final
rec'd 7/6/79

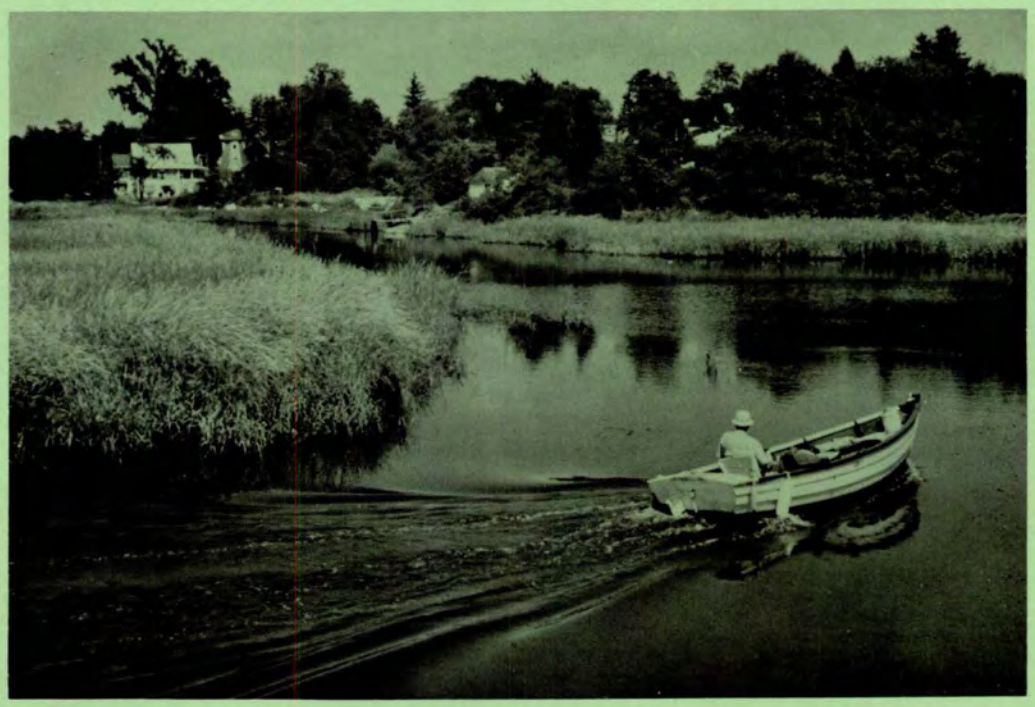
WATERSHED PLAN

AND

ENVIRONMENTAL IMPACT STATEMENT

BLIND BROOK WATERSHED

WESTCHESTER COUNTY, NEW YORK AND FAIRFIELD COUNTY, CONNECTICUT



PREPARED BY U.S.D.A.- SOIL CONSERVATION SERVICE

JULY 1979

WATERSHED PLAN

AND

ENVIRONMENTAL IMPACT STATEMENT

BLIND BROOK WATERSHED

Westchester County, New York and Fairfield County, Connecticut

Prepared under the Authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008) and in accordance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

Prepared by: The city of Rye
Westchester County Legislature
Westchester County Soil and Water Conservation District
U.S. Department of Agriculture, Soil Conservation Svc.
U.S. Department of Agriculture, Forest Service

July 1979

PREFACE

This document is a PL-566 Watershed Plan with an incorporated Environmental Impact Statement.

The Watershed Plan has been developed by the local sponsors with the assistance of the U.S. Department of Agriculture and is the basis for the authorization of federal assistance to implement the proposed project in accordance with the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended (16 USC 1001-1008).

The Environmental Impact Statement has been prepared by the U.S. Department of Agriculture in compliance with Section 102(2)(C) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 4321 et seq).

This document presents the resource related problems and needs in the Blind Brook Watershed. It then describes the formulation process utilized in selecting a plan of action to address the problems. Finally, it states the impacts of the proposed project actions. Appendices have been added, as appropriate, to support the main document.

TABLE OF CONTENTS

BLIND BROOK WATERSHED
PLAN/E.I.S.

	Page No.
Summary	1
Project Setting	3
Problems and Needs in the Watershed	5
Land and Water Management	5
Erosion Damages	5
Sediment Damages	5
Plant and Animal Problems	6
Floodwater Damages	6
Indirect Flood Damage	7
Flood Proofing Costs	7
Historic Flood Events	7
Economic and Social Problems	8
Project Formulation	9
Project Purposes and Goals	10
Planning Considerations	10
Alternatives and Proposed Actions	11
Planned Project	16
Land Treatment Measures	16
Structural Measures	16
Floodwater Retarding Structures	16
Dikes	18
Other	20
Installation Costs	21
Economic Benefits	22
Installation and Financing	24
Operation and Maintenance	27
Impacts of the Selected Plan	29
I. Existing Environmental Conditions	30
II. Environmental Quality Account	34
A. Areas of Natural Beauty	34
B. Quality Considerations of Water, Land, and Air Resources	34
C. Biological Resources and Selected Ecosystems	35
D. Irreversible or Irretrievable Resource Commitments	37
E. Adverse Environmental Impacts Which Cannot be Advoided	37

TABLE OF CONTENTS (Cont'd.)

Page No.

F. Short Term Vs Long Term Productivity..... 38

III. Economic Development Impact Account..... 39

A. National and Regional Economic Development Account..... 39

B. Incremental Economic Impact on Structures..... 42

IV. Social Well Being Account..... 43

V. Alternatives..... 44

Engineering and Accounting Tables

1 - Estimated Installation Cost
2 - Estimated Cost Distribution
3 - Structural Data, Dams with Planned Storage Capacity
3C - Structural Data, Dikes
4 - Annual Cost
5 - Estimated Annual Flood Damage Reduction Benefits
6 - Comparison of Benefits and Cost

List of the Preparers

Plan and EIS Review

APPENDICES

Appendix A - Agreement
Appendix B - Letters of Comment on Draft EIS
Appendix C - Cultural Resources Survey and Evaluation
Appendix D - Definition of Wetland Types
Appendix E - Maps
Appendix F - Bibliography

BLIND BROOK WATERSHED PLAN
WESTCHESTER COUNTY, NEW YORK
FAIRFIELD COUNTY, CONNECTICUT

SUMMARY

Blind Brook Watershed, located in southeastern New York and southwestern Connecticut, has a drainage area of 6,980 acres. The Sponsoring Local Organizations are the Westchester County Soil and Water Conservation District SWCD, the county of Westchester, and the city of Rye.

The major soil and water resource problem is urban flooding. Estimated average annual losses of $287,770, due to property damage and reduced services, are occurring in the watershed.

The plan provides for the installation of land treatment measures, two floodwater retarding structures, and four dikes. (See Appendix E, Figure E-1, Project Map). The land treatment measures and structural measures will be installed during a 4-year installation period. (See Appendix A, Agreement).

Installation of sediment control measures as part of the land treatment will reduce erosion rates on construction sites. Installation of structural measures will reduce average annual floodwater damages to urban areas by 72 percent from floods up to the magnitude of the 100-year frequency. Sediment concentration at the mouth of the watershed will be reduced from 43 to 39 milligrams per liter.

About 117 acres of land will be committed to the installation of the structural measures. Present land use includes open land formerly cropped, forest land, urban land, other land, and water. Additional commitments will include 6,800 feet of perennial stream. Acreage committed to structural measures will become permanent grassland, concrete dikes, water, wetland, or retain existing cover.

The Westchester County Soil and Water Conservation District will be responsible for planning land treatment measures with technical assistance provided by the Soil Conservation Service, and the New York State Department of Environmental Conservation in cooperation with the Forest Service. Landowners and operators, with assistance furnished by the Soil Conservation Service, Department of Environmental Conservation, and the Forest Service, will be responsible for establishing and maintaining these practices. The Blind Brook Small Watershed Protection District will obtain landrights. The Soil Conservation Service will provide PL 566 engineering services required for the installation of the structural measures. The Blind Brook Small Watershed Protection District will let and administer construction contracts. However, at a later date, the Sponsors may request the Service to perform this function. The Sponsors and the

Service will bear project administration costs that each incurs.

Total installation cost of the combined land treatment and structural measures is estimated at $3,175,760. Of this amount $2,644,180 will be paid by PL 566 funds and $531,580 will be paid by other funds. Total land treatment cost is $43,200, to be paid by SCS and landowner funds under the ongoing program. Total structural measure cost is $3,132,560 including $2,637,980 from PL 566 funds, and $494,580 from other funds. The structural costs are preliminary and subject to change based on detailed geologic investigations.

The average annual operation and maintenance cost of $4,300 for the structural measures will be borne and financed by the Blind Brook Small Watershed Protection District. The average annual cost of the structural measures is estimated to be $219,910. These measures are expected to produce average annual benefits of $230,210. The ratio of the total average annual benefits to the average annual cost of structural measures is 1.05 to 1.0.

All information and data, except as otherwise noted by reference to source, were collected during the watershed planning investigation by the Soil Conservation Service, and Forest Service.

PROJECT SETTING

Blind Brook Watershed, approximately 6,980 acres or 10.91 square miles in size, is located on the New York-Connecticut state line. Approximately 96.7 percent (6,750 acres) is in Westchester County, New York and 3.3 percent (230 acres) is in Fairfield County, Connecticut. It includes portions of three towns and of the city of Rye, New York. The watershed is located approximately three miles east of White Plains (population 50,220) and 10 miles northeast of New York City (population 6,343,219). See Watershed Location Map (Figure 1) for details.

The land use of the Blind Brook Watershed is reflected in Table A.

TABLE A: PRESENT LAND USE IN THE BLIND BROOK WATERSHED

LAND USE	PRESENT USE	
	Acres	Percent
Urban Land	3,974	57
Wetland and Open Water	38	1
Other Land	593	8
Orchards	33	1
Open Land Formerly Cropped	1,271	18
Forest Land	1,071	15
TOTAL	6,980	100

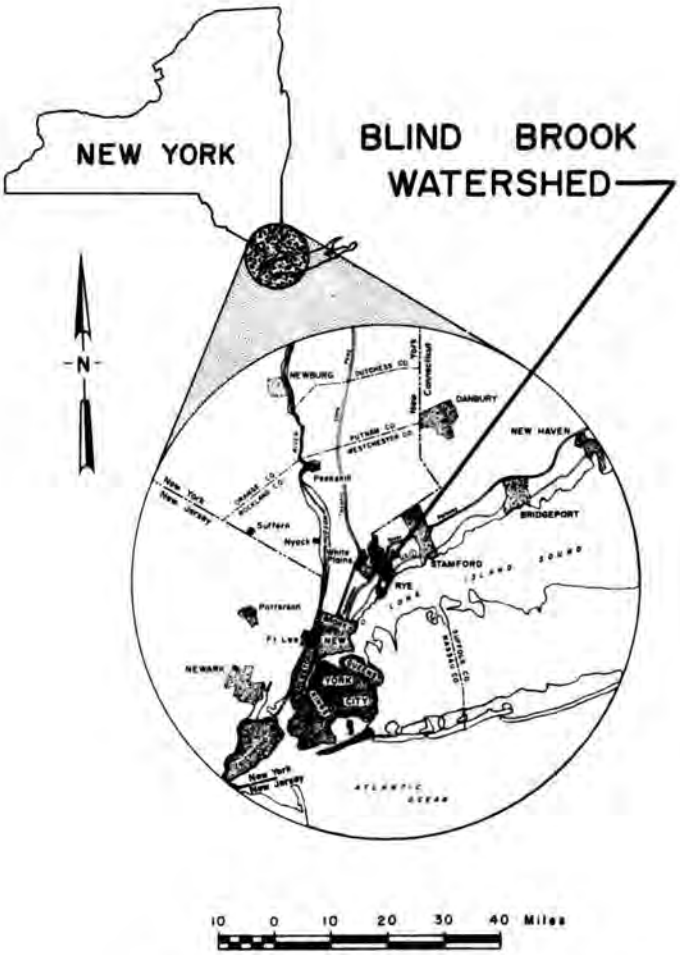


Figure 1 - Watershed Location Map

The watershed is part of the New York City Standard Metropolitan Statistical Area (SMSA) which includes New York City and Nassau, Suffolk, Rockland, Westchester, and Putnam Counties. The SMSA had a population of about 10,060,800 in 1970.

The lower portion of the watershed, which includes most of the city of Rye (population 15,869) and a small section of the village of Port Chester (population 25,803), is urban in character; the upper portion of the watershed is suburban.

The watershed is located within the Water Resources Council's Middle Atlantic Region, which includes most of eastern and southern New York; the Lower Hudson subregion, which includes the New York City Metropolitan area of southeastern New York State; and northeastern New Jersey. The watershed, subregion, and region are all dominated by the northeast megalopolis. The hydrologic unit number is 02030102.

The watershed is located in the Long Island Coastal Plain Physio-

graphic (physical geography) Province. It lies within the New England and Eastern New York Upland Resource Area of the Northeastern Forage and Forest Region. Its topography is gently rolling with elevations ranging from 490 feet mean sea level (m.s.l.) at its northeastern edge to sea level at its confluence with Long Island Sound.

An extensive assessment of resources was conducted in the planning process. The assessment included inventories of plant, animal, socio-economic, soils, water, and other physical resources. The data served as a base for the plan and E.I.S.

The inventory information is not totally displayed in this document; however, it is on file in the SCS State Office in Syracuse, New York and is open to public review.

PROBLEMS AND NEEDS IN THE WATERSHED

LAND AND WATER MANAGEMENT

The primary land and water management concerns are problems associated with improper upland development (i.e., greater induced peaks as grass and trees are replaced with asphalt and buildings). As land use change occurs, retention of existing vegetation and installation of measures such as onsite stormwater control structures could compensate for possible increased runoff.

EROSION DAMAGE

Total gross sheet erosion is estimated to be 3,749 tons annually. Approximately 59 percent of this total is from urban land under construction.

Erosion on building sites stripped for construction is estimated to be 22 tons/acre/year. All other erosion rates in the watershed are within SCS tolerance standards.

SEDIMENT DAMAGES

Sediment from the watershed is primarily deposited near the mouth of the watershed where stream velocity slows considerably and the stream is within the area of tidal influence. Average annual sediment yield at the mouth of the watershed is approximately 679 tons. This is equivalent to an average annual sediment concentration of 43 milligrams per liter. This average sediment concentration does not represent conditions that are present within the stream system throughout the entire year. Very high sediment concentrations occur during limited periods of spring runoff or intense summer storms. Sediment concentrations during the remainder of the year are very low due to limited flow. Deposition of the average annual sediment yield at the mouth is equivalent to approximately 0.3 acre feet.

Any sediment damage that is occurring in Milton Harbor is a result of sediment from both Blind Brook and tidal currents. However, identification of the exact source is difficult if not impossible to ascertain. As the sediment yield from Blind Brook is quite low, it would be reasonable to assume that the majority of any sediment damage would be attributable to tidal influence.

PLANT AND ANIMAL PROBLEMS

There is a lack of open areas with tall grass, weeds, and fruiting shrubs which provide habitat for a greater variety of bird species. This is due to extensive development and a lack of management of formerly open areas. Existing open fields need to be mowed at least once every three years to prevent invasion of hardwoods.

Plant succession, without man's influence is gradually converting brushy areas to forest land. There is a need for additional evergreen trees (i.e., Norway spruce and white pine) to provide diverse cover for wildlife. A large percentage of the forest land is in the sapling and pole size with many oak and beech that provide mast (food) for squirrels; however, the trees are not mature enough to have nest cavities.

There are few wetlands in the watershed. Most are small in size and have little open water. These remaining wetlands are threatened by filling as they are small and are not protected by the New York State Freshwater Wetlands Act. The loss of these wetlands results in the loss of diverse songbird, amphibian, reptile, and waterfowl habitat as well as floodwater storage.

Unsuitable water temperatures (mid-seventies) have eliminated trout from Blind Brook where suitable physical habitat occurs. Development of a warm water sport fishery is restricted by the lack of suitable physical habitat.

FLOODWATER DAMAGE

The primary floodwater damage in the Blind Brook Watershed occurs in the developed urban flood plain in the city of Rye, which encompasses Reaches 1 through 5. (See Appendix E, Figure E-6, Reach Map) This damage results from overbank flow created by high runoff. High tides from Long Island Sound increase the flood levels in Reaches 1 and 2.

Urban floodwater damages include damages to structures and contents of residential, commercial, and public buildings. (See Appendix E, Figure E-6A thru E-6C, Urban Floodplain Maps.) These damages are stated in 1979 prices; however, damage totals reflect an analysis of projected future conditions. Other urban damages are those to roads and bridges, and to lawns and yards.

Estimated average annual damages for the 100-year evaluation period under present conditions are presented in Table B.

TABLE B - FLOOD DAMAGE TO RESIDENTIAL AND COMMERCIAL PROPERTIES 1/

		Residential		Commercial		Total
Reach	Beginning Damage Frequency (%)	Number Houses	Dollar Damages	Number Buildings	Dollar Damages	Dollars
1	6.5	177	58,810	8	6,740	65,550
2	9.7	35	71,690	9	30,840	102,530
3	9.3	21	7,500	19	9,720	17,220
4	11.4	83	61,490	11	3,710	65,200
5	1.5	14	750	0	0	750
Road and Bridge						2,120
Indirect						20,100
Lawns and Yards						14,400
Total			200,240		51,010	287,870

1/ Average annual dollars.

Approximately 330 residences and 47 commercial establishments would be affected by the 100-year frequency flood event. Such an event would flood approximately 178 buildings at the first floor elevation and cause damages of $3,760,265.

INDIRECT FLOOD DAMAGE

An estimated $20,100 in average annual indirect flood damages will occur in the watershed. These damages reflect losses caused by flooding but not represented by physical loss. These losses include delays due to rerouting of traffic, inconvenience, and time lost by evacuation of residences and loss of markets.

FLOODPROOFING COSTS

Federal Insurance Administration regulations coming in force will require floodproofing of all new structures and of significant improvements to existing structures within the 100-year flood plain. The average annual floodproofing costs for development taking place in the flood plain have been projected to the year 2020 and are estimated to be $14,030. These costs relate to both existing and undeveloped properties.

HISTORIC FLOOD EVENTS

Three historic flood events, each associated with a hurricane, have been evaluated. The first flood event, which occurred on September 14, 1938, (unnamed hurricane) resulted in high tide flooding, as

well as out-of-bank flooding. The flood events of June 19, 1972, (Hurricane Agnes) and of September 26, 1975, (Hurricane Eloise) occurred in the absence of high tide conditions; consequently, floodwater damages were relatively limited in Reach 1. Table C shows peak discharges (in cubic feet per second) that were recorded at Gaging Station 01300000, located upstream from the Blind Brook bridge on Theodore Fremd Avenue (See Water Quality Map, Appendix E, Figure E-7).

TABLE C - PEAK DISCHARGES AT STATION "01300000"

Storm Date	Peak Discharge (cfs)	Estimated Frequency (% chance)
June 19, 1972	2,320	60 years (1.7)
September 26, 1975	2,280	55 years (1.8)

ECONOMIC AND SOCIAL PROBLEMS

The unemployment in Westchester County in August 1978 was 6.7 percent. This county was designated as a Title IV redevelopment area under The Public Works and Economic Development Act of 1965 as amended in August 18, 1976 because of substantial unemployment.

PROJECT FORMULATION

PROJECT PURPOSES AND GOALS

The intent of the Water Resources Council's Principles and Standards served as the basis for project formulation. Local goals were considered under the two broad objectives of National Economic Development (NED) and Environmental Quality (EQ).

At a public meeting of the Blind Brook Watershed Planning Committee on March 2, 1976, the committee and the public presented protection and environmental goals. The goals were presented for SCS consideration in plan formulation.

The following summarizes major items initially agreed to as goals between the Sponsoring Local Organizations and the Service and subsequently refined during project formulation. The Sponsors recognize that competing or conflicting uses of the same areas may occur in meeting the stated goals and that the planned project may not provide for all of these stated goals.

1. Provide watershed protection to:

    a. Reduce streambank erosion and protect against existing wall failure.
    b. Protect the quality of the high school athletic field.
    c. Protect the harbor and marina from sedimentation and the hydraulic force of a freshwater crest.
    d. Preserve existing floodwater retention areas.
    e. Permit reasonable development of vacant land.
    f. Uniformly regulate onsite stormwater retention in new development.
    g. Provide cutoff and drainage control for existing office parks and large developments.

2. Reduce present urban flooding to:

    a. Protect all habitable structures, including basements.
    b. Protect business establishments.
    c. Protect the elderly living in high risk areas.
    d. Protect against petroleum storage tank rupture and fire at service stations.
    e. Maintain adequate traffic circulation for emergency vehicles on public roads.
    f. Provide protection for long term parking of cars in public lots.
    g. Maintain gas and electrical services.
    h. Achieve minimal damage to yards, gardens and outbuildings.
    i. Preserve the capacity of the Blind Brook sewage treatment plant.
    j. Minimize tidal damages.

3. Areas of Critical Environment Concern

a. Tidal wetland at Disbrown Park.
b. Cemetery opposite Rich's Greenhouse.
c. Rye High School Athletic Field.
d. Milton Fine House.
e. Rye Nature Center.
f. Library.
g. Square House.
h. YMCA.
i. Fire House.
j. Duffy Building.
k. Curve in brook at Elm Street and Fremd Boulevard.
l. Open space below Purchase Street on west side ofBlind Brook.
m. Wildlife area in the city of Rey flood control area behind Bowman Avenue dam.
n. Geigy wetland.
o. Residential landscaping.
p. Waterfalls behind Ridge Street School.
q. Price's Pond.

PLANNING CONSIDERATIONS

The Sponsoring Local Organizations and the Soil Conservation Service encouraged the participation of interested public agencies and the gen eral public in the planning process by keeping them informed of planning progress and providing them with forums to discuss their respective concerns. The diverse interests expressed by the public agencies and private citizens were considered in the formulation of the project.

Authorized by the Westchester County Board of Supervisors, the Department of Public Works filed an application for assistance under PL 566 in October 1964. The Division of Water Resources, New York State Department of Environmental Conservation, approved the application in October 1964. The Administrator of the Soil Conservation Service authorized planning in May 1976.

Periodic meetings were held between 1976 and 1978. Representatives of the Soil Conservation Service met with the Blind Brook Steering Committee, the Westchester County Soil and Water Conservation District, the Westchester County Planning Board, Representatives of the city of Rye, town of Harrison, and interested persons. Meetings were held both in Rye and White Plains. Many of the meetings were open to the public and both notices of these meetings and summaries of the proceedings appeared in the local newspapers.

The sponsoring local organizations were fully involved in the decision making necessary during project formulation. Several alternatives based on NED and EQ objectives were evaluated during planning in order to determine a feasible plan acceptable to the Sponsors. Representa-

tives of the Soil Conservation Service presented physical and economic data relative to these alternatives to the Sponsors and other interested agencies, groups, and individuals as they were developed.

A number of coordination meetings involving representatives from the U.S. Fish & Wildlife Service, the New York State Department of Environmental Conservation, and the Soil Conservation Service were held during project formulation to assess potential environmental issues. Subsequent discussion and field reconnaissances were made to coordinate the fish and wildlife aspects of the project. Included was a field evaluation of the tidal wetlands of Blind Brook to identify values and mitigation potentials.

The planning of this watershed has been coordinated with the New York State Office of Parks and Recreation regarding historical and archeological investigations. The National Register of Historic Places was reviewed to locate listed properties in the watershed that are significant to American history, architecture, archeology, or culture.

The National Weather Service was consulted in the evaluation of the flood warning system for the city of Rye.

The U.S. Geological Survey, U.S. Department of the Interior, has provided an assessment of water quality and advised Soil Conservation Service personnel during project formulation.

The following is a brief summary of the chronological planning sequence:

1. PL 566 application filed October 1964

2. PL 566 application approved October 1964.

3. Preliminary Evaluation conducted by SCS March 1973.

4. Interagency Field Reconnaissance - September 1973.

5. Environmental Assessment initiated 1974.

6. Local objectives stated March 1976.

7. Planning authorization granted by SCS May 1976.

8. Alternatives presented to local sponsors January 1978.

9. Plan prepared for review February 1979.

ALTERNATIVES AND PROPOSED ACTION

The development of planning alternatives was primarily devoted to controlling floodwater damage. This was the main local objective and the impetus for the planning effort. The alternatives and, finally, the

selected plan were developed with an NED related purpose in full observation of EQ goals and constraints.

Various alternatives including a "No Project" alternative were considered in the planning process. Alternatives evaluated included:

1. FWRS 1 and 2 with Laurel Street and Boston Post Road Dikes (NED Plan).
2. FWRS 1 and 2 only (EQ Plan).
3. Floodwater Retarding Structures (FWRS) 1 and 2 with Barbara Court, Laurel Street, Brookdale, and Boston Post Road Dikes (Selected Plan).
4. FWRS 1 and 2 with nonstructural measures to control remaining damages.
5. FWRS 1 and 2 with a tidal control structure and pump plant at Oakland Beach Avenue.
6. FWRS 1 and 2 with Barbara Court, Laurel Street, Brookdale, Boston Post, School Track, Crescent Avenue, Oakland Beach, and Hewlett Avenue Dikes.
7. No Project.

