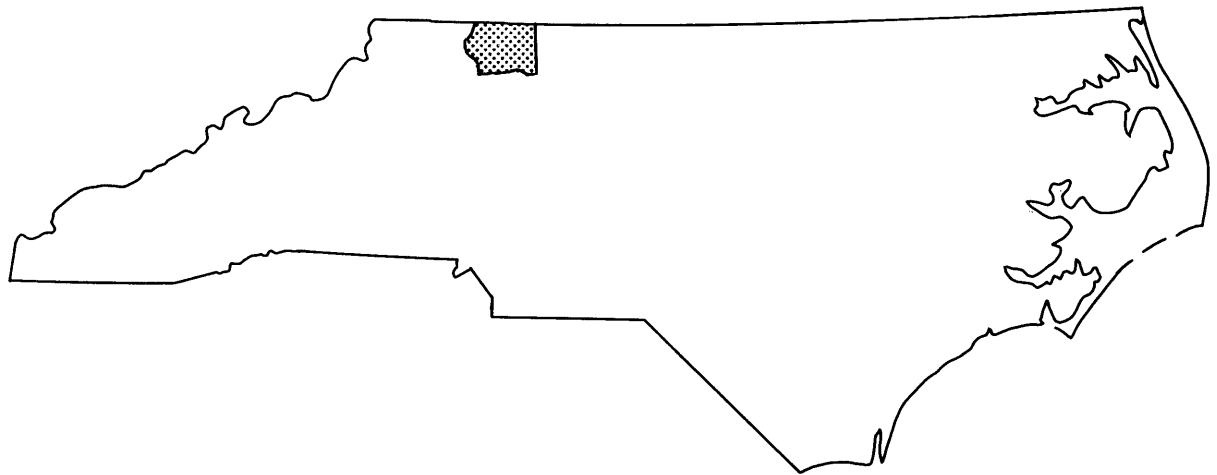


# FLOOD INSURANCE STUDY



**SURRY COUNTY,  
NORTH CAROLINA  
UNINCORPORATED AREAS**



SEPTEMBER 15, 1989



**Federal Emergency Management Agency**

COMMUNITY NUMBER - 370364

**NOTICE TO  
FLOOD INSURANCE STUDY USERS**

**Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.**

**This publication incorporates revisions to the original Flood Insurance Study. These revisions are presented in Section 9.0.**

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Flood Boundary and Floodway Map



FLOOD INSURANCE STUDY  
SURRY COUNTY (UNINCORPORATED AREAS) NORTH CAROLINA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the unincorporated areas of Surry County, North Carolina and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Surry County to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these Federally-supported studies are based. These criteria take precedence over the minimum Federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 24 CFR, 1910.1 (d). In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Coordination

The result of the flood hazard analyses of the Soil Conservation Service (SCS) (References 1 and 2) have been used in this Flood Insurance Study.

A final coordination meeting was held on January 5, 1981, to review the report with representatives of the SCS, FEMA and officials of Surry County.

2.0 AREA STUDIED

2.1 Scope of Study

Ararat River has its headwaters along the Blue Ridge Parkway in Carroll County Virginia and flows south into North Carolina and through Surry County to its confluence with the Yadkin River at Siloam, North Carolina. The study area consists of a 9.5 mile reach of the river between the North Carolina-Virginia state line and the junction of Stewarts Creek approximately two miles south of Mount Airy, North Carolina.

Stewarts Creek and Lovills Creek have their headwaters along the southern edge of the Blue Ridge Parkway in Carroll County, Virginia and flows south to North Carolina and through Surry County to their confluence with the

Ararat River at Mount Airy, North Carolina. The Stewarts Creek study area consisted of a 16 mile reach of Stewarts Creek and a 5.4 mile reach of Pauls Creek, a tributary to Stewarts Creek. The Lovills Creek study area consists of a 6.7 mile reach on Lovills Creek. These study reaches are from the proposed structures downstream to Ararat River. The area studied is shown on the Vicinity Map (Figure 1).

### 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. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, and 500-year period (recurrence intervals), have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one percent chance of annual occurrence) in any 50 year period is about 40 percent (four in 10), and for any 90 year period, the risk increases to about 60 percent (six in 10). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

#### 3.1 Hydrologic and Hydraulic Analyses

Hydrologic and hydraulic data used in this Flood Insurance Study were obtained from the Flood Hazard Analyses Reports prepared by SCS (References 1 and 2).

All elevations used in this study are referenced to National Geodetic Vertical Datum of 1929 (NGVD); the elevation reference marks used in this study are shown and described on the maps.

### 4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

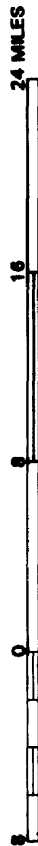
The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.



FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
**PLANT COUNTY**

APPROXIMATE SCALE



**VICINITY MAP**

**FIGURE 1**

#### 4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by FEMA 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 were delineated using the Flood Hazard Area photo maps of the Flood Hazard Analyses Reports prepared by the SCS (References 1 and 2).

#### 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 National 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 FEMA limits 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.

Technical data required to define limits of flooding for the selected 10-year, 50-year, 100-year and 500-year frequency floods, and determination of floodway limits were developed by SCS. The Town of Mt. Airy and Surry County Commissioners have the responsibility of implementing the flood plain management and floodway based on the technical data developed by SCS. The delineation of the floodway is controlled by the Floodway Regulation Law, G.S. 143-215.56-61, and General Statutes G.S. 142-215.52(2) and G.S. 143-215.53, the floodway regulation law (References 1 and 2).

## 5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, FEMA 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 (FHF), and flood insurance zone designations for each significant flooding source affecting the community.

### 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.

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

### 5.2 Flood Hazard Factors (FHF)

The Flood Hazard Factor is used to correlate flood information with insurance rate tables. Correlations between property damages from floods and their assigned FHF are used to set actuarial insurance premium rate tables based on FHF 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 the 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 flood water-surface elevations is greater than 10.0 feet, the accuracy for the FHF is to the nearest foot.

### 5.3 Flood Insurance Zones

After the determination of reaches and their respective FHF, the entire unincorporated areas of Surry County 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 FHF's determined.
Zones A3, A4, A5, A6, A9, A10, A12 & A13:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF's.
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; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; or areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding.

Table 1, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHF's, flood insurance zones, and base flood elevation for each flooding source studied in detail in the community.

#### 5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the unincorporated areas of Surry County is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of 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 FEMA.

## 6.0 OTHER STUDIES

No other studies have been done for Surry County, North Carolina.

FLOODING SOURCE	PANEL <sup>1</sup>	ELEVATION DIFFERENCE <sup>2</sup> BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION <sup>3</sup> (FEET NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
ARARAT RIVER	65,130 65 55,65	-7.2 -6.0 -4.3	-2.6 -2.1 -1.7	6.3 5.5 3.2	070 060 045	A14 A12 A9	VARIES—SEE MAP VARIES—SEE MAP VARIES—SEE MAP
STEWARTS CREEK	65,130 65,130 65 45,65 35,45	-5.5 -4.5 -2.5 -4.5 -1.7	-1.9 -2.0 -1.1 -2.2 -0.8	6.7 7.2 3.4 6.6 3.0	055 045 025 045 015	A11 A9 A5 A9 A3	VARIES—SEE MAP VARIES—SEE MAP VARIES—SEE MAP VARIES—SEE MAP VARIES—SEE MAP
PAULS CREEK	35,45,55,65	-1.7	-0.8	3.4	015	A3	VARIES—SEE MAP
LOVILLS CREEK	65 55,65 55	-2.3 -2.0 -2.3	-1.0 -0.8 -1.3	2.1 1.6 2.2	025 020 025	A5 A4 A5	VARIES—SEE MAP VARIES—SEE MAP VARIES—SEE MAP
TUMBLING ROCK BRANCH	65 65	-2.8 -1.6	-0.9 -0.4	1.8 0.9	030 015	A6 A3	VARIES—SEE MAP VARIES—SEE MAP

<sup>1</sup>FLOOD INSURANCE RATE MAP PANEL

<sup>2</sup>WEIGHTED AVERAGE

<sup>3</sup>ROUNDED TO NEAREST FOOT

**FLOOD INSURANCE ZONE DATA**

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

ARARAT RIVER—STEWARTS CREEK—  
PAULS CREEK—LOVILLS CREEK—TUMBLING ROCK BRANCH

**TABLE 1**

## 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 Emergency Management Agency, Insurance and Mitigation Division, 1375 Peachtree Street, N.E. Atlanta, Georgia 30309.

## 8.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Analyses of Ararat River, Surry County, North Carolina, April 1979.
2. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Analyses of Stewarts Creek - Lovills Creek, Surry County, North Carolina, June 1979.



## 9.0 REVISIONS DESCRIPTION

This section has been added to provide information regarding significant revisions made since the original Flood Insurance Study was printed. Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood hazard data located at the Surry County Planning and Development Office, Courthouse Square, Dobson, North Carolina.

### 9.1 First Revision (Revised September 15, 1989)

#### a. Acknowledgments

The hydrologic and hydraulic analyses for this Revisions Description were performed by the U.S. Army Corps of Engineers (COE), Wilmington District, and the U.S. Soil Conservation Service (SCS). The Federal Emergency Management Agency reviewed and accepted these data for purposes of this revision.

#### b. Scope

This Flood Insurance Study was revised for the Ararat River north of Stewarts Creek, Stewarts Creek, Lovills Creek, and Tumbling Rock Branch. In addition, floodways were added to the Ararat River north of Stewarts Creek, Stewarts Creek, Pauls Creek, Lovills Creek, and Tumbling Rock Branch. This Revisions Description includes information from the SCS report titled "Flood Hazard Analyses, Stewarts Creek-Lovills Creek, Surry County, North Carolina" (Reference 3). The information was used to prepare the Flood Insurance Rate Map, effective December 1981, but was not included in the original Flood Insurance Study text.

#### c. Hydrologic and Hydraulic Analyses

The COE performed new hydrologic analyses for the Ararat River using the log-Pearson Type III method (Reference 4) in a regional frequency study of gages in the Yadkin River basin. The COE also developed discharges for Tumbling Rock Branch using methods outlined in a U.S. Geological Survey report titled "Effect of Urban Development on Floods in the Piedmont Province of North Carolina" (Reference 5).

The revised discharges for the Ararat River and Tumbling Rock Branch and discharges previously determined by the SCS for Stewarts Creek, Pauls Creek, and Lovills Creek are shown in Table 2, Revised Summary of Discharges.

TABLE 2 - REVISED SUMMARY OF DISCHARGES

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (SQ MILES)</u>	<u>PEAK DISCHARGE (CFS)</u>			
		<u>10-YEAR</u>	<u>50-YEAR</u>	<u>100-YEAR</u>	<u>500-YEAR</u>
ARARAT RIVER just upstream of confluence of Stewarts Creek	111.0	10,700	20,200	27,800	50,700
just upstream of confluence of Lovills Creek about 4,300 feet upstream of Linville Road	75.0	8,000	16,000	21,300	39,100
	59.0	6,600	13,000	17,400	32,000
STEWARTS CREEK at mouth	76.3	7,400	10,900	14,100	23,750
just upstream of confluence of Pauls Creek	33.9	4,100	6,200	8,150	14,450
PAULS CREEK at mouth	28.9	5,600	8,700	11,500	19,850
LOVILLS CREEK just upstream of mouth	35.29	4,555	6,275	7,715	12,435
just upstream of confluence of Tumbling Rock Branch	30.95	4,470	6,345	7,925	12,945
TUMBLING ROCK BRANCH at mouth	1.77	760	1,310	1,560	2,370
just upstream of Westlake Drive	0.66	450	810	990	1,475

The COE used the HEC-2 step-backwater computer program (Reference 6) to perform hydraulic analyses for the Ararat River upstream of Stewarts Creek; for Lovills Creek from its mouth to the northern corporate limits of the City of Mount Airy, North Carolina; and for Tumbling Rock Branch. The roughness coefficients (Manning's "n") for the Ararat River range from 0.04 to 0.07 for the main channel and from 0.06 to 0.10 for the overbank areas. Roughness coefficients for Lovills Creek range from 0.035 to 0.055 for the main channel and from 0.06 to 0.12 for the overbank areas. Roughness coefficients for Tumbling Rock Branch range from 0.04 to 0.06 for the main channel and from 0.06 to 0.12 for the overbank areas. The COE delineated the 100- and 500-year floodplains and the 100-year floodway

for the Ararat River, Lovills Creek, and Tumbling Rock Branch, adjacent to Mount Airy, using topographic work maps at a scale of 1:4800 with a contour interval of 5 feet (Reference 7). The 100- and 500-year floodplains and the 100-year floodway for the Ararat River north of Mount Airy were delineated using a topographic map at a scale of 1:24000 with a contour interval of 20 feet (Reference 8). The water-surface profiles and 100- and 500-year floodplain delineation for Lovills Creek upstream of Mount Airy were not revised.

The WSP-2 computer program (Reference 9) was used to revise the starting water-surface elevations for Stewarts Creek to match the revised water-surface profiles for the Ararat River.

Floodways were added for Stewarts Creek, Pauls Creek, and Lovills Creek upstream of Mount Airy using maps from the SCS Flood Hazard Analyses report (Reference 3).

d. Floodways

Due to the scope of the previously effective Flood Insurance Study for this community, a floodway was not determined for certain flooding sources. This Revisions Description incorporates the results of the floodway analyses for the Ararat River, Stewarts Creek, Pauls Creek, Lovills Creek, and Tumbling Rock Branch into the effective Flood Insurance Study.

The floodways presented in this study were computed for certain stream segments on the basis of a conveyance reduction from each side of the floodplain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed and are presented in Table 3, Floodway Data.

As shown on the Flood Boundary and Floodway Map, the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and the 100-year floodplain boundaries are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway of the Ararat River, Lovills Creek, and Tumbling Rock Branch lie outside the county boundary.

