

PASSAIC RIVER BASIN
STAGE 3 REPORT
PART IV - ENGINEERING
COST ESTIMATES

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I - INTRODUCTION

GENERAL

This appendix documents the development of, and contains the estimate of first costs for the recommended plan of protection in the Passaic River Basin. Methods for deriving costs of various plan components of the recommended plan are discussed.

BASIS FOR ESTIMATES

All estimates are based on October 1986 price levels which have been updated from June 1986 price levels. The work quantities for the considered plan of improvement have been developed from detailed plans shown on Figures 23 through 61 of the Main Report.

II - FORMULATION OF PROJECT FIRST COSTS

FIRST COSTS

First costs include the charges arising from the construction of the project, including costs of contingencies, engineering, design, supervision and administration. The detailed estimates include, such items as: lands, relocations, reconstruction of roads and bridges, channel improvement and modifications, levees, floodwalls; and by means of a tunnel boring machine (T.B.M.), the construction of a 13.5 mile 39-foot diameter and a 1.2 mile 22-foot diameter concrete lined tunnel. The summary of project costs for the recommended plan of protection is shown in Table IV-1. Detailed estimates of project first costs for the recommended plan of protection are presented in Tables IV-2 through IV-42.

UNIT COSTS

Unit costs for material and equipment were developed and based upon: current bid unit costs from projects of a similar nature, contact with manufacturers, dealers, distributors, and contractors in the areas of the project and also by adapting

certain items from quantity and cost curves developed especially for the Passaic River Basin Study. Those unit costs based upon bid abstracts were adjusted appropriately for the size of project, construction period and inflation.

Particular attention was given to the unit cost for earth-work excavation since it was based on the project's specific characteristics such as the location of construction area, material being excavated, type of equipment needed and the availability and location of disposal sites.

Also, due to poor subsurface conditions in the Lower Valley levee systems of Kearny, Doremus, Turnpike and Lister; piles were added to the floodwall foundations. The levees were stabilized by the inclusion of a woven filter fabric encased in a sand layer along with a deepening of the inspection trench and lowering the impervious core. Riprap was placed on the water side along the Hackensack River in the Kearny system.

The levee systems above the Pompton Inlet: Pequannock - Ramapo, Stiles Court, Wanaque Avenue, Hill Court and Shore Road have the impervious core extended 6 feet below the inspection trench because of pervious subsurface conditions and include an additional 10-foot wide sand berm placed along side the levee to protect against erosion due to potential under seepage.

For a further explanation of the subsurface treatment of the Lower Valley levee systems and the levee systems above the Pompton Inlet see Supporting Documentation, Part III - FOUNDATIONS.

QUANTITY AND COST CURVES

Generalized quantity and cost curves were developed in 1979 for structural and nonstructural flood control measures in the Passaic River Basin. The designs of structures analyzed for the cost curves were developed to anticipate foundation conditions and dewatering situations that may occur in the Passaic River Basin based on existing foundations information. These curves served as an estimating tool for quantities and cost in the pre-feasibility screening of alternative solutions under study in the Passaic River Basin.

For example, one of the structural flood control measures for which a generalized costing method is applicable is floodwalls. These curves show an itemized cost breakdown and related quantities for each component part of a floodwall. All of these quantity curves with the exception of land requirements are summarized by applying unit costs to the quantities and

combining the costs into a total cost curve which show the cost per linear foot of floodwall versus the height of floodwall. In addition, if foundation conditions are known to be a concern, there is a curve which includes a cost for pile support. One purpose these curves serve is to provide an estimate of land requirements (in acres) for permanent and temporary easement. This general approach is used for most of the basic structural improvements with the exception of trapezoidal channels, inlet/outlet structures and the tunnel. These curves were developed for the following plan components and construction activities.

1. Bridge Removal.
2. Bridge Replacement.
 - a. single span
 - b. multi-span
3. Bridge Raising (span length of 30 to 100 feet).
 - a. a one foot increment to ten feet
 - b. existing substructure in good condition
 - c. existing substructure in poor condition
4. Replacement and raising of eight site specific bridges in Passaic River Basin.
5. Roadway Raisings. (As these roadway raisings pertain to approach roads for bridges, any state and/or Federal highway standard controlling the vertical alignment at each specific bridge will be adhered to as information becomes available. Also any secondary work on crossroads, driveways and drainage will be included in the estimate).
6. FLOODPROOFING FOR:
 - a. residences
 - b. industrial structures
 - c. commercial structures
7. Levees (height range of 1 to 25 feet).
 - a. two types considered
 - good foundation conditions
 - difficult foundation conditions
8. Floodwalls (height range of 1 to 30 feet).
 - a. four types considered

- "L" type wall
- "I" type wall (height range of 1 to 12 feet)
- "T" type floodwall
- "T" type retaining wall

9. Stop Log Closures (height range of 1 to 8 feet).

- a. four widths considered: 15, 30, 45, and 60 feet
- b. with and without wingwalls

10. Swing Gate Closures (height range of 1 to 16 feet).

- a. four widths considered: 15, 30, 45, and 60 feet
- b. gate structure on good foundation
- c. gate structure on pile foundation

11. Relocation of Utilities (cost per linear foot).

- a. underground water main and sewer main - 24" and 48", dry land and subaqueous
- b. underground gas main - 24" and 48", dry land and subaqueous
- c. overhead electric lines
- d. overhead telephone lines

12. Maintenance and Protection of Traffic - Lump sum costs are provided at 1 year and 2 year durations for major streets and highways.

- a. stage construction
- b. detour traffic

13. Pump Stations. (These costs and quantities were developed from a range of projects both constructed and contemplated within the New York District. The data was extracted from Phase II G.D.M.'s and from recently constructed projects such as the Elizabeth River flood control project.

- a. range in size from 1 to 450 cfs
- b. curve shown as total cost versus cfs

14. Flumes (height range from 5 to 20 ft.)

- a. four widths considered: 20, 30, 40 and 50 feet

TUNNEL COSTS

Early in this study, Jenny Engineering Corp. was contracted to make an analysis of tunneling conditions, constructability, and costs in order to determine the feasibility of proceeding with a study of a tunnel diversion plan which was considered in previous reports in 1948, 1962, 1969 and 1972. The analysis was

premised on the Beatties Dam to Nutley tunnel route for which subsurface information was available in the 1962 Passaic River report. Additional subsurface information was developed from a seismic study aimed at determining a rock profile along this tunnel route. Design and costs were developed for the route for tunnel sizes ranging from 25 to 55 feet in diameter. In addition to determining costs by the traditional drill and shoot construction methods, the tunnel boring machine (TBM) construction method was also estimated for sizes up to 35 feet, the largest size machine in current use at that time. These conditions were also extrapolated to other tunnel routes proposed in the plan of study. An additional study estimated costs of an inverted siphon tunnel alternative as compared to the grade line tunnel which was estimated initially.

A subsequent field trip was made, in coordination with NED Corps Personnel, to the Park River Tunnel site in Hartford Connecticut. This tunnel, which was an inverted siphon, consisted of a 22-foot diameter tunnel constructed using the tunnel boring machine (TBM). This trip was useful in that it substantiated the basic assumptions as to constructability and rates of progress made by Jenny Engineering in their siphon tunnel analysis.

Finally, based on this initial work, cost curves were developed to provide costs per linear foot versus tunnel diameter. It should be noted that due to the importance of the tunnel costs, and at NAD's suggestion, an international firm involved in tunneling technology, Harza Engineering Company, who had recent experience on the Tunnel and Reservoir Project (TARP) in Chicago, was consulted on the basic assumptions as to constructability and costs made by Jenny Engineering. The results of their study confirmed the methods and assumptions for TBM construction, and in fact stated that the TBM "optimistic" estimate was in fact very realistic. Harza's evaluation strongly confirmed that the method of excavation most likely to be considered by the bidding contractor would be by tunnel boring machine (TBM). It was their consensus of opinion that TBM's will be capable of boring tunnels 40 to 45 feet in diameter by the years 1990 to 1995.

A field trip, attended by NAN and NAD personnel, to the Culver - Goodman Tunnel in Rochester, N.Y. also verified Jenny's assumptions as to the rates of progress concerning concreting, rockbolting, etc.

The final Stage 3 study by Jenny Engineering involved a more detailed investigation into the cost of the tunnel. Although the level of detail for this stage of planning only requires using current bid unit costs as the basis for the estimate as

outlined in EM 1110-2-1301, "Cost Estimates - Planning and Design Stages"; due to its unique nature and magnitude in size and scope, together with the scarcity of recent bid unit costs from projects of a similar nature, the unit costs in this particular estimate were arrived at by calculating separable direct cost, indirect cost and plant and equipment (as outlined in EM 1110-2-1302 "Cost Estimates - Government Estimate of Fair and Reasonable Cost to Contractor").

Specifically the direct cost is the cost of direct labor which is made up of standard crew sizes for different types of tunnel work recognizing productivity, union requirements and prevailing New Jersey wage rates and operating costs. It also includes equipment operation along with any necessary supplies, materials and off site muck removal.

The indirect cost includes all costs not charged to the other divisions of cost. It includes project supervision, job engineering, office payroll and expenses, insurance, taxes and bond premiums.

The cost of plant and equipment covers the move-in and invoice costs of the plant and the equipment necessary to do the work plus the cost of installation. A salvage value where applicable was deducted from the total cost to obtain the net plant and equipment job cost. Those items of plant and equipment which cannot be attributed to a single segment of construction work are known as distributed costs and are allocated to each major construction item based on their percentage of the total direct cost.

The estimate was separated into three areas of work to lessen the effect of interest during construction and also to anticipate how a job of this magnitude would be let out for contract. It was presented as such because future planned construction would have this portion of the tunnel functioning and on line as soon as possible to maximize the benefits that would be generated prior to the base year (end of project construction). This analysis is further discussed under the section titled "INTEREST DURING CONSTRUCTION."

The first area (Phase I), is the 39 ft. diameter tunnel between Clifton at the mouth of the Third River and the area called Two Bridges.

The second area (Phase II) is the completion of the upper leg of the 39 ft. diameter tunnel to the Pompton inlet which would be constructed after the inlet at Two Bridges is in operation.

The third area (Phase III) involves a 22 ft. diameter spur tunnel from the Two Bridges inlet to an intersection point with the 39 ft. diameter main tunnel. This tunnel is planned to be built concurrent with the lower leg of the main tunnel (Phase I) and having its estimated completion date occur at the same time. These two elements would form a singular unit enabling the Two Bridges inlet to function in advance of the overall project.

Refer to Table IV-2 for project first cost and Figure IV-1 which shows estimated construction durations.

TUNNEL CONSTRUCTION

A. Phase I - Exit Shaft No. 3 to Passaic River Outlet

Two tunnel boring machines (TBM's), 42.5' diameter each, will be used to excavate the main tunnel. TBM No. 1 will start at Work Shaft No. 1, Third River site and proceed to exit at Work Shaft No. 2 at the quarry site in Montclair. TBM No. 2 will start at Work Shaft No. 2 and proceed to Exit Shaft No. 3 to complete the main tunnel excavation for Phase I.

The rate of progress for the TBM was calculated as follows:

Brunswick Formation

Penetration Rate: 14'/hr.
TBM Utilization: 40% @ 14'/hr. = 5.6'/hr.
Work Period: 3 shifts = 24 hrs. @ 5.6' = 134'/day
Overall Average: 75% of 134' = Use 100'/day

Basalt

Penetration Rate: 10'/hr.
TBM Utilization: 40% @ 10'/hr. = 4'/hr.
Work Period: 3 shifts = 24 hrs. @ 4'/hr. = 96'/day
Overall Average: 75% of 96 = Use 75'/day

The horizontal movement of muck through the tunnel is by rail using a Hagglund shuttle train. The shuttle train is made up of a locomotive, a loading car and the required haul cars of 15 cubic yards (loose) capacity each. The loading car and train cars are each equipped with a chain conveyor so that the train is self-loading. As the loading car is loaded by conveyor from the TBM, the muck is transferred from car to car until the entire train is loaded. At the shaft, the cars unload from car to car into the muck pocket and into skips which lift the muck out of the tunnel to the surface.

The sites at Work Shaft No. 1 and No. 2 will serve as staging areas and muck handling areas. Each work shaft will have a headframe to service the tunnel construction. It will contain two counterbalanced muck skips, a material cage and a man cage.

The sites at Work Shaft No. 1 and No. 2 are large enough to store 3 to 5 days of tunnel muck (26,000 to 44,000 cubic yards - loose) to avoid any slow down in tunnel excavation due to any off-site muck removal problems, such as weather.

At Work Shaft No. 1 an above-ground conveyor from the shaft, passing under the Rt. 21 bridge to the Passaic River, will permit the off-site muck removal operation to utilize the river for transportation. This can be supplemented by loading trucks at the shaft for a second means of offsite muck removal.

Removal of muck at Work Shaft No. 2 will have to be by truck and a reconstructed rail line. Muck will be generated at a rate of 8,000 to 9,000 (loose) cubic yards per day. Any reduction in the handling of muck removal from the site will result in a lower progress rate for tunnel excavation.

It is estimated that the two TBM's working simultaneously will complete the tunnel excavation from Exit Shaft No. 3 to the tie-in point of the Passaic River Outlet in 13 to 14 months.

After TBM No. 1 is removed at Work Shaft No. 2, concreting of the tunnel will begin. A combined concrete batching system with a capacity of 120 cubic yards per hour will be set up at work back towards Work Shaft No. 1. Concrete will be placed 24 hours per day, 5 days per week using full circle forms and two 60 cubic yard per hour pumps. This will average 2,160 cubic yards per day or 75% of the system's capacity. Concrete placing will start at Work Shaft No. 2 and proceed to work back towards Work Shaft No. 1. After TBM No. 2 is removed at Exit Shaft No. 3 a similar concrete batching system will be installed at Work Shaft No. 2 to place the concrete between Exit Shaft No. 3 and Work Shaft No. 2.

B. Phase II - Pompton Inlet to Exit Shaft No. 3

The Pompton Inlet site will be the staging area for Phase II tunnel construction. The TBM (No. 1 or No. 2) will mole from the inlet to Exit Shaft No. 3. Tunnel muck will be removed through the shaft at the inlet site.

The concrete batch plant and concrete placement system from Work Shaft No. 1 will be set up at the inlet shaft. Concreting will proceed as described previously for Phase I.

C. Phase III - Two Bridges Inlet and Connecting Spur Tunnel

Work shaft No. 4 will be constructed on the north side of Rt. 80 approximately 700 LF west of the main tunnel. One 24.5' diameter TBM will advance from the work shaft and exit at the Two Bridges inlet site.

The intersection of the main tunnel and the connection to the work shaft will be excavated by the drill and shoot method. This work will be scheduled to tie into the main tunnel intersection after TBM No. 2 is at Exit Shaft No. 3. It is estimated that the tunnel excavation from the mainline intersection to the Two Bridges inlet (6,500 LF) will be done in 5 months.

A concrete placement system with a capacity of 60 c.y. per hour will be set up at the work shaft. Concreting will start at a point near the inlet and proceed to the work shaft. The concrete will be placed by pouring during a 10 hr. shift with the forms stripped and set during a second 10 hr. shift. Progress will be 125 LF/day (425 c.y.).

The intersection will require special forming, which will take about two weeks to form and pour.

D. Work Shafts - Inlet and Outlet Structures

Work Shafts No. 1 and No. 2 will be constructed during the 12 months required for TBM delivery. To accommodate the erection of the 42.5' diameter TBM's at the tunnel level, the shafts will be 35' diameter. The Exit Shaft No. 3 must be completed in time for the removal of TBM No. 2.

Each work shaft will have a drill and shoot excavated starting chamber for the TBM. At Work Shaft No. 1, the connection to the Passaic River Outlet will serve as a tail tunnel. For Work Shaft No. 2, the tail tunnel will be a portion of the main tunnel extending down grade from the shaft.

The work shaft on the 22' diameter spur tunnel will be 20' diameter for a 24.5' diameter TBM. The connection to the main line will serve as the tail tunnel. Exit Shaft No. 3 will only be used for TBM removal and for emergency purposes. The Passaic River Outlet will be built on a landfill projection into the river, along the east side of Rt. 21. This landfill projection will be approximately 100,000 S.F. The fill will be placed within a steel sheet pile retaining wall. A chain link fence will be erected parallel to Rt. 21 with locked ingress and egress gates.

Pompton Inlet will be used as a work shaft for Phase II and then converted into an inlet. The Two Bridges Inlet will be used to remove the spur tunnel TBM and then converted to an operating inlet.

After the tunnels and structures are completed it is planned to use Work Shaft No. 1, No. 2, Exit Shaft No. 3, and the spur tunnel work shaft, as tunnel maintenance access shafts and for venting air from the operating tunnel.

E. Groundwater Inflows and Shotcreting

The excavated diameter of the main and spur tunnels is large enough to accommodate a gantry for shotcreting without interfering with the excavation process. Shotcreting, rock dowels and welded wire fabric will be installed at the crown of the tunnel to preserve the opening and to prevent any fallout due to the horizontal bedding characteristics of the rock.

A high rate of ground water infiltration is not anticipated. However, the construction estimate includes costs to cover inflow grouting.

LAND REQUIREMENTS AND ACQUISITION COSTS

In order to construct the considered plans of improvement, local interests would be required to provide certain lands and easements. Studies were conducted by the Real Estate Division to determine the estimated value of lands and easements needed for the channel improvement, acquisition, local protection works and tunnel construction. The real estate study for the tunnel construction proposing its method of financial compensation is presented in Attachment IV-1. The real estate studies for the levee/floodwall portion of the project are presented in Attachment IV-2. Fee takings, natural storage acquisition, permanent (including that portion of the permanent easements which lie between the existing stream bank) and temporary easements for the tunnel, levee/floodwall and ponding areas are included in Table IV-44. These estimates include costs items such as contingencies, planning, surveys, appraisals and administration.

LUMP SUM ITEMS

Certain items of cost such as dewatering and diversion of streams, maintenance of traffic, and planting measures are listed in the detailed estimates as lump sum items because of the number of items and multiplicity of activities utilized to accomplish each of these work features.

CONTINGENCIES

The estimate of cost for each major subdivision or features of the project includes an item for "contingencies." The item for "contingencies" is an allowance against some adverse or unanticipated condition not susceptible to exact evaluation from the data at hand, but which must be expressed or represented in the cost estimate. Ordinarily, it represents possible latent difficulties in foundation conditions; deficiencies in surveys, borings or other basic data; or uncertainties beyond the control of the estimator.

For example, there should be an allowance to cover possible added cost that may arise because of not having specific information as to the exact extent and scope of relocations which may finally be required. It is not an allowance for omissions of work items which during all stages of project development are known to be required, but for which fairly accurate quantities have not yet been determined by specific design.

The normal contingency allowance, as provided for in EM 1110-2-1301, Appendix C, dated 31 July 1980 (as amended by change 1 dated 15 April 1982) for use in estimates of cost of construction and relocation features of civil works projects is a percentage of the estimated direct construction cost. This would range from 20 percent where the direct cost is more than \$10,000,000, to 25 percent where the direct cost is less than \$10,000,000. Since the total direct cost of the project is more than \$10,000,000, and in view of the scope of the modifications and completeness of the surveys and basic data, a 20 percent contingency factor was used for the levee/floodwall portion of the project. Accordingly, in light of the detailed nature of the tunnel estimate together with the comprehensive boring program and subsurface analysis, a 10 percent contingency factor was used. Allowance for contingencies, which were used in determining the cost estimates for the alternative nonstructural plans of protection was 25 percent due to the extent of the basic data.

ENGINEERING AND DESIGN

The Engineering and Design (E&D) cost was incorporated into the levee/floodwall estimate by adding a factor of 15% to the total estimated direct construction cost, including contingencies.

This cost was obtained and based on previous experience, relative complexity of the design and an analysis of cost records of projects of a similar nature. It includes all engineering, design, and surveys for Phase II general design memoranda, plans and specifications and related work required for the construction of the project. This also accounts for the cost of the survey, and possible treatment and mitigation plan for the cultural resources in the project area, which is estimated to be less than 1% of the project cost.

The factor chosen for the tunnel estimate was 8% due to the relatively high direct construction cost and for reasons stated above.

INSPECTION, SUPERVISION, ADMINISTRATION AND OVERHEAD

The Supervision and Administration (S&A) cost was included into the Levee/Floodwall estimate by adding an estimated amount of 10% of the total construction cost, including contingencies. This would provide for such anticipated items as the salaries of the resident engineer, his staff of engineers, surveyors, inspectors, draftsmen, clerical, and custodial personnel; construction cost or rental for field office, operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; project office administration, distributive cost of area office and general overhead charged to the project.

A factor of 6% was chosen for the Supervision and Administration (S&A) cost in the tunnel estimate to reflect the relatively high direct construction cost and the less complex nature and uniformity of tunnel construction operations in this project. The work items and activities for tunnel work would include, but not be limited to: the salaries of all supervisory, engineering (including resident geologist and geological staff), office and safety field personnel; all on site expenses including supplies, rent, telephone and automobiles. Also any additional field costs such as surveys, borings or soil sampling, well monitoring, the cost of any laboratory work such as soil, rock or concrete testing. Included in the above items would be District overhead.

