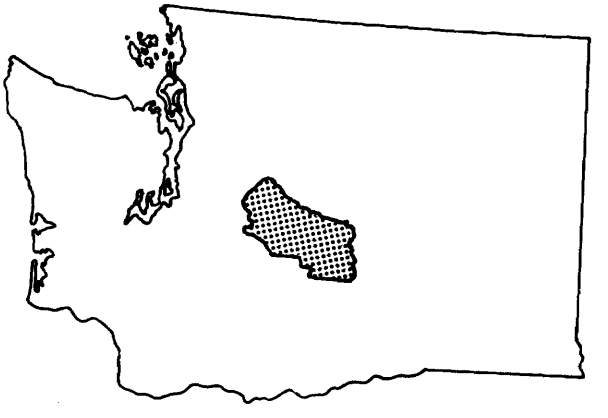
FLOOD INSURANCE STUDY

CITY OF CLE ELUM, CITY OF SOUTH CLE ELUM, CITY OF ELLENSBURG, TOWN OF KITTITAS, AND KITTITAS COUNTY, WASHINGTON

UNINCORPORATED AREAS



OCTOBER 15, 1981

Federal Emergency Management Agency

COMMUNITY NUMBERS - 530096-530263-530234-530098-530095

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Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

FLOOD INSURANCE STUDY

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 unincorporated areas of Kittitas County, Washington, including the incorporated City of Ellensburg; the incorporated City of Cle Elum; the incorporated City of South Cle Elum; and the Town of Kittitas, 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 Kittitas County, the City of Ellensburg, the City of Cle Elum, the City of South Cle Elum, and the Town of Kittitas to the regular program of flood insurance by the Federal Emergency Management Agency. 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

Streams requiring detailed and approximate study were identified at a meeting attended by representatives of the study contractor and the Federal Emergency Management Agency; officials of the Kittitas County Planning and Engineers office; the City of Ellensburg Engineer; and the Mayors of Cle Elum, South Cle Elum, and Kittitas. This meeting was held in Ellensburg, Washington, on June 5, 1975.

Coordination was maintained throughout the study with the Cities of Ellensburg, Cle Elum, and South Cle Elum; the Town of Kittitas; Tudor Engineering; the U.S. Army Corps of Engineers; and the U.S. Soil Conservation Service.

The results of this study were reviewed during final community coordination meetings held on April 30, 1979, for Kittitas County; on January 30, 1980, for the City of Ellensburg; on February 25, 1980, for the Cities of Cle Elum and South Cle Elum, and on May 26, 1981, for the Town of Kittitas. Representatives of the Federal Emergency Management Agency, the study contractor, the county, and the cities attended their respective meetings. No problems were raised at these meetings.

1.3 Authority and Acknowledgments

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 the U.S. Geological Survey, for the Federal Emergency Management Agency, under Inter-Agency Agreement No. IAA-H-17-75, Project Order No. 14. This work, which was completed in September 1978, covered all significant flooding sources affecting Kittitas County, the Cities of Ellensburg, Cle Elum, and South Cle Elum, and the Town of Kittitas.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Kittitas County and the incorporated City of Ellensburg, the incorporated City of Cle Elum, the incorporated City of South Cle Elum, and the Town of Kittitas. The area of study is shown on the Vicinity Map (Figure 1).

The City of Roslyn is not included in this Flood Insurance Study.

The following watercourses were studied in detail:

Yakima River in Kittitas County, from approximately 1500 feet downstream of its confluence with Wilson Creek past the City of Ellensburg, and through the Cities of Cle Elum and South Cle Elum to approximately 155,000 feet upstream of its confluence with Teanaway River

Kachess River in Kittitas County, from its confluence with Yakima River to the Kachess Dam

Silver Creek in Kittitas County, from its confluence with Yakima River to approximately 7000 feet upstream

Cle Elum River in Kittitas County, from its confluence with Yakima River to approximately 39,000 feet upstream

Manastash Creek in Kittitas County, from the West Side Canal to the crossing of Manastash Road, 56,800 feet upstream of its confluence with the Yakima River

Crystal Creek in Cle Elum, from its confluence with Yakima River to approximately 9900 feet upstream

Naneum Creek in Kittitas County, from its confluence with Wilson Creek to approximately 10,000 feet upstream

Left Channel Naneum Creek in Kittitas County, from its confluence with Naneum Creek to Wilson Creek Road

Wilson Creek in Kittitas County, from its confluence with Yakima River to Mountain View Avenue in Ellensburg and from Sanders Road to Brick Mill Road

Right Channel Wilson Creek, from its confluence with Wilson Creek in Kittitas County to approximately 200 feet upstream of its confluence with Mercer Creek

Reecer Creek in Ellensburg, from Cascade Way to Dry Creek Road

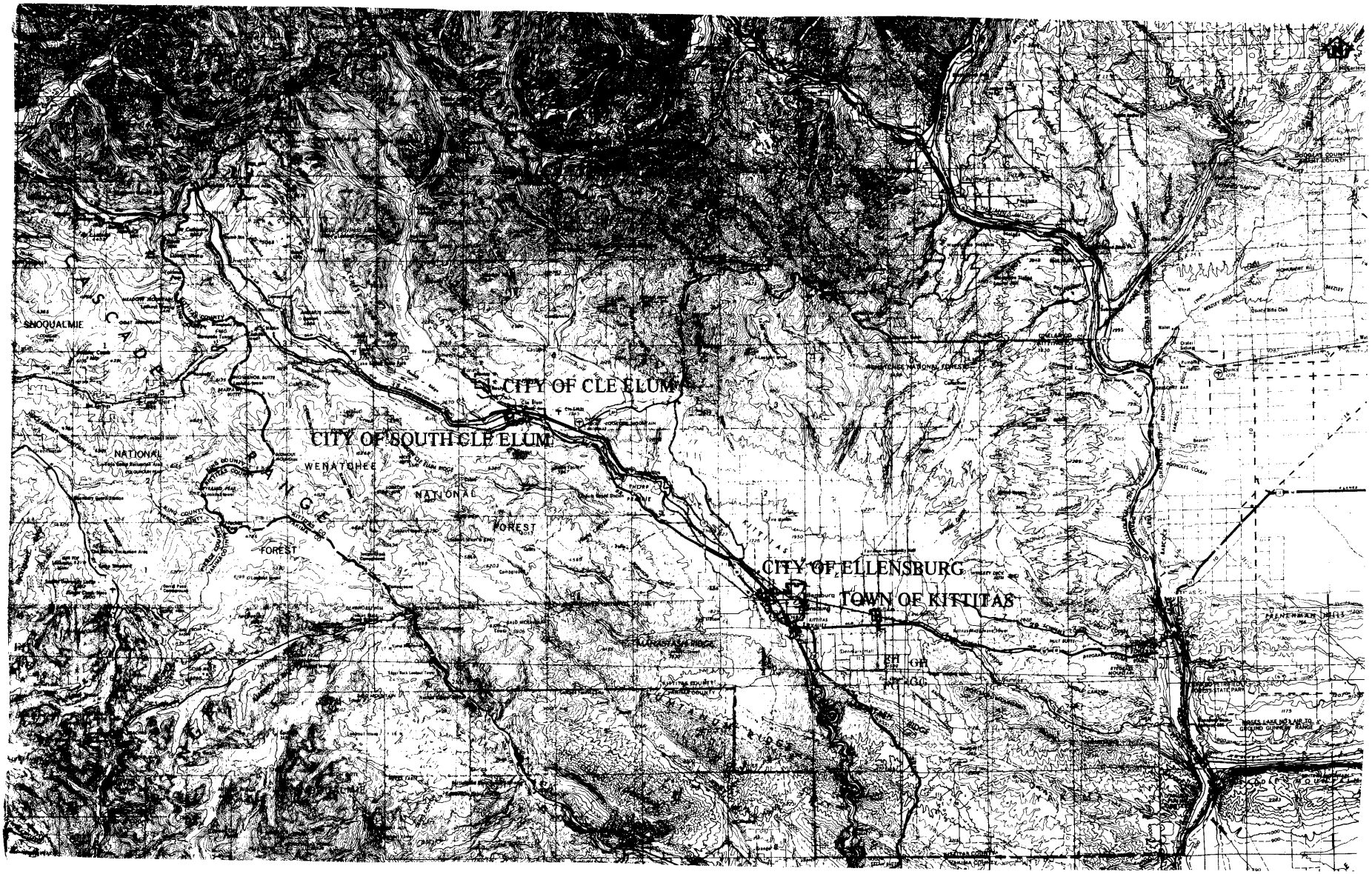

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

APPROXIMATE SCALE

6.36 0 6.36 12.72 19.08 MILES

VICINITY MAP

Currier Creek in Ellensburg, from Cascade Way to Dry Creek Road

Whiskey Creek in Ellensburg, from its confluence with Mercer Creek to approximately 1600 feet upstream and from a point approximately 5750 feet farther upstream for an additional 1000 feet

Mercer Creek in Ellensburg, from its confluence with Right Channel Wilson Creek to approximately 200 feet downstream of Fifth Avenue

Caribou Creek, from Badger Pocket Road in Kittitas to the Cascade Canal in Kittitas County

Teanaway River in Kittitas County, from its confluence with Yakima River to its confluence with Middle Fork Teanaway and West Fork Teanaway Rivers

North Fork Teanaway River in Kittitas County, from its confluence with Teanaway River to approximately 36,150 feet upstream

Middle Fork Teanaway River in Kittitas County, from its confluence with Teanaway River to approximately 26,700 feet upstream

West Fork Teanaway River in Kittitas County, from its confluence with Teanaway River to approximately 37,000 feet upstream

Shallow flooding areas studied by detailed methods are Cooke Creek in the Town of Kittitas; parts of Mercer, Wilson, Whiskey, Reecer, and Right Channel Wilson Creeks in the City of Ellensburg, overflow of the Yakima, Teanaway, and Kachess Rivers; and parts of Reecer, Currier, Cooke, Right Channel Wilson, Whiskey, Coleman, Mercer and Caribou Creeks in Kittitas County. Alluvial fan shallow flooding on the downstream portion of Manastash Creek was also studied in detail.

Streams in the county studied by approximate methods are Swauk, Taneum, Whiskey, Cooke, Caribou, Park, Schnebly, Cherry, Badger, Coleman, Naneum, Wilson, Currier, Dry, Reecer, Robinson, and Cabin Creeks; Rocky, Ryegrass, and Schnebly Coulees.

The approximate study analysis of Rocky, Ryegrass, and Schnebly Coulees has determined flood hazards less than 200 feet wide and thus were not delineated on the Flood Insurance Rate Maps.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards.

The areas and initial methods of study were agreed to jointly by representatives of the Federal Emergency Management Agency, Kittitas County, Ellensburg, Cle Elum, South Cle Elum, Kittitas, and the study contractor, on June 1975 at the initial community coordination study meeting.

During the course of the study, the Federal Emergency Management Agency developed guidelines for alluvial fan flooding. Dames & Moore reevaluated the flooding situation on the downstream portion of Manastash Creek according to these guidelines. All hydrologic and hydraulic computations were based upon present conditions.

Those areas studied by detailed methods were chosen with consideration given to all proposed construction and forecasted development through 1983.

2.2 Community Description

Kittitas County, in central Washington, is surrounded by the Counties of Chelan to the north, Douglas to the northeast, Grant to the east, Yakima to the south, and King to the west. Kittitas County is also bounded on the west by the Cascade Range, and bounded on the north by the Wenatchee Mountains. The county is 2317 square miles in area and had a 1977 population of 8700 in the unincorporated areas (Reference 1). The major industries are lumber, wood products, and agriculture.

Ellensburg, the county seat of Kittitas County, is 106 miles east of Seattle, in the south-central portion of the county, at the junction of Interstate Highways 82 and 90. The 1977 population of Ellensburg was 13,000. The Town of Kittitas, 6 miles east of Ellensburg, had a 1977 population of 750. The Cities of Cle Elum and South Cle Elum, on Interstate Highway 90, 22 miles northwest of Ellensburg, had 1977 populations of 1725 and 400, respectively (Reference 1).

Kittitas County is predominantly rural, with residential and commercial development only in the cities. There are recreational areas, however, in the northern portions of the county.

Due to the prevailing westerly winds and the Cascade Range, the climate of the county varies considerably from west to east. Within 20 miles, annual precipitation decreases from 94 inches at Stampede Pass (elevation 4000 feet) to 28 inches at Cle Elum and South Cle Elum (elevation 1900 feet). In the next 22 miles, precipitation decreases to 9 inches at Ellensburg and Kittitas (elevation 1700 feet). Most of the precipitation is snow. The mean annual temperature at Ellensburg is 48°F. Monthly mean temperatures range from 24°F in January to 70°F in July (Reference 2).

The soils of the Kittitas valley consist predominantly of loam, silt loam, and clay loam, which were deposited over older gravelly alluvium. Many of the soils in the Ellensburg area are poorly drained and have impervious, cemented, gravelly substrata. There may also be low surface-water infiltration rates, particularly during periods of snowmelt runoff when the soil surface is frozen (Reference 3).

The vegetation in the headwater areas is predominantly timber, and agriculture prevails in the flood plain areas.

2.3 Principal Flood Problems

Floods on the Yakima, Teanaway, and Cle Elum Rivers occur as the result of snowmelt in spring and early summer, and occur after heavy rains in November and December. The snowmelt floods are characterized by slow rise and long duration of flow; river stages may be increased by ice and debris jams. The winter flood crests are reduced because of Kachess, Keechelus, and Cle Elum Lakes' reservoir storage as flooding occurs after the irrigation season when storage is available. However, these reservoirs control only a small part of the runoff, and storage may not be available if a second winter flood occurs.

Since 1862, 18 floods have occurred on the Yakima River and its tributaries. Five of the most severe floods occurred in November 1906 (41,000 cubic feet per second (cfs)), December 1933 (32,200 cfs), May 1948 (27,700 cfs), December 1975 (16,600 cfs), and December 1977 (21,500 cfs). These peak discharges were recorded at the U.S. Geological Survey gaging station on the Yakima River at Umtanum, Washington, Station No. 12484500 (References 4, 5, and 6). This site is 10 miles south of Ellensburg.

Ellensburg and Kittitas are surrounded by a complex irrigation system consisting of the North Branch, Town, and Cascade Canals; Whipple Wasteway; and Reecer, Currier, Whiskey, Mercer, Wilson, Cooke, and Caribou Creeks. This system has a decreasing capacity downstream, and, if used to route floodwaters, may be overtaxed. In the 1948 flood, floodwaters diverted from one basin caused problems in another.

Ice and debris have an impact on flood stages when culverts and bridges are obstructed.

Historic high-water elevations and streamflow information were obtained from U.S. Geological Survey publications (References 4, 5, and 6). Other high-water marks were obtained from records of the floods of December 1975 and December 1977 by the study contractor.

Figures 2 and 3 show flooding in December 1975 in the vicinity of Ellensburg. This flood had an estimated recurrence interval of 8 years. Figures 4, 5, and 6 show flooding in December 1977 in the vicinity of Ellensburg and Thrall. This flood had an estimated recurrence interval of 20 years. Figures 7 through 12 show flooding during 1948, 1965, 1974, and 1977 in Ellensburg.

2.4 Flood Protection Measures

Three reservoirs having a combined storage capacity of 833,700 acre-feet (Keechelus Lake, 157,800 acre-feet; Kachess Lake, 239,000 acre-feet, and Cle Elum Lake, 436,900 acre-feet) have been constructed upstream of Ellensburg for irrigation in the Yakima River basin (Reference 7). These reservoirs are also operated for flood control on the basis of runoff forecasts. Storage is usually available to

Figure 2. December 1975 Flooding, Yakima River Looking Upstream, Vincinity of Cross Section BJ

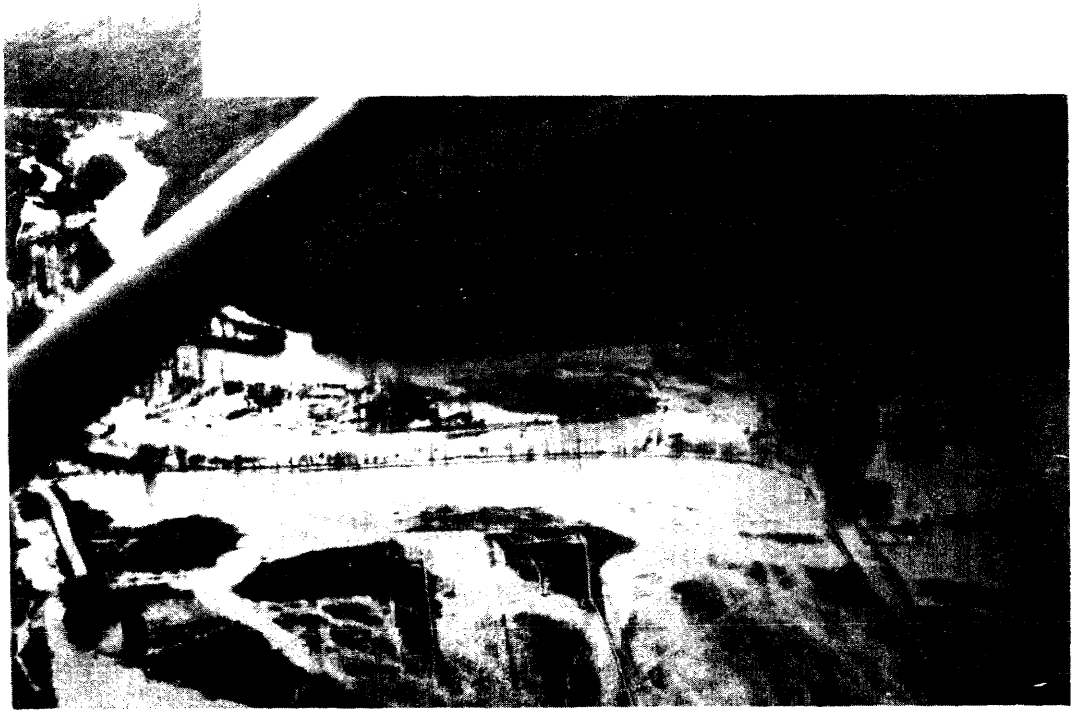

Figure 3. December 1975 Flooding, Yakima River Looking Downstream, Vicinity of Cross Section T

Figure 4. December 1977 Flooding, Yakima River Looking East, Vicinity of Cross Section J

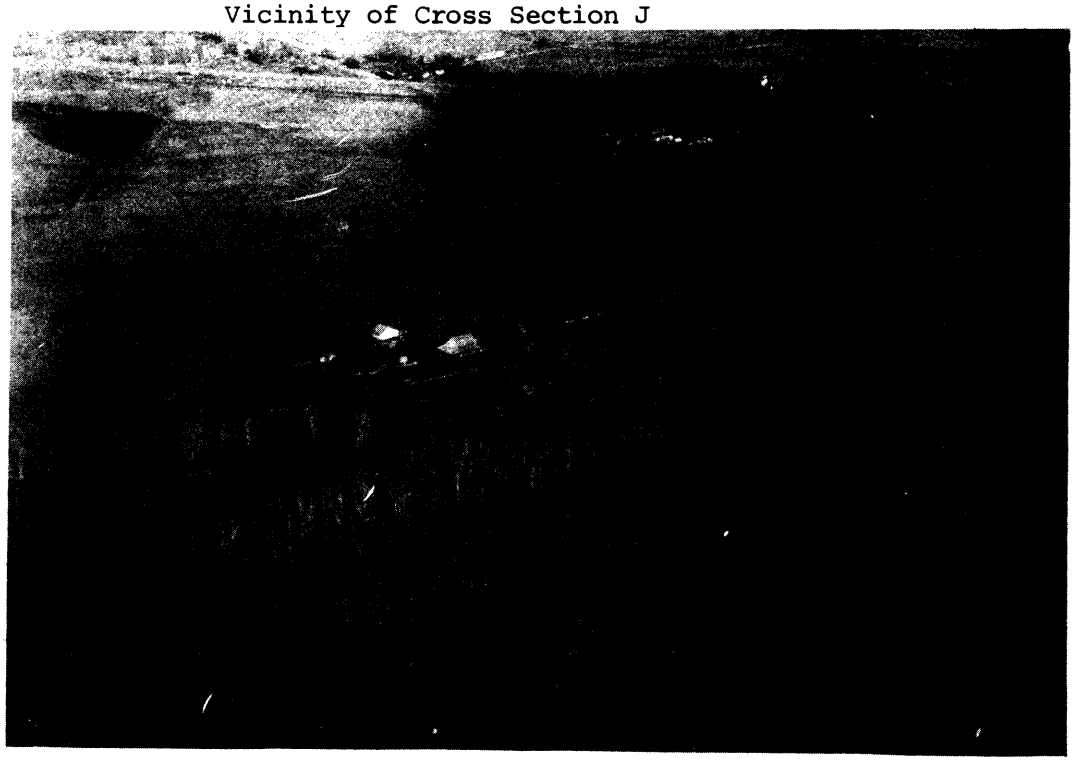

Figure 5. December 1977 Flooding, Yakima River Looking East, Vicinity of Thrall, South of Ellensburg

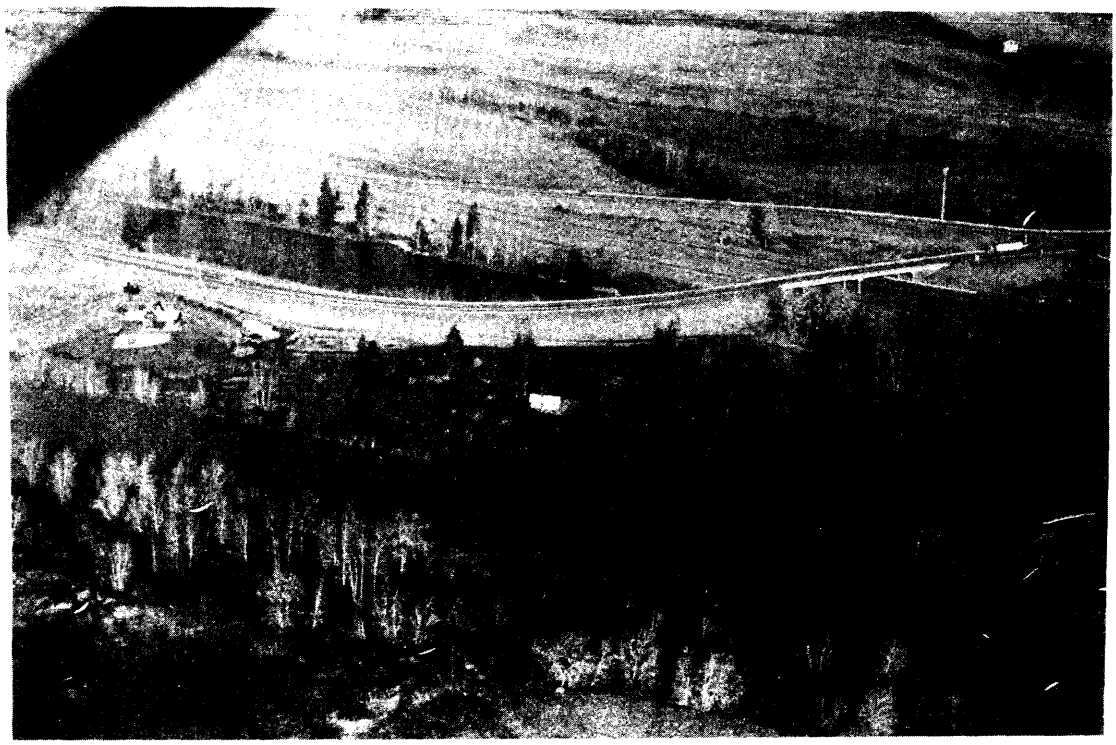

Figure 6. December 1977 Flooding, Yakima River Looking Upstream at Throp Highway, KOA Campground, Vicinity of Cross Section BJ

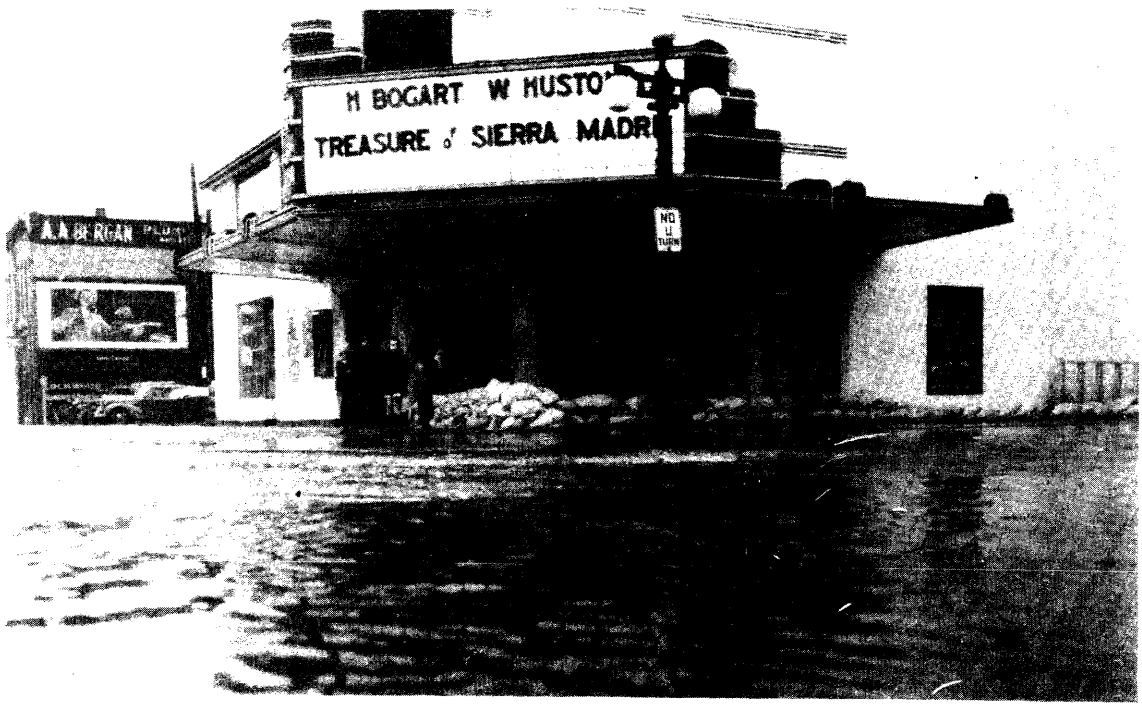

Figure 7. May 1948 Flooding, 5th and Pine Streets, Ellensburg

Figure 8. January 1965 Flooding, 4th and Sampson Streets, Ellensburg

Figure 9. January 1965 Flooding From Reecer Creek at 5th and Pacific Streets, Ellensburg

Figure 10. January 1965 Flooding From Mercer Creek at Anderson Road, Ellensburg

Figure 11. January 1974 Flooding From Reecer and Currier Creeks, Looking East at Cascade Way, Vicinity of Ellensburg

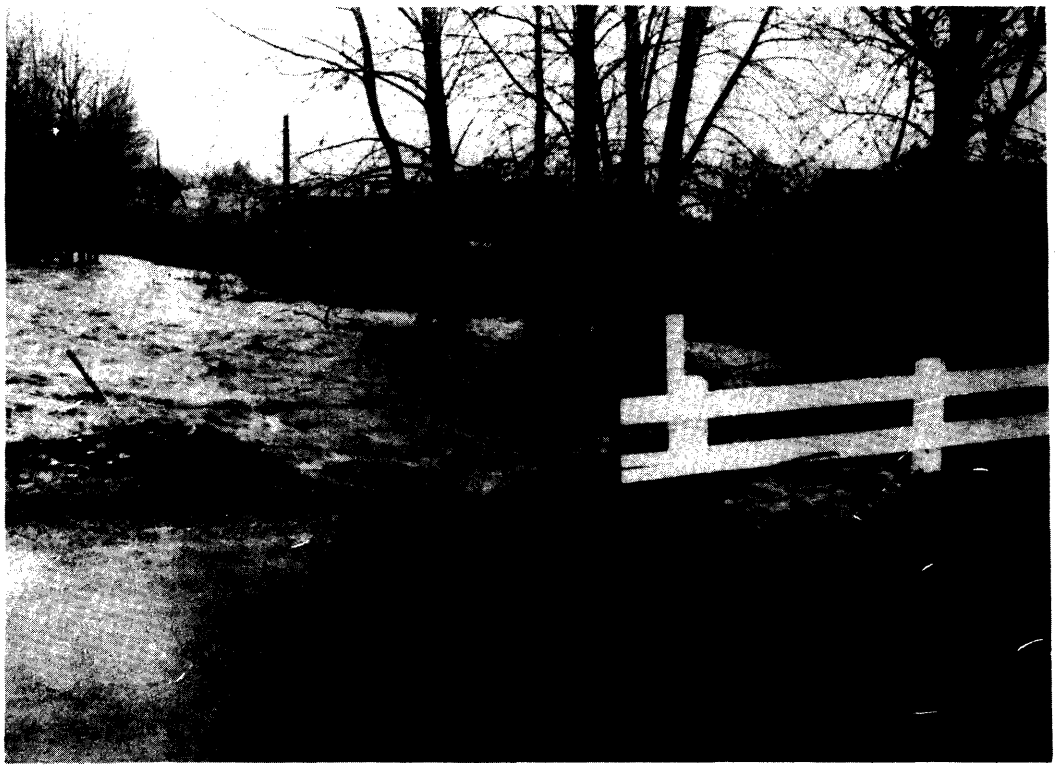

Figure 12. December 1977 Flooding From Manastash Creek, Looking Upstream From Cove Road, Vicinity of Cross Section AV

assist in controlling winter floods; however, when late spring floods occur, the reservoirs may be full in order to assure an adequate irrigation water supply. Some levees have been constructed on the Yakima, Cle Elum, and Teanaway Rivers, but they are not adequate to protect against the 100-year floods.

Some flood protection is afforded the City of Ellensburg and the Town of Kittitas because the irrigation systems can be used to divert floodwaters around these communities.

Flooding within the cities and town is generally localized. Therefore, rather than building flood protection structures, the communities have chosen to restrict development to those areas that do not have major flooding potential.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county and communities, 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-, or 500-year period (recurrence interval) 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-, or 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 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual occurrence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported here reflect flooding potentials based on conditions existing in the county and communities at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream studied in detail in the county and communities.

U.S. Geological Survey gaging stations on the Yakima River (operated since 1906 at cross section KI, and since 1941 at cross section SI), the Teanaway River (operated from 1968 to 1974 at cross section EF), the Cle Elum River (operated since 1903 at cross section CQ), the Kachess River (operated since 1903 at cross section L), and 21 other adjacent hydrologically similar sites (References 4, 5, and 6) were the principal sources of data for defining the peak discharge-

frequency relationships for each stream studied in detail. Values of the 10-, 50-, 100-, and 500-year peak discharges were obtained from a log-Pearson Type III distribution of annual peak-flow data at these sites in accordance with the guidelines set forth in U.S. Water Resources Council Bulletin 17 (Reference 8). Peak discharges for sites on the Yakima, Cle Elum, and Kachess Rivers are affected by regulation, and only nonregulated flows were used to develop these frequency curves. Estimates of flood discharges for the alluvial fan shallow flooding analysis were determined from the Manastash Creek detailed riverine analysis.

Regional relationships described in existing publications (References 9 and 10) did not produce satisfactory results for the 10-, 50-, 100-, and 500-year peak discharges in comparison with those obtained for the gaged sites by the log-Pearson Type III distribution (Reference 8). Therefore, new regional relationships of basin characteristics (drainage area and precipitation) to streamflow characteristics (10-, 50-, 100-, and 500-year peak discharges) were developed for determining peak discharges at all sites in the study area. These values were adjusted to fit the regulated conditions on the Yakima, Cle Elum, and Kachess Rivers. Between these values peak discharges were prorated by distance, which is approximately proportional to drainage area.

At several locations on Manastash, Naneum, Left Channel Naneum, Wilson, Whiskey, and Mercer Creeks, distributaries remove water from the main channel drainage area. At each of these locations field observations and engineering judgment were used to estimate a discharge without computation of a drainage area for the distributary.

Peak discharge-drainage area relationships for the Yakima River; Kachess River; Silver Creek; Cle Elum River; Manastash, Crystal, Naneum, Left Channel Naneum, Wilson, Right Channel Wilson, Reecer, Currier, Whiskey, Mercer, and Caribou Creeks; and Teanaway, North Fork Teanaway, Middle Fork Teanaway, and West Fork Teanaway Rivers are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of streams in the county and communities were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each stream studied in the county.

Water-surface elevations of floods for the selected recurrence intervals were computed through use of a combination of the U.S. Geological Survey's step-backwater computer program (Reference 11), culvert rating analyses (Reference 12), and computations of flow over roads (Reference 13).

All cross section data for the backwater analyses were obtained from aerial photographs (Reference 14). These data were supplemented

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second) 10-Year	50-Year	100-Year	500-Year
Yakima River[1]					
At Downstream Study Limit	1,586	20,000	29,300	33,900	45,400
Upstream of Wilson Creek, Cross Section D	1,190	19,000	28,000	32,300	43,600
At Confluence With Manastash Creek	1,177	18,900	27,700	32,000	43,200
At Confluence With Dry Creek	1,037	18,500	27,100	31,400	42,400
At Cross Section GN	948	18,200	26,700	30,900	41,900
At Confluence With Teanaway River	740	17,100	25,100	29,100	39,600
Upstream of Confluence With Teanaway River, Cross Section HA	533	14,700	21,700	25,200	34,300
Upstream of Confluence With Crystal Creek, Cross Section KR	495	14,500	21,400	24,700	33,800
At Confluence With Cle Elum River	485	14,200	21,000	24,300	33,200
Upstream of Confluence With Cle Elum River, Cross Section LP	263	7,990	11,700	13,500	18,400
Upstream of Confluence With Big Creek, Cross Section PS	229	7,220	10,600	12,200	16,600
At Gaging Station at Easton, Cross Section SI	188	6,580	9,660	11,200	15,200
Upstream of Confluence With Kachess River, Cross Section SP	122	4,900	7,180	8,290	11,300
Upstream of Confluence With Cabin Creek, Cross Section TG	82.1	3,740	5,480	6,300	8,600
At Upstream Study Limit	74.8	3,460	5,060	5,840	7,900
Kachess River[1]					
At Mouth	64.0	2,300	3,360	3,860	5,180

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second) 10-Year	50-Year	100-Year	500-Year
Silver Creek					
At Mouth	6.1	260	370	425	560
Cle Elum River					
At Mouth	222	8,020	11,800	13,600	18,600
At Upstream Study Limit	203	7,540	11,100	12,800	17,400
Manastash Creek					
At Cross Section A (Apex of Alluvial Fan)	--[2]	1,400	2,030	2,310	3,030
At Cross Section C	--[2]	1,320	1,900	2,200	2,850
At Confluence of Manastash Creek and North Fork Manastash Creek	69.7	1,240	1,780	2,040	2,670
At Upstream Limit of Study	42.8	967	1,400	1,590	2,100
Crystal Creek					
At Mouth	7.71	150	220	250	320
Naneum Creek					
At Mouth	--[2]	920	1,310	1,480	1,890
At Cross Section I	--[2]	290	420	470	600
Left Channel Naneum Creek					
At Cross Section A	--[2]	625	890	1,000	1,300
At Cross Section I	--[2]	290	420	470	600

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second) 10-Year	50-Year	100-Year	500-Year
Wilson Creek					
At Mouth[3]	396	3,100	4,250	4,750	5,900
Upstream of Confluence With Cherry Creek, Cross Section N	--[4]	2,050	2,750	3,000	3,700
Upstream of Confluence With Naneum Creek, Cross Section AB[3]	--[2]	1,550	2,170	2,360	2,950
At Cross Section BT[5]	--[2]	290	440	475	655
At Upstream Study Limit	--[2]	475	680	770	986
Right Channel Wilson Creek					
At Cross Section C[3]	--[2]	1,260	1,610	1,725	2,045
At Upstream Study Limit	--[2]	243	347	393	501
Reecer Creek					
At Downstream Detailed Study Limit, Cascade Way	40.0	280	400	450	560
At Cross Section E	--[2]	100	140	160	200
Currier Creek					
At Downstream Detailed Study Limit, Cascade Way[6]	40.0	280	400	450	560
At Dry Creek Connection Road	26.6	180	255	290	360
Whiskey Creek					
At 5th Street	--[2]	75	105	175[7]	275[7]
At Upstream Study Limit	10.3	75	105	118	147
Mercer Creek					
At Mouth	15.6	110	150	220[7]	310[7]
At Railroad Avenue	--[2]	110	150	170	210

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (Cubic Feet per Second) 10-Year	50-Year	100-Year	500-Year
Caribou Creek					
At Downstream Study Limit	36.7	294	417	471	595
Teanaway River					
At Mouth	207	5,300	6,700	7,350	8,700
At Cross Section EF	172	4,600	5,950	6,450	7,650
Upstream of Confluence With North Fork Teanaway River, At Cross Section EU	69.0	2,400	3,000	3,300	3,900
North Fork Teanaway River					
At Mouth	95.0	2,900	3,700	4,000	4,750
Middle Fork Teanaway River					
At Mouth	30.0	1,250	1,570	1,700	2,020
West Fork Teanaway River					
At Mouth	39.3	1,300	1,640	1,780	2,080
At Upstream Study Limit	19.2	790	1,000	1,080	1,260

[1] Discharges Reflect Regulated Conditions
[2] Distributary from Main Channel
[3] Includes Overflow from Yakima River, Reecer, and Currier Creeks
[4] Not Available
[5] Includes Overflow from Reecer and Currier Creeks
[6] Combined Values Reecer and Currier Creeks
[7] Includes Overflow from Reecer Creek

by field measurement of the underwater portions. Elevation data and geometry for bridges, culverts, road overflow, and a few additional channel cross sections were obtained by field survey.

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 2).

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. Main channel roughness values ranged from 0.032 to 0.055; roughness values for the flood plain ranged from 0.050 to 0.090 for all flooding sources.

Starting water-surface elevations for the first cross section of all streams were computed either by profile convergence from downstream cross sections or culvert ratings where an approach section was the section farthest downstream.

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals (Exhibit 1).

Downstream of cross section A on Manastash Creek, profiles are not applicable for the alluvial fan shallow flooding analysis.

Shallow flooding delineations were determined by field investigations and interpretation of aerial photographs (Reference 14).

Shallow flooding depths for Coleman Creek at Kittitas Highway and both Cooke and Caribou Creeks at Ferguson and Tjossem Roads were determined by field investigations and historical flooding information for these immediate areas. These roads are constructed approximately 2 feet above the ground elevation, and as culvert capacities are surpassed, have a damming effect until the flood flow peaks and flows over the roads. These shallow flooding areas have an average depth of 1 foot.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations, as shown on the profiles, are, thus, considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail. An exception to this would be where culverts and bridges are known to be repeatedly obstructed by debris and ice jams. In these instances, the profiles and areas of inundation were adjusted to match historic floods.

Due to the extreme meandering of the Yakima and Cle Elum Rivers and Wilson Creek, the distance between cross sections, in some areas, is measured along a profile baseline, rather than the actual stream

channel. This procedure was followed for Yakima River cross sections AH to AL, OR to OV, QJ to QK, QM to QO, and QZ to RA; Cle Elum River cross sections BP to BT; and Wilson Creek cross sections BP to BQ.

For streams studied by approximate methods, water-surface elevations were determined by normal depth calculations.

The acceptability of all assumed hydraulic factors, cross sections, and hydraulic structure data was verified by computations that duplicated the profile of the December 1975 flood from the Yakima River.

Statistical analyses were used to compute flood depths and velocities for the area subject to alluvial fan flooding. Channel systems on alluvial fans are unstable, and flow may occur on separate parts of an alluvial fan during subsequent flood events. The depths of flooding on the alluvial fan presented in this report were computed according to the guidelines issued by the Federal Emergency Management Agency (Reference 15).

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

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 Federal Emergency Management Agency 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 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were developed photogrammetrically, using aerial photographs at a scale of 1:9600 (Reference 14). Alluvial fan boundaries were delineated using topographic maps at a scale of 1:62,500 with a contour interval of 80 feet (Reference 16).

Shallow flooding boundaries were determined by field investigations and interpretation of aerial photographs (Reference 14).

Shallow flooding boundaries for Cooke, Caribou, and Coleman Creeks as discussed in Section 3.2 were delineated using topographic maps at a scale of 1:24,000 with a contour interval of 20 feet (Reference 17).

For streams studied by approximate methods, the boundary of the 100-year flood was delineated using topographic maps (References 16, 17, and 18).

In cases where the 100- and 500-year flood boundaries are close together, only the 100-year flood boundary has been shown.

Approximate flood boundaries in some portions of the study area were taken from the Flood Hazard Boundary Map (Reference 19).

Flood boundaries for the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2).

Small areas within the flood boundaries may lie above the flood elevations and, therefore, not be subject to flooding; owing to limitations of the map scale, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity and increases flood heights, thus increasing 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 be carried without substantial increases in flood heights. As minimum standards, the Federal Emergency Management Agency limits such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced.

Where the channel velocity is high (at or near critical) and/or the flow is confined to the channel, and in certain areas designated as wetlands by Kittitas County, the floodway is coincident with the 100-year boundary. Therefore, Kittitas County is enabled to restrict development in the 100-year flood plain. The streams and stream reaches, which would be affected, are Yakima River (cross sections SO to TF), Kachess River, Silver Creek, Manatash Creek, Crystal Creek, Teanaway River (cross sections FG to FI), North Fork Teanaway River, Middle Fork Teanaway River, and West Fork Teanaway River.

Some streams have shifting channels, alluvial fans, shallow flooding, and/or ponding for which the floodway concept is not applicable. These streams are the downstream portion of Manastash Creek, and Naneum, Left Channel Naneum, Wilson, Right Channel Wilson, Reecer, Currier, Whiskey, Mercer, and Caribou Creeks.

The floodways were computed on the basis of equal-conveyance reduction except for cross sections BF to BK of the Yakima River where the county designated the left (north) floodway boundary. 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 2), the floodway boundaries were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood boundaries are close together, only the floodway boundary has been shown.

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 13.

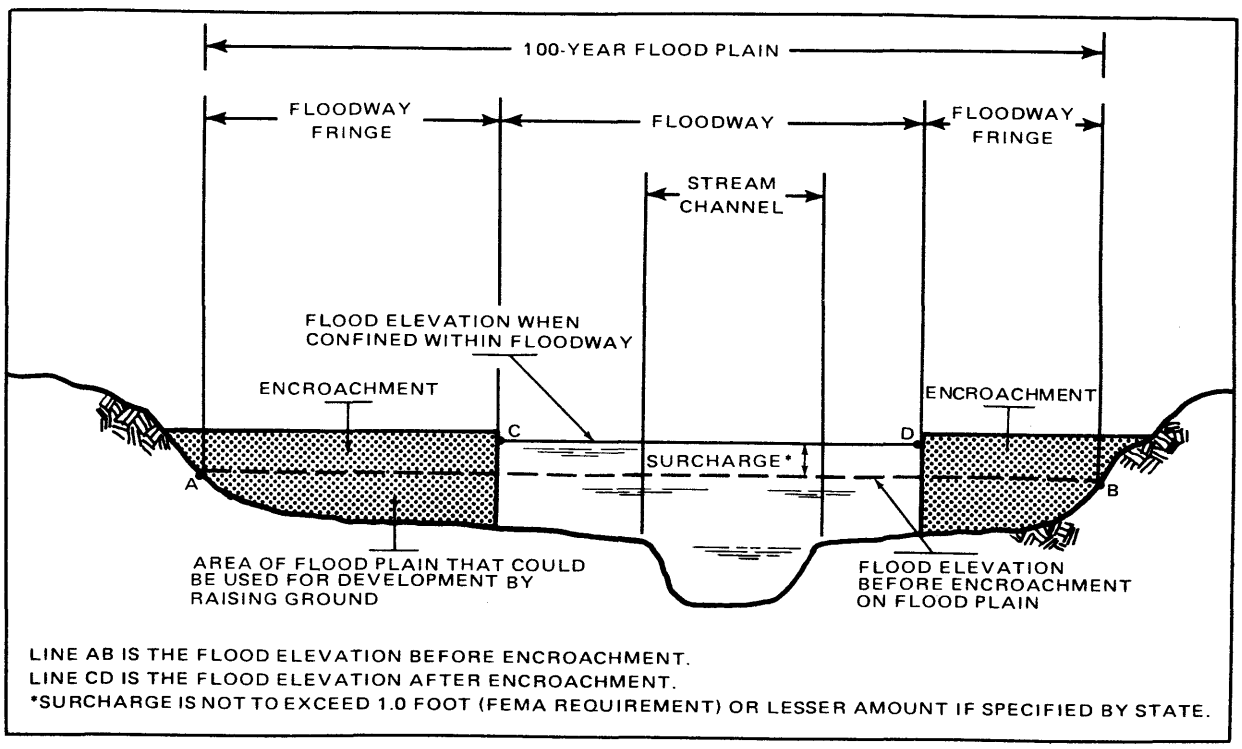

Figure 13. Floodway Schematic

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)			
Yakima River								
A	1,278	570	5,635	6.02	1,419.7	1,419.7	1,420.6	0.9
B	683	560	5,261	6.44	1,420.5	1,420.5	1,421.3	0.8
C	178	610	5,853	5.79	1,421.6	1,421.6	1,422.1	0.5
D	511	400	3,618	8.93	1,422.7	1,422.7	1,423.1	0.4
E	681	400	3,452	9.36	1,423.1	1,423.1	1,423.7	0.6
F	1,153	360	3,664	8.82	1,424.5	1,424.5	1,425.1	0.6
G	1,602	370	3,724	8.67	1,425.7	1,425.7	1,426.1	0.4
H	2,069	435	4,789	6.74	1,427.0	1,427.0	1,427.6	0.6
I	2,547	480	4,749	6.80	1,427.7	1,427.7	1,428.3	0.6
J	3,083	580	5,973	5.41	1,428.7	1,428.7	1,429.4	0.7
K	3,612	820	6,488	4.98	1,429.3	1,429.3	1,430.0	0.7
L	4,099	1,140	7,949	4.06	1,430.4	1,430.4	1,430.8	0.4
M	4,672	1,200	9,112	3.54	1,431.0	1,431.0	1,431.5	0.5
N	5,272	1,580	9,381	3.44	1,431.5	1,431.5	1,432.1	0.6
O	5,692	1,780	9,291	3.48	1,431.9	1,431.9	1,432.6	0.7
P	6,082	1,760	8,781	3.68	1,432.4	1,432.4	1,433.2	0.8
Q	6,526	1,740	7,948	4.06	1,433.1	1,433.1	1,433.9	0.8
R	6,950	1,740	8,057	4.01	1,433.9	1,433.9	1,434.7	0.8
S	7,550	1,930	12,168	2.65	1,434.7	1,434.7	1,435.7	1.0
T	8,065	1,800	9,591	3.37	1,435.1	1,435.1	1,436.1	1.0
U	8,625	1,640	6,933	4.66	1,435.7	1,435.7	1,436.7	1.0
V	8,980	1,740	8,714	3.71	1,436.5	1,436.5	1,437.4	0.9
W	9,559	2,030	9,473	3.41	1,437.9	1,437.9	1,438.2	0.3
X	10,119	2,020	8,989	3.58	1,438.5	1,438.5	1,438.9	0.4
Y	10,582	1,700	7,403	4.34	1,439.2	1,439.2	1,439.6	0.4
Z	11,102	1,720	6,471	4.97	1,440.4	1,440.4	1,441.0	0.6

[1]Feet From Confluence With Wilson Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
AA	11,666	1,780	6,307	5.10	1,442.0	1,442.0	1,442.8	0.8
AB	12,168	2,060	8,129	3.96	1,443.6	1,443.6	1,444.6	1.0
AC	12,691	2,340	9,416	3.41	1,445.1	1,445.1	1,445.7	0.6
AD	13,217	2,280	6,689	4.81	1,446.4	1,446.4	1,446.8	0.4
AE	13,595	2,550[2]	7,586	4.24	1,447.6	1,447.6	1,448.1	0.5
AF	14,378	2,600[2]	6,666	4.82	1,450.4	1,450.4	1,450.5	0.1
AG	14,696	2,920[2]	8,492	3.79	1,451.3	1,451.3	1,452.0	0.7
AH	15,116	2,600[2]	7,742	4.15	1,452.5	1,452.5	1,453.5	1.0
AI	15,516	2,460[2]	8,058	3.99	1,454.1	1,454.1	1,455.0	0.9
AJ	15,737	2,210[2]	6,763	4.75	1,455.2	1,455.2	1,455.9	0.7
AK	16,137	2,300	6,048	5.32	1,457.5	1,457.5	1,458.1	0.6
AL	16,537	2,200	6,984	4.60	1,459.6	1,459.6	1,460.3	0.7
AM	16,817	2,100	7,805	4.12	1,460.5	1,460.5	1,461.5	1.0
AN	17,308	1,900	7,551	4.26	1,461.9	1,461.9	1,462.8	0.9
AO	17,731	1,850	6,582	4.88	1,463.2	1,463.2	1,464.0	0.8
AP	18,290	1,950	6,468	4.97	1,464.9	1,464.9	1,465.8	0.9
AQ	18,834	2,000	8,177	3.93	1,466.7	1,466.7	1,467.6	0.9
AR	19,092	2,270	8,710	3.69	1,467.0	1,467.0	1,468.0	1.0
AS	19,603	2,380	10,013	3.21	1,468.0	1,468.0	1,469.0	1.0
AT	20,061	2,290	8,158	3.94	1,469.0	1,469.0	1,469.9	0.9
AU	20,461	2,240	7,294	4.41	1,470.2	1,470.2	1,471.0	0.8
AV	20,941	2,600	8,399	3.83	1,471.9	1,471.9	1,472.6	0.7
AW	21,407	2,870	8,744	3.68	1,473.2	1,473.2	1,473.8	0.6
AX	22,053	3,110	9,252	3.47	1,475.1	1,475.1	1,475.9	0.8
AY	22,621	3,230	9,985	3.22	1,476.4	1,476.4	1,477.4	1.0
AZ	23,167	2,930	7,937	4.05	1,477.9	1,477.9	1,478.8	0.9

[1]Feet From Confluence With Wilson Creek [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
BA	23,810	2,300	7,906	4.07	1,480.1	1,480.1	1,481.1	1.0
BB	24,230	1,940	7,120	4.52	1,481.6	1,481.6	1,482.5	0.9
BC	25,195	1,780	7,439	4.32	1,485.0	1,485.0	1,485.4	0.4
BD	25,744	1,600	7,186	4.47	1,486.1	1,486.1	1,486.9	0.8
BE	26,267	1,400	5,582	5.76	1,487.7	1,487.7	1,488.6	0.9
BF	26,706	1,430	5,626	5.71	1,490.3	1,490.3	1,490.8	0.5
BG	27,409	1,770	6,911	4.65	1,492.9	1,492.9	1,493.7	0.8
BH	27,884	1,890	7,468	4.31	1,494.1	1,494.1	1,495.1	1.0
BI	28,536	1,960	6,476	4.96	1,496.2	1,496.2	1,497.1	0.9
BJ	29,264	1,520	5,008	6.42	1,499.8	1,499.8	1,500.1	0.3
BK	29,848	1,130	7,940	4.05	1,502.4	1,502.4	1,502.7	0.3
BL	30,279	1,230	9,018	3.55	1,502.7	1,502.7	1,503.2	0.5
BM	30,670	1,370	6,876	4.65	1,503.1	1,503.1	1,503.7	0.6
BN	31,035	1,420	11,282	2.84	1,504.8	1,504.8	1,505.7	0.9
BO	31,587	1,460	9,354	3.42	1,505.1	1,505.1	1,506.1	1.0
BP	31,995	1,380	7,438	4.30	1,505.5	1,505.5	1,506.4	0.9
BQ	32,557	1,200	5,829	5.49	1,506.8	1,506.8	1,507.5	0.7
BR	33,156	1,020	6,018	5.32	1,508.7	1,508.7	1,509.5	0.8
BS	33,699	800	4,145	7.72	1,510.5	1,510.5	1,511.2	0.7
BT	34,313	949	6,272	5.10	1,513.2	1,513.2	1,514.0	0.8
BU	34,573	1,120	7,205	4.44	1,513.8	1,513.8	1,514.6	0.8
BV	35,033	1,400	7,272	4.40	1,514.7	1,514.7	1,515.3	0.6
BW	35,719	1,440	8,948	3.58	1,516.1	1,516.1	1,516.4	0.3
BX	36,319	1,470	8,773	3.65	1,517.0	1,517.0	1,517.2	0.2
BY	36,859	1,440	7,764	4.12	1,517.8	1,517.8	1,517.9	0.1
BZ	37,415	1,060	6,249	5.12	1,518.9	1,518.9	1,519.9	1.0

[1]Feet From Confluence With Wilson Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
CA	38,090	912	3,488	9.17	1,522.8	1,522.8	1,522.8	0.0
CB	38,856	789	6,541	4.89	1,526.3	1,526.3	1,526.3	0.0
CC	39,549	584	5,607	5.60	1,526.8	1,526.8	1,527.0	0.2
CD	40,187	530	4,372	7.18	1,527.6	1,527.6	1,527.7	0.1
CE	40,736	460	3,798	8.27	1,528.7	1,528.7	1,529.0	0.3
CF	41,252	364	3,262	9.63	1,529.9	1,529.9	1,530.3	0.4
CG	41,823	490	4,402	7.13	1,531.9	1,531.9	1,532.4	0.5
CH	42,446	730	6,026	5.21	1,533.3	1,533.3	1,533.8	0.5
CI	42,911	710	3,813	8.23	1,533.8	1,533.8	1,534.3	0.5
CJ	43,369	710	5,027	6.25	1,535.5	1,535.5	1,536.4	0.9
CK	43,732	540	3,820	8.22	1,536.2	1,536.2	1,537.0	0.8
CL	44,150	390	4,142	7.58	1,537.7	1,537.7	1,538.7	1.0
CM	44,437	363	3,352	9.37	1,539.1	1,539.1	1,539.5	0.4
CN	44,953	670	6,886	4.56	1,541.0	1,541.0	1,541.4	0.4
CO	45,437	620[2]	5,594	5.61	1,541.4	1,541.4	1,541.8	0.4
CP	45,899	500[2]	3,438	9.13	1,542.1	1,542.1	1,542.4	0.3
CQ	46,329	880	7,484	4.20	1,543.6	1,543.6	1,544.5	0.9
CR	46,815	970	7,807	4.02	1,544.1	1,544.1	1,545.0	0.9
CS	47,304	1,060	7,875	3.99	1,544.6	1,544.6	1,545.6	1.0
CT	47,834	970	7,217	4.35	1,545.2	1,545.2	1,546.1	0.9
CU	48,332	740	4,990	6.29	1,546.1	1,546.1	1,546.9	0.8
CV	48,851	540	3,884	8.08	1,547.8	1,547.8	1,548.5	0.7
CW	49,881	400	3,154	9.96	1,549.8	1,549.8	1,550.5	0.7
CX	49,952	470	3,589	8.75	1,553.0	1,553.0	1,553.8	0.8
CY	50,413	600	3,780	8.31	1,554.5	1,554.5	1,555.4	0.9
CZ	50,946	661	3,601	8.25	1,557.3	1,557.3	1,557.7	0.4

[1]Feet From Confluence With Wilson Creek [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
DA	51,587	775	4,159	7.14	1,559.7	1,559.7	1,560.1	0.4
DB	52,012	921	4,802	6.18	1,561.5	1,561.5	1,561.0	0.1
DC	52,475	1,120	4,174	7.12	1,562.8	1,562.8	1,562.9	0.1
DD	52,875	1,200	5,569	5.55	1,564.3	1,564.3	1,564.8	0.5
DE	53,412	1,320	6,419	4.81	1,565.6	1,565.6	1,566.3	0.7
DF	53,762	1,430	6,993	4.42	1,566.3	1,566.3	1,567.1	0.8
DG	54,302	1,350	7,806	3.96	1,567.3	1,567.3	1,568.1	0.8
DH	54,878	1,280	9,004	3.43	1,568.2	1,568.2	1,569.0	0.8
DI	55,368	1,130	6,691	4.62	1,568.9	1,568.9	1,569.6	0.7
DJ	55,664	1,000	4,408	7.01	1,569.5	1,569.5	1,570.2	0.7
DK	56,174	1,010	5,211	5.93	1,572.0	1,572.0	1,572.8	0.8
DL	56,682	660	4,118	7.50	1,573.8	1,573.8	1,574.6	0.8
DM	57,350	680	4,714	6.55	1,576.4	1,576.4	1,577.1	0.7
DN	57,955	620	3,981	7.76	1,578.1	1,578.1	1,578.8	0.7
DO	58,519	850	5,184	5.96	1,580.1	1,580.1	1,580.9	0.8
DP	59,010	1,080	5,730	5.39	1,581.3	1,581.3	1,582.1	0.8
DQ	59,423	1,320	6,606	4.68	1,582.8	1,582.8	1,583.3	0.5
DR	59,874	1,420	6,873	4.50	1,583.7	1,583.7	1,584.4	0.7
DS	60,324	1,460	6,162	5.01	1,584.6	1,584.6	1,585.4	0.8
DT	60,852	1,600	6,878	4.49	1,585.8	1,585.8	1,586.8	1.0
DU	61,413	1,270	5,127	6.03	1,587.6	1,587.6	1,588.3	0.7
DV	61,918	1,020	5,084	6.08	1,589.5	1,589.5	1,589.8	0.3
DW	62,393	790	4,347	7.11	1,590.8	1,590.8	1,591.2	0.4
DX	62,918	780	3,756	8.23	1,592.4	1,592.4	1,592.9	0.5
DY	63,223	860	3,979	7.76	1,593.9	1,593.9	1,594.5	0.6
DZ	63,343	420	3,530	8.75	1,595.2	1,595.2	1,595.6	0.4

[1]Feet From Confluence With Wilson Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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	INCREASE
Yakima River (Cont'd)								
EA	63,787	600	7,125	4.34	1,598.9	1,598.9	1,599.0	0.1
EB	64,166	400	4,224	7.32	1,598.9	1,598.9	1,599.1	0.2
EC	64,468	1,670	17,631	1.75	1,601.4	1,601.4	1,601.5	0.1
ED	65,166	2,010	14,158	2.18	1,601.5	1,601.5	1,601.7	0.2
EE	65,569	1,920	9,977	3.10	1,601.6	1,601.6	1,601.8	0.2
EF	66,260	1,830	7,130	4.33	1,602.3	1,602.3	1,602.8	0.5
EG	66,679	1,730	7,948	3.89	1,603.0	1,603.0	1,603.7	0.7
EH	67,229	1,670	8,006	3.86	1,604.3	1,604.3	1,604.9	0.6
EI	67,839	1,440	5,553	5.56	1,605.5	1,605.5	1,606.2	0.7
EJ	68,515	1,440	6,041	5.12	1,608.0	1,608.0	1,608.5	0.5
EK	69,081	1,380	5,710	5.41	1,609.5	1,609.5	1,610.3	0.8
EL	69,620	1,070	4,041	7.65	1,611.6	1,611.6	1,612.3	0.7
EM	70,120	378	4,137	7.47	1,614.5	1,614.5	1,614.8	0.3
EN	70,561	934	5,992	5.16	1,616.4	1,616.4	1,616.6	0.2
EO	71,039	1,270	6,942	4.45	1,617.2	1,617.2	1,617.7	0.5
EP	71,421	1,380	6,300	4.90	1,617.9	1,617.9	1,618.5	0.6
EQ	71,990	1,260	6,019	5.13	1,619.1	1,619.1	1,620.1	1.0
ER	72,100	1,150	5,641	5.48	1,619.4	1,619.4	1,620.4	1.0
ES	72,695	1,260	6,100	5.07	1,621.4	1,621.4	1,622.3	0.9
ET	73,145	1,390	6,490	4.76	1,622.7	1,622.7	1,623.7	1.0
EU	73,745	1,730	7,650	4.04	1,624.5	1,624.5	1,625.4	0.9
EV	74,384	1,850	8,144	3.79	1,626.0	1,626.0	1,626.9	0.9
EW	74,943	1,680	5,202	5.94	1,627.6	1,627.6	1,628.3	0.7
EX	75,585	1,720	7,740	3.99	1,630.2	1,630.2	1,631.0	0.8
EY	76,150	2,130	7,770	3.98	1,631.4	1,631.4	1,632.3	0.9
EZ	76,842	1,980	6,939	4.45	1,633.3	1,633.3	1,634.1	0.8

[1]Feet From Confluence With Wilson Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
FA	77,409	1,990	7,711	4.01	1,634.6	1,634.6	1,635.6	1.0
FB	77,927	2,180	10,050	3.07	1,635.7	1,635.7	1,636.7	0.9
FC	78,388	2,010	5,974	5.17	1,636.9	1,636.9	1,637.5	0.6
FD	78,898	1,570[2]	5,734	5.39	1,638.9	1,638.9	1,639.5	0.6
FE	79,432	2,320[2]	3,835	8.06	1,641.8	1,641.8	1,642.0	0.2
FF	79,918	2,410	10,621	2.91	1,644.5	1,644.5	1,645.5	1.0
FG	80,488	2,240	7,660	4.03	1,645.4	1,645.4	1,646.3	0.9
FH	81,507	1,890	6,534	4.73	1,648.4	1,648.4	1,648.9	0.5
FI	82,138	1,720	7,625	4.05	1,650.1	1,650.1	1,650.7	0.6
FJ	82,636	1,490	5,582	5.54	1,651.2	1,651.2	1,651.8	0.6
FK	83,084	1,460	5,383	5.74	1,652.6	1,652.6	1,653.1	0.5
FL	83,469	1,480	5,872	5.26	1,654.0	1,654.0	1,654.6	0.6
FM	83,959	1,190	5,186	5.96	1,655.1	1,655.1	1,655.9	0.8
FN	84,486	1,220	6,275	4.92	1,656.6	1,656.6	1,657.5	0.9
FO	84,980	1,030	4,968	6.22	1,657.8	1,657.8	1,658.5	0.7
FP	85,359	940	5,034	6.14	1,659.1	1,659.1	1,659.6	0.5
FQ	85,772	840	5,913	5.23	1,660.7	1,660.7	1,660.9	0.2
FR	86,284	560	4,316	7.16	1,661.0	1,661.0	1,661.6	0.6
FS	86,757	425	4,437	6.96	1,662.1	1,662.1	1,662.8	0.7
FT	87,244	410	3,091	10.00	1,663.0	1,663.0	1,663.6	0.6
FU	87,774	320	3,233	9.56	1,665.4	1,665.4	1,666.0	0.6
FV	88,243	445	4,147	7.45	1,666.7	1,666.7	1,667.7	1.0
FW	88,734	380	4,024	7.68	1,667.8	1,667.8	1,668.8	1.0
FX	89,258	272	2,976	10.38	1,668.8	1,668.8	1,669.7	0.9
FY	89,771	209	2,764	11.18	1,670.6	1,670.6	1,671.2	0.6
FZ	90,334	279	3,092	9.99	1,672.3	1,672.3	1,673.0	0.7

[1]Feet From Confluence With Wilson Creek

[2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Yakima River (Cont'd)								
GA	91,395[1]	255	3,692	8.37	1,674.7	1,674.7	1,675.7	1.0
GB	91,907[1]	688	6,413	4.82	1,675.6	1,675.6	1,676.6	1.0
GC	92,400[1]	1,130	8,616	3.59	1,676.7	1,676.7	1,677.3	0.6
GD	92,866[1]	1,350	10,175	3.04	1,677.3	1,677.3	1,677.8	0.5
GE	93,357[1]	1,400	4,750	6.50	1,678.5	1,678.5	1,678.9	0.4
GF	93,603[1]	1,270	11,031	2.80	1,680.5	1,680.5	1,681.5	1.0
GG	94,114[1]	1,090	7,863	3.93	1,680.8	1,680.8	1,681.8	1.0
GH	94,623[1]	850	4,768	6.48	1,681.5	1,681.5	1,682.1	0.6
GI	95,176[1]	216	3,101	9.96	1,682.9	1,682.9	1,683.5	0.6
GJ	95,369[1]	603	4,446	6.95	1,685.7	1,685.7	1,685.7	0.0
GK	95,922[1]	445	3,695	8.36	1,686.9	1,686.9	1,687.3	0.4
GL	96,448[1]	510	3,763	8.21	1,688.4	1,688.4	1,688.9	0.5
GM	96,960[1]	464	3,394	9.10	1,689.9	1,689.9	1,690.5	0.6
GN	97,502[1]	677	3,726	8.29	1,691.8	1,691.8	1,692.6	0.8
GO	4,894[2]	188	2,244	12.97	1,807.0	1,807.0	1,807.9	0.9
GP	4,434[2]	210	2,792	10.42	1,810.2	1,810.2	1,811.1	0.9
GQ	4,042[2]	230	3,235	9.00	1,811.7	1,811.7	1,812.7	1.0
GR	3,680[2]	230	3,309	8.80	1,812.6	1,812.6	1,813.6	1.0
GS	3,230[2]	215	3,210	9.06	1,813.6	1,813.6	1,814.6	1.0
GT	2,891[2]	215	3,315	8.78	1,814.5	1,814.5	1,815.5	1.0
GU	2,472[2]	150	2,366	12.30	1,815.1	1,815.1	1,816.1	1.0
GV	2,060[2]	150	2,492	11.68	1,817.0	1,817.0	1,817.9	0.9
GW	1,685[2]	150	2,383	12.21	1,818.4	1,818.4	1,819.3	0.9
GX	1,253[2]	470	6,219	4.68	1,821.1	1,821.1	1,821.9	0.8
GY	865[2]	400	4,201	6.93	1,821.2	1,821.2	1,822.0	0.8
GZ	458[2]	410	5,006	5.81	1,822.2	1,822.2	1,822.8	0.6

[1]Feet From Confluence With Wilson Creek [2]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
HA	127	380	4,252	5.93	1,822.6	1,822.6	1,823.4	0.8
HB	559	350	4,025	6.26	1,823.0	1,823.0	1,823.9	0.9
HC	945	350	3,495	7.21	1,823.4	1,823.4	1,824.3	0.9
HD	1,371	375	4,381	5.75	1,824.5	1,824.5	1,825.5	1.0
HE	1,807	380	3,822	6.59	1,825.0	1,825.0	1,825.9	0.9
HF	2,330	600	5,384	4.68	1,826.2	1,826.2	1,827.1	0.9
HG	2,827	850	7,075	3.56	1,827.0	1,827.0	1,827.9	0.9
HH	3,313	1,110	9,074	2.78	1,827.4	1,827.4	1,828.2	0.8
HI	3,664	960	7,206	3.50	1,827.6	1,827.6	1,828.4	0.8
HJ	4,104	1,060	6,120	4.12	1,828.3	1,828.3	1,828.9	0.6
HK	4,364	1,020	5,722	4.40	1,829.2	1,829.2	1,829.5	0.3
HL	4,734	1,020	6,176	4.08	1,830.0	1,830.0	1,830.4	0.4
HM	5,214	1,190	6,363	3.96	1,830.8	1,830.8	1,831.2	0.4
HN	5,584	1,430	6,539	3.85	1,831.5	1,831.5	1,832.0	0.5
HO	5,863	1,590	7,029	3.59	1,832.1	1,832.1	1,832.5	0.4
HP	6,053	2,090	7,686	3.28	1,832.5	1,832.5	1,833.0	0.5
HQ	6,851	1,820	5,916	4.26	1,834.2	1,834.2	1,834.6	0.4
HR	7,181	1,860	5,954	4.23	1,835.0	1,835.0	1,835.5	0.5
HS	7,439	1,860	4,469	5.64	1,835.6	1,835.6	1,836.0	0.4
HT	7,698	1,980	6,488	3.88	1,836.9	1,836.9	1,837.4	0.5
HU	8,028	1,800	6,178	4.08	1,837.7	1,837.7	1,838.2	0.5
HV	8,408	1,560	4,779	5.27	1,839.1	1,839.1	1,839.3	0.2
HW	8,828	1,590	6,433	3.92	1,840.3	1,840.3	1,841.0	0.7
HX	8,985	1,780	3,521	7.16	1,840.7	1,840.7	1,841.1	0.4
HY	9,249	1,610	7,723	3.26	1,842.8	1,842.8	1,843.4	0.6
HZ	9,642	1,320	6,855	3.68	1,843.4	1,843.4	1,844.0	0.6

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
IA	10,060	1,180	6,864	3.67	1,844.1	1,844.1	1,844.7	0.6
IB	10,503	890	4,831	5.22	1,845.0	1,845.0	1,845.6	0.6
IC	11,123	1,700	8,784	2.87	1,846.6	1,846.6	1,847.3	0.7
ID	11,635	1,970	8,973	2.81	1,847.3	1,847.3	1,847.9	0.6
IE	12,142	2,170	8,856	2.85	1,848.2	1,848.2	1,848.7	0.5
IF	12,550	1,950	8,149	3.09	1,849.0	1,849.0	1,849.3	0.3
IG	13,363	1,320	4,734	5.32	1,850.7	1,850.7	1,851.0	0.3
IH	13,760	1,080	3,972	6.34	1,852.1	1,852.1	1,852.5	0.4
II	14,129	1,000	5,348	4.71	1,853.6	1,853.6	1,854.4	0.8
IJ	14,551	840	4,064	6.20	1,854.7	1,854.7	1,855.6	0.9
IK	14,984	640	3,861	6.53	1,856.3	1,856.3	1,857.2	0.9
IL	15,438	520	3,569	7.06	1,857.9	1,857.9	1,858.8	0.9
IM	15,814	890	6,344	3.97	1,859.7	1,859.7	1,860.2	0.5
IN	16,303	1,160	8,205	3.07	1,860.3	1,860.3	1,860.9	0.6
IO	16,795	1,470	7,462	3.38	1,860.9	1,860.9	1,861.4	0.5
IP	17,678	1,550	7,866	3.20	1,861.8	1,861.8	1,862.6	0.8
IQ	18,186	1,280	6,193	4.07	1,862.5	1,862.5	1,863.4	0.9
IR	18,587	1,180	7,005	3.60	1,863.3	1,863.3	1,864.0	0.7
IS	18,947	1,160	4,703	5.36	1,864.1	1,864.1	1,864.6	0.5
IT	19,299	1,150	6,708	3.76	1,865.3	1,865.3	1,865.7	0.4
IU	19,761	1,250	7,166	3.52	1,865.6	1,865.6	1,866.4	0.8
IV	20,107	600	3,530	7.14	1,865.8	1,865.8	1,866.8	1.0
IW	20,564	938	5,275	4.78	1,870.5	1,870.5	1,870.6	0.1
IX	20,970	840	7,076	3.56	1,871.1	1,871.1	1,871.1	0.0
IY	21,355	983	6,688	3.77	1,871.4	1,871.4	1,871.5	0.1
IZ	21,771	960	8,159	3.09	1,871.7	1,871.7	1,871.9	0.2

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
JA	22,152	740	4,874	5.17	1,871.9	1,871.9	1,872.1	0.2
JB	22,564	680	4,666	5.40	1,872.5	1,872.5	1,872.9	0.4
JC	22,953	780	4,448	5.67	1,873.3	1,873.3	1,873.7	0.4
JD	23,383	895	3,988	6.32	1,874.6	1,874.6	1,875.2	0.6
JE	23,791	860	3,606	6.99	1,876.4	1,876.4	1,877.0	0.6
JF	24,216	860	4,307	5.85	1,878.6	1,878.6	1,879.0	0.4
JG	24,684	820	5,323	4.73	1,879.6	1,879.6	1,880.4	0.8
JH	25,159	768	2,885	8.74	1,880.7	1,880.7	1,881.5	0.8
JI	25,514	717	4,300	5.86	1,883.9	1,883.9	1,884.2	0.3
JJ	25,956	780	4,724	5.33	1,884.6	1,884.6	1,885.4	0.8
JK	26,342	819	3,586	7.00	1,885.5	1,885.5	1,886.4	0.9
JL	26,745	860	3,841	6.53	1,887.7	1,887.7	1,888.5	0.8
JM	27,176	800	2,718	9.23	1,890.8	1,890.8	1,891.1	0.3
JN	27,589	930	5,837	4.30	1,893.7	1,893.7	1,894.4	0.7
JO	27,819	970	6,193	4.05	1,894.1	1,894.1	1,894.7	0.6
JP	28,058	950	5,822	4.31	1,894.4	1,894.4	1,895.0	0.6
JQ	28,458	1,160	5,368	4.68	1,895.1	1,895.1	1,895.7	0.6
JR	28,888	1,220	4,214	5.96	1,896.5	1,896.5	1,897.0	0.5
JS	29,275	1,490	6,854	3.66	1,897.9	1,897.9	1,898.8	0.9
JT	29,754	1,520	7,740	3.24	1,898.5	1,898.5	1,899.5	1.0
JU	30,183	1,340	6,280	4.00	1,899.1	1,899.1	1,900.1	1.0
JV	30,573	1,350	7,542	3.33	1,900.1	1,900.1	1,900.7	0.6
JW	31,110	1,360	7,387	3.40	1,900.9	1,900.9	1,901.4	0.5
JX	31,512	1,220	7,064	3.55	1,901.4	1,901.4	1,901.9	0.5
JY	31,930	1,110	5,923	4.24	1,902.0	1,902.0	1,902.7	0.7
JZ	32,427	1,080	5,265	4.77	1,903.2	1,903.2	1,903.8	0.6

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
KA	3,2788	1,200	5,580	4.50	1,903.9	1,903.9	1,904.6	0.7
KB	33,183	1,290	6,680	3.76	1,904.9	1,904.9	1,905.6	0.7
KC	33,583	1,320	6,914	3.63	1,905.5	1,905.5	1,906.3	0.8
KD	33,971	1,380	5,027	4.99	1,906.1	1,906.1	1,906.8	0.7
KE	34,391	1,460	4,091	6.14	1,907.3	1,907.3	1,908.0	0.7
KF	34,862	1,380	3,170	7.92	1,909.2	1,909.2	1,909.9	0.7
KG	35,246	1,210	3,546	7.08	1,911.3	1,911.3	1,912.3	1.0
KH	35,628	878	3,547	7.08	1,913.6	1,913.6	1,914.0	0.4
KI	36,040	660	3,506	7.16	1,914.7	1,914.7	1,915.4	0.7
KJ	36,447	628	3,953	6.25	1,915.8	1,915.8	1,916.5	0.7
KK	36,875	530	3,903	6.33	1,917.1	1,917.1	1,917.6	0.5
KL	37,304	520	3,461	7.14	1,918.1	1,918.1	1,918.6	0.5
KM	37,679	475	3,075	8.03	1,919.3	1,919.3	1,919.8	0.5
KN	38,134	475	3,734	6.61	1,920.9	1,920.9	1,921.7	0.8
KO	38,487	490	3,357	7.36	1,922.0	1,922.0	1,922.6	0.6
KP	38,945	569	3,962	6.23	1,923.9	1,923.9	1,924.3	0.4
KQ	39,288	910	3,791	6.51	1,924.9	1,924.9	1,925.4	0.5
KR	39,758	995	4,995	4.95	1,926.4	1,926.4	1,927.4	1.0
KS	40,201	1,050	5,082	4.82	1,927.7	1,927.7	1,928.4	0.7
KT	41,115	1,140	4,748	5.16	1,930.5	1,930.5	1,930.5	0.0
KU	41,467	1,310	3,937	6.22	1,931.1	1,931.1	1,931.3	0.2
KV	42,221	1,490	5,877	4.17	1,932.9	1,932.9	1,933.8	0.9
KW	42,663	1,450	7,546	3.25	1,934.3	1,934.3	1,934.7	0.4
KX	43,146	1,280	6,247	3.92	1,934.6	1,934.6	1,935.2	0.6
KY	43,513	1,240	3,807	6.44	1,935.0	1,935.0	1,935.6	0.6
KZ	43,881	1,100	4,220	5.81	1,936.3	1,936.3	1,937.0	0.7

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
LA	44,319	1,050	3,162	7.75	1,937.8	1,937.8	1,938.0	0.2
LB	44,661	1,160	3,282	7.46	1,940.1	1,940.1	1,940.1	0.0
LC	45,126	1,030	3,160	7.75	1,941.9	1,941.9	1,942.0	0.1
LD	45,565	1,050	4,820	5.08	1,943.5	1,943.5	1,943.9	0.4
LE	45,985	820	6,126	4.00	1,944.2	1,944.2	1,945.0	0.8
LF	46,443	710	3,823	6.41	1,944.8	1,944.8	1,945.5	0.7
LG	46,920	750	3,281	7.47	1,946.2	1,946.2	1,946.9	0.7
LH	47,407	670	3,017	8.12	1,949.0	1,949.0	1,949.5	0.5
LI	48,293	310	2,785	8.72	1,953.3	1,953.3	1,953.8	0.5
LJ	48,671	245	2,977	8.16	1,954.6	1,954.6	1,955.3	0.7
LK	49,233	420	4,271	5.69	1,956.0	1,956.0	1,956.8	0.8
LL	49,637	770	6,060	4.01	1,956.8	1,956.8	1,957.6	0.8
LM	50,001	880	6,743	3.60	1,957.1	1,957.1	1,957.9	0.8
LN	50,411	920	7,014	3.46	1,957.7	1,957.7	1,958.4	0.7
LO	50,693	930	6,496	3.74	1,958.0	1,958.0	1,958.6	0.6
LP	51,056	530	4,192	3.22	1,958.4	1,958.4	1,959.0	0.6
LQ	51,358	250	1,710	7.89	1,960.0	1,960.0	1,960.1	0.1
LR	51,710	470	3,806	3.55	1,960.9	1,960.9	1,961.6	0.7
LS	52,127	780	5,296	2.55	1,961.3	1,961.3	1,962.1	0.8
LT	52,640	990	6,003	2.25	1,961.6	1,961.6	1,962.4	0.8
LU	52,972	1,240	5,466	2.47	1,961.8	1,961.8	1,962.6	0.8
LV	53,304	1,360	3,674	3.67	1,962.2	1,962.2	1,963.1	0.9
LW	53,638	1,390	4,811	2.81	1,963.1	1,963.1	1,963.9	0.8
LX	53,883	1,420	5,584	2.42	1,963.4	1,963.4	1,964.3	0.9
LY	54,400	1,540	4,499	3.00	1,964.2	1,964.2	1,965.1	0.9
LZ	54,692	1,100	5,487	2.46	1,964.7	1,964.7	1,965.6	0.9

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
MA	55,008	790	4,116	3.28	1,965.2	1,965.2	1,966.1	0.9
MB	55,470	730	3,168	4.26	1,966.5	1,966.5	1,966.9	0.4
MC	55,904	820	3,449	3.91	1,967.6	1,967.6	1,968.1	0.5
MD	56,272	110	3,119	4.33	1,968.5	1,968.5	1,969.2	0.7
ME	56,499	770	2,733	4.94	1,969.6	1,969.6	1,969.9	0.3
MF	57,026	1,010	5,488	2.46	1,971.1	1,971.1	1,971.4	0.3
MG	57,385	1,070	3,608	3.74	1,971.5	1,971.5	1,971.9	0.4
MH	57,805	1,200	5,252	2.57	1,971.9	1,971.9	1,972.9	1.0
MI	58,323	1,320	6,113	2.21	1,972.3	1,972.3	1,973.3	1.0
MJ	58,715	820	3,193	4.23	1,973.2	1,973.2	1,974.0	0.8
MK	59,055	860	2,853	4.73	1,974.8	1,974.8	1,975.3	0.5
ML	59,550	830	3,180	4.25	1,977.6	1,977.6	1,977.7	0.1
MM	59,710	1,150	4,252	3.18	1,978.1	1,978.1	1,978.5	0.4
MN	60,070	1,300	2,502	5.40	1,979.4	1,979.4	1,979.8	0.4
MO	62,600	2,020	8,141	1.65	1,986.6	1,986.6	1,987.1	0.5
MP	63,038	1,720	4,619	2.90	1,987.1	1,987.1	1,987.6	0.5
MQ	63,404	970	2,823	4.75	1,988.3	1,988.3	1,988.9	0.6
MR	63,781	1,290	3,841	3.49	1,989.9	1,989.9	1,990.6	0.7
MS	64,219	1,450	3,306	4.41	1,991.5	1,991.5	1,991.9	0.4
MT	64,512	1,380[2]	4,179	3.21	1,992.7	1,992.7	1,993.5	0.8
MU	64,936	1,200[2]	3,514	3.81	1,993.1	1,993.1	1,994.1	1.0
MV	65,373	740	2,711	4.94	1,994.4	1,994.4	1,995.2	0.8
MW	65,803	400	2,296	5.84	1,996.2	1,996.2	1,996.5	0.3
MX	66,199	386	1,909	7.02	1,997.0	1,997.0	1,997.6	0.6
MY	66,537	360	2,512	5.33	1,998.2	1,998.2	1,998.9	0.7
MZ	66,948	323	2,319	5.78	1,999.3	1,999.3	1,999.8	0.5

[1] Feet From Confluence With Teanaway River

[2] This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
NA	67,346	230	2,052	6.53	2,000.2	2,000.2	2,000.6	0.4
NB	67,794	200	1,680	7.98	2,001.2	2,001.2	2,001.5	0.3
NC	68,159	170	1,522	8.80	2,002.5	2,002.5	2,002.6	0.1
ND	68,499	230	2,369	5.66	2,003.2	2,003.2	2,004.1	0.9
NE	68,816	250	2,491	5.38	2,003.8	2,003.8	2,004.7	0.9
NF	69,173	300	2,974	4.51	2,004.3	2,004.3	2,005.2	0.9
NG	69,545	320	2,446	5.48	2,004.8	2,004.8	2,005.7	0.9
NH	69,946	330	2,382	5.62	2,005.6	2,005.6	2,006.4	0.8
NI	70,437	250	1,832	7.31	2,006.7	2,006.7	2,007.3	0.6
NJ	70,845	240	1,833	7.31	2,008.3	2,008.3	2,008.6	0.3
NK	71,368	180	1,431	9.36	2,010.1	2,010.1	2,010.4	0.3
NL	71,712	170	1,892	7.08	2,011.3	2,011.3	2,012.0	0.7
NM	71,863	238	2,293	5.85	2,012.0	2,012.0	2,012.4	0.4
NN	71,990	279	2,230	6.01	2,012.7	2,012.7	2,012.8	0.1
NO	72,231	247	2,127	6.30	2,013.5	2,013.5	2,013.6	0.1
NP	72,656	170	1,616	8.29	2,014.0	2,014.0	2,014.3	0.3
NQ	73,122	190	1,588	8.44	2,015.6	2,015.6	2,015.8	0.2
NR	73,436	205	1,517	8.84	2,016.6	2,016.6	2,017.0	0.4
NS	73,832	220	1,948	6.88	2,018.3	2,018.3	2,018.7	0.4
NT	74,228	260	2,492	5.38	2,019.2	2,019.2	2,019.6	0.4
NU	74,574	235	1,343	9.98	2,019.6	2,019.6	2,020.0	0.4
NV	74,800	320	2,590	5.17	2,021.2	2,021.2	2,022.2	1.0
NW	75,182	275	2,498	5.36	2,021.9	2,021.9	2,022.8	0.9
NX	75,541	410	3,146	4.26	2,022.7	2,022.7	2,023.6	0.9
NY	76,103	1,030	5,995	2.24	2,023.5	2,023.5	2,024.4	0.9
NZ	76,481	1,210	7,938	1.69	2,023.7	2,023.7	2,024.6	0.9