Along streams where base flood elevations have been established but floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

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

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
<b>ARARAT RIVER</b>								
A	125,660	500	5166	5.4	985.7	985.7	985.5	0.8
B	127,000	480 <sup>2</sup>	6200	4.5	988.0	988.0	988.6	0.6
C	129,380	400 <sup>2</sup>	6197	4.5	991.1	991.1	991.9	0.8
D	130,300	200	2963	7.2	991.8	991.8	992.6	0.8
E	131,250	150	2829	7.5	994.0	994.0	994.6	0.6
F	135,940	450 <sup>2</sup>	6039	3.5	1000.5	1000.5	1001.2	0.7
G	137,830	160 <sup>2</sup>	1427	14.9	1001.3	1001.3	1002.0	0.7
H	138,130	250 <sup>2</sup>	4045	5.3	1006.1	1006.1	1006.2	0.1
I	139,910	615 <sup>2</sup>	5687	3.7	1007.3	1007.3	1007.7	0.4
J	141,390	600 <sup>2</sup>	6361	3.0	1008.5	1008.5	1009.1	0.6
K	141,510	700 <sup>2</sup>	6325	3.0	1008.8	1008.8	1009.4	0.6
L	143,520	500 <sup>2</sup>	4987	3.8	1013.0	1013.0	1013.5	0.5
M	144,880	500 <sup>2</sup>	4567	4.2	1016.0	1016.0	1016.6	0.6
N	146,440	230 <sup>2</sup>	2152	8.9	1016.7	1016.7	1017.4	0.7
O	146,630	430 <sup>2</sup>	4863	3.9	1019.2	1019.2	1020.0	0.8
P	148,105	325 <sup>2</sup>	3575	5.4	1020.0	1020.0	1021.0	1.0
Q	149,985	342	4098	4.7	1025.2	1025.2	1025.7	0.5
R	150,140	200	2381	8.1	1025.2	1025.2	1025.4	0.2
S	151,790	270 <sup>2</sup>	2986	6.4	1029.4	1029.4	1030.2	0.8
T	152,060	335 <sup>2</sup>	3996	4.8	1032.5	1032.5	1032.9	0.4
U	153,460	192	2410	8.0	1034.7	1034.7	1034.9	0.2
V	156,210	436	3015	5.8	1041.1	1041.1	1041.3	0.2
W	159,010	718	5186	3.4	1047.7	1047.7	1047.7	0.0
X	160,970	244	1739	10.0	1050.7	1050.7	1050.7	0.0
Y	162,270	251	2004	8.7	1055.1	1055.1	1055.1	0.0
Z	163,210	486	2697	6.5	1058.0	1058.0	1058.0	0.0

<sup>1</sup>FEET ABOVE MOUTH  
<sup>2</sup>THIS WIDTH EXTENDS WITHIN AREA NOT INCLUDED

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
 (UNINCORPORATED AREAS)

**FLOODWAY DATA**

**ARARAT RIVER**

**TABLE 3**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE'	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
ARARAT RIVER								
AA	164,810	441	2422	4.8	1064.0	1064.0	1064.0	0.0
AB	166,890	980	5032	2.3	1068.7	1068.7	1068.7	0.0
AC	168,040	635	2217	5.2	1070.8	1070.8	1070.8	0.0
AD	169,190	373	2019	5.7	1075.8	1075.8	1075.8	0.0
AE	170,970	546	3110	3.7	1081.1	1081.1	1081.1	0.0
AF	172,970	616	4153	2.8	1085.3	1085.3	1085.3	0.0
AG	174,570	891	4053	2.7	1088.0	1088.0	1088.0	0.0

1 FEET ABOVE MOUTH

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**ARARAT RIVER**

**TABLE 3**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
<b>STEWARTS CREEK</b>								
A	600	243	3748	3.1	986.4	986.4	987.4	1.0
B	1700	342	5265	2.2	989.4	989.4	990.4	1.0
C	2880	132	2823	4.1	990.4	990.4	991.4	1.0
D	4800	965	13,413	0.9	991.2	991.2	992.2	1.0
E	7320	491	5268	2.2	993.5	993.5	994.5	1.0
F	10,000	1221	10,563	1.1	994.2	994.2	995.2	1.0
G	13,380	108	1557	7.8	1002.0	1002.0	1003.0	1.0
H	14,980	601	6899	1.8	1003.5	1003.5	1004.5	1.0
I	15,850	1138	14,173	0.9	1005.6	1005.6	1006.6	1.0
J	16,180	669	8507	1.6	1005.8	1005.8	1006.8	1.0
K	18,180	1359	14,416	1.0	1007.8	1007.8	1008.8	1.0
L	21,600	921	6601	2.3	1011.3	1011.3	1012.3	1.0
M	24,160	623	4167	3.6	1014.0	1014.0	1015.0	1.0
N	25,360	257	2624	5.7	1017.3	1017.3	1018.3	1.0
O	27,120	1155	6714	2.3	1019.2	1019.2	1020.2	1.0
P	30,720	381	3110	4.9	1028.5	1028.5	1029.5	1.0
Q	32,700	1033	5715	2.7	1031.3	1031.3	1032.3	1.0
R	34,650	95	1671	9.3	1040.3	1040.3	1041.3	1.0
S	34,850	412	5592	2.8	1043.5	1043.5	1044.5	1.0
T	37,150	149	2217	7.1	1051.2	1051.2	1052.2	1.0
U	39,950	1143	12,174	1.3	1052.6	1052.6	1053.6	1.0
V	41,750	569	5490	2.9	1054.0	1054.0	1055.0	1.0
W	44,330	114	1782	9.1	1058.2	1058.2	1059.2	1.0
X	44,630	402	5498	2.9	1061.0	1061.0	1062.0	1.0
Y	46,130	812	4823	1.4	1061.5	1061.5	1062.5	1.0
Z	46,610	681	3876	1.7	1061.5	1061.5	1062.5	1.0

<sup>1</sup>FEET ABOVE CONFLUENCE WITH ARARAT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**STEWARTS CREEK**

**TABLE 3**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
<b>STEWARTS CREEK</b>								
AA	49,235	425	1828	3.7	1065.0	1065.0	1066.0	1.0
AB	50,955	191	1358	5.0	1070.3	1070.3	1071.3	1.0
AC	55,035	292	1406	3.7	1083.9	1083.9	1084.9	1.0
AD	58,875	403	1420	3.5	1097.0	1097.0	1098.0	1.0
AE	60,275	160	885	5.6	1103.2	1103.2	1104.2	1.0
AF	64,285	181	1600	3.0	1125.0	1125.0	1126.0	1.0
AG	66,445	356	1684	2.8	1132.6	1132.6	1133.6	1.0
AH	67,605	110	816	5.7	1138.6	1138.6	1139.6	1.0
AI	71,525	36	222	4.7	1151.9	1151.9	1152.9	1.0
AJ	73,085	108	362	2.7	1161.0	1161.0	1162.0	1.0
AK	75,085	35	185	4.9	1174.4	1174.4	1175.4	1.0
AL	78,595	50	193	3.9	1194.0	1194.0	1195.0	1.0
AM	79,835	80	194	3.2	1209.0	1209.0	1210.0	1.0
AN	83,035	50	219	2.6	1220.5	1220.5	1221.5	1.0

<sup>1</sup>FEET ABOVE CONFLUENCE WITH ARARAT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**STEWARTS CREEK**

FLOODING SOURCE		FLOODWAY				BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)	
<b>PAULS CREEK</b>									
A	390	448	6848	1.5	1064.0	1064.0	1065.0	1.0	
B	2230	1073	8579	1.2	1064.2	1064.2	1065.2	1.0	
C	5110	469	3926	2.7	1067.7	1067.7	1068.7	1.0	
D	7470	378	2097	5.2	1078.2	1078.2	1079.2	1.0	
E	8870	567	3379	3.3	1084.0	1084.0	1085.0	1.0	
F	10,870	1027	3652	3.1	1090.2	1090.2	1091.2	1.0	
G	12,070	344	2222	5.1	1102.2	1102.2	1103.2	1.0	
H	14,150	319	3643	3.1	1109.5	1109.5	1110.5	1.0	
I	15,630	501	4216	2.7	1110.9	1110.9	1111.9	1.0	
J	19,430	394	2465	4.7	1121.5	1121.5	1122.5	1.0	
K	23,110	502	1840	3.4	1133.6	1133.6	1134.6	1.0	
L	25,670	356	1417	4.2	1145.9	1145.9	1146.9	1.0	

<sup>1</sup>FEET ABOVE MOUTH

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**PAULS CREEK**

**TABLE 3**



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
<b>LOVILLS CREEK</b>								
A	2000	265 <sup>2</sup>	1780	4.3	991.0	987.2 <sup>3</sup>	987.8	0.6
B	6300	227 <sup>2</sup>	1276	6.2	1003.1	1003.1	1003.1	0.0
C	7020	159 <sup>2</sup>	1486	5.3	1004.4	1004.4	1005.0	0.6
D	8200	450 <sup>2</sup>	3639	2.2	1006.7	1006.7	1007.3	0.6
E	10,010	153 <sup>2</sup>	983	8.3	1009.5	1009.5	1010.3	0.8
F	10,485	220 <sup>2</sup>	1994	4.1	1012.4	1012.4	1012.9	0.5
G	10,720	190 <sup>2</sup>	1592	5.1	1013.0	1013.0	1013.7	0.7
H	11,450	330 <sup>2</sup>	2191	3.7	1014.5	1014.5	1015.4	0.9
I	23,825	67	858	8.9	1056.9	1056.9	1057.9	1.0
J	25,425	480	2542	3.0	1060.4	1060.4	1061.4	1.0
K	26,625	328	1835	4.1	1064.8	1064.8	1065.8	1.0
L	27,825	152	1192	6.3	1070.2	1070.2	1071.2	1.0
M	29,425	640	3649	2.1	1072.4	1072.4	1073.4	1.0
N	30,195	310	1226	6.1	1076.5	1076.5	1077.5	1.0
O	31,205	697	4903	1.5	1084.0	1084.0	1085.0	1.0
P	32,205	227	1701	4.4	1085.6	1085.6	1086.6	1.0
Q	34,485	109	882	8.3	1098.0	1098.0	1099.0	1.0

<sup>1</sup>FEET ABOVE CONFLUENCE WITH ARARAT RIVER

<sup>2</sup>THIS WIDTH EXTENDS WITHIN AREA NOT INCLUDED

<sup>3</sup>ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM ARARAT RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**LOVILLS CREEK**

**TABLE 3**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
<b>TUMBLING ROCK BRANCH</b>								
A	1470	120	292	4.6	1035.0	1035.0	1035.2	0.2
B	2030	120	276	4.9	1038.7	1038.7	1038.8	0.1
C	3880	60	377	3.6	1056.5	1056.5	1056.5	0.0
D	4630	48	147	8.8	1067.6	1067.6	1067.6	0.0
E	6150	70	284	4.0	1101.9	1101.9	1102.1	0.2
F	7270	70	148	7.5	1111.8	1111.8	1112.0	0.2
G	8100	205	2603	0.4	1134.7	1134.7	1135.1	0.4
H	9250	55	115	7.7	1138.8	1138.8	1138.9	0.1
I	10,955	50	113	6.2	1172.5	1172.5	1172.5	0.0
J	12,000	60	117	5.0	1191.4	1191.4	1191.5	0.1

<sup>1</sup>FEET ABOVE MOUTH

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SURRY COUNTY, NC**  
(UNINCORPORATED AREAS)

**FLOODWAY DATA**

**TUMBLING ROCK BRANCH**

**TABLE 3**

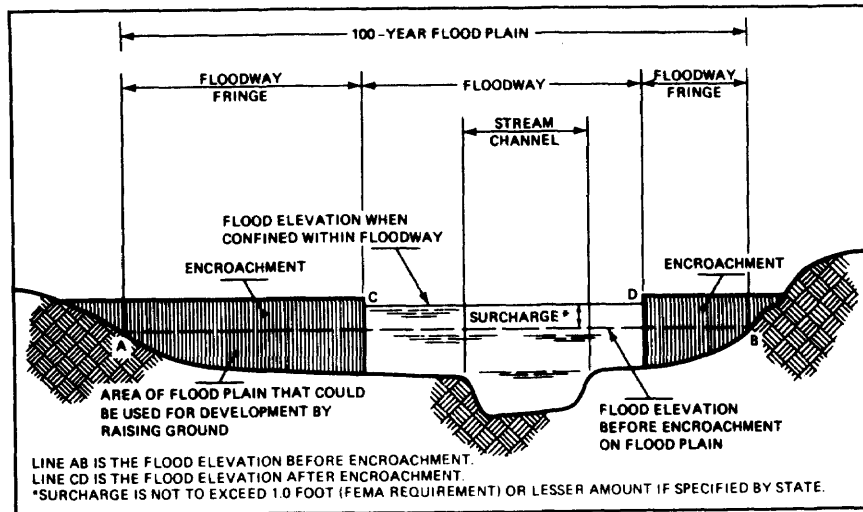


FIGURE 2 - Floodway Schematic

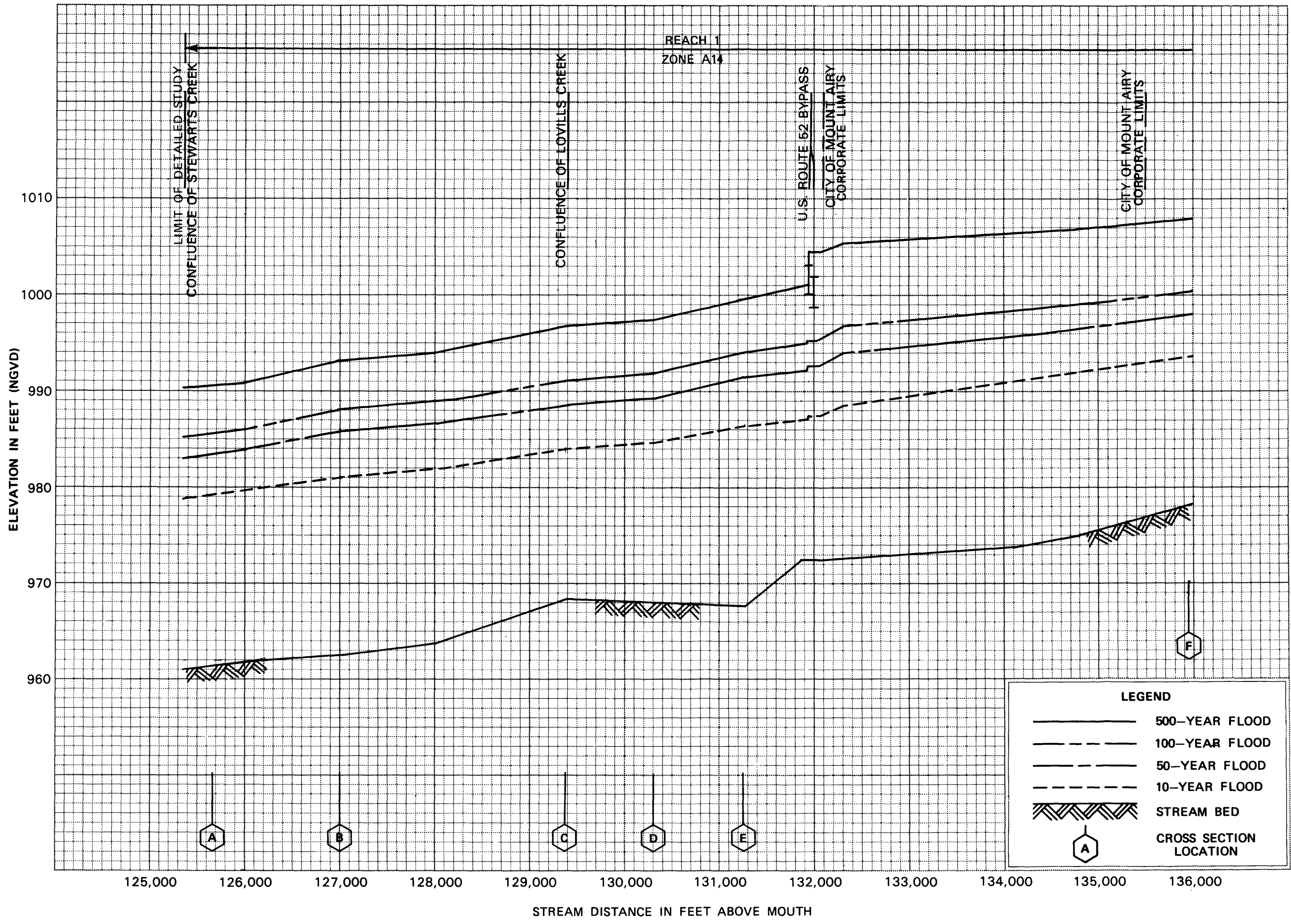
e. Other Studies

The Flood Insurance Study published for the City of Mount Airy, North Carolina (Reference 10) is in agreement with this revised study.