Other alternatives such as channel modification, diversions, and retention basins were considered during planning and eliminated primarily for economic and environmental reasons.

During project formulation, floodwater retarding sites (FWRS) 1 and 2 became basic to the selected plan. The sites demonstrated economic and physical justification with environmental impacts which were considered relatively minor. Dikes and a tidal control structure with a pump plant were considered to supplement sites 1 and 2.

Dikes eliminated from the selected plan were deleted primarily for economic reasons; however, environmental concerns also influenced the formulation. The tidal control structure with pump plant was considered as an alternative to diking, but was eliminated primarily for economic reasons.

All selected structural increments were economically justified except Brookdale and Barbara Court Dikes. Brookdale and Barbara Court were not justified as economic increments, however, were included in the plan as the last increments added under total project justification. The unjustified dikes were added to maximize protection from upland flooding in the 100-year storm.

Alternative 4 was considered the nonstructural alternative. Nonstructural measures in conjunction with FWRS 1 and 2 were assessed. The nonstructural measures evaluated were primarily floodproofing. The alternative considered floodproofing of 244 homes and 2 commercial buildings, and purchase of 13 homes. Other nonstructural techniques such as floodwarnings, zoning, and flood insurance were not emphasized because they have already been implemented and will continue in effect

locally. Nonstructural floodproofing as an increment was found to economically feasible.

Table D outlines relative economic and environmental impacts for alternatives 1 through 7.

There is no known approved or proposed federal, state, or local land use plans which will conflict with the proposed project measures. The proposed project measures conform with the objectives of the Clean Air Act and the Federal Water Pollution Control Act Amendments of 1972.

A floodwarning system and evacuation plan is currently in operation in the city of Rye, and will continue to be used in conjunction with this plan.

TABLE D SUMMARY COMPARISON OF ALTERNATIVES FOR BLIND BROOK WATERSHED

Economic, Environmental or Social Factors	Goals	NED-Alternative 1 Site 1, Site 2, Boston Post Rd. Dike, Laurel St. Dike, Land Treatment	EQ-Alternative 2 Land Treatment, Site 1, Site 2	Select Plan-Alternative 3 Land Treatment, Site 1, Site 2, Boston Post Rd. Dike, Barbara Ct., Laurel St. Dike, Brookdale Place Dike	Nonstructural -Alternative 4 Land Treatment, Site 1, Site 2, Nonstructural Measures	Alternative 5 Land Treatment, Site 1, Site 2, Oakland Beach Pump Plant	Alternative 6 Land Treatment, Site 1, Site 2 Eight Dikes	Alternative 7 No Project
Installation Costs	N.A.	$2,235,240	$1,585,100	$3,132,560	$3,421,620	$3,432,220	$5,209,070	0
Annual O&M Costs	N.A.	2,850	2,000	4,300	2,100	12,000	9,600	0
Annual Cost	N.A.	156,700	111,100	219,910	235,510	236,240	368,140	0
Annual Benefits	N.A.	205,850	149,150	230,200	236,440	191,190	293,480	0
Annual Net Benefits		+49,150	+38,050	+10,290	+ 930	-45,050	-74,660	0
Floodwater Reduction	Reduction of flood damages to all habitable structures including basements.	66%	48%	72%	82%	59%	87%	No reduction of flood damages.
Erosion	Reduce erosion on urban construction sites.	Provide assistance for erosion control on 500 acres on new construction.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	No Effect
Sedimentation	Reduce sedimentation in Milton Harbor.	Reduce sediment yield at the mouth by 61 tons annually.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same alternative 1	No Effect
Water Quality	N.A.	Temporary increase in sediment concentrations.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same alternative 1	No Effect
Wetlands								
Tidal	Minimum damage to tidal wetlands.	No Effect	No Effect	No Effect	No Effect	Reduce type 18 by 0.6 acre.	Reduce type 18 by 0.1 acre and type 16 by 3.6 acres.	No Effect
Freshwater	N.A.	Increase types 4 & 5 by 3.1 acres.	Same as alternative 1	Reduce type 1 by 0.4 acre increase type 4 and 5 by 3.1 acres.	Same as alternative 1	Same as alternative 1	Same as alternative 3	No Effect
Land Use (acres)								
Forest land	N.A.	-21.5	-21.5	-21.8	Same as alternative 2	Same as alternative 2	-24.5	No Effect
Urban land	N.A.	- 2.8	- 1.8	- 3.5			- 4.1	
Open land formerly cropped	N.A.	- 6.6	- 6.6	- 6.6			-10.4	
Other	N.A.	+30.9	+29.9	+31.9			+39.0	
Prime Agricultural Land	N.A.	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
Archeological and Historical	Avoid damage to existing resources	No Effect	No Effect	Possible effect to archeological site	No Effect	May distribute known historic archeological deposits	Same as alternative 5	No Effect

TABLE D SUMMARY COMPARISON OF ALTERNATIVES FOR BLIND BROOK WATERSHED

Economic, Environmental or Social Factors	Goals	NED-Alternative 1 Site 1, Site 2, Boston Post Rd. Dike, Laurel St. Dike, Land Treatment	EQ-Alternative 2 Land Treatment, Site 1, Site 2	Select Plan-Alternative 3 Land Treatment, Site 1, Site 2, Boston Post Rd. Dike, Barbara Ct., Laurel St. Dike, Brookdale Place Dike	Nonstructural -Alternative 4 Land Treatment, Site 1, Site 2, Nonstructural Measures	Alternative 5 Land Treatment, Site 1, Site 2, Oakland Beach Pump Plant	Alternative 6 Land Treatment, Site 1, Site 2 Eight Dikes	Alternative 7 No Project
Wildlife	N.A.	Reduce quality of 44.3 acres forestland, 25.8 acres openland for wildlife by temporary inundation.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	No Effect
					Same as alternative 1	Same as alternative 1	Same alternative 1	No Effect
	N.A.	Quantity of openland habitat increased by 18.6 acres, forestland habitat decreased 21.5 acres.	Same as alternative 1	Quantity of openland habitat increased by 18.9 acres, forestland habitat decreased by 21.8 acres.	Same as alternative 1	Same as alternative 1	Quantity of openland habitat increased by 21.6 acres, forestland habitat decreased by 24.5 acres	No Effect
	N.A.	Quantity of terrestrial habitat decreased by 3.1 acres, aquatic habitat increased by 3.1 acres.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	No Effect
Fishery	N.A.	Convert 400 ft. of stream with minnows	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	No Effect
Mitigation	N.A.	Landscape dikes	none	Landscape dikes	none	none	Landscape dikes replace 3.7 acres of tidal wetland.	none

PLANNED PROJECT 1/

LAND TREATMENT MEASURES

The Westchester SWCD, as a result of the project, is requiring that all subdivision plot plans be submitted to the SWCD for review. The district intends to require land treatment and runoff control measures to be installed as needed. The following Westchester County agencies will assist the SWCD in reviewing the plot plans: Environmental Management Council, Planning, Health, and the Department of Public Works. The SCS and N.Y.S Department of Environmental Conservation in cooperation with the Forest Service will assist inreview.

It is estimated that 30 additional plot plans will require review during the establishment of the project. SCS will accelerate assistance during establishment, using its ongoing program. The N.Y.S. Department of Environmental Conservation in cooperation with the Forest Service will provide assistance through the Forest Service ongoing program and with state and PL 566 funds.

STRUCTURAL MEASURES

Planned structural measures include two floodwater retarding structures and four dikes. The two floodwater retarding structures will control 3.73 square miles of drainage area which is approximately 34 percent of the total watershed area. The design life for all structural measures is 100 years. The location of the structural measures is shown on the Project Measure Map, Appendix E.

FLOODWATER RETARDING STRUCTURES 2/

The floodwater retarding structure, site No. 1, with a drainage area of 1.83 square miles will be located north of Anderson Hill Road and east of the State University of New York (SUNY) campus. The structure will be a 24-foot high earthfill dam with a single stage reinforced concrete drop inlet principal spillway with energy dissipator and two vegetated earth emergency spillways. It will provide capacity for a total of 2.9 acre-feet of submerged sediment, and 438.3 acre-feet of floodwater storage. (See Table 3 of Engineering and Accounting Tables for Structural Data.)

1/ The planned Project is in compliance with Executive Order 11988.

2/ The two Floodwater Retarding Structures are both "Class C" dams. Class C is defined as dams located where failure may cause loss of life, serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads. This requires that the most stringent criteria be used in the engineering design of these dams. The potential for earthquakes in this area has been investigated and determined to be low. The dams are designed such that 24.5 inches of rain in 6 hours will not overtop them.

Flow will be controlled through an ungated reinforced concrete conduit, which incorporates a single stage principal spillway system that controls runoff resulting from storms up to the 100-year, 10-day storm. Flow resulting from storms greater than the 100-year frequency event will be routed safely around the dam through the emergency spillways (See Appendix E, Figure E-2, Typical Cross Section of Floodwater Retarding Structure.)

Preliminary investigation indicates that the foundation for the structure is glacial till and metamorphic bedrock. The emergency spillways are located on both abutments and are designed to permit a velocity of 4.2 feet per second during passage of the peak of the emergency spillway design storm. The material excavated from the emergency spillway is glacial till (SM) and is suitable for use as earthfill for the dam.

The foundation has no critical earthquake hazard. The characteristics of the borrow material will be considered in the final design of the embankment to minimize earthquake hazards of the structure.

Minimum land area required will include 49 acres for the temporary floodpool; 2.5 acres for the sediment storage; 17 acres for the embankment, emergency spillway, outlet channel, and access area; and 12 acres for the borrow area.

The sediment pool surface area will be approximately 2.5 acres and have a maximum initial depth of 3 feet. This area will gradually decrease as sediment accumulates over the life of the project. The floodpool area will be subject to short term temporary flooding and will experience normal vegetation successional trends over the life of the project.

A Westchester County sewerline runs parallel to and on the west side of the brook at this site. It will be within the floodpool and under the floodwater retarding structure. Where the line would pass under the dam the pipe would be replaced with stronger pipe and adequately designed to protect both the integrity of the sewer and the dam. Where the sewer would be submerged with floodwaters the manholes would be made watertight. These modifications to the sewerline have been estimated to cost $40,000.

Floodwater retarding structure No. 2, with a drainage area of 1.9 square miles, will be located north of the Hutchinson River Parkway and west of Lincoln Avenue. The structure will be a 40-foot high earthfill dam with a single stage reinforced concrete drop inlet principal spillway with an energy dissipator and two vegetated earth emergency spillways. It will provide capacity for a total 3.5 acre-feet of submerged sediment, and 366.4 acre-feet of floodwater storage. (See Table 3 of the Engineering and Accounting Tables for structural data.)

Flow will be controlled through an ungated reinforced concrete con-

duit, which incorporates a single-stage principal spillway system that controls runoff resulting from storms up to the 100-year, 10-day storm. Flow resulting from storms greater than the 100-year frequency event will be routed safely around the dam through the emergency spillways. (See Appendix E, Figure E-2, Typical Cross Section of Floodwater Retarding Structure.)

Preliminary investigations indicate that the foundation for the structure is glacial till and metamorphic bedrock. The emergency spillways are located on both abutments and are designed to permit a velocity of 5.1 feet per second during passage of the peak of the emergency spillway design storm. The material excavated from the emergency spillway is rock and glacial till (SM) and the till is suitable for use as earthfill for the dam.

The foundation has no critical earthquake hazards. The characteristics of the borrow material will be considered in the final design of the embankment to minimize earthquake hazards of the structure.

Minimum land area required will include 28 acres for the temporary floodpool; 1.4 acres for the sediment storage; 10 acres for the embankment, emergency spillway, outlet channel, access areas; and the 12 acre borrow area at site 1. The sediment pool surface area will be approximately 1.4 acres and have a maximum initial depth of about 5 feet. This area will gradually decrease as sediment accumulates over the life of the project. The floodpool area will be subject to short term temporary flooding and will experience normal vegetational successional trends over the life of the project.

A Westchester County sewerline also runs parallel to the brook at this site. The same modifications as used on site No. 1 will also be used here, but because more of the line will be modified it is estimated to cost $59,000.

DIKES

See Appendix E, Figure E-3, Typical Dike, and E-4, Typical Pump Plant.

The Brookdale Place Dike location is just north of Playland Parkway and extends north to the south property line of Rye High School. This dike will consist of about 570 feet of reinforced concrete dike, 940 feet of earth dike, and will have a pumping plant.

The average height of the concrete dike will be about 8 feet. This system will control runoff resulting from storms up to the 100-year frequency flood event. Foundation of this structure is a combination of alluvial or marine sediments, primarily silts underlain by sands. A drainage system will be provided to carry water that seeps along the dike to the pumping bay. The pumping plant will consist of one 50 horsepower electric motor, a reduction gear, and a 24-inch diameter pump.

Minimum land required will be about 2 acres. The construction area will be used intensively over the installation period, and all disturbed areas will be seeded to grasses and legumes. Trees and shrubs will be planted to break the uniform appearance of the concrete dike.

The Laurel Street Dike location extends from the south property line of the YMCA downstream to Central Avenue on the west side of Blind Brook. This dike will consist of about 1,020 feet of reinforced concrete dike, and a pumping plant.

The average height of the concrete dike will be about 8 feet. This system will control runoff resulting from storms up to the 100-year frequency flood event. The foundation for this structure is a combination of alluvial or marine silts and sands underlain by glacial till. A drainage system will be provided to carry water that seeps along the dike to the pumping bay. The pump plant will consist of one 30-horsepower electric motor, a reduction gear, and a 24 inch diameter pump.

Minimum land area required will be about .5 acre for the construction area; the temporary construction area will be used intensively over the installation period, and all disturbed areas will be seeded to grasses and legumes. Trees and shrubs will be planted to break the uniform appearance of the concrete dike.

The Barbara Court Dike location extends south of Central Avenue to the Rye Nature Center property on the west side of Blind Brook. This dike will consist of about 470 feet of reinforced concrete dike, 750 feet of earth dike, and a pumping plant.

The average height of the concrete dike will be about 8 feet and the earth dike 9 feet. This system will control runoff resulting from storms up to the 100-year frequency flood event. The foundation for this structure is a combination of alluvial or marine silts and sands underlain by glacial till. A drainage system will be provided to carry water that seeps along the dike to the pumping bay. The pump plant will consist of one 25-horsepower electric motor, a reduction gear, and a 24 inch diameter pump.

Minimum land area required will be about 0.5 acre for the construction area; the temporary construction area will be used intensively over the installation period, and all disturbed areas will be seeded to grasses and legumes. Trees and shrubs will be planted to break the uniform appearance of the concrete dike.

The Boston Post Road Dike location is just north of Orchard Avenue and west of Boston Post Road. This reinforced concrete dike will be about 260 feet long with an average height of about 8 feet. This system will control runoff resulting from storms up to the 100-year frequency flood event. The foundation for this structure is a com-

bination of fill material underlain by alluvial or marine sands. The temporary construction area will be used intensively during the installation period and all disturbed areas will be seeded to grasses and legumes or paved as necessary.

OTHER

To minimize the impacts on the landscape resource, construction techniques will be employed such as: (1) selective and minimum clearing, (2) minimum disturbance of onsite vegetation, (3) overbuilding of earthen structures to disrupt geometrics (if excess material is available), and (4) variation of heights of earthen structures to avoid uniformity (if excess material is available). Also, the access roads and temporary construction areas that will be used intensively during construction will be revegetated to desirable grasses and legumes.

Each contract will require that contractors adhere to strict specifications for minimizing soil erosion, and water, noise, and air pollution during construction. The specifications will include provisions for measures, such as sediment basins and temporary vegetation and mulching, to protect exposed areas until permanent vegetation is established. Adherence to state and local health requirements will be required regarding vector control, and noise, and air pollution. Suppressors will be used to keep dust within tolerable limits Pollution of surface areas or ground water by chemicals, fuel, lubricants, sewage, and other pollutants will not be permitted. Clearing and disposal of brush and vegetation will be carried out in accordance with the New York Forest Practice Act and applicable state and local laws.

There is no storage of water in the floodwater retarding structures specifically provided for recreational uses. Adequate provisions will be made to exclude the public to prevent the creation of unsanitary conditions. If public use is allowed in the future, the sponsors will provide adequate sanitary facilities to service the use contemplated. Requirements for safety and health,in conformance with the Federal Construction Safety Act of 1969 (P.L. 91-54), will be included in each construction contract. Design and construction will comply with applicable state laws.

The plan has been coordinated with the Division of Historic Preservation, New York State Parks and Recreation. If artifacts or other items of archeological or historic significance are uncovered by the Soil Conservation Service, or brought to its attention by others prior to or during construction, the State Commission of Parks and Recreation and the National Park Service will be notified. Construction will not begin or continue until appropriate arrangements for survey or salvage have been made.

The city of Rye, and the towns of Rye and Harrison, New York have been identified bythe Federal Insurance Administration of the U.S.

Department of Housing and Urban Development as having special flood hazard areas. These communities are participating in the National Flood Insurance Program and have adopted adequate land use controls and enforcement measures.

Studies to identify the flood hazard areas began in 1975 for the towns of Rye and Harrison, and in 1976 for the city of Rye.

The New York Statewide Comprehensive Recreation Plan has objectives which promote the development of land and water resources. This project will not contravene these objectives. The project proposes land treatment for the control of runoff and erosion and is complementary to the objectives of flood prevention.

The U.S. Corps of Engineers provides a flood plain management service. A flood plain information report was prepared by the Corps of Engineers for the Blind Brook Watershed and published in January 1965.

In June 1976, the city of Rye, with assistance from the National Weather Service, installed a flood warning system for the city. It consists of a resistance-type steam gage on Blind Brook at the Bowman Avenue Dam which can be read at the city police station, a staff gage at the dam for back-up, and an indoor-reading rain gage at the fire station. The system provides 24-hour monitoring of the water level upstream of the city and an advance warning of flood stages. The city is also planning to obtain a radio monitor to pick up the National Weather Services' Tidal Floodwarning broadcast. Two floodwarning horns have been installed in the city; one at the Locust Avenue Fire station and one at the Milton Fire Station. The city has developed a flood evacuation plan and an emergency preparedness plan.

Project sponsors have indicated that nonstructural floodproofing measures would be a satisfactory approach to reduction of remaining damages not controlled by structures. The sponsors have reserved active application of the nonstructural approach because of the nonavailability of funding for implementation. Should funding become available, the agreement will be supplemented.

INSTALLATION COSTS 1/

The total installation cost of the works of improvement is estimated to be $3,175,760 for the 4 year installation period. Total installation cost includes $43,200 for establishing land treatment measures on private land, and $3,132,560 for structural measures. Table 1 contains further cost information.

The total land treatment program cost of $43,200 for review and treatment of subdivision plot plans will be included in the ongoing and accelerated program.

The two floodwater retarding structures and the four dikes serve the purposes of flood prevention. Their installation costs are allocated to that purpose.

1/ These costs are preliminary and subject to change based on a detailed geologic investigation.

The total installation costs of structural measures include costs for construction, engineering services, landrights, and project administration.

Construction costs include estimated contract costs plus a contingency allowance of 12 percent. All costs are based on estimated quantities and current (1979) unit costs. The unit costs were obtained from actual bid prices for similar works constructed in the state and from costs submitted by material supply firms. Construction costs include such items as excavation, seeding, concrete, and earthfill. The estimated construction cost is $2,028,780.

Engineering services costs include the direct cost of engineers and other technicians for surveys, engineering and geologic investigations, and preparation of plans and specifications for structural measures, including associated vegetative work. The costs for engineering services are estimated at $294,100.

Relocation payments include moving and related expenses for a displaced person, business, or farm operation. In addition, financial assistance is available for replacement housing for a displaced person who qualifies and whose dwelling is acquired because of the project. No relocations are anticipated.

Project administration costs include the costs incurred for layout, inspection, relocation assistance advisory services (when relocation occurs), administration of contracts, and other administrative and clerical services necessary to install the project. Project administration costs are estimated to be $351,000.

Landrights costs are estimated to be $458,680 and include all expenditures to be made in acquiring land and/or easements, needed permits, changing existing utilities, and constructing access roads. These costs include $99,000 for sewerlines, treatment, and $359,680 for survey, legal fees, land, installation of fences, value of trees to be removed, and other costs. Landrights costs were determined with the cooperation of the local Sponsors.

The cost for each major structural measure has been determined individually as shown in Table 2.

Actual cost sharing between P.L. 566 cost and other cost can be found in the Watershed Agreement in Appendix A.

ECONOMIC BENEFITS 1/

The total average annual benefits from the project amount to $230,200. When compared with the average annual costs of $219,910, this yields a benefit ratio of 1.05:1.

1/ All monetary values are stated in average annual amounts based on 1979 dollars.

Table E reflects an incremental analysis of the structural works of improvement. Benefit categories considered in this analysis include direct and indirect flood damage reduction, yard and lawn damage reduction, road and bridge damage reduction, floodproofing costs foregone, and employment.

Direct flood damage reduction benefits result from improved floodwater protection to residential, public and commercial buildings in the flood plain and to their contents. Reduced indirect damages result from lowering losses attributed to flooding, but not represented by physical loss such as rerouting of traffic.

Yard and lawn damages are not severe in the flood plain and consist primarily of debris removal and minor repair following larger storms.

Floodproofing costs refer to those costs required under the federal flood insurance program for newly built or substantially improved structures in the flood plain. Lower flood levels with the project in place translates to lower flodproofing costs and the difference from what these costs would be without the project is claimed as a benefit or cost foregone.

Employment benefits refer to the use of otherwise unemployed or underemployed labor resources during construction of the project and for operation and maintenance after installation.

The Brookdale and Barbara Court Dikes are not justified as economic increments. They were included in the plan as the last added increments under total project justification. The Brookdale and Barbara Court Dikes were added to maximize protection from upland flooding in the 100-year storm.

The project provides complete protection from the 100-year storm to 114 residences and 20 businesses. In addition, 216 residences and 27 businesses will receive partial protection and thus have reduced floodwater damages. The average residences inundated are reduced by 40 percent from 30 to 18, and the average businesses inundated are reduced by 50 percent from 6 to 3.

TABLE E - INCREMENTAL ECONOMIC DATA REFINED
BY STRUCTURE AND BENEFIT CATEGORY
1979 1/

Average Annual Benefits and Costs 2/	FWRS Site 1&2	Boston Post Dike	Laurel St. Dike	3/ Barbara Ct. Dike	3/ Brookdale Dike
Direct Flood Damage Reduction	$124,470	$ 9,980	$37,590	$ 5,880	$ 8,410
Indirect Flood Damage Reduction	9,750	1,040	2,890	450	910
Yard and Lawn Damage Reduction	2,910		730	900	1,270
Road and Bridge Damage Reduction	390				
Floodproofing Costs Foregone	3,800	240	380	500	690
Employment	7,830	590	3,260	2,450	2,890
Total Benefits	$149,150	$11,850	$44,850	$10,180	$14,170
Total Costs	111,100	5,690	39,910	28,480	34,730
Net Benefits	$ 38,050	$ 6,160	$ 4,940	$18,300	$20,560
Benefit:Cost	1.34:1	2.08:1	1.12:1	0.36:1	0.41:1
Residences Protected from 100-year storm	64	0	12	13	25
Businesses Protected from 100-year storm	18	2	0	0	0

1/ 1979 Dollars
2/ Amortized at 6-7/8 percent for 100 years
3/ These dikes were added to maximize protection from upland flooding in the 100-year storm.

INSTALLATION AND FINANCING

Federal assistance, financial and other, to be furnished by the Soil Conservation Service and the New York State Department of Environmental Conservation, in cooperation with the Forest Service in carrying out the project, is contingent on the appropriation of funds for this purpose. Before federal funds are made available, the sponsors will be responsible for:

1. Giving assurances that all necessary landrights have been secured.

2. Providing for administering the contracts.

3. Executing an Operation and Maintenance Agreement.

4. Executing a project agreement.

Obtaining the funds needed to apply the land treatment measures will be the responsibility of the individual landowners and operators, utilizing cost-sharing assistance as may be available for approved practices through the ongoing program. Complete program implementation is, however, contingent upon the availability of associated funding. The funds for technical assistance will be provided by the Department of Environmental Conservation, PL 566, and through the ongoing program of the Soil Conservation Service and the Soil and Water Conservation District.

The Westchester County Soil and Water Conservation District will be responsible for providing assistance to landowners and operators to help them plan, establish, and maintain land treatment measures. The land treatment measures will be installed at approximately uniform annual rates over the 5-year installation period. Installation of similar measures required to meet the total conservation needs will be continued thereafter.

