the York River.

The study area is rich in history and contains 50 sites of historic value. Twelve of these sites are included in the *National Register of Historic Places*. None of the National Register sites will be directly affected by the proposed project. The Virginia Research Center for Archaeology has stated that the proposed site for the York River STP has a high potential for containing prehistoric relics. The applicant is currently evaluating the archaeological potential of the site. The study area contains 9,191 acres of wetlands.

### **STATUS OF COMPREHENSIVE PLANNING**

Three regional planning agencies have jurisdiction in the study area:

- Peninsula Planning District Commission (PPDC)
- Hampton Roads Sanitation District (HRSD)
- Hampton Roads Water Quality Agency (HRWQA)

These agencies coordinate the planning activities of the municipalities on the York-James Peninsula. The municipalities are empowered by the state to plan and zone for future development within their boundaries. York County adopted the land use plan included in its Comprehensive Plan in 1976. That plan projects that York County will remain a residential suburb of the Newport News-Hampton economic center. Poquoson became a City in 1975 but has been planning land use since 1952. The present land use plan envisions additional development of residential, commercial and industrial sites with minimal infringement upon conservation areas. Hampton adopted a land use plan in 1971. The plan projects continued dominance by residential development. The plan also projects a significant area of land for public use. Projections of future land use in the service area of the York River STP are summarized below:

<u>Projected Land Use</u>	<u>Acres</u>	<u>Percent of Total Area</u>
Residential	23,115	36.3
Commercial	1,394	2.0
Industrial	1,712	2.5
Public/Semi-public	7,588	11.0
Vacant/Conservation	27,739	40.2
Reserved	4,651	6.7
Water Areas	872	1.3
	<u>69,071</u>	<u>100.0</u>

The principal local growth controls available to the municipalities in the study area are zoning and subdivision ordinances, capital improvements programs, and open space and recreational planning. York County's current zoning ordinance is not in compliance with the goals of the 1976 land use plan. The County has recognized the discrepancies between these two documents and is initiating a comprehensive rezoning process. The County zoning ordinance was not adequately enforced during the past eight years. York County's capital improvements budget is currently insufficient to provide adequate facilities if

rapid growth should occur in the County. York County identified a series of "Open Space/Conservation" areas in the 1976 land use plan. The County is currently identifying alternative methods of preserving these areas. The zoning ordinance of the City of Poquoson conforms with the most recent land use plan. Enforcement of, and adherence to, the zoning ordinance has been strict. The rate of capital improvement expenditures in Poquoson will decline during the next five years but will be sufficient to maintain essential services. Open space and recreation planning in Poquoson is limited and all planned facilities are designed for local use. The City of Hampton has strictly enforced its zoning ordinance. When the new land use plan for the City is adopted, the zoning ordinance will be amended to include new land use policies. The capital improvements program for the City of Hampton includes significant expansion of public facilities. Open space and recreational facilities are included in the City's land use plan and capital improvements program.

### ***Environmental Evaluation of the Applicants Proposed Project***

The principal, primary, long term impact of the applicant's proposed project will be an increase in point source pollutant loading of the York River. However, based on the Hydrosience model, this increased loading should have only a minimal impact. The increased air pollution load generated by incinerating the sludge from the facility will not violate any primary or secondary air quality standards. Secondary impacts of the applicant's proposal are generally minimal. These impacts are mitigated, in part, by the presence of large areas of open space in York County, local ordinances for growth management and the protection of environmentally sensitive areas, and the concentration of growth in the cities of Poquoson and Hampton. The principal beneficial effects of the proposed project are the provision of capacity to allow treatment of sewage now being undertreated by individual septic tanks and to allow orderly growth with minimum environment impact.

### ***ALTERNATIVES TO THE APPLICANT'S PROPOSED PROJECT***

EPA has reviewed the applicant's proposed project and has determined that the proposed treatment processes are acceptable and will achieve the required degree of treatment. Chlorination and dechlorination will provide the required disinfection and remove residual chlorine from the effluent. Advance waste treatment units are not required at the proposed facility.

HRSD has proposed incineration as a sludge-volume reduction technique. Because the study area is included in an Air Quality Control Region (AQCR), EPA has questioned the continued reliance upon incineration. Sludge disposal through land application appears feasible because large areas of open space are included in the military bases and parks on the York-James Peninsula. Composting also appears to be a feasible sludge disposal technique.

EPA has reviewed the alternative of constructing a regional facility at the existing James River Facility. EPA has also investigated the use of staged construction of such a regional facility. Neither of these alternatives offer a cost savings over the applicant's proposal to construct the York River Plant.

Continued reliance upon septic tanks for sewage disposal in the York County portion of the service area is not practical because minimum lot sizes are too small for septic tanks, and most of the land is unsuitable for septic tanks.

Thus, the No-Action alternative would have significant adverse impacts upon growth in the service area and could promote adverse impacts upon water quality.

### ***Summary Recommendations***

EPA's review of population forecasts, wastewater flows and economic projections for the service area indicates that 15 mgd would provide applicant with sufficient treatment capacity to alleviate existing water quality problems in the service area and to accommodate projected wastewater flows for a short period of time in excess of the 1995 design year.

EPA's analysis has taken into consideration the most recent State of Virginia population figures and also assumed that residential per capita water use will remain at 62.7 gallons per capita per day throughout

the design life of the plant. Providing treatment capacity in the system for infiltration and inflow has been determined to be more cost-effective than embarking on a rehabilitation program.

Sludge disposal techniques need further evaluation by HRSD. Thus, EPA will condition the construction grant application to provide for the evaluation of land application as a sludge disposal alternative.

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## SUMMARY

( ) Draft Environmental Impact Statement  
(X) Final Environmental Impact Statement  
U. S. Environmental Protection Agency Region III  
Philadelphia, Pennsylvania

1. Name of Action  
Administrative (X)  
Legislative ( )
2. The Hampton Roads Sanitation District (the applicant) has requested Federal financial assistance for the construction of a 15 million gallon per day (mgd) wastewater treatment facility to be located near Seaford, York County, Virginia. Federal financial assistance has been requested under the statutory authority of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500). The service area of the proposed facility includes York County, the City of Poquoson, and the northern half of the City of Hampton. However, because the applicant's sewage treatment facilities are interconnected, the service area of the proposed facility could be extended to other areas of the York-James Peninsula. The proposed project does not include the development of a collection system, but two collection systems are being development of a collection system, but two collection systems are being developed in the service area.
3. The proposed facility was designed to alleviate public health hazards, to improve water quality, and to promote orderly growth in the service area. The proposed facility was also designed to satisfy the projected 1995 wastewater treatment requirements of the service area. EPA's review of population forecasts, wastewater flows and economic projections for the service area indicate that 15 mgd would provide the applicant with sufficient treatment capacity to alleviate existing water quality problems in the service area and to accommodate projected 1995 wastewater flows. The applicant's proposed future wastewater flows incorporate a 12.4 gcd increase in residential flows between 1980 and 1995; capacity will be provided only for maintenance of the 1980 projected consumption of 62.7 gcd, additional increases are not justified.

Minor short-term adverse impacts will occur during construction of the proposed facility. These construction-related impacts will result in increased noise levels, dust and air pollutant concentrations, and sedimentation and erosion. These adverse impacts will be concentrated near the site of the facility and along the outfall corridor, and can be minimized through sound conservation practices and contemporary construction techniques.

Long-term primary impacts of the applicant's proposed project include substantially increased pollutant loading of the lower York River and increased air pollution loading resulting from incineration of the sludge from the facility. However, according to the Hydrosiences, Inc. (1975) modeling of the lower York River, the proposed discharge would have minimal adverse impact upon the water quality. Further, no primary or secondary air quality standards would be violated.

Secondary environmental impacts resulting from the applicant's proposed project include increased air and water pollution from area sources, blockage of groundwater recharge areas, increased demands for water, recreational facilities and other public services, and encroachment upon historic and archaeological sites. Many of these secondary impacts may be minimized as a result of local ordinances to manage growth and protect environmentally sensitive areas, the presence of substantial areas of land which cannot be developed (military reservations and the Yorktown National Battlefield Park), and the concentration of future growth in the cities of Poquoson and Hampton. EPA's effort has been directed toward the preservation of environmental quality as it is affected by secondary impacts resulting from land use, and social and economic development of the service area. As part of this analysis, EPA has evaluated the status of each municipality's land use plan, comprehensive plan, and zoning ordinance. EPA has also identified environmentally sensitive areas which require protection through strong local ordinances (existing and revised) while managed development proceeds.

4. EPA analyzed numerous alternatives to the applicant's proposed project. These alternatives were assessed on the basis of environmental and socioeconomic information contained in this statement.

Alternatives evaluated by EPA ranged from specific treatment processes to the concept of regionalization at other existing facilities in the interconnect system. Non-structural alternatives and the no action alternatives were also evaluated.

Several mitigating measures would permit the applicant to avoid some of the adverse primary and secondary environmental impacts of the proposed project. EPA is providing assistance to the applicant in the further development and implementation of these measures.

5. A public hearing on the York River STP Draft EIS was conducted on June 20, 1977 at 6:30 PM in Tabb High School Auditorium in York County. A list of persons appearing or submitting comments for the record is included following this summary. Persons submitting written comments on the DEIS are also listed.
6. This Final EIS addresses issues and errors raised through written comments, appearances at the public hearing, and by new information developed since publication of the Draft EIS. Additionas of new information and corrections of errors are contained in Appendix B in the form of errata. Substantive issues are discussed under the appropriate heading in the body of the EIS. Issues discussed are listed in the Table of Contents.

## COMMENTS

The following persons spoke at the public hearing held on June 20, 1977:

- George Pence - Chief, EIS Branch, U.S. Environmental Protection Agency, Region III
- Joe Piotrowski - Project Officer, York River EIS, U.S. Environmental Protection Agency, Region III
- William Love - General Manager, Hampton Roads Sanitation District
- Paul E. Paul - Gannett, Fleming, Corddry and Carpenter
- John St. John - Hydrosience, inc.
- L. S. McBride Regional Director, Tidewater Office, Virginia State Air Pollution Control Board
- John Quarles - Member, York County Board of Supervisors
- Thomas Miller - City of Hampton
- Joseph Richie Mayor, City of Newport News
- Frank Smiley - City Manager, City of Newport News
- Donald Patten - Newport News Planning Commission
- Wendell White Chairman, Peninsula Planning District Commission
- Paul Baker - Chesapeake Bay Foundation, York Chapter, Inc.
- Elizabeth Rogers Williamsburg Area League of Women Voters
- Eugene Lamb Executive Director, Newport News Redevelopment and Housing Authority
- Lamar Jolly - President, Peninsula Housing and Builders Association
- Karl F. Lanier President, Peninsula Chamber of Commerce
- Ben Head
- A. A. West
- Daniel Hayes Manager, Laundrymen, Inc.
- John D. Yoder
- H. Jack Jennings
- Bruce Flagge
- Lewis McMurrin Chairman, Virginia Peninsula Industrial Council
- Hayden Ross-Clunis
- Virginia J. Wasson Managing Director, Williamsburg Chamber of Commerce
- Thomas D. Kaizer
- John Demerit Virginia Watermen's Association, Poquoson Division
- Allen Sower
- J. L. Riggins
- Henry Elksin
- James L. Riggins, Sr.
- Mary Sherwood Holt
- Mary Matthews
- B. Saville, Jr.

- June Pearson
- Roy Hinsley
- Shirley Cooper, Chairman, York County Board of Supervisors
- Bill Burgess
- M. Haskins

In addition, written comments were submitted by the following for inclusion in the hearing record:

- Bureau of Shellfish Sanitation, Virginia Department of Health
- O. Wendell White - Chairman, Peninsula Planning District Commission
- W. Ballard Preston, Jr.

Additional written comments on the Draft EIS were received from the following individuals representing governmental units:

- E. A. Barco, P.E. Director, Utility Division, Naval Facilities Engineering Command, Atlantic Division
- Donald N. Patten Chairman, Newport News City Planning Commission
- Paul E. Fisher - Project Administrator, Hampton Roads Water Quality Agency
- Edward Councill, III - Executive Director, Richmond Regional Planning District Commission
- D. N. Grimwood - State Conservationist, Soil Conservation Service, U.S. Department of Agriculture
- M. L. Strait - District Director, Food and Drug Administration, U.S. Department of Health, Education and Welfare
- Cloyde W. Wiley - Director, Bureau of Shellfish Sanitation, Virginia Department of Health
- Franz K. Gimmler - Acting Regional Representative of the Secretary, U.S. Department of Transportation
- Larry E. Meierotto - Deputy Assistant Secretary, Office of the Secretary, U.S. Department of the Interior
- William J. Love General Manager, Hampton Roads Sanitation District
- Nicholas M. Ruha - Chief, Environmental Impact Statement and Wetlands Review Section, U.S. Environmental Protection Agency
- M. E. Bender, Ph.D. Coordinator, Virginia Institute of Marine Sciences
- Charles Custard - Director, Office of Environmental Affairs, U.S. Department of Health, Education and Welfare
- J. L. Hamrick, Jr. Division Director, Bureau of Enforcement, Virginia State Water Control Board
- Susan T. Wilburn Acting Administrator, Virginia Council on the Environment
- Ernest R. Holz - Acting Director, Office of Review and Compliance, Advisory Council on Historic Preservation
- William G. Gordon Regional Director, National Marine Fisheries Service, U.S. Department of Commerce

Additional written comments on the Draft EIS were received from the following members of the public:

- Karl F. Lanier - President, Peninsula Chamber of Commerce
- M. C. Dick Carpenter President, Newport News-Hampton Board of Realtors
- T. Caldwell Seagle

- Richard F. Abbitt
- William T. Roos
- Gerald H. Johnson - President, Chesapeake Bay Foundation, York Chapter, Inc.
- Bruce Flagge
- T. B. Ray - Environmental Control Engineer, Newport News Shipbuilding
- H. A. Ross    Clunis Jr.
- Prentis Smiley, Jr.    Law Offices of Holloway and Smiley
- Doris M. Antczak
- Fred W. Schaumburg, Jr.
- Frank B. Tabor
- Paul S. Batier - Corresponding Secretary, Chesapeake Bay Foundation, York Chapter, Inc.
- James Kukalis



## I. DESCRIPTION OF THE APPLICANT'S PROPOSED ACTION

### A. BACKGROUND

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page I-1 of the Draft EIS, Appendix A (not included).

### B. EXISTING WASTEWATER TREATMENT FACILITIES

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page I-4 of the Draft EIS, Appendix A (not included).

### C. APPLICANT'S PROPOSED PROJECT

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page I-18 of the Draft EIS, Appendix A (not included).

The Hampton Roads Sanitation District (HRSD) has extended sewer service to the entire York-James Peninsula by realigning the boundaries of its three existing sewer service areas and constructing the York River Sewage Treatment Plant. The site of the proposed York River STP is located west of Seaford in York County, Virginia, on the southern bank of Back Creek. The site is included on the USGS "Poquoson West" topographic quadrangle and is located within the 100-year flood plain of Back Creek. Through this action, the applicant proposes to implement the recommendations of the following studies:

- *Water and Sewage Facilities Plan*, Malcolm Pirnie, Inc. (1969),
- *Interim Metropolitan/Regional Water Quality Management Plan*, Malcolm Pirnie, Inc. (1971),
- *Lower James River Comprehensive Water Quality Management Study*, Virginia State Water Control Board, (1974),
- *York River Wastewater Treatment Plant Preliminary Engineering Report*, Gannett, Fleming, Corddry, and Carpenter (1974).

HRSD proposes to construct the York River STP with a capacity of 15 mgd and to use the conventional activated sludge process. GFCC (1974) recommended to HRSD that the wastewater treatment facility include unit processes for degritting, primary clarification, singlestage activated sludge aeration, secondary clarification, disinfection by chlorination, gravity thickening of primary sludges, anaerobic digestion, vacuum filtration, and incineration. However, based upon a cost-effectiveness analysis of incinerator capacities at its existing facilities, HRSD decided not to construct an incinerator at the York River STP.

Sludge from the proposed facilities will be disposed of in the existing incinerators at the Boat Harbor STP. Dechlorination was also included in the design after the SWCB adopted the position that dechlorination facilities should be provided at the proposed facility. Dechlorination will be accomplished through the addition of sulfur dioxide (SO<sub>2</sub>) to the effluent.

The conventional activated sludge process biologically stabilizes wastewater through the metabolic activities of microorganisms in an aerobic environment. Single-stage activated sludge aeration is designed to remove carbonaceous oxygen demand, but some nitrification may occur depending upon operating conditions. Operating at 15 mgd the proposed facility would receive daily loads of 26,900 lbs. of BOD and 29,400 lbs. of suspended solids. Removal rates for BOD and suspended solids would be 86 percent and 87 percent respectively (GFCC, 1976, Personal Communication). Total phosphorus and total nitrogen loading of the facility would occur at rates of 1,250 lbs. and 5,000 lbs. per day, respectively. Removal rates for these constituents will be 20 and 12 percent, respectively.

Influent sewage to the York River STP will be screened before flowing through the grit collectors (detritors). The degrittied waste will flow into the primary clarifiers, which will remove most inorganic suspended solids and some of the larger, denser organic suspended solids. Settled wastewaters will then flow into aeration tanks where biologically active microorganisms (activated sludge) will be maintained. The mixture of sewage and secondary clarifier sludge, "mixed liquor", will be turbulently mixed in the aeration tanks. This will permit the microorganism to efficiently degrade the carbonaceous matter in the waste and convert it into more biomass. The mixture of bacteria and wastes produced in the aeration tanks will flow into the secondary clarifiers where the bacteria and other solids will settle out of suspension. Some of the sludge from this process will be returned to the aeration tanks to maintain the necessary biological population for optimum treatment. The remainder of the sludge will be diverted to the sludge digester. Treated wastewater will flow over the weirs of the secondary clarifiers and will enter the chlorination units for disinfection. The disinfected effluent will flow through dechlorination units before being conveyed to and through the VEPCO outfall into the York River.

Since the plant discharges into shellfish waters, it will be of Class I reliability, that is, auxiliary electrical power will be required so that the plant can operate in the event of a power failure.

Sludge from the primary clarifiers will be thickened by gravity. Sludge from the secondary clarifiers will be thickened by flotation. The thickened sludges will be stabilized through anaerobic digestion. During this process the facultative bacteria will utilize the organic wastes for food and produce volatile organic acids. The anaerobic bacteria will convert most of these acids to methane and carbon dioxide. This process will reduce the mass and volume of sludge, reduce the number of pathogenic organisms, and provide a useful by-product (methane). After digestion, the sludge will be dewatered on vacuum filters. The filtrate will be returned to the process flow. The dewatered sludge, which is approximately 22 percent dry solids by weight, will be collected from the filters and will be disposed of in the existing incinerators at the Boat Harbor STP.

No substantive issues related to this subject have been raised since the publication of the Draft EIS. For a further discussion of this subject refer to page I-18 of the Draft EIS, Appendix A (not included).

#### D. GOALS AND OBJECTIVES OF THE PROPOSED PROJECT

No substantive issues related to this subject were raised since publication of the Draft EIS. For a discussion of this subject, refer to page I-30 of the Draft EIS, Appendix A (not included).

## II. ENVIRONMENTAL SETTING

### A. NATURAL ENVIRONMENT

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page II-1 of the Draft EIS, Appendix A (not included).

### B. SOCIAL AND ECONOMIC ENVIRONMENT

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page II-45 of the Draft EIS, Appendix A (not included).

### C. ENVIRONMENTALLY SENSITIVE AREAS

The following substantive issues related to environmentally sensitive areas were raised through comments or new developments since publication of the Draft EIS.

#### ***Issue: Incorrect delineation of floodplains***

In the Draft EIS on Page II-24 in Figure II-4 flood-plains are shown incorrectly. This was pointed out by Hampton Roads Sanitation District (HRSD) in written comments dated June 18, 1977 (Appendix E). The correct outline of the 100-year floodplain at the proposed site of the York River STP is shown in "Exhibit E," an attachment to the forementioned letter. This information indicates that sufficient area above the 100-year floodplain is available for the necessary structures.

#### ***Issue: Acceptability of soils on site for necessary structures***

This issue was raised by the Chesapeake Bay Foundation in their statement at the public hearing held June 20, 1977 (Appendix E). Page II-23 of the Draft EIS indicates that soil associations identified by SCS on the proposed STP site are classified as exhibiting severe and moderate limitations for construction of roads or structures. However, it must be recognized that SCS assessments of the limitations of soil types are generalized to an entire soil group; a much more accurate assessment of soil capabilities on a site can be gained by performing and analyzing soil borings. "Attachment A" to HRSD's letter of July 18 (Appendix E) indicates the engineering firm of Gannett, Fleming, Corddry, and Carpenter performed an investigation of foundation conditions at the site including core borings and soil tests which established the acceptability of the site for the proposed types of structures.

For additional discussion of environmentally sensitive areas, refer to page II-78 of the Draft EIS, Appendix A (not included).

### III. STATUS OF COMPREHENSIVE PLANNING

#### A. PLANNING AGENCIES AND ACTIVITIES

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page III-1 of the Draft EIS, Appendix A (not included).

#### B. LOCAL GROWTH MANAGEMENT CONTROLS

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page III-10 of the Draft EIS, Appendix A (not included).

#### C. POPULATION PROJECTIONS

New population projections are discussed in Section V-A of this EIS. No other substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page III-16 of the Draft EIS, Appendix A (not included).

#### IV. ENVIRONMENTAL EVALUATION OF THE APPLICANT'S PROPOSED PROJECT

##### A. ENVIRONMENTAL IMPACTS OF THE APPLICANT'S PROPOSED PROJECT

The following substantive issues related to environmental impacts at the applicant's proposed project were raised through comments or new developments since publication of the Draft EIS.

###### ***Issue: Salinity verification of Hydroscience model***

The Virginia Institute of Marine Science (VIMS) in comments dated August 15, 1977, (Appendix E) questioned the salinity verification of the model prepared by Hydroscience, inc. to assess water quality effects of the proposed York River STP. EPA concurs with the model's theoretical shortcomings as raised by VIMS; however it is felt that the model is sufficiently accurate for the purposes of analysis and that improvement would involve extensive research efforts beyond the needs and scope of this EIS.

###### ***Issue: Ground water export via effluent***

The U.S. Department of the Interior in their letter of July 14, 1977 (Appendix E), raised the question of possible ground water depletion through the export of domestic well water in the STP effluent which had previously recharged to the ground water through septic tanks. The Chesapeake Bay Foundation, York Chapter, also raised this issue in their public hearing comments on June 20, 1977 (Appendix E). However, sewer and water service are most often provided together and for this reason as service becomes available the quantity of ground water extracted from individual domestic wells will decrease reducing the impacts of removing septic tank recharge. For this reason, ground water export via STP effluent will not be a significant problem.

###### ***Issue: New data on the Boat Harbor incinerators***

At the time the Draft EIS was prepared no emissions data were available for the Boat Harbor STP incinerators. Estimates of particulate concentrations in the Draft EIS due to incineration of sludge assumed emissions from the incinerators would be 1.3 lb/dry ton sludge which is the applicable New Source Performance Standard (NSPS).

Since the Draft EIS was released, the Boat Harbor incinerators have completed compliance tests for particulate emissions. Average particulate emissions were 0.545 lb/ton dry sludge for Furnace #1, and 0.572 lb/ton dry sludge for Furnace #2. These values are less than 45% of the applicable NSPS. Therefore, the actual impact of particulate emissions will be lower than predicted in the DEIS as shown in Table IV-1, below:

Table IV-1		
Stability Class	Distance to Point of Maximum Impact (KM)	Concentration (ug/m <sup>3</sup> )
A	0.15	8
B	0.22	8
C	0.32	8
D	0.58	7
E	0.90	6
F	1.70	5

This updates Table IV-3, page IV-17 of the Draft EIS.



### ***Issue: Economic impact of shellfish closure zone***

VIMS, in their letter of July 21, 1977, (Appendix E) questioned the conclusion of the Draft EIS that because of MSC the shellfish closure zone necessary around the effluent discharge point would not cause significant economic impacts. This disease currently renders the affected beds unprofitable. VIMS pointed out that research is currently underway to produce an MSX-resistant variety of oyster. They felt this potential was not recognized by the EIS. While such research is currently underway at VIMS, no natural plantings have yet been successful. In the event that a resistant strain is developed which could support a commercial fishery in MSX-infested higher salinity waters, it will be necessary to reevaluate the economic impact of the closure zone, based on oyster market values and operating costs at that time. Steps to reduce the size of the closure zone may then be justified.

### ***Issue: Growth inducement and the York River STP***

The issue of the growth inducement effects of the proposed York River STP was raised by a number of comments from citizens and governmental agencies. Letters from the U.S. Department of Commerce (August 16, 1977; Appendix E), Richmond Regional Planning District Commission (July 1, 1977; Appendix E), Mr. H. A. Ross-Clunis (July 21, 1977), and Mr. Fred Schaumburg (July 21, 1977) raised this issue along with numerous persons at the public hearing on June 20, 1977, including Mr. Paul Baker for the York Chapter of the Chesapeake Bay Foundation, Ms. Elizabeth Rogers of the Williamsburg Area League of Women Voters, and Mr. H. A. Ross-Clunis. Essentially, the assertion is made that the proposed York River STP induces or attracts the growth on which basis it is justified. The reader is referred to the discussion of accommodated and induced growth in the Draft EIS, page IV-48 (Appendix A).

EPA has reviewed population projections used in sizing the York River STP and found them reasonable. These conclusions are discussed in the Draft EIS beginning on pages III-16 and V-5 (Appendix A). Recent changes in the Virginia Office of Planning and Budget population projections are assessed in this Final EIS under Section V-A, Component Alternatives. Under this type of situation, where sizing of STP capacity is not excessive, local conditions and the availability and costs of collectors will determine the potential for growth inducement.

As discussed in the Draft EIS (Appendix A) on page IV-37, without previous decisions regarding public funding of collector sewers, growth inducement is difficult to tie to a reasonable increase in regional treatment capacity. However, collectors are currently being installed in some limited developed areas of Sanitary District #2 under EPA Contract # 510405 and may be extended into large areas of partially developed land under EPA Contract # 510585. A map designating the areas of these contracts is included as Figure I-17 on page I-28 of the Draft EIS (Appendix A).

In light of the preliminary indications of growth inducement potential discussed in the Draft EIS, environmental assessment activities currently underway on EPA Contract # 510585 will fully consider this issue. EPA Program Requirements Memorandum 77-8 (July 21, 1977, Appendix F) strictly regulates funding of collector systems.

Collectors are eligible for funds only if they are built for a community having "substantial human habitation" as of October 18, 1972, with adequate treatment capacity in existence or planned.

The memo states "that substantial human habitation is considered to be an average density of 1.7 persons per acre or one household for every two acres. Density is to be evaluated block by block or by areas of five acres or less. Two-thirds of the flow design capacity of the collector must be for wastewaters originating from the habitation. This two-thirds rule would apply to each area evaluated. New collectors must also be necessary and cost-effective, as documented in facility plans, and the public must be informed as to their cost. (*Air/Water Pollution Report*, 1977)."