f. References and Bibliography

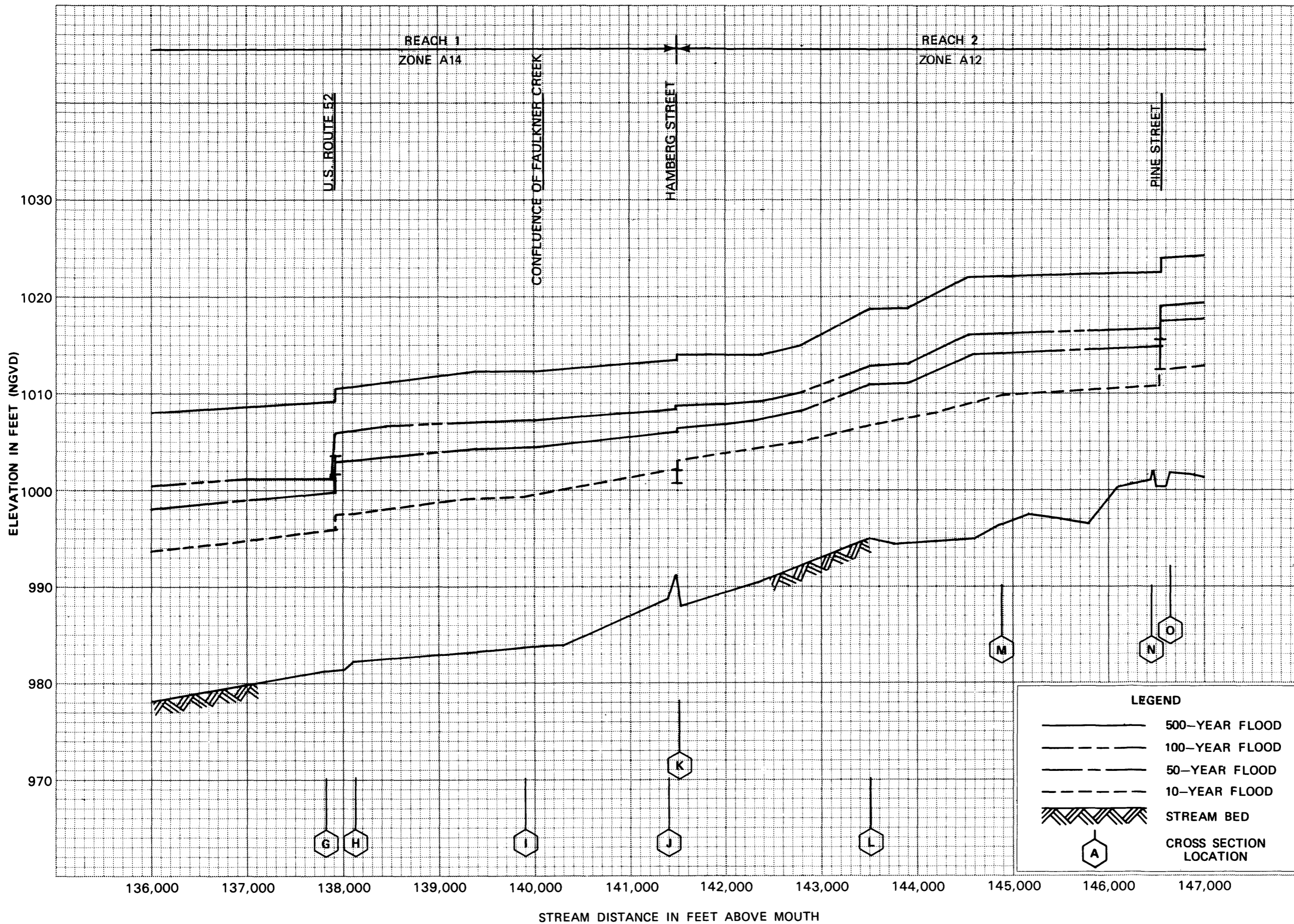
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6. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program 723-X6-L202A, Davis, California, April 1984.
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8. U.S. Geological Survey, 15 Minute Series Topographic Maps, Scale 1:24000, Contour Interval 20 Feet: Mount Airy North, Virginia-North Carolina, 1968.
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ARARAT RIVER**

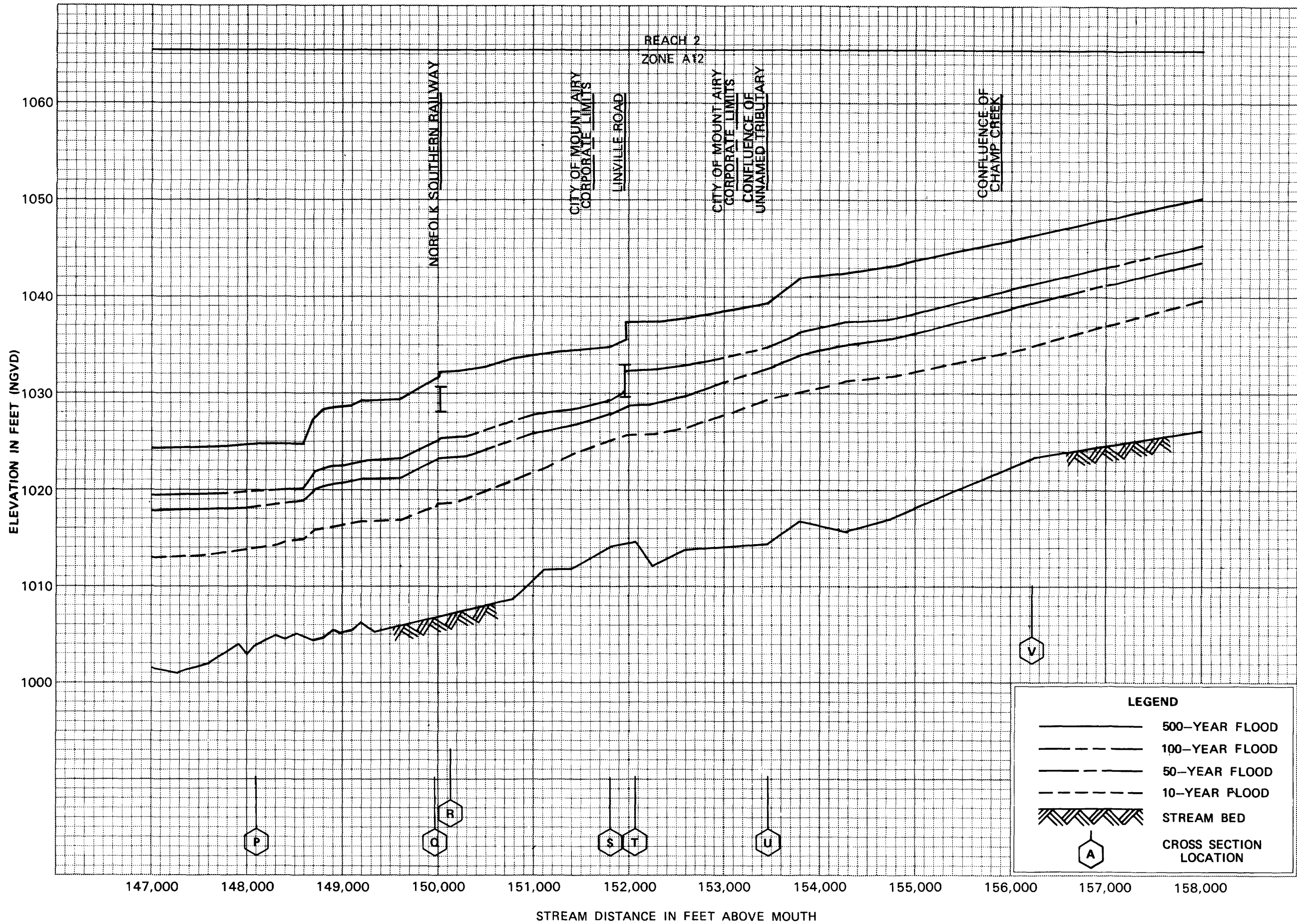
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**ARARAT RIVER**

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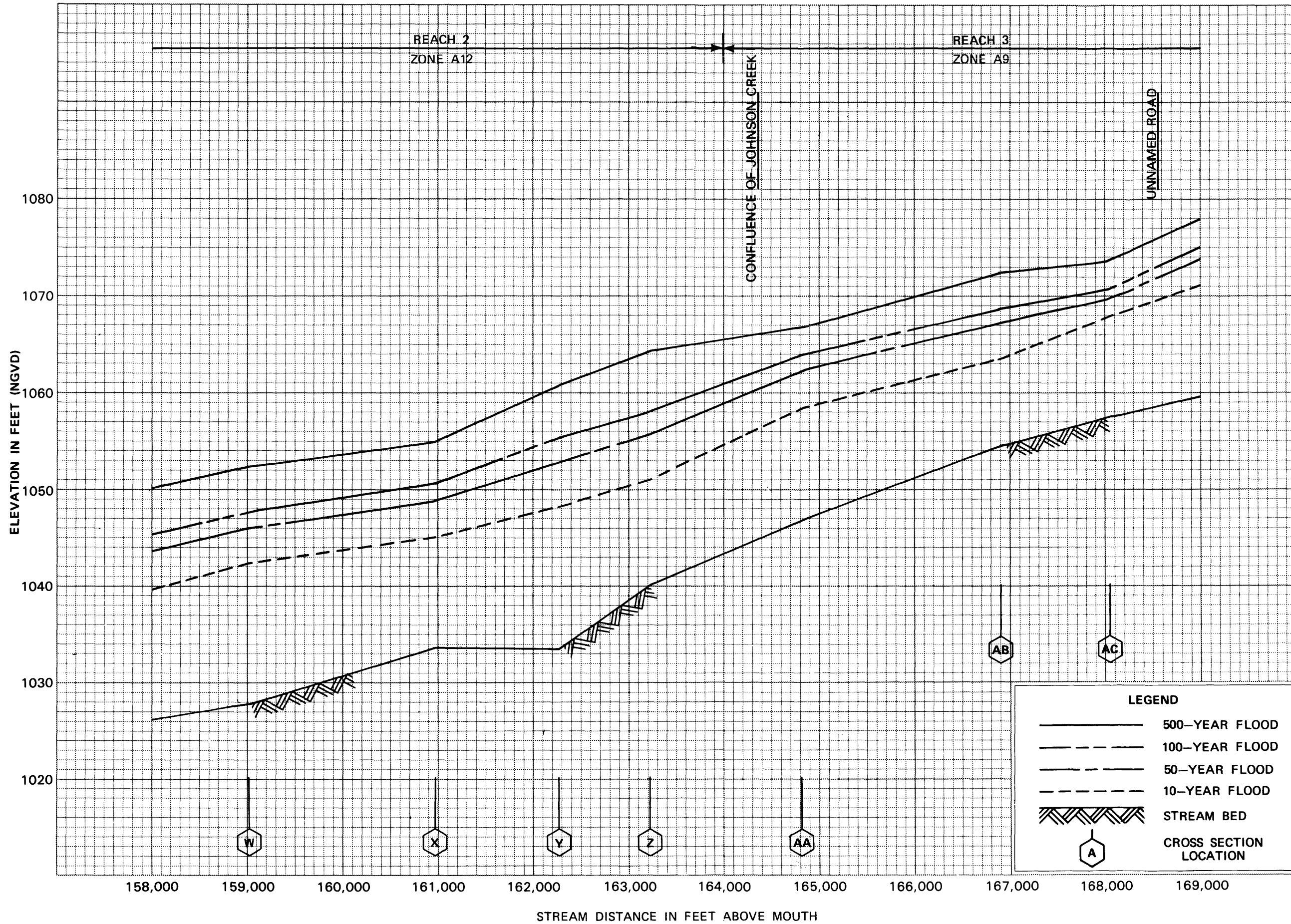


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**ARARAT RIVER**

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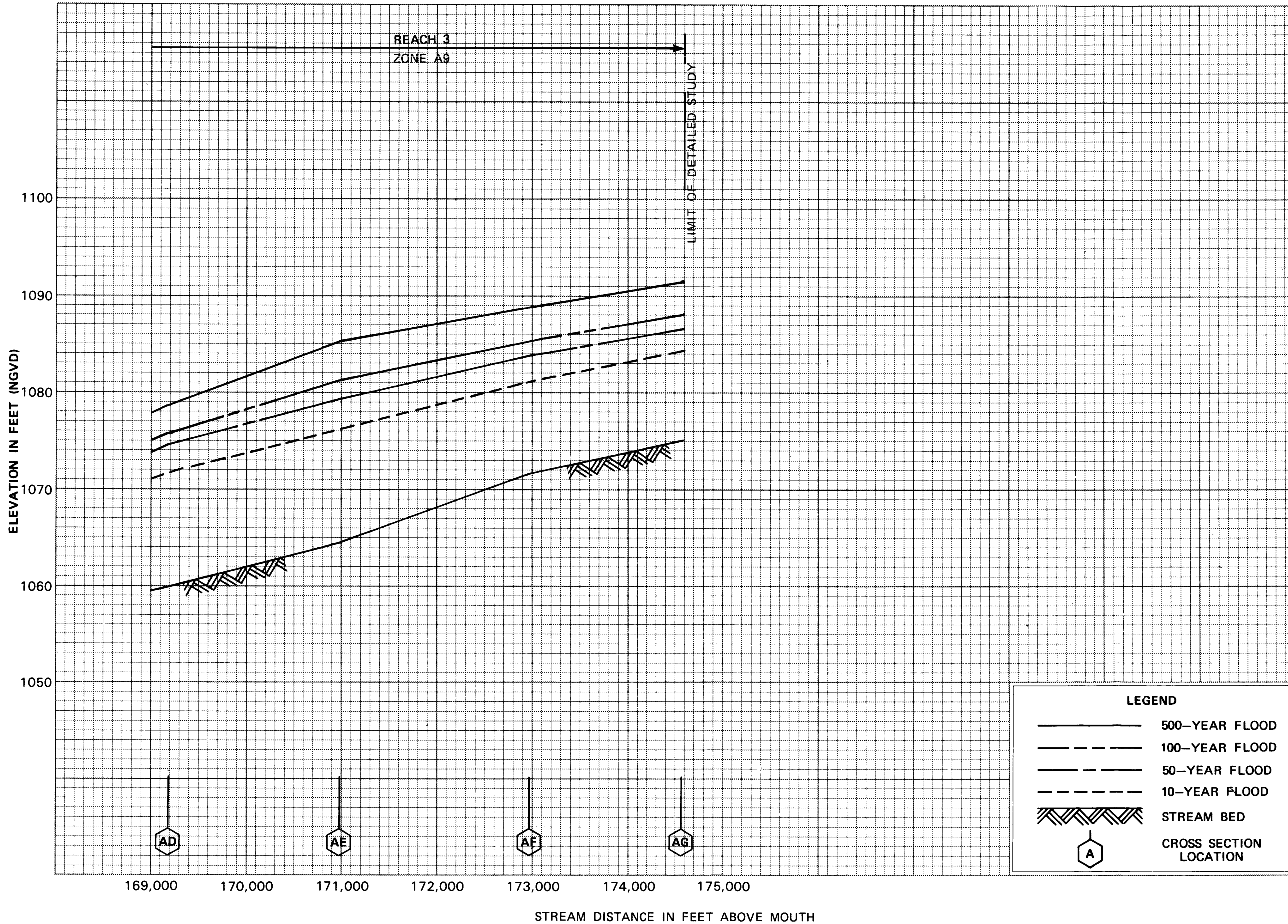
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**ARARAT RIVER**

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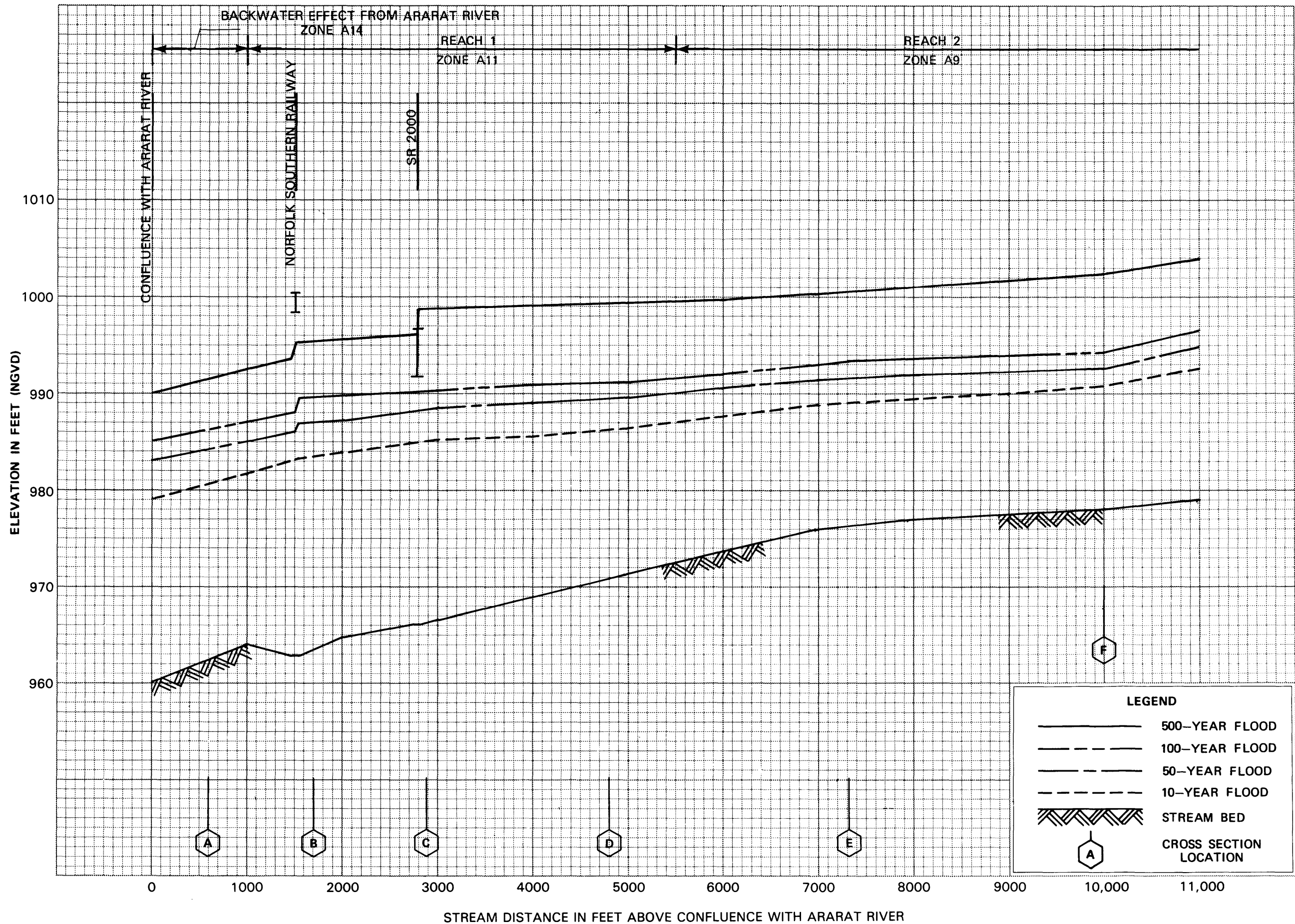