The Westchester County Soil and Water Conservation District will petition the County of Westchester to establish a small watershed protection district, in accordance with New York State's enabling legislation (Article 5-D of the County Law). Upon approval by the county government, the Blind Brook Small Watershed Protection District will become the Sponsor and bear the landrights cost associated with the installation of the structural and nonstructural measures. Funds for these establishment expenses and landrights costs will be provided through procedures prescribed in New York State's enabling legislation (County Law). Under provisions of County Law, up to 50 percent of the costs of landrights needed for flood prevention may be reimbursable through New York State funding. The schedule of obligations for structural measures is shown on Table H.

The Blind Brook Watershed project will have to be built considering the effects of the individual structures on the whole project. Specifically, both dams will have to be completed before the dikes are started. This is because the design of the dikes considers the effects of the dams being in place. A construction schedule would be to build site No. 1 the first year at a total cost of $695,700, to build site No. 2 the second year at a cost of $889,400, to build Brookdale Place Dike, Boston Post Road Dike and Barbara Court Dike the third year at a cost of $978,520, and to build Laurel Street Dike the fourth year at a cost of $568,940.

Expenses incurred in the formation of the Blind Brook Small Watershed Protection District will be provided for by the county of Westchester and city of Rye. The district will have legal authority and it will:

1. Provide the necessary landrights including all needed permits for all structural and nonstructural measures. They will obtain landrights through negotiation or condemnation, if necessary. Appraisals will be obtained as a prerequisite to securing landrights in accordance with provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894), and any other applicable laws.

2. Provide for the administration of construction contracts and for such inspection and other administrative services as it requires for the installation of structural measures without P.L. 566 cost sharing assistance. The sponsors, at a later date, may request the Soil Conservation Service to administer contracts.

   Prior to entering into agreements that obligate funds of the Soil Conservation Service, the sponsors will agree to a code of conduct governing the performance of its officers, employees, or agents in contracting with or expending P.L. 566 funds; and a financial management system for control, accountability, and disclosure of P.L. 566 funds received and for control and accountability for property and other assets purchased with P.L. 566 funds. Program income earned during the grant period will be reported on the sponsor's request for allowance or reimbursement from the Service.

3. Request the assistance of the Cooperative Extension Service, through their agents and specialists, in developing and carrying out the watershed information and education program.

4. Request the cooperation of lending agencies, such as local banks and the Federal Land Bank to provide loans to help cooperating landowners and operators install needed treatment measures.

5. Provide relocation assistance advisory services, when necessary, to include providing current and continuing information on the availability prices, and rentals, of comparable decent, safe, and sanitary sales and rental housing; supply information concerning federal and state housing programs, disaster loan programs, and other federal or state programs offering assistance to displaced persons in order to minimize hardships to such persons in adjusting to relocation. These services will be provided without P.L. 566 cost sharing assistance.

6. As part of project administration, provide personally, or by certified or registered first class mail, written notice of displacement, at least 90 days before displaced persons have to move, and appropriate application forms to each individual, family, or business, to be displaced; assist in filing applications, review, and take action on applications for relocation assistance; review and process grievances in connection with displacements; and make relocation payments.

7. Provide for operation and maintenance of structural measures. This is discussed in the next section.

The Soil Conservation Service will:

1. Under the Westchester County Soil and Water Conservation Districts' Memorandum of Understanding with the U.S. Department of Agriculture, provide technical assistance for planning, installing, and maintaining conservation measures.

2. Furnish engineering services for the surveys, layouts, design, and preparation of plans and specifications for the structural measures.

3. Provide for project administration services, including a government representative to administer the expenditure of federal funds, and ensure that all structural measures are installed in accordance with plans and specifications.

4. Will, if cultural values are discovered during construction, dispatch an appropriate notice to the Secretary of the Interior in accordance with Section 3 of P.L. 93-291.

The Forest Service will provide assistance to the Westchester Soil and Water Conservation District, other sponsors and cooperators, for planning and installing conservation measures.

OPERATION AND MAINTENANCE

Land treatment measures will be operated and maintained by the landowners and operators. Technical assistance will be provided by the Westchester County Soil and Water Conservation District, subject to availability of resources.

The Blind Brook sponsors will operate and maintain all structural works of improvement. Annual operation and maintenance cost for the structural measures is estimated to be $4,300. This is broken down into $1,000 for site No. 1, $1,000 for site No. 2, $750 for Laurel Street Dike, $750 for Barbara Court Dike, $100 for Boston Post Road Dike, and $700 for Brookdale Dike and includes the costs for the operation of the pumps and motors and, also, an annual payment to replace these pumps and motors after 50 years. This cost will be borne by the sponsors by taxing the beneficiaries.

Operation and maintenance to be performed by the sponsors includes, but is not limited to, mowing the vegetated areas, removing debris from the structures, and repairing dikes. Scheduled routine maintenance of the pump plants will be required to keep the pumps, motors, and controls in good operating condition. Maintenance activities will be timed to minimize damage to wildlife. Mowing of

vegetated areas will be scheduled to follow the spring nesting period of ground nesting birds and mammals. Debris removal and channel maintenance will be scheduled to avoid spring and fall fish spawning periods.

The sponsors will make inspections annually, after unusually severe floods, and after the occurrence of any other unusual conditions that might adversely affect the structural measures. They will determine what maintenance measures are needed. These inspections will continue annually for the evaluated life of the project. The Soil Conservation Service may assist the sponsors with their inspections at the discretion of the State Conservationist. Sponsors will prepare an inspection report and send a copy to the Service.

There is no storage of additional water in the floodwater retarding structures specifically provided for recreational use. Adequate provisions will be made to exclude the public to prevent the creation of unsanitary conditions from concentrations of litter and human waste. If public use is allowed in the future, the sponsors will provide adequate sanitary facilities to serve the use contemplated.

An operation and maintenance agreement, between the Soil Conservation Service and the Blind Brook Small Watershed Protection District, will be executed for each structure prior to the signing of a project agreement. It will include specific provisions for retention and disposal of property acquired or improved with P.L. 566 financial assistance. The agreement will contain a reference to the SCS State Watersheds Operation and Maintenance Handbook. An operation and maintenance plan will be prepared for each structure in accordance with guidelines contained in the Handbook.

The city of Rye recognizes the will maintain the floodwarning system to ensure proper functioning.

IMPACTS OF SELECTED PLAN

The impacts of the selected plan are displayed in this section. The section has been organized to insure compliance with the Water Resource Council's Principles and Standards Guidelines and the National Environmental Policy Act of 1969, as amended.

The following outline reflects the organization of this section:

I. EXISTING ENVIRONMENTAL CONDITIONS

II. ENVIRONMENTAL QUALITY ACCOUNT 1/

- A. Impacts on Areas of Natural Beauty.
- B. Quality Considerations of Water, Land, and Air Resources.
- C. Impacts on Biological Resources and Selected Ecosystems.
- D. Irreversible or Irretrievable Resource Committments.
- E. Adverse Environmental Impacts Which Cannot Be Avoided.
- F. Impacts on Short-Term Vs. Long-Term Productivity.

III. ECONOMIC DEVELOPMENT IMPACT ACCOUNT

- A. National and Regional Economic Development
- B. Incremental Economic Impacts of Structures.

IV. SOCIAL WELL-BEING IMPACT ACCOUNT

V. ALTERNATIVES

This section includes the Water Resource Council's 4-account displays and discusses impacts on sediment, erosion, landuse, water quality, floodwater, prime farmland, wildlife, fisheries, threatened and endangered species, archaeological and historic resources, and wetlands.

1/ Cultural Resources Survey and Evaluation, Appendix C; Wetland Definitions, Appendix D.

I. EXISTING ENVIRONMENTAL CONDITIONS

Most of the watershed was cultivated at one time, however, thousands of homes have since been built and hardwood forests have developed on a majority of the idled fields. Shade trees and shrubs have been planted around the homes creating the appearance that most of the watershed is forested.

The southern and eastern portions of the watershed are residential and commercial. The residential portion is characterized by landscaped home lots. They vary in size from 1/10 acre to an acre, but are fairly consistent in size for the neighborhood. The homes have groomed lawns and are surrounded with many large trees, foundation, and ornamental plantings.

The remainder of the watershed is characterized by large wooded estates, vacant lots, and extensive open areas, including the State University Campus, golf courses, and the Westchester County Airport. The estates have large lawns with ornamental plantings and are generally separated by sizeable forest, tall grass-perennial weed idle area, and/or shrubby areas.

Hardwood forest occupy 1,071 acres or 15 percent of the watershed. Forested areas vary in size from several hundred square feet around rock outcrops and along streams in the residential areas to sizeable portions of the 20-50 acre estates.

Short mowed grass associated with lawns, playfields, parkways, etc., compromise most of the open areas. Scatter areas of tall grass-perennial weed fields also provide diversity.

There is no prime or unique farmland in the watershed.

Two tidal and five small inland freshwater wetlands have been identified in the watershed.

Their composition and size by type is listed in Table F in accordance with the USDI Fish and Wildlife, "Wetlands of the United States," Circular 39, 1971, and the New York Tidal Wetlands Act. (Wetland Definitions, Appendix D.)

TABLE F - WETLANDS OF THE WATERSHED BY TYPE
Wetland Type (Acres)

Wetland No.	Upland Freshwater Wetlands 1	2	3	4	6	Tidal Wetlands 16 HM	18 1M	19 SM	& LZ	Total Acres 1/
	-	-	-	-	-					
1						1.0	2.1	0.3	1.4	4.8
2						13.7	0.7		2.4	16.8
* 3	0.8									0.8
4		0.8			0.2					1.0
5		0.3	0.1	1.0	0.3					1.7
6		0.1			0.1					0.2
* 7		1.1			1.8					2.9
Total	0.8	2.3	0.1	1.0	2.4	14.7	2.8	0.3	3.8	28.2

1/ Types as listed by the New York State Tidal Wetlands Act.

Wetlands 1 and 2 are located along Blind Brook between the mouth and Playland Parkway in the area considered for diking. Vegetation in these wetlands include smooth cordgrass (Spantina alterniflora), salt hay (Spantina patens) and common reed (Phragmities sp.).

Wetland number 3 is located in the vicinity of the proposed Brookdale Place dike. This type 1 wetland contains common reed (Phragmities sp.).

Wetlands 4, 5 and 6 are not impacted by any alternative.

Wetland 7 is located in the floodpool of structure No. 2. The type 2 is primarily sedges, rushes and some cattail. The type 6 is alder and dogwood.

The American osprey (Pandion haliaetus) an endangered species nests along the ocean and is found in tree tops, dead trees, and on utility poles feeding on fish in nearby waters. The proximity of Long Island Sound creates a potential for osprey to rest, feed, or nest near the mouth of Blind Brook; however, the large population of people in the area may discourage osprey from using the area.

The Blanding turtle (Emdoidea blanding), a threatened species, occurs in the Lower Hudson River Region in lakes, marshes, and small streams.

The "sea or march pink" (Sabatia stellaris), New York State protected plant, may occur in the saline marsh. Similarly, the "wild pink" (Silene caroliniana) may occur on the dry gravelly or rocky woods and openings of the watershed. None have been observed.

* Only wetland numbers 3 and 7 are impacted by the selected plan.

Medium populations of deer, squirrels, raccoons and a low population of grouse occur in the central and northern portions of the watershed. The mature forest of the large estates support these densities. A generally high crown density of mature mast producing trees (oak, beech, hickory, maple) and dense understory exists.

Local populations of pheasants exist where suitable open areas are found adjacent to woody cover.

Songbirds are common throughout the watershed and the most significant wildlife species in the residential area. The small undeveloped forest and overgrown areas of the southern portion of the watershed support moderate populations of squirrels with a lower abundance of rabbits and woodchucks. Pigeons, English sparrows, nighthawks, and chimney swifts are common in the highly urbanized areas.

Approximately 16 ponds are scattered throughout the watershed, the previously mentioned wetlands and Blind Brook provide localized habitat for waterfowl, marsh and shorebirds, and muskrats.

Blind Brook, in the vicinity of Barbara Court, Laurel Street, and Boston Post Road dikes has a channel gradient of about 10 feet per mile, causing the water to be fairly uniform in depth with only a few gentle riffles (10 percent). The stream has an average width of about 14 feet and is 30-36 inches deep in the downstream end, shallowing to about 12-18 inches in the upper end. The bottom materials are primarily sands and silts. The banks are walled in many areas. About 85 percent of the water area is shaded. The majority of this section is in residential areas with only several hundred feet flowing through a commercial area.

In the vicinity of the Brookdale Place dike and south to Milton Harbor, Blind Brook has little gradient, and is affected by tides which normally vary the water levels several feet. Ebb tides reduce the depth of the lower section from 3-6 feet to 8-16 inches deep. Three to 12 feet of mudbanks are exposed to low tide. The stream is primarily riffles above Oakland Beach Avenue.

Little Brook, in the vicinity of site 2, has a steeper gradient with 7 percent pools and 93 percent riffles. The riffles are approximately 11 feet wide and 4 inches deep, with pockets behind rocks 12-14 inches deep. The stream flows through dense forest land providing 90-100 percent shade over the water.

Blind Brook, in the vicinity of site 1, is 7-8 feet wide, flowing mainly through semiopen wooded areas which provide shade to 54 and more percent of the water. The gradient is low, creating a high amount of pools (86 percent). The average depth of the pools is 13 inches with maximum depths of about 24 inches. Along the sandy bottom, some roots provide cover for fish. Riffles consist of 14 percent of the stream, averaging 11 inches deep.

There is no sport fishery in Blind Brook or its tributaries. Herring, smelt, white perch, and striped bass may use the half mile of stream as a feeding area. White suckers, golden shiners, blacknose dace, and goldfish are found in the remainder of the stream.

A detailed archeological and historical study has been conducted for the watershed. This data is displayed in Appendix C.

The water quality testing program initiated by SCS consisted of three sampling stations which were operated during the summer of 1975. The USGS Blind Brook stream gage location at Rye, New York was used as one sampling station, one was located on Blind Brook at Port Chester, and the other on Blind Brook Tributary at Port Chester. (See Appendix E, Figure E-7).

Water samples were taken monthly at these stations from 5/75 to 10/75 and analyzed by the U.S. Department of Interior Geological Survey Central Laboratory, Albany, New York. In addition, stream flow data was taken from USGS gage records from the stream gage operated at Rye, New York since 1943. Additional random water quality samples have been analyzed by USGS in 1971, 1971, and 1976.

Of the 44 parameters analyzed only those concerning the present and future water use were included in this report.

Selected WQ Parameters (Median Values)

Parameters		STA-1	STA-2	STA-3
Total Alkalinity	MG/L	65.	76.5	54.5
Bicarbonate	MG/L	79.	93.5	66.
Chloride	MG/L	32.	19.	22.
Fecal Coliforms	/100ML	17550.	470.	170.
Fecal Strep	/100ML	14270.	465.	200.
Conductivity		330.	292.	253.
Total Hardness	MG/L	90.5	105.	81.
Total Nitrogen	MG/L	1.5	1.3	1.4
Dissolved Oxygen	MG/L	8.4	8.7	8.5
pH		7.25	7.4	7.3
Total Phosphorus	(P)MG/L	.09	.06	.05
Dissolved Solids	MG/L	178.	149.	153.
Sodium	MG/L	17.	10.5	12.5
Turbidity	JTU	2.0	2.0	1.0
Suspended Solids	MG/L	5.5	3.5	3.5
Temp. °C		20.8	19.5	18.8
Temp. °F		69.6	67.2	66.

II. ENVIRONMENTAL QUALITY ACCOUNT 1/

Measure of Beneficial and Adverse Effects:

A. Areas of Natural Beauty

1. The construction of structural measures will alter the natural aesthetics of the watershed because open land will be created by dikes and dams.

2. The access to and view of Blind Brook will be reduced by the dikes. Dikes averaging 8 feet in height will impede access to and observation of Blind Brook. There are 57 residences behind the dikes.

3. Construction of the dikes could impact historic archaeological remains in the vicinity of Old Rye Fort and along the eastern bank of Blind Brook above Milton Harbor. (See Apendix C).

4. Construction is proposed in the vicinity of the Old Rye Fort and Square House. However, construction will not physically impact those buildings. (See Appendix C).

B. Quality considerations of water, land, and air resources.

1. The floodwater retarding structures will trap 105 tons of sediment per year.

2. The annual sediment yield at the mouth of Blind Brook will be reduced from 679 tons to 618 tons.

3. The average annual sediment concentration at the mouth of Blind Brook will be reduced from 43 mg/l to 39 mg/l.

4. Dollar damages to residential lawns and yards will decrease by 40 percent.

5. Noise and dust pollution as well as sediment delivered to the stream will increase during the construction period, but levels should return to normal after installation of the project.

6. Construction related energy consumption will increase during the installation period, but should decline after completion of the project due to a lower level activity needed for repair of flood plain structures.

7. Table G outlines the land and water resources committed to the project.

1/ Cultural Resource Survey and Evaluation, Appendix C; Wetland Definitions, Appendix D.

TABLE G - LAND AND WATER RESOURCES COMMITTED TO THE PROJECT

Land Use By Site	Total Area Committed By Project	Area Directly Impacted By Construction 1/	Area Intermittently Impacted By The Flood Pools 2/
Perennial Stream (Ft.)			
FWRS Site 1	4,200	1,200	3,000
FWRS Site 2	2,600	500	2,100
Total	6,800	1,700	5,100
Open Land Formerly Cropped (Ac.)			
FWRS Site 1	8.0	6.6	1.4
FWRS Site 2	2.0	0	2.0
Total	10.0	6.6	3.4
Forest Land (Ac.)			
FWRS Site 1	37.6	12.1	25.5
FWRS Site 2	28.2	9.4	18.8
Brookdale Dike	0.7	0.7	0
Barbara Court - Laurel Street Dike	0.3	0.3	0
Total	66.8	22.5	44.3
Urban Land (Ac.)			
FWRS Site 2	6.0	1.2	4.8
Brookdale Dike	0.9	0.9	0
Barbara Court - Laurel Streek Dike	1.7	1.7	0
Total	9.6	4.8	4.8
Water (Ac.)			
FWRS Site 2	0.8	0.8	0
Total	0.8	0.8	0
Wetland (Ac.)(Types)			
FWRS Site 1 (II & VI)	2.9	0	2.9
Brookdale Dike (I)	0.4	0.4	0
Total	3.3	0.4	2.9
Golf Course (Ac.)			
FWRS Site 1	15.5	0.8	14.7
Borrow Area	12.0	12.0	0
Total	27.5	12.8	14.7
Summary for Project			
Perennial Stream (Ft.)	6,800	1,700	5,100
Land & Water (Ac.)	117.0	46.9	70.1

1/ Areas directly impacted by construction include acreages where earth will be moved and land use altered.

2/ Areas intermittently impacted include acreage where vegetative cover will not change, but which will be subject to periodic inundation by the functioning of the dams.

8. Construction of the floodwater retarding structures will result in the conversion of 6.6 acres of open land formerly cropped, 18.6 acres of forest, 0.8 acre of golf course, and 1 acre of urban land to grassed spillways, dams, and construction areas. Two and nine-tenths acres of woods, 0.2 acre urban land, and 0.8 acre water will be converted to sediment pool.

9. Construction of the dike will convert 2.6 acres urban land, 0.4 acre type 1 wetland, and 1 acre forest to 2,000 square feet of concrete dike and 172,240 square feet of open land planted to grass, legumes and shrubs.

10. Temporary disturbance will occur on 12 acres of golf course for borrow and 2.6 acres of urban land for dike construction.

11. Approximately 150 feet of Blind Brook and 250 feet of Little Brook will be converted to concrete pipe by dam construction. Also, 1,050 feet of Blind Brook and 250 feet of Little Brook will be inundated by the sediment pool.

12. The natural landscape will be altered by earthen dam construction. The construction will alter existing native vegetation and natural topography.

13. Water quality will not be adversely impacted by the project.

14. No prime and unique farmland will be impacted by the project. No agricultural land will be removed from production by the project.

C. Biological resources and selected ecosystems.

1. Temporary inundation of 70.1 acres of land by FWRS Sites will decrease its suitability for ground nesting species while increasing its suitability as waterfowl habitat. Inundation will eliminate eggs and immobile young of ground and low shrub nesting species.

2. The conversion of 28.4 acres of land through site construction to permanent grass will increase nesting habitat for ground nesting birds and mammals and increase forage for deer and rabbits.

3. Three and one-tenth acres of water suitable for existing minnow population, waterfows, marsh type songbirds, and muskrats will be created by dam construction.

4. Nine acres of forest land providing squirrel habitat and 13.5 acres of forest land providing songbird and small mammal habitat will be converted to 19.6 acres of grassland and 2.9 acres of water.

5. Four-tenths acre of type 1 wetland will be converted to terrestrial habitat. Three and one-tenth acres of terrestrial habitat will be converted to aquatic habitat.

6. There will be no impacts on threatened or endangered species.

7. Existing habitat for minnow species will be lost in 400 feet of stream.

D. Irreversible and Irretrievable Commitments of Resources

The structural measures will occupy approximately 117.0 acres of land, consisting of 10.0 acres of open land formerly cropped, 66.8 acres of forest land, 27.5 acres of other land, 8.6 acres of urban land, 0.8 acre of water, 3.3 acres of wetland, and 6,800 feet of perennial stream.

Other commitment of resources includes labor, materials, and energy required for the construction of the project.

Commitment of the land and water areas to features of the project will preclude these areas from other uses for a period to exceed the life of the project. The committed acreage will become an open space area used by upland wildlife. The sediment pool areas will be used by minnows, waterfowl, and furbearers.

The storage volume in the reservoirs allocated to sediment will be filled during the life of the project. However, the structures will be operational for flood reduction for many years.

Four hundred feet of minnow habitat will be lost by dam construction.

E. Adverse Environmental Impacts Which Cannot Be Avoided.

The following in the judgment of the Soil Conservation Service are the most important environmental amenities that would be lost if the selected plan is installed.

1. Floodwater Retarding Structures 1 and 2 will eliminate 3.1 acres of terrestrial habitat, and 1,700 feet of perennial streams.

2. Twelve acres of land presently being used as a golf course will be altered by borrow activities.

3. The Brookdale Place Dike will eliminate 0.4 acre of Type 1 Wetland.

4. The dikes will reduce the view of the stream and impede access to the stream.

5. The structures will alter the aesthetics of the watershed.

F. Short Term VS. Long Term Use of Resources

The most obvious trends in land use change is open land formerly cropped being converted to urban land. Table H summarizes the present and expected future (2000) land use. Anticipated future land use will not be influenced by installation of the project.

TABLE H - PRESENT AND FUTURE (2000) LAND USE

LAND USE	PRESENT USE		FUTURE USE	
	Acres	Percent	Acres	Percent
Urban Land	3,974	57	5,707	82
Wetland and Open Water	38	1	38	1
Other Land	593	8	593	8
Orchards	33	1	0	0
Open Land Formerly Cropped	1,271	18	171	2
Forest Land	1,071	15	471	7
TOTAL	6,980	100	6,980	100

Structural measure installation will restrict options for future use on land to be occupied by the measures, or about 2.5 percent of the watershed. On the remaining 97.5 percent, opportunities for use will be maintained or enhanced.

The project is designed to meet the immediate need for flood prevention, and to continue to satisfy the need, with adequate maintenance for at least 100 years. The plan is compatible with the long term uses of the natural resources and will mesh readily with known water and related land resource plans of a wider scope.

The plan was reviewed by appropriate state and federal agencies and is compatible with other water resource projects in the region.

An accumulated effect outside the watershed is the reduction of sediment delivered to the mouth of the watershed by 61 tons annually.

III. ECONOMIC DEVELOPMENT IMPACT ACCOUNT 1/

A. National and Regional Economic Development

Beneficial Effects:	(Average Annual) 2/
The value to users of increased outputs of goods and services.	
1. Flood Prevention	
Direct Damage Reduction	$192,530
Indirect Damage Reduction	15,040
2. Flood Proofing Cost Savings	5,610
3. Employment	17,020
TOTAL BENEFICIAL EFFECTS.....	$230,200 3/

1/ Combines National and Regional Economic Accounts
2/ 100 Years at 6-7/8 Percent Interest
3/ Direct national benefits are accrued in New York State

Components	Measures of Effects	
	State of New York	Rest of Nation
Income	(Average Annual) 2/	
Adverse Effects: (Cost)		
The value of resources contributed to achieve the outputs.		
1. Project Installation	$31,570	$159,880
2. Project Operation and Maintenance	4,300	0
3. Project Administrtion	2,470	21,690
TOTAL ADVERSE EFFECTS.....	$38,340	$181,570
TOTAL ADVERSE EFFECT (Cost) Total Nation	$219,910	
NET BENEFICIAL EFFECTS.....	$191,860	-$181,570
NET BENEFICIAL EFFECTS TOTAL NATION		+$10,290 3/

1/ Combines National and Regional Economic Accounts
2/ 100 Years at 6-7/8 Percent Interest
3/ Indirect national benefits are accrued in New York State

Components	Measure of Effects
Employment (Regional)	
Beneficial Effects:	
Increase in the number and types of jobs	
1. Project Construction	During the installation period 22.8 man years of labor will be employed, of which 11.6 would have been otherwise unemployed or underemployed.
2. Project Operation and Maintenance	During the life of the project 0.4 man years of labor will be employed annually.
Adverse Effects:	No adverse effects to regional employment are expected from the construction or the operation and maintenance of the project.
Population Distribution (Regional)	
Beneficial and adverse Effects	Since the area is already densely populated and little future development of the flood plain is expected, the project should not cause any significant change in regional or national population distribution patterns.
Region Economic Base and Stability (Regional)	
Beneficial and adverse effects	A large number of the wage earners in the watershed commute to work in New York City and the project would have little effect on them. A small number of local merchants in the flood plain would benefit in that they could expect less floodwater damage to their businesses plus less interruption and loss of business due to flooding over the 100-year life of the project.

