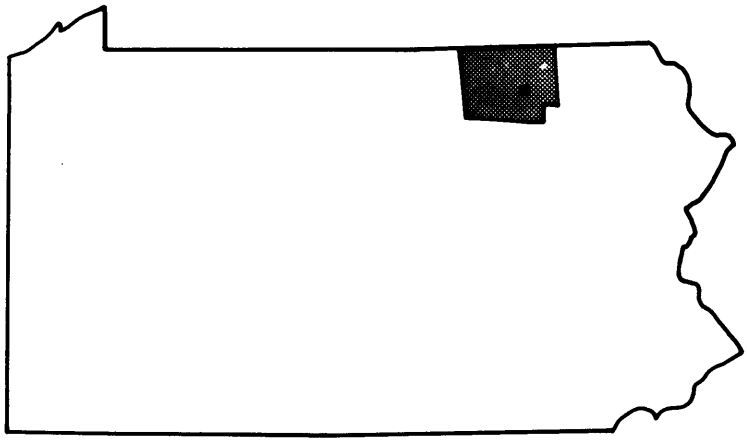
FLOOD INSURANCE STUDY

TOWNSHIP OF WYSOX, PENNSYLVANIA

BRADFORD COUNTY



AUGUST 1977

U.S. DEPARTMENT of HOUSING & URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

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PUBLISHED SEPARATELY:

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FLOOD INSURANCE STUDY
TOWNSHIP OF WYSOX, PENNSYLVANIA

1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the Township of Wysox, Bradford County, Pennsylvania, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert the Township of Wysox to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

The identification of streams requiring detailed study was done at a meeting attended by personnel of the study contractor, the FIA and representatives of the Township of Wysox in March 1975. Study areas were finalized at a community coordination meeting in November 1975. Results of the hydrologic analyses were coordinated with the Susquehanna River Basin Commission (SRBC), the U. S. Geological Survey (USGS), and the U. S. Army Corps of Engineers (COE).

On March 9, 1977, the results of the study were reviewed at the final Consultation and Coordination (CCO) meeting attended by personnel of the study contractor, the FIA, and community officials. The study was acceptable to the community.

1.3 Authority and Acknoweldgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by Gannett, Fleming, Corddry, and Carpenter, Inc., for the Federal Insurance Administration, under Contract No. H-3813. This work, which was completed in February 1977, covered all significant flooding sources in the Township of Wysox.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Wysox, Bradford County, Pennsylvania. The area of study is shown on the Vicinity Map (Figure 1).

The limits of detailed and approximate studies in Wysox were determined by the FIA after consultation with the community and the study contractor.

Floods caused by overflow of the Susquehanna River from the downstream corporate limit of Wysox to the U. S. Route 6 bridge, and Laning Creek from its confluence with the Susquehanna River to Conrail were studied in detail. Flooding on the remainder of the Susquehanna River and Laning Creek within the township limits were studied by approximate methods, as was Wysox Creek.

Approximate methods of analysis were used to study those areas having a low development potential and/or a minimal flood hazard as could be ascertained at the initiation of this study.

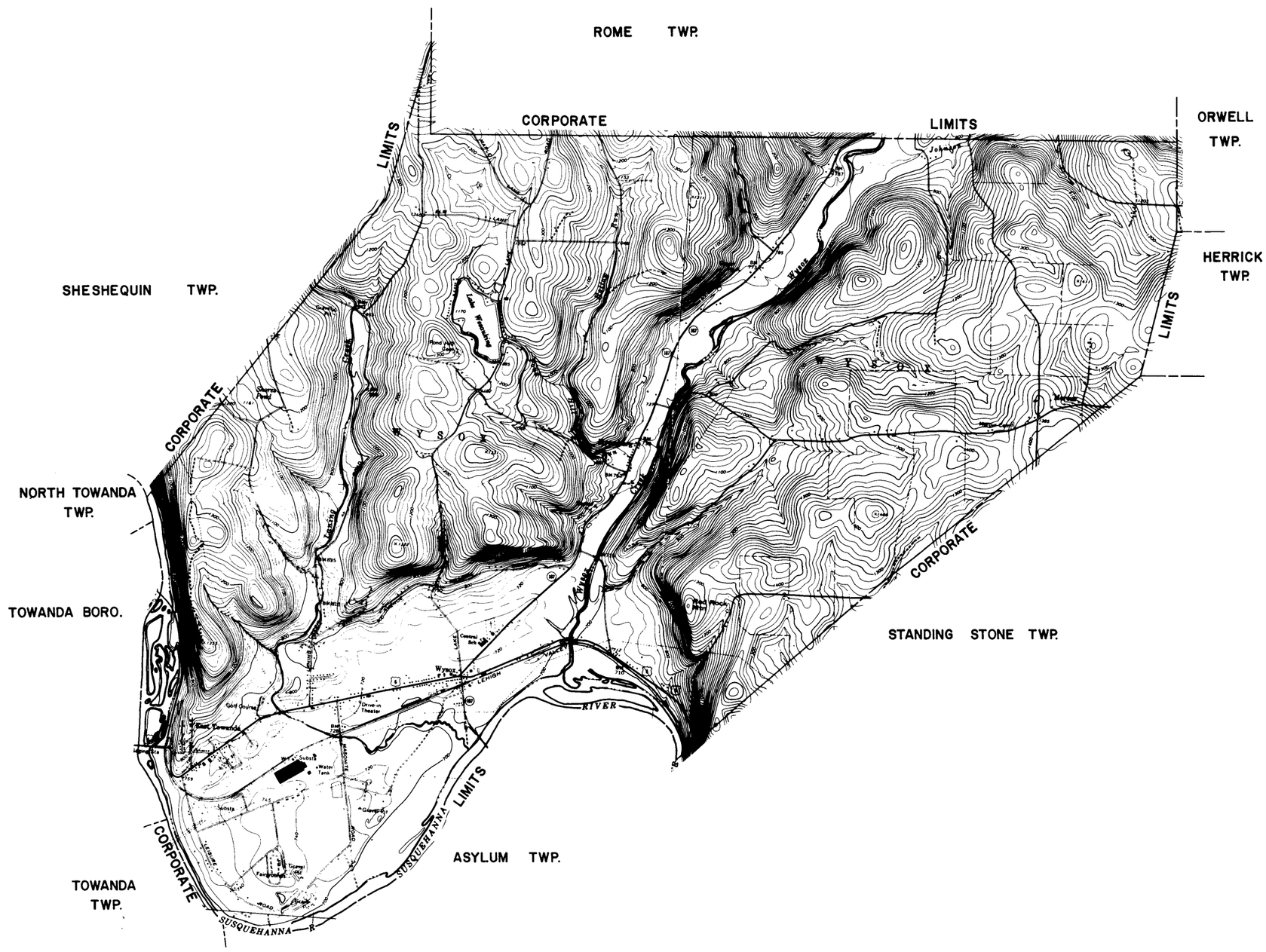
The areas studied in detail were chosen with consideration given to forecasted development for the next five years (through March 1982).