This process will assure that collectors are not oversized, therefore do not promote induced growth.

In addition, planning for EPA Contract # 510585 will identify area by area the environmental and cost factors related to decentralized on-site alternatives for waste treatment such as cluster systems or sand mounds as well as conventional collection and centralized treatment. EPA feels this process is adequate to deal with potentials for growth inducement in Sanitary District #2.

### ***Issue: Water quality impacts***

A number of comments compared projected adverse impacts of effluent with the beneficial impacts of relieving existing problems with septic tanks. This issue was raised by many of the commentators listed above as concerned about growth impacts. In addition, Mr. Bruce Flagge and Mr. Henry Elksin voiced the same issue at the public hearing on June 20, 1977. It is erroneous, however, to make this comparison. In evaluating alternatives a comparison must be made between the minimal to moderate impacts identified for the applicant's proposed effluent discharge and the severe impacts identified for the no-action alternative. These impacts are discussed on pages IV-7 and V-26, respectively, of the Draft EIS (Appendix A).

In addition, the public's concern regarded the potential non-point runoff-related water quality impacts of projected growth. The Hampton Roads Water Quality Agency (HRWQA) is currently preparing an Areawide Waste Treatment Management (AWTM) Plan which has responsibility for examining non-point pollution from existing and future development and establishing workable management strategies to control this pollution. Ms. Elizabeth Rogers, in her comments at the public hearing on June 20, 1977, for the Williamsburg Area League of Women Voters, suggested delaying the Final EIS and planning for the York River STP until completion of this plan. However, it is EPA's position, detailed in Program Requirements Memorandum 75-38 (February 9, 1977, Appendix F) that ongoing facilities planning should not be delayed for the completion of AWTM Plans.

For additional discussion of environmental impacts of the applicant's proposed project, refer to page IV-1 of the Draft EIS, Appendix A (not included).

#### **B. ADVERSE IMPACTS WHICH CANNOT BE AVOIDED**

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page IV-44 of the Draft EIS, Appendix A (not included).

#### **C. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page IV-46 of the Draft EIS, Appendix A (not included).

#### **D. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE APPLICANT'S PROPOSED PROJECT SHOULD IT BE IMPLEMENTED**

No substantive issues were raised since publication of the Draft EIS which were related to this subject. Therefore, for a discussion of this subject, refer to page IV-47 of the Draft EIS, Appendix A (not included).

## V. IDENTIFICATION AND EVALUATION OF ALTERNATIVES TO THE APPLICANT'S PROPOSED PROJECT

### A. COMPONENT ALTERNATIVES

The following substantive issues related to component alternatives were raised through comments or new developments since publication of the Draft EIS.

#### ***Issue: Effluent disinfection***

Questions concerning alternative techniques for effluent disinfection and for dechlorination of chlorinated effluent were raised by Mr. Paul Baker for the York Chapter of the Chesapeake Bay Foundation at the public hearing on June 20, 1977, as well as by Mr. John Demerit and Mr. Allen Sower.

As indicated by Table V-3, page V-5 of the Draft EIS, dechlorination with sulfur dioxide (SO<sub>2</sub>) was considered as an alternative. Sulfur dioxide dechlorination is a relatively simple process, similar to chlorination, and highly effective in removing residual chlorine. A case of chlorinated effluents causing fish mortalities at the James River plant has been reported by Mellanca and Bailey (1975). In this case, the problem was excessive use of chlorine for disinfection, and was resolved by better control of the chlorination process. Due to such operational problems, both EPA and the SWCB are recommending that dechlorination be utilized as an environmental safeguard.

Although chlorine has a long record as a proven disinfectant for wastewater, it is suspected of reacting with the residual organic material in the treated wastewater to form chlorinated hydrocarbons. Dechlorination with sulfur dioxide (a reducing agent) removes residual chlorine but does not remove chlorinated hydrocarbons. Ozone will not form chlorinated hydrocarbons, but it is not known if ozone will react with organic material in wastewater to form other compounds in trace amounts. Little information exists to document the long-term impacts of either chlorination or ozonation on natural water. As the vast majority of wastewater treatment plants disinfect their effluent with chlorine or ozone, resolution of this issue is national in scope, and beyond the scope of this statement. In any case, much of the basic disinfection equipment is the same for chlorine and for ozone, so installing one process now would not preclude switching to the other at a later date, should more information become available.

#### ***Issue: Class I reliability***

The measures necessary for plant reliability to meet Class I reliability requirements for discharging in shellfish waters were not detailed in the Draft EIS. Class I reliability for the York River STP will include multiple units and equipment, auxiliary power for essential plant elements, and automatic alarms to give warning of high water, power failure, and equipment malfunction. Chlorination must be continuous and the chlorine contact time will be half hour at peak flow with one hour contact at average flow. This should provide 75-80% disinfection efficiency. Class I reliability will eliminate all raw sewage bypasses and assure consistently a minimum of primary treatment with chlorination.

#### ***Issue: Sludge disposal by incineration in an AQMA***

This issue, raised by Ms. Elizabeth Rogers for the Williamsburg Area League of Women Voters at the public hearing held June 20, 1977, relates to the proposed incineration of sludge from the York River STP. Even though the incinerators at the Boat Harbor STP which are to be used meet applicable emission standards and will not directly cause the violation of ambient air quality standards, additional pollutant emissions in an AQMA for particulates must be considered unacceptable if viable alternatives such as land disposal exist. HRSD should formulate a comprehensive sludge management program for all of its treatment facilities on the Peninsula and continue to evaluate land application as a disposal alternative, including its water quality impacts.

It is estimated that, at an average daily flow of 63.5 mgd, HRSD facilities on the peninsula will

produce 593 tons per day, dry weight, of sludge for disposal. This could be converted into about 508 cubic yards of compost per day.

The estimated costs of composting 59.3 tons of sludge per day, based on Colacicco (1976), are \$6 per ton of dry sludge for capital costs and \$27 per ton of dry sludge for operation and maintenance. Total costs would be about \$33 per ton of dry sludge. Approximately 20 acres of land would be required for the composting operation.

Spreading of compost on parklands or woodlands is limited primarily by the nitrogen uptake rate; nitrogen in the sludge can not be applied faster than it can be utilized by plants, or it will leach to the ground water. Heavy metals must also be considered. There is little information available regarding the characteristics of HRSD sludge. However, assuming typical characteristics for domestic wastewater sludges, and assuming that parklands have a relatively modest nitrogen uptake rate of 100 lb/ac/y, over 8,000 acres of land will be necessary for the safe application of compost over the next twenty years.

Inquiries made by EPA to other agencies in the peninsula area indicated that there may be some interest in using compost. However, there have been no firm commitments, and the "market" for compost must be considered unknown.

Since capital costs for constructing a composting site are low, and at least a potential market exists, it appears worthwhile to establish a pilot composting program on the York-James Peninsula. A test project is currently underway by HRSD at the site of the new Atlantic STP in Virginia Beach. It is possible that, with compost available, various agencies on the peninsula will be encouraged to experiment with the use of compost on their lands. Should this prove successful, the net result would be a more beneficial means of sludge disposal than the present incineration and landfill process.

It is therefore recommended that a pilot composting study be included as part of the Step II planning process. This study should include the following elements:

(1) Sludge Testing

Sludge from the existing James River plant, and the York River WWTP when it goes on-line, should be tested for nutrients, metals and pesticides. The results of these tests will help determine safe application rates.

(2) Pilot Composting Operation

A small composting operation should be established to help determine the design of a full-scale facility. The compost produced should be used for test plots and preliminary marketing studies.

(3) Test Plots

Test plots would be established on parklands and woodlands with a range of application rates. These plots would not only serve a safety purpose, by detecting buildups of heavy metals or nitrogen, but should also be used as demonstration plots for the marketing effort.

(4) Marketing Program

The studies mentioned above should demonstrate the feasibility, safety and direct costs of the composting alternative. However, the success of a land application program hinges on the willingness of the federal and state agencies on the peninsula to utilize the compost on the lands under their control.

A marketing and costing program should address the following items.:

- Benefits of sludge application and the willingness of users to obtain these benefits.
- Cost of producing sludge, and a fair market price.
- Maximum demand for sludge.
- Optimal distribution strategy.
- Public relations.

### ***Issue: Treatment capacity***

HRSD has applied to EPA for PL 92-500 funding to construct a wastewater treatment facility designed for the following wastewater flows:

Average daily flow - annual	= 15.00 mgd
Average daily flow - maximum	
30 day	= 18.75 mgd
Average daily flow - maximum	
7 day	= 22.50 mgd
Peak daily rate	= 37.50 mgd

HRSD's request was based upon existing and future needs within the proposed service area and in the interconnect system.

It must be recognized that the different units of a wastewater treatment plant are sensitive to different design flows. For example, a pumping station would be sized primarily to handle the peak wastewater flow, while sludge digestors (which are sensitive mostly to long-term solids loading) are usually sized for the average annual daily flow. Thus a "15 mgd plant" is actually a nominal rating and implies a variety of design flows for different periods of time.

After a considerable amount of discussion with EPA regarding population projections, per capita water consumption, and calculation of infiltration/inflow, GFCC presented HRSD's rationale for flow projections to EPA in a letter dated February 1, 1977. A copy of this letter is contained in the correspondence section of the DEIS.

HRSD's projections are based on the maximum 30-day wastewater flow. This is because the HRSD service area is subject to a seasonally high groundwater table, which causes increased infiltration into the system for part of the year. As the plants' discharge permits are all written with a 30-day discharge limitation, HRSD considers the maximum 30-day wastewater flow to be the principal design flow for a treatment plant.

EPA has questioned these proposed flow projections on two points: (1) the allowance for infiltration/inflow; and (2) increases in per capita flows.

In addition, the York Chapter of the Chesapeake Bay Foundation in their letter of July 25, 1977, (Appendix E) as well as at the public hearing on June 20, 1977, raised the issue of excessive infiltration and inflow in the HRSD system.

GFCC calculated infiltration/inflow on the basis of observed wastewater flows less residential and non-residential flows. While this is an acceptable method for calculating system-wide I/I, it assumes that it is not cost-effective to rehabilitate the sewerage system to remove the extraneous flows. The Virginia State Water Control Board has certified to EPA that the Boat Harbor, James River, and Williamsburg systems (i.e., the existing sewerage system of the Peninsula) are not subject to excessive I/I, which means that it is cheaper to treat the extraneous flows at the treatment plants than to repair the leaks in the sewerage system. McGeorge (1977, Personal communication) estimated that I/I correction in the Boat Harbor system would cost \$19,760,000 or about \$3.80 per gpd removed. Anthony Koller, EPA, in a memorandum on May 31, 1977, (Appendix C) on the other hand, estimated rehabilitation costs at only \$3,300,000, or \$0.63 per gpd, not including the costs of an evaluation survey. Such a survey would cost an additional \$1,660,000 to \$3,700,000 or \$0.71 per gpd. By comparison, the cost of wastewater treatment at the proposed York River plant will be about \$1.80 per gpd, but only about 21 percent, or \$0.38/gpd of these costs are actually attributable to the design 30-day average flow. The remaining costs are a function of other design parameters such as BOD and suspended solids. Therefore, EPA concluded that, despite the inconsistencies in the I/I cost-effective analysis, I/I was non-excessive. It must be pointed out, however, that the specified allowances for I/I must be maintained in the system and cannot, at a later date, be reallocated to residential or commercial wastewater flows, without proof that I/I flows have, in fact, been reduced through rehabilitation or are lower than originally anticipated.

Flow equalization has been suggested as a means of reducing the amount of treatment plant capacity necessary for treating infiltration/inflow. However, the infiltration/inflow component of



flow used by GFCC is the maximum 30-day I/I, and is primarily long-term infiltration caused by an elevated ground water table, rather than short-term inflow caused by storms. Thus, extensive amounts of storage would be required to reduce this peak 30-day flow significantly.

Regarding the second issue, per capita flows, EPA (1977) proposed that allowances for future increase of per capita wastewater flows with time will not be approved unless a complete justification for such increases is provided and conservation factors tending to decrease per capita flows have been thoroughly analyzed in the facility plan. The GFCC (1977) flow projections propose that per capita flows on the Peninsula will increase from 62.7 gcd in 1980 to 75.1 gcd in 1995. Both the City of Newport News and the PPDC have indicated that sufficient water is available to support total residential and non-residential consumption rates of 165 gcd in 1995. However, the immediate availability of water is not sufficient reason to justify increasing per capita use.

It is EPA's opinion that, although HRSD has been unsuccessful in attempts to reduce increasing domestic consumption, there is no justification for further increased beyond projected levels for 1980. Therefore, capacity will be provided for only these levels of domestic consumption in the future. In fact, at some future date, actual reductions in domestic consumption may become necessary. Maintenance of per capita residential consumption at 62.7 gcd would result in projected 1995 Peninsula wastewater flows as shown in Table V-1.

Table V-1  
MAXIMUM 30-DAY WASTEWATER FLOW PROJECTIONS BY EPA

Year and Service Area (1)	Sewered Population (2)	Wastewater Flow Components (3) - mgd			Maximum 30-Day Total Wastewater Flow - mgd (4)
		Residential	Nonresidential	Maximum 30-Day Infiltration/Inflow	
1975					
Boat Harbor	110,300	6.39	6.63	5.20	18.22
James River	56,600	3.28	3.19	2.19	8.66
Williamsburg	19,200	1.11	3.94	1.32	6.37
York River	61,200	3.54	2.65	2.00	8.19
Total	247,300	14.32	16.41	10.71	41.44
1980					
Boat Harbor	122,100	7.66	7.38	5.20	20.24
James River	79,600	4.99	3.92	2.32	11.23
Williamsburg	23,900	1.50	6.89	1.38	9.77
York River	80,900	5.07	2.97	2.20	10.24
Total	306,500	19.22	21.16	11.10	51.48
1985					
Boat Harbor	132,500	8.31	8.12	5.21	21.64
James River	90,200	5.66	4.65	2.40	12.71
Williamsburg	28,700	1.80	6.97	1.45	10.22
York River	98,100	6.15	3.29	2.38	11.82
Total	349,500	21.92	23.03	11.44	56.39
1990					
Boat Harbor	135,000	8.46	8.86	5.21	22.53
James River	96,700	6.06	5.38	2.46	13.90
Williamsburg	33,200	2.08	7.05	1.51	10.64
York River	111,900	7.02	3.61	2.52	13.15
Total	376,800	23.62	24.90	11.70	60.22

Table V-1  
MAXIMUM 30-DAY WASTEWATER FLOW PROJECTIONS BY EPA (Continued)

<u>Year and Service Area (1)</u>	<u>Sewered Population (2)</u>	<u>Wastewater Flow Components (3) - mgd</u>			<u>Maximum 30-Day Total Wastewater Flow - mgd (4)</u>
		<u>Residential</u>	<u>Nonresidential</u>	<u>Maximum 30-Day Infiltration/Inflow</u>	
1995					
Boat Harbor	137,100	8.60	9.08	5.23	22.91
James River	103,300	6.48	5.82	2.51	14.81
Williamsburg	39,100	2.45	7.31	1.59	11.35
York River	126,800	7.95	3.79	2.66	14.40
Total	406,300	25.48	26.00	11.99	63.47(5)

- (1) Proposed service areas as depicted in Plate IV of York River Wastewater Treatment Plant Preliminary Engineering Study.  
 (2) Based on 1975 DSPCA population projections. Refer to October 1975 supplemental submission to Virginia SWCB for details.  
 (3) 95 percent residential water consumption returned to sewer system. 100 percent of nonresidential water consumption returned to sewer system. Maximum 30-day (on an annual basis) infiltration/inflow component.  
 (4) Design flows. Computed as the sum of residential, nonresidential, and maximum 30-day infiltration/inflow components.  
 (5) Existing treatment plant design flows: Boat Harbor - 25.0 mgd; James River - 15.0 mgd; Williamsburg - 9.6 mgd. Total equals 49.6 mgd.

EPA reviewed the availability of the existing treatment plant capacity of the interconnected system based upon data presented by GFCC (1974; 1977, Personal Communication) and HRSD (1977, Personal Communication). EPA concluded that the existing system capacity in 1977 was 49.6 mgd, compared to a projected 1980 flow of 51.5 mgd. Thus, it appears that at least some increment of capacity will be required. HRSD (1977, Personal Communication) proposed that approximately 3.5 and 3 mgd can be transferred from the York River service area to the Boat Harbor and James River plants respectively. This leaves about 3.7 mgd of the 1980 flow from the York River service area which either must be treated at a new facility, or pumped to another treatment plant via a new interconnection.

It appears that, by 1995, the peninsula will require a total wastewater treatment capacity of 63.47 mgd, or an increase of 13.9 mgd over the present capacity. The 1995 flows for the York River service area will be 14.40 mgd of which only 6.5 mgd could be transferred to other interconnected plants. In this respect, a 15 mgd (30 day) initial capacity appears to be proper for initial construction of the York River plant. Therefore, it is included that the design flows for the York River wastewater treatment plant shall be as follows:

Average daily flow - annual\* = 13.7 mgd  
 Average daily flow - maximum  
   30 day = 15.0 mgd  
 Average daily flow - maximum  
   7 day\*\* = 20.6 mgd  
 Peak daily flow\*\*\* = 34.3 mgd  
   \*Assumes I/I at 1/2 of the 30 day maximum  
   \*\*1.5 times annual average  
   \*\*\*2.5 times annual average

New population projections for the Peninsula have been developed by the Tayloe-Murphy Institute for the State of Virginia.

The York Chapter of the Chesapeake Bay Foundation, in the inquiries regarding regionalization mentioned above, questioned the effects of these new figures in computing treatment capacity.

Applying these new population figures to the methodology previously used by EPA to predict wastewater flows, the following flow projections were determined:

	<u>Entire Peninsula</u>	<u>York River Service Area</u>
Population	345,600	108,500
Residential Flow	21.67 mgd	6.87 mgd
Non-Residential Flow	26.00 mgd	3.79 mgd
Infiltration/Inflow	11.51 mgd	2.41 mgd
Total Wastewater Flow	59.18 mgd	13.07 mgd

Subtracting the existing HRSD system capacity of 49.6 mgd, it is seen that, under these projections, only 9.6 mgd of additional capacity is needed in the entire system by 1995, although 13.07 mgd will be needed in the York River Service Area. For this reason a 13 or 14 mgd plant size for York River would more closely fit service area projections. The net effect of this "oversize" would simply extend the design life of the facilities by an increment within the design life recommended by EPA regulations.

For additional discussion of component alternatives, refer to page V-1 of the Draft EIS, Appendix A (not included).

## B. SYSTEM ALTERNATIVES

The following substantive issues related to system alternatives were raised through comments or new developments since publication of the Draft EIS.

### ***Issue: Staged construction versus regionalization***

A discussion in the Draft EIS beginning on page V-21 concluded that regionalization at the James River STP was more cost-effective than construction of the new York River STP. New cost figures which include data specific to the physical constraints of this project, however, generate a different conclusion. Since the alternative of regionalization generated support from individuals opposed to the proposed York River STP, a discussion of the new computations which change the conclusion of the Draft EIS is given below. This discussion originally took the form of errata sheets distributed at the public hearing on June 20, 1977.

The applicant proposed that 20 mgd additional treatment capacity (15 mgd at York and a 5 mgd expansion at James) will be needed for the Peninsula by 1996. Cost of expanding to 20 mgd in other increments of capacity, which were not evaluated by the applicant, are summarized below in Table V-2. The costs presented are based on general guidelines and may vary for specific facilities. Alternatives III and IV are both more expensive than the proposed alternative and would be justified only if flow projections are highly uncertain.

Alternative II, which is the cost of expanding a generalized facility in a single increment of 20 mgd, would save 16 percent over the expansion as presently proposed in Alternative I. However, the analysis of this generalized alternative must be modified to include the data from Table V-3 which is specific to the physical constraints of this particular project. In order to accomplish this modification, the applicant's cost estimate for a 15 mgd plant was scaled according to the following method.

Table V-2.  
COST OF ALTERNATIVE EXPANSION INCREMENTS FOR A COMBINED JAMES RIVER AND  
YORK RIVER STP

Alternative	Increment mgd	Added (On-line)	Capital Cost Less Salvage in 1996 \$1,000	O&M Cost \$1,000/yr.	Present Worth \$1,000	Difference from Alternative I
I	15 5	1981 1991	6,320	795	15,200	
II	20	1981	5,970	605	12,700	-16%
III	10 10	1981 1986	6,880	818	16,000	+ 8%
IV	10 5 5	1981 1986 1991	7,120	960	17,800	+20%

Note: All costs are from "A Guide to the Selection of Cost-Effective Wastewater Treatment Systems," EPA, July, 1975. The LCAT used was 129.

Table V-3.  
SUMMARY OF COST DIFFERENCES FOR CONSTRUCTING A 15 MGD EXPANSION AT THE  
JAMES RIVER STP RATHER THAN THE PROPOSED YORK RIVER STP.  
(LCAT INDEX - 129. CAPITAL COSTS INCLUDE 25 PERCENT ENGINEERING  
AND CONTINGENCIES.)

Additional Costs Incurred as a Result of Expansion at James River

	Capital Costs \$1,000	O&M Costs \$1,000/yr
<u>Item</u>		
Pumping station and force main to transfer flow from Routes 173 and 165 to the James River STP	11,090	70
Additional piping required at the James River STP	240	—
Sub-Total	\$11,330	\$70
Cost Savings Resulting from Expansion at James River		
Delete effluent pumping station at the York River STP	1,000	29
Delete effluent force main	2,080	—
Delete force mains from Routes 173 and 615 to the York River STP	1,190	6
Savings on expanding the existing control building rather than constructing a new building	720	—
Reduced personnel requirements	—	56
Savings from not requiring a separate interconnection	3,260	8
Sub-Total	\$ 8,250	\$99
Total: Net Savings		
Capital Costs - \$3,050,000		
O&M \$ 29,000/year		
= net present worth = -2,730,000		

Tables I-9 and I-10, from the Draft EIS, which present the applicant's capital and O&M costs for the York River 15 mgd plant were used. The costs of the effluent pumping station and force main, which are not necessary if Alternative II is selected, were deducted from these capital and O&M costs. The remaining costs are \$16,951,000 capital and 525,000/yr O&M. The generalized estimates of plant cost based on Table V-2 are:

	<u>20 mgd</u>	<u>15 mgd</u>	<u>5 mgd</u>
Capital	\$5,968,000	\$5,039,000	\$1,252,000
O&M	605,000/yr	520,000/yr	275,000/yr

Thus, the applicant's capital cost estimate for a 15 mgd facility are 3.36 times the estimates of Table V-2 (\$16,951,000/\$5,039,000 = 3.36). The O&M cost estimate made by the applicant is 1.01 times greater than estimated in Table V-2 (\$525,000/\$520,000 = 1.01). These scale factors are then applied to the generalized plant costs listed above to provide normalized figures for comparison with Table V-3.

	<u>20 mgd</u>	<u>15 mgd</u>	<u>5 mgd</u>	<u>15 mgd + 5 mgd</u>	<u>Difference 15 mgd+5 mgd vs 20 mgd</u>
Capital	\$20,076,000	\$16,951,000	\$4,212,000	\$21,163,000	\$1,087,000
O&M	611,000/yr	525,000/yr	278,000/yr	803,000/yr	192,000/yr

The savings of \$1,087,000 in capital costs and \$192,000/yr in O&M costs can now be added to the costs of Table V-3.

	<u>Capital</u>	<u>O&amp;M</u>
Additional Costs Incurred (Table V-2)	-\$11,330,000	-\$ 70,000/yr
Cost Savings (Table V-2)	8,250,000	99,000/yr
Economy of Scale Savings (above)	1,087,000	192,000/yr
Total Savings	-\$ 1,993,000*	\$221,000/yr (savings)

Using a present worth factor of 11.13, the net present worth of the total savings is \$467,000.00 less than 2 percent of the total project of the total project costs of. Since estimates of costs are rarely considered more accurate than  $\pm 10$  percent, it appears that both a 20 mgd plant and a 15 mgd plant with a 5 mgd future expansion are equally cost-effective.

The additional cost of increasing capacity of the James River STP by 15 mgd rather than building a 15 gd plant at York is estimated to be \$2,730,000. Thus, this alternative does not appear to be cost effective.

Constructing a 20 mgd facility at the James River site which would incorporate the 15 mgd proposed capacity for the York River STP and a proposed 5 mgd expansion of the James River facility would result in a savings of \$467,000 or less than 2 percent of the total project costs. Since cost estimates are rarely considered more accurate than  $\pm 10\%$ , it appears that a 20 mgd expansion and a 15 mgd plant with a 5 mgd future expansion are equally cost-effective.

#### ***Issue: Alternative STP sites***

Numerous comments on the Draft EIS questioned the lack of an explicit evaluation of alternative STP sites. Areas north of Fort Monroe, in Hampton, have been identified as potentially surplus by the U.S. Army and were suggested as potential alternative sites in comments on the Draft EIS. This issue was raised by the York Chapter of the Chesapeake Bay Foundation in letters dated June 25 and July 25, 1977 (Appendix E), and at the public hearing on June 20, 1977. Letters regarding this issue were also received from the U.S. Department of Commerce (August 16, 1977, Appendix E), Mr. Fred Schaumburg (July 21, 1977) and Mr. Prentis Smiley (July 15, 1977, Appendix E).



Discharge points upriver of the proposed location at the VEPCO outfall were not considered since the severity of impacts would increase upstream. Commercial shell-fishing, not viable below the nearby bridge at Gloucester Point, is practiced north of this point. In addition, flows in the York River would be less upriver and tidal mixing would decrease, also tending to increase impacts.

An expansion on the James River is discussed elsewhere in Section V-B.

An outfall on the Chesapeake Bay, such as would be used with the suggested Fort Monroe site, was examined by Hydrosience, Inc. in their analysis for the facility plan. The Hydrosience assessment concluded that a bay outfall would have slightly less impact than the applicant's proposed discharge, but this difference was described as below the level of reliable measurement.

Construction of a new wastewater treatment plant on the bay at Fort Monroe, instead of at the York River site, would necessitate transferring the sewage flows from the York River service area through the City of Hampton. This would be possible using force mains and interceptors. However, using the costs developed in evaluating the interconnect system, it is estimated that this construction would cost approximately \$13 million in additional expenditures.

Also, the structures and operations of a wastewater treatment plant may not be compatible with the historic nature of the nearby fort. There is also a problem with site acquisition, as the property must now be offered to all federal agencies, including the Interior Department (which may also be interested in acquiring the property), before it can be offered to a unit of local government. These procedures would almost certainly result in a lengthy delay in plant construction, and there is no guarantee that the property would ultimately be available.

Therefore, the alternative of a site at Fort Monroe must be rejected due to increased cost and questionable availability.

For additional discussion of system alternatives, refer to page V-18 of the Draft EIS, Appendix A (not included).

