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Special Flood Hazard Evaluation Report

Buttonwood Creek and West Branch Round Pond Creek, Town of Greece, Monroe County, New York

Prepared for the
New York State Department of Environmental Conservation

US Army Corps
of Engineers
Buffalo District

March 1993

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This technical report documents the result of an investigation to determine the potential flood situation along Buttonwood Creek and the West Branch of Round Pond Creek within the Town of Greece, New York. The study reaches Buttonwood Creek from Frisbee Hill Road upstream to the town's western corporate limit with the town of Parma, and West Branch Round Pond Creek. This report identifies the 100-year and 500-year flood plains and 100-year floodway for Buttonwood Creek and West Branch Round Pond Creek within the town of Greece.

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SPECIAL FLOOD HAZARD EVALUATION REPORT
BUTTONWOOD CREEK AND WEST BRANCH ROUND POND CREEK
TOWN OF GREECE
MONROE COUNTY, NEW YORK

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INTRODUCTION

This Special Flood Hazard Evaluation Report documents the results of an investigation to determine the potential flood situation along Buttonwood Creek and the West Branch of Round Pond Creek within the town of Greece, New York. This study was conducted at the request of the New York State Department of Environmental Conservation under the authority of Section 206 of the 1960 Flood Control Act, as amended. The study reaches include Buttonwood Creek from Frisbee Hill Road, upstream to the town's western corporate limit with the town of Parma and West Branch Round Pond Creek, from 1,000 feet north of Ridgeway Avenue, upstream to the town's southern corporate limit with the town of Gates.

The town of Greece is located northwest of the city of Rochester in Monroe County, New York. It is bordered by the city of Rochester and town of Irondequoit to the east, the town of Gates to the south, the town of Parma to the west, and Lake Ontario to the north (see Figure 1). The town has an area of approximately 42 square miles and a population of 85,140 according to the 1990 census (Reference 1).

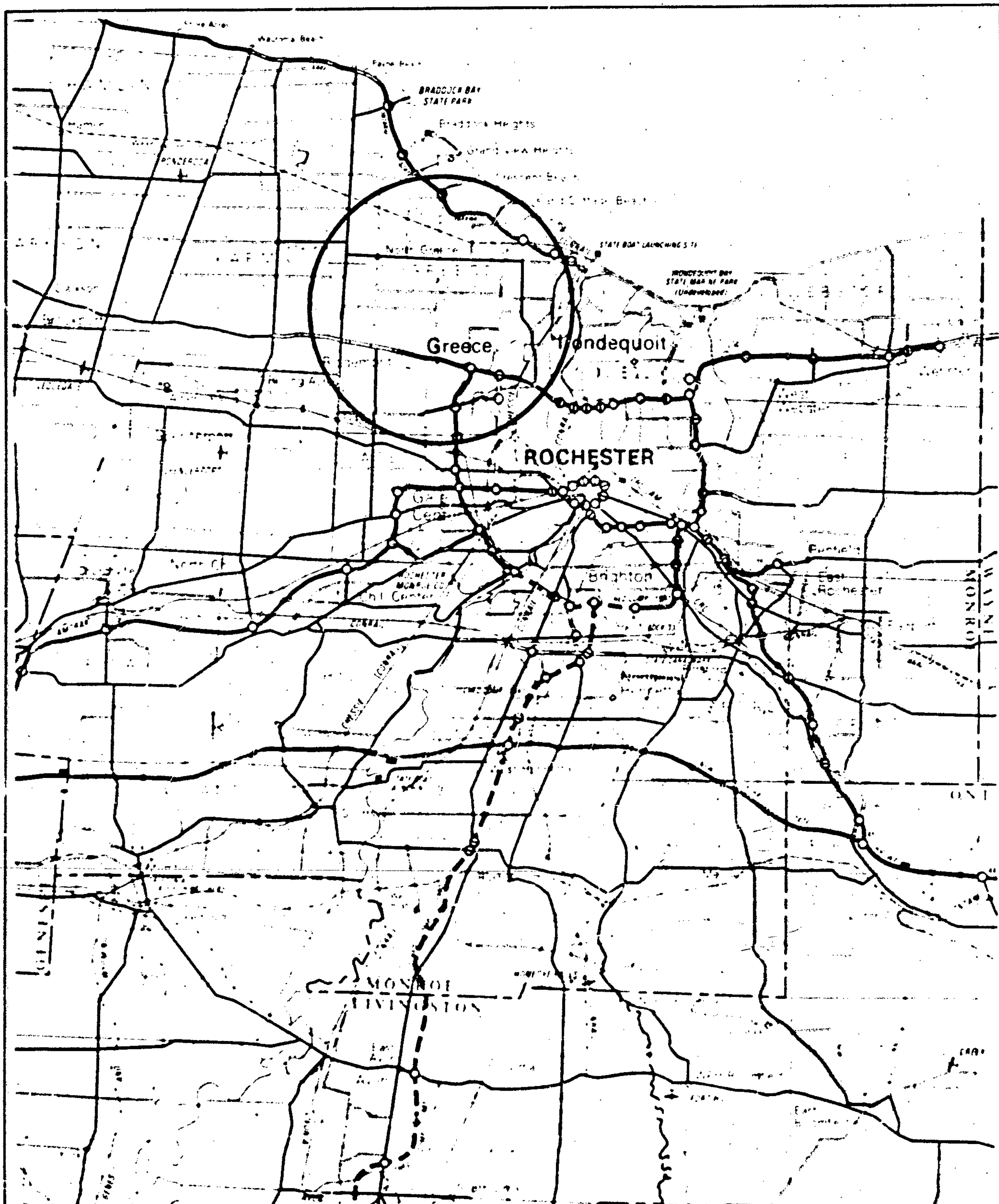
The climate of Greece is continental with temperatures moderated by Lake Ontario. The average annual precipitation is approximately 31.33 inches (Reference 2).

Buttonwood Creek originates just west of the village of Spencerport, then flows northeasterly to its mouth at Braddock Bay.

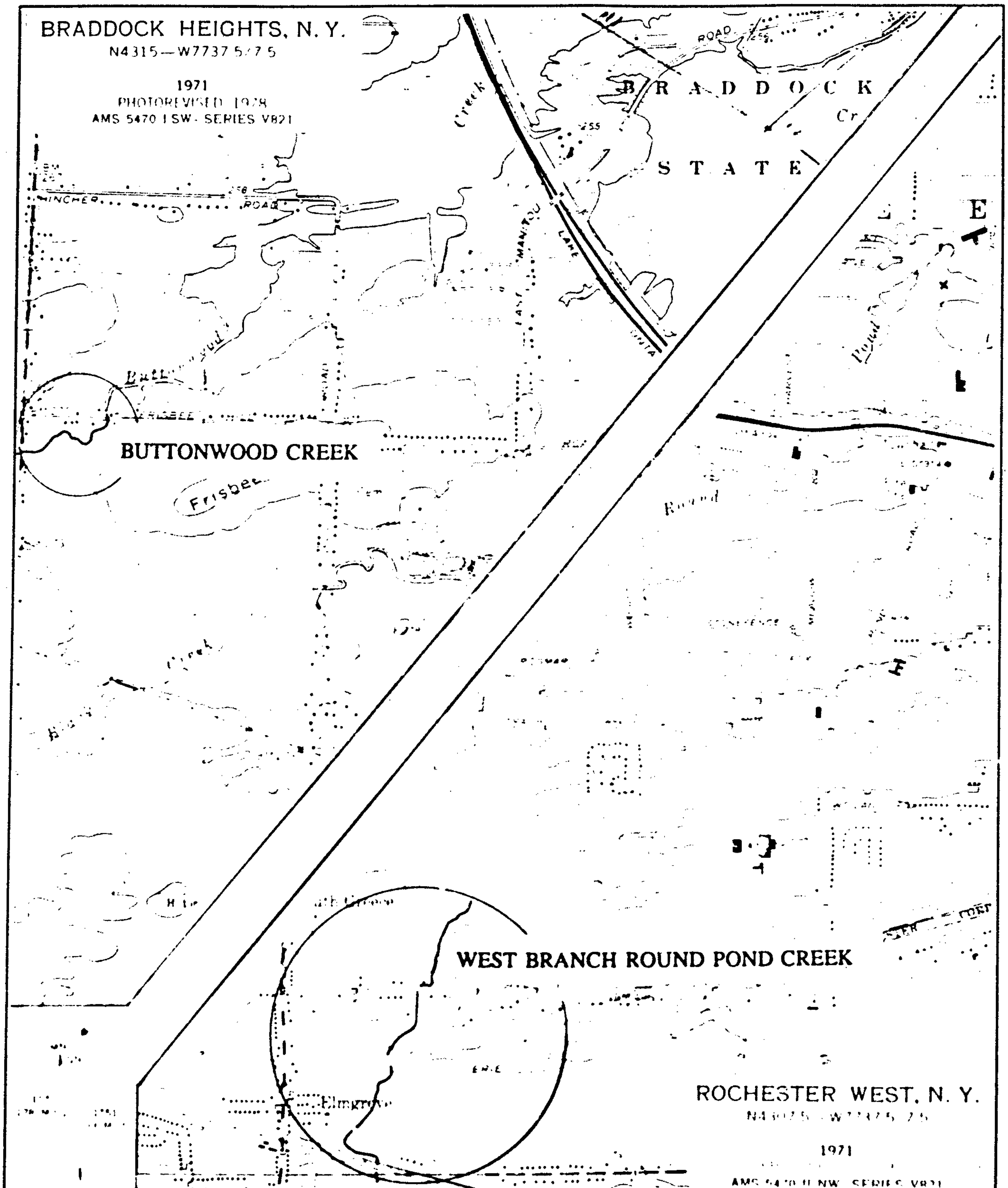
West Branch Round Pond Creek originates in the town of Gates and flows north entering the town of Greece southeast of the Conrail crossing, just east of Elmgrove Road. From this point, it flows in a northeasterly direction to Round Pond and Lake Ontario.