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
OA	76,845	1,230	4,983	2.69	2,023.9	2,023.9	2,024.7	0.8
OB	77,310	770	3,967	3.38	2,024.6	2,024.6	2,025.4	0.8
OC	77,563	380	1,489	9.00	2,024.6	2,024.6	2,025.5	0.9
OD	77,982	297	1,795	7.46	2,028.1	2,028.1	2,028.1	0.0
OE	78,375	389	2,098	6.39	2,029.3	2,029.3	2,029.4	0.1
OF	78,750	460	2,491	5.38	2,029.9	2,029.9	2,030.3	0.4
OG	79,087	407	2,195	6.10	2,030.2	2,030.2	2,031.0	0.8
OH	79,512	530	3,356	3.99	2,031.3	2,031.3	2,031.9	0.6
OI	79,878	515	3,123	4.29	2,031.8	2,031.8	2,032.3	0.5
OJ	80,320	694	4,170	3.21	2,032.3	2,032.3	2,032.8	0.5
OK	80,780	700	5,403	2.48	2,032.6	2,032.6	2,033.2	0.6
OL	81,295	640	4,602	2.91	2,032.8	2,032.8	2,033.5	0.7
OM	81,813	620	2,382	5.62	2,033.2	2,033.2	2,033.7	0.5
ON	82,199	620	3,520	3.81	2,034.2	2,034.2	2,034.8	0.6
OO	82,513	640	3,826	3.50	2,034.7	2,034.7	2,035.4	0.7
OP	82,942	650	4,192	3.20	2,035.1	2,035.1	2,035.8	0.7
OQ	83,415	790	5,090	2.63	2,035.3	2,035.3	2,036.1	0.8
OR	83,793	880	5,284	2.54	2,035.6	2,035.6	2,036.4	0.8
OS	83,997	820[2]	3,314	4.04	2,035.7	2,035.7	2,036.4	0.7
OT	84,554	1,020[2]	3,871	3.44	2,036.3	2,036.3	2,037.2	0.9
OU	85,854	930	4,248	3.13	2,038.8	2,038.8	2,039.7	0.9
OV	86,210	740[2]	1,994	6.67	2,040.8	2,040.8	2,041.0	0.2
OW	86,527	850	4,093	3.25	2,042.8	2,042.8	2,043.6	0.8
OX	87,486	880	3,171	4.19	2,044.9	2,044.9	2,045.6	0.7
OY	87,952	890	3,091	4.30	2,046.1	2,046.1	2,046.8	0.7
OZ	88,326	740	3,703	3.59	2,046.9	2,046.9	2,047.8	0.9

[1] Feet From Confluence With Teanaway River [2] This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
PA	88,718	720	3,482	3.82	2,047.6	2,047.6	2,048.2	0.6
PB	89,107	800	2,739	4.86	2,048.6	2,048.6	2,048.9	0.3
PC	89,464	940	3,293	4.04	2,049.4	2,049.4	2,050.2	0.8
PD	89,894	1,000	4,456	2.98	2,050.2	2,050.2	2,051.1	0.9
PE	90,369	880	4,506	2.95	2,050.9	2,050.9	2,051.8	0.9
PF	90,799	790	3,490	3.81	2,051.6	2,051.6	2,052.3	0.7
PG	91,181	760	2,489	5.34	2,052.3	2,052.3	2,053.3	1.0
PH	91,557	770	4,053	3.28	2,054.4	2,054.4	2,054.7	0.3
PI	91,960	340[2]	1,618	8.22	2,055.2	2,055.2	2,055.5	0.3
PJ	92,455	550	2,226	5.97	2,057.4	2,057.4	2,058.4	1.0
PK	92,819	460	2,200	6.05	2,059.3	2,059.3	2,059.7	0.4
PL	93,193	340	2,191	6.07	2,060.4	2,060.4	2,060.9	0.5
PM	93,569	240	1,808	7.36	2,061.4	2,061.4	2,061.9	0.5
PN	93,982	250	2,242	5.93	2,062.4	2,062.4	2,063.2	0.8
PO	94,315	280	2,085	6.38	2,063.0	2,063.0	2,063.8	0.8
PP	94,545	340	2,303	5.78	2,063.5	2,063.5	2,064.5	1.0
PQ	94,785	390	2,704	4.92	2,064.0	2,064.0	2,065.0	1.0
PR	95,085	365	2,594	5.13	2,064.7	2,064.7	2,065.6	0.9
PS	95,455	455	2,976	4.10	2,065.7	2,065.7	2,066.5	0.8
PT	95,672	550	3,349	3.64	2,066.1	2,066.1	2,066.8	0.7
PU	96,082	580	3,253	3.75	2,066.6	2,066.6	2,067.4	0.8
PV	96,458	730	4,146	2.94	2,067.2	2,067.2	2,068.0	0.8
PW	96,877	920	4,360	2.80	2,067.7	2,067.7	2,068.6	0.9
PX	97,275	860	4,559	2.68	2,068.2	2,068.2	2,069.1	0.9
PY	97,628	800[2]	3,341	3.65	2,068.6	2,068.6	2,069.5	0.9
PZ	97,971	790[2]	2,874	4.25	2,069.4	2,069.4	2,070.3	0.9

[1]Feet From Confluence With Teanaway River [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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	INCREASE
Yakima River (Cont'd)								
QA	98,358	780	3,742	3.26	2,070.4	2,070.4	2,071.4	1.0
QB	98,714	720	3,851	3.17	2,071.0	2,071.0	2,071.9	0.9
QC	99,187	590	3,663	3.33	2,071.6	2,071.6	2,072.4	0.8
QD	99,584	575	2,472	4.94	2,072.0	2,072.0	2,072.8	0.8
QE	99,795	575	2,999	4.07	2,072.8	2,072.8	2,073.5	0.7
QF	100,126	595	3,912	3.12	2,073.4	2,073.4	2,073.2	0.8
QG	100,319	685	3,998	3.05	2,073.5	2,073.5	2,074.3	0.8
QH	100,677	845	5,620	2.17	2,074.0	2,074.0	2,074.7	0.7
QI	101,056	1,000	4,916	2.48	2,074.2	2,074.2	2,074.9	0.7
QJ	101,306	1,080[2]	4,048	3.01	2,074.5	2,074.5	2,075.1	0.6
QK	102,786	1,000[2]	3,045	4.01	2,079.4	2,079.4	2,080.0	0.6
QL	103,238	1,620	5,014	2.43	2,080.9	2,080.9	2,081.7	0.8
QM	103,554	1,320[2]	2,825	4.32	2,081.7	2,081.7	2,082.2	0.5
QN	103,874	1,390[2]	5,258	2.32	2,082.9	2,082.9	2,083.5	0.6
QO	104,290	1,320[2]	4,161	2.93	2,083.5	2,083.5	2,084.4	0.9
QP	104,653	1,130[2]	3,556	3.43	2,084.4	2,084.4	2,085.4	1.0
QQ	104,963	930[2]	2,751	4.44	2,085.7	2,085.7	2,086.4	0.7
QR	105,280	1,470[2]	5,234	2.33	2,087.4	2,087.4	2,088.3	0.9
QS	105,726	1,320[2]	3,401	3.59	2,088.8	2,088.8	2,089.4	0.6
QT	105,905	1,220[2]	3,742	3.26	2,089.4	2,089.4	2,090.2	0.8
QU	106,188	910[2]	3,387	3.60	2,090.4	2,090.4	2,091.2	0.8
QV	106,619	1,160	4,852	2.51	2,091.5	2,091.5	2,092.4	0.9
QW	107,037	626	2,625	4.65	2,092.2	2,092.2	2,093.1	0.9
QX	107,465	665	3,054	4.00	2,094.5	2,094.5	2,094.7	0.2
QY	107,866	664	3,495	3.49	2,095.1	2,095.1	2,095.7	0.6
QZ	108,361	940	4,244	2.87	2,095.9	2,095.9	2,096.5	0.6

[1]Feet From Confluence With Teanaway River [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
RA	110,501	1,460	3,556	3.43	2,101.2	2,101.2	2,102.1	0.9
RB	110,991	1,350	4,440	2.75	2,103.4	2,103.4	2,104.2	0.8
RC	111,833	1,080	4,064	3.00	2,105.4	2,105.4	2,106.3	0.9
RD	112,199	1,060	4,049	3.01	2,106.3	2,106.3	2,107.2	0.9
RE	112,611	1,120	3,937	2.97	2,107.5	2,107.5	2,108.2	0.7
RF	112,863	1,160	4,298	2.72	2,108.3	2,108.3	2,108.9	0.6
RG	113,134	1,160	3,851	3.04	2,108.8	2,108.8	2,109.3	0.5
RH	113,816	1,310	3,916	2.99	2,110.1	2,110.1	2,111.0	0.9
RI	114,177	1,120	2,519	4.64	2,111.5	2,111.5	2,112.2	0.7
RJ	114,388	1,080	3,641	3.21	2,113.2	2,113.2	2,113.7	0.5
RK	114,676	1,280	3,907	2.99	2,113.8	2,113.8	2,114.5	0.7
RL	114,908	1,040[2]	3,011	3.89	2,114.4	2,114.4	2,115.1	0.7
RM	115,421	1,570[2]	3,394	3.45	2,117.3	2,117.3	2,117.3	0.0
RN	115,781	1,190[2]	3,188	3.67	2,118.6	2,118.6	2,119.1	0.5
RO	116,117	1,180[2]	4,106	2.85	2,119.4	2,119.4	2,120.3	0.9
RP	116,697	1,180	2,874	4.07	2,121.3	2,121.3	2,121.8	0.5
RQ	116,797	1,180	2,684	4.36	2,121.7	2,121.7	2,122.1	0.4
RR	117,093	1,030	2,706	4.32	2,122.7	2,122.7	2,123.4	0.7
RS	117,430	960	4,146	2.82	2,124.3	2,124.3	2,124.5	0.2
RT	117,960	777	2,281	5.13	2,125.3	2,125.3	2,125.5	0.2
RU	118,280	726	2,751	4.25	2,126.3	2,126.3	2,126.6	0.3
RV	118,500	840	2,489	4.50	2,127.0	2,127.0	2,127.5	0.5
RW	118,907	900	3,998	2.80	2,128.4	2,128.4	2,129.1	0.7
RX	119,501	720	4,003	2.80	2,129.3	2,129.3	2,129.9	0.6
RY	119,897	280	4,447	2.52	2,129.8	2,129.8	2,130.5	0.7
RZ	120,040	250	4,468	2.51	2,129.9	2,129.9	2,130.6	0.7

[1]Feet From Confluence With Teanaway River [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
SA	120,420	340	5,349	2.09	2,130.2	2,130.2	2,130.8	0.6
SB	120,732	360	1,739	6.44	2,130.3	2,130.3	2,130.9	0.6
SC	121,234	465	1,657	6.76	2,132.6	2,132.6	2,132.7	0.1
SD	121,520	530	1,970	5.68	2,133.9	2,133.9	2,134.4	0.5
SE	121,888	330	1,485	7.54	2,135.5	2,135.5	2,135.7	0.2
SF	122,298	176	1,074	10.43	2,137.8	2,137.8	2,138.3	0.5
SG	122,737	157	1,391	8.05	2,140.4	2,140.4	2,141.3	0.9
SH	123,158	160	1,415	7.92	2,142.0	2,142.0	2,142.6	0.6
SI	123,491	215	1,629	6.88	2,143.4	2,143.4	2,144.0	0.6
SJ	123,777	177	1,959	5.72	2,144.3	2,144.3	2,145.1	0.8
SK	124,129	194	1,509	7.42	2,144.7	2,144.7	2,145.4	0.7
SL	124,480	183	1,564	7.16	2,145.8	2,145.8	2,146.5	0.7
SM	124,840	150	1,485	7.54	2,147.0	2,147.0	2,147.3	0.3
SN	125,230	115	1,257	8.91	2,147.6	2,147.6	2,148.1	0.5

[1]Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
TG	139,405	194	1,756	3.59	2,199.3	2,199.3	2,200.2	0.9
TH	139,641	172	1,505	4.19	2,199.5	2,199.5	2,200.3	0.8
TI	140,384	1,050	5,631	1.12	2,200.1	2,200.1	2,200.9	0.8
TJ	141,864	800	1,837	3.43	2,201.7	2,201.7	2,202.1	0.4
TK	142,281	670	1,448	4.35	2,203.9	2,203.9	2,204.6	0.7
TL	142,431	510	1,757	3.59	2,204.5	2,204.5	2,205.4	0.9
TM	142,619	525	3,014	2.09	2,208.7	2,208.7	2,208.8	0.1
TN	142,981	350	1,947	3.13	2,208.8	2,208.8	2,209.0	0.2
TO	143,363	440	1,418	4.30	2,209.1	2,209.1	2,209.5	0.4
TP	143,638	610	3,484	1.75	2,209.6	2,209.6	2,210.5	0.9
TQ	143,991	725	2,245	2.72	2,209.8	2,209.8	2,210.6	0.8
TR	144,433	690	1,817	3.36	2,211.0	2,211.0	2,212.0	1.0
TS	144,649	645	2,044	2.98	2,212.3	2,212.3	2,212.9	0.6
TT	145,066	670	1,368	4.46	2,214.1	2,214.1	2,214.7	0.6
TU	145,852	820	1,960	3.11	2,218.4	2,218.4	2,219.3	0.9
TV	146,573	153	634	9.62	2,222.9	2,222.9	2,223.2	0.3
TW	147,187	159	1,913	3.19	2,225.3	2,225.3	2,225.8	0.5
TX	147,831	166	583	10.46	2,226.9	2,226.9	2,226.9	0.0
TY	148,563	150	1,088	5.61	2,232.2	2,232.2	2,323.8	0.6
TZ	149,238	179	926	6.39	2,234.0	2,234.0	2,234.8	0.8

[1] Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Yakima River (Cont'd)								
UA	150,012	510	2,021	3.02	2,236.8	2,236.8	2,237.2	0.4
UB	150,791	460	1,250	4.67	2,238.6	2,238.6	2,239.2	0.6
UC	151,403	570	1,243	4.70	2,241.9	2,241.9	2,242.5	0.6
UD	152,132	360	1,032	5.66	2,245.4	2,245.4	2,246.2	0.8
UE	153,847	940	1,113	5.24	2,255.2	2,255.2	2,256.1	0.9
UF	154,357	690	1,474	3.96	2,258.2	2,258.2	2,259.0	0.8
UG	155,171	653	1,285	4.54	2,263.2	2,263.2	2,263.3	0.1

[1] Feet From Confluence With Teanaway River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

YAKIMA RIVER

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)			
Cle Elum River								
A	410	890	4,155	3.27	1,959.5	1,959.5	1,959.9	0.4
B	781	990	2,721	5.00	1,960.7	1,960.7	1,960.9	0.2
C	1,113	1,020	2,155	6.31	1,962.4	1,962.4	1,962.8	0.4
D	1,654	850	3,195	4.26	1,964.3	1,964.3	1,965.4	1.1
E	1,909	450	2,554	5.33	1,965.0	1,965.0	1,966.0	1.0
F	2,194	920	6,662	2.04	1,969.6	1,969.6	1,969.8	0.2
G	2,562	1,090	3,729	3.65	1,969.7	1,969.7	1,970.0	0.3
H	2,981	1,150	3,504	3.88	1,970.2	1,970.2	1,971.1	0.9
I	3,314	1,010	1,854	7.33	1,972.3	1,972.3	1,972.8	0.5
J	3,541	819	5,014	2.71	1,979.6	1,979.6	1,979.7	0.1
K	3,849	870	4,861	2.80	1,979.6	1,979.6	1,979.8	0.2
L	4,087	1,140	6,298	2.16	1,979.8	1,979.8	1,980.1	0.3
M	4,866	1,350	5,589	2.43	1,979.9	1,979.9	1,980.2	0.3
N	4,800	1,730	3,994	3.41	1,980.4	1,980.4	1,980.8	0.4
O	5,311	2,120	4,351	3.13	1,981.5	1,981.5	1,982.4	0.9
P	5,724	2,100	6,859	1.98	1,982.4	1,982.4	1,983.3	0.9
Q	6,293	1,750	4,340	3.13	1,983.8	1,983.8	1,984.2	0.4
R	6,699	1,310	2,848	4.78	1,986.2	1,986.2	1,986.7	0.5
S	7,122	950	3,368	4.04	1,988.7	1,988.7	1,989.5	0.8
T	7,540	790	2,784	4.89	1,990.5	1,990.5	1,991.2	0.7
U	7,940	520	2,550	5.33	1,992.1	1,992.1	1,993.0	0.9
V	8,257	567	4,083	3.33	1,997.2	1,997.2	1,997.2	0.0
W	8,399	610	3,525	3.86	1,997.3	1,997.3	1,997.3	0.0
X	8,581	598	5,653	2.41	2,000.4	2,000.4	2,000.5	0.1
Y	8,974	418	3,951	3.44	2,000.4	2,000.4	2,000.6	0.2
Z	9,455	312	3,006	4.52	2,000.5	2,000.5	2,000.8	0.3

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

CLE ELUM RIVER

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)			
Cle Elum River (Cont'd)								
AA	9,851	302	2,478	5.33	2,000.7	2,000.7	2,001.2	0.5
AB	10,334	385	2,328	5.67	2,001.4	2,001.4	2,002.2	0.8
AC	10,822	670	2,589	5.10	2,002.7	2,002.7	2,003.7	1.0
AD	11,272	810	2,446	5.40	2,004.6	2,004.6	2,005.5	0.9
AE	11,694	739	2,835	4.66	2,006.8	2,006.8	2,007.5	0.7
AF	12,141	655	3,088	4.27	2,008.5	2,008.5	2,009.2	0.7
AG	12,441	680	2,008	6.57	2,010.2	2,010.2	2,010.8	0.6
AH	12,707	620	2,770	4.77	2,011.8	2,011.8	2,012.8	1.0
AI	13,131	430	2,567	5.14	2,013.1	2,013.1	2,014.0	0.9
AJ	13,546	184	1,598	8.26	2,014.2	2,014.2	2,014.9	0.7
AK	13,977	285	1,749	7.55	2,016.1	2,016.1	2,016.7	0.6
AL	14,366	407	1,898	6.95	2,017.9	2,017.9	2,018.4	0.5
AM	15,016	630	2,575	5.13	2,021.0	2,021.0	2,021.7	0.7
AN	15,702	950	3,474	3.80	2,023.2	2,023.2	2,024.0	0.8
AO	16,248	820	2,830	4.66	2,025.1	2,025.1	2,025.9	0.8
AP	17,080	400	2,226	5.93	2,027.9	2,027.9	2,028.7	0.8
AQ	17,330	300	1,257	10.50	2,028.5	2,028.5	2,029.2	0.7
AR	17,722	240	1,762	7.49	2,031.6	2,031.6	2,032.1	0.5
AS	18,199	211	1,550	8.52	2,033.4	2,033.4	2,034.1	0.7
AT	18,609	165	1,431	9.22	2,035.0	2,035.0	2,035.9	0.9
AU	18,951	198	1,760	7.50	2,036.6	2,036.6	2,037.4	0.8
AV	19,322	191	1,592	8.29	2,037.5	2,037.5	2,038.4	0.9
AW	19,753	270	2,150	6.14	2,039.4	2,039.4	2,040.0	0.6
AX	20,225	440	2,017	6.54	2,040.5	2,040.5	2,041.1	0.6
AY	20,634	372	2,289	5.77	2,041.7	2,041.7	2,042.4	0.7
AZ	20,952	430	2,537	5.20	2,042.4	2,042.4	2,043.0	0.6

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

CLE ELUM RIVER

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)			
Cle Elum River (Cont'd)								
BA	21,792	955	4,185	3.15	2,044.6	2,044.6	2,045.1	0.5
BB	22,322	850	3,428	3.85	2,045.7	2,045.7	2,046.3	0.6
BC	22,841	700	3,405	3.88	2,047.0	2,047.0	2,047.9	0.9
BD	23,139	565	2,765	4.77	2,048.0	2,048.0	2,048.7	0.7
BE	23,505	480	2,340	5.64	2,049.5	2,049.5	2,050.3	0.8
BF	23,945	420	2,646	4.99	2,050.8	2,050.8	2,051.8	1.0
BG	24,393	606	3,578	3.69	2,051.9	2,051.9	2,052.7	0.8
BH	24,715	654	2,946	4.48	2,052.5	2,052.5	2,053.1	0.6
BI	25,155	400	1,985	6.65	2,053.9	2,053.9	2,054.3	0.4
BJ	25,551	565	1,382	9.55	2,056.6	2,056.6	2,057.0	0.4
BK	26,103	1,070	2,690	4.91	2,063.0	2,063.0	2,063.6	0.6
BL	26,395	970	2,621	5.19	2,064.7	2,064.7	2,065.3	0.6
BM	26,730	974	2,427	5.60	2,067.4	2,067.4	2,067.8	0.4
BN	26,986	1,000	2,315	5.87	2,069.6	2,069.6	2,070.1	0.5
BO	27,429	750	2,139	6.36	2,072.5	2,072.5	2,073.5	1.0
BP	27,771	840	3,778	3.60	2,075.6	2,075.6	2,076.0	0.4
BQ	28,111	960	2,142	6.35	2,077.6	2,077.6	2,077.9	0.3
BR	28,311	1,050	3,333	4.08	2,079.8	2,079.8	2,080.6	0.8
BS	28,611	1,390	2,449	5.55	2,082.4	2,082.4	2,082.8	0.4
BT	28,891	1,500	2,531	5.37	2,086.0	2,086.0	2,086.5	0.5
BU	29,162	1,180	3,214	4.23	2,088.8	2,088.8	2,089.8	1.0
BV	29,534	830	3,114	4.37	2,091.6	2,091.6	2,092.2	0.6
BW	29,884	735	3,451	3.94	2,092.7	2,092.7	2,093.7	1.0
BX	30,290	700	3,135	4.34	2,093.9	2,093.9	2,094.8	0.9
BY	30,716	840	3,718	3.55	2,095.1	2,095.1	2,096.0	0.9
BZ	31,081	940	3,126	4.22	2,096.3	2,096.3	2,097.1	0.8

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

CLE ELUM RIVER

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)			
Cle Elum River (Cont'd)								
CA	31,453	820	4,209	3.04	2,097.4	2,097.4	2,098.4	1.0
CB	31,825	750	3,372	3.80	2,098.0	2,098.0	2,098.9	0.9
CC	32,160	740	3,535	3.62	2,098.7	2,098.7	2,099.7	1.0
CD	32,327	720	2,975	4.30	2,099.1	2,099.1	2,100.0	0.9
CE	33,260	189	1,209	10.59	2,103.5	2,103.5	2,104.5	1.0
CF	33,479	190	1,260	10.16	2,105.6	2,105.6	2,106.5	0.9
CG	34,145	150	1,410	9.08	2,110.9	2,110.9	2,111.0	0.1
CH	34,532	180	1,708	7.50	2,112.1	2,112.1	2,113.0	0.9
CI	34,963	174	1,796	7.13	2,113.2	2,113.2	2,114.0	0.8
CJ	35,344	190	1,921	6.66	2,114.1	2,114.1	2,114.8	0.7
CK	35,739	180	1,908	6.71	2,114.8	2,114.8	2,115.3	0.5
CL	36,137	178	2,059	6.22	2,115.5	2,115.5	2,115.9	0.4
CM	36,569	175	1,940	6.60	2,116.1	2,116.1	2,116.5	0.4
CN	37,476	157	1,939	6.60	2,117.3	2,117.3	2,117.6	0.3
CO	37,976	161	2,009	6.37	2,118.0	2,118.0	2,118.3	0.3
CP	38,360	174	2,077	6.16	2,118.5	2,118.5	2,118.8	0.3
CQ	38,783	180	2,434	5.26	2,119.0	2,119.0	2,119.2	0.2
CR	39,100	208	2,750	4.65	2,119.3	2,119.3	2,119.5	0.2

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

CLE ELUM RIVER

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)			
Teanaway River								
A	551	370	4,246	1.73	1,822.5	1,815.7[2]	1,816.5[2]	0.8
B	717	360	3,200	2.30	1,822.5	1,819.3[2]	1,820.1[2]	0.8
C	1,149	320	2,200	3.34	1,822.5	1,820.1[2]	1,820.9[2]	0.8
D	1,578	260	1,240	5.93	1,822.5	1,822.2[2]	1,823.0[2]	0.8
E	1,953	133	863	8.51	1,823.6	1,823.6	1,824.1	0.5
F	2,403	150	1,084	6.78	1,827.7	1,827.7	1,828.2	0.5
G	2,952	160	1,141	6.44	1,829.3	1,829.3	1,829.5	0.2
H	3,032	198	1,114	6.60	1,829.9	1,829.9	1,830.1	0.2
I	3,375	175	994	7.40	1,831.5	1,831.5	1,831.7	0.2
J	3,837	164	926	7.94	1,833.2	1,833.2	1,833.5	0.3
K	4,239	155	698	10.54	1,836.4	1,836.4	1,836.5	0.1
L	4,679	170	749	9.82	1,840.9	1,840.9	1,841.0	0.1
M	4,982	170	897	8.20	1,843.0	1,843.0	1,843.3	0.3
N	5,423	270	1,299	5.66	1,845.6	1,845.6	1,845.7	0.1
O	5,670	260	1,095	6.71	1,846.4	1,846.4	1,846.6	0.2
P	5,858	200	918	8.00	1,847.5	1,847.5	1,847.8	0.3
Q	6,277	220	1,148	6.40	1,849.4	1,849.4	1,850.4	1.0
R	6,627	318	981	7.49	1,852.2	1,852.2	1,852.3	0.1
S	7,001	430	1,697	4.33	1,854.1	1,854.1	1,855.0	0.9
T	7,270	275	1,075	6.83	1,855.0	1,855.0	1,855.9	0.9
U	7,706	230	911	8.07	1,858.1	1,858.1	1,858.2	0.2
V	8,088	240	1,040	7.07	1,860.7	1,860.7	1,860.8	0.1
W	8,624	400	1,844	3.99	1,862.5	1,862.5	1,862.9	0.4
X	9,161	450	1,248	5.89	1,864.7	1,864.7	1,865.1	0.4
Y	9,726	390	1,395	5.27	1,868.2	1,868.2	1,868.7	0.5
Z	10,104	136	746	9.85	1,869.9	1,869.9	1,870.4	0.5

[1] Feet Above Mouth [2] Computed Without Consideration of Backwater Effect From Yakima River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
AA	10,410	163	798	9.21	1,872.7	1,872.7	1,873.2	0.5
AB	10,780	194	1,166	6.31	1,875.4	1,875.4	1,876.0	0.6
AC	11,194	306	961	7.65	1,877.3	1,877.3	1,877.9	0.6
AD	11,569	219	974	7.55	1,880.0	1,880.0	1,880.7	0.7
AE	11,999	286	898	8.18	1,883.8	1,883.8	1,883.8	0.0
AF	12,379	303	1,097	6.70	1,887.0	1,887.0	1,887.6	0.6
AG	12,804	306	932	7.88	1,890.6	1,890.6	1,890.7	0.1
AH	13,154	340	1,317	5.58	1,892.9	1,892.9	1,893.6	0.7
AI	13,580	388	1,560	4.71	1,895.1	1,895.1	1,895.2	0.1
AJ	13,860	400	1,195	6.15	1,896.0	1,896.0	1,896.3	0.3
AK	14,101	392	1,051	6.99	1,897.8	1,897.8	1,898.1	0.3
AL	14,414	290	1,015	7.24	1,900.6	1,900.6	1,900.9	0.3
AM	14,721	247	913	7.56	1,902.8	1,902.8	1,903.2	0.4
AN	15,030	150	812	8.49	1,905.4	1,905.4	1,905.5	0.1
AO	15,518	154	950	7.26	1,908.4	1,908.4	1,908.6	0.2
AP	15,948	155	828	8.34	1,910.6	1,910.6	1,910.8	0.2
AQ	16,336	200[2]	823	8.39	1,913.4	1,913.4	1,913.9	0.5
AR	16,757	190	870	7.93	1,916.9	1,916.9	1,917.3	0.4
AS	17,053	150	804	8.58	1,919.0	1,919.0	1,919.4	0.4
AT	17,566	198	882	7.83	1,923.1	1,923.1	1,923.4	0.3
AU	17,902	498	1,864	3.70	1,925.3	1,925.3	1,925.6	0.3
AV	18,694	287	877	7.86	1,929.2	1,929.2	1,929.7	0.5
AW	19,027	254	968	7.13	1,932.9	1,932.9	1,933.3	0.4
AX	19,304	240	1,125	6.13	1,934.9	1,934.9	1,935.0	0.1
AY	19,553	291	1,246	5.54	1,936.0	1,936.0	1,936.1	0.1
AZ	19,826	248	995	6.93	1,936.9	1,936.9	1,937.0	0.1

[1]Feet Above Mouth [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
BA	20,108	313	977	7.06	1,939.2	1,939.2	1,939.3	0.1
BB	20,438	260	969	7.12	1,941.7	1,941.7	1,942.5	0.8
BC	20,875	250	1,129	6.11	1,944.6	1,944.6	1,945.2	0.6
BD	21,256	255	856	8.06	1,947.1	1,947.1	1,947.8	0.7
BE	21,632	333	1,560	4.42	1,950.1	1,950.1	1,950.3	0.2
BF	22,061	220	665	10.40	1,952.5	1,952.5	1,952.5	0.0
BG	22,270	552	2,912	2.37	1,959.1	1,959.1	1,959.2	0.1
BH	22,604	288	1,816	3.80	1,959.2	1,959.2	1,959.3	0.1
BI	22,999	290[2]	1,581	4.36	1,959.5	1,959.5	1,960.0	0.5
BJ	23,397	380[2]	1,126	6.13	1,961.7	1,961.7	1,962.0	0.3
BK	23,760	410[2]	1,316	5.24	1,964.8	1,964.8	1,965.4	0.6
BL	24,143	390[2]	903	7.64	1,968.0	1,968.0	1,968.1	0.1
BM	24,541	300[2]	1,282	5.38	1,971.1	1,971.1	1,971.2	0.1
BN	24,913	330[2]	820	8.42	1,973.6	1,973.6	1,973.8	0.2
BO	25,290	490[2]	1,543	4.47	1,977.8	1,977.8	1,978.6	0.8
BP	25,706	640[2]	1,331	5.18	1,981.4	1,981.4	1,981.4	0.0
BQ	26,016	530[2]	1,367	5.05	1,983.7	1,983.7	1,983.8	0.1
BR	26,349	562	1,542	4.47	1,985.4	1,985.4	1,985.9	0.5
BS	26,808	320	983	7.02	1,988.9	1,988.9	1,989.2	0.3
BT	27,188	300	1,244	5.55	1,991.7	1,991.7	1,992.1	0.4
BU	27,591	277	918	7.52	1,994.1	1,994.1	1,994.5	0.4
BV	27,950	250	932	7.40	1,997.2	1,997.2	1,997.9	0.7
BW	28,376	285	1,205	5.72	2,000.2	2,000.2	2,001.1	0.9
BX	28,761	240	827	8.35	2,003.0	2,003.0	2,003.4	0.4
BY	29,185	330	1,325	5.21	2,006.0	2,006.0	2,006.7	0.7
BZ	29,568	390	1,280	5.39	2,008.1	2,008.1	2,008.4	0.3

[1]Feet Above Mouth [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
CA	29,921	340	1,144	6.03	2,010.0	2,010.0	2,010.4	0.4
CB	30,302	363	1,243	5.55	2,012.6	2,012.6	2,012.7	0.1
CC	30,664	442	1,169	5.90	2,014.2	2,014.2	2,014.7	0.5
CD	31,065	310	1,043	6.61	2,016.5	2,016.5	2,017.3	0.8
CE	31,413	352	1,227	5.62	2,019.2	2,019.2	2,019.6	0.4
CF	31,777	400	1,109	6.22	2,021.4	2,021.4	2,021.9	0.5
CG	32,176	350	1,156	5.97	2,024.2	2,024.2	2,024.7	0.5
CH	32,491	410	946	7.29	2,026.9	2,026.9	2,027.3	0.4
CI	32,961	530	1,589	4.34	2,030.6	2,030.6	2,031.3	0.7
CJ	33,523	598	1,575	4.38	2,033.0	2,033.0	2,033.7	0.7
CK	33,929	533	1,238	5.57	2,035.7	2,035.7	2,035.9	0.2
CL	34,327	216	864	7.98	2,038.4	2,038.4	2,039.0	0.6
CM	34,708	425	1,565	4.41	2,040.8	2,040.8	2,041.8	1.0
CN	35,054	591	1,353	5.10	2,043.5	2,043.5	2,043.7	0.2
CO	35,461	673	1,723	4.01	2,046.0	2,046.0	2,046.7	0.7
CP	35,891	427	1,307	5.28	2,048.2	2,048.2	2,049.1	0.9
CQ	36,202	230	896	7.70	2,050.6	2,050.6	2,051.3	0.7
CR	36,578	313	1,081	6.38	2,054.6	2,054.6	2,055.0	0.4
CS	37,061	320	1,336	5.16	2,057.7	2,057.7	2,058.6	0.9
CT	37,439	346	1,401	4.92	2,060.0	2,060.0	2,060.4	0.4
CU	37,881	220	881	7.83	2,062.9	2,062.9	2,063.3	0.4
CV	38,236	381	1,317	5.24	2,065.6	2,065.6	2,066.5	0.9
CW	38,604	292	1,107	6.23	2,068.5	2,068.5	2,068.7	0.2
CX	39,076	390	1,542	4.47	2,071.5	2,071.5	2,071.6	0.1
CY	39,465	295	1,032	6.69	2,073.6	2,073.6	2,073.7	0.1
CZ	39,831	360	1,162	5.94	2,076.7	2,076.7	2,077.0	0.3

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
DA	40,226	398	1,581	4.36	2,078.8	2,078.8	2,079.2	0.4
DB	40,582	306	1,102	6.26	2,080.5	2,080.5	2,080.8	0.3
DC	40,934	294	1,168	5.91	2,082.7	2,082.7	2,083.5	0.8
DD	41,312	321	1,626	4.24	2,084.6	2,084.6	2,085.4	0.8
DE	41,704	217	809	8.53	2,087.2	2,087.2	2,087.5	0.3
DF	42,094	390	1,503	4.59	2,091.4	2,091.4	2,091.5	0.1
DG	42,432	417	1,329	5.19	2,092.5	2,092.5	2,092.7	0.2
DH	42,884	310	1,090	6.33	2,095.3	2,095.3	2,095.4	0.1
DI	43,175	271	1,041	6.63	2,097.9	2,097.9	2,098.0	0.1
DJ	43,561	327	1,109	6.22	2,101.0	2,101.0	2,101.3	0.3
DK	44,004	298	1,175	5.87	2,104.0	2,104.0	2,104.4	0.4
DL	44,464	320	1,167	5.91	2,107.4	2,107.4	2,107.7	0.3
DM	44,804	270	1,254	5.50	2,109.2	2,109.2	2,109.8	0.6
DN	45,173	220	1,022	6.75	2,111.6	2,111.6	2,112.1	0.5
DO	45,483	309	1,257	5.49	2,114.2	2,114.2	2,114.4	0.2
DP	45,876	390	1,290	5.00	2,116.5	2,116.5	2,116.9	0.4
DQ	46,206	512	1,073	6.01	2,119.5	2,119.5	2,119.6	0.1
DR	46,613	420	1,448	4.46	2,123.3	2,123.3	2,123.7	0.4
DS	47,030	550	1,375	4.69	2,126.4	2,126.4	2,127.0	0.6
DT	47,418	630	2,074	3.11	2,129.0	2,129.0	2,129.8	0.8
DU	47,824	580	1,626	3.97	2,131.0	2,131.0	2,131.8	0.8
DV	48,136	510	1,425	4.52	2,133.2	2,133.2	2,134.0	0.8
DW	48,539	550	1,593	4.05	2,136.5	2,136.5	2,137.2	0.7
DX	48,929	440	1,602	4.03	2,139.1	2,139.1	2,139.4	0.3
DY	49,180	390	1,394	4.63	2,140.5	2,140.5	2,140.8	0.3
DZ	49,567	380	1,267	5.09	2,143.3	2,143.3	2,143.6	0.3

[1]Feet Above Mouth

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
EA	49,944	320	1,162	5.55	2,146.7	2,146.7	2,147.1	0.4
EB	50,264	528	1,712	3.77	2,149.1	2,149.1	2,149.4	0.3
EC	50,683	363	1,182	5.46	2,151.8	2,151.8	2,152.4	0.6
ED	51,052	315	1,361	4.74	2,154.7	2,154.7	2,155.6	0.9
EE	51,426	268	1,084	5.95	2,157.6	2,157.6	2,157.9	0.3
EF	51,791	312	1,554	4.15	2,159.8	2,159.8	2,159.9	0.1
EG	52,151	214	1,156	5.58	2,161.0	2,161.0	2,161.1	0.1
EH	52,443	217	1,373	4.70	2,162.1	2,162.1	2,162.4	0.3
EI	52,876	250	1,456	4.43	2,163.4	2,163.4	2,163.8	0.4
EJ	53,290	295	985	6.55	2,166.0	2,166.0	2,166.5	0.5
EK	53,674	311	1,492	4.32	2,169.7	2,169.7	2,170.4	0.7
EL	54,043	340	1,876	3.44	2,171.2	2,171.2	2,172.0	0.8
EM	54,392	383	1,615	3.99	2,172.2	2,172.2	2,1 3.0	0.8
EN	54,706	284	840	7.68	2,175.3	2,175.3	2,175.7	0.4
EO	55,133	280	1,530	4.22	2,179.6	2,179.6	2,180.3	0.7
EP	55,497	251	972	6.63	2,181.6	2,181.6	2,182.1	0.5
EQ	55,840	420	1,226	5.26	2,185.3	2,185.3	2,185.4	0.1
ER	56,276	400	1,354	4.77	2,188.6	2,188.6	2,189.5	0.9
ES	56,564	282	979	6.59	2,191.6	2,191.6	2,192.0	0.4
ET	56,940	270	1,419	4.55	2,195.0	2,195.0	2,195.2	0.2
EU	57,241	210	967	3.41	2,196.3	2,196.3	2,196.5	0.2
EV	57,595	270[2]	703	4.69	2,197.7	2,197.7	2,197.9	0.2
EW	58,295	390	1,248	2.64	2,201.6	2,201.6	2,201.8	0.2
EX	58,650	220	709	4.66	2,203.3	2,203.3	2,203.6	0.3
EY	59,022	207	684	4.83	2,206.3	2,206.3	2,206.6	0.3
EZ	59,405	225	853	3.87	2,209.3	2,209.3	2,209.5	0.2

[1]Feet Above Mouth [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

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)			
Teanaway River (Cont'd)								
FA	59,836	225	485	6.81	2,214.8	2,214.8	2,215.0	0.2
FB	60,208	280	1,233	2.68	2,218.3	2,218.3	2,218.9	0.6
FC	60,648	170	603	5.47	2,220.8	2,220.8	2,221.1	0.3
FD	60,986	140	669	4.93	2,223.8	2,223.8	2,224.2	0.4
FE	61,407	299[2]	655	5.04	2,227.4	2,227.4	2,227.5	0.1
FF	61,851	208	803	4.11	2,231.6	2,231.6	2,231.6	0.0

[1]Feet Above Mouth [2]This Width Excludes Islands

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOODWAY DATA

TEANAWAY RIVER

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the Federal Emergency Management Agency 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, and flood insurance zone designations for each flooding source studied in detail affecting Kittitas County, and the Cities of Ellensburg, Cle Elum, South Cle Elum, and the Town of Kittitas.

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
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of Kittitas County and the Cities of Ellensburg, Cle Elum, South Cle Elum, and the Town of Kittitas are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is the Federal Emergency Management Agency device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHF 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 Flood Hazard Factors, the entire unincorporated area of Kittitas County and the Cities of Ellensburg, Cle Elum, South Cle Elum, and the Town of

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Yakima River							
Reach 1	0566	-2.6	-0.8	1.8	025	A5	Varies - See Map
Reach 2	0552,0554 0558,0562 0566	-1.2	-0.4	0.9	010	A2	Varies - See Map
Reach 3	0438,0439 0552	-2.5	-0.8	1.6	025	A5	Varies - See Map
Reach 4	0436,0438	-1.5	-0.7	1.0	015	A3	Varies - See Map
Reach 5	0436	-3.1	-1.0	2.4	030	A6	Varies - See Map
Reach 6	0409,0417 0428,0436	-1.7	-0.8	1.2	015	A3	Varies - See Map
Reach 7	0409	-2.7	-0.8	2.5	025	A5	Varies - See Map
Reach 8	0264	-3.4	-1.0	2.5	035	A7	Varies - See Map
Reach 9	0262,0264	-3.9	-1.3	3.0	040	A8	Varies - See Map
Reach 10	0262,0264	-3.2	-1.0	2.7	030	A6	Varies - See Map
Reach 11	0262,0264	-1.9	-0.6	1.5	020	A4	Varies - See Map
Reach 12	0261,0262 0263,0264	-1.4	-0.4	0.9	015	A3	Varies - See Map
Reach 13	0261	-2.9	-1.0	2.5	030	A6	Varies - See Map
Reach 14	0001(Cle Elum), 0001 (South Cle Elum) 0242,0261	-1.4	-0.4	1.0	015	A3	Varies - See Map
Reach 15	0001 (South Cle Elum) 0242	-2.0	-0.6	1.2	020	A4	Varies - See Map

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

YAKIMA RIVER

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Yakima River (Cont'd)							
Reach 16	0241,0242	-2.4	-0.7	1.9	025	A5	Varies - See Map
Reach 17	0241	-1.2	-0.3	0.8	010	A2	Varies - See Map
Reach 18	0241	-2.1	-0.6	1.4	020	A4	Varies - See Map
Reach 19	0241	-2.8	-0.9	2.5	030	A6	Varies - See Map
Reach 20	0229,0240	-2.0	-0.5	1.2	020	A4	Varies - See Map
	0241,0233						
Reach 21	0229	-1.4	-0.4	0.9	015	A3	Varies - See Map
Reach 22	0228,0229						
	0226	-1.2	-0.3	0.7	010	A2	Varies - See Map
Reach 23	0226	-2.5	-0.8	1.8	025	A5	Varies - See Map
Reach 24	0226,0207	-4.4	-1.3	3.1	045	A9	2181.0
Reach 25	0207	-3.6	-1.2	3.0	035	A7	Varies - See Map
Reach 26	0207	-2.7	-0.8	2.2	025	A5	Varies - See Map
Reach 27	0207	-1.9	-0.6	1.4	020	A4	Varies - See Map
Reach 28	0206,0207	-1.3	-0.3	0.7	015	A3	Varies - See Map
Shallow Flooding	0261,0262	N/A	N/A	N/A	N/A	A0	Depth 2
Kachess River							
Reach 1	0207	-1.2	-0.5	1.2	010	A2	Varies - See Map
Shallow Flooding	0207	N/A	N/A	N/A	N/A	A0	Depth 2
Silver Creek							
Reach 1	0226	-0.5	-0.1	0.3	005	A1	Varies - See Map
Reach 2	0226	-1.4	-0.5	0.8	015	A3	Varies - See Map
Reach 3	0226	-0.6	-0.2	0.5	005	A1	Varies - See Map
Reach 4	0226	-2.2	-0.8	0.5	020	A4	Varies - See Map
Reach 5	0226	-0.6	-0.2	0.3	005	A1	Varies - See Map

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

YAKIMA RIVER-KACHESS RIVER-SILVER CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Cle Elum River							
Reach 1	0241	-1.5	-0.5	1.2	015	A3	Varies - See Map
Reach 2	0241	-2.3	-0.9	2.6	025	A5	Varies - See Map
Reach 3	0241	-1.1	-0.3	1.0	010	A2	Varies - See Map
Reach 4	0241	-3.1	-0.9	2.1	030	A6	Varies - See Map
Reach 5	0233,0241	-1.2	-0.3	0.8	010	A2	Varies - See Map
Reach 6	0233	-1.8	-0.4	1.1	020	A4	Varies - See Map
Reach 7	0229,0231 0233	-1.2	-0.3	0.8	010	A2	Varies - See Map
Reach 8	0227,0231	-2.6	-0.7	1.6	025	A5	Varies - See Map
Manastash Creek							
Reach 1	0531,0532 0533,0534	-0.8	-0.2	0.5	010	A2	Varies - See Map
Alluvial Fan Shallow Flooding	0438,0551 0553	N/A	N/A	N/A	N/A	A0	1[4]
Alluvial Fan Shallow Flooding	0532,0551 0553	N/A	N/A	N/A	N/A	A0	2[4]
Crystal Creek							
Reach 1	0001(Cle Elum), 0234,0242	-0.5	-0.1	0.3	005	A1	Varies - See Map
Naneum Creek							
Reach 1	0558	-0.5	-0.2	0.5	010	A1	Varies - See Map
Reach 2	0558	-0.8	-0.2	0.5	010	A2	Varies - See Map

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot [4] See Map for Velocities

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

CLE ELUM RIVER-MANASTASH CREEK-CRYSTAL CREEK-NANEUM CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Naneum Creek Left Channel							
Reach 1	0558	-0.3	-0.1	0.4	005	A1	Varies - See Map
Reach 2	0558	-1.0	-0.2	0.5	010	A2	Varies - See Map
Reach 3	0558	-0.5	-0.1	0.3	005	A1	Varies - See Map
Wilson Creek							
Reach 1	0566	-2.5	-0.8	2.0	025	A5	Varies - See Map
Reach 2	0566	-1.6	-0.6	1.7	015	A3	Varies - See Map
Reach 3	0002 (Ellensburg), 0552,0554 0556,0558 0566	-0.4	-0.1	0.3	005	A1	Varies - See Map
Reach 4	0441,0443	-0.6	-0.1	0.4	005	A1	Depth 1
Shallow Flooding	0002 (Ellensburg)	N/A	N/A	N/A	N/A	A0	Depth 1
Shallow Flooding	0558	N/A	N/A	N/A	N/A	A0	Depth 2
Wilson Creek Right Channel							
Reach 1	0002 (Ellensburg), 0552,0554	-0.4	-0.1	0.2	005	A1	Varies - See Map

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

NANEUM CREEK LEFT CHANNEL-WILSON CREEK-WILSON CREEK RIGHT CHANNEL

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Wilson Creek Right Channel (Cont'd) Reach 2	0002 (Ellensburg), 0552	-0.6	-0.2	0.3	005	A1	Varies - See Map
Shallow Flooding	0002 (Ellensburg)	N/A	N/A	N/A	N/A	AO	Depth 1

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

WILSON CREEK RIGHT CHANNEL

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Reecer Creek							
Reach 1	0001 (Ellensburg), 0439	-0.5	-0.2	0.4	005	A1	Varies - See Map
Shallow Flooding	0552,0002 (Ellensburg)	N/A	N/A	N/A	N/A	A0	Depth 2
Currier Creek							
Reach 1	0439	-0.6	-0.2	0.4	005	A1	Varies - See Map
Shallow Flooding	0439,0001 (Ellensburg)	N/A	N/A	N/A	N/A	A0	Depth 2
Whiskey Creek							
Reach 1	0001,0002 (Ellensburg), 0439	-0.8	-0.5	0.5	005	A2	Varies - See Map
Reach 2	0439,0001 0002 (Ellensburg)	-0.8	-0.3	0.3	010	A2	Varies - See Map
Shallow Flooding	0439,0552 0001 (Ellensburg)	N/A	N/A	N/A	N/A	A0	Depth 1
Shallow Flooding		N/A	N/A	N/A	N/A	A0	Depth 2

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

REECER CREEK-CURRIER CREEK-WHISKEY CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Mercer Creek							
Reach 1	0552	-0.5	-0.2	0.3	005	A1	Varies - See Map
Reach 2	0002 (Ellensburg), 0552	-1.0	-0.5	0.5	010	A2	Varies - See Map
Shallow Flooding	0439,0441 0443,0002 (Ellensburg)	N/A	N/A	N/A	N/A	A0	Depth 1
Shallow Flooding	0439	N/A	N/A	N/A	N/A	A0	Depth 2
Caribou Creek							
Reach 1	0001 (Kittitas), 0557	-0.5	-0.2	0.3	005	A1	Varies - See Map
Shallow Flooding	0559	N/A	N/A	N/A	N/A	A0	Depth 1

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

MERCER CREEK-CARIBOU CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Teanaway River Reach 1	0251,0254 0258,0262 0266,0252	-0.7	0.2	0.3	005	A1	Varies - See Map
Shallow Flooding	0262,0266	N/A	N/A	N/A	N/A	AO	Depth 1
North Fork Teanaway River Reach 1	0162,0164 0251,0163	-0.6	-0.1	0.3	005	A1	Varies - See Map
Middle Fork Teanaway River Reach 1	0144,0163 0251	-0.5	-0.1	0.3	005	A1	Varies - See Map
West Fork Teanaway River Reach 1	0144,0232 0143,0251	-0.5	-0.1	0.3	005	A1	Varies - See Map

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

TEANAWAY RIVER-NORTH FORK TEANAWAY RIVER-MIDDLE FORK TEANAWAY RIVER-WEST FORK TEANAWAY RIVER

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Coleman Creek Shallow Flooding	0556,0557	N/A	N/A	N/A	N/A	AO	Depth 1
Cooke Creek Shallow Flooding	0557,0559 0001(Kittitas)	N/A	N/A	N/A	N/A	AO	Depth 1
Cherry Creek Shallow Flooding	0559	N/A	N/A	N/A	N/A	AO	Depth 1

[1] Flood Insurance Rate Map Panel [2] Weighted Average [3] Rounded to Nearest Foot

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

FLOOD INSURANCE ZONE DATA

COLEMAN CREEK-COOKE CREEK-CHERRY CREEK

Kittitas 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 Flood Hazard Factors determined.
Zone A0:	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; depths are shown, or areas of 100-year alluvial fan flooding, depths and velocities shown, but no flood hazard factors are determined.
Zones A1-A9:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to Flood Hazard Factors.
Zone B:	Areas between the Special Flood Hazard Areas 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; also areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and 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.

The flood elevation differences, Flood Hazard Factors, flood insurance zones, and base flood elevations for each flooding source studied in detail in the communities are summarized in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Kittitas County, the Cities of Ellensburg, Cle Elum, South Cle Elum, and the Town of Kittitas is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official deline-

ation 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 the Federal Emergency Management Agency.

6.0 OTHER STUDIES

The Flood Hazard Boundary Maps for Kittitas County (Reference 19), City of Cle Elum (Reference 20), City of South Cle Elum (Reference 21), Town of Kittitas (Reference 22), City of Ellensburg (Reference 23), and the City of Roslyn (Reference 24) are in general agreement with this Flood Insurance Study.

Hydrologic methods used in this Flood Insurance Study are in agreement with those used in the Flood Insurance Study for Yakima County, Washington (Reference 25). There is no overlap or joining of these two study areas, and, therefore, no hydraulic comparisons could be made.

Flood Insurance Studies have also been made for adjoining Douglas County, Washington (Reference 26), King County, Washington (Reference 27), and Chelan County, Washington (Reference 28), but there are no areas of overlap with this Flood Insurance Study.

This study is authoritative for the purposes of the National Flood Insurance Program; data presented herein either supersede or are compatible with all previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the Insurance and Mitigation Division, Federal Emergency Management Agency, Federal Regional Center, 130 228th Street, SW., Bothell, WA 98011.

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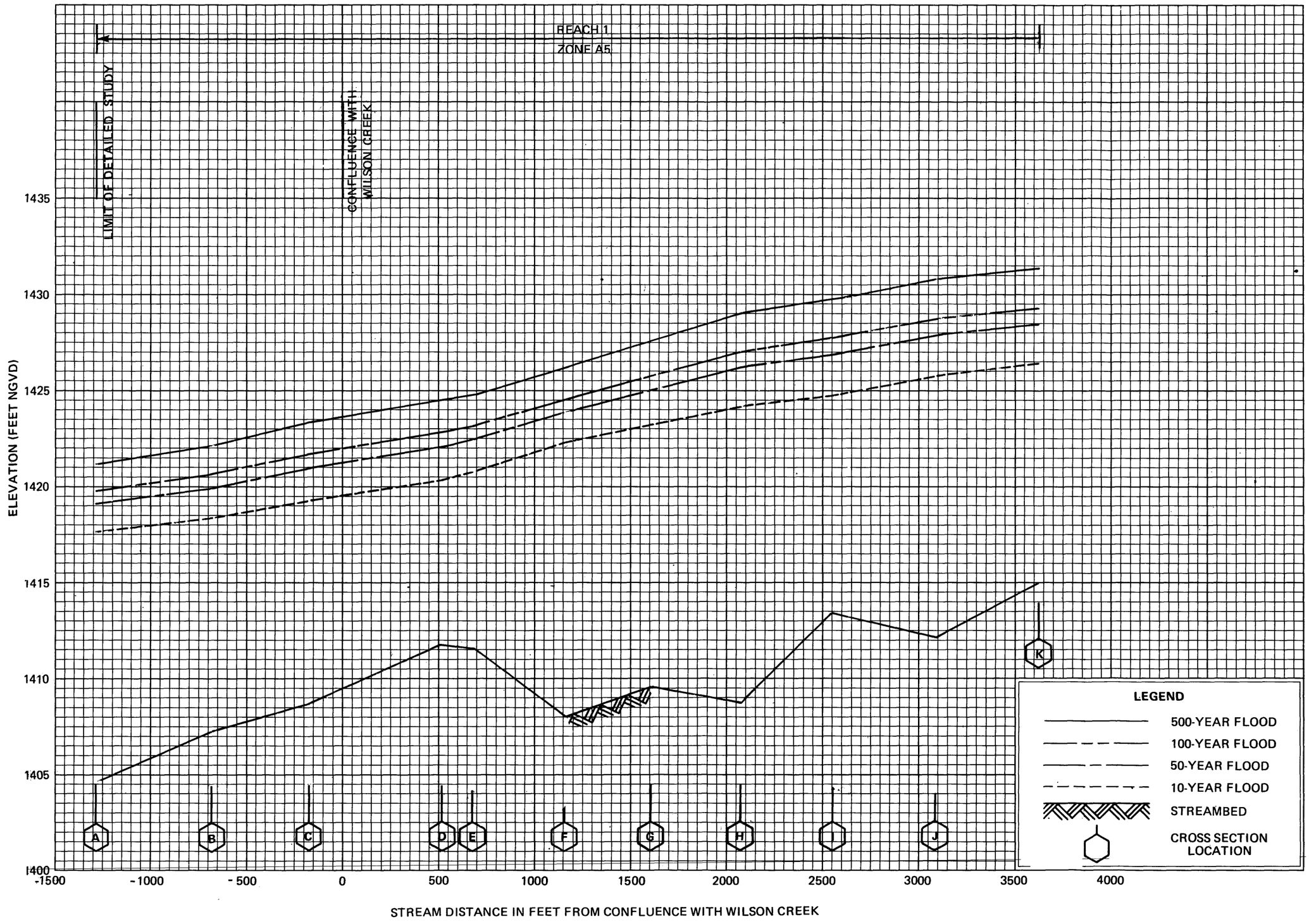


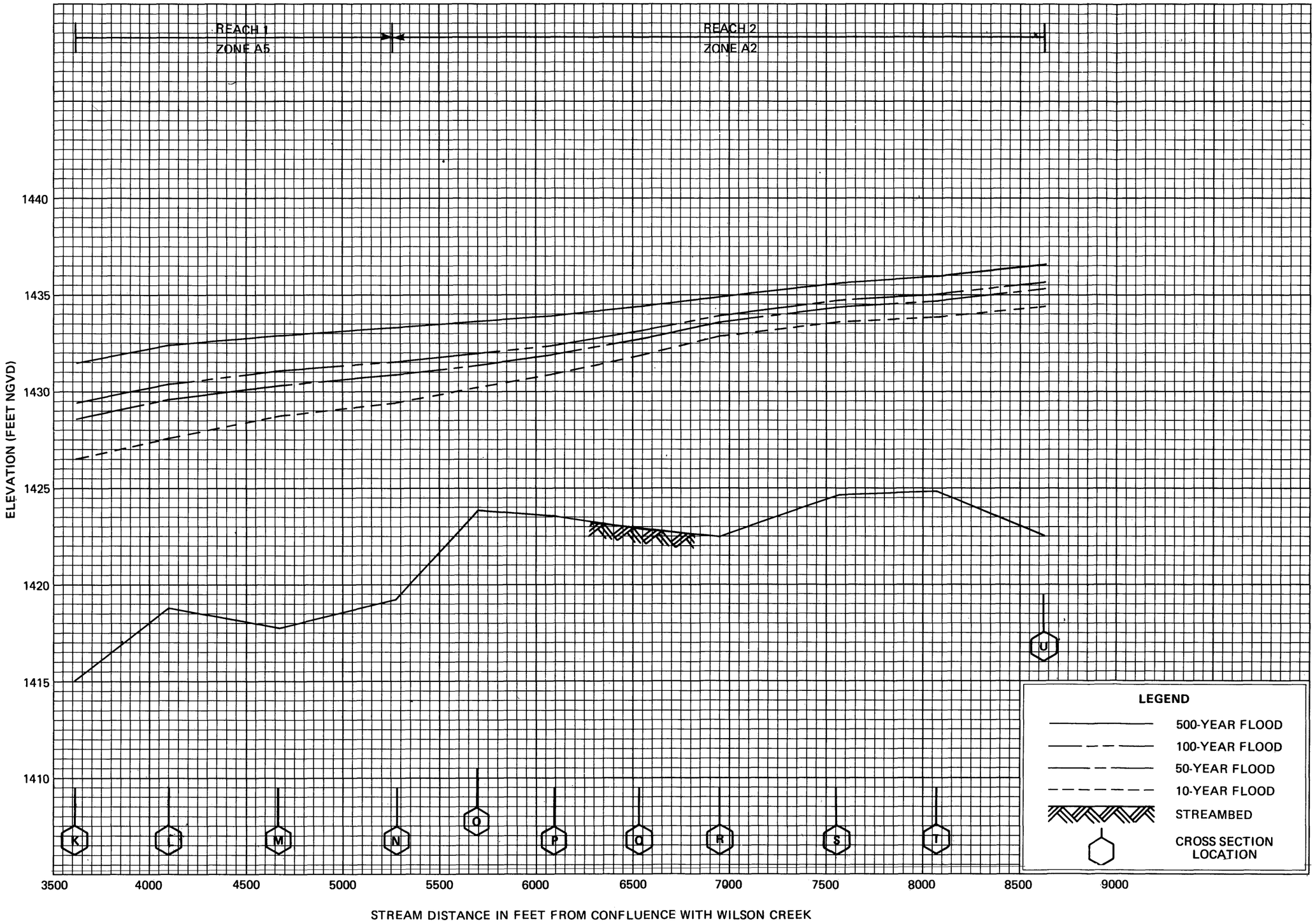
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

01P



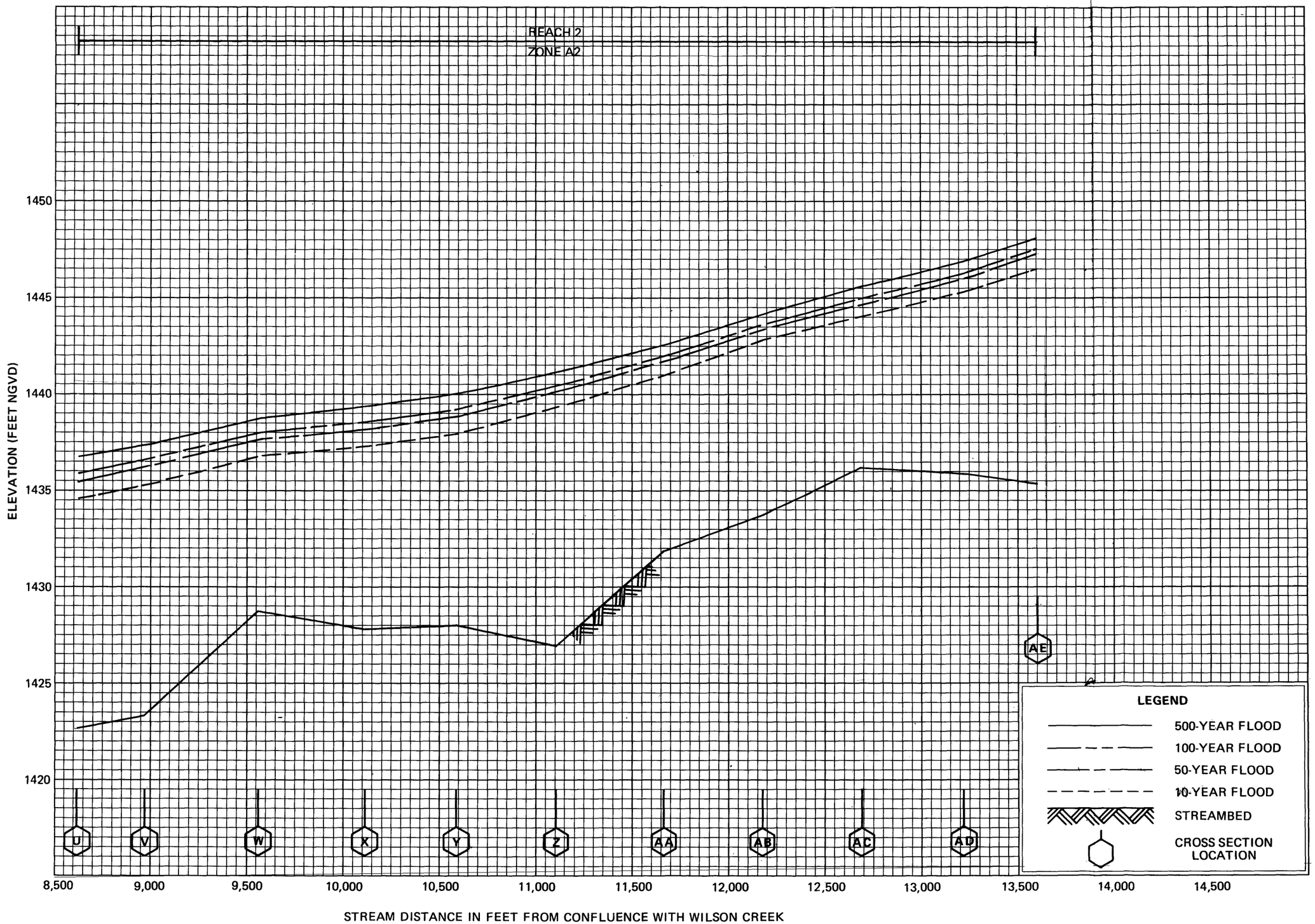
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

02P



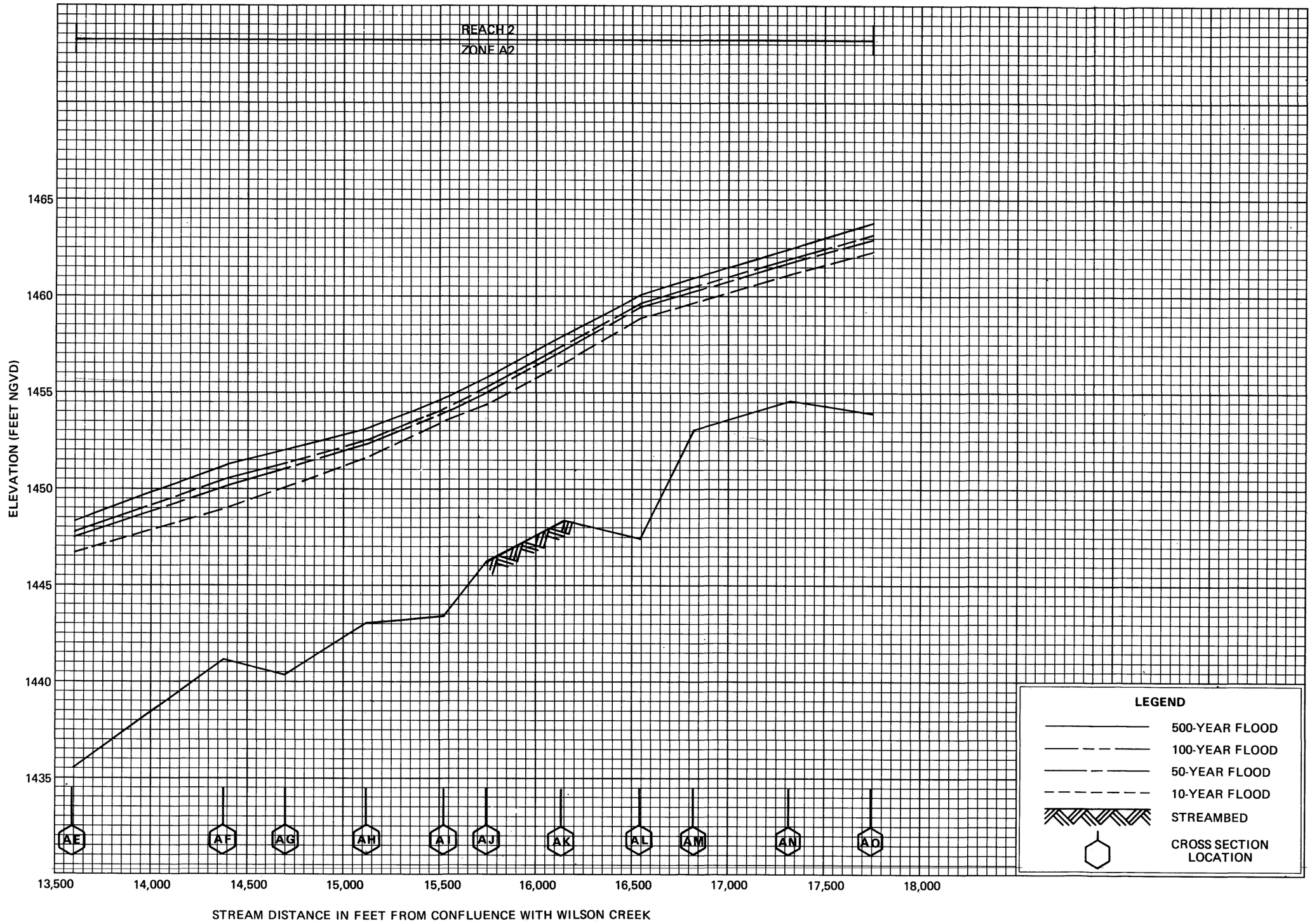
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

03P



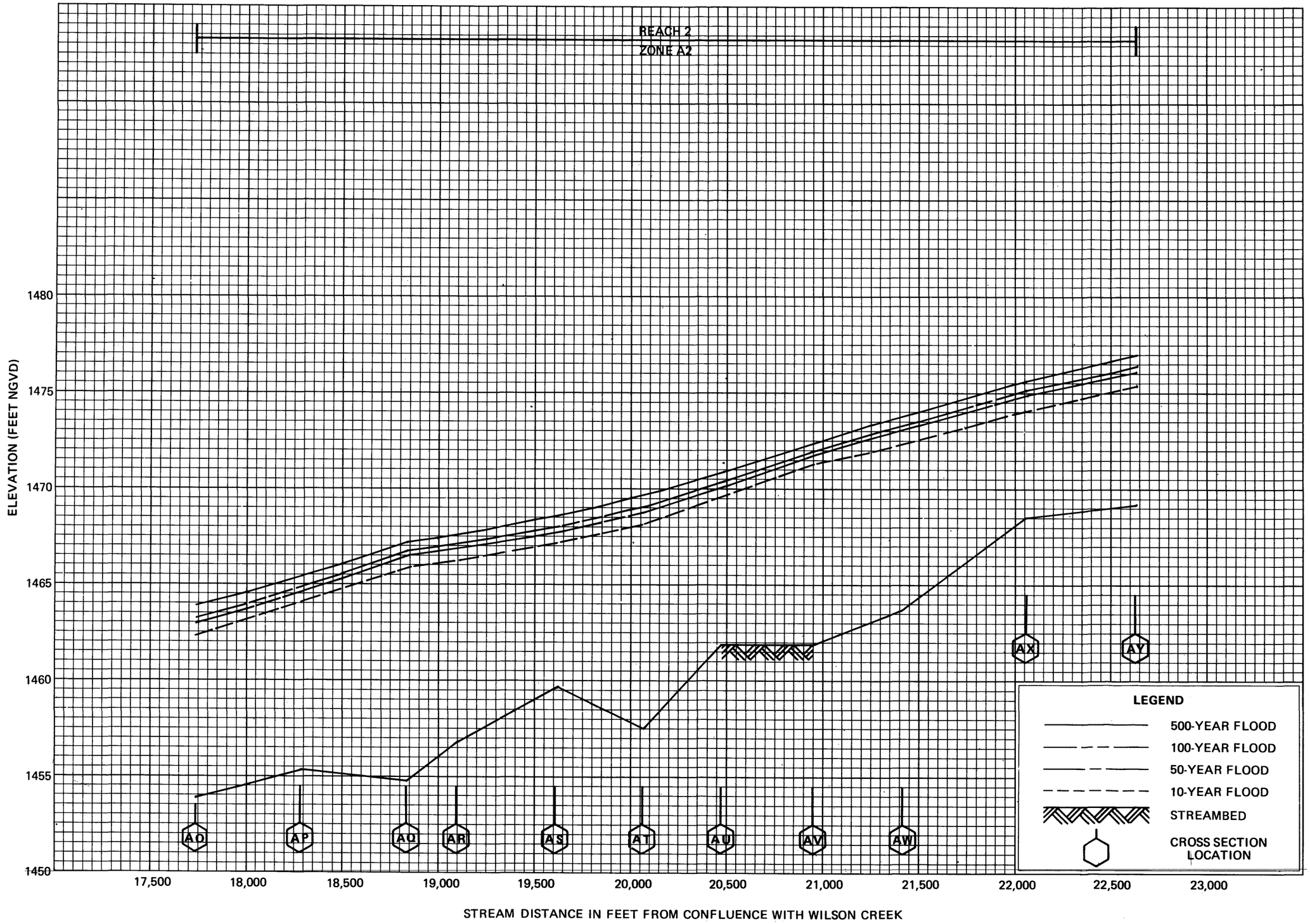
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

04P



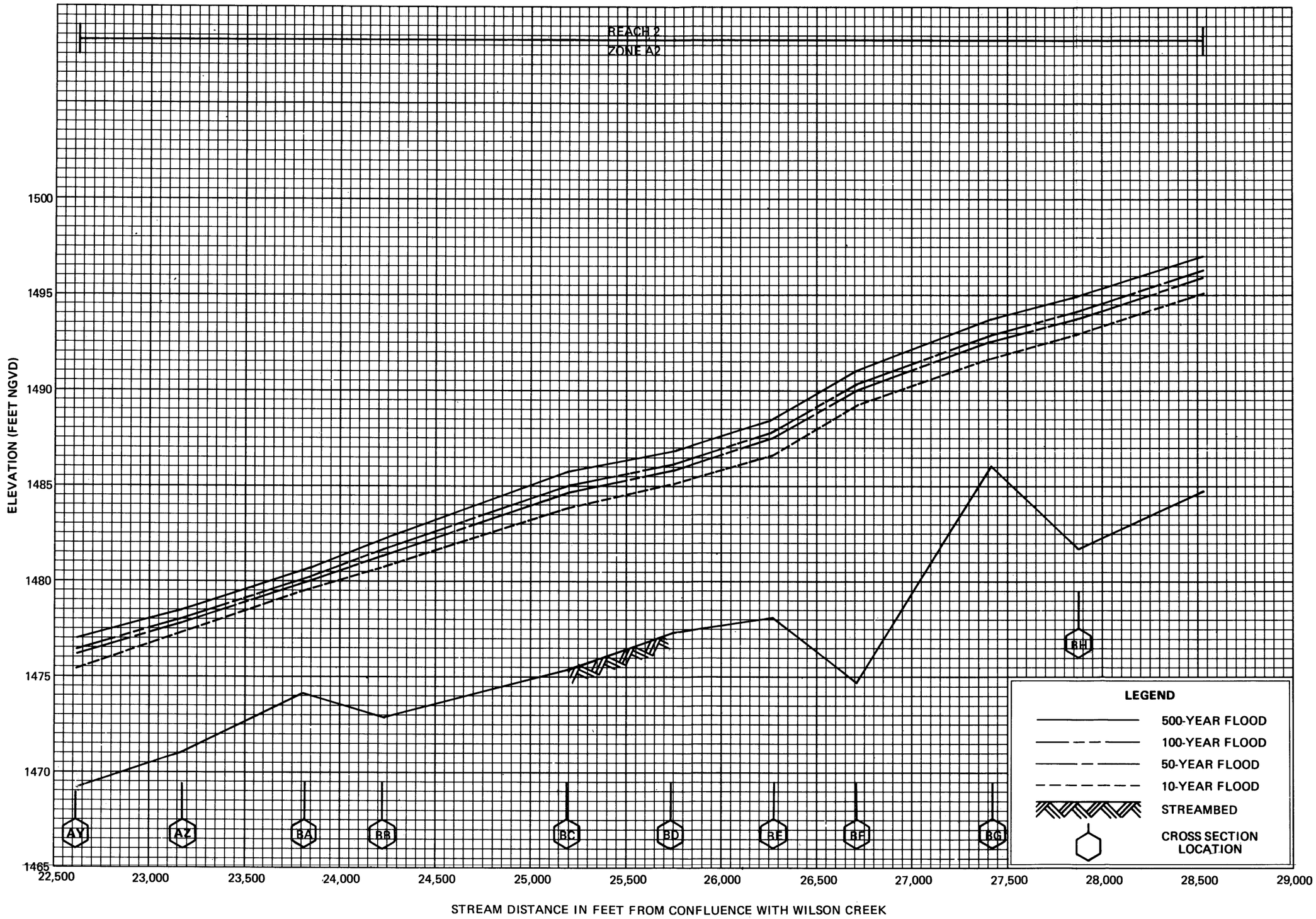
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

05P



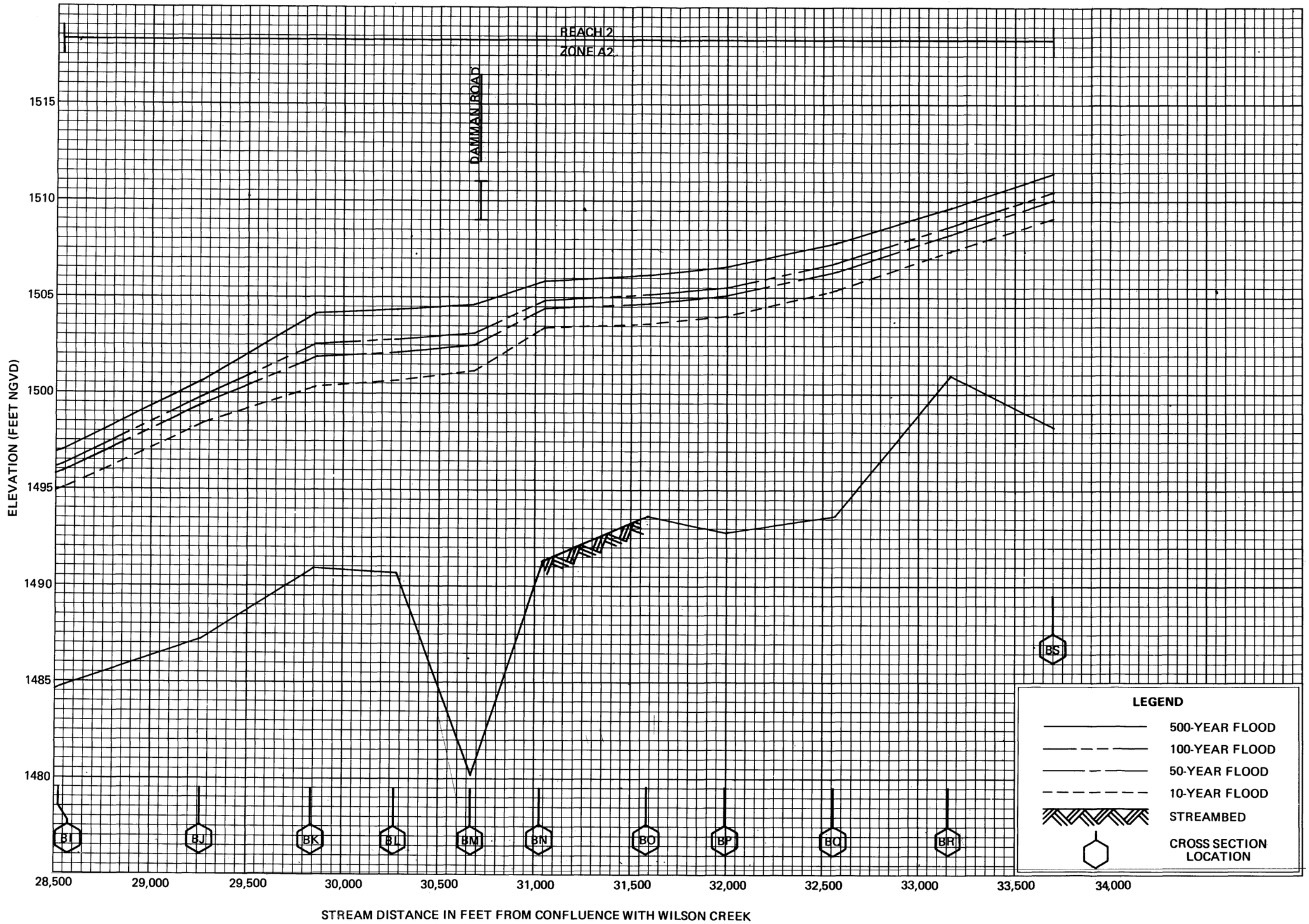
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

06P



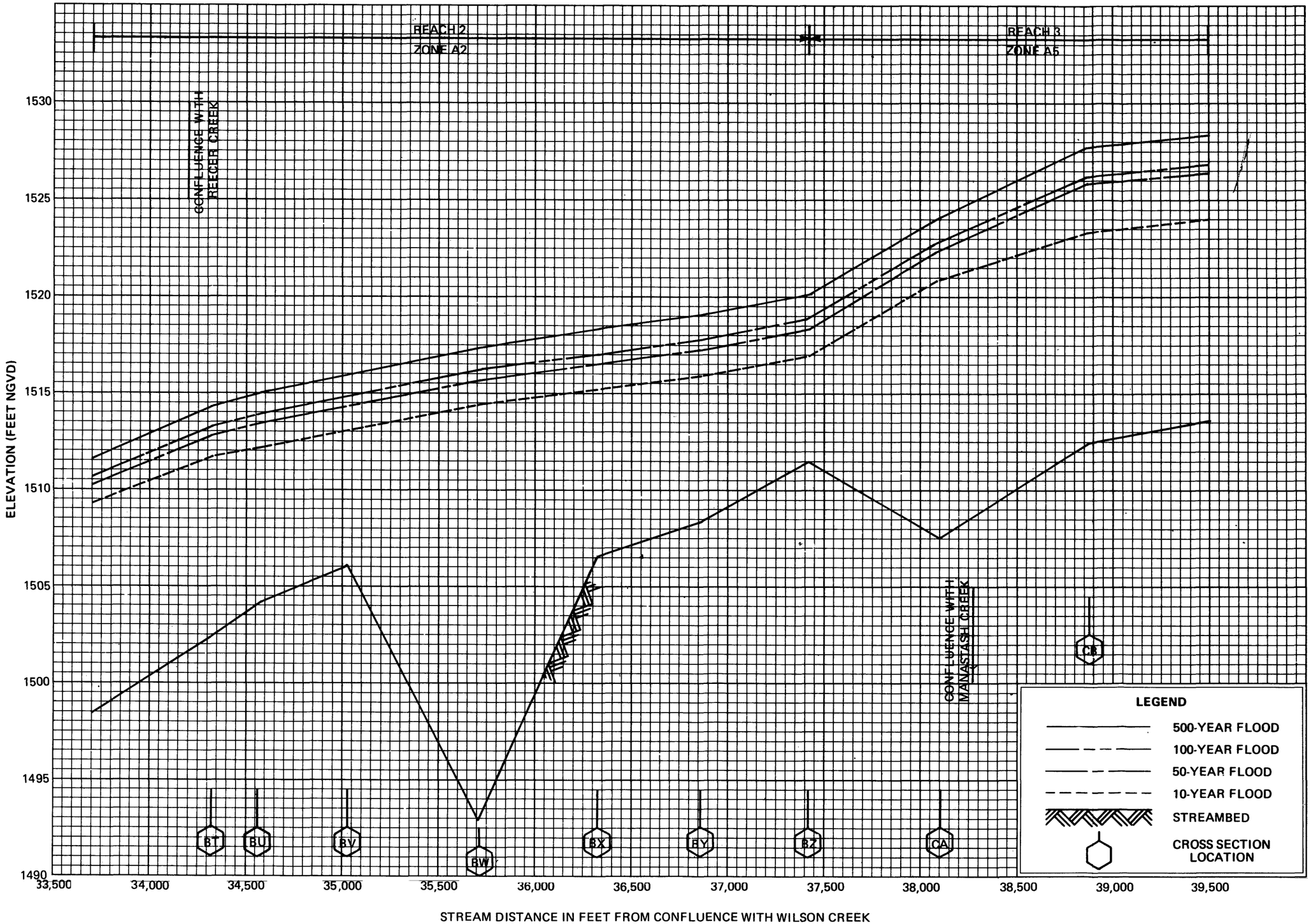
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

07P



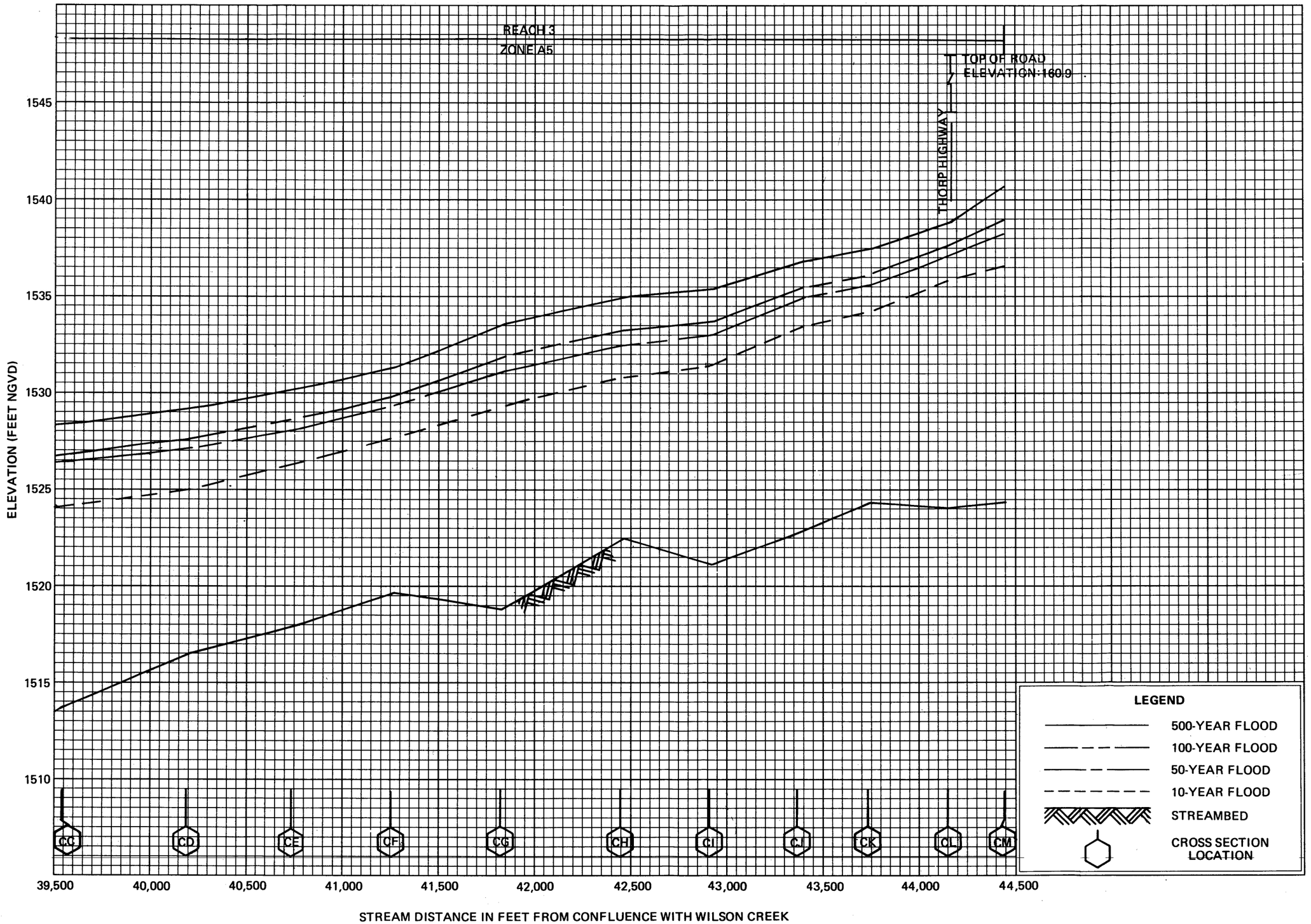
FLOOD PROFILES

YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

08P



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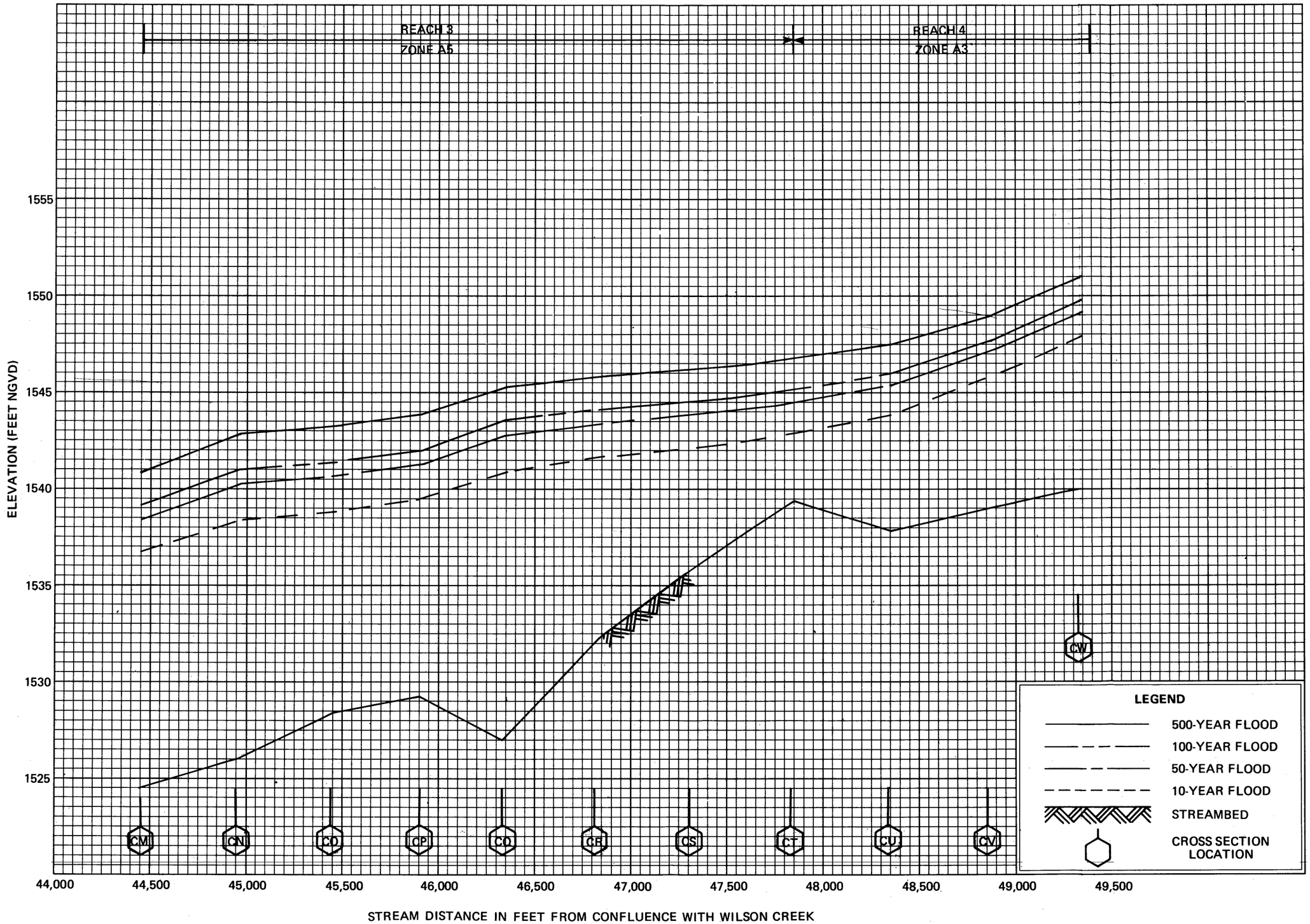
YAKIMA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