B. Incremental Benefit Cost Analysis (1979 Dollars)

Item	Avg. Annual Benefits	Annual Costs 1/	Net Benefits	B:C
Floodwater Retarding Structures 1 and 2	149,150	111,100	38,050	1.34:1
Boston Post Road Dike	11,850	5,690	6,160	2.08:1
Laurel St. Dike	44,850	39,910	4,940	1.12:1
Barbara Ct. Dike 2/	10,180	28,480	-18,300	.36:1
Brookdale Place Dike 2/	14,170	34,730	-20,560	.41:1
Total Structural Measures	230,200	219,910	10,290	1.05:1

1/ Amortized at 6-7/8 percent interest for 100 years.
2/ The Brookdale Dike and Barbara Court Dikes are not justified as economic increments. They were included in the plan as the last added increments under total project justification. The Brookdale Dike and Barbara Court Dikes were added to maximize protection from upland flooding in the 100-year storm.

IV. SOCIAL WELL BEING IMPACT ACCOUNT

Measure of Beneficial and Adverse Effects:

A. Real Income

1. A 72 percent reduction in flood damages to residences and businesses in the flood plain will provide an increase in real income. Average businesses inundated will be reduced by 50 percent.

2. Increased employment during the installation period and for operation and maintenance over the life of the project, plus savings in the cost of future floodproofing, will further increase real income.

3. Costs of the project borne by residents of the watershed represent a decline in the real income but are more than offset by the increases in Nos. 1 and 2 above.

B. Life, Health and Safety

1. The risk of flooding and thus the threat to loss of life will be significantly reduced for residents of the flood plain. The average residences inundated will be reduced by about 40 percent.

2. Reduction of flooding will reduce the public health hazard from contaminated water.

3. The Brookdale and Barbara Court dikes do not exhibit economic feasibility. However, they do reduce the threat to life, health, and safety in the watershed.

C. Recreational and Educational

1. Two and one-half acres of water particularly suitable as an environmental study area will be created near the SUNY campus at Purchase by construction of Site 1.

2. Residents will be restricted by the dikes from easy access to the stream for recreational purposes.

V. ALTERNATIVES

All logical alternatives were evaluated in the planning process. None of the alternatives evaluated would achieve the planning objectives with essentially a similar commitment of resources while avoiding environmental impacts.

Data relative to the alternatives evaluated are outlined in the project formulation section (Pg. 9-13).

ENGINEERING

and

ACCOUNTING

TABLES

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST

Blind Brook Watershed, New York

Installation Cost Item	Unit	No.	Estimated Cost (Dollars)1/ P.L. 566 Funds SCS 2/	FS 2/	Total	Other SCS 2/	FS 2/	Total	TOTAL
LAND TREATMENT - ONGOING PROGRAM									
Land Areas									
Urban Land	Acres	10				10,000		10,000	10,000
Technical Assistance						3,000		3,000	3,000
SUBTOTAL						13,000		13,000	13,000
LAND TREATMENT - ACCELERATED									
Urban Land									
Construction Sites	No.	30							
(Plot Plans)	(Acres)	(500)				10,000	10,000	20,000	20,000
Technical Assistance				6,200	6,200	3,000	1,000	4,000	10,200
SUBTOTAL				6,200	6,200	13,000	11,000	24,000	30,200
TOTAL LAND TREATMENT				6,200	6,200	26,000	11,000	37,000	43,200
STRUCTURAL MEASURES									
Floodwater Retarding Structures: 4/									
Site 1			441,100		441,100	190,000		190,000	631,100
Site 2			636,400		636,400	159,000		159,000	795,400
Dikes:									
Boston Post Rd.			68,600		68,600	1,000		1,000	69,600
Laurel St.			458,380		458,380	39,460		39,460	497,840
Barbara Ct.			329,900		329,900	21,800		21,800	351,700
Brookdale Pl.			388,500		388,500	47,420		47,420	435,920
SUBTOTAL - Structural Costs			2,322,880		2,322,880	458,680		458,680	2,781,560
PROJECT ADMINISTRATION									
Construction Inspection			155,000		155,000	17,000		17,000	172,000
Other			160,100		161,000	18,900		18,900	179,000
SUBTOTAL - Administration			315,100		315,100	35,900		35,900	351,000
TOTAL PROJECT COSTS 3/			2,637,980	6,200	2,644,180	507,580	11,000	518,580	3,162,760
TOTAL ALL COSTS			2,637,980	6,200	2,644,180	520,580	11,000	531,580	3,175,760

1/ Price base 1979.
2/ Federal agency responsible for assisting in installation of works of improvement.
3/ Excludes ongoing program land treatment.
4/ Costs are preliminary and subject to change based on detailed geologic investigations.

March 1979

TABLE 2 - ESTIMATED COST DISTRIBUTION

Blind Brook Watershed, New York

(Dollars)1/

	Installation Cost P.L. 566 Funds				Installation Cost - Other Funds				Total
	Construction	Engineering	Landrights	Total P.L. 566	Construction	Engineering	Landrights	Total Other	Installation Cost
STRUCTURAL MEASURES									
Floodwater Retarding Structures:									
Site 1	387,300	53,800		441,100			190,000 2/	190,000 2/	631,100
Site 2	560,000	76,400		636,400			159,000 3/	159,000 3/	795,400
Dikes:									
Boston Post Road	58,100	10,500		68,600			1,000	1,000	69,600
Laurel Street	395,180	63,200		458,380			39,460	39,460	497,840
Brookdale Place	343,800	44,700		388,500			47,420	47,420	435,920
Barbara Court	284,400	45,500		329,900			21,800	21,800	351,700
SUBTOTAL - Structural	2,028,780	294,100		2,322,880			458,680	458,680	2,781,560
PROJECT ADMINISTRATION	XXXXXXX	XXXXXXX	XXXXXXX	315,100	XXXXXXX	XXXXXXX	XXXXXXX	35,900	351,000
GRAND TOTAL	2,028,780	294,100		2,637,980			458,680	494,580	3,132,560

1/ Price base 1979
2/ Includes $40,000 for treating sewerline
3/ Includes $59,000 for treating sewerline

March 1979

TABLE 3 - STRUCTURAL DATA

DAMS WITH PLANNED STORAGE CAPACITY

Blind Brook Watershed, New York

Item	Unit	Structure Number 1	Structure Number 2	Total
Class of Structure		C	C	
Drainage Area (Total)	Sq. Mi.	1.83	1.90	3.73
Runoff Curve No. (1-day) (AMC II)		76	75	
Elevation Top of Dam	Ft.	264.9	203.3	
Elevation Crest Emergency Spillway	Ft.	260.6	199.3	
Elevation Crest Inlet	Ft.	243.4	169.4	
Maximum Height of Dam	Ft.	23.9	40.3	
Volume of Fill	Cu. Yd.	45,000	56,000	101,000
Total Capacity 1/	Ac. Ft.	441.7	370.5	812.2
Sediment Submerged	Ac. Ft.	2.9	3.5	
Sediment Aerated	Ac. Ft.	.5	.7	
Floodwater Retarding	Ac. Ft.	438.3	366.4	804.7
Surface Area				
Sediment Pool	Acres	2.5	1.4	3.9
Floodwater Retarding Pool 1/	Acres	49.0	28.0	77.0
Principal Spillway Design				
Rainfall Volume (1-day)	Inches	7.3	7.3	
Rainfall Volume (10-day)	Inches	14	14	
Runoff Volume (10-day)	Inches	8.4	8.0	
Capacity of High Stage (Max.)	cfs.	56.1	72.2	
Dimensions of Conduit	Inches	24	24	
Emergency Spillway Design				
Frequency Operation-Emergency Spillway	% chance	1	1	
Rainfall Volume (ESH)	Inches	10.5	10.5	
Runoff Volume (ESH)	Inches	7.5	7.4	
Storm Duration	Hours	6	6	
Type		Veg. Earth	Veg. Earth	
Bottom Width	Ft.	330	290	
Velocity of Flow (V)	Ft. Sec.	4.2	5.1	
Slope of Exit Channel	Ft./Ft.	.019	.019	
Max. Reservoir Water Surface Elevation	Ft.	261.9	201.0	
Freeboard Design				
Rainfall Volume (FH)	Inches	24.5	24.5	
Runoff Volume (FH)	Inches	21.1	20.9	
Storm Duration	Hrs.	6	6	
Max. Reservoir Water Surface Elevation	Ft.	264.9	203.3	
Capacity Equivalents				
Sediment Volume	Inches	.03	.04	
Floodwater Retarding Volume	Inches	4.33	3.5	

1/ Crest of Emergency Spillway

March 1979

TABLE 3A - STRUCTURAL DATA

DIKES

Blind Brook Watershed, New York

Name	Length (ft.)	Height (ft.)	Top Width (ft.)	Side Slopes	Type & Volume (cu.yds.)	
Brookdale Place	570	8	1	-	Concrete	387
	940	9	10	3:1	Earth	8,250
Barbara Court	470	8	1	-	Concrete	239
	750	8	10	3:1	Earth	7,800
Laurel Street	1,020	8	1	-	Concrete	667
Boston Post Road	260	8	1	-	Concrete	120

March 1979

TABLE 4 - ANNUAL COST

Blind Brook Watershed, New York
(Dollars)

Evaluation Unit	Amortization of Installation Cost 2/	Operation and Maintenance Cost	Total
Unit #1 FWRS 1 and 2, Boston Post Rd., Barbara Ct. Laurel St. and Brookdale Pl. Dikes	191,450	4,300	195,750
Project Administration	24,160		24,160
GRAND TOTAL	215,610	4,300	219,910

1/ Price Base: 1979
2/ Amortized @ 6-7/8 percent interest rate for 100 years

March 1979

TABLE 5 - ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Blind Brook Watershed, New York
(Dollars)

Item	Estimated Average Annual Damage 1/ Without Project	With Project	Damage Reduction Benefit
Urban Floodwater			
Residential			
Structure and Contents	200,240	57,820	142,420
Lawn and Yard	14,400	8,590	5,810
Commercial			
Structure and Contents	51,010	7,100	43,910
Road and Bridge	2,120	1,730	390
Subtotal	267,770	75,240	192,530
Indirect	20,100	5,060	15,040
Total	287,870	80,300	207,570

1/ Price base 1979

March 1979

TABLE 6 - COMPARISON OF BENEFITS AND COSTS

Blind Brook Watershed, New York

(Dollars)

Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/				Average Annual Cost 3/	Benefit Cost Ratio
	Damage 2/ Reduction	Floodproofing Cost Foregone	Employment	Total		
Unit #1						
FWRS 1 and 2; Boston Post Road Barbara Ct., Laurel St., and Brookdale Place Dikes	207,570	5,610	17,020	230,200	195,750	1.18:1
Project Administration	XXXXXXX	XXXXX	XXXXX	XXXXXXX	24,160	XXXXX
GRAND TOTAL	207,570	5,610	17,020	230,210	219,910	1.05:1

1/ Price base 1979
2/ From Table 5
3/ From Table 4

March 1979

LIST OF THE PREPARERS

Robert G. Rood
Water Resources Staff Leader
7 years experience water resources planning
BA Economics; MBA

Joseph R. DelVecchio
Water Resources Staff Civil Engineer
9 years engineering experience
BS Civil Engineering, PE New York

Francis M. Keeler
Water Resources Staff Biologist
8 years experience
AAS Agronomy, BS Wildlife Science

Harlan F. Moonen
Water Resources Staff Geologist
12 years water resources and river basin planning
BA Geology

Phillip D. Teague
Water Resource Staff Economist
1.5 years experience
BA Economics

Julius D. Toenniessen
Hydraulic Engineer
9 years engineering experience
BSCE; MSCE

Albert A. Dekin, Jr.
Archaeological Consultant

Plan and EIS Review

The following is a list of agencies, organizations and persons to whom copies of the document have been sent for review. Comments received will be included in Appendix B of this post-review document.

New York State Department of Environmental Conservation
New York State Planning & Development Clearinghouse
Tri-State Regional Planning Commission
Corps of Engineers, New York District
Environmental Protection Agency
Department of the Army
Department of the Interior
Department of Commerce
Department of Health, Education, and Welfare
Department of Transportation
Office of Equal Opportunity - USDA
Federal Power Commission
Audubon Society
National Resources Defense Council
Friends of the Earth
Environmental Defense Fund
National Wildlife Federation
Governor of the State of New York
Housing and Urban Development

APPENDIX A

AGREEMENT

AGREEMENT

between the following local organizations:

County of Westchester
Westchester County Soil & Water Conservation District
City of Rye

(Referred to herein as sponsors.)

State of New York
and the
Soil Conservation Service
United States Department of Agriculture

(Referred to herein as SCS)

Whereas, application has heretofore been made to the Secretary of Agriculture by local organization(s) for assistance in preparing a plan for works of improvement for the Blind Brook Watershed, State of New York, under the authority of the Watershed Protection and Flood Prevention Act (16 U.S.C. 1001-1008); and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the Soil Conservation Service (SCS); and

Whereas, there has been developed through the cooperative efforts of local organizations and SCS this plan for works of improvement for the Blind Brook Watershed, State of New York;

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through the Soil Conservation Service and the sponsors hereby agree on this plan and that the works of improvement for this project will be installed, operated, and maintained in accordance with the terms, conditions, and stipulations provided for in this watershed plan and including the following:

1. The Sponsoring Local Organization will acquire such landrights as will be needed in connection with the works of improvement. The percentages of this cost to be borne by the Sponsoring Local Organization and SCS are as follows:

Works of Improvement	Sponsors (Percent)	SCS (Percent)	Estimated Land Rights Cost (Dollars)
Structural Measures	100	0	458,680

2. The Sponsors will make every effort to assure that comparable

replacement dwellings will be available for individuals and persons displaced from dwellings, and will provide relocation assistance advisory services and relocation assistance, make the relocation payments to displaced persons, and otherwise comply with the real property acquisition policies contained in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894) effective as of January 2, 1971, and the Regulations issued by the Secretary of Agriculture pursuant thereto. The costs of relocation payments will be shared by the Sponsors and SCS as follows:

	Sponsors (percent)	SCS (percent)	Estimated Relocation Payment Costs (dollars)
Relocation Payments	30	70	0 1/

3. The Sponsors will acquire or provide assurance that landowners or water users have acquired such water rights pursuant to state law as may be needed in the installation and operation of the works of improvement.

4. The percentages of construction costs to be paid by the Sponsors and by SCS are as follows:

Works of Improvement	Sponsors (percent)	SCS (percent)	Estimated Construction Costs (dollars)
Structural Measures	0	100	2,028,780

1/ Investigation has disclosed that under present conditions the project measures will not result in the displacement of any person, business, or farm operation. However, if relocations become necessary, relocation payments will be cost shared in accordance with the percentages shown.

5. The percentages of the engineering costs to be borne by the Sponsors and SCS are as follows:

Works of Improvement	Sponsors (percent)	SCS (percent)	Engineering Costs (dollars)
Structural Measures	0	100	294,100

6. The Sponsors and SCS will each bear the cost of Project Administration which it incurs, estimated to be $35,900 and $315,100,

respectively.

7. The Sponsors will be responsible for obtaining agreements to execute conservation plans from owners of not less than 50 percent of the land above each floodwater retarding structure. Fifty percent of the land above each floodwater retarding structure must be adequately protected prior to construction of the structure.

8. The Sponsors will provide assistance to landowners and operators to assure the installation of the land treatment measures shown in the watershed plan.

9. The Sponsors will encourage landowners and operators to operate and maintain the land treatment measures for the protection and improvement of the watershed.

10. The Sponsors will be responsible for the operation and maintenance and replacement of the works of improvement by actually performing the work or arranging for such work in accordance with agreements to be entered into prior to issuing invitations to bid for construction work.

11. The costs shown in this plan represent preliminary estimates. In finally determining the costs to be borne by the parties hereto, the actual costs incurred in the installation of works of improvement will be used.

12. This agreement is not a final obligating document. Financial and other assistance to be furnished by SCS in carrying out the plan is contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.

13. A separate agreement will be entered into between SCS and Sponsors before either party initiates work involving funds of the other party. Such agreements will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

14. This plan may be amended, revised, or terminated only by mutual agreement of the parties hereto except that SCS may terminate financial and other assistance in whole, or in part, at any time it determines that the Sponsor has failed to comply with the conditions of this agreement. In this case, SCS shall promptly notify the Sponsor in writing of the determination and the reasons for the termination, together with the effective data. Payments made to the Sponsor or recoveries by SCS under projects terminated shall be in accord with the legal rights and liabilities of the parties.

15. No member of or delegate to Congress, or resident commissioner,

shall be admitted to any share or part of this plan, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

16. The program conducted will be in compliance with all requirements respecting nondiscrimination as contained in the Civil Rights Act of 1964, as amended, and the regulations of the Secretary of Agriculture (7CFR 15.1-15.12), which provide that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any activity receiving federal financial assistance.

17. The Sponsors will maintain the existing flood warning system and evacuation plan in the city of Rye.

_____ By
Title _____

_____ Date _____
Address Zip Code

The signing of this plan was authorized by a resolution of the governing body of the _____
adopted at a meeting held on _____

_____ _____
Address Zip Code

Date _____

_____

_____

_____ By _____

Title _____

_____ Date _____
Address Zip Code

The signing of this plan was authorized by a resolution of the governing body of the _____
adopted at a meeting held on _____

_____ _____
Address Zip Code

Date _____

_____

_____

_____ By
Title _____

_____ Date _____
Address Zip Code

The signing of this plan was authorized by a resolution of the governing body of the _____
adopted at a meeting held on _____

_____ _____
Address Zip Code

Date _____

_____
_____

_____ By _____

Title _____

_____ Date _____
Address Zip Code

The signing of this plan was authorized by a resolution of the governing body of the _____
adopted at a meeting held on _____

_____ _____
Address Zip Code

Date _____

_____
_____

Appropriate and careful consideration has been given to the environmental impact statement prepared for this project and to the environmental aspects thereof.

Soil Conservation Service

United States Department of Agriculture

Approved by:

_____
Robert L. Hilliard
State Conservationist

_____
Date

APPENDIX B

LETTERS OF COMMENT

ON

ENVIRONMENTAL IMPACT STATEMENT

LETTERS OF COMMENT

ON

ENVIRONMENTAL IMPACT STATEMENT

The following correspondence are a series of comments and responses regarding the Blind Brook Draft Plan and EIS.

The Appendix is organized to reflect a letter of comment followed by the SCS response. Instances where comments have caused changes in the text are noted on letters of response.

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Peter A. A. Berle,
Commissioner

DIVISION OF WATER
FLOOD PROTECTION BUREAU

June 5, 1979

Mr. Robert L. Hilliard
State Conservationist
US Department of Agriculture
Soil Conservation Service
771 Federal Building
100 South Clinton Street
Syracuse, New York 13202

Dear Mr. Hilliard:

The Draft Watershed Work Plan for the Blind Brook Watershed has been reviewed by the following State agencies:

Department of Transportation
Department of Agriculture and Markets
Department of Health
Division of State Planning
Office of Parks and Recreation
Department of Environmental Conservation

The agencies generally agreed that the project would be most beneficial.

Comments from those agencies which responded are attached for your consideration.

Comments on the Environmental Impact Statement will be forwarded from this Department's Office of Environmental Analysis.

Sincerely,

James Kelley

James F. Kelley
Chief, Water Management Group

Attachments
TEA/ea

STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE AND MARKETS
J. ROGER BARBER, COMMISSIONER
ALBANY, NEW YORK 12235

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
JUN 4 1979
PROGRAMMING AND ANALYSIS BUREAU

May 31, 1979

James F. Kelley
Watershed Reviews
NYS DEC, Room 618
50 Wolf Road
Albany, NY 12233

Dear Mr. Kelley:

The Blind Brook Watershed Work Plan and Environmental Impact Statement for USDA - SCS's PL-566 project, has been reviewed. Due to the urban nature of this watershed and its close proximity to New York City, White Plains and other large centers of population, we would expect the impact of this project proposal on viable agricultural land in New York State to be minimal.

We do feel, however, that the DEIS should more clearly identify whether or not any agricultural activity is occurring at the location of the upper dams. The Cultural Resources Survey and Evaluation Report (Appendix C), indicates that the "upper dams are in areas of field and pasture which have not been significantly altered..." This could imply that agricultural activity is ongoing and that active farmland may be taken out of production as a result of project implimentation. On the otherhand, the DEIS only refers to 10 acres of "open land formerly cropped." There is confusion, also, as to what is meant by 27.5 acres of "other land" (p. 37). We feel that if there is no active farmland this should be spelled out rather than not to mention it as even a possible category. Even though 'no prime and unique farmaland' is affected, active farmland whether or not it is classified as prime and unique should be identified in acres as a recognized category of land use or non-existent, if that, in fact, is the case.

Sincerely,

Louise A. Inglis

Louise A. Inglis
Agricultural Development Assistant

LAL/elr

bcc: Kim Blot

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Robert F. Flacke,
Commissioner

DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
RECEIVED
JUN 1 1979
PROGRAM ... AND
ANALYSIS ...

M E M O R A N D U M

TO: James F. Kelley

FROM: Edward A. Karath EAK

SUBJECT: BLIND BROOK WATERSHED WORK PLAN

DATE: June 1, 1979

We believe the Work Plan should be approved. We have the following comments:

1. In discussing economic benefits (page 24, Table E and page 37, paragraph D), the indirect costs incurred by altering the land use of up to 117 acres should be noted.

2. In discussing Quality Considerations of Water, Land and Air Resources, impacts on salt water intrusion and groundwater quality should be addressed.

3. In discussing the structural measures, the sizing for the pumping bay and pumping plants should consider interior drainage as well as seepage water. Gravity drainage structures might help empty the pumping bays during ebb tides.

4. In designing the concrete flood walls for construction on pervious strata, care should be taken that movement of foundation materials is prevented.

ACT:lb

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 12, 1979

Mr. James F. Kelley
Chief, Water Management Group
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Mr. Kelley:

I appreciate the comments on the Draft Plan and Environmental Impact Statement for the Blind Brook Watershed which you attached to your correspondence of June 5, 1979. My staff has reviewed the comments and the following responses are offered for your consideration:

1. There is no agricultural activity occurring in the location of the proposed damsites as outlined in the Blind Brook Plan. Therefore, no active farmland will be removed from production as a result of project implementation.

2. The 27.5 acres of "other land" referred to on page 37 of the Draft EIS is property currently being managed as a golf course.

** 3. The final impact statement will be amended to reflect that no agricultural land is being removed from production by the project.

4. The plan project will not alter the water table in the watershed and therefore there is no evidence of saltwater intrusion affecting ground water quality.

5. The sizing for the pump plants associated with the planned diking considered interior drainage as well as seepage water.

6. The concrete dikes as displayed in the draft plan were adequately designed for construction on pervious strata.

7. Costs incurred by altering land use of 117 acres are considered landrights costs and are included in the total cost line item of Table E. A detailed estimate of these costs by site is found in Table 2 of the Engineering and Accounting Tables.

**See Page 36, Item B-14 of the EIS for the amendment.

I have not received comments from your Environmental Analysis Division as of this date. However, I have been in contact with Mr. Curran's office and it was indicated that comments would be forwarded before June 15. I will respond to those comments as soon as they are received.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P.A. Dodd, Deputy State Conservationist
K.F. Otte, NTSC, Broomall, PA
Ms. S. Portnoy, Westchester Co. District Manager
C.J. Perkins, AC, SCS, Middletown, NY
J.B. Cropper, DC, SCS, White Plains, NY
L.I. Inglis, Dept. of Ag. and Markets, Albany, NY
E.A. Karath, Water Mgt. Planning, Albany, NY
T.P. Curran, Evt. Analysis, Albany, NY
R.G. Rood, Water Resources Staff Leader

Westchester County

DEPARTMENT OF HEALTH

ANITA S. CURRAN, M.D., M.P.H.
Commissioner

May 15, 1979

Shelley Portnoy
District Manager
Westchester County Conservation District
216 Central Avenue
White Plains, N. Y. 10606

Re: Watershed Plan and Draft
EIS Blind Brook Watershed
Westchester County, New York And
Fairfield County, Connecticut

Dear Ms. Portnoy:

The above captioned plan and draft EIS has been reviewed by members of our staff, and the following comments are submitted.