## VI. RECOMMENDATIONS

EPA has developed the following recommendations based on the Draft EIS, comments received, and additional information analyzed since publication of the DEIS. The following list is a summary of these conclusions; a complete discussion of the rationale for each conclusion is provided in this EIS or the Draft EIS (Appendix A).

1. HRSD has applied to EPA for PL 92-500 funding to construct a wastewater treatment facility designed for the following wastewater flows:

Average daily flow - annual	= 15.00 mgd
Average daily flow - maximum	
30 day	= 18.75 mgd
Average daily flow - maximum	
7 day	= 22.50 mgd
Peak daily rate	= 37.50 mgd

EPA has questioned proposed flow projections on two points: (a) the allowance for infiltration/inflow; and (b) increases in per-capita flows.

(a) EPA has concluded that I/I was non-excessive. It must be pointed out, however, that the specified allowances for I/I must be maintained in the system and cannot, at a later date, be reallocated to residential or commercial wastewater flows, without proof that I/I flows have, in fact, been reduced through rehabilitation or are lower than originally anticipated.

(b) Regarding per capita flows, GFCC (1977) projections propose that per capita flows on the Peninsula will increase from 62.7 gcd in 1980 to 75.1 gcd in 1995. EPA concludes that this increase is not justified and capacity will be provided to meet a projected consumption of 62.7 gcd in 1995.

After reviewing the availability of the existing treatment plant capacity of the interconnected system, it was concluded that the design flows for the York River wastewater treatment plant shall be as follows:

Average daily flow - annual*	= 13.7 mgd
Average daily flow - maximum	
30 day	= 15.0 mgd
Average daily flow - maximum	
7 day**	= 20.6 mgd
Peak daily flow***	= 34.3 mgd

\*Assumes I/I at 1/2 of the 30 day maximum

\*\*1.5 times annual average

\*\*\*2.5 times annual average

New population projections for the Peninsula have been developed by Tayloe-Murphy. Applying these new population figures to the methodology previously used by EPA to predict wastewater flows, leads to the conclusion service area projections for York River. The net effect of this "oversize" would simply extend the design life of the facilities by an increment within the design life recommended by EPA regulations.

2. EPA has concluded that the applicant has had difficulty developing adequate pretreatment requirements for Anheuser-Busch brewery discharges, with the result being operational difficulties at the Williamsburg facility. This problem is under study and will be resolved by HRSD as part of a Step I Construction Grant application for modifications to the Williamsburg STP.

3. The applicant's proposal to rely upon incineration as a sludge volume-reduction method in an AQMA for particulates requires further evaluation. Even though the incinerators meet applicable emission standards and will not directly cause the violation of ambient air quality standards, additional pollutant emissions in an AQMA must be considered unacceptable if viable alternatives such as composting and land disposal exist. Thus, EPA views land application of sludge as the preferred method and incineration should be used only as a final alternative. In order to accomplish this end,

EPA is recommending that a pilot composting study be included as part of the Step Two grant. The study will include sludge testing, a pilot composting operation, test plots and a marketing-feasibility study.

4. The principal, primary, long-term impact of the applicant's proposed project will be a substantial increase in point-source pollutant loading of the lower York River. During normal operations at 15 mgd the proposed facility will discharge 3750 lbs/day BOD, 2500 lbs/day ammonia-nitrogen, 4380 lbs/day total nitrogen, and 1000 lbs/day total phosphorus into the estuary. These loadings will increase the average concentrations of total phosphorus in the estuary by approximately 20% and total nitrogen by approximately 10%. The Hydrosience model has predicted that the net effect of the York River discharge will be minimal and will not preclude any beneficial use of the River. Further the effect of the increased loadings must be balanced against both the detrimental effects of existing and future failing septic tank systems on groundwater, surface waters and public health, and against the severe economic effects of the no-action alternative.

5. Without extensive collectors, growth inducement cannot be tied to an increase in regional treatment capacity such as the proposed York River WTP represents. However, if extensive collectors are constructed, growth inducement may easily result. In light of preliminary indications of growth inducement potential, further "201" planning efforts for collectors in Sanitary District No. 2 will fully consider secondary land use effects of collectors. This process will assure that collectors are not oversized, and therefore do not promote induced growth.

HRWQA is currently preparing an Areawide Waste Management Plan which will address the water quality impacts of growth and which jurisdictions served by HRSD should adhere to as strictly as possible.

For these reasons, secondary impacts from growth related to the York STP are not considered to be excessive.

6. A commitment must be secured by HRSD from VEPCO for the joint use of the proposed outfall as part of the Step Two Construction Grant process.

Appendix A.  
Draft EIS; York River Wastewater Treatment Facility, York County, Virginia;  
May 18, 1977 (not included).

The following changes to the Draft EIS are necessary due to minor errors or omissions. In places where the purpose of the change is unclear an explanation is given.

<u>Section</u>	<u>Draft EIS Page</u>
I. DESCRIPTION OF THE APPLICANT'S PROPOSED ACTION	
<ul style="list-style-type: none"> <li>• First line below "Type of Treatment" and "Design Capacity": delete "Secondary" and "25.0"; add "Primary" and "22.0".</li> </ul>	I-6
<ul style="list-style-type: none"> <li>• Reverse information in items 16 and 17.</li> </ul>	I-7
<ul style="list-style-type: none"> <li>• Second paragraph: delete last sentence, "Based. . . ." This deletion is made due to a comment from HRSD in their "Attachment A" to their letter of July 18, 1977 (Appendix E) indicating the data utilized could not be relied on for the conclusion given; EPA concurred with this opinion.</li> </ul>	I-8
<ul style="list-style-type: none"> <li>• Delete second paragraph; add: "The James River facility provides secondary treatment, using the activated sludge process and chlorination of wastewater entering the collection system. Treatment units at the facility currently consist of screen chambers, grit collectors, pre-aeration tanks, primary clarifiers, aeration tanks, secondary clarifiers, chlorine contact tanks, waste activated sludge thickeners, anaerobic digestors, and sludge drying lagoons. Effluent from the facility is discharged through 60 and 36-inch diameter outfalls which extend approximately 3,900 feet into the James and Warwick Rivers at their confluence. In the past, sludge from the James River plant has been land applied, but, according to the HRSD, digested primary and waste activated sludge will be transported to the Boat Harbor plant for incineration; the reason for this change is that the HRSD has not been able to find sufficient land for sludge disposal. The annual operation and maintenance costs are projected to be approximately \$644,000 in Fiscal Year 1976-77 (Table I-5)."</li> </ul> <p>This paragraph modifies and replaces the original in accordance with new information supplied by HRSD in "Attachment A." This new information relates to the number and size of outfalls and the current method of sludge disposal at the James River STP.</p>	I-13
<ul style="list-style-type: none"> <li>• Second paragraph, second line: delete "as a"; "This problem is currently unresolved."</li> </ul> <p>These changes are made due to data in HRSD "Attachment A" which indicate that operational difficulties at the James River STP were not conclusively due to toxic discharges to the facility.</p>	I-14
<ul style="list-style-type: none"> <li>• Third paragraph, delete last line "Based upon an operational. . .", 23rd line, add: "However, levels of BOD and SS from this lesser flow equaled those originally anticipated from flows of 2.8 mgd (HRSD communication)."</li> </ul>	I-14
<ul style="list-style-type: none"> <li>• First paragraph, delete last two sentences. Add "HRSD is negotiating BOD and suspended solids limitations with the brewery, and has submitted a Step I grant application to solve this problem."</li> </ul>	I-16
<ul style="list-style-type: none"> <li>• Third paragraph, last sentence: add "under construction and therefore" between "were" and "not"; delete "due to unknown difficulties."</li> </ul>	I-16
<ul style="list-style-type: none"> <li>• First paragraph; delete entire paragraph: Substitute "The Interconnect System". In 1974, the SWCB directed that HRSD "prepare a plan for the interconnection of all Peninsula treatment plants to provide protection</li> </ul>	I-17

against pollution due to total or partial failure of anyone treatment unit". The intent of the directive was to increase system reliability and maximize existing capacity. The generally flat terrain of the Peninsula requires that most wastewater flows be pumped to treatment facilities in the service area of their origin. Because all flows must be pumped, interconnection of the force main system was congruous with the existing system. "The ability to transfer flows from treatment plant to treatment plant makes it possible for the Commission to plan and manage the treatment of its wastewaters in a highly cost-effective manner" (GFC&C, 1974).

The interconnect system allows HRSD some flexibility to define the service area of its plants. The decisions are based on conditions and characteristics of systems and pumping costs as well as development and growth patterns in an area. A system model proposed by Gannett, Fleming, Corddry and Carpenter will enable HRSD to more efficiently predict line pressures resulting from projected flows and the effects of proposed emergency or minor permanent service area changes.

- First paragraph, first subsection: delete "Route 17 interceptor" add "Yorktown/York County Interceptor force main. . .". I-27
- First paragraph, second subsection, sixth line: delete "Route 17 interceptor" add "Yorktown/York County Interceptor force main. . .". I-27
- First paragraph, third subsection, second and sixth lines: delete "Route 17 interceptor" add "Yorktown/York County Interceptor force main. . .". I-27

## II. ENVIRONMENTAL SETTING

- First paragraph, tenth line: change "10" to "11". II-19
- Directly above "Flood" and "Ebb": replace "York River" with "Back Creek". II-24
- Legend, following "Shellfish Closure Zones": add "in the vicinity of the York River STP". II-31
- Delete last paragraph II-34
- Delete first paragraph II-35

These deletions are made due to their material being inappropriately located. This material is repeated on page IV-34 of the Draft EIS.

- Delete third paragraph; add "The blue crab (*Callinectes sapidus*) is the only genus of crab commercially harvested in the York River. Harvesting activity is restricted by the Coast Guard to areas outside of the shipping channels (Van Engle, 1976). Because of their mobility, and because themeat is not eaten raw, shellfish closure regulations do not apply to crabs (HRWQA, 1976). In the York River system (including Back River, Poquoson River and Mobjack Bay), the approximately 300 commercial hard crab fishermen begin working near the bay in March or May and follow the crabs upstream to shallow waters in the tributaries by June or July (Horrell, 1976). Approximately 50 individuals commercially harvest soft crabs from the York River (Horrell, 1976). In the lower York River, from the U.S. Naval Weapons Station to the mouth, approximately 4,400 pounds of soft crabs and 1,200,000 pounds of hard crabs were harvested in 1976, valued at \$3,200 and \$260,000, respectively (Gordon, 1977). Although far fewer total pounds of soft crabs are harvested, these figures show their dollar value per pound to be more than three times that of II-40

hard crabs. No crab “pots” are currently being set in the vicinity of the VEPCO outfall, and “peeler” or softcrab fishing is primarily restricted to that portion of the York River upstream from the Route 17 bridge (Horrell, 1976).”

This change incorporates information provided by the U.S. Dept. of Commerce in their letter of August 16, 1977 (Appendix E).

- First paragraph: delete last three sentences; add “Landings from the lower York River (downstream from the U.S. Naval Weapons Station) in 1976 totalled 120,000 pounds, valued at \$113,000 (Gordon, 1977).”

II-41

This change incorporates information provided by the U.S. Dept. of Commerce in their letter of August 16, 1977 (Appendix E).

- Third paragraph: delete first two sentences; add “The Virginia Marine Marine Resources Commission reports a 1976 oyster production from the lower York River (from the mouth to the U.S. Naval Weapons Station) of 177,000 pounds (meat), valued at \$165,000 (Gordon, 1977).”

This change incorporates information provided by the U.S. Dept. of Commerce in their letter of August 16, 1977 (Appendix E).

- End of second paragraph: add “The catadromous American eel (*Anquilla rostrata*) resides in estuarine rivers, often penetrating to the headwaters, but returns to the Atlantic Ocean to spawn. Catch statistics for commercially imported species for the lower York River, from the mouth upriver to the U.S. Naval Weapons Station, are listed in Table II-23b for 1976.”

II-42

This change incorporates information provided by the U.S. Dept. of Commerce in their letter of August 16, 1977 (Appendix E).

- End of third paragraph: add “Catch statistics for these marine species for the lower York River are listed in Table II-23b for 1976.”

II-42

TABLE II-23b

1976 YORK RIVER CATCH STATISTICS, U.S. NAVAL WEAPONS  
STATION TO MOUTH [SOURCE: Gordon, 1977].

	<u>Pounds</u>	<u>Value</u>
Alewife	25,000	1,000
Bluefish	149,000	16,000
Butterfish	22,500	6,700
Croaker	400,000	71,000
Eel	20,500	7,900
Flounder	3,200	1,100
Menhaden	687,000	13,600
Gray trout	252,000	43,000
Spot	97,500	14,300
Striped bass	27,000	11,000
Unclassified industrial	312,000	7,000

This change incorporates information provided by the U.S. Dept. of Commerce in their letter of August 16, 1977 (Appendix E).

Section	Draft EIS Page
<ul style="list-style-type: none"> <li>• Third paragraph, second line: delete “and the York River STP service area”.</li> </ul>	II-45
<p>This phrase is deleted since the figures mentioned only refer to the York-James Peninsula, not the York River STP service area.</p>	
<ul style="list-style-type: none"> <li>• Delete fifth paragraph.</li> </ul>	II-70
<p>This paragraph is deleted since Virginia’s highway construction moratorium is no longer in effect according to information in HRSD’s “AttachmentA”.</p>	
<h3>III. STATUS OF COMPREHENSIVE PLANNING</h3>	
<ul style="list-style-type: none"> <li>• First paragraph, after last item “York County”: add <ul style="list-style-type: none"> <li>• City of Suffolk</li> <li>• City of Portsmouth</li> <li>• Isle of Wight County”</li> </ul> </li> </ul>	III-2
<ul style="list-style-type: none"> <li>• Fourth paragraph, after first item: add “Recent negotiations have concluded that flows from the U.S. Naval Weapons Station will be sent to the Williamsburg STP. However, an equal increment of flows currently being sent to the Williamsburg STP will be diverted to the York River STP using the interconnect system.”</li> </ul>	III-18
<p>This paragraph is modified in accordance with recent negotiations between the Naval Facilities Engineering Command and HRSD mentioned in a comment by letter from E.A. Barco of the Navy, dated June 16, 1977.</p>	
<ul style="list-style-type: none"> <li>• Second paragraph, sixth line: after “1970 U.S. Census” add: “and 1972, 1973 and provisional 1974 population data.”</li> </ul>	III-21
<h3>IV. ENVIRONMENTAL EVALUATION OF THE APPLICANT’S PROPOSED PROPOSED</h3>	
<ul style="list-style-type: none"> <li>• Under “Parameter Impacted”: reverse “Ground water quality” and “Ground water quantity”.</li> </ul>	IV-3
<ul style="list-style-type: none"> <li>• Delete mitigating measures for “Recreation”.</li> </ul>	IV-3
<p>These mitigating measures are deleted since they are not being pursued as a direct attempt to ameliorate an impact and are therefore not technically “mitigating measures”. This change responds to comments from the U.S. Department of Commerce in a letter dated August 16, 1977 (Appendix E).</p>	
<ul style="list-style-type: none"> <li>• Second paragraph, add: “These loadings are in addition to those from the Mattaponi and Pumunkey Rivers, existing sewage treatment plant, unknown agricultural runoff, septic tank and marinas discharging into the York River, as well as nutrients from the Chesapeake Bay during flood tide.</li> </ul>	IV-8
<ul style="list-style-type: none"> <li>• Second paragraph, last sentence: replace “will” with “could”.</li> </ul>	IV-10
<ul style="list-style-type: none"> <li>• Third paragraph, first sentence: delete “in response to the proposed project”; add “as a result of providing wastewater treatment capacity for expected growth.”</li> </ul>	IV-10
<ul style="list-style-type: none"> <li>• Second paragraph, twelfth line: delete “lower water table”; add “lowering of the water table through elimination of septic tanks.”</li> </ul>	IV-14



<u>Section</u>	<u>Draft EIS</u> <u>Page</u>
<ul style="list-style-type: none"> <li>• Delete third paragraph; add “Approximately 14.3 tons/day (dry weight) of sludge will be generated at the York River STP. At this rate, the sludge loading to the Boat Harbor incinerator will be increased by 100 tons per week, or to about twice the present loading.”</li> </ul> <p>This paragraph is changed to reflect corrections supplied by HRSD in “Attachment A.”</p>	IV-16
<ul style="list-style-type: none"> <li>• First paragraph, first line, delete “\$1,244,000” add “\$980,052.”</li> </ul>	IV-31
<ul style="list-style-type: none"> <li>• Second paragraph next to last sentence: change to read “Instead any general increase in user charges would be levied upon all. . .”</li> </ul>	IV-31
<ul style="list-style-type: none"> <li>• Under “Regional User Charges”, following “Average Family Rate”: replace “22.00” with “15.50”.</li> </ul>	IV-32
<ul style="list-style-type: none"> <li>• Fifth paragraph, following the second sentence: delete remainder of text. Add “Sewage treatment is a permitted use in this District.”</li> </ul>	IV-37
<p>Delete first paragraph.</p> <p>This section is changed due to an incorrect description of the York County Zoning Ordinance. Uses permitted in B-1 include sewage treatment; uses in B-1 are included M-1; uses in M-1 are permitted in M-2. Therefore, M-2 allows sewage treatment as a conforming use.</p>	IV-38
<ul style="list-style-type: none"> <li>• Fifth paragraph: following “polyelectrolyte,” add “sulfur dioxide.”</li> </ul>	IV-47
V. IDENTIFICATION AND EVALUATION OF ALTERNATIVES TO THE APPLICANT'S PROPOSED PROJECT	
<ul style="list-style-type: none"> <li>• Fourth paragraph, fourth line: replace “AQCR” with “AQMA”.</li> </ul>	V-12
<ul style="list-style-type: none"> <li>• Second paragraph, third line: replace “AQCR” with “AQMA”.</li> </ul>	V-17
<ul style="list-style-type: none"> <li>• Fourth paragraph: delete last sentence.</li> </ul> <p>This deletion is made due to a correction by HRSD in “Attachment A”. This correction indicates that sites were examined and are not available.</p>	V-18
<ul style="list-style-type: none"> <li>• Paragraph below Table V-7, eighth line delete sentence beginning with “Excess capacity is currently. . .”</li> </ul>	V-20
<ul style="list-style-type: none"> <li>• Third paragraph, second item: delete second sentence “Under this alternative. . .”</li> </ul> <p>This deletion is made since a water conservation program is discussed in the body of this Final EIS.</p>	V-24
<ul style="list-style-type: none"> <li>• Third item: replace “unsuitable for” with “having severe limitations for use with”.</li> </ul>	V-25



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
6TH AND WALNUT STREETS  
PHILADELPHIA, PENNSYLVANIA 19106

OCT 31 1977

TO ALL INTERESTED AGENCIES, PUBLIC GROUPS AND CITIZENS:

Enclosed is a copy of the Final Environmental Impact Statement (EIS) for the proposed construction of the York River Wastewater Treatment Facility, York County, Virginia.

Pursuant to the National Environmental Policy Act of 1969 and regulations promulgated by this Agency (40 CFR 6, April 14, 1975), the public comment period for this Final EIS will remain open until November 30, 1977. All comments should be submitted to the above address for the attention of the Environmental Impact Branch - EIS Preparation Section.

This Final EIS addresses all substantive comments received during the public review period on the Draft EIS including the testimony received at the Public Hearing of June 20, 1977. Rather than repeat the entire Draft EIS here in the Final EIS, we have referenced the Draft EIS as an appendix while making the appropriate changes and additions in the Final EIS.

I welcome your interest and participation in the EIS process.

Sincerely yours,

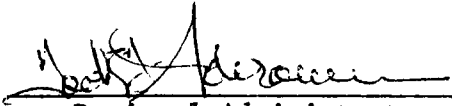
A handwritten signature in dark ink, appearing to read "Jack J. Schramm", is written over a horizontal line.

Jack J. Schramm  
Regional Administrator

FINAL  
ENVIRONMENTAL IMPACT STATEMENT  
YORK RIVER WASTEWATER TREATMENT FACILITY  
YORK COUNTY, VIRGINIA

Prepared for:  
U. S. Environmental Protection Agency  
Region III  
Philadelphia, Pennsylvania  
Project Officer: Joseph T. Piotrowski

Prepared by:  
EcolSciences, Inc.  
127 Park Street, N.E.  
Vienna, Virginia  
Project Manager: Carl Mitchell

  
Regional Administrator  
OCT 31 1977  
Date

Appendix C: Infiltration/Inflow  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region III - 6th & Walnut Sts.  
Philadelphia, Pa. 19106

SUBJECT: C-510533-01, York River STP  
HRSD, Virginia

DATE: 5-31-77

FROM: Anthony Koller, Sanitary Engineer  
Facilities Management Branch

*Anthony F. Koller*

TO: Joseph Piotrowski, Project Officer  
York EIS

THRU: R. Fenton Roudabush, Chief *RFR*  
Virginia/West Virginia Section, FMB

In reply to your memo dated April 28, 1977, the Virginia State Water Control Board certified to EPA on April 22, 1976 that the Boat Harbor System was subject to non-excessive I/I. A copy of their certification and their determination is attached.

The following is an estimate of possible costs for an I/I Evaluation survey and possible costs for corrective action:

1. Estimated costs for I/I Evaluation Survey

High =  $\$2.45/\text{ft} \times 285.89 \text{ miles} \times 5280 \text{ ft/mile} = \$3,698,273$

Low =  $\$1.10/\text{ft} \times 285.89 \text{ miles} \times 5280 \text{ ft/mile} = \$1,660,449$

2. Estimated Costs for I/I Corrective Action using 300' between Manholes

$5280/300 = 17.6$  manholes per mile - Use 20 MH/mile

a. Grouting of MH =  
 $20 \times \$150.00 = \$3,000/\text{mile}$  \$3,000.00

b. Repair of MH covers =  
 $20 \times \$175.00 = \$3,500/\text{mile}$  3,500.00

c. Grouting of connections  
Estimate 5 joints per MH Reach  
Material =  $20 \times 5 \times \$40.00 = \$4,000.00$  4,000.00  
Equipment Rental & Setup =  $20 \times \$150.00 = \underline{\$3,000.00}$

TOTAL PER MILE - \$13,500.00

TOTAL COST OF CORRECTIVE ACTION

$285.89 \times .85 \times \$13,500 = \$3,280,587$

This cost represents only corrective action for grouting of sewer lines

and manholes to correct infiltration. It does not represent any corrective action to reduce inflow, such as cross-connection between sanitary and storm sewers, elimination of roof leaders, etc. These costs would be added on.

The cost figures used were from the 1974 Needs Survey Procedural Bulletin and do not reflect higher costs due to inflation.

## Appendix D. Public Hearing

A public hearing on the York River STP Draft EIS was conducted on June 20, 1977 at 6:30 PM in Tabb High School Auditorium in York County. Issues raised included treatment capacity, alternative STP sites, growth inducement, and water quality; these issues are discussed in the Final EIS. Representatives of York County and the City of Newport News each expressed their desire that the new facilities not be located within their respective jurisdictions.

The following persons spoke at the public hearing:

- George Pence - Chief, EIS Branch, U.S. Environmental Protection Agency, Region III
- Joe Piotrowski - Project Officer, York River EIS, U.S. Environmental Protection Agency, Region III
- William Love - General Manager, Hampton Roads Sanitation District
- Paul E. Paul - Gannett, Fleming, Corddry and Carpenter
- John St. John - Hydrosience, inc.
- L. S. McBride - Regional Director, Tidewater Office, Virginia State Air Pollution Control Board
- John Quarles - Member, York County Board of Supervisors
- Thomas Miller - City of Hampton
- Joseph Richie - Mayor, City of Newport News
- Frank Smiley - City Manager, City of Newport News
- Donald Patten - Newport News Planning Commission
- Wendell White - Chairman, Peninsula Planning District Commission
- Paul Baker - Chesapeake Bay Foundation, York Chapter, Inc.
- Elizabeth Rogers - Williamsburg Area League of Women Voters
- Eugene Lamb - Executive Director, Newport News Redevelopment and Housing Authority
- Lamar Jolly - President, Peninsula Housing and Builders Association
- Karl F. Lanier - President, Peninsula Chamber of Commerce
- Ben Head

- A. A. West
- Daniel Hayes - Manager, Laundrymen, Inc.
- John D. Yoder
- H. Jack Jennings
- Bruce Flagge
- Lewis McMurren - Chairman, Virginia Peninsula Industrial Council
- Hayden Ross-Clunis
- Virginia J. Wasson - Managing Director, Williamsburg Chamber of Commerce
- Thomas D. Kaizer
- John Demerit - Virginia Watermen's Association, Poquoson Division
- Allen Sower
- J. L. Riggins
- Henry Elksin
- James L. Riggins, Sr.
- Mary Sherwood Holt
- Mary Matthews
- B. Saville, Jr.
- June Pearson
- Roy Hinsley
- Shirley Cooper, Chairman, York County Board of Supervisors
- Bill Burgess
- M. Haskins

In addition, written comments were submitted by the following for inclusion in the hearing record:

- Bureau of Shellfish Sanitation, Virginia Department of Health
- O. Wendell White - Chairman, Peninsula Planning District Commission
- W. Ballard Preston, Jr.

Appendix E. Representative Comments Presented in Chrono-  
logical Order.





*Chesapeake Bay Foundation,  
York Chapter, Inc.*

P. O. BOX 643  
YORKTOWN, VIRGINIA 23690

STATEMENT FOR PRESENTATION AT THE PUBLIC HEARING ON THE DRAFT ENVIRONMENTAL  
IMPACT STATEMENT FOR THE PROPOSED YORK RIVER WASTEWATER TREATMENT FACILITY  
CONDUCTED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION III  
MONDAY, JUNE 20, 1977

TABB HIGH SCHOOL, YORK COUNTY, VIRGINIA

The Chesapeake Bay Foundation, York Chapter has been involved in this project for a long time, and is pleased that the draft EIS addresses many of the concerns we expressed in our presentation at the hearing here two years ago. In general, we consider the draft EIS a well prepared document of appropriate scope and treatment of the subject, and we find ourselves in agreement with the thrust of its Preliminary Conclusions (page VI-1,2), though with some significant exceptions which are described later. The draft EIS describes the substantial adverse environmental impacts of the presently projected York River STP and points out that there are desirable alternatives with less adverse impact, which have not yet been adequately studied or considered. For the most part, the EIS is cautiously worded with respect to its findings. Presumably, the burden is on the applicant to substantiate that the York River STP is the best solution.

Our immediate conclusion from the draft EIS itself (without taking into account the questions and points we make below) is that in view of the questions the EIS raises with regard to infiltration/inflow, per capita flow projections, capabilities of the interconnect systems, over-capacity at 15 mgd, alternatives to the York River site, and others, the EPA cannot,

*"Preserve The Environmental Integrity Of The Chesapeake Bay"*

in justice to its mission and the objectives of PL 92-500, approve the 15 mgd York River STP until and unless all of these questions are resolved to show that it is the optimum solution. As we try to make clear below, it is indeed not the optimum solution.