INTEREST DURING CONSTRUCTION

This is the cost of construction money invested in a project before the beginning of the period of economic analysis and before the accumulation of benefits by the project. Interest during construction (IDC) costs are added to the project cost to determine investment costs. Average annual costs are determined based on investment costs which include IDC.

Planning Guidance Notebook (EP 1105-2-45, Paragraph 2-6, page 2-2) states that costs incurred during the construction period should be increased by adding compound interest at the applicable project discount rate from the date the expenditures are made to the beginning of the period of analysis (Base Year). For purposes of this study, construction expenditures are assumed to occur in equal monthly increments and interest is determined assuming that expenditures are made at mid-month.

Construction of the recommended plan is estimated to be completed in 7 years 6 months as shown on Figure IV-1. This would include land acquisition, relocations and alterations, channel excavation, tunnel, levee/floodwall construction, and implementation of environmental and aesthetic measures; with economic benefits expected to begin to accrue for each increment upon completion of construction of the corresponding increment. The pre-base year benefits were estimated using the Federal interest rate of 8-5/8%.

For example, the 39 ft. diameter tunnel from Clifton at the mouth of the Third River to the area called Two Bridges was estimated to be constructed in 50 months at the beginning of the overall schedule. At the end of this 50 month period the IDC generated was \$55,644,000. Therefore, in order for the IDC to be shown in constant dollars it would have to be projected to the Base Year using the single payment compound amount factor.

Subsequently, once this tunnel system is in operation, it would generate an annual benefit amount of approximately \$26,200,000. Using the constant dollar theory again, this amount is then brought forward to the Base Year using the uniform series compound amount factor. Carried forward to the Base Year, this would generate a total benefit of \$96,500,000 and annualized for 100 years would be an additional \$8,322,000 generated in advance of the base year.

Therefore, it can be seen that additional benefits can be generated prior to the Base Year so long as the benefits and IDC are brought forward to constant dollar values. This method was applied to all major plan systems.

III - ANNUAL CHARGES

PROJECT LIFE

It is estimated that major features of the plan of improvement such as levees, floodwalls, tunnels, and pumping station structures will have useful life expectancies of at least 100 years. The alternative nonstructural plans of improvement such as floodproofing and raising will have a useful life of at least 50 years.

INTEREST AND AMORTIZATION

The interest rate used in converting investment costs to an equivalent annual cost is the rate set by the Water Resources Council for the evaluation of Federal Government water resources projects. This rate is set at 8-5/8 percent for FY86.

Amortization is the financial or economic process of recovering an investment in a project. The amortization period is the period of time assumed or selected for economic recovery of the net investment in a project by the process of amortization. The definition of amortization can more readily be explained by stating that it is the equivalent annual amount which, with compound interest, will accumulate to provide one dollar at the end of the amortization period.

When combined, interest and amortization become the capital recovery factor which, when applied to project costs, will result in the annual cost of the project investment.

The interest and amortization factor based on a 100-year project life and 8-5/8 percent interest rate, is 0.086272. Based on a 50 year project life and 8-5/8 percent interest rate, the factor is 0.08765.

MAJOR REPLACEMENT

The annual cost of equipment which is anticipated to require replacement before the end of the project life is estimated by computing the cost of its replacement, then calculating the present worth of that value, which is then converted to an annual charge over the entire project life by applying the capital recovery factor. The project life of mechanical equipment (pumps, etc.) is estimated to be 30 years and, therefore, this equipment is expected to require replacement three times throughout a project life of 100 years.

MAINTENANCE AND OPERATION

The operation and maintenance (O&M) costs are estimated to represent the anticipated average annual economic costs necessary to maintain the project at full operating efficiency throughout the project life. After completion of the project, operation and maintenance of project facilities would be performed by the local cooperating agency in accordance with government regulations.

The basis for developing the O&M costs was consideration of the procedures needed to maintain the project over its 100 year life. The costs associated with the various project elements were based on experience by the New York State Department of Environment Conservation, Office of Regional Operations, Water Management Group and the Bureau of Fisheries, which provided information on actual annual maintenance and repair costs for various types of local protection projects in New York State.

The only project facilities in the recommended plan of protection that would require continuous operation would be the pump stations. However, test operation of the gates at the inlet and outlet structures together with periodic maintenance would be required.

The major task associated with this project would be the annual maintenance that would have to be performed on the channels, levees and floodwalls. These tasks would include but not be limited to: inspection, maintenance, repair and replacement of riprap; clearing of debris from the channel and bridges; sediment removal as needed, shoal removal, brush and tree control, trash pickup; cutting of grass along the channel banks, levees and ponding areas; and the repair of concrete structures together with the painting of miscellaneous metal parts.

The fish and wildlife mitigation features have been designed to be self maintaining, as recommended by the U.S. Fish and Wildlife Service and the New Jersey Bureau of Freshwater Fisheries. Therefore, there is no O&M cost associated with the mitigation features. The wetlands will also be self-perpetuating once established, and the nesting boxes designed to replace the loss of reproductive cover from trees are expected to degenerate over time. They are not scheduled to be maintained or replaced since new trees and nesting niches will become available as the riparian corridor becomes reestablished.

Some of the major activities associated with the operation and maintenance of the tunnel are:

1. Periodic Pump-Out.

Three-fourths of the tunnel is above sea level, and therefore, will be dry allowing inspection at any time. However, the downstream portion of the tunnel from Sta 193+90 (inv. 0.0) to the Passaic River Outlet (Sta. 0+00, inv. -192.4) is below sea level and, therefore,

constantly filled with water. It will have to be pumped out in order to make a visual inspection and allow necessary sediment clean out. The schedule for this pump out would be after five years of operation and at least once every ten years thereafter or after a major flood event.

2. On-Site Personnel.

There would be qualified personnel provided on-site to receive flood warning messages and operate the gates during flood events. Other personnel would perform routine daily tasks such as general inspection and to guard against vandalism to the inlets, outlet, bascule and roller gates, etc. They would also ensure proper working order of the related electrical components and hydraulic machinery. An annual testing program of the entire system should be initiated along with a training program to provide for additional qualified operational personnel in case of a flood emergency.

3. Mechanical Maintenance

Coupled with the need for on-site personnel a yearly maintenance schedule should be initiated for the bascule and roller gates at the Pompton River inlet; the bascule gates at the Two Bridges inlet; and the roller gates at the Passaic River outlet. This annual maintenance would generally include the replacement of seals, lubricating equipment and the painting of miscellaneous metal parts.

4. Inlet and Outlet Structures.

An annual scheduled maintenance program should be initiated for the inlet structures at Pompton River, Two Bridges and Passaic River outlet. At the Pompton River inlet, this would include the cutting of grass on the proposed embankment, keeping the river flow restrictor and gated diversion spillway free of debris, inspection of and any necessary repair of the concrete on the morning glory spillway due to exposure to weather. At Two Bridges inlet, the work would include debris removal at the gated diversion spillway and also any necessary concrete repairs to the morning glory spillway. At the Passaic River outlet scheduled maintenance would include trash pick-up and grass mowing along the levee embankments and any debris removal at the roller gates.

5. Tunnel Clean Out.

Scheduled-clean out of the entire length of the tunnel should occur at least ten times during the 100 year life of the structure. Other periodic clean-outs may possibly occur, especially after major flood events. This clean out would involve the removal of any silt or muck deposited within the tunnel. To accomplish this, maintenance crews and any necessary equipment can be lowered by crane into the tunnel from Workshaft #2 at the quarry site in Montclair. Also at this time a visual inspection of the tunnel can be made to check the tunnel lining for any wear, or seepage.

ESTIMATED ANNUAL CHARGES

A detailed breakdown of annual costs, including Federal and non-Federal charges is presented in Table IV-43.

IV- COST SHARING RESPONSIBILITIES

General

The requirements for the Federal and non-Federal sharing of responsibilities in the construction, operation and maintenance of Federal water resources projects are set forth in the Water Resources Development Act of 1986 (PL 99-662). These responsibilities are discussed in further detail in Volume IV of the Main Report, Appendix C - Plan Formulation in Section 10, under the heading COST SHARING RESPONSIBILITIES.

COST ALLOCATION

The Federal share of the project's total first cost is \$622.5 million. The Federal Government will design the project, prepare detailed plans and construct the project, exclusive of those items specifically required of non-Federal interests.

The non-Federal share of the estimated total first cost of the proposed project is \$218.7 million, which consists of lands, easements, rights-of-way, relocations and disposals totaling \$58.3 million, and a cash contribution of \$160.4 million. The Water Resources Development Act of 1986, Section 103, which sets forth cost sharing for flood control projects, states that non-Federal interests must operate, maintain and rehabilitate the project, and must pay during construction a minimum of 25% of the total cost assigned to flood control, including 5% of costs in cash, and provide lands, easements, rights-of-way and dredged material disposal areas (LERRD). If the 5% cash plus LERRD exceed 30% of the total cost assigned to flood control, non-Federal interests may reimburse the excess over 15 years.

The non-Federal share is limited to 50%. For nonstructural components, such as the acquisition of natural flood storage areas, the non-Federal share is limited to 25% of the cost. For hurricane and storm damage reduction measures, such as the Lower Valley tidal levee/floodwall systems, the non-Federal share is 35%. Section 906 of PL-99-662 states that fish and wildlife mitigation costs are to be allocated among the purposes which caused the requirement for mitigation and to be cost-shared to the same extent as project costs allocated to these purposes.

A breakdown of these costs are shown in Table IV-44. For a complete listing and further explanation of the flood control, and hurricane and storm damage reduction levee/floodwall systems see Volume IV of the Main Report, Appendix C - Plan Formulation, Section 10 - RECOMMENDED PLAN.

TABLE IV - 1

SUMMARY OF PROJECT COSTS
 PROPOSED PLAN OF PROTECTION
 MAINSTEM PASSAIC RIVER
 (OCTOBER 1986 PRICE LEVEL IN DOLLARS)

CONST OUR (MOS)	ITEM	CONSTRUCTION COST						LERRD				TOTAL FIRST COST	INTEREST DURING CONST.	IDC BROUGHT FORWARD TO BASE YEAR	INVESTMENT COST	OPER. & MAINT.	ANNUAL COST
		06. FISH & WOLF. FACS	11. LEVEES & FLOWALLS.	13. PUMPING PLANTS	15. FLD CON. & DIV STRUCTS.	22. NONSTRUC FLOOD CONT.	TOTAL CONSTRUCTION	01. LANDS & DAMAGES	02. RELOCS.	08. ROADS, RR & BRDS.	TOTAL * LERRD						
50	TUNNEL-TWO BRIDGES				277,060,000		277,060,000	3,721,000			3,721,000	280,781,000	55,644,000	73,314,000	354,095,000	500,000	31,048,000 *
24	SPUR TUN. (22" DIA)				37,045,000		37,045,000					37,045,000	3,230,000	4,256,000	41,301,000		3,563,000
15	PASS R DIV SPILL				5,617,000		5,617,000					5,617,000	292,000	365,000	6,002,000		518,000
15	FAIRFIELD RD BRDG						0			2,498,000	2,498,000	2,498,000	130,000	171,000	2,669,000		230,000
12	PASSAIC ACCESS B				5,985,000		5,985,000					5,985,000	242,000	319,000	6,304,000		544,000
8	PASSAIC MORN GLORY				636,000		636,000					636,000	16,000	21,000	657,000		57,000
18	PASSAIC R OUTLET				4,069,000		4,069,000					4,069,000	258,000	340,000	4,409,000		380,000

* THE TOTAL LERRD COST SHOWN HERE (\$3,721,000) INCLUDES: TUNNEL-TWO BRIDGES, SPUR TUNNEL AND TUNNEL TO POMPTON.
 THE TOTAL OPER. & MAINT. COST (\$500,000) INCLUDES: TUNNEL-TWO BRIDGES, SPUR TUNNEL, PASSAIC R DIV SPILLWAY,
 FAIRFIELD RD BRIDGE, PASSAIC ACCESS BASIN, PASSAIC MORNING GLORY, PASSAIC R OUTLET, TUNNEL TO POMPTON,
 TUNNEL OPERATION FACILITIES, POMPTON FLOW REST, POMPTON ACCESS BASIN, POMPTON DIV SPILLWAY, POMPTON MORNING GLORY.

TABLE IV - 1 (CONT)

SUMMARY OF PROJECT COSTS
 PROPOSED PLAN OF PROTECTION
 MAINSTEM PASSAIC RIVER
 (OCTOBER 1966 PRICE LEVEL IN DOLLARS)

CONST DUR (MO)	ITEM	CONSTRUCTION COST						LEERD				TOTAL FIRST COST	INTEREST DURING CONST.	IOC BROUGHT FORWARD TO BASE YEAR	INVESTMENT COST	OPER. & MAINT.	ANNUAL COST
		06. FISH & WOLF. FAC	11. LEVEES & FLOWALLS.	13. PUMPING PLANTS	15. FLD CON. & DIV STRUCTS.	22. NONSTRUC FLOOD CONT.	TOTAL CONSTRUCTION	01. LANDS & DAMAGES	02. RELOCS.	08. ROADS, RR & BRDS.	TOTAL * LEERD						
7	RIVER RD #1		2,059,000	4,196,000			6,255,000	562,000	48,000		610,000	6,865,000	150,000	198,000	7,063,000	26,000	635,000
14	MAIN ST.		7,105,000	7,518,000			14,623,000	316,000			316,000	14,939,000	718,000	946,000	15,685,000	43,000	1,413,000
13	RIVER RD. #2		8,638,000	7,642,000			16,280,000	694,000			694,000	16,974,000	752,000	991,000	17,965,000	50,000	1,600,000
23	RIVERSIDE AVE. #1		7,834,000	11,349,000			19,183,000	1,524,000			1,524,000	20,707,000	1,723,000	2,270,000	22,977,000	61,000	2,043,000
5	YANTACAW		1,950,000	4,576,000			6,526,000	373,000	38,000		411,000	6,937,000	100,000	132,000	7,069,000	20,000	630,000
15	RIVERSIDE AVE. #2		7,824,000	9,078,000			16,902,000	757,000			757,000	17,659,000	917,000	1,208,000	18,867,000	56,000	1,684,000
11	RIVER ST - MAIN AVE		5,826,000	2,807,000			9,633,000	1,534,000			1,534,000	11,167,000	410,000	540,000	11,707,000	36,000	1,046,000
5	RIVER DR #1		5,168,000	4,902,000			10,070,000	369,000			369,000	10,439,000	151,000	199,000	10,638,000	29,000	947,000
28	8 TH STREET		12,631,000	1,571,000			14,202,000	621,000			621,000	14,823,000	1,532,000	2,018,000	16,841,000	32,000	1,465,000
	FISH & WILDLIFE	2,370,000					2,370,000					2,370,000	0	0	2,370,000		204,000
	OP & FORECAST FACIL				200,000		200,000					200,000	0	0	200,000		17,000
	NAT STORAGE ACQUIS					22,000,000	22,000,000					22,000,000	0	0	22,000,000	146,000	2,044,000
31	KEARNY POINT		38,513,000	5,211,000			43,724,000	4,712,000			4,712,000	48,436,000	5,604,000	8,417,000	56,653,000	166,000	5,673,000
6	DOREMUS AVE.		5,214,000	4,140,000			9,354,000	332,000			332,000	9,686,000	176,000	314,000	10,000,000	26,000	889,000

TABLE IV - 1 (CONT)

SUMMARY OF PROJECT COSTS
 PROPOSED PLAN OF PROTECTION
 MAINSTEM PASSAIC RIVER
 (OCTOBER 1986 PRICE LEVEL IN DOLLARS)

CONST DUR (MOS)	ITEM	CONSTRUCTION COST					LERRD				TOTAL FIRST COST	INTEREST DURING CONST.	IDC BROUGHT FORWARD TO BASE YEAR	INVESTMENT COST	OPER. & MAINT.	ANNUAL COST
		06. FISH & WDLF. FACS	11. LEVEES & FLDWALLS.	13. PUMPING PLANTS	15. FLD CON. & DIV STRUCTS.	22. NONSTRUC FLOOD CONT.	TOTAL CONSTRUCTION	01. LANDS & DAMAGES	02. RELOCS.	08. ROADS, RR & BRDS.	TOTAL * LERRD					
3	TURNPIKE		2,257,000				2,257,000	1,510,000	112,000		1,622,000	3,879,000	28,000	51,000	3,930,000	375,000
7	LISTER AVE.		7,605,000	6,954,000			14,559,000	659,000			659,000	15,218,000	332,000	588,000	15,806,000	1,405,000
5	SOUTH 1 ST. STREET		3,302,000	3,333,000			6,635,000	403,000			403,000	7,038,000	102,000	183,000	7,221,000	653,000
4	PINCH BROOK		1,187,000				1,187,000	1,003,000			1,003,000	2,190,000	24,000	43,000	2,233,000	206,000
6	PASSAIC R. CHANNEL				5,517,000		5,517,000	731,000	1,030,000		1,761,000	7,278,000	132,000	167,000	7,445,000	666,000
25	PASSAIC R. #2A		28,257,000				28,257,000	5,880,000	54,000		5,934,000	34,191,000	3,118,000	3,942,000	38,133,000	3,616,000
6	PASSAIC R. #2C		2,325,000				2,325,000	1,165,000			1,165,000	3,490,000	63,000	80,000	3,570,000	324,000
6	ROCKAWAY #1		5,414,000				5,414,000	7,063,000			7,063,000	12,477,000	226,000	286,000	12,763,000	1,170,000
8	ROCKAWAY #2		4,332,000	1,197,000			5,529,000	3,540,000	356,000		3,896,000	9,425,000	241,000	305,000	9,730,000	886,000
11	ROCKAWAY #3		4,155,000	1,435,000			5,590,000	3,160,000	33,000		3,193,000	8,783,000	323,000	408,000	9,191,000	831,000
7	PASSAIC R. #10		2,566,000				2,566,000	2,032,000	71,000		2,103,000	4,669,000	102,000	129,000	4,798,000	437,000
16	TUNNEL TO POMPTON				132,196,000		132,196,000				132,196,000	7,371,000	8,697,000	140,853,000		12,155,000
18	TUNNEL OPER FACIL				2,000,000		2,000,000				2,000,000	127,000	150,000	2,150,000		165,000
18	POMPTON FLOW RESTR				3,230,000		3,230,000				3,230,000	205,000	242,000	3,472,000		300,000

TABLE IV - 1 (CONT)

SUMMARY OF PROJECT COSTS
 PROPOSED PLAN OF PROTECTION
 MAINSTEM PASSAIC RIVER
 (OCTOBER 1985 PRICE LEVEL IN DOLLARS)

CONST DUR (MOS)	ITEM	CONSTRUCTION COST						LERRD				TOTAL FIRST COST	INTEREST DURING CONST.	IDC BROUGHT FORWARD TO BASE YEAR	INVESTMENT COST	OPER. & MAINT.	ANNUAL COST
		06. FISH & WOLF. FACS	11. LEVEES & FLDHALLS.	13. PUMPING PLANTS	15. FLD CON. & DIV STRUCTS.	22. NONSTRUC FLOOD CONT.	TOTAL CONSTRUCTION	01. LANDS & DAMAGES	02. RELOCS.	08. ROADS, RR & BRIDS.	TOTAL * LERRD						
12	POMPT ACCESS BASIN				5,570,000		5,570,000					5,570,000	226,000	267,000	5,837,000		504,000
15	POMPT DIV SPILLWAY				4,436,000		4,436,000					4,436,000	230,000	271,000	4,707,000		406,000
12	POMPT MORN. GLORY				2,690,000		2,690,000					2,690,000	109,000	129,000	2,819,000		243,000
7	RAMAPO R. CHANNEL				2,745,000		2,745,000	807,000			807,000	3,552,000	78,000	88,000	3,640,000	46,000	360,000
7	SHORE ROAD	3,845,000					3,845,000	2,344,000			2,344,000	6,189,000	135,000	152,000	6,341,000	28,000	575,000
24	PEQUANN. R. CHANN.				12,116,000		12,116,000	601,000	939,000		1,540,000	13,656,000	1,191,000	1,191,000	14,847,000	58,000	1,339,000
2	STILES COURT	365,000					365,000	348,000			348,000	713,000	3,000	3,000	716,000	8,000	70,000
16	PEQUANNOCK-RAMAPO	6,297,000					6,297,000	4,430,000	122,000		4,552,000	10,849,000	605,000	639,000	11,488,000	83,000	1,074,000
5	WANAUKE R. CHANNEL				2,059,000		2,059,000	451,000	703,000		1,154,000	3,213,000	47,000	54,000	3,267,000	16,000	298,000
5	WANAUKE AVE.	1,156,000	1,601,000				2,757,000	247,000			247,000	3,004,000	43,000	49,000	3,053,000	11,000	274,000
3	HILL COURT	1,039,000					1,039,000	352,000			352,000	1,391,000	10,000	12,000	1,403,000	8,000	129,000