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**ARARAT RIVER**

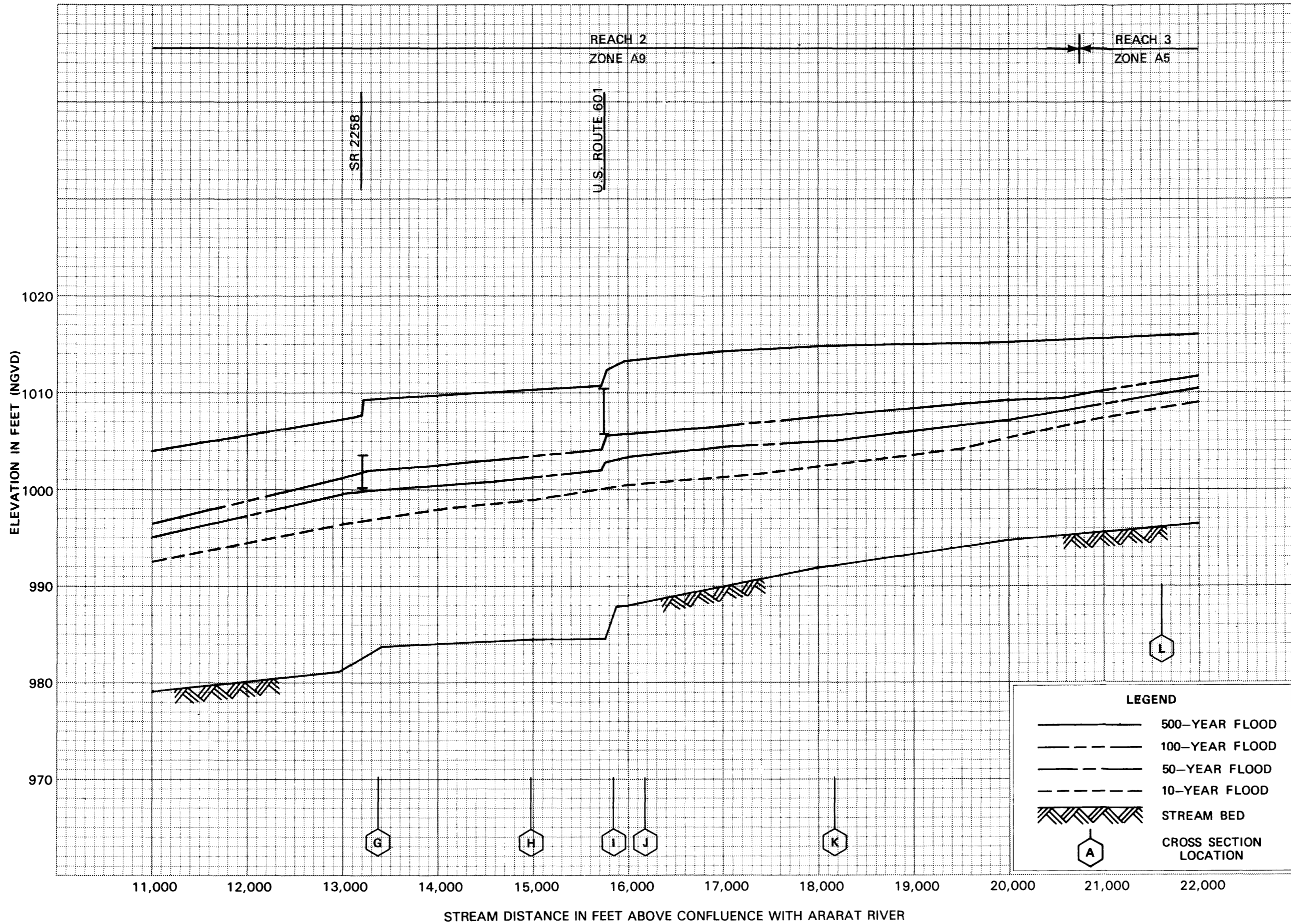
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**STEWARTS CREEK**

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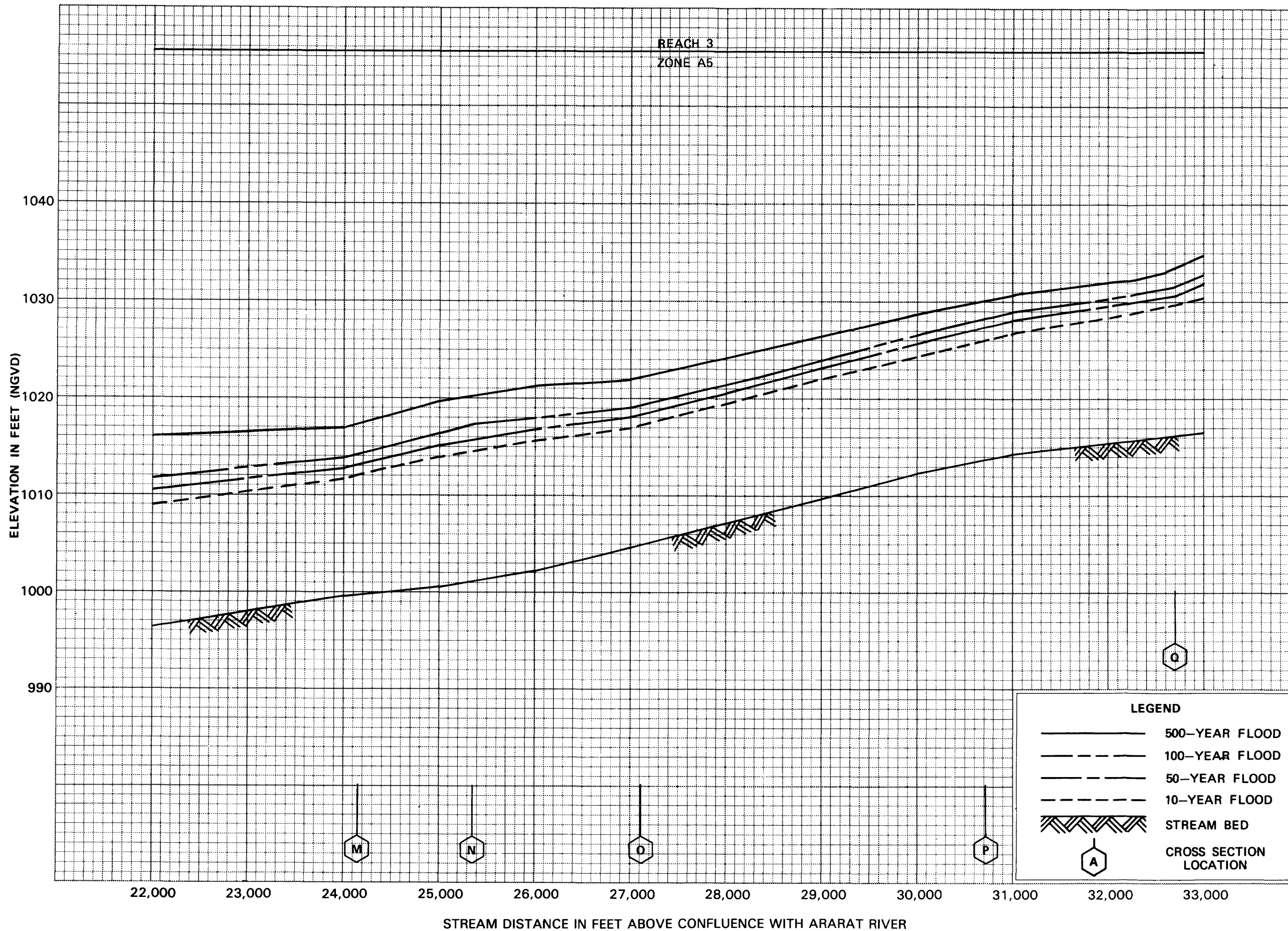
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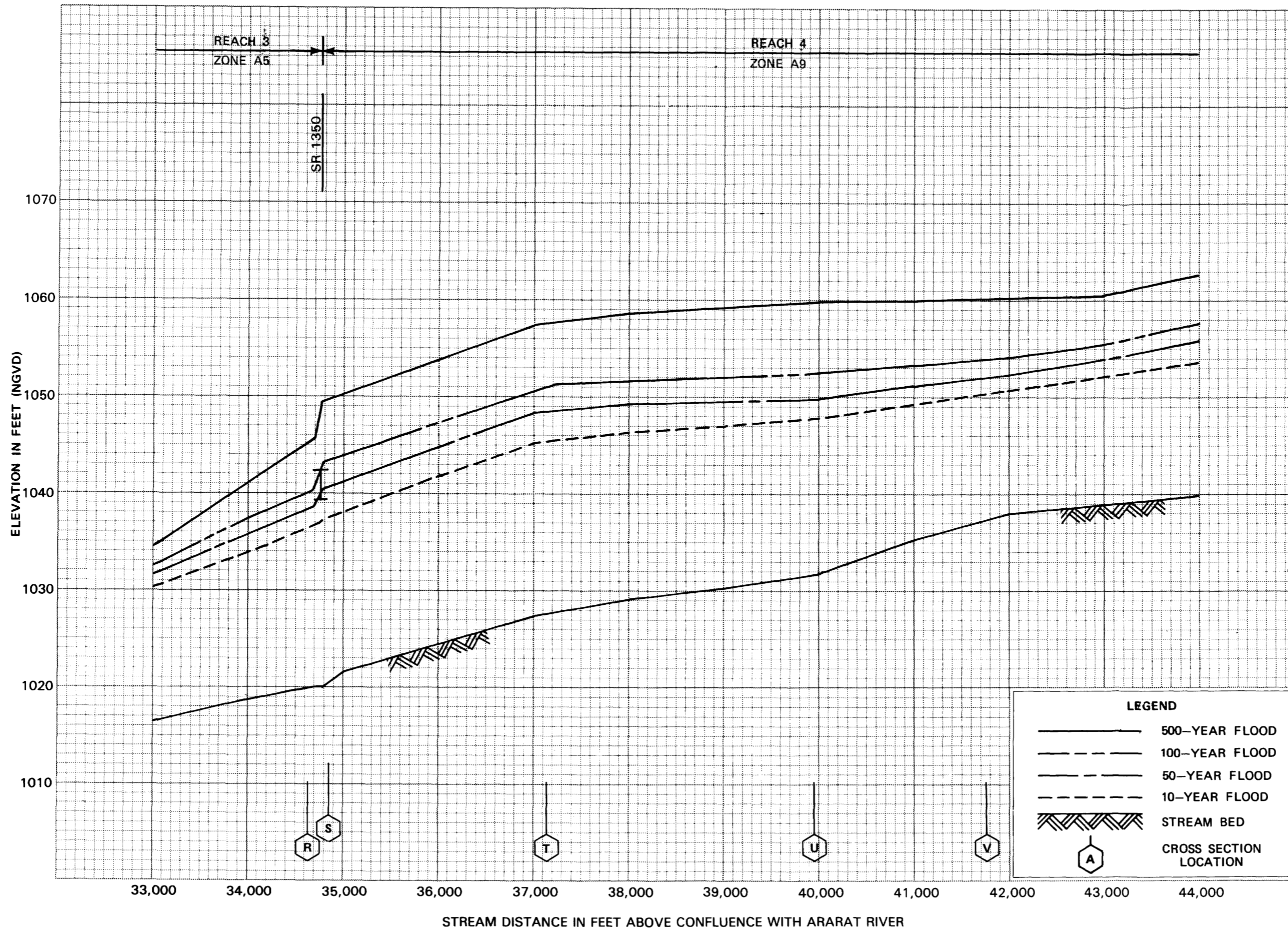


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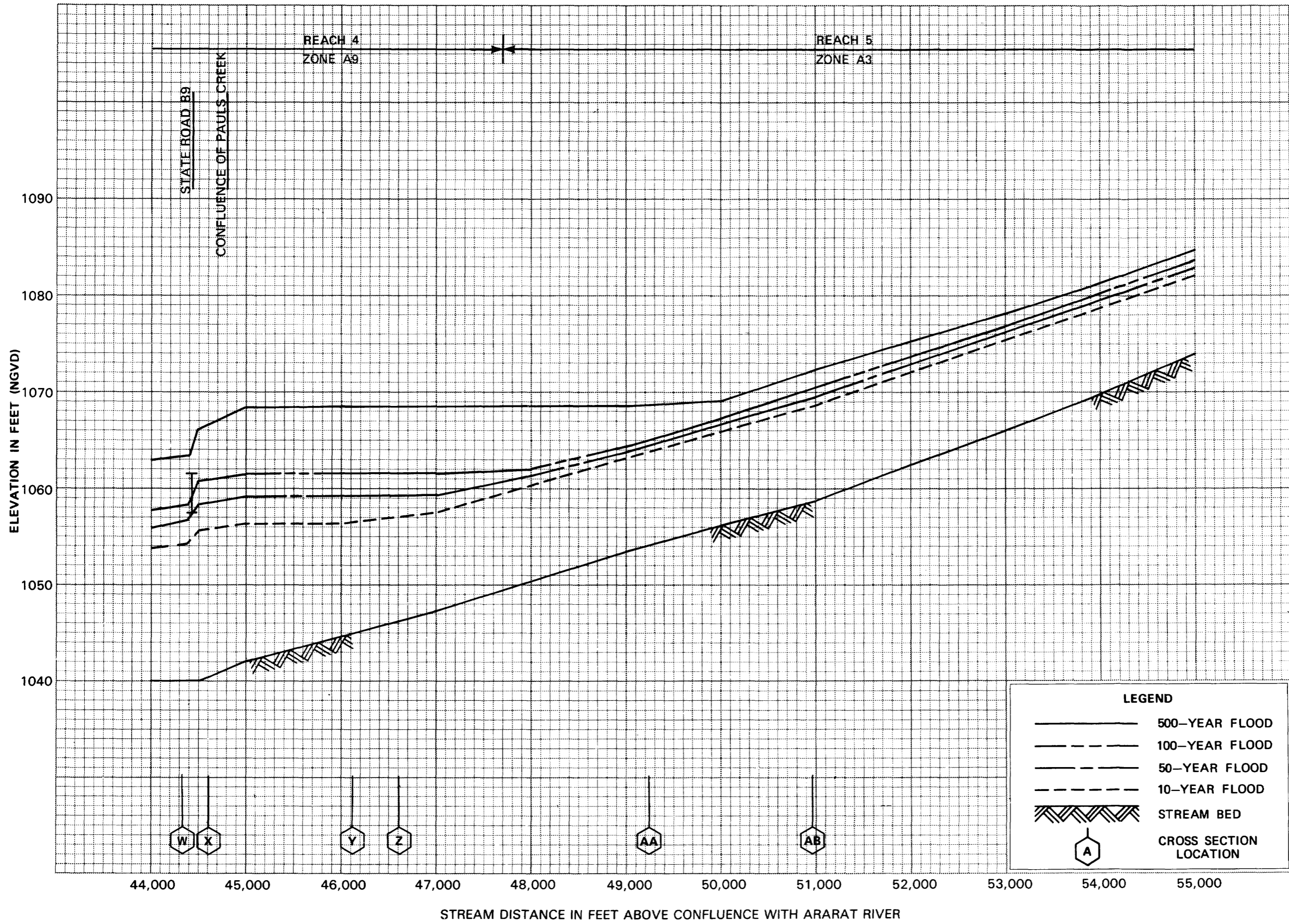