09P



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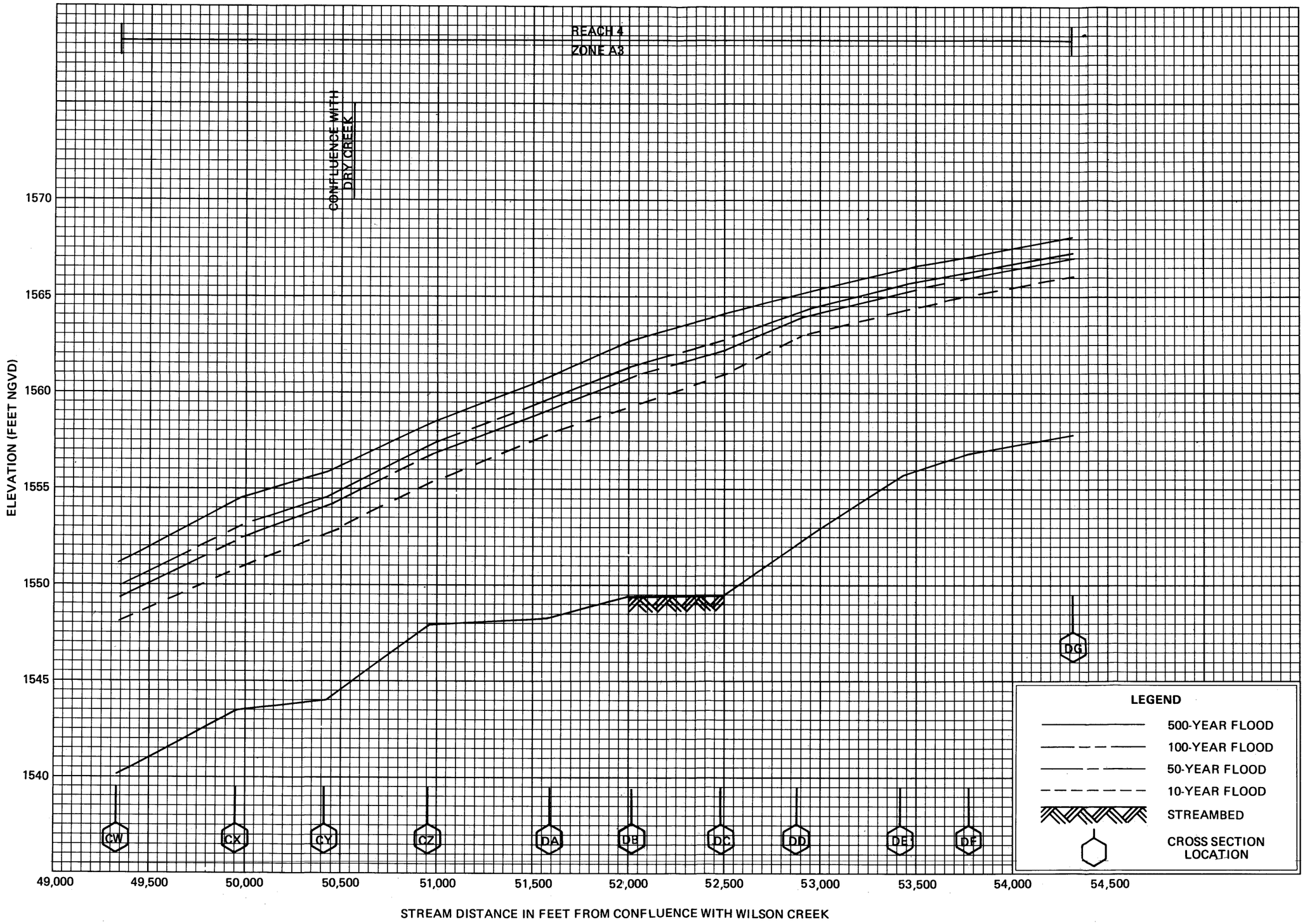
KITTITAS COUNTY, WA



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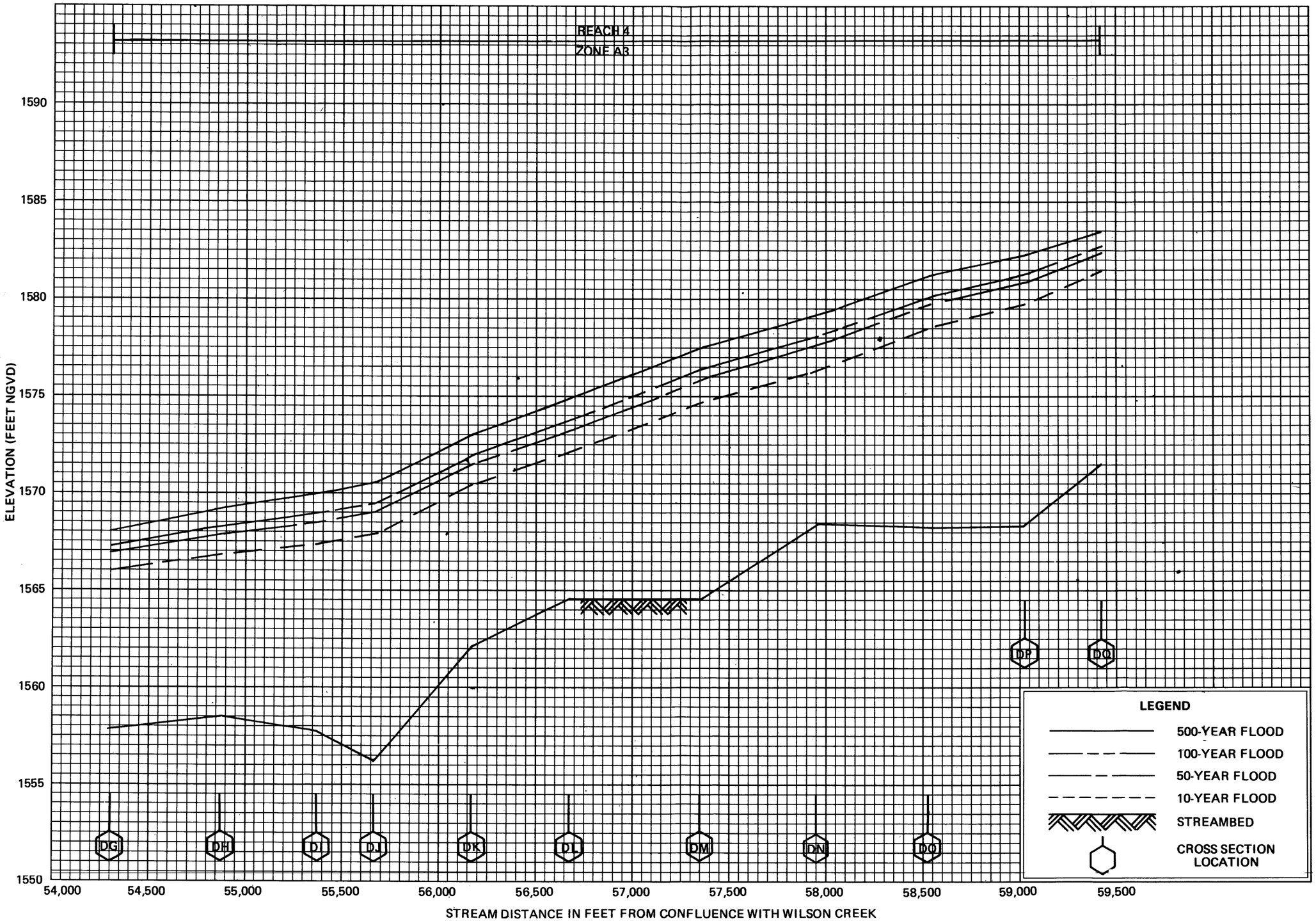
KITTITAS COUNTY, WA



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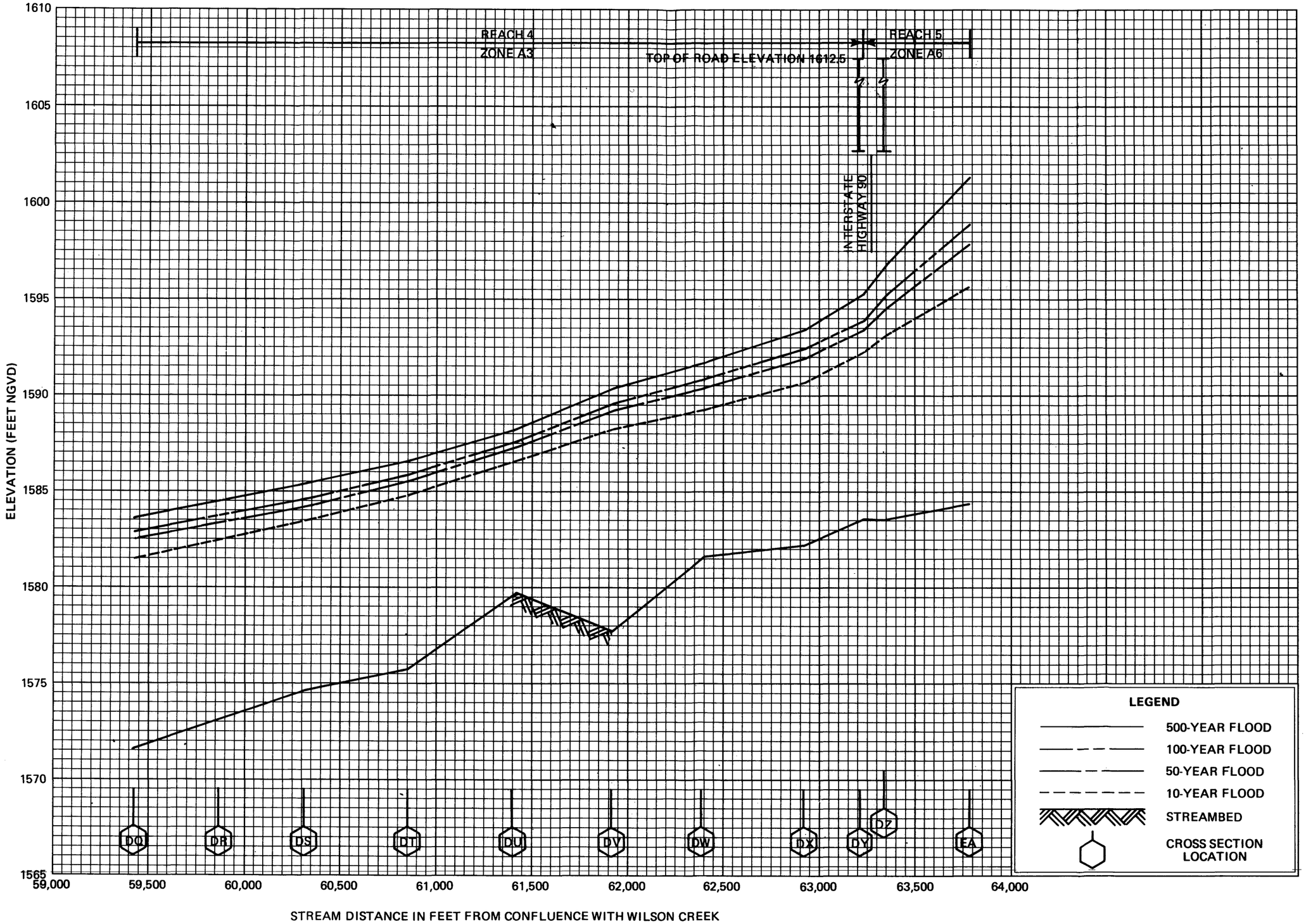

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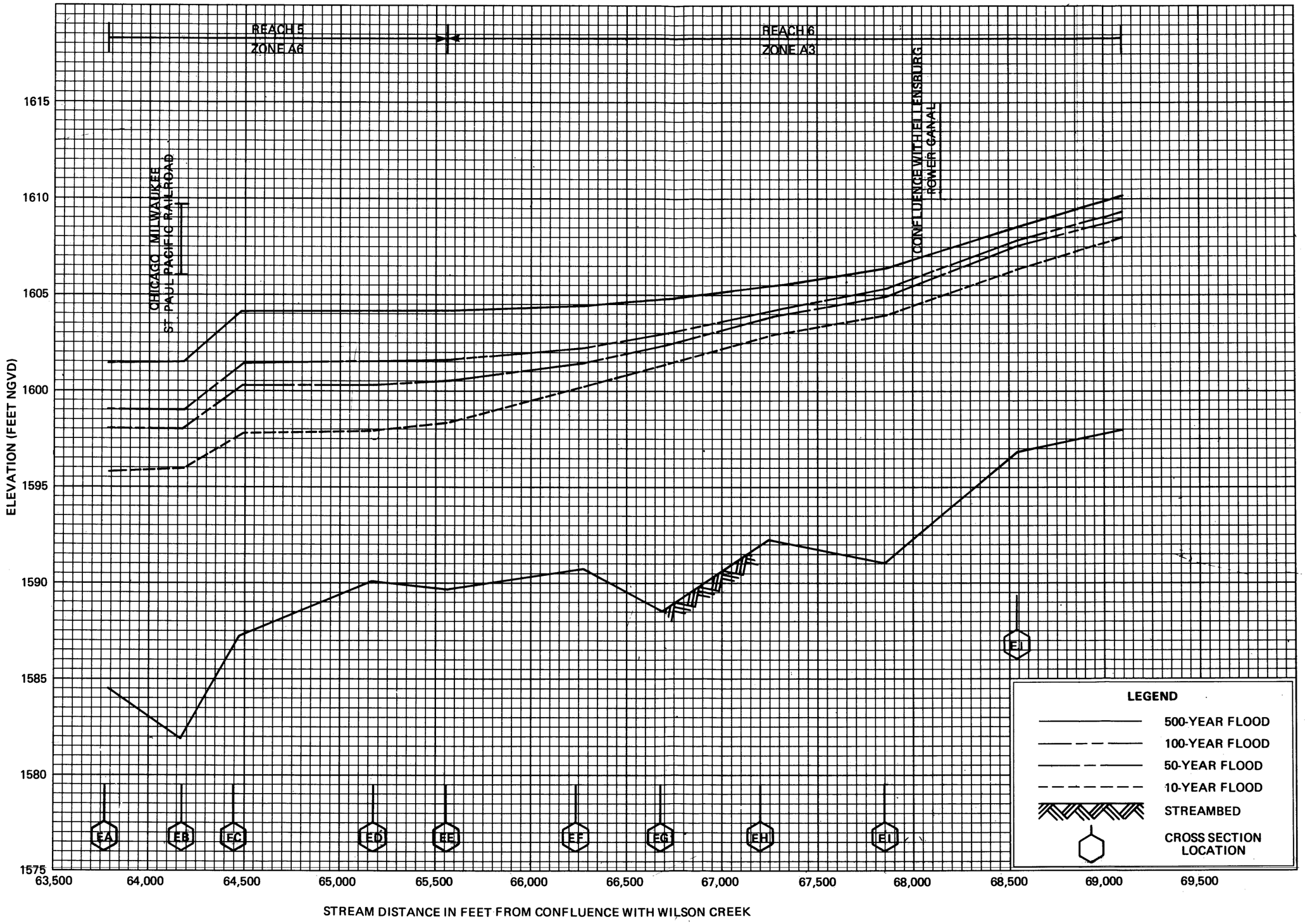

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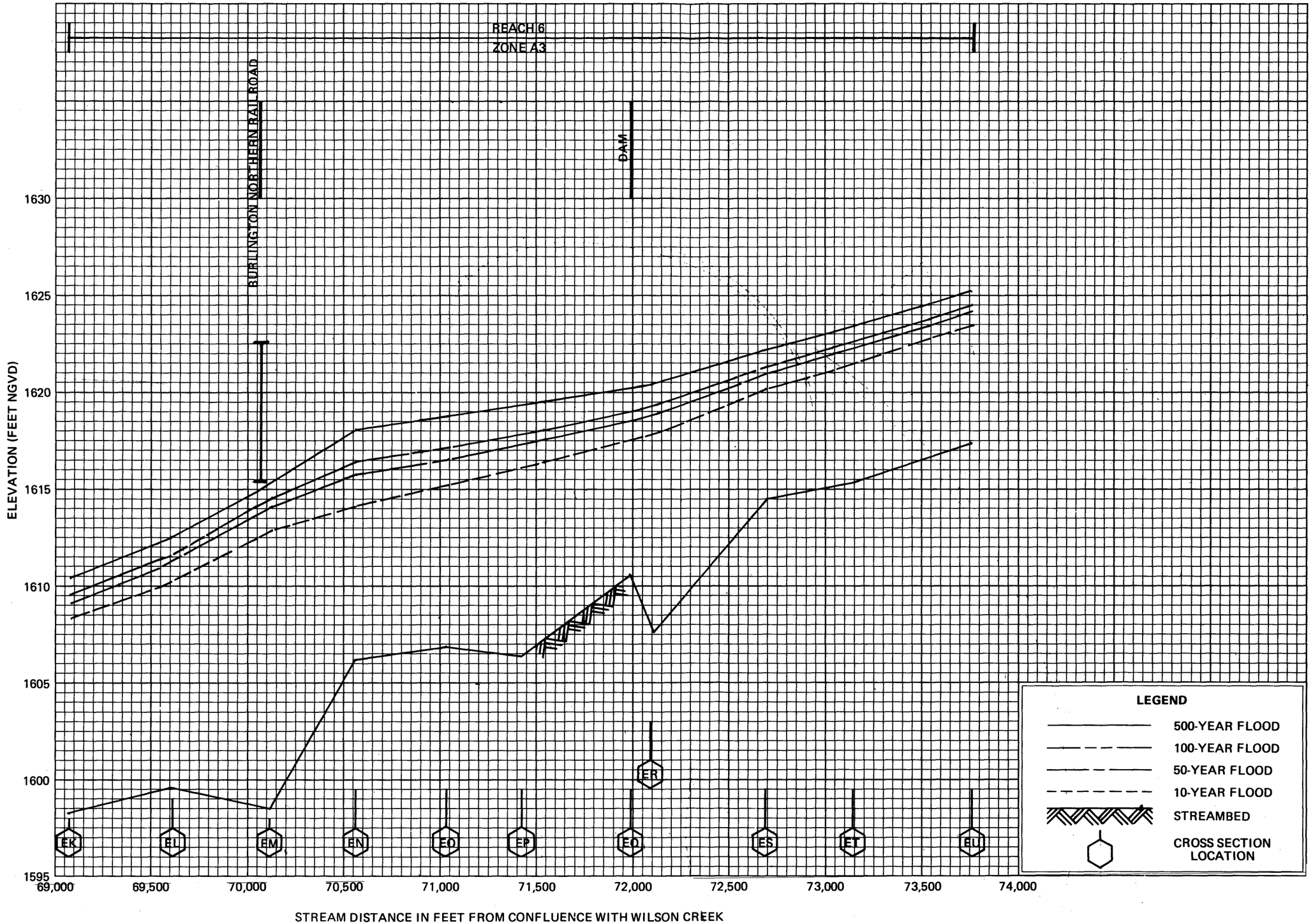

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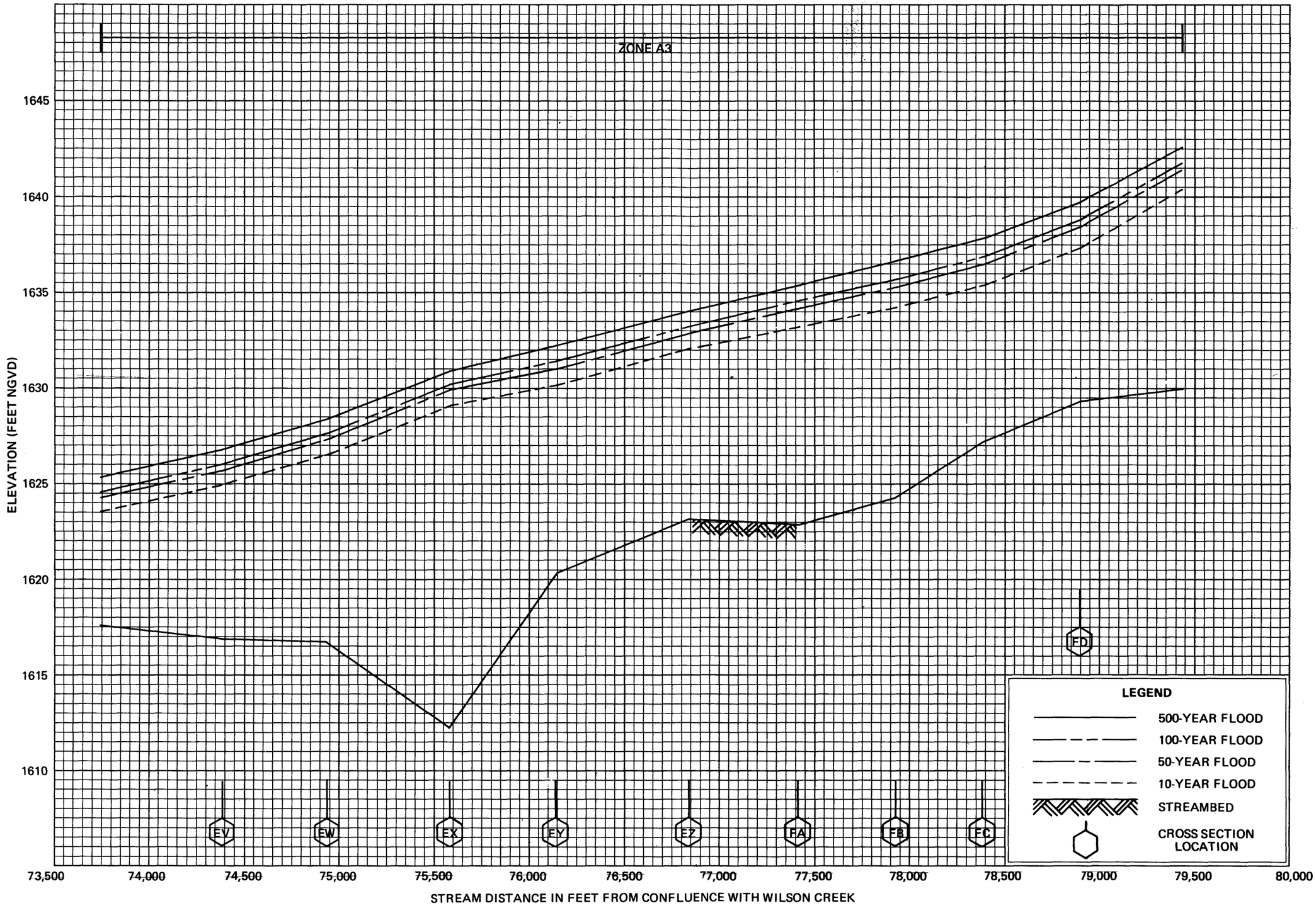

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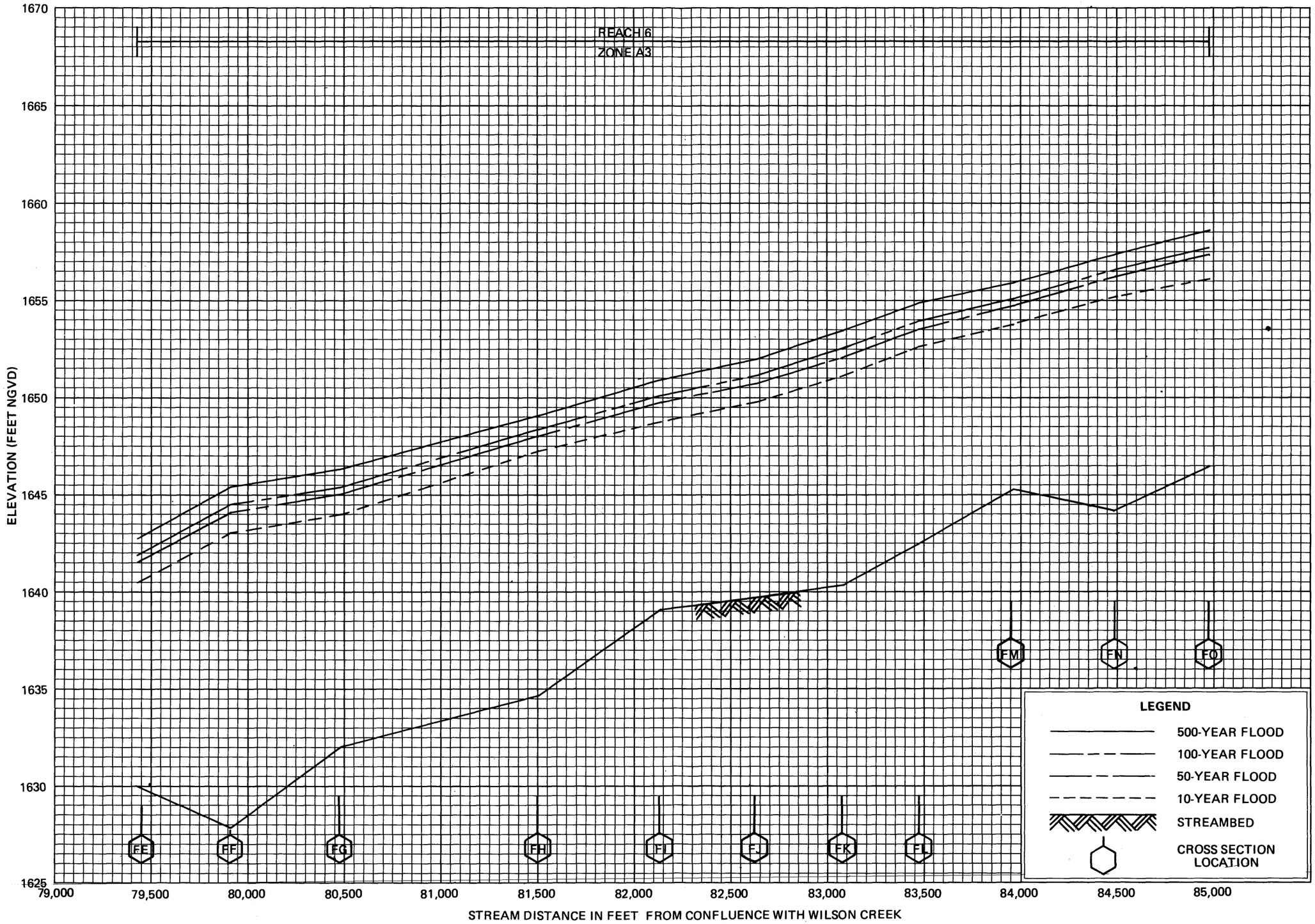

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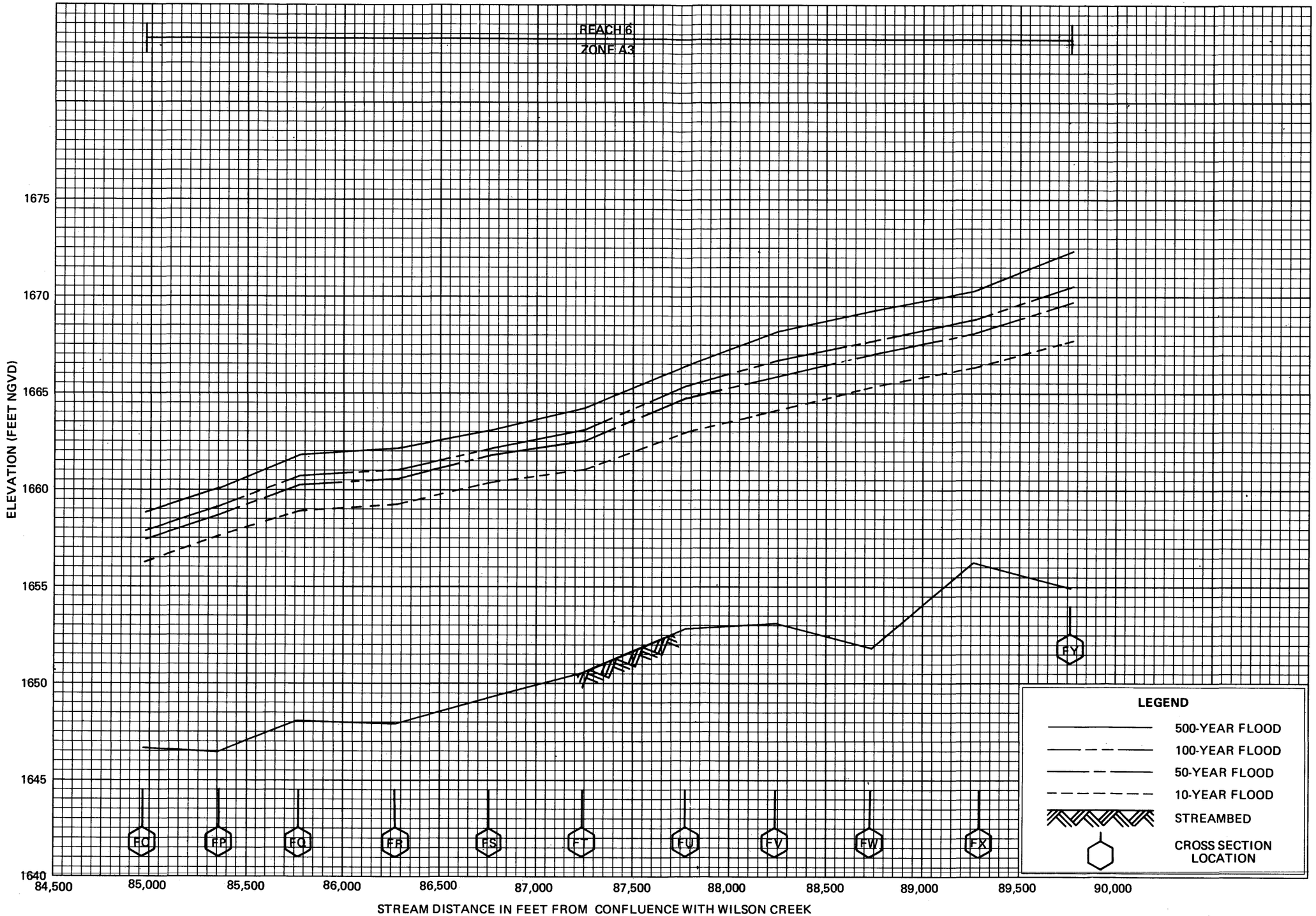

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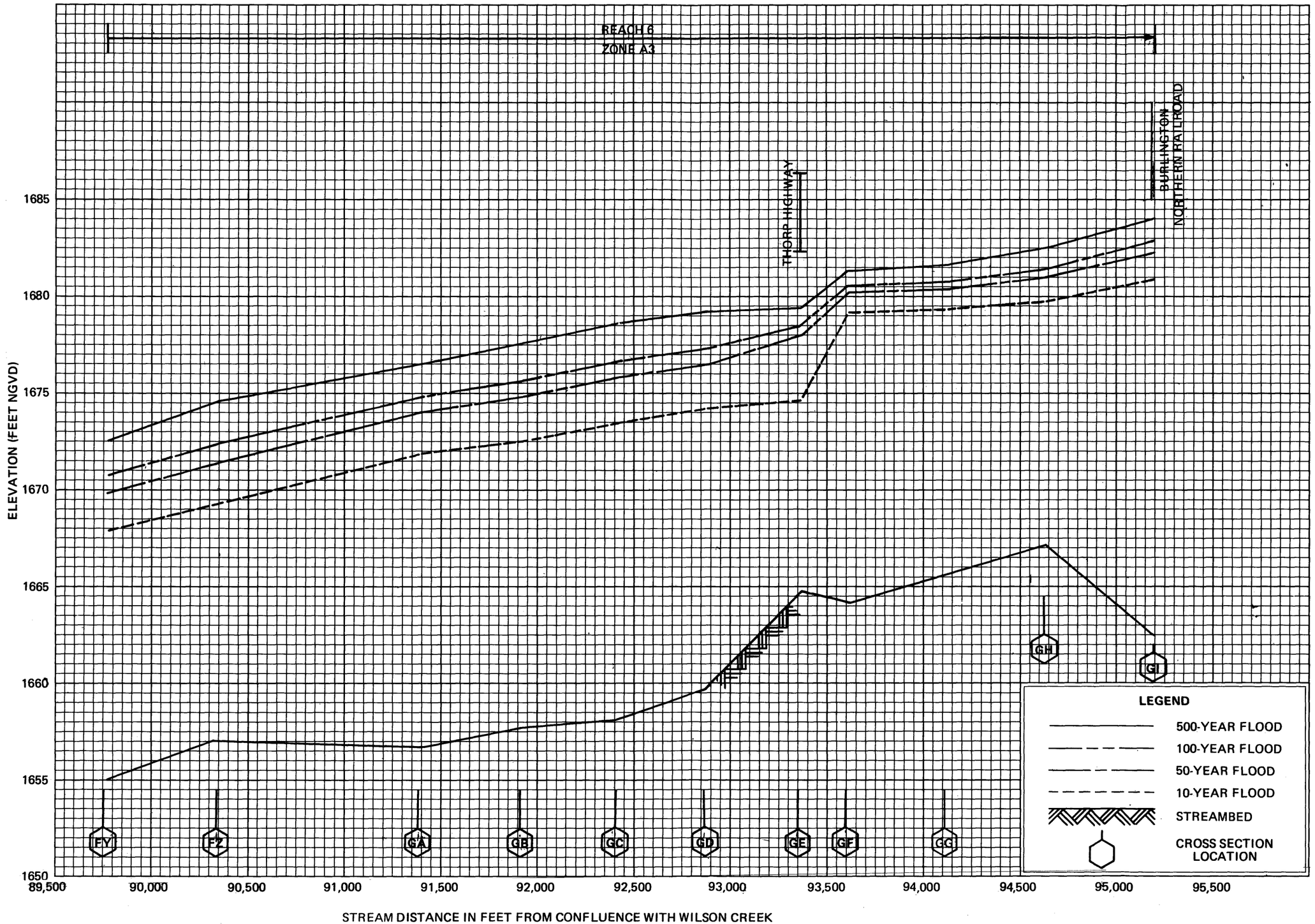

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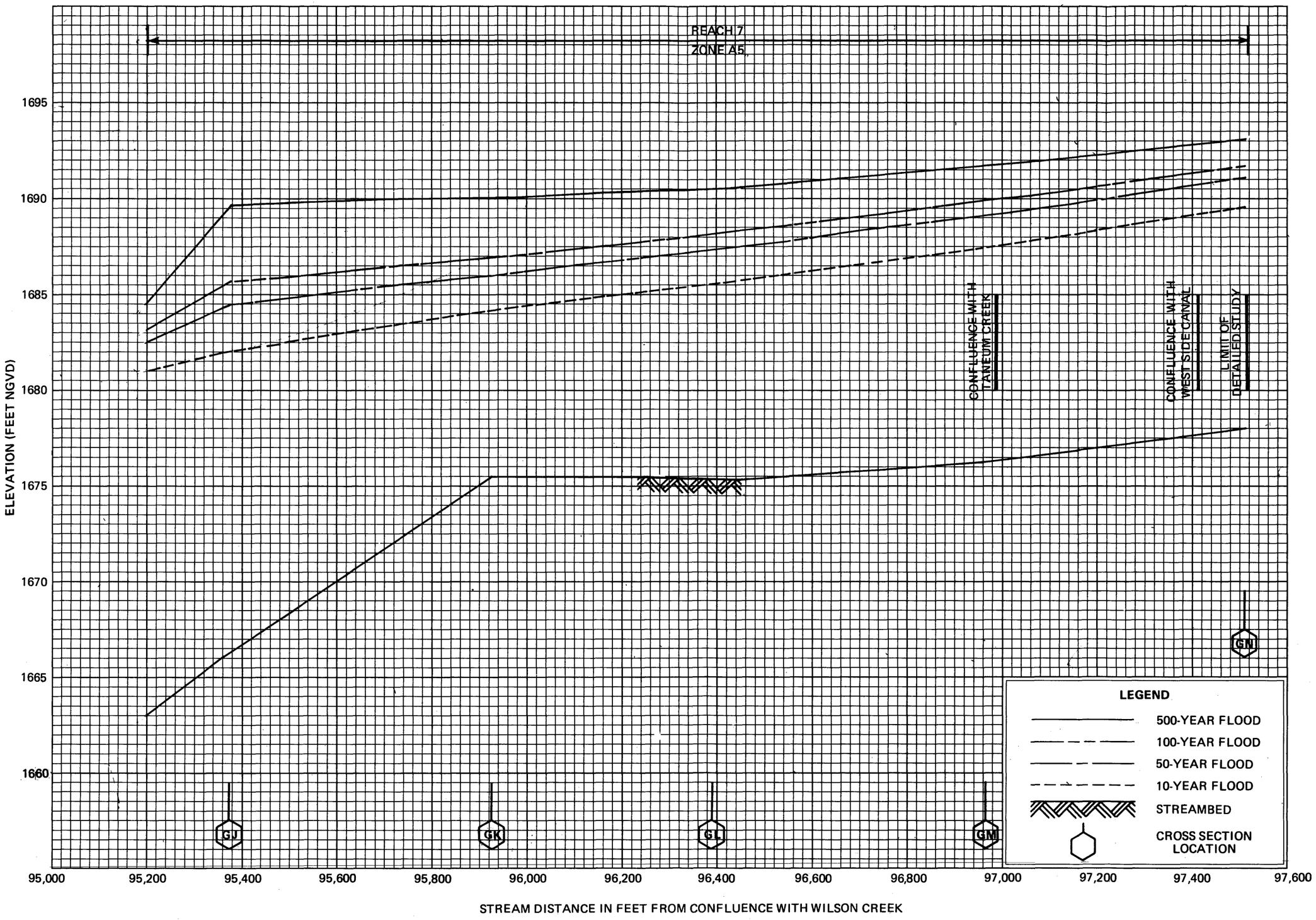

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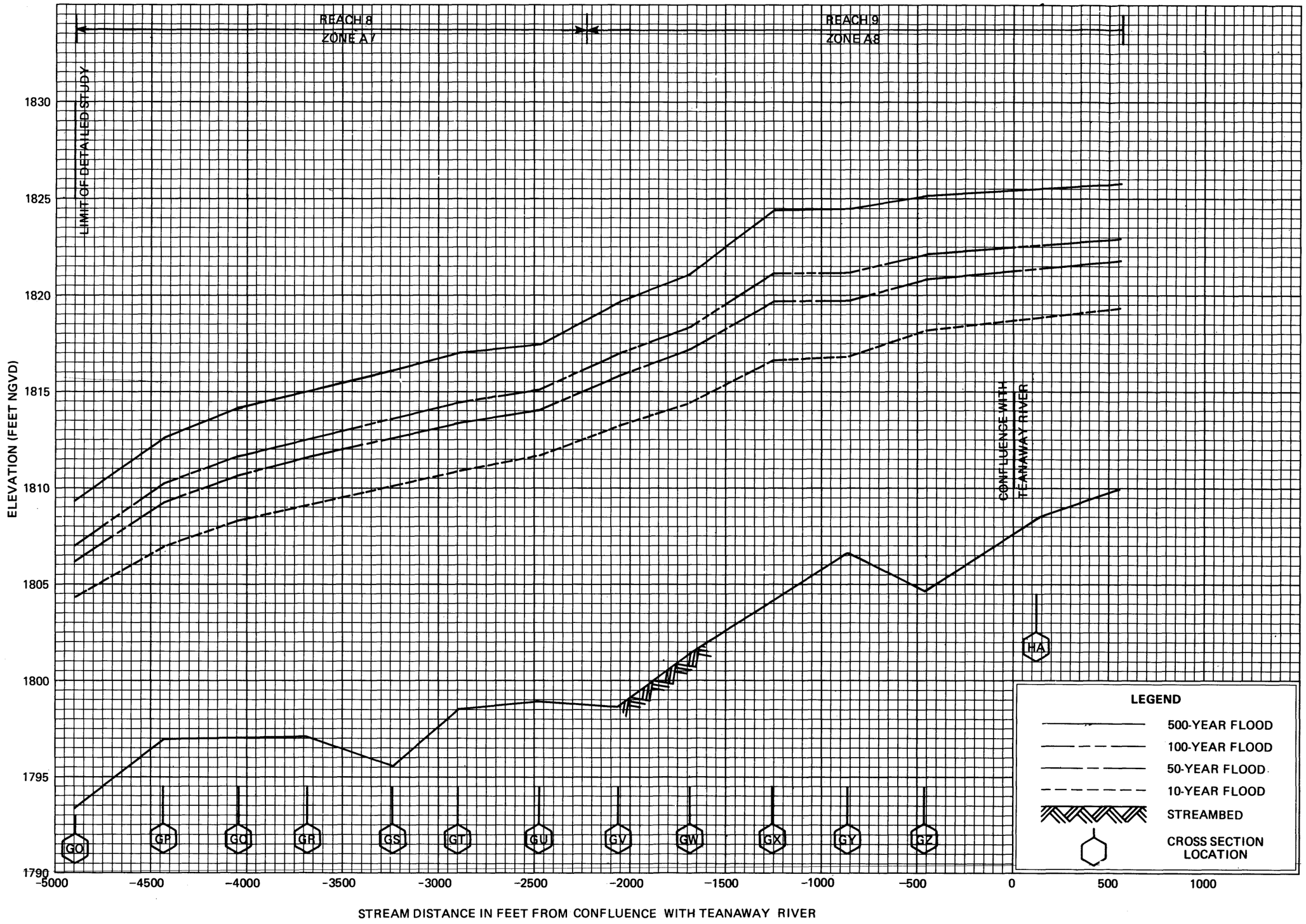

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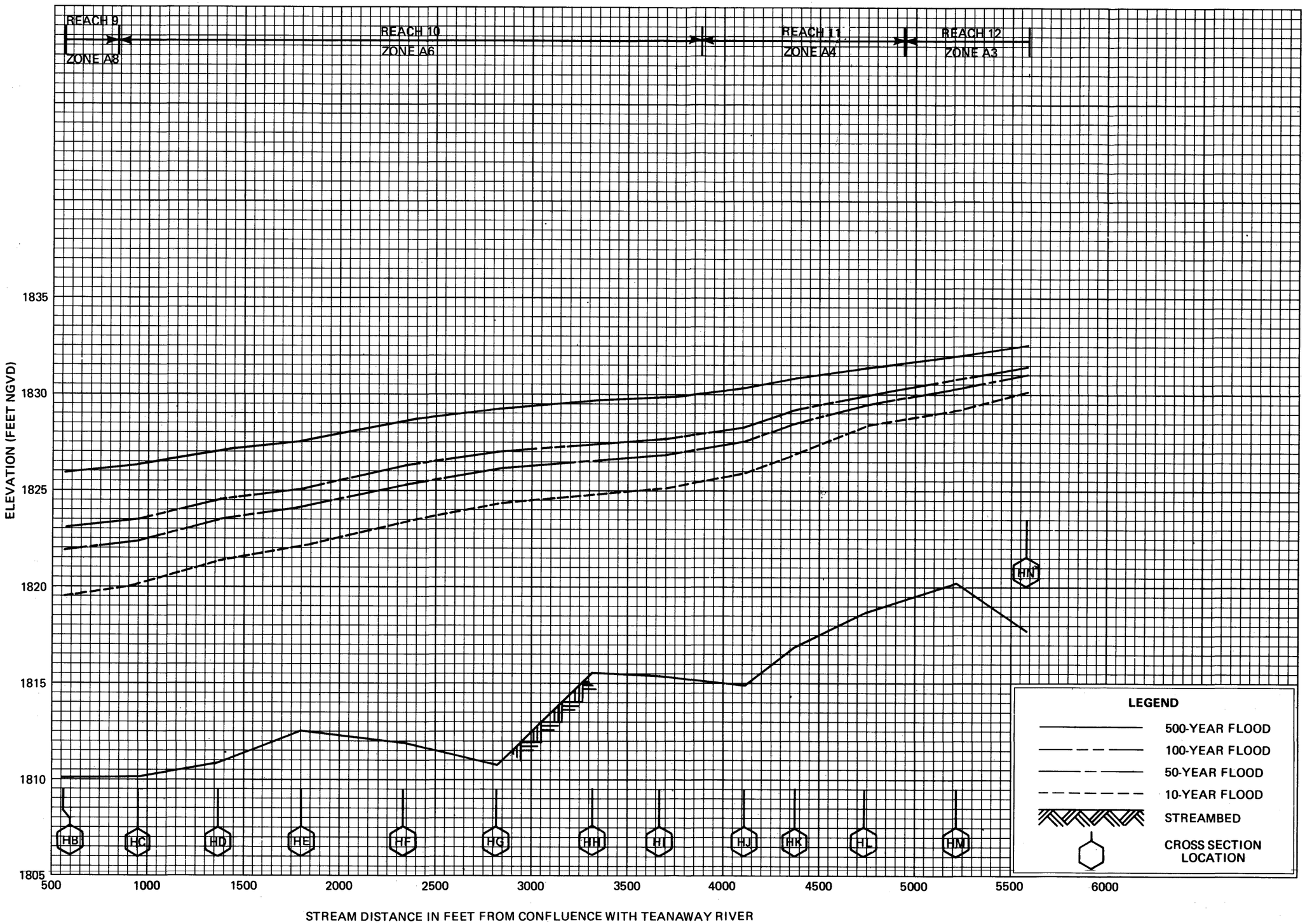

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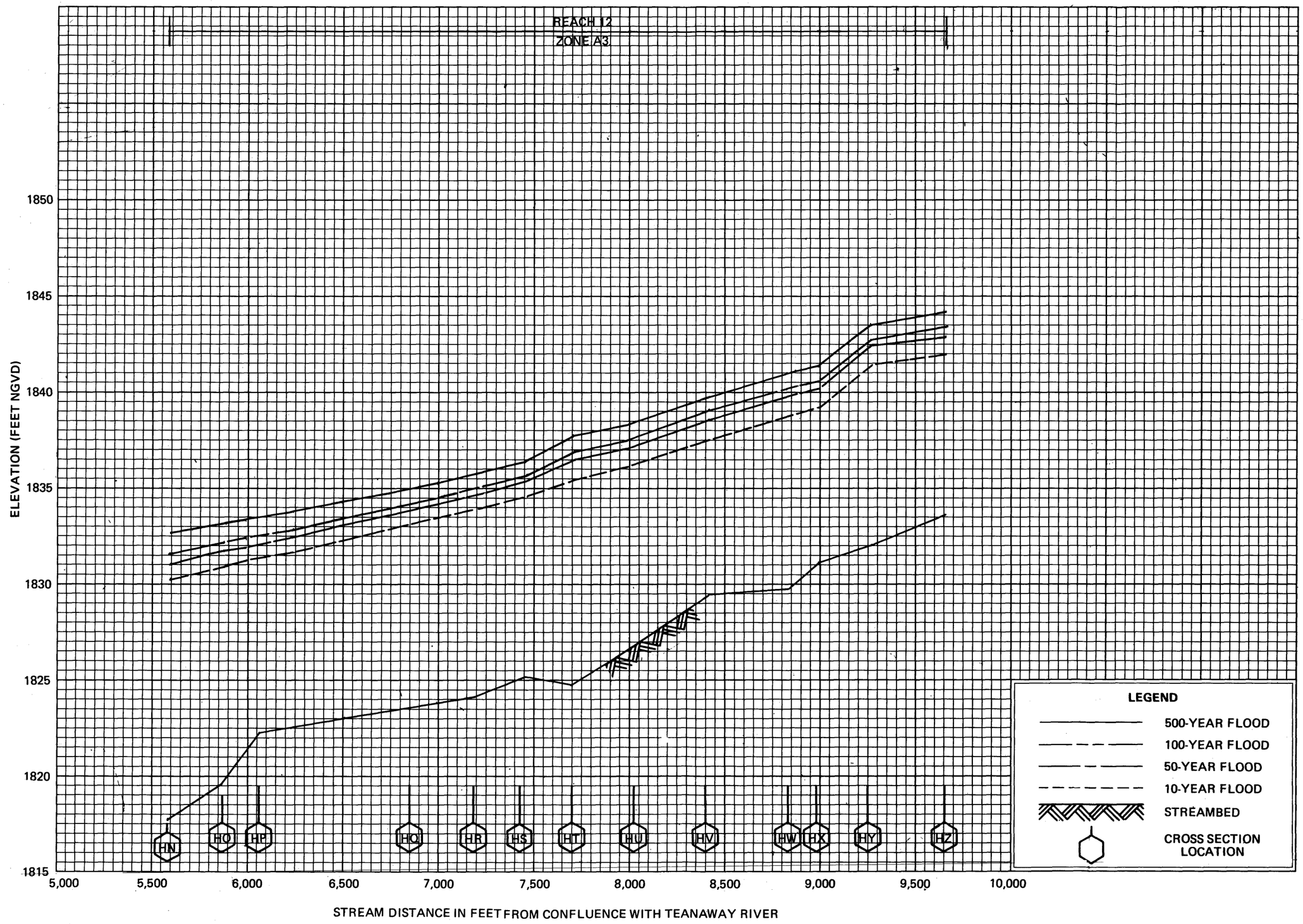

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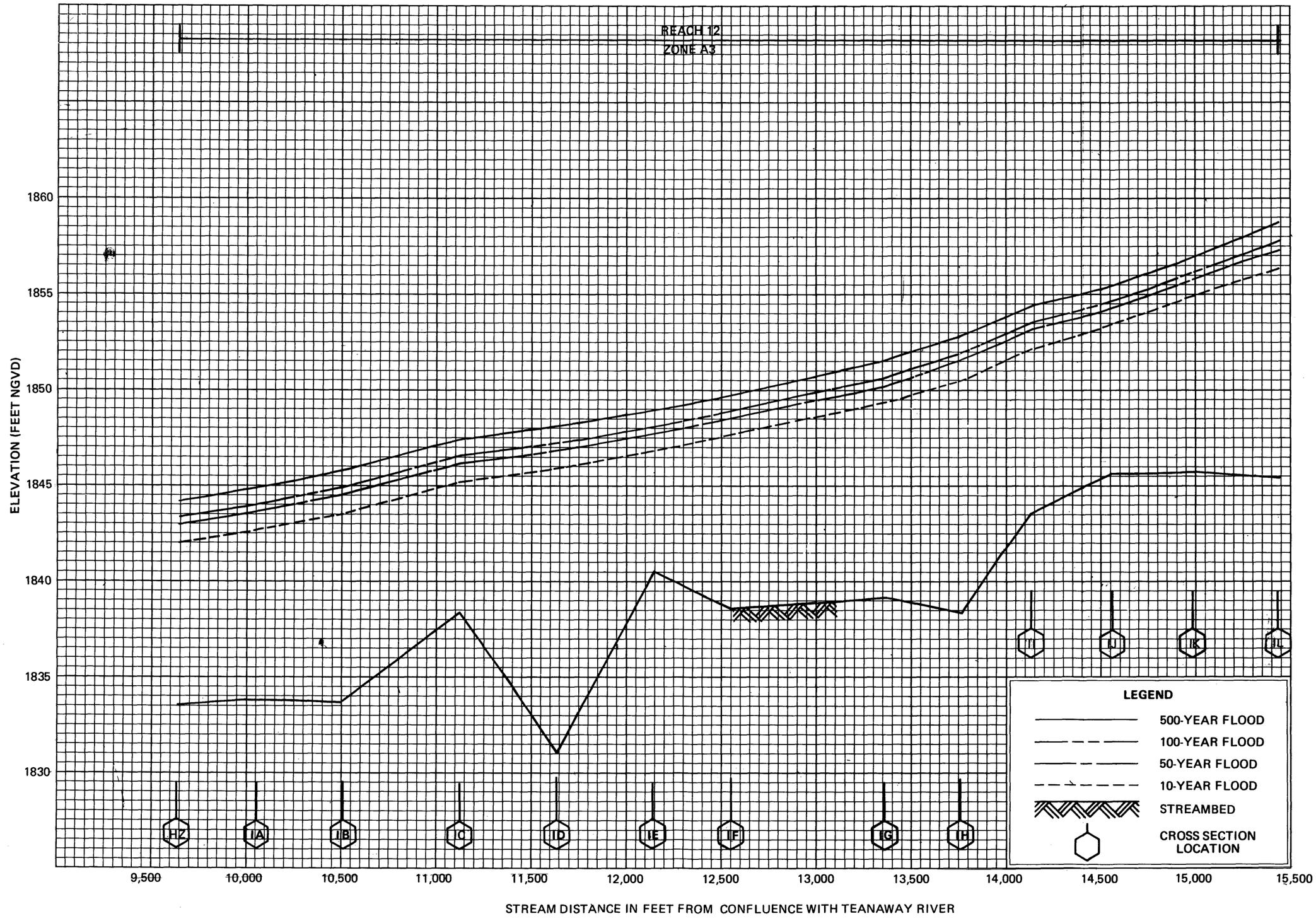

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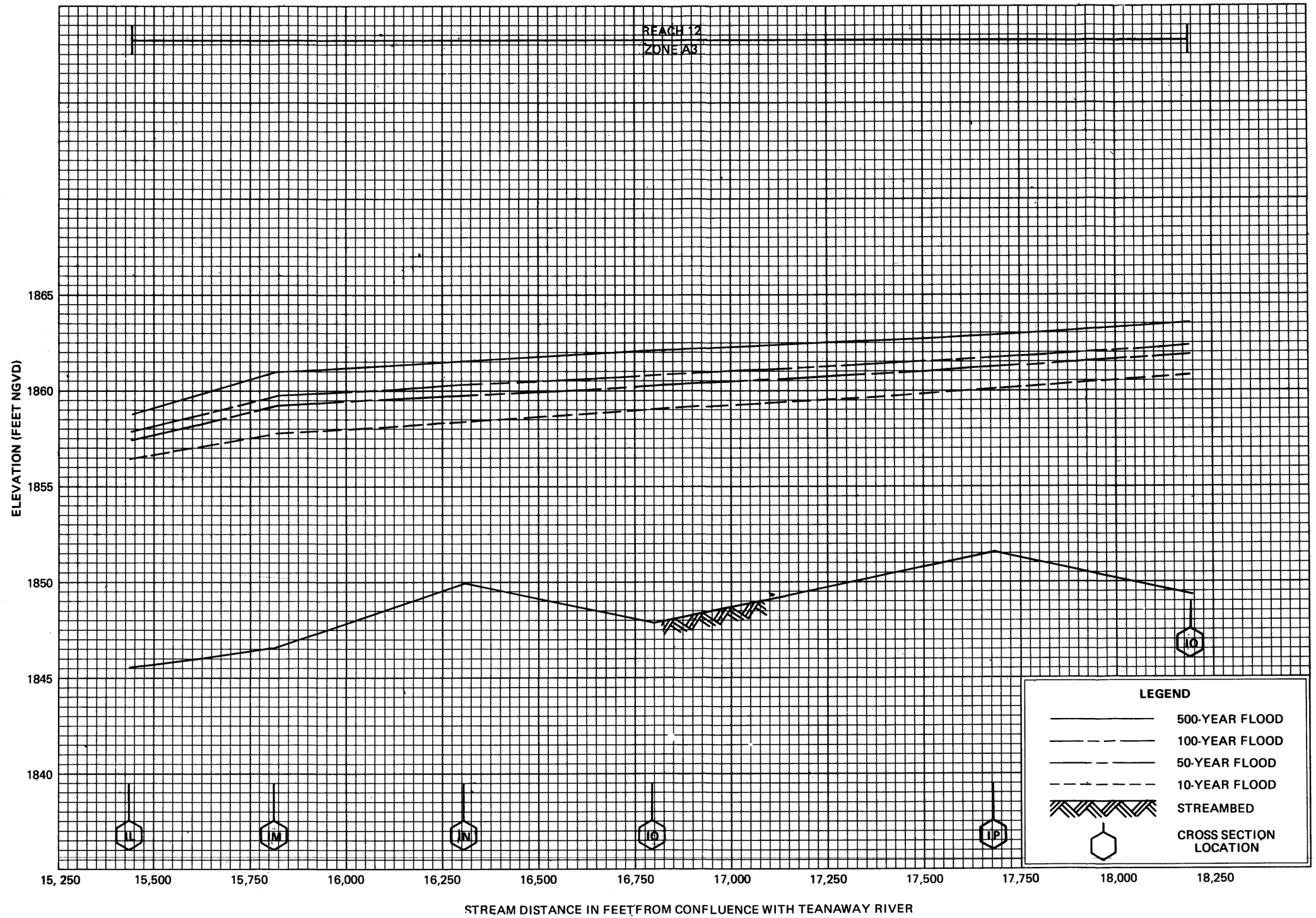

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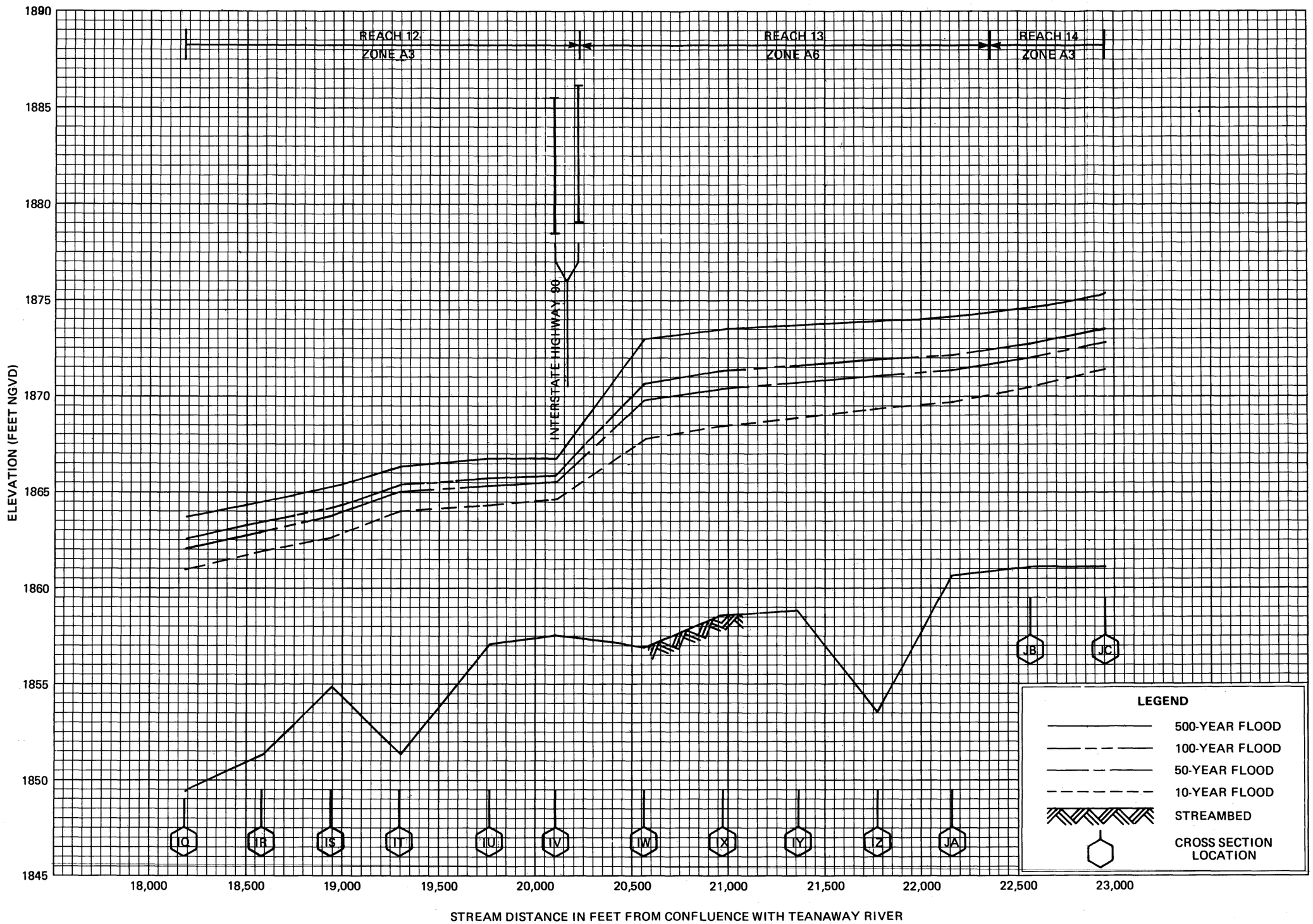

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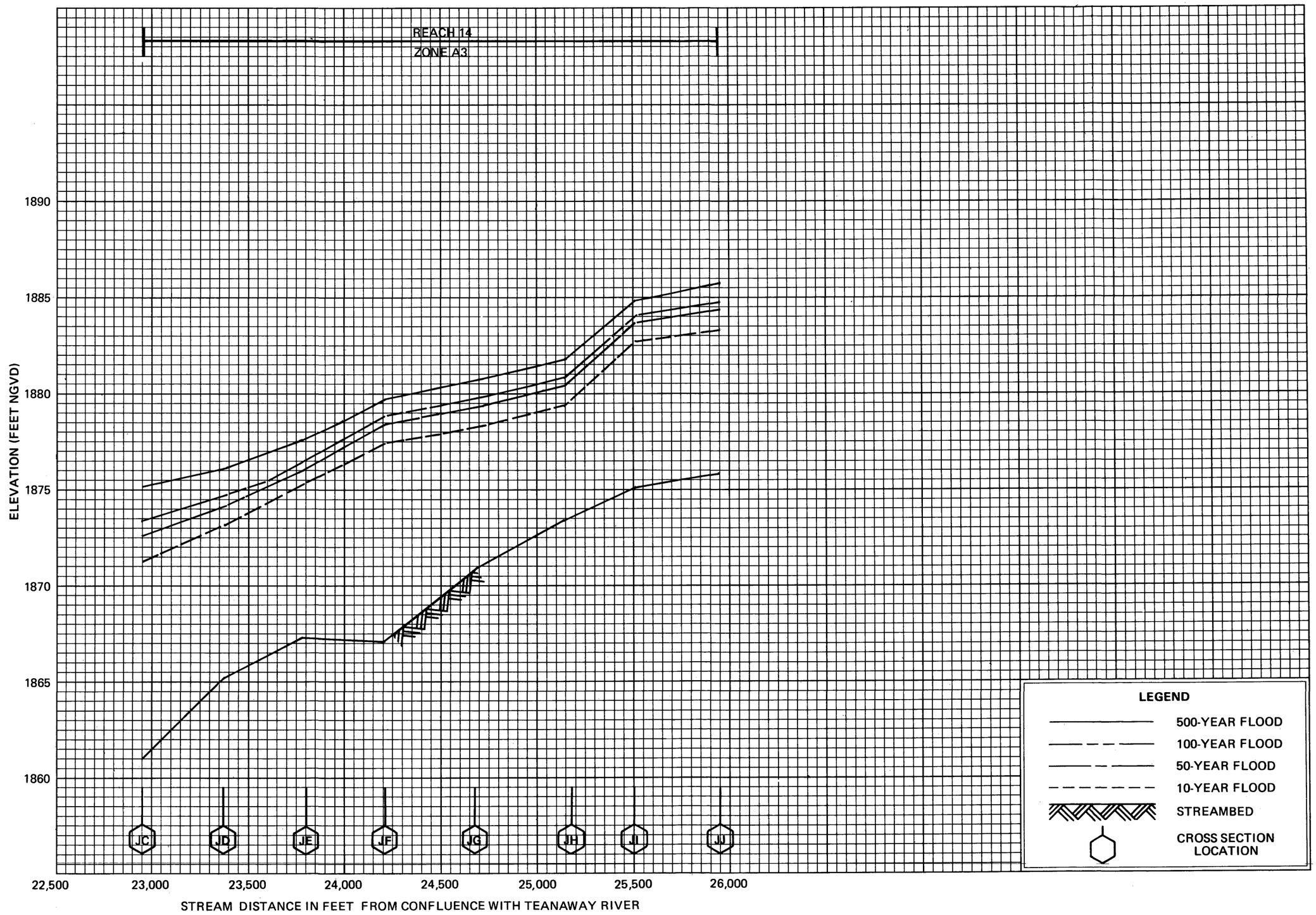

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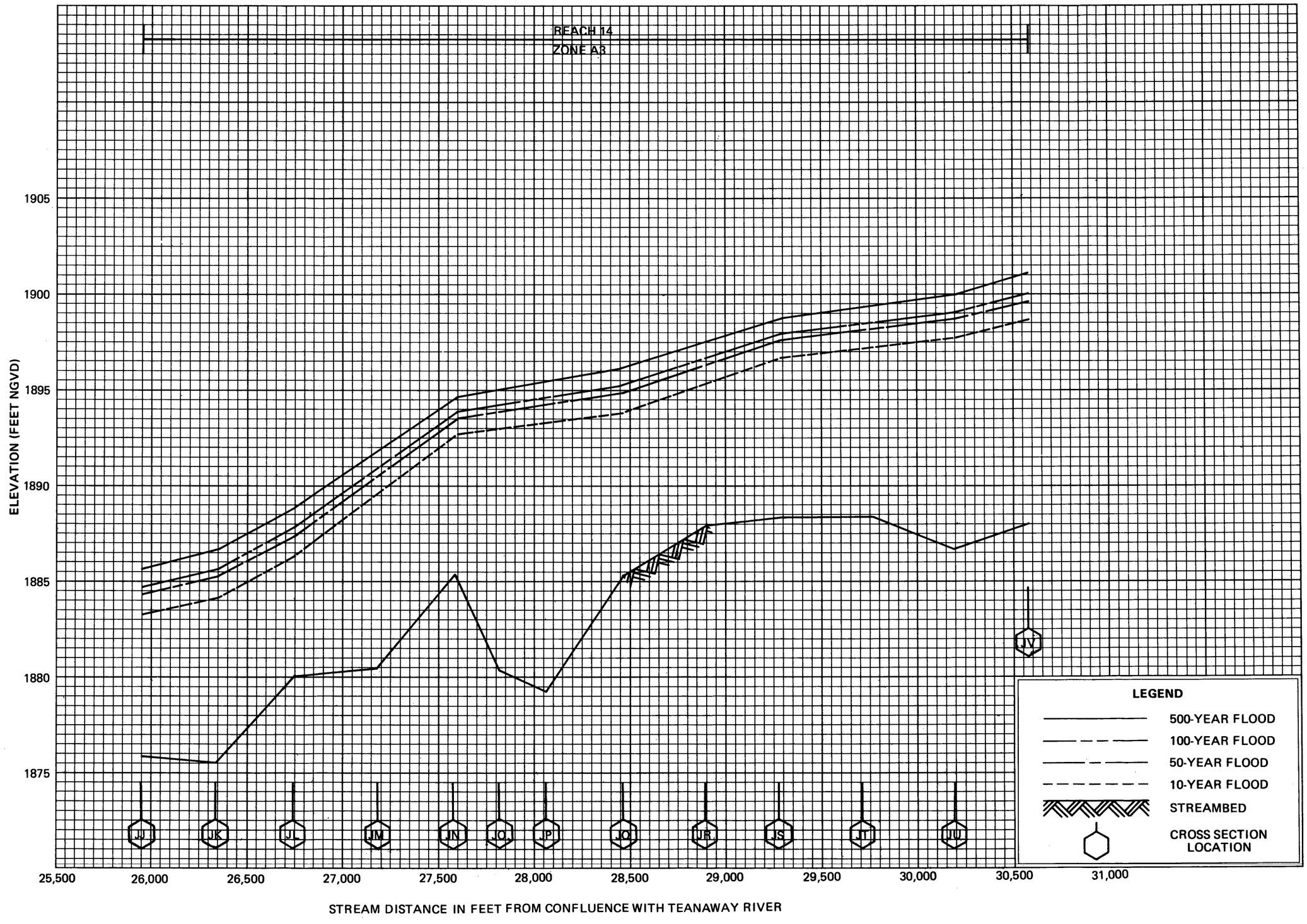

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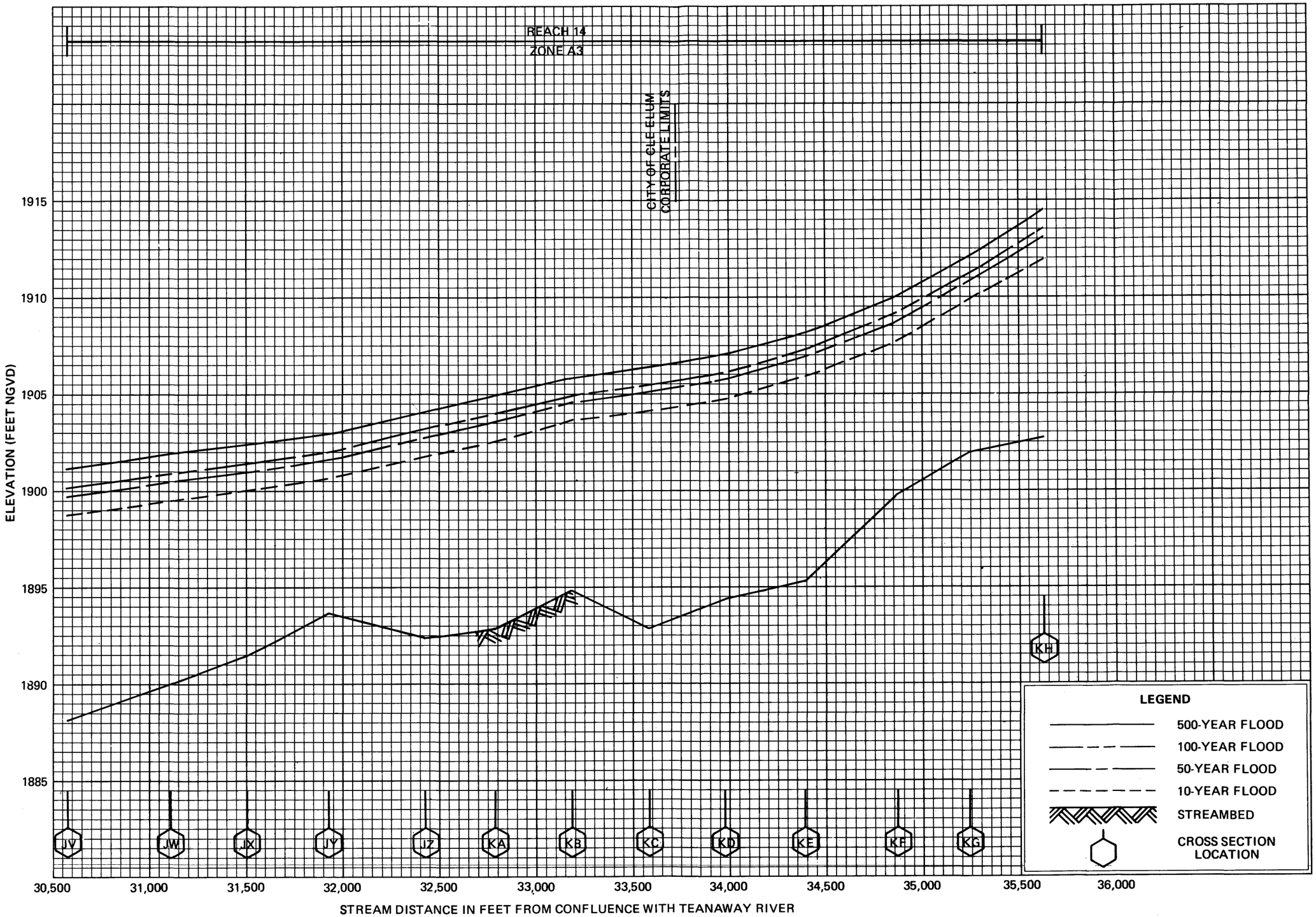

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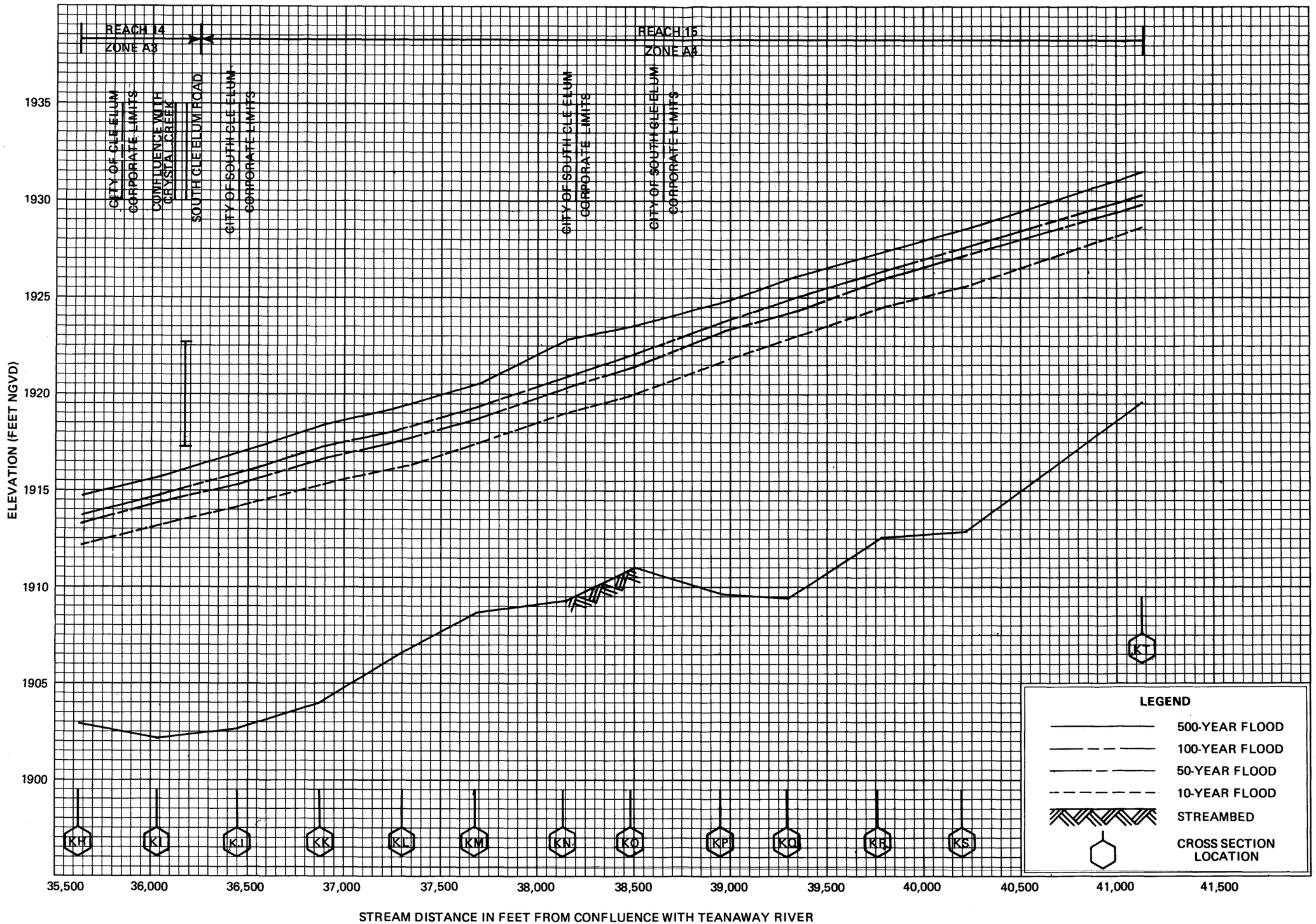

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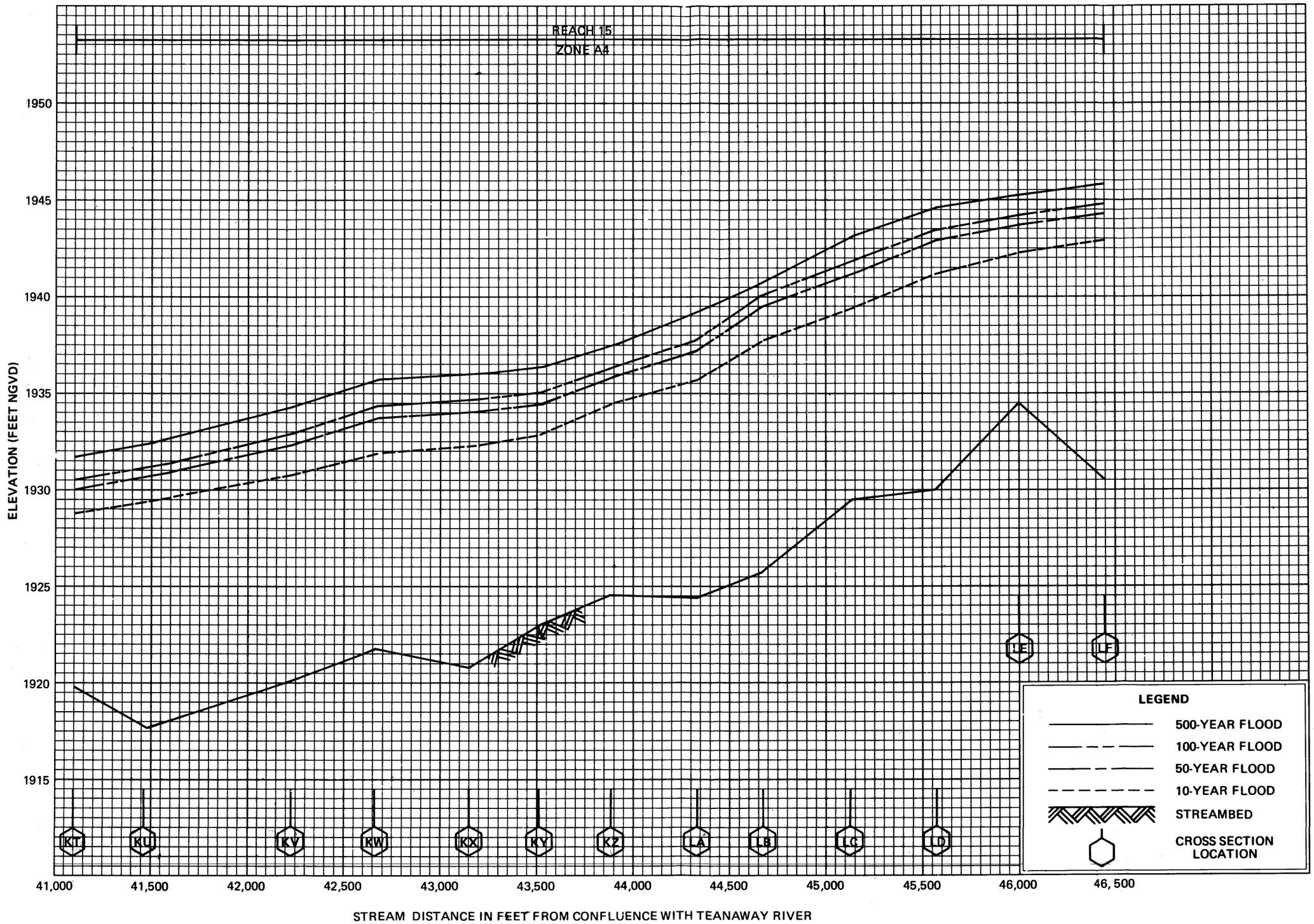

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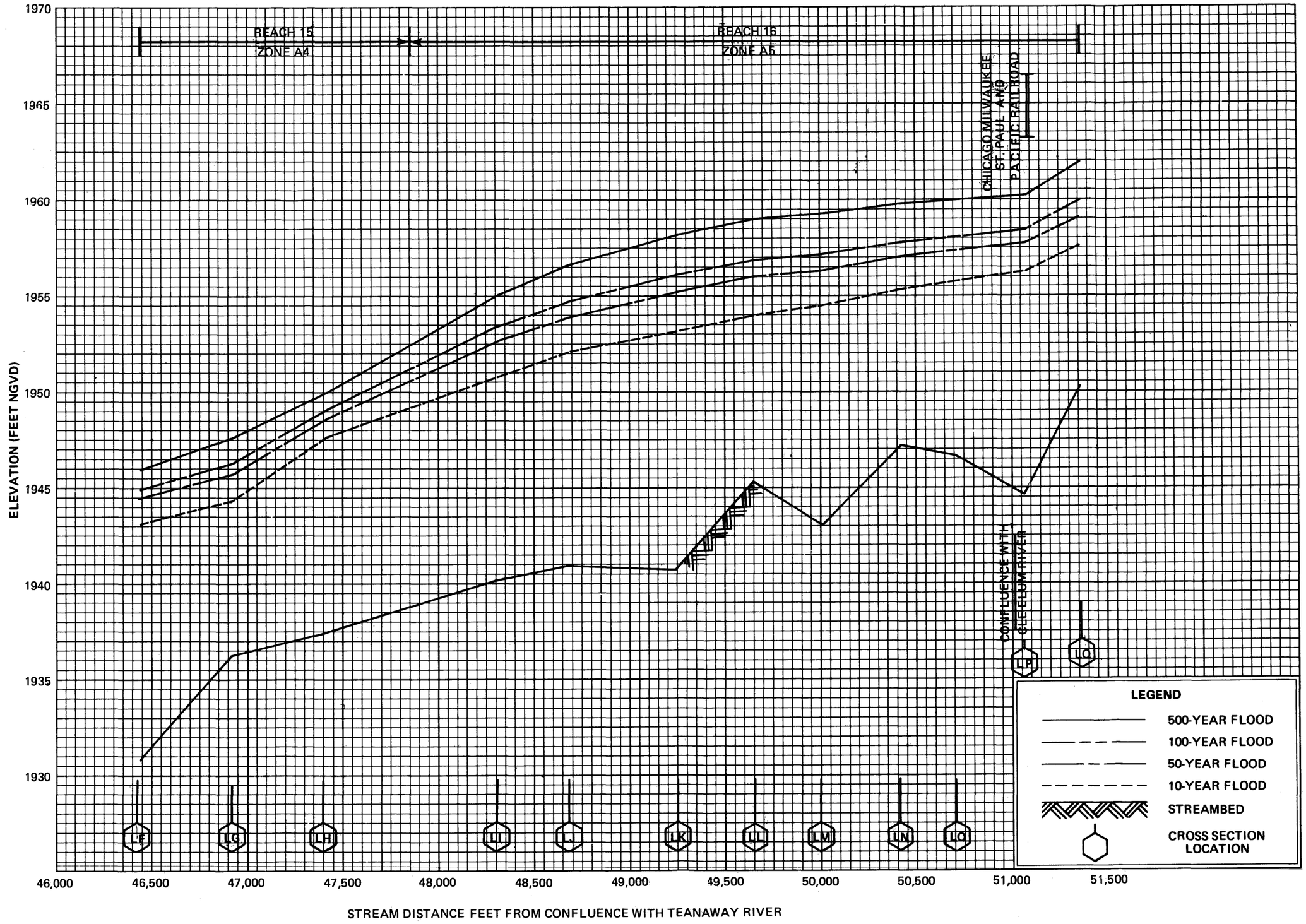