The relatively short time available between the receipt of the draft EIS on Friday, May 27th and the hearing on June 20th has made it very difficult to complete the work necessary for thorough review of the document and preparation of a statement for the hearing. As stated in the last paragraph of page xx, the matter under study is one of considerable complexity. Time did not permit our dealing with such important topics as Air Quality, Sludge Disposal, Land Application and Toxic Substances. However, these are discussed in our earlier letters and statements. The following topics or issues are addressed in this statement:

#### A. Population Projections

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The following abbreviations will be used in this statement:

CBF, YC	Chesapeake Bay Foundation, York Chapter
EPA	The United States Environmental Protection Agency (Region III)
GFCC	Gannett, Fleming, Corrdry and Carpenter
gpcd	gallons per capita per day
HRSD	Hampton Roads Sanitation District
I/I	infiltration/inflow
mgd	million gallons per day
mg/l	milligrams per liter
PPDC	Peninsula Planning District Commission
STP	Sewage Treatment Plant (Wastewater Treatment Facility)
SWCB	Virginia State Water Control Board
ug/l	micrograms per liter

- B. Unsatisfactory on-site Sewage Disposal Systems
- C. Soils Information
- D. HRSD Peninsula Interconnect System
- E. HRSD Peninsula Infiltration/Inflow
- F. HRSD Peninsula Operations
- G. Environmental Impact
- H. Surface Runoff
- I. Biology of the York River Estuary
- J. Effluent Disinfection
- K. Hampton Roads Water Quality Agency
- L. Additional Alternative Site
- M. PL 92-500, Sewers, and Growth
- N. Concluding Remarks

In addition to those listed above, a number of other topics or items are brought to notice in Appendix A, cited in page number sequence of the draft EIS. Some are quite important and some relate to the listed topics. Appendix B is a listing of previous CBF,YC letters or statements relating to the York River STP, which by reference are parts of this statement.

## A. POPULATION PROJECTIONS

(reference, Section III.C, p. III-16)

We were rather surprised to see that EPA's population projections for the York River STP Service Area (Table III-9) exceeded those of the PPDC (Table III-7). We confidently expected PPDC to top all others. However, GFCC's were highest.

The discussion recites how the EPA rejected the HRWQA projections and proceeded to make its own projections for the York River STP Service Area. From the information given, it is not possible to correlate the various Service Area Projections and corresponding City/County Projections. In any event, the population projections of interest are those for the cities, the counties, and the Peninsula, not for the arbitrary York River Service Area, and it is the sewered population that is the source of the residential wastewater flow. We know that PPDC has been dissatisfied with the DSPCA (now OPB) projections that came out in March, 1975. These were appreciably lower than the projections used in the York River STP Preliminary Engineering Report. A new edition of the OPB projections is about to be published. It is interesting to compare the various projections for the Peninsula, all in thousands:

	1970	1975	1980	1995
GFCC, 1974	----	350.3	403.0	(525)
DSPCA, 1975	319.1	----	373.5	460.0
HRWQA, 1976	319.9	----	341.2	401.4
(OPB, 1977)	319.1	332.8*	350.3	386.9

\* 1974

The projections of future population are seen to be shrinking substantially as the years go by. No doubt, PPDC will object to the latest projections as being too low. We believe the PPDC, GFCC and EPA projections are inflated.

We must point out again that population projections used for planning sewers and roads are, to a very large degree, self-fulfilling prophecies if they are acted on, and this should be recognized by all concerned.

An entirely different aspect of the population projections for the York River Service Area, that deserves comment is that the portions of the service area showing the greatest numerical growth, in Hampton and Poquoson, lie in the 100 year flood plain, as can be seen by transferring the flood plain boundary from Figure II-15 to Figures III-2,3,4 and 5. (The more frequent flood plain boundaries will be related but show somewhat smaller area.) While developers may choose to ignore the dangers of the flood plain, it would appear that some fraction of prospective residents will be aware and prudently avoid the area, or in the course of time a disaster affecting the population numbers will occur. Was any notice taken in the population projections? On the other side of the coin, it would appear that local jurisdictions have some responsibility to avoid relatively large populations on the flood plain. The reality of these concerns will be apparent to those who remember the hurricane in the fall of 1933 and the Ash Wednesday northeaster of April, 1962, when the water levels reached nine and eight respectively above normal high water in Poquoson. Or will Federal disaster assistance take care of everything?

## B. UNSATISFACTORY ON-SITE SEWAGE DISPOSAL SYSTEMS

(reference, page I-18)

This list was prepared by the York County Health Department at the request of the former County Administrator. The sole use for the list was as justification for a Health Hazard declaration to improve the probability of state and federal funding for the County's sewage collection system. No other use has been made of the list, nor (even after the declaration of a "most urgent health hazard") has there been any attempt by any level of government to confirm the correctness of the list or to have the problems corrected.

The 35 satisfactory and 60 unsatisfactory privies and the 24 cases of no sanitary facilities listed are almost entirely in Lackey, a sub-standard residential area immediately outside the main gate of the Naval Weapons Station. There are no known plans for sewerage in this area. It is inconceivable that the residents of this area could afford the several thousand dollars per residence cost of sewage collection, even considering 75% federal funding. It is possible that at some future date a special arrangement could be worked out with the Naval Weapons Station.

The other lists of some several hundred malfunctioning septic systems are hard to evaluate. Spot checks have shown the list to be wrong. Approximately half the lists came from a drive around the area, and certainly are questionable. A check of the locations of the malfunctions showed that only about 20% would be included in the initial Sanitary District No. 2 collection systems. The CBF, YC urged York County to check the list, and to seek alternative solutions to the identified problems. For example, a CBF, YC member had a chronically malfunctioning septic tank during the time interval involved (he was not on the list). He cured the problem by adding on to the septic system at far less cost than connecting to a central sewer and at zero cost to any governmental agency.

The accuracy of the lists is known to be low. There are certainly malfunctioning septic systems, but their nature and location are not derivable from the lists. (We obtained the location information by research of the original data.) The shame of the matter is that this list was contrived for the special purpose of promoting the sewage collection systems along Route 17. Its usefulness as a tool for seeking correction of the malfunctions or for identifying the areas most needful of sewage collection was, to the best of our knowledge, ignored completely by all levels of government from local to federal (EPA).

### C. SOILS INFORMATION

The draft EIS presents a large volume of information on the natural setting of the proposed STP. However, some glaring deficiencies are obvious. The data on ground-water and the regional changes in ground-water tables is out of date or it does not apply to the service area of the STP. Similarly, the EIS does not address in a meaningful way the effects on the ground-water of the diversion of the desseminated septic tank effluents to surface discharge or the reduced infiltration created by STP stimulated development. Without these data it is not possible to conclude what effects the STP will have on the ground-water tables.

The report indicates that the soils in the proposed service area will not support developments using septic tank drainfields. This is based in part on the soils map (Figure II-3) which was gathered on a reconnaissance survey. The map does not delineate major tracts of land that are suitable for more intensive land uses and is not sufficiently detailed. Consequently the soil data base is inadequate and cannot be used to support the position that most of the area within the service area must be sewered.

The draft EIS contains a lengthy discussion of the soils on the STP site (Figure II-4) and the geology of the area. Although the report points out the inadequacy of the soils for various purposes, including roads, it fails to indicate whether or not the site has adequate geology or soil conditions to support large facilities, such as the large aeration and settling tanks of a sewage treatment plant.



#### D. HRSD PENINSULA INTERCONNECT SYSTEM

The draft EIS makes clear the significant discrepancies between generalizations about the interconnect system on the Peninsula and its apparent actual capabilities. For generalities, see first paragraph, page I-17, and also paragraph 7, SWCB letter of January 6, 1977, page 9 of section VII: "Another reason for the increased capacity is that all of the facilities in the Peninsula have to be interconnected so that all the wastes from a facility can be transferred to the others in case of a malfunction." (?). Actual diversion capabilities are discussed on pages I-17,18; I-29; V-9,10; and VII-49 (HRSD letter of 4/4/77), but the situation appears confused, and the nature of the limitations on diversion capability are not made clear. It appears to us that indeed the system should be made capable of diverting substantial flows both from and to any given STP, and that it is worth a study to secure an optimum capability to minimize individual STP capacity requirements, and for emergency use in event of process or equipment breakdown at one of the STPs. This study should be a factor in decisions on future STP capacities, including the present case.

## E. HRSD PENINSULA INFILTRATION/INFLOW

(reference, page I-11)

The Boat Harbor 11.3 mgd maximum average 30-day I/I flow is 46% of the maximum total flow for any month during this period (24.6mgd), which appears to us to be excessive, even though I/I is certified to be non-excessive by the SWCB. Examination of Table 2 of GFCC's 2/1/77 letter (VII-44) shows that the maximum 30-day I/I flow at 2.2 mgd was also a relatively high proportion of the total flow at the Williamsburg STP. Table 3 of the GFCC letter of 2/1/77 projects much lower (but still very high) Boat Harbor I/I flows, but it is not made clear how the reductions are to be achieved.

It is interesting to compare the projected total wastewater flows on the Peninsula as calculated by GFCC in Table 3 of the reference letter and those of Table 13 of the 1974 Preliminary Engineering Report (mgd).

	Table 13(1974) YR STP REPT.	Table 3 GFCC	Table V-6 EIS
1975	35.83 (16.0)	41.44 (16.4)	-----
1980	48.47 (21.2)	51.48 (21.2)	47.38
1990	62.89 (24.9)	63.80 (24.9)	-----
1995	68.52 (26.0)	68.49 (26.0)	57.96

It is seen in the table that the GFCC projected flows are about the same, achieved by using the maximum 30-day I/I flows, (Table 3) instead of average I/I, as the sewered population projections reduced from those used in Table 13 (from 463,700 to 406,300 for 1995). The gpcd increased with time in both cases, from 58 to 75 for Table 3, and 60 to 79 for Table 13. The non-residential component (shown in parentheses) remains the same. The EIS projection, Table V-6, with average I/I and constant gpcd is shown for comparison.

The actual average total flow for 1974 was 33.8 mgd and for 1975 was 39.8 mgd (a wet year). For 1976 it was 36.3 mgd. So far this year it is 38.6 mgd. Inspection of the monthly average flow at the Peninsula STPs, together with the information presented in Table 2 of the GFCC 2/1/77 letter, clearly shows the great importance of the I/I characteristics of a system. The contrast between the flows in November 1974 (27.5 mgd total) and 4 months later in March, 1975 (48.8 mgd total, 21.3 mgd greater) is impressive, as is the Boat Harbor STP component of the flow, which went from 14.7 mgd to 31.3 mgd, 16.6 mgd higher.

Table 3 of the reference letter projects the Peninsula 1975 I/I flow to be 10.7 mgd (30-day maximum I/I), about 26% of the total flow. STP capacity to treat the I/I component represents a substantial investment, and points out the importance of the cost study on rehabilitating the Boat Harbor conveyance system. It appears to us that there is more than cost-effectiveness involved in a decision on rehabilitation of the system. It is not simply a matter of comparison of the costs with the cost of additional treatment capacity at the York River or James River sites. The environmental and social impacts of the increased STP capacity and effluent flow must also be considered. It appears to us that the value of rehabilitation is very much greater than the dollar cost of treatment capacity for the I/I flow reduction.

## F. HRSD PENINSULA OPERATIONS

The draft EIS cites a number of instances of problems in the operations of the James River STP (page I-13) and the Williamsburg STP (page I-15,16). The third paragraph on page I-16 cites the EPA requirements for pretreatment regulations to be established by the public treatment authority, and that HRSD has not formulated the required standards for Anheuser Busch. A hearing on these problems was held before the SWCB on June 6, 1977 (being continued from the previous December) to consider the permit violations at the two plants, and the two matters were voted to be continued until September. At the hearing, there was no discussion of the reasons for the James River STP being out of compliance from December through April. It was stated that the plant was back in compliance with the new 30 BOD/30 Suspended Solids mg/l requirement (replacing the former 20/20) in April and May, and the matter was continued. On the problems of the Williamsburg STP, HRSD testified at length as described in the press reports, but it was not made clear just how the "spill" or "pretreatment failure" at Jeffco occurred, whether it was human failure or process failure; structural failure or what the cause of the failure was. No questions were asked about this. The major part of the testimony related to problems in treating brewery waste, with the very large fluctuation in flow now being considered a major disturbing factor. It was reported that the plant was back in compliance the last two weeks in May and the matter was continued. It should be noted that there has been a continuing history of violation of permits and reduction of permit requirements going back at least to 1974. A summary performance report in the SWCB's quarterly newsletter of September, 1974 illustrates the situation at that time.

The continuing problems at the Williamsburg STP makes one wonder about the wisdom of HRSD's having contracted with Anheuser Busch to treat 2.8 mgd of brewery waste as an inducement for location of the brewery on

the Peninsula. With the continuing problems since the start of operations, the prospect of having to treat an additional 2.8 mgd when the brewery decides to expand, is positively discouraging. Any expression that extra capacity is needed because of the difficulties of treating the brewery waste are inadmisable. Anheuser Busch must conform to pretreatment requirements.

We are dismayed by HRSD's defense of chlorine as a disinfectant and the questioning of chlorine's toxic effect on aquatic life, as reported in the press in mid-May. This is a very serious matter for the waters around the Peninsula. The occurance reinforces our impression the HRSD's interest in environmental problems is strictly secondary.

## G. ENVIRONMENTAL IMPACT

In Table IV-1, Summary of Environmental Impact of the York River STP, the Impacting Action "Relief/Elimination of septic tanks and small/proliferated sewage treatment plants/facilities" is rated as Primary, long term; Beneficial, and Significant with respect to Surface Water Quality and Public Health. No other unequivocal Significant rating appears in the table. This impacting action is discussed under related headings (pages IV-7, IV-14, IV-24, IV-29). The basis for the beneficial rating of this impacting action (also cited at lesser degree on 3 other parameters) is evidently the unsatisfactory on-site sewage disposal systems listed on page I-18 (the Health Hazard declaration) and also the Back River paragraph (page 290) and the last paragraph on page 321 (lower York River) of the referenced SWCB Water Quality Inventory 305 (b) Report.

An interesting aspect not referred to in the EIS is quoted from the paragraph on page 290: "... and receive some suspected over-flows from local pump station interceptors. These interceptors are faulty at times and release raw wastewater into New Market Creek". This is mentioned as "minimal to moderate" in Table IV-1.

The health hazard matter has been the subject of extensive correspondence with EPA, covered elsewhere. The point to be made here is that the relation between the 15 mgd York River STP and this impacting action is so slight as to be practically non-existent. This is because no beneficial impacting action will exist until sewage collection from the malfunctioning sites exist, and when it does exist, it will be to an interceptor capable of conveying the wastewater to any of the HRSD STPs. It is seen that it is the collection system, not the STP, which has the key role in locations where the on-site system cannot be made to function properly. It should also be noted that the failing York County Sanitary District No.1 STP at

0.368 mgd does not relate to the York River STP nor to the York County Interceptor. It will be connected to a Williamsburg STP force main. In the meantime, it does contribute pollution to the upper York River.

We notice that the STP effluent loading of the lower York River is rated as "minimal to moderate, adverse". The contrast is between this rating applied to the daily discharge (at 15 mgd) of 1.9 tons each of BOD and Suspended Solids. 0.5 tons of total phosphorus, 2.2 tons of total nitrogen, and substantial coliform bacteria when the STP is operating as designed (page I-19), and the "significant beneficial" rating applied to the elimination of the intermittent polluted wastewater overflows of the on-site facilities enumerated on page I-18, the pollutant loading of which at most, amounts to a small fraction of a pound on a daily basis. We consider that the adverse impact of the STP discharge must be rated "significant", to put it mildly.

## H. SURFACE RUNOFF

The York River STP proposes to eliminate the "health hazard" problems in the small eastward flowing tidal streams south of Seaford by eliminating the seepage from septic tank drainfields. However, the growth in development induced by the STP along and east of Route 17 will create highly polluted stormwater runoffs. The organic and inorganic pollutants in first flow runoff from streets, parking lots, service areas and other impervious areas is commonly comparable to domestic waste levels and the release of this water directly into natural streams in the area east of Route 17 will have a deleterious effect on the stream biota and water quality.

Furthermore, STP stimulated development will necessitate the channelization and dredging of the natural upland drainage-ways to accommodate the additional storm runoff. This will result in greater flood flows and lower non-storm stream flows. As a consequence, these streams and their plant and animal life will be destroyed and the streams will become as unsightly, polluted and devoid of life as Newmarket Creek above Mercury Boulevard in the Hampton-Newport News area. One of the principle objectives of the proposed STP, the improvement of stream water quality, will be negated by its construction.



## I. BIOLOGY OF THE YORK RIVER ESTUARY

A serious reservation still remains with respect to the calibration and verification of the Hydrosience model, as cited on page IV-25 (also page VII-63). Although there may be some acceptance of the model's ability to simulate dispersion and dilution of conservative substances (N and Po), the effects of these nutrients on the phytoplankton community is still open to question because it is unknown whether or not the growth of the phytoplankton community is nutrient limited (Jordan et al, 1975). In addition, a high value of chlorophyll a is assumed as an initial condition in the model with a result that an inconsequential increase of 5 ug/l in chlorophyll a will occur.

In aquatic studies, interpretations of the meaning of chlorophyll a do vary with respect to the phytoplankton communities which serve as the base of the autotrophic food webs for higher trophic levels. Although chlorophyll a levels of 50 ug/l are considered "bloom" conditions for green (Chlorophyta) and blue-green (Cyanophyta) algae in fresh water environments, some authorities consider levels of chlorophyll a greater than 20 ug/l for diatoms and dinoflagellates in the estuarine (saline) environment to be bloom levels. In a two year study at the mouth of the York River (1972-1973), five out of 44 measurements of chlorophyll a were in excess of 20 ug/l and these were made when noticeable phytoplankton blooms were observed (Zubkoff and Warinner, 1977). In another study at the same location on diurnal productivity measurements in 1974, during 8 intensive study periods, only rarely were levels of chlorophyll a greater than 20 ug/l (Haas, 1975, Appendix B).

These two studies, in addition to that cited in the EIS, indicate that the existing chlorophyll a level used in the Hydrosience model should have a lower initial condition for chlorophyll a - possibly at the highest level

of 20 ug/l or even more reasonably at 10 ug/l.

Thus, there is another weakness concerning the effectiveness of the proposed model with realistically simulating non-conservative biological parameters, as cited on page IV-25.

References cited in this section:

Haas, L. W. "Plankton dynamics in a temperate estuary with observations on a variable hydrographic condition." Doctoral Dissertation, College of William and Mary, Williamsburg, Virginia. 1975

Zubkoff, P. L., and Warinner, J. E. "The effect of tropical storm Agnes as reflected in Chlorophyll a and heterotrophic potential of the lower Chesapeake Bay". May 1974 Symposium.

Zubkoff, P. L., and Warinner, J. E. "The effects of tropical storm Agnes on the Chesapeake Bay Estuarine system". Chesapeake Research Consortium, Publication 54, 1977.

## J. EFFLUENT DISINFECTION

This matter is extremely important for the waters around the Peninsula, but its treatment (page V-4) in the draft EIS is about as perfunctory as it has been in the HRSD and SWCB documents. The one reference is not even included in the reference list. We have been seeking information on de-chlorination in practice for some time without results. It seems to us that if we in Tidewater Virginia are serious about our shellfish commerce, we must pay far more attention to protecting it from toxic pollutants than we have paid in the past, including the elimination of the use of chlorine. As of now, we have no confidence in dechlorination by  $\text{SO}_2$ . This is just another chemical that can be overdosed by careless operators. We consider that it would do much more for clean water and the environment ( and our shellfishery) for EPA to provide funds for non-toxic disinfection of the effluent at all the STPs operated by HRSD, than the funding contemplated for additional capacity "to promote orderly growth" (page xi).

K. HAMPTON ROADS WATER QUALITY AGENCY

(REFERENCE, pages III-2, IV-12)

This Agency is composed of the Peninsula Planning District Commission, the Southeastern Virginia Planning District Commission, and the Hampton Roads Sanitation District Commission, and was formed in 1974 under Section 208 of PL 92-500 to develop wastewater management plans. The Peninsula is the northern half of the critical area. The completion date was originally in 1976, subsequently extended to June 1977, and most recently to April, 1978. EPA has provided 2.6 million dollars for this effort, which by its nature provides vital information pertinent to the subject of this draft EIS. In view of the need for this information and the investment of the substantial sum in the 208 effort, it would appear that extraordinary efforts should be made to have the resolution of the York River STP problem benefit from the 208 effort. It would appear from the trend toward downward revisions in population and wastewater flow projections, as well as the actual Peninsula wastewater flows in the past 4½ years, that the situation is not so critical as to require decision before the data from the 208 study can be made available.

## L. ADDITIONAL ALTERNATIVE SITE

It has never been made clear why effort was not made to secure sufficient acreage for a STP on a small portion of the Federal land in Hampton, between Fort Monroe and Buckroe Beach. This site is nearby to the areas in Hampton which are projected to transfer from the Boat Harbor to the York River service area. It is a natural low point on the Peninsula, topographically. Its outfall would be furthest downstream of any site on the Peninsula. The value of Fort Monroe to the Army as an operational site is obviously diminishing, and it would appear that the transfer of a small portion sufficient for a regional STP would not be unreasonable. About 15-30 acres would be required. Obviously, the historical value of Fort Monroe itself is beyond estimation, but the area under discussion is considerably removed from the old Fort. Although Hampton is a major contributor of present and future wastewater flows, all HRSD treatment plants are distant from its boundaries.

It has been said that we (CBF,YC)are against growth. This is not so. We recognize that the population of this country and of this state is going to continue to grow for decades to come, and likewise the population of the Peninsula and the upper counties. We hope that the economic growth in terms of constant dollars will continue. But we are concerned about growth, because we are concerned about our natural environment, and we are aware how much the environment deteriorated as a result of growth in the recent past. We are concerned that our growth and development, particularly in York County, take place at a reasonable rate and within the carrying capacity of the land, soils, water, and air (not to mention our financial capacity) so that we maintain the attractive qualities of our environment as we grow. We believe that most agree with us. We consider it imperative that the "carrying capacity" concept be a basic condition for all growth and development. By this we mean that our free enterprise system progress must be made consistent with the carrying capacity of both our natural environment (land, water and air) and our social environment, at the same time we are repairing our past environmental insults. Perhaps it is noteworthy that a page or two past the two page spread in the 6/12/77 Newport News Daily Press, which focussed on the controversy about the York River STP, the results of a recent Harris poll were reported. The headline was "Americans wary of growth". A message to our officials and planners perhaps?

It seems evident that the goal of our local officials is unreservedly "get the federal 75% of the money for the STP so that growth will not be held up". The environment and clean water are secondary matters. There is no question about their wanting clean water and a healthy environment, but they want to be told that the impact of increasing effluent flows, urban runoff, air emissions and so forth are tolerable, and they willingly accept studies or interpretations that support this, as they did in the completely

useless "Environmental Assessment" appendix to the Preliminary Engineering Report.

The obsession with growth appears to stem from the belief that not only is continuing economic growth the most beneficial state of affairs for all of us, but it is essential for the solution of our social problems. It appears that this belief is almost universally accepted at all levels of government. Some appear to believe that when they conflict, environmental considerations must bow to those of growth. This is a narrow, short term point of view. We believe the long term considerations must prevail, with growth and a healthy environment for ourselves and our future generations.

With this universal belief in the desirability of growth, there is of course competition between localities and regions to secure the location of new industries, new federal installations, new state installations, new residents in one's own locality, etc. At the same time we also have the phenomenon of net migration of residents from the inner city to the suburbs, within the same commuting area, and the deterioration of the inner city. This is already happening on the Peninsula, especially in downtown Newport News and Hampton. Suburban sprawl at the expense of the inner city is taking place here. And it appears to us, that in funding the Yorktown Interceptor (EPA C-510-465) and the Sanitary District No. 2 Collection System (EPA C-510-405), EPA is contributing to suburban sprawl. We objected as strenuously as we could to what is now the Phase I, Sanitary District No. 2 Collection System (EPA, Region III has a substantial file of our letters and exhibits in support of our position), but EPA chose to support the project as applied for. The Route 17 Interceptor Project went through before we had learned our lessons about sewers. The York River STP is another growth promoting project.

The first words of PL 92-500, the Federal Water Pollution Control Act

Amendments of 1972, in its Declaration of Goals and Policy are: "Sec. 101.(a). The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.", but this and the listed national goals and policies are rather pushed aside by the Act's funding provisions, and growth is catered to under the otherwise prudent condition: "Sec. 204(5). ..that the size and capacity of such works relate directly to the needs to be served by such works, including sufficient reserve capacity." It appears that in practice, the concept of reserve in the sense of "keeping back" for special needs is utterly lost, and in the absence of controls on the rate of use of the reserve, it's "first come, first served". It appears to us that despite the disclaimer (page III-11, first paragraph) emphasizing environmental laws and regulations and which leaves open the question of whether EPA regulations on qualifications for grants are adequate under the goals and policy of LP 92-500, EPA has greater responsibility for action than the relatively ineffective (in terms of results) method of being satisfied with local intentions or agreements.

The discussion on pages IV-38 and 44 seeks to differentiate between "accommodated growth" and "induced growth", with accommodated growth defined as previously projected population increases. The discussion does not make very clear what induced growth is. Presumably, it is growth beyond the original population projections. It is noted in the discussion that "lower York County and Poquoson have the highest potential for single-family residential growth inducement" (page IV-42) and also that: "lower York County also has a significant potential for multi-family growth inducement". The last paragraph on page IV-42 and the five paragraphs on page IV-43 recite studies by EPA which show undesirable sewage-related effects in undeveloped and developing areas. For all this discussion, an extremely important part of the problem is not addressed. This is the problem of controlling the



growth of a region so that it proceeds at a reasonable rate, within the capabilities of the locality involved. Some reference is made to this problem in Section III-B., but the experience in York County in achieving growth control means and in implementing them has been poor in the extreme. This is mentioned in the draft EIS (page III-11), but progress on the County Master Plan and on up-dating the zoning ordinances to conform with the Land Use Plan adopted March 4, 1976, has been insignificant. It appears that resolution during 1977 will be impossible.

In considering regional growth, a most important component is residential growth. It is instructive to compare growth rates corresponding to population projections for the country, the state and our region. The table below shows the average annual rates, in percent, with the Virginia data taken from the DSPCA projections of March, 1975.

	1972- 1980	1980- 1985	1985- 1990	1990- 1995
USA	0.9	1.0	0.9	0.8
Virginia	1.3	1.2	1.2	1.0
Peninsula	1.7	1.7	1.4	1.3
York Co.	3.0	3.5	2.8	2.6

The principal question that arises is whether the higher rates on the Peninsula involve environmental degradation. It seems to us that for growth rates higher than the national or state average to be acceptable, environmental degradation must not be allowed to occur.

We consider that EPA must face up to its responsibilities, because events have shown that local and state governments cannot be relied upon to exercise the necessary responsibility for the environment.