Knowledge of potential floods and flood hazards is important in land use planning. This report identifies the 100-year and 500-year flood plains and 100-year floodway for Buttonwood Creek and West Branch Round Pond Creek within the town of Greece.

Information developed for this study will be used by local officials to manage future flood plain development. While the report does not provide solutions to flood problems, it does furnish a suitable basis for the adoption of land use controls to guide flood plain development, thereby preventing intensification of the flood loss problem. It will also aid in the development



TOWN OF GREECE, NEW YORK (Monroe County)	SCALE 1 250 000 · 5 · 0 · 5 MILES · NORTH
	VICINITY MAP



TOWN OF GREECE, NEW YORK
(Monroe County)

SCALE 1:24000

LOCALITY MAP

of other flood damage reduction techniques to modify flooding and reduce flood damages which might be embodied in an overall Flood Plain Management (FPM) program. Other types of studies, such as those of environmental attributes and the current and future land use roles of the flood plain as part of its surroundings, would also profit from this information.

Although Flood Insurance Rate Maps have been developed for the community, detailed analyses were not used to study the stream reaches analyzed in this study because the area was thought to have a low development potential at the time the maps were prepared. However, the area is now experiencing residential development pressure, and local officials requested detailed flood plain information to manage development.

Additional copies of this report can be obtained from the New York State Department of Environmental Conservation until its supply is exhausted, and the National Technical Information Service of the U.S. Department of Commerce, Springfield, Virginia 22161, at the cost of reproducing the report. The Buffalo District, Corps of Engineers, will provide technical assistance and guidance to planning agencies in the interpretation and use of the hydrologic data obtained for this study.

PRINCIPAL FLOOD PROBLEMS

The greatest potential and frequency for floods within the study area occurs in the early spring when rain combines with snowmelt. Flooding occurred along major streams in Greece in 1971 and 1974 (Reference 3).

Flood Magnitudes and Their Frequencies

Floods are classified on the basis of their frequency or recurrence interval. A 100-year flood is an event with a magnitude that can be expected to be equaled or exceeded once on the average during any 100-year period. It has a 1.0 percent chance of occurring in any given year. It is important to note that, while on a long-term basis the exceedence averages out to once per 100 years, floods of this magnitude can occur in any given year or even in consecutive years and within any given time interval. For example, there is a greater than 50 percent probability that a 100-year event will occur during a 70-year lifetime. Additionally, a house which is built within the 100-year flood level has about a one-in-four chance of being flooded in a 30-year mortgage life.

Hazards and Damages of Large Floods

The extent of damage caused by any flood depends on the topography of the flooded area, the depth and duration of flooding, the velocity of flow, the rate of rise in water surface elevation, and development of the flood plain. Deep water flowing at a high velocity and carrying floating debris would create conditions hazardous to persons and vehicles which attempt to cross the flood plain. Generally, water 3 or more feet deep which flows at a velocity of 3 or more feet per second could easily sweep an adult off his feet and create definite danger of injury or drowning. As indicated in Table 5, flow velocities of the streams studied exceed 3 feet per second on West Branch Round Pond Creek. Rapidly rising and swiftly flowing floodwater may trap persons in homes that are ultimately destroyed or in vehicles that are ultimately submerged or floated. Since water lines can be ruptured by deposits of debris and by the force of flood waters, there is the possibility of contaminated domestic water supplies. Damaged sanitary sewer lines and sewage treatment plants could result in the pollution of floodwaters and could create health hazards. Isolation of areas by floodwater could create hazards in terms of medical, fire, or law enforcement emergencies.

HYDROLOGIC ANALYSES

Hydrologic analyses were carried out to determine the peak discharge-frequency relationships for each flooding source affecting the community.

For this study, Buttonwood Creek was analyzed as one reach. The annual peak discharges were taken from the Flood Insurance Study dated August 1991 (Reference 4). The values for the drainage areas and the 100-year and 500-year peak discharges are shown in Table 1.

For West Branch Round Pond Creek, the stream was divided into three hydrologic reaches, and discharges were calculated at the downstream limit of each reach. Reach 1 extends from 1,000 feet downstream of Ridgeway Avenue upstream to just downstream of the Barge Canal. Reach 2 extends from just upstream of the Barge Canal to just downstream of the railroad embankment. Reach 3 extends from just upstream of the railroad embankment to the southern corporate limit of the town of Greece.

For Reach 1 and Reach 2, the discharges were adjusted to account for restrictive culverts at the barge canal and at the railroad embankment. These storage adjustments account for the reduction of peak discharges as you progress downstream along the West Branch Round Pond Creek. The P.C. versions of HEC-1 (Reference 5) and HEC-DSS were used to determine the adjustments.

Drainage areas and basin characteristics were determined by field inspection of the watersheds and from USGS 7.5-minute topographic maps (Reference 6) and Monroe County Soils Maps. The guidelines published in the "National Handbook of Recommended Methods for Water Data Acquisition were used to calculate the basin parameters (Reference 7). The values for the drainage areas and 100-year and 500-year peak discharges are shown in Table 1.

Table 1 - Summary of Discharges

Location	Drainage Area (sq. mi.)	Peak Discharges (cfs) 100-Yr	500-Yr
Buttonwood Creek at Frisbee Hill Road	9.40	1680	2240
West Branch Round Pond Creek			
Reach 1 - 1,000 feet downstream of Ridgeway Ave.	3.75	170	180
Reach 2 - just upstream of Barge Canal	3.63	470	540
Reach 3 - just upstream of railroad embankment	3.30	1160	1610

HYDRAULIC ANALYSES

Analyses of the hydraulic characteristics of flooding from sources studied were carried out to provide estimates of the elevations of floods for the 100-year and 500-year recurrence intervals.

Cross-section data for the backwater analyses of the Buttonwood Creek and West Branch Round Pond Creek were obtained from field surveys performed by Buffalo District personnel in November 1991. Additional data were obtained from topographic maps (References 6 and 8). All bridges and culverts were surveyed to determine elevation data and structural geometry. Spot elevations were obtained in the overbank areas in order to accurately delineate the flood plain boundaries.

Water surface elevations of the 100-year and 500-year recurrence interval flood events were computed using the COE HEC-2 step-backwater computer program (Reference 9). For Buttonwood Creek, the 100-year flood elevation at cross section "J", located 50 feet downstream of Frisbee Hill Road, taken from the current Flood Insurance Study (Reference 4) was used as the starting water surface elevation. The starting water surface elevation for West Branch Round Pond Creek was based on discharge and storage data obtained from the Corps of Engineers Dam Safety Report for Round Pond Creek (May 1981) and is also the ponded water surface elevation behind the dam as shown in the preliminary FIS (Reference 10). However, this elevation becomes insignificant because of the steepness of the channel bed just upstream from the confines of the reservoir. Locations of the selected cross-sections used in the hydraulic analyses are shown on the Flood Profiles (Plates 1 and 2) and on the Flooded Area Maps (Plates 3 through 6).

West Branch Round Pond Creek passes under the New York State Barge Canal via a 4-foot diameter, 250-foot long concrete culvert. The canal banks are situated 19.5 feet above the invert of the upstream end of the culvert. The pool created by the 500-year discharge on West Branch Round Pond Creek does not approach this height; therefore, no spillover is possible. Likewise, the canal has no overflow structures at this location; thus no increase in creek discharges can be expected because of high stages on the Barge Canal.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were selected by engineering judgement and were based on field observations of the stream and flood plain areas. The values for Mannings "n" and the contraction and expansion coefficients used in the study reaches are shown in Tables 2 and 3, respectively.

Table 2. Mannings "n"

Stream	Channel	Overbank
Buttonwood Creek	0.030 - 0.045	0.040 - 0.065
West Branch Round Pond Creek	0.040 - 0.045	0.045 - 0.050

Table 3. Coefficients

Stream	Contraction	Expansion
Buttonwood Creek	0.1 - 0.3	0.3 - 0.5
West Branch Round Pond Creek	0.1 - 0.3	0.3 - 0.5

Flood profiles were drawn showing the computed water surface elevations for the selected recurrence intervals. The flood plain boundaries were delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using USGS topographic maps and spot elevations obtained during the field surveys. Small areas within the flood plain boundaries may be above the flood elevations, but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

Floodways were determined for the streams studied in detail. Floodway encroachments were based on equal conveyance reduction from each side of the flood plain. Per New York State standard, the maximum increase in stage due to encroachment was limited to 1 foot provided that hazardous velocities were not produced. Floodway widths were computed at cross sections and varied from 115 feet to 230 feet on Buttonwood Creek and 40 feet to 140 feet for West Branch Round Pond Creek. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Tables 4 and 5. The computed floodways are also shown on the Flooded Area Maps, Plates 3 through 6. In cases where the floodway and the 100-year flood plain boundaries are either close together or collinear, only the floodway boundary is shown.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE
A	158	180	1,214	1.4	259.4	259.4	259.4	0.0
B	1,050	115	644	2.6	259.5	259.5	259.5	0.0
C	1,500	230	978	1.7	259.8	259.8	260.0	0.2

1 Distance is measured in feet from centerline of Frisbee Hill Road.

TOWN OF GREECE, NEW YORK
(Monroe County)

FLOODWAY DATA

BUTTONWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
						(FEET NGVD)		
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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1 [illegible]

[illegible]

TABLE [illegible]

FLOODWAY DATA

[illegible]

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Descriptions of the reference marks are presented in Table 6.

UNIFIED FLOOD PLAIN MANAGEMENT

Historically, the alleviation of flood damage has been accomplished almost exclusively by the construction of protective works such as reservoirs, channel improvements, and floodwalls and levees. However, in spite of the billions of dollars that have already been spent for construction of well-designed and efficient flood control works, annual flood damages continue to increase because the number of persons and structures occupying floodprone lands is increasing faster than protective works can be provided.