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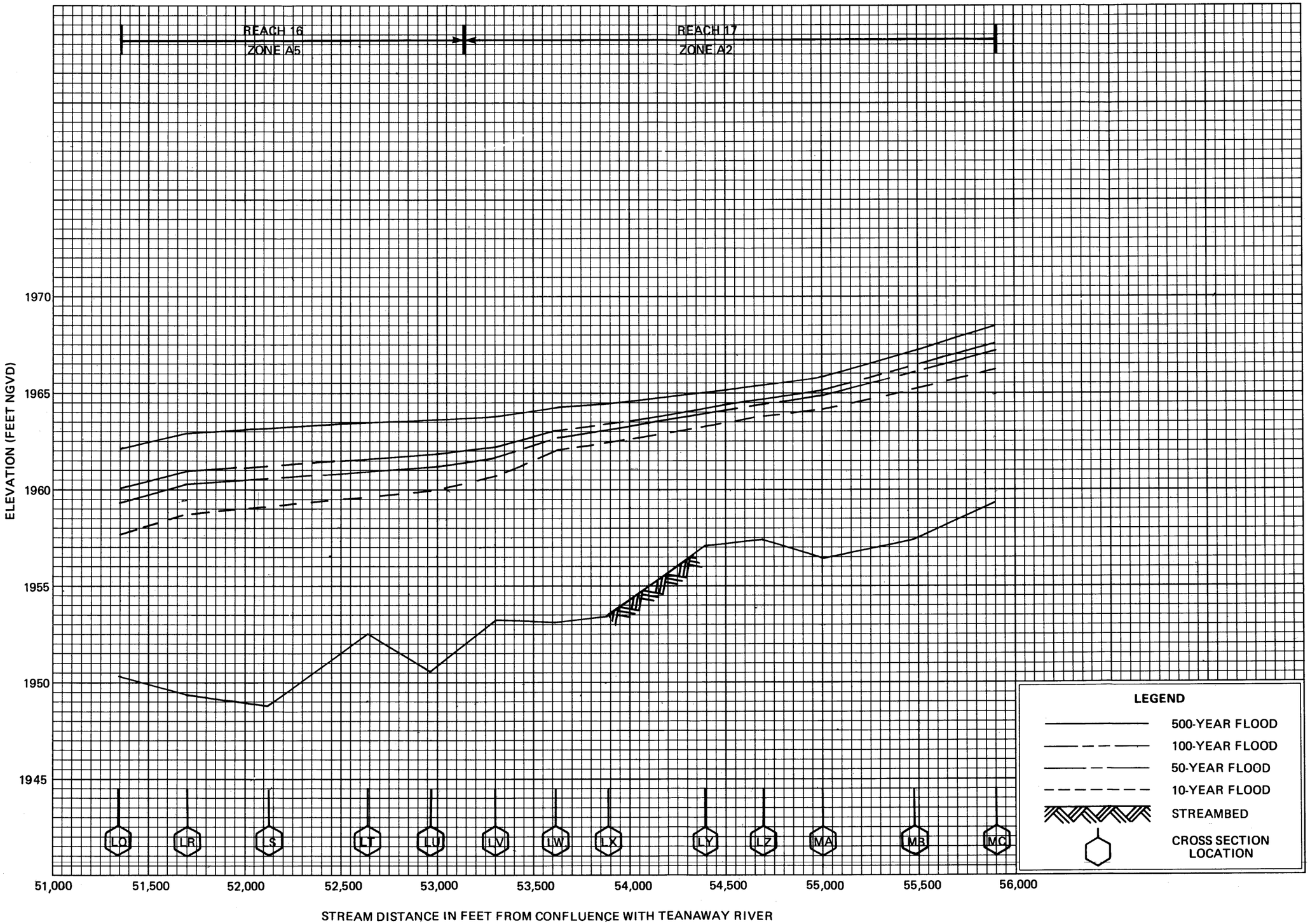

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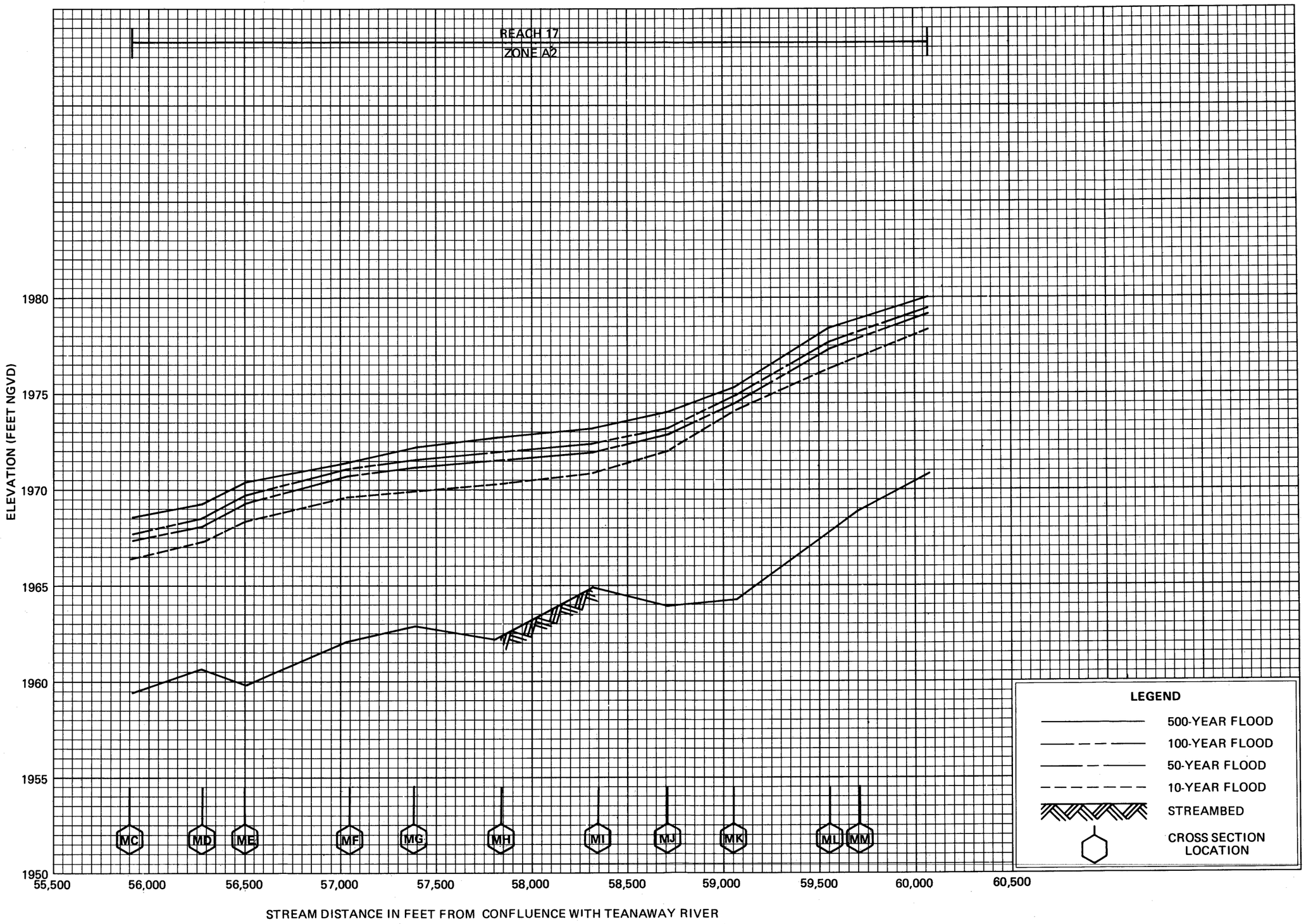

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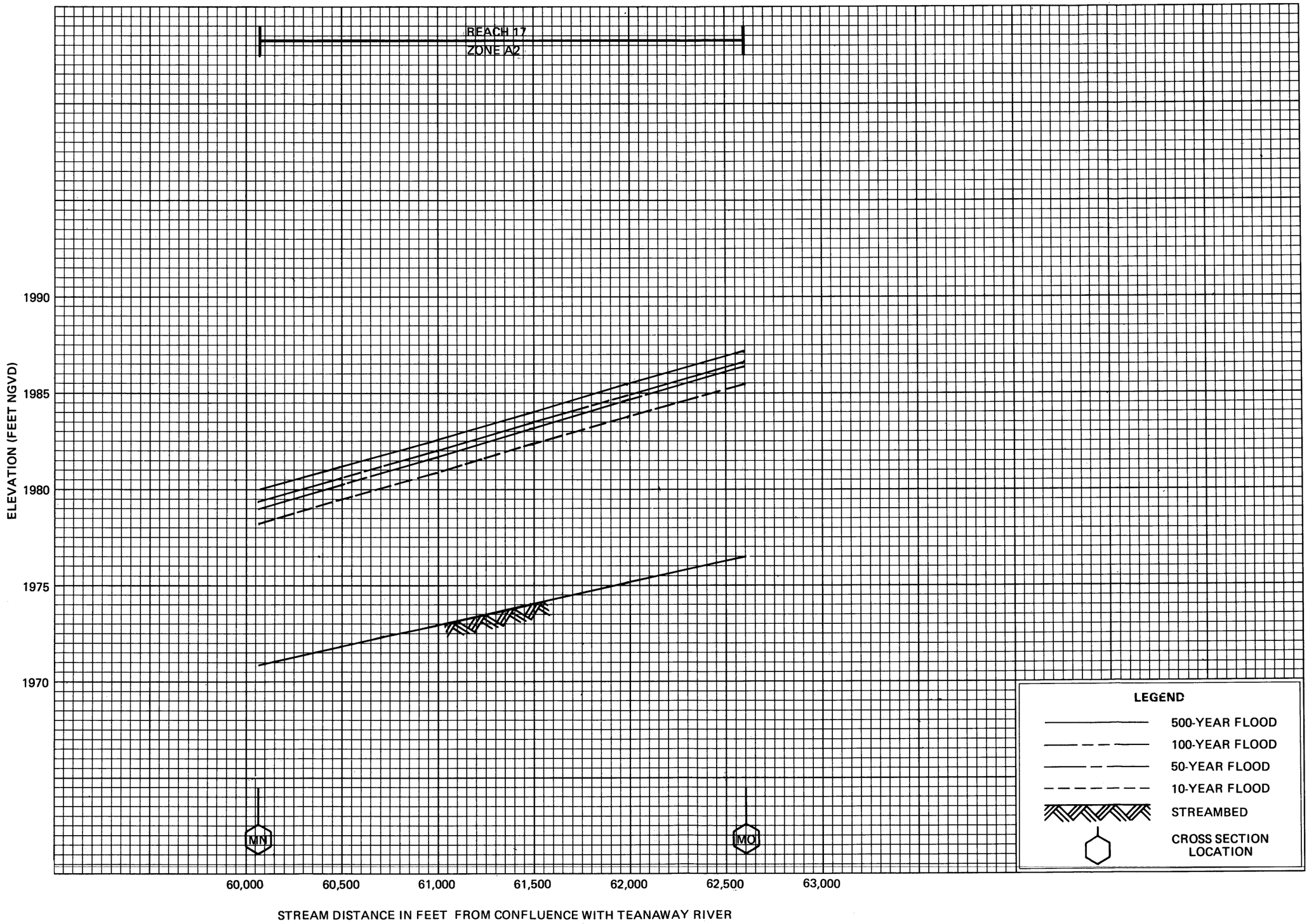

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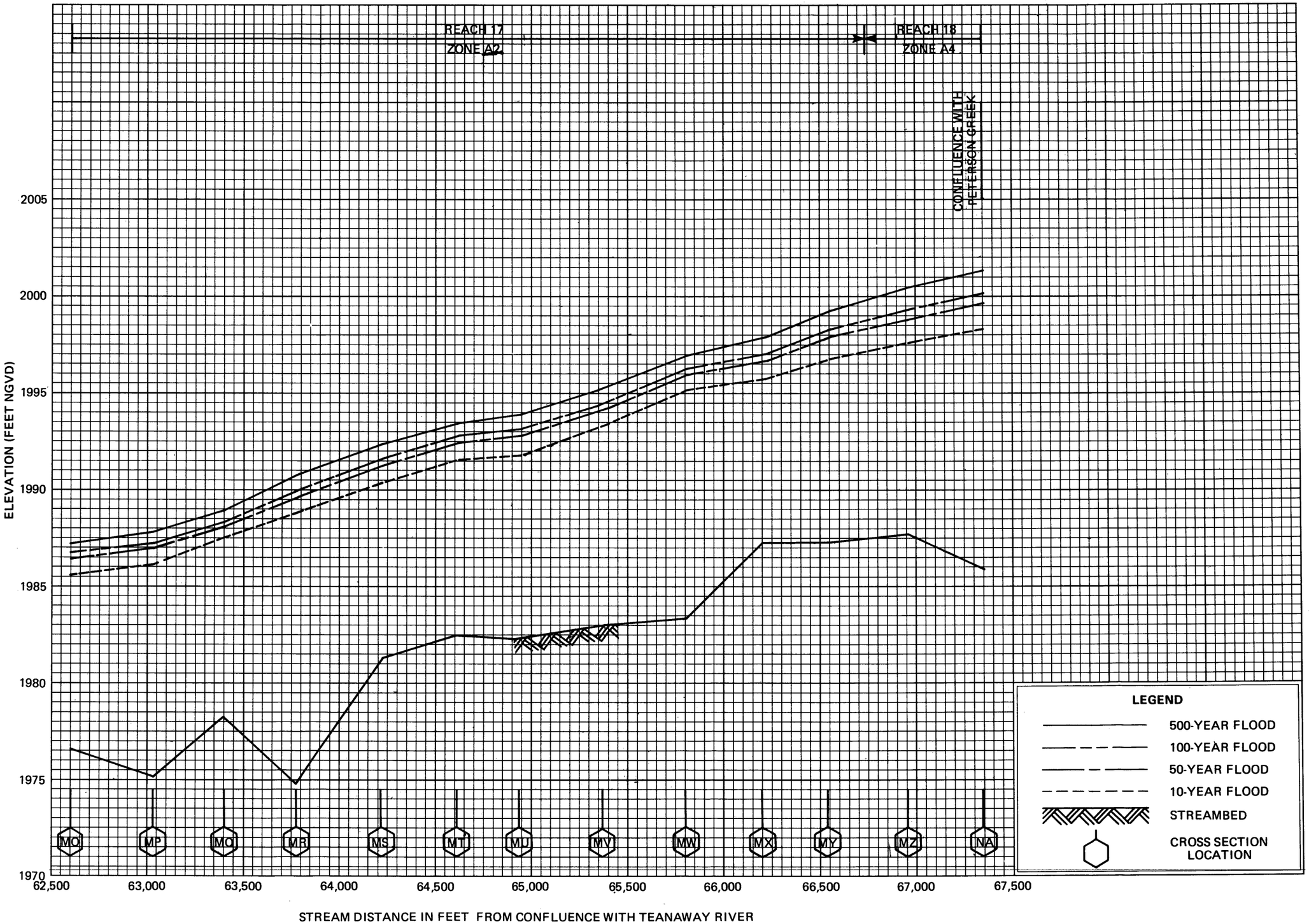

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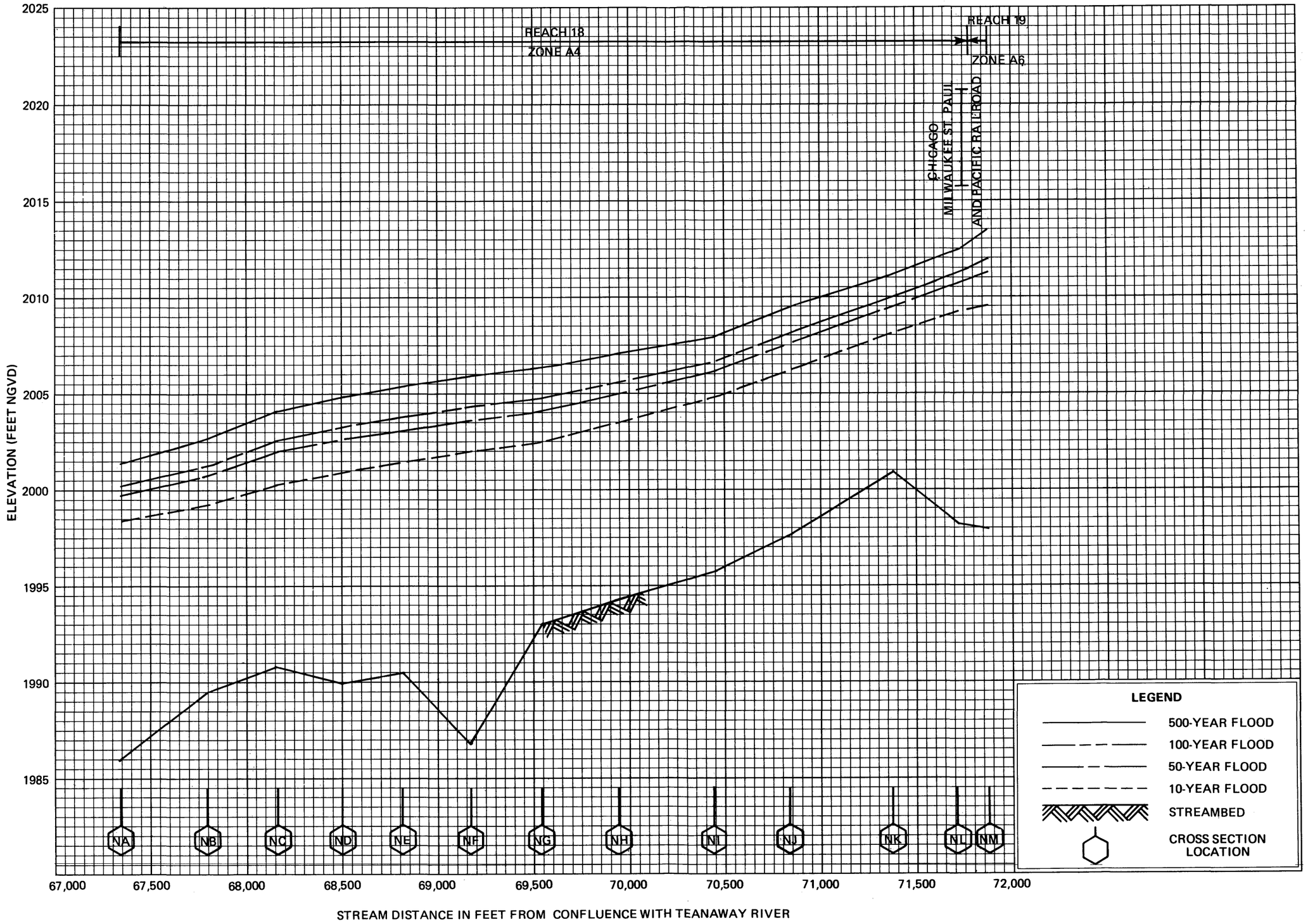

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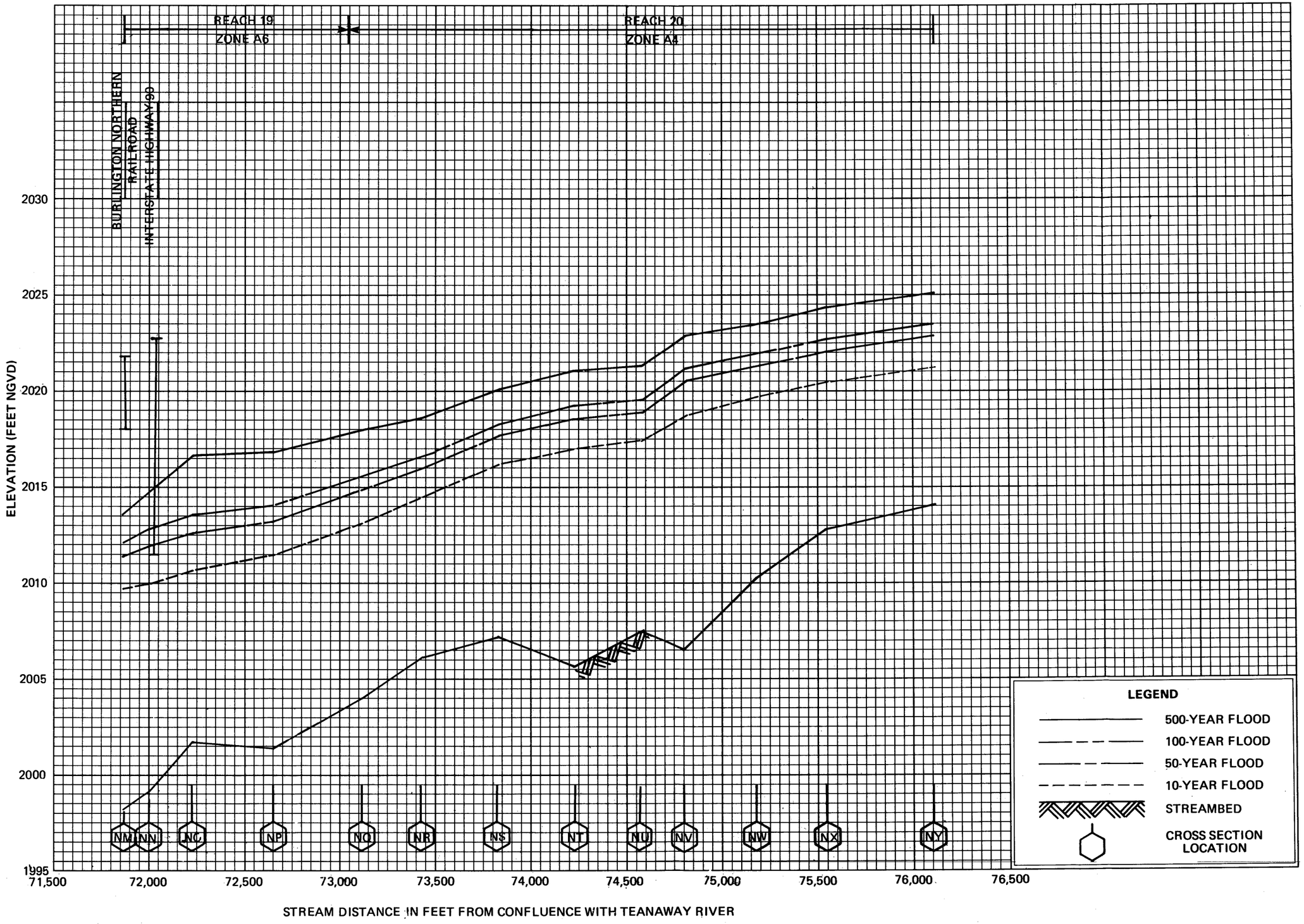

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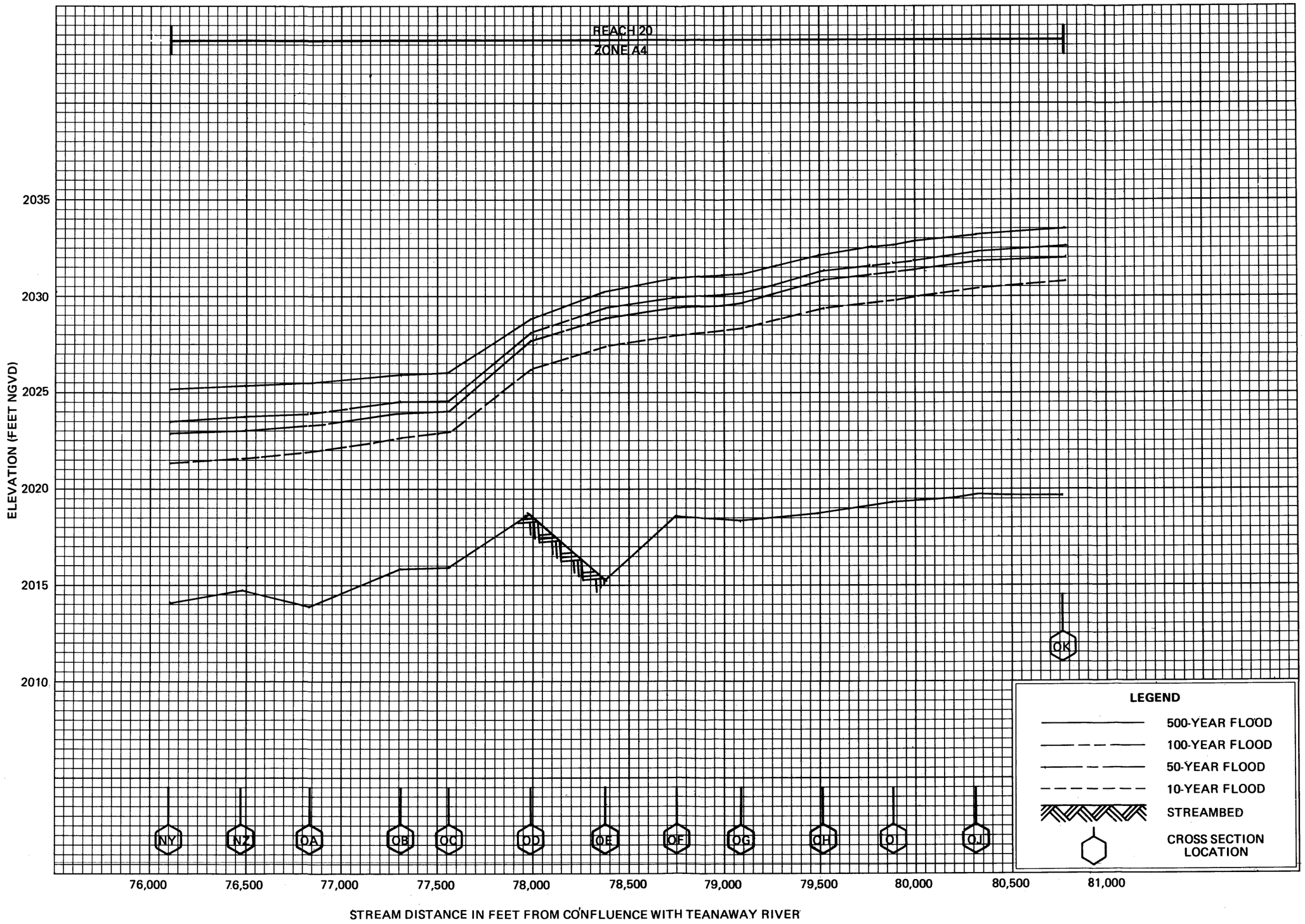

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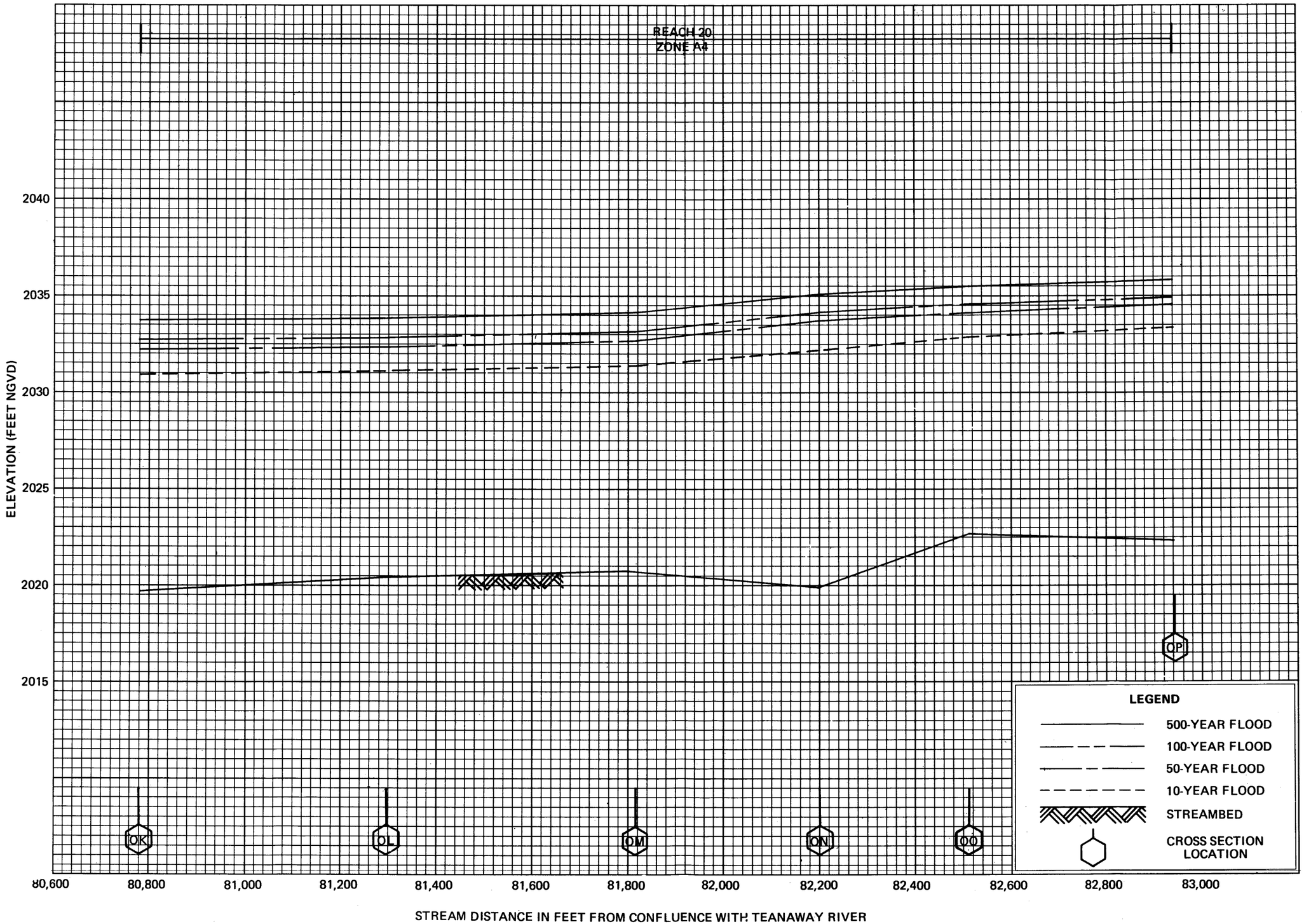

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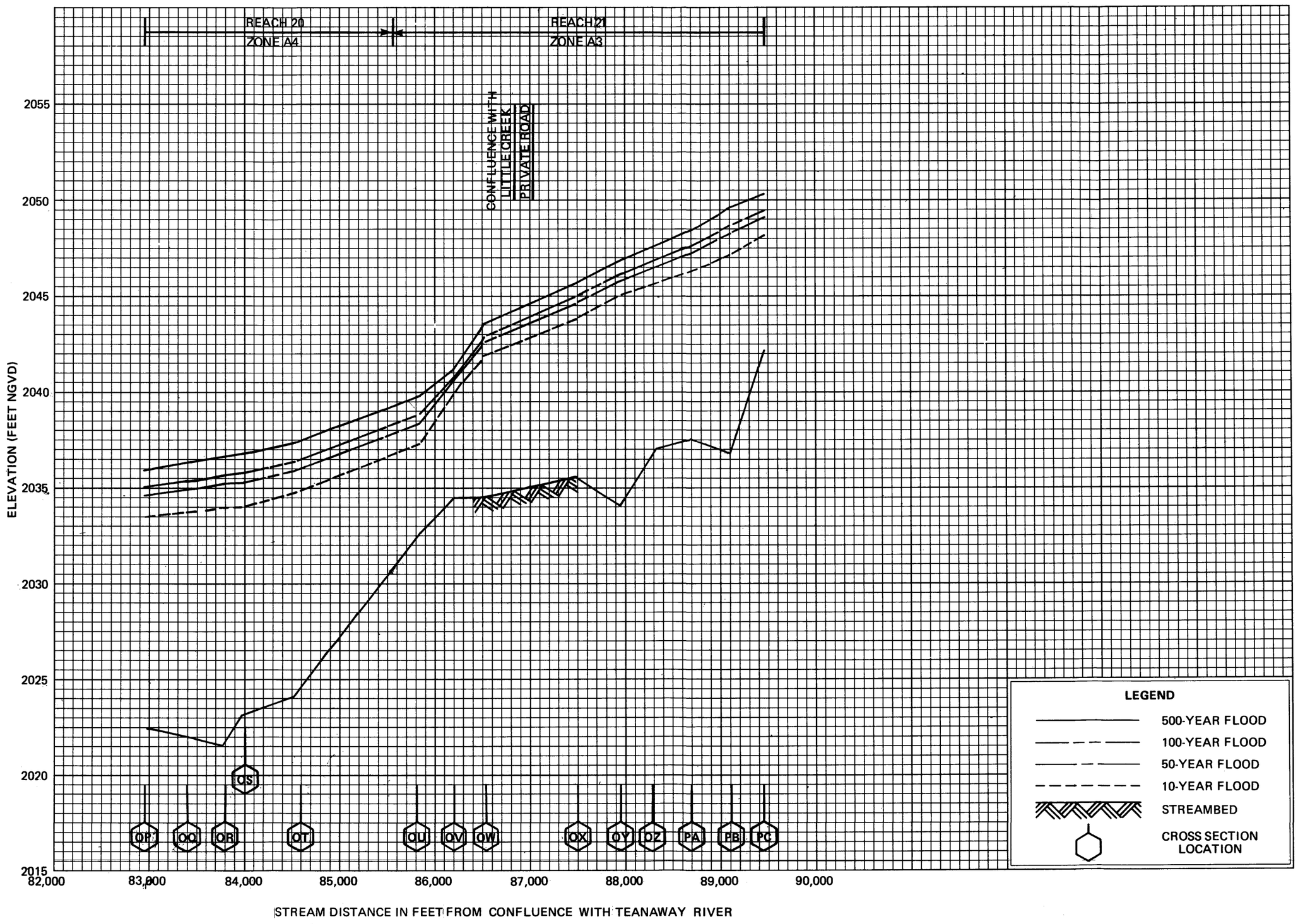

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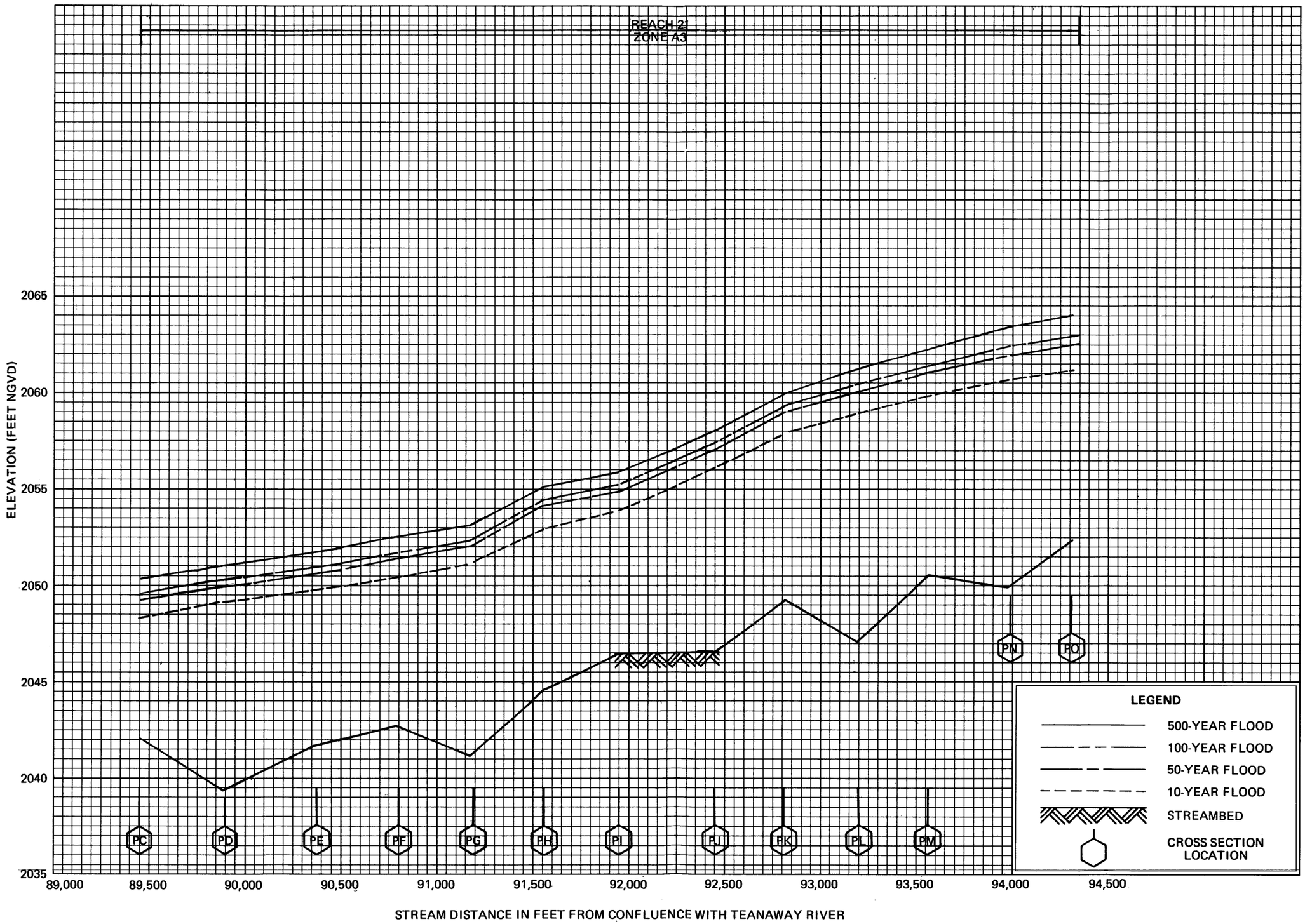

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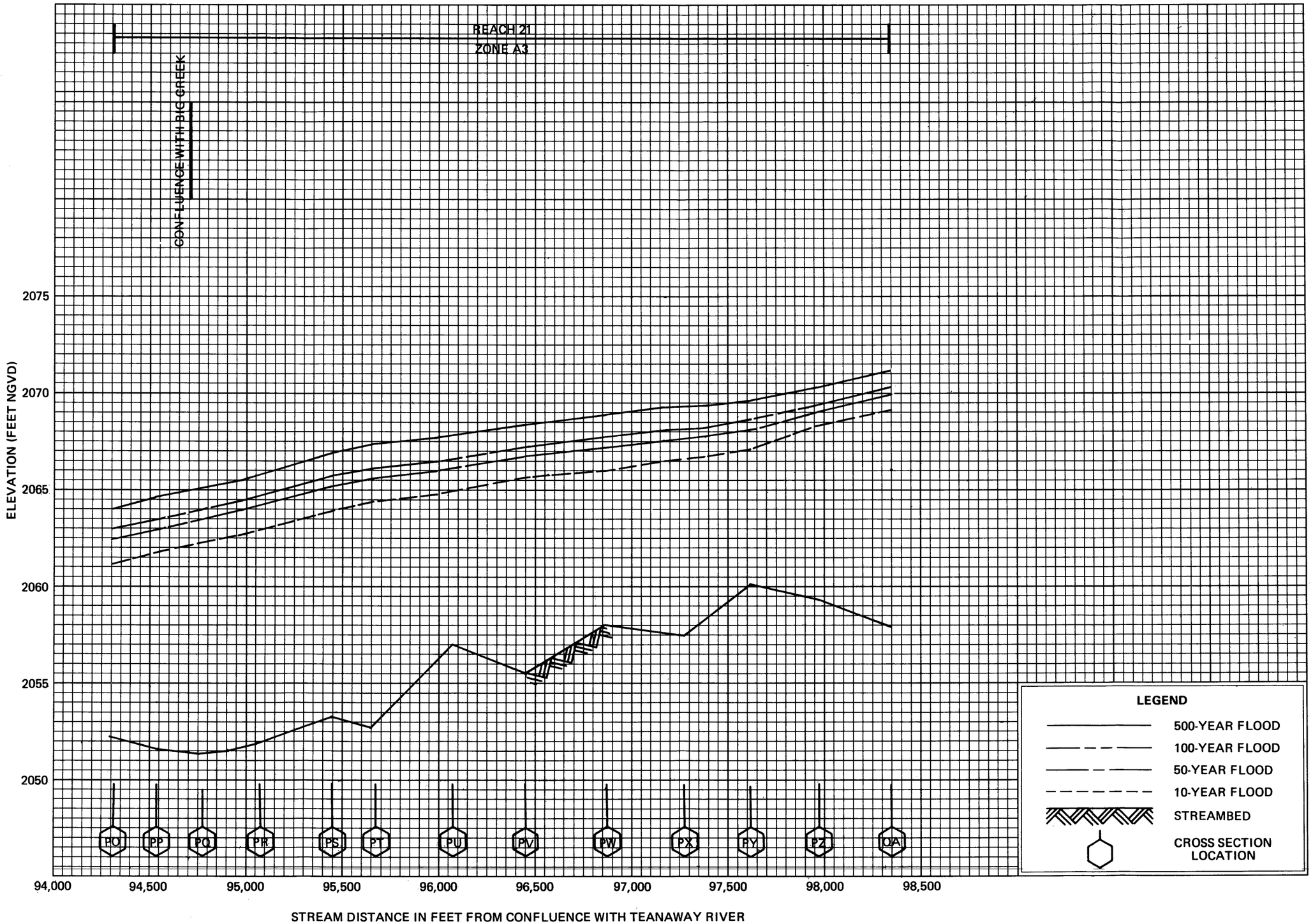

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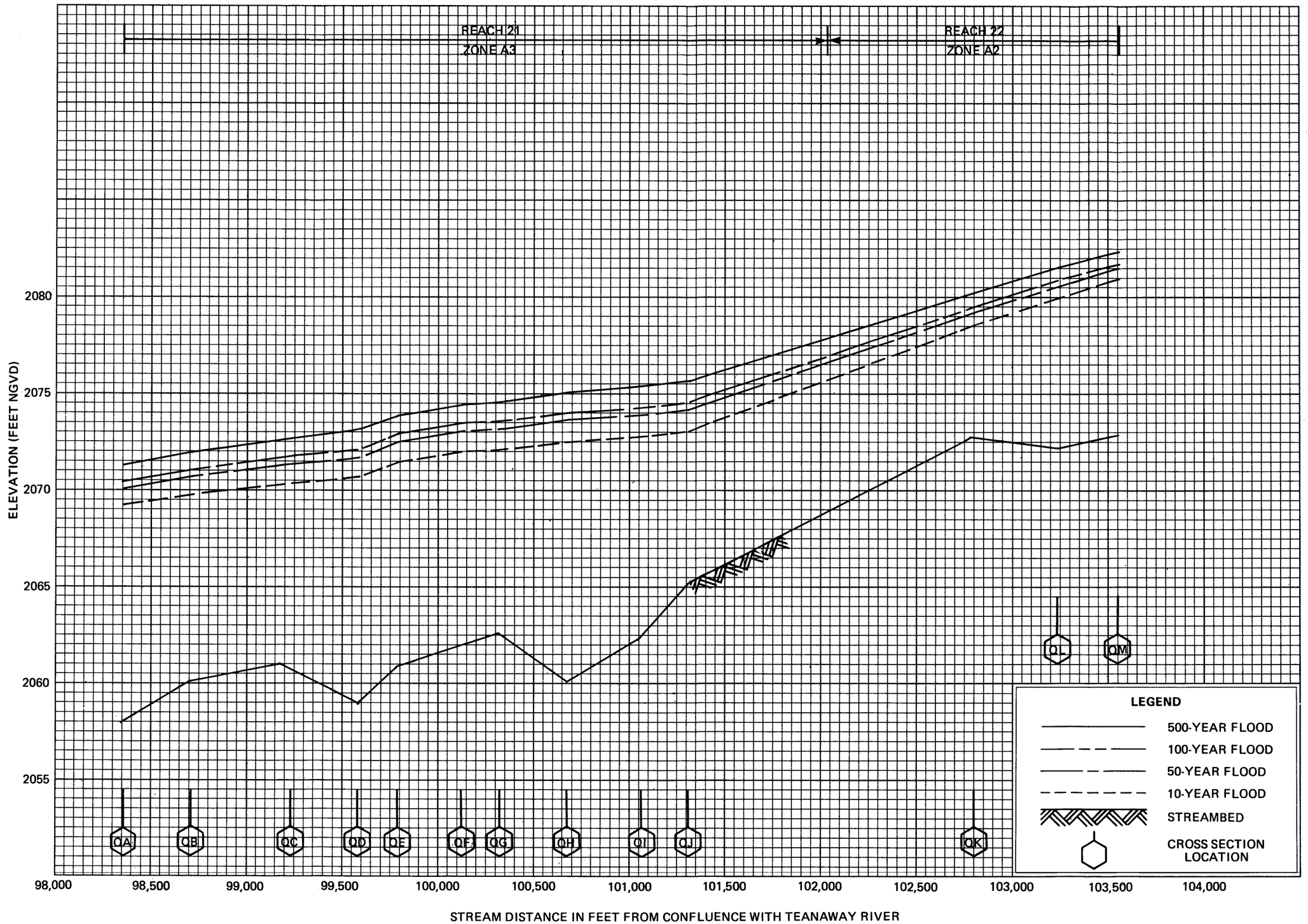

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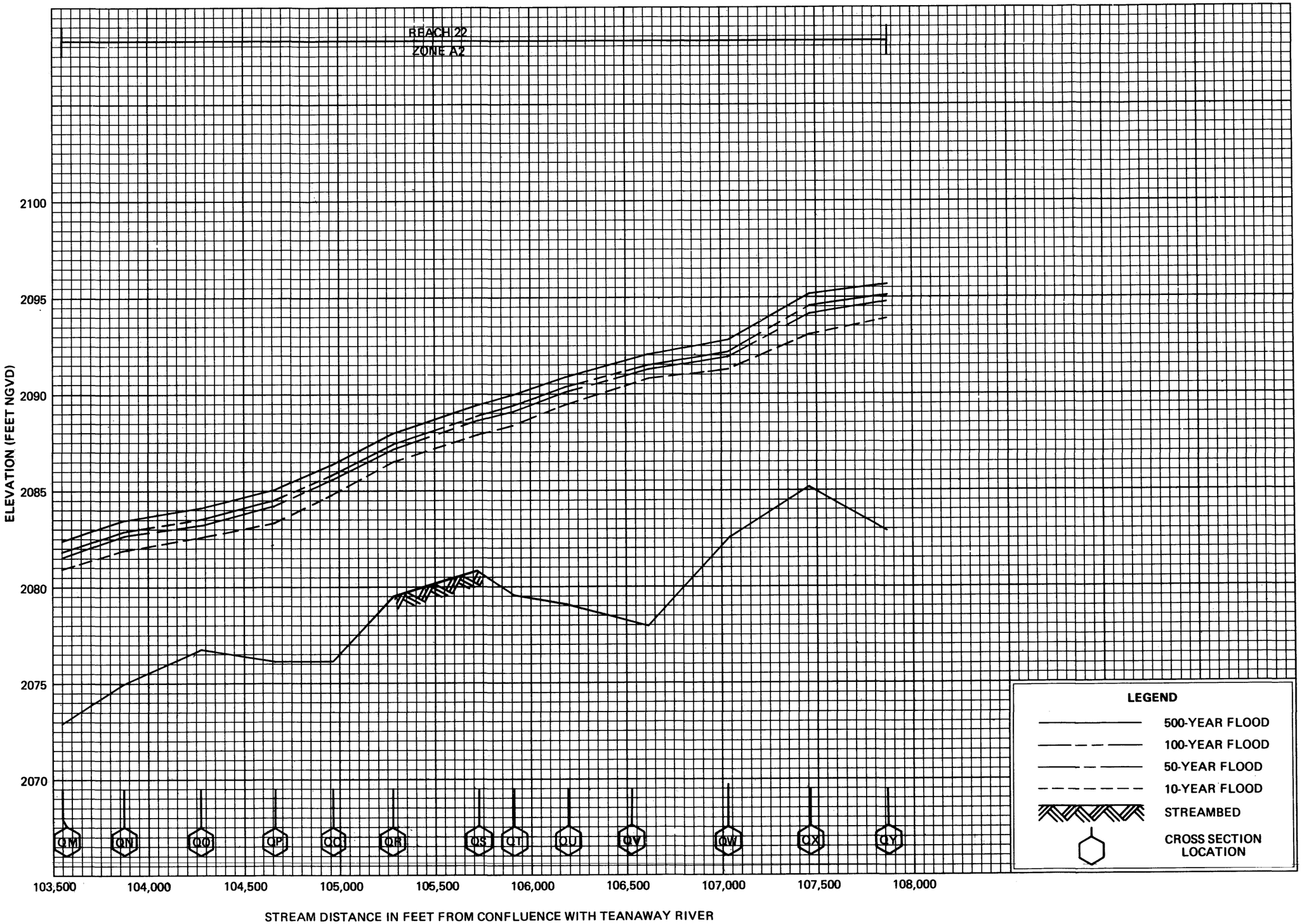

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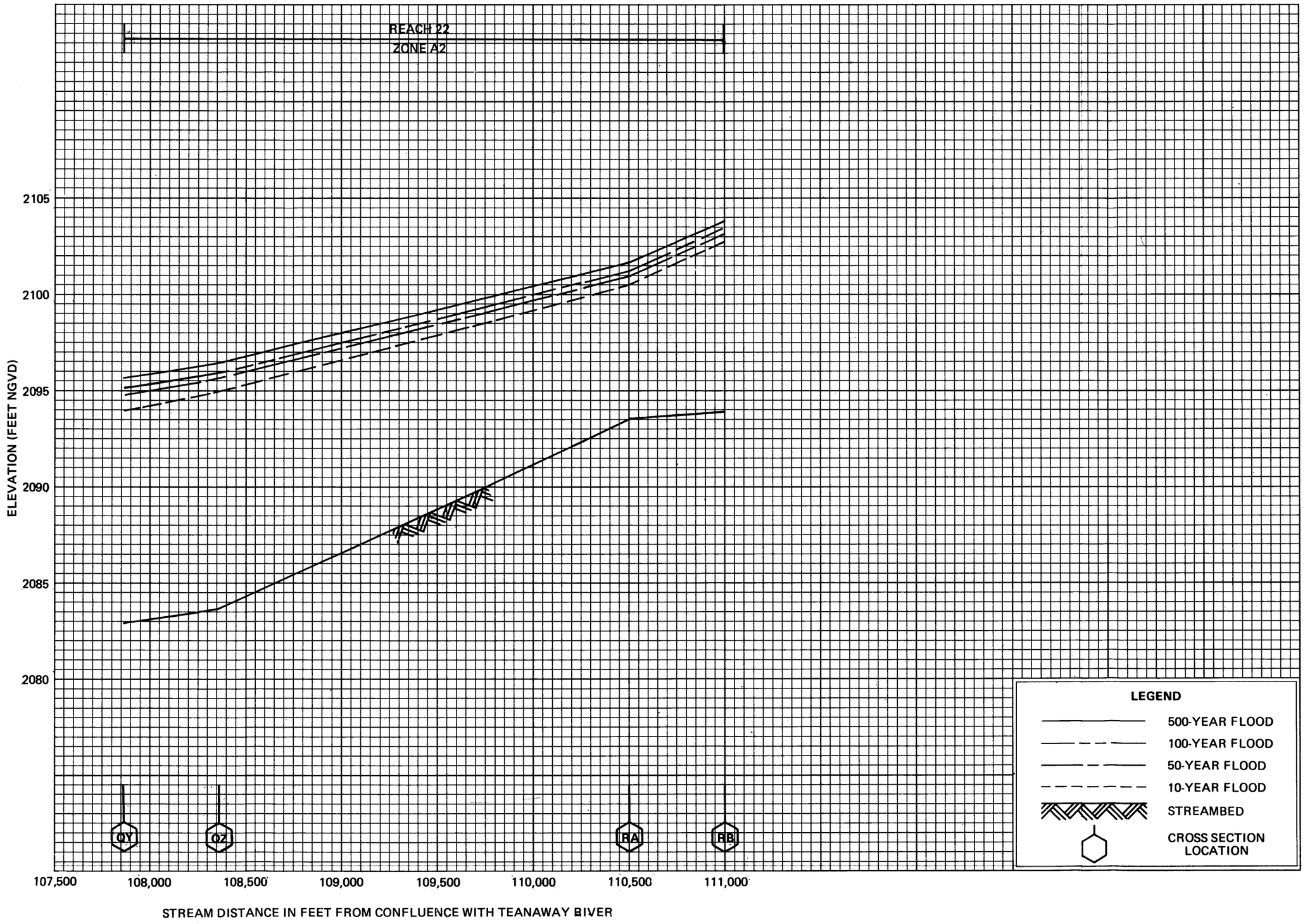

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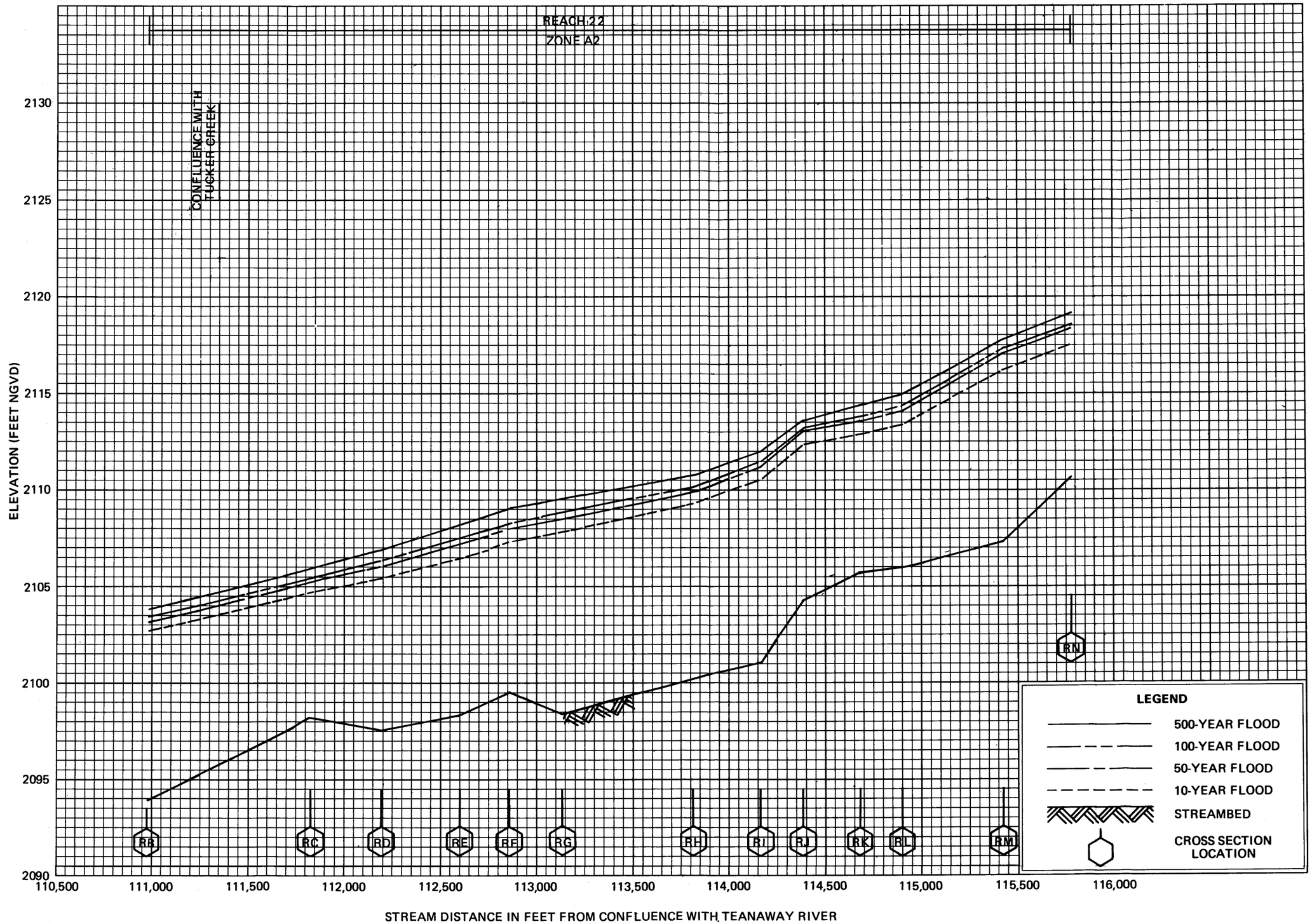

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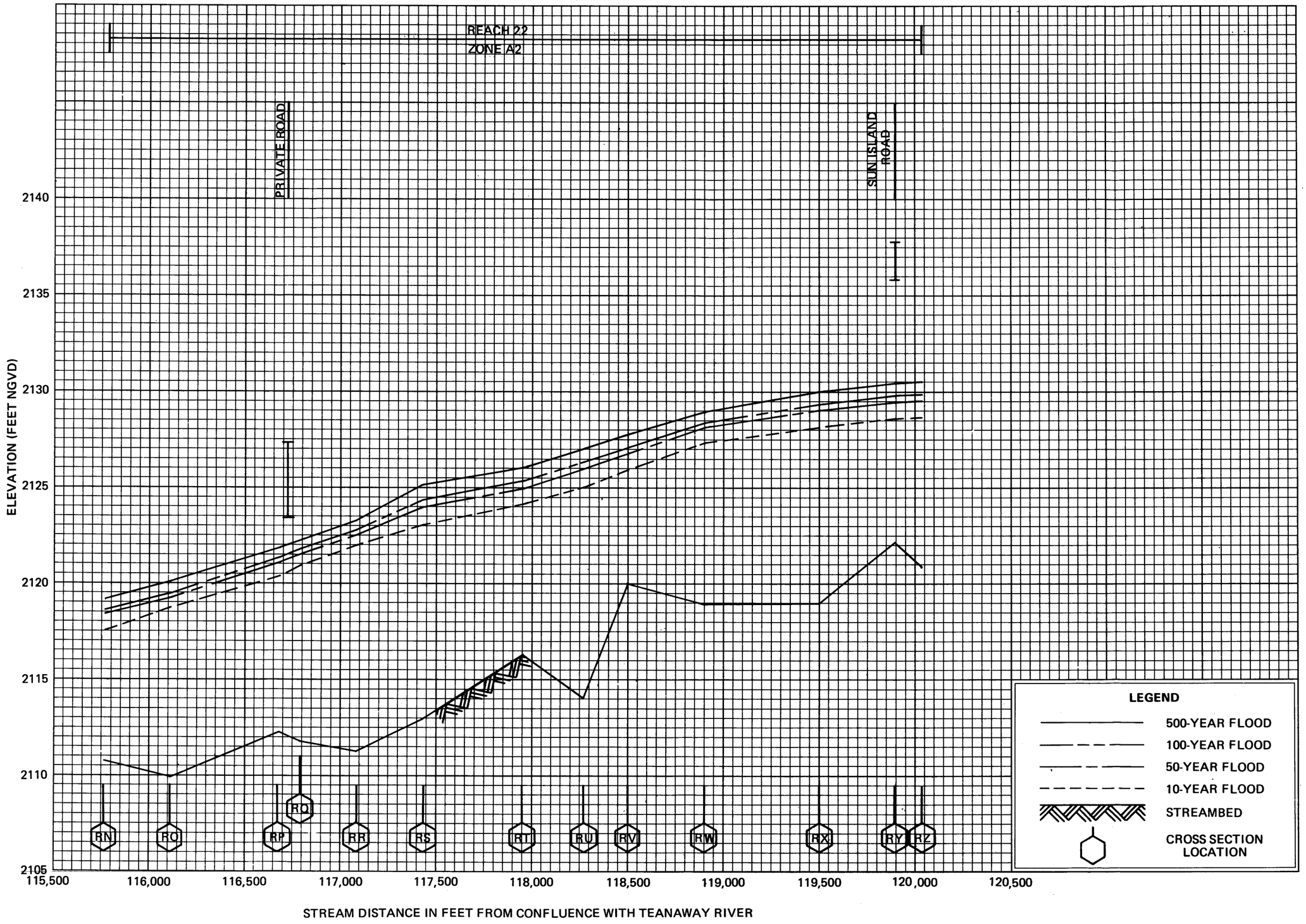

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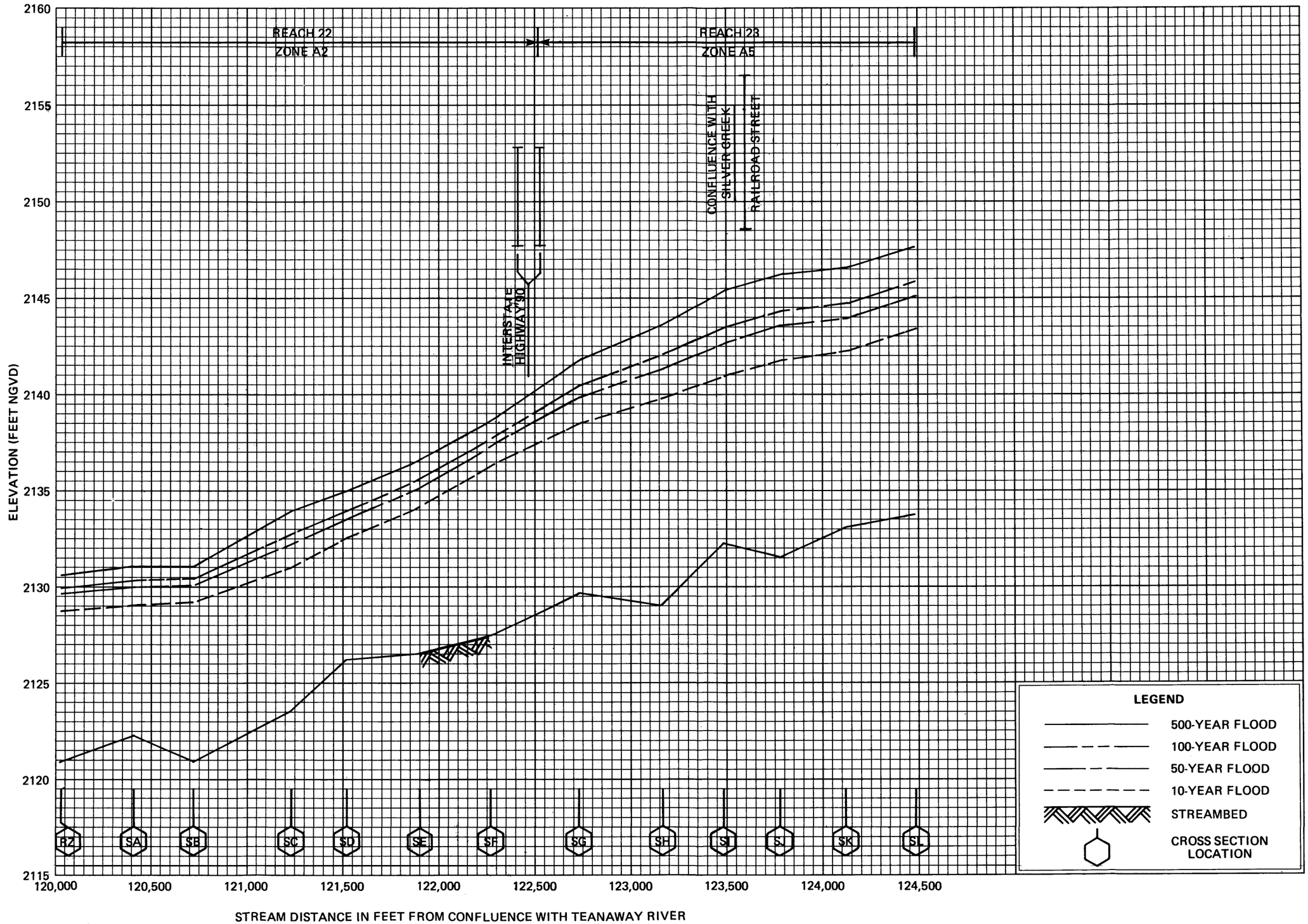

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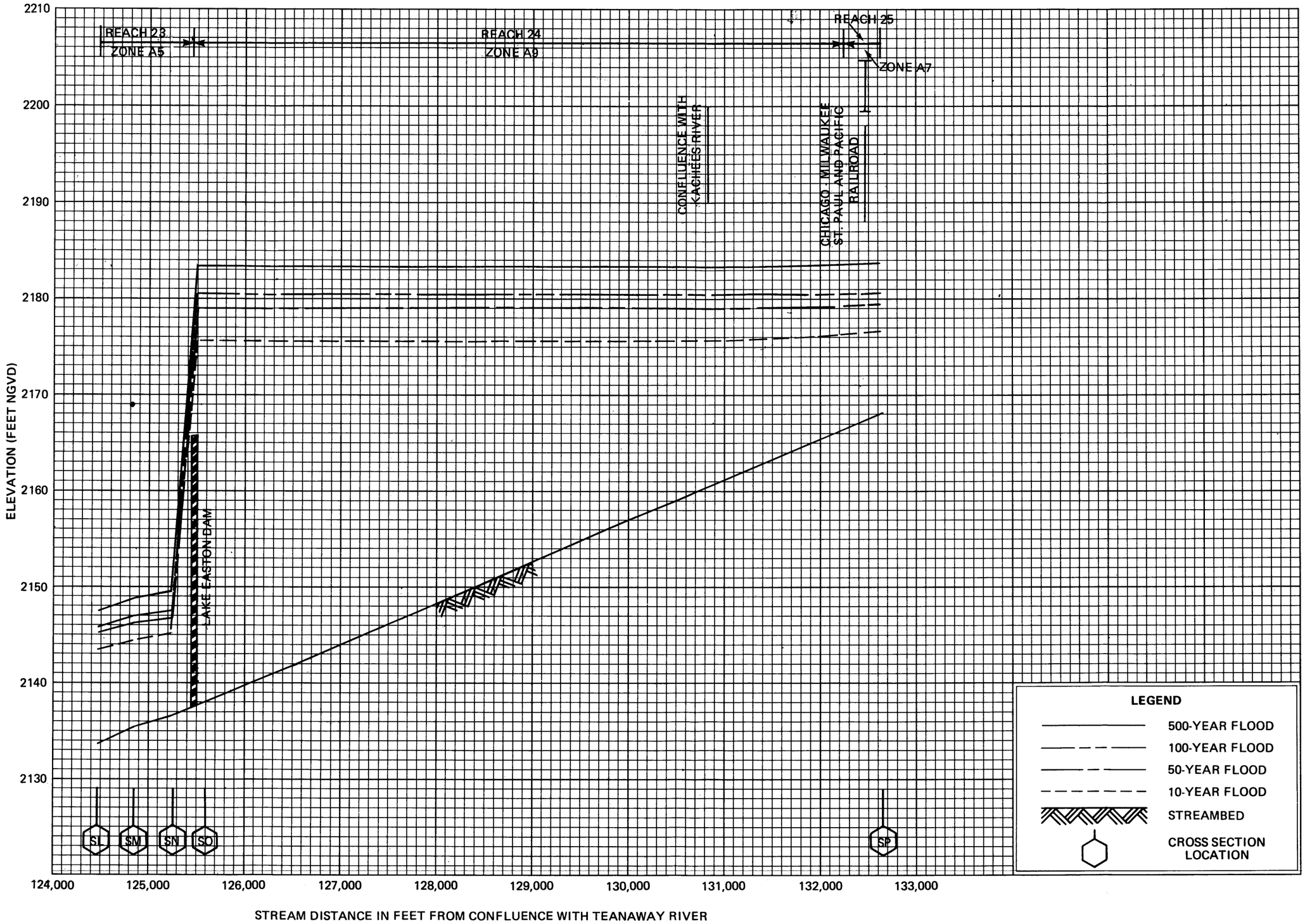

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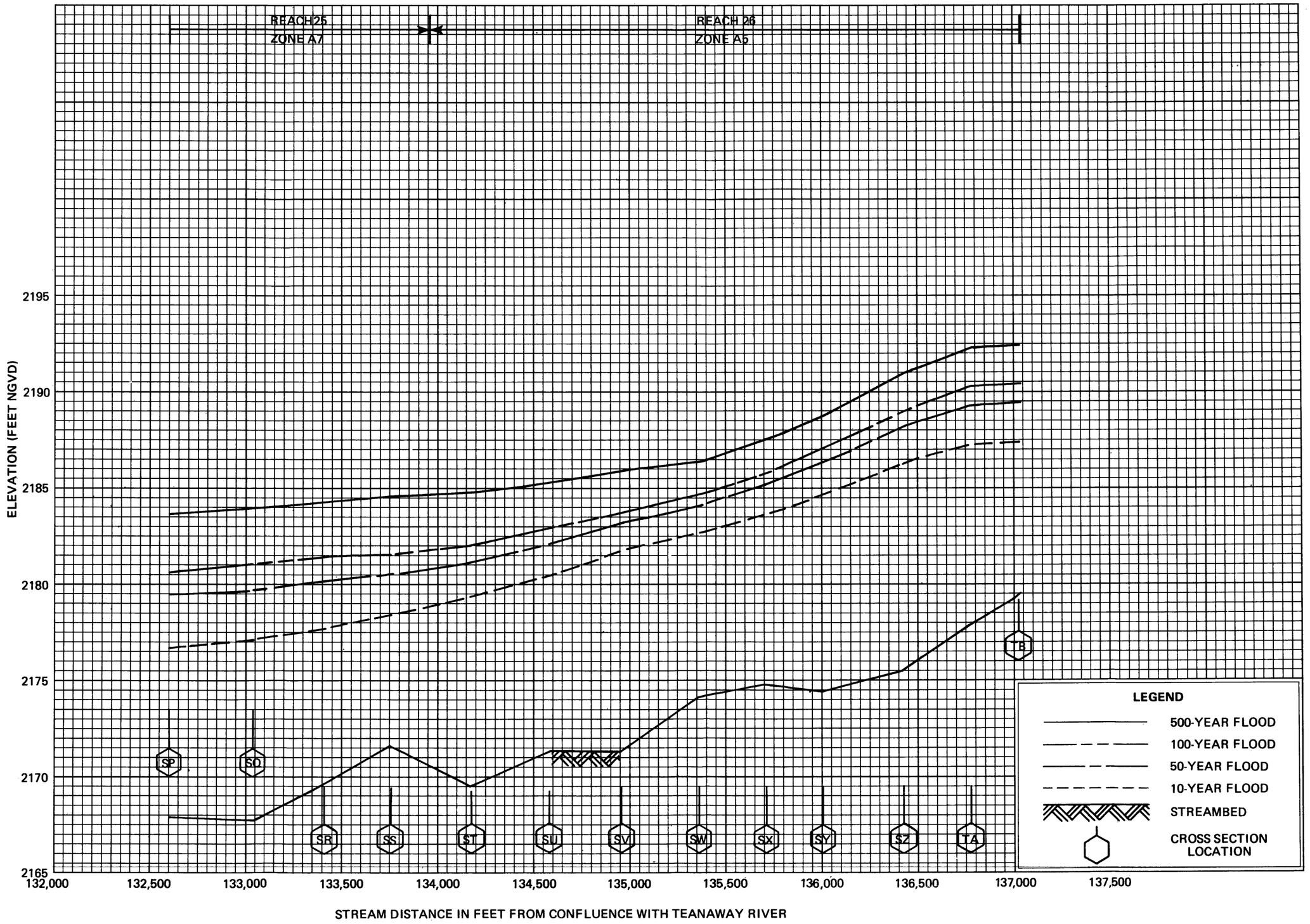

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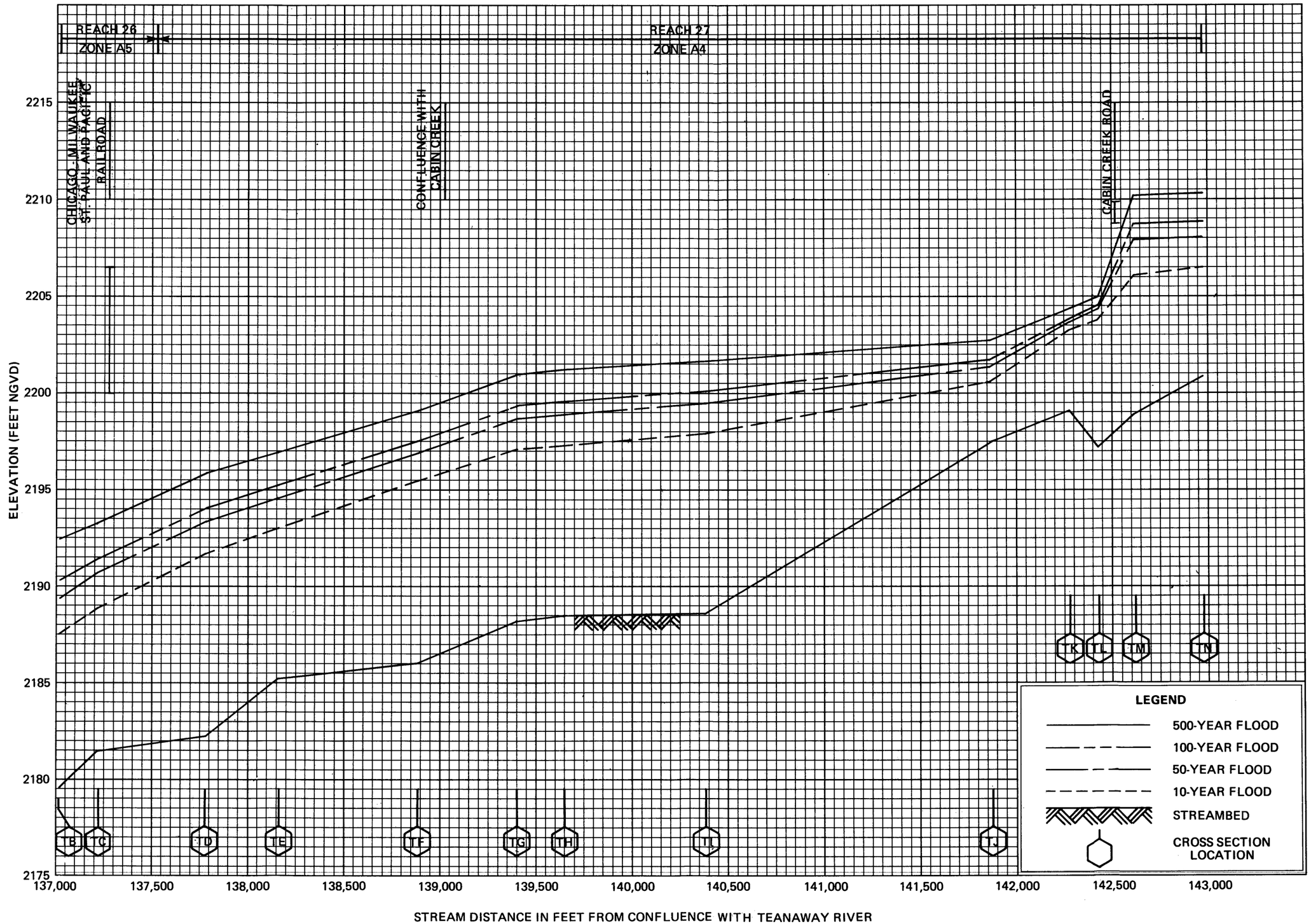

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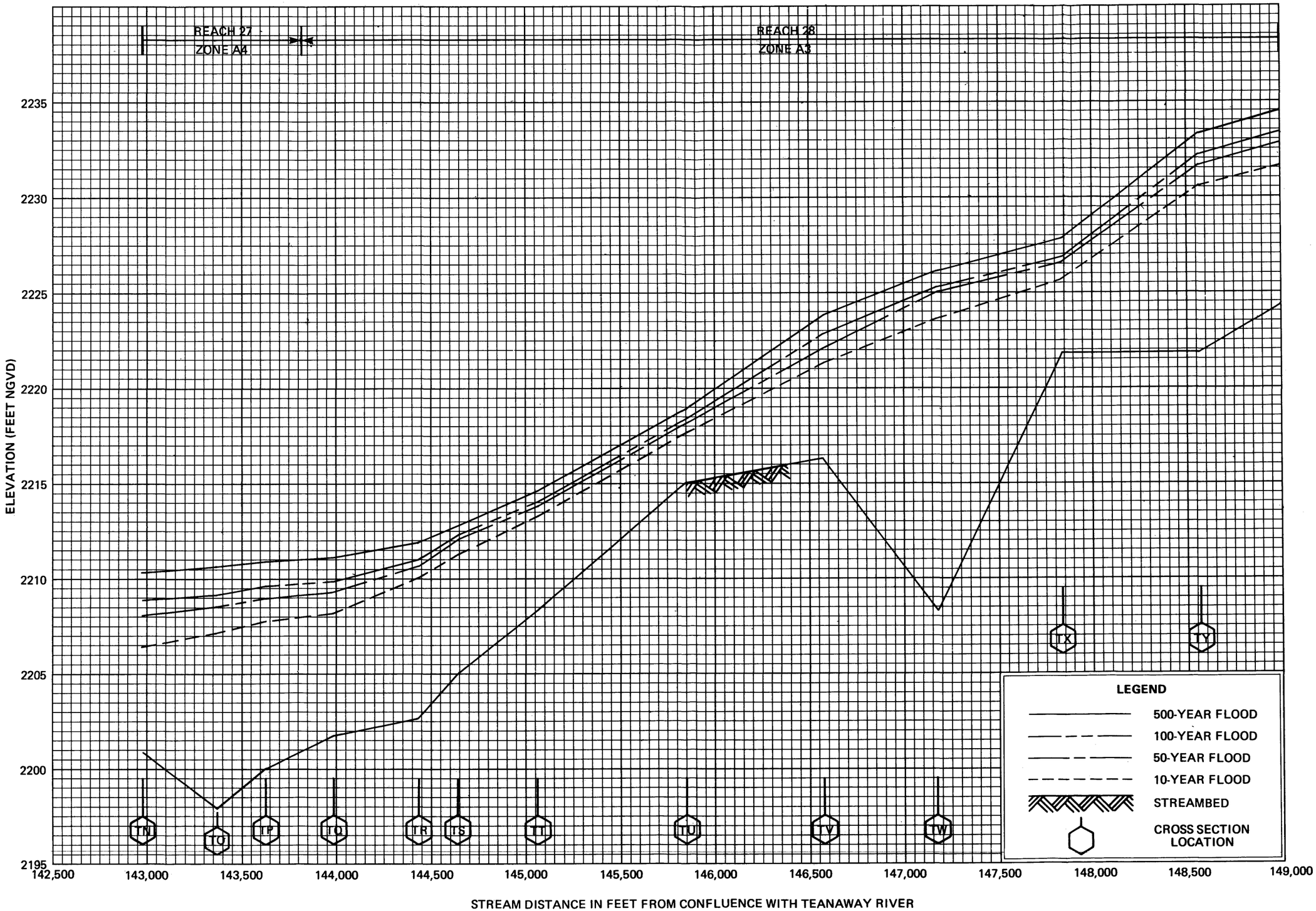

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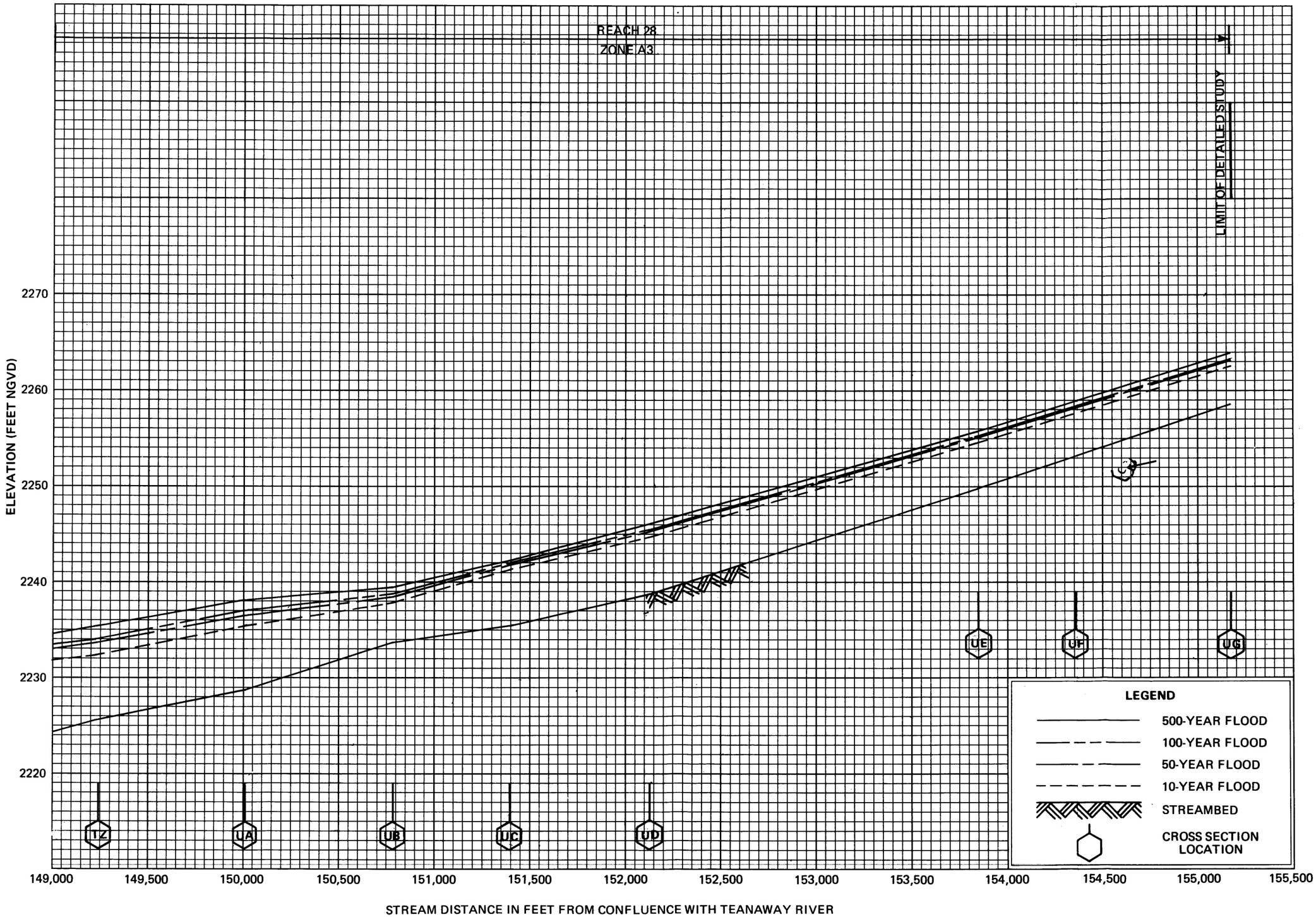