## N. CONCLUDING REMARKS

We find ourselves in general agreement with the Preliminary Conclusions (page VI-1) with some exceptions. We believe the conclusions can, from information in the draft EIS, be taken further, and that additional preliminary conclusions can be drawn, as follows:

Paragraph 1. additional Since they relate directly to required treatment capacity, HRSD should institute a program to promote water conservation and arrange its fee structure accordingly. HRSD studies and estimates relating to the rehabilitation of the Boat Harbor collection system to reduce excessive I/I should be expedited and also independently reviewed to insure that the estimated costs are not inflated.

Paragraph 2. additional HRSD should conduct studies to establish the requirements for an optimum interconnect system to secure maximum system reserve capacity. If modification of the interconnect mains and pumping stations are required, these should be undertaken.

Paragraph 3. additional HRSD should conduct a study in connection with those mentioned above to arrive at the most cost effective and environmentally sound means for providing for reasonably projected wastewater flows on the Peninsula for the ten years beyond 1980, at the James River and Fort Monroe sites.

Paragraph 6. We disagree with this conclusion. Local ordinances to manage growth and protect environmentally sensitive areas are not present and have little prospect. Future growth in urban areas will increase pollution through storm run-off.

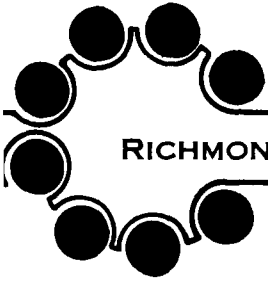
Paragraph 7. additional paragraph The need for, and acceptable siting of the proposed 15 mgd York River STP has not been established.

Our principal conclusion is that the draft EIS brings out very clearly that in view of the lack of essential information (on the interconnect system,

on I/I, on water conservation to maintain present per capita flows), an intelligent decision on the capacity and siting of an addition to the HRSD Peninsula system cannot be made at this time. It is very important that a good decision be made because the environmental impact of additional STP effluent will be significantly adverse. We are within a relatively short time of having important needed data as a result of the HRWQA 208 project work. It is evident that the present Peninsula system capacity is sufficient to handle wastewater flows until a decision can be made and a facility put into operation.

We request that we be informed directly and promptly of any action by EPA, Region III on the application for funding of Step II and Step III for the HRSD York River STP project.

Paul S. Baker, Corresponding Secretary  
Arvid H. Johnson, President



**RICHMOND REGIONAL PLANNING DISTRICT COMMISSION**

July 1, 1977

Mr. Alvin R. Morris  
Acting Regional Administrator  
Region III U. S. Environmental  
Protection Agency  
Sixth and Walnut Streets  
Philadelphia, Pennsylvania 19106

Attention: Environmental Impact Branch-  
Environmental Impact Statement Section

Re: Draft Environmental Impact Statement,  
York River Wastewater Treatment Facility,  
York County, Virginia.

Dear Mr. Morris:

I am writing regarding the above referenced document pursuant to the opportunity for comments per 40 CFR 6, April 14, 1975. My understanding is that comments received by July 8, 1977 will be considered for inclusion scheduled for completion in August, 1977.

One of my concerns is that neither myself, Planning District Commissioners, nor local officials particularly in New Kent and Charles City Counties have been involved in the York STP/EIS process. This is quite perplexing given this correspondence exchanged during the past two years, the major pieces of which I have attached to this letter for your information, as well as to elaborate our concerns for the benefit of the recipients of this letter who prepared the York STP/EIS. It was on inquiry at my initiative that I received the information ( the EIS draft) and that a public hearing had been scheduled. Unfortunately, such was scheduled for the same date and hour as our own 208 Study meeting.

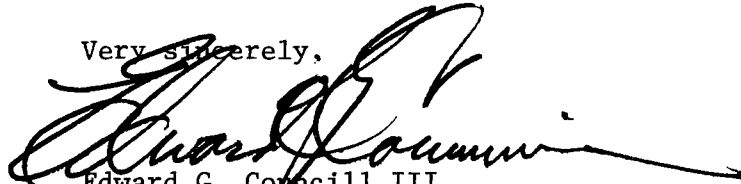
Assuming that we will be dealt with on this matter in the future, I offer the following comments to the Draft EIS which are in addition to the attached materials and which illuminate our continuing concerns:

1. Environmental Evaluation of the Applicant's Proposed Project pages S-9 through S-14 is a focal point of concerns of Planning District 15. I am specifically concerned that the statement, "secondary impacts of the applicant's proposal are generally minimal", does not agree with the resource allocations which impact the water resources of the York available to localities upstream and the anticipated induced growth with its ramifications on future increases in water resources demand on the Chickahominy River. Regarding the former, I am concerned that the allocation of conservative substances to the York STP outfall will preclude the allocation of such substances to upstream development. In the second point, I am not convinced that the proposed York STP will not provide excess wastewater treatment capacity beyond existing available water resources in the Peninsula Planning District (PPD). Apparently the EIS shares one part of this concern (see page S-15 and the statement that "EPA has concluded that 15 mgd may provide extra capacity ...") but ignores secondary impacts which we see as occurring outside the PPD but rather quite resident within the Richmond Regional Planning District, (RRPD). Simply stated, figures shown me and included in EIS indicate that the proposed increase in capacity can only reach full utilization at the expense of water resources residents in RRPD. While the impact of this situation may be "minimal" in PPDC, it is more than "potentially significant" to RRPD.
2. These comments apply also to the "Summary of Environmental Impacts Resulting from the Proposed Construction and Operation of the York River Sewage Treatment Plant" beginning with the parameters of Surface Water Quality and including that of Water Supply. In both cases the impact, its "Degree of Impact", and "Mitigating Measures" all apply only to the PPDC and/or the York STP Service Area. While the statements may be true in that regard, I am concerned and assessment of impacts on these parameters in the RRPD and recommend consideration thereof prior to arriving at a final decision by EPA.
3. Additionally, regarding the Parameters Impacted of Social and Economic Factors (see pages S-14), while EPA's consultant views the degree of impact as "minimal" given the Federal subsidies for 75% of eligible costs, two comments occur to me. First, that over the life span of such a facility, the "O and M" costs will far exceed the federal investments, which, in my judgment fall in a category beyond "minimal". Second, again I do not see any consideration of the social and economic dislocations resulting from allocation of RRPD's water resources to the PPD in the RRPD.
4. Finally, the Parameter Impacted of Land Use (page S-14) begins to reflect some of my concerns expressed both above and attached. I feel its degree of impact to be significant, and would urge EPA to look at this parameter, along with those above, as it relates also to RRPD.

Mr. Alvin R. Morris  
Page 3  
July 1, 1977

Thank you for the opportunity, belated as it is, to participate in this process. We stand ready to assist EPA or anyone else involved to discuss these concerns and issues with the hope that some satisfactory resolution can be obtained.

Very sincerely,



Edward G. Connolly, III  
Executive Director

EGC, III/rba  
enclosures

cc: RRPDC Executive Committee



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE  
PUBLIC HEALTH SERVICE  
FOOD AND DRUG ADMINISTRATION

July 11, 1977

BALTIMORE DISTRICT  
900 MADISON AVENUE  
BALTIMORE, MARYLAND 21201  
TELEPHONE: 301-962-3396

Mr. Alvin R. Morris  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region III  
6th & Walnut Streets  
Philadelphia, Pennsylvania 19106

Dear Mr. Morris:

The Department has asked for our review and comments on the subject document: DEIS:EPA--York River Waste Water Treatment Facility, York County, Virginia.

Our comments are as follows. All sewage treatment plants that discharge into shellfish growing areas are required to meet structural and physical plant design requirements. These design requirements are outlined in the Technical Bulletin entitled "Protection of Shellfish Waters" (EPA430/9-74-010) and the Technical Bulletin entitled "Design Criteria for Mechanical, Electric, and Fluid System and Component Reliability" (EPA-430-99-74-001). At the present time, all discharges of sewage treatment plant effluents into shellfish growing waters should be from plants of reliability class I.

The above guidelines are necessary because of the public health hazards resulting from the harvesting of edible molluscan shellfish from waters subject to discharge of pollutants. Shellfish are known to concentrate pollutants from the aquatic environment. The quality of the shellfish is directly related to the quality of the overlying waters. Several outbreaks of enteric diseases related to consumption of shellfish that have grown in sewage contaminated waters have been documented. Since shellfish are frequently eaten uncooked or partially cooked, there habitat must be protected to preclude contamination and the resulting health hazard.

The National Shellfish Sanitation Program which is administrated by the Food & Drug Administration requires shellfish growing area closures surrounding sewage treatment plant discharges. The York River waste water treatment plant facility will discharge into an approved harvest area of shellfish. A closure is necessary and should be of sufficient size to protect the public health as described in the Manual of Operations of the National Shellfish Sanitation Program.

This proposed waste water treatment facility will have impact on shellfish growing areas. The upgrading of this plant to include advanced waste treatment would reduce the BOD and suspended solids. This changing concept would reduce the effect of this plant's affluent on the shellfish growing area. A reduction of closure size may, in fact, be possible due to a heightened disinfection capability due to the lowering of the organic load of the effluent.

If you have any questions, you may contact Mr. Robert H. Brands at 301/962-4052.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "M. L. Strait".

M.L. Strait,  
District Director





# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

PEP ER-77/520

JUL 14 1977

Alvin R. Morris  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region III  
6th and Walnut Streets  
Philadelphia, Pennsylvania 19106

Dear Mr. Morris:

Thank you for the letter of May 18, 1977, requesting our views and comments on the draft environmental statement for the York River Wastewater Treatment Facility, York County, Virginia. Except for the comments and suggestions listed below, the document adequately considers those areas within our jurisdiction and expertise.

Page I-23, paragraph 2 -- The frequency and magnitude of storm-generated tidal flooding of greater than 100-year frequency should be considered. Such data would be useful to evaluate any adverse effects of potential flooding of the proposed site that may exceed the 100-year flood protection.

Page II-79, paragraph 3 -- Inland, wetlands not dependent upon or associated with tidal action should be included in this section if they are present. Such wetlands are generally more subject to development as they are less protected by state and Federal laws.

Page II-81, Endangered Species -- The fact that no endangered animal species are reported in the study area does not necessarily mean they do not exist there. If there are any plans to determine if the primary study area as well as the service area contain endangered species these plans should be described in this section.

Was a specific reconnaissance made to determine the presence or absence of endangered plants in the primary study area? If so, this should be indicated in this section.

Page II-33, Terrestrial Fauna -- The reference to wooded tracts which are large enough to meet territorial requirements should be amplified by inclusion of wildlife population density data which is available from the Virginia Commission of Game and Inland Fisheries.

Page IV-1 -- If land application of sludge is to be considered more fully as suggested by the Environmental Protection Agency, resultant impacts on ground water should be fully assessed. The consideration of the use of outfalls in the river or bay for effluent disposal (p. V-4 through V-6) should include as assessment of impacts related to the export of ground water over and above those resulting from elimination of the recharge from septic tanks.

Pages IV-2-6, Table IV-1 -- The mitigating measures cited in Table IV-1 should be considered carefully. In reference to "Recreation," the phrase "Preservation of the sewage treatment plant site" is inaccurate since preservation is an alternative rather than a mitigation measure. If the project is designed to provide access to waterfront or a tot lot or other recreation facility, then such a facility would be a mitigating measure in regard to recreation.

The provision of open area around the treatment plant is a minor mitigating measure at that site in regard to open space. However, the "Preservation of critical open space and environmentally sensitive areas" is not a program responsibility assumed by this project nor by those who are managing the project. Further, the phrase "Preservation of critical open space . . . ." is too general to be considered a specific mitigating measure.

The Summary, Item 3, asserts that "Many of these secondary impacts will be mitigated as a result of local ordinances to manage growth and protect environmentally sensitive areas, . . . ." Again, this project cannot assure managed growth. The sponsoring agency does not have authority to control any of the specific areas listed. Further, the mere ". . . presence of substantial areas of land which cannot be developed . . ." is not a mitigating measure. This paragraph should be rewritten.

Mitigation measures should properly be defined as those specific items and actions to be undertaken as a part of the proposed project, and by the project sponsor, rather than a general list of community goals.

The term "secondary development" is used several time in Chapter IV, especially in regard to recreation and aesthetics. It would seem that a more accurate term would be "induced development" as used in regard to Land Use in Table IV-1.

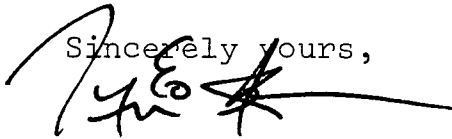
Page IV-7, Section A.1, Section IV.A.1, Surface Water Quality -- In the discussion of erosion and sedimentation, the statement is made that strict enforcement of state and local erosion and sediment control ordinances will minimize undesirable affects. We believe that erosion and sedimentation are major habitat disruption elements when considering development of an area. As such our interpretation of the above statement leads us to believe that there will be strict observation of such laws. We believe that an evaluation of past local and state enforcement efforts should be included to support the positive position taken in this section with regard to erosion control.

Page IV-26, Biology -- The section dealing with secondary environmental impacts upon vegetation and wildlife should be expanded and quantified. Additionally, secondary environmental impacts regarding endangered species, if any, in the study area should also be addressed.

Page IV-47 -- Irreversible and Irretrievable Commitment of Resources Which Would Be Involved In the Applicants Proposed Project Should It Be Implemented. The loss of public fish and wildlife resources through habitat destruction should be thoroughly addressed in this section.

We hope these comments and suggestions will be of assistance to you.

Sincerely yours,



Larry E. Meierotto  
Deputy Assistant SECRETARY

*Holloway & Smiley*

2107 GEORGE WASHINGTON HIGHWAY  
POST OFFICE BOX 1307  
GRAFTON, VIRGINIA 23692  
TELEPHONE: 804 898-5485

G. DUANE HOLLOWAY  
PRENTIS SMILEY, JR.

ROBERT F. SCHULTZ, JR.

July 15, 1977

EIS PREPARATION SECTION - YORK RIVER DRAFT EIS  
Environmental Impact Branch  
United States Environmental Protection Agency  
Region III  
Curtis Building 6th and Walnut Streets  
Philadelphia, PA 19106

Dear Sir:

I have followed, with great interest and concern, the irrelevant and irrational statements presented by those in opposition to the York River Wastewater Treatment Facility at your hearing on June 20, 1977 in Tabb High School.

Our economy minded Board of Supervisors have spent many hours cutting \$420,000 out of the County Administrator's recommended budget, but have lost all sense of fiscal responsibility by suggesting that the additional 15 MGD sewage treatment capacity needed for this area be built at the James River Facility at an added cost of \$3,050,000.00. Speaking as a York County resident and taxpayer and as Federal taxpayer, this additional cost cannot be justified.

As a potential HRSD customer (the York County local collection system is under construction now adjacent to my place of business) the additional costs cannot be justified.

My good friends from the Chesapeake Bay Foundation York Chapter say that an intelligent decision cannot be made until more study is done. This group of self acknowledged experts (the Draft EIS contains a letter in which they say the group "has among its membership experts in many disciplines related to this problem, including numerous holders of advanced degrees.") either do not want a decision to be made or are not capable of making a decision. They say in the Draft EIS that the group is particularly aware of the "pristine" condition of the York River and "wish to see no significant alteration of its condition." The Draft EIS shows that the construction of a York River Facility will improve water quality in the York River. Mr. Baker in his opening statement said the Draft EIS was well prepared and that they were in agreement with the thrust of the document - Mr. Ross Clunis emphasized the environmental objectives of 92-500, but CBF YC wants no significant alteration of conditions in the York River even if they are beneficial. CBF YC wants

*Holloway, Smiley & Brendel*

Environmental Impact Branch

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more study. Perhaps this additional study is desired to feather their own nests by allowing them to apply for more EPA funded CBF YC sponsored seminars as each additional study is unveiled. I have seen 7 years worth of studies relating to the York River Facility including the Draft EIS. These six documents weigh a total of 16 pounds, contain 2000 pages and over 500,000 words. The bottom line in each of these studies is that a 15 MGD secondary treatment facility is needed now and that it is more cost-effective to build a facility at York River with only minimal adverse impacts both primary and secondary. Additional study is not needed. I have seen sufficient evidence to make a decision and I know that EPA has also.

As further evidence of their inability to arrive at a decision, (CBF YC believes the York to be Pristine and the James to be heavily stressed) they now pick on their namesake Chesapeake Bay and say build the facility at Ft. Monroe and discharge into the Bay, even though their letterhead proclaims "Preserve the Environmental Integrity of Chesapeake Bay". A similar alternative was studied and discarded in 1968 when the PPDC was preparing its 1969 Water and Sewerage Facilities Plan. It was also studied and discarded in 1972 when HRSD proposed the construction of the York County Interceptor that was designed to serve a York River Plant location and approved and funded by EPA. The problems associated with a Chesapeake Bay outfall were also evaluated in the York River Facilities Plan in 1975. There is no need to pursue this alternative further.

I personally do not concur with CBF YC's classification of the York River as pristine. Webster's dictionary defines pristine as characteristic of the earliest, or an earlier period or condition; original; still pure and untouched. Mrs. Matthews in her statement described how God created the world. Unfortunately she neglected to point out how the York - James Peninsula was created millions of years later by those infamous adverse environmental impacts of erosion, sedimentation and flooding, not exactly pristine conditions. Surely EPA does not want to return to the pristine conditions that existed in October 1781 when the York River assimilated the wastes generated by the 32,140 British, French and American troops assembled at Yorktown or the 103 ships in the British Naval Force on the York River or the pristine condition that existed when Cornwallis ran out of forage for his horses and expeditiously solved the problem by slitting the throats of 400 horses and casting the carcasses into the York River. This pristine condition of bloated decaying animals is described in The Allies at Yorktown: A Bicentennial History of the Siege of 1781 and was also recorded on canvass by James Peale in 1781 in his painting, The Generals at Yorktown. Surely EPA does not wish to return to the pristine conditions that existed in 1881 at the poorly planned Centennial Celebration or

*Holloway, Smiley & Brendel*

Environmental Impact Branch

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the pristine conditions that existed in 1931 when 300,000 people attended the 4 day Sesquicentennial where they actually constructed 6 permanent comfort stations to accommodate the planned attendance of 100,000 people. I, for one, believe that adequate sewage treatment capacity will be essential for the health and safety of those that will come to visit in 1981 for the Bicentennial celebration.

The Williamsburg League of Women Voters wants a decision on this facility delayed until the completion of the Hampton Roads Water Quality Agency 208 Study. I have participated in the past as a member of the public participation committee of that agency and am aware of the fact that the HRWQA has accepted the facilities plan as an integral part of the study. The HRWQA considers that the York River facility will be constructed by 1980 and that wastewater flows will be treated at the York River Facility from 1985 on. Therefore, there is no need to delay this project until completion of the 208 Study.

Mr. Flagge, in his testimony, acknowledged the citizen support for this project while he suggests that the environment continue to be subjected to septic tank effluents such as his, with "77 mg/l suspended solids and 305 mg/l of BOD" as opposed to the secondary treatment concentrations of 30 mg/l suspended solids and BOD of the proposed HRSD facility. I concur with EPA's Draft EIS conclusions that continued reliance on septic tanks is not practical and that HRSD's secondary treatment is adequate.

Mr. Elksnin, as usual, is confused with his facts. He described the plight of the famous Lynnhaven oyster. The entire Lynnhaven Bay was closed for the taking of shellfish in March 1975 due to the same conditions that exist in York County - inadequate sewage treatment, mainly from malfunctioning septic tanks. At that time you could not buy a Lynnhaven oyster. The provision of adequate sewage treatment has contributed to the opening of selected areas of Lynnhaven Bay in the fall of 1976. Since that time Lynnhaven oyster have reappeared in seafood markets.

Mrs. Cooper, Chairman of the York County Board of Supervisors, is also confused. She voted in favor of the York County resolution requesting EPA to give consideration to expansion at the James River. At the public hearing she personally concurred with the statement of Mr. McBride of the SWCB in support of the York River Facility.

Mr. Burgess indicated that our problems will be solved by water conservation. Water conservation practiced by Anheuser Busch in regard to the Williamsburg STP has reduced their hydraulic volume but has not

*Holloway, Smiley & Brendel*

Environmental Impact Branch

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July 15, 1977

reduced the organic loading of that facility or solved any of the treatment problems that currently exist at that facility.

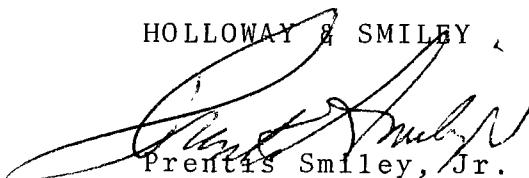
In summary, I endorse the conclusions of EPA's Draft EIS, the statements of the many proponents of the York River Facility and particularly the statements of watermen such as Mr. DiMaria and Mr. Sollers and the overwhelming support expressed at the hearing.

There is more than adequate evidence to support the immediate construction of the York River Wastewater Treatment Facility as proposed by HRSD.

Therefore, I respectfully urge the Environment Protection Agency to approve the construction of the York River Facility.

Sincerely yours,

HOLLOWAY & SMILEY

A handwritten signature in dark ink, appearing to read "Prentis Smiley, Jr.", is written over the typed name.

Prentis Smiley, Jr.

bhl



Commonwealth of Virginia

HAMPTON ROADS SANITATION DISTRICT

WILLIAM J. LOVE, P. E.  
GENERAL MANAGER  
MAURICE A. PERSON, P. E.  
ASST. GEN. MGR. &  
DIR. OF ENGINEERING  
MRS. ANNA MARIE BOTTOMS  
SECRETARY  
JAMES R. BORBERG, P. E.  
DIR. OF CONSTRUCTION  
EUGENE K. GOFFIGON  
DIR. OF TREATMENT  
ROBERT H. PORTER, JR.  
DIR. OF FINANCE & ADMINISTRATION  
DONNIE R. WHEELER  
DIR. OF WATER QUALITY

BOX 5000

VIRGINIA BEACH, VIRGINIA 23455

July 18, 1977

COMMISSION MEMBERS  
WILLIAM A. COX, JR., P. E.  
CHAIRMAN  
G. DUANE HOLLOWAY  
VICE CHAIRMAN  
J. CLYDE MORRIS  
ROBERT K. HEIDE, M. D.  
CAROLYN H. COFFMAN  
WILLIAM T. PARKER  
S. WALLACE STIEFFEN  
CHESLEY H. MCGINNIS

Environmental Impact Branch  
EIS Preparation Section  
Environmental Protection Agency  
6th and Walnut Streets  
Curtis Building  
Philadelphia, Pennsylvania 19106

Re: York River Wastewater Treatment Plant  
Draft Environmental Impact Statement

Dear Sir:

HRSD concurs with many of the conclusions in the Draft Environmental Impact Statement for the York River STP. The majority agree with those obtained in the environmental assessment for the York River Plant prepared by our Consultants, Gannett, Fleming, Corddry and Carpenter, in December, 1974. It is significant that both EPA and the EIS conclude that at least 15 MGD of additional sewage capacity is required on the Peninsula. The secondary impacts resulting from new capacity is considered neither controlling nor sufficiently serious to warrant reliance on "no action" or "non structural controls" alternatives. Other conclusions considered relevant are listed below and quoted from statements in the EIS. Without a careful reading of the draft, it would be difficult to appreciate some of these findings.

1. EPA has reviewed the applicant's proposed project and has determined that the proposed treatment disposal, and disinfection processes are acceptable.

2. Advanced water treatment units are not required at the proposed facility.

3. The "no action" alternative (i. e., no new additional sewage capacity) would have significant adverse impacts upon growth in the service area and could promote adverse secondary impacts upon air and water quality.

4. That EPA generally concurs with the Hydrosience Model which denotes that discharge from the York River STP would have minimal adverse impact upon water quality in the lower York River.



5. The addition of particulate emissions from the incinerators would not cause the primary or secondary air quality standards to be violated.

6. No air quality standard should be violated by the secondary impacts of the proposed project.

7. Treatment plant operation will not significantly increase ambient noise levels.

8. The entire area does have significant visual appeal, but sewage treatment facilities on the site will not destroy any significant visual amenities.

9. The effects of the condemnation on oyster production will be negligible.

Although HRSD supports many of the conclusions in the EIS, there are basic disagreements with several portions of the draft and with several of EPA's preliminary draft conclusions. Prior to the June 20, 1977 public hearing, the District's primary objection to the EIS was EPA's proposal to construct a 20 MGD increment at the existing James River STP in lieu of the 15 MGD York River facility. This proposal was not considered either economically or environmentally advantageous. Not even a preliminary evaluation was made by EPA of the environmental effects of a 20-35 MGD additional discharge to the James River (now designated as a National Priority River). Furthermore, this proposal directly conflicted with previous EPA actions supporting the York River Plant. The major interceptors for the York River Plant were constructed with an EPA Grant (C-510465). These interceptors were sized for a plant on the York River and not as peripheral sewers for the James River STP. Through statements in the "errata sheets" issued at the public hearing, EPA concurs that the York River site is more cost effective than a plant on the James River. A copy of the Hydrosience testimony (Exhibit A) adequately addresses the environmental impacts of a large incremental discharge from the James River STP.

The following will specifically address EPA's preliminary conclusions and specific statements on the EIS which require clarification.

#### EPA Preliminary Conclusion 1

The applicant's proposed treatment capacity of 15 MGD is sufficient to accomodate maximum wastewater flows projected by 1995. The applicant's flow projections incorporate a 12.4 gpcd increase in residential wastewater flows between 1980 and 1995 and assume that removal of infiltration/inflow from the Boat Harbor sewer system is not cost effective. EPA has calculated that maintenance of 1980 residential per capita flows throughout the Peninsula would reduce projected 1995 residential wastewater flows by 5 MGD. Cost-effective removal of infiltration/inflow from the Boat Harbor collection system could also provide the applicant with additional available treatment capacity for residential and non-residential wastewater.

Refer also to pages: xi, S-15, I-4, I-11, V-5, V-10, V-25.

HRSD has been a long term advocate of water conservation. In 1972, a program was initiated by the District to inform industry and the general public of means available to reduce water consumption. Many of the commercial and industrial establishments served by HRSD have responded, showing dramatic decreases in consumption. Unfortunately, the effect of the program on residential users has not been significantly measurable - despite a substantial increase in HRSD sewer rates.

Accordingly, current planning for future sewage capacity relied on predictions available at the time of planning. Exhibit B presents the documentation for the projected increase in residential sewage flows from 62.7 gpcd in 1980 to 75.1 gpcd in 1995. The 75.1 gpcd was used as a basis for projecting long range regional planning on Peninsula treatment capacity. The York River STP is the scheduled treatment facility in the regional plan as reflected by the existing interceptors for the plant. Even with no increase in per capita water consumption from 62.7 gpcd, a 15 MGD York River Plant is still needed. Planned expansion of other HRSD facilities is not locked into any definite time phase, but will be made as needed and according to the demands of the system.