- It/we felt that this is an important project and should be completed as soon as possible. The past floods have created potential public health problems causing surcharging and backup in the sanitary sewerage system. This, in turn, caused back up in basements and yards in the low lying areas. Flooding of habitable structures has also occurred.

- On page 17 (sixth paragraph from top) it is noted that the sewerline will be under the proposed dam. Modification to the sewer will have to conform to the New York State Department of Environmental Conservation "Standards For Wastewater Treatment", part 1.

- On page 20 (third paragraph from top) the last sentence relates to clearing and disposal of brush. Brush, trees, roots etc. generated from the load clearing process must be disposed of in an approved manner. On-site burning of combustible material in general will not be permitted except as provided for in the Westchester County Sanitary Code, Article 16. Section 1613, and then only by permit. For further information contact Richard Paccione, P.E., General Engineering Section.

- The report does not indicate if the proposed construction and flood control structures will be located on or near any existing water mains. In the event water mains will have to be crossed or relocated, such work will have to be approved by the Westchester County Department of Health. Water main modifications will have to conform to the New York State Department of Health bulletin 5. Applications for modification, filing information and copies of bulletin 5 may be obtained from Walter Scott, P.E., Water Supply Section.

I trust these comments will be of assistance with this project.

Very truly yours,

Calvin E. Weber

Calvin E. Weber, P.E.
Assistant Commissioner of Health
for Environmental Quality

CEW:RP:rh
cc: Daniel Donahue, P.E.
Walter Scott, P.E.
Paul Chadik-GDO
Richard Paccione, P.E.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 12, 1979

Mr. Calvin Weber
Assistant Commissioner of Health
Westchester County Department of Health
85 Court Street
White Plains, New York 10601

Dear Mr. Weber:

Thank you for your comments on the Blind Brook Watershed Draft Plan and Environmental Impact Statement. I have reviewed your comments and offer the following responses:

1. Considerations for the modification of sewerline under the proposed damsite have been incorporated in our planning designs. Final designs will conform to the New York State Department of Environmental Conservation's "Standards for Waste Water Treatment."

2. Construction of the proposed project will be executed within the constraints of all state and municipal codes. Your references to Westchester County Sanitary Code Article 16, Section 1613 and the availability of Mr. Paccione are appreciated.

3. It would not appear that the proposed project will affect any existing water mains; however, in the event that mains will have to be crossed or relocated, New York State Department of Health Bulletin 5 will be utilized.

If you have any further comments on the Blind Brook project, please notify me.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P .A. Dodd, Deputy State Conservationist
K.F. Otte, NTSC, Broomall, PA
Ms. S. Portnoy, Westchester District Mgr.
C.J. Perkins, AC, SCS, Middletown, NY
J.B. Cropper, DC, SCS, White Plains, NY
R.G. Rood, Water Resources Staff Leader

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333
TELEPHONE: (404) 633-3311

May 11, 1979

Mr. Robert L. Hilliard
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
771 Federal Building
100 S. Clinton Street
Syracuse, New York 13260

Dear Mr. Hilliard:

We have reviewed the draft watershed plan and environmental impact statement on Blind Brook Watershed, Westchester County, New York, and Fairfield County, Connecticut. We are responding on behalf of the Public Health Service.

We have reviewed the subject report for potential vectorborne disease impacts. Our interests in this development center on the floodwater retarding structures which will retain water permanently and could become mosquito habitats. Provision should be made in the EIS for mosquito control on the impoundments if it should become necessary.

We suggest that health and safety benefits regarding the Brookdale and Barbara Court Dikes be clarified in order to adequately justify the preferred alternative. It is noted within the statement that these additions are unjustifiable as economic increments, are excluded in the Environmental Quality alternative, are added only to "maximize" the level of protection from upland flooding in a possible 100-year storm, and increase the level of flood protection to all habitable structures by only 6 percent annually (p. 14). It is also noted on page 24 that a total of 38 residences will be protected from the 100-year storm by these two dikes. Does the additional protection of these two dikes significantly reduce the threat to life, health, and safety compared to the benefits of non-structural measures?

Other than the above comments, we believe health and safety issues have been adequately addressed, and we foresee no adverse health effects as a result of this proposed project.

Thank you for the opportunity of reviewing this statement. We would appreciate receiving a copy of the final statement when it is issued.

Sincerely yours,

Frank S. Lisella

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Bureau of State Services

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 12, 1979

Frank S. Lisella, PhD
Chief, Environmental Affairs Group
Department of Health, Education and Welfare
Public Health Service
Atlanta, Georgia 30333

Dear Dr. Lisella:

Thank you for your correspondence of May 11 stating your comments on the Blind Brook Watershed Draft Plan and Environmental Impact Statement. Our Water Resources Staff has reviewed your comments and the following responses are offered for your consideration:

1. It has been determined that the installation of the two floodwater retarding structures will not increase the total available mosquito breeding habitat. Should mosquito control become a problem after project installation, it will be the responsibility of the local project sponsors to implement a control program.

2. The inclusion of the Brookdale and Barbara Court dikes reduce the threat to life, health and safety in the watershed. The dikes are considered to be more effective in reducing the threat than nonstructural alternatives. This point will be clarified in our environmental quality account. **

A copy of the final Plan and Environmental Impact Statement on Blind Brook will be forwarded to your office when it is issued.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P.A. Dodd, Deputy State Conservationist
K.F. Otte, NTSC, Broomall, PA
Ms. S. Portnoy, Westchester Co. District Mgr.
C.J. Perkins, AC, SCS, Middletown, NY
J.B. Cropper, DC, SCS, White Plains, NY
R.G. Rood, Water Resources Staff Leader

**See Page 43, Item B-3 of the Social Well Being Impact Account for inclusion.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10007

25 MAY 1979

Robert L. Hilliard
State Conservationist
Soil Conservation Survey
771 Federal Building
100 S. Clinton Street
Syracuse, New York 13260

LO-2

Dear Mr. Hilliard:

We have reviewed the draft watershed plan and environmental impact statement (EIS) issued in connection with the proposed flood control project for the Blind Brook Watershed in Westchester County, New York and Fairfield County, Connecticut. The following comments are offered for your consideration.

The proposal provides for the installation of two floodwater retarding structures and four dikes, and will result in various habitat alterations, including the conversion of 0.4 acres of fresh-water wetland to terrestrial habitat. In view of the highly urbanized nature of the Blind Brook Watershed, EPA believes that the environmental impacts associated with the project will be minimal. However, site specific data on the quality of the wetland that will be affected should be provided.

With respect to economic considerations, the unfavorable cost-benefit ratios associated with installation of two of the dikes (Brookdale and Barbara Court) suggest that project alternatives should be examined in more detail. As an additional alternative, the EIS should consider a plan that does not include these two dikes, and that substitutes flood-proofing measures in their stead for the 38 residences that would otherwise be protected.

In light of these comments, and in accordance with EPA policy, we have rated this EIS as LO-2, indicating our lack of objections to the proposal (LO) and our request for additional information (2).

Please contact this office at 8-264-0592 should you have any questions concerning this matter, or if we may be of additional assistance. Two copies of the final EIS are requested.

Sincerely,

Kevin Bricke

Kevin C. Bricke, Chief
Office of Federal Activities

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 12, 1979

Kevin C. Bricke, Chief
Office of Federal Activities
Environmental Protection Agency
26 Federal Plaza
New York, New York 10007

Dear Mr. Bricke:

I appreciate your comments of May 25 which were made with regard to our Draft Plan and Environmental Impact Statement on Blind Brook Watershed. Our Water Resources Planning Staff has reviewed your comments and the following responses are offered for your consideration:

1. Site Specific Data on the Quality of .4 Acres of Wetland to be Converted to Terrestrial Habitat

   The .4 acres of wetland referred to in your comments is of relatively low quality. The wetland is located just north of the Playland Parkway in the City of Rye and will be impacted by the construction of the Brookdale dike. It is primarily phragmities or common reed (Phragmities communis) and is located between the stream and bordering residential yards. Presently the area in question is used by neighborhood children as a play area and trails exist indicating use by off-road vehicles.

2. The Unfavorable Cost Benefit Ratios Associated with Installation of Brookdale and Barbara Court Dikes

   The alternative suggested in your comments of eliminating the two unjustified dikes and substituting floodproofing measures was evaluated. The following is a summary of that evaluation:

Installation Costs	$ 2,402,670
Annual O&M Costs	2,850
Annual Costs	168,230
Annual Benefits	217,160
Annual Net Benefits	+ 48,930
Floodwater Reduction	72%

It should be noted that the floodproofing measures included in this alternative for the 38 residences involved would not be justified as an economic increment.

Further, these floodproofing techniques would not relieve the threat of hazard and loss of life to the level afforded by the dikes.

The local sponsors are very interested in extending the benefits of the P.L. 566 program to as many damaged property owners as possible. Floodproofing is a compatible concept locally and there is intent to supplement this watershed planning effort to include protection for remaining damage areas. This supplemental effort will take place in the future when funding for a nonstructural program becomes available.

The development of the final Plan and EIS for Blind Brook will be delayed pending your concurrnece. Therefore, it is requested that you provide a timely response to this correspondence.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P.A. Dodd, Deputy State Conservationist
K.F. Otte, NTSC, Broomall, PA
Ms. S. Portnoy, Westchester Co. District Mgr.
C.J. Perkins, AC, SCS, Middletown, NY
J.B. Cropper, DC, SCS, White Plains, NY
R.G. Rood, WR Staff Leader

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10007

JUN 22 1979

Robert L. Hilliard
State Conservationist
Soil Conservation Service
771 Federal Building
100 South Clinton Street
Syracuse, New York 13260

Dear Mr. Hilliard:

Your letter of June 12, 1979 regarding EPA's comments on the draft environmental impact statement (EIS) for the Blind Brook Flood Control Project has been reviewed by this office.

The additional data you have provided regarding the quality of the wetland that will be impacted by the project adequately responds to EPA's concerns. Your comments with respect to the relative benefit-cost ratios for non-structural alternatives have also been noted. The final EIS should be supplemented with this information.

Based on the impacted nature of the affected wetland and its location in a highly urbanized area, EPA has no objections to the Blind Brook project.

Your prompt attention to our comments on the draft EIS has been appreciated.

Sincerely,

Kevin Bricke

Kevin C. Bricke, Chief
Office of Federal Activities

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20250

MAY 11 1979

OFFICE OF EQUAL OPPORTUNITY

IN REPLY REFER TO: 8140 Supplement 8

SUBJECT: Draft Environmental Impact Statement, Blind Brook Watershed, New York

TO: Robert L. Hilliard
State Conservationist

THRU: Verne M. Bathrust, Deputy Administrator for Administration, Soil Conservation Service

We have reviewed the Draft Environmental Statement and note that it (1) fails to identify minority populations affected by the proposed actions and (2) makes no analysis regarding the effects of the proposed actions, if any, upon minority populations.

We recommend that the Final Statement include these items and that the Soil Conservation assure itself that no disproportionately adverse impacts will fall upon minority group persons before the project is approved.

James Frazier
JAMES FRAZIER
Director

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 12, 1979

James Frazier, Director
United States Department of Agriculture
Office of the Secretary
Washington, D.C. 20250

Dear Mr. Frazier:

Thank you for your comments of May 11, 1979 with regard to the Blind Brook Watershed Draft Plan and Environmental Impact Statement.

I have discussed your comments with our Water Resources Planning Staff and have concluded that the proposed project will not create adverse impacts on any minority group persons.

It has been estimated that the minority population in the watershed is less than 3 percent and any impacts on the minority population from the project would be beneficial in nature. The beneficial effects would be in terms of reduced flood stages.

The proposed structures will not cause any commercial or residential relocations.

Should you have further comments or questions regarding the Plan, please notify me.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P.A. Dodd, Deputy State Conservationist
K.F. Otte, NETSC, Broomall, PA
Ms. S. Portnoy, Westchester Co. District Mgr.
C.J. Perkins, Ac, SCS, Middletown, NY
J.B. Cropper, DE, SCS, White Plains, NY
R.G. Rood, WR Staff Leader

New York State Department of Environmental Conservation
Division of Regulatory Affairs
50 Wolf Road
Albany, New York 12233

Robert F. Flack
Commissioner

June 18, 1979

Mr. Robert Hilliard
State Conservationist
Soil Conservation Survey
771 Federal Building
100 S. Clinton Street
Syracuse, New York 13260

Re: Blind Brook Watershed Plan and Draft Environmental Impact Statement
Westchester County, New York and
Fairfield County, Connecticut
DEC 360-99-0065

Dear Mr. Hilliard:

The Department of Environmental Conservation has completed its review of the above noted document and supports the Soil Conservation Service's choice of alternative 3. We would also be supportive of alternatives 2 and 4. In addition, we offer the following comments:

1) Although the Watershed Plan adequately describes the project and discusses some alternatives, the concept of using a series of several small flood water retarding structures rather than only two relatively large ones was not mentioned. This alternative should be considered both from an economics standpoint, and in the interest of avoiding or reducing interference with ecological studies that the Department understands are being undertaken by SUNY Purchase at its property in the vicinity of FWRS Site 1.

2) Sediment is expected to accumulate in the two floodwater retarding structures at a rate of 105 tons per year. Although capacity for sediment storage has been built into the design of these structures, there is no mention of its removal. Provision for periodic sediment removal and management (as a resource) should be discussed under Operation and Management on pages 27 and 28, and be included as part of the annual operation and maintenance cost.

3) An agreement between the County of Westchester, the Westchester County Soil and Water Conservation District, the City of Rye, the State of New York and the Soil Conservation Service, U.S.D.A. sets forth the duties, obligations,

and responsibilities of each with respect to the Blind Brook project. Since much of the project lies within the Towns of Rye and Harrison, the Department questions why these municipalities are not included as parties to the agreement. From the list of agencies, organizations, and persons to whom copies of the subject document were sent for review (unnumbered page entitled "Plan and EIS Review"), it would appear that neither of these towns, nor the City of Rye, were sent copies. Better notification and coordination is clearly called for here.

4) The most serious oversight in the DEIS is the lack of discussion of mitigative measures. Seeding, revegetating, and landscaping are only briefly mentioned on pages 14 and 20 of the Watershed Plan.

5) Because of the size of the watershed areas above them, the two dams which will be part of FWRS 1 and 2 will require approvals from the Department of Environmental Conservation. Submission of applications for permit, plans, and design reports should be made well in advance of the anticipated start of construction.

Thank you for the opportunity for review. We request review of the final document when available.

Very truly yours,

Terence P. Curran, Director
Division of Regulatory Affairs

cc: G. Danskin
File DEC 360-99-0065

ERM:mm

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

June 21, 1979

Terence P. Curran, Director
Division of Regulatory Affairs
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Dear Mr. Curran:

I appreciate your comments which were received from your office on the Blind Brook P.L. 566 watershed project. The following is a summary of responses for your consideration.

1. (Response to comment 1)

   Compared to most Soil Conservation Service structures, Site 1 is relatively small. The alternative of a series of structures would not be economically feasible.

2. (Response to comment 1)

   It would be possible in final design to design Site 1 as a dry dam. This approach will produce the minimum impact on SUNY ecological studies.

3. (Response to comment 2)

   The damsites are designed to store sediment for the 100-year life of the project. Therefore, sediment removed is not considered an O&M requirement.

4. (Response to comment 3)

   The towns of Rye and Harrison are not included as parties to the agreement because they are not financial sponsors of the plan. Eventually, pending legal formation, the Blind Brook Small Watershed Protection District will be the only sponsor.

5. (Response to comment 3)

   Provisions were made for local review of the draft Plan and EIS. The documents were distributed through the Westchester County SWCD, and town officials from Rye and Harrison were notified of the distribution.

6. (Response to comment 4)

Through the interagency planning process, it was determined that no mitigating measures beyond normal construction procedures would be required.

7. (Response to comment 5)

It is recognized that design approval by DEC is required for the damsites. Applications for permit,plans, and design reports will be made in advance of anticipated construction.

If you have any comments or questions on this project, please notify my office.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
P.A. Dodd, Deputy State Conservationist
K.F. Otte, NTSC, Broomall, PA
C.J. Perkins, AC, SCS, Middletown, NY
J.B. Cropper, DC, SC S, White Plains, NY
R.G. Rood, Water Resources Staff Leader

APPENDIX C

CULTURAL RESOURCES SURVEY

AND

EVALUATION

REPORT

Cultural Resources Survey and Evaluation of Blind Brook Dikes, Dams and Pump Plant Rye, NY

By:

Albert A. Dekin, Jr.
Archaeological Research and Consulting
PO Box 505
Newark Valley, NY 13811

To:

Soil Conservation Service
US Courthouse and Federal Building
Room 771, 100 South Clinton St.
Syracuse, NY 13202

Date:

1 September 1977

Order Number:

40-2031-7-503

Abstract

As a result of a field reconnaissance of areas to be impacted by direct construction, no standing structures will be directly affected by this project. However, there may be direct impact on known and possible historic archaeological deposits by dike and pump plant construction. There will be indirect impact on the integrity of a culturally significant district along the Old Post Road in the vicinity of the location of the Old Rye Fort (1675). We recommend a public hearing to evaluate the relative public value of channelization versus maintaining the visual and environmental integrity of the area. We recommend further survey by an historic archaeologist of the areas to be diked opposite the Old Rye Fort and along the Milton Harbor/Blind Brook shore between the public marina and the high school (on the eastern shore).

Prepared by:

Albert A. Dekin, Jr.
Ruth-Louise Dekin

The Project

This project, presently in the design phase, involves flood protection devices along Blind Brook in Rye, Westchester County, New York. They include two dams and impoundments in the upper drainage, ca. 8000' of dike and channelization, and a tidal dam and pump station. Blind Brook has already been stabilized along its extent in "downtown" Rye, but the downstream extent of dikes is along tidal portions of the brook. The upper dams are in areas of field and pasture which have not been significantly altered, save for farming activity. The tidal dam crosses a narrow portion of the present brook in an area of early settlement.

Background and Previous Research

Very little research on Westchester's cultural resources has been conducted. Earlier compilations of New York's archaeological history by Parker and Beauchamp were consulted by the office of New York State Historic Preservation Officer revealing that cultural resources were present (including shell middens and burials) but that their location could not be plotted precisely (see letter from S. J. Raiche of 17 September 1976). Standing historic structures were recorded by the Westchester Landmarks Project, but none appear to be directly impacted by the proposed construction (see letter from F. E. Sanchis of 22 March 1977).

Rye itself has successfully resisted both strip and industrial development by consciously retaining its domestic isolation and residential character. The transition along the old Boston Post Road when entering Rye from either Mamaroneck or Port Chester is striking in that Rye is characterized by old mature trees lining "boulevard" type streets with limited access. This is in marked contrast to adjacent towns and reflects the degree to which Rye has attempted to retain its social, economic and political integrity. The project passes through the western end of "downtown" Rye, transecting its political and religious centers. When compared to other portions of Westchester County, Rye has retained its cultural integrity, both in social and in architectural terms, and is thus a unique area in terms of its cultural resources.

In terms of tangible properties, Rye should contain evidence of prehistoric occupation from the Archaic period through to the ethnohistoric period (with the

possibility of paleo-indian sites in the interior). Burials and shell middens have been reported from this area and should date from these occupations. The Blind Brook-Milton Harbor estuary was utilized early in the history of this area and historic archaeological sites should date from the seventeenth century along the brook. From the present designed facilities location, the greatest potential impact, stemming from the location of most of the facilities along the major drainage of Blind Brook in tidewater, appears to be on potential historic midden deposits related to the early seventeenth century occupation of this area. From both field and documentary research, no point impacts on known cultural resources can be predicted.

Field Reconnaissance

On August 13 and 14 four man-days were spend on a field examination of the project area. The impoundment locations were observed from adjacent slopes and no cultural resources were located. The areas are adjacent to residences, a golf course and the campus of State University of New York at Purchase. No known cultural resources will be affected by their construction and it may even enhance present land use patterns and areal esthetics. Geomorphologic features include rather even slopes to small, possibly intermittent streams without well-developed terraces or other micro-features. No standing structures of significance are within the immediate project design limits.

Field observations were made of all dike locations and walk-overs were conducted along the dike locations at the public marina in Milton Harbor and in the public park areas along Blind Brook near the Old Rye Fort. None of the present standing structures nor any of those outlined by Mr. Sanchis (letter of 3/22/77 and personal communication) were within the areas to be directly impacted by planned construction.

A grist mill (and subsequently a sawmill) was located at Milton Harbor at the present location of Nichols Boat Yard and the public marina. Millard Ferris (presently manager of the Boat Yard) confirmed that the construction of

the public jetty across from the Boat Yard had largely destroyed the former dam foundations and had covered most of what remained. The buildings of the present Nichols Boat Yard are those of the former mill and will not be affected by planned construction. Mr. Ferris referred to this location as Chapman's Mill and informed us that no other dams had been constructed upstream (therefore within the project area). If planned diking abuts the present public jetty at the upstream end, then no impact may be expected on the remnants of the former mill and dam complex. Interestingly, the jetty itself was filled with debris from the Rye landfill and considerable amounts of nineteenth and twentieth century artifacts and debris are visible on the surface and in the landscaped portions of the parking lot and boat landing (personal communication from an employee of the Harbor Master).

Immediately upstream of the jetty, apparently recent deposits of "garbage" and construction debris were found eroding within the present active tidal pools. While their extent was not field verified, their presence does indicate that the pattern of refuse disposal into the tidal flats was practiced historically in this area and suggests that the potential exists that such deposits may date from the earliest occupation of Rye (see letter from F. Sanchis of 3/27/77).

The immediate vicinity of the Old Rye Fort along the old Boston Post Road is an area of rich and significant cultural resources. Beside the old fort itself, which has been significantly altered, its outbuildings and associated midden and the present character of the political and religious complexes which are adjacent to it deserve consideration in this evaluation.

The present channel of Blind Brook was apparently stabilized in the past with cut stone "rip rap". The extent of disturbance resulting from this cannot be determined without extensive field and archival research. Blind Brook and the public park through which it flows at this location has considerable visible evidence of present and former artifacts and deposits (ranging from grocery carts and styrofoam fragments of vessels to bricks and shell fragments. However, these artifacts are not confined to the surface and recent deposits.

Recent erosion channels and slope wash revealed deposits which have sufficient integrity to represent episodes of deposit. We collected several historic archaeological specimens from directly across the road from the location of the Old Rye Fort. These included bivalve shells, cut bone, brick fragments and apparently late nineteenth century ceramics in a charcoal sand/silt matrix. While these deposits may not be precisely dated, they are of sufficient integrity and distribution to suggest that significant historical archaeological deposits may be located along this portion of Blind Brook. Intensive survey of this area should be conducted prior to construction.

At a larger scale of analysis, the political/religious/educational/historical complex through which the proposed dikes pass, when combined with the present park-like atmosphere, existing park and canopy of large deciduous trees creates an atmosphere of containment which coincides with the conscious efforts of Rye to maintain its cultural and historical integrity (made manifest by zoning and historic preservation legislation). To a great degree, this area would be adversely affected by construction which cut down large trees, opened the viewshed of the brook and generally made the environment more open, artificial and "new". The intrusion of such construction into this portion of Rye must be assessed carefully, as the Square House (or Widow Haviland's Tavern) which houses the Rye Historical Society and museum is on the National Register of Historic Places and might be adversely affected. We recommend that a public meeting be held prior to determination of final design in order to assess public sentiment in Rye regarding the integrity of this complex or district relative to their perceived need for flood protection.

The effects of the project's intrusion into this sensitive area must be determined and we recommend further study once design plans are completed.

Summary/Recommendations

1. Based on an understanding of site locations in this area, it is unlikely that significant cultural resources will be impacted by dam construction in the upper drainage. Soil Conservation Service personnel should conduct an on-site inspection of the proposed construction area once the land has been purchased to verify this evaluation.

2. No standing structures will be directly impacted by construction.

3. There is a high probability that significant historic archaeological remains will be impacted by dike construction in the vicinity of Old Rye Fort and along the eastern bank of Blind Brook upstream of Milton Harbor. We recommend intensive survey of the construction zone in this area.

4. No known prehistoric archaeological materials have been found in the construction zone.

5. The complex or district which includes the Square House and the Old Rye Fort should be evaluated in terms of the adverse effects of the project's intrusion and construction impact. We recommend that efforts be made to weigh public opinion in these matters through a public hearing or meeting at which the relative values of flood protection and historic preservation may be determined by the citizens of Rye. Once final designs are available and precise estimates of construction impact on this district's integrity can be made, then we recommend further assessment of potential adverse effects upon these cultural resources.