2.2 Community Description

The Township of Wysox is located in the northeastern portion of Pennsylvania in the central portion of Bradford County. The total land area contained within the township limits is 22.1 square miles. It is situated approximately 45 miles northwest of Scranton, Pennsylvania, and 28 miles southeast of Elmira, New York. According to U. S. Census Bureau figures, the population has increased from 1,437 persons in 1960 to 1,666 persons in 1970 (Reference 1).

The Susquehanna River, which flows east through the township and forms the southern boundary, is one of the principal rivers in Pennsylvania. Its length of 456 miles extends from southern New York south through Pennsylvania and Maryland to the Chesapeake Bay. Its drainage area encompasses 27,132 square miles.

Laning Creek, a tributary flowing south to the Susquehanna River, is 10.8 miles in length with a drainage area of 15.1 square miles.



APPROXIMATE SCALE

4000 0 4000 8000 12000 FEET

VICINITY MAP

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
(BRADFORD CO)

FIGURE 1

Wysox Creek, also a tributary flowing south to the Susquehanna River, is 14.7 miles in length with a drainage area of 101 square miles.

The original settlers of the area were the Andastes tribe of the Iroquois Indians. In 1616, Etiene Brule, an explorer for Champlain, was the first white man to enter Pennsylvania. German descendants were the first permanent settlers of the area in the early 1770s. They were later followed by former inhabitants of New England. Farming, fishing and hunting were important activities during these early settlements. The Township of Wysox was formed in 1795 and Bradford County was later organized in 1810 (Reference 2).

The Township of Wysox, located in the Appalachian Plateau Province of Pennsylvania, is characterized by level and rolling terrain. Local elevations vary from 700 to 1,466 feet. This land was formed by geologic activity in which huge layers of rock were folded upwards by tremendous internal pressure. Glaciation, rain, and other climatic elements have gradually eroded away the sharper protrusions. The podzolic soil supports diversified vegetation with hard and soft wood trees that prevail in the surrounding forests.

Approximately 5 percent of the township has been developed with the remainder of land being vacant or wooded. Flood plain development within the drainage areas studied is limited. The majority of development has occurred adjacent to U. S. Route 6. State Route 187 and Conrail also serve the residents of Wysox.

The climate in northern Pennsylvania has the characteristics of being humid continental. Summer and winter temperatures range from 66.8°F to 24.7°F, respectively. Annual average precipitation of the region is 37.1 inches while recorded snowfall totals 39.9 inches. The precipitation is fairly uniformly distributed throughout the year (Reference 3).

2.3 Principal Flood Problems

The past history of flooding on the streams within the Township of Wysox indicates that flooding may occur during any season of the year. The majority of major floods have occurred during February, March, April and May and are usually the result of spring rains and/or snowmelt. Storms occurring during the early summer months are often associated with tropical storms moving up the Atlantic coastline.