Throughout the EIS in general and EPA Conclusion #1 in particular, it is implied that additional sewage treatment capacity would be available by removal of infiltration/inflow. At the public hearing, EPA acknowledged that it was not cost effective to remove infiltration/inflow. Accordingly, the continued references in the EIS to the capacity available from additional infiltration/inflow removal are no longer germane and should be deleted.

#### EPA Preliminary Conclusion 2

The interconnect system has not functioned as the applicant had proposed with the result that two treatment facilities frequently violate their NPDES permit limitations. In addition, the capacity of the interconnect system to provide long-term diversion with complete treatment at a second facility is not sufficient to efficiently utilize the total reserve capacity of all HRSD Peninsula treatment facilities. The applicant has failed to comply with EPA's 1973 pre treatment requirements with the result that the James River and Williamsburg facilities have experienced operational difficulties from industrial waste discharges.

Refer also to pages S-3, S-15, I-16, I-17, I-18, I-29,  
IV-46, V-18, V-20, V-21.

It is apparent from this statement and other contained throughout the EIS that the purpose and operation of the HRSD interconnector system is not understood in the draft. The intent of the SWCB directive to interconnect the Peninsula systems was to a) increase system reliability; b) maximize existing capacity. HRSD & and State never considered the

system would be utilized to accept all the flow from a plant experiencing major failure. Nor did they intend the system to allow the District to violate long-term planning of defined service areas. Instead, the interconnection allows for temporary diversion from a plant experiencing operational difficulties or an overloaded system or pump station, and an alternate route for sewage in case of line or pump station failure. As in the case of York County, it enabled the District to temporarily extend service boundaries of existing plants to provide needed sewage treatment capability long before construction of the York River Plant.

The interconnect system allows HRSD some flexibility to define the service area of its plants. However, the process is not arbitrary as suggested by EPA. The decisions are based on conditions and characteristics of systems and pumping costs as well as development and growth patterns in an area. The system model proposed by Gannett, Fleming, Corddry and Carpenter will enable HRSD to more efficiently predict line pressures resulting from projected flows and the effects of proposed emergency or minor permanent service area changes, procedures which now consume considerable time.

As portions of the interconnect system on the North Shore have either recently been completed or now are under construction, its use has been somewhat limited. Flow transfer between Williamsburg and James River was not possible until mid-1976. Due to available capacity and operational difficulties at these plants, it was HRSD's decision not to transfer any flows in recent months. Diversions from James River to Boat Harbor STP will be limited until the Boat Harbor influent line is reinforced (now awaiting resolution of PG-62). The system, although incomplete, has already increased system reliability. Flows have been diverted from several overloaded pump stations in the Boat Harbor area to prevent bypasses and to allow repair of force mains with a minimum of sewage overflow.

Hampton Roads Sanitation District has been acutely aware of treatment difficulties at the Williamsburg Treatment Plant and those occasionally experienced at the James River Plant for the past several years. The District has expended considerable effort in trying to optimize treatment processes and meet effluent limitations as specified in the NPDES permit. In addition, many studies of influent wastes to the plant have been accomplished. These studies have included wastewater characterization, effects of mixing of various waste streams, and effects of loadings (hydraulic and organic) on the treatment plant itself. This work has culminated in our belief that the Williamsburg Treatment Plant cannot successfully treat waste as are presently discharged from the Anheuser-Busch Brewery. Treatment difficulties at James River have never been conclusively attributed to an industrial discharge.

Hampton Roads Sanitation District has enforced a pH effluent limitation on Anheuser-Busch since 1972. This limitation is in keeping with those promulgated by EPA in 1973. Even though these effluent limitations state that no discharge shall be allowed which impairs treatment structures and processes, HRSD had not satisfactorily concluded that the Brewery wastes could not successfully be treated at the treatment plant until mid-1976. In absence of specific EPA pretreatment requirements for brewery wastes, HRSD has attempted to define reasonable standards during

the process of optimizing treatment. Negotiations to implement these requirements are ongoing and will continue until problems associated with waste treatment at the Williamsburg Plant are solved.

### EPA Preliminary Conclusion 3

Regionalization of treatment capacity at the site of the existing James River facility would provide HRSD with long-term cost savings. Constructing a 20 MGD facility at the site to incorporate the 15 MGD proposed capacity for the York River STP and a proposed 5 MGD expansion of the James River facility would save HRSD approximately \$450,000 in capital costs and \$29,000 annually in operation and maintenance costs.

Refer also to pages: S-15, V-18, V-19, V-22, V-23.

The cost analysis and the resultant EPA preliminary conclusion #3 were revised by the "errata sheets" issued at the public hearing. In essence, the "errata sheets" noted that the cost differences between building a 20 MGD plant in 1981 versus providing 15 MGD of capacity in 1981, followed by 5 MGD in 1991 were negligible. More importantly, they confirmed that construction of a 15 MGD York River Plant is more cost-effective than expansion of the James River Plant by 15 MGD.

Based on the review of the "errata sheets", our consultants still have doubts regarding the procedures which were used for conducting the present worth analyses as well as the logic used in assessing the feasibility of phased construction. While the EIS methodology and its application to the EPA document "A Guide to the Selection of Cost-Effective Wastewater Treatment Systems", (EPA, July 1975) cannot be accepted, the revised Preliminary Conclusion Number Three, as contained in the "errata sheets", better reflects the results of our own independent analysis. Nevertheless, it is believed that the prepared testimony by Gannett, Fleming, Corrdry and Carpenter, presented at the public hearing, is still pertinent and accordingly again will be filed with EPA (Exhibit C).

### EPA Preliminary Conclusion 4

The applicant's proposal to rely upon incineration as a sludge volume-reduction technique in an AQCR for particulates requires further evaluation. HRSD should formulate a comprehensive sludge management program for all of its treatment facilities on the Peninsula and continue to evaluate land application as a disposal alternative.

Refer also to pages: S-4, S-15, xii, III-16, IV-48, V-10-18.

EPA's concern over particulate emissions is unclear, as the EIS stated that no secondary or primary air quality standards would be violated by the Boat Harbor incinerators. To clarify any ambiguity, HRSD is submitting the Boat Harbor Compliance Test for Particulate Emissions (Exhibit D) which states the incinerator meets air quality standards.

Incineration is presently the major thrust of HRSD's sludge management program. It is the product of an extensive effort by HRSD to find a reliable and economically and environmentally acceptable sludge disposal method. Land application has been the traditional means of sludge application for the District since its inception. The James River Plant continues to rely solely on land application. HRSD has applied liquid sludge via tank trucks, spray irrigation and plow injection. Dried sludge from lagoons and drying beds has also been applied to the land. In recent years, the spread of residential development and increased quantities of sludge have reduced the availability of disposal sites. The relatively high groundwater table, the number of reservoirs, and concern over drainage to shellfish areas has made it difficult to locate new sites. In one year, the District examined almost 60 areas extending from North Carolina to the suburbs of Richmond to the mines in the Western portion of the state, before a suitable location could be found to dispose of sludge from an upset digester. A good sampling of these problems is indicated in the EIS appendix where requests to receive composted sludge were received with "little" enthusiasm.

To obtain a reliable sludge disposal method, HRSD made the commitment to incineration in 1972. It is recognized that incineration is expensive and wastes a potentially valuable resource. Thus, the District continues efforts to find other alternatives. At considerable expense, HRSD piloted a sludge dryer. Purifax was also used. A small scale composting study will begin this fall. Underway at the Atlantic Plant site is the most extensive effort in Virginia to study the viability of land application. This project, initiated by HRSD, has just received EPA funding as a portion of the Step I Atlantic Plant Grant.

Hayes, Seay, Mattern and Mattern made an extensive study to cover available sludge options for the District thru 2000. The study includes potential sites for sludge disposal on the North and South Shores. However, until the results of the Atlantic Plant project can conclude that land application is environmentally and economically acceptable for this area, incineration will be the main sludge disposal method for the District.

#### EPA Preliminary Conclusion 5

The principal, primary, long-term impact of the applicant's proposed project will be a substantial increase in point-source pollutant loading of the lower York River. During normal operations at 15 MGD, the proposed facility will discharge 3750 lbs/day BOD, 2500 lbs/day ammonia-nitrogen, 4380 lbs/day total nitrogen, and 1000 lbs/day total phosphorus into the estuary. These loadings will increase the average concentrations of total phosphorus in the estuary

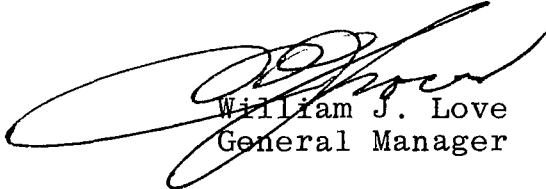
by approximately 20% and total nitrogen by approximately 10%. According to a model of the estuary, this nutrient addition will increase maximum chlorophyll concentrations to approximately 50 ug/l. However, the effects of failing septic tank systems on groundwater, surface waters and public health. Additional study may also be needed to compare the loading effects of the proposed York STP versus the alternative of the James River STP expansion.

Refer also to pages: S-9, xii, IV-8, IV-9, IV-25.

The enclosed copy of (Exhibit A) of John St. John of Hydroscience adequately addresses this conclusion.

The following attachment "A" addresses specific items in the EIS which also warrant your attention. I hope our comments have been helpful. If you have any questions, please contact me.

Very truly yours,



William J. Love  
General Manager

mhc

Enclosure

CC: Mr. Robert V. Davis, SWCB

EXHIBIT B

GANNETT FLEMING CORDDRY & CARPENTER  
ENGINEERS



P. O. BOX 12621  
NORFOLK, VIRGINIA 23502

STERLING, VA  
NEW YORK, N. Y.  
BUFFALO, N. Y.  
ROCHESTER, N. Y.  
WASHINGTON, D. C.

HARRISBURG, PA.  
PHILADELPHIA, PA.  
PITTSBURGH, PA.  
INDIANAPOLIS, IND.  
CHICAGO, ILL.

July 18, 1977

Mrs. Marjorie McLemore  
Project Coordinator, York River EIS  
Hampton Roads Sanitation District  
Post Office Box 5000  
Virginia Beach, Virginia 23455

Dear Mardene:

Re: York River Wastewater Treatment Plant  
Documentation of Increasing Water Consumption

As requested in the Draft EIS on the York River Wastewater Treatment Plant, we are documenting in this letter the basis for the projected increases in per capita water consumption used in the development of wastewater flows. In our Preliminary Engineering Report on the York River Wastewater Treatment Plant, we indicated that per capita water consumption is likely to increase for the foreseeable future, based upon estimates made by Pitometer Associates for the Newport News Water System, on long-term projected trends in water consumption, and on projections of the Virginia State Water Control Board.

Long-term trends in most areas show that per capita water consumption is increasing. This is particularly the case on the Virginia Peninsula, as is well documented in the 1972 report by The Pitometer Associates on their Engineering Study of the Newport News Water Distribution System. Table Number 5 of the Pitometer report, enclosed herein, presents over 20 years of water consumption data for the Newport News Water System service area. This data is displayed graphically in Chart Number 2 of the report, which is also enclosed. The long-term per capita water consumption trend is obviously toward increasing consumption.

We analyzed the per capita water consumption data for both 20-year and 10-year trends using a least squares fit. The results of the analysis show a long-term (1951-1970) trend of consumption increasing at 1.42 gallons per capita per day per year (gpcd/year), and a more recent shorter term (1961-1970) trend at a 2.43 gpcd/year rate of increase. This analysis also indicated that there is an apparent positive rate of increasing water consumption rates.

July 18, 1977

The Pitometer report also developed projections of per capita water consumption, which are presented in the enclosed Chart Number 2. These projections began with a higher per capita rate of increasing water consumption (6 gpcd/year for 1972-1977), with lower rates farther into the future (1.2 gpcd/year for 1977-1982 and 1.0 gpcd/year for 1982-1987).

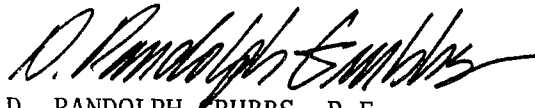
In projecting future water consumption and wastewater flows for the York River Facilities Plan, we were cognizant of the increased interest in water conservation on the part of the general public and as mandated in Public Law 92-500. However, we were also obligated to provide for wastewater needs based upon a realistic evaluation of actual conditions. Therefore, we projected a continuation of increasing per capita water consumption, but at a lesser rate than that projected by Pitometer Associates. Our projections were for a rate of increase of 1.0 gpcd/year for the near future (until 1990), decreasing to 0.5 gpcd/year after 1990. For the period 1980 to 1995, this corresponds to 12.43 gpcd after adjustment for water not discharged to the sewer system, as compared to 15.4 gpcd as provided by Pitometer Associates. The increase of 12.4 gpcd is approximately one-half of the increase that would be justified by extrapolating past trends.

We are aware of the recent public information program developed by the HRSD directed toward water conservation, but the effect of such a program is gradual and cannot be quantified until it has been underway for several years. The projections of wastewater flows must balance anticipated decreases in water consumption with documented historical trends. We believe that the projections developed by us provide that balance and are the most accurate and realistic projections available for the Virginia Peninsula. To project any lower water consumption (and wastewater flows) would not be responsible planning toward the elimination of public health hazards and protection of water quality.

Please feel free to contact us should you have any questions concerning this information.

Very truly yours,

GANNETT FLEMING CORDDRY AND CARPENTER



D. RANDOLPH GRUBBS, P.E.  
Norfolk Branch Office  
Pollution Control Division

DRG:JCE:mm

Enclosures



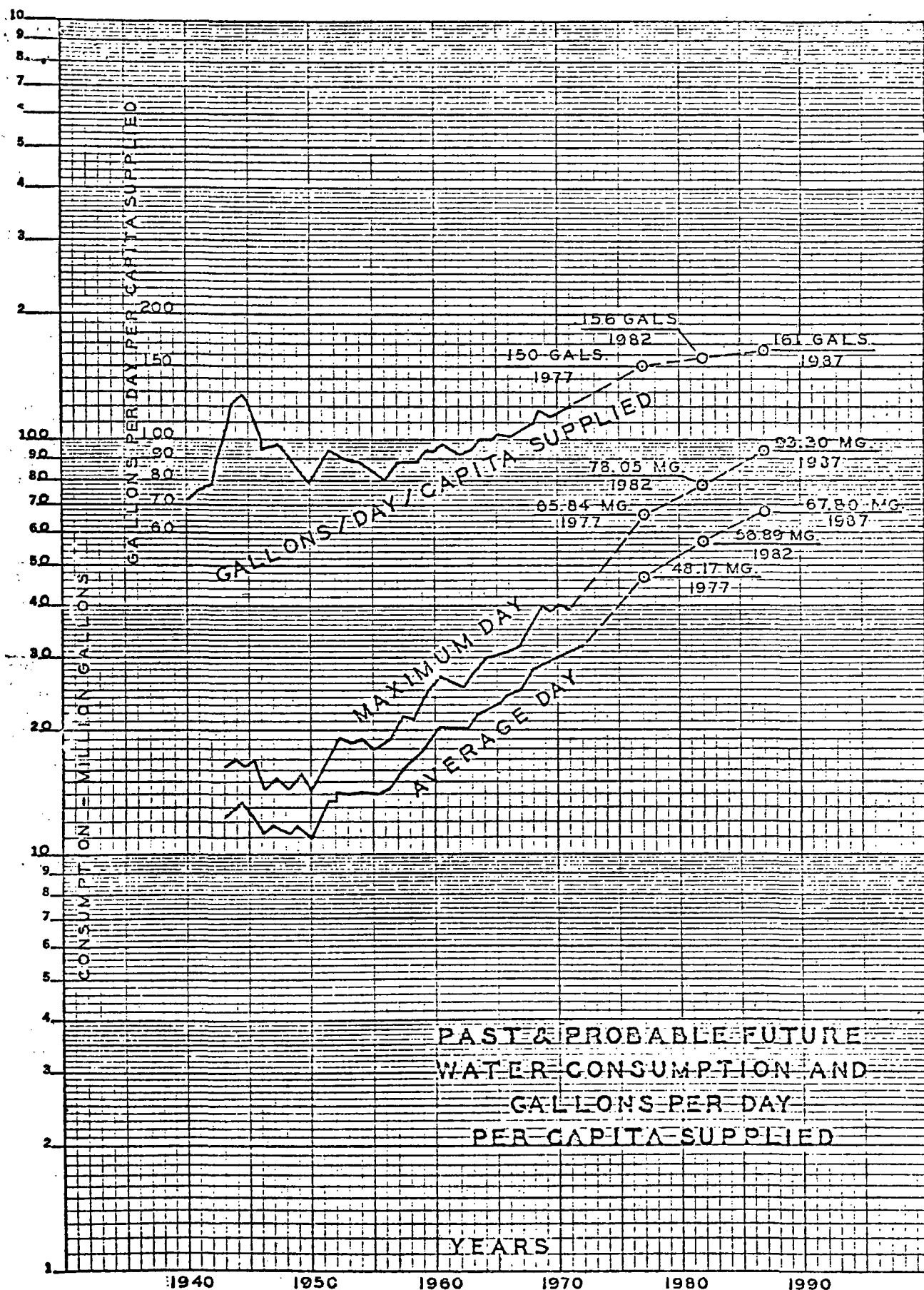


TABLE NO. 5

DAILY CONSUMPTION

GALLONS PER CAPITA

(Water Quantities are in Million Gallons Per Day)

Year	Estimated Population Supplied	Average Daily Consumption	Average Gallons Per Capita	Maximum Daily Consumption	Maximum Day Gallons Per Capita Supplied	Ratio Maximum To Average Percent
1971	271,000	31.00	114	38.22	141	123
1970	265,000	30.01	113	39.10	148	130
1969	258,000	28.80	111	37.08	144	129
1968	251,000	28.50	113	39.24	156	137
1967	245,000	25.30	103	31.89	130	126
1966	239,000	23.70	99	30.52	128	129
1965	232,000	23.30	100	30.18	130	129
1964	226,000	22.00	97	29.24	129	133
1963	219,000	21.30	97	27.92	127	131
1962	214,000	19.68	92	24.52	114	125
1961	203,000	19.61	94	25.58	123	130
1960	203,000	19.41	96	26.77	132	138
1959	195,000	17.78	91	24.91	128	140
1958	188,000	16.27	87	20.65	110	127
1957	182,000	15.92	87	21.53	118	135
1956	174,000	13.71	79	18.48	106	135
1955	168,000	13.61	81	17.60	105	129
1954	162,000	13.88	86	18.41	114	133
1953	156,000	13.62	87	18.67	119	137
1952	152,000	13.70	90	19.06	125	139
1951	145,000	13.22	91	17.00	117	129
1950	139,000	10.34	75	13.13	95	127

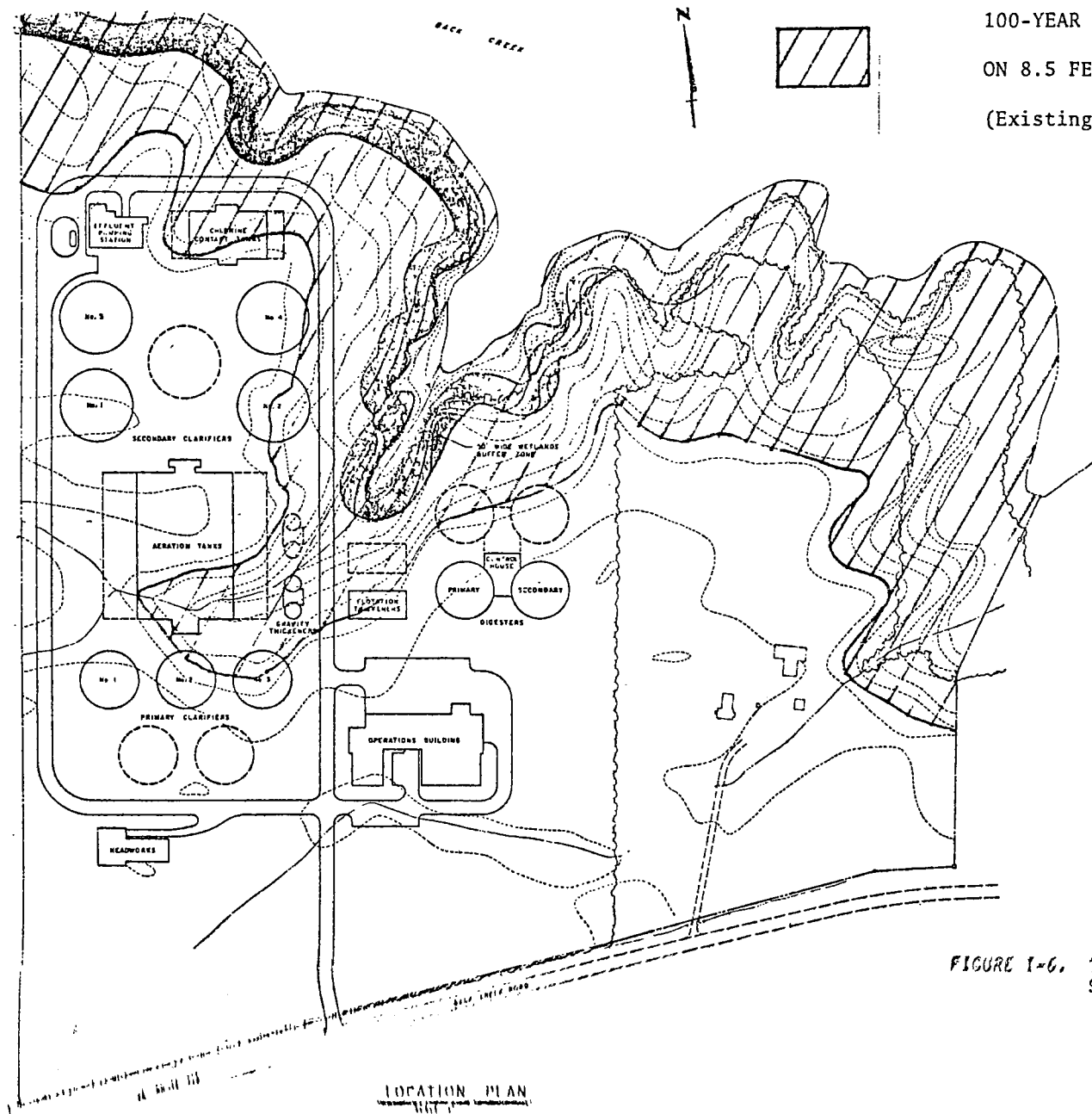


FIGURE I-6. THE PROPOSED YORK RIVER SEWAGE TREATMENT PLANT, [Source: OFCG (1977) Personal Communication]

ATTACHMENT "A"

SPECIFIC COMMENTS - YORK RIVER DRAFT EIS

Pages and Item

Comment

S-2, 3rd Para.

GFC&C did not assume that the 1973 total population was the population served.

S-3 - Refer to Table

It appears reserve capacity is based on 1974 figures. This is misleading. The 1974, 1977 and 1980 plant capacities are provided below:

	<u>James River</u>	<u>Boat Harbor</u>	<u>Williamsburg</u>
1974 (MGD)	11	12	9.6
1977 (MGD)	15	22	9.6
1980 (MGD)	15	25	9.6

S-7, 1st Para.

The highway construction moratorium is no longer in effect. See II-72 also.

S-9, last Para.

Pollution load cannot be termed "substantial"; Hydrosience's statement at the hearing, based upon their modeling study, demonstrated that the pollution load is environmentally insignificant. Refer to Exhibit A.

S-15, 2nd Para.

Portions of this paragraph are unnecessary and irrelevant. EPA, in preliminary conclusions, supports at least 15 MGD capacity. EPA has declared Boat Harbor "non-excessive" Infiltration/Inflow. Refer to HRSD comment to EPA conclusion #2.

S-15, 2nd Para.

Increasing per capita consumption can be documented. Refer to HRSD comment, EPA conclusion #1.

S-15, 4th Para.

EPA has supported the York River Plant by funding the interconnect system to the York River Plant. Interceptor lines leading to the facility were built under Federal Grant C-510465.

Refer to GFC&C detailed statement and comments regarding cost analysis. (Exhibit C).

S-16, (last sent, 1st para.)	Similarly, the York River facility would not adversely affect growth.
xi, 3rd Para.	Increasing per capita consumption can be documented.
xii, 2nd Para.	Refer to comment for Item S-9, last Para.
I-6, Table I-1	The Boat Harbor STP is a primary plant design capacity is currently 22 MGD.
I-7	#16 and #17 should be reversed. See Figure I-3.
I-8, 1st Para.	Water and wastewater flow data and population are for various years (1974, 1975 and 1976) over a period of changing service area delineation, and cannot be analyzed this way. Also, Boat Harbor Plant has 22.0 MGD capacity now.
I-11, 1st Para.	Third sentence should be deleted; data not sufficiently detailed to analyze one year versus the next year.
I-11, 2nd Para.	Infiltration/inflow comparison is meaningless because it compares I/I from existing service area with I/I projected for a smaller, new service area.
I-11, 3rd Para.	The paragraph is incomplete and inaccurate and should be deleted.
I-13, 1st Para.	Effluent from the James River facility is discharged through a 60 and a 36 inch outfall. Sludge from the James River Plant is not incinerated. Refer to HRSD comment, EPA conclusion #4.
I-14, 1st Para.	It is not conclusive that operational difficulties at James River are caused by toxic industrial waste.
2nd Para.	Although Anheuser-Busch only discharged an average of 1.65 MGD versus the 2.8 MGD originally anticipated, BOD and SS poundages were the same as anticipated with the 2.8 MGD.
I-16, 1st Para.	Put facts into correct context. The heavy metal discharges into the Williamsburg STP only occurred during a

brief period. The situation was corrected and the violator charged for the discharge. See HRSD comment and EPA conclusion #2 on pretreatment standards.

I-16, last Para.

The Williamsburg incinerators were still under construction at the time the EPA representatives conducted his field investigation in 1977.

I-17, 2nd Para.

The existence of reserve capacity in 1975, based on 1974 flows, is irrelevant and misleading.

I-27, 3rd Item

The Route 17 interceptor is known as the York County Interceptor.

I-28, Figure 1-9

Areas near Cheatham Annex and Naval Weapons Stations were neglected.

II-19, 1st Para.

Elevations at the York River Plant site range up to 11 feet above MSL.

II-23, 2nd Para.

HRSD has conducted an investigation of foundation conditions at the site including core borings and soil tests which established the acceptability of the site for the proposed types of structures.

II-24, Figure II-4 & II-26  
3rd Para.

Back Creek is adjacent to the site, not the York River. 100-year flood zone, as depicted in Figure, is much larger than actually exists based upon 8.5 feet above MSL, as on Page II-26. See attached Exhibit E for correct delineation.

II-31, Figure II-6

The figure does not show all of the existing shellfish condemnations in the York River.

II-45, 3rd Para. and  
II-47, Table II-24

Table clearly shows increasing rate of growth in York River service area, contrary to statement in text.

II-73

GFC&C found information to indicate the York River STP will not affect any archaeological or historical site. See Exhibit F. Refer also to P. II-84, IV-29.

III-2

The HRSD includes the City of Suffolk as well as portions of the City of Portsmouth and Isle of Wight County.