TOTALS = 2,370,000 177,864,000 77,510,000 503,171,000 22,000,000 782,915,000 52,241,000 3,506,000 2,498,000 58,245,000 841,160,000 87,116,000 114,165,000 955,325,000 2,114,000 84,531,000

TABLE IV - 2

TUNNEL AND 4 SHAFTS

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
PHASE I - OUTLET TO TWO BRIDGES :				
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$1,750,000
SITE PREPARATION	-	JOB	L.S.	\$950,000
INSIRUMENTATION	-	JOB	L.S.	\$175,000
OUTLET	-	JOB	L.S.	\$4,050,000
SHAFTS	-	JOB	L.S.	\$7,006,000
EXCAVATION	2,521,200	C.Y.	\$40	\$100,848,000
ROCK BOLTS	108,000	EA.	\$86	\$9,288,000
STRUCTURAL STEEL	528,000	LBS.	\$0.70	\$369,600
SHOTCRETE	26,000	C.Y.	\$181	\$4,706,000
GROUT	2,000	C.Y.	\$306	\$612,000
CONCRETE	374,252	C.Y.	\$134	\$50,149,768
TOTAL DIRECT COST				\$179,904,368
JOB OVERHEAD LABOR				\$5,314,000
JCB OVERHEAD INVOICE				\$15,637,000
TOTAL JOB COST				\$200,855,368
PROFIT AND OVERHEAD				\$20,085,537
SUBTOTAL				\$220,940,905
10% CONTINGENCIES				\$22,094,090
SUBTOTAL				\$243,034,995
8% E&D				\$19,442,800
6% S&A				\$14,582,100
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$277,059,895
TOTAL CONSTRUCTION COSTS				\$277,059,895

TABLE IV - 2 (CONT)

TUNNEL AND 4 SHAFTS

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
PHASE II - TWO BRIDGES TO POMPTON INLET:				
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$675,000
SITE PREPARATION	-	JOB	L.S.	\$375,000
INSTRUMENTATION	-	JOB	L.S.	\$70,000
INLET	-	JOB	L.S.	\$3,600,000
SHAFTS	-	JOB	L.S.	\$669,000
EXCAVATION	1,214,250	C.Y.	\$40	\$48,570,000
ROCK BOLTS	51,750	EA.	\$87	\$4,502,250
SHOTCRETE	12,000	C.Y.	\$183	\$2,196,000
GROUT	1,000	C.Y.	\$306	\$306,000
CONCRETE	178,760	C.Y.	\$136	\$24,311,360
TOTAL DIRECT COST				\$85,274,610
JOB OVERHEAD LABOR				\$3,107,000
JOB OVERHEAD INVOICE				\$7,454,000
TOTAL JOB COST				\$95,835,610
PROFIT AND OVERHEAD				\$9,583,561
SUBTOTAL				\$105,419,171
10% CONTINGENCIES				\$10,541,917
SUBTOTAL				\$115,961,088
8% E&D				\$9,276,887
6% S&A				\$6,957,665
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$132,195,640
TOTAL CONSTRUCTION COSTS				\$132,195,640

TABLE IV - 2 (CONT)

TUNNEL AND 4 SHAFTS

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
PHASE III - SPUR TUNNEL:				
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$200,000
SITE PREPARATION	-	JOB	L.S.	\$120,000
INSTRUMENTATION	-	JOB	L.S.	\$25,000
INLET	-	JOB	L.S.	\$3,960,000
SHAFTS	-	JOB	L.S.	\$848,000
EXCAVATION	113,915	C.Y.	\$86	\$9,796,690
ROCK BOLTS	6,500	EA.	\$96	\$624,000
SHOTCRETE	1,500	C.Y.	\$330	\$495,000
GROUT	250	C.Y.	\$332	\$83,000
CONCRETE	23,000	C.Y.	\$302	\$6,946,000
TOTAL DIRECT COST				\$23,097,690
JOB OVERHEAD LABOR				\$1,824,000
JOB OVERHEAD INVOICE				\$1,934,000
TOTAL JOB COST				\$26,855,690
PROFIT AND OVERHEAD				\$2,685,569
SUBTOTAL				\$29,541,259
10% CONTINGENCIES				\$2,954,126
SUBTOTAL				\$32,495,385
8% E&D				\$2,599,631
6% S&A				\$1,949,723
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$37,044,739
TOTAL CONSTRUCTION COSTS				\$37,044,739

TABLE IV - 2 (CONT)

TUNNEL AND 4 SHAFTS

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREA COSTS (LEFRD)				
01. LANDS AND DAMAGES:				
TEMPORARY EASEMENT RIGHTS				
PASSAIC RIVER OUTLET (CLIFTON)	1.00	AC.	L.S.	\$140,000
WORK SHAFT # 1 (CLIFTON)	2.50	AC.	L.S.	\$350,000
WORK SHAFT # 2 (LITTLE FALLS)	2.50	AC.	L.S.	\$175,000
WORK SHAFT # 3 (WAYNE)	1.50	AC.	L.S.	\$63,000
WORK SHAFT # 4 (WAYNE)	1.50	AC.	L.S.	\$210,000
TWO BRIDGES INLET (WAYNE)	2.00	AC.	L.S.	\$55,000
POMPTON RIVER INLET (WAYNE)	2.00	AC.	L.S.	\$65,000
FEE TAKING				
PASSAIC RIVER OUTLET (CLIFTON)	2.00	AC.	\$200,000	\$400,000
WORK SHAFT # 1 (CLIFTON)	1.50	AC.	\$200,000	\$300,000
WORK SHAFT # 2 (LITTLE FALLS)	1.50	AC.	\$100,000	\$150,000
WORK SHAFT # 3 (WAYNE)	1.50	AC.	\$60,000	\$90,000
WORK SHAFT # 4 (WAYNE)	1.50	AC.	\$200,000	\$300,000
TWO BRIDGES INLET (WAYNE)	4.00	AC.	\$40,000	\$160,000
POMPTON RIVER INLET (WAYNE)	4.00	AC.	\$60,000	\$240,000
ESTIMATED DIRECT COST				\$2,713,000
15% CONTINGENCIES				\$407,700
SUBTOTAL				\$3,125,700
3% PLANNING & SURVEYS				\$93,771
2% APPRAISAL & ADMIN.				\$62,514
SUBTOTAL				\$3,281,985
SUBSURFACE EASEMENTS	-	JOB	L.S.	\$362,000
15% CONTINGENCIES				\$57,300
SUBTOTAL				\$439,300
TOTAL COSTS: 01. LANDS AND DAMAGES				\$3,721,285
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LEFRD)				\$3,721,285
TOTAL PROJECT FIRST COST: (OCTOBER '86)				\$450,021,559

TABLE IV - 3

 PASSAIC GATED DIVERSION SPILLWAY

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
STREAM DIV. & DEWATERING	-	JOB	L.S.	\$60,000
BASCULE GATES :				
@ 11.0' HIGH X 100.0' WIDE	4	EA.	\$375,000	\$1,500,000
EQUIP. & LABOR	-	JOB	L.S.	\$600,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$400,000
CONCRETE :				
PIERS	305	C.Y.	\$400	\$122,000
SPILLWAY	1,762	C.Y.	\$400	\$704,800
TRASH RACKS:				
@ 11.0' HIGH X 100.0' WIDE	4	EA.	\$66,000	\$264,000
TOTAL DIRECT COST				\$3,700,800
20% CONTINGENCIES				\$740,160
SUBTOTAL				\$4,440,960
15% E&D				\$666,144
10% S&A				\$444,096
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$5,551,200
TOTAL CONSTRUCTION COSTS				\$5,551,200
TOTAL PROJECT FIRST COST: (JUNE '86)				\$5,551,200
(OCTOBER '86)				\$5,616,704

TABLE IV - 4

FAIRFIELD ROAD BRIDGE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
08. ROADS, RAILROADS AND BRIDGES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$25,000
NEW FAIRFIELD ROAD BRIDGE:				
5 SPANS @ 36' WIDE				
SPAN #1 (ABUT. SPAN)	2952	S.F.	130	\$383,760
SPAN #2	2952	S.F.	100	\$295,200
SPAN #3	2952	S.F.	100	\$295,200
SPAN #4	2952	S.F.	100	\$295,200
SPAN #5	2952	S.F.	100	\$295,200
APPROACH ROAD RAISINGS :				
2 LANES @ 4.0' HIGH				
LEFT :	115	L.F.	245	\$28,175
RIGHT :	115	L.F.	245	\$28,175
TOTAL DIRECT COST				\$1,645,910
20% CONTINGENCIES				\$329,182
SUBTOTAL				\$1,975,092
15% E&D				\$296,264
10% S&A				\$197,509
TOTAL COSTS: 08. ROADS, RAILROADS AND BRIDGES				\$2,468,865
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$2,468,865
TOTAL PROJECT FIRST COST: (JUNE '86)				\$2,468,865
(OCTOBER '86)				\$2,497,998

TABLE IV - 5

PASSAIC DIVERSION WORKS ACCESS BASIN

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$25,000
EXCAVATION	103,224	C.Y.	6	\$619,344
REINFORCED CONCRETE :				
FLOOR SLAB	3,423	C.Y.	400	\$1,369,200
WALLS	3,575	C.Y.	400	\$1,430,000
TEMPORARY SHEETING & COFFERDAMS	-	JOB	L.S.	\$450,000
DEWATERING & PUMPING	-	JOB	L.S.	\$50,000
TOTAL DIRECT COST				\$3,943,544
20% CONTINGENCIES				\$788,709
SUBTOTAL				\$4,732,253
15% E&D				\$709,838
10% S&A				\$473,225
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$5,915,316
TOTAL CONSTRUCTION COSTS				\$5,915,316
TOTAL PROJECT FIRST COST: (JUNE '86)				\$5,915,316
(OCTOBER '86)				\$5,985,117

TABLE IV - 6

 PASSAIC MORNING GLORY SPILLWAY

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$10,000
EXCAVATION COMMON	850	C.Y.	\$6	\$5,100
REINFORCED CONCRETE	1,010	C.Y.	\$400	\$404,000
TOTAL DIRECT COST				\$419,100
20% CONTINGENCIES				\$83,820
SUBTOTAL				\$502,920
15% E&D				\$75,436
10% S&A				\$50,292
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$628,650
TOTAL CONSTRUCTION COSTS				\$628,650
TOTAL PROJECT FIRST COST: (JUNE '66)				\$628,650
(OCTOBER '66)				\$636,066

TABLE IV - 7

PASSAIC RIVER OUTLET

DESCRIPTION	NO. UNITS	UNIT MEAS	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$150,000
EXCAVATION	9,083	C.Y.	\$12	\$108,996
RIPRAP	4,221	C.Y.	\$50	\$211,050
REINFORCED CONCRETE :				
SLAB	1,404	C.Y.	\$400	\$561,600
WALLS	903	C.Y.	\$400	\$361,200
ROLLER GATE PIERS	70	C.Y.	\$400	\$28,000
ROLLER GATES :				
@ 20.0' HIGH X 30.0' WIDE	3	EA.	\$200,000	\$600,000
EQUIP. & LABOR	-	JOB	L.S.	\$60,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$100,000
TEMPORARY SHEETING & COFFERDAMS	-	JOB	L.S.	\$450,000
DEWATERING & PUMPING				\$50,000
TOTAL DIRECT COST				\$2,680,846
20% CONTINGENCIES				\$536,169
SUBTOTAL				\$3,217,015
15% E&D				\$482,552
10% S&A				\$321,702
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$4,021,269
TOTAL CONSTRUCTION COSTS				\$4,021,269
TOTAL PROJECT FIRST COST: (JUNE '86)				\$4,021,269
(OCTOBER '86)				\$4,068,720

TABLE IV - 8

RIVER ROAD #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$60,000
BEAUTIFICATION	-	JOB	L.S.	\$140,000
LEVEES:				
@ 2.0' HIGH	490	L.F.	\$39	\$19,110
@ 7.0' HIGH	1,600	L.F.	\$104	\$166,400
@ 8.0' HIGH	770	L.F.	\$124	\$95,480
@ 9.0' HIGH	190	L.F.	\$137	\$26,030
@ 10.0' HIGH	1,360	L.F.	\$156	\$212,160
@ 11.0' HIGH	300	L.F.	\$169	\$50,700
FLOODWALLS:				
@ 6.0' HIGH: T-2 TYPE	220	L.F.	\$473	\$104,060
@ 7.0' HIGH: T-2 TYPE	610	L.F.	\$513	\$312,930
SWING GATES:				
60' LONG				
@ 3.0' HIGH	1	EA.	\$170,000	\$170,000
TOTAL DIRECT COST				\$1,356,370
20% CONTINGENCIES				\$271,374
SUBTOTAL				\$1,628,244
15% E&D				\$244,237
10% S&A				\$162,824
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$2,035,305
13. PUMPING PLANTS:				
PUMP STATIONS	299	C.F.S.	\$4,515	\$1,349,985
	319	C.F.S.	\$4,435	\$1,414,765
TOTAL DIRECT COST				\$2,764,750
20% CONTINGENCIES				\$552,950
SUBTOTAL				\$3,317,700
15% E&D				\$497,655
10% S&A				\$331,770
TOTAL COSTS: 13. PUMPING PLANTS				\$4,147,125
TOTAL CONSTRUCTION COSTS				\$6,182,430

TABLE IV - 8 (CONT)

 RIVER ROAD #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
<hr/>				
NORTH ARLINGTON				
TEMPORARY EASEMENT RIGHTS	3.31	AC.	5,000	\$16,550
PERMANENT EASEMENT RIGHTS	8.36	AC.	50,000	\$418,000
KEARNY				
TEMPORARY EASEMENT RIGHTS	0.46	AC.	4,000	\$1,840
PERMANENT EASEMENT RIGHTS	0.60	AC.	40,000	\$24,000
				<hr/>
ESTIMATED DIRECT COST				\$460,390
15% CONTINGENCIES				\$69,059
				<hr/>
SUBTOTAL				\$529,449
3% PLANNING & SURVEYS				\$15,883
2% APPRAISAL & ADMIN.				\$10,589
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$555,921
02. RELOCATIONS:				
<hr/>				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$5,000
ROAD RAISINGS:				
PASSAIC AVE.				
@ 1.8' HIGH	110	L.F.	\$245	\$26,950
				<hr/>
TOTAL DIRECT COST				\$31,950
20% CONTINGENCIES				\$6,390
				<hr/>
SUBTOTAL				\$38,340
15% E&D				\$5,751
10% S&A				\$3,634
				<hr/>
TOTAL COSTS: 02. RELOCATIONS				\$47,925
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$603,846
TOTAL PROJECT FIRST COST: (JUNE '86)				\$6,786,276
(OCTOBER '86)				\$6,866,354

TABLE IV - 9

MAIN STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$135,000
BEAUTIFICATION	-	JOB	L.S.	\$90,000
LEVEES:				
@ 3.0' HIGH	360	L.F.	\$46	\$16,560
@ 9.0' HIGH	200	L.F.	\$137	\$27,400
FLOODWALLS:				
@ 1.0' HIGH : T-2 TYPE	150	L.F.	\$290	\$43,500
@ 2.0' HIGH : T-2 TYPE	1,080	L.F.	\$330	\$356,400
@ 4.0' HIGH : T-2 TYPE	900	L.F.	\$400	\$360,000
@ 5.0' HIGH : T-2 TYPE	440	L.F.	\$435	\$191,400
@ 6.0' HIGH : T-2 TYPE	850	L.F.	\$475	\$403,750
@ 13.0' HIGH : T-2 TYPE	180	L.F.	\$790	\$142,200
@ 16.0' HIGH : T-2 TYPE	90	L.F.	\$925	\$83,250
@ 2.0' HIGH : L TYPE	150	L.F.	\$305	\$45,750
@ 11.0' HIGH : L TYPE	500	L.F.	\$725	\$362,500
@ 12.0' HIGH : L TYPE	600	L.F.	\$785	\$471,000
@ 13.0' HIGH : L TYPE	140	L.F.	\$835	\$116,900
@ 14.0' HIGH : L TYPE	940	L.F.	\$900	\$846,000
@ 18.0' HIGH : L TYPE	560	L.F.	\$1,160	\$649,600
SWING GATES :				
60' WIDE				
@ 3' HIGH	2	EA.	\$170,000	\$340,000
TOTAL DIRECT COST				\$4,681,210
20% CONTINGENCIES				\$936,242
SUBTOTAL				\$5,617,452
15% E&D				\$842,618
10% S&A				\$561,745
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$7,021,815

TABLE IV - 9 (CONT)

MAIN STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
13. PUMPING PLANTS:				
<hr/>				
PUMP STATIONS	228	C.F.S.	\$4,810	\$1,096,680
	253	C.F.S.	\$4,685	\$1,185,305
	255	C.F.S.	\$4,675	\$1,192,125
	337	C.F.S.	\$4,390	\$1,479,430
				<hr/>
TOTAL DIRECT COST				\$4,953,540
20% CONTINGENCIES				\$990,708
				<hr/>
SUBTOTAL				\$5,944,248
15% E&D				\$891,637
10% S&A				\$594,425
				<hr/>
TOTAL COSTS: 13. PUMPING PLANTS				\$7,430,310
				<hr/>
TOTAL CONSTRUCTION COSTS				\$14,452,125
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LEFRD)				
<hr/>				
01. LANDS AND DAMAGES:				
<hr/>				
BELLEVILLE				
TEMPORARY EASEMENT RIGHTS	4.27	AC.	\$5,500	\$23,485
PERMANENT EASEMENT RIGHTS	4.28	AC.	\$55,000	\$235,400
				<hr/>
ESTIMATED DIRECT COST				\$258,885
15% CONTINGENCIES				\$38,833
				<hr/>
SUBTOTAL				\$297,718
3% PLANNING & SURVEYS				\$8,932
2% APPRAISAL & ADMIN.				\$5,954
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$312,604
				<hr/>
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS AND DISPOSAL AREAS COSTS (LEFRD)				\$312,604
				<hr/>
TOTAL PROJECT FIRST COST: (JUNE '86)				\$14,764,729
(OCTOBER '86)				\$14,938,952

RIVER ROAD #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$100,000
BEAUTIFICATION	-	JOB	L.S.	\$65,000
RECREATION	-	JOB	L.S.	\$120,000
LEVEES:				
@ 7.0' HIGH	750	L.F.	\$104	\$78,000
@ 9.0' HIGH	1,900	L.F.	\$137	\$260,300
FLOODWALLS:				
@ 7.0' HIGH : T-2 TYPE	2,130	L.F.	\$515	\$1,096,950
@ 8.0' HIGH : T-2 TYPE	800	L.F.	\$545	\$436,000
@ 9.0' HIGH : T-2 TYPE	2,150	L.F.	\$585	\$1,257,750
@ 10.0' HIGH : T-2 TYPE	660	L.F.	\$640	\$422,400
@ 12.0' HIGH : T-2 TYPE	1,290	L.F.	\$750	\$967,500
@ 14.0' HIGH : T-2 TYPE	690	L.F.	\$840	\$579,600
SWING GATES:				
45' WIDE				
@ 5.0' HIGH	2	EA.	\$130,000	\$260,000
15' WIDE				
@ 8.0' HIGH	1	EA.	\$48,000	\$48,000
TOTAL DIRECT COST				\$5,691,500
20% CONTINGENCIES				\$1,138,300
SUBTOTAL				\$6,829,800
15% E&D				\$1,024,470
10% S&A				\$682,980
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$8,537,250
13. PUMPING PLANTS:				
PUMP STATIONS	217	C.F.S.	\$4,860	\$1,054,620
	237	C.F.S.	\$4,770	\$1,130,490
	297	C.F.S.	\$4,520	\$1,342,440
	345	C.F.S.	\$4,370	\$1,507,650
TOTAL DIRECT COST				\$5,035,200
20% CONTINGENCIES				\$1,007,040
SUBTOTAL				\$6,042,240
15% E&D				\$906,336
10% S&A				\$604,224
TOTAL COSTS: 13. PUMPING PLANTS				\$7,552,800
TOTAL CONSTRUCTION COSTS				\$16,090,050

TABLE IV - 10 (CONT)

RIVER ROAD #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
TEMPORARY EASEMENT RIGHTS:				
BELLEVILLE	1.44	AC.	\$5,500	\$7,909
NUTLEY	3.29	AC.	\$5,500	\$18,073
CLIFTON	0.76	AC.	\$7,000	\$5,313
PERMANENT EASEMENT RIGHTS:				
BELLEVILLE	2.14	AC.	\$55,000	\$117,700
NUTLEY	4.89	AC.	\$55,000	\$268,730
CLIFTON	2.15	AC.	\$70,000	\$150,150
ESTIMATED DIRECT COST				\$567,875
15% CONTINGENCIES				\$85,181
SUBTOTAL				\$653,056
3% PLANNING & SURVEYS				\$19,592
2% APPRAISAL & ADMIN.				\$13,061
TOTAL COSTS: 01. LANDS AND DAMAGES				\$685,709
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS AND DISPOSAL AREAS COSTS (LERRD)				\$685,709
TOTAL PROJECT FIRST COST: (JUNE '86)				\$16,775,759
(OCTOBER '86)				\$16,973,713