APPENDIX D

DEFINITION OF WETLAND TYPES

DEFINITION OF WETLAND TYPES

A. U.S. Fish & Wildlife Service Classification as per Circular 39 "Wetlands of the United States".

INLAND FRESH AREAS

Type 1 - Seasonally flooded basins or flats

The soil is covered with water, or is water logged during variable seasonal periods, but usually well drained much of the growing season. This type occurs both in upland depressions and in overflow bottomlands. Vegetation varies greatly and may include bottomland hardwoods and herbaceous growths such as smartweeds, wild millet, fall panicum, tealgrass, marsh elder, and ragweed. Waterfowl use this type for migration, nesting, and wintering.

Type 2 - Inland fresh meadows

The soil usually is without standing water during most of the growing season but is waterlogged within at least a few inches of its surface. Vegetation includes sedges, common rush, redtop, reed canarygrass, mannagrasses, and mints. Such areas are often adjacent to Type 3 wetlands.

Type 3 - Inland shallow fresh marshes

The soil is usually waterlogged during the growing season and is often covered with as much as 6 inches or more of water. Type 3 is identified from Type 2, by the presence of bulrushes, burreed, or arrowhead, or standing water up to 6-8 inches deep. Other emergent aquatic vegetation may also be present.

Type 4 - Inland deep fresh marshes

The soil is covered with 6 inches to 3 feet or more of water during the growing season.

Type 6 - Shrub swamps

The soil is usually waterlogged during the growing season, and is often covered with as much as 6 inches of water. Vegetation usually includes alders, willows, buttonbush, and sometimes silky dogwood. Shrub swamps occur mostly along sluggish streams and occasionally on flood plains.

Type 16 - Coastal salt meadows

The soil is always waterlogged during the growing season, but is rarely covered with tidewater marshes or bordering open salt

water. Vegetation includes mainly saltmeadow cordgrass, saltgrass, blackrush, and, in fresher parts, Olney three-square and saltmarsh fleabanes.

Type 18 - Regularly flooded salt marshes

The soil is covered at average high tide with 6 inches of more of water during the growing season. Vegetation is mainly saltmarsh cordgrass.

Type 19 - Sounds and bays

This type includes those portions of salt-water sounds and bays that are considered shallow enough to be diked, dredged or filled. All water landward from the 6 feet below the average lowtide line is included. Vegetation includes eelgrass and wigeongrass.

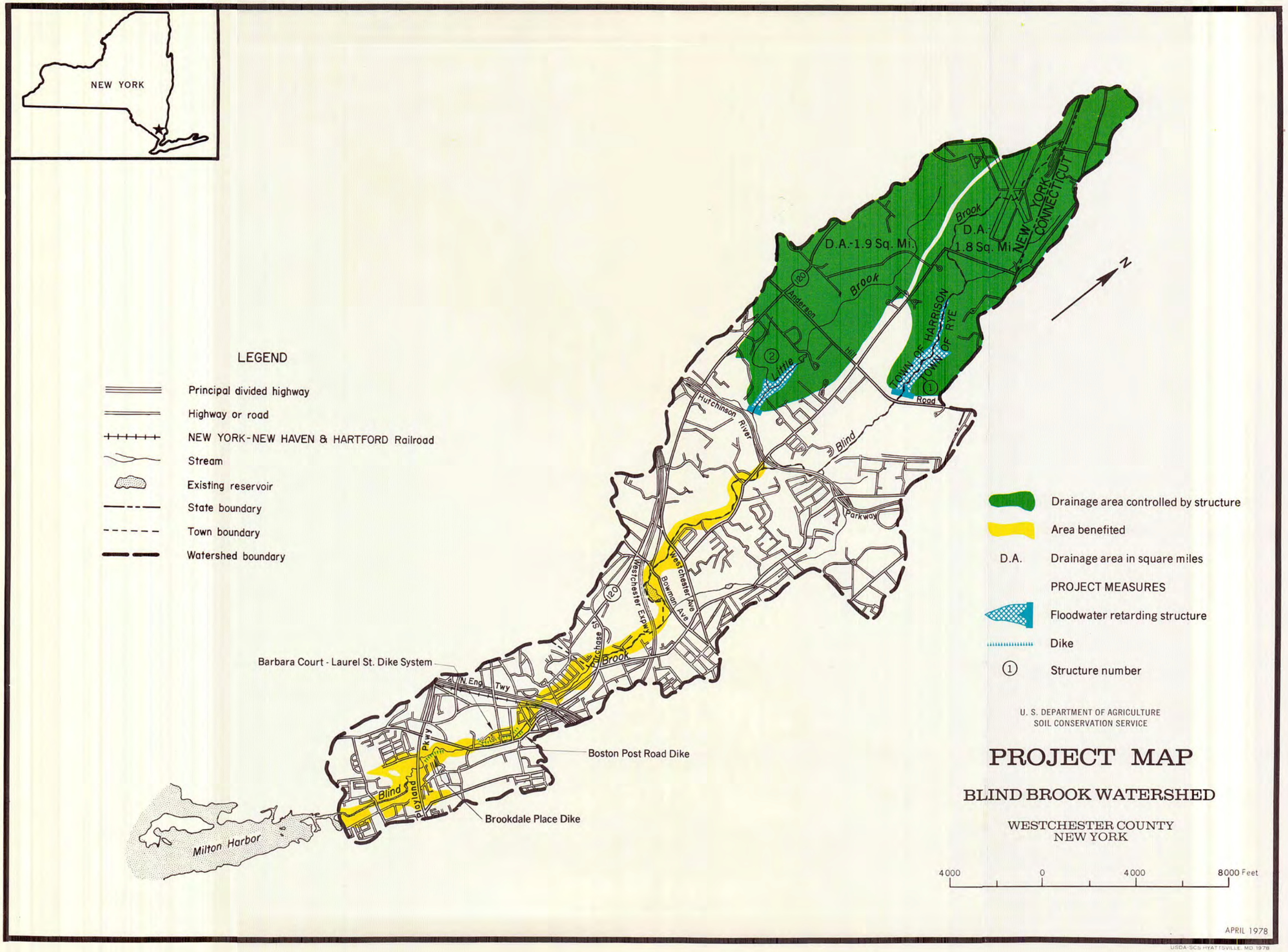
APPENDIX E

SUPPORTING

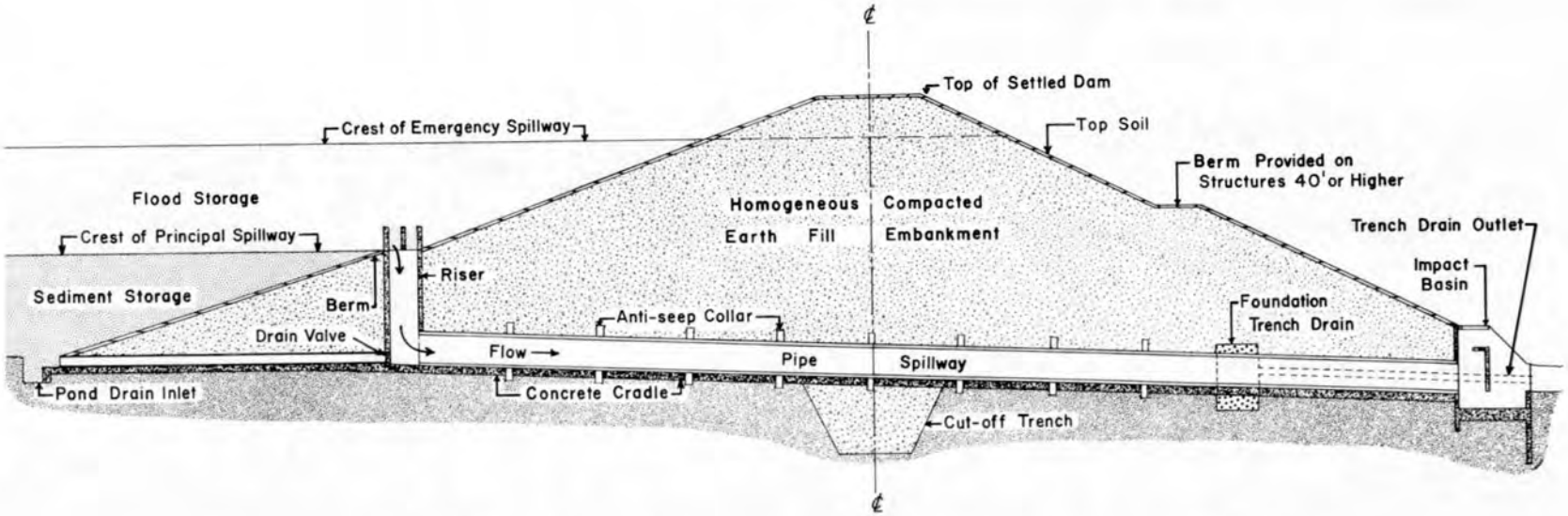
MAPS

AND

FIGURES


NEW YORK
LEGEND
Principal divided highway
Highway or road
NEW YORK-NEW HAVEN & HARTFORD Railroad
Stream
Existing reservoir
State boundary
Town boundary
Watershed boundary
D.A.-1.9 Sq. Mi.
D.A. 1.8 Sq. Mi.
Brook
Anderson
Little
Hutchinson River
Blind
Road
TOWN OF HARRISON
TOWN OF RYE
NEW YORK
CONNECTICUT
N
Parkway
Westchester Ave
Bowman Ave
Westchester Expwy
Purchase St
120
Barbara Court - Laurel St. Dike System
N. Eng Twy
Boston Post Road Dike
Playland Pkwy
Brookdale Place Dike
Milton Harbor
Drainage area controlled by structure
Area benefited
D.A. Drainage area in square miles
PROJECT MEASURES
Floodwater retarding structure
Dike
Structure number
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
PROJECT MAP
BLIND BROOK WATERSHED
WESTCHESTER COUNTY
NEW YORK
4000 0 4000 8000 Feet
APRIL 1978
USDA-SCS HYATTSVILLE, MD. 1978

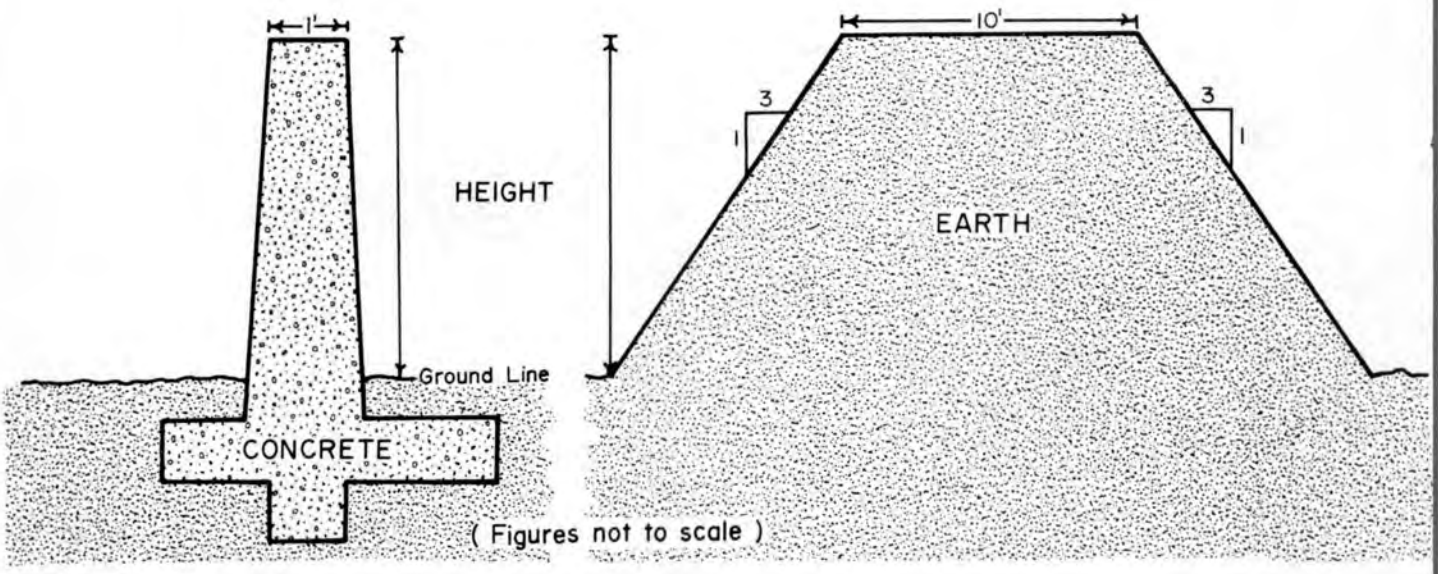
TYPICAL FLOODWATER RETARDING STRUCTURE



TYPICAL CROSS SECTION OF FLOODWATER RETARDING STRUCTURE

FIGURE E-2

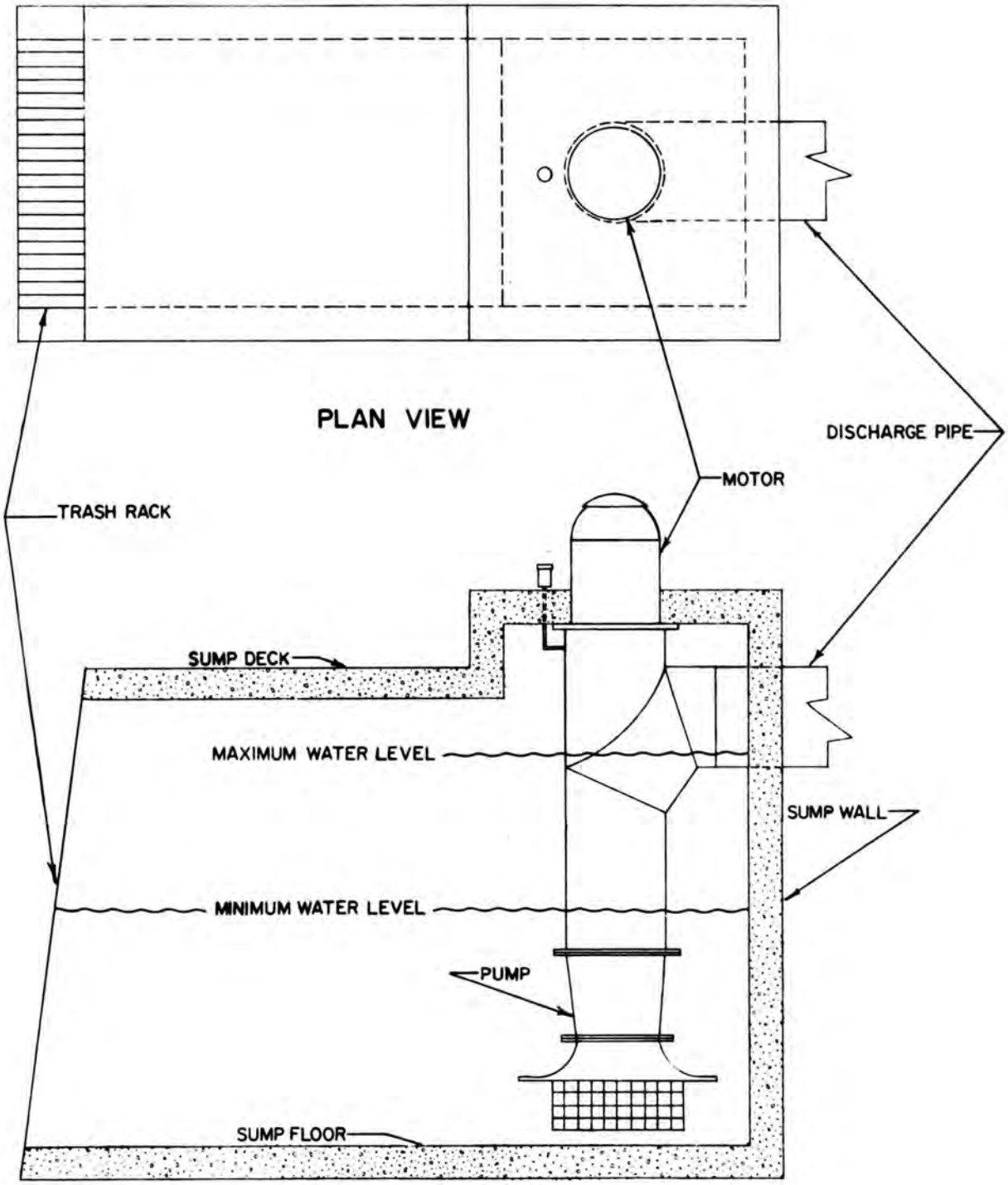
TYPICAL CONCRETE DIKE



TYPICAL DIKE PROPORTIONS

FIGURE E-3

TYPICAL PUMP PLANT



SECTIONAL ELEVATION

FIGURE E-4

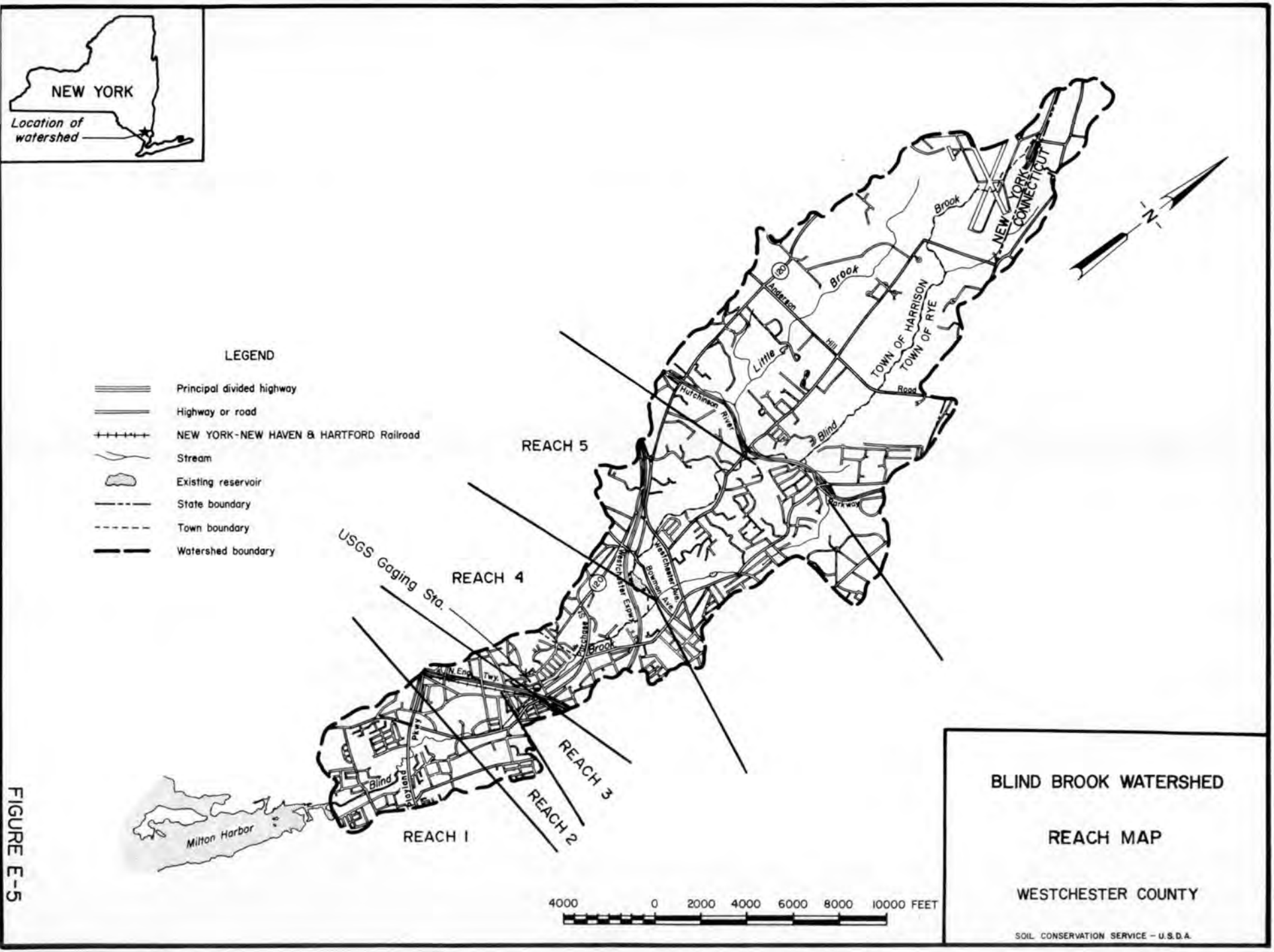

NEW YORK
Location of watershed
LEGEND
Principal divided highway
Highway or road
NEW YORK-NEW HAVEN & HARTFORD Railroad
Stream
Existing reservoir
State boundary
Town boundary
Watershed boundary
REACH 5
REACH 4
REACH 3
REACH 2
REACH 1
USGS Gaging Sta.
Milton Harbor
Blind
Holland
Place
Hutchinson River
Little
Anderson
Hill
Brook
Blind
Brook
Brook
Brook
Parkway
Bronx
Bronx River
Westchester Ave.
Westchester Exwy.
Cross
Bronx Exp.
Twy.
TOWN OF HARRISON
TOWN OF RYE
Road
NEW YORK
CONNECTICUT
N
4000 0 2000 4000 6000 8000 10000 FEET
BLIND BROOK WATERSHED
REACH MAP
WESTCHESTER COUNTY
SOIL CONSERVATION SERVICE – U.S.D.A.