III-21, 2nd Para.

GFC&C also used 1972, 1973 and provisional 1974 population data.

III-22, Table III-10  
and III-23, 1st Para.

Table would more clearly present GFC&C methodology if growth rates for all portions (other service areas) of the municipalities were shown (as presented in October 1975 supplement to the York River Facilities Plan). The lower composite growth rate for Hampton reflects low growth rate for the center city.

IV-16, 3rd Para.

This section is inaccurate - in 1995 HRSD has projected 182,000 lbs/day of sludge will be produced at a 20% cake. Incineration capacity at the Boat Harbor incinerator is 810,000 lbs/day of a 20% cake. Boat Harbor will produce secondary and primary sludge. York River sludge will be roughly equivalent to 50% of the total sludge burned in 1995, provided only York River and Boat Harbor STP sludge are incinerated at this site.

IV-16

The emissions data is now available and is enclosed as Exhibit D. Refer to HRSD comment to EPA preliminary conclusion #4.

IV-31, 1st line

According to figures on IV-30, the \$1,244,000 should be \$980,052.

last sent.,  
1st Para.

A general increase in rates cannot be concluded. If a sufficient number of customers are added, a rate increase may not be necessary.

IV-32

The average Family (HRSD) quarterly User Rate is \$15.50 not the \$22.00 indicated.

IV-37

Land Use Impacts - EPA is referred to the York County Zoning Ordinance (Exhibit G). A Sewage Treatment Plant is classified as an acceptable use. Refer specifically to M-1, B-1 (@ -1-10). Both classifications are included in M-2.

IV-46, 1st Para.

Capacity on the Peninsula will run out by the first half of 1979. A restriction may be imposed on the Peninsula within 6 months.

V-47

Materials and Natural Resources - the operation of the system will also require sulfur dioxide.

**[V-48**

Air Quality - I refer to previous statement in the EIS that the secondary effects will not be significant.

7-5, 1st Para.

GFC&C letter of January 11, 1977 to EPA presents further information on the flow projection methodology acceptable to EPA.

V-6, Table V-4

The project cost of the effluent force main to VEPCO is estimated to be \$2,810,000 based upon an ENR Construction Cost Index of 2225.

W-6, last Para.

Increasing per capita consumption can be documented.

V-8, Table V-6  
and V-9, 1st Para.

Inasmuch as the EPA has now acknowledged that infiltration/inflow on the Peninsula is not cost-effective to remove, this paragraph should be deleted. Refer to HRSD comment on EPA conclusion #1.

Table V-6 is also in error with regard to 1980 York River wastewater flow; corrected table is attached as Exhibit H.

V-9, last Para.  
and V-10

This presents an erroneous and misleading comparison of the latest (1977) flow projections versus a 1974 example presentation of potential plant expansions based on previous flow projections; the only proposed facility is 15 MGD at York River, with further plant expansions to follow later when required. The proposed Peninsula treatment capacity is thus 64.6 MGD. When flow projections are compared to this figure, a 3.9 MGD deficit results in 1995 (Table on page V-10).

If the table on page V-10 must be used, it should be reconstructed as shown in Exhibit I.

V-18, 4th Para.

Boat Harbor - HRSD has extensively explored the availability of land adjacent to Boat Harbor STP. It is not available.

V-12, 2nd Para.

It is our understanding PCB's are destroyed at 1200°F. See HRSD comments on EPA's preliminary conclusion #4.



- V-15, last Para.                      The cost figures for treating and transporting sludge are not applicable. An important cost factor is percent solids.
- V-17, 2nd para.                      Twelve acres of land for sludge disposal are not available at Williamsburg. See Also V-19.
- V-19                      Williamsburg - Additional land is not available at the Williamsburg STP for sludge disposal.
- V-20, last Para.                      The interconnector mentioned is not needed during the initial operation of the York River STP.
- V-20                      Eight MGD excess capacity is not currently available.
- V-21                      Using the same logic - regionalization - a 20 MGD plant at the York River would be equally advantageous. This section should be changed to reflect conclusions presented in the draft sheets.



# COMMONWEALTH of VIRGINIA

*Virginia Institute of Marine Science*

*Gloucester Point, Virginia 23062*

WILLIAM J. HARGIS, JR.  
DIRECTOR

Phone: (804) 642-2111

July 21, 1977

TO: Mr. Reginald F. Wallace  
Environmental Impact Statement Coordinator  
Council on the Environment  
903 Ninth St. Office Building  
Richmond, Virginia 23219

and

Mr. Alvin R. Morris  
Acting Regional Administrator  
U. S. Environmental Protection Agency  
6th and Walnut Sts.  
Philadelphia, Pa. 19106

FROM: Virginia Institute of Marine Science, M. E. Bender, Ph.D., Coordinator

SUBJECT: Status of the York River, Virginia in Relation to the Proposed  
York River Sewage Treatment Plant (STP)

The Institute has reviewed the DRAFT Environmental Impact Statement on the York River Sewage Treatment Plant and is seriously concerned that the present status of the river was not adequately considered in developing the impact statement.

There are four areas of principal concern, these are:

- 1) Oxygen depletion
- 2) Phytoplankton growth and population changes
- 3) Loss of potentially productive shellfish grounds
- 4) Potential impacts of the plant on the use of the river and its water for research purposes.

We will develop our concern for each of these areas separately in the following sections.

SYNOPSIS OF SUMMER DISSOLVED OXYGEN CONDITIONS IN THE LOWER YORK RIVER,  
1960-1976.

Oxygen conditions in the lower estuary are difficult to compare because of the paucity of data in certain years and because of the often complex and dynamic vertical and horizontal distribution of dissolved O<sub>2</sub>. The following summarizes data available in the VIMS hydrographic data base and in various reports and publications by Institute staff. Almost no reliable data on dissolved O<sub>2</sub> concentrations in deeper waters of the lower York prior to 1960 are available from these sources.

- 1960 Patten et al. conducted productivity experiments at the "plankton buoy" station located directly off VIMS in 9 m of water (approximately river mile 4.5). Experiments were conducted from June 22 to October 11, thus abundant data are available. Bottom dissolved oxygen concentrations during the summer ranged from 2.70 - 6.14 mg/l. Most values were in the 4.5 - 5.5 mg/l range, but levels below 4.0 mg/l were found on 4 of the 16 sampling occasions, and only once was the DO much below 4 mg/l - 2.7 (August 24). Bottom values were considerably lower than those just above the bottom due to benthic oxygen demand. DO at 7 m was never below 4 mg/l.
- 1961 Patten continued experiments during the early summer of 1961. The lowest DO value observed on the bottom (9 m) was 5.92 mg/l.
- 1962 Essentially no relevant data from the summer of 1962 were uncovered.
- 1963 Patten and Chabot conducted 8 factorial productivity experiments at the plankton buoy from 24 June to 14 August. Bottom D.O ranged from 3.35 - 6.16 mg/l and was reduced below 4 mg/l (mean 3.7 mg/l) through 15 July, however DO at 6 m remained above 4 mg/l.
- 1964 Few data are available from the lower York River. Collections at the mouth of the river (Y00) showed 6 mg/l at 15 m in May, a low value of 1.1 mg/l at 12 m on 23 June, and 5.3 and 6.7 mg/l deeper than 15 m in July and September, respectively. Surface DO was reported as 4.0 mg/l on 23 June. These low values must be regarded with some caution since they represent single samples.
- 1965 Relevant data are sparse to non-existent.
- 1966 Data are available for Y00 for May, June, July and August. 5.1 - 6.9 mg/l were found at 10 m except on August 23 when the DO level was reported as 4.2 mg/l.
- 1967 Relevant data are extremely sparse.
- 1968 Brehmer conducted hydrographic surveys of the major Virginia subestuaries and visited one station (river mile 4-5) in the lower York monthly on slack water runs. DO levels in May and June were 76 mg/l at 11 m. On July 16 4.93 mg/l were found at 15 m and on Sept. 10 4.54 mg/l were found at 11 m.

1969 Brehmer continued sampling at the mile 5 station. He reported:

Date	Depth (m)	D.O (mg/l)
5-26	9	5.93
7-15	11	4.14
8-18	9	3.33
9-16	9	4.21

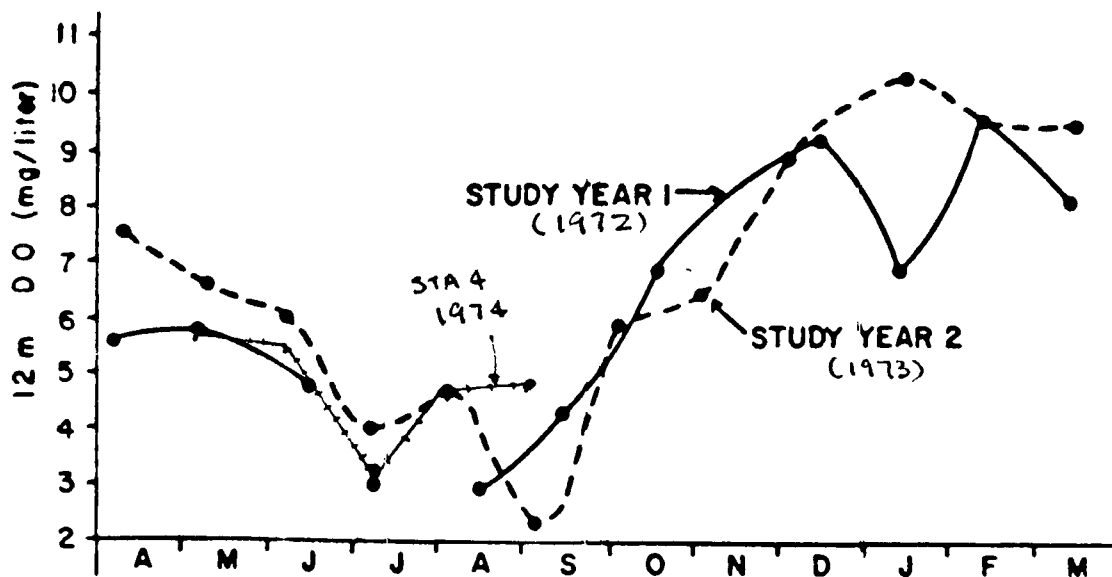
1970 Again few relevant data are available.

1971 Physical Oceanography sampled a station at mile 3.6 (off VEPCO) on slack water rivers. The following data are available:

Date	Depth (m)	D.O (mg/l)
5-19	6	8.0
	12	5.7
6-7	6	3.7
	12	2.9
8-2	8	2.2
	16	2.3
9-22	6	3.3
	10	3.8

Dissolved oxygen in the bottom water remained 3-4 mg/l into October. For the first time in the available data we see evidence of fairly persistent low oxygen levels throughout the summer.

1972 Regular sampling of 6 stations in the lower York by Jordan began in the spring, just before the arrival of Tropical Storm Agnes. The figure below shows mean DO values at 12 m for 1972 and 1973 and values at station 4 (off VEPCO) for 1974. DO was reduced at about the time of Agnes to <3 mg/l. After a slight rebound in mid-July it was again very low through late July and August (<3 mg/l).



- 1973 DO in bottom water again was drastically lowered in 1973 but did not fall to very low levels until late August. It remained low until late September. Water containing 2 mg/l of DO was found within 8 m of the surface in early September.
- 1974 Jordan conducted an extensive study of dissolved oxygen conditions in the lower York River during May - October. Low oxygen conditions developed in deep water in early June. The density stratification and oxygen clinograde was periodically broken down and reformed resulting in at least 5 episodes of oxygen reduction followed by "ventilation" throughout the summer. This conforms with Haas' observations of the dynamic nature of the thermohaline structure of the York. Jordan also observed lowered DO throughout the water column (below the state standard of 5 mg/l) after an extended period of overcast skies. On the average 34% of the volume of the river (below 8 m) and nearly half of its bottom area was affected by <5 mg/l water.
- 1975 Physical Oceanography slack water runs sampled river mile 3.6 on May 15, September 19 and October 15 and found in excess of 5.2 mg/l at 11 m. However no data are available from June - August.
- 1976 Physical oceanography slack water runs on May 15, June 7 and September 13 show no unusually low DO values. However, synoptic sampling at several stations in the lower river by Physical Oceanography on 30 June and 1 July for the 208 study showed probably the worst DO conditions yet witnessed in the lower York. At a station near Jordan's station 4 off VEPCO DO in the 8-11 m layer was found to vary from 1.9 - 4.3 mg/l (mean 2.7 mg/l). Lower DO levels were found at stations near the Gloucester Point - Yorktown constriction. Here a value of 0.4 mg/l was found at 10 m although the levels there averaged about 2.2 mg/l. Occasionally the low DO water reached the surface and levels of 3-4 mg/l were found in surface water samples.

Ichthyology samples in the lower York taken on 21 July also showed low DO conditions; near Jordan's station 4 3.7 mg/l was found at the surface and 2.6 mg/l at 7 m. DO levels in surface water were about 4 mg/l at several of their stations.

#### Conclusion:

Because of the paucity of data from many years and the known dynamic nature of the oxygen depletion phenomenon it is not possible to statistically demonstrate a worsening of oxygen conditions in the lower York River. Nonetheless the low DO values observed in recent years fall outside the range of the extensive observations in the early 1960's. In the 1960's values of <4 mg/l were not witnessed within 7 m of the surface. This condition was observed on several occasions during 1971, 1972, 1973 and 1976. According to Jordan an average of about one-third of the volume of the lower York River fell below the state long-term

standards of 5 mg/l during the summer 1974 (not a particularly severe year). Furthermore, this oxygen deficient pool blanketed about one half of the bottom area of the river, and much of this area experienced  $< 3$  mg/l. The oxygen clinograde usually intersects the shoulders of the channel, thus a slight rise in the depth of the oxygen deficient zone, say to 5 or 6 m, will affect a very large area of river bottom. Substantial changes in the benthic biota of the deeper portions ( $> 7$  m) of the lower York River have been documented since 1972 and these are thought to be, at least in part, attributable to these degraded oxygen conditions.

#### Impact of the Proposed York River Sewage Treatment Plant:

Adequacy of model in simulation of complex physical system - Previous investigations (particularly those by Jordan and Haas) have shown that the circulation and thermohaline structure of the lower York River is extremely complex. The lower river exhibited periodic stratification and destratification, the cause of which, to our knowledge, is not explained by variation in freshwater inflow. Also noteworthy is the response of the river following several overcast days, wherein 4-5 mg/l DO water was observed at the surface by Jordan.

We also note that in earlier reviews of the Hydrosience model by VIMS' physical oceanographers that the salinity verification of the model is questionable and no attempts have been made to simulate and verify the present water quality conditions. All things considered, we have grave reservations regarding the accuracy of the model's predictions. Furthermore, the model fails to estimate the effect on dissolved oxygen distribution of the nutrient additions. Since mass discharge of total N is greater than that of BOD, given any reasonable C:N ratios for organic matter produced, it is obvious that the oxygen demand of organic material which could be secondarily produced through nutrient stimulation may far outweigh BOD discharged by the STP. And this N can be used again and again in the production of new carbon!

#### Phytoplankton Response

Background - The EIS treats the effects of nutrient enrichment only in terms of increases in standing crop, i.e. chlorophyll a. It concludes that an increase in 5  $\mu\text{g/l}$  is likely and then compares this increase to other situations where nuisance blooms occur. Since the present standing crop levels are well below nuisance levels, the conclusion is reached that no significant impacts will occur. This approach is very much an oversimplified one. At present the average chlorophyll a levels are usually between 5-10  $\mu\text{g/l}$ , an increase of between 50 to 100% can hardly be expected to be insignificant. More importantly are the potential changes which might occur in species composition. As a measure of potential impact in this regard, we have summarized the impacts which

dinoflagellate blooms have on oyster growth.

We began weighing oysters under water as a measure of growth (shell accretion) and to monitor diseases in the mid 1950's. In the 1950's, oysters grew continuously through the warm season from about 1 April to 15 December each year. Growth was fastest in May-June and slowest on the two cold ends of the growing season. Temperature was the chief limiting factor provided diseased and sick oysters were ignored or removed.

In the 1960's, summer growth was frequently interrupted by red tides (dinoflagellate blooms) beginning about 10 July and continuing 4 to 6 weeks depending upon weather (temperature) and other factors.

In the wet years of 1971 - 1975, a new 4 to 6 week period of no growth was added in April and early May. This stoppage was also associated with dinoflagellate blooms. The species involved in both spring and summer blooms varied from year to year. There were no large red tide blooms in the summer of 1976 or the spring of 1977 and oyster growth was not interrupted.

We believe that these red blooms are associated with high nutrient levels in the water, and they seem to be associated with wet years and abnormal runoff.

#### Potential Impact of Nutrients from the STP

It is not possible to predict with accuracy the impact of nutrient additions from the York STP on the composition of the phytoplankton community. However, as shown above, if nutrients released from the plant were to cause a shift in the plankton community to increased populations of dinoflagellates, a very serious impact on the oyster industry in the York could result.

Red tide bloom formation has been studied rather extensively and the causative agent or agents have yet to be identified. Therefore, if the STP caused shifts in the plankton community, the addition of nutrient removal for N and/or P would not necessarily reverse the situation.

#### Loss of Shellfish Grounds

It is our opinion that the EIS treats the condemnation of 1500 acres of oyster grounds too lightly. Although of little economic importance at the present time because of the existence of MSX, the development of hatcheries to produce disease resistant oysters at some point in the future could make this a valuable oystering area again. An acre of productive oyster ground, not of the highest quality,

can be expected to yield a profit of about \$800/acre/year (Haven, personal communication). If relaying is necessary, the potential profit is reduced by at least one half; therefore, using these estimates one could project the potential loss, due to the projected closure, of over one half million dollars per year.

#### Potential Impact on the River as a Research Asset

The Commonwealth of Virginia maintains its main marine research facilities, valued at over 4 million dollars, with research, advisory service and educational operations totaling around 8 million dollars, on the shores of the York River. VIMS draws water from the river for the culture of sensitive marine organisms and also utilizes it as a source of dilution water for numerous types of bioassay experiments. If toxic materials were to enter the river from the sewage system, they could seriously jeopardize this research operation and continued utility of the facility. Since the plant will be interconnected with others in the area which have industrial inputs, this concern is even greater than it would be for a strictly domestic system. The recent problems with the release of toxic wastes into the Williamsburg Plant are an example of this concern. In addition, the introduction of persistent chlorinated organic compounds which will not be neutralized by dechlorination, could affect our water supplies.

It is difficult to gage the exact magnitude of this potential problem because of the uncertainty as to the composition of the effluent. We feel, however, that the risk is significant and that a substantial public resource may be affected.

#### Overall Impact

The staff of the Institute believes that environmental conditions in the Lower York River have been deteriorating over the past 10 years. This trend is most evident in the dissolved oxygen conditions and is also indicated by declining and/or interrupted oyster growth rates.

If the plant is allowed to be built, it is our opinion that monitoring of environmental conditions in the river should be required. If such studies show conditions to be changing as a result of the discharge, corrective measures should be mandatory. The river monitoring should include comprehensive studies of dissolved oxygen distribution, phytoplankton populations, and toxic substances.





*Chesapeake Bay Foundation,  
York Chapter, Inc.*

P. O. BOX 643  
YORKTOWN, VIRGINIA 23690

July 25, 1977

Mr. Joseph Piotrowski  
EIS Preparation Section  
U.S. Environmental Protection  
Agency, Region III  
6th & Walnut Streets  
Philadelphia, Penna. 19106

Ref: York River STP EIS

Gentlemen:

Noting that today is the closing date for supplementary comments on the draft Environmental Impact Statement for the proposed York River STP, we request your indulgence for the brevity of this communication. The magnitude and complexity of the matter has resulted in the impossibility of full treatment within the present time limit. Consequently, we here treat several topics very briefly, and will provide extension of our remarks on these and other topics where advisable.

The topics we include here are:

- 1) York River Site Planning
- 2) I/I Problem
- 3) Recent Related Events
- 4) Letters from HRSD, PPDC

Site Planning The draft EIS does not treat the planning nor refer to the planning reports that led to the Goodwin Neck site for the proposed York River STP. There is no listing of these references in the GFCC York River STP "Preliminary Engineering Report", 1974, but a listing does appear on page 2-3,4 of the "Boat Harbor Water Pollution Control Plant Phase II" Reports, April, 1975, from Hayes, Seay, Mattern and Mattern. We have not yet been able to examine the Buck, Seifert and Jost 1968 report to verify that the Fort Monroe/Buckroe Beach site was considered (a copy was not available in the Peninsula Planning District Commission library), but in any event, conditions today are much different than they were in 1968. We have re-examined the Malcolm Pirnie reports and confirmed our view that the planning is typical of pre-PL 92-500 sewerage reports.

I/I Problem We were informed at the hearing on June 20th that the EPA had decided that it was cost effective to treat the Infiltration/Inflow in the Peninsula system, i.e. to pass it through larger capacity STP's rather than to correct it. We have requested information on the basis for this decision, since the I/I in the Boat Harbor system is such a large proportion of the total flow, and we believe any such decision must be arrived at only after consideration of all the factors involved.



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York Chapter, Inc.*

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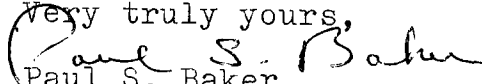
The term "cost-effective" has implication of a restricted scope in factors. The requested information is urgently needed for review.

Recent Related Events The events below have all occurred since the June 20th hearing, and all relate to questionable aspects of the planning for the proposed York River STP, which must be adequately dealt with prior to any decision on the York River STP.

- a) Anheuser-Busch Brewery Expansion (clipping) Though the Williamsburg STP designed capacity of 9.6 mgd should provide sufficient capacity for the additional 2.8 mgd wastewater flow, the recent problems show that HRSD must impose appropriate effluent requirements on Anheuser-Busch, so that the Williamsburg STP can in turn meet its effluent requirements.
- b) Peninsula Population (clipping) This is another in a continuing series of reports which show continuing reductions in the population projections for the Peninsula.
- c) Fort Monroe Site (clipping) This continuing situation adds credence to the practical possibility of the proposed "furthest downstream" Buckroe/Fort Monroe site for an STP for Hampton wastewater flows.
- d) Fairfax County (no clipping) A brief citation in the June issue of the "Water News" from the Virginia Water Resources Research Center at VPI&SU at Blacksburg led us to an encouraging article in the June 20th issue of the Richmond "Times-Dispatch" referring to the Fairfax County Difficult Run Pump-down project, in which an EPA Region III spokesman was quoted as stating the EPA must give priority to cleaning up the environment and to clean water, with projects to cope with a community's growth to be of secondary importance.

Letters from HRSD and PPDC (copies herewith) These letters are in response to ours to Mr. Cox on June 25, 1977, a copy of which you have. They have not yet been answered. They appear to show a rather complete lack of understanding of our position. We will forward copies of our respective responses.

Concluding Remarks We intend to conduct further researches into the shellfishing situation in the neighboring waters. We also intend to comment on additional aspects of the York River STP. We continue to believe that time is available for resolution of the many questions that have been raised, so that a more reasonable decision on additional STP capacity for the Peninsula can be reached than is possible under the present circumstances.

Very truly yours,  
  
Paul S. Baker

Corresponding Secretary

*"Preserve The Environmental Integrity Of Chesapeake Bay"*



**UNITED STATES DEPARTMENT OF COMMERCE**  
**The Assistant Secretary for Science and Technology**  
Washington, D.C. 20230 (202) 377-3111

August 16, 1977

Mr. Alvin R. Morris  
Acting Regional Administrator  
Environmental Protection Agency-Region III  
Sixth and Walnut Streets  
Philadelphia, Pennsylvania 19106

Dear Mr. Morris:

This is in reference to your draft environmental impact statement entitled, "York River Wastewater Treatment Facility, York County, Virginia." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration. In addition to these comments, the Maritime Administration suggests that the discussion in Chapter I of the statement should include a description of plans to handle ship-generated sewage in the Port of Hampton Roads and environs.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving six (6) copies of the final statement.

Sincerely,

  
Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs

Enclosure--Memo from: NOAA

ATTENTION: Bob Massey, NMFS, EAD, F53

ADVANCE COPY

Date : August 5, 1977

To : Director, Office of Ecology and Environmental  
Conservation, EE

Thru : Assistant Director for Scientific and Technical  
Service, FS

From : William G. Gordon, Regional Director

Subject : Comment on Draft Environmental Impact Statement--York  
River Wastewater Treatment Facility, York County,  
Virginia--EPA--DEIS #7706.06.

The draft environmental impact statement that accompanied your memorandum of June 6, 1977, has been received by the National Marine Fisheries Service (NMFS) for review and comment.

The statement has been reviewed and the following comments are offered for your consideration.

General Comments

In our opinion, the DEIS contains sufficient biological and environmental information to allow an adequate evaluation of the STP's impacts on the local aquatic resources. However, several sections describing plant operation and construction should be covered in greater detail. In addition, it would appear that the majority of the project's beneficial impacts could be achieved by enforcing improved septic tank and land use codes along with expansion of the existing HRSD treatment facilities. We also note that many of the STP's adverse impacts are to be mitigated through enforcement of environmental legislation and regulation. Since existing regulations governing septic systems etc. are apparently not being enforced in York County, adherence to these new regulations is doubtful (see page 5-16, V-24, V-25). It should be noted that of the 42 impacts associated with the proposed project, 33 or 78.6% are listed as adverse. In conclusion, the various contradictory statements concerning the balance of the postulated **surface water quality** benefits resulting from closure of failing septic systems and inadequate package treatment plants against the projected adverse impacts of increased urban runoff that would result from project-stimulated construction should be clarified.

The statement on Page IV-48, paragraph 4, "The beneficial impacts resulting from improved water quality may offset the adverse impacts resulting from increased flow variations and increased urban runoff." typifies these statements and appears to eliminate the major positive benefit claimed for the project. In short, it would appear

August 5, 1977

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that the entire project is based on a benefit which will be totally eliminated by the secondary growth induced and permitted by project construction. It is our opinion that this secondary growth will have a significant adverse impact on the aquatic resources within the project area not to mention the loss of 1,500 acres of potentially productive shellfish grounds as a direct result of the plant's effluent condemnation zone.

### Specific Comments

#### Section II

#### ENVIRONMENTAL SETTING

##### A. NATURAL ENVIRONMENT

###### 7. Biology

#### Aquatic Fauna

Page II-41, paragraph 2. The final sentence in this paragraph indicates that MSX and natural predators have practically eliminated all oyster production in Lower Chesapeake Bay and its tributaries. While it is true that MSX has reduced the oyster production to a very low level, efforts are being made to solve the problem (see comments on page IV-34, paragraph 6).

Page II-42, paragraph 2. Harvest figures for the commercially important species mentioned in this paragraph should be included in this section. We have included a table of catch statistics for the lower York River (Naval Weapons Station to the river mouth), giving the 1976 data for your review and inclusion in the final EIS. The table also lists the shellfish harvest for this reach of the river discussed on previous pages in the DEIS.