There have been a number of major floods on the Susquehanna River this century. The four worst floods occurred in March 1936, March

1964, June 1972, and September 1975. The discharges associated with these events are 188,000 cubic feet per second (cfs), 174,000 cfs, 320,000 cfs, and 217,000 cfs, respectively. The estimated return period for floods of these magnitudes, without considering the effects of the below mentioned dams, are 20 years, 12 years, 333 years and 30 years, respectively. These floodwaters have caused damage to buildings and bridges within the township. During the flood associated with Tropical Storm Agnes, June 14-23, 1972, the Susquehanna River attained its highest peak discharge, measured at the Towanda Creek gaging station (No. 01531500). The discharge was 320,000 cfs (References 4, 5 and 6). The estimated 100-year discharge for the Susquehanna River at Wysox, without considering regulation, is 277,000 cfs. The elevation of a high water mark from Tropical Storm Agnes in June 1972, 2,000 feet downstream from the confluence of Wysox Creek and the Susquehanna River, between U. S. Route 6 and Conrail is 716.9 feet National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929 (Reference 7). The elevation of the water-surface of the estimated 100-year flood with regulation at this location is 709.17 feet NGVD or 7.73 feet below that level attained during Tropical Storm Agnes. The elevation of the 100-year flood without the effects of regulation is 714.17 feet NGVD.

Flooding that occurs on Laning Creek is often compounded by flooding from the Susquehanna River, due to the backwater effect that results. A sudden downpour, however, could cause flooding of the creek independent of the river. The estimated 100-year discharge for Laning Creek at the confluence with the Susquehanna River is 5,040 cfs. No high water marks are known to exist on Laning Creek within the study area.

2.4 Flood Protection Measures

There are a number of dams and reservoirs within the Susquehanna River Basin upstream of the Township of Wysox that serve as flood protection devices. Existing dams and reservoirs include Almond, on Canacadea Creek (flood storage of 14,640 acre-feet); Arkport, on the Canisteo River (flood storage of 7,950 acre-feet); East Sidney, on Outleout Creek (flood storage of 58,350 acre-feet); and Whitney Point, on Otselic River (flood storage of 176,000 acre-feet). Two additional dams and reservoirs are under construction. These include Tioga-Hammond, on the Tioga River and Crooked Creek, which will provide a flood storage of 89,100 acre-feet and is expected to be completed in 1979. The flood flow reduction that will result from the flood storage to be provided by the Tioga-Hammond and the Cowanesque Dams was considered in this study, as per FIA directive.

Upon completion of the Tioga-Hammond and Cowanesque reservoirs, the estimated 100-year discharge is expected to decrease to 212,000 cfs on the Susquehanna River.

Non-structural measures of flood protection are also being utilized to aid in the prevention of future flood damage. These are in the form of land use regulations adopted from the code of Federal Regulations (Reference 8), which control building within areas that have a high risk of flooding.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Floods having recurrence intervals of 10, 50, 100 and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the drainage areas of the flooding sources.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail in the community.

For the Susquehanna River at Wysox, two sets of discharge values were considered. One set does not reflect the effects of the Tioga-Hammond and Cowanesque Dams. These discharges are based on statistical analysis of discharge records covering an 82-year period at the Towanda gaging station operated by the USGS (References 4, 5 and 6). These analyses followed the standard log-Pearson Type III method as outlined by the Water Resources Council (Reference 9).

The second set of discharges, developed by the USGS and coordinated with the COE and SRBC, considers the flood-flow reduction which will be afforded when the aforementioned dams are operational. These regulated discharge values were adopted for the purposes of this Flood Insurance Study.

For the detailed study of Laning Creek the hydrologic analysis was a modification of the U. S. Department of Agriculture, Soil Conservation Service (SCS) procedure designated in this study as "McSparren Tp, Condition III," which relates basin characteristics to stream flow characteristics (Reference 10). Rainfall data, calculated

using the Pennsylvania State University's "Design Procedures for Rainfall-Duration-Frequency in Pennsylvania," is combined with basin characteristics such as drainage area, stream slope, soil cover, vegetation and land use characteristics (Reference 11). Discharge values are then calculated by considering a time lapse to the peak discharge determined from empirical equations.

A summary of drainage area-peak discharge relationships for each stream studied in detail is shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
SUSQUEHANNA RIVER					
Downstream corporate limit	8,196.0	144,000	196,700	217,200	275,400
Downstream of Towanda Creek	8,077.0	142,800	195,300	215,700	273,900
Towanda Gage (#01531500)	7,797.0	140,000	192,000	212,000	277,000
LANING CREEK					
Confluence with Susquehanna River	15.1	3,070	4,430	5,040	6,700

Flood discharges for areas of approximate study are based on the USGS open-file report 76-391, Floods in Pennsylvania: A Manual for Estimation of Their Magnitude and Frequency, which is a regional method based on regression analysis (Reference 12). The method relates drainage area, channel slope, percent area of storage, and an index of average annual excess precipitation to the peak discharge by empirical equations.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of each flooding source studied in detail in Wysox were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources (Reference 13).

Cross-sections for the backwater analyses of the Susquehanna River and Laning Creek were obtained from aerial photographs (Reference 13) flown in April, 1975, at a negative scale of 1 inch equals 1,200 feet; the below-water sections were obtained by field measurement. All bridges, dams and culverts were field checked to obtain elevation data and structural geometry.