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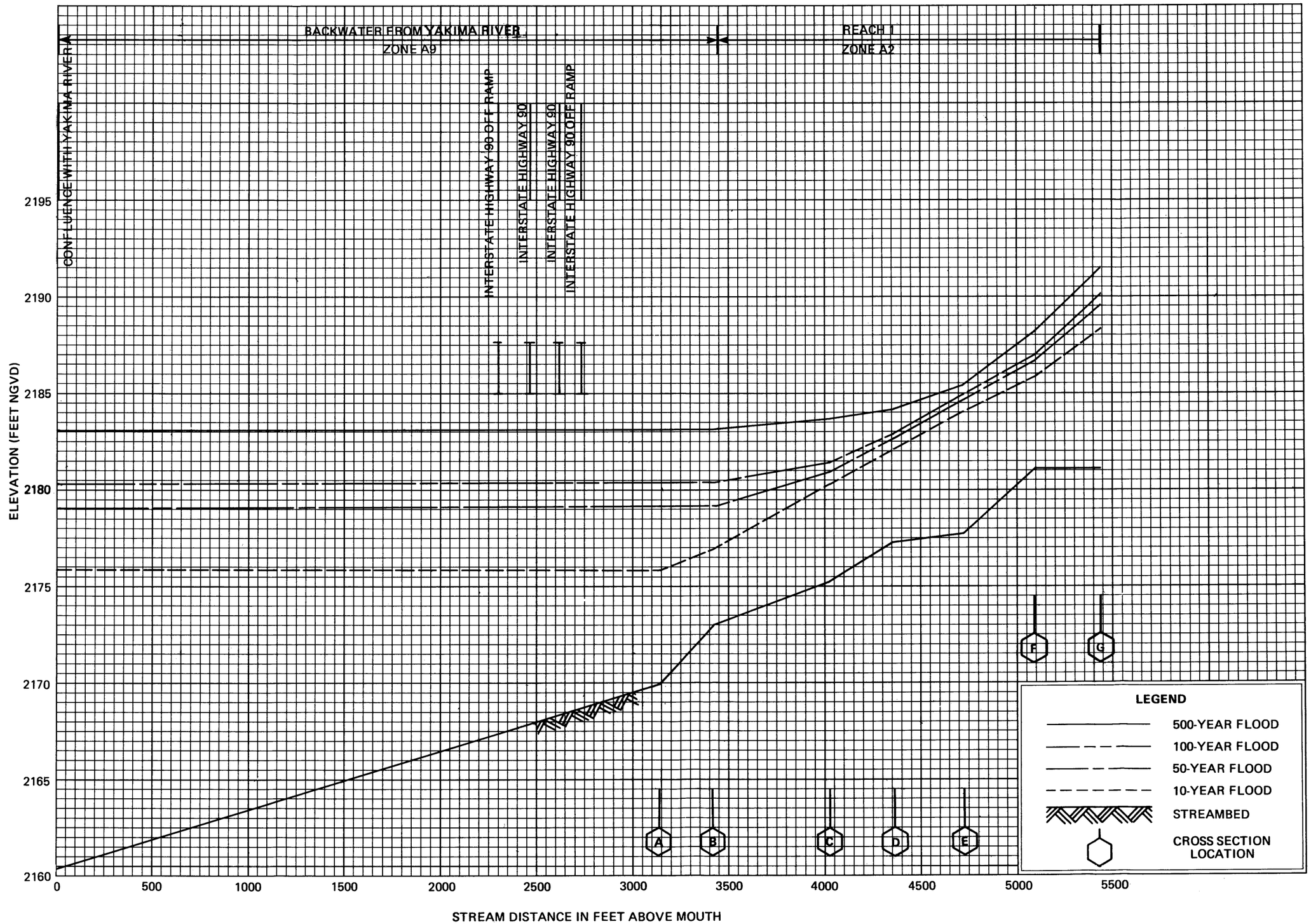
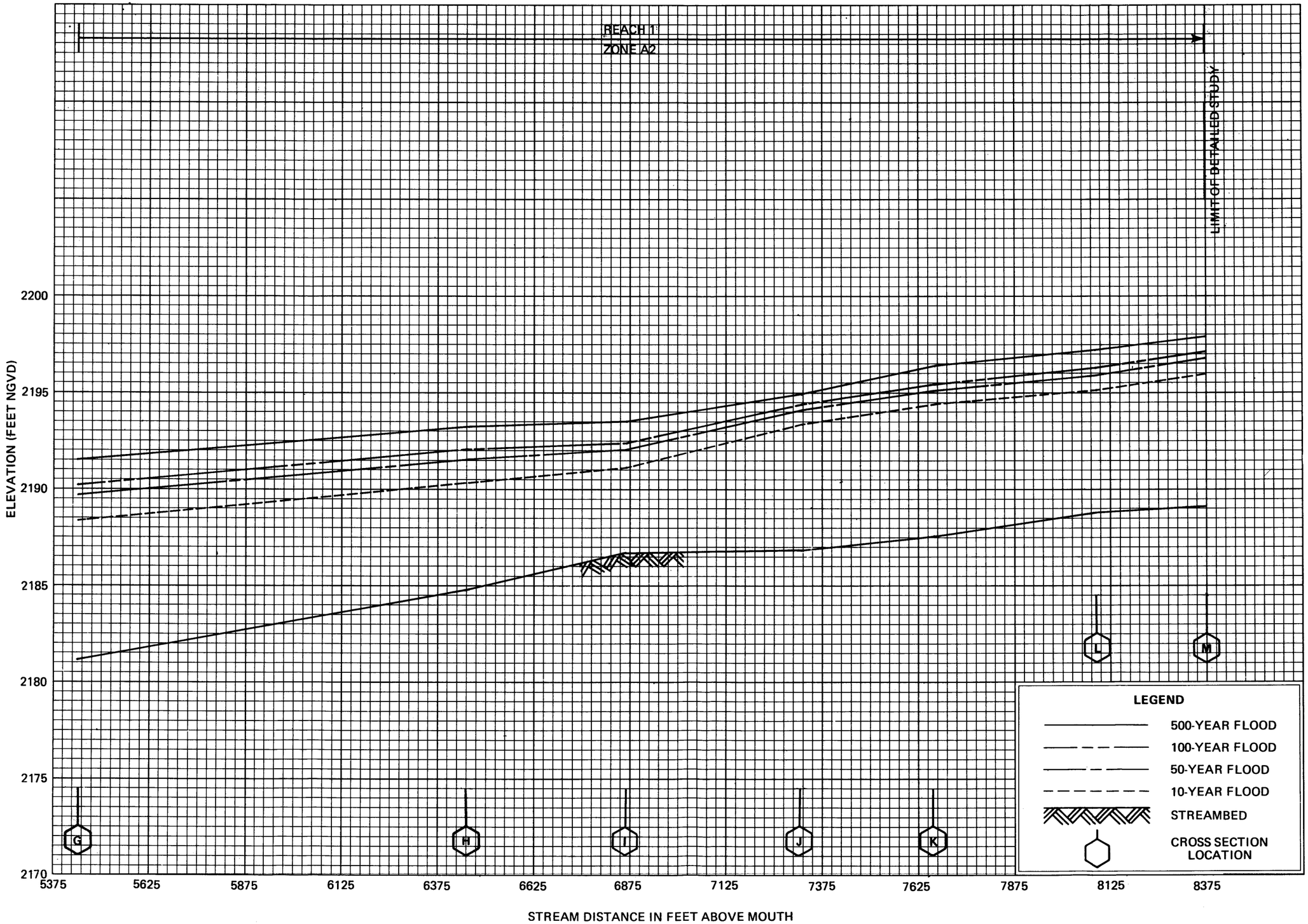


FLOOD PROFILES

KACHESS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

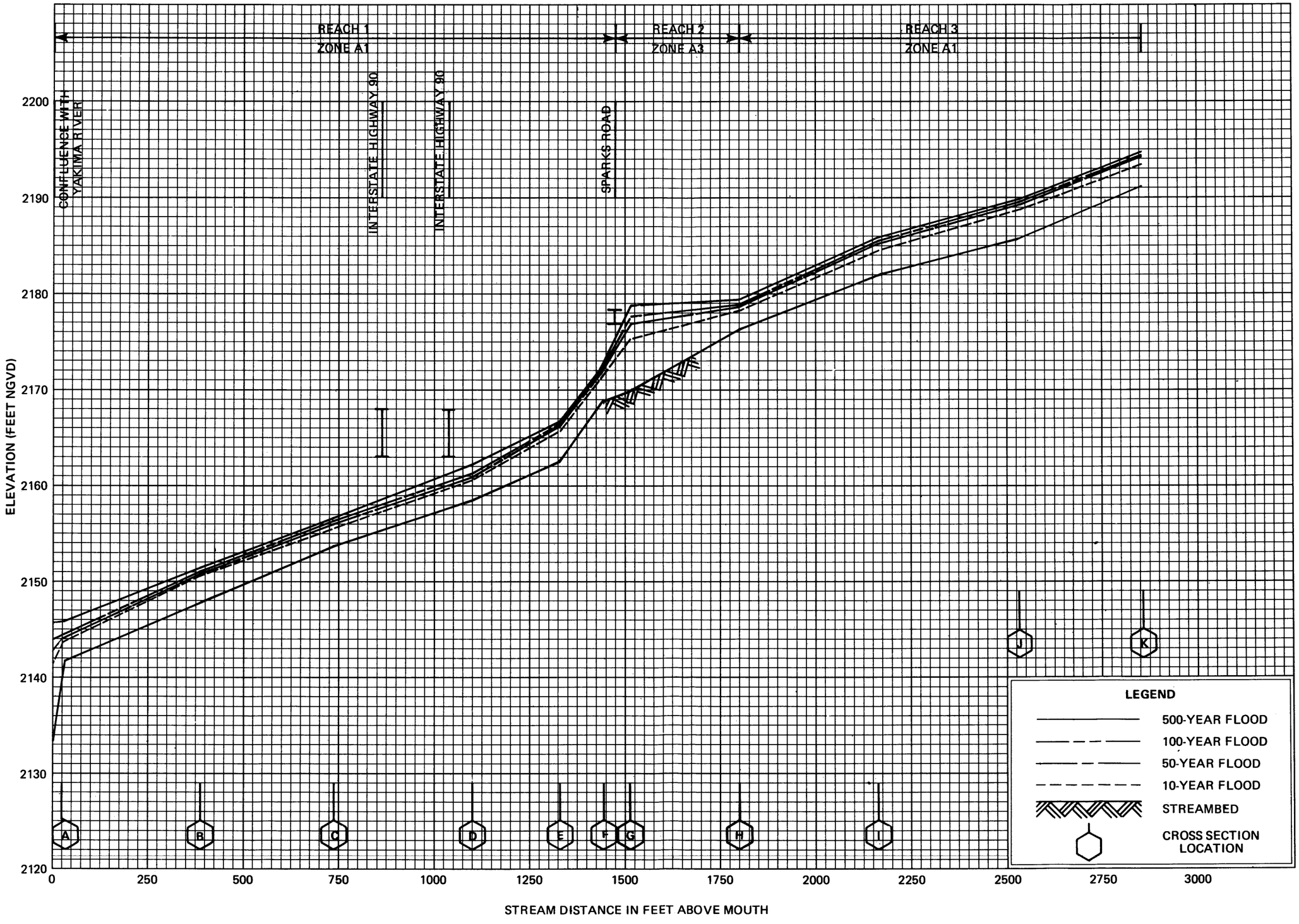


FLOOD PROFILES

KACHESS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

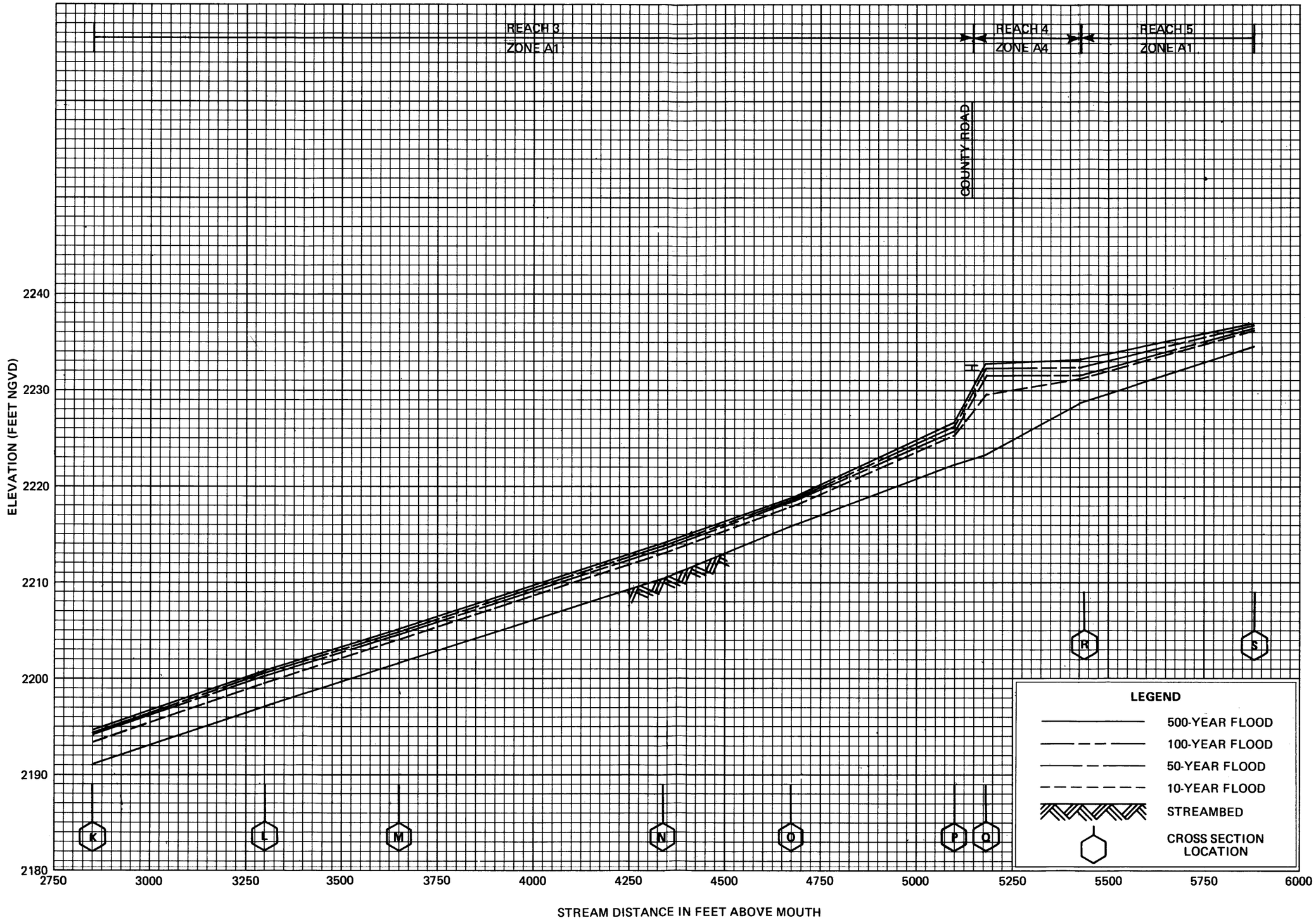


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

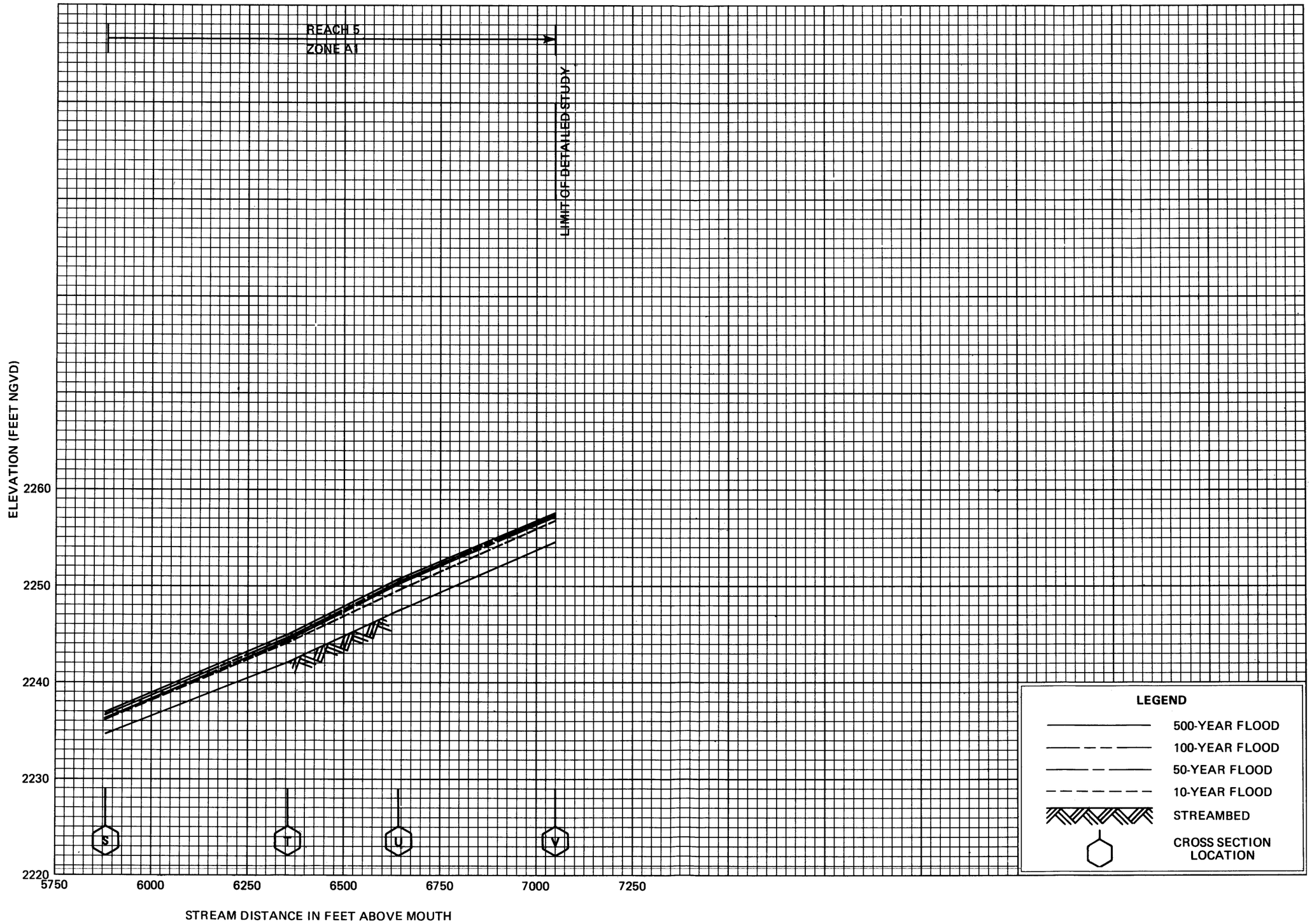


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

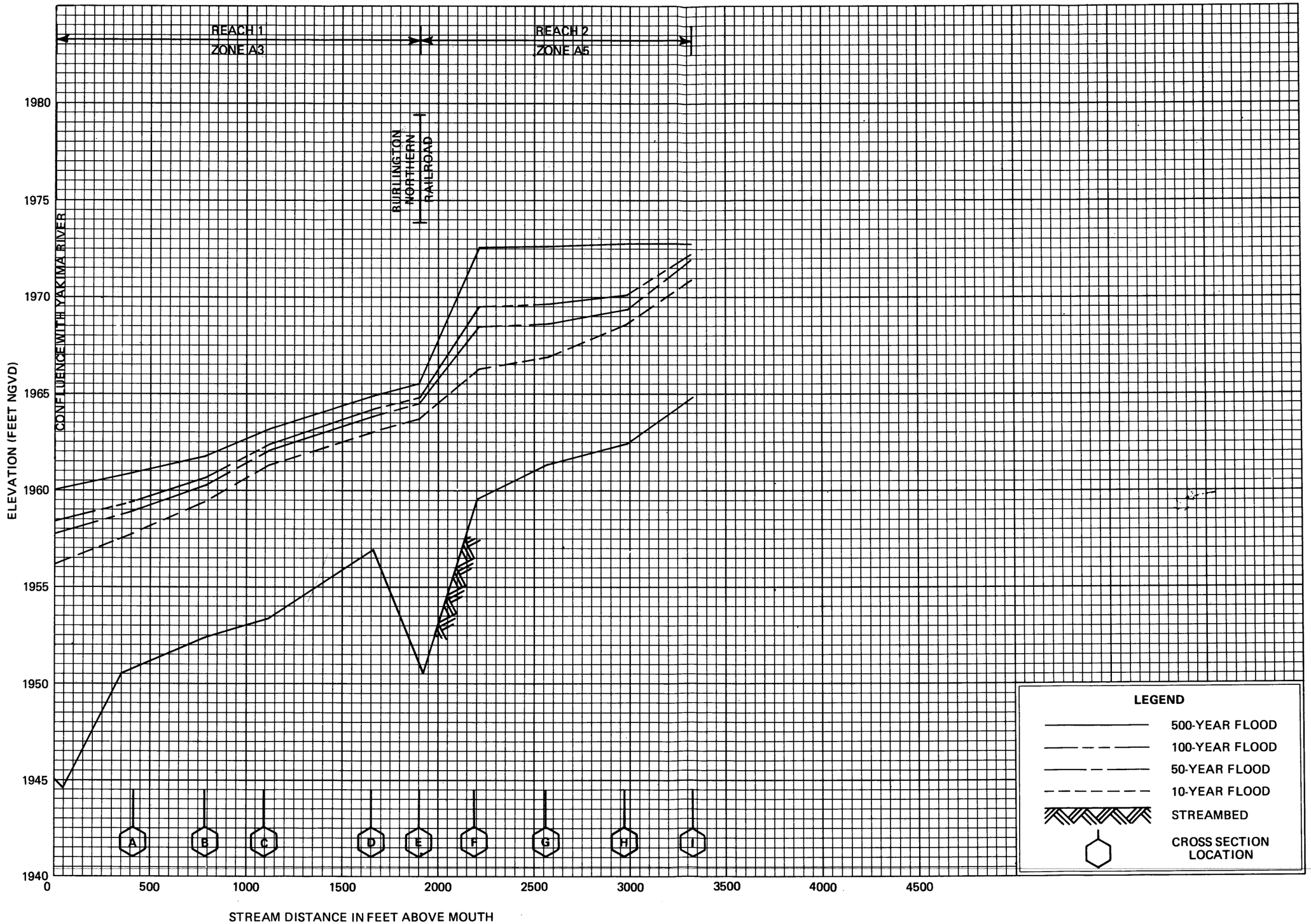


FLOOD PROFILES

SILVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



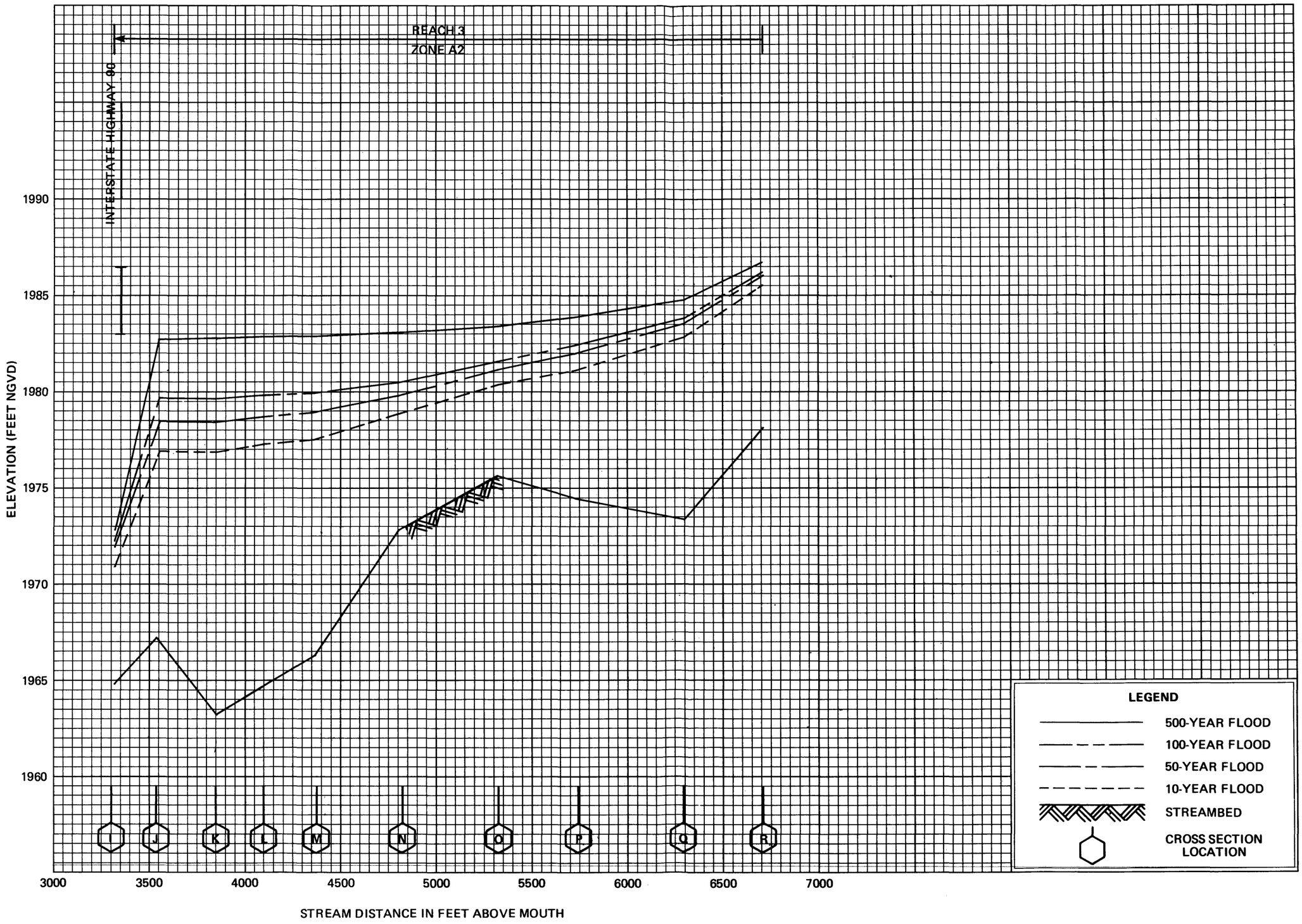
FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

60P



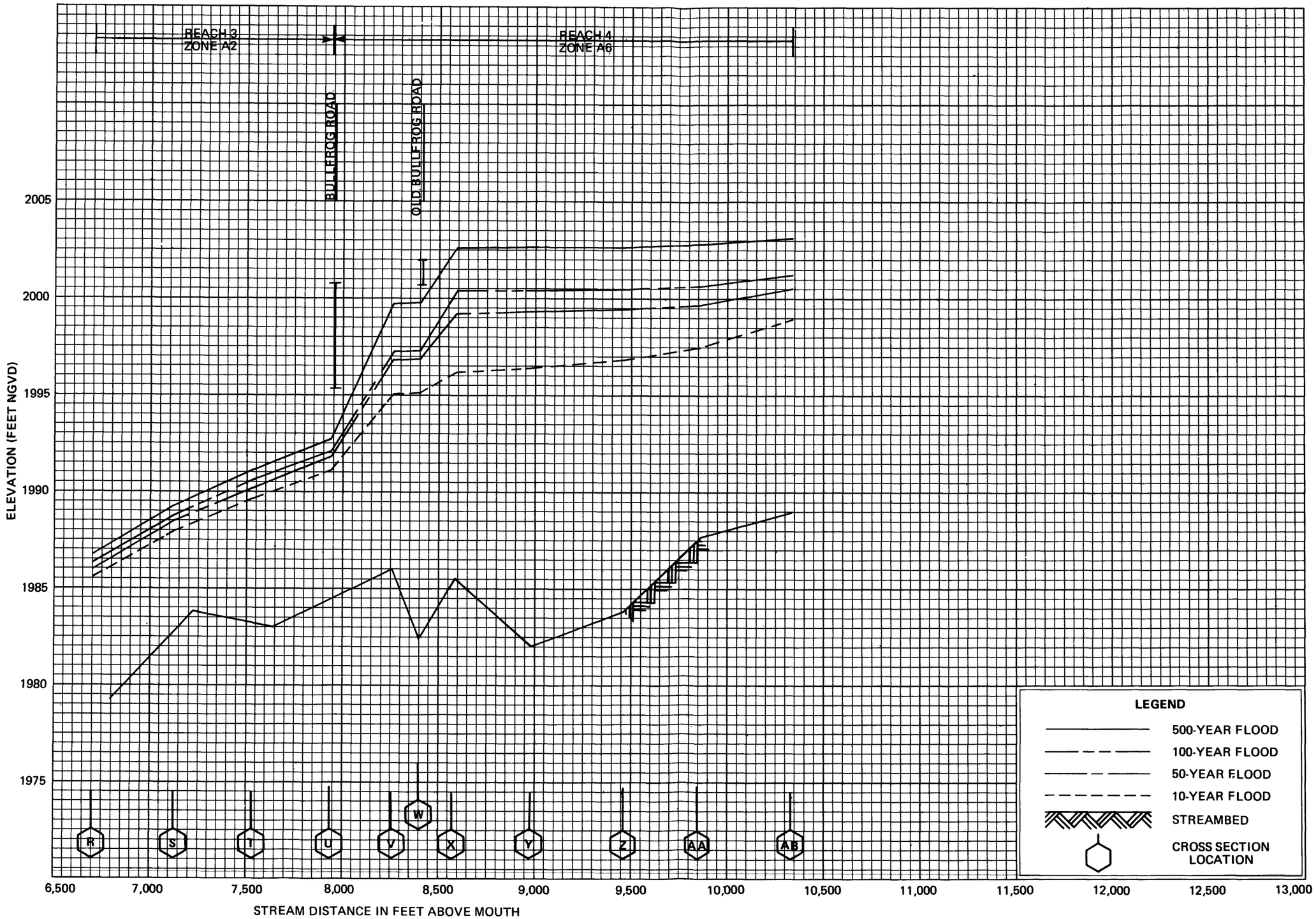
FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

61P



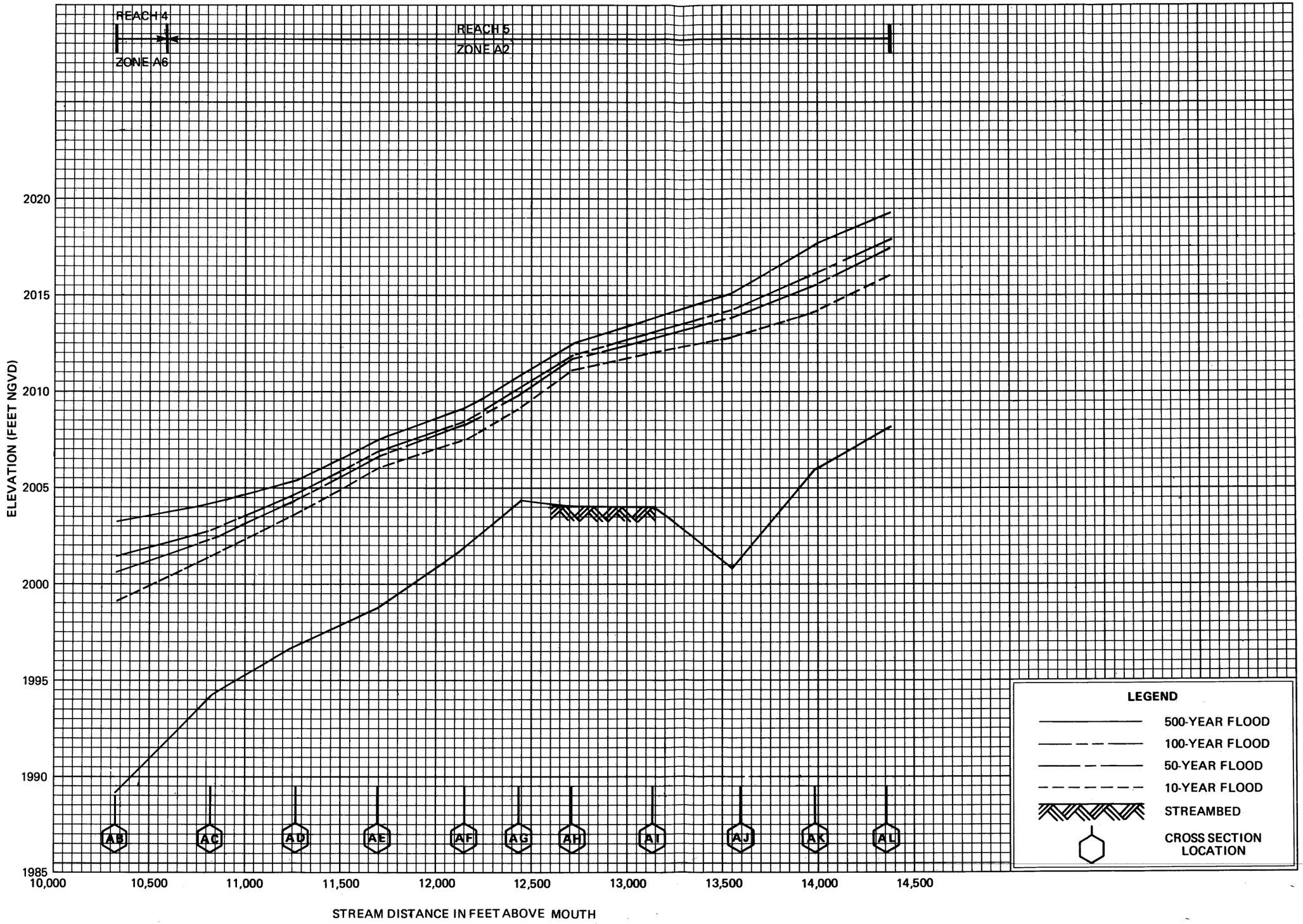
FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