TABLE IV - 11

 RIVERSIDE AVENUE #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$100,000
BEAUTIFICATION	-	JOB	L.S.	\$260,000
LEVEES:				
@ 10.0' HIGH	570	L.F.	\$156	\$88,920
@ 11.0' HIGH	1,160	L.F.	\$169	\$196,040
@ 12.0' HIGH	1,580	L.F.	\$189	\$298,620
@ 13.0' HIGH	2,400	L.F.	\$202	\$484,800
@ 15.0' HIGH	2,860	L.F.	\$241	\$689,260
FLOODWALLS:				
@ 7.0' HIGH : T-2 TYPE	340	L.F.	\$515	\$175,100
@ 8.0' HIGH : T-2 TYPE	700	L.F.	\$545	\$381,500
@ 9.0' HIGH : T-2 TYPE	130	L.F.	\$585	\$76,050
@ 11.0' HIGH : T-2 TYPE	970	L.F.	\$700	\$679,000
@ 13.0' HIGH : T-2 TYPE	320	L.F.	\$790	\$252,800
SWING GATES:				
15' WIDE				
@ 8.0' HIGH	2	EA.	\$48,000	\$96,000
@ 11.0' HIGH	2	EA.	\$58,000	\$116,000
30' WIDE				
@ 13.0' HIGH	1	EA.	\$137,000	\$137,000
45' WIDE				
@ 4.0' HIGH	1	EA.	\$124,000	\$124,000
STEEL SHEET PILING	67,100	S.F.	\$15	\$1,006,500
TOTAL DIRECT COST				\$5,161,590
20% CONTINGENCIES				\$1,032,318
SUBTOTAL				\$6,193,908
15% E&D				\$929,086
10% S&A				\$619,391
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$7,742,385

RIVERSIDE AVENUE #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS	263	C.F.S.	\$4,635	\$1,219,005
	311	C.F.S.	\$4,450	\$1,383,950
	318	C.F.S.	\$4,435	\$1,410,330
	401	C.F.S.	\$4,200	\$1,684,200
	429	C.F.S.	\$4,150	\$1,780,350
TOTAL DIRECT COST				\$7,477,835
20% CONTINGENCIES				\$1,495,567
SUBTOTAL				\$8,973,402
15% E&D				\$1,346,010
10% S&A				\$897,340
TOTAL COSTS: 13. PUMPING PLANTS				\$11,216,753
TOTAL CONSTRUCTION COSTS				\$18,959,138
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
TEMPORARY EASEMENT RIGHTS:				
N. ARLINGTON	2.61	AC.	\$5,000	\$13,050
LYNDHURST	5.57	AC.	\$5,000	\$27,850
RUTHERFORD	0.07	AC.	\$8,000	\$552
PERMANENT EASEMENT RIGHTS:				
N. ARLINGTON	6.01	AC.	\$50,000	\$300,500
LYNDHURST	17.71	AC.	\$50,000	\$885,500
RUTHERFORD	0.25	AC.	\$80,000	\$20,000
ESTIMATED DIRECT COST				\$1,247,452
15% CONTINGENCIES				\$187,118
SUBTOTAL				\$1,434,570
3% PLANNING & SURVEYS				\$43,037
2% APPRAISAL & ADMIN.				\$28,691
TOTAL COSTS: 01. LANDS AND DAMAGES				\$1,506,298
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,506,298
TOTAL PROJECT FIRST COST: (JUNE '86)				\$20,465,436
(OCTOBER '86)				\$20,706,928

TABLE IV - 12

YANTACAW STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$40,000
BEAUTIFICATION	-	JOB	L.S.	\$25,000
LEVEES:				
@ 10.0' HIGH	360	L.F.	\$156	\$56,160
@ 12.0' HIGH	1,180	L.F.	\$189	\$223,020
FLOODWALLS:				
@ 6.0' HIGH : T-2 TYPE	280	L.F.	\$475	\$133,000
@ 7.0' HIGH : T-2 TYPE	200	L.F.	\$515	\$103,000
@ 12.0' HIGH : T-2 TYPE	340	L.F.	\$750	\$255,000
@ 13.0' HIGH : T-2 TYPE	300	L.F.	\$790	\$237,000
STEEL SHEET PILING	14,160	S.F.	\$15	\$212,400
TOTAL DIRECT COST				\$1,284,580
20% CONTINGENCIES				\$256,916
SUBTOTAL				\$1,541,496
15% E&D				\$231,224
10% S&A				\$154,150
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$1,926,870
13. PUMPING PLANTS:				
PUMP STATION	299	C.F.S.	\$4,515	\$1,349,985
	395	C.F.S.	\$4,215	\$1,664,925
TOTAL DIRECT COST				\$3,014,910
20% CONTINGENCIES				\$602,982
SUBTOTAL				\$3,617,892
15% E&D				\$542,684
10% S&A				\$361,789
TOTAL COSTS: PUMPING PLANTS				\$4,522,365
TOTAL CONSTRUCTION COSTS				\$6,449,235

TABLE IV - 12 (CONT)

YANTACAW STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
CLIFTON				
TEMPORARY EASEMENT RIGHTS	1.67	AC.	\$7,000	\$11,683
PERMANENT EASEMENT RIGHTS	4.20	AC.	\$70,000	\$293,860
ESTIMATED DIRECT COST				\$305,543
15% CONTINGENCIES				\$45,831
SUBTOTAL				\$351,374
3% PLANNING & SURVEYS				\$10,541
2% APPRAISAL & ADMIN.				\$7,027
TOTAL COSTS: 01. LANDS AND DAMAGES				\$368,943
02. RELOCATIONS:				\$368,943
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$1,000
ROAD RAISING:				
RIVER ROAD				
2 LANES @ 1.5' HIGH	100	L.F.	\$240	\$24,000
TOTAL DIRECT COST				\$25,000
20% CONTINGENCIES				\$5,000
SUBTOTAL				\$30,000
15% E&D				\$4,500
10% S&A				\$3,000
TOTAL COSTS: 02. RELOCATIONS				\$37,500
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$406,443
TOTAL PROJECT FIRST COST: (JUNE '86)				\$6,855,678
(OCTOBER '86)				\$6,936,575

TABLE IV - 13

RIVERSIDE AVENUE #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$130,000
BEAUTIFICATION	-	JOB	L.S.	\$200,000
LEVEES:				
@ 9.0' HIGH	1,270	L.F.	\$137	\$173,990
@ 12.0' HIGH	300	L.F.	\$189	\$56,700
FLOODWALLS:				
@ 9.0' HIGH : T-2 TYPE	2,250	L.F.	\$585	\$1,316,250
@ 10.0' HIGH : T-2 TYPE	190	L.F.	\$640	\$121,600
@ 11.0' HIGH : T-2 TYPE	190	L.F.	\$700	\$133,000
@ 12.0' HIGH : T-2 TYPE	700	L.F.	\$750	\$525,000
@ 15.0' HIGH : T-2 TYPE	230	L.F.	\$880	\$202,400
@ 17.0' HIGH : T-2 TYPE	1,430	L.F.	\$965	\$1,379,950
STEEL SHEET PILING	14,700	S.F.	\$15	\$220,500
SWING GATES:				
15' WIDE				
@ 9.0' HIGH	8	EA.	\$50,000	\$400,000
@ 11.0' HIGH	2	EA.	\$58,000	\$116,000
@ 17.0' HIGH	2	EA.	\$90,000	\$180,000
TOTAL DIRECT COST				\$5,155,390
20% CONTINGENCIES				\$1,031,078
SUBTOTAL				\$6,186,468
15% E&D				\$927,970
10% S&A				\$618,647
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$7,733,085
13. PUMPING PLANTS:				
PUMP STATIONS	222	C.F.S.	\$4,815	\$1,068,930
	228	C.F.S.	\$4,810	\$1,096,680
	239	C.F.S.	\$4,760	\$1,137,640
	239	C.F.S.	\$4,760	\$1,137,640
	355	C.F.S.	\$4,340	\$1,540,700
TOTAL DIRECT COST				\$5,981,590
20% CONTINGENCIES				\$1,196,318
SUBTOTAL				\$7,177,908
15% E&D				\$1,076,686
10% S&A				\$717,791
TOTAL COSTS: 13. PUMPING PLANTS				\$8,972,385
TOTAL CONSTRUCTION COSTS				\$16,705,470

TABLE IV - 13 (CONT)

 RIVERSIDE AVENUE #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
RUTHERFORD				
TEMPORARY EASEMENT RIGHTS	4.71	AC.	\$8,000	\$37,680
PERMANENT EASEMENT RIGHTS	7.27	AC.	\$80,000	\$581,600
ESTIMATED DIRECT COST				\$619,280
15% CONTINGENCIES				\$92,892
SUBTOTAL				\$712,172
3% PLANNING & SURVEYS				\$21,365
2% APPRAISAL & ADMIN.				\$14,243
TOTAL COSTS: 01. LANDS AND DAMAGES				\$747,781
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$747,781
TOTAL PROJECT FIRST COST: (JUNE '86)				\$17,453,251
(OCTOBER '86)				\$17,659,199

TABLE IV - 14

RIVER STREET - MAIN AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$100,000
BEAUTIFICATION	-	JOB	L.S.	\$250,000
LEVEES:				
@ 5.0' HIGH	1,010	L.F.	\$78	\$78,780
@ 6.0' HIGH	440	L.F.	\$98	\$43,120
@ 7.0' HIGH	130	L.F.	\$104	\$13,520
@ 9.0' HIGH	2,240	L.F.	\$137	\$306,880
@ 10.0' HIGH	2,040	L.F.	\$156	\$318,240
FLOODWALLS:				
@ 5.0' HIGH : T-2 TYPE	120	L.F.	\$435	\$52,200
@ 6.0' HIGH : T-2 TYPE	90	L.F.	\$470	\$42,300
@ 7.0' HIGH : T-2 TYPE	160	L.F.	\$515	\$82,400
@ 9.0' HIGH : T-2 TYPE	600	L.F.	\$580	\$348,000
@ 10.0' HIGH : T-2 TYPE	2,140	L.F.	\$640	\$1,369,600
@ 13.0' HIGH : T-2 TYPE	950	L.F.	\$790	\$750,500
@ 23.0' HIGH : L TYPE	100	L.F.	\$1,260	\$126,000
STEEL SHEET PILING	9,400	S.F.	\$15	\$141,000
REMOVE BUILDINGS	-	JOB	L.S.	\$5,000
SWING GATES:				
15' WIDE				
@ 9.0' HIGH	2	EA.	\$50,000	\$100,000
45' WIDE				
@ 5.0' HIGH	1	EA.	\$130,000	\$130,000
60' WIDE				
@ 9.0' HIGH	1	EA.	\$240,000	\$240,000
TOTAL DIRECT COST				\$4,497,540
20% CONTINGENCIES				\$899,508
SUBTOTAL				\$5,397,048
15% E&D				\$809,557
10% S&A				\$539,705
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$6,746,310

TABLE IV - 14 (CONT)

RIVER STREET - MAIN AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS	325	C.F.S.	\$4,425	\$1,438,125
	62	C.F.S.	\$6,630	\$411,060
TOTAL DIRECT COST				\$1,849,185
20% CONTINGENCIES				\$369,837
SUBTOTAL				\$2,219,022
15% E&D				\$332,853
10% S&A				\$221,902
TOTAL COSTS: 13. PUMPING PLANTS				\$2,773,778
TOTAL CONSTRUCTION COSTS				\$9,520,088
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
RUTHERFORD				
TEMPORARY EASEMENT RIGHTS	0.99	AC.	\$8,000	\$7,952
PERMANENT EASEMENT RIGHTS	2.81	AC.	\$80,000	\$224,640
WALLINGTON				
TEMPORARY EASEMENT RIGHTS	3.47	AC.	\$7,000	\$24,290
PERMANENT EASEMENT RIGHTS	8.77	AC.	\$70,000	\$613,760
E. RUTHERFORD				
TEMPORARY EASEMENT RIGHTS	1.64	AC.	\$8,500	\$13,906
PERMANENT EASEMENT RIGHTS	3.54	AC.	\$85,000	\$300,815
BUILDING ACQUISITION	-	JOB	L.S.	\$70,000
ESTIMATED DIRECT COST				\$1,255,363
15% CONTINGENCIES				\$188,304
SUBTOTAL				\$1,443,667
3% PLANNING & SURVEYS				\$43,310
2% APPRAISAL & ADMIN.				\$28,873
TOTAL COSTS: 01. LANDS AND DAMAGES				\$1,515,851
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,515,851
TOTAL PROJECT FIRST COST: (JUNE '86)				\$11,035,938
(OCTOBER '86)				\$11,166,162

TABLE IV - 15

RIVER DRIVE #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$40,000
BEAUTIFICATION	-	JOB	L.S.	\$25,000
LEVEES:				
@ 2.0' HIGH	130	L.F.	\$39	\$5,070
@ 10.0' HIGH	1,790	L.F.	\$156	\$279,240
CONCRETE CAPPING (EXIST. WALL)	-	JOB	L.S.	\$100,000
FLOODWALLS:				
@ 4.0' HIGH : T-2 TYPE	670	L.F.	\$400	\$268,000
@ 6.0' HIGH : T-2 TYPE	620	L.F.	\$470	\$291,400
@ 7.0' HIGH : T-2 TYPE	250	L.F.	\$515	\$128,750
@ 8.0' HIGH : T-2 TYPE	480	L.F.	\$545	\$261,600
@ 9.0' HIGH : T-2 TYPE	300	L.F.	\$585	\$175,500
@ 10.0' HIGH : T-2 TYPE	560	L.F.	\$640	\$358,400
@ 11.0' HIGH : T-2 TYPE	880	L.F.	\$700	\$616,000
SWING GATES:				
15' WIDE				
@ 6.0' HIGH	1	EA.	\$39,000	\$39,000
30' WIDE				
@ 11.0' HIGH	2	EA.	\$124,000	\$248,000
45' WIDE				
@ 4.0' HIGH	1	EA.	\$124,000	\$124,000
@ 5.0' HIGH	2	EA.	\$130,000	\$260,000
@ 9.0' HIGH	1	EA.	\$185,000	\$185,000
TOTAL DIRECT COST				\$3,404,960
20% CONTINGENCIES				\$680,992
SUBTOTAL				\$4,085,952
15% E&D				\$612,893
10% S&A				\$408,595
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$5,107,440

TABLE IV - 15 (CONT)

RIVER DRIVE #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS	358	C.F.S.	\$4,330	\$1,550,140
	400	C.F.S.	\$4,200	\$1,680,000
TOTAL DIRECT COST				\$3,230,140
20% CONTINGENCIES				\$646,028
SUBTOTAL				\$3,876,168
15% E&D				\$581,425
10% S&A				\$387,617
TOTAL COSTS: 13. PUMPING PLANTS				\$4,845,210
TOTAL CONSTRUCTION COSTS				\$9,952,650
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
PASSAIC CITY				
TEMPORARY EASEMENT RIGHTS	3.57	AC.	\$4,500	\$16,065
PERMANENT EASEMENT RIGHTS	6.35	AC.	\$45,000	\$285,750
ESTIMATED DIRECT COST				\$301,815
15% CONTINGENCIES				\$45,272
SUBTOTAL				\$347,087
3% PLANNING & SURVEYS				\$10,413
2% APPRAISAL & ADMIN.				\$6,942
TOTAL COSTS: 01. LANDS AND DAMAGES				\$364,442
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$364,442
TOTAL PROJECT FIRST COST: (JUNE '86)				\$10,317,092
(OCTOBER '86)				\$10,438,833

TABLE IV - 16

8TH STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$175,000
BEAUTIFICATION	-	JOB	L.S.	\$150,000
LEVEES:				
@ 7.0' HIGH	460	L.F.	\$104	\$47,840
@ 11.0' HIGH	1,670	L.F.	\$169	\$282,230
@ 12.0' HIGH	450	L.F.	\$189	\$85,050
FLOODWALLS:				
@ 4.0' HIGH : T-2 TYPE	130	L.F.	\$400	\$52,000
@ 5.0' HIGH : T-2 TYPE	380	L.F.	\$435	\$165,300
@ 10.0' HIGH : T-2 TYPE	2,510	L.F.	\$640	\$1,606,400
@ 11.0' HIGH : T-2 TYPE	3,620	L.F.	\$700	\$2,534,000
@ 12.0' HIGH : T-2 TYPE	670	L.F.	\$750	\$502,500
@ 13.0' HIGH : T-2 TYPE	1,400	L.F.	\$790	\$1,106,000
@ 15.0' HIGH : T-2 TYPE	170	L.F.	\$880	\$149,600
@ 16.0' HIGH : T-2 TYPE	570	L.F.	\$925	\$527,250
@ 14.0' HIGH : L TYPE	200	L.F.	\$900	\$180,000
@ 20.0' HIGH : L TYPE	130	L.F.	\$1,285	\$167,050
SWING GATES:				
15' WIDE				
@ 5.0' HIGH	1	EA.	\$37,000	\$37,000
@ 6.0' HIGH	1	EA.	\$40,000	\$40,000
45' WIDE				
@ 4.0' HIGH	1	EA.	\$124,000	\$124,000
@ 9.0' HIGH	1	EA.	\$185,000	\$185,000
60' WIDE				
@ 7.0' HIGH	1	EA.	\$206,000	\$206,000
TOTAL DIRECT COST				\$8,322,220
20% CONTINGENCIES				\$1,664,444
SUBTOTAL				\$9,986,664
15% E&D				\$1,498,000
10% S&A				\$998,666
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$12,483,330

8TH STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
13. PUMPING PLANTS:				
<hr/>				
PUMP STATION	211	C.F.S.	\$4,905	\$1,034,955
TOTAL DIRECT COST				\$1,034,955
20% CONTINGENCIES				\$206,991
				<hr/>
SUBTOTAL				\$1,241,946
15% E&D				\$186,292
10% S&A				\$124,195
				<hr/>
TOTAL COSTS: 11. PUMPING PLANTS				\$1,552,433
				<hr/>
TOTAL CONSTRUCTION COSTS				\$14,035,763
				<hr/>
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
<hr/>				
PASSAIC CITY				
TEMPORARY EASEMENT RIGHTS	6.42	AC.	\$4,500	\$28,899
PERMANENT EASEMENT RIGHTS	10.65	AC.	\$45,000	\$479,250
				<hr/>
ESTIMATED DIRECT COST				\$508,149
15% CONTINGENCIES				\$76,222
				<hr/>
SUBTOTAL				\$584,371
3% PLANNING & SURVEYS				\$17,531
2% APPRAISAL & ADMIN.				\$11,687
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$613,590
				<hr/>
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$613,590
				<hr/>
TOTAL PROJECT FIRST COST: (JUNE '86)				\$14,649,352
(OCTOBER '86)				\$14,822,215

TABLE IV - 17

FISH AND WILDLIFE MITIGATION

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
06. FISH AND WILDLIFE FACILITIES:				
AQUATIC HABITAT:				
PASSAIC RIVER (LOWER VALLEY)				
COBBLE SUBSTRATE	6,400	C.Y.	\$25	\$160,000
PASSAIC RIVER (CENTRAL BASIN)				
COBBLE SUBSTRATE	5,900	C.Y.	\$5	\$29,500
PEQUANNOCK RIVER				
COBBLE SUBSTRATE (PLACEMENT ONLY)	18,850	C.Y.	\$5	\$94,250
WANAQUE RIVER				
COBBLE SUBSTRATE (PLACEMENT ONLY)	7,250	C.Y.	\$5	\$36,250
RAMAPO RIVER				
COBBLE SUBSTRATE (PLACEMENT ONLY)	9,400	C.Y.	\$5	\$47,000
POMPTON RIVER				
WING DAMS	14	EA.	\$6,300	\$88,200
TERRESTRIAL HABITAT:				
PEQUANNOCK RIVER				
NEST BOXES				
75 RIVER & 40 POND	115	EA.	\$15	\$1,725
WANAQUE RIVER				
NEST BOXES				
30 RIVER & 30 POND	60	EA.	\$15	\$900
RAMAPO RIVER				
NEST BOXES				
35 RIVER & 70 POND	105	EA.	\$15	\$1,575
POMPTON RIVER				
NEST BOXES				
10 RIVER	10	EA.	\$15	\$150
PASSAIC #2C, #10				
NEST BOXES	790	EA.	\$15	\$11,850
ROCKAWAY #1, #2, #3				
NEST BOXES	315	EA.	\$15	\$4,725
PINCH BROOK				
NEST BOXES	15	EA.	\$15	\$225

TABLE IV - 17 (CONT)