Channel roughness factors (Manning's "n"), used in the hydraulic computations, were chosen by engineering judgment and based on field observations of the streams and flood plain areas. Roughness values for the main channel of the Susquehanna River range from .025 to .036 with flood plain roughness values ranging from .052 to .080 for all floods. Roughness values for the main channel of Laning Creek range from .030 to .040 with flood plain roughness values ranging from .050 to .075 for all floods. The acceptability of all assumed hydraulic factors, cross-sections and hydraulic structure data was checked by computations that duplicated historic flood water profiles.

Starting water-surface elevations for the Susquehanna River were calculated using slope-area methods. Starting elevations for Laning Creek were taken from the Susquehanna River profiles. Water-surface elevations of floods of the selected recurrence intervals were computed through use of the COE HEC-2 step-backwater computer program (Reference 14). Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3). All elevations are referenced from the NGVD; elevation reference marks used in this study are shown on the maps.

For the streams studied by approximate methods, the 100-year flood elevations were determined using normal depth calculations and topographic maps at a scale of 1:24,000 with a contour interval of twenty feet (Reference 15).

The hydraulic analyses for this study are 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.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage state and local governments to adopt sound flood plain management programs. Each Flood Insurance Study, therefore, includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and the 500-year floods have been delineated using the flood elevations determined at each cross-section; between cross-sections, the boundaries were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of twenty feet (Reference 15). In cases where the 100- and the 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the streams studied by approximate methods, the boundary of the 100-year flood was developed from normal depth calculations and the topographic maps referenced above.

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding; owing to limitations of the map scale, or lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross-sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway widths were determined at cross-sections; between cross-sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown. A portion of the floodway of the Susquehanna River extends beyond the corporate limits.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Township of Wysox.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Susquehanna River (continued)							
R	25,280[1]	1,727[3]	39,601	5.4	720.4	719.4	1.0
S	26,410[1]	1,511[3]	35,422	6.0	720.8	719.9	0.9
T	27,260[1]	1,112[3]	29,925	7.1	721.2	720.4	0.8
U	28,230[1]	861[3]	26,521	8.0	721.8	720.9	0.9
Laning Creek							
A	1,180[2]	98	697	7.2	699.6	698.6*	1.0
B	2,380[2]	549	3,360	1.5	702.3	701.3*	1.0
C	3,290[2]	737	2,948	1.7	702.7	701.7*	1.0
D	3,980[2]	422	1,397	3.6	703.6	702.8*	0.8
E	5,280[2]	365	1,490	3.4	709.7	708.7*	1.0
F	5,770[2]	321	1,144	4.4	712.7	712.0	0.7
G	6,530[2]	390	1,561	3.2	718.0	717.1	0.9
H	6,870[2]	247	785	6.4	719.2	718.2	1.0

[1]FEET ABOVE CORPORATE LIMITS [2]FEET ABOVE CONFLUENCE WITH SUSQUEHANNA RIVER
[3]THESE WIDTHS EXTEND BEYOND THE CORPORATE LIMITS
*ELEVATIONS COMPUTED WITHOUT CONSIDERATION FOR BACKWATER EFFECT OF SUSQUEHANNA RIVER

TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
(BRADFORD CO)

FLOODWAY DATA

SUSQUEHANNA RIVER AND LANING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Susquehanna River							
A	1,180	1,102	32,012	6.8	709.1	708.1	1.0
B	1,760	1,227	35,138	6.2	709.4	708.4	1.0
C	3,470	1,320	35,601	6.1	710.1	709.2	0.9
D	4,520	1,516	38,653	5.6	710.6	709.8	0.8
E	5,060	1,600	40,901	5.3	711.0	710.1	0.9
F	6,550	1,561	39,204	5.5	711.3	710.4	0.9
G	8,270	948	27,598	7.9	711.7	710.7	1.0
H	9,080	852	25,181	8.6	712.3	711.6	0.7
I	10,460	1,151	27,900	7.7	712.7	711.8	0.9
J	12,190	1,456	29,624	7.3	713.4	712.6	0.8
K	14,020	1,357	29,083	7.4	714.3	713.4	0.9
L	15,960	1,097	25,811	8.4	715.3	714.4	0.9
M	18,000	877	24,690	8.7	716.1	715.2	0.9
N	19,240	931	26,282	8.2	716.5	715.6	0.9
O	21,400	1,138	27,806	7.6	717.8	717.0	0.8
P	23,470	1,746	41,949	5.1	719.7	718.9	0.8
Q	24,340	1,825	41,241	5.1	720.0	719.0	1.0