Recognition of this trend has forced a reassessment of the flood control concept and resulted in the broadened concept of unified flood plain management programs. Legislative and administrative policies frequently cite two approaches - structural and nonstructural - for adjusting to the flood hazard. In this context, "structural" is usually intended to mean adjustments that modify the behavior of floodwaters through the use of measures such as dams and channel work. "Nonstructural" is usually intended to include all other adjustments in the way society acts when occupying or modifying a flood plain (e.g., regulations, floodproofing, insurance, etc.). Both structural and nonstructural tools are used for achieving desired future flood plain conditions. There are three basic strategies which may be applied individually or in combination: (1) modifying the susceptibility to flood damage and disruption, (2) modifying the floods themselves, and (3) modifying (reducing) the adverse impacts of floods on the individual and the community.

Modify Susceptibility to Flood Damage and Disruption

The strategy to modify susceptibility to flood damage and disruption consists of actions to avoid dangerous, economically undesirable, or unwise use of the flood plain. Responsibility for implementing such actions rests largely with the non-Federal sector and primarily at the local level of government.

These actions include restrictions in the mode and the time of occupancy; in the ways and means of access; in the pattern, density, and elevation of structures and in the character of their materials (structural strength, absorptiveness, solubility, corrodibility); in the shape and type of buildings and in their contents; and in the appurtenant facilities and landscaping of the grounds. The strategy may also necessitate changes in the interdependencies between flood plains and surrounding areas not subject to flooding, especially interpendencies regarding utilities and commerce. Implementing mechanisms for these actions include land use regulations, development and

Table 6 - Elevation Reference Marks

Reference Mark	Elevation (feet NGVD)	Description of Location
Buttonwood Creek		
RM 1	260.56	Chiseled square on top of upstream, left concrete headwall located on Frisbee Hill Road bridge over Buttonwood Creek.
RM 2	260.22	Chiseled cross on the downstream, right abutment of Manitou Road bridge over Buttonwood Creek.
West Branch Round Pond Creek		
RM 3	496.07	Disk stamped "672" set in concrete post located on Ridgeway Avenue, 28.6 feet south of the centerline and approximately 600 feet west of centerline of creek.
RM 4	486.65	Railroad spike on the northeast side of RG&E Pole #79, approximately 1.8 feet above ground. Pole is located on south side of Ridgeway Avenue, just west of Residence #2857.
RM 5	499.25	Top of 4-foot concrete culvert (painted yellow), located on downstream side of Barge Canal at W. Branch Round Pond Creek.
RM 6	517.64	Yellow scratch on north side of Post #45 located on the south side of the Barge Canal along path near centerline of culvert.
RM 7	514.74	Letter "E" in the word "Moose" on the downstream, right wingwall of Deming Street bridge over Round Pond Creek.
RM 8	522.72	Chiseled square on top of southwest corner of the headwall located on the upstream side of the railroad bridge over Round Pond Creek.

redevelopment policies, floodproofing, disaster preparedness and response plans, and flood forecasting and warning systems.

Different tools may be more suitable for developed or underdeveloped flood plains or for urban or rural areas. The information contained in this report is particularly useful for the preparation of flood plain regulations.

a. Flood Plain Regulations.

Flood plain regulations apply to the full range of ordinances and other means designed to control land use and construction within floodprone areas. The term encompasses zoning ordinances, subdivision regulations, building and housing codes, encroachment line statutes, open area regulations, and other similar methods of management which affect the use and development of floodprone areas.

Flood plain land use management does not prohibit use of floodprone areas; to the contrary, flood plain land use management seeks the best use of flood plain lands. The flooded area map and the water surface profile contained in this report can be used to guide development in the flood plain. The elevations shown on the profile should be used to determine flood heights because they are more accurate than the outlines of flooded areas. It is recommended that development in areas susceptible to frequent flooding adhere to the principles expressed in Executive Order 11988 - Flood Plain Management, whose objective is to ". . . avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of flood plains . . . whenever there is a practicable alternative." Accordingly, development in areas susceptible to frequent flooding should consist of construction which has a low damage potential such as parking areas and golf courses. High value construction such as buildings, should be located outside the flood plain to the fullest extent possible. In instances where no practicable alternative exists, the land should be elevated to minimize damages. If it is uneconomical to elevate the land in these areas, means of floodproofing the structure should be given careful consideration.

b. Development Zones.

A flood plain consists of two zones. The first zone is the designated "floodway" or that cross sectional area required for carrying or discharging the anticipated flood waters with a maximum 1-foot increase in flood level (New York State Department of Environmental Conservation standard). Velocities are the greatest and most damaging in the floodway. Regulations essentially maintain the flow-conveying capability of the floodway to minimize inundation of additional adjacent areas. Uses which are acceptable for floodways include parks, parking areas, open spaces, etc.

The second zone of the flood plain is termed the "floodway fringe" or restrictive zone, in which inundation might occur but where depths and velocities are generally low. Although not recommended if practicable alternatives exist, such areas can be developed provided structures are placed high enough or floodproofed to be reasonably free from flood damage during the 100-year flood. Typical relationships between the floodway and floodway fringe are shown in Figure 2. The floodways for Buttonwood Creek and West Branch Round Pond Creek have been plotted on the Flooded Area Maps, Plates 3 through 6.

Figure 3 - Floodway Schematic

c. Formulation of Flood Plain Regulations.

Formulation of flood plain regulations in a simplified sense involves selecting the type and degree of control to be exercised for each specific flood plain. In principle, the form of the regulations is not as important as a maintained adequacy of control. The degree of control normally varies with the flood hazard as measured by depth of inundation, velocity of flow, frequency of flooding, and the need for available land. Considerable planning and research is required for the proper formulation of flood plain regulations. Formulation of flood plain regulations may require a lengthy period of time during which development is likely to occur. In such cases, temporary regulations should be adopted and amended later as necessary.

Modify Flooding

The traditional strategy of modifying floods through the construction of dams, dikes, levees and floodwalls, channel alterations, high flow diversions and spillways, and land treatment measures has repeatedly demonstrated its effectiveness for protecting property and saving lives, and it will continue to be a strategy of flood plain management. However, in the future, reliance solely upon a flood modification strategy is neither possible nor desirable. Although the large capital investment required by flood modifying tools has been provided largely by the Federal government, sufficient funds from Federal sources have not been and are not likely to be available to meet all situations for which flood modifying measures would be both effective and economically feasible. Another consideration is that the cost of maintaining and operating flood control structures falls upon local governments.

Flood modifications acting alone leave a residual flood loss potential and can encourage an unwarranted sense of security leading to inappropriate use of lands in the areas that are directly protected or in adjacent areas. For this reason, measures to modify possible floods should usually be accompanied by measures to modify the susceptibility to flood damage, particularly by land use regulations.

Modify the Impact of Flooding on Individuals and the Community

A third strategy for mitigating flood losses consists of actions designed to assist individuals and communities in their preparatory, survival, and recovery responses to floods. Tools include information dissemination and education, arrangements for spreading the costs of the loss over time, purposeful transfer of some of the individual's loss to the community by reducing taxes in flood prone areas, and the purchase of Federally subsidized flood insurance.

The distinction between a reasonable and unreasonable transfer of costs from the individual to the community can also be regulated and is a key to effective flood plain management.

CONCLUSION

This report presents local flood hazard information for Buttonwood Creek and the West Branch Round Pond Creek in the town of Greece, New York. The U.S. Army Corps of Engineers, Buffalo District, will provide interpretation in the application of the data contained in this report, particularly as to its use in developing effective flood plain regulations. Requests should be coordinated with the New York State Department of Environmental Conservation.

GLOSSARY

BACKWATER EFFECT	The resulting rise in water surface in a given stream due to a downstream obstruction or high stages in an intersecting stream.
BASE FLOOD	A flood which has an average return interval in the order of once in 100 years, although the flood may occur in any year. It is based on statistical analysis of streamflow records available for the watershed and analysis of rainfall and runoff characteristics in the general region of the watershed. It is commonly referred to as the "100-year flood."
DISCHARGE	The quantity of flow in a stream at any given time, usually measured in cubic feet per second (cfs).
FLOOD	An overflow of lands not normally covered by water. Floods have two essential characteristics: the inundation of land is temporary and the lands are adjacent to and inundated by overflow from a river, stream, ocean, lake, or other body of standing water. Normally a "flood" is considered as any temporary rise in streamflow or stage, but not the ponding of surface water, that results in significant adverse effects in the vicinity. Adverse effects may include damages from overflow of land areas, temporary backwater effects in sewers and local drainage channels, creation of unsanitary conditions or other unfavorable situations by deposition of materials in stream channels during flood recessions, and rise of groundwater coincident with increased streamflow.
FLOOD CREST	The maximum stage or elevation reached by floodwaters at a given location.
FLOOD FREQUENCY	A statistical expression of the percent chance of exceeding a discharge of a given magnitude in any given year. For example, a <u>100-year flood</u> has a magnitude expected to be exceeded on the average of once every hundred years. Such a <u>flood</u> has a 1 percent chance of being exceeded in any given year. Often used interchangeably with <u>RECURRENCE INTERVAL</u>.

FLOOD PLAIN	The areas adjoining a river, stream, watercourse, ocean, lake, or other body of standing water that have been or may be covered by floodwater.
FLOOD PROFILE	A graph showing the relationship of water surface elevation to location; the latter generally expressed as distance upstream from a known point along the approximate centerline of a stream of water that flows in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood, but may be prepared for conditions at a given time or stage.
FLOOD STAGE	The stage or elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area in which the elevation is measured.
FLOODWAY	The channel of a watercourse and those portions of the adjoining flood plain required to provide for the passage of the selected flood (normally the 100-year flood) with an insignificant increase in the flood levels above that of natural conditions. As used in the National Flood Insurance Program, floodways must be large enough to pass the 100-year flood without causing an increase in elevation of more than a specified amount (1 foot in most areas).
RECURRENCE INTERVAL	A statistical expression of the average time between floods exceeding a given magnitude (see FLOOD FREQUENCY).