 FISH AND WILDLIFE MITIGATION

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
WETLAND RECLAMATION FOR:				
REACH 1 (MOUTH TO DUNDEE)	10	AC.	\$4,165	\$41,650
REACH 2 (DUNDEE DAM TO BEATTIES DAM)	5	AC.	\$4,165	\$20,825
REACH 3 (BEATTIES DAM TO TWO BRIDGES)	5	AC.	\$4,165	\$20,825
REACH 4	5	AC.	\$3,300	\$16,500
	15	AC.	\$4,165	\$62,475
(POMPTON VALLEY)				
REACH 5	100	AC.	\$3,300	\$330,000
	45	AC.	\$4,165	\$187,425
(PASSAIC RIVER - TWO BRIDGES & UPSTREAM)				
TOTAL DIRECT COST				\$1,156,050
20% CONTINGENCIES				\$231,210
SUBTOTAL				\$1,387,260
15% E&D				\$208,089
10% S&A				\$138,726
TOTAL COSTS: WETLAND RECLAMATION (ONLY)				\$1,734,075
TOTAL CONSTRUCTION COSTS				\$1,734,075
TOTAL PROJECT FIRST COST: (JUNE '86)				\$1,734,075
(OCTOBER '86)				\$1,754,537

TABLE IV - 18

 KEARNY POINT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$300,000
BEAUTIFICATION	-	JOB	L.S.	\$200,000
LEVEES (GOOD FOUND.):				
@ 7.0' HIGH	2,980	L.F.	\$104	\$309,920
LEVEES (POOR FOUND.):				
@ 5.0' HIGH	510	L.F.	\$137	\$69,870
@ 7.0' HIGH	220	L.F.	\$200	\$44,000
@ 9.0' HIGH	1,100	L.F.	\$259	\$284,900
@ 10.0' HIGH	1,150	L.F.	\$291	\$334,650
@ 11.0' HIGH	300	L.F.	\$318	\$95,400
@ 12.0' HIGH	710	L.F.	\$352	\$249,920
LEVEES (POOR FOUND., W/RIPRAP):				
@ 5.0' HIGH	1,060	L.F.	\$187	\$198,220
@ 7.0' HIGH	660	L.F.	\$265	\$174,900
@ 8.0' HIGH	1,000	L.F.	\$305	\$305,000
@ 9.0' HIGH	2,590	L.F.	\$339	\$878,010
@ 10.0' HIGH	1,040	L.F.	\$379	\$394,160
@ 11.0' HIGH	1,310	L.F.	\$413	\$541,030
@ 12.0' HIGH	1,650	L.F.	\$455	\$750,750
@ 13.0' HIGH	320	L.F.	\$490	\$156,800
FLOODWALLS (W/O PILES):				
@ 7.0' HIGH : T-2 TYPE	2,900	L.F.	\$515	\$1,493,500
FLOODWALLS (W/PILES):				
@ 5.0' HIGH : T-2 TYPE	870	L.F.	\$685	\$595,950
@ 6.0' HIGH : T-2 TYPE	2,170	L.F.	\$725	\$1,573,250
@ 7.0' HIGH : T-2 TYPE	820	L.F.	\$765	\$627,300
@ 8.0' HIGH : T-2 TYPE	2,550	L.F.	\$795	\$2,027,250
@ 9.0' HIGH : T-2 TYPE	7,010	L.F.	\$835	\$5,853,350
@ 10.0' HIGH : T-2 TYPE	120	L.F.	\$890	\$106,800
@ 11.0' HIGH : T-2 TYPE	700	L.F.	\$950	\$665,000
@ 13.0' HIGH : T-2 TYPE	230	L.F.	\$1,040	\$239,200
@ 16.0' HIGH : T-2 TYPE	550	L.F.	\$1,365	\$750,750

TABLE IV - 18 (CONT)

KEARNY POINT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
INTERIOR DRAINAGE				
CLEARING	52	AC.	\$2,000	\$104,000
EXCAVATION, STRIPPING	7,585	C.Y.	\$3	\$22,755
EXCAVATION, COMMON	332,350	C.Y.	\$6	\$1,994,100
TOPSOIL & SEEDING	52	AC.	\$8,000	\$416,000
OUTLET SYSTEMS	12	EA.	\$7,000	\$84,000
24" DIA. R.C.P.	450	L.F.	\$30	\$13,500
30" DIA. R.C.P.	950	L.F.	\$40	\$38,000
24" DIA. A.D. GATE	3	EA.	\$3,500	\$10,500
30" DIA. A.D. GATE	3	EA.	\$4,000	\$12,000
24" DIA. SLUICE GATE	3	EA.	\$8,000	\$24,000
30" DIA. SLUICE GATE	3	EA.	\$9,000	\$27,000
SWING GATES (W/PILES):				
45' WIDE				
@ 5.0' HIGH	2	EA.	\$195,000	\$390,000
30' WIDE				
@ 4.0' HIGH	1	EA.	\$105,000	\$105,000
@ 7.0' HIGH	1	EA.	\$125,000	\$125,000
@ 8.0' HIGH	6	EA.	\$140,000	\$840,000
@ 9.0' HIGH	10	EA.	\$150,000	\$1,500,000
@ 12.0' HIGH	1	EA.	\$185,000	\$185,000
15' WIDE				
@ 9.0' HIGH	1	EA.	\$60,000	\$60,000
@ 10.0' HIGH	1	EA.	\$65,000	\$65,000
@ 11.0' HIGH	2	EA.	\$70,000	\$140,000
TOTAL DIRECT COST				\$25,375,735
20% CONTINGENCIES				\$5,075,147
SUBTOTAL				\$30,450,882
15% E&D				\$4,567,632
10% S&A				\$3,045,088
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$38,063,603

TABLE IV - 18 (CONT)

 KEARNY POINT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS (W/PILE FOUND.)	335	C.F.S.	\$5,040	\$1,688,400
	349	C.F.S.	\$5,000	\$1,745,000
TOTAL DIRECT COST				\$3,433,400
20% CONTINGENCIES				\$686,680
SUBTOTAL				\$4,120,080
15% E&D				\$618,012
10% S&A				\$412,008
TOTAL COSTS: 13. PUMPING PLANTS				\$5,150,100
TOTAL CONSTRUCTION COSTS				\$43,213,703
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
KEARNY				
TEMPORARY EASEMENT RIGHTS	20.66	AC.	\$4,000	\$82,636
PERMANENT EASEMENT RIGHTS	94.36	AC.	\$40,000	\$3,774,400
ESTIMATED DIRECT COST				\$3,857,036
15% CONTINGENCIES				\$578,555
SUBTOTAL				\$4,435,591
3% PLANNING & SURVEYS				\$133,068
2% APPRAISAL & ADMIN.				\$88,712
TOTAL COSTS: 01. LANDS AND DAMAGES				\$4,657,371
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
				\$4,657,371
TOTAL PROJECT FIRST COST: (JUNE '86)				\$47,871,073
(OCTOBER '86)				\$48,435,952

TABLE IV - 19

DOREMUS AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$130,000
BEAUTIFICATION	-	JOB	L.S.	\$75,000
LEVEES (POOR FOUND.):				
@ 5.0' HIGH	190	L.F.	\$137	\$26,030
@ 7.0' HIGH	280	L.F.	\$200	\$56,000
@ 8.0' HIGH	380	L.F.	\$233	\$88,540
@ 9.0' HIGH	1,550	L.F.	\$259	\$401,450
FLOODWALLS (W/PILES):				
@ 7.0' HIGH : T-2 TYPE	100	L.F.	\$765	\$76,500
@ 9.0' HIGH : T-2 TYPE	110	L.F.	\$835	\$91,850
@ 10.0' HIGH : T-2 TYPE	1,490	L.F.	\$890	\$1,326,100
@ 15.0' HIGH : L TYPE	210	L.F.	\$1,400	\$294,000
SWING GATES (W/PILES):				
30' LONG				
@ 7.0' HIGH	2	EA.	\$125,000	\$250,000
@ 9.0' HIGH	2	EA.	\$150,000	\$300,000
@ 10.0' HIGH	2	EA.	\$160,000	\$320,000
TOTAL DIRECT COST				\$3,435,470
20% CONTINGENCIES				\$687,094
SUBTOTAL				\$4,122,564
15% E&D				\$618,385
10% S&A				\$412,256
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$5,153,205

TABLE IV - 19 (CONT)

DOREMUS AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS (W/PILE FOUND.)	253	C.F.S.	\$5,390	\$1,364,000
	253	C.F.S.	\$5,390	\$1,364,000
TOTAL DIRECT COST				\$2,728,000
20% CONTINGENCIES				\$545,600
SUBTOTAL				\$3,273,600
15% E&D				\$491,040
10% S&A				\$327,360
TOTAL COSTS: 13. PUMPING PLANTS				\$4,092,000
TOTAL CONSTRUCTION COSTS				\$9,245,205
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
NEWARK				
TEMPORARY EASEMENT RIGHTS	2.73	AC.	\$4,500	\$12,263
PERMANENT EASEMENT RIGHTS	5.77	AC.	\$45,000	\$259,695
ESTIMATED DIRECT COST				\$271,958
15% CONTINGENCIES				\$40,794
SUBTOTAL				\$312,751
3% PLANNING & SURVEYS				\$9,383
2% APPRAISAL & ADMIN.				\$6,255
TOTAL COSTS: 01. LANDS AND DAMAGES				\$328,389
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$328,389
TOTAL PROJECT FIRST COST: (JUNE '86)				\$9,573,594
(OCTOBER '86)				\$9,686,562

TABLE IV - 20

TURNPIKE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$30,000
BEAUTIFICATION	-	JOB	L.S.	\$25,000
LEVEES (POOR FOUND.):				
@ 4.0' HIGH	160	L.F.	\$113	\$18,080
@ 6.0' HIGH	370	L.F.	\$167	\$61,790
@ 7.0' HIGH	420	L.F.	\$200	\$84,000
@ 8.0' HIGH	980	L.F.	\$233	\$228,340
@ 15.0' HIGH	100	L.F.	\$449	\$44,900
FLOODWALLS (W/PILES):				
@ 7.0' HIGH T-2 TYPE	410	L.F.	\$765	\$313,650
@ 9.0' HIGH T-2 TYPE	180	L.F.	\$835	\$150,300
INTERIOR DRAINAGE:				
CLEARING	23	AC.	\$2,000	\$46,000
EXCAVATION, STRIPPING	36345	C.Y.	\$3	\$109,035
EXCAVATION, COMMON	27259	C.Y.	\$6	\$163,554
TOPSOIL & SEEDING	23	AC.	\$8,000	\$184,000
OUTLETS	2	EA.	\$7,000	\$14,000
24" DIA. A.D. GATE	1	EA.	\$3,500	\$3,500
24" DIA. SLUICE GATE	1	EA.	\$8,000	\$8,000
24" DIA. R.C.P.	100	L.F.	\$30	\$3,000
TOTAL DIRECT COST				\$1,487,149
20% CONTINGENCIES				\$297,430
SUBTOTAL				\$1,784,579
15% E&D				\$267,687
10% S&A				\$178,458
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$2,230,724
TOTAL CONSTRUCTION COSTS				\$2,230,724

TABLE IV - 20 (CONT)

TURNPIKE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
NEWARK				
TEMPORARY EASEMENT RIGHTS	2.02	AC.	\$4,500	\$9,068
PERMANENT EASEMENT RIGHTS	27.26	AC.	\$45,000	\$1,226,700
ESTIMATED DIRECT COST				\$1,235,768
15% CONTINGENCIES				\$185,365
SUBTOTAL				\$1,421,133
3% PLANNING & SURVEYS				\$42,634
2% APPRAISAL & ADMIN.				\$28,423
TOTAL COSTS: 01. LANDS AND DAMAGES				\$1,492,189
02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$5,000
ROAD RELOCATION:				
ACCESS ROAD	500	L.F.	\$138	\$69,000
TOTAL DIRECT COST				\$74,000
20% CONTINGENCIES				\$14,800
SUBTOTAL				\$88,800
15% E&D				\$13,320
10% S&A				\$8,880
TOTAL COSTS: 02. RELOCATIONS				\$111,000
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,603,189
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,833,913
(OCTOBER '86)				\$3,879,153

TABLE IV - 21

LISTER AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$135,000
BEAUTIFICATION	-	JOB	L.S.	\$100,000
LEVEES (POOR FOUND.):				
@ 4.0' HIGH	100	L.F.	\$113	\$11,300
@ 5.0' HIGH	1,100	L.F.	\$137	\$150,700
@ 6.0' HIGH	220	L.F.	\$167	\$36,740
@ 7.0' HIGH	1,870	L.F.	\$200	\$374,000
@ 9.0' HIGH	740	L.F.	\$259	\$191,660
@ 11.0' HIGH	900	L.F.	\$317	\$285,300
FLOODWALLS (W/PILES):				
@ 7.0' HIGH: T-2 TYPE	260	L.F.	\$765	\$198,900
@ 9.0' HIGH: T-2 TYPE	1,870	L.F.	\$835	\$1,561,450
@ 11.0' HIGH: T-2 TYPE	170	L.F.	\$950	\$161,500
@ 17.0' HIGH: L TYPE	610	L.F.	\$1,540	\$939,400
SWING GATES (W/PILES):				
30' LONG				
@ 6' HIGH	2	EA.	\$115,000	\$230,000
@ 7' HIGH	1	EA.	\$125,000	\$125,000
@ 9' HIGH	3	EA.	\$150,000	\$450,000
15' LONG				
@ 9' HIGH	1	EA.	\$60,000	\$60,000
TOTAL DIRECT COST				\$5,010,950
20% CONTINGENCIES				\$1,002,190
SUBTOTAL				\$6,013,140
15% E&D				\$901,971
10% S&A				\$601,314
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$7,516,425

TABLE IV - 21 (CONT)

LISTER AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATIONS (W/PILE FOUND.)	278	C.F.S.	\$5,270	\$1,465,000
	255	C.F.S.	\$5,380	\$1,372,000
	349	C.F.S.	\$5,000	\$1,745,000
TOTAL DIRECT COST				\$4,582,000
20% CONTINGENCIES				\$916,400
SUBTOTAL				\$5,498,400
15% E&D				\$824,760
10% S&A				\$549,840
TOTAL COSTS: 13. PUMPING PLANTS				\$6,873,000
TOTAL CONSTRUCTION COSTS				\$14,389,425
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
NEWARK				
TEMPORARY EASEMENT RIGHTS	5.09	AC.	\$4,500	\$22,905
PERMANENT EASEMENT RIGHTS	11.47	AC.	\$45,000	\$516,150
ESTIMATED DIRECT COST				\$539,055
15% CONTINGENCIES				\$80,858
SUBTOTAL				\$619,913
3% PLANNING & SURVEYS				\$18,597
2% APPRAISAL & ADMIN.				\$12,398
TOTAL COSTS: 01. LANDS AND DAMAGES				\$650,909
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$650,909
TOTAL PROJECT FIRST COST: (JUNE '86)				\$15,040,334
(OCTOBER '86)				\$15,217,810

TABLE IV - 22

SOUTH - 1ST. STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$135,000
BEAUTIFICATION	-	JOB	L.S.	\$75,000
LEVEES:				
@ 2.0' HIGH	100	L.F.	\$39	\$3,900
@ 7.0' HIGH	930	L.F.	\$104	\$96,720
@ 8.0' HIGH	940	L.F.	\$124	\$116,560
@ 9.0' HIGH	640	L.F.	\$137	\$87,680
@ 10.0' HIGH	320	L.F.	\$156	\$49,920
@ 11.0' HIGH	200	L.F.	\$169	\$33,800
FLOODWALLS:				
@ 7.0' HIGH : T-2 TYPE	910	L.F.	\$515	\$468,650
@ 9.0' HIGH : T-2 TYPE	1,890	L.F.	\$585	\$1,105,650
REMOVE BUILDING	-	JOB	L.S.	\$2,500
SWING GATES:				
15' LONG				
7' HIGH	2	EA.	\$43,000	\$86,000
9' HIGH	1	EA.	\$50,000	\$50,000
30' LONG				
9' HIGH	2	EA.	\$103,000	\$206,000
45' LONG				
6' HIGH	1	EA.	\$137,000	\$137,000
60' LONG				
4' HIGH	1	EA.	\$172,000	\$172,000
TOTAL DIRECT COST				\$2,175,380
20% CONTINGENCIES				\$435,076
SUBTOTAL				\$2,610,456
15% E&D				\$391,568
10% S&A				\$261,046
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$3,263,070

TABLE - 22 (CONT)

SOUTH - 1ST. STREET

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
13. PUMPING PLANTS:				
PUMP STATIONS	200	C.F.S.	\$4,985	\$997,000
	257	C.F.S.	\$4,665	\$1,198,905
TOTAL DIRECT COST				\$2,195,905
20% CONTINGENCIES				\$439,181
SUBTOTAL				\$2,635,086
15% E&D				\$395,263
10% S&A				\$263,509
TOTAL COSTS: 13. PUMPING PLANTS				\$3,293,858
TOTAL CONSTRUCTION COSTS				\$6,556,928
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
HARRISON				
TEMPORARY EASEMENT RIGHTS	3.60	AC.	\$6,000	\$21,600
PERMANENT EASEMENT RIGHTS	8.09	AC.	\$35,000	\$283,150
BUILDING ACQUISITION	-	JOB	L.S.	\$25,000
ESTIMATED DIRECT COST				\$329,750
15% CONTINGENCIES				\$49,463
SUBTOTAL				\$379,213
3% PLANNING & SURVEYS				\$11,376
2% APPRAISAL & ADMIN.				\$7,584
TOTAL COSTS: 01. LANDS AND DAMAGES				\$398,173
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$398,173
TOTAL PROJECT FIRST COST: (JUNE '86)				\$6,955,101
(OCTOBER '86)				\$7,037,171

TABLE IV - 23

PINCH BROOK SYSTEM

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$15,000
PLANTING	-	JOB	L.S.	\$10,000
LEVEES:				
@ 1.0' HIGH	301	L.F.	\$29	\$8,729
@ 2.0' HIGH	249	L.F.	\$39	\$9,711
@ 3.0' HIGH	606	L.F.	\$46	\$27,876
@ 4.0' HIGH	376	L.F.	\$65	\$24,440
@ 5.0' HIGH	418	L.F.	\$78	\$32,604
@ 6.0' HIGH	60	L.F.	\$98	\$5,880
@ 7.0' HIGH	117	L.F.	\$104	\$12,168
@ 8.0' HIGH	57	L.F.	\$124	\$7,068
@ 9.0' HIGH	100	L.F.	\$137	\$13,700
@ 10.0' HIGH	43	L.F.	\$156	\$6,708
@ 11.0' HIGH	196	L.F.	\$169	\$33,124
@ 12.0' HIGH	319	L.F.	\$189	\$60,291
@ 13.0' HIGH	335	L.F.	\$202	\$67,670
@ 14.0' HIGH	193	L.F.	\$221	\$42,653
FLOODWALLS:				
@ 12.0' HIGH: T-2 TYPE	200	L.F.	\$750	\$150,000
INTERIOR DRAINAGE:				
CLEARING	8	AC.	\$2,000	\$16,000
EXCAVATION, STRIPPING	11664	C.Y.	\$3	\$29,160
EXCAVATION, COMMON	11664	C.Y.	\$6	\$69,984
TOPSOIL & SEEDING	8	AC.	\$8,000	\$64,000
OUTLETS	2	EA.	\$7,000	\$14,000
24" DIA. A. D. GATE	1	EA.	\$3,500	\$3,500
24" DIA. SLUICE GATE	1	EA.	\$8,000	\$8,000
24" DIA. R.C.P.	100	L.F.	\$30	\$3,000
4' HIGH CHAIN LINK FENCE	2600	L.F.	\$18	\$46,800
TOTAL DIRECT COST				\$782,066
20% CONTINGENCIES				\$156,413
SUBTOTAL				\$938,479
15% E&D				\$140,772
10% S&A				\$93,848
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$1,173,099
TOTAL CONSTRUCTION COSTS				\$1,173,099

TABLE IV - 23 (CONT)

PINCH BROOK SYSTEM

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
EAST HANOVER				
TEMPORARY EASEMENT RIGHTS	2.33	AC.	\$6,000	\$13,980
PERMANENT EASEMENT RIGHTS	13.45	AC.	\$60,000	\$807,000
ESTIMATED DIRECT COST				\$820,980
15% CONTINGENCIES				\$123,147
SUBTOTAL				\$944,127
3% PLANNING & SURVEYS				\$28,324
2% APPRAISAL & ADMIN.				\$18,883
TOTAL COSTS: 01. LANDS AND DAMAGES				\$991,333
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$991,333
TOTAL PROJECT FIRST COST: (JUNE '86)				\$2,164,432
(OCTOBER '86)				\$2,189,973