[1]FEET ABOVE CORPORATE LIMITS
[2]THESE WIDTHS EXTEND BEYOND THE CORPORATE LIMITS

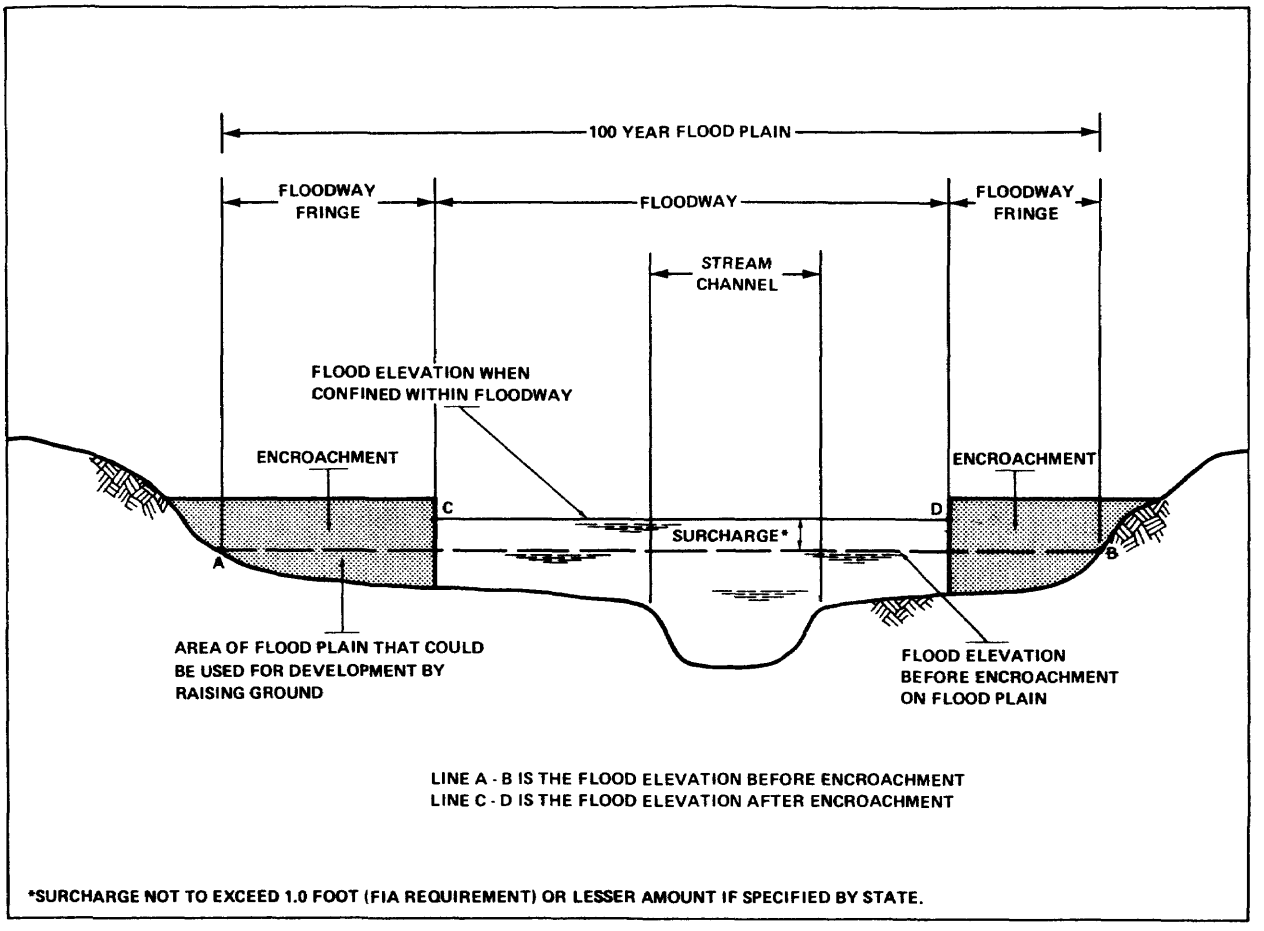
TABLE 2

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
(BRADFORD CO)

FLOODWAY DATA

SUSQUEHANNA RIVER



FLOODWAY SCHEMATIC Figure 2

Two reaches meeting the above criteria were required for the flooding sources of Wysox. These included one each on the Susquehanna River and Laning Creek. The locations of the reaches are shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damages from floods and FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest one-half foot, and shown as a three-digit code. For

example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of Wysox was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods, no base flood elevations shown or FHFs determined.
Zones A1, A13:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones assigned according to FHFs.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; or, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot. Zone B is not subdivided.
Zone C:	Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Township of Wysox is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Susquehanna River Reach 1	03	-6.3	-1.7	+4.4	065	A13	Varies
Laning Creek Reach 1	03	-0.7	-0.3	+1.7	005	A1	Varies

[1] FLOOD INSURANCE RATE MAP PANEL
[2] WEIGHTED AVERAGE
[3] ROUNDED TO NEAREST FOOT – SEE MAP

TABLE 3

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
(BRADFORD CO)

FLOOD INSURANCE ZONE DATA

SUSQUEHANNA RIVER AND LANING CREEK

flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

Presently, no other Flood Insurance Studies or similar such investigations are being conducted or have been conducted in the Township of Wysox or the surrounding communities.

This study is authoritative for purposes of the Flood Insurance Program.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, Curtis Building, Sixth and Walnut Street, Philadelphia, Pennsylvania 19106.