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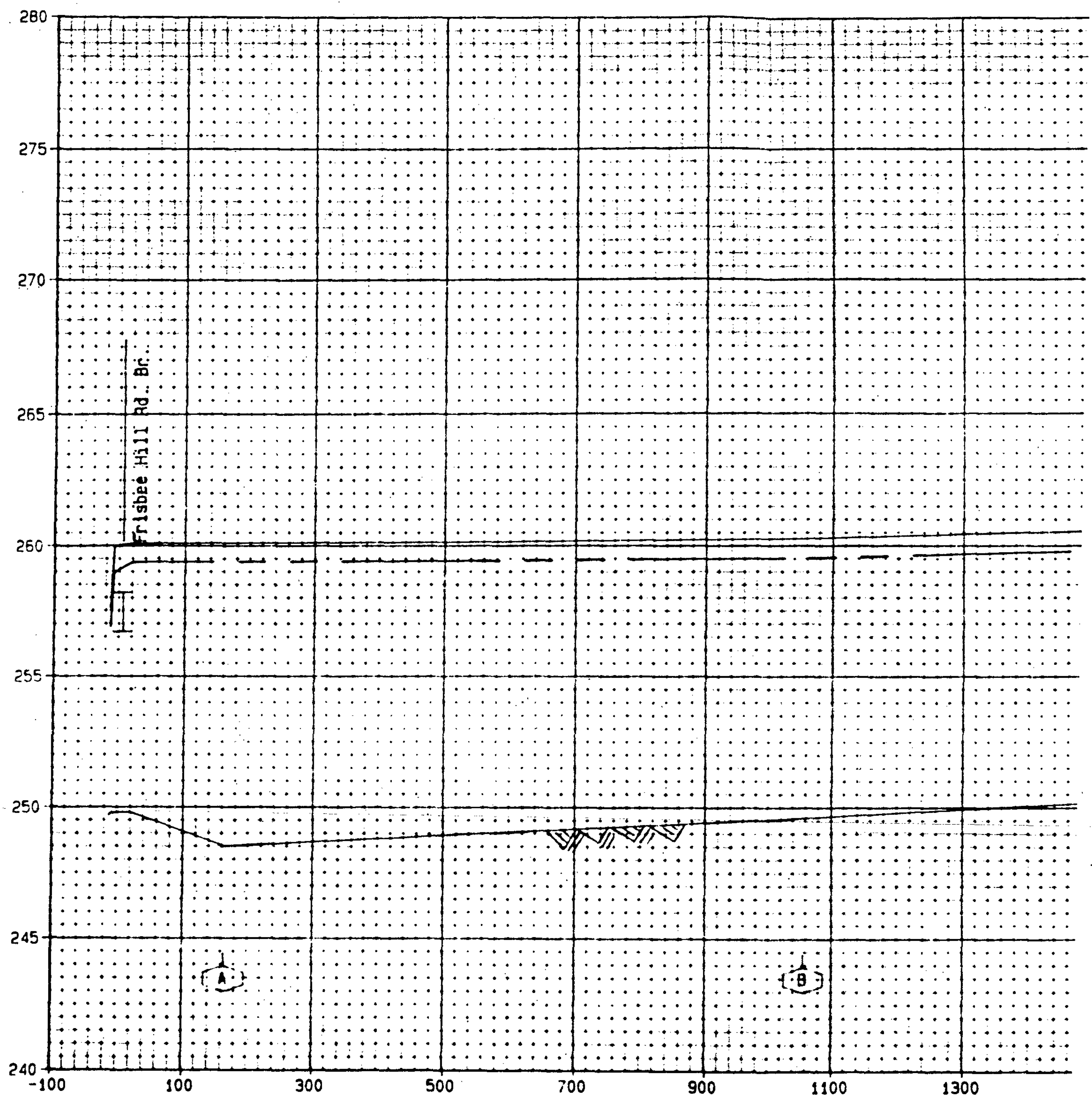


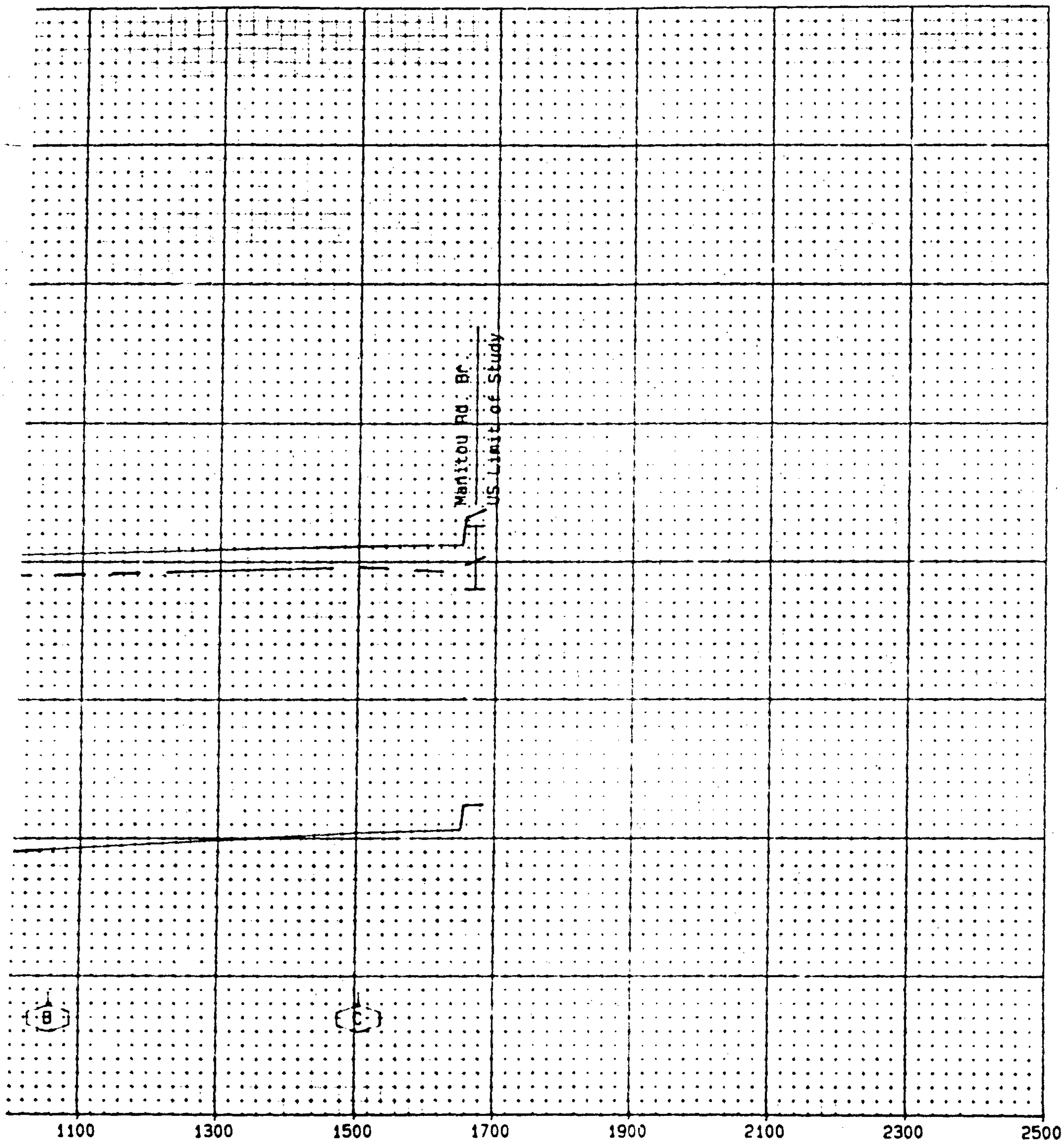
DISTANCE IN FEET
Distance is measured in feet from the c
of Frisbee Hill Rd. Bridge

egend:
)0 YEAR FLOOD
)0 YEAR FLOOD

A Cross Section

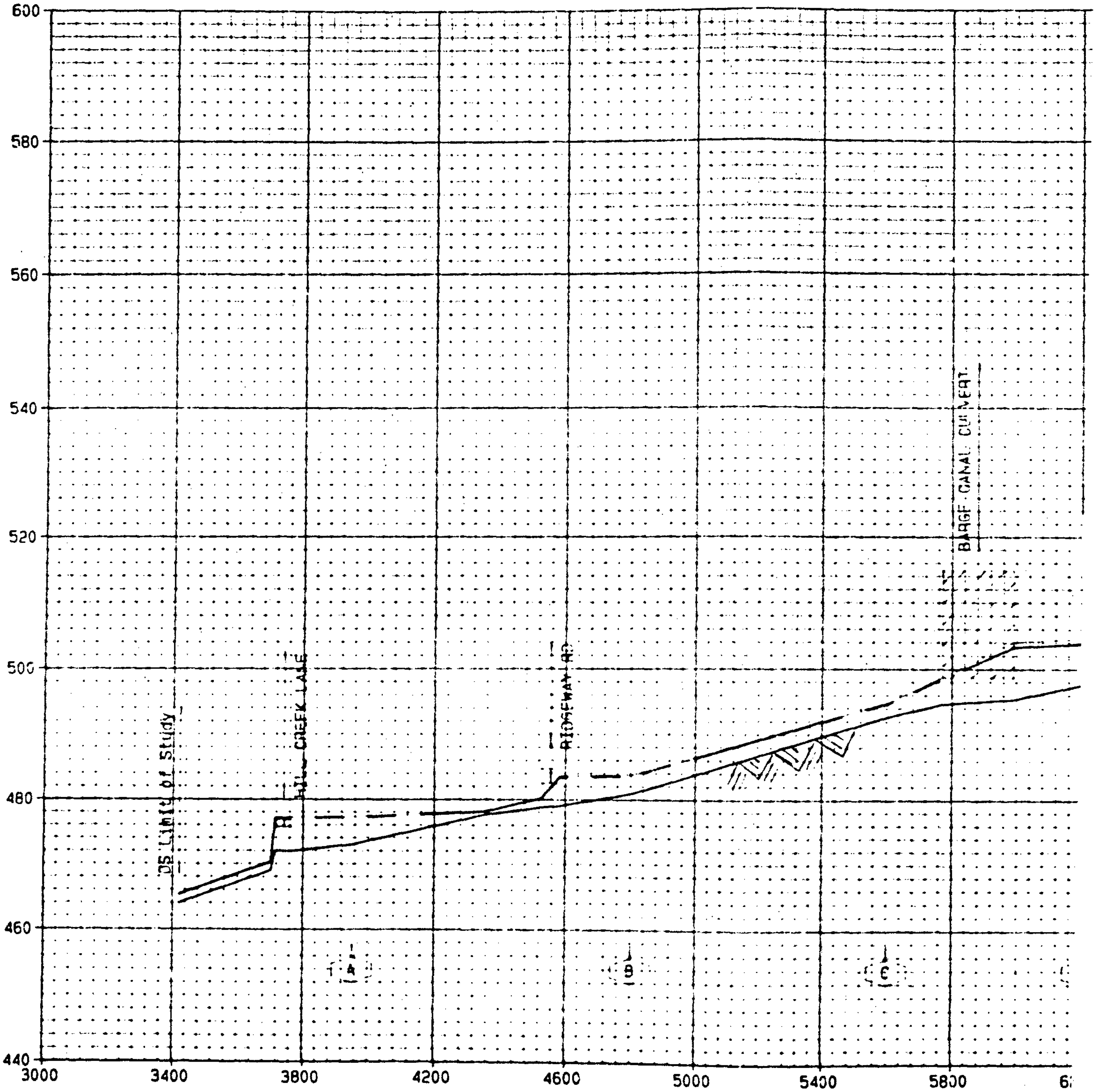
Stream bed

Bridge



DISTANCE IN FEET
-- ..easured in feet from the centerline
Frisbee Hill Rd. Bridge