TABLE IV - 24

 PASSAIC RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
MOB. & DE-MOB.	-	JOB	L.S.	\$60,000
BEAUTIFICATION	-	JOB	L.S.	\$40,000
SITE CLEARING	4	AC.	\$2,000	\$8,000
CHANNEL EXCAVATION	262,000	C.Y.	\$10	\$2,620,000
CHANNEL LINING	30,000	S.Y.	\$4	\$120,000
GREAT PIECE MEADOW WEIR:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$20,000
EXCAVATION	208	C.Y.	\$12	\$2,496
LEVEES:				
@ 2.0' HIGH	223	L.F.	\$39	\$8,697
@ 3.0' HIGH	74	L.F.	\$46	\$3,404
@ 4.0' HIGH	473	L.F.	\$65	\$30,745
BASCULE GATES:				
@ 13.75' HIGH X 100.0' WIDE	1	EA.	\$375,000	\$375,000
EQUIP. & LABOR	-	JOB	L.S.	\$40,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$65,000
GATE HOUSE	-	JOB	L.S.	\$25,000
CONCRETE:	37	C.Y.	\$400	\$14,800
WALLS	167	C.Y.	\$400	\$66,800
SLAB				
TEMP. SHEETING & COFFERDAMS	-	JOB	L.S.	\$60,000
DEWATERING	-	JOB	L.S.	\$25,000
TOTAL DIRECT COST				\$3,634,942
20% CONTINGENCIES				\$726,988
SUBTOTAL				\$4,361,930
15% E&D				\$654,290
10% S&A				\$436,193
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$5,452,413
TOTAL CONSTRUCTION COSTS				\$5,452,413

TABLE IV - 24 (CONT)

PASSAIC RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
PASSAIC COUNTY:				
WAYNE TWP.				
TEMPORARY EASEMENT RIGHTS	1.66	AC.	\$6,000	\$9,960
PERM. EASEMENT RIGHTS (UPLAND)	0.83	AC.	\$60,000	\$49,800
PERM. EASEMENT RIGHTS (RIVER)	12.40	AC.	\$10,000	\$124,000
ESSEX COUNTY:				
FAIRFIELD BORO.				
TEMPORARY EASEMENT RIGHTS	2.11	AC.	\$6,000	\$12,660
PERM. EASEMENT RIGHTS (UPLAND)	1.37	AC.	\$60,000	\$82,200
PERM. EASEMENT RIGHTS (RIVER)	13.77	AC.	\$10,000	\$137,700
MORRIS COUNTY				
LINCOLN PARK				
TEMPORARY EASEMENT RIGHTS	1.65	AC.	\$6,000	\$9,900
PERM. EASEMENT RIGHTS (UPLAND)	1.14	AC.	\$60,000	\$68,400
PERM. EASEMENT RIGHTS (RIVER)	10.33	AC.	\$10,000	\$103,300
ESTIMATED DIRECT COST				\$597,920
15% CONTINGENCIES				\$89,688
SUBTOTAL				\$687,608
3% PLANNING & SURVEYS				\$20,628
2% APPRAISAL & ADMIN.				\$13,752
TOTAL COSTS: 01. LANDS AND DAMAGES				\$721,988

TABLE IV - 24 (CONT)

PASSAIC RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$35,000
ROAD RAISINGS:				
CAMP ROAD				
2 LANES @ 2.0' HIGH	420	L.F.	\$275	\$115,500
UTILITY RELOCATION:				
TWO 20" WATER MAINS	660	L.F.	\$800	\$528,000
TOTAL DIRECT COST				\$678,500
20% CONTINGENCIES				\$135,700
SUBTOTAL				\$814,200
15% E&D				\$122,130
10% S&A				\$81,420
TOTAL COSTS: 02. RELOCATIONS				\$1,017,750
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,739,738
TOTAL PROJECT FIRST COST: (JUNE '86)				\$7,192,151
(OCTOBER '86)				\$7,277,019

TABLE IV - 25

PASSAIC RIVER SYSTEM #2A

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$125,000
BEAUTIFICATION	-	JOB	L.S.	\$100,000
LEVEES:				
@ 1.0' HIGH	142	L.F.	\$29	\$4,118
@ 2.0' HIGH	298	L.F.	\$39	\$11,622
@ 3.0' HIGH	368	L.F.	\$46	\$16,928
@ 4.0' HIGH	471	L.F.	\$65	\$30,615
@ 5.0' HIGH	778	L.F.	\$78	\$60,684
@ 6.0' HIGH	1,493	L.F.	\$98	\$146,314
@ 7.0' HIGH	1,978	L.F.	\$104	\$205,712
@ 8.0' HIGH	3,198	L.F.	\$124	\$396,552
@ 9.0' HIGH	3,213	L.F.	\$137	\$440,181
@ 10.0' HIGH	3,037	L.F.	\$156	\$473,772
@ 11.0' HIGH	2,176	L.F.	\$169	\$367,744
@ 12.0' HIGH	1,408	L.F.	\$189	\$266,112
@ 13.0' HIGH	883	L.F.	\$202	\$178,366
FLOODWALLS:				
@ 6.0' HIGH	25	L.F.	\$475	\$11,875
@ 7.0' HIGH	117	L.F.	\$515	\$60,255
@ 8.0' HIGH	201	L.F.	\$550	\$110,550
@ 9.0' HIGH	337	L.F.	\$585	\$197,145
@ 10.0' HIGH	550	L.F.	\$640	\$352,000
BLOCKING CULVERTS	11	EA.	\$5,000	\$55,000
RELOCATION OF DEEPAVAL BK.:				
EXCAVATION	57,000	C.Y.	\$6	\$342,000
CHANNEL LINING	32,000	S.Y.	\$4	\$128,000
INTERIOR DRAINAGE:				
CLEARING	403	AC.	\$2,000	\$806,000
EXCAVATION, STRIPPING	763,153	C.Y.	\$3	\$2,289,459
EXCAVATION, COMMON	1,123,991	C.Y.	\$6	\$6,743,946
TOPSOIL & SEEDING	403	AC.	\$8,000	\$3,224,000
OUTLETS	32	EA.	\$7,000	\$224,000
24" DIA. A.D. GATE	4	EA.	\$3,500	\$14,000
30" DIA. A.D. GATE	6	EA.	\$4,000	\$24,000
36" DIA. A.D. GATE	2	EA.	\$5,000	\$10,000
24" DIA. A.D. GATE	4	EA.	\$8,000	\$32,000
30" DIA. A.D. GATE	6	EA.	\$9,000	\$54,000
36" DIA. A.D. GATE	2	EA.	\$15,000	\$30,000
BOX CULVERT (2' X 4')	1,200	L.F.	\$150	\$180,000
2' X 4' A.D. GATE	4	EA.	\$7,000	\$28,000
2' X 4' SLUICE GATE	4	EA.	\$16,500	\$66,000
4' HIGH CHAIN LINK FENCE	34,750	L.F.	\$18	\$625,500

TABLE IV - 25 (CONT)

PASSAIC RIVER SYSTEM #2A

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
24" DIA. R.C.P.	720	L.F.	\$30	\$21,600
30" DIA. R.C.P.	2,750	L.F.	\$40	\$110,000
36" DIA. R.C.P.	1,000	L.F.	\$55	\$55,000
TOTAL DIRECT COST				\$18,618,050
20% CONTINGENCIES				\$3,723,610
SUBTOTAL				\$22,341,660
15% E&D				\$3,351,249
10% S&A				\$2,234,166
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$27,927,075
TOTAL CONSTRUCTION COSTS				\$27,927,075
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
FAIRFIELD BORO.				
TEMPORARY EASEMENT RIGHTS	15.27	AC.	\$6,000	\$91,620
PERMANENT EASEMENT RIGHTS	78.69	AC.	\$60,000	\$4,721,400
WEST CALDWELL BORO.				
TEMPORARY EASEMENT RIGHTS	1.12	AC.	\$6,000	\$6,720
PERMANENT EASEMENT RIGHTS	2.88	AC.	\$60,000	\$172,800
ESTIMATED DIRECT COST				\$4,813,020
15% CONTINGENCIES				\$721,953
SUBTOTAL				\$5,534,973
3% PLANNING & SURVEYS				\$166,049
2% APPRAISAL & ADMIN.				\$110,699
TOTAL COSTS: 01. LANDS AND DAMAGES				\$5,811,722

TABLE IV - 25 (CONT)

PASSAIC RIVER SYSTEM #2A

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/> 02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JCB	L.S.	\$1,500
ROAD RAISINGS:				
BLOOMFIELD AVE.				
2 LANES @ 3.3' HIGH	100	L.F.	\$340	\$34,000
TOTAL DIRECT COST				\$35,500
20% CONTINGENCIES				\$7,100
SUBTOTAL				\$42,600
15% E&D				\$6,390
10% S&A				\$4,260
TOTAL COSTS: 02. RELOCATIONS				\$53,250
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$5,864,972
TOTAL PROJECT FIRST COST: (JUNE '86)				\$33,792,047
(OCTOBER '86)				\$34,190,793

TABLE IV - 26

 PASSAIC RIVER SYSTEM #2C

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$40,000
BEAUTIFICATION	-	JOB	L.S.	\$30,000
LEVEES:				
@ 1.0' HIGH	93	L.F.	\$29	\$2,697
@ 2.0' HIGH	154	L.F.	\$39	\$6,006
@ 3.0' HIGH	333	L.F.	\$46	\$15,318
@ 4.0' HIGH	680	L.F.	\$65	\$44,200
@ 5.0' HIGH	300	L.F.	\$78	\$23,400
@ 6.0' HIGH	593	L.F.	\$98	\$58,114
@ 7.0' HIGH	294	L.F.	\$104	\$30,576
@ 8.0' HIGH	783	L.F.	\$124	\$97,092
@ 9.0' HIGH	504	L.F.	\$137	\$69,048
@ 10.0' HIGH	703	L.F.	\$156	\$109,668
@ 11.0' HIGH	217	L.F.	\$169	\$36,673
@ 12.0' HIGH	206	L.F.	\$189	\$38,934
FLOODWALLS:				
@ 7.0' HIGH: T TYPE	287	L.F.	\$515	\$147,805
@ 8.0' HIGH: T TYPE	267	L.F.	\$545	\$145,515
@ 9.0' HIGH: T TYPE	124	L.F.	\$585	\$72,540
@ 10.0' HIGH: T TYPE	173	L.F.	\$640	\$110,720
@ 11.0' HIGH: T TYPE	100	L.F.	\$700	\$70,000
INTERIOR DRAINAGE:				
CLEARING	7	AC.	\$2,000	\$14,000
EXCAVATION, STRIPPING	11,293	C.Y.	\$3	\$33,879
EXCAVATION, COMMON	33,880	C.Y.	\$6	\$203,280
TOPSOIL & SEEDING	7	AC.	\$8,000	\$56,000
OUTLETS	2	EA.	\$7,000	\$14,000
24" DIA. A.D. GATE	1	EA.	\$3,500	\$3,500
24" DIA. SLUICE GATE	1	EA.	\$8,000	\$8,000
24" DIA. R.C.P.	50	L.F.	\$30	\$1,500
4' HIGH CHAIN LINK FENCE	2,750	L.F.	\$18	\$49,500
TOTAL DIRECT COST				\$1,531,965
20% CONTINGENCIES				\$306,393
SUBTOTAL				\$1,838,358
15% E&D				\$275,754
10% S&A				\$183,836
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$2,297,948
TOTAL CONSTRUCTION COSTS				\$2,297,948

TABLE IV - 26 (CONT)

PASSAIC RIVER SYSTEM #2C

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
<hr/>				
FAIRFIELD BORO.				
TEMPORARY EASEMENT RIGHTS	1.47	AC.	\$6,000	\$8,820
PERMANENT EASEMENT RIGHTS	2.89	AC.	\$60,000	\$173,400
WEST CALDWELL BORO.				
TEMPORARY EASEMENT RIGHTS	2.32	AC.	\$6,000	\$13,920
PERMANENT EASEMENT RIGHTS	12.63	AC.	\$60,000	\$757,800
				<hr/>
ESTIMATED DIRECT COST				\$953,940
15% CONTINGENCIES				\$143,091
				<hr/>
SUBTOTAL				\$1,097,031
3% PLANNING & SURVEYS				\$32,911
2% APPRAISAL & ADMIN.				\$21,941
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$1,151,883
				<hr/>
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,151,883
				<hr/>
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,449,830
(OCTOBER '86)				\$3,490,538

TABLE IV - 27

 ROCKAWAY RIVER SYSTEM #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$25,000
BEAUTIFICATION	-	JOB	L.S.	\$15,000
LEVEES:				
@ 1.0' HIGH	53	L.F.	\$29	\$1,537
@ 2.0' HIGH	24	L.F.	\$39	\$936
@ 3.0' HIGH	198	L.F.	\$46	\$9,108
@ 4.0' HIGH	217	L.F.	\$65	\$14,105
@ 5.0' HIGH	345	L.F.	\$78	\$26,910
@ 6.0' HIGH	185	L.F.	\$98	\$18,130
@ 7.0' HIGH	250	L.F.	\$104	\$26,000
@ 8.0' HIGH	195	L.F.	\$124	\$24,180
@ 9.0' HIGH	341	L.F.	\$137	\$46,717
@ 10.0' HIGH	464	L.F.	\$156	\$72,384
@ 11.0' HIGH	480	L.F.	\$169	\$81,120
@ 12.0' HIGH	443	L.F.	\$189	\$83,727
@ 13.0' HIGH	443	L.F.	\$202	\$89,486
INTERIOR DRAINAGE:				
CLEARING	85	AC.	\$2,000	\$170,000
EXCAVATION, STRIPPING	135841	C.Y.	\$3	\$407,523
EXCAVATION, COMMON	204004	C.Y.	\$6	\$1,224,024
TOPSOIL & SEEDING	85	AC.	\$8,000	\$680,000
OUTLETS	12	EA.	\$7,000	\$84,000
36" DIA. A.D. GATE	6	EA.	\$5,000	\$30,000
36" DIA. SLUICE GATE	6	EA.	\$15,000	\$90,000
36" DIA. R.C.P.	1350	L.F.	\$55	\$74,250
4' HIGH CHAIN LINK FENCE	15175	L.F.	\$18	\$273,150
TOTAL DIRECT COST				\$3,567,287
20% CONTINGENCIES				\$713,457
SUBTOTAL				\$4,280,744
15% E&D				\$642,112
10% S&A				\$428,074
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$5,350,931
TOTAL CONSTRUCTION COSTS				\$5,350,931

TABLE IV - 27 (CONT)

ROCKAWAY RIVER SYSTEM #1

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
<hr/>				
PARSIPPANY TROY HILLS				
TEMPORARY EASEMENT RIGHTS	2.50	AC.	\$6,500	\$16,276
PERMANENT EASEMENT RIGHTS	88.69	AC.	\$65,000	\$5,764,850
				<hr/>
ESTIMATED DIRECT COST				\$5,781,126
15% CONTINGENCIES				\$867,169
				<hr/>
SUBTOTAL				\$6,648,295
3% PLANNING & SURVEYS				\$199,449
2% APPRAISAL & ADMIN.				\$132,966
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$6,980,710
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$6,980,710
TOTAL PROJECT FIRST COST: (JUNE '86)				\$12,331,640
(OCTOBER '86)				\$12,477,153

TABLE IV - 28

 ROCKAWAY RIVER SYSTEM #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$25,000
BEAUTIFICATION	-	JOB	L.S.	\$20,000
EXCAVATION	5,417	C.Y.	\$6	\$32,502
LEVEES:				
@ 1.0' HIGH	33	L.F.	\$29	\$957
@ 2.0' HIGH	160	L.F.	\$39	\$6,240
@ 3.0' HIGH	33	L.F.	\$46	\$1,518
@ 4.0' HIGH	143	L.F.	\$65	\$9,295
@ 5.0' HIGH	187	L.F.	\$78	\$14,586
@ 6.0' HIGH	399	L.F.	\$98	\$39,102
@ 7.0' HIGH	644	L.F.	\$104	\$66,976
@ 8.0' HIGH	1,164	L.F.	\$124	\$144,336
@ 9.0' HIGH	800	L.F.	\$137	\$109,600
@ 10.0' HIGH	764	L.F.	\$156	\$119,184
@ 11.0' HIGH	344	L.F.	\$169	\$58,136
@ 12.0' HIGH	369	L.F.	\$189	\$69,741
@ 13.0' HIGH	200	L.F.	\$202	\$40,400
@ 14.0' HIGH	50	L.F.	\$221	\$11,050
@ 15.0' HIGH	50	L.F.	\$241	\$12,050
INTERIOR DRAINAGE:				
CLEARING	38	AC.	\$2,000	\$76,000
EXCAVATION, STRIPPING	61,306	C.Y.	\$3	\$183,918
EXCAVATION, COMMON	65,485	C.Y.	\$6	\$392,910
TOPSOIL & SEEDING	38	AC.	\$8,000	\$304,000
OUTLETS	8	EA.	\$7,000	\$56,000
36" DIA. A.D. GATE	1	EA.	\$5,000	\$5,000
36" DIA. SLUICE GATE	1	EA.	\$15,000	\$15,000
36" DIA. R.C.P.	2,000	L.F.	\$55	\$110,000
42" DIA. R.C.P.	7,200	L.F.	\$65	\$468,000
48" DIA. R.C.P.	3,700	L.F.	\$80	\$296,000
4' HIGH CHAIN LINK FENCE	9,250	L.F.	\$18	\$166,500
TOTAL DIRECT COST				\$2,854,001
20% CONTINGENCIES				\$570,800
SUBTOTAL				\$3,424,801
15% E&D				\$513,720
10% S&A				\$342,480
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$4,281,002

 ROCKAWAY RIVER SYSTEM #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>13. PUMPING PLANTS:</u>				
PUMP STATION	148	C.F.S.	\$5,330	\$788,840
TOTAL DIRECT COST				\$788,840
20% CONTINGENCIES				\$157,768
SUBTOTAL				\$946,608
15% E&D				\$141,991
10% S&A				\$94,661
TOTAL COSTS: 13. PUMPING PLANTS				\$1,183,260
TOTAL CONSTRUCTION COSTS				\$5,464,262
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<u>01. LANDS AND DAMAGES:</u>				
MONIVILLE				
TEMPORARY EASEMENT RIGHTS	3.68	AC.	\$6,000	\$22,080
PERMANENT EASEMENT RIGHTS	47.92	AC.	\$60,000	\$2,875,200
ESTIMATED DIRECT COST				\$2,897,280
15% CONTINGENCIES				\$434,592
SUBTOTAL				\$3,331,872
3% PLANNING & SURVEYS				\$99,956
2% APPRAISAL & ADMIN.				\$66,637
TOTAL COSTS: 01. LANDS AND DAMAGES				\$3,498,466

TABLE IV - 28 (CONT)

ROCKAWAY RIVER SYSTEM #2

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/> 02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
ROAD RAISINGS:				
CHANGE BRIDGE RD.				
4 LANES @ 8.0' HIGH	240	L.F.	\$465	\$111,600
CHANGE BRIDGE RD.				
4 LANES @ 5.6' HIGH	160	L.F.	\$410	\$65,600
BARNET RD.				
2 LANES @ 0.6' HIGH	30	L.F.	\$235	\$7,050
TOTAL DIRECT COST				\$234,250
20% CONTINGENCIES				\$46,850
SUBTOTAL				\$281,100
15% E&D				\$42,165
10% S&A				\$28,110
TOTAL COSTS: 02. RELOCATIONS				\$351,375
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$3,849,841
TOTAL PROJECT FIRST COST: (JUNE '86)				\$9,314,102
(OCTOBER '86)				\$9,424,009

TABLE IV - 29

ROCKAWAY RIVER SYSTEM #3

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$65,000
BEAUTIFICATION	-	JOB	L.S.	\$35,000
EXCAVATION	9,859	C.Y.	\$6	\$59,154
LEVEES:				
@ 1.0' HIGH	6	L.F.	\$29	\$174
@ 2.0' HIGH	27	L.F.	\$39	\$1,053
@ 3.0' HIGH	34	L.F.	\$46	\$1,564
@ 4.0' HIGH	33	L.F.	\$65	\$2,145
@ 5.0' HIGH	114	L.F.	\$78	\$8,892
@ 6.0' HIGH	108	L.F.	\$98	\$10,584
@ 7.0' HIGH	206	L.F.	\$104	\$21,424
@ 8.0' HIGH	540	L.F.	\$124	\$66,960
@ 9.0' HIGH	704	L.F.	\$137	\$96,448
@ 10.0' HIGH	1,205	L.F.	\$156	\$187,980
@ 11.0' HIGH	1,530	L.F.	\$169	\$258,570
@ 12.0' HIGH	1,303	L.F.	\$189	\$246,267
@ 13.0' HIGH	200	L.F.	\$202	\$40,400
@ 14.0' HIGH	310	L.F.	\$221	\$68,510
INTERIOR DRAINAGE:				
CLEARING	26	AC.	\$2,000	\$52,000
EXCAVATION, STRIPPING	30,976	C.Y.	\$3	\$92,928
EXCAVATION, COMMON	95,278	C.Y.	\$6	\$571,668
TOPSOIL & SEEDING	26	AC.	\$8,000	\$208,000
OUTLETS	3	EA.	\$7,000	\$21,000
36" DIA. A.D. GATE	1	EA.	\$5,000	\$5,000
36" DIA. SLUICE GATE	1	EA.	\$15,000	\$15,000
36" DIA. R.C.P.	150	L.F.	\$55	\$8,250
72" DIA. R.C.P.	2,800	L.F.	\$175	\$490,000
4' HIGH CHAIN LINK FENCE	5,750	L.F.	\$18	\$103,500
TOTAL DIRECT COST				\$2,737,471
20% CONTINGENCIES				\$547,494
SUBTOTAL				\$3,284,965
15% E&D				\$492,745
10% S&A				\$328,497
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$4,106,207