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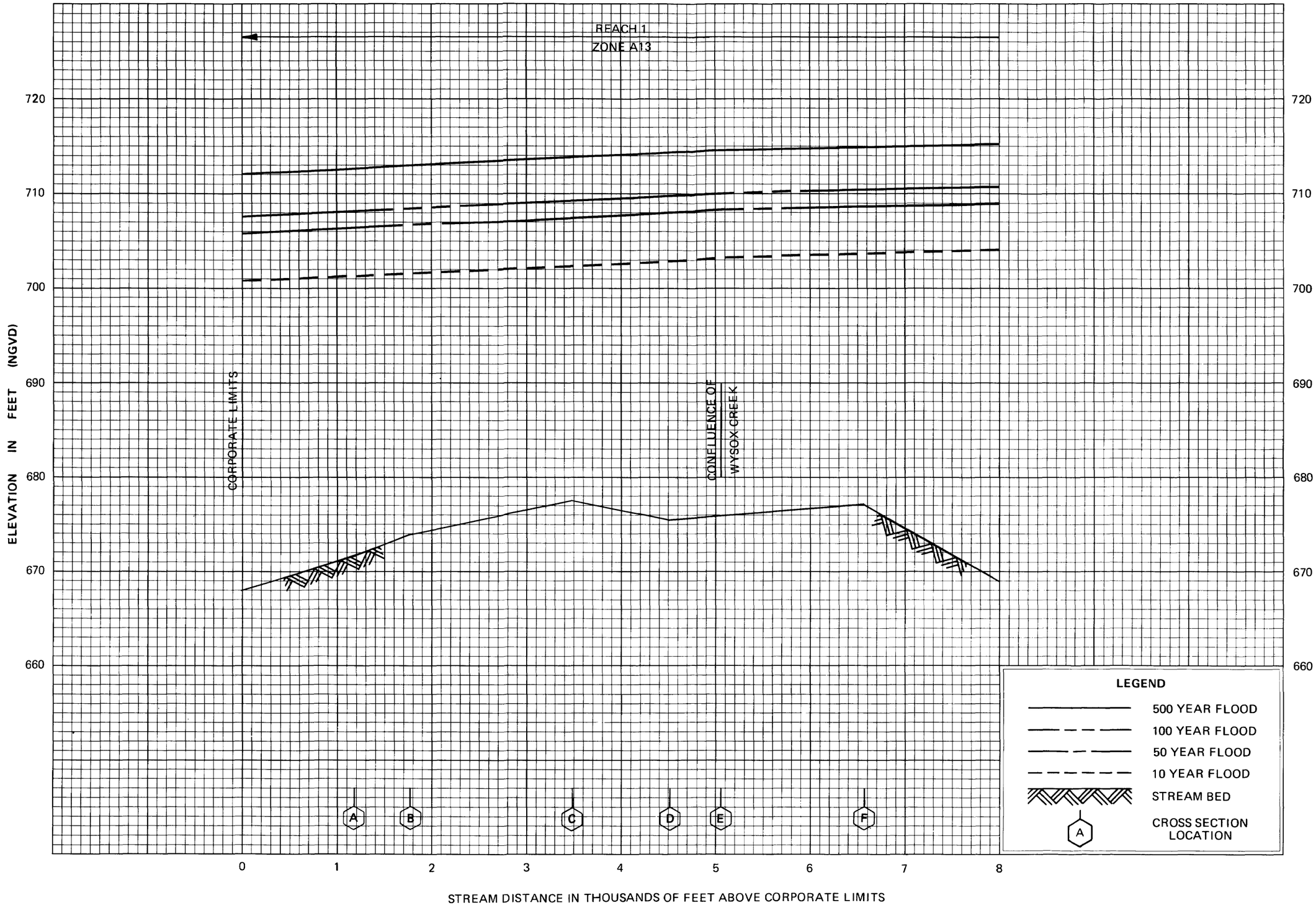