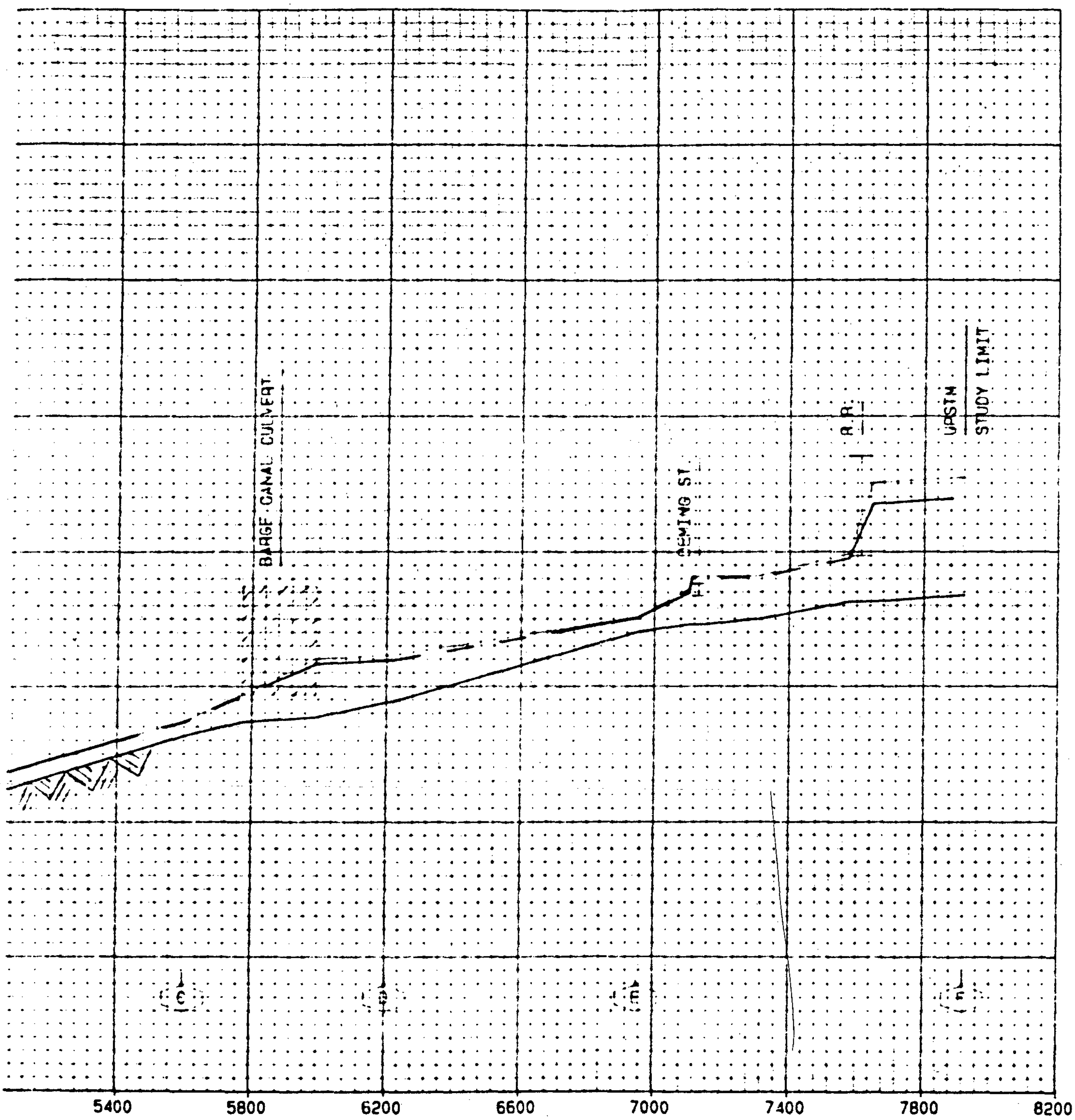
FLOOD PROFILE
BUTTONWOOD CREEK
TOWN OF GREECE, N.Y.
PLATE 1



DISTANCE IN FEET
Distance is measured in feet from

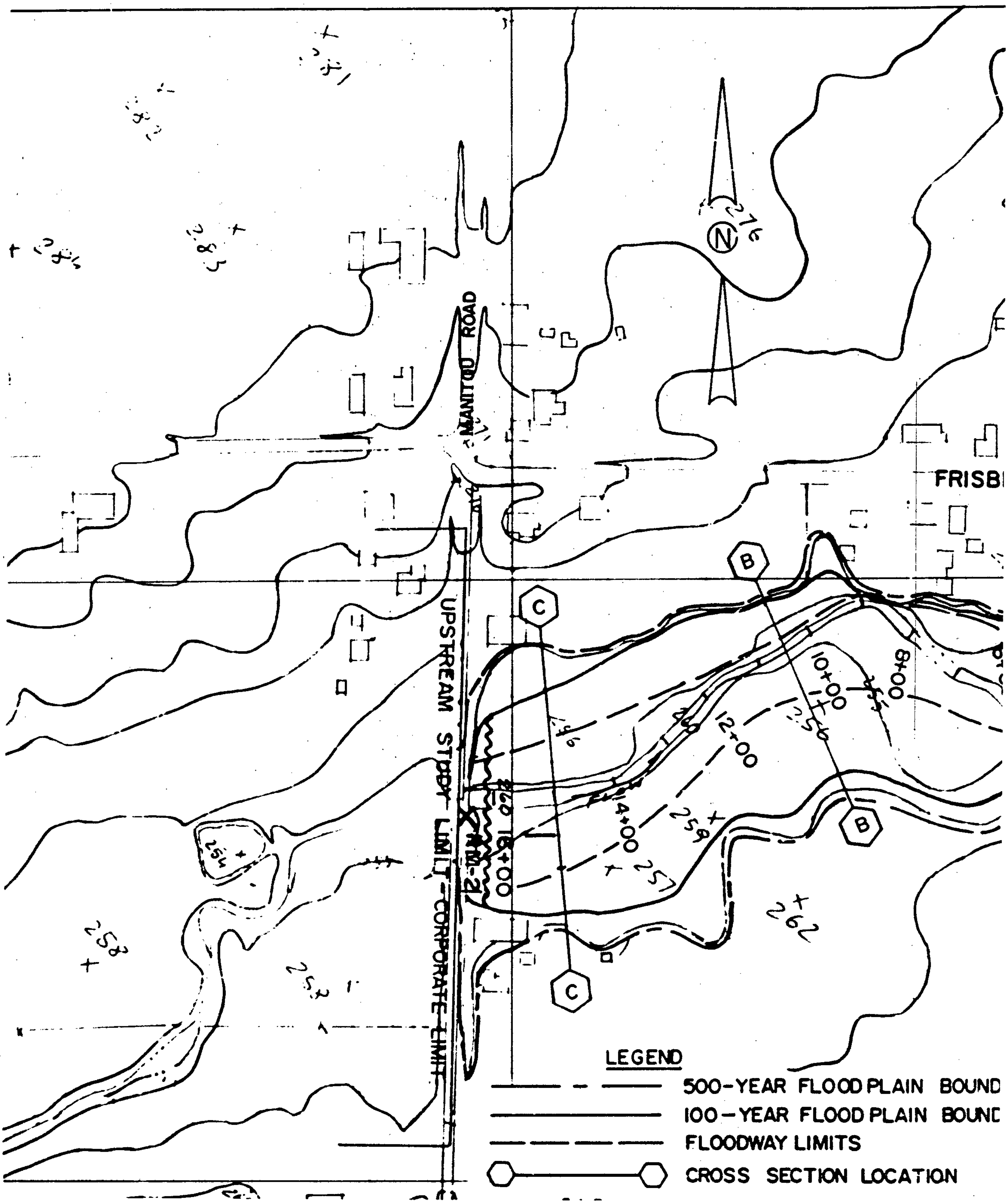
gend:
0 YEAR FLOOD
0 YEAR FLOOD