62P

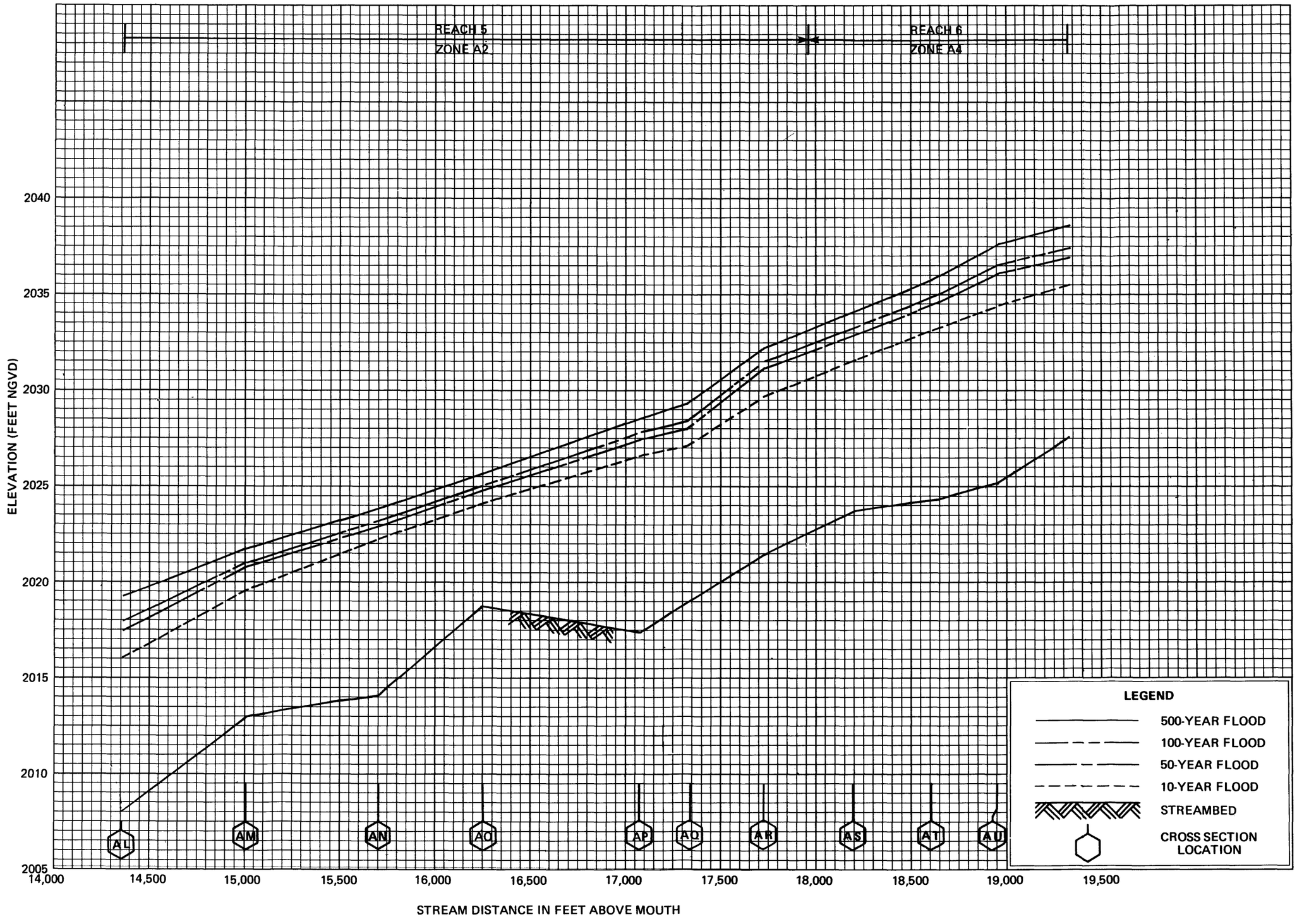


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

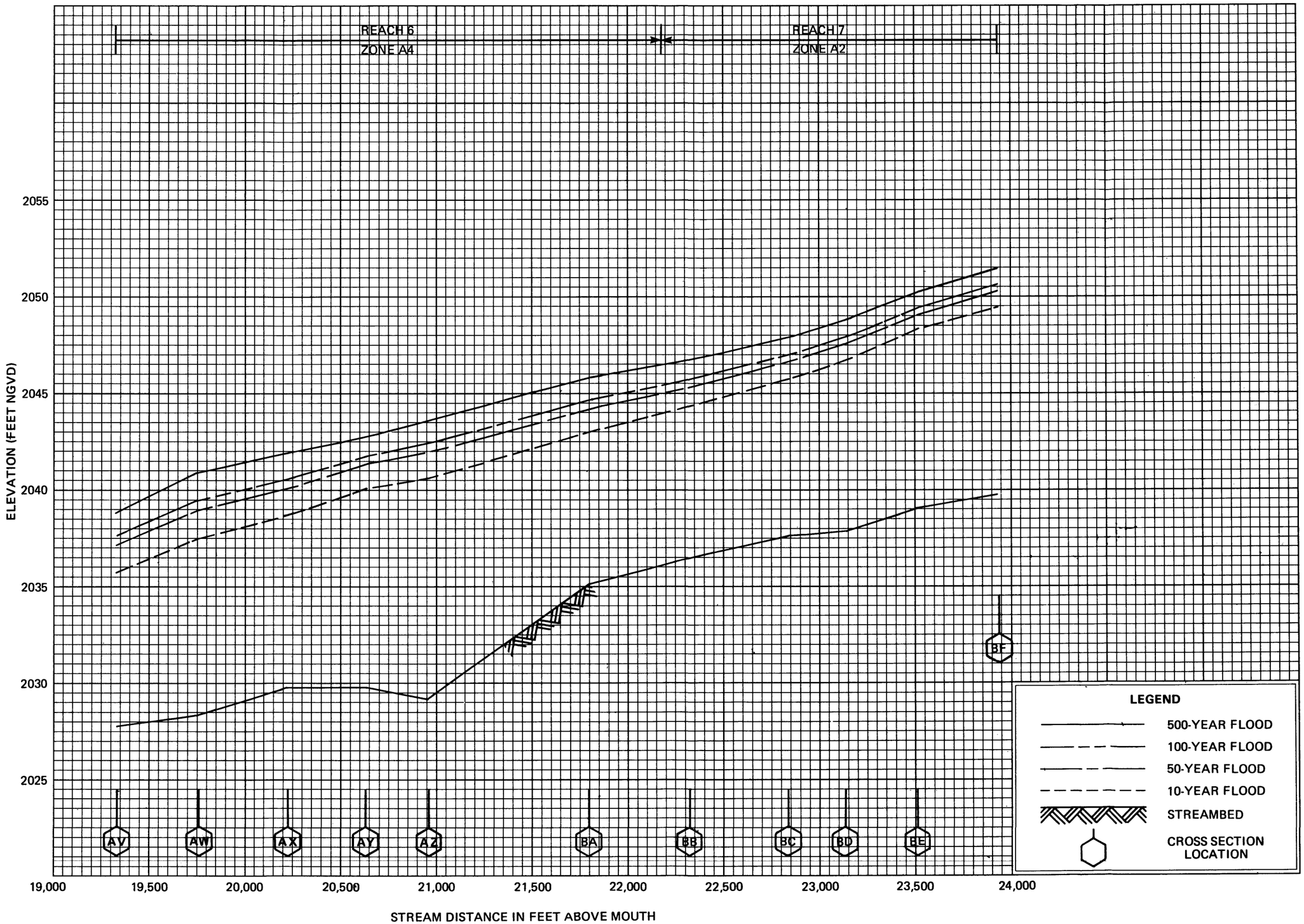


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

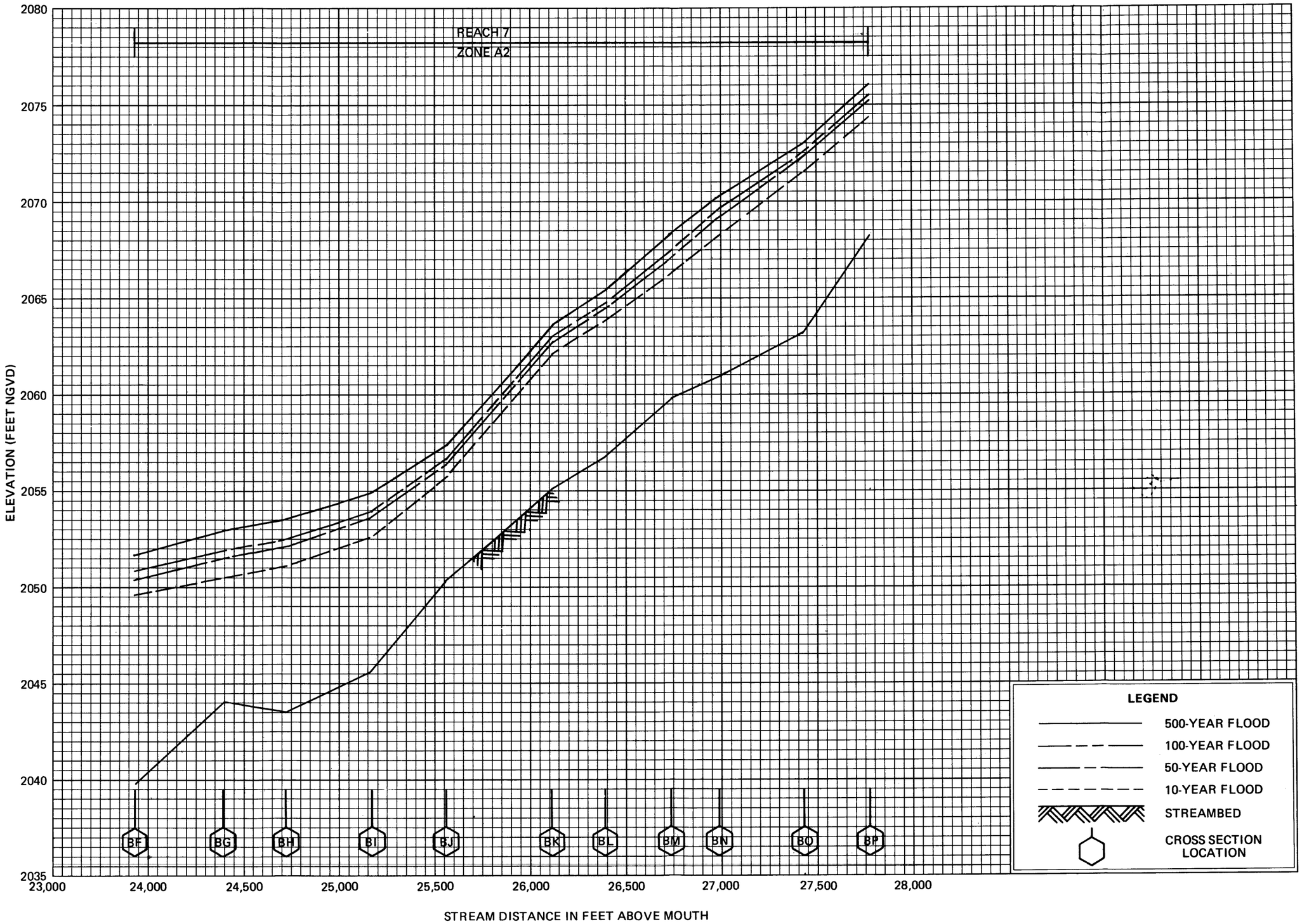


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

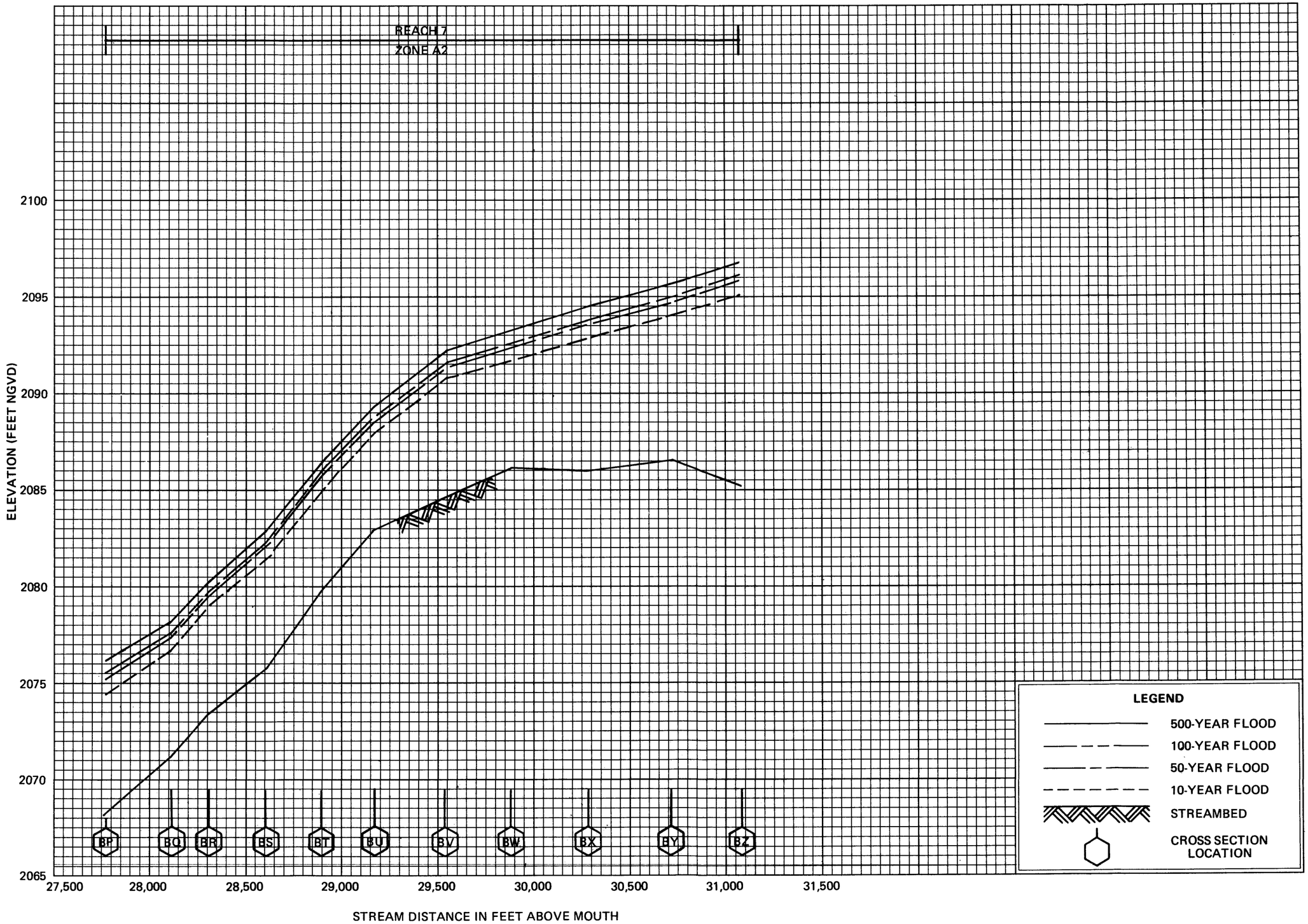


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

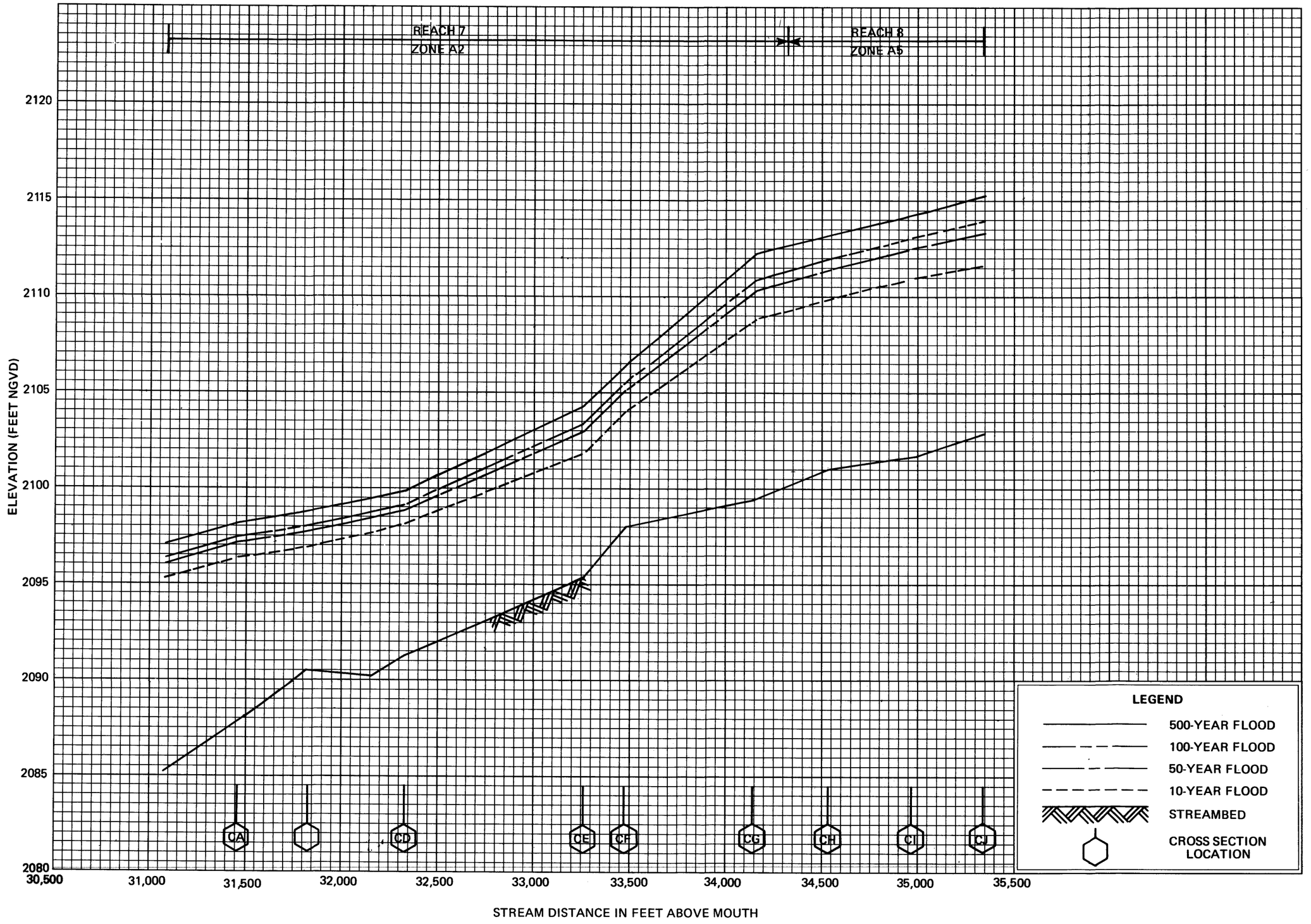


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

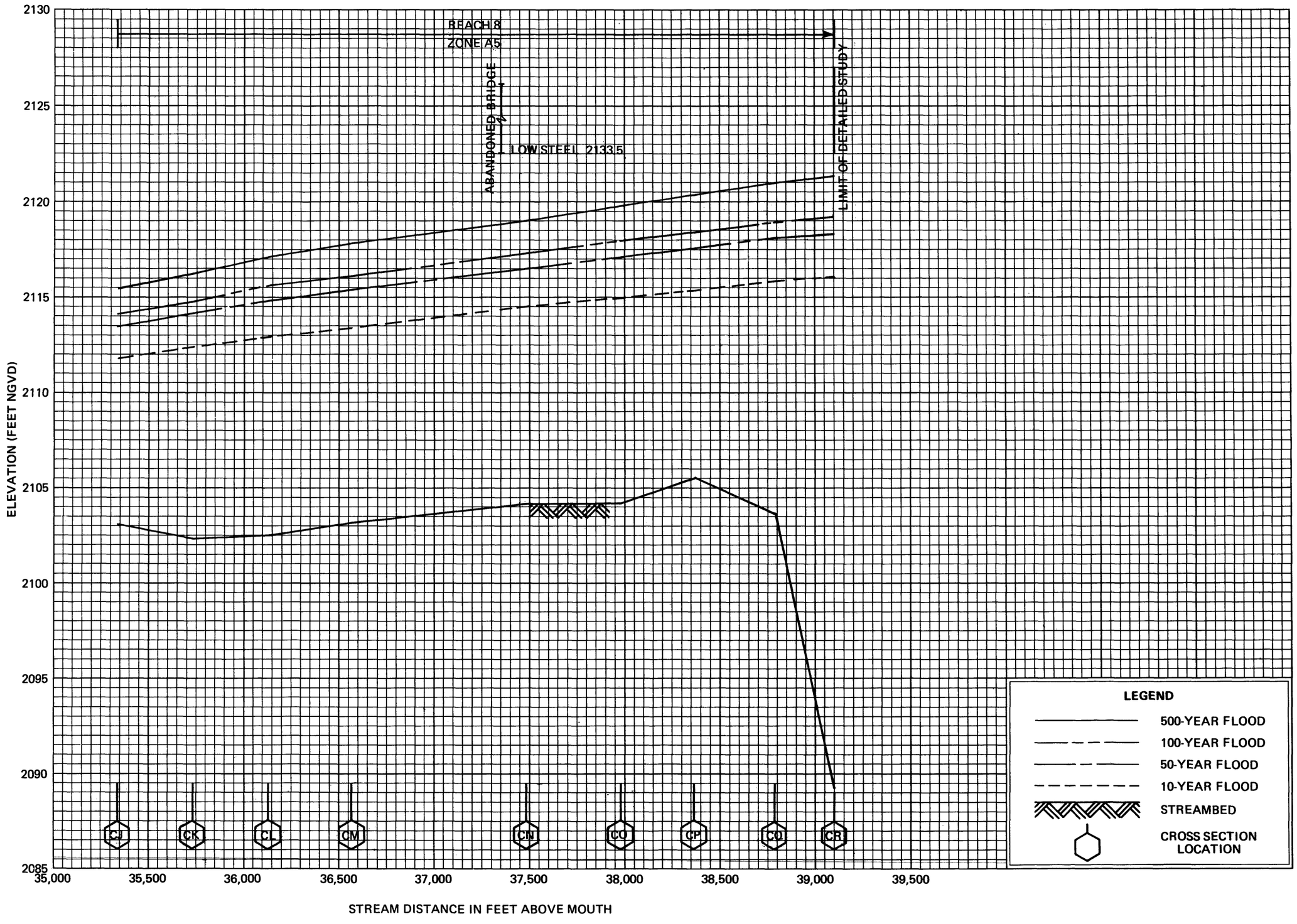


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

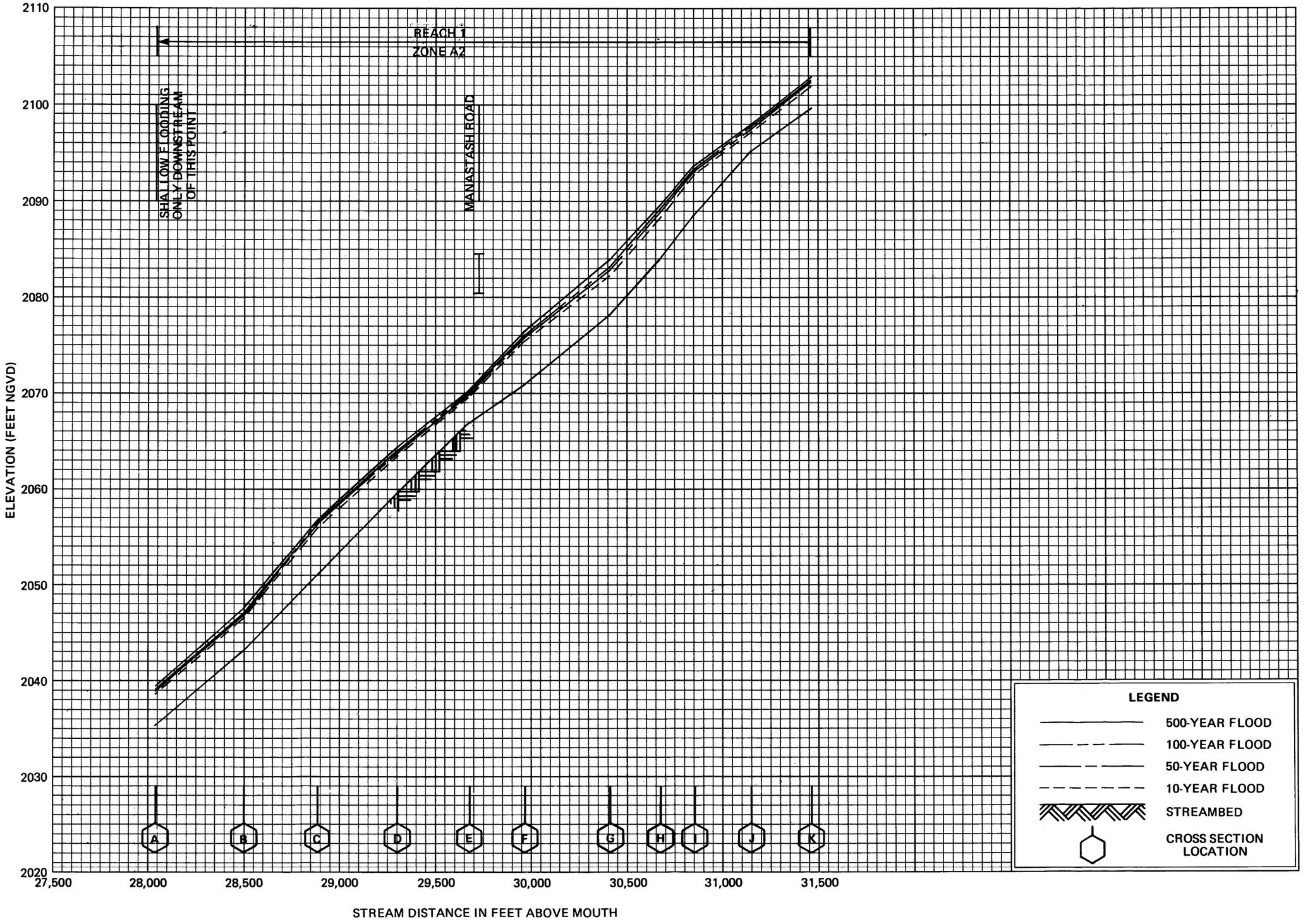


FLOOD PROFILES

CLE ELUM RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

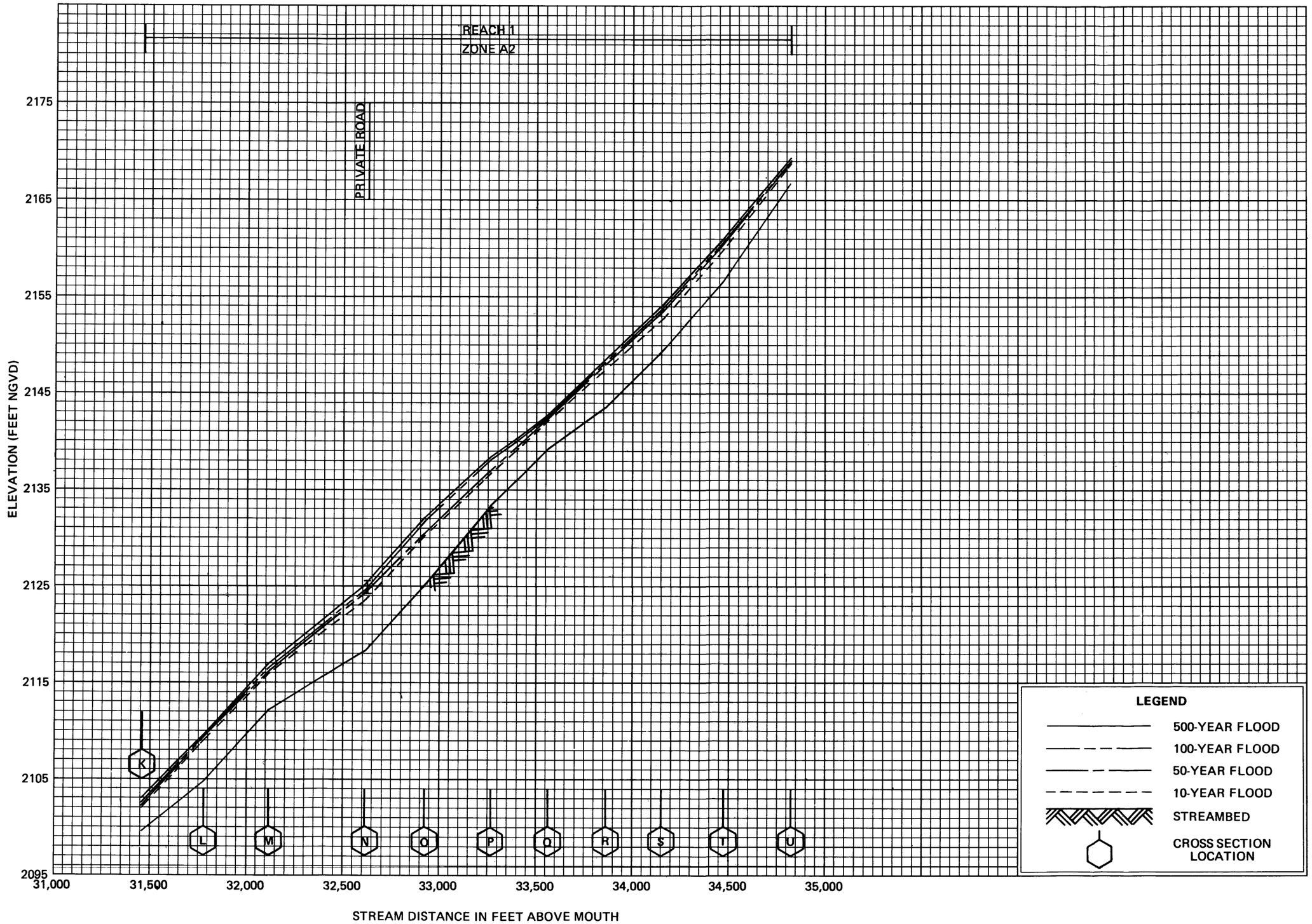


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

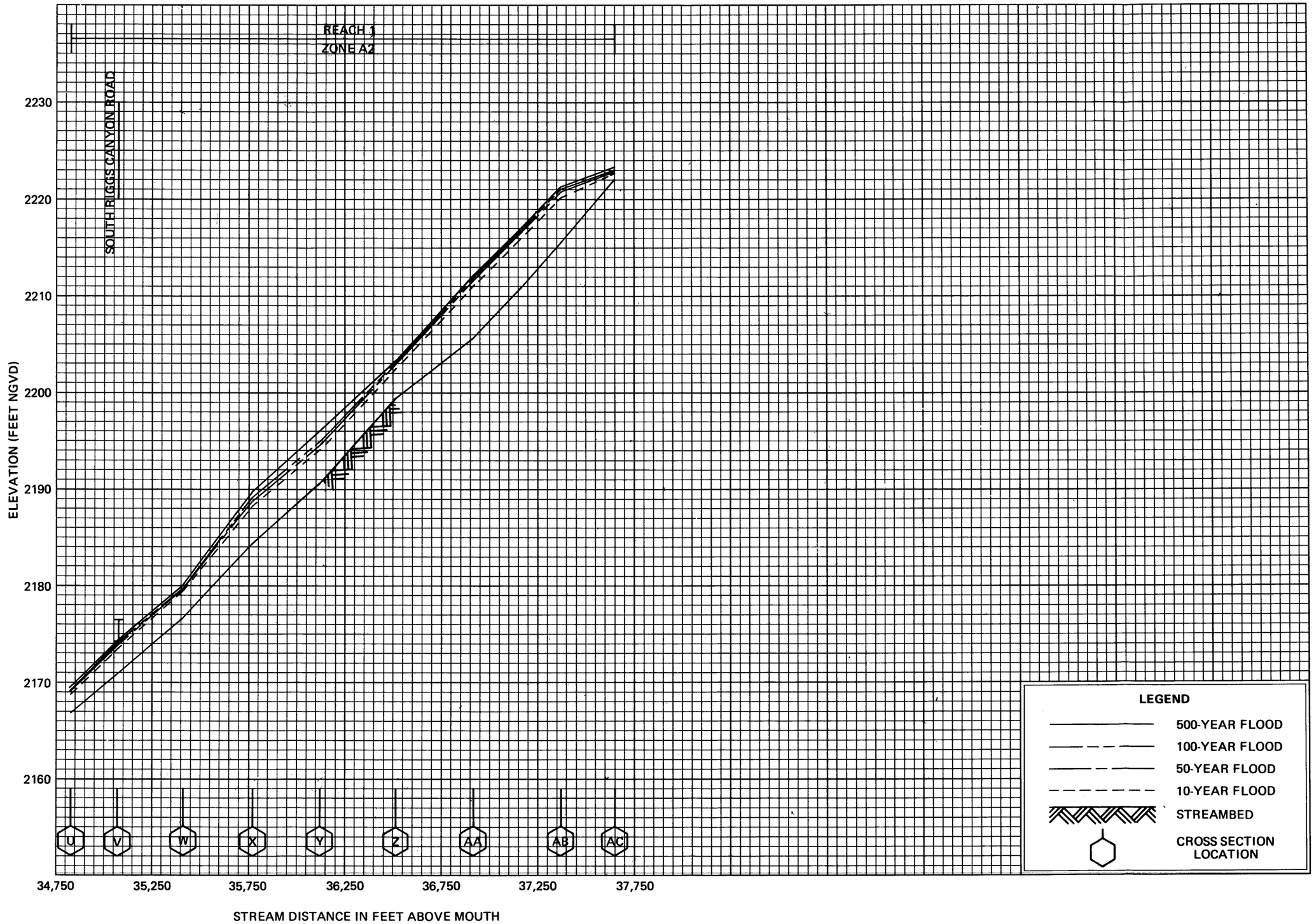


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

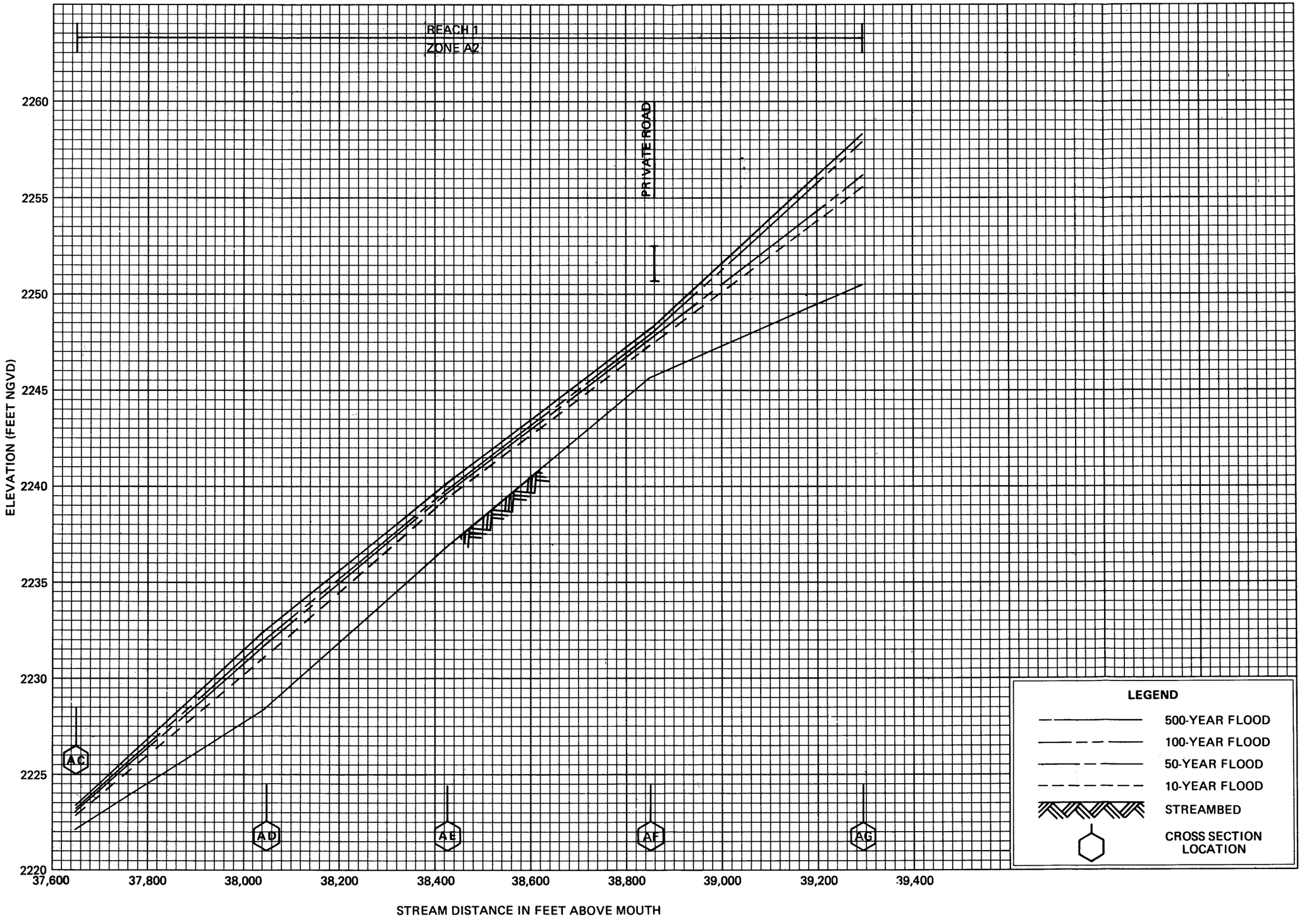


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

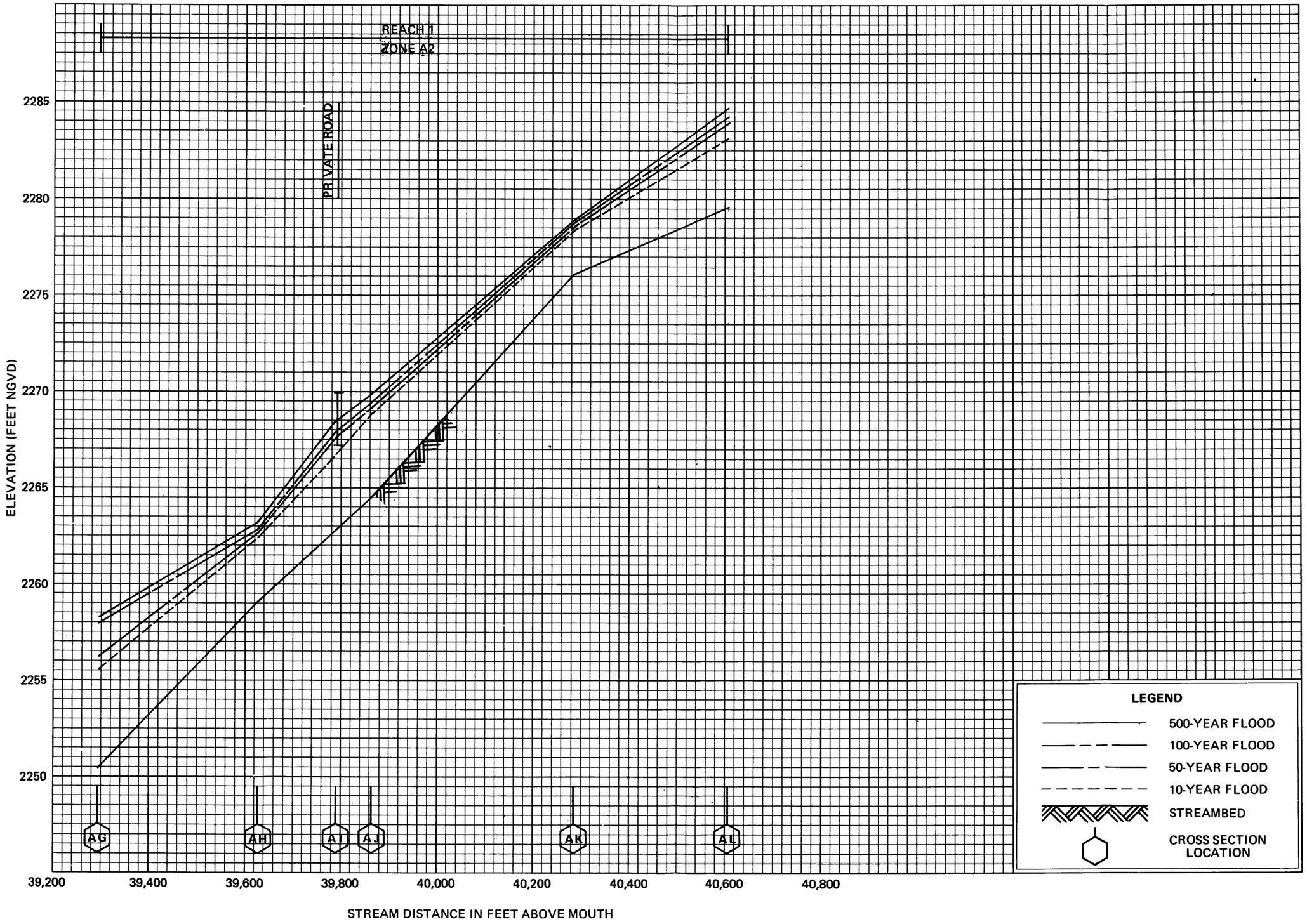


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

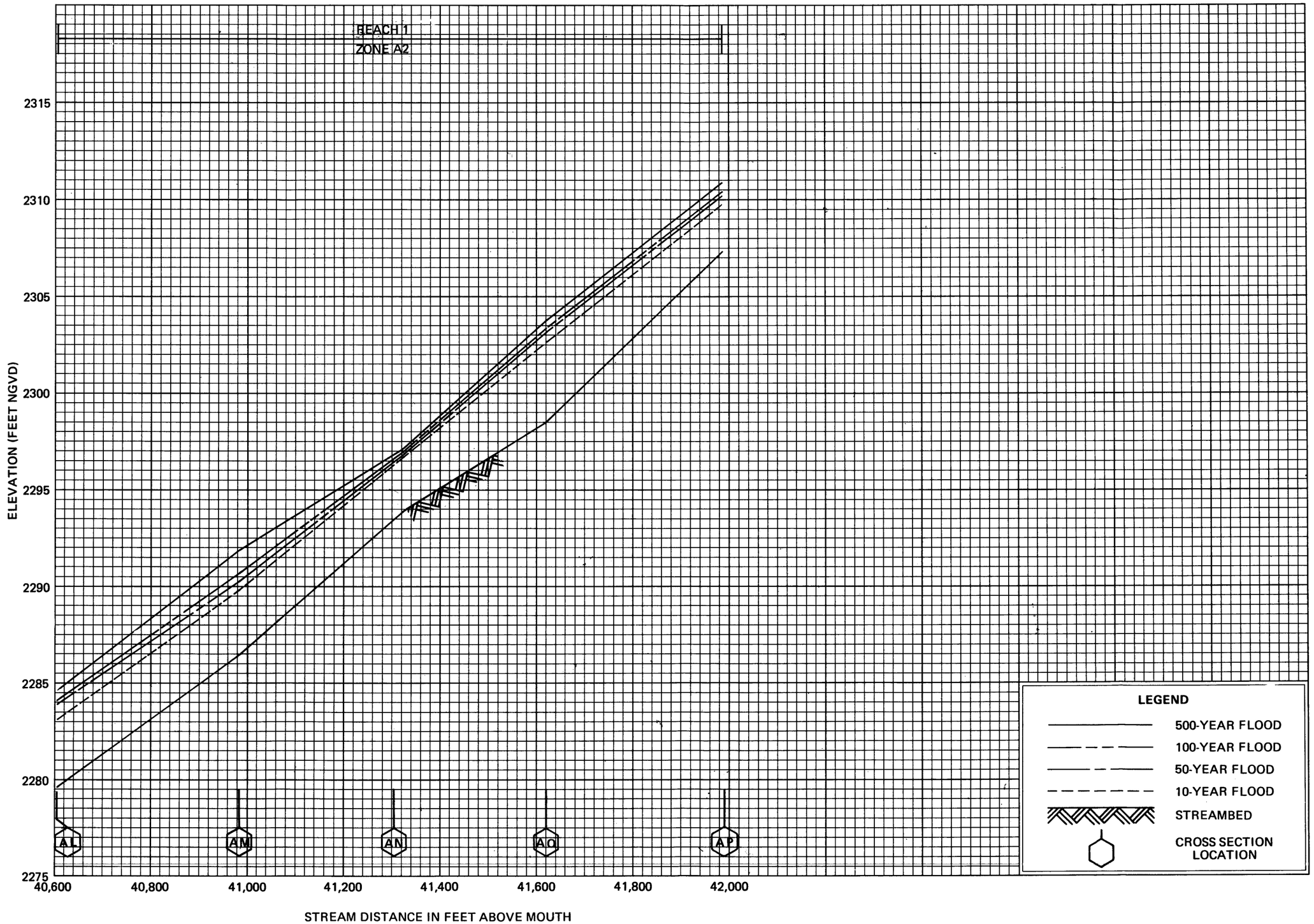


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

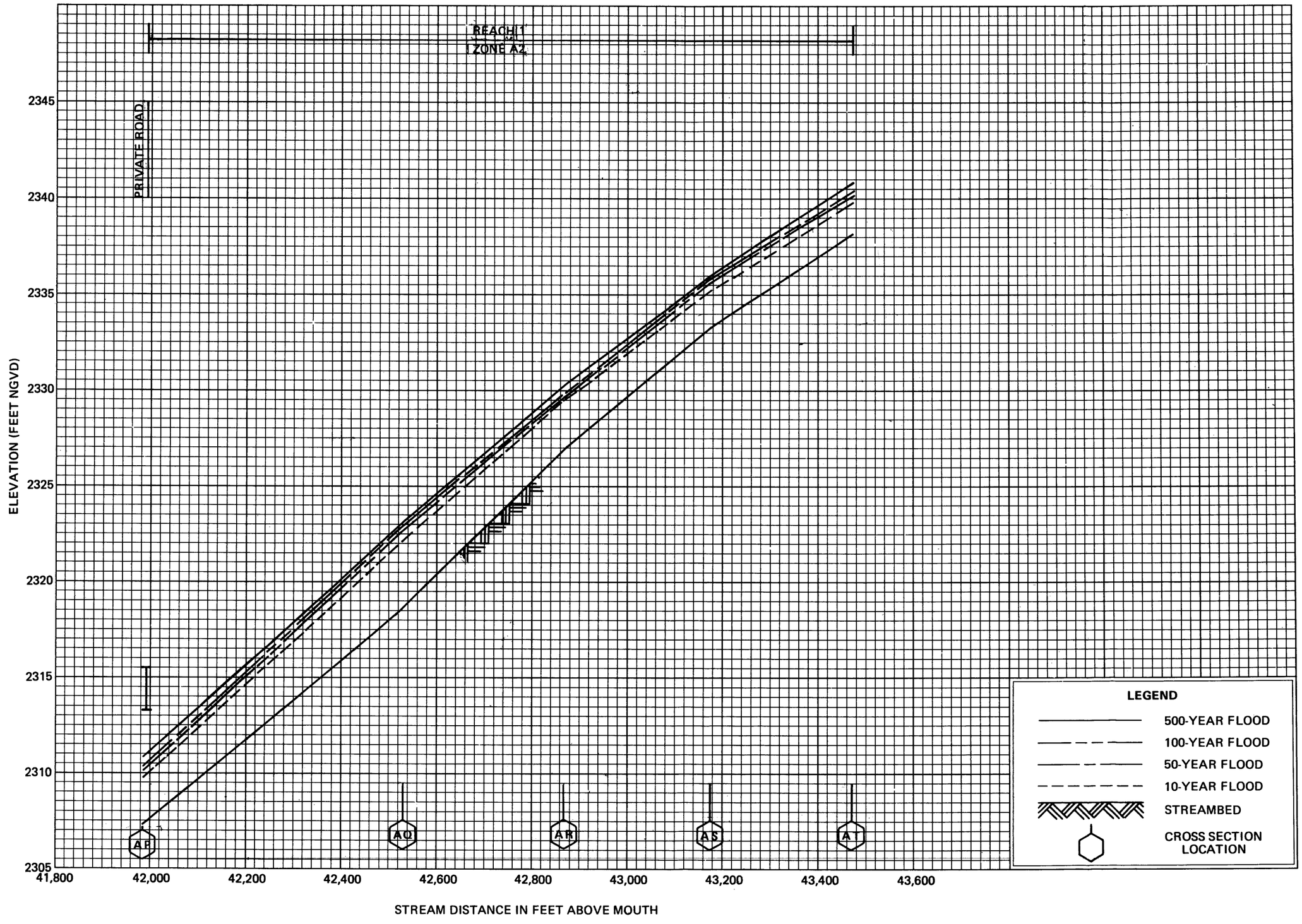


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

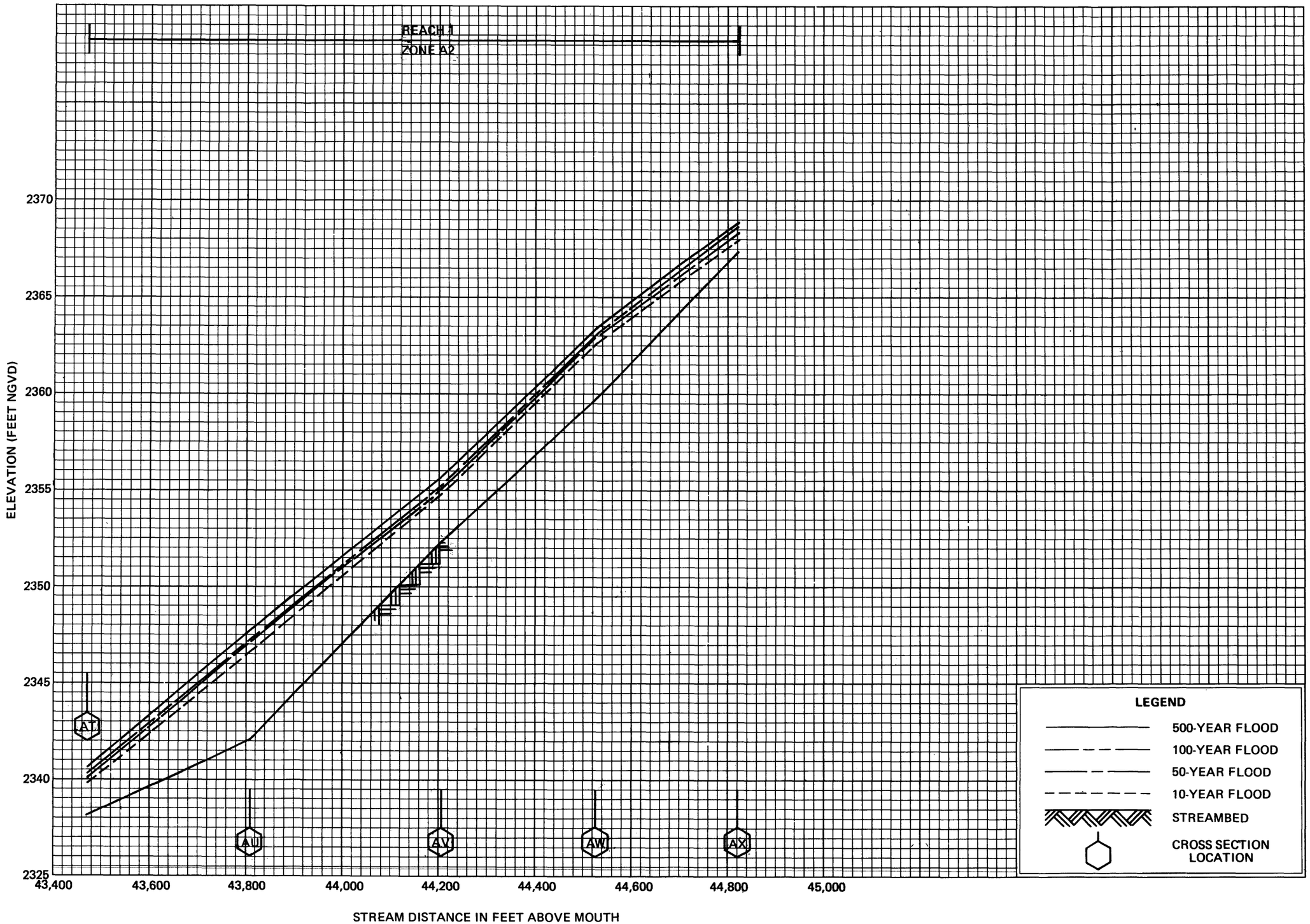


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

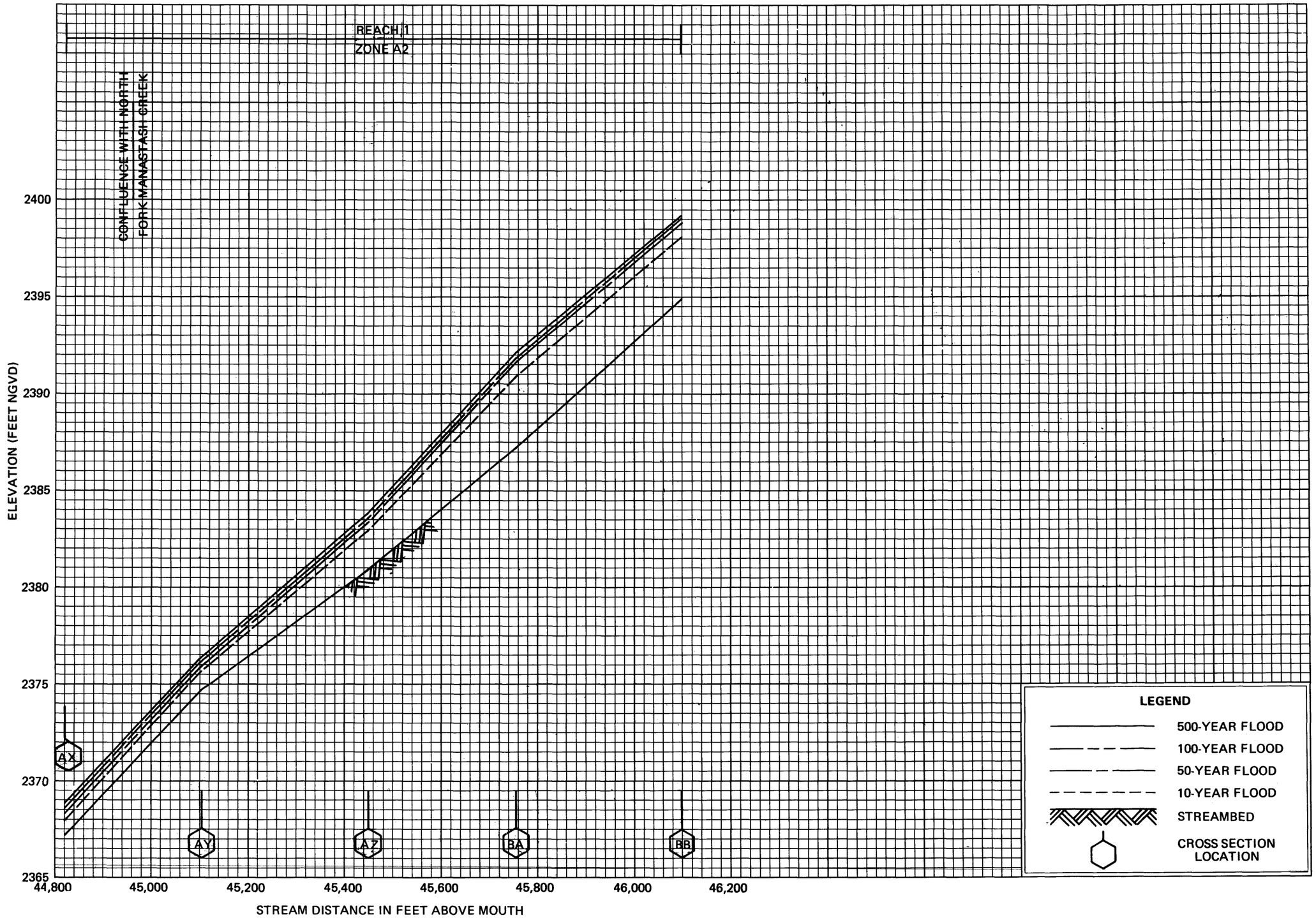


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

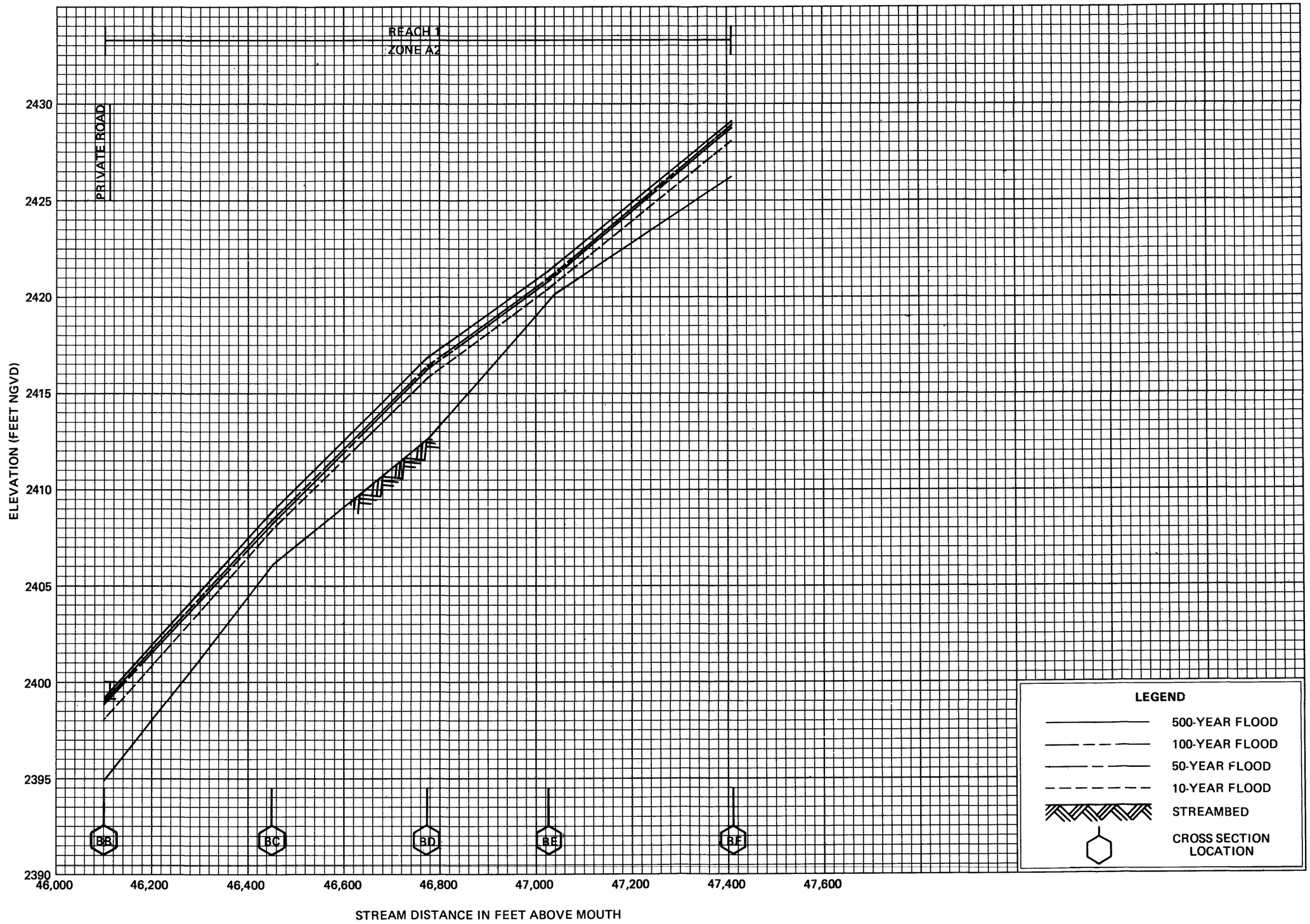


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

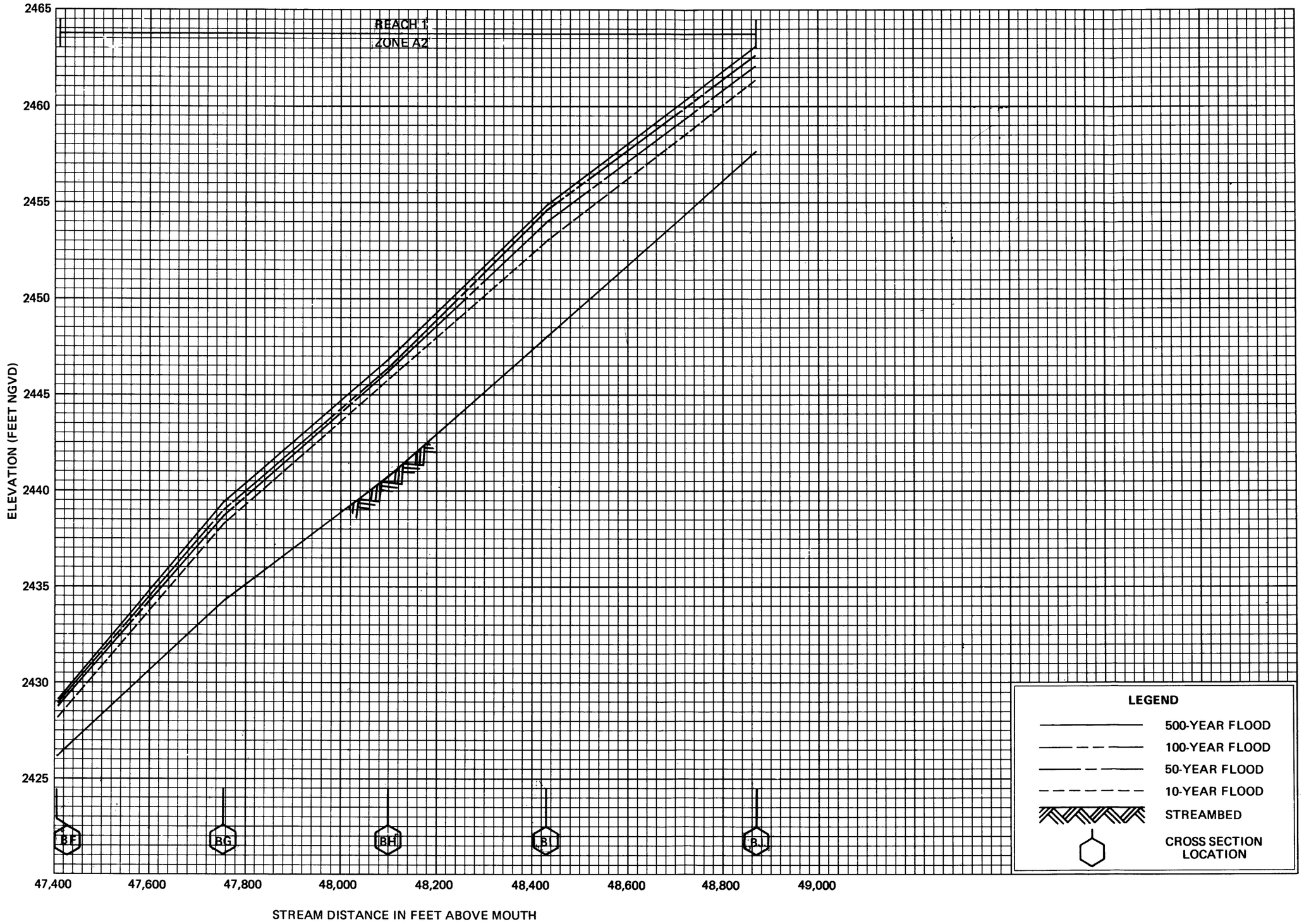


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

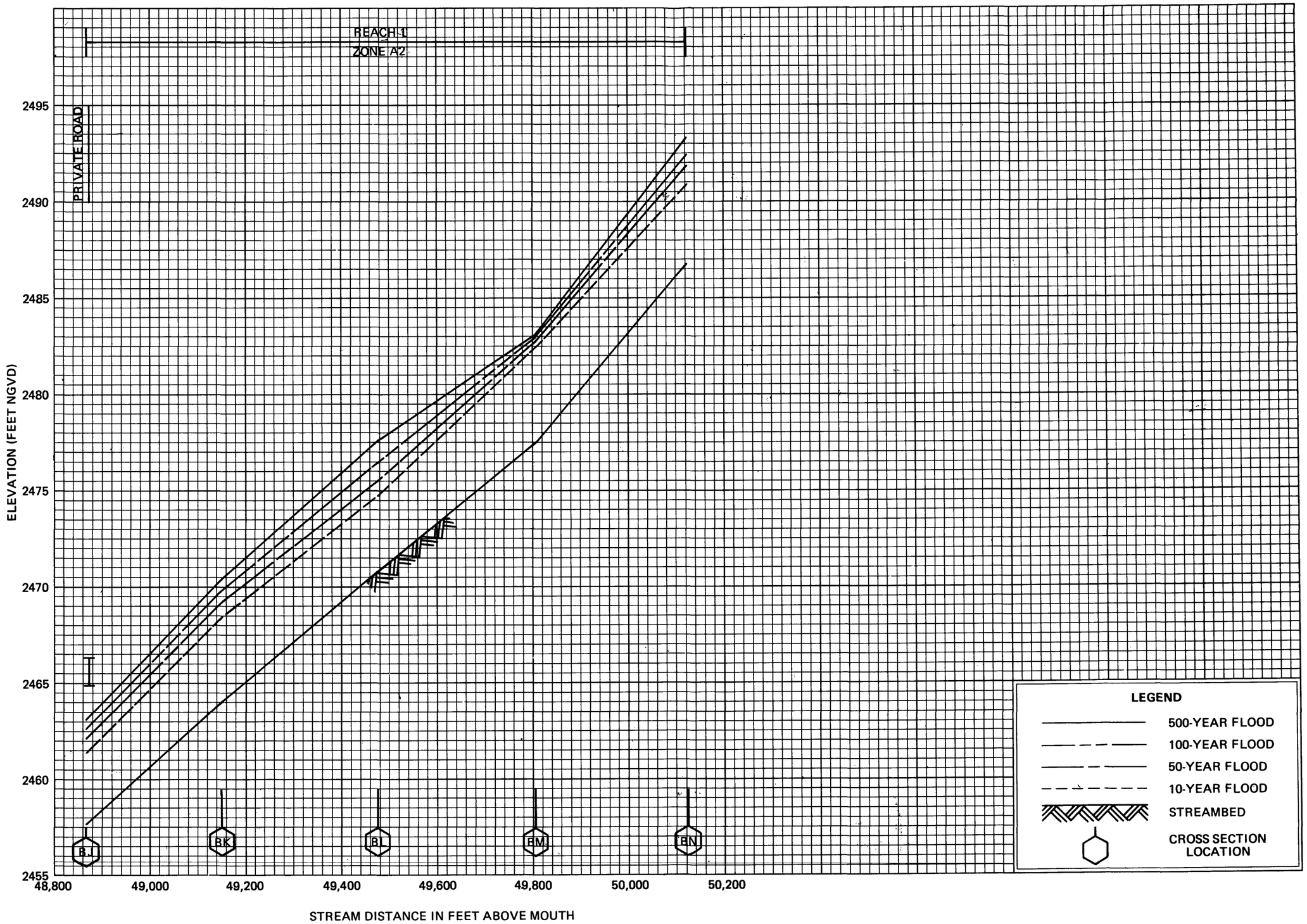


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

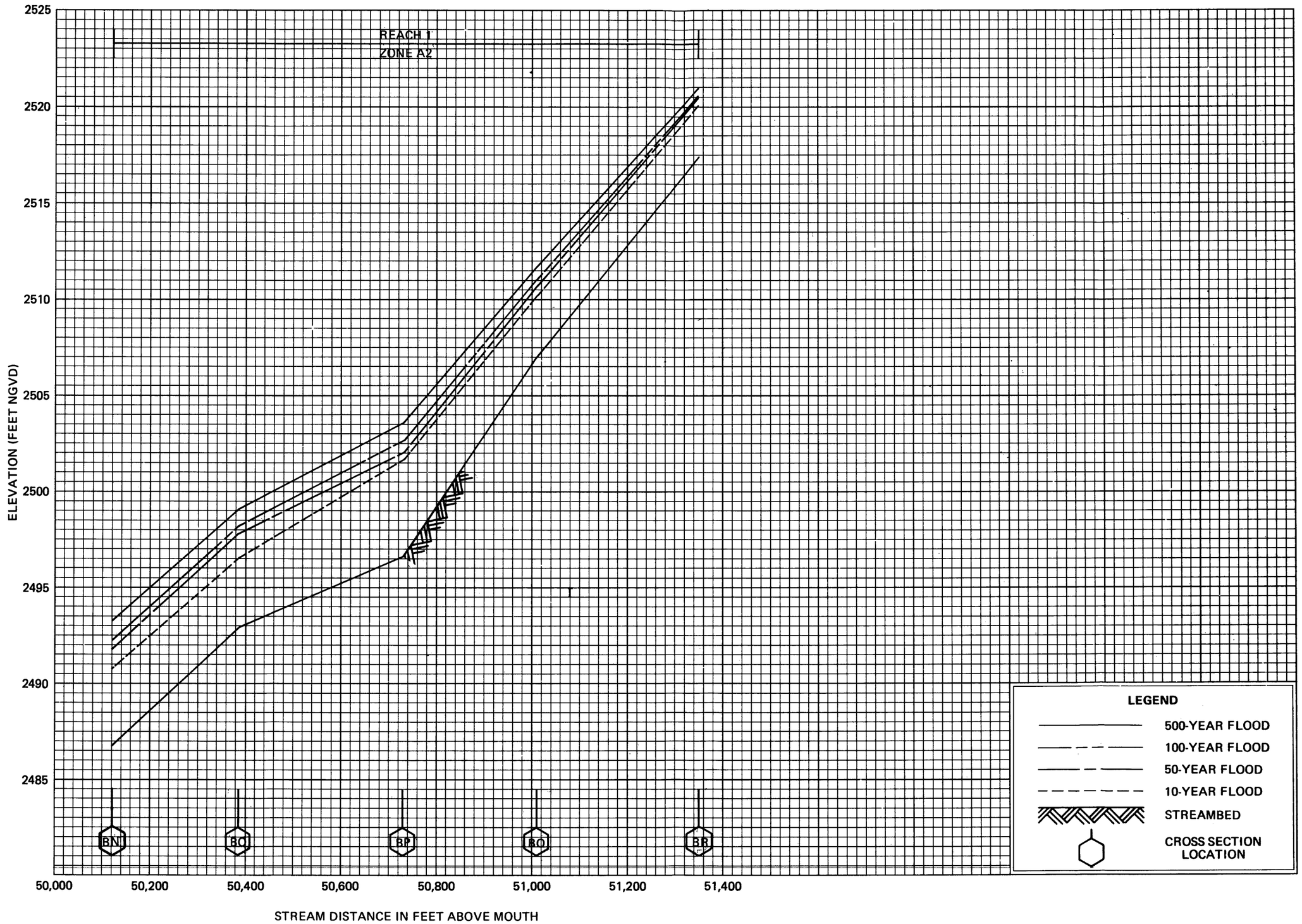


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



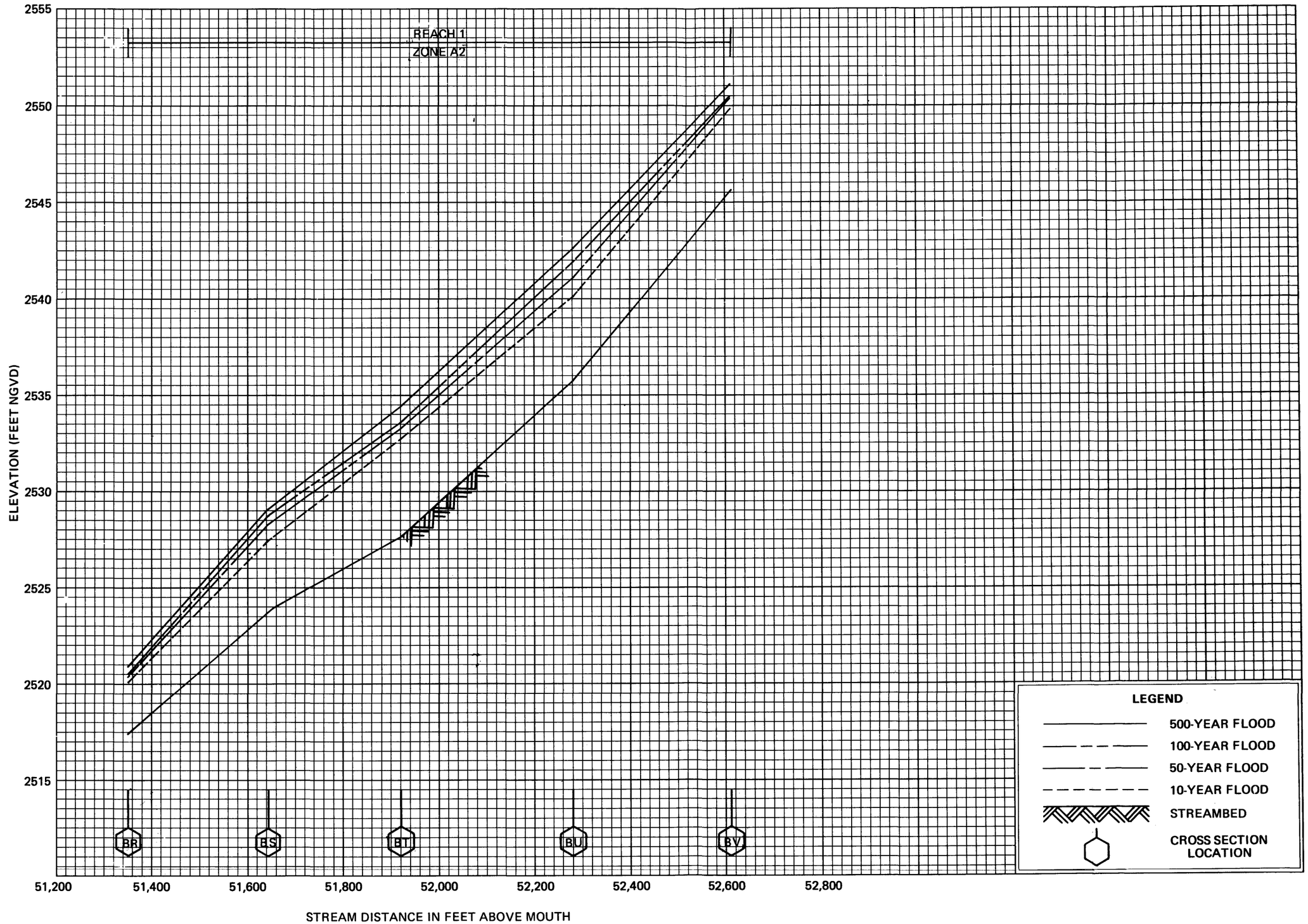
FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

82P

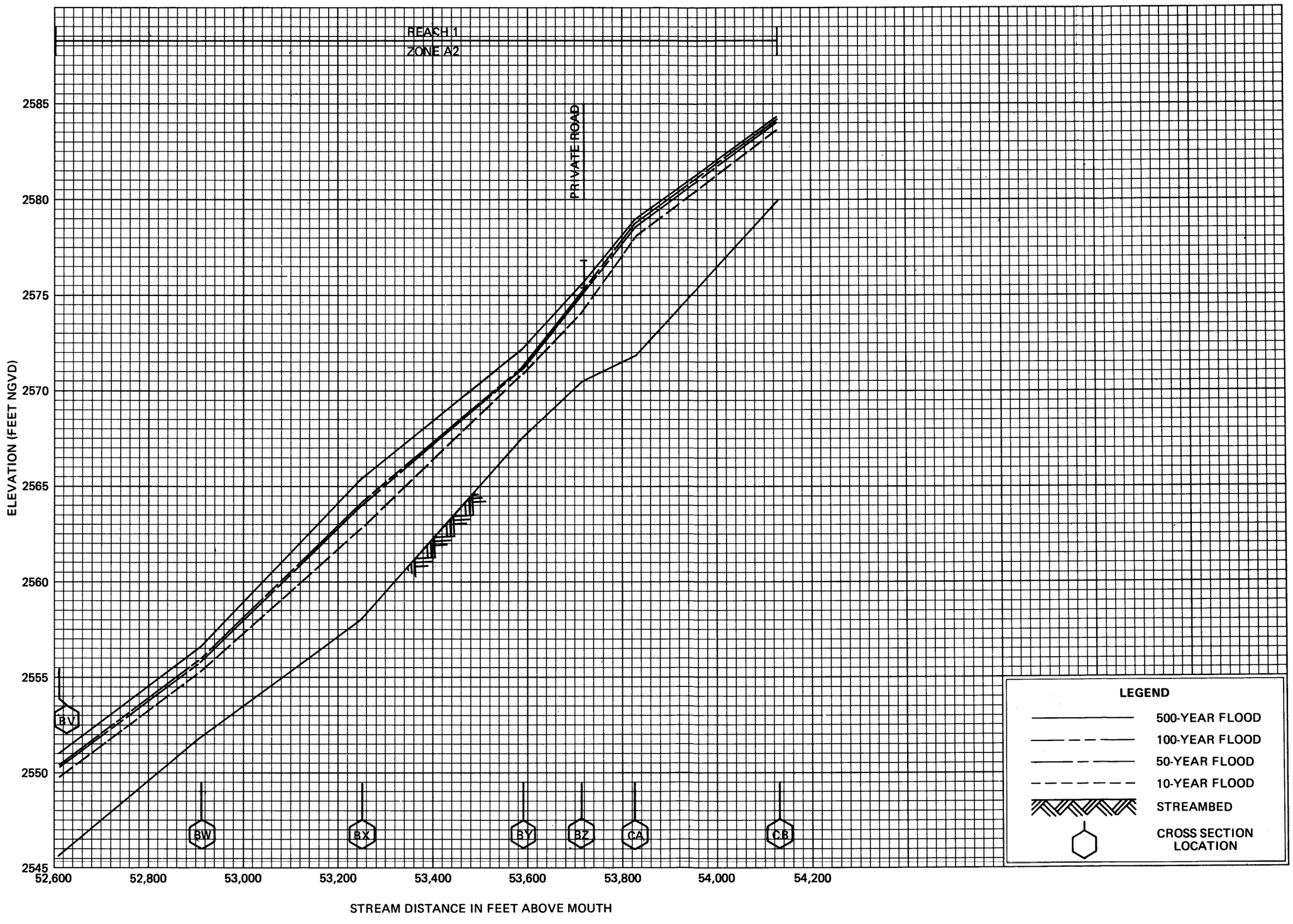


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

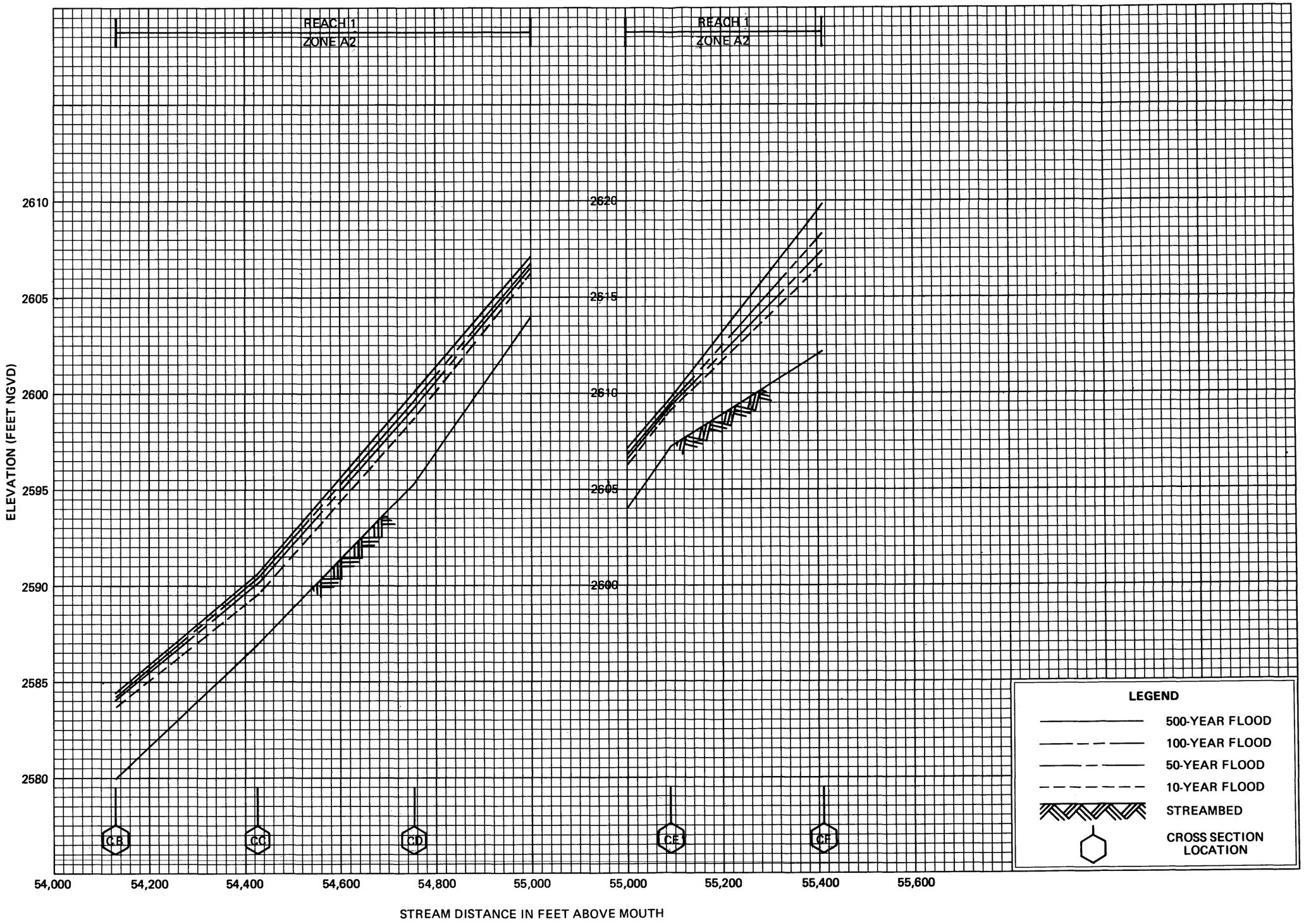


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



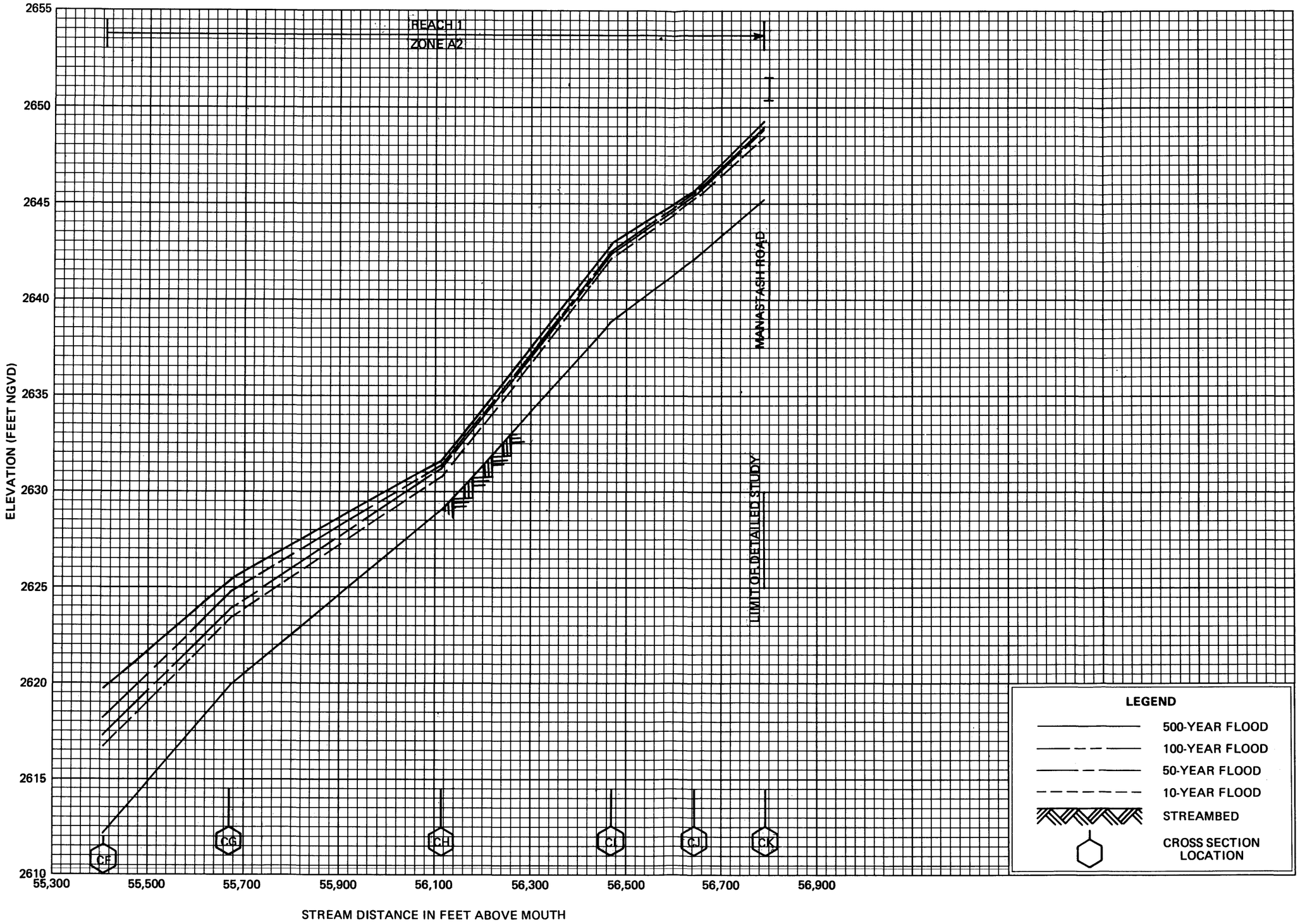
FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

85P

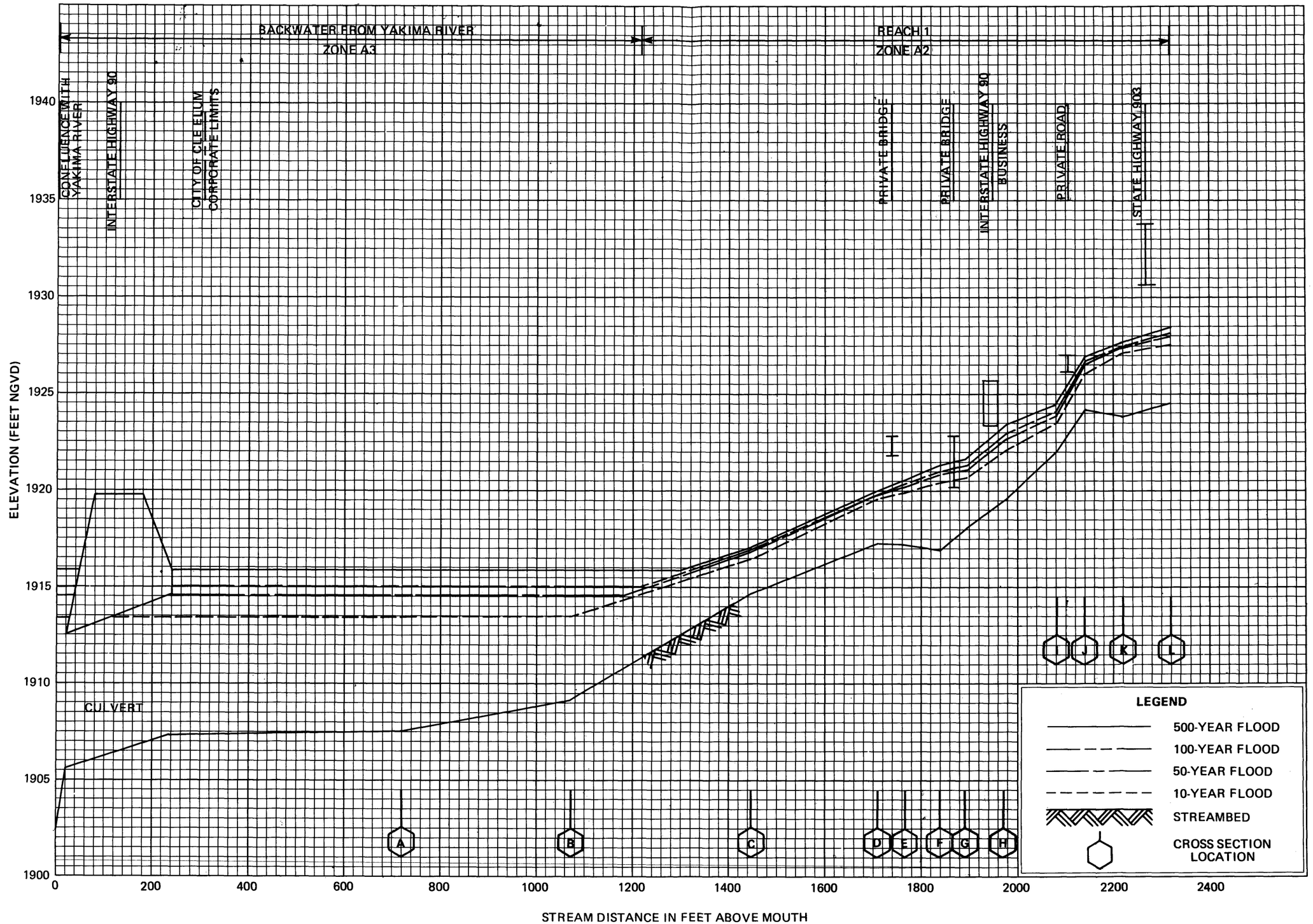


FLOOD PROFILES

MANASTASH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



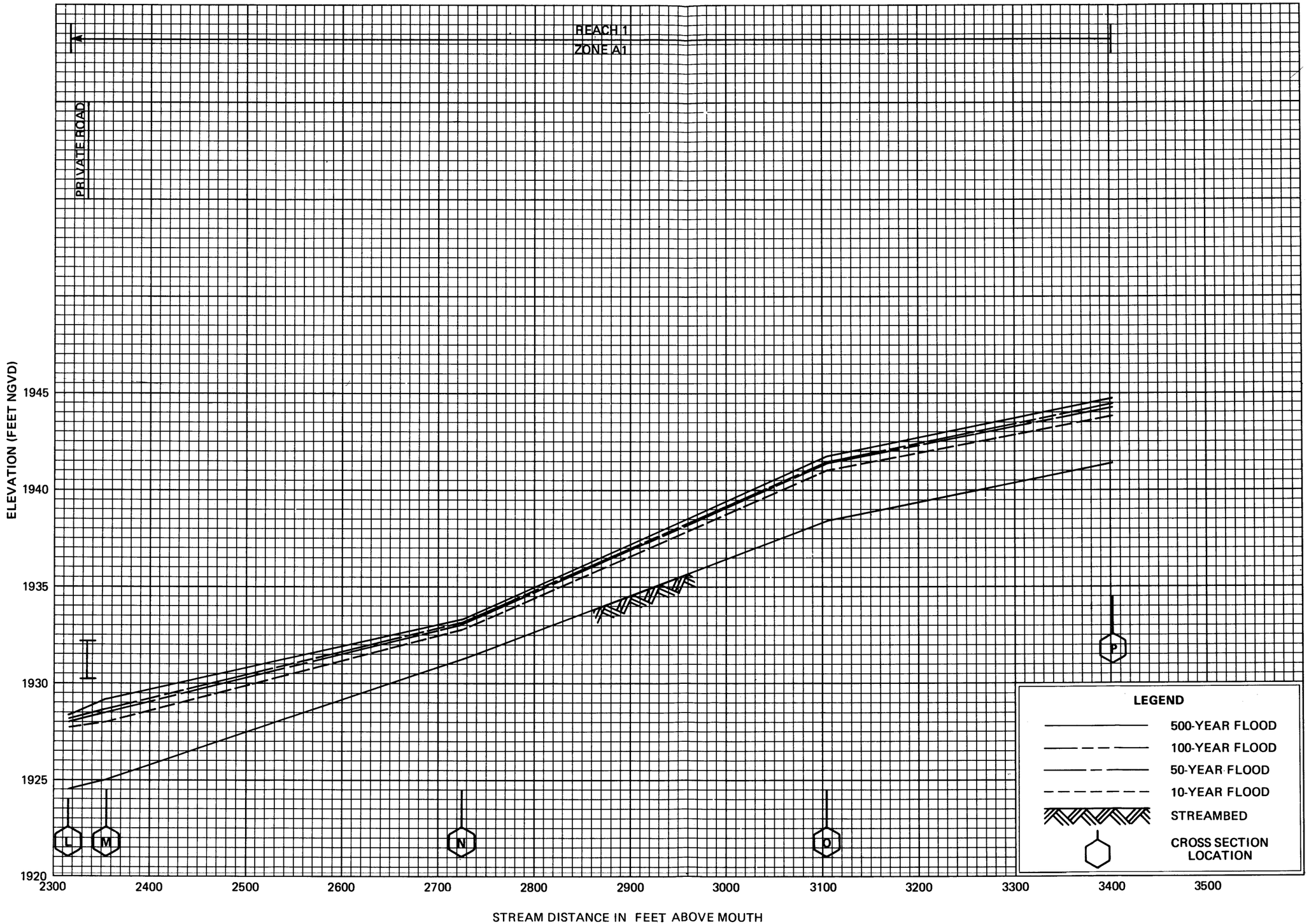
FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

87P

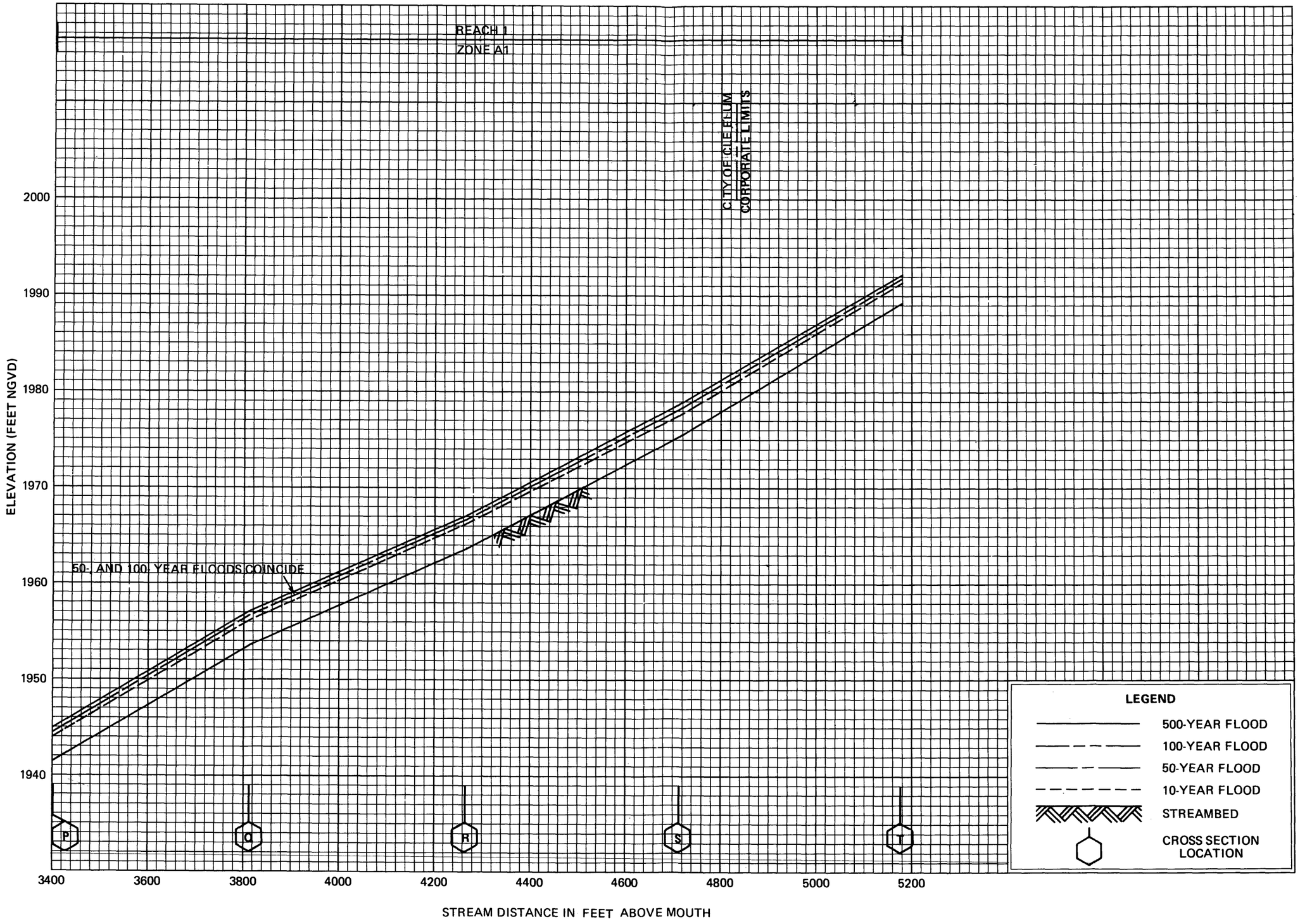


FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

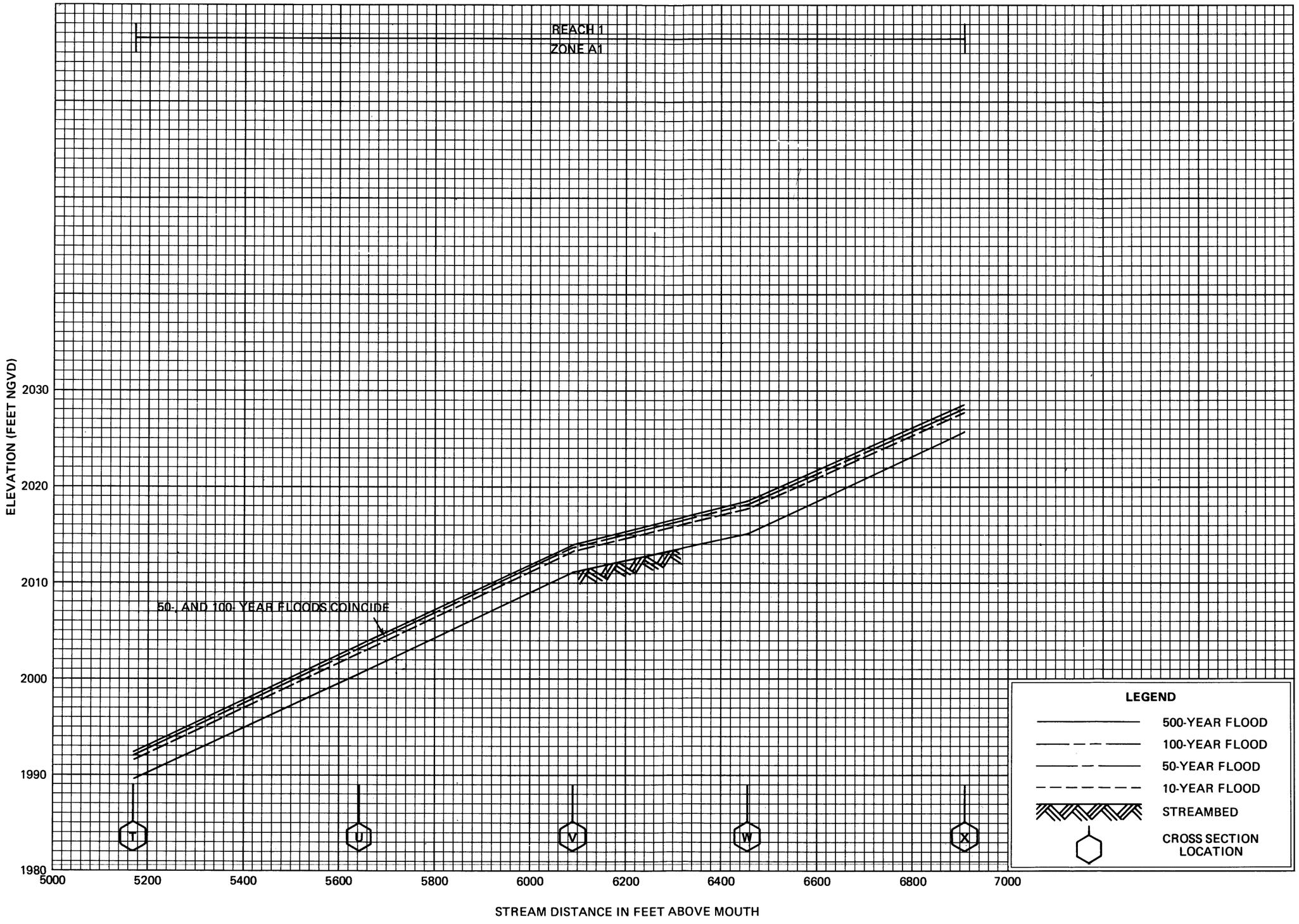


FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

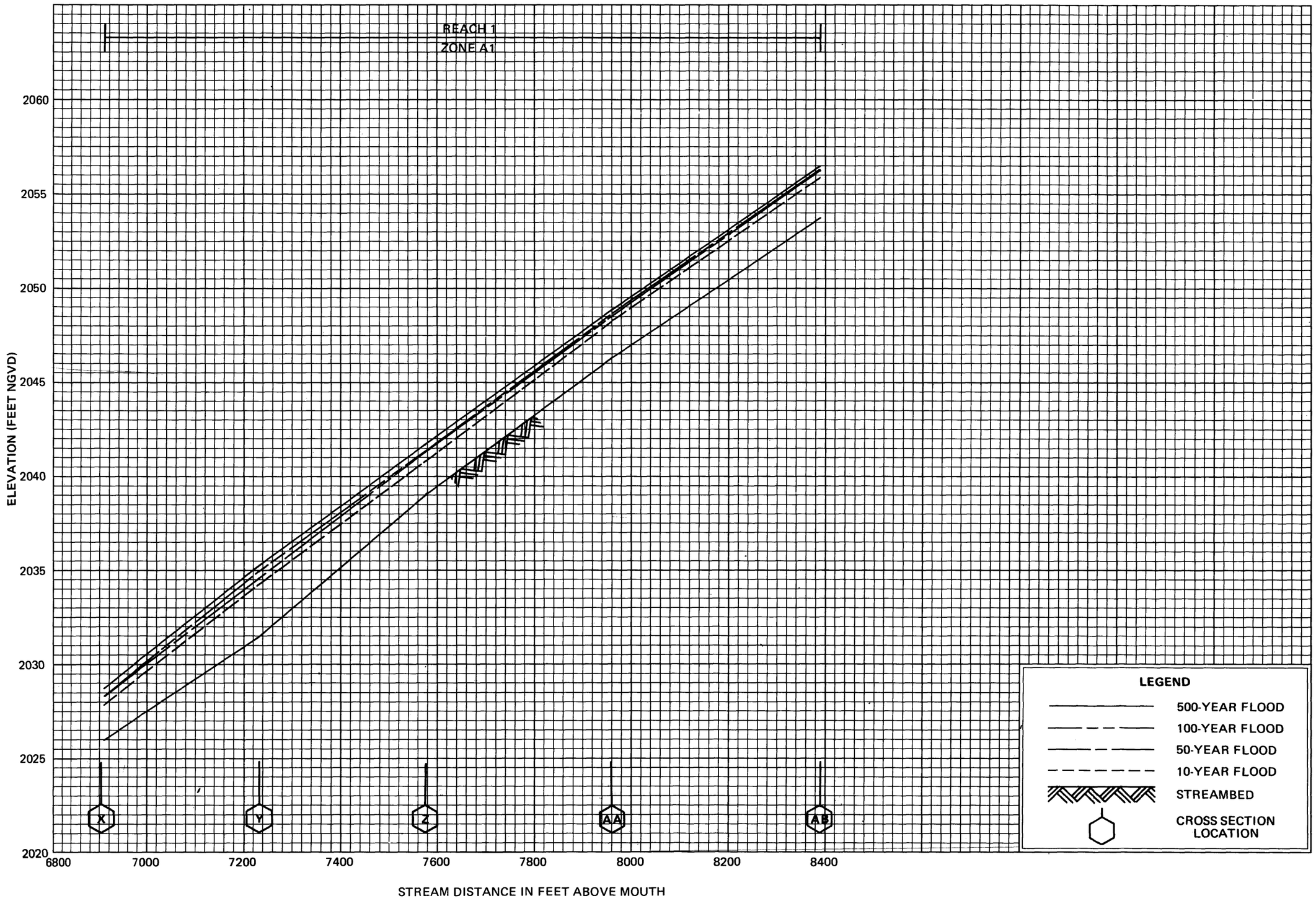


FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

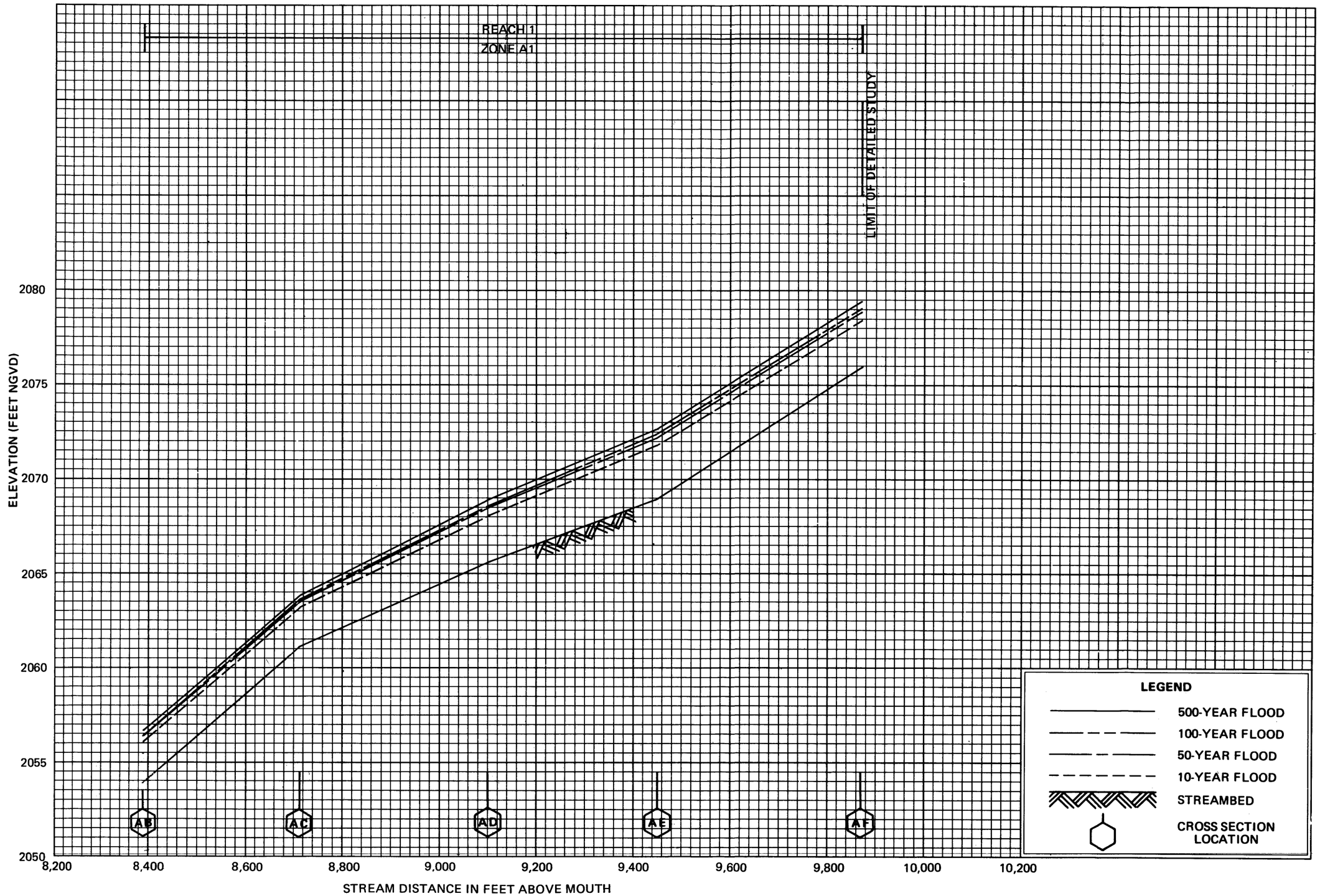


FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



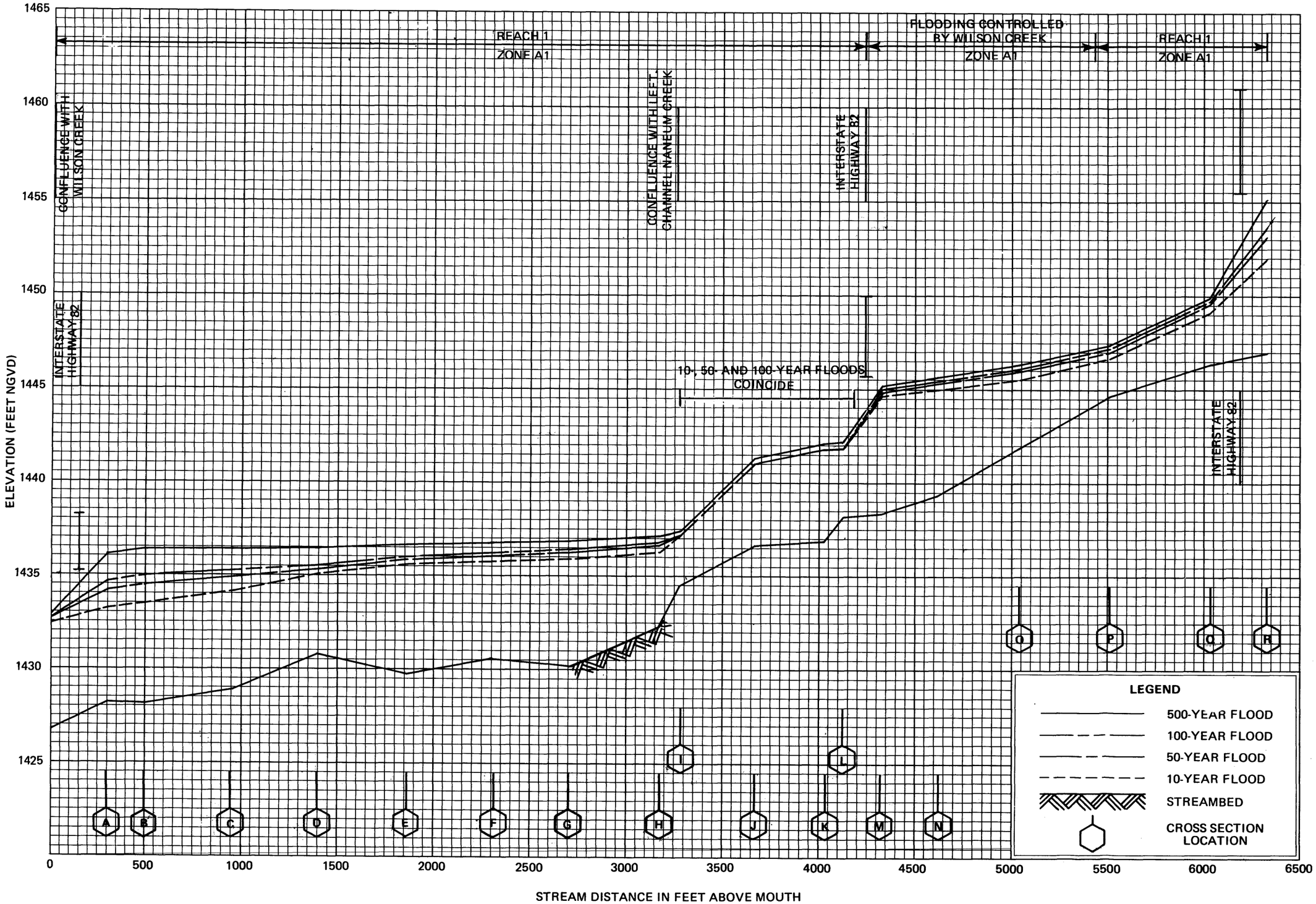
FLOOD PROFILES

CRYSTAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

92P



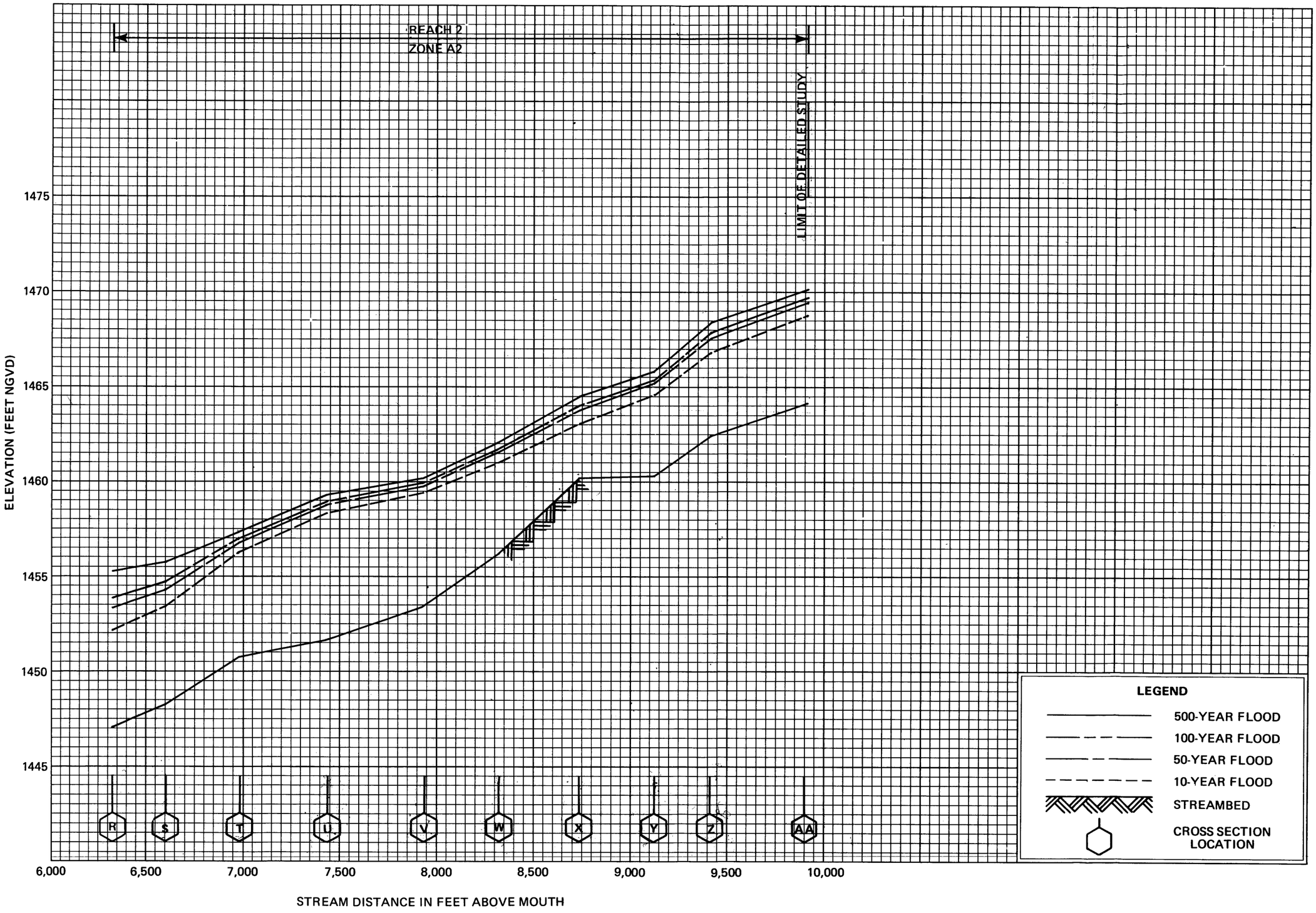
FLOOD PROFILES

NANEUM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

93P

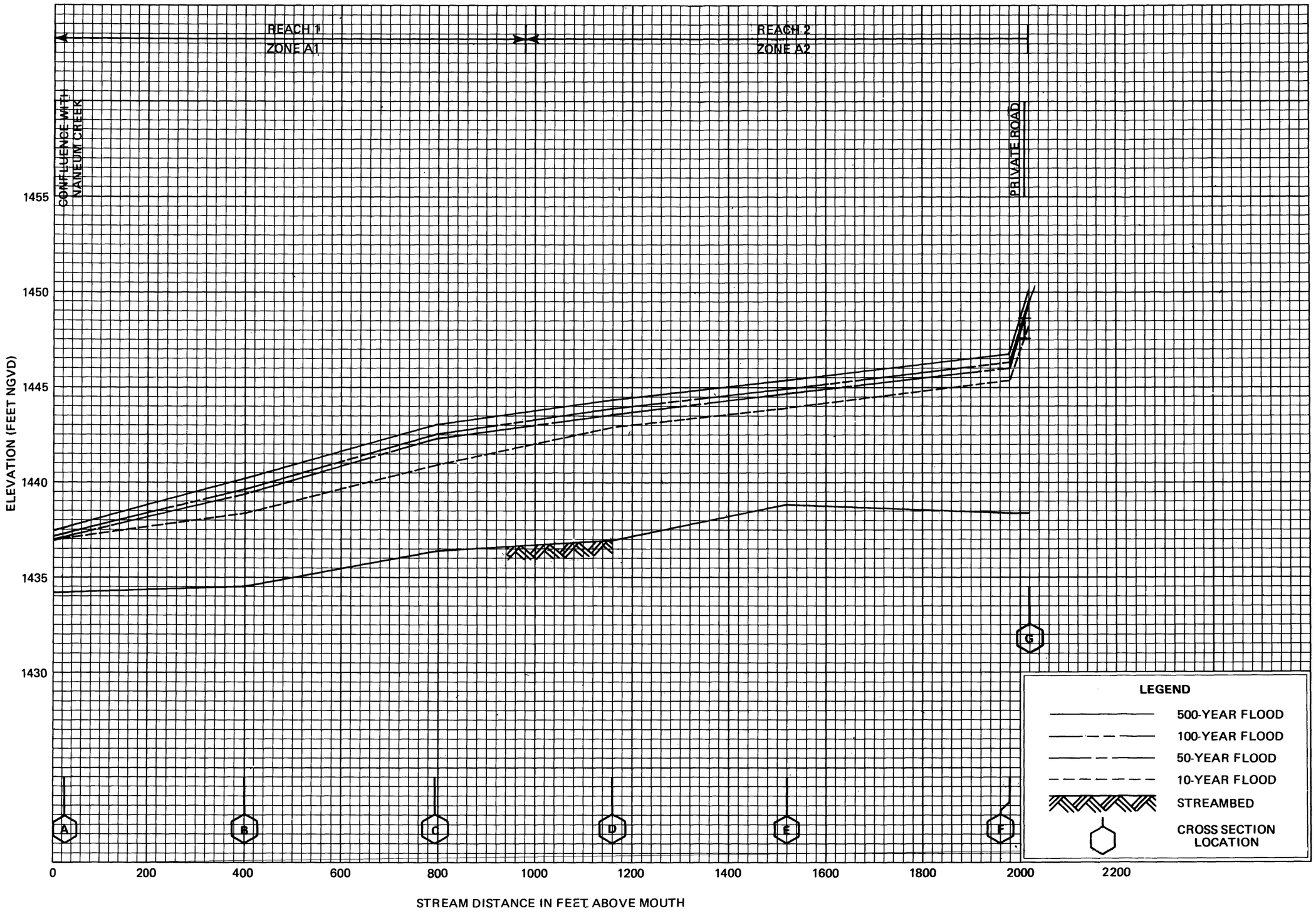


FLOOD PROFILES

NANEUM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

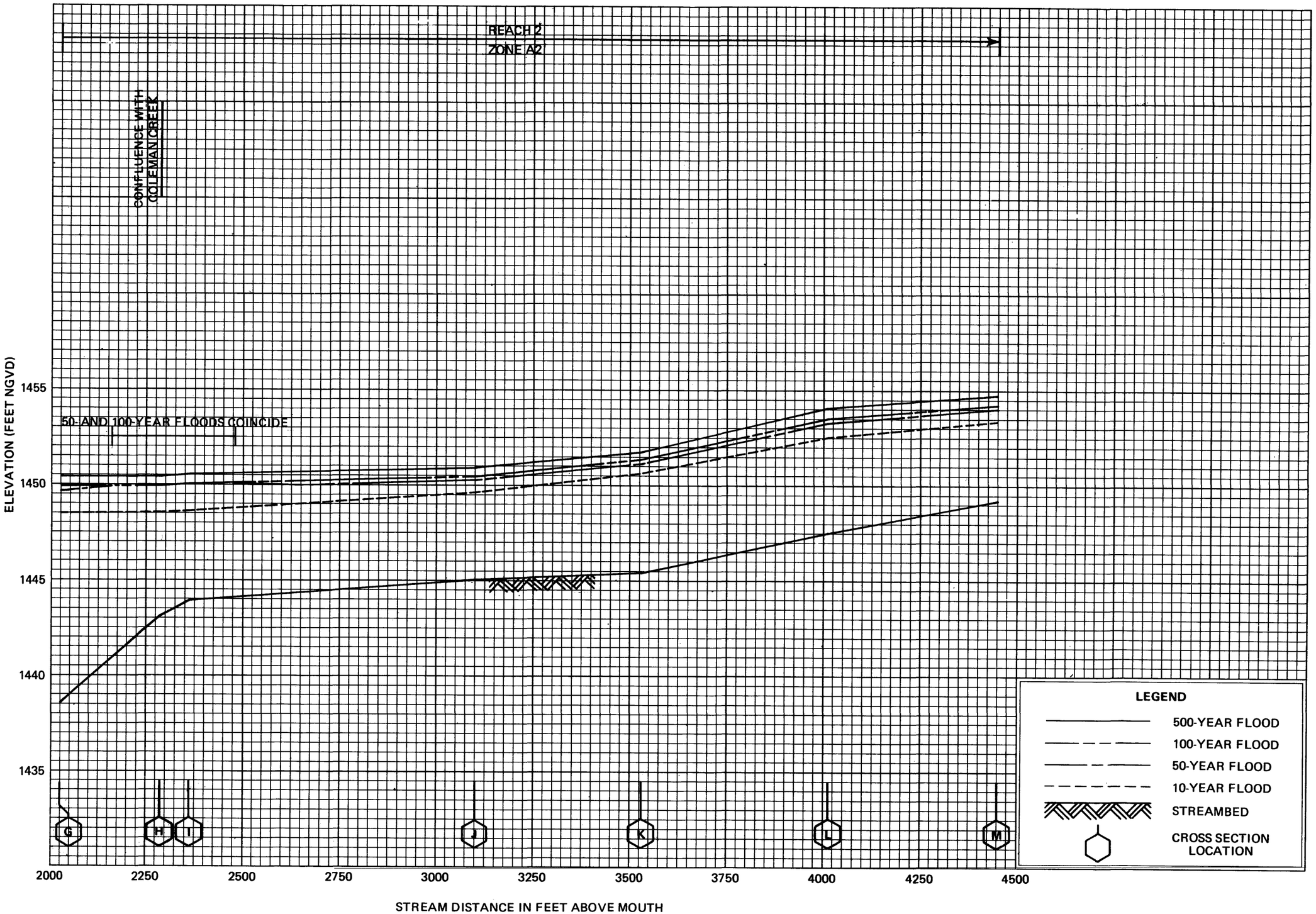


FLOOD PROFILES

LEFT CHANNEL NANEUM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

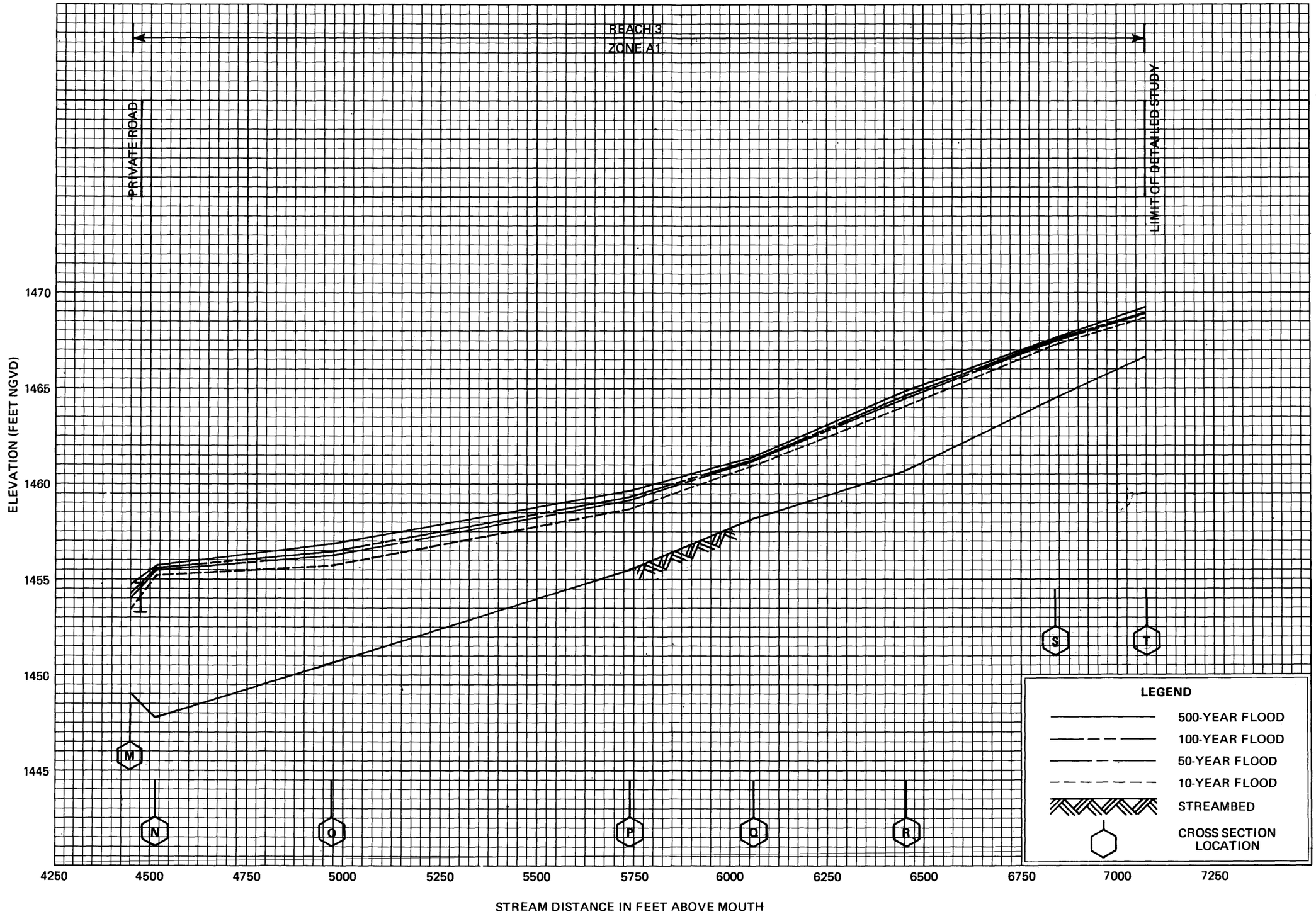


FLOOD PROFILES

LEFT CHANNEL NANEUM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

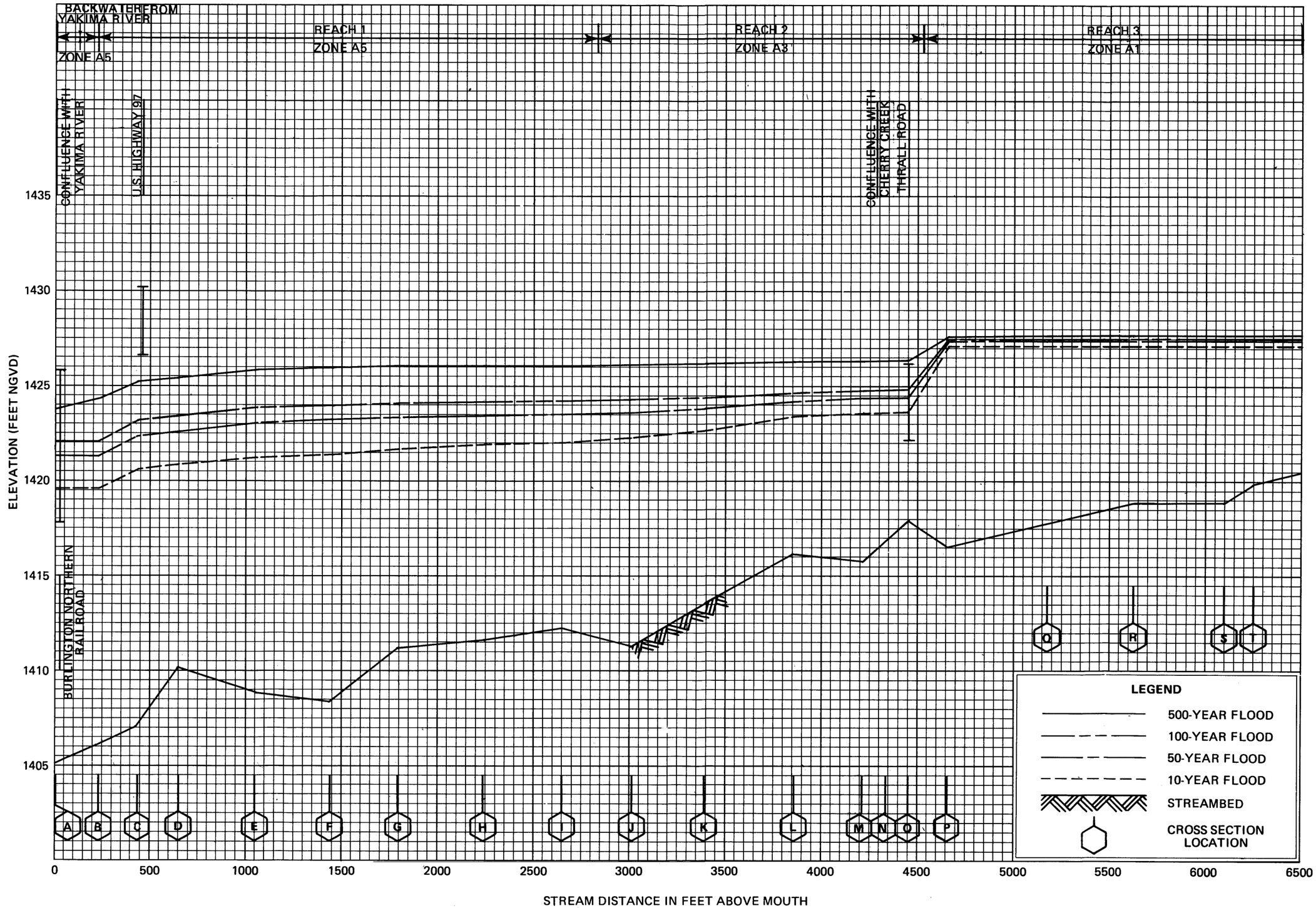


FLOOD PROFILES

LEFT CHANNEL NANEUM CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



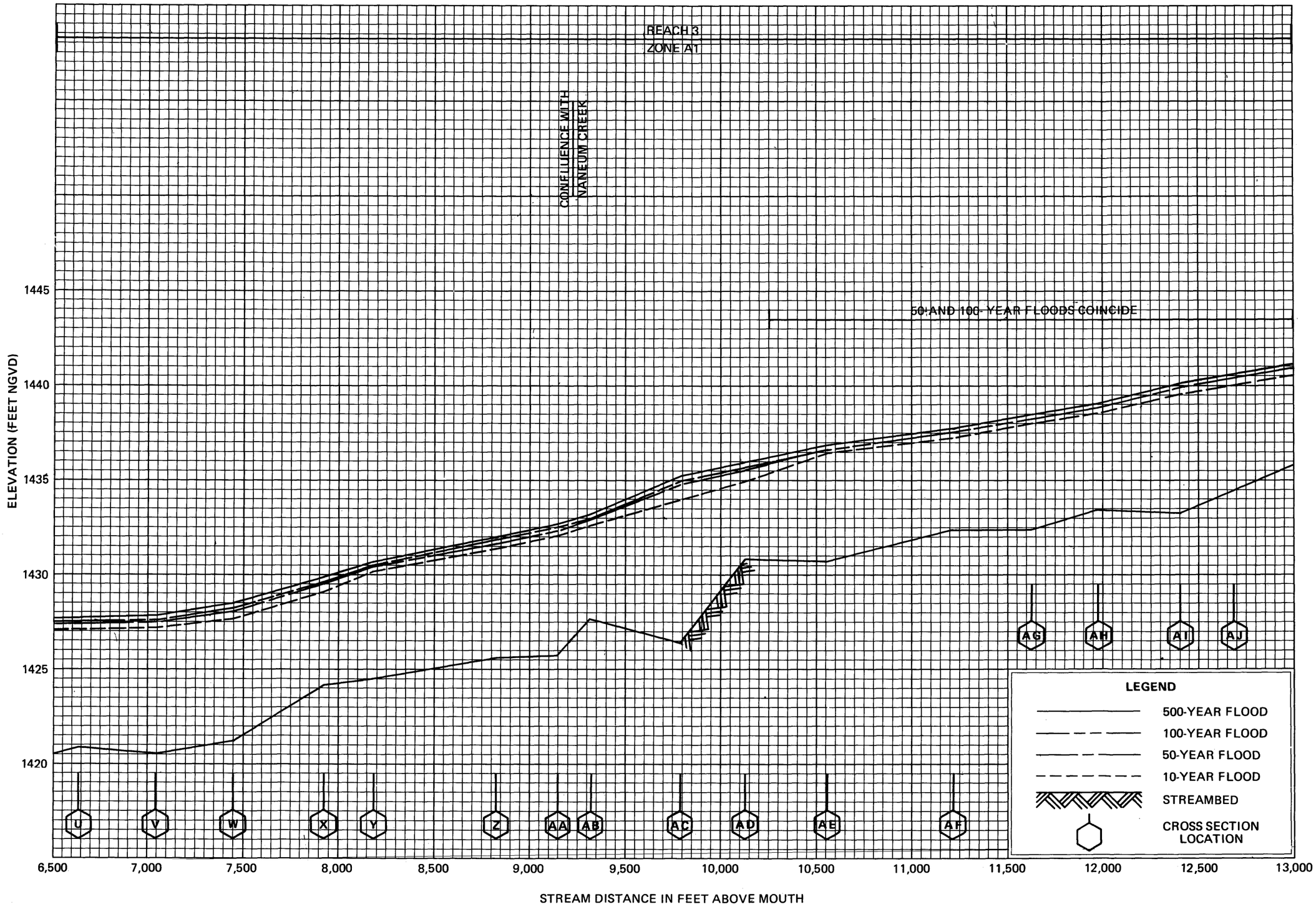
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