FLOOD PROFILES

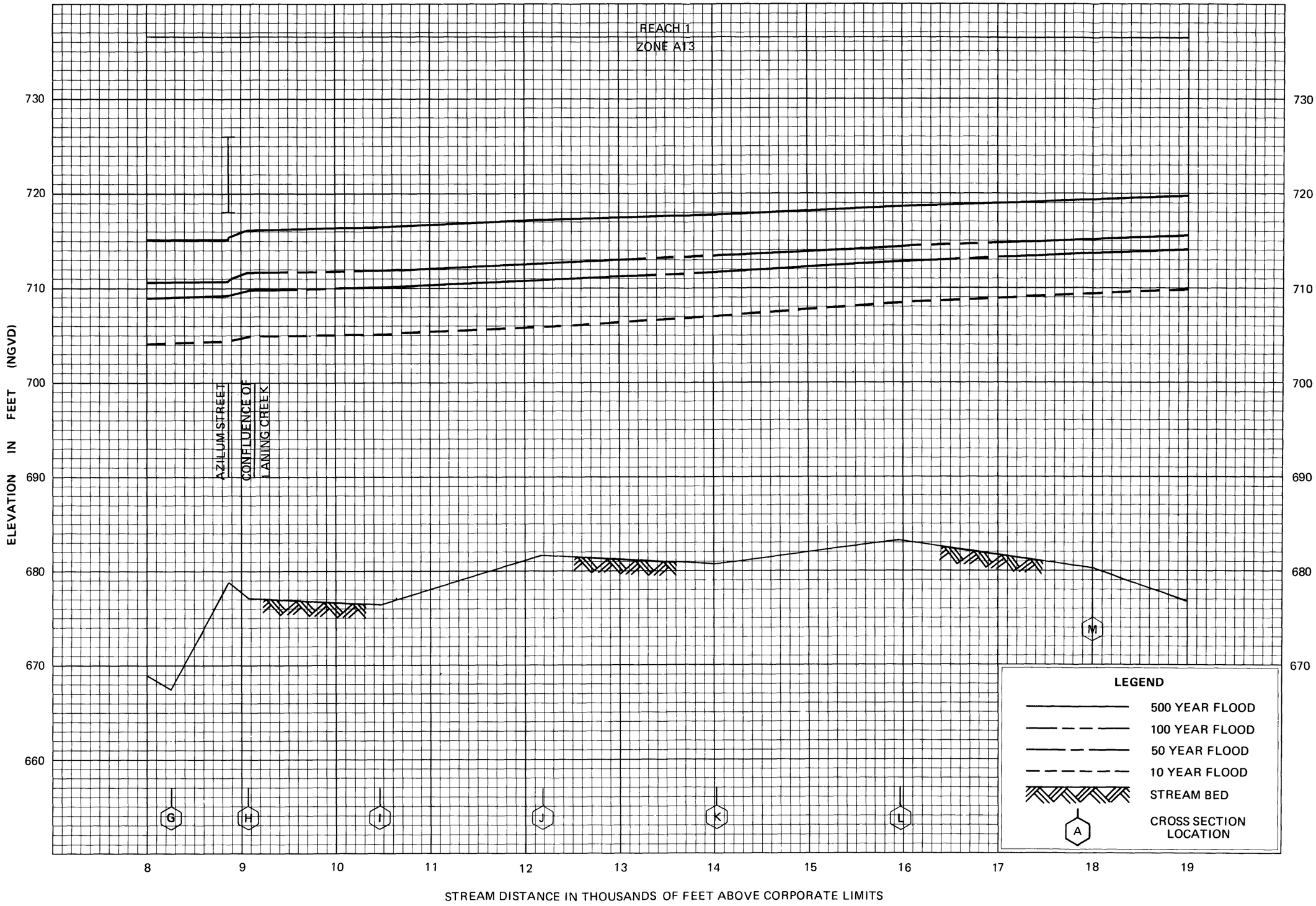
SUSQUEHANNA RIVER

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
(BRADFORD CO)

01P

EXHIBIT 1



FLOOD PROFILES

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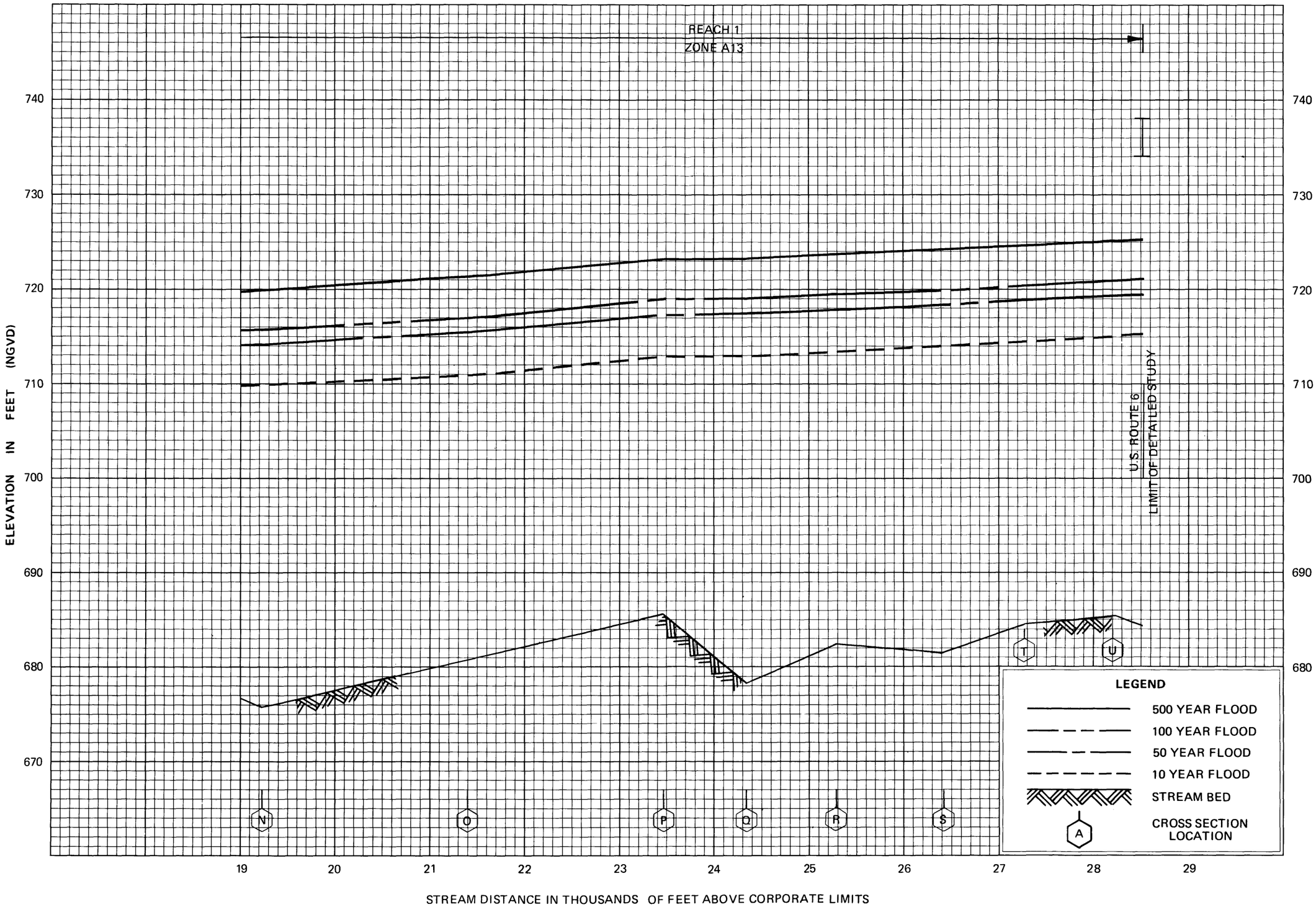