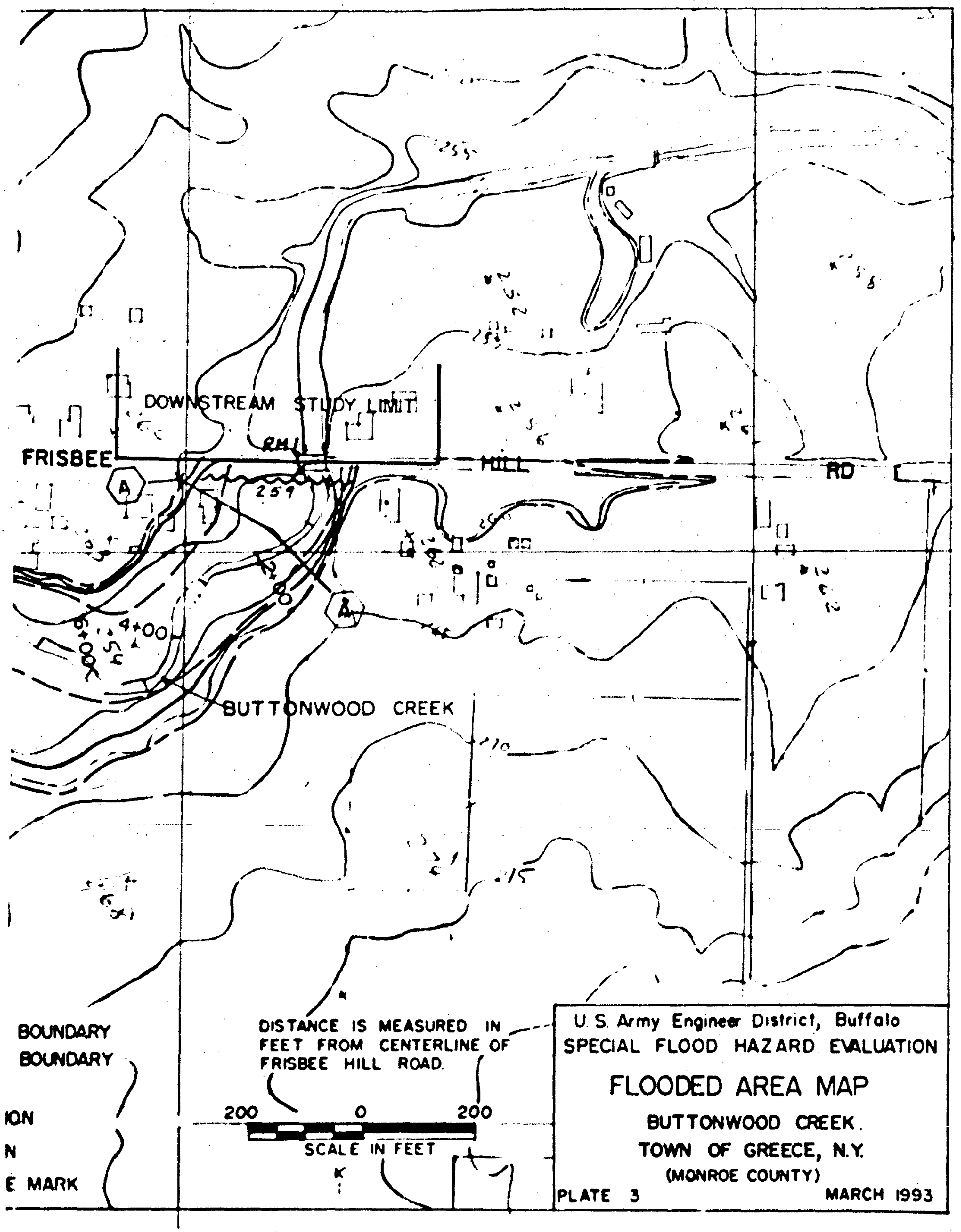
A Cross Section
Stream bed
Culvert
Bridge

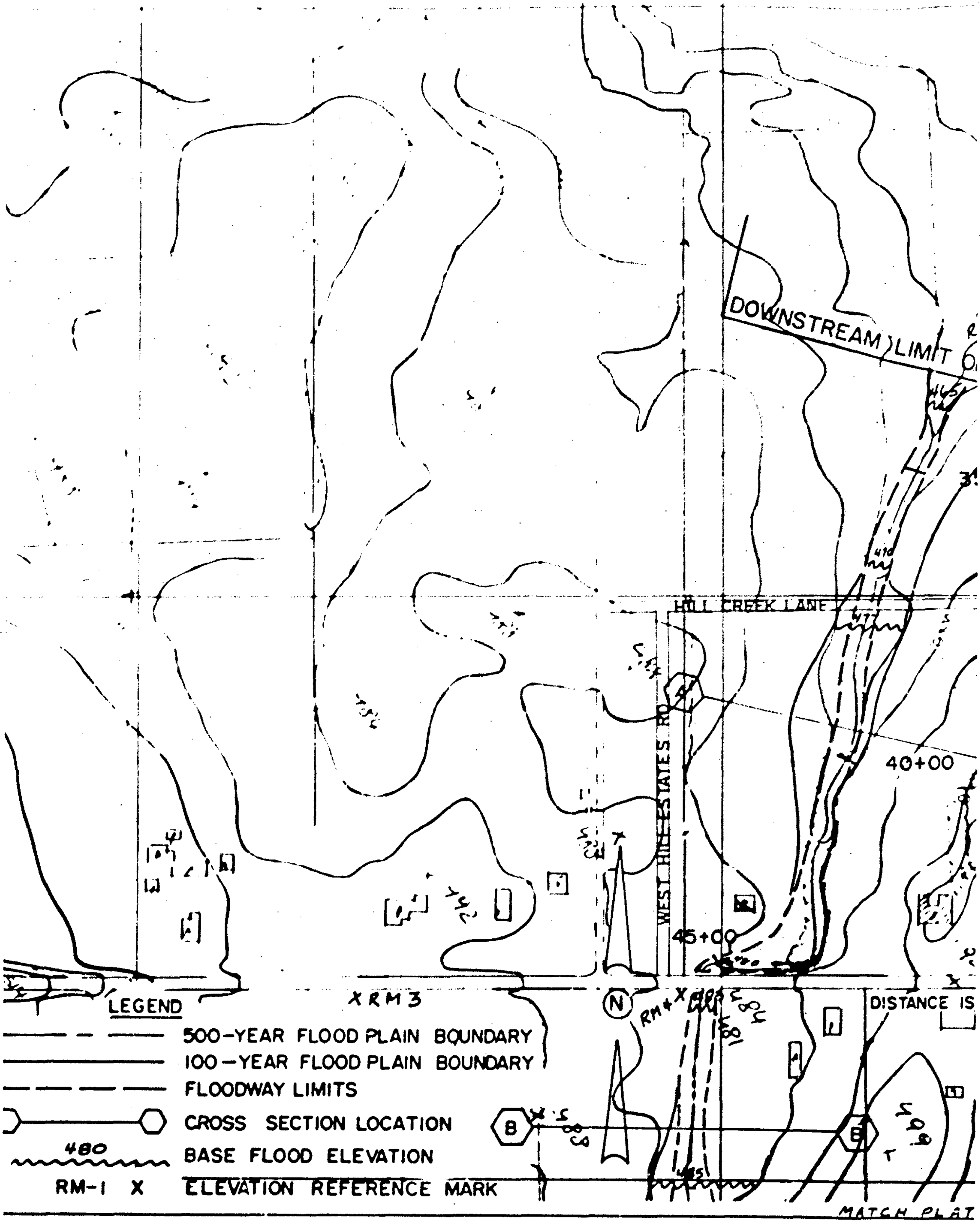


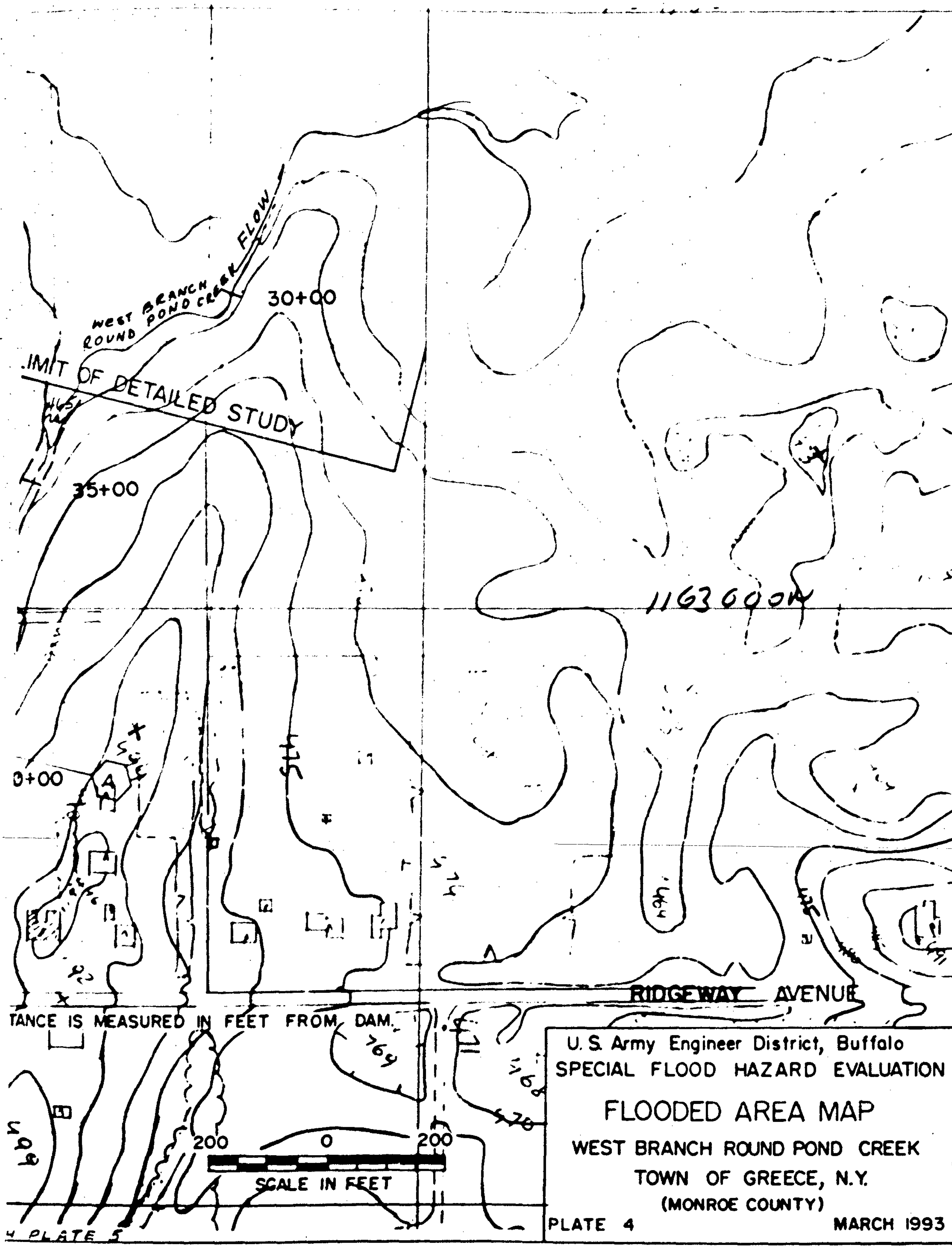
DISTANCE IN FEET
ance is measured in feet from DAM