FIGURE E-5

BLIND BROOK WATERSHED
URBAN FLOOD PLAIN
Sheet 1 of 3
N
100 YEAR FLOOD
W/O PROJECT
100 YR WITH PROJECT
CRESCENT AVE
MILTON RD
BOSTON POST RD
PELHAM PARKWAY
HIGH HAZARD AREA
OAKLAND BEACH AVE
MIDLAND AVE

FIGURE E-6A

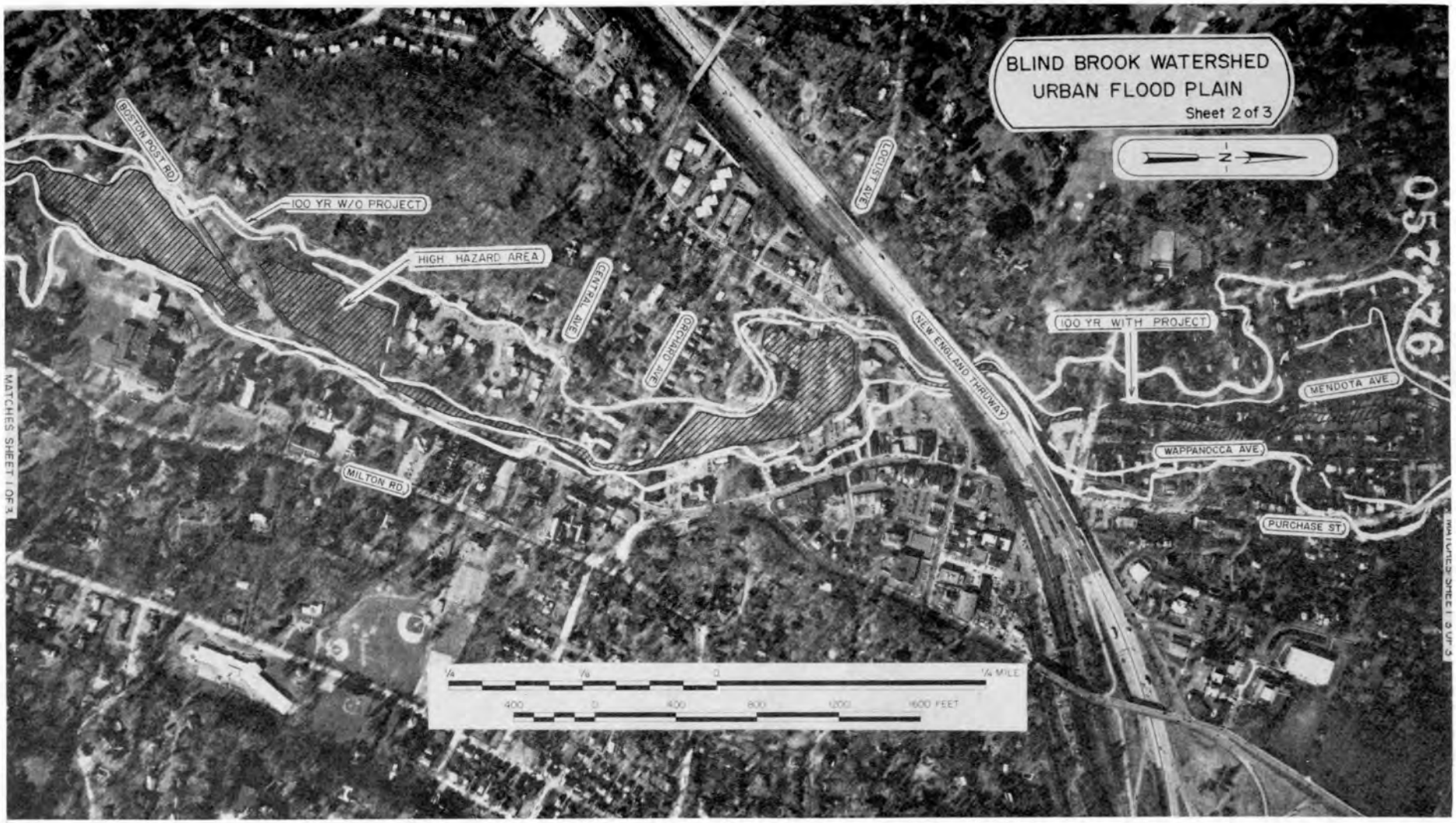

BLIND BROOK WATERSHED
URBAN FLOOD PLAIN
Sheet 2 of 3
N
BOSTON POST RD.
100 YR W/O PROJECT
HIGH HAZARD AREA
CENTRAL AVE.
ORCHARD AVE.
COLUSA AVE.
NEW ENGLAND THRUWAY
100 YR WITH PROJECT
MENDOTA AVE.
WAPPANOCCA AVE.
PURCHASE ST.
MILTON RD.
MATCHES SHEET 1 OF 3
MATCHES SHEET 3 OF 3
1/4
1/4
0
1/4 MILE
400
0
400
800
1200
1600 FEET

FIGURE E-6B

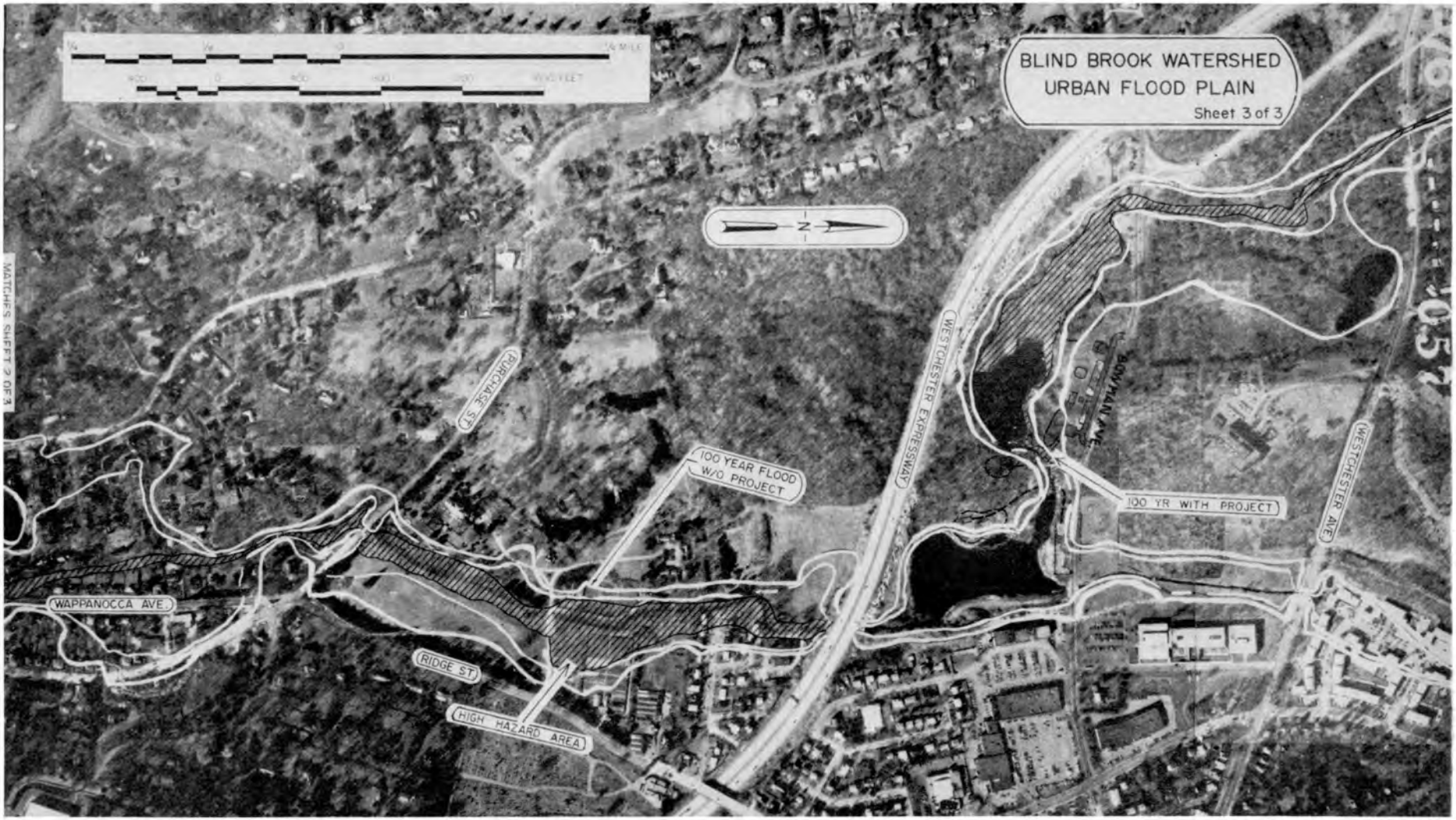

BLIND BROOK WATERSHED
URBAN FLOOD PLAIN
Sheet 3 of 3
MATCHES SHEET 2 OF 3
WAPPANOCCA AVE.
RIDGE ST.
HIGH HAZARD AREA
PURCHASE ST.
100 YEAR FLOOD
W/O PROJECT
WESTCHESTER EXPRESSWAY
SOUTHLAND AVE.
100 YR WITH PROJECT
WESTCHESTER AVE.

FIGURE E-6C

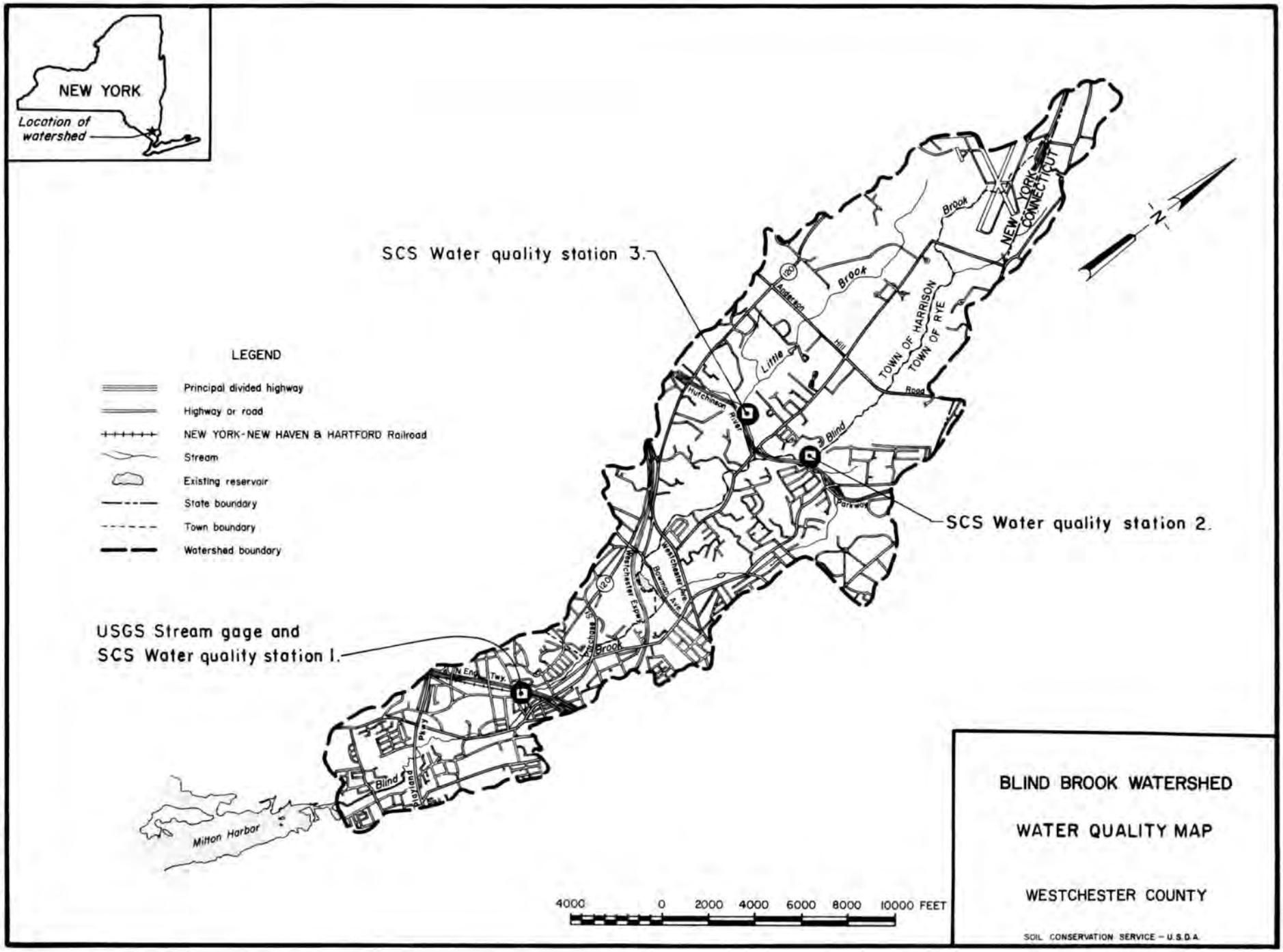

NEW YORK
Location of watershed
SCS Water quality station 3.
SCS Water quality station 2.
USGS Stream gage and
SCS Water quality station 1.
LEGEND
Principal divided highway
Highway or road
NEW YORK-NEW HAVEN & HARTFORD Railroad
Stream
Existing reservoir
State boundary
Town boundary
Watershed boundary
TOWN OF HARRISON
TOWN OF RYE
NEW YORK
CONNECTICUT
Little Blind Brook
Anderson Hill Road
Hutchinson River Parkway
Westchester Expy
Boston Post Rd
Milton Harbor
4000 0 2000 4000 6000 8000 10000 FEET
BLIND BROOK WATERSHED
WATER QUALITY MAP
WESTCHESTER COUNTY
SOIL CONSERVATION SERVICE – U.S.D.A.

FIGURE E-7

APPENDIX F

BIBLIOGRAPHY

BIBLIOGRAPHY

(1) American Society for Testing and Materials, Classification of Soils for Engineering Purposes, ASTM Designation: D 2487 - 69.

(2) Anonymous (1970), Land Use and Wildlife Resources, National Academy of Sciences, Washington, D.C., 262 pgs.

(3) Anonymous, Resource Conservation Glossary, Journal of Soil and Water Conservation, January-February, 1970, Vol. 12, No. 1

(4) Austin, Morris, E., Land Resources Regions and Major Land Resource Areas of the United States, Agricultural Handbook 296, USDA-Soil Conservation Service, Washington, D.C. 1965.

(5) Cline, Marlin G., Soils and Soil Associations of New York, New York State College of Agriculture, Cornell University, Ithaca, New York, Extension Bulletin 930.

(6) Dethier, Bernard E., Precipitation in New York State, Cornell University Agricultural Experiment Station, New York, State College of Agriculture, Ithaca, New York, Bulletin 1009.

(7) Dethier, B. E. and A. Boyd Pack, Climatological Summary, Urban Climate Series No. 3, Geneva, New York, September 1965.

(8) Dickson, Alex, Management of Small Woodlands in New York, New York State College of Agriculture, Ithaca, New York, Cornell Extension Bulletin 1125, January 1967.

(9) ESSA, Earthquake History of United States, Part I, 1965.

(10) Heath, Ralph C., Ground Water in New York; State of New York Conservation Department, Water Resources Commission, Albany, New York; Bulletin 6W-51; 1964.

(11) Leonard, Raymond E., Effects of Trees and Forests in Noise Abatement, Cooperative Extension University of Massachusetts, Amherst, Mass.

(12) Mordoff, R. A., The Climate of New York State, New York State College of Agriculture at Cornell, Ithaca, New York, Extension Bulletin 764.

(13) New York State, People Resources Recreation, New York State Comprehensive Plan, Office of Parks and Recreation, Albany, New York, March 1978.

(14) New York State Department of Environmental Conservation, Albany, New York, Classification and Standards Governing the Quality and Purity of Waters of New York State, Parts 700-703, Title 6, Official Compilation of Codes, Rules and Regulations.

(15) New York State Department of Labor, Labor Area Summary, New York Department of Labor, Albany, New York, September 1978.

(16) New York State Department of Labor, Division of Reach and Statistics, Manpower Review, November 1976.

(17) Odum, Eugene P., Fundamentals of Ecology, 1971, W. B. Saunders Company, Philadelphia, Pa., p. 79.

(18) Paradise, Frank J., Tree Environment Report for the Town of Rye, Westchester County, New York, Unpublished, July 1973.

(19) Shaw, Samuel P., and C. Gordon Fredine, Wetlands of the United States, Department of the Interior, Fish and Wildlife Service, Circular 39, GPO, Washington, D.C., 1956.

(20) Soil Conservation Service, Land Capability Classification, USDA, Washington, D.C., January 1973, Agriculture Handbook No. 210.

(21) Trippensee, R. E., (1948), Wildlife Management, McGraw-Hill Book Co., New York, Toronto, London, 478 pages.

(22) U.S. Army Corps of Engineer, Preliminary Long Range Water Supply Study, Volume VII, November 1971, Department of the Army, Washington, D.C.

(23) U.S. Bureau of the Census, Census of Population: 1970. General Social and Economic Characteristics, Final Report PC(1)-C34 New York, GPO, Washington, D.C. 1972.

(24) United States Department of Agriculture, Erosion and Sediment Inventory, Soil Conservation Service, Syracuse, New York, 1974.

(25) United States Department of Agriculture, Soil Survey, Westchester County, New York, Unpublished.

(26) United States Department of the Interior, Rare and Endangered Fish & Wildlife of the United States, U.S. Bureau of Sport Fisheries and Wildlife, 1968.

(27) U.S. Water Resources Council: 1972 OBERS Projections, Regional Economic Activity in the U.S., Vol. 3, Water Resource Regions 1-8, U.S. Government Printing Office, Washington, D.C.

(28) U.S. Department of Commerce, Economic Development Administration, Qualified Areas Under the Public Works and Economic Development Act of 1965, as amended, March 1977, U.S. Government Printing Office, Washington, D.C., 1977.

(29) The University of the State of New York, Geologic Map of New York, The State Education Department, Albany, New York, 1961.

United States Department of Agriculture

Soil Conservation Service

771 Federal Building
100 S. Clinton Street
Syracuse, New York 13260

September 18, 1979

Mr. Frank J. Culross
Rye City Manager
City Hall
Rye, New York 10580

RECEIVED
SEP 21 1979
CITY OF RYE

Dear Mr. Culross:

Attached are pages which have recently been revised in the Blind Brook Watershed Plan and the Environmental Impact Statement. The changes have been underlined.

These pages should be added to your copy of the Blind Brook Plan and EIS dated July, 1979. The changes are reflected in a September, 1979 edition to be used for sponsor signatures and review by the Department of Agriculture.

Sincerely,

Robert L. Hilliard

Robert L. Hilliard
State Conservationist

Attachments

selected plan were developed with an NED related purpose in full observation of EQ goals and constraints.

Various alternatives including a "No Project" alternative were considered in the planning process. Alternatives evaluated included:

1. FWRS 1 and 2 with Laurel Street and Boston Post Road Dikes (NED Plan).
2. FWRS 1 and 2 only (EQ Plan).
3. Floodwater Retarding Structures (FWRS) 1 and 2 with Barbara Court, Laurel Street, Brookdale, and Boston Post Road Dikes (Selected Plan).
4. FWRS 1 and 2 with nonstructural measures to control remaining damages.
5. FWRS 1 and 2 with a tidal control structure and pump plant at Oakland Beach Avenue.
6. FWRS 1 and 2 with Barbara Court, Laurel Street, Brookdale, Boston Post, School Track, Crescent Avenue, Oakland Beach, and Hewlett Avenue Dikes.
7. FWRS 1 and 2 with Boston Post and Laurel Street Dikes, and floodproofing at Brookdale Place and Barbara Court.
8. No Project.

Other alternatives such as channel modification, diversions, and retention basins were considered during planning and eliminated primarily for economic and environmental reasons.

During project formulation, floodwater retarding sites (FWRS) 1 and 2 became basic to the selected plan. The sites demonstrated economic and physical justification with environmental impacts which were considered relatively minor. Dikes and a tidal control structure with a pump plant were considered to supplement sites 1 and 2.

Dikes eliminated from the selected plan were deleted primarily for economic reasons; however, environmental concerns also influenced the formulation. The tidal control structure with pump plant was considered as an alternative to diking, but was eliminated primarily for economic reasons.

All selected structural increments were economically justified except Brookdale and Barbara Court Dikes. Brookdale and Barbara Court were not justified as economic increments, however, were included in the plan as the last increments added under total project justification. The unjustified dikes were added to maximize protection from upland flooding in the 100-year storm. Floodproofing appears to be a logical alternative to the unjustified Brookdale Place and Barbara Court dikes. However, floodproofing has a greater impact on damage reduction than on hazard reduction. The Brookdale Place dike would provide damage reduction and eliminate flooding hazards for 25 residential dwellings in the 100-year storm. The Barbara Court dike would have

the same impact on 13 homes. The average stage in the 100-year storm in the Brookdale area is about 4 feet with 13 first floors flooded in the 100-year storm. Stages range to 7 feet in depth. The average 100-year stage in the Barbara Court area is about 2 feet with stages ranging to 4 feet.

The project sponsors concluded that the Brookdale Place and Barbara Court dikes, althout quantitatively unjustified, have qualitative benefits including the reduction of hazard and risk to loss of life, which outweighs the negative net benefit.

Alternative 4 was considered the nonstructural alternative. Nonstructural measures in conjunction with FWRS 1 and 2 were assessed. The nonstructural measures evaluated were primarily floodproofing. The alternative considered floodproofing of 244 homes and 2 commercial buildings, and purchase of 13 homes. Other nonstructural techniques such as floodwarnings, zoning, and flood insurance were not emphasized because they have already been implemented and will continue in effect locally. Nonstructural floodproofing, as an increment, was found economically infeasible.

Table D outlines relative economic and environmental impacts for alternatives 1 through 8.

There is no known approved or proposed federal, state, or local land use plans which will conflict with the proposed project measures. The proposed project measures conform with the objectives of the Clean Air Act and the Federal Water Pollution Control Act Amendments of 1972.

A floodwarning system and evacuation plan is currently in operation in the city of Rye, and will continue to be used in conjunction with this plan.

TABLE D SUMMARY COMPARISON OF ALTERNATIVES FOR BLIND BROOK WATERSHED

Economic, Environmental or Social Factors	Goals	NED-Alternative 1 Site 1, Site 2, Boston Post Rd. Dike, Laurel St. Dike, Land Treatment	EQ-Alternative 2 Land Treatment, Site 1, Site 2	Select Plan-Alternative 3 Land Treatment, Site 1, Site 2, Boston Post Rd. Dike, Barbara Ct., Laurel St. Dike, Brookdale Place Dike	Nonstructural -Alternative 4 Land Treatment, Site 1, Site 2, Nonstructural Measures	Alternative 5 Land Treatment, Site 1, Site 2, Oakland Beach Pump Plant	Alternative 6 Land Treatment, Site 1, Site 2 Eight Dikes	Alternative 7 Site 1, Site 2 Boston Post Rd. Dike, Laurel St. Dike, Land Treatment, Floodproofing at Brookdale Place and Barbara Ct.
Installation Costs	N.A.	$2,235,240	$1,585,100	$3,132,560	$3,421,620	$3,432,220	$5,209,070	$2,402,670
Annual O&M Costs	N.A.	2,850	2,000	4,300	2,100	12,000	9,600	2,850
Annual Cost	N.A.	156,700	111,100	219,910	235,510	236,240	368,140	168,230
Annual Benefits	N.A.	205,850	149,150	230,200	236,440	191,190	293,480	217,160
Annual Net Benefits		+49,150	+38,050	+10,290	+ 930	-45,050	-74,660	+ 48,930
Floodwater Reduction	Reduction of flood damages to all habitable structures including basements.	66%	48%	72%	82%	59%	87%	72%
Erosion	Reduce erosion on urban construction sites.	Provide assistance for erosion control on 500 acres on new construction.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1
Sedimentation	Reduce sedimentation in Milton Harbor.	Reduce sediment yield at the mouth by 61 tons annually.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same alternative 1	Same as alternative 1
Water Quality	N.A.	Temporary increase in sediment concentrations.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same alternative 1	Same as alternative 1
Wetlands								
Tidal	Minimum damage to tidal wetlands.	No Effect	No Effect	No Effect	No Effect	Reduce type 18 by 0.6 acre.	Reduce type 18 by 0.1 acre and type 16 by 3.6 acres.	No Effect
Freshwater	N.A.	Increase types 4 & 5 by 3.1 acres.	Same as alternative 1	Reduce type 1 by 0.4 acre increase type 4 and 5 by 3.1 acres.	Same as alternative 1	Same as alternative 1	Same as alternative 3	No Effect
Land Use (acres)								
Forest land	N.A.	-21.5	-21.5	-21.8	Same as alternative 2	Same as alternative 2	-24.5	Same as alternative 1
Urban land	N.A.	- 2.8	- 1.8	- 3.5			- 4.1	
Open land formerly cropped	N.A.	- 6.6	- 6.6	- 6.6			-10.4	
Other	N.A.	+30.9	+29.9	+31.9			+39.0	
Prime Agricultural Land	N.A.	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect	No Effect
Archeological and Historical	Avoid damage to existing resources	No Effect	No Effect	Possible effect to archeological site	No Effect	May distribute known historic archeological deposits	Same as alternative 5	No Effect

TABLE D SUMMARY COMPARISON OF ALTERNATIVES FOR BLIND BROOK WATERSHED

Economic, Environmental or Social Factors	Goals	NED-Alternative 1 Site 1, Site 2, Boston Post Rd. Dike, Laurel St. Dike, Land Treatment	EQ-Alternative 2 Land Treatment, Site 1, Site 2	Select Plan-Alternative 3 Land Treatment, Site 1, Site 2, Boston Post Rd. Dike, Barbara Ct., Laurel St. Dike, Brookdale Place Dike	Nonstructural -Alternative 4 Land Treatment, Site 1, Site 2, Nonstructural Measures	Alternative 5 Land Treatment, Site 1, Site 2, Oakland Beach Pump Plant	Alternative 6 Land Treatment, Site 1, Site 2 Eight Dikes	Alternative 7 ~~No Project~~ *
Wildlife	N.A.	Reduce quality of 44.3 acres forestland, 25.8 acres openland for wildlife by temporary inundation.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1
					Same as alternative 1	Same as alternative 1	Same alternative 1	Same as alternative 1
	N.A.	Quantity of openland habitat increased by 18.6 acres, forestland habitat decreased 21.5 acres.	Same as alternative 1	Quantity of openland habitat increased by 18.9 acres, forestland habitat decreased by 21.8 acres.	Same as alternative 1	Same as alternative 1	Quantity of openland habitat increased by 21.6 acres, forestland habitat decreased by 24.5 acres	Same as alternative 1
	N.A.	Quantity of terrestrial habitat decreased by 3.1 acres, aquatic habitat increased by 3.1 acres.	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1
Fishery	N.A. *	Convert 400 ft. of stream with minnows	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as alternative 1	Same as altertive 1	Same as alternative 1
Mitigation	N.A.	Landscape dikes	none	Landscape dikes	none	none	Landscape dikes replace 3.7 acres of tidal wetland.	Same as alternative 1

Alternative 8 - No Project - This alternative would be an extension of existing conditions. There would be no reduction of flood damages. There would be no effect on any of the other impact categories listed above.

Table E reflects an incremental analysis of the structural works of improvement. Benefit categories considered in this analysis include direct and indirect flood damage reduction, yard and lawn damage reduction, road and bridge damage reduction, floodproofing costs foregone, and employment.

Direct flood damage reduction benefits result from improved floodwater protection to residential, public and commercial buildings in the flood plain and to their contents. Reduced indirect damages result from lowering losses attributed to flooding, but not represented by physical loss such as rerouting of traffic.

Yard and lawn damages are not severe in the flood plain and consist primarily of debris removal and minor repair following larger storms.

Floodproofing costs refer to those costs required under the federal flood insurance program for newly built or substantially improved structures in the flood plain. Lower flood levels with the project in place translates to lower flodproofing costs and the difference from what these costs would be without the project is claimed as a benefit or cost foregone.