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**STEWARTS CREEK**

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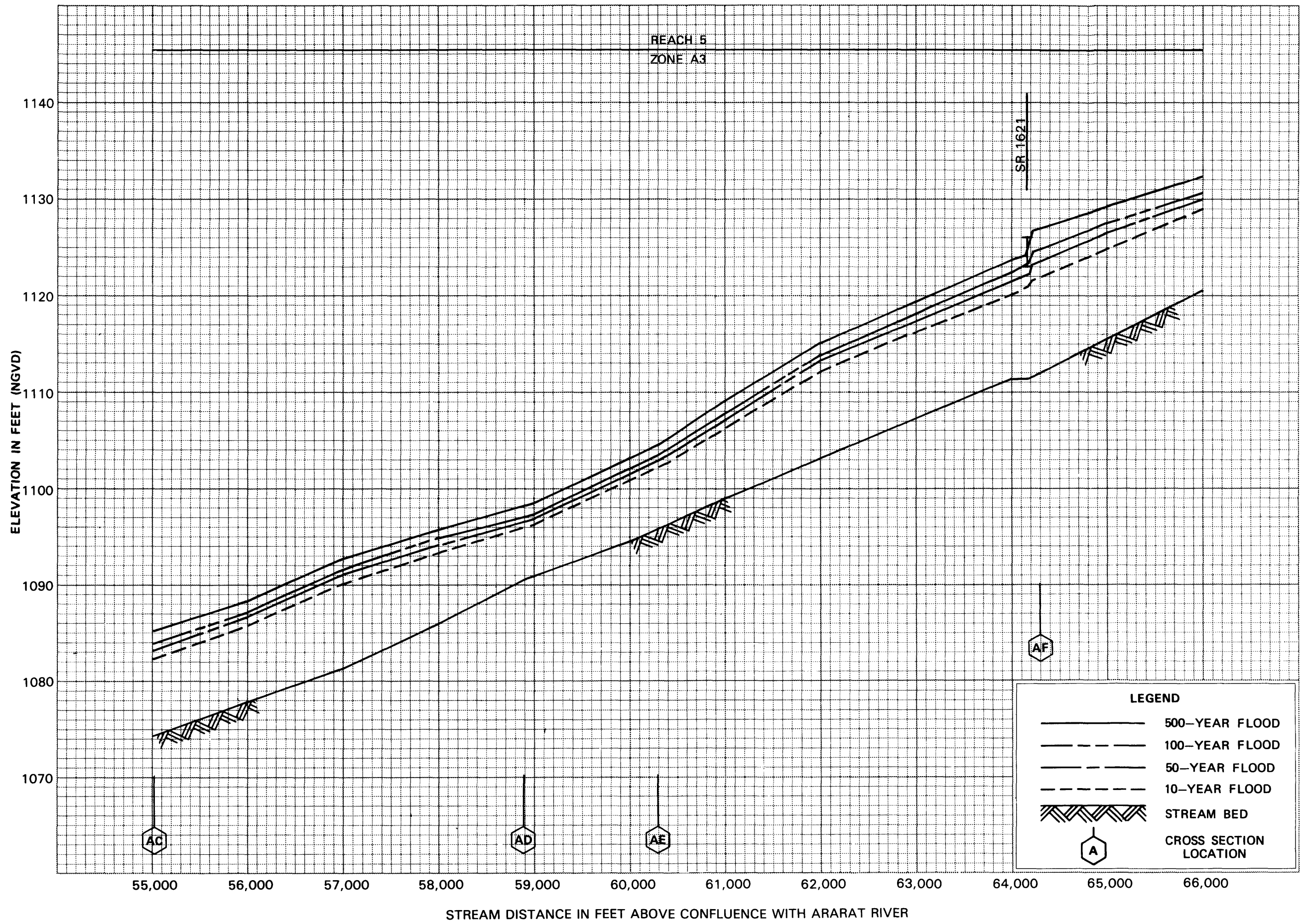
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**STEWARTS CREEK**

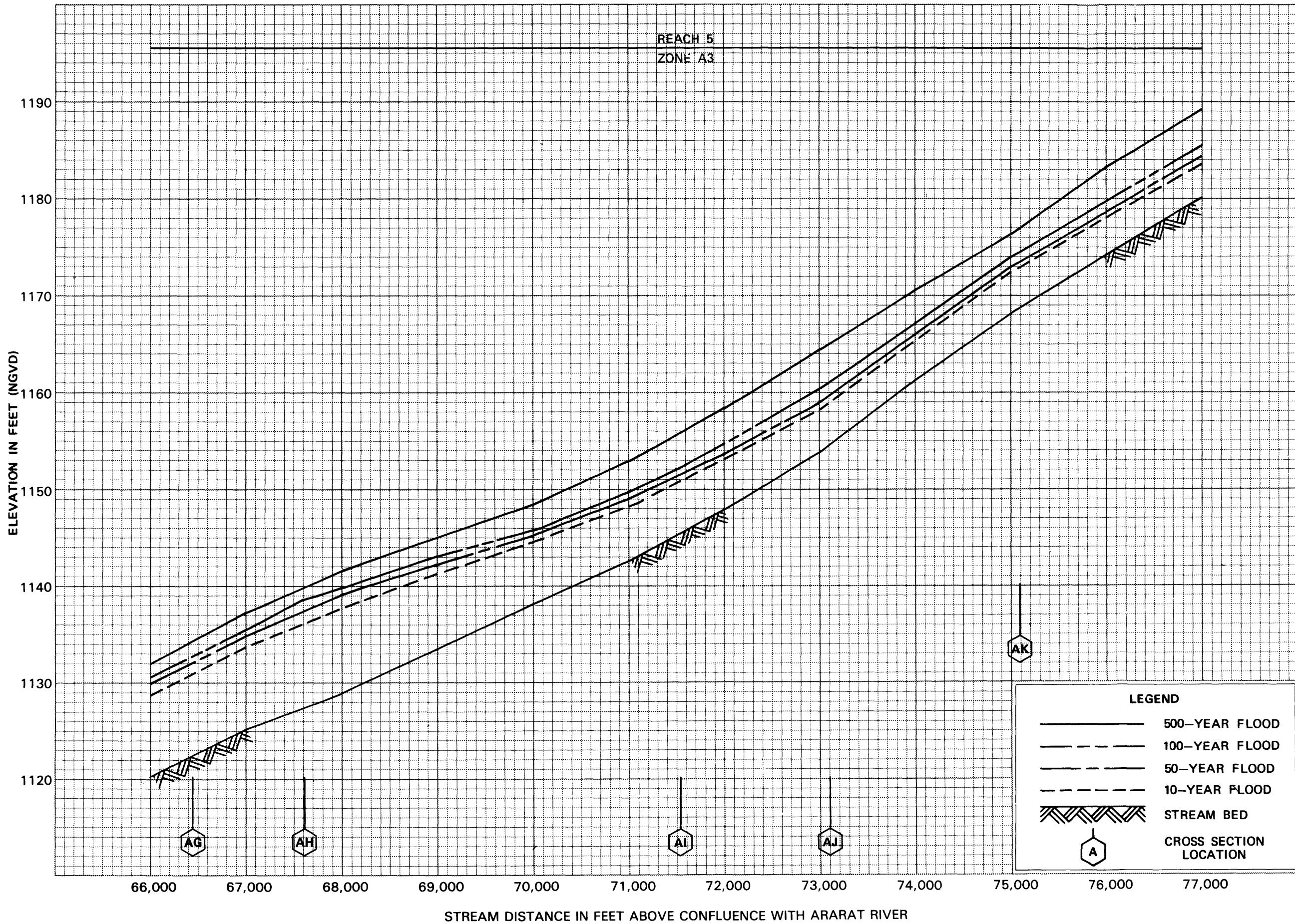
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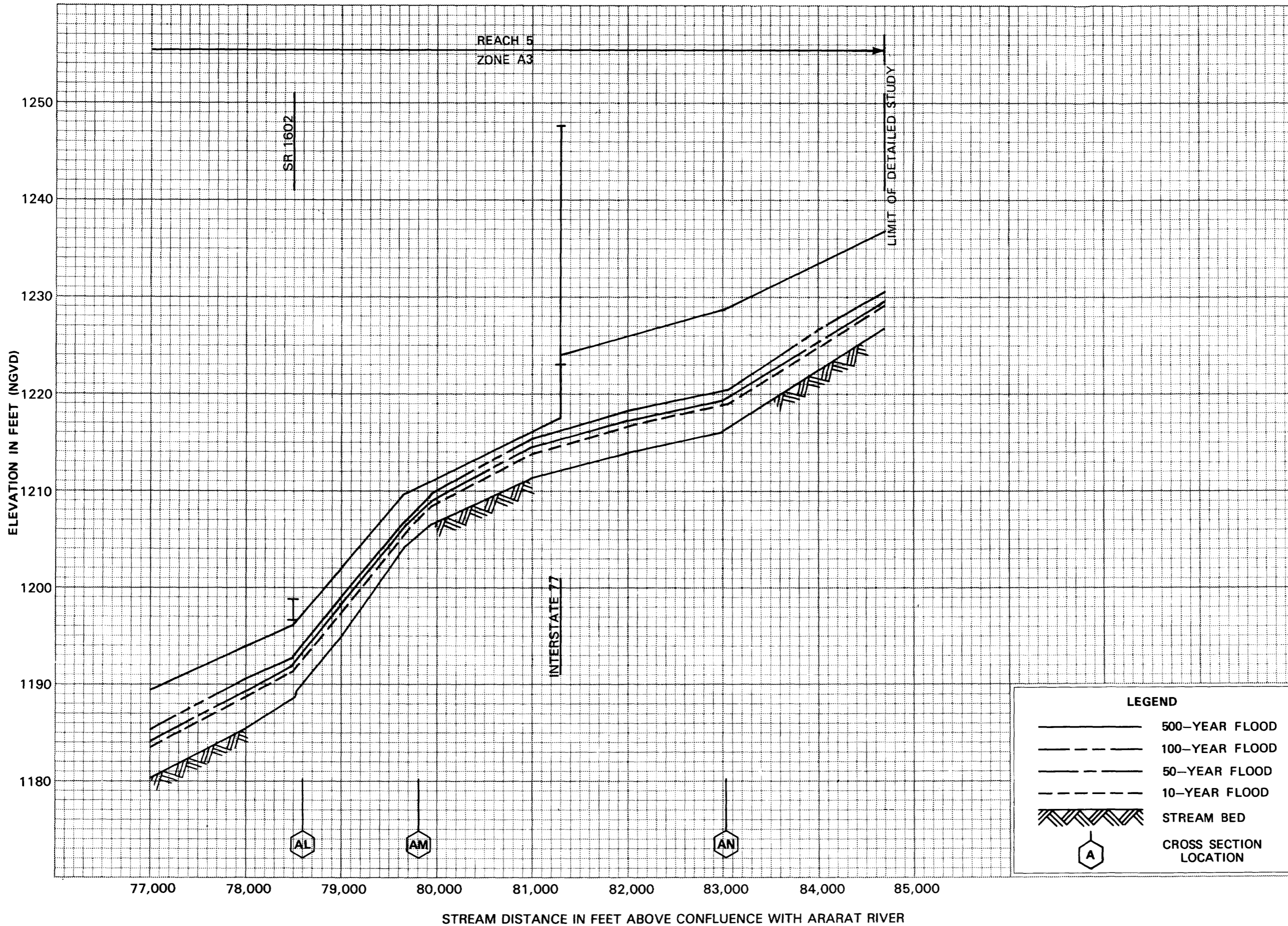
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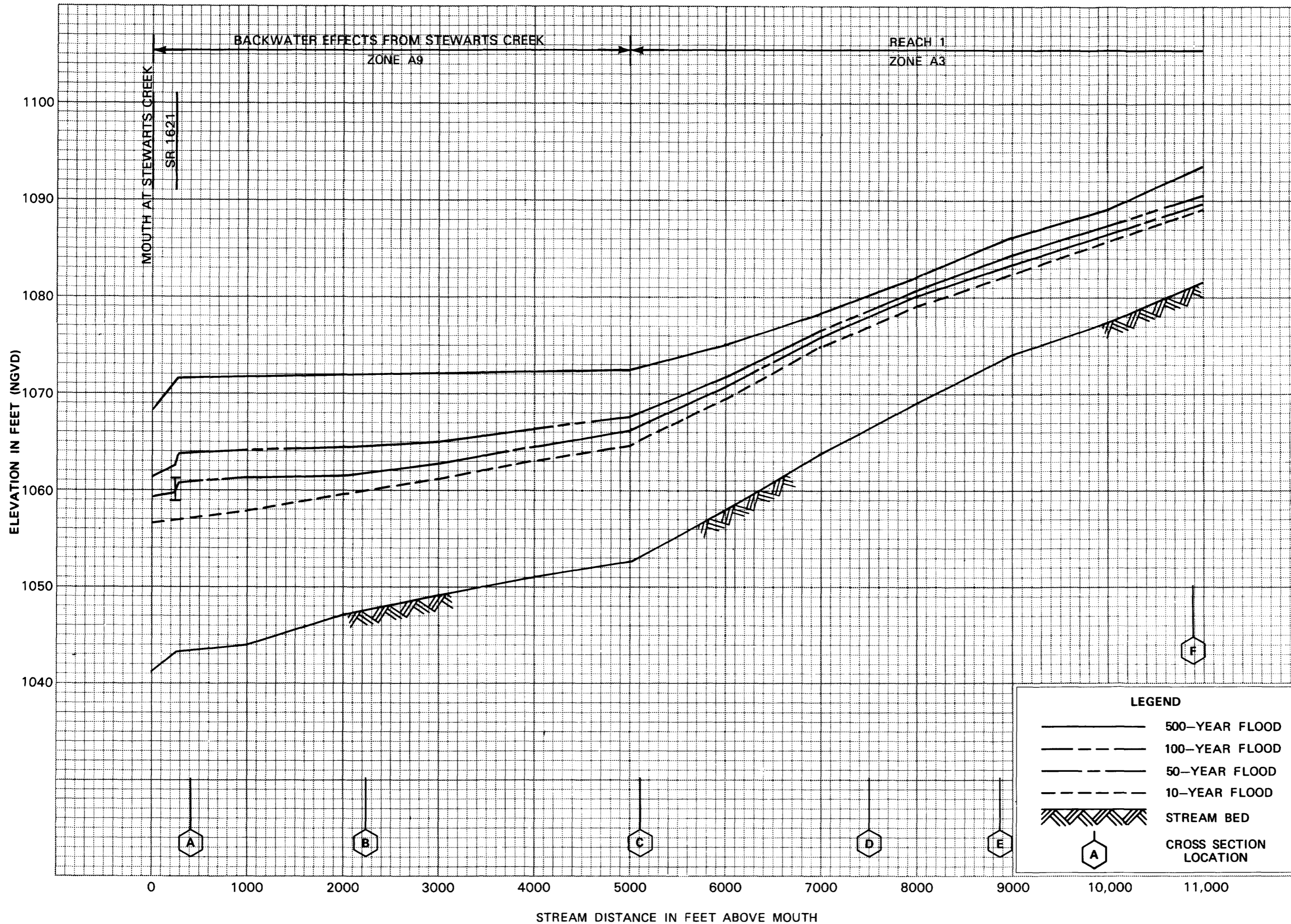