FLOOD PROFILE
W. BRANCH ROUND POND CREEK
TOWN OF GREECE, N.Y.
PLATE 2

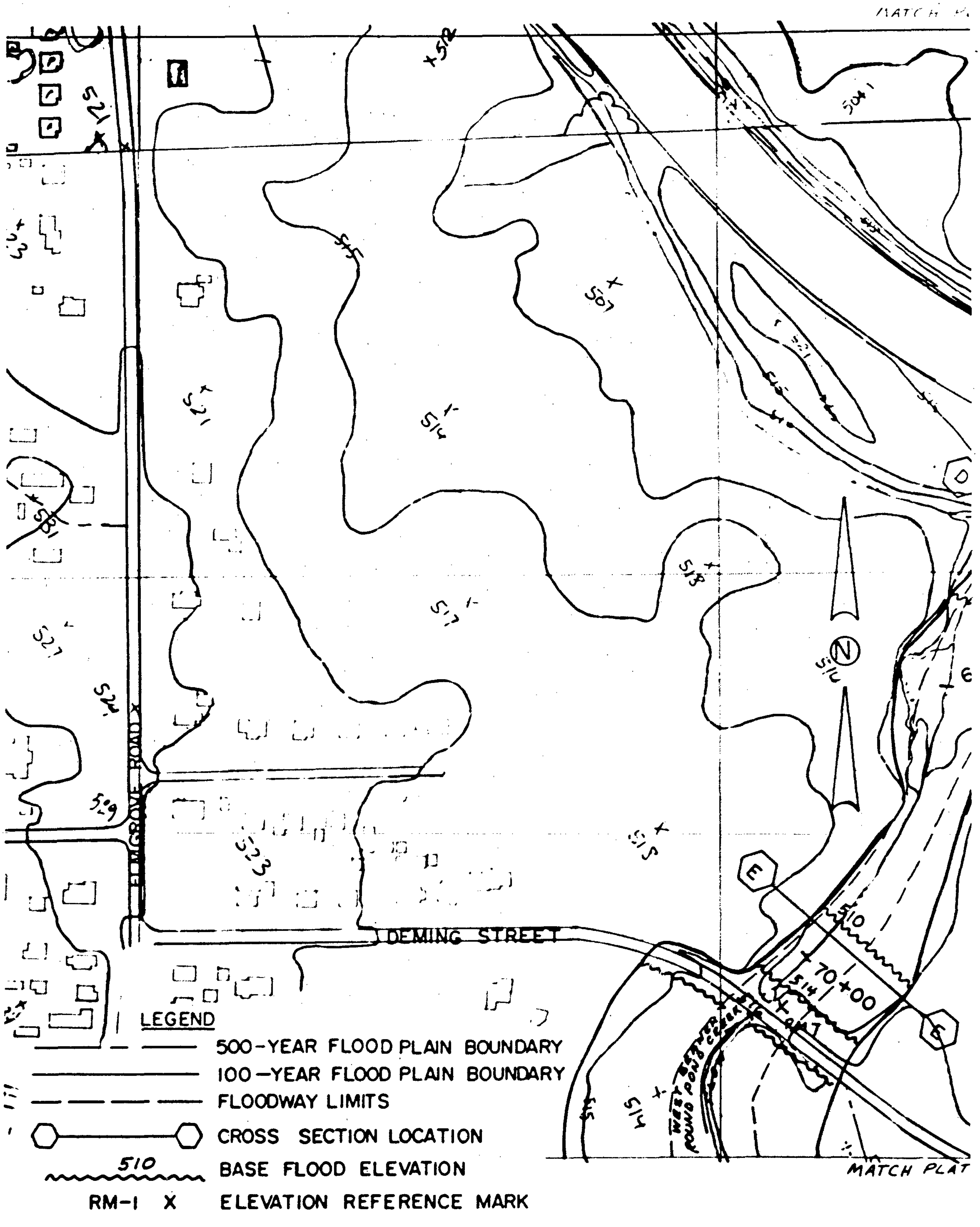

MANITOU ROAD
FRISBI
UPSTREAM STUDY LIMIT-CORPORATE LIMIT
N
B
B
C
C
10+00
8+00
12+00
14+00
16+00
262
258
254
LEGEND
500-YEAR FLOOD PLAIN BOUND
100-YEAR FLOOD PLAIN BOUNC
FLOODWAY LIMITS
CROSS SECTION LOCATION

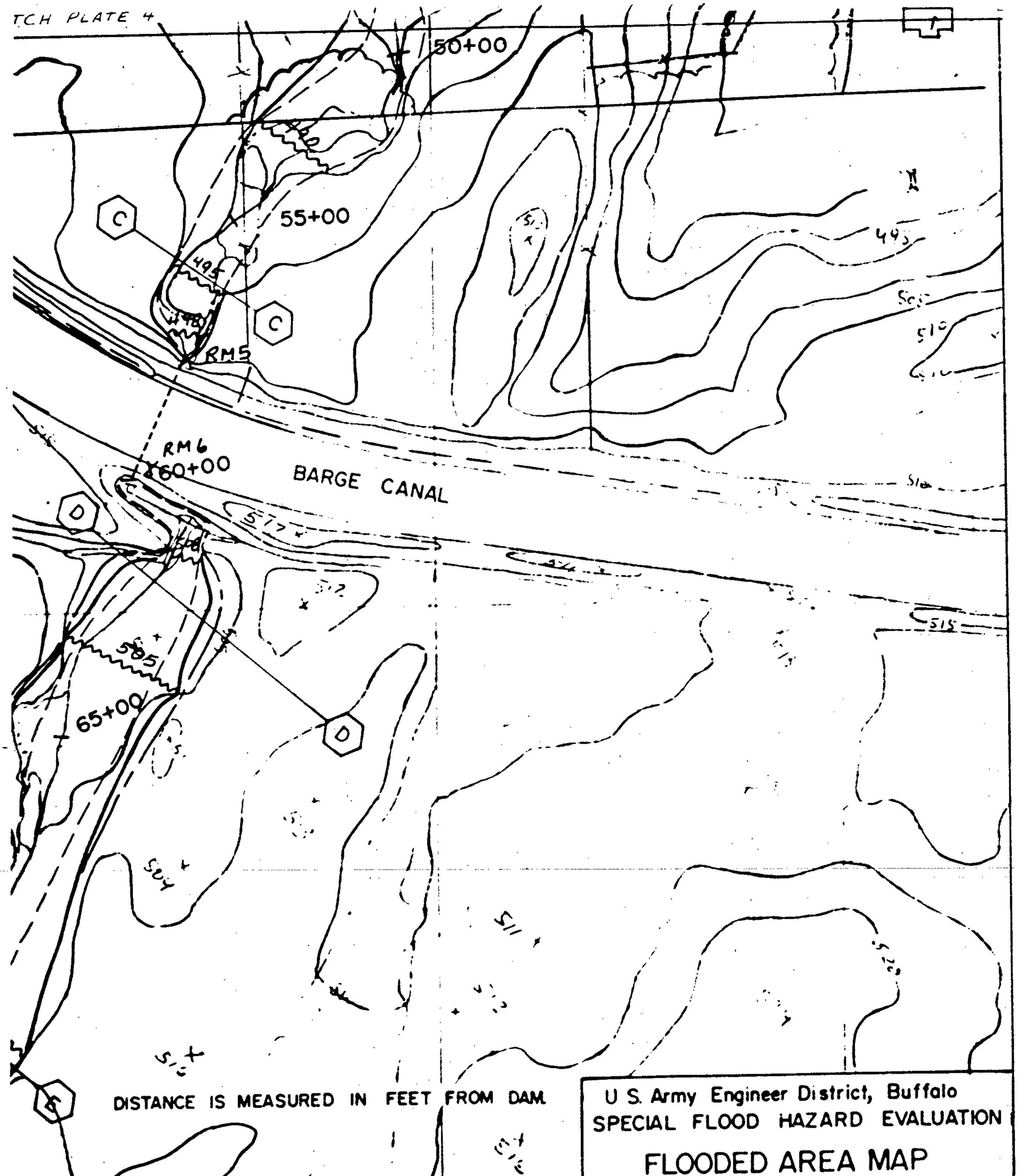

DOWNSTREAM STUDY LIMIT
FRISBEE
HILL
RD
RM1
A
259
255
4+00
6+00
A
BUTTONWOOD CREEK
BOUNDARY
BOUNDARY
ION
N
E MARK
DISTANCE IS MEASURED IN FEET FROM CENTERLINE OF FRISBEE HILL ROAD.
200
0
200
SCALE IN FEET
U.S. Army Engineer District, Buffalo
SPECIAL FLOOD HAZARD EVALUATION
FLOODED AREA MAP
BUTTONWOOD CREEK.
TOWN OF GREECE, N.Y.
(MONROE COUNTY)
PLATE 3
MARCH 1993


DOWNSTREAM LIMIT
HILL CREEK LANE
WEST HILL ESTATES RD
40+00
45+00
X RM 3
RM 4 X
DISTANCE IS
LEGEND
500-YEAR FLOOD PLAIN BOUNDARY
100-YEAR FLOOD PLAIN BOUNDARY
FLOODWAY LIMITS
CROSS SECTION LOCATION
480
BASE FLOOD ELEVATION
RM-1 X
ELEVATION REFERENCE MARK