98P

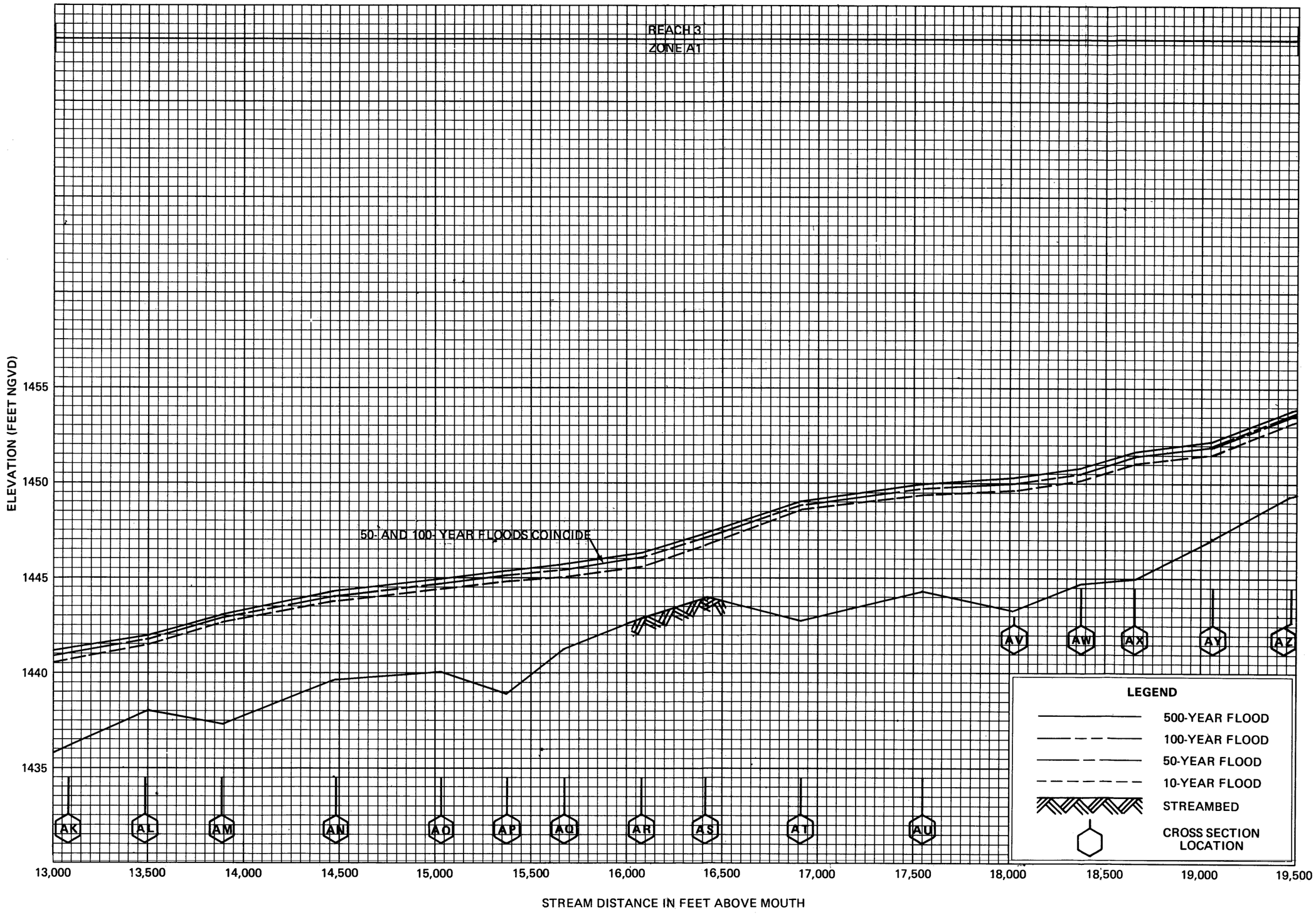


FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



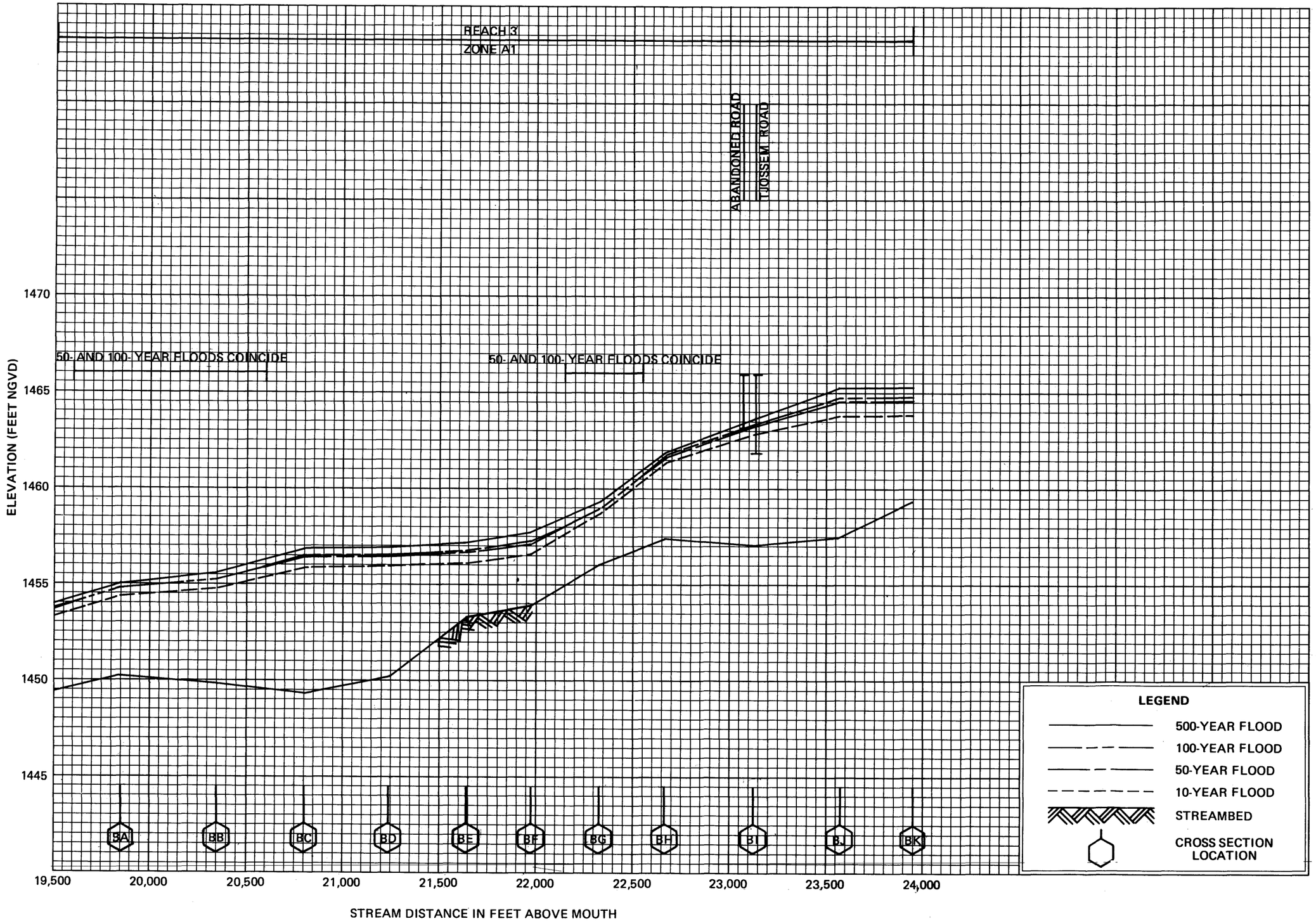
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

100P



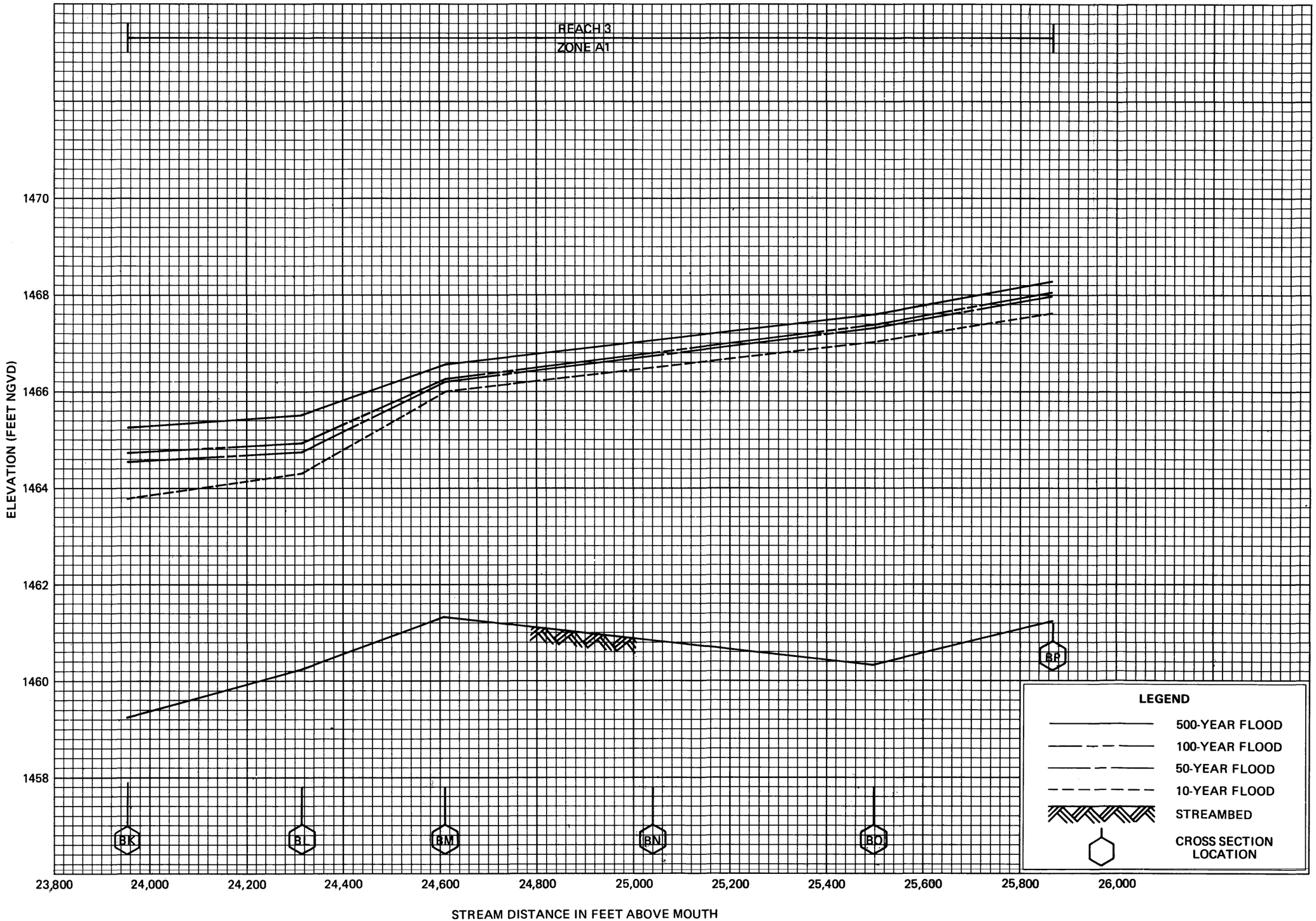
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

101P



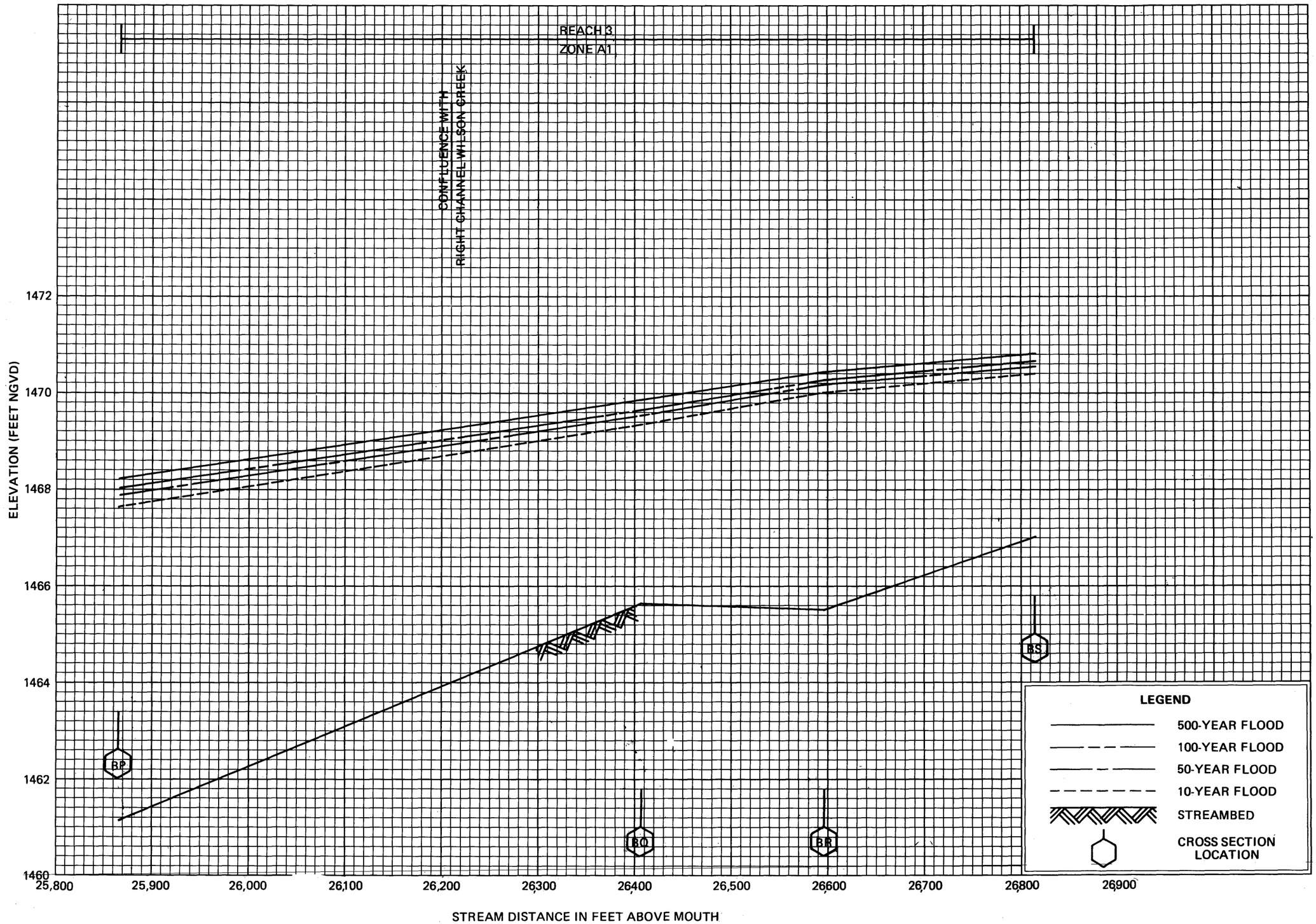
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

102P



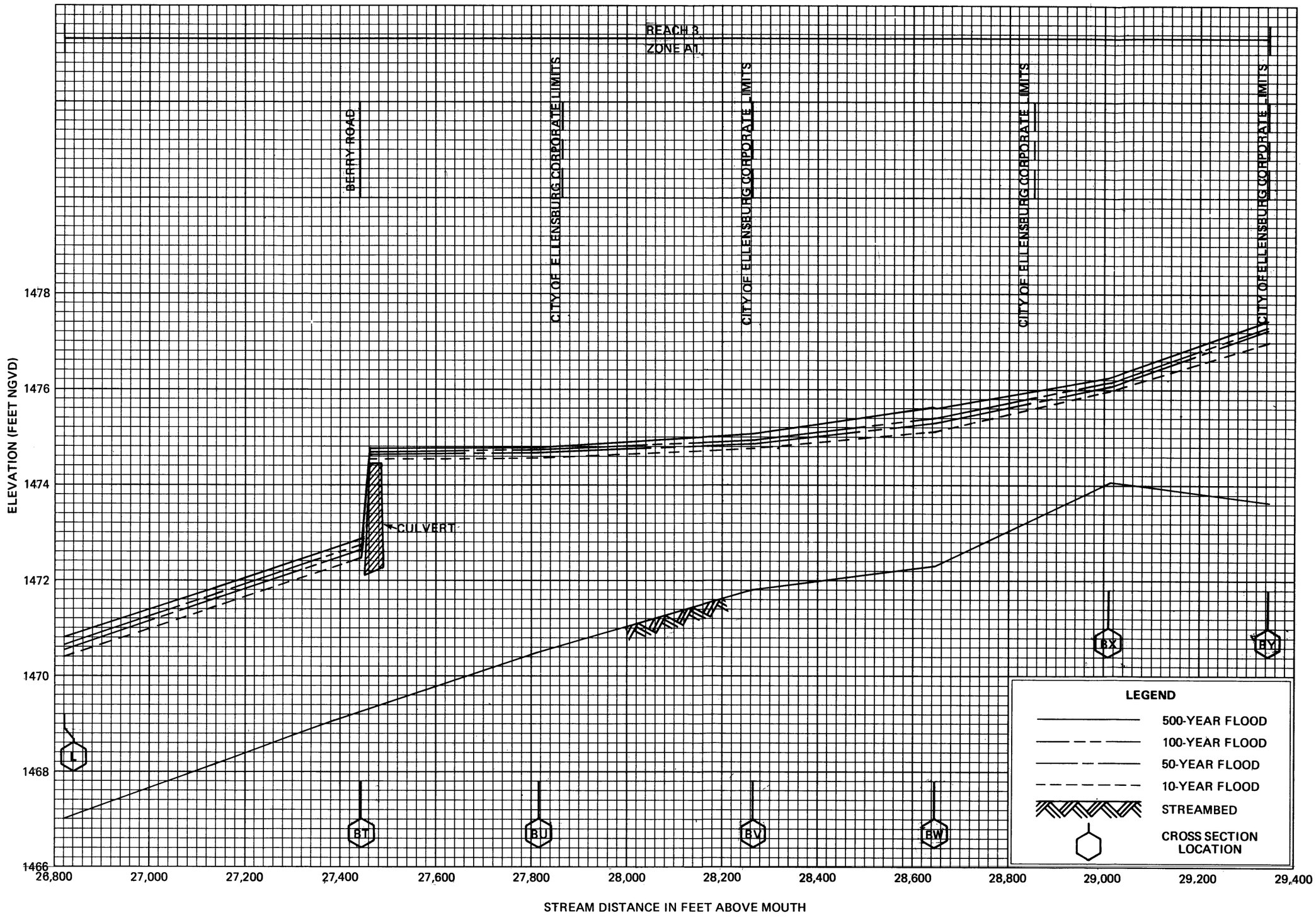
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

103P



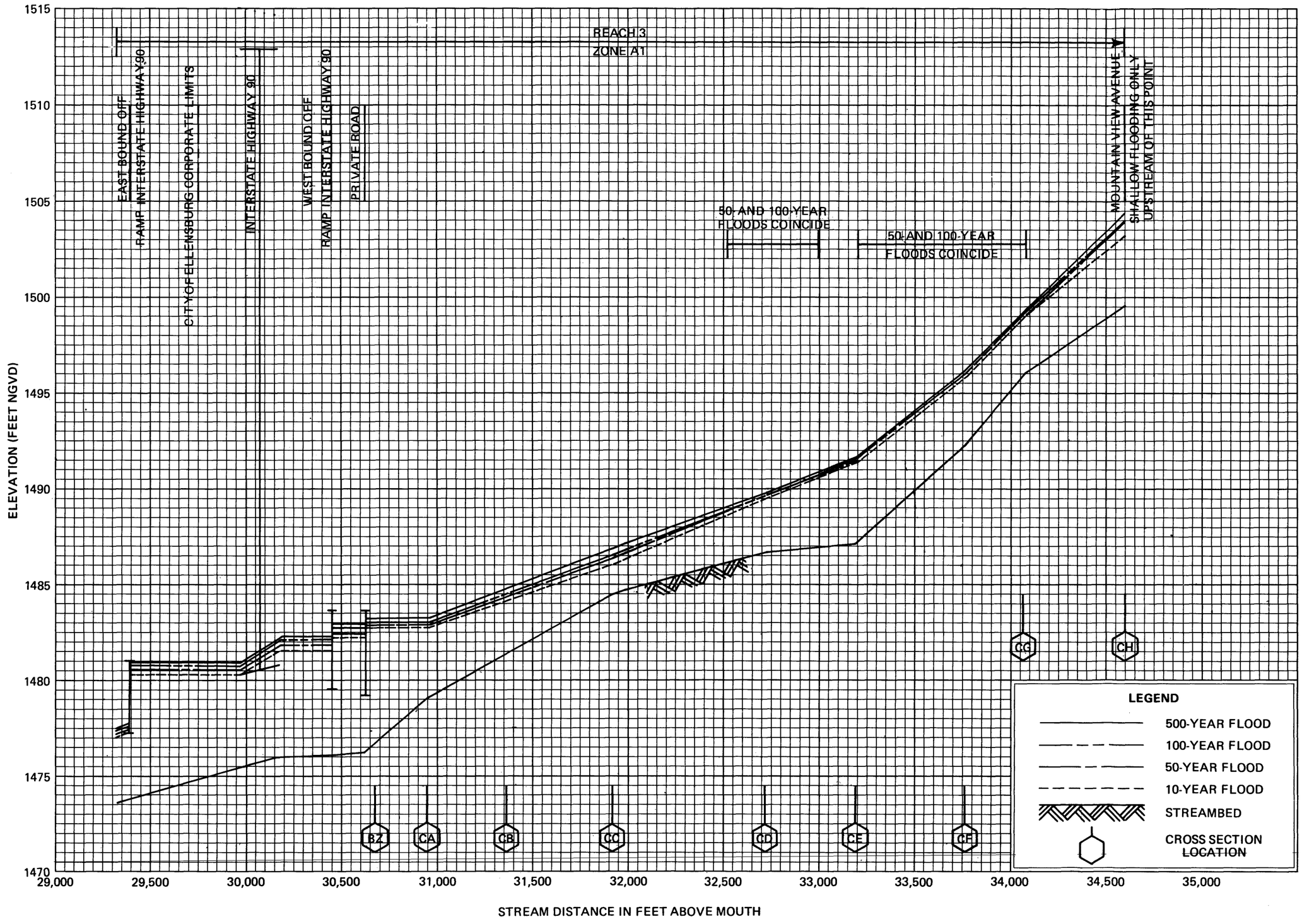
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

104P



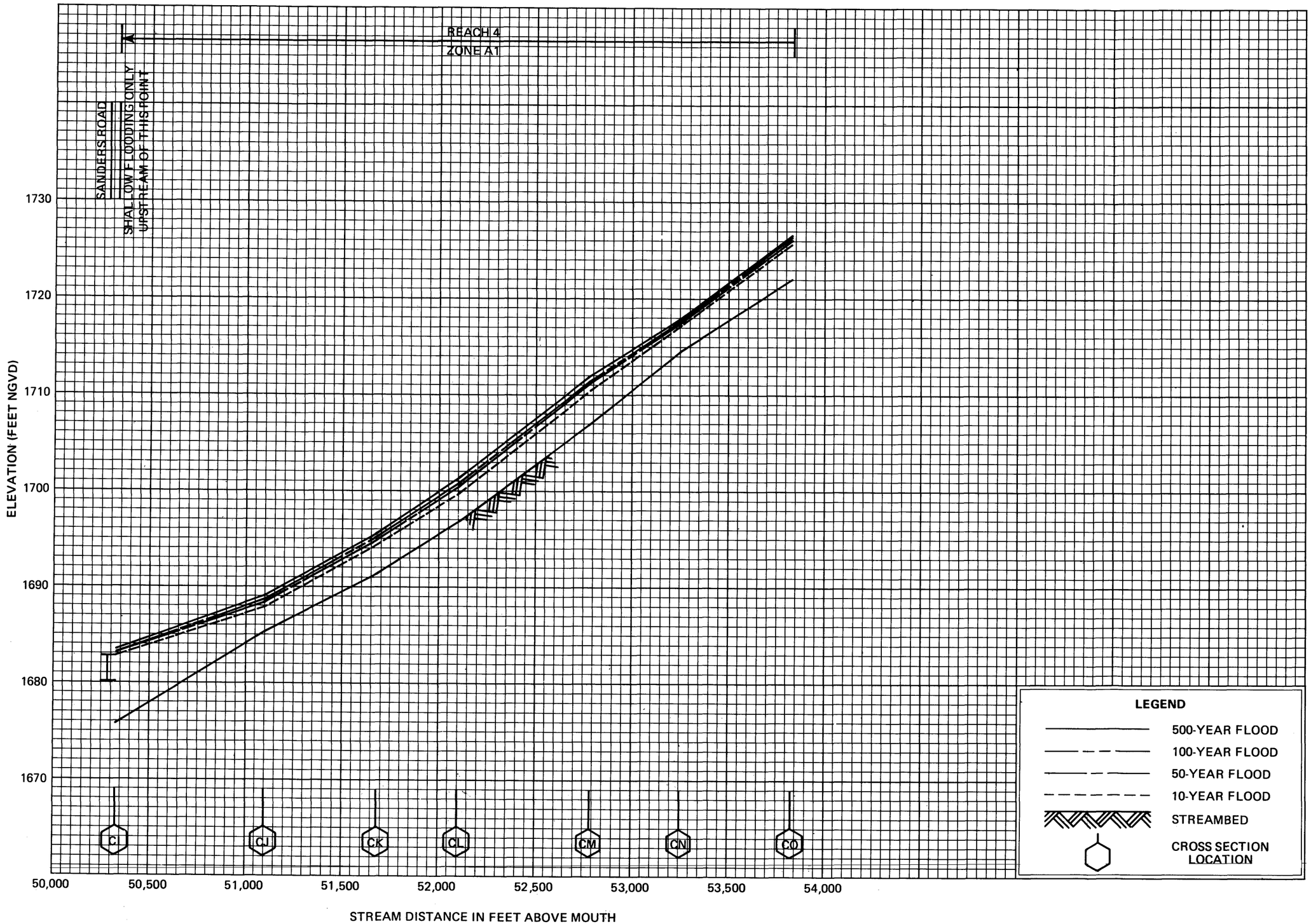
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

105P



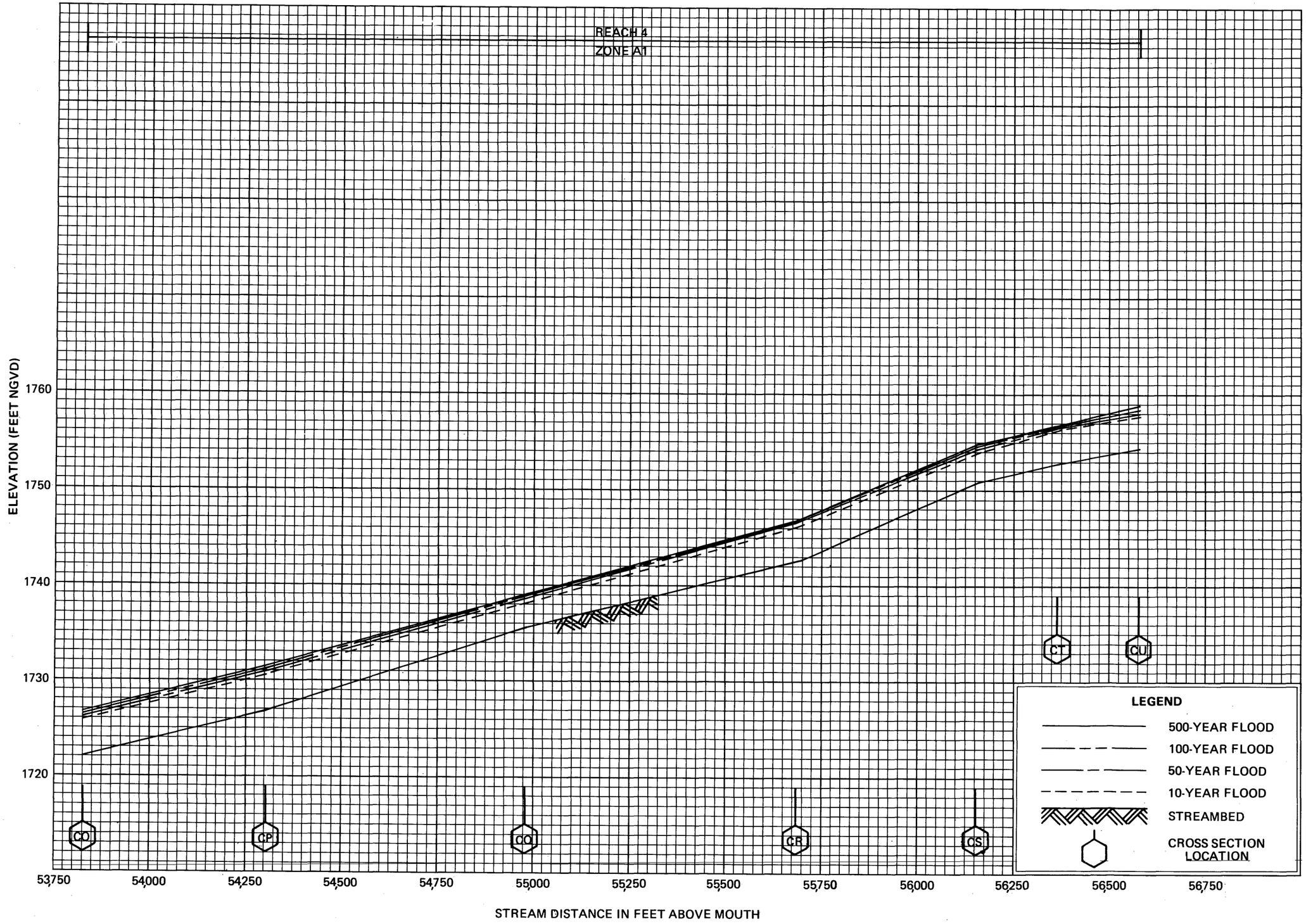
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

106P



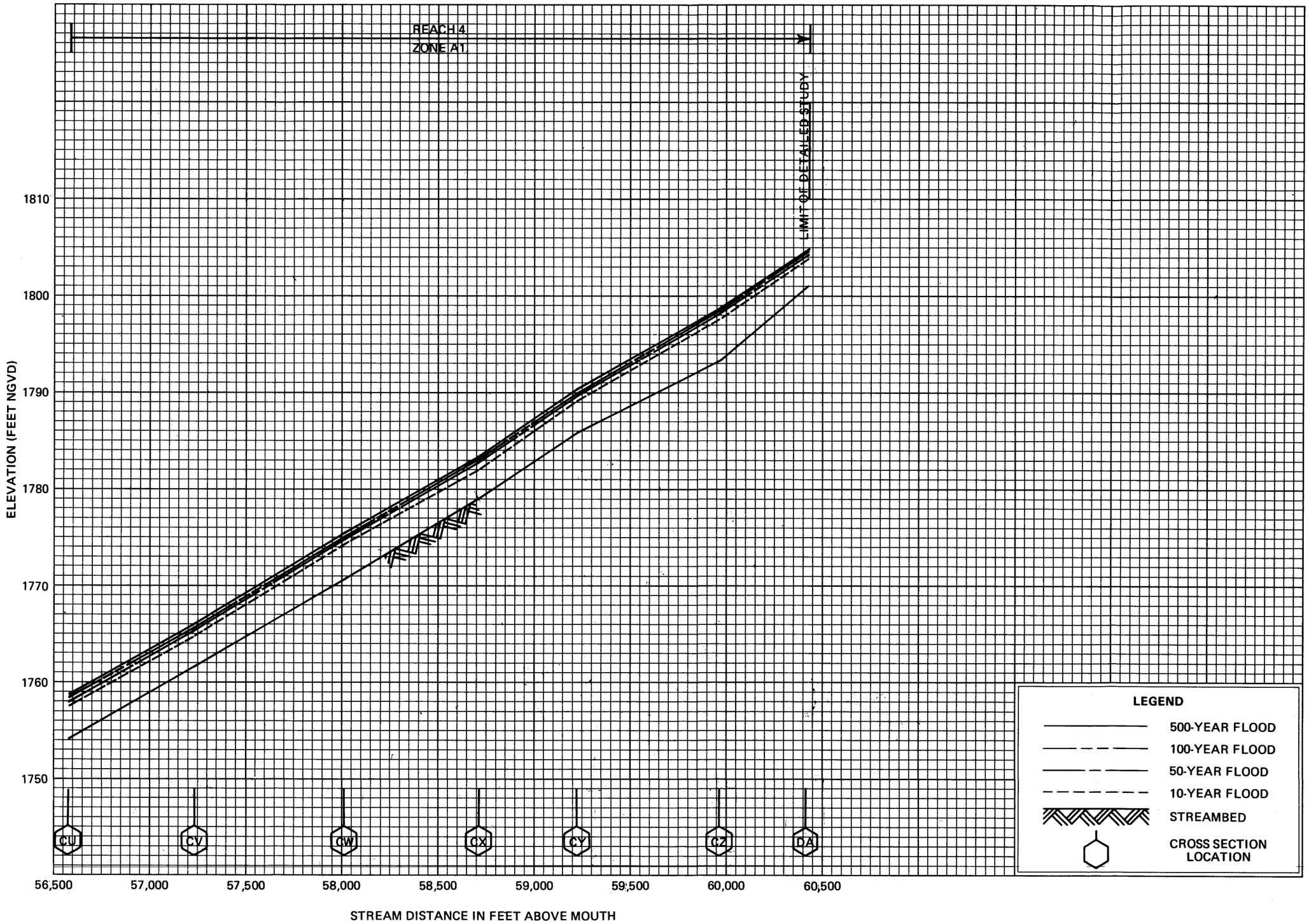
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