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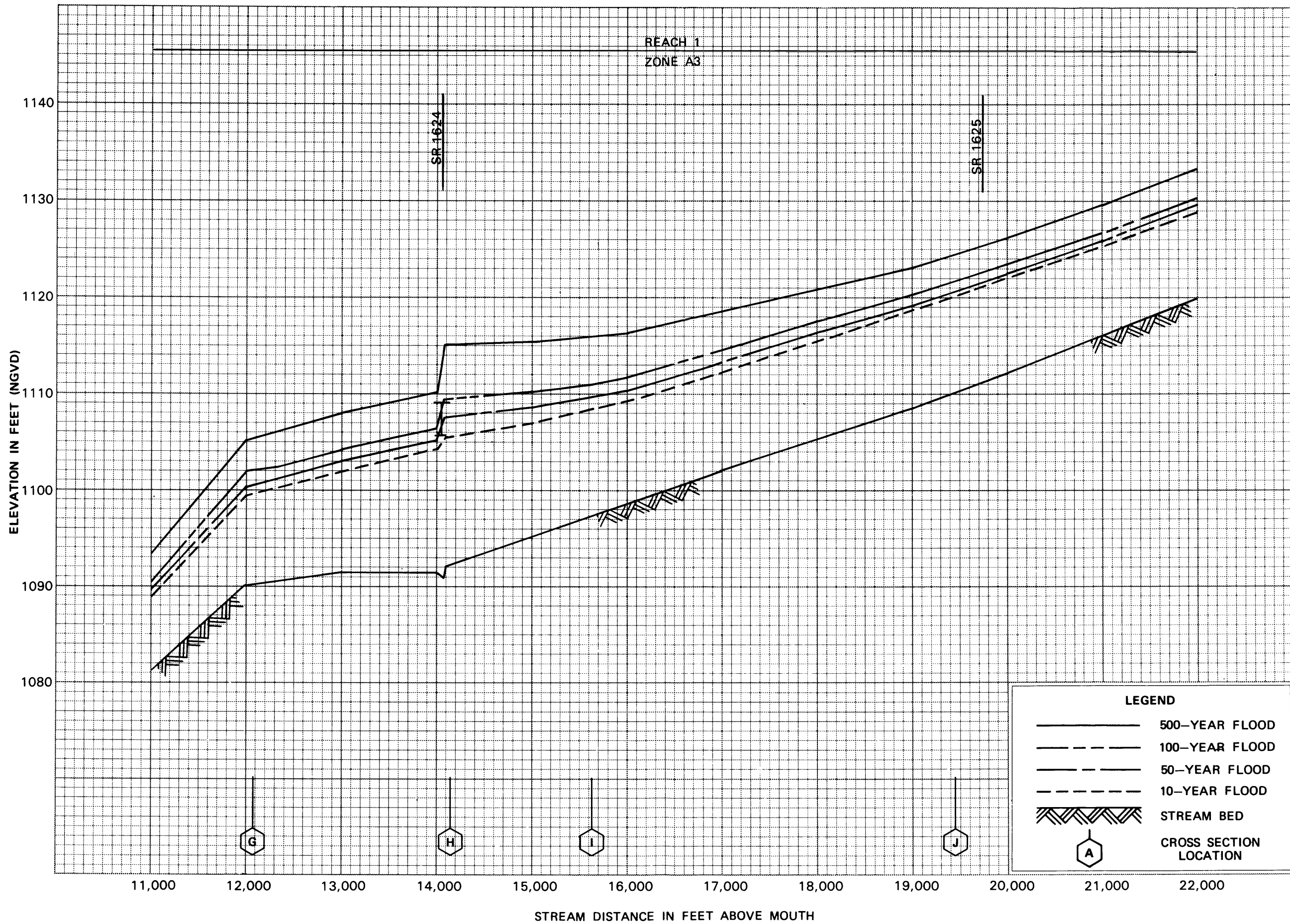


**FLOOD PROFILES**

**PAULS CREEK**

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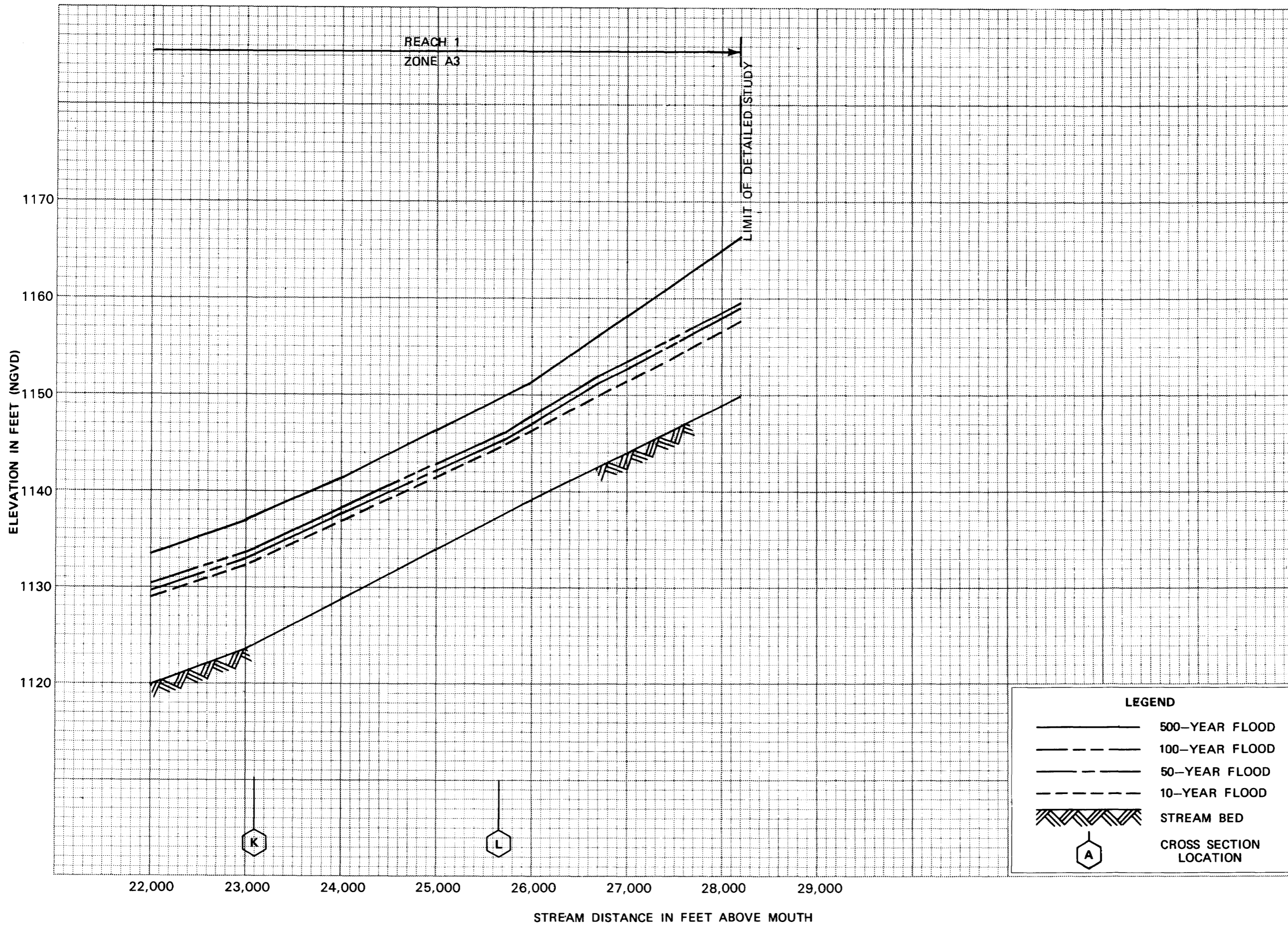
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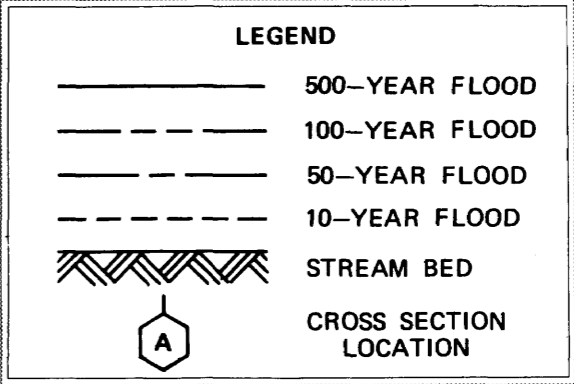
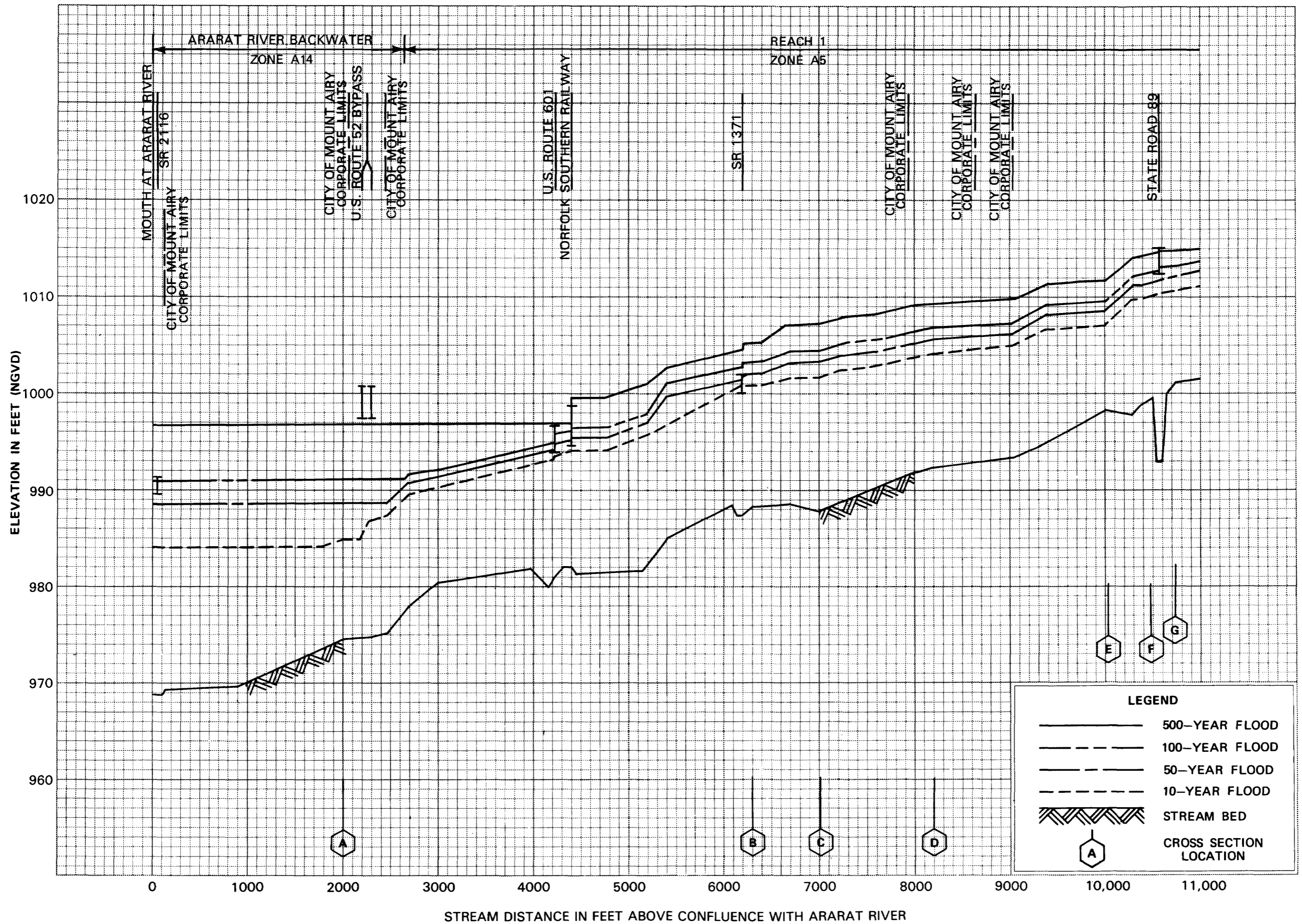


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**PAULS CREEK**

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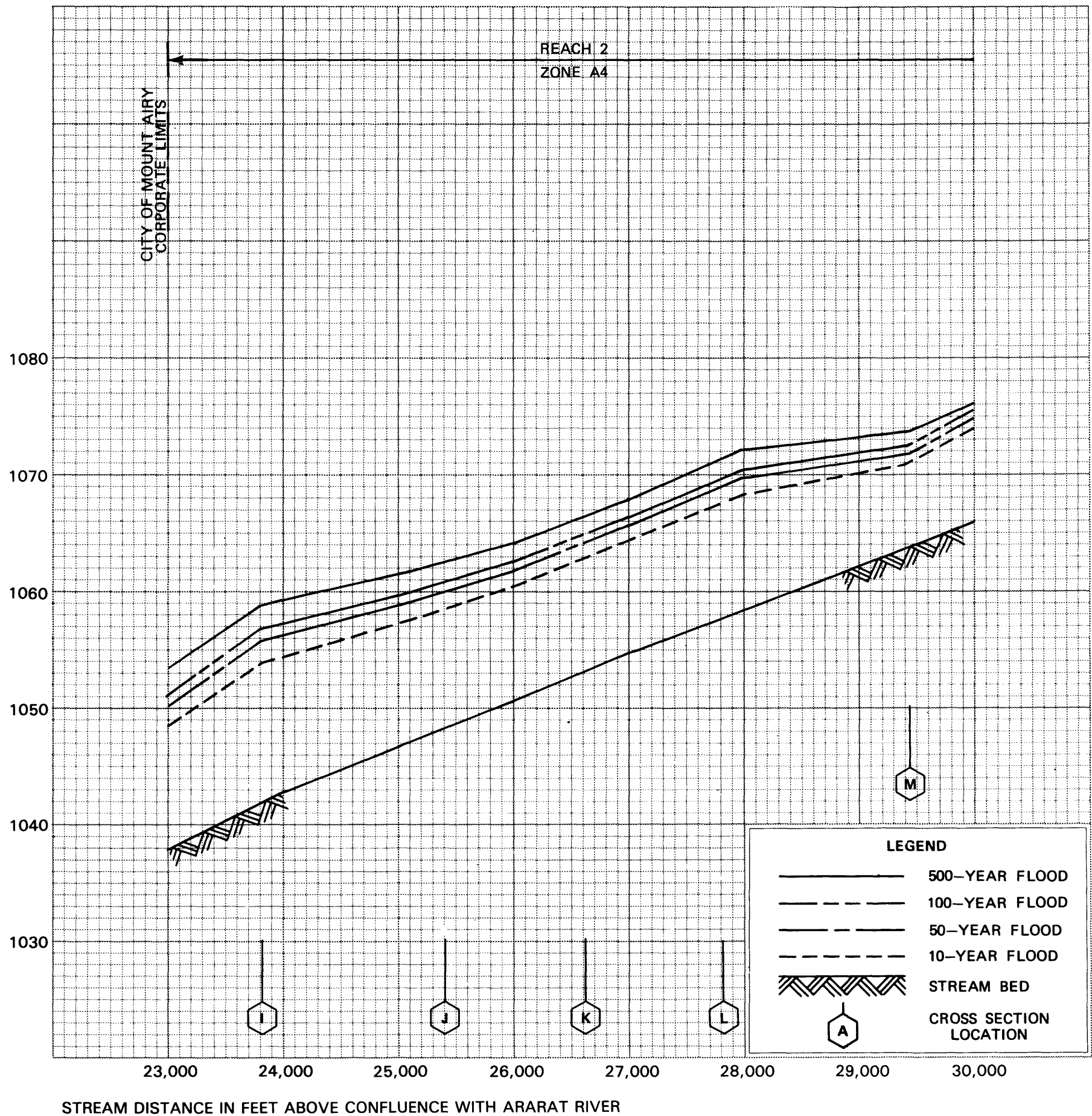
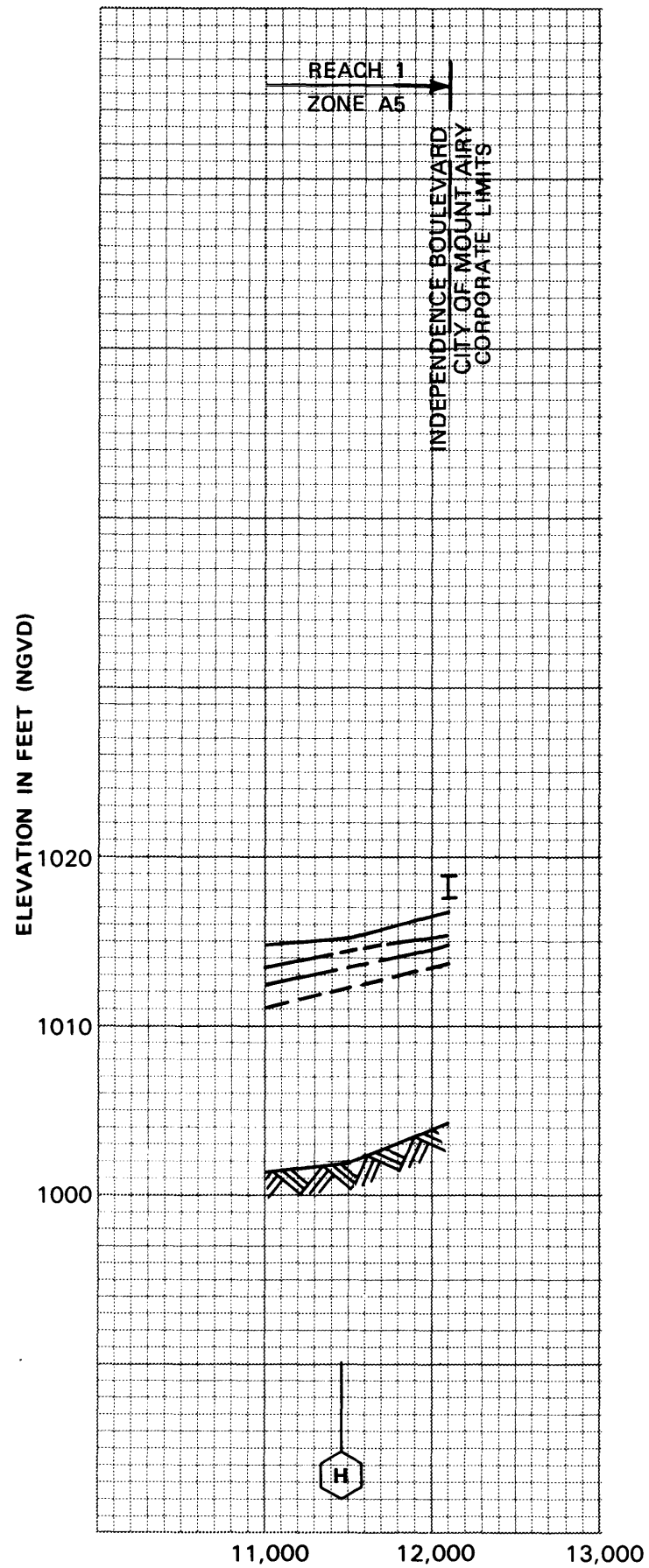