TABLE IV - 29 (CONT)

 ROCKAWAY RIVER SYSTEM #3

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
13. PUMPING PLANTS:				
<hr/>				
PUMP STATION	188	C.F.S.	\$5,030	\$945,640
TOTAL DIRECT COST				\$945,640
20% CONTINGENCIES				\$189,128
				<hr/>
SUBTOTAL				\$1,134,768
15% E&D				\$170,215
10% S&A				\$113,477
				<hr/>
TOTAL COSTS: 13. PUMPING PLANTS				\$1,418,460
				<hr/>
TOTAL CONSTRUCTION COSTS				\$5,524,667
 LANDS, EASEMENTS, RIGHT OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<hr/>				
01. LANDS AND DAMAGES:				
<hr/>				
PARSIPPANY TROY HILLS				
TEMPORARY EASEMENT RIGHTS	4.36	AC.	\$6,500	\$28,340
PERMANENT EASEMENT RIGHTS	39.36	AC.	\$65,000	\$2,558,400
				<hr/>
ESTIMATED DIRECT COST				\$2,586,740
15% CONTINGENCIES				\$388,011
				<hr/>
SUBTOTAL				\$2,974,751
3% PLANNING & SURVEYS				\$89,243
2% APPRAISAL & ADMIN.				\$59,495
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$3,123,489

TABLE IV - 29 (CONT)

ROCKAWAY RIVER SYSTEM #3

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<u>02. RELOCATIONS:</u>				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$2,000
ROAD RAISINGS:				
LAKE SHORE DRIVE				
2 LANES @ 2.6' HIGH	85	L.F.	\$235	\$19,975
TOTAL DIRECT COST				\$21,975
20% CONTINGENCIES				\$4,395
SUBTOTAL				\$26,370
15% E&D				\$3,956
10% S&A				\$2,637
TOTAL COSTS: 02. RELOCATIONS				\$32,963
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$3,156,451
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,681,118
(OCTOBER '86)				\$3,783,555

TABLE IV - 30

PASSAIC RIVER SYSTEM #10

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$35,000
BEAUTIFICATION	-	JOB	L.S.	\$30,000
LEVEES:				
@ 1.0' HIGH	31	L.F.	\$29	\$899
@ 2.0' HIGH	55	L.F.	\$39	\$2,145
@ 3.0' HIGH	151	L.F.	\$46	\$6,946
@ 4.0' HIGH	142	L.F.	\$65	\$9,230
@ 5.0' HIGH	321	L.F.	\$78	\$25,038
@ 6.0' HIGH	286	L.F.	\$98	\$28,028
@ 7.0' HIGH	714	L.F.	\$104	\$74,256
@ 8.0' HIGH	506	L.F.	\$124	\$62,744
@ 9.0' HIGH	703	L.F.	\$137	\$96,311
@ 10.0' HIGH	433	L.F.	\$156	\$67,548
@ 11.0' HIGH	554	L.F.	\$169	\$93,626
@ 12.0' HIGH	356	L.F.	\$189	\$67,284
@ 13.0' HIGH	248	L.F.	\$202	\$50,096
INTERIOR DRAINAGE:				
CLEARING	19	AC.	\$2,000	\$38,000
EXCAVATION, STRIPPING	30556	C.Y.	\$3	\$91,668
EXCAVATION, COMMON	91668	C.Y.	\$6	\$550,008
TOPSOIL & SEEDING	19	AC.	\$8,000	\$152,000
OUTLETS	4	EA.	\$7,000	\$28,000
30" DIA. A.D. GATE	1	EA.	\$4,000	\$4,000
30" DIA. SLUICE GATE	1	EA.	\$9,000	\$9,000
30" DIA. R.C.P.	250	L.F.	\$40	\$10,000
36" DIA. A.D. GATE	1	EA.	\$5,000	\$5,000
36" DIA. SLUICE GATE	1	EA.	\$15,000	\$15,000
36" DIA. R.C.P.	400	L.F.	\$55	\$22,000
4' HIGH CHAIN LINK FENCE	6500	L.F.	\$18	\$117,000
TOTAL DIRECT COST				\$1,690,827
20% CONTINGENCIES				\$338,165
SUBTOTAL				\$2,028,992
15% E&D				\$304,349
10% S&A				\$202,899
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$2,536,241
TOTAL CONSTRUCTION COSTS				\$2,536,241

TABLE IV - 30 (CONT)

PASSAIC RIVER SYSTEM #10

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
LIVINGSTON				
TEMPORARY EASEMENT RIGHTS	3.11	AC.	\$6,000	\$18,660
PERMANENT EASEMENT RIGHTS	27.41	AC.	\$60,000	\$1,644,600
ESTIMATED DIRECT COST				\$1,663,260
15% CONTINGENCIES				\$249,469
SUBTOTAL				\$1,912,749
3% PLANNING & SURVEYS				\$57,362
2% APPRAISAL & ADMIN.				\$38,255
TOTAL COSTS: 01. LANDS AND DAMAGES				\$2,008,366
02. RELOCATIONS:				
MAINT. & PROT. OF TRAFFIC	-	JOB	L.S.	\$1,500
ROAD RAISING				
ACCESS ROAD	165	L.F.	\$275	\$45,375
TOTAL DIRECT COST				\$46,875
20% CONTINGENCIES				\$9,375
SUBTOTAL				\$56,250
15% E&D				\$8,438
10% S&A				\$5,625
TOTAL COSTS: 02. RELOCATIONS				\$70,313
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$2,078,699
TOTAL PROJECT FIRST COST: (JUNE '86)				\$4,614,939
(OCTOBER '86)				\$4,669,396

POMPTON RIVER FLOW RESTRICTOR

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROT. OF TRAFFIC	-	JOB	L.S.	\$25,000
EXCAVATION	27,075	C.Y.	\$12	\$324,900
REINFORCED CONCRETE	852	C.Y.	\$500	\$426,000
ROLLER GATES :				
@ 15.0' HIGH X 27.0' WIDE	4	EA.	\$200,000	\$800,000
EQUIP. & LABOR	-	JOB	L.S.	\$80,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$132,000
TEMP. SHEETING & COFFERDAMS	-	JOB	L.S.	\$150,000
STREAM DIV. & DEWATERING	-	JOB	L.S.	\$30,000
PROPOSED DAM EMBANKMENTS :				
SPILLWAY TO GARDEN PL.				
AVE. HT. = 4.5'	765	L.F.	\$72	\$55,080
SPILLWAY TO TIE OUT				
AVE. HT. = 6.5'	795	L.F.	\$100	\$79,500
SIDESLOPE FILL AROUND WALLS				
AVE. HT. = 7.0 '	500	L.F.	\$104	\$26,000
TOTAL DIRECT COST				\$2,128,480
20% CONTINGENCIES				\$425,696
SUBTOTAL				\$2,554,176
15% E&D				\$383,126
10% S&A				\$255,418
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$3,192,720
TOTAL CONSTRUCTION COSTS				\$3,192,720
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,192,720
(OCTOBER '86)				\$3,230,394

POMPTON RIVER DIVERSION WORKS ACCESS BASIN

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROT. OF TRAFFIC	-	JOB	L.S.	\$25,000
DEWATERING & PUMPING	-	JOB	L.S.	\$40,000
TEMP. SHEETING & COFFERDAMS	-	JOB	L.S.	\$360,000
EXCAVATION	74,165	C.Y.	\$6	\$444,990
REINFORCED CONCRETE	7,000	C.Y.	\$400	\$2,800,000
TOTAL DIRECT COST				\$3,669,990
20% CONTINGENCIES				\$733,998
SUBTOTAL				\$4,403,988
15% E&D				\$660,598
10% S&A				\$440,399
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$5,504,985
TOTAL CONSTRUCTION COSTS				\$5,504,985
TOTAL PROJECT FIRST COST: (JUNE '86)				\$5,504,985
(OCTOBER '86)				\$5,569,944

POMPTON GATED DIVERSION SPILLWAY

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
STREAM DIV. & DEWATERING	-	JOB	L.S.	\$75,000
BASCULE GATES :				
5.5' HIGH X 75.0' WIDE	5	EA.	\$200,000	\$1,000,000
EQUIP. & LABOR	-	JOB	L.S.	\$600,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$400,000
REINFORCED CONCRETE:				
PIERS	285	C.Y.	\$400	\$114,000
SPILLWAY	1,300	C.Y.	\$400	\$520,000
FOOTBRIDGE	69	C.Y.	\$400	\$27,600
FOOTBRIDGE RAILING	920	L.F.	\$12	\$11,040
TRASH RACKS:				
@ 5.5' HIGH X 75.0' WIDE	5	EA.	\$25,000	\$125,000
TOTAL DIRECT COST				\$2,922,640
20% CONTINGENCIES				\$584,528
SUBTOTAL				\$3,507,168
15% E&D				\$526,075
10% S&A				\$350,717
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$4,383,960
TOTAL CONSTRUCTION COSTS				\$4,383,960
TOTAL PROJECT FIRST COST: (JUNE '86)				\$4,383,960
(OCTOBER '86)				\$4,435,691

POMPTON MORNING GLORY SPILLWAY

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$20,000
EXCAVATION COMMON	4,242	C.Y.	\$6.	\$25,452
REINFORCED CONCRETE	4,317	C.Y.	\$400	\$1,726,800
TOTAL DIRECT COST				\$1,772,252
20% CONTINGENCIES				\$354,450
SUBTOTAL				\$2,126,702
15% E&D				\$319,005
10% S&A				\$212,670
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$2,658,378
TOTAL CONSTRUCTION COSTS				\$2,658,378
TOTAL PROJECT FIRST COST: (JUNE '86)				\$2,658,378
(OCTOBER '86)				\$2,689,747

TABLE IV - 35

RAMAPO RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$60,000
BEAUTIFICATION	-	JOB	L.S.	\$50,000
EXCAVATION	258,065	C.Y.	\$6	\$1,548,390
BRIDGE FOOTING PROTECTION :				
PATERSON-HAMBURG TPK.	-	JOB	L.S.	\$150,000
TOTAL DIRECT COST				\$1,808,390
20% CONTINGENCIES				\$361,678
SUBTOTAL				\$2,170,068
15% E&D				\$325,510
10% S&A				\$217,007
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$2,712,585
TOTAL CONSTRUCTION COSTS				\$2,712,585
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
WAYNE TWP.				
TEMPORARY EASEMENT RIGHTS	10.99	AC.	\$6,000	\$65,940
PERM. EASEMENT RIGHTS (UPLAND)	2.33	AC.	\$60,000	\$139,800
PERM. EASEMENT RIGHTS (RIVER)	15.80	AC.	\$10,000	\$158,000
POMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	1.93	AC.	\$5,500	\$10,615
PERM. EASEMENT RIGHTS (UPLAND)	2.33	AC.	\$55,000	\$128,150
PERM. EASEMENT RIGHTS (RIVER)	15.80	AC.	\$10,000	\$158,000
ESTIMATED DIRECT COST				\$660,505
15% CONTINGENCIES				\$99,076
SUBTOTAL				\$759,581
3% PLANNING & SURVEYS				\$22,787
2% APPRAISAL & ADMIN.				\$15,192
TOTAL COSTS: 01. LANDS AND DAMAGES				\$797,560
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$797,560
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,510,145
(OCTOBER '86)				\$3,551,564

TABLE IV - 36

SHORE ROAD

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
BEAUTIFICATION	-	JOB	L.S.	\$35,000
LEVEES (MODIFIED FOR SEEPAGE COND.):				
@ 1.0' HIGH	13	L.F.	\$29	\$377
@ 2.0' HIGH	13	L.F.	\$39	\$507
@ 3.0' HIGH	17	L.F.	\$64	\$1,088
@ 5.0' HIGH	24	L.F.	\$96	\$2,304
@ 6.0' HIGH	184	L.F.	\$116	\$21,344
@ 7.0' HIGH	1350	L.F.	\$127	\$171,450
@ 8.0' HIGH	1432	L.F.	\$147	\$210,504
@ 9.0' HIGH	1267	L.F.	\$160	\$202,720
@ 10.0' HIGH	100	L.F.	\$179	\$17,900
@ 11.0' HIGH	33	L.F.	\$192	\$6,336
@ 12.0' HIGH	67	L.F.	\$212	\$14,204
FLOODWALLS:				
@ 8.0' HIGH : T TYPE	1000	L.F.	\$547	\$547,000
@ 9.0' HIGH : L TYPE	200	L.F.	\$625	\$125,000
INTERIOR DRAINAGE:				
CLEARING	22	AC.	\$2,000	\$44,000
EXCAVATION, STRIPPING	34637	C.Y.	\$3	\$103,911
EXCAVATION, COMMON	96041	C.Y.	\$6	\$576,246
TOPSOIL & SEEDING	22	AC.	\$8,000	\$176,000
OUTLETS	6	EA.	\$7,000	\$42,000
36" DIA. A.D. GATE	1	EA.	\$5,000	\$5,000
36" DIA. SLUICE GATE	1	EA.	\$15,000	\$15,000
36" DIA. R.C.P.	700	L.F.	\$55	\$38,500
4' HIGH CHAIN LINK FENCE	7075	L.F.	\$18	\$127,350
TOTAL DIRECT COST				\$2,533,741
20% CONTINGENCIES				\$506,748
SUBTOTAL				\$3,040,489
15% E&D				\$456,073
10% S&A				\$304,049
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$3,800,612
TOTAL CONSTRUCTION COSTS				\$3,800,612

TABLE IV - 36 (CONT)

SHORE ROAD

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
WAYNE TWP.				
TEMPORARY EASEMENT RIGHTS	3.66	AC.	\$6,000	\$21,960
PERMANENT EASEMENT RIGHTS	31.61	AC.	\$60,000	\$1,896,600
ESTIMATED DIRECT COST				\$1,918,560
15% CONTINGENCIES				\$287,784
SUBTOTAL				\$2,206,344
3% PLANNING & SURVEYS				\$66,190
2% APPRAISAL & ADMIN.				\$44,127
TOTAL COSTS: 01.LANDS AND DAMAGES				\$2,316,661
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$2,316,661
TOTAL PROJECT FIRST COST: (JUNE '86)				\$6,117,273
(OCTOBER '86)				\$6,189,457

TABLE IV - 37

 PEQUANNOCK RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$120,000
BEAUTIFICATION	-	JOB	L.S.	\$100,000
STREAM DIV & DEWATERING	-	JOB	L.S.	\$90,000
EXCAVATION	778,544	C.Y.	\$6	\$4,671,264
CHANNEL LINING	95,850	S.Y.	\$4	\$383,400
RIPRAP (24")	27,466	C.Y.	\$40	\$1,098,640
BEDDING MATERIAL (6")	4,409	C.Y.	\$40	\$176,360
BRIDGE FOOTING PROTECTION :				
RIVERDALE RD. (PIER #1)	-	JOB	L.S.	\$55,000
PEQUANNOCK WEIR:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$30,000
EXCAVATION	350	C.Y.	\$12	\$4,200
BASCULE GATES:				
@ 16.5' HIGH X 85.0' WIDE	2	EA.	\$420,000	\$840,000
EQUIP. & LABOR	-	JOB	L.S.	\$45,000
PROFIT & OVERHEAD	-	JOB	L.S.	\$70,000
GATE HOUSE	-	JOB	L.S.	\$25,000
CONCRETE:				
WALLS	50	C.Y.	\$400	\$20,000
SLAB	285	C.Y.	\$400	\$114,000
TEMP. SHEETING & COFFERDAMS	-	JOB	L.S.	\$100,000
DEWATERING	-	JOB	L.S.	\$40,000
TOTAL DIRECT COST				\$7,982,864
20% CONTINGENCIES				\$1,596,573
SUBTOTAL				\$9,579,437
15% E&D				\$1,436,916
10% S&A				\$957,944
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$11,974,296
TOTAL CONSTRUCTION COST				\$11,974,296

TABLE IV - 37 (CONT)

 PEQUANNOCK RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LEERD)				
01. LANDS AND DAMAGES:				
MORRIS COUNTY:				
PEQUANNOCK TWP.				
TEMPORARY EASEMENT RIGHTS	11.47	AC.	\$5,000	\$57,350
PERM. EASEMENT RIGHTS (UPLAND)	1.93	AC.	\$6,000	\$11,580
PERM. EASEMENT RIGHTS (RIVER)	15.43	AC.	\$5,000	\$77,150
RIVERDALE BORO.				
TEMPORARY EASEMENT RIGHTS	2.18	AC.	\$6,000	\$13,080
PERM. EASEMENT RIGHTS (UPLAND)	1.17	AC.	\$60,000	\$70,200
PERM. EASEMENT RIGHTS (RIVER)	9.37	AC.	\$10,000	\$93,700
PASSAIC COUNTY:				
COMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	4.50	AC.	\$5,000	\$22,500
PERM. EASEMENT RIGHTS (UPLAND)	2.42	AC.	\$6,000	\$14,520
PERM. EASEMENT RIGHTS (RIVER)	19.35	AC.	\$5,000	\$96,750
WAYNE TWP.				
TEMPORARY EASEMENT RIGHTS	1.60	AC.	\$5,000	\$8,000
PERM. EASEMENT RIGHTS (UPLAND)	0.58	AC.	\$6,000	\$3,480
PERM. EASEMENT RIGHTS (RIVER)	4.67	AC.	\$5,000	\$23,350
ESTIMATED DIRECT COST				\$491,660
15% CONTINGENCIES				\$73,749
SUBTOTAL				\$565,409
3% PLANNING & SURVEYS				\$16,962
2% APPRAISAL & ADMIN.				\$11,308
TOTAL COSTS: 01. LANDS AND DAMAGES				\$593,679

TABLE IV - 37 (CONT)

PEQUANNOCK RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$15,000
UTILITY RELOCATION :				
72" PIPE TO BE REPLACED	320	L.F.	\$1,100	\$352,000
CONCRETE CASING	630	C.Y.	\$400	\$252,000
TOTAL DIRECT COST				\$619,000
20% CONTINGENCIES				\$123,800
SUBTOTAL				\$742,800
15% E&D				\$111,420
10% S&A				\$74,280
TOTAL COSTS: 02. RELOCATIONS				\$928,500
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,522,179
TOTAL PROJECT FIRST COST: (JUNE '86)				\$13,496,475
(OCTOBER '86)				\$13,655,734

TABLE IV - 38

STILES COURT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$8,000
BEAUTIFICATION	-	JOB	L.S.	\$6,000
LEVEES (MODIFIED FOR SEEPAGE COND.):				
@ 1.0' HIGH	390	L.F.	\$29	\$11,310
@ 2.0' HIGH	335	L.F.	\$39	\$13,065
@ 3.0' HIGH	216	L.F.	\$46	\$9,936
@ 4.0' HIGH	140	L.F.	\$83	\$11,620
@ 5.0' HIGH	327	L.F.	\$96	\$31,392
@ 6.0' HIGH	352	L.F.	\$116	\$40,832
INTERIOR DRAINAGE:				
CLEARING	3	AC.	\$2,000	\$6,000
EXCAVATION, STRIPPING	3340	C.Y.	\$3	\$10,020
EXCAVATION, COMMON	6680	C.Y.	\$6	\$40,080
TOPSOIL & SEEDING	3	AC.	\$8,000	\$24,000
OUTLETS	2	EA.	\$7,000	\$14,000
24" DIA. A.D. GATE	1	EA.	\$3,500	\$3,500
24" DIA. SLUICE GATE	1	EA.	\$8,000	\$8,000
24" DIA. R.C.P.	100	L.F.	\$30	\$3,000
TOTAL DIRECT COST				\$240,755
20% CONTINGENCIES				\$48,151
SUBTOTAL				\$288,906
15% E&D				\$43,336
10% S&A				\$28,891
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$361,133
TOTAL CONSTRUCTION COSTS				\$361,133

TABLE IV - 38 (CONT)

STILES COURT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
<hr/>				
PCOMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	1.21	AC.	\$5,500	\$6,655
PERMANENT EASEMENT RIGHTS	5.06	AC.	\$55,000	\$278,300
				<hr/>
ESTIMATED DIRECT COST				\$284,955
15% CONTINGENCIES				\$42,743
				<hr/>
SUBTOTAL				\$327,698
3% PLANNING & SURVEYS				\$9,831
2% APPRAISAL & ADMIN.				\$6,554
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$344,083
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$344,083
TOTAL PROJECT FIRST COST: (JUNE '86)				\$705,216
(OCTOBER '86)				\$713,537