Employment benefits refer to the use of otherwise unemployed or underemployed labor resources during construction of the project and for operation and maintenance after installation.

The Brookdale and Barbara Court Dikes are not justified as economic increments. They were included in the plan as the last added increments under total project justification. The Brookdale and Barbara Court Dikes were added to maximize protection from upland flooding in the 100-year storm. The quantifiable costs do exceed the quantifiable benefits, however, it has been concluded that qualitative benefits in reduction of hazard to loss of life outweighs the negative net benefit.

The project provides complete protection from the 100-year storm to 114 residences and 20 businesses. In addition, 216 residences and 27 businesses will receive partial protection and thus have reduced floodwater damages. The average residences inundated are reduced by 40 percent from 30 to 18, and the average businesses inundated are reduced by 50 percent from 6 to 3.

TABLE E - INCREMENTAL ECONOMIC DATA REFINED
BY STRUCTURE AND BENEFIT CATEGORY
1979 1/

Average Annual Benefits and Costs 2/	FWRS Site 1&2	Boston Post Dike	Laurel St. Dike	3/ Barbara Ct. Dike	3/ Brookdale Dike
Direct Flood Damage Reduction	$124,470	$ 9,980	$37,590	$ 5,880	$ 8,410
Indirect Flood Damage Reduction	9,750	1,040	2,890	450	910
Yard and Lawn Damage Reduction	2,910		730	900	1,270
Road and Bridge Damage Reduction	390				
Floodproofing Costs Foregone	3,800	240	380	500	690
Employment	7,830	590	3,260	2,450	2,890
Total Benefits	$149,150	$11,850	$44,850	$10,180	$14,170
Total Costs	111,100	5,690	39,910	28,480	34,730
Net Benefits	$ 38,050	$ 6,160	$ 4,940	$18,300	$20,560
Benefit:Cost	1.34:1	2.08:1	1.12:1	0.36:1	0.41:1
Residences Protected from 100-year storm	64	0	12	13	25
Businesses Protected from 100-year storm	18	2	0	0	0

1/ 1979 Dollars
2/ Amortized at 6-7/8 percent for 100 years
3/ These dikes were added to maximize protection from upland flooding in the 100-year storm, and reduce hazard and risk of loss of life.

INSTALLATION AND FINANCING

Federal assistance, financial and other, to be furnished by the Soil Conservation Service and the New York State Department of Environmental Conservation, in cooperation with the Forest Service in carrying out the project, is contingent on the appropriation of funds for this purpose. Before federal funds are made available, the sponsors will be responsible for:

1. Giving assurances that all necessary landrights have been secured.

2. Providing for administering the contracts.

3. Executing an Operation and Maintenance Agreement.

4. Executing a project agreement.

Obtaining the funds needed to apply the land treatment measures will be the responsibility of the individual landowners and operators, utilizing cost-sharing assistance as may be available for approved practices through the ongoing program. Complete program implementation is, however, contingent upon the availability of associated funding. The funds for technical assistance will be provided by the Department of Environmental Conservation, PL 566, and through the ongoing program of the Soil Conservation Service and the Soil and Water Conservation District.

The Westchester County Soil and Water Conservation District will be responsible for providing assistance to landowners and operators to help them plan, establish, and maintain land treatment measures. The land treatment measures will be installed at approximately uniform annual rates over the 4-year installation period. Installation of similar measures required to meet the total conservation needs will be continued thereafter.

The Westchester County Soil and Water Conservation District will petition the County of Westchester to establish a small watershed protection district, in accordance with New York State's enabling legislation (Article 5-D of the County Law). Upon approval by the county government, the Blind Brook Small Watershed Protection District will become the Sponsor and bear the landrights cost associated with the installation of the structural and nonstructural measures. Funds for these establishment expenses and landrights costs will be provided through procedures prescribed in New York State's enabling legislation (County Law). Under provisions of County Law, up to 50 percent of the costs of landrights needed for flood prevention may be reimbursable through New York State funding. The schedule of obligations for structural measures is shown on Table H.

The Blind Brook Watershed project will have to be built considering the effects of the individual structures on the whole project. Specifically, both dams will have to be completed before the dikes are started. This is because the design of the dikes considers the effects of the dams being in place. A construction schedule would be to build site No. 1 the first year at a total cost of $695,700, to build site No. 2 the second year at a cost of $889,400, to build Brookdale Place Dike, Boston Post Road Dike and Barbara Court Dike the third year at a cost of $978,520, and to build Laurel Street Dike the fourth year at a cost of $568,940.

Expenses incurred in the formation of the Blind Brook Small Watershed Protection District will be provided for by the county of Westchester and city of Rye. The district will have legal authority and it will:

1. Provide the necessary landrights including all needed permits for all structural and nonstructural measures. Permits might include the U.S. Army Corps of Engineer's 404 permit, NYS Department of Environmental Conservation permits, and consultation under Westchester County Sanitary Code, Article 16, Section 1613. They will obtain landrights through negotiation or condemnation, if necessary. Appraisals will be obtained as a prerequisite to securing landrights in accordance with provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84 Stat. 1894), and any other applicable laws.

2. Provide for the administration of construction contracts and for such inspection and other administrative services as it requires for the installation of structural measures without P.L. 566 cost sharing assistance. The sponsors, at a later date, may request the Soil Conservation Service to administer contracts.

   Prior to entering into agreements that obligate funds of the Soil Conservation Service, the sponsors will agree to a code of conduct governing the performance of its officers, employees, or agents in contracting with or expending P.L. 566 funds; and a financial management system for control, accountability, and disclosure of P.L. 566 funds received and for control and accountability for property and other assets purchased with P.L. 566 funds. Program income earned during the grant period will be reported on the sponsor's request for allowance or reimbursement from the Service.

3. Request the assistance of the Cooperative Extension Service, through their agents and specialists, in developing and carrying out the watershed information and education program.

4. Request the cooperation of lending agencies, such as local banks and the Federal Land Bank to provide loans to help cooperating landowners and operators install needed treatment measures.

5. Provide relocation assistance advisory services, when necessary, to include providing current and continuing information on the availability prices, and rentals, of comparable decent, safe, and sanitary sales and rental housing; supply information concerning federal and state housing programs, disaster loan programs, and other federal or state programs offering assistance to displaced persons in order to minimize hardships to such persons in adjusting to relocation. These services will be provided without P.L. 566 cost sharing assistance.

6. As part of project administration, provide personally, or by certified or registered first class mail, written notice of displacement, at least 90 days before displaced persons have to move, and appropriate application forms to each individual, family, or business, to be displaced; assist in filing applications, review, and take action on applications for relocation assistance; review and process grievances in connection with displacements; and make relocation payments.

B. Incremental Benefit Cost Analysis (1979 Dollars)

Item	Avg. Annual Benefits	Annual Costs 1/	Net Benefits	B:C
Floodwater Retarding Structures 1 and 2	149,150	111,100	38,050	1.34:1
Boston Post Road Dike	11,850	5,690	6,160	2.08:1
Laurel St. Dike	44,850	39,910	4,940	1.12:1
Barbara Ct. Dike 2/	10,180	28,480	-18,300	.36:1
Brookdale Place Dike 2/	14,170	34,730	-20,560	.41:1
Total Structural Measures	230,200	219,910	10,290	1.05:1

1/ Amortized at 6-7/8 percent interest for 100 years.

2/ The Brookdale Dike and Barbara Court Dikes are not justified as economic increments. They were included in the plan as the last added increments under total project justification. The Brookdale Dike and Barbara Court Dikes were added to maximize protection from upland flooding in the 100-year storm. The quantifiable costs exceed the quantifiable benefits, however, it has been concluded that qualitative considerations in reduction of hazard to loss of life outweighs the negative net benefits.

United States
Department of
Agriculture

Soil
Conservation
Service

771 Federal Building
100 S. Clinton Street
Syracuse, New York 13260

July 27, 1979

RECEIVED
AUG - 1 1979
CITY OF RYE

Mr. Frank J. Culross
Rye City Manager
City Hall
Rye, New York 10580

Dear Mr. Culross:

Attached are comments from U.S. Department of the Interior, Fish and Wildlife and the U.S. Corps of Engineers on the Blind Brook project which the Soil Conservation Service received subsequent to the deadline for interagency review. Also attached are the Soil Conservation Service responses to the comments and an amended Page 37 to the Environmental Impact Statement.

This data should be added to the Blind Brook Watershed Plan and EIS which was forwarded to you on July 2, 1979.

Sincerely,

Robert G. Rood
Water Resources Staff Leader

Attachments

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER-79/358

JUN 28 1979

Mr. Robert L. Hilliard
State Conservationist
Soil Conservation Service
771 Federal Building
100 South Clinton Street
Syracuse, New York 13260

JUN. 2 1979

Dear Mr. Hilliard:

Thank you for your letter of April 13, 1979, requesting our views and comments on the draft watershed plan and draft environmental statement for the Blind Brook Watershed, New York and Connecticut. We have reviewed the documents and have the following general and specific comments.

General Comments

The draft environmental statement does not adequately describe the potential project impacts on fish and wildlife resources in the project area. We also suggest that the effects of the project on ground-water recharge, quality, and levels be assessed.

There are no active mineral operations in the project area which could conflict with the proposed plan. Although impacts on in-the-ground mineral resources (sand and gravel and stone) are not mentioned, they can be inferred from the discussion on the commitment of land. The temporary flooding of the floodpools would not lock up underlying mineral resources in case of emergency. This is not true for the actual structures (dams, spillways, and dikes). We do not recommend that this report be revised, but do suggest that future reports prepared by the Soil Conservation Service specifically mention mineral resources and the impacts proposed actions may have on mineral resources.

Specific Comments

Page 5 - It would be useful in appraising the adequacy of the natural foundations if, in addition to the generalized information presented, a summary of the extensive assessment of soils and physical resources referred to were included in the environmental statement.

Page 29 - The statement states that the Alternatives section "includes the Water Resources Council's 4-account displays and discusses impacts on sediment, erosion, landuse, water quality, floodwater, prime farmland, wildlife, fisheries, threatened and endangered species, archeological and historic resources, and wetlands." An examination of this section, however, finds said discussion lacking. Table D "Summary Comparison of Alternatives for Blind Brook Watershed" should supplement discussion on these issues, not substitute for it.

Page 31 - Neither the American osprey nor the Blanding's turtle are federally listed as endangered or threatened species. However, the federally protected bald eagle and peregrine falcon may be found in the project area as occasional transients.

Page 32 - The two stream sites proposed for floodwater retarding structures are presently bordered by trees. Little Brook, in the vicinity of the Site 2 structure, flows through dense forestlands which provide 90 to 100 percent shade over the water. Blind Brook, in the vicinity of the Site 1 structure, provides greater than 54 percent shade over the water. Although data is not provided for the percent shading of the reaches proposed for dikes, conversion of wooded sites to open land will occur (page 34,A.1.0 and, thus, loss of stream shading is anticipated. The anticipated increase in solar heating in the stream has not been assessed in the environmental statement although it appears a potential problem. Solar heating may also be anticipated in the sediment ponds. The potential impacts of removal of shade on the warming of the stream should be analyzed in the final statement. The effects of maintaining fairly large sediment ponds, in comparison to smaller ponds, should be evaluated in terms of additional heat transferred to the stream system, the potential warming of the stream as a result of the removal of shade, the present thermal stresses on the aquatic ecosystem, and the expected life of the sediment ponds.

Page 33 - The water quality data provided is not sufficient to assess the present stresses on the aquatic ecosystem or for evaluating the potential impacts on the preferred alternative. Although water quality data was taken over a 5-month period in 1975, and randomly during 1971 and 1976, only median values are listed. The listing of median values for water temperature is not adequate for determining present and potential temperature stresses. Our Fish and Wildlife Service would like to review the data from which median values were determined.

Page 36 - The statement indicates that borrow activities will cause temporary disturbance on 12 acres of golf course (B.-10), that intermittent impact by the flood pools at FWRS 1 will occur on 14.7 acres of golf course, and that 0.8 acres of golf course will be converted by construction at FWRS (B.-8). The final statement should indicate the proposed measures to mitigate these impacts.

The construction of the floodwater retarding structure will commit 150 feet of Blind Brook and 250 feet of Little Brook to being encased by concrete pipe (B.-11). Species of fish in these brooks require migrations upstream to spawn. The effects that these structures and the two earth-fill dams will have on fish migrations should be addressed in the final statement. If the effects are adverse to fish migrations, alternatives to the pipes should be considered.

Page 37 - The most valuable wildlife resource in the watershed is the riparian habitat. The effects of this proposed project on riparian habitat have not been adequately discussed in the statement. Mitigation measures, included in the project plans to offset habitat losses, are not satisfactory. Suitable mitigation can only be discussed once the impacts are known. We suggest that project impacts on wildlife be examined more closely to identify suitable mitigation to be implemented concurrently with structural measures.

Page 44 - The document also states that "none of the alternatives evaluated would achieve the planning objectives with essentially a similar commitment of resources while avoiding environmental impacts." The information contained in Table D, however, indicates that alternative one (FWRS 1 and 2 with Laurel Street and Boston Post Road Dikes) should achieve the desired planning objectives. This alternative would also provide a higher benefit ratio, 1.31:1, than the selected alternative, 1.05:1. Moreover, the effects of alternative one, as identified in Table D, differ only slightly from those of the selected alternative. An important positive difference between these two alternatives, however, is that no adverse effect on archeological and historical resources is identified for alternative one, whereby a possible adverse effect to archeological resources is identified for the selected alternative. No specific information is provided indicating why alternative one was rejected.

Appendix C - The archeological and historical study which was conducted for the project states that there is a high probability that significant historic archeological remains will be impacted by dike construction in the vicinity of Old Rye Fort and along the eastern bank of Blind Brook upstream of Milton Harbor. Intensive survey of the construction zone in this area is recommended by the archeological consultant. Additionally, the consultant recommends that the complex or district which includes the Square House (a National Register property) and the Old Rye Fort should be evaluated in terms of the adverse effects of the project's intrusion and construction impact.

Appendix E - The location of historic properties should be identified in the air photos in relationship to the project.

Summary Comments

The draft does not contain sufficient information from a fish and wildlife standpoint to state a probable position (recommendations pursuant to the Fish and Wildlife Coordination Act) with respect to the issuance of any Federal permits such as those required under Section 404 of the Clean Water Act or Section 10 of the 1899 Rivers and Harbors Act that might be necessary to implement this project.

The final statement should address potential project-caused impacts to fish and wildlife resources and discuss provisions to avoid or offset any adverse impacts to those resources.

We hope these comments will be of assistance to you in developing the necessary information to evaluate project impacts on areas under our jurisdiction or special expertise.

Sincerely,

Larry E. Meierotto
SECRETARY

771 Federal Building
100 So. Clinton Street
Syracuse, New York 13260

July 9, 1979

Mr. Larry E. Meirotto
Assistant Secretary
U.S. Department of the Interior
Office of the Secretary
Washington, D.C. 20240

Dear Mr. Meirotto:

Thank you for your letter of June 28, 1979, expressing views and comments on the Blind Brook Watershed Draft Plan and E.I.S. The comments, together with a copy of this response, have been transmitted to the project sponsors.

The interagency review period for Blind Brook was completed on June 11, 1979, and an unrequested grace period was provided until June 25, 1979.

It was necessary on June 25 to proceed with the printing of the document to be used for the notice of availability. This action was taken to ensure compliance with local scheduling. Because your comments were not received until July 2, 1979, they were not included in Appendix B of the document. Your comments and this response will be added to Appendix B of the final document before it is signed.

The following are responses to your comments:

1. The environmental assessment process is extensive and generates large quantities of data. Summary data is published in the Plan and E.I.S. to reduce the size of the document. All data is on file and may be reviewed at your convenience.

2. The paragraph on page 29 referencing the Water Resource Council's 4-account displays, applies to the entire impacts section, pages 29 through 44. These pages do contain impacts of the project for all the various categories as stated.

3. It is the judgement of the Soil Conservation Service that the proposed construction will not adversely impact ground water.

4. It has been noted that the bald eagle and peregrine falcon may be found in the project area as occasional transients. It is our judgment that the project will not impact these species.

5. As stated in the E.I.S., there is no sport fishery in the upper reaches of Blind Brook or its tributaries. Rough fish such as

golden shiners, white suckers, blacknose dace, and goldfish are found in the stream. Therefore, the dams should not impede any fish migrations or spawning opportunities. This will be stated on page 37 of the E.I.S.

6. Construction of the floodwater retarding structures and dikes will cause some reduction of stream shading. The losses are estimated to be low and should not increase solar heating in the stream. Trees and shrubs will be maintained on the perimeters of the sediment pools at the dam sites. Some shade will be lost at the outlets of the dams, however, these losses should be limited to 100 feet at each outlet. Water flowing through the pipes under the dams will have an added cooling effect on the stream.

   Currently, there is an open water pond at the proposed location of the site 2 sediment pool. The sediment pool will be approximately the same size as the existing pond, however, it will be somewhat deeper.

   Dike construction should have minor impacts on water temperature. Construction would impact only one side of the stream and most areas are already under residential development. The most significant shading impacted would be the Barbara Court construction zone which follows the stream for about 800 feet.

7. Water quality data was coordinated through USGS as explained on page 33 of the Plan and E.I.S. The data is available for your review.

8. The mitigation of recreation areas, such as the golf course, is considered a local responsibility. Current SCS policy does not require mitigation for impacts on that form of land use.

9. It has been determined that impacts on riparian wildlife habitat through project installation will be limited. The installation of dikes will have the greatest impact on riparian habitat and these dikes are planned in the city of Rye where the habitat is not considered high value for wildlife. The predominant wildlife resources affected would be squirrels and songbirds. It has been assessed there is in excess of 160,000 feet of streambanks in the watershed. The project will impact about 2 percent of that total, and riparian values in the impacted areas would not be eliminated. Therefore, it has been determined that mitigation would not be required. There are contingencies in engineering cost estimates for planting shrubs and trees in diking areas.

10. Alternative 3 was selected as opposed to alternative 1 because of the greater level of flood protection. Alternative 3 incorporates two additional dikes which protect 38 residences in the 100-year storm. The two dikes, Barbara Court and Brookdale Place, were not incrementally justified and have a negative effect on the benefit:cost ratio. Alternative 3 achieves 72 percent of flood

reduction to all habitable structures, including basements, as opposed to 66 percent offered by alternative 1. Alternative 3 was considered more effective in achieving local objectives.

11. As stated in the Cultural Resources Survey and Evaluation in Appendix C, the construction of the Brookdale Place and Barbara Court dikes could result in possible impacts on historic resources. This conclusion of the Cultural Resources Survey has been noted, however, a more intensive study would not appear justified at this time.

    The plan has been coordinated with the Division of Historic Preservation, New York State Parks and Recreation. If artifacts or other items of archeological or historic significance are uncovered by the Soil Conservation Service, or brought to its attention by others prior to or during construction, the State Commission of Parks and Recreation and the National Park Service will be notified. Construction will not begin or continue until appropriate arrangements for surveys or salvage have been made. (Page 20 of Plan/E.I.S.).

12. Construction of the proposed project will not physically impact any historic properties.

13. The Soil Conservation Service has conducted a full environmental assessment of the Blind Brook project, including interagency coordination with the U.S.D.I. Fish and Wildlife Service at Cortland, New York and the New York State Department of Environmental Conservation. Technical data related to fish and wildlife resources will be made available as required during the 404 permit process. It has been determined that the proposed project will not cause significant impacts on fish and wildlife resources which would require special provisions or mitigation.

Should you have any further comments or questions on the Blind Brook Project please contact my office.

Sincerely,

RR

Robert L. Hilliard
State Conservationist

cc: Mr. Fred Zwick, Chairman, Westchester Co. SWCD, White Plains, NY
Mr. John Carey, Mayor, City of Rye, NY
Mr. Peter Eschweiler, Comm., Westchester Co. Dept. of Planning
Mr. Karl Otte, Head, Plng. Tech. Staff, NLTSC, SCS, Broomall, PA
Mr. James Mitchell, Dir., WS Div., SCS, Washington, DC
Mr. Frank J. Culross, City Mgr., City of Rye, NY
Mr. Calvin J. Perkins, Area Consvst., SCS, Middletown, NY

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

19 JUN 1979

06 073809 0

EXEC. CORR. & REC.

SCS

79 JUN 21 A 9: 53

Honorable Rupert Cutler
Assistant Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Cutler:

In compliance with the provisions of Section 5 of Public Law 566, 83rd Congress, the views of the Secretary of the Army were requested for the Watershed Work Plan and Draft Environmental Impact Statement for Blind Brook Watershed, New York and Connecticut.

We have reviewed the report and foresee no conflicts with any projects or current proposals of this Department. However, we did note that the report shows no evidence of consultation with the Corps of Engineers on the possible need for regulatory permits such as are required under Section 404 of the Federal Water Pollution Control Act of 1972. Also, the Environmental Impact Statement appears lacking in three areas stipulated by the Council on Environmental Quality regulations of 15 April 1974, specifically, land use plans, an appropriate summary sheet, and an adequate discussion of alternatives and associated impacts.

If we can be of further assistance, please contact us.

Sincerely,

Michael Blumenfeld

Michael Blumenfeld
Assistant Secretary of the Army
(Civil Works)

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

771 Federal Building, 100 South Clinton Street, Syracuse, New York 13260

July 12, 1979

Honorable Michael Blumenfeld
Assistant Secretary of the Army
Office of the Assistant Secretary
Washington, D.C. 20310

Dear Mr. Blumenfeld:

Thank you for your letter of June 19, 1979, expressing views and comments on the Blind Brook Watershed Draft Plan and Environmental Impact Statement. The comments, together with a copy of this response, have been transmitted to the project sponsors.

The interagency review period for Blind Brook was completed on June 11, 1979, and an unrequested grace period was provided until June 25, 1979.

It was necessary on June 25 to proceed with the printing of the document to be used for the Notice of Availability. This action was taken to ensure compliance with local scheduling. Because your comments were not received until July 2, 1979, they were not included in the Appendix B of the document. Your comments and this response will be added to Appendix B of the final document before it is signed.

The following are responses to your comments:

1. To date, there has been no consultation on the 404 permit process. The consultation will take place as required during the operations phase of the project. The project is still considered to be in the planning phase.

2. The EIS was developed in compliance with the Council on Environmental Qualities (CEQ) National Environmental Policy Act Regulations issued November 29, 1978.

3. The data related to the formulation of project alternatives is presented on pages 11 through 15 of the Plan/EIS.

4. Impacts related to land use patterns are presented on pages 34 through 37 of the Plan/EIS.

Should you require further data concerning the Blind Brook project, please notify my office.

Sincerely yours,

Robert L. Hilliard
State Conservationist

cc:
Mr. Fred Zwick, Chairman, Westchester Co. S&WCD
Mr. John Carey, Mayor, City of Rye
Mr. Peter Eschweiller, Comm. Westchester Co. Dept. of Planning
Mr. Karl F. Otte, Head, Plng. Tech. Staff., NETSC, Broomall, PA
Mr. James Mitchell, Director, WS Division, SCS, Washington, DC
Mr. Frank J. Culross, City Mgr. City of Rye
Mr. Calvin J. Perkins, AC, SCS, Middletown, NY

5. Four-tenths acre of type 1 wetland will be converted to terrestrial habitat. Three and one-tenth acres of terrestrial habitat will be converted to aquatic habitat.

6. There will be no impacts on threatened or endangered species.

7. Existing habitat for minnow species will be lost in 400 feet of stream.

D. Irreversible and Irretrievable Commitments of Resources

The structural measures will occupy approximately 117.0 acres of land, consisting of 10.0 acres of open land formerly cropped, 66.8 acres of forest land, 27.5 acres of other land, 8.6 acres of urban land, 0.8 acre of water, 3.3 acres of wetland, and 6,800 feet of perennial stream.

Other commitment of resources includes labor, materials, and energy required for the construction of the project.

Commitment of the land and water areas to features of the project will preclude these areas from other uses for a period to exceed the life of the project. The committed acreage will become an open space area used by upland wildlife. The sediment pool areas will be used by minnows, waterfowl, and furbearers.

The storage volume in the reservoirs allocated to sediment will be filled during the life of the project. However, the structures will be operational for flood reduction for many years.

Four hundred feet of minnow habitat will be lost by dam construction. The dams should not impede any fish migrations or spawning opportunities.

E. Adverse Environmental Impacts Which Cannot Be Avoided.

The following in the judgment of the Soil Conservation Service are the most important environmental amenities that would be lost if the selected plan is installed.

1. Floodwater Retarding Structures 1 and 2 will eliminate 3.1 acres of terrestrial habitat, and 1,700 feet of perennial streams.

2. Twelve acres of land presently being used as a golf course will be altered by borrow activities.

3. The Brookdale Place Dike will eliminate 0.4 acre of Type 1 Wetland.