**FLOOD PROFILES**

**LOVILLS CREEK**

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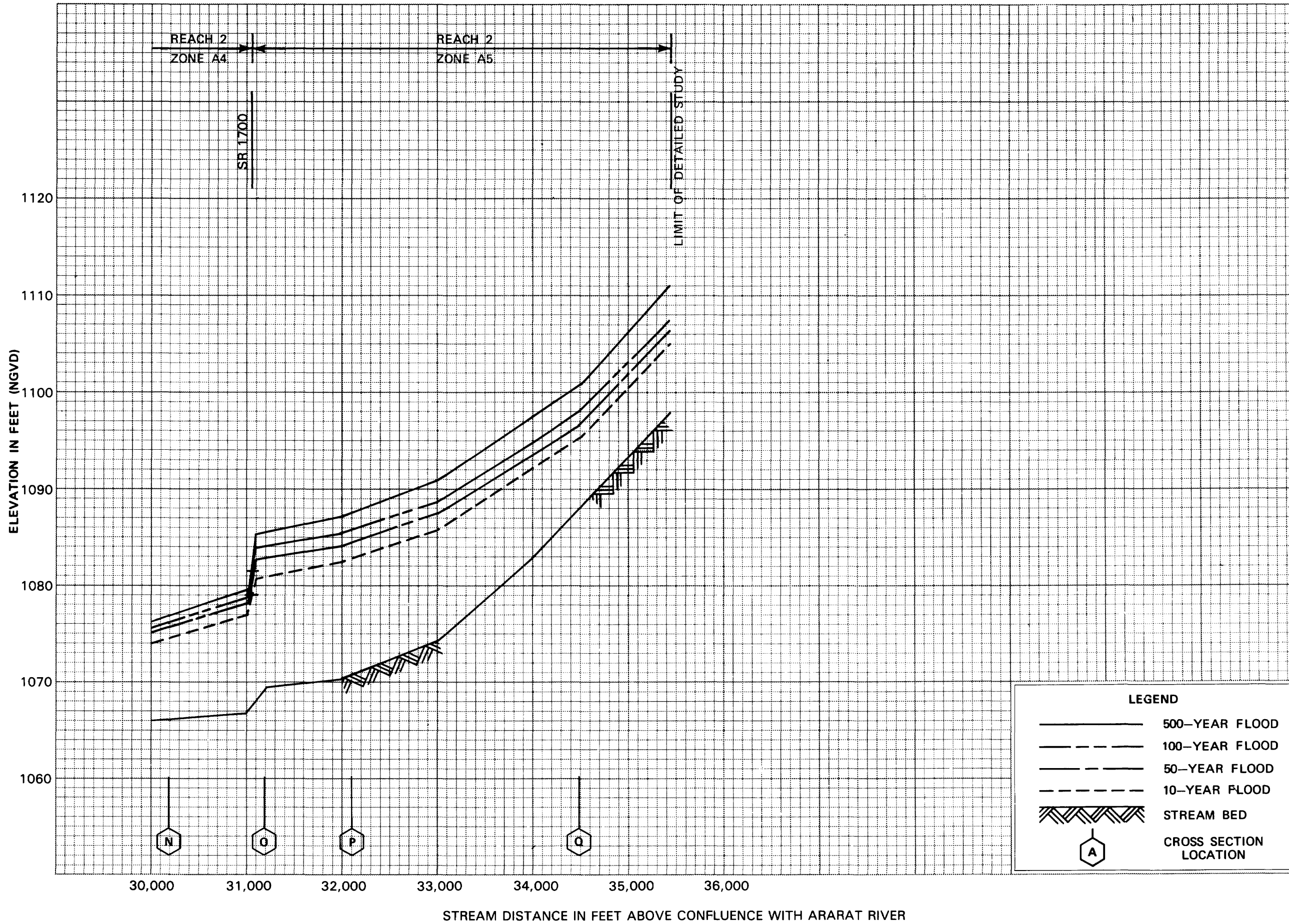
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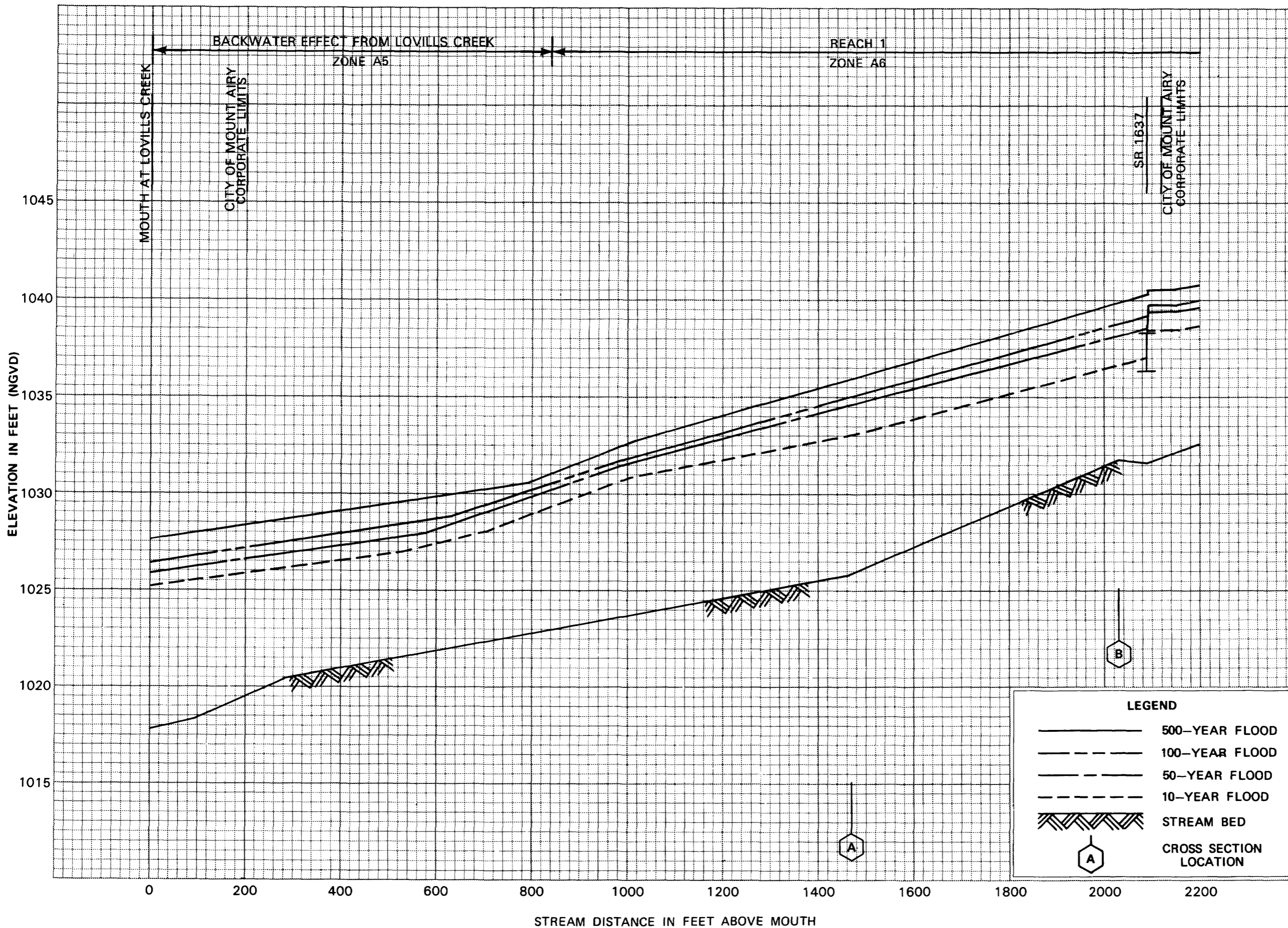
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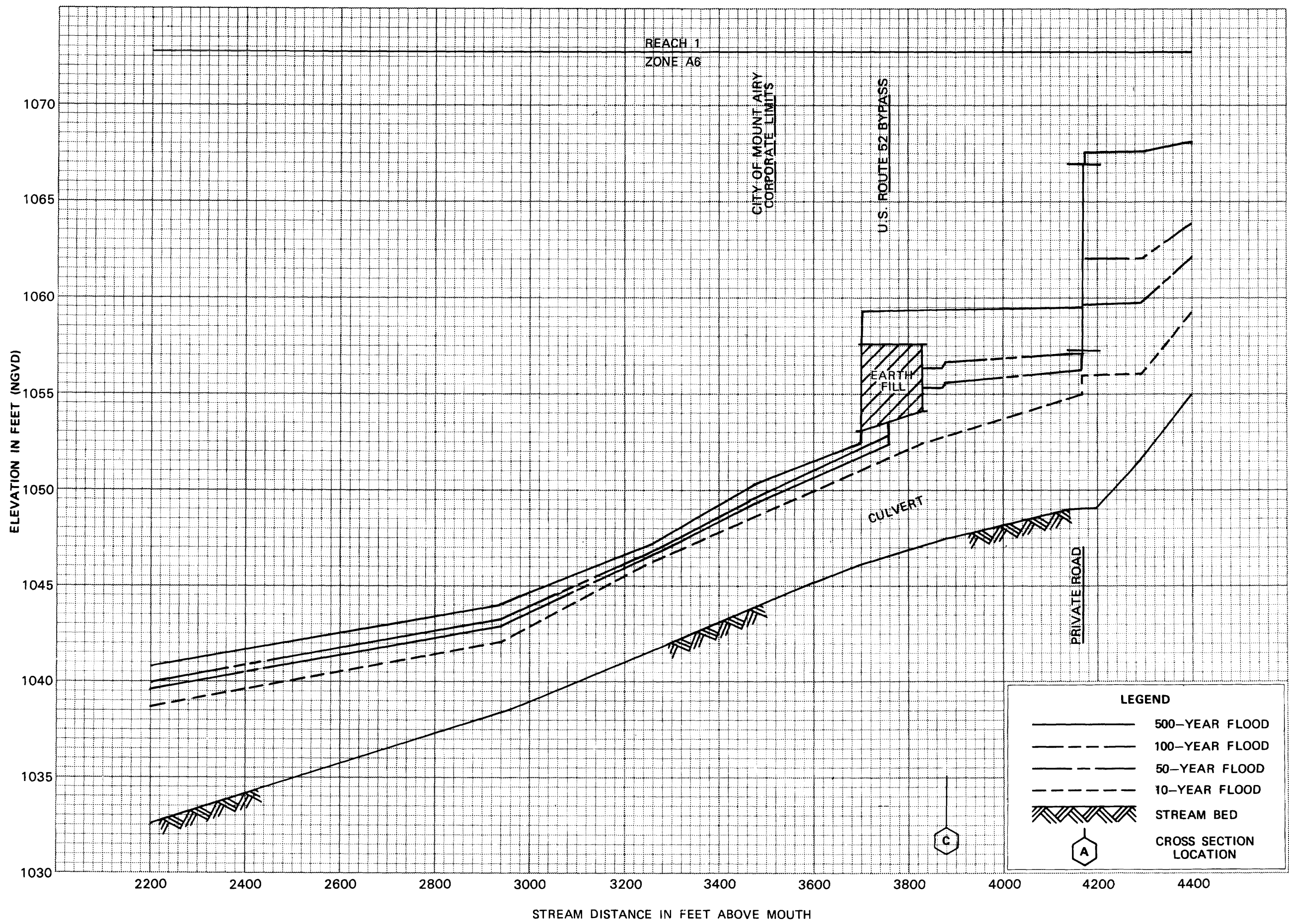
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**FLOOD PROFILES**  
**TUMBLING ROCK BRANCH**