TABLE IV - 39

 PEQUANNOCK - RAMAPO

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$80,000
BEAUTIFICATION	-	JOB	L.S.	\$70,000
LEVEES (MODIFIED FOR SEEPAGE COND.):				
@ 1.0' HIGH	55	L.F.	\$29	\$1,595
@ 2.0' HIGH	32	L.F.	\$39	\$1,248
@ 3.0' HIGH	77	L.F.	\$64	\$4,928
@ 4.0' HIGH	83	L.F.	\$83	\$6,889
@ 5.0' HIGH	227	L.F.	\$96	\$21,792
@ 6.0' HIGH	294	L.F.	\$116	\$34,104
@ 7.0' HIGH	906	L.F.	\$127	\$115,062
@ 8.0' HIGH	1504	L.F.	\$147	\$221,088
@ 9.0' HIGH	1746	L.F.	\$160	\$279,360
@ 10.0' HIGH	1603	L.F.	\$179	\$286,937
@ 11.0' HIGH	1023	L.F.	\$192	\$196,416
@ 12.0' HIGH	836	L.F.	\$212	\$177,232
@ 13.0' HIGH	454	L.F.	\$225	\$102,150
@ 14.0' HIGH	390	L.F.	\$244	\$95,160
FLOODWALLS:				
@ 9.0' HIGH : T TYPE	210	L.F.	\$585	\$122,850
@ 10.0' HIGH : T TYPE	700	L.F.	\$640	\$448,000
@ 11.0' HIGH : T TYPE	90	L.F.	\$700	\$63,000
@ 12.0' HIGH : T TYPE	200	L.F.	\$750	\$150,000
@ 13.0' HIGH : T TYPE	300	L.F.	\$790	\$237,000
INTERIOR DRAINAGE:				
CLEARING	46	AC.	\$2,000	\$92,000
EXCAVATION, STRIPPING	73502	C.Y.	\$3	\$220,506
EXCAVATION, COMMON	99160	C.Y.	\$6	\$594,960
TOPSOIL & SEEDING	46	AC.	\$8,000	\$368,000
OUTLETS	6	EA.	\$7,000	\$42,000
24" DIA. A.D. GATE	2	EA.	\$3,500	\$7,000
36" DIA. A.D. GATE	1	EA.	\$5,000	\$5,000
24" DIA. SLUICE GATE	2	EA.	\$8,000	\$16,000
36" DIA. SLUICE GATE	1	EA.	\$15,000	\$15,000
24" DIA. R.C.P.	700	L.F.	\$30	\$21,000
36" DIA. R.C.P.	300	L.F.	\$55	\$16,500
4' HIGH CHAIN LINK FENCE	2000	L.F.	\$18	\$36,000
TOTAL DIRECT COST				\$4,148,777
20% CONTINGENCIES				\$829,755
SUBTOTAL				\$4,978,532
15% E&D				\$746,780
10% S&A				\$497,853
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$6,223,166
TOTAL CONSTRUCTION COST				\$6,223,166

TABLE IV - 39 (CONT)

 PEQUANNOCK - RAMAPO

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LEFRD)				
01. LANDS AND DAMAGES:				
POMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	7.43	AC.	\$5,500	\$40,865
PERMANENT EASEMENT RIGHTS	65.18	AC.	\$55,000	\$3,584,900
ESTIMATED DIRECT COST				\$3,625,765
15% CONTINGENCIES				\$543,865
SUBTOTAL				\$4,169,630
3% PLANNING & SURVEYS				\$125,089
2% APPRAISAL & ADMIN.				\$83,393
TOTAL COSTS: 01. LANDS AND DAMAGES				\$4,378,111
02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$2,500
ROAD RAISING:				
RIVERVIEW ROAD				
2 LANES @ 1.2' HIGH	50	L.F.	\$240	\$12,000
WILLOW ROAD				
2 LANES @ 7.0' HIGH	200	L.F.	\$330	\$66,000
TOTAL DIRECT COST				\$80,500
20% CONTINGENCIES				\$16,100
SUBTOTAL				\$96,600
15% E&D				\$14,490
10% S&A				\$9,660
TOTAL COSTS: 02. RELOCATIONS				\$120,750
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LEFRD)				\$4,498,861
TOTAL PROJECT FIRST COST: (JUNE '86)				\$10,722,027
(OCTOBER '86)				\$10,848,547

TABLE IV - 40

 WANAUKE RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
15. FLOODWAY CONTROL AND DIVERSION STRUCTURES:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$50,000
BEAUTIFICATION	-	JOB	L.S.	\$30,000
EXCAVATION	192,596	C.Y.	\$6	\$1,155,576
CHANNEL LINING	29,250	S.Y.	\$4	\$117,000
BRIDGE FOOTING PROTECTION :				
HERSHFIELD PARK FOOTBRIDGE	-	JOB	L.S.	\$3,960
TOTAL DIRECT COST				\$1,356,536
20% CONTINGENCIES				\$271,307
SUBTOTAL				\$1,627,843
15% E&D				\$244,176
10% S&A				\$162,784
TOTAL COSTS: 15. FLOODWAY CONTROL AND DIVERSION STRUCTURES				\$2,034,804
TOTAL CONSTRUCTION COSTS				\$2,034,804
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
POMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	12.56	AC.	\$5,500	\$69,080
PERM. EASEMENT RIGHTS (UPLAND)	2.61	AC.	\$55,000	\$143,550
PERM. EASEMENT RIGHTS (RIVER)	15.66	AC.	\$10,000	\$156,600
ESTIMATED DIRECT COST				\$369,230
15% CONTINGENCIES				\$55,385
SUBTOTAL				\$424,615
3% PLANNING & SURVEYS				\$12,738
2% APPRAISAL & ADMIN.				\$8,492
TOTAL COSTS: 01. LANDS AND DAMAGES				\$445,845

TABLE IV - 40 (CONT)

WANAQUE RIVER CHANNEL

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
02. RELOCATIONS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$15,000
UTILITY RELOCATIONS :				
72" PIPE TO BE REPLACED	150	L.F.	\$1,100	\$165,000
CONCRETE CASING	293	C.Y.	\$400	\$117,200
8" PIPE TO BE RELOCATED	200	L.F.	\$830	\$166,000
TOTAL DIRECT COST				\$463,200
20% CONTINGENCIES				\$92,640
SUBTOTAL				\$555,840
15% E&D				\$83,376
10% S&A				\$55,584
TOTAL COSTS: 02. RELOCATIONS				\$694,800
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$1,140,645
TOTAL PROJECT FIRST COST: (JUNE '86)				\$3,175,449
(OCTOBER '86)				\$3,212,920

TABLE IV - 41

WANAQUE AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$15,000
BEAUTIFICATION	-	JOB	L.S.	\$10,000
LEVEES (MODIFIED FOR SEEPAGE COND.):				
@ 2.0' HIGH	20	L.F.	\$39	\$780
@ 3.0' HIGH	30	L.F.	\$64	\$1,920
@ 4.0' HIGH	35	L.F.	\$83	\$2,905
@ 5.0' HIGH	50	L.F.	\$96	\$4,800
@ 6.0' HIGH	40	L.F.	\$116	\$4,640
@ 7.0' HIGH	68	L.F.	\$127	\$8,636
@ 8.0' HIGH	34	L.F.	\$147	\$4,998
@ 9.0' HIGH	166	L.F.	\$160	\$26,560
@ 10.0' HIGH	367	L.F.	\$179	\$65,693
@ 11.0' HIGH	316	L.F.	\$192	\$60,672
@ 12.0' HIGH	300	L.F.	\$212	\$63,600
@ 13.0' HIGH	116	L.F.	\$225	\$26,100
FLOODWALLS:				
@ 7.0' HIGH: T TYPE	30	L.F.	\$515	\$15,450
@ 8.0' HIGH: T TYPE	25	L.F.	\$550	\$13,750
@ 9.0' HIGH: T TYPE	55	L.F.	\$585	\$32,175
@ 10.0' HIGH: T TYPE	190	L.F.	\$640	\$121,600
@ 11.0' HIGH: T TYPE	140	L.F.	\$705	\$98,700
@ 12.0' HIGH: T TYPE	140	L.F.	\$750	\$105,000
@ 13.0' HIGH: T TYPE	100	L.F.	\$790	\$79,000
TOTAL DIRECT COST				\$761,979
20% CONTINGENCIES				\$152,396
SUBTOTAL				\$914,375
15% E&D				\$137,156
10% S&A				\$91,437
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$1,142,969

TABLE IV - 41 (CONT)

WANAUKE AVENUE

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
<hr/>				
13. PUMPING PLANTS:				
<hr/>				
PUMP STATION	217	C.F.S.	\$4,860	\$1,054,620
TOTAL DIRECT COST				\$1,054,620
20% CONTINGENCIES				\$210,924
				<hr/>
SUBTOTAL				\$1,265,544
15% E&D				\$189,832
10% S&A				\$126,554
				<hr/>
TOTAL COSTS: 13. PUMPING PLANTS				\$1,581,930
				<hr/>
TOTAL CONSTRUCTION COSTS				\$2,724,899
<hr/>				
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
<hr/>				
01. LANDS AND DAMAGES:				
<hr/>				
POMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	1.40	AC.	\$5,500	\$7,700
PERMANENT EASEMENT RIGHTS	3.53	AC.	\$55,000	\$194,150
				<hr/>
ESTIMATED DIRECT COST				\$201,850
15% CONTINGENCIES				\$30,278
				<hr/>
SUBTOTAL				\$232,128
3% PLANNING & SURVEYS				\$6,964
2% APPRAISAL & ADMIN.				\$4,643
				<hr/>
TOTAL COSTS: 01. LANDS AND DAMAGES				\$243,734
				<hr/>
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$243,734
				<hr/>
TOTAL PROJECT FIRST COST: (JUNE '86)				\$2,968,632
(OCTOBER '86)				\$3,003,662

TABLE IV - 42

HILL COURT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
CONSTRUCTION COSTS				
11. LEVEES AND FLOODWALLS:				
MAINT. & PROTECTION OF TRAFFIC	-	JOB	L.S.	\$15,000
BEAUTIFICATION	-	JOB	L.S.	\$10,000
LEVEES (MODIFIED FOR SEEPAGE COND.):				
@ 1.0' HIGH	17	L.F.	\$29	\$493
@ 2.0' HIGH	17	L.F.	\$39	\$663
@ 3.0' HIGH	16	L.F.	\$64	\$1,024
@ 4.0' HIGH	7	L.F.	\$83	\$581
@ 5.0' HIGH	17	L.F.	\$96	\$1,632
@ 6.0' HIGH	63	L.F.	\$116	\$7,308
@ 7.0' HIGH	124	L.F.	\$127	\$15,748
@ 8.0' HIGH	293	L.F.	\$147	\$43,071
@ 9.0' HIGH	246	L.F.	\$160	\$39,360
@ 10.0' HIGH	303	L.F.	\$179	\$54,237
@ 11.0' HIGH	247	L.F.	\$192	\$47,424
FLOODWALLS:				
@ 8.0' HIGH	600	L.F.	\$545	\$327,000
INTERIOR DRAINAGE:				
CLEARING	2	AC.	\$2,000	\$4,000
EXCAVATION, STRIPPING	2500	C.Y.	\$3	\$7,500
EXCAVATION, COMMON	7500	C.Y.	\$6	\$45,000
TOPSOIL & SEEDING	2	AC.	\$8,000	\$16,000
OUTLETS	2	EA.	\$7,000	\$14,000
24" DIA. A.D. GATE	1	EA.	\$3,500	\$3,500
24" DIA. SLUICE GATE	1	EA.	\$8,000	\$8,000
24" DIA. R.C.P.	100	L.F.	\$30	\$3,000
4' HIGH CHAIN LINK FENCE	1125	L.F.	\$18	\$20,250
TOTAL DIRECT COST				\$684,791
20% CONTINGENCIES				\$136,958
SUBTOTAL				\$821,749
15% E&D				\$123,262
10% S&A				\$82,175
TOTAL COSTS: 11. LEVEES AND FLOODWALLS				\$1,027,187
TOTAL CONSTRUCTION COSTS				\$1,027,187

TABLE IV - 42 (CONT)

HILL COURT

DESCRIPTION	NO. UNITS	UNIT MEAS.	UNIT PRICE (\$)	TOTAL
LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				
01. LANDS AND DAMAGES:				
POMPTON LAKES BORO.				
TEMPORARY EASEMENT RIGHTS	1.21	AC.	\$5,500	\$6,655
PERMANENT EASEMENT RIGHTS	5.12	AC.	\$55,000	\$281,600
ESTIMATED DIRECT COST				\$288,255
15% CONTINGENCIES				\$43,238
SUBTOTAL				\$331,493
3% PLANNING & SURVEYS				\$9,945
2% APPRAISAL & ADMIN.				\$6,630
TOTAL COSTS: 01. LANDS AND DAMAGES				\$348,068
TOTAL LANDS, EASEMENTS, RIGHTS OF WAY, RELOCATIONS, AND DISPOSAL AREAS COSTS (LERRD)				\$348,068
TOTAL PROJECT FIRST COST: (JUNE '86)				\$1,375,254
(OCTOBER '86)				\$1,391,482

TABLE IV-43

ESTIMATED ANNUAL CHARGES OF THE RECOMMENDED PLAN

(OCTOBER 1986 PRICE LEVEL; 100 YEAR PROJECT LIFE; 8-5/8% INTEREST RATE)

	<u>FEDERAL</u>	<u>NON-FEDERAL</u>	<u>TOTAL</u>
FIRST COSTS:			
Flood Control	566,000,000	188,600,000	754,600,000
(Percent Apportionment)	(75%)	(25%)	
Hurricane & Storm Damage Reduction	54,700,000	29,500,000	84,200,000
(Percent Apportionment)	(65%)	(35%)	
Fish and Wildlife Mitigation	1,800,000	600,000	2,400,000
TOTAL	\$622,500,000	\$218,700,000	\$841,200,000
INVESTMENT COST:			
First Cost	622,500,000	218,700,000	841,200,000
Interest During Construction	84,500,000	29,700,000	114,200,000
TOTAL	\$707,000,000	\$248,400,000	\$955,400,000
ANNUAL COSTS:			
Interest During Construction	7,300,000	2,500,000	9,800,000
Interest and Amortization	53,700,000	18,900,000	72,600,000
Operation and Maintenance	-	2,100,000	2,100,000
Residual Induced Flood Damages	-	1,000,000	1,000,000
TOTAL	\$ 61,000,000	\$ 24,500,000	\$ 85,500,000

TABLE IV - 44
PROJECT COST SHARING

<u>TOTAL PROJECT</u>	
Construction	
Flood Control	682,000,000
Preservation of Natural Storage	22,000,000
Fish & Wildlife Mitigation	2,400,000
Subtotal Flood Control	<u>706,400,000</u>
Hurricane & Storm Damage Reduction	76,500,000
Total Construction	<u>\$782,900,000</u>
LERRD:	
Flood Control	50,600,000
Hurricane & Storm Damage Reduction	7,700,000
Total LERRD	<u>\$ 58,300,000</u>
<u>TOTAL PROJECT</u>	<u>\$841,200,000</u>

<u>NON-FEDERAL CONTRIBUTION</u> (During Construction)	
5% Cash	
Flood Control (w/o Preservation)	36,700,000
LERRD:	
Flood Control	50,600,000
Hurricane & Storm Damage Reduction	7,700,000
Additional Cash:	
Flood Control	96,400,000
Preservation of Natural Storage	5,500,000
Hurricane & Storm Damage Reduction	21,800,000
Adjusted Non-Federal Share:	
Cash	160,400,000
LERRD	58,300,000
Total	<u>\$218,700,000</u>

<u>NON-FEDERAL CONTRIBUTION</u>	- OMRR
	\$ 2,100,000

REAL ESTATE REQUIREMENTS FOR THE RECOMMENDED PLAN

LEVEE / FLOODWALL / CHANNEL PORTION OF PLAN

COMMUNITY	EASEMENTS			COST (\$)
	PERMANENT (UPLAND) (ACRE)	PERMANENT (RIVER) (ACRE)	TEMPORARY (ACRE)	
BERGEN COUNTY:				
E.RUTHERFORD BORO.	3.54		1.64	\$314,721
LYNDHURST TWP.	17.71		5.57	\$913,350
N. ARLINGTON	14.37		5.92	\$748,100
RUTHERFORD	10.33		5.77	\$872,424
WALLINGTON	8.77		3.47	\$638,050
ESSEX COUNTY:				
BELLEVILLE TOWN	6.42		5.71	\$384,494
FAIRFIELD BORO.	82.95	13.77	18.85	\$5,227,800
LIVINGSTON TWP.	27.41		3.11	\$1,663,260
NEWARK CITY	44.50		9.84	\$2,046,781
NUTLEY TOWN	4.89		3.29	\$286,803
W. CALDWELL BORO.	15.51		3.44	\$951,240
HUDSON COUNTY:				
HARRISON	8.09		3.60	\$304,750
KEARNY TOWN	94.96		21.12	\$3,882,876

REAL ESTATE REQUIREMENTS FOR THE RECOMMENDED PLAN

LEVEE / FLOODWALL / CHANNEL PORTION OF PLAN

COMMUNITY	EASEMENTS			COST (\$)
	PERMANENT (UPLAND) (ACRE)	PERMANENT (RIVER) (ACRE)	TEMPORARY (ACRE)	
MORRIS COUNTY:				
E. HANOVER TWP.	13.45		2.33	\$820,980
LINCOLN PARK BORO.	1.14	10.33	1.65	\$181,600
MONTVILLE TWP.	47.92		3.68	\$2,897,280
PARSIP-TROY HILLS	128.05		6.86	\$8,367,866
PEQUANNOCK TWP.	1.93	15.43	11.47	\$146,080
RIVERDALE BORO.	1.17	9.37	2.18	\$176,980
PASSAIC COUNTY:				
CLIFTON CITY	6.35		2.43	\$461,006
PASSAIC CITY	17.00		9.99	\$809,964
POMPTON LAKES BORO.	86.25	50.81	30.24	\$5,200,590
WAYNE TWP.	35.35	32.87	17.91	\$2,500,890
SUBTOTAL: LEVEE / FLOODWALL / CHANNEL PORTION OF PLAN				\$39,797,885

TABLE IV - 45 (CONT)

REAL ESTATE REQUIREMENTS FOR THE RECOMMENDED PLAN

TUNNEL PORTION OF PLAN
(SURFACE EASEMENTS)

COMMUNITY	FEE TAKING (ACRE)	TEMPORARY EASEMENT (ACRE)	COST (S)
PASSAIC COUNTY:			
CLIFTON CITY	3.50	3.50	\$1,190,000
LITTLE FALLS	1.50	2.50	\$325,000
WAYNE TWP.	11.00	7.00	\$1,203,000
SUBTOTAL: (SURFACE EASEMENTS)			\$2,718,000

TUNNEL PORTION OF PLAN
(SUB-SURFACE EASEMENTS)

COMMUNITY	COST
	(\$)
PASSAIC COUNTY:	
CLIFTON CITY	
LITTLE FALLS	
TOTOWA BORO.	
WAYNE TWP.	
SUBTOTAL: (SUB-SURFACE EASEMENTS)	
	\$382,000

REAL ESTATE REQUIREMENTS FOR THE RECOMMENDED PLAN

NATURAL STORAGE ACQUISITION PORTION OF PLAN

COMMUNITY	FEE TAKING (ACRE)	COST (\$)
BLACK MEADOWS:		
FLORHAM PARK	255	\$2,524,500
E. HANOVER	195	\$693,000
HANOVER	660	\$1,650,000
BOG & VLY:		
LINCOLN PARK	360	\$1,171,600
MONTVILLE	45	\$112,500
CANOE BROOK:		
LIVINGSTON	175	\$767,500
GREAT PIECE MEADOWS:		
FAIRFIELD	1,030	\$1,545,000
LINCOLN PARK	420	\$630,000
MONTVILLE	130	\$559,000
HAITFIELD SOUTH:		
E. HANOVER	135	\$969,600
LIVINGSTON TOWNS	55	\$137,500

TABLE IV - 45 (CONT)

REAL ESTATE REQUIREMENTS FOR THE RECOMMENDED PLAN

NATURAL STORAGE ACQUISITION PORTION OF PLAN

COMMUNITY	FEE TAKING (ACRE)	COST (\$)
HATFIELD SWAMP:		
E. HANOVER	85	\$212,500
FAIRFIELD	20	\$180,000
W. CALDWELL	290	\$1,200,000
MONTVILLE	35	\$87,500
POMPTON VALLEY:		
PEQUANNOCK	120	\$420,000
WAYNE	165	\$577,500
TROY MEADOWS:		
E. HANOVER	385	\$2,908,125
HANOVER	25	\$62,500
PARSIPPANY-TROY	765	\$1,759,500

SUBTOTAL: NATURAL STORAGE \$18,207,825

TOTAL DIRECT COST : \$61,105,710

FIGURE IV - 1

DESIGN AND CONSTRUCTION SCHEDULE
PROPOSED PLAN OF PROTECTION
MAINSTEM PASSAIC RIVER