107P



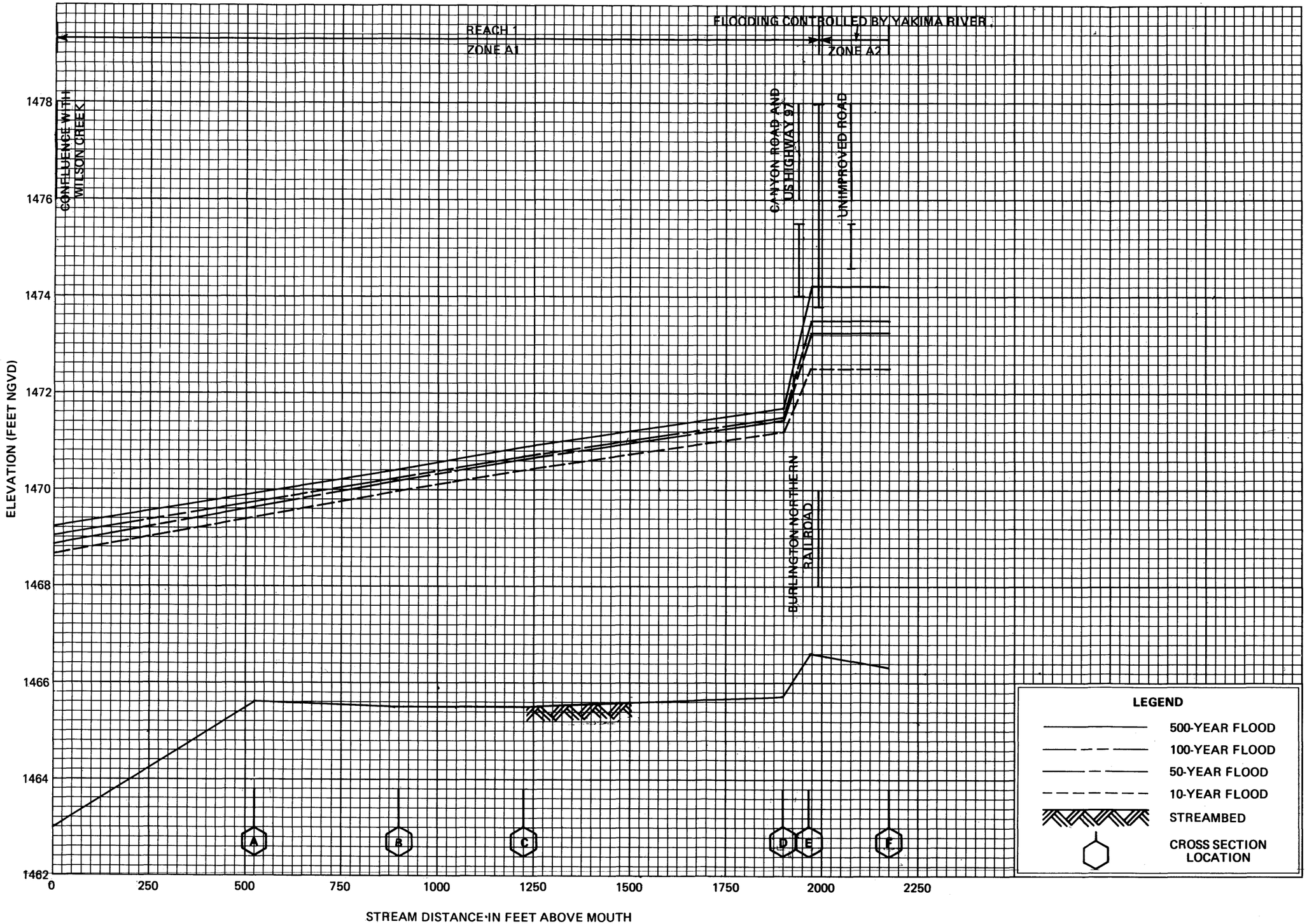
FLOOD PROFILES

WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

108P



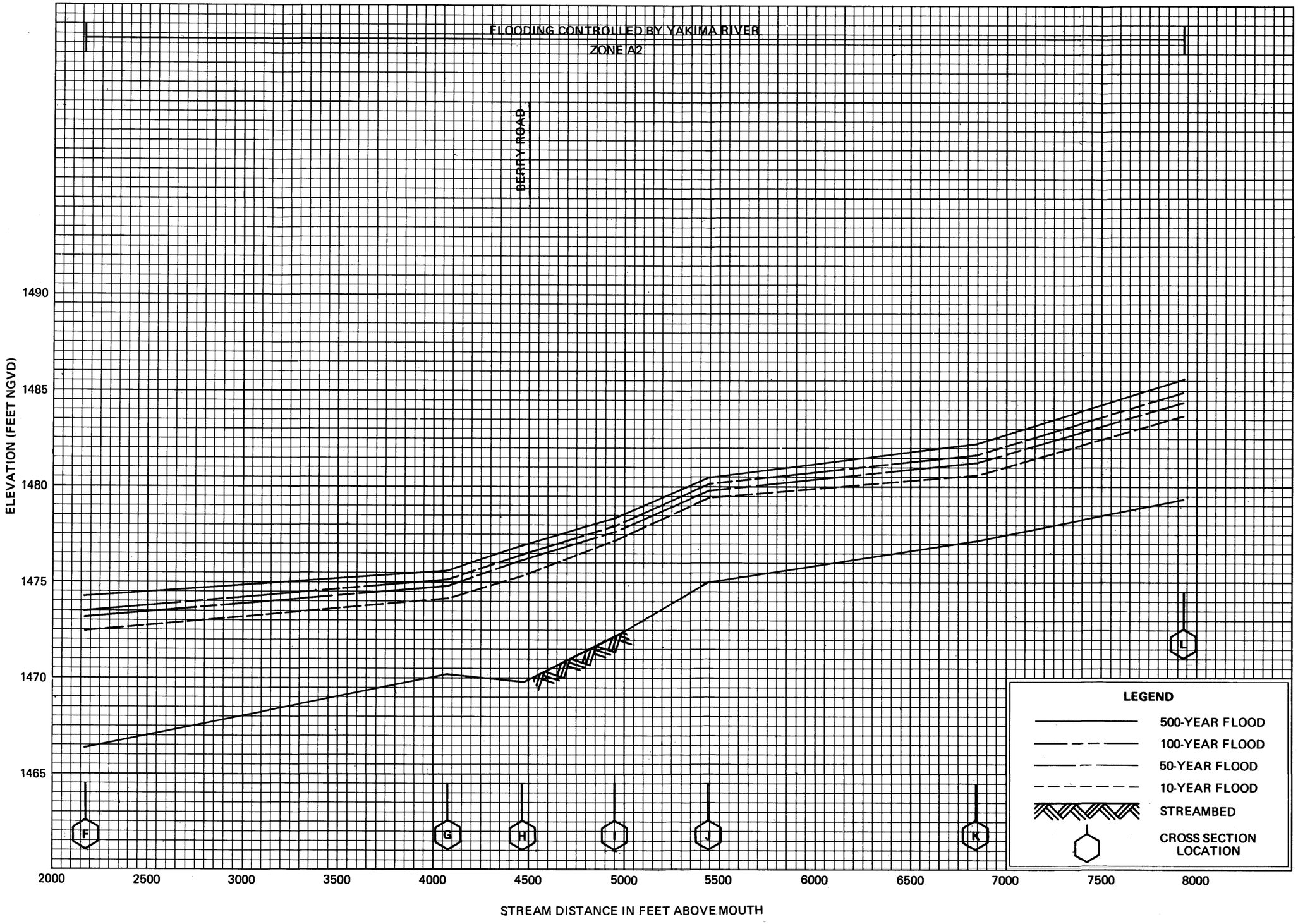
FLOOD PROFILES

RIGHT CHANNEL WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

109P

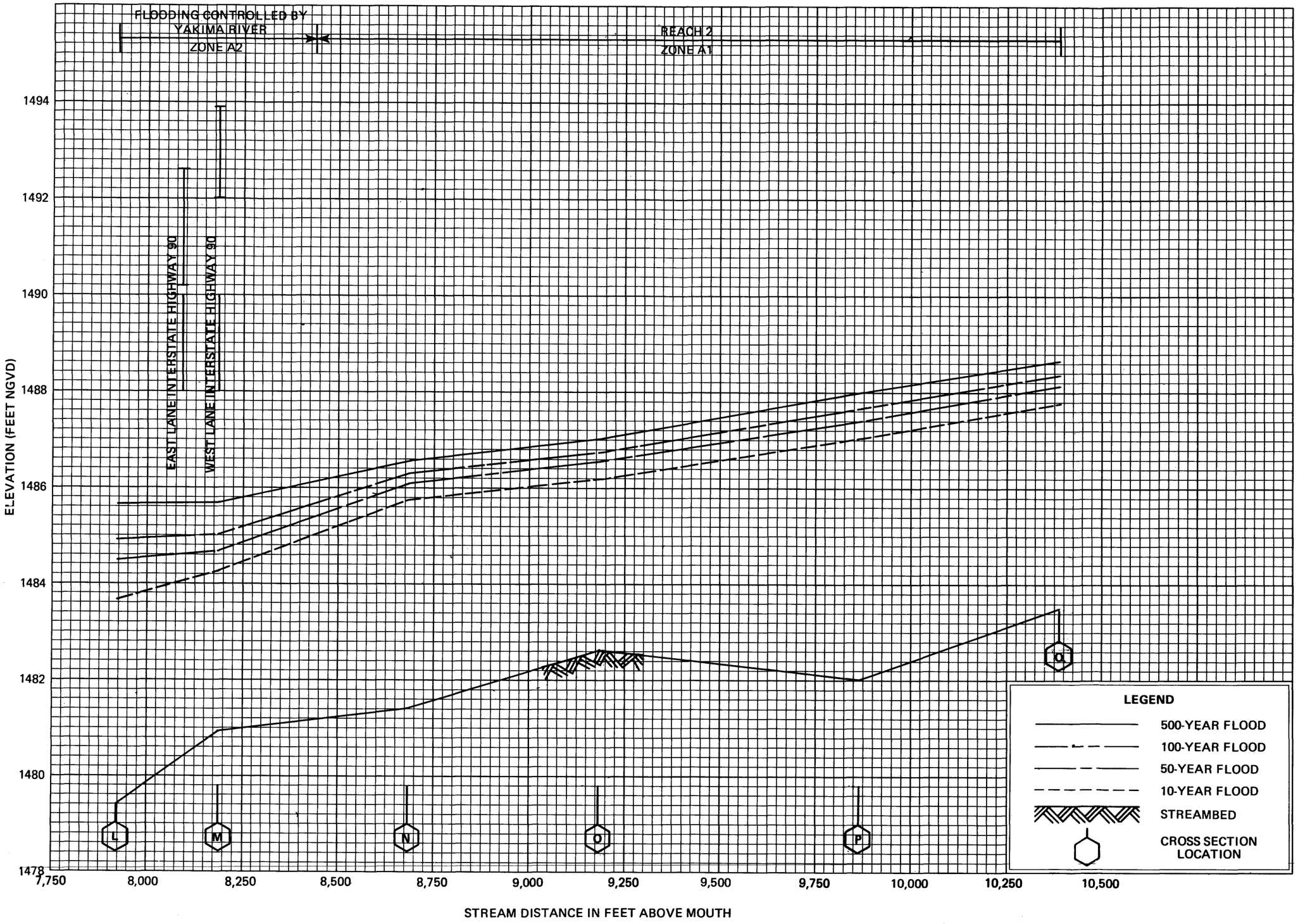


FLOOD PROFILES

RIGHT CHANNEL WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



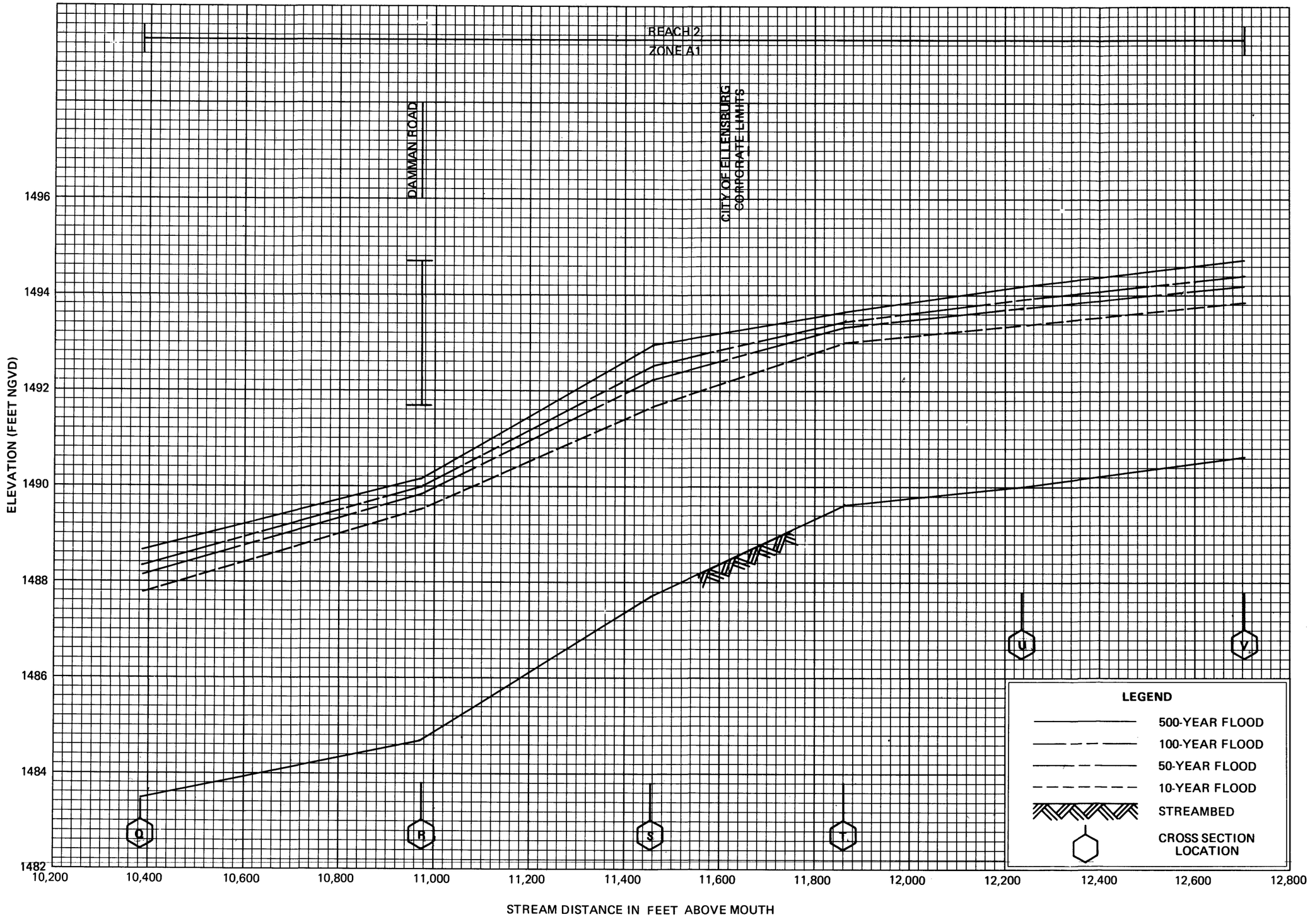
FLOOD PROFILES

RIGHT CHANNEL WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

111P

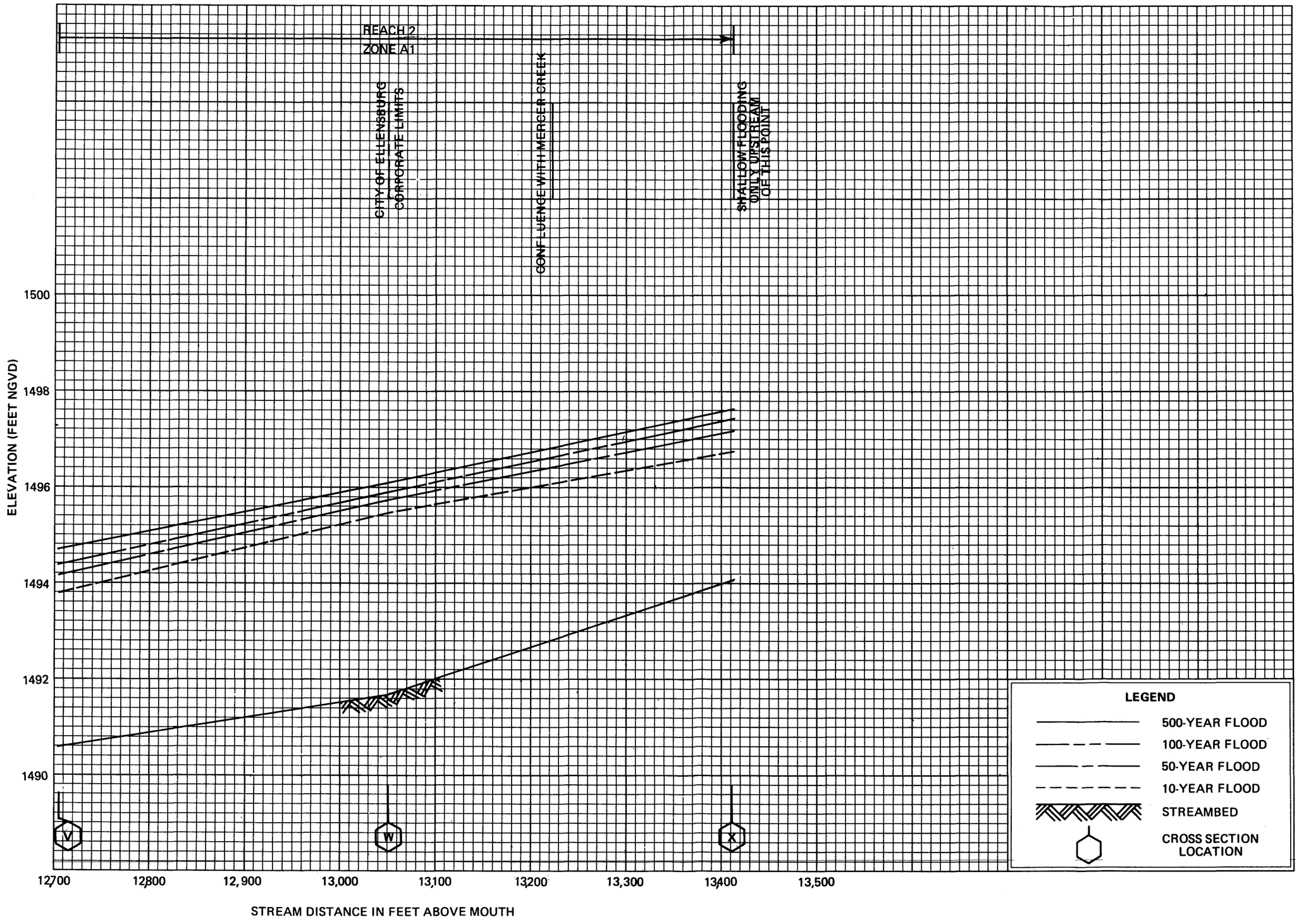


FLOOD PROFILES

RIGHT CHANNEL WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

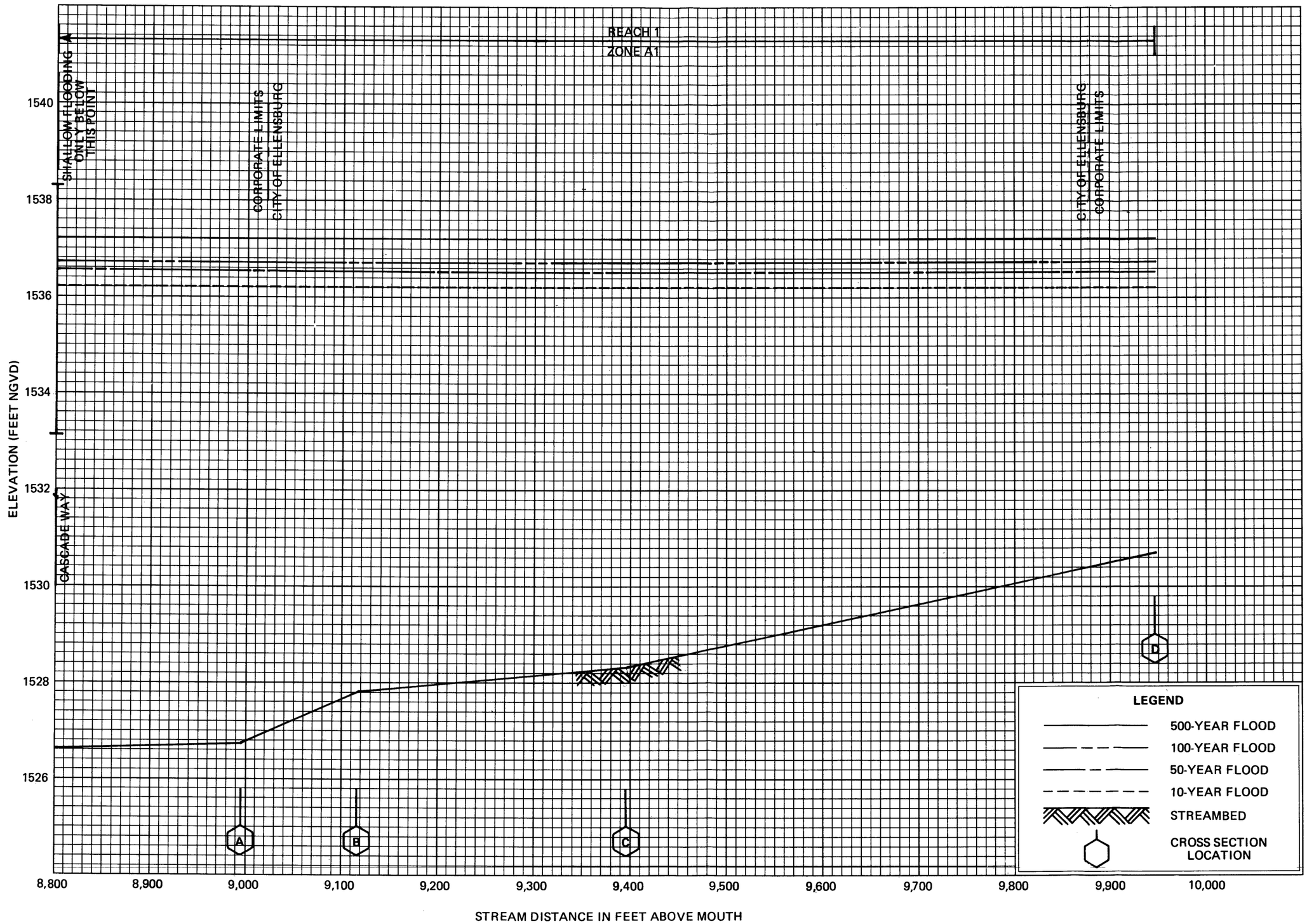


FLOOD PROFILES

RIGHT CHANNEL WILSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



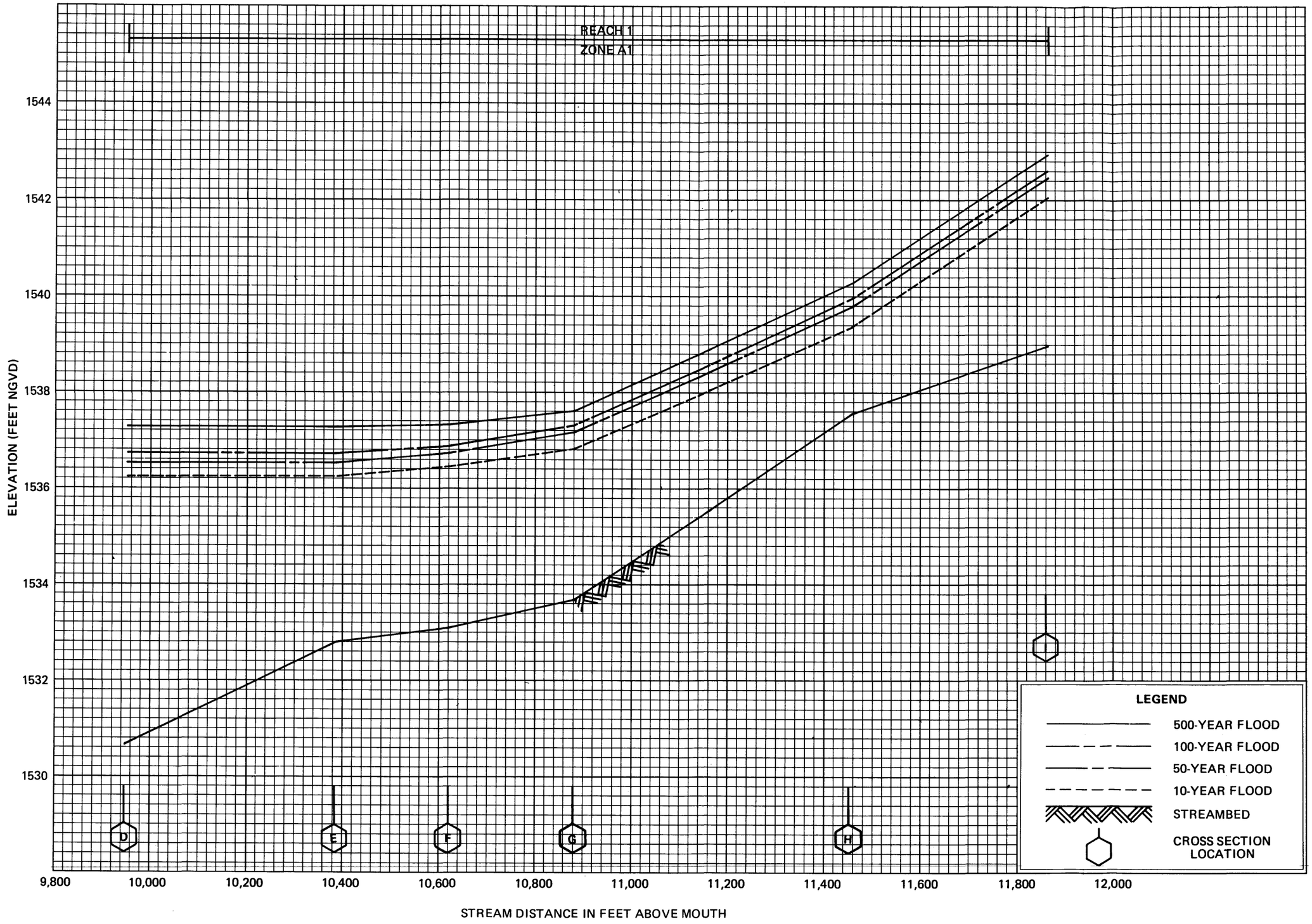
FLOOD PROFILES

REECER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

114P



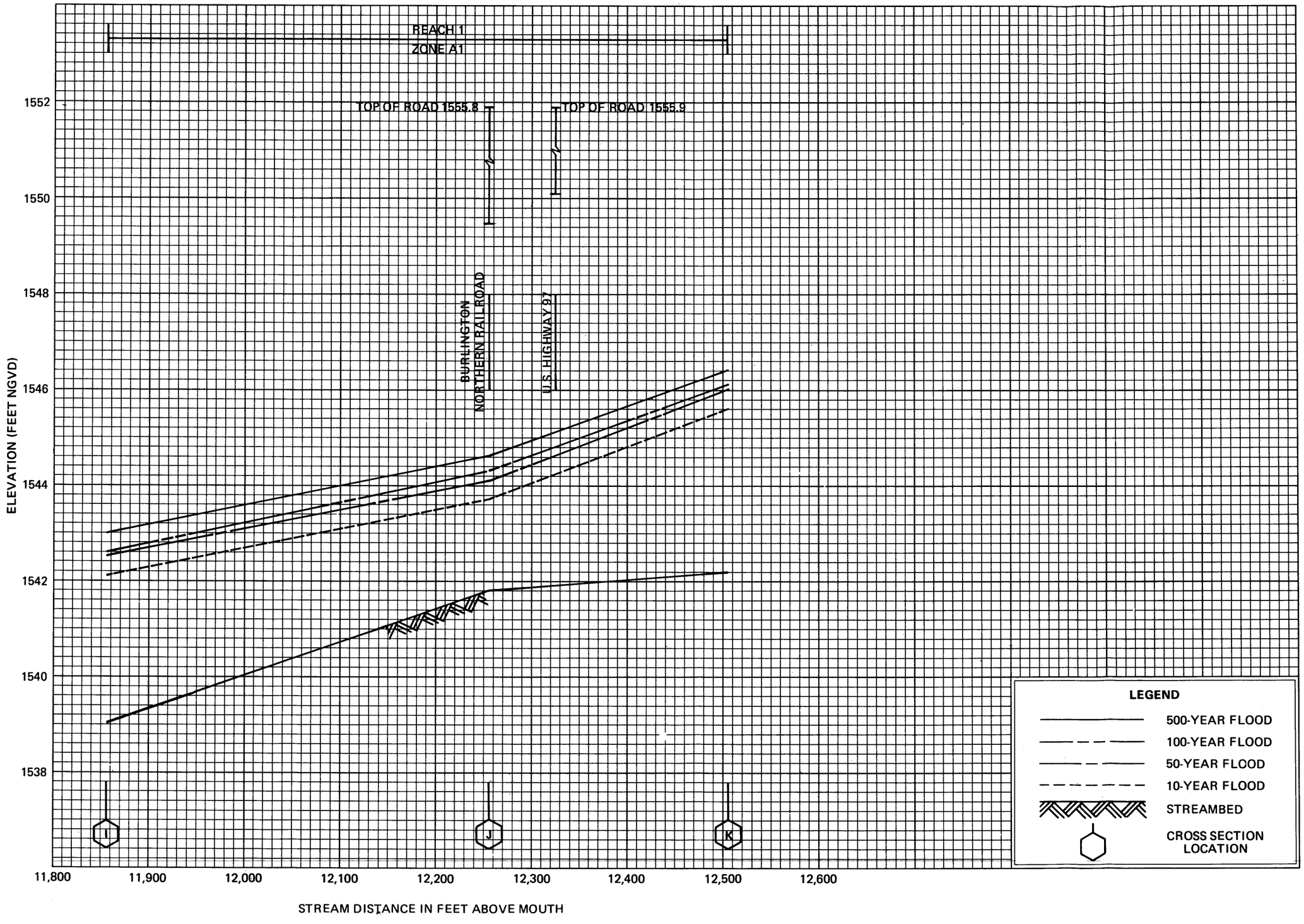
FLOOD PROFILES

REECER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

115P



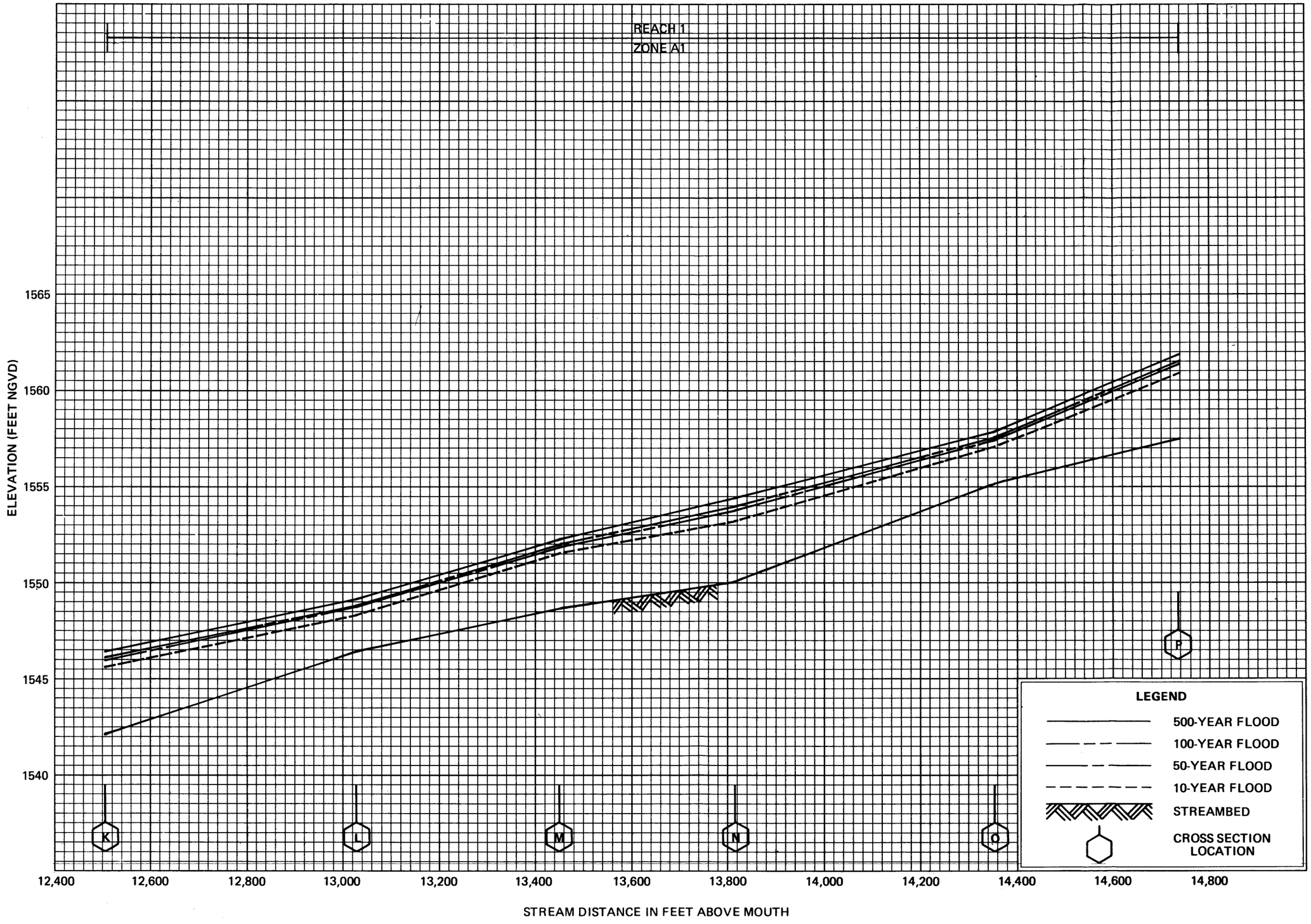
FLOOD PROFILES

REECER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

116P



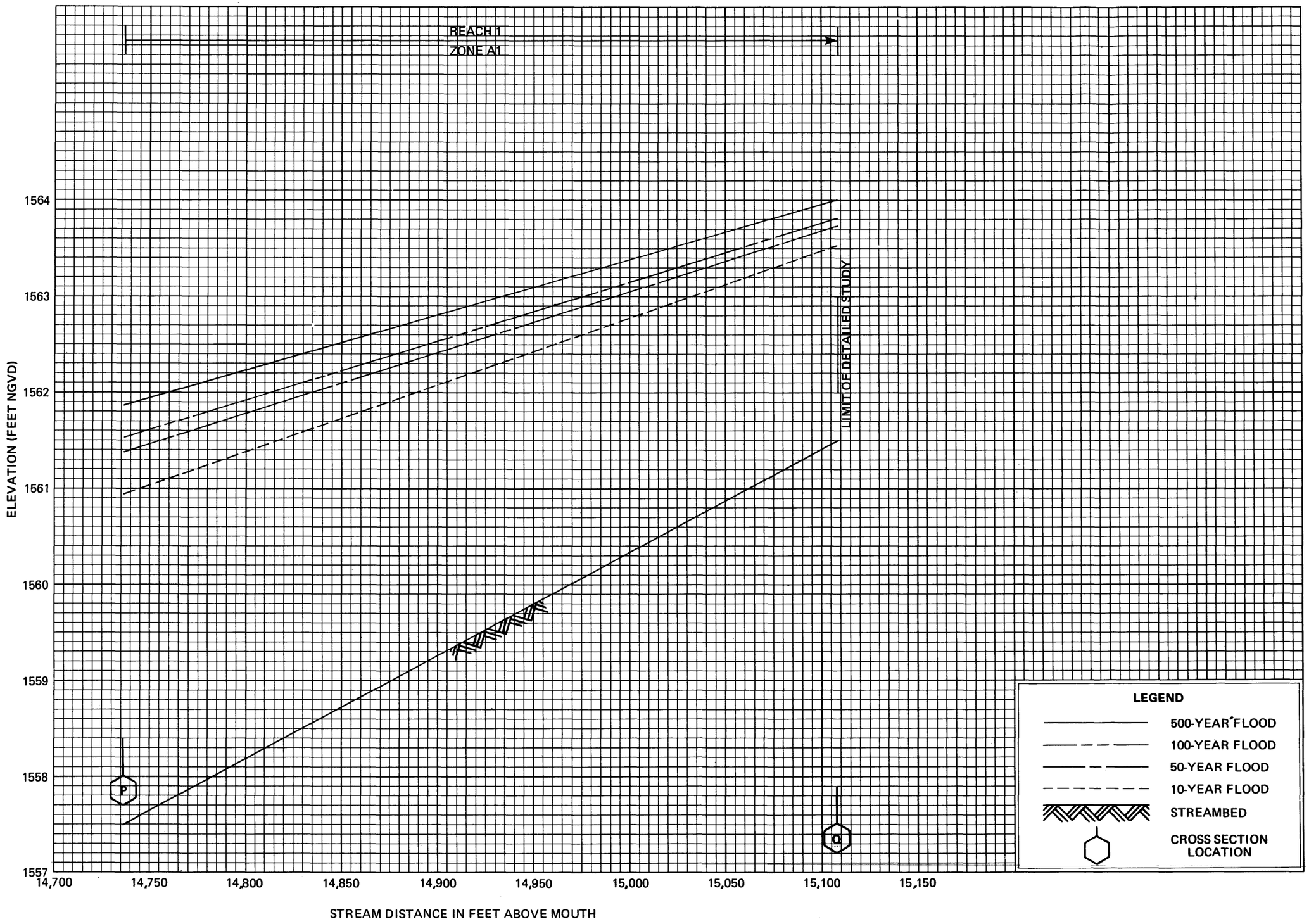
FLOOD PROFILES

REECER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

117P



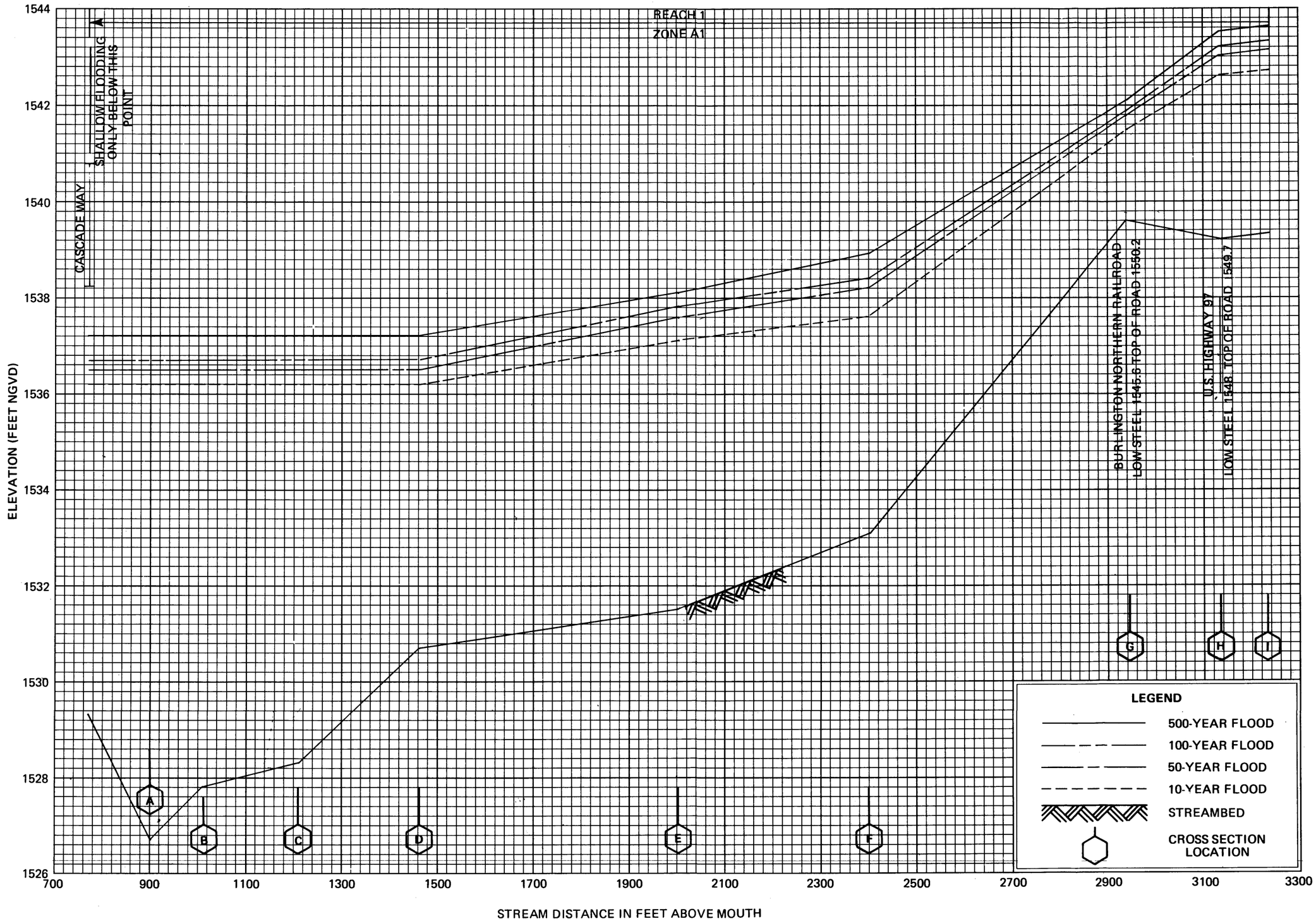
FLOOD PROFILES

REECER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

118P

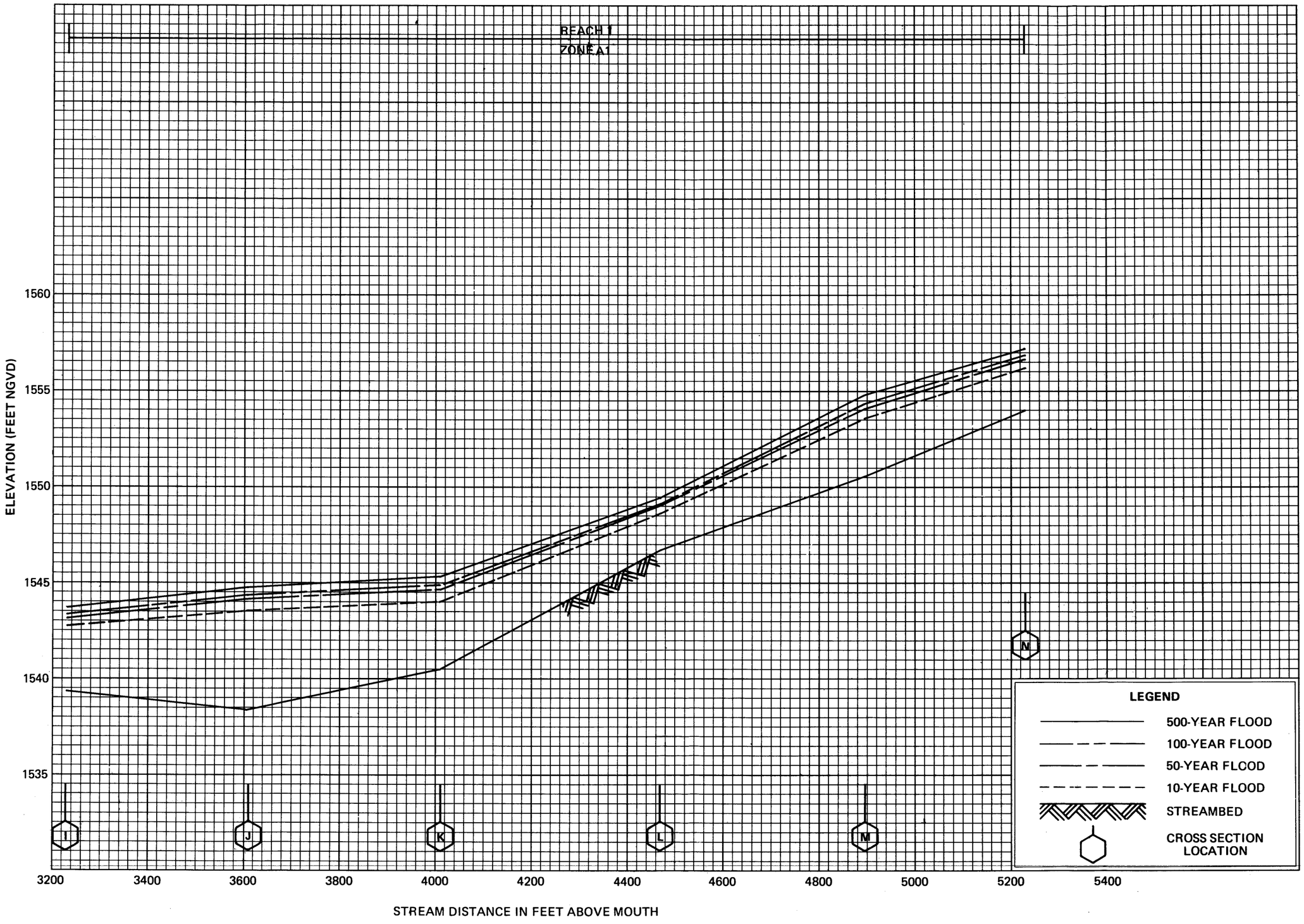


FLOOD PROFILES

CURRIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

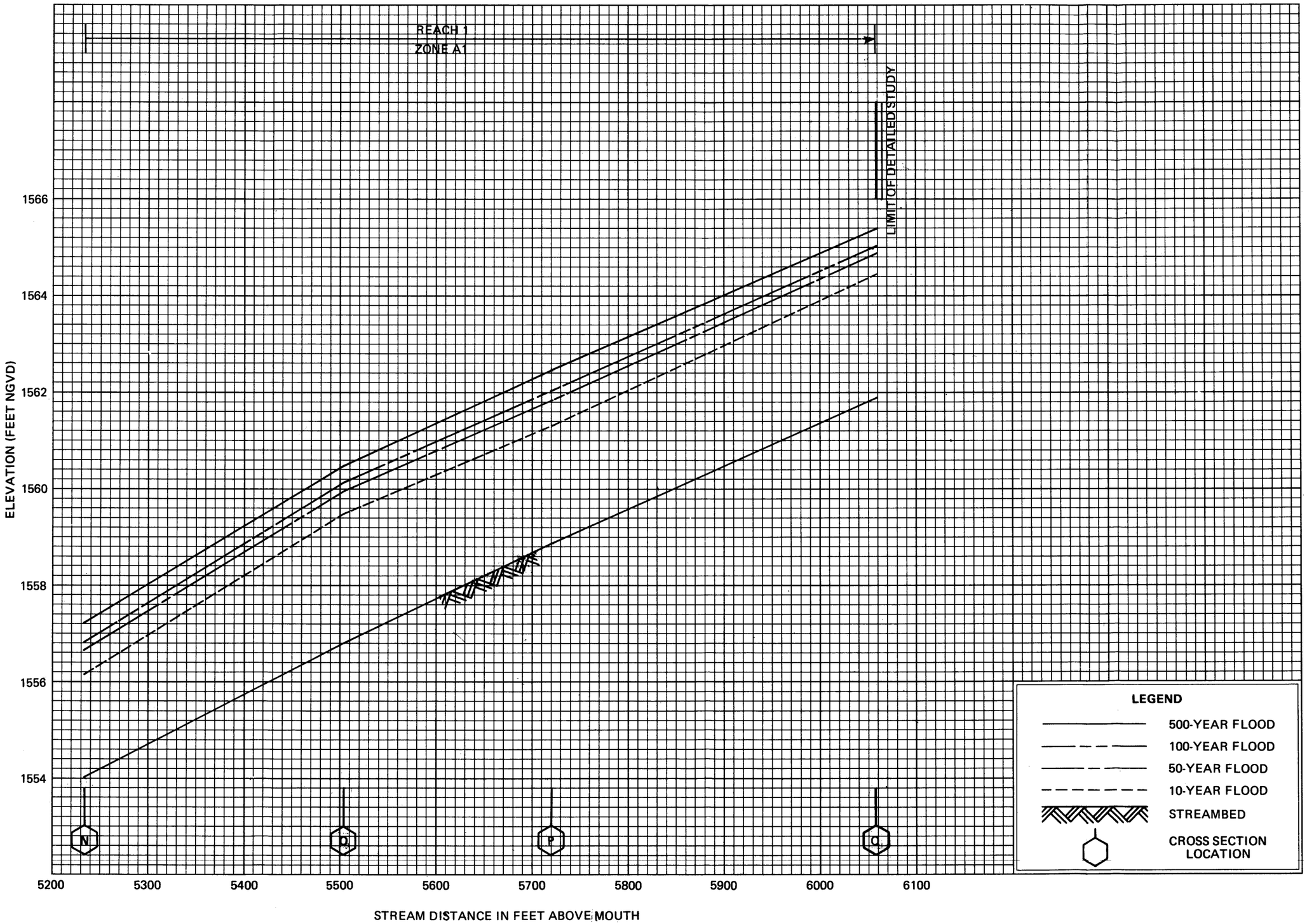


FLOOD PROFILES

CURRIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



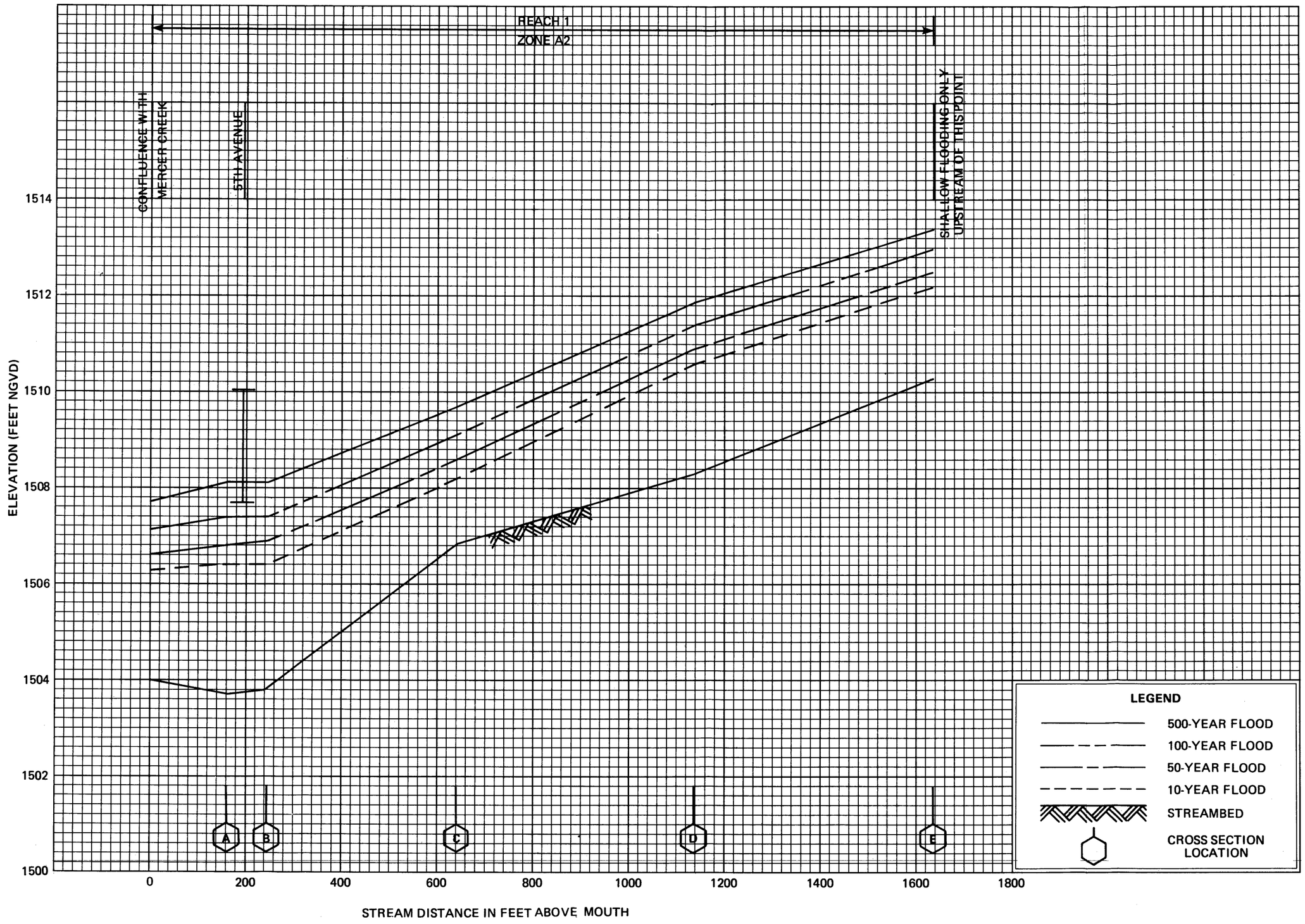
FLOOD PROFILES

CURRIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

121P

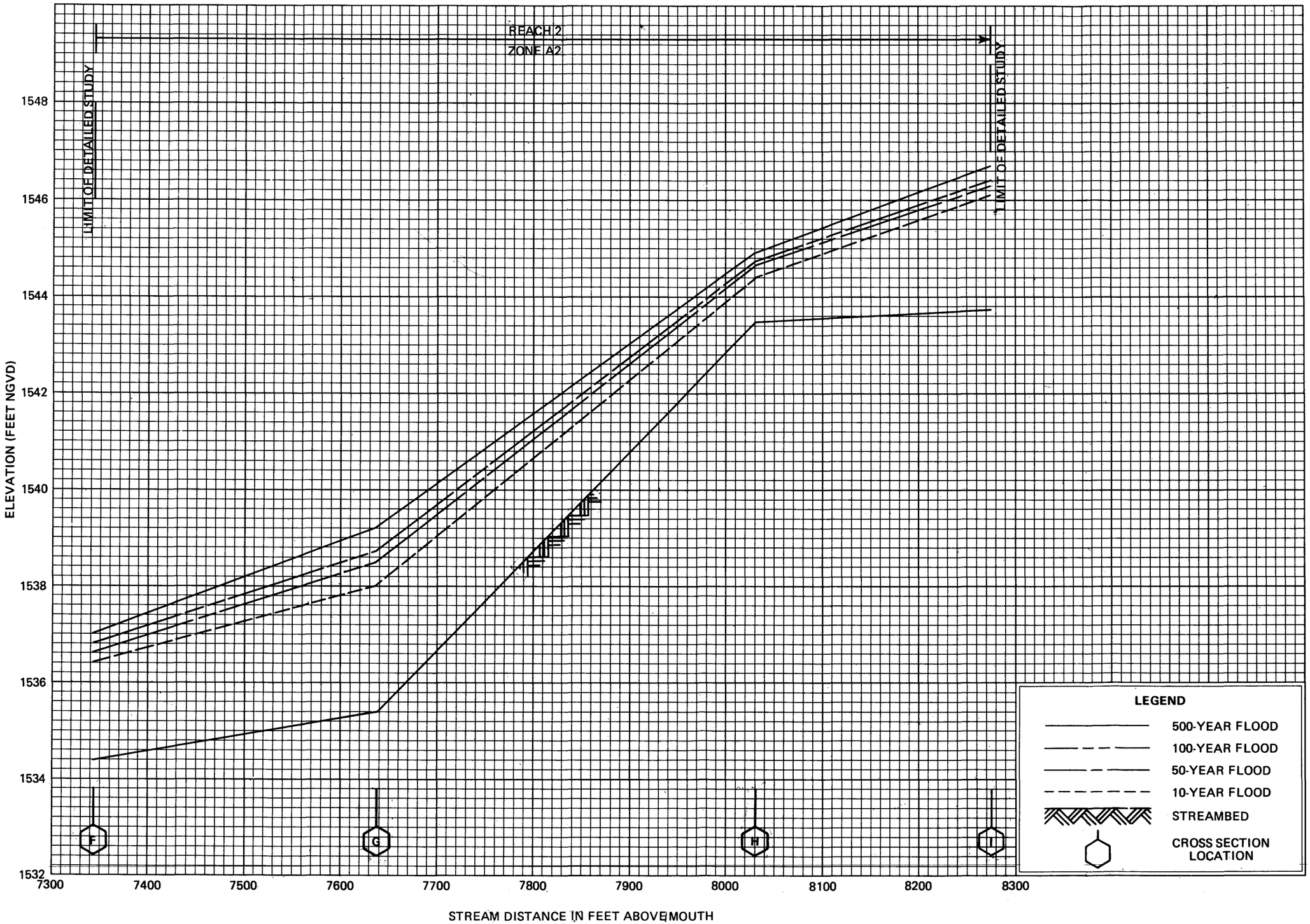


FLOOD PROFILES

WHISKEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

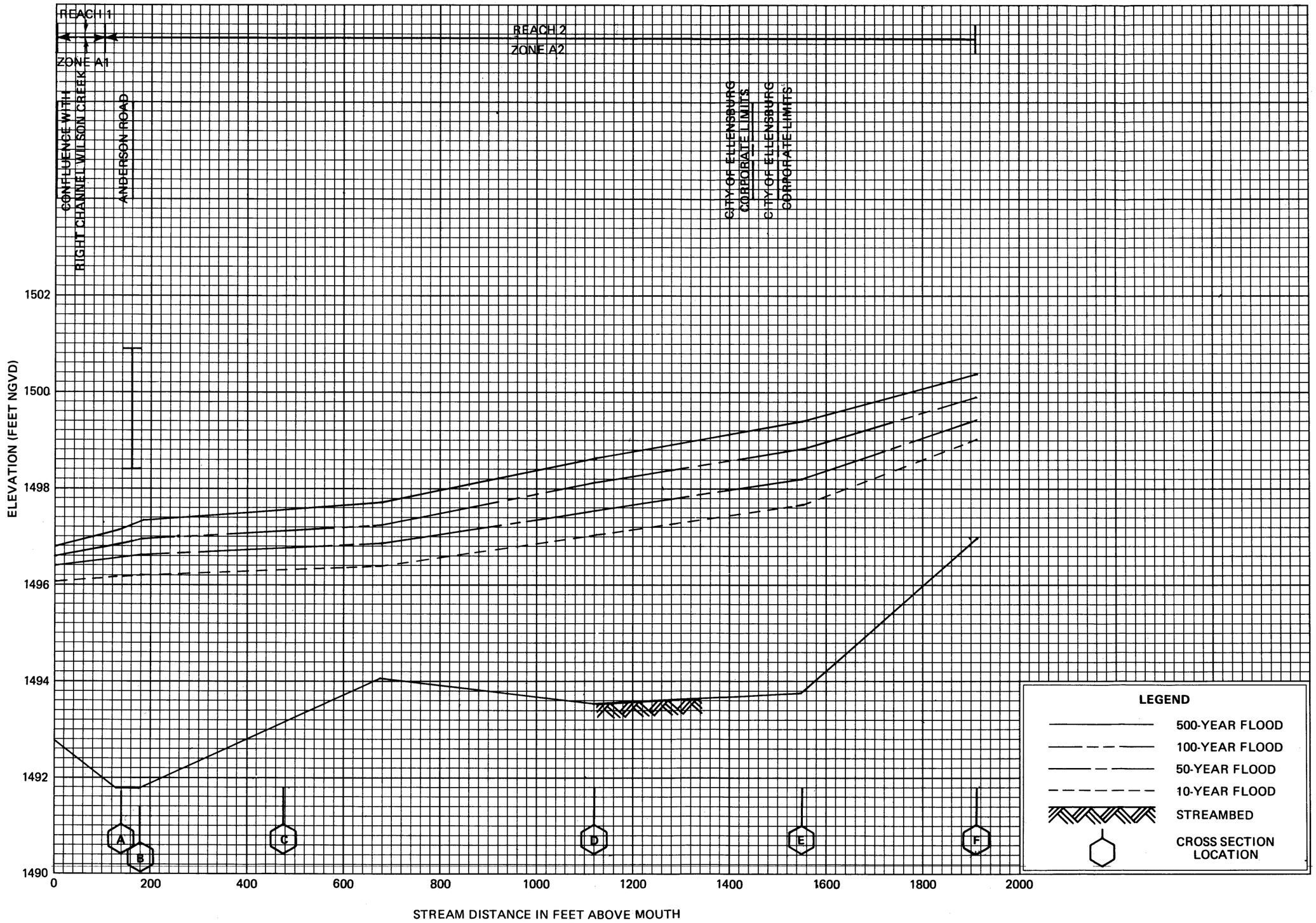


FLOOD PROFILES

WHISKEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



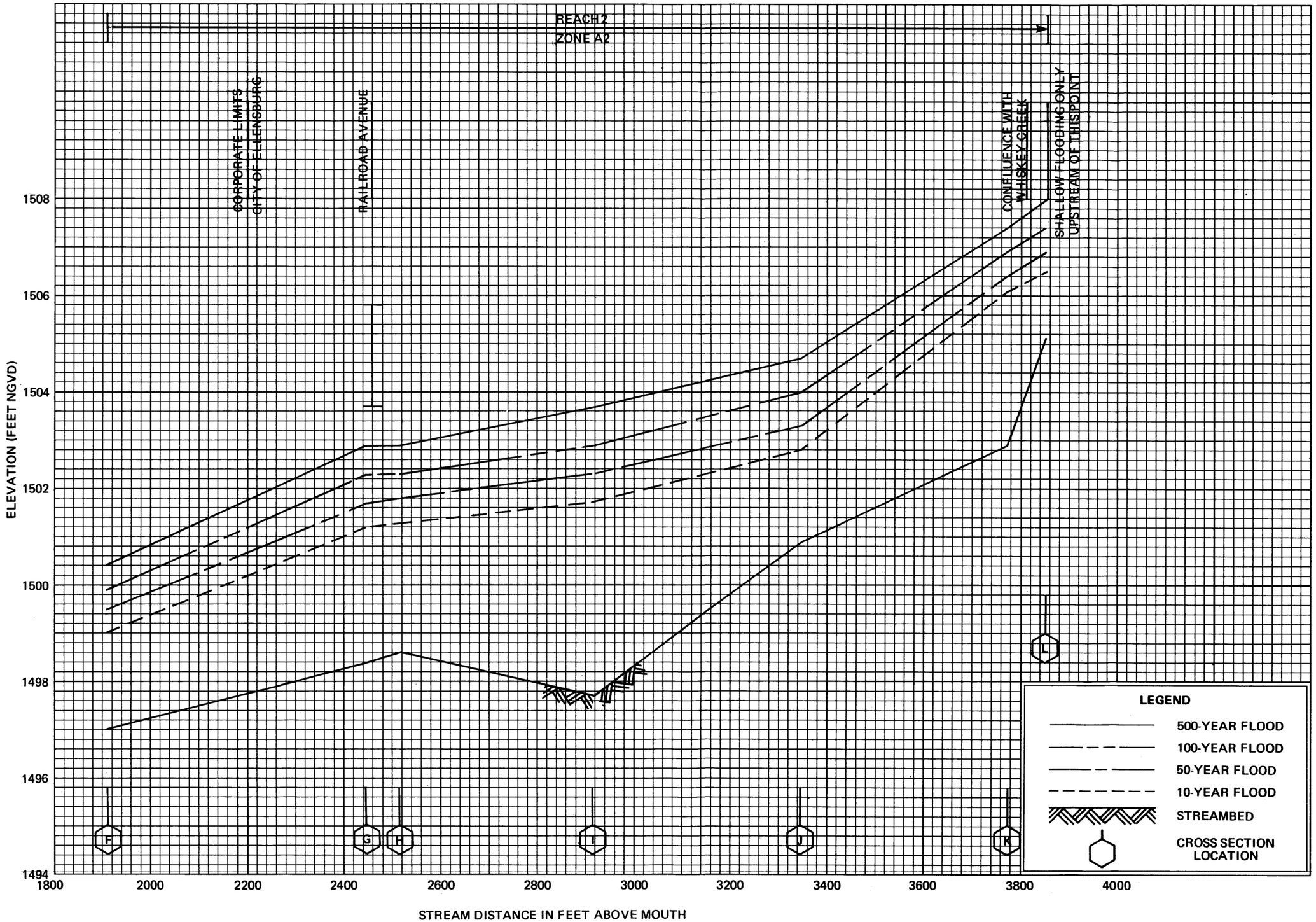
FLOOD PROFILES

MERCER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

124P



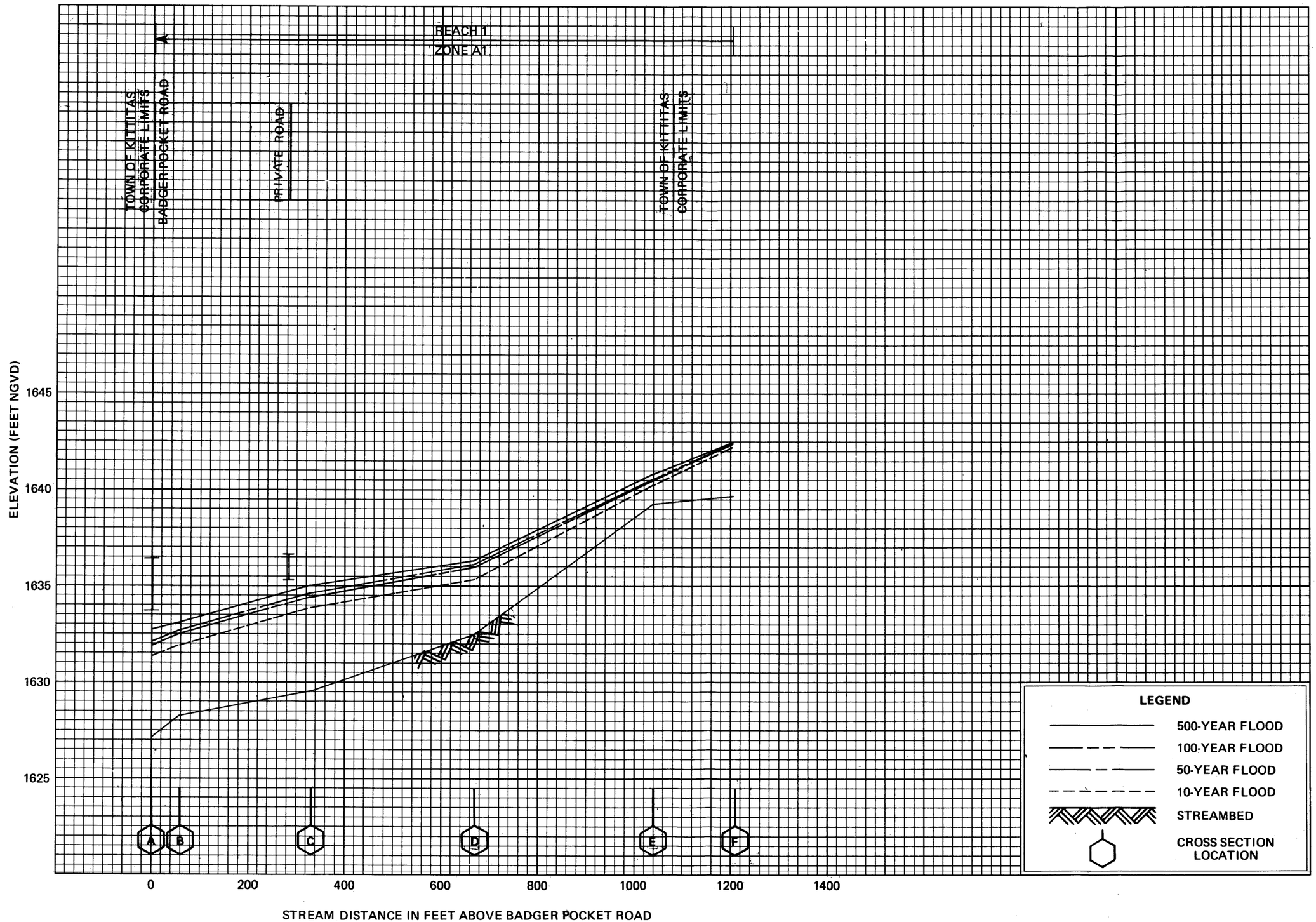
FLOOD PROFILES

MERCER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

125P

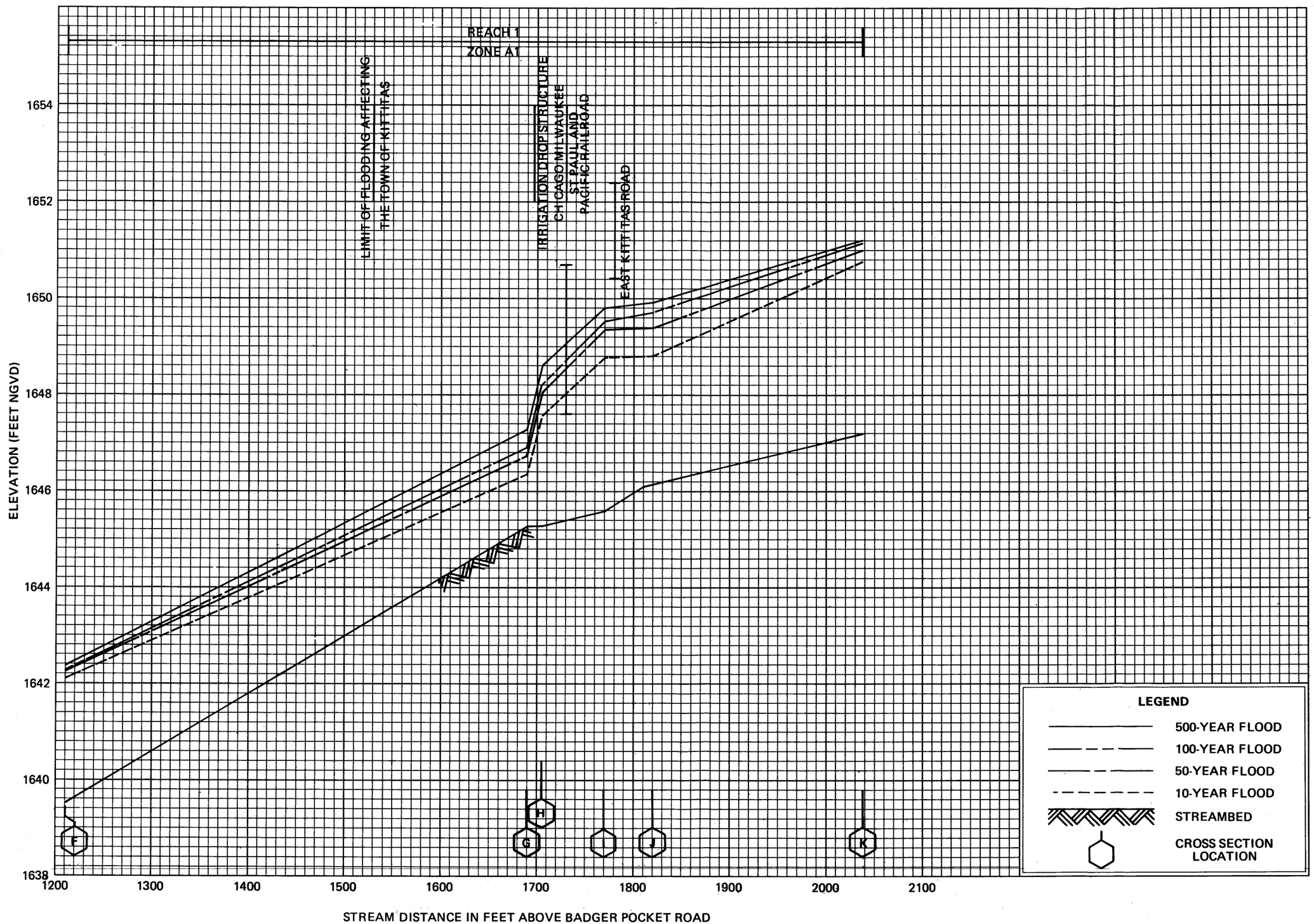


FLOOD PROFILES

CARIBOU CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



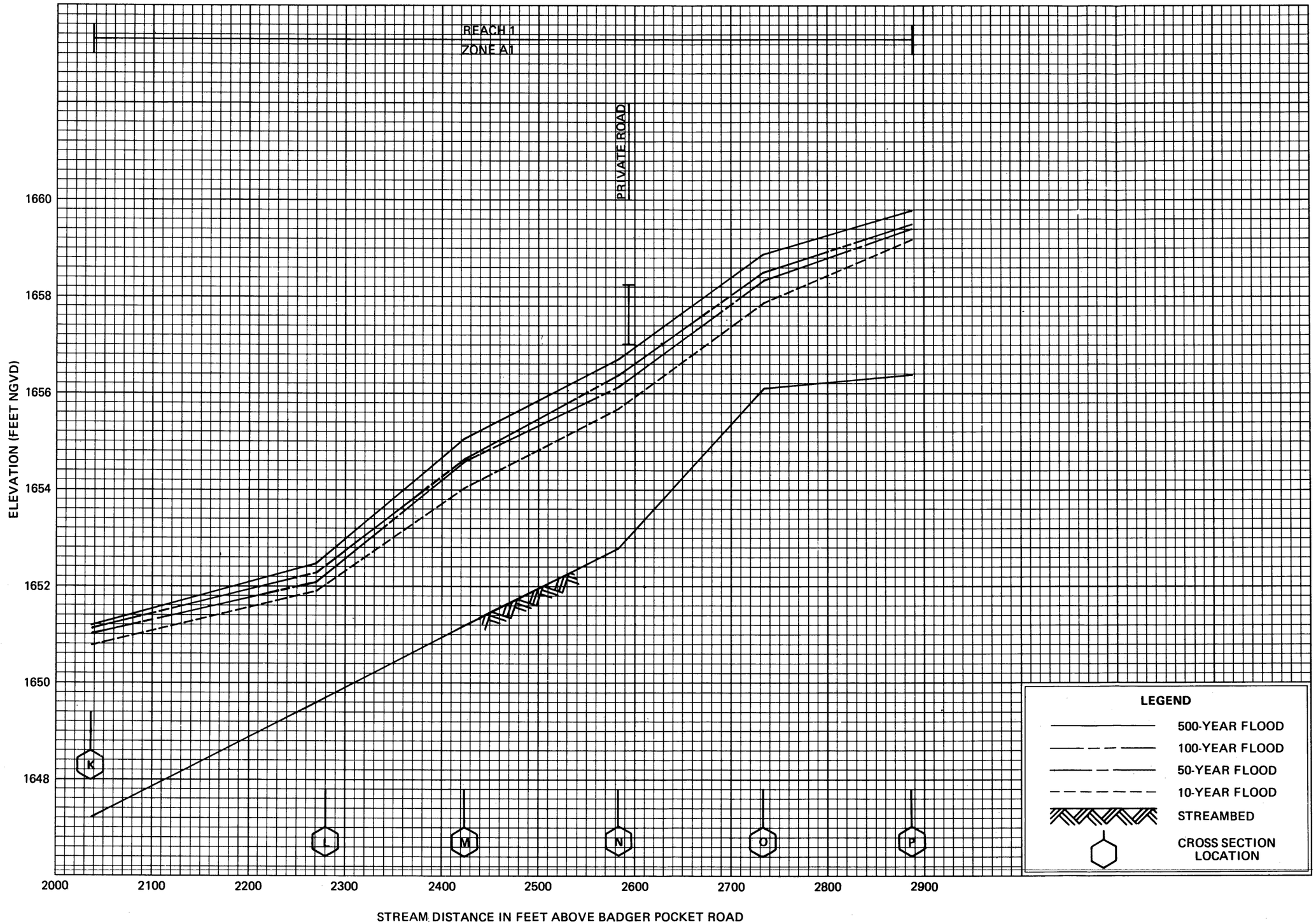
FLOOD PROFILES

CARIBOU CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

127P

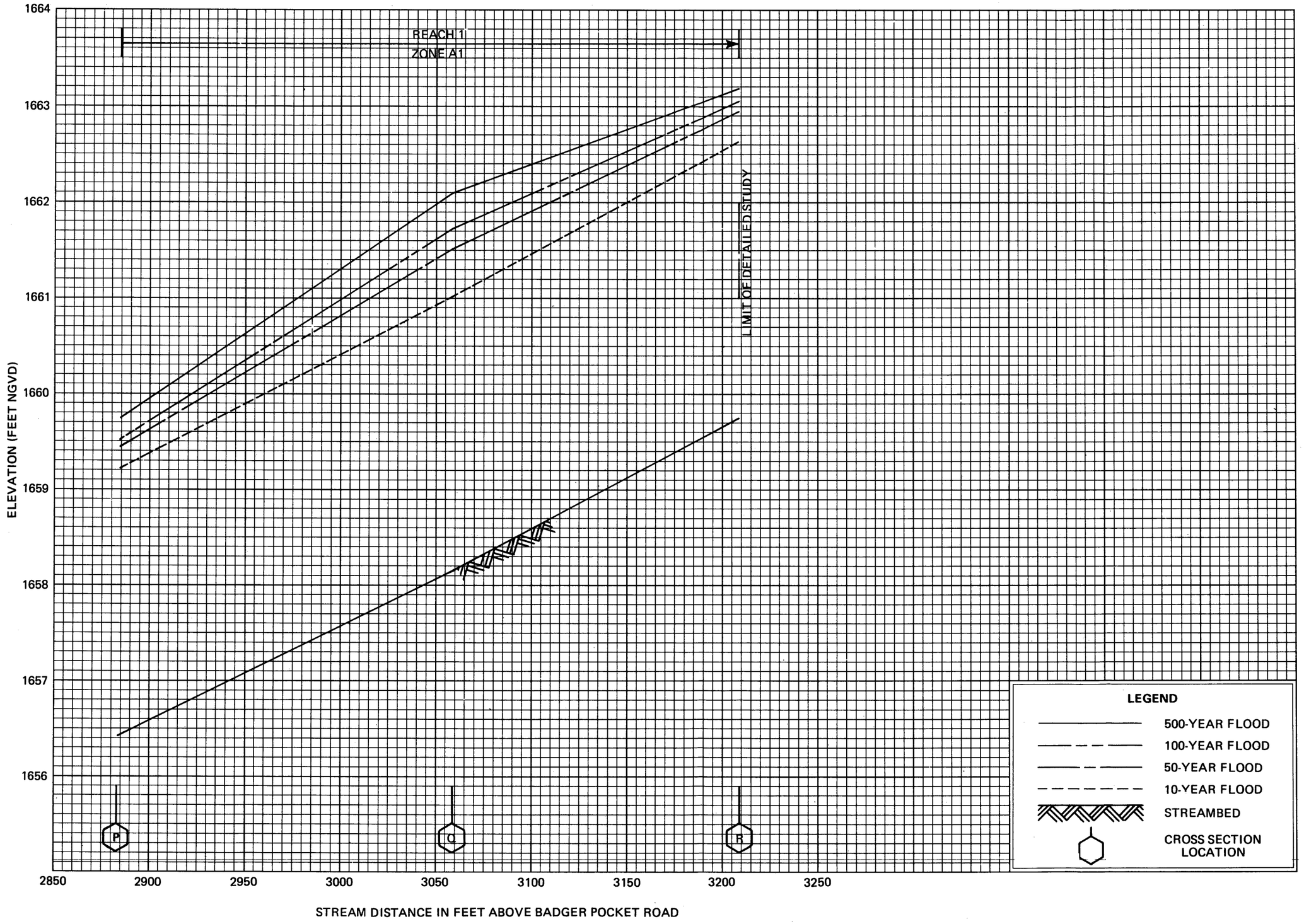


FLOOD PROFILES

CARIBOU CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

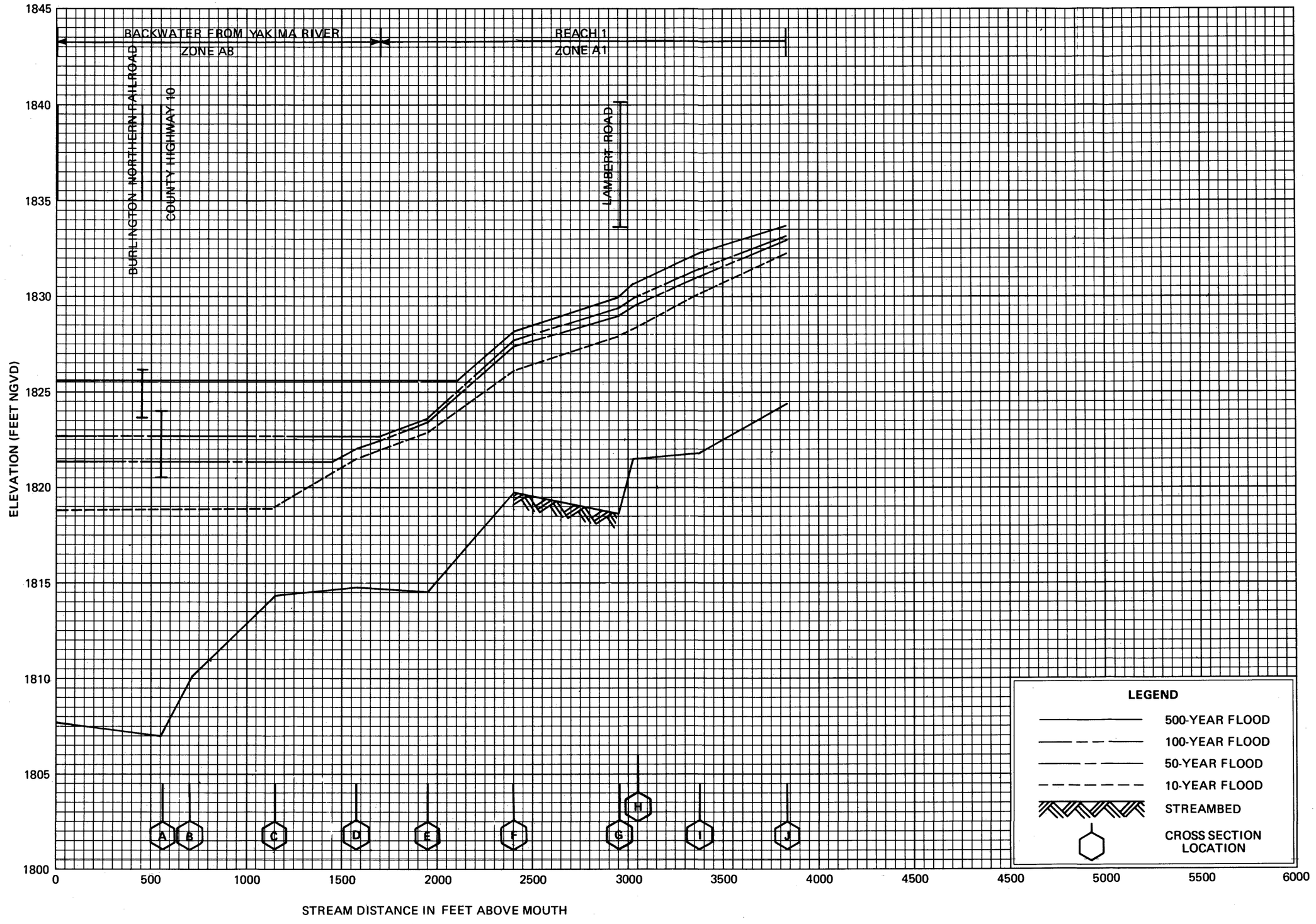


FLOOD PROFILES

CARIBOU CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

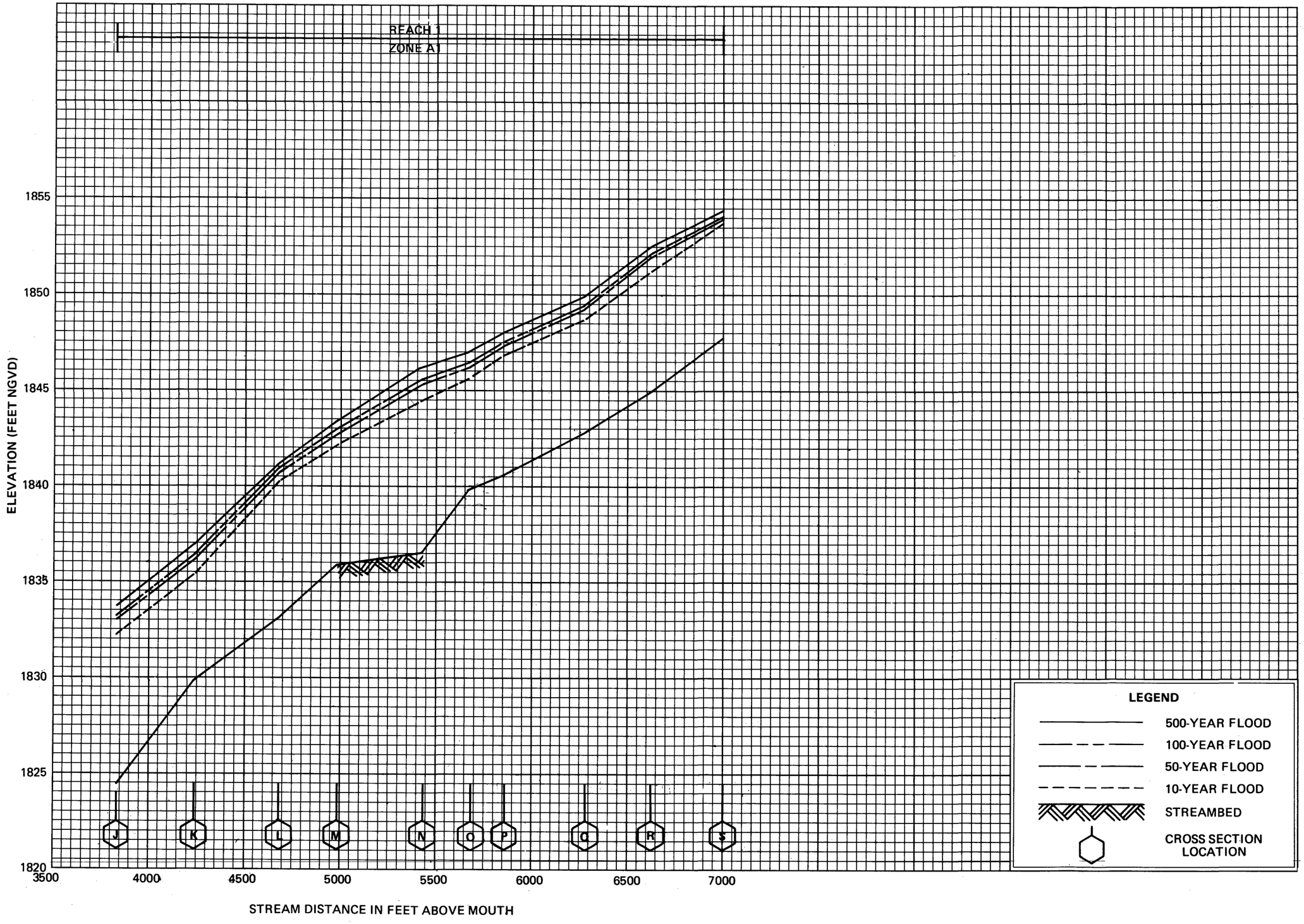


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

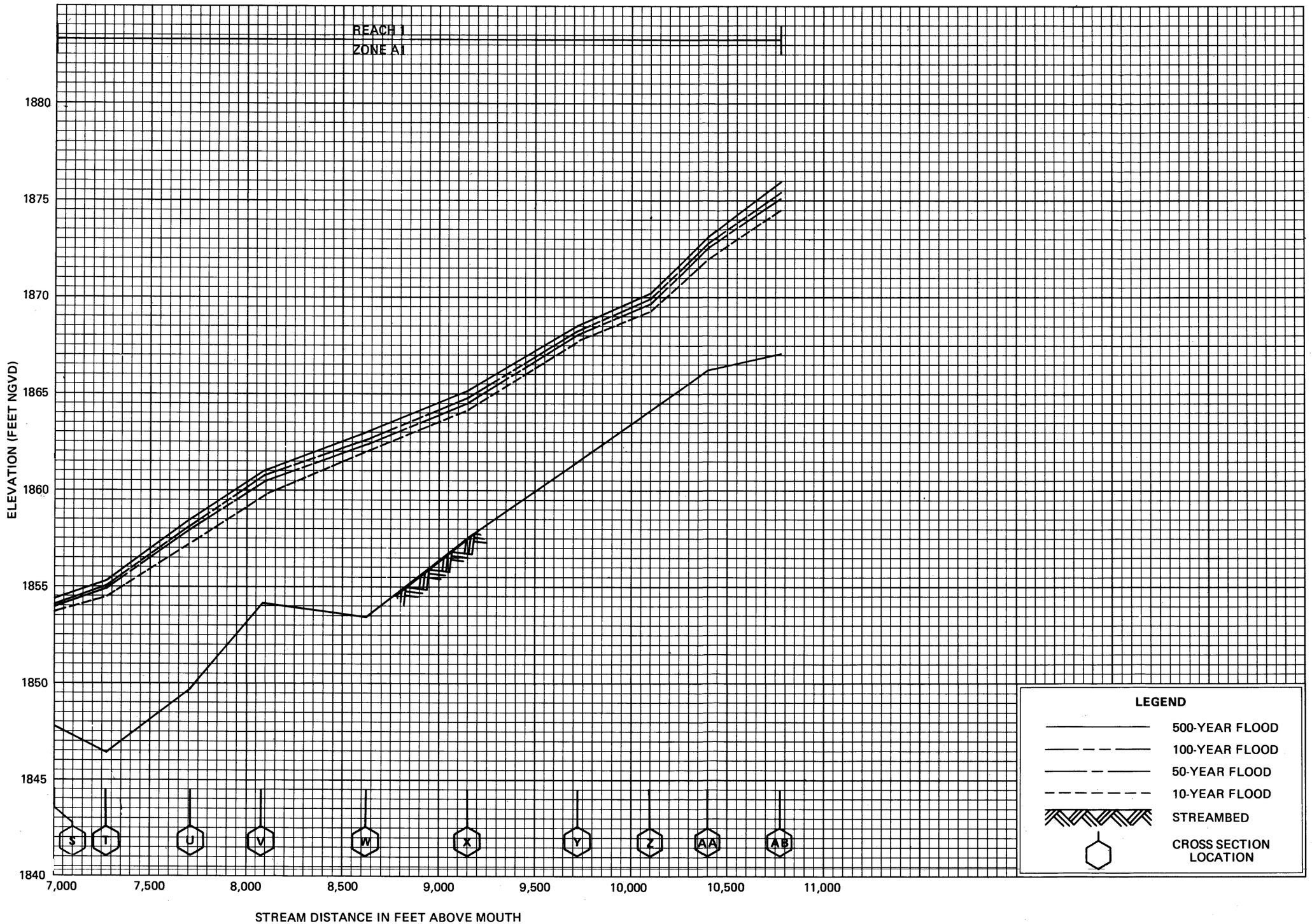


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

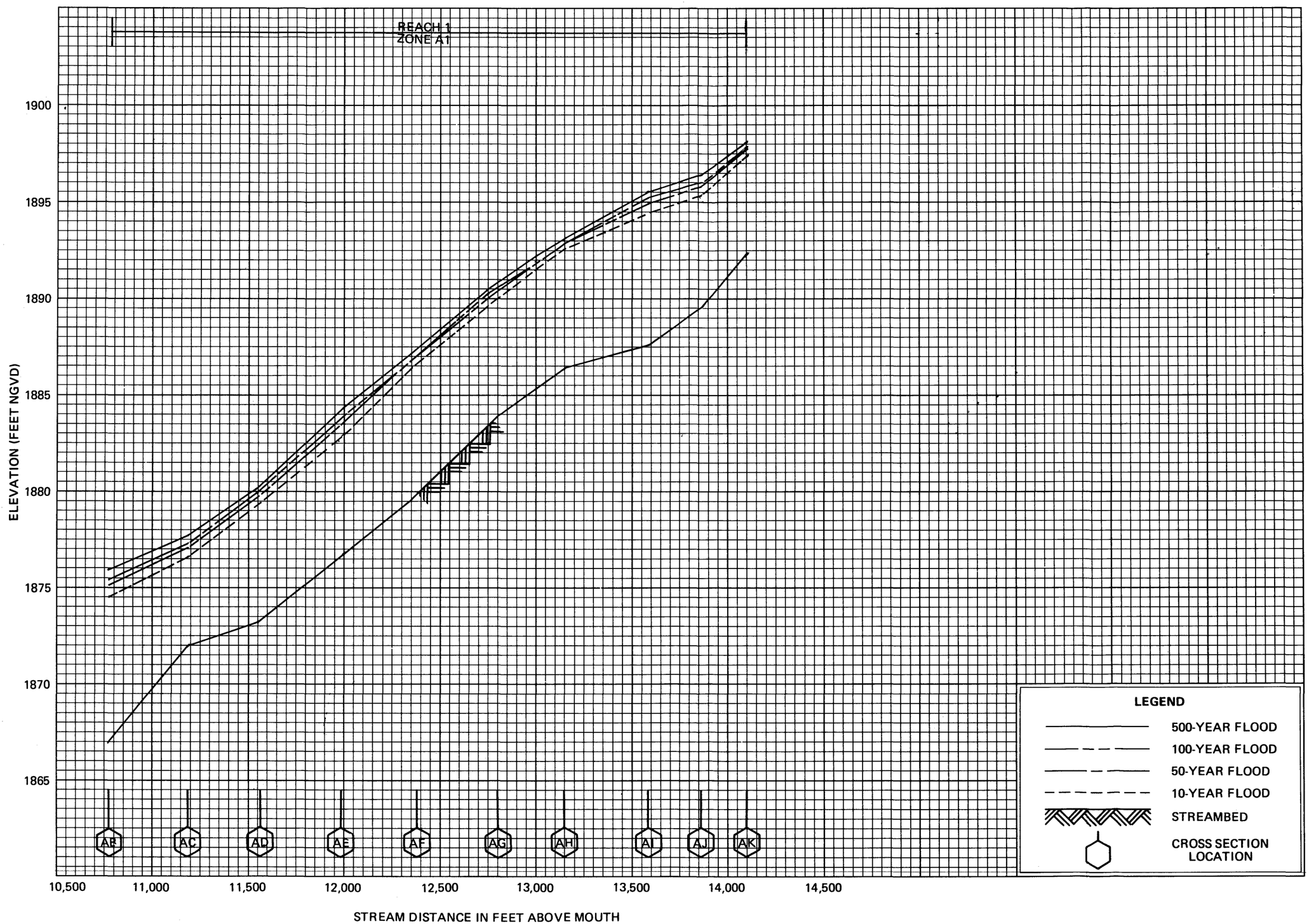


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



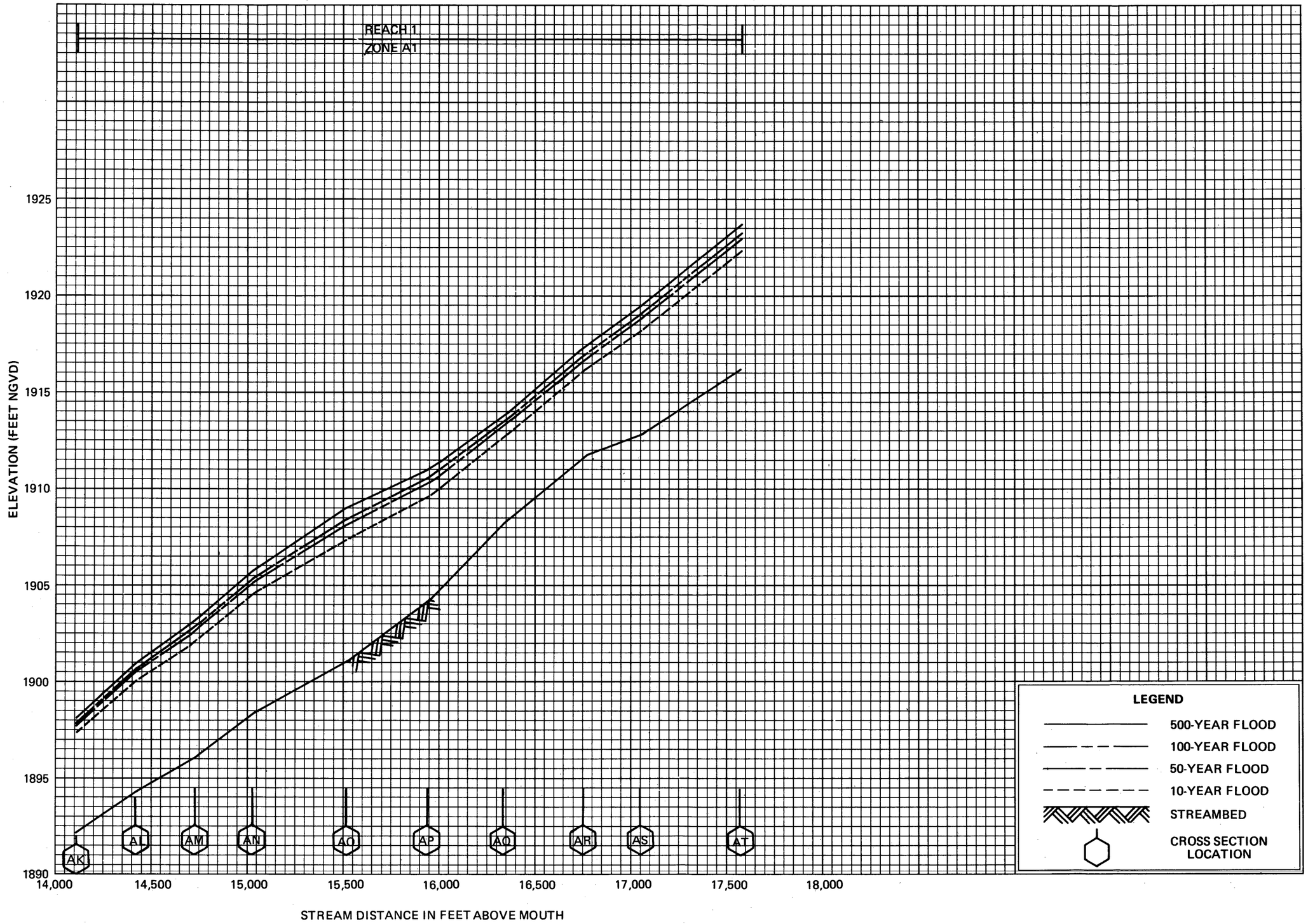
FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

133P

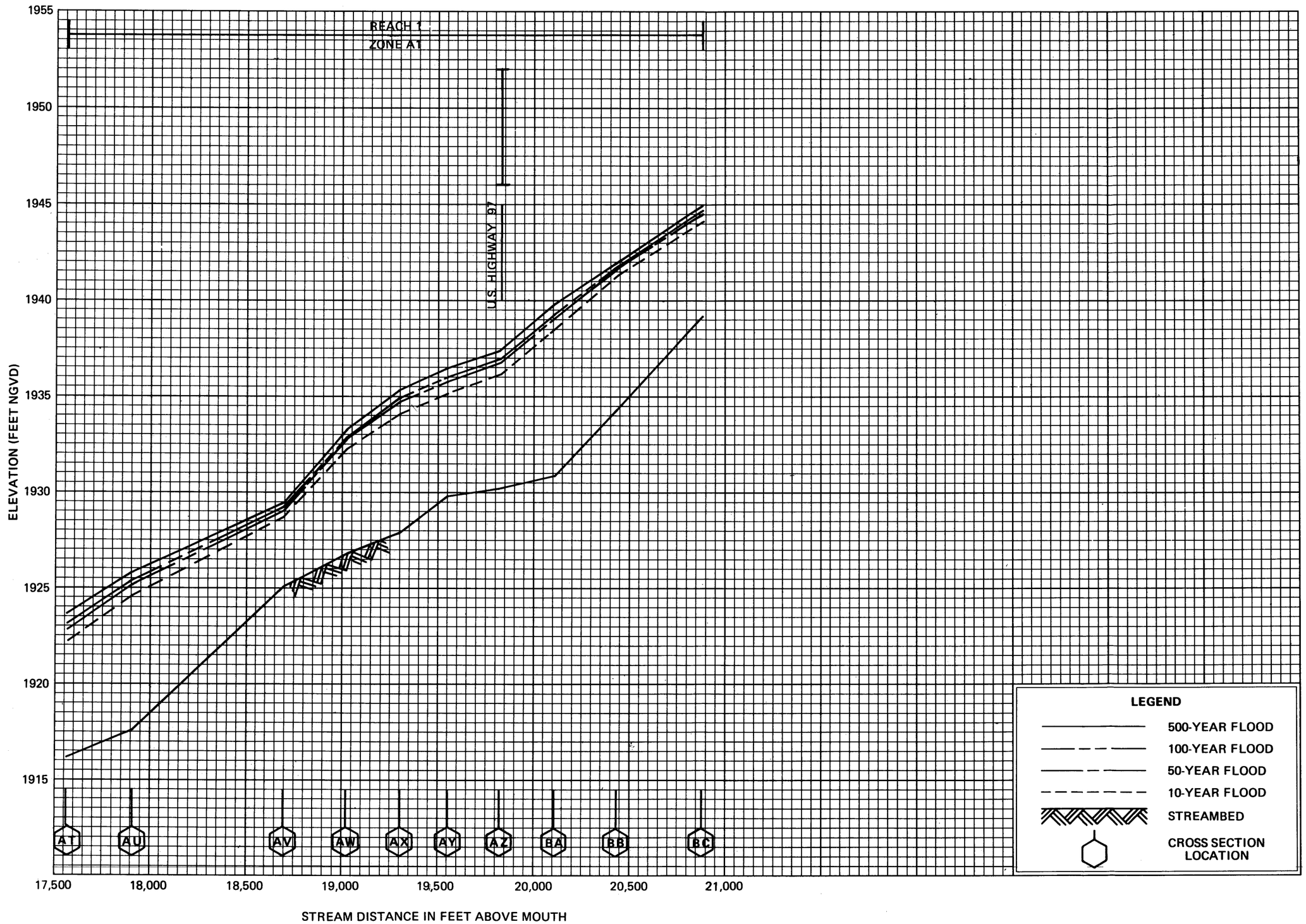


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

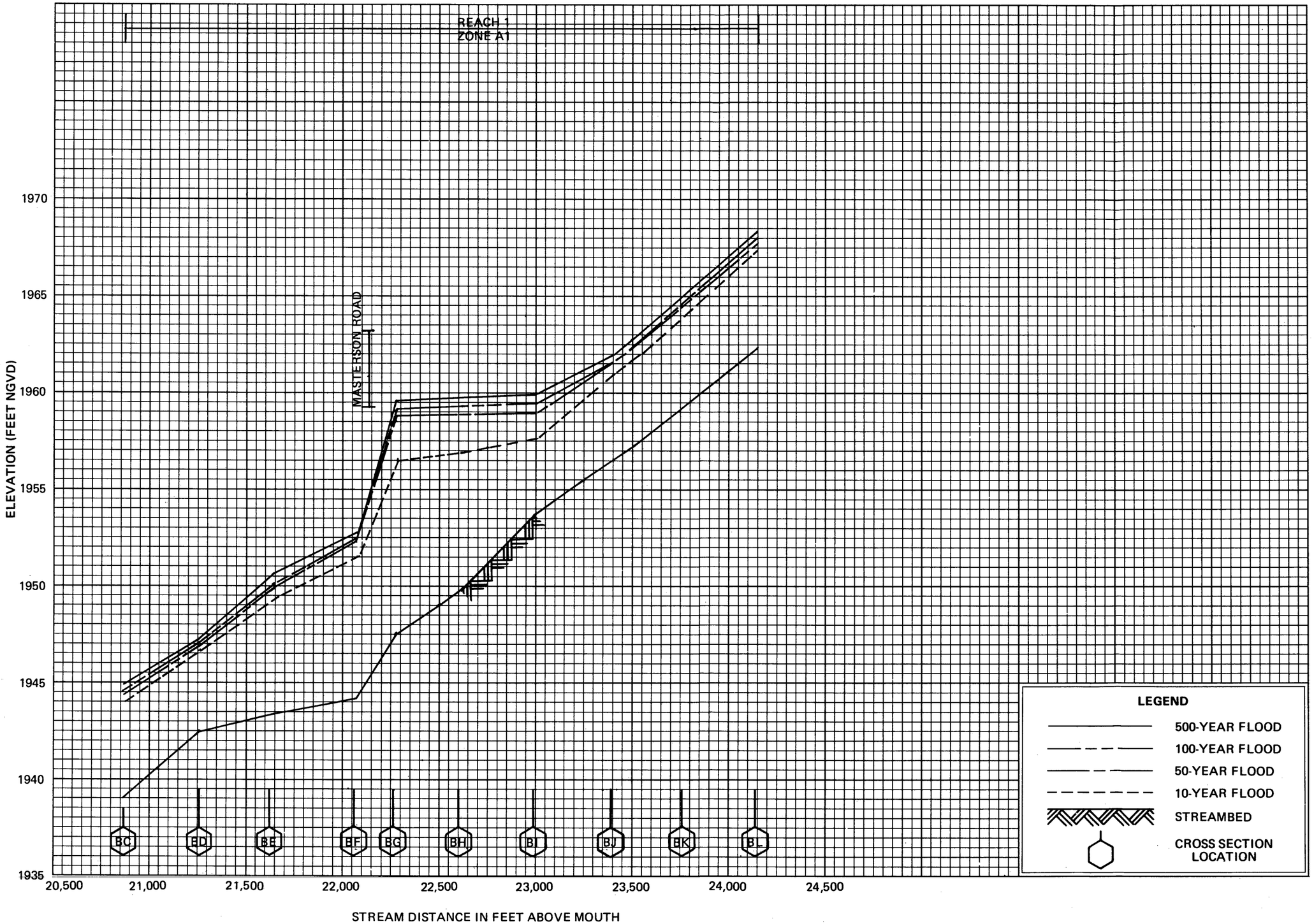


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

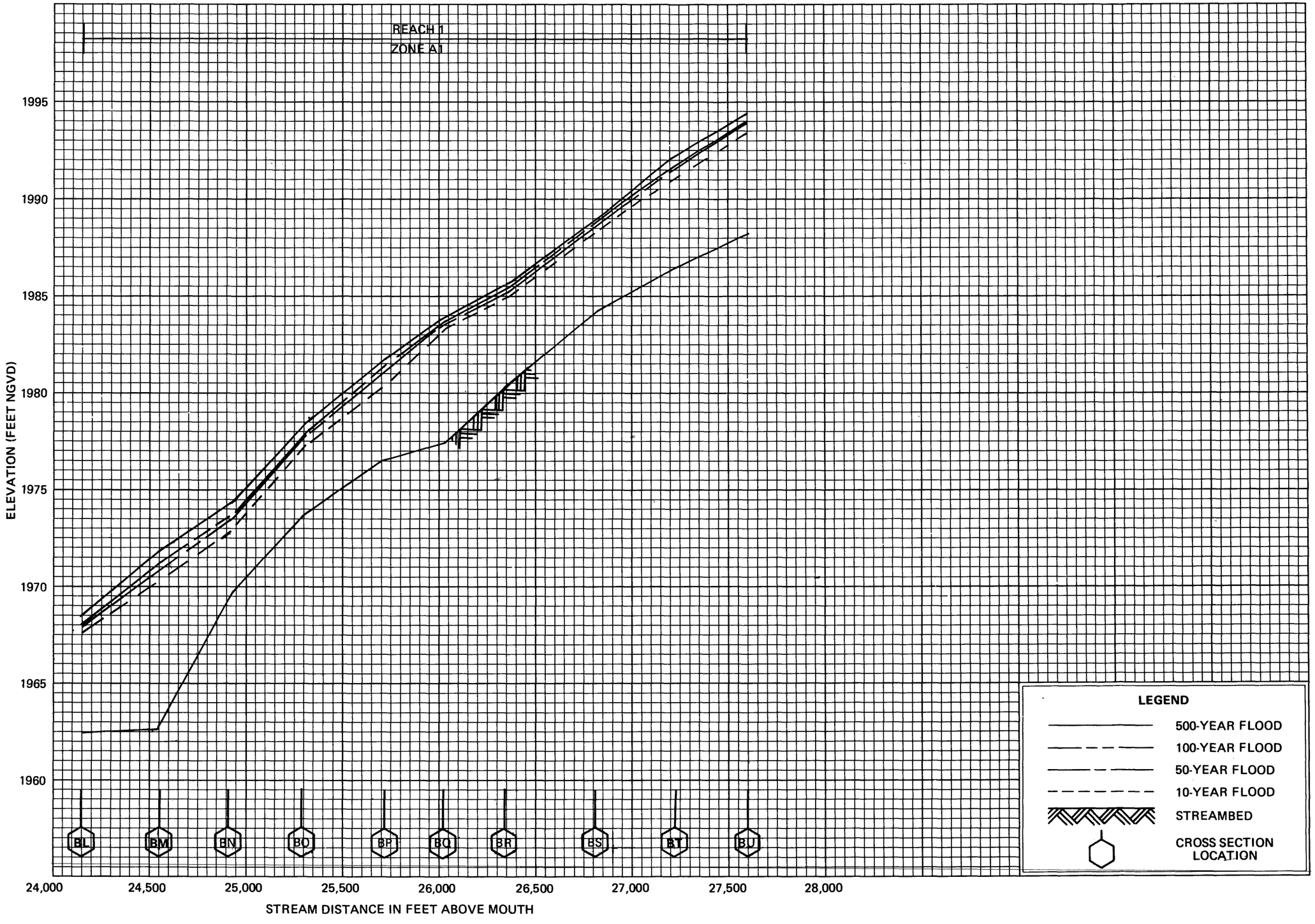


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

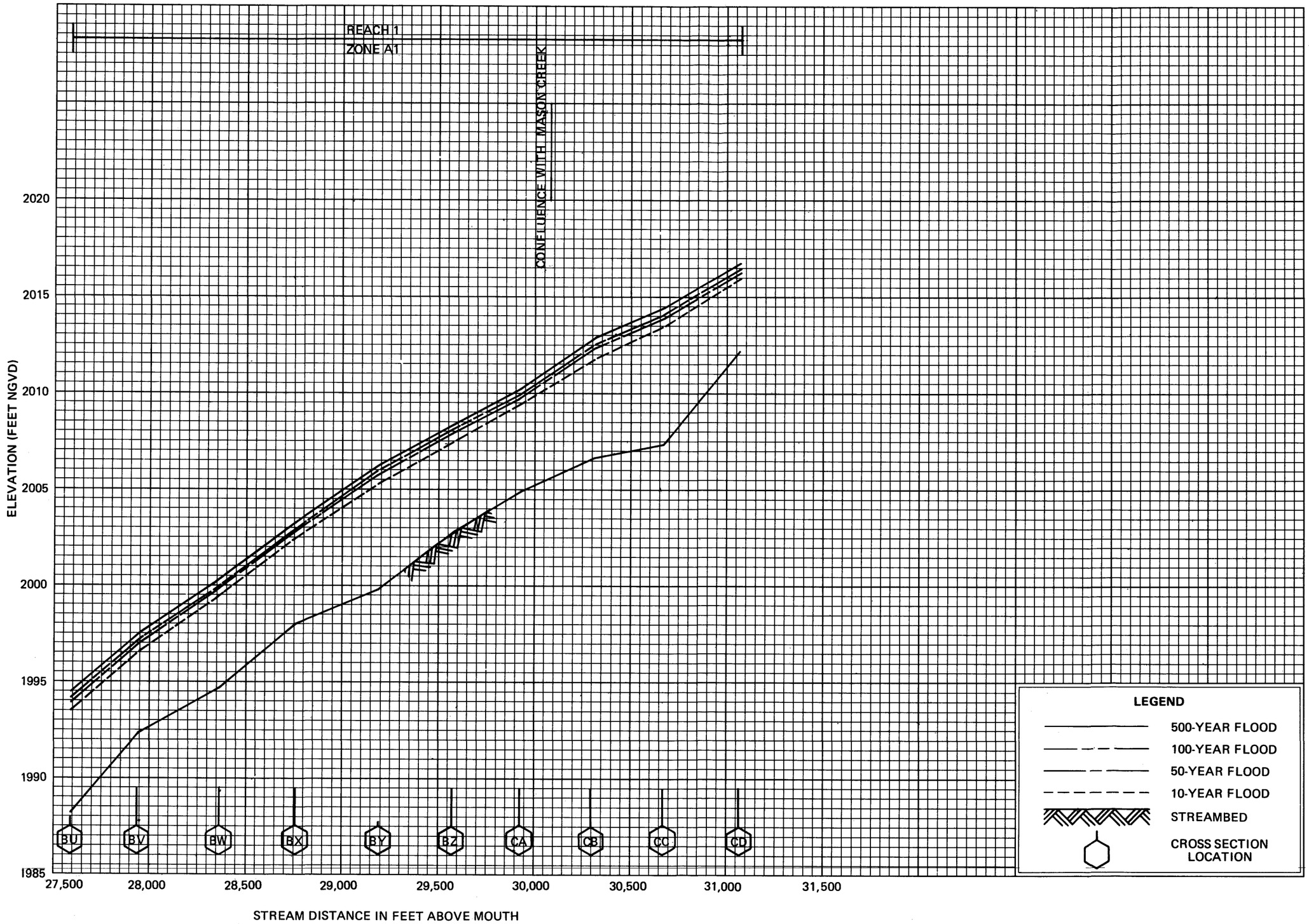


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

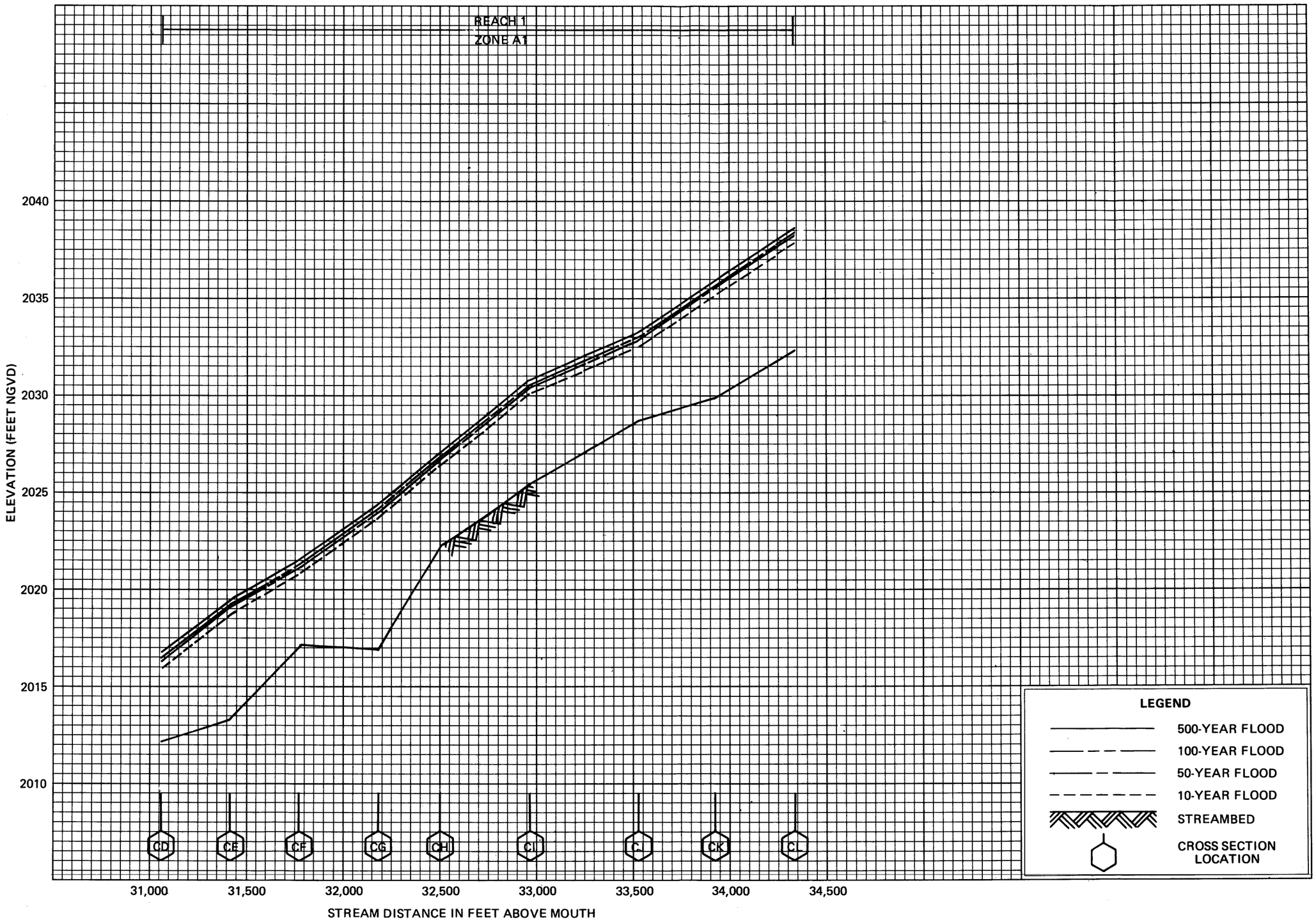


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUTY, WA



FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

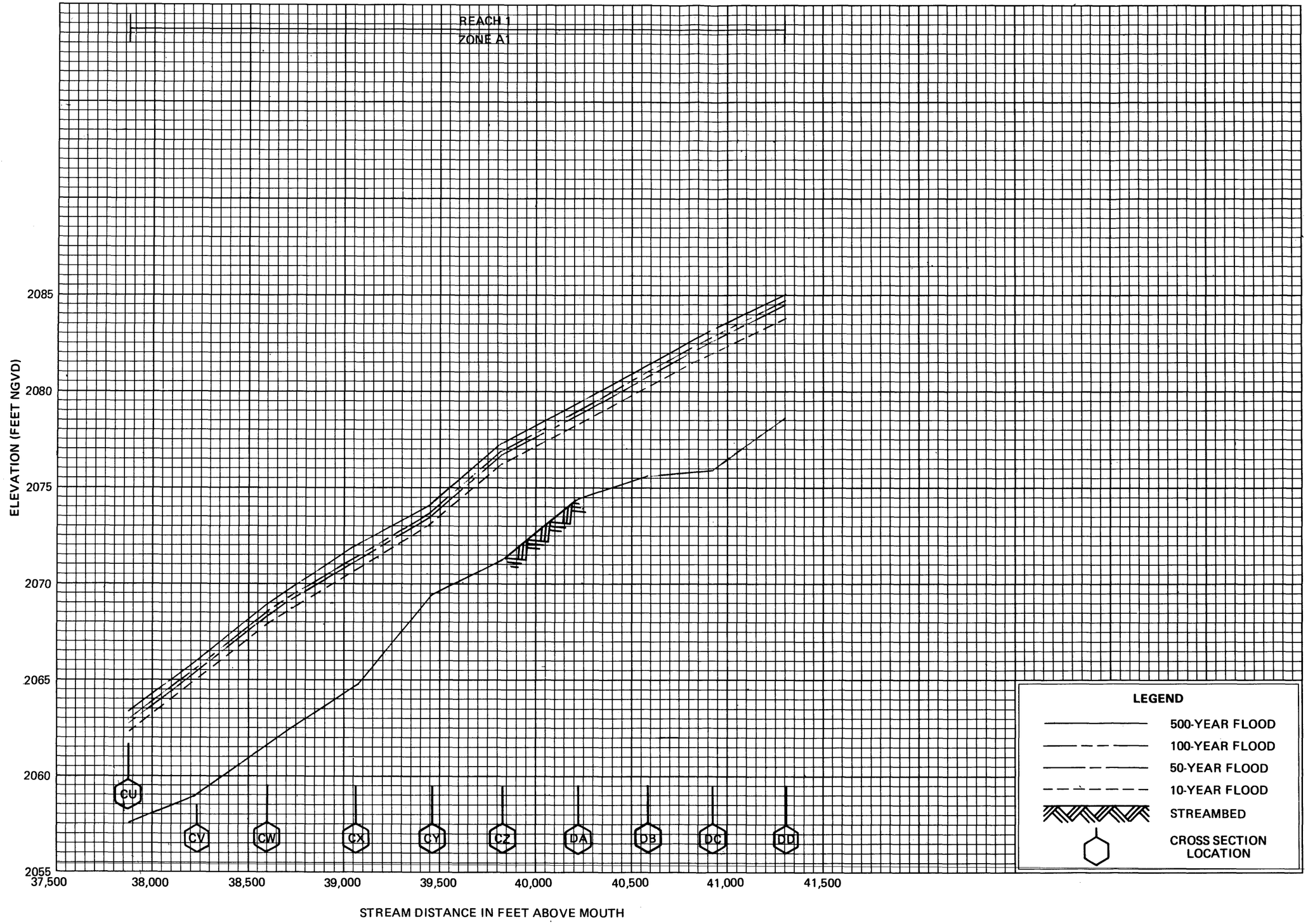
KITTITAS COUNTY, WA

FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

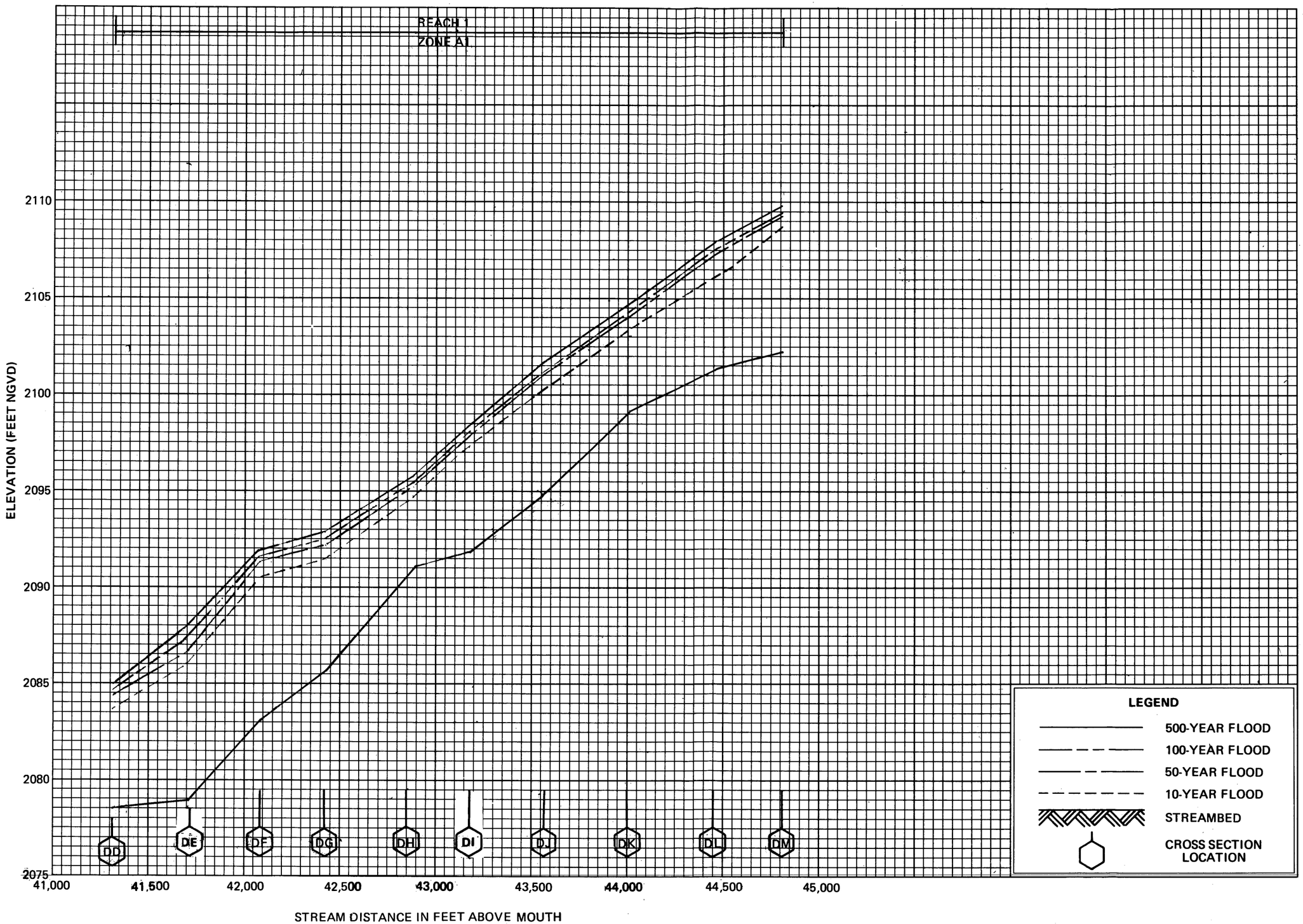


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

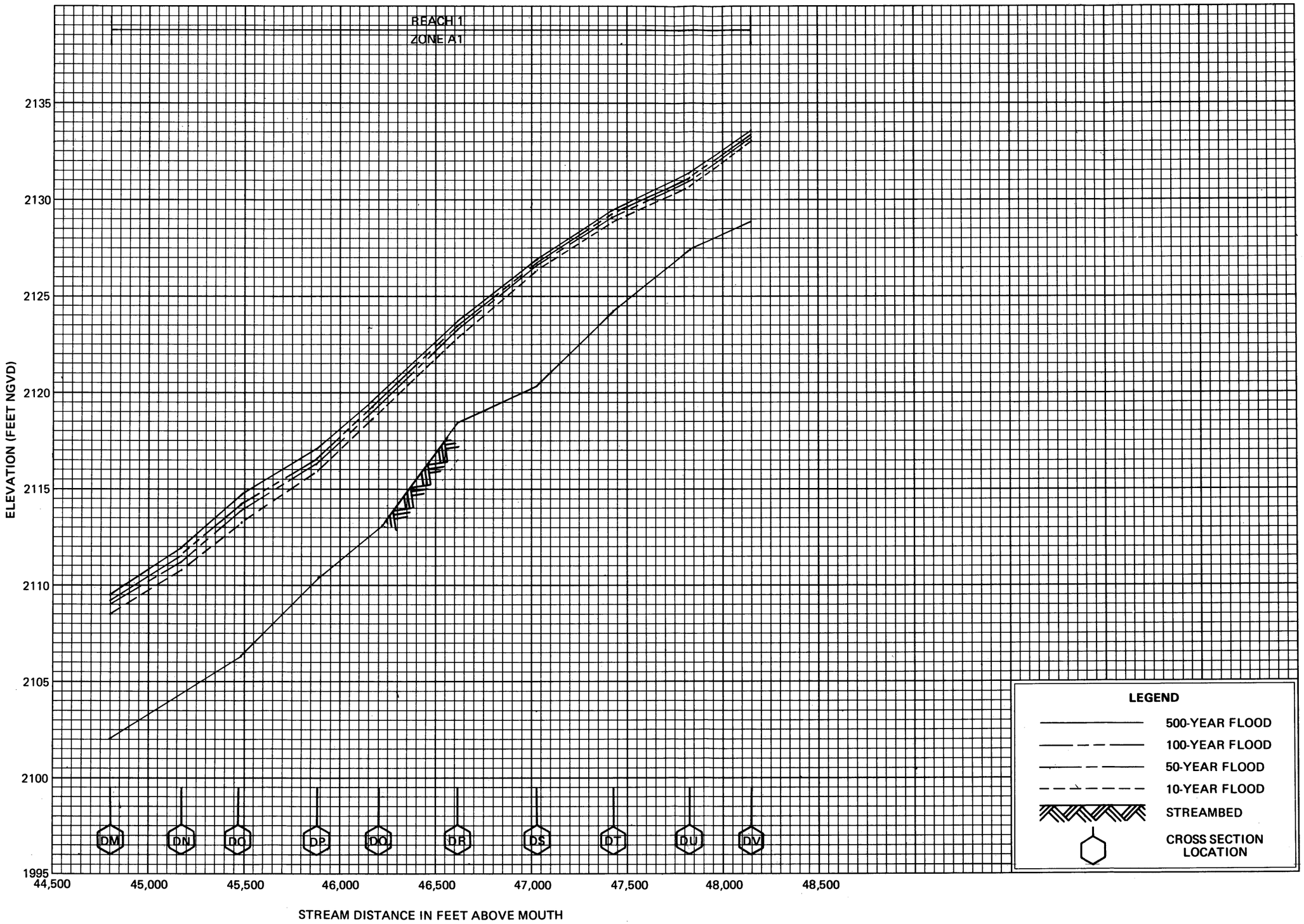


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

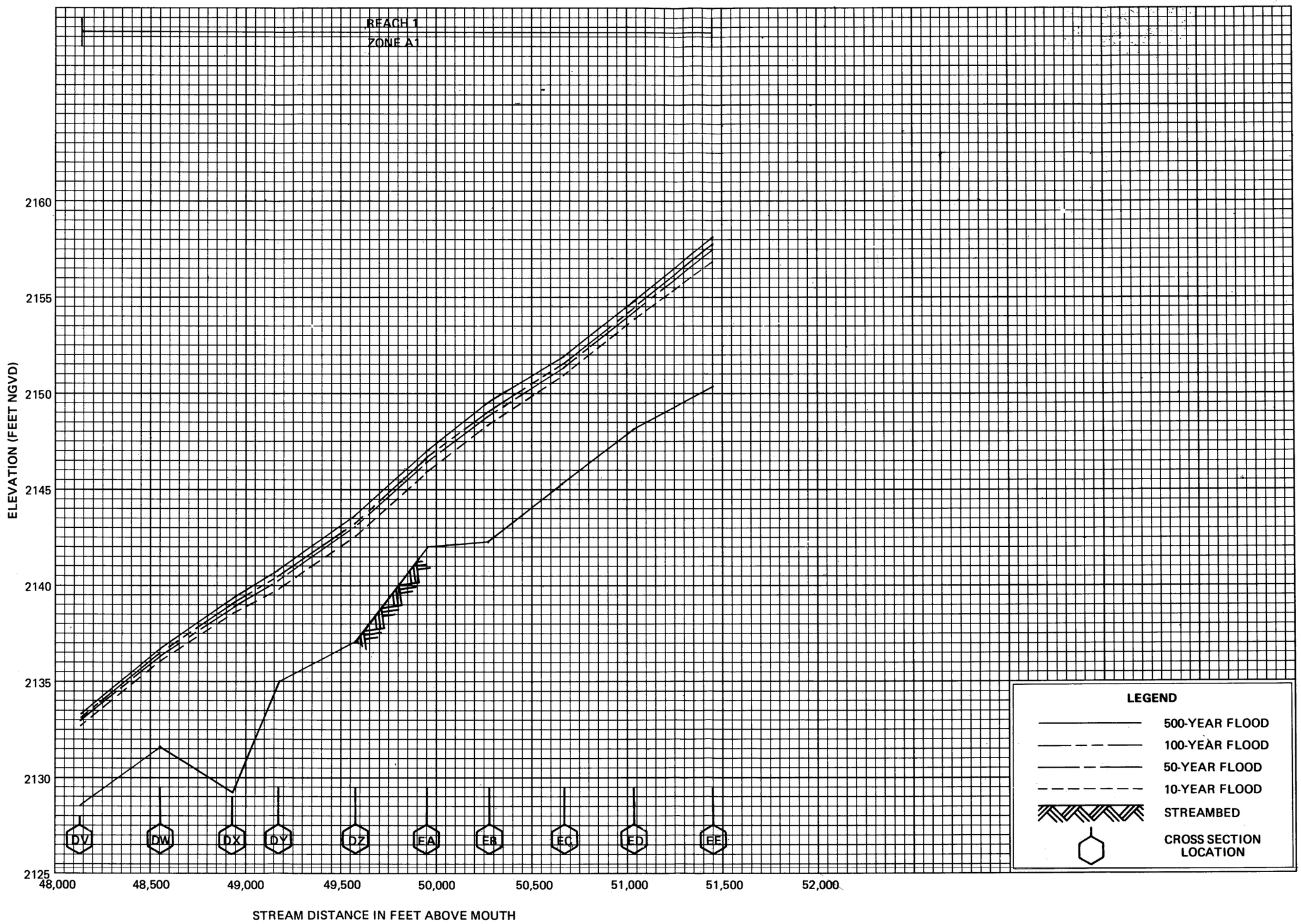


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

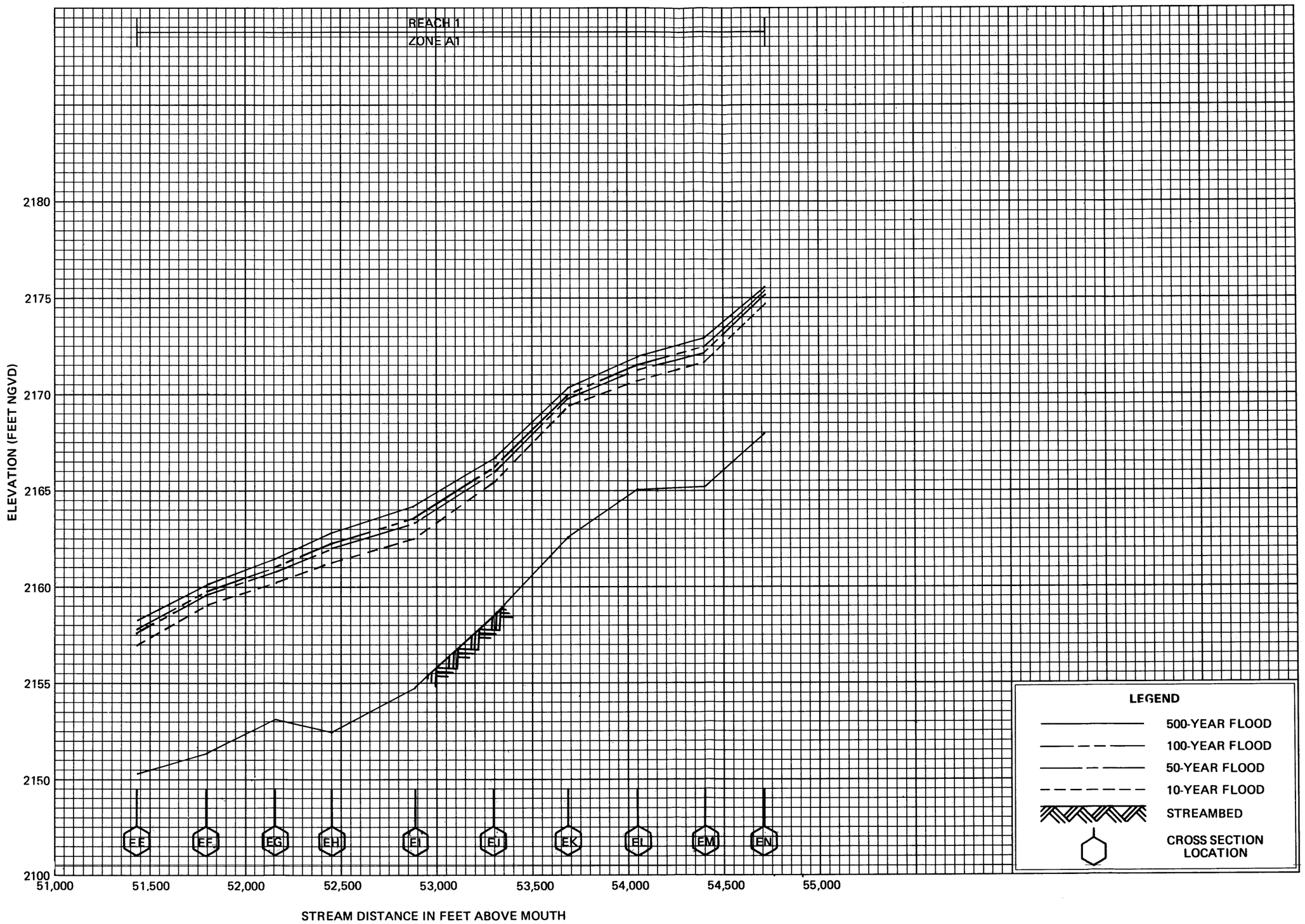


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