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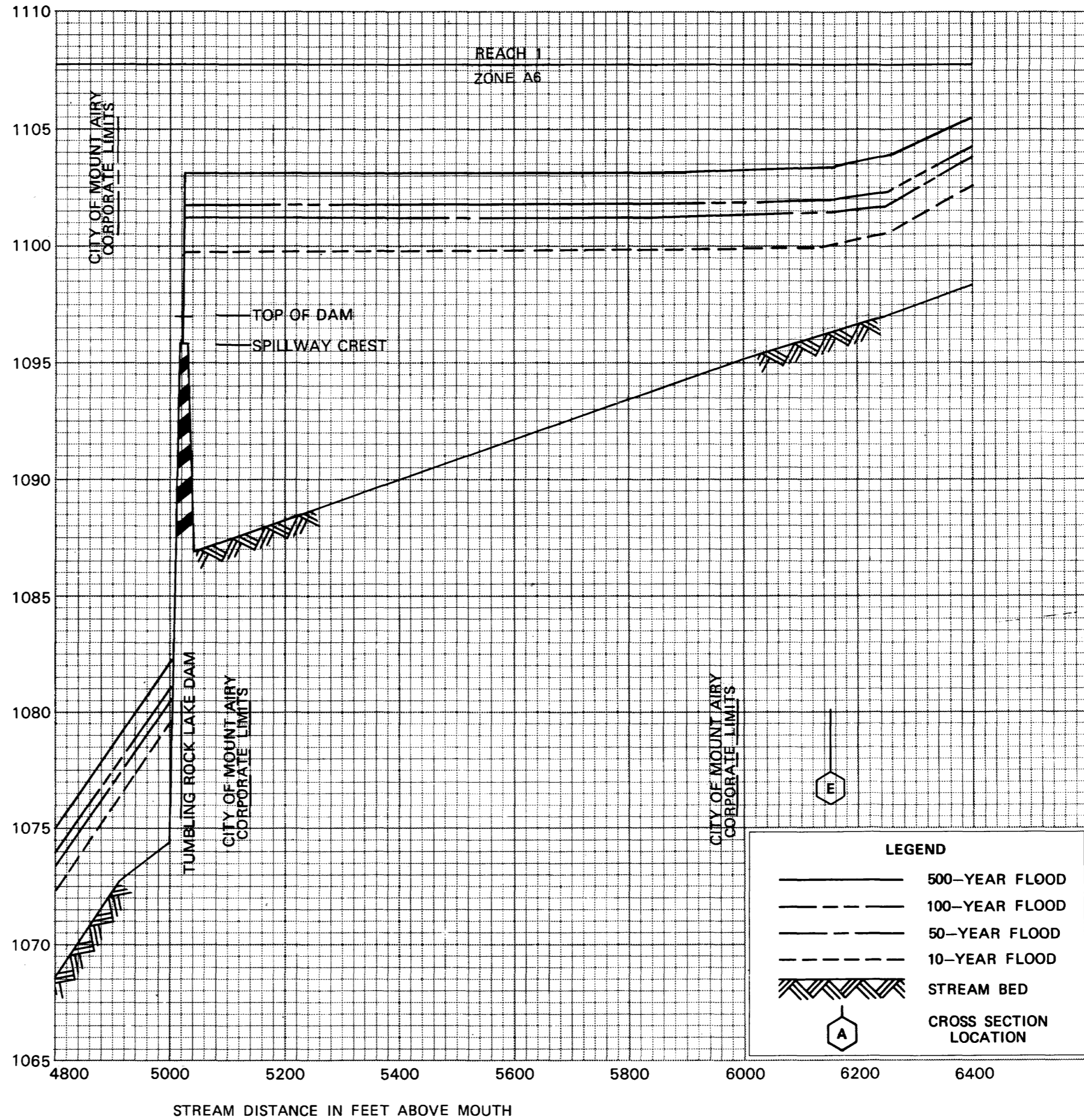
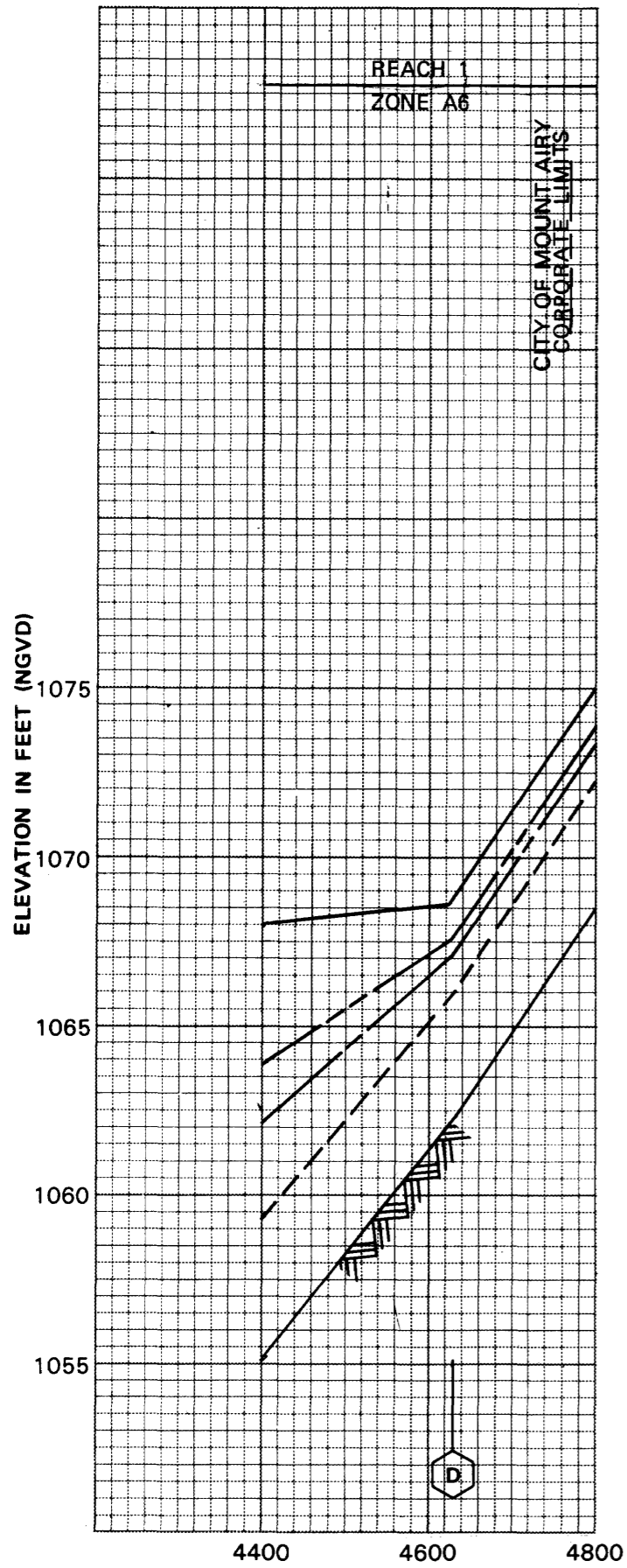


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TUMBLING ROCK BRANCH

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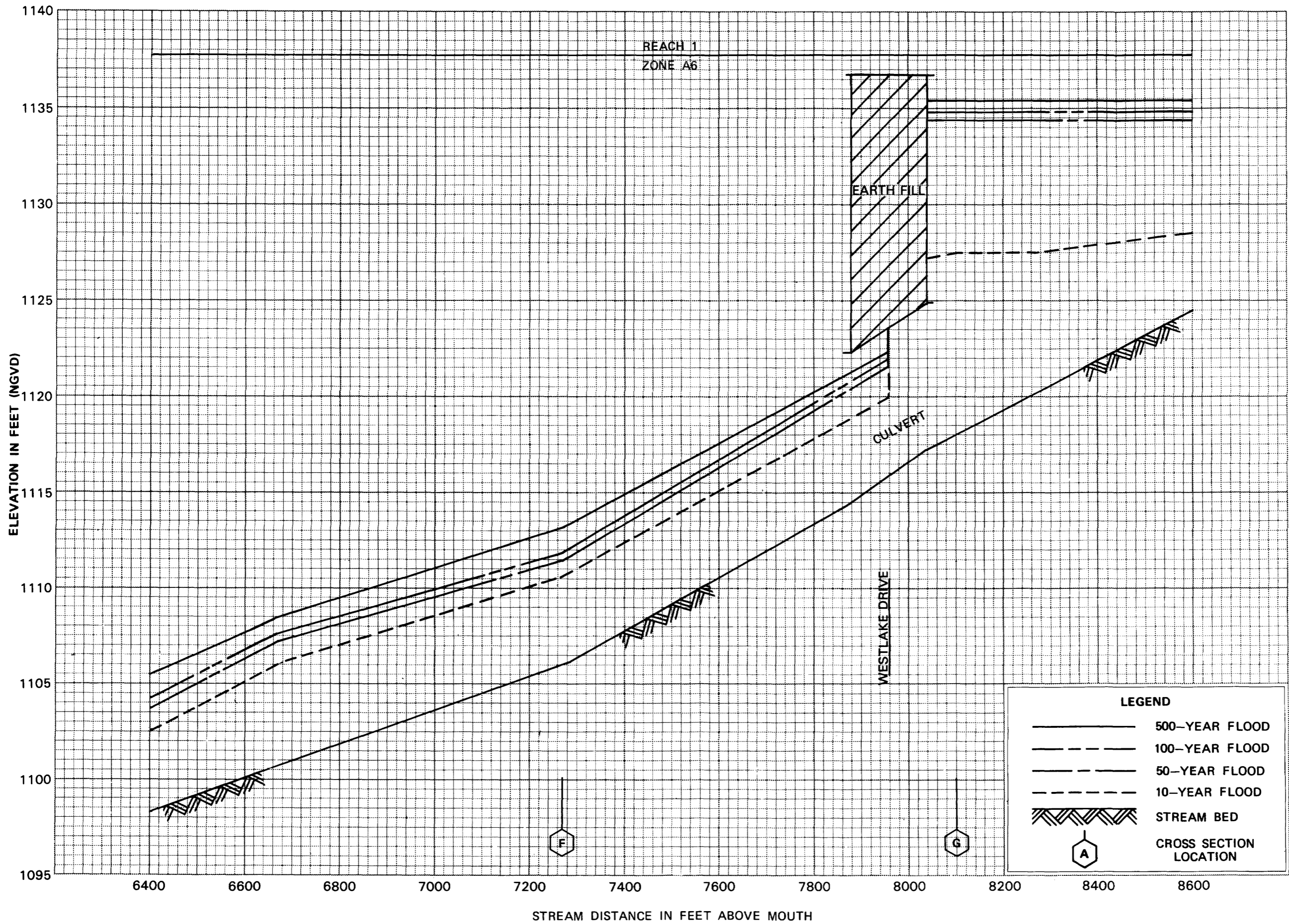


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TUMBLING ROCK BRANCH

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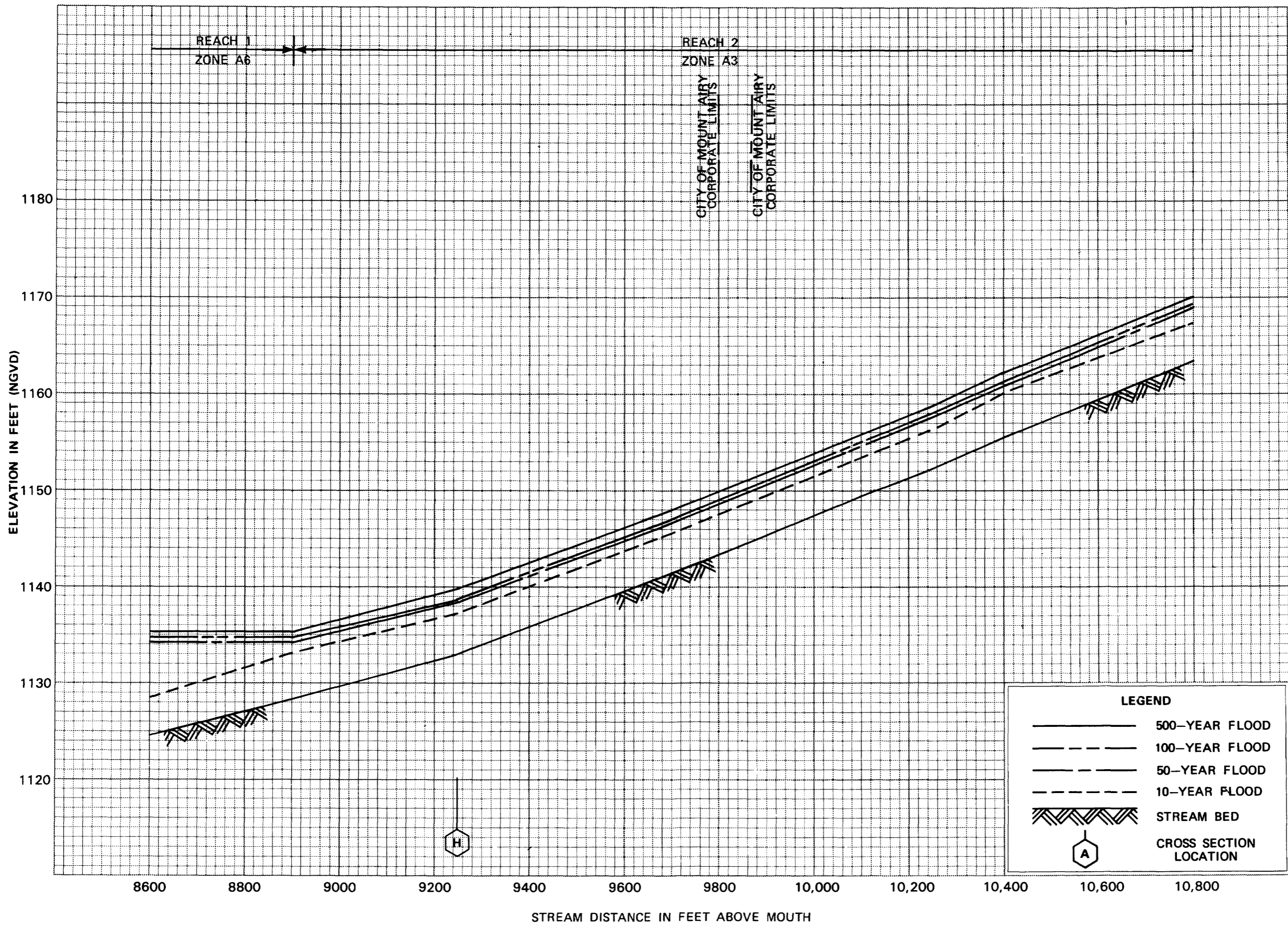
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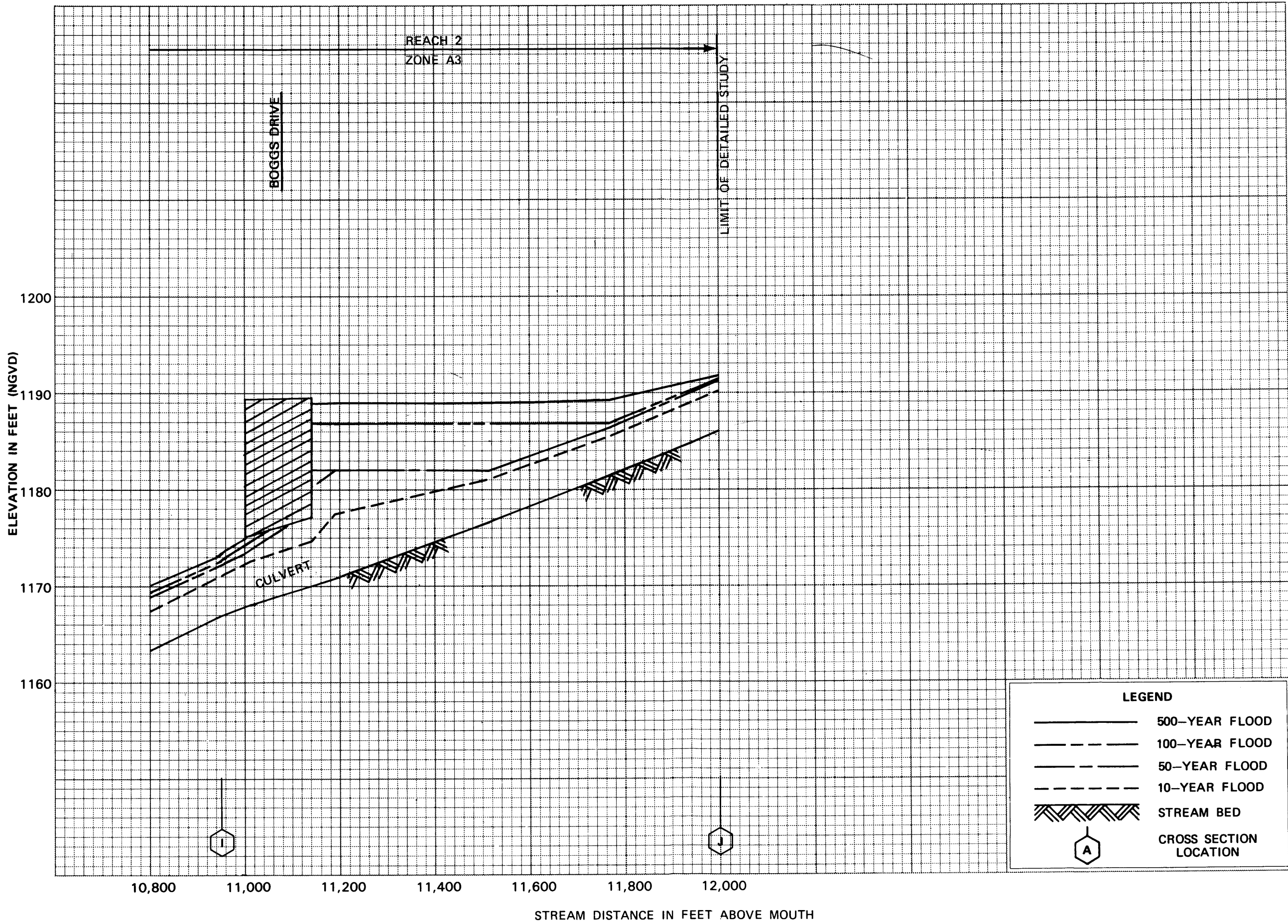


**FLOOD PROFILES**

**TUMBLING ROCK BRANCH**

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