FLOOD PROFILES

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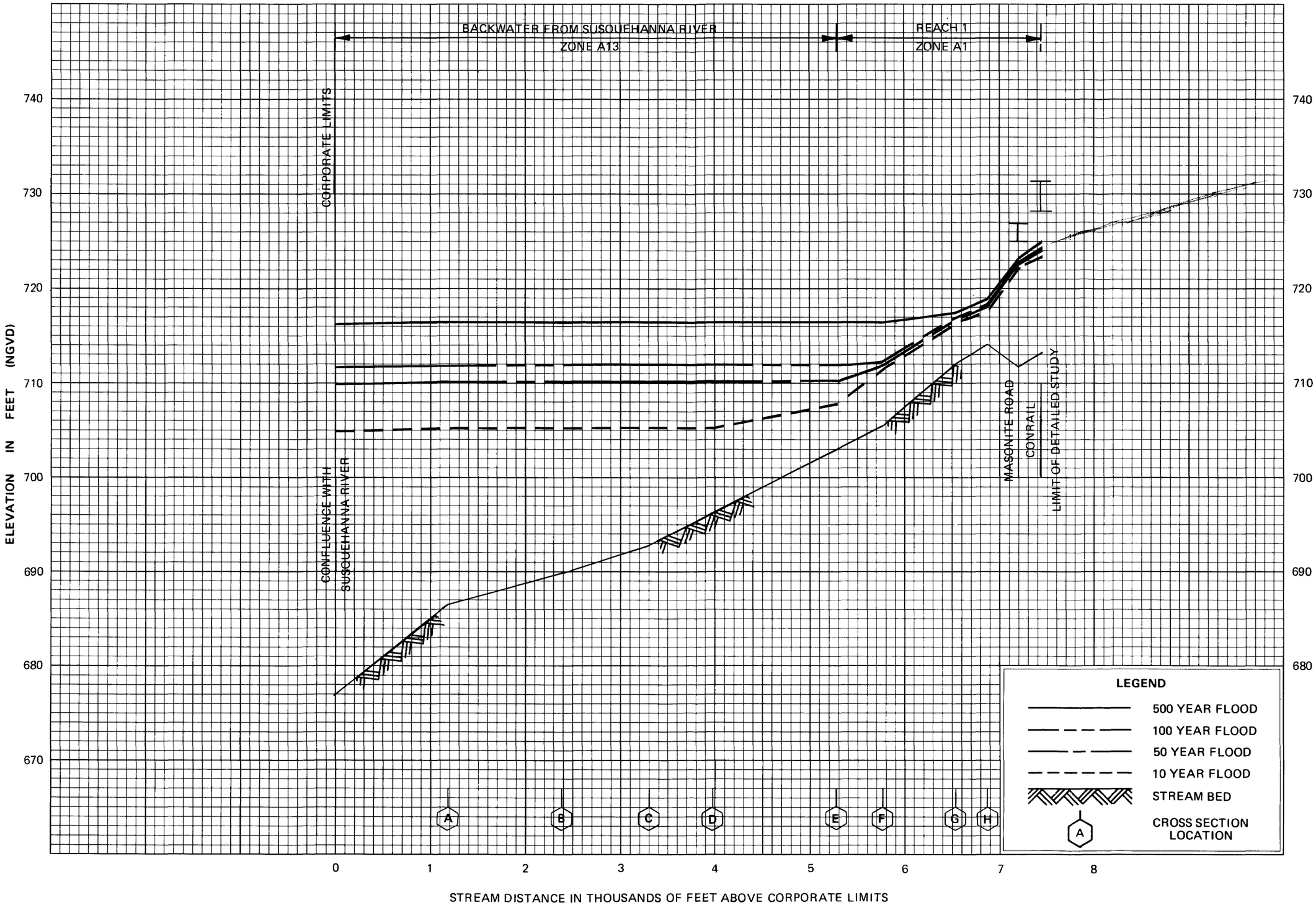

FLOOD PROFILES

LANING CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWNSHIP OF WYSOX, PA
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