#### Section IV

#### IV. ENVIRONMENTAL EVALUATION OF APPLICANT'S PROPOSED PROJECT.

##### A. Environmental Impacts of Applicant's Proposed Project

Page IV-1, paragraph 1. This paragraph indicates that many of the project's adverse impacts can be minimized or mitigated through careful planning and enforcement of regulations designed to protect environmental quality. This statement becomes suspect when we consider the statements on pages S-16 and V-24, which indicate that the present standards for septic tanks are ineffective, the minimum lot size is too small, and the York County Health Department has, historically, poorly enforced this inadequate standard. We see no reason to believe that these new criteria, posed as mitigative measures, will fare any better than present regulations. This will

August 5, 1977

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result in project damage to aquatic resources. In addition, paragraph 2 indicates that many of these mitigative measures will require the development of new and complex programs to ensure their success. These programs should be described and their potential effectiveness evaluated.

### 1. Surface Water Quality

Page IV-9, paragraph 1. This paragraph indicates the STP effluent will be discharged through the outfall of the VEPCO plant located on the York River adjacent to the proposed STP site. This section, however, does not discuss the potential effects of the VEPCO plant's heated effluent on biocides in the STP effluent. The potential for a continuous plankton bloom at the discharge pipe, as a result of the mixing with heated effluent, should be discussed. In addition, the potential interaction of the combined effluent from the STP and VEPCO plants with the adjacent Amoco refinery should be considered.

Finally, Virginia Institute of Marine Science (VIMS) has detected a trend in DO reduction within the York River beginning in the early 1950s (Tom Barnard, VIMS, Gloucester Point, Virginia: personal communication). This fact should be discussed and related to the model prediction concerning dissolved oxygen concentrations.

These topics should also be related to Section 6. Biology on page IV-24.

Page IV-10, paragraph 3. Increased urban runoff will enter the streams within the study area as the area develops in response to the project. The extent to which increased urban runoff pollutes local streams will have a direct effect on the proposed project's effectiveness in improving surface water quality. Since the elimination of failing septic tanks and small sewage treatment plants is a major project benefit, calculation of the difference in projected benefits from removal of these sources from the increased urban runoff is critical to project success. Because urban runoff contains heavy metals, petroleum extracts, pesticides, organic waste, suspended solids, and nutrients, it is more detrimental to aquatic resources than simple septic leachate or treatment plant effluent. In addition, upland runoff has been found to leave very high coliform counts, and it therefore appears unlikely that any presently condemned shellfish areas would be opened as a result of project construction. In summary, we would take issue with the DEIS conclusion (page IV-12, paragraph 3) that the reduction of point source loads may be reduced sufficiently to allow the receiving streams to

assimilate the increasing load from non-point source urban runoff. While this may occur in the short term before significant project-induced construction takes place, it is our opinion that the long-term effects of increasing urban runoff will have a decidedly adverse effect on the aquatic resources within the STP's service area.

## 6. Biology

Page IV-24, paragraph 4. This section again indicates that the project's primary beneficial impact will be the improvement of water quality in the small tributaries to the lower York River. As stated in the preceding paragraph, it is the opinion of NMFS that these projected benefits will not be realized and that, in fact, the resultant water quality degradation from increases in urban runoff will actually effect a net reduction of water quality. This very fact is alluded to in the third paragraph on page IV-25 which states: "The adverse results of flash flooding, low stream flow, and pollution from urban areas may negate the beneficial impacts expected from the relief of clustered treatment plants and septic tanks." Thus, this project is, in fact, simply providing a vehicle by which construction can continue in an area that, by its very physical features, is not suited for either residential or commercial development, and that this development with its secondary impacts will result in adverse impacts to aquatic resources, including the closure of 1,500 acres of potentially productive shellfish beds in the York River.

Page IV-26, paragraph 3. We do not agree with your conclusion that the effects of salinity changes will be minor. The marine organisms present within the project area are conditioned to the various salinity ranges that exist at present. While they are able to tolerate moderate changes in salinity, any significant shift in salinity will result in a concurrent shift in species distribution. In addition, significant short-term influxes of fresh water such as Hurricane Agnes, 1972, can cause a shellfish mortality. The likelihood of this occurring in the project area increases with the rise of urbanization.

## 12. Social and Economic Impacts

Page IV-34, paragraph 6. This paragraph indicates that the condemnation of 1,500 acres of shellfish leases and grounds will have a negligible effect on oyster production. While this is generally true at present, it should be noted that plant location at this site will result in the permanent closure of 1,500 acres of oyster grounds which will preclude their return to productive use in the future. In addition, fourth generation oysters resistant to MSX are presently being cultured in the laboratory at VIMS. This and other experimental work presently being conducted on solving the MSX problem indicate that the problems are not insurmountable, leading us to conclude that the oyster bars in higher salinities

will again become productive. Thus the closure of 1,500 acres of potential oyster grounds is, in our opinion, not insignificant.

Page IV-37, paragraph 1. If MSX is eliminated as a problem, as discussed in the preceding comment, we believe that seed oysters of a resistant strain will again be planted in the York River.

Page IV-37, paragraph 2. While commercial harvesting of hard clams in low-density areas (less than 23 bushels/acre ) is not feasible, the reason for the low density of hard clams in the condemnation area should be investigated. If the area is potentially useable for clam production, then the loss of this potential area is more significant than indicated in the DEIS.

#### B. Adverse Impacts Which Cannot Be Avoided

Page IV-44, paragraph 2. This section again indicates that enforcement and implementation of the appropriate environmental protection measures will be required to mitigate or reduce many of the project's adverse environmental impacts. As indicated in our earlier comments on this subject, we see no reason to believe that the present lack of enforcement of existing standards by York County will change (page 5-16, V-24, V-25) and are therefore skeptical of the usefulness of these proposed new regulations to reduce the project's adverse impacts on the marine environment.

#### C. Relationship Between Local Short-term Use of Man's Environment and the Maintenance and Enhancement of Long-term Productivity.

Page IV-46, paragraph 1. This paragraph states: "The requirement for treating wastes at the proposed site has not been demonstrated." and that "Capacity is available at the James River and Williamsburg facilities." Given these two statements, we question the need for the construction of the STP at this location with its associated environmental disruptions. This position is further strengthened when we consider the statement on page IV-48, which indicates that the projected surface water quality improvements may offset the adverse impacts resulting from increased flow variations and increase urban runoff.

### SECTION V

#### V. IDENTIFICATION AND EVALUATION OF ALTERNATIVES TO THE APPLICANT'S PROPOSED PROJECT

Page V-1. While this section generally addresses the various alternatives to the project, we note that no consideration has apparently been given to actually locating the proposed STP at a site other than the proposed York River location. This topic should be discussed along with the other listed alternatives.



Finally, the opening paragraph of this section indicates that various alternatives are available to HRSD which would allow them to attain their stated goal while eliminating many of the adverse impacts of the present proposal. It might prove useful to list these various options in tabular form for easy comparison.

1976 YORK RIVER CATCH STATISTICS (LOWER RIVER)

	<u>Pounds</u>	<u>Value</u>
Alewife	25,000	1,000
Bluefish	149,000	16,000
Butterfish	22,500	6,700
Croaker	400,000	71,000
Eel	20,500	7,900
Flounder	3,200	1,100
Harvestfish	1,000	450
Menhaden	687,000	13,600
Gray trout	252,000	43,000
Spanish Mackerel	3,900	750
Spot	97,500	14,300
Striped bass	27,000	11,000
Unclassified industrial	312,000	7,000
Soft crabs	4,400	3,200
Hard crabs	1,200,000	260,000
Oyster (meat)	177,000	165,000
Hard clams	120,000	113,000
Total listed	3,502,000	735,000
Total all-river	3.7 million	794,000

Source: Virginia Marine Resources Commission  
Newport News, Virginia



APPENDIX F

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

FEB 9 1976

PROGRAM REQUIREMENTS MEMORANDUM PRM NO. 75-38  
Program Guidance Memorandum PG-66

OFFICE OF WATER AND  
HAZARDOUS MATERIALS

SUBJECT: Relationship Between 201 Facility Planning and  
Water Quality Management (WQM) Planning

FROM: Andrew W. Breidenbach, Assistant Administrator  
for Water and Hazardous Materials *for C. L. C.*

TO: Regional Administrators      PROGRAM GUIDANCE MEMORANDUM  
Regions I - X      Construction Grants No. 66  
Water Quality Management SAM-1

PURPOSE

This policy statement describes the relationships between 201 facility planning and WQM planning under Section 208 and the minimum facility planning requirements which an initial WQM plan must meet for EPA approval of the WQM plan.

The purpose is to assure that facility plans can be completed and processed expeditiously through EPA approval during those periods when an initial WQM plan is either being prepared, approved, or implemented. A second purpose is to have initial WQM plans prepared that satisfy, at a minimum, certain requirements with respect to facility planning. As WQM planning requirements overlap with the 201 planning requirements, this policy seeks to minimize duplication and conflict between the two planning efforts.

This policy statement supersedes the memo on the same subject signed March 11, 1975, by James L. Agee (issued as construction grants program guidance memo number 47 and planning guidance memo AM-1). Any other policy or guidance statements contrary to this policy are also superseded. This policy statement applies to all agencies (State and local) responsible for either 201 or WQM planning.

BACKGROUND

201 Facility Planning

Facility planning consists of the plans and studies prerequisite to the award of grant assistance for detailed design and construction of publicly-owned treatment works. In the absence of a completed and

approved WQM plan or approved interim outputs produced by the WQM planning process, the facility plan must contain the following elements:

1. Description of the planning area.
2. Selection of service areas.
3. Selection of overall treatment systems, including location, capacity and configuration of all facilities, treatment levels, and preliminary identification of type of treatment and method of disposal of residual wastes.
4. Analysis supporting the selections in 2 and 3 based on identification, evaluation and cost-effective comparison of alternatives.
5. Preliminary designs and studies related to the selected wastewater treatment systems, including sewer evaluation surveys, surface and subsurface investigations of sites for proposed facilities, preliminary designs and detailed cost-effectiveness assessment, and other requirements set forth in Section 35.917-1 of the Title II regulations.

#### WQM Planning under Section 208

WQM planning sets forth a comprehensive management program for collection and treatment of wastes and controlling pollution from all point and non-point sources. Control measures for abating pollution from these sources utilize a combination of traditional structural measures together with land-use or land management practices and regulatory programs. These measures are implemented by a management agency or agencies designated in the plan. An initial WQM plan is developed over a prescribed planning period and, thereafter, updated and approved annually.

#### POLICY: RELATIONSHIP BETWEEN 201 FACILITY PLANNING AND WQM PLANNING

I. THE RELATIONSHIPS BETWEEN 201 AND WQM PLANNING IN THE SAME GEOGRAPHIC AREA DURING THE PERIOD BEFORE FINAL EPA APPROVAL OF A WQM PLAN ARE AS FOLLOWS:

##### A. 201 Planning

All 201 plans underway and on current or subsequent approved priority lists should proceed expeditiously through to completion, State certification and approval by EPA. The scope of 201 planning approved before the final WQM work plan is approved by EPA should be at a level necessary to complete all required elements of the facility plan. The scope of 201 planning approved after the final WQM work plan is approved by EPA should be at a level necessary to

supplement work assigned to and within the capability of the responsible WQM planning agency to accomplish expeditiously so that a complete facility plan can be provided with minimal delay.

The WQM planning agency's review of ongoing facility plans will generally be handled in accordance with procedures for the A-95 review process.

B. Minimum Requirements for Facility Planning by WQM Planning Agencies

During the initial planning period, WQM planning agencies must produce the interim outputs specified in Program Guidance Memorandum AM-2; generally, for designated areawide agencies, these interim outputs will be completed within 9 months of the date upon which the planning process becomes operational as selected by the Regional Administrator. States conducting the planning in non-designated areas may elect to place a lower priority on facilities planning outputs, and, with the approval of the Regional Administrator, may provide alternative schedules to satisfy this interim output requirement.

For those municipal facilities within the WQM planning area expected to receive a construction grant award during the five years following initial WQM plan approval, the initial WQM plan will include the facility planning information listed below. In most cases, 201-funded facilities planning is either ongoing or scheduled in the near term to support facilities construction over the next several years. Thus, WQM planning agencies are expected during this period to utilize and incorporate (not duplicate) the 201-funded planning information, supplementing the 201-funded or programmed activities whenever deemed necessary by the Regional Administrator.

Minimum requirements for facility planning to be summarized in initial WQM plans for any facilities expected to receive a construction grant award during the five years following initial WQM plan approval:

1. Selection of service areas
2. Preliminary estimate of municipal wastewater flows to be generated during a 20 year planning period based on economic and population projections for the WQM planning area.
3. Preliminary identification and comparison of the cost of alternative treatment systems needed to handle projected municipal wastewater flows, and to meet the requirements of BPWTT or any more stringent discharge limitation necessitated under the Act. Cost estimates may be based on streamlined cost-estimating systems such as those prepared by Bechtel, Black and Veatch, and ICARUS.

4. Preliminary comparison of the cost of alternative general configurations for needed wastewater collection at the trunk line level.
5. Overall summary of environmental impacts of alternative treatment and wastewater collection configurations.
6. Preliminary determinations, based on the above analysis, of which municipal treatment systems and conveyance configurations are likely to be most cost-effective.
7. Estimate of the land area required and possible financial arrangements which could be utilized to construct these facilities.

The terms "preliminary", "summary" and "estimate" in this description are used to emphasize that the WQM plan will satisfy these requirements by brief, general analysis and conclusions which are much shorter and less detailed than those in a facility plan. As such, these conclusions may be modified as a result of 201-funded facility planning conducted in accordance with policies and procedures described in Section II (see p. 5).

WQM planning agencies are also required to meet statutory requirements which are normally not considered a part of the facility planning process but which, after approval of the WQM plan, will affect facility planning. Such requirements include establishment of priorities and time schedules for completion of treatment works, estimation of municipal waste treatment system needs, identification of agencies necessary to construct, operate and maintain treatment works, and establishment of a regulatory program that can affect facilities in the area (example - stormwater or pretreatment controls).

#### C. Detailed Facility Planning in WQM planning Work Plans

New WQM planning work plans shall not be approved by the Regional Administrator when they provide for detailed facility planning beyond the minimum requirements in section B, above. This detailed facility planning shall be handled by existing and subsequent 201 facility planning grants.

Existing approved work plans for FY 74 and 75 designated 208 areawide agencies which provide for facility planning beyond the minimum requirements should be amended to eliminate such detailed planning, except where designated WQM planning agencies have already contracted to conduct detailed facility planning and the contractor has started the work and is too far along for the contract to be revised or terminated as determined by the Regional Administrator. If work plans are revised to eliminate detailed facility planning, Section 201 planning grants should be quickly provided in these areas in accordance with paragraph A above.

D. Interim 208 Outputs

After interim outputs (AM-2) are approved by the State and EPA for a WQM planning area, the relationship between 201 and WQM planning in that area will be the same as described above except that planning under any 201 grant awarded after the approval of the interim outputs must be consistent with these interim WQM outputs. The scope and funding of new 201 planning should not extend to developing a justification for the interim outputs, as this will have been produced by the WQM planning process.

E. Coordination Between Concurrent 201 and WQM Planning

All WQM planning must be coordinated with facility planning and other construction grant activity so that the final WQM plan will facilitate needed construction in the area. Each State, working with the Regional office must assure that effective coordination between concurrent 201 and WQM planning does occur, and that relationships between the two planning efforts are consistent with this policy statement. The procedures for securing agreement on relationships and responsibilities between concurrent 201 and WQM planning efforts are at the discretion of the State. Conflicts in approaches between concurrent 201 and WQM planning should be resolved between the 201 and WQM planning agencies and concerned State and local officials.

F. Transition to New WQM Requirements Affecting Facility Planning

Any WQM plan which proposes a significant change in either management or approach affecting construction grant awards must allow adequate time and establish detailed procedures for transition to the new approach or management once the WQM plan is approved by EPA.

II. THE FOLLOWING SPECIFIES THE RELATIONSHIPS BETWEEN 201 AND WQM PLANNING AFTER THE WQM PLAN HAS BEEN COMPLETED, AND THE MANAGEMENT AGENCY OR AGENCIES IDENTIFIED BY THE PLAN ARE APPROVED BY THE STATE AND EPA.

A. Facility Plans Underway

All facility plans underway at the time of approval will be completed by the agency which received the Step 1 grant. The planning effort will continue expeditiously through to State certification and EPA approval unless the approved WQM plan clearly justifies a change in required treatment levels or alternative approach on the basis of substantially lower costs or major changes in projected environmental impacts.

B. New Facility Plans: Role of Designated Management Agency(s)

New grants for 201 plans will be made to the management agency(s) designated in the approved WQM plan. New facility planning will be consistent with the approved WQM plan.

The scope and funding of new facility planning starts should be sufficient to supplement the data and analysis in the WQM plan to the extent necessary to provide a complete facility plan as required by Section 35.917 of the Title II regulations.

Where future 201 planning results in recommended projects not in general conformance with the recommendations of an approved WQM plan, review of the proposed change must be made by the designated agency responsible for operating the continuing WQM planning process. If the proposed change is accepted by the WQM planning agency, the WQM plan is to be revised. (Revisions will then proceed through the normal State certification and EPA approval process.) If the proposed change is unacceptable, the approved WQM plan is controlling.

Review of WQM Plans

Regional municipal construction grants personnel should review sections of the work plans for WQM planning and draft WQM plans focusing on facility planning elements to assure coordination between WQM planning and the municipal facilities grant program consistent with this guidance. State construction grants personnel should be encouraged to do the same.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

21 JUN 1977

CONSTRUCTION GRANTS  
Program Requirements Memorandum  
No. 77-8

THE ADMINISTRATOR

MEMORANDUM FOR Regional Administrators

SUBJECT: Funding of Sewage Collection System Projects

I. PURPOSE

This memorandum summarizes Agency policy on the award of grants for sewage collection system projects under P.L. 92-500. It sets forth guidance for rigorous review of grant applications to ensure that proposed projects meet the established requirements of the law and regulations.

II. DISCUSSION

Sewage collection system projects may be grant eligible projects under P.L. 92-500 (the Act). Eligibility is limited, however, by Section 211 of the Act which provides for funding of collection systems only 1) for the replacement or major rehabilitation of an existing collection system or 2) for new collection systems in existing communities.

Sewage collection systems are defined in 40 CFR § 35.905-19 as:

For the purpose of § 35.925-13, each, and all, of the common lateral sewers, within a publicly-owned treatment system, which are primarily installed to receive wastewaters directly from facilities which convey wastewater from individual structures or from private property, and which include service connection "Y" fittings designed for connection with those facilities. The facilities which convey wastewater from individual structures or from private property to the public lateral sewer, or its equivalent, are specifically excluded from the definition, with the exception of pumping units, and pressurized lines, for individual structures or groups of structures when such units are cost effective and are owned and maintained by the grantee.

The eligibility of sewage collection system projects is further defined in 40 CFR § 35.925-13 which reads:

That, if the project is for, or includes sewage collection system work, such work (a) is for replacement or major rehabilitation of an existing sewer system pursuant to § 35.927-3(a) and is necessary to the total integrity and performance of the waste treatment works servicing such community, or (b) is for a new sewer system in a community in existence on October 18, 1972, with sufficient existing or planned capacity to adequately treat such collected sewage. Replacement or major rehabilitation of an existing sewer system may be approved only if cost effective and must result in a sewer system design capacity equivalent only to that of the existing system plus a reasonable amount for future growth. A community, for purposes of this section, would include any area with substantial human habitation on October 18, 1972. No award may be made for a new sewer system in a community in existence on October 18, 1972 unless it is further determined by the Regional Administrator that the bulk (generally two-thirds) of the flow design capacity through the sewer system will be for waste waters originating from the community (habitation) in existence on October 18, 1972.

This section of the EPA regulations implements Section 211 of P.L. 92-500.

All treatment works funded under the construction grants program must represent the most cost effective alternative to comply with the requirements of the Act. Treatment works are defined in Section 212 to include sewage collection systems. EPA cost-effectiveness requirements are found in 40 CFR § 35.925-7 and in Appendix A to 40 CFR Part 35.

A large number of new collection system projects have appeared on FY 1977 State project priority lists. The lists contain both individual collection system projects and collection systems associated with treatment plant and interceptor sewer projects. Many of these projects may not meet the eligibility and cost-effectiveness requirements set forth above.

Funding must be denied for all collection system projects which are not grant eligible or not cost-effective. This is important for two reasons. First, the requirements of the regulations must be satisfied. Secondly, the funding of collection system projects not meeting the

eligibility and cost-effectiveness requirements will commit limited Federal dollars to projects which provide fewer pollution control benefits than more needed treatment plants and interceptors.

Public disclosure of costs is a fundamental prerequisite for all grants projects, including collection systems. Program Requirements Memorandum 76-3, "Presentation of Local Government Costs of Wastewater Treatment Works in Facility Plans," August 16, 1976, requires that cost information be presented at all public hearings held on facility plans after January 2, 1977. However, public hearings were held on many collection system projects prior to this date. Special measures are necessary to ensure the public is aware of the cost implications of collection systems prior to their approval.

The following policy is to be followed in reviewing future grant applications for collection system projects. This policy supplements all existing Agency regulations and policy statements. It does not levy any fundamentally new requirements, but provides guidance for more rigorous review of grant applications to ensure that proposed projects meet the established requirements of the law and regulations. Compliance with this policy will help to assure that only grant eligible and cost-effective collection system projects are funded by EPA.

### III. POLICY

EPA policy on the funding of sewage collection systems is as follows:

#### A. Substantial human habitation

New collector sewer projects are eligible for funding only in a community in existence on October 18, 1972, with sufficient existing or planned capacity to treat adequately such collected sewage. The Title II regulation states in Section 35.925-13 that a community would include any area with substantial human habitation on October 18, 1972. The bulk (generally two-thirds) of the flow design capacity through the sewer system is to be for wastewaters originating from the habitation.

The Agency policy is that closely populated areas with average densities of 1.7 persons per acre (one household for every two acres) or more on October 18, 1972, shall be considered to meet the requirement for "substantial human habitation". Population density should be evaluated block by block or, where typical city blocks do not exist, by areas of 5 acres or less. The "two-thirds" rule would apply within each area evaluated when making a decision on collector sewer eligibility.

Densities of less than one household for every two acres rarely result in serious localized pollution or public health problems from the use of properly operated on-site systems. These areas should not be considered to have had, on October 18, 1972, substantial habitation warranting collection sewers from a pollution control standpoint.

## B. Cost-Effectiveness

New collector sewers must be proven in the facility plan to be necessary and cost-effective in addition to being eligible under the definition of "substantial human habitation" and the two-thirds rule.

New collector sewers should be funded only when the systems in use (e.g. septic tanks or raw discharges from homes) for disposal of wastes from the existing population are creating a public health problem, contaminating groundwater, or violating the point source discharge requirements of the Act. Specific documentation of the nature and extent of health, groundwater and discharge problems must be provided in the facility plan. Where site characteristics are considered to restrict the use of on-site systems, such characteristics, (e.g. groundwater levels, soil permeability, topography, geology, etc.) must be documented by soil maps, historical data and other pertinent information.

The facility plan must also document the nature, number and location of existing disposal systems (e.g. septic tanks) which are malfunctioning. A community survey of individual disposal systems is recommended for this purpose, and is grant eligible.

In addition, the facility plan must demonstrate, where population density is less than 10 persons per acre, that alternatives are clearly less cost-effective than new gravity collector sewer construction and centralized treatment. Such alternatives are cited in the previous Administrator's memorandum of December 30, 1976, subject: "Encouraging Less Costly Wastewater Facilities for Small Communities" and Mr. Rhett's memorandum of August 18, 1976 on "Eligibility of Septic Tanks and other Small Treatment Systems". A draft guidance document accompanied the August 18 memorandum. The draft policy represents the policy of the Agency until issued in final form.

The alternatives to be evaluated include the following:

- measures to improve operation and maintenance of existing septic tanks including more frequent inspections, timely pumpouts, and prohibition of garbage grinders.
- new septic tanks
- holding tanks and "honey wagons"
- various means of upgrading septic tanks, including mounds, alternate leaching fields and pressure sewers
- other systems to serve individual households or a cluster of households. Such systems include, for example, wastewater separation, water conservation and recycle systems where feasible.

The facility plan, where applicable, must examine alternatives such as limited sewer service for a portion of a community. For example, septic systems work very well in many small towns except in one isolated area such as a business district where open space for adequate on-site disposal is not available.

#### C. Public Disclosure of Costs

All projects, including collection systems, on which public hearings were held after January 2, 1977, must comply fully with the requirements of Program Requirements Memorandum 76-3 prior to approval.

Agency policy is to ensure public disclosure of the costs of any collection system projects where a public hearing was held on or before January 2, 1977. Such disclosure shall take the form of a prominently published notice in a local newspaper, and the cost is grant eligible. The Agency shall pay the cost of the notice if necessary to expedite the project.

The notice shall include the estimated monthly charge for operation and maintenance, the estimated monthly debt service charge, the estimated connection charge and the total monthly charge to a typical residential customer for the new collection system being funded and any other associated wastewater facilities required. Such associated facilities would include new treatment capacity needed to handle the flows from the new collection system.

The charges may be only rough estimates, and may be presented as a range of possible costs when major unknowns exist such as whether or not substantial parts of the project are grant eligible.

#### IV. IMPLEMENTATION

The States are to be advised of the issuance of this policy at once. All pending and future grant applications for collection system projects or projects containing collection systems are to be reviewed for compliance with this policy.

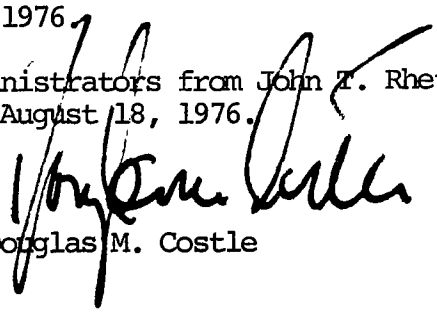
The requirements of sections III-A and III-C are effective immediately.

The requirements of Section III-B are effective immediately for all projects which have received a step 1 facility planning grant but have not yet received approval of their facility plan.

For all other projects, the requirements of section III-B are effective immediately unless the Regional Administrator determines, from information in the facility plan and other sources, that a project is necessary and cost-effective even though the full documentation required by section III-B is not available. In any case, the full requirements of section III-B shall apply without exception to all projects being reviewed for funding after September 30, 1977.

V. REFERENCES

- A. Sections 201, 211, 212, P.L. 92-500.
- B. 40 CFR ~~ss~~ 35.905-19, 925-7, 925-13, Appendix B.
- C. PRM 76-3, "Presentation of Local Government Costs of Wastewater Treatment Works in Facility Plans", August 16, 1976.
- D. Memorandum to Regional Administrators from Russell E. Train, "Encouraging Less Costly Wastewater Facilities For Small Communities", December 30, 1976.
- E. Memorandum to Regional Administrators from John T. Rhett, "Less Costly Treatment Systems", August 18, 1976.



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