WEST BRANCH ROUND POND CREEK
FLOW
30+00
LIMIT OF DETAILED STUDY
35+00
1163000N
0+00
A
RIDGEWAY AVENUE
TANCE IS MEASURED IN FEET FROM DAM.
200
0
200
SCALE IN FEET
PLATE 5
U. S. Army Engineer District, Buffalo
SPECIAL FLOOD HAZARD EVALUATION
FLOODED AREA MAP
WEST BRANCH ROUND POND CREEK
TOWN OF GREECE, N.Y.
(MONROE COUNTY)
PLATE 4
MARCH 1993


MATCH P
512
521
515
507
504
514
521
518
517
527
524
529
523
515
510
70+00
514
ELMGROVE ROAD
DEMING STREET
D
E
MATCH PLAT
LEGEND
500-YEAR FLOOD PLAIN BOUNDARY
100-YEAR FLOOD PLAIN BOUNDARY
FLOODWAY LIMITS
CROSS SECTION LOCATION
510
BASE FLOOD ELEVATION
RM-1 X
ELEVATION REFERENCE MARK



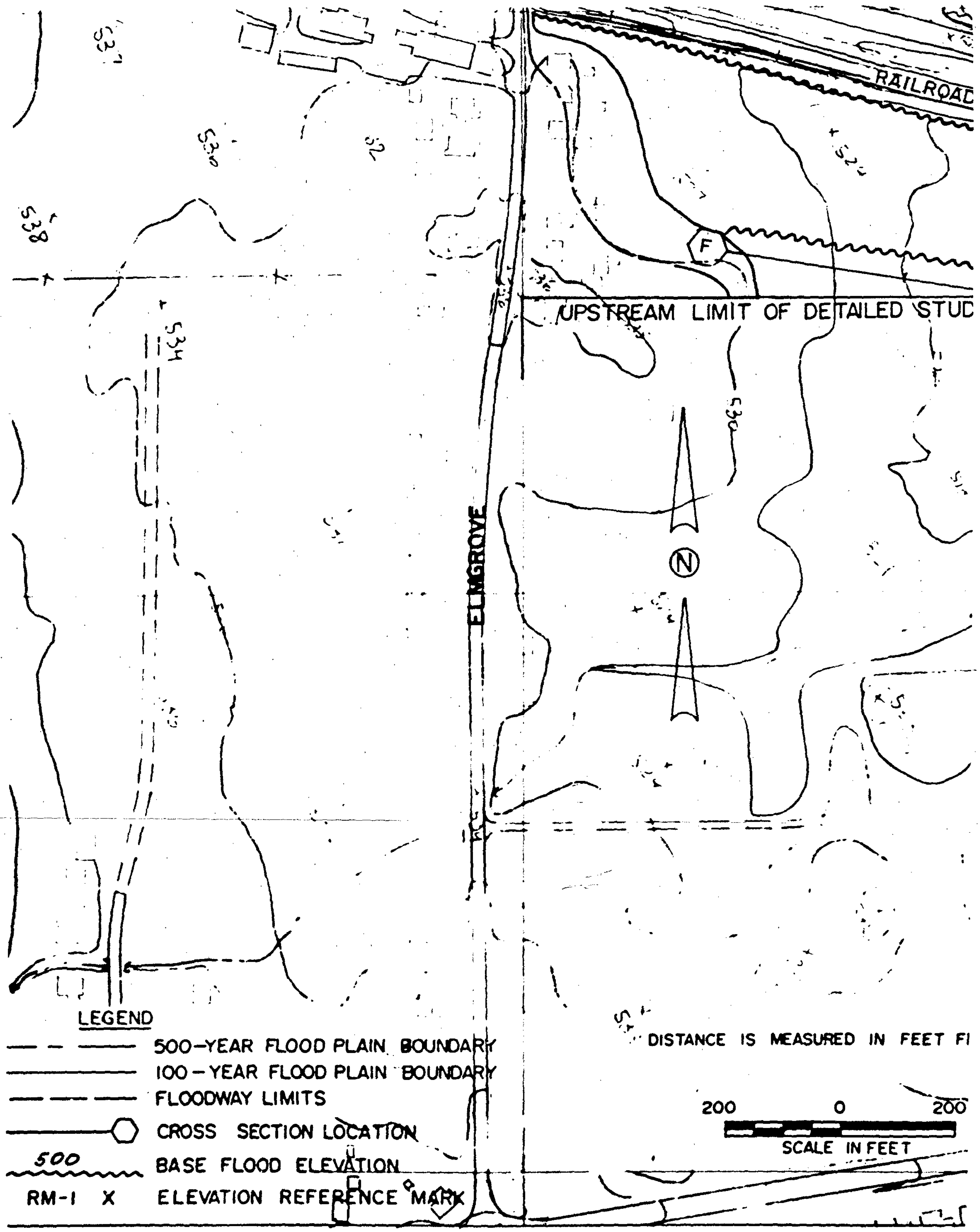
U S. Army Engineer District, Buffalo
SPECIAL FLOOD HAZARD EVALUATION

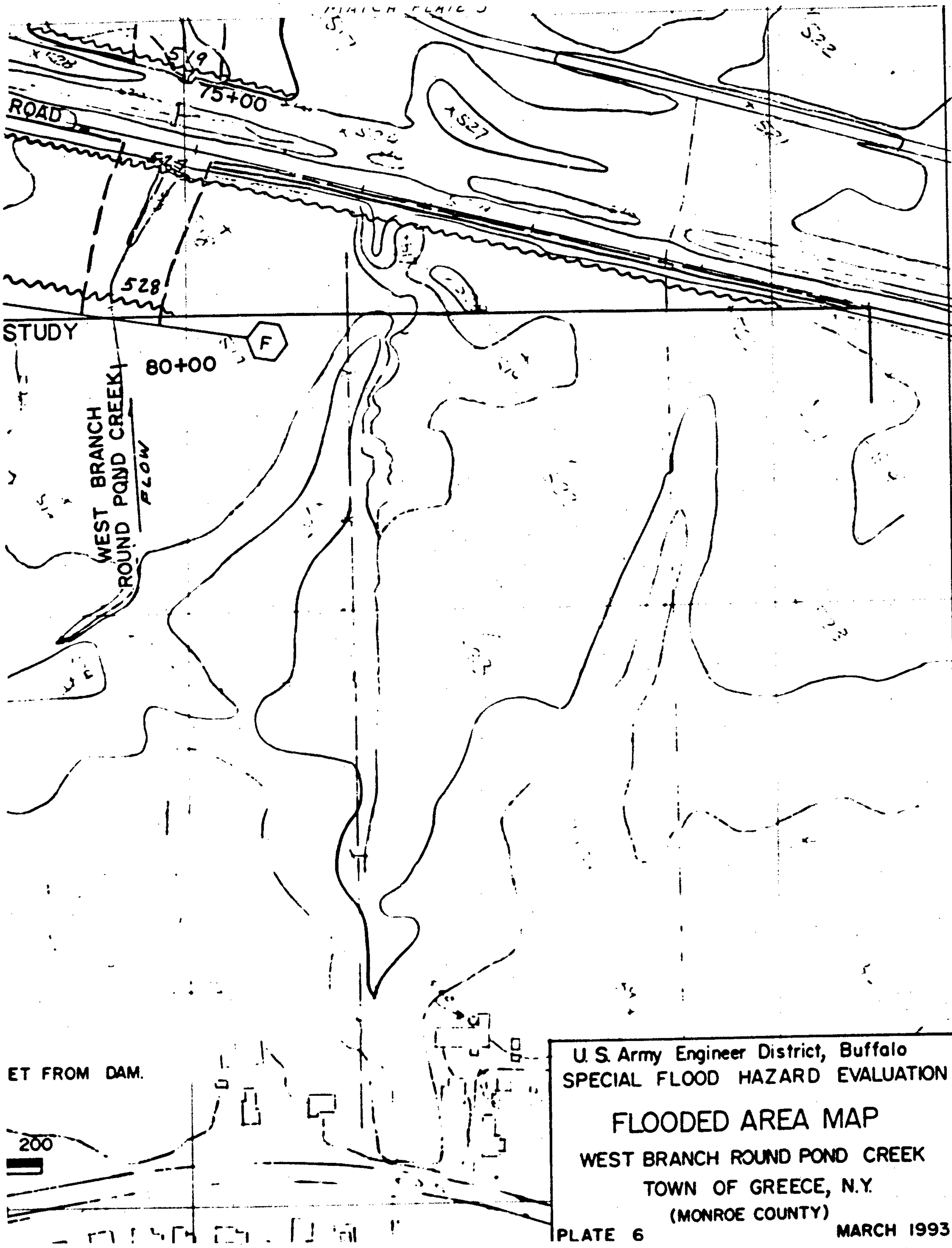
FLOODED AREA MAP

WEST BRANCH ROUND POND CREEK
TOWN OF GREECE, N.Y.
(MONROE COUNTY)

PLATE 5

MARCH 1993


RAILROAD
F
UPSTREAM LIMIT OF DETAILED STUD
ELMGROVE
N
537
530
532
538
534
530
LEGEND
500-YEAR FLOOD PLAIN BOUNDARY
100-YEAR FLOOD PLAIN BOUNDARY
FLOODWAY LIMITS
CROSS SECTION LOCATION
500
BASE FLOOD ELEVATION
RM-1 X
ELEVATION REFERENCE MARK
DISTANCE IS MEASURED IN FEET FI
200
0
200
SCALE IN FEET


ROAD
75+00
528
STUDY
F
80+00
WEST BRANCH
ROUND POND CREEK
FLOW
ET FROM DAM.
200
U. S. Army Engineer District, Buffalo
SPECIAL FLOOD HAZARD EVALUATION
FLOODED AREA MAP
WEST BRANCH ROUND POND CREEK
TOWN OF GREECE, N.Y.
(MONROE COUNTY)
PLATE 6
MARCH 1993

END

FILMED

DATE: 4-93

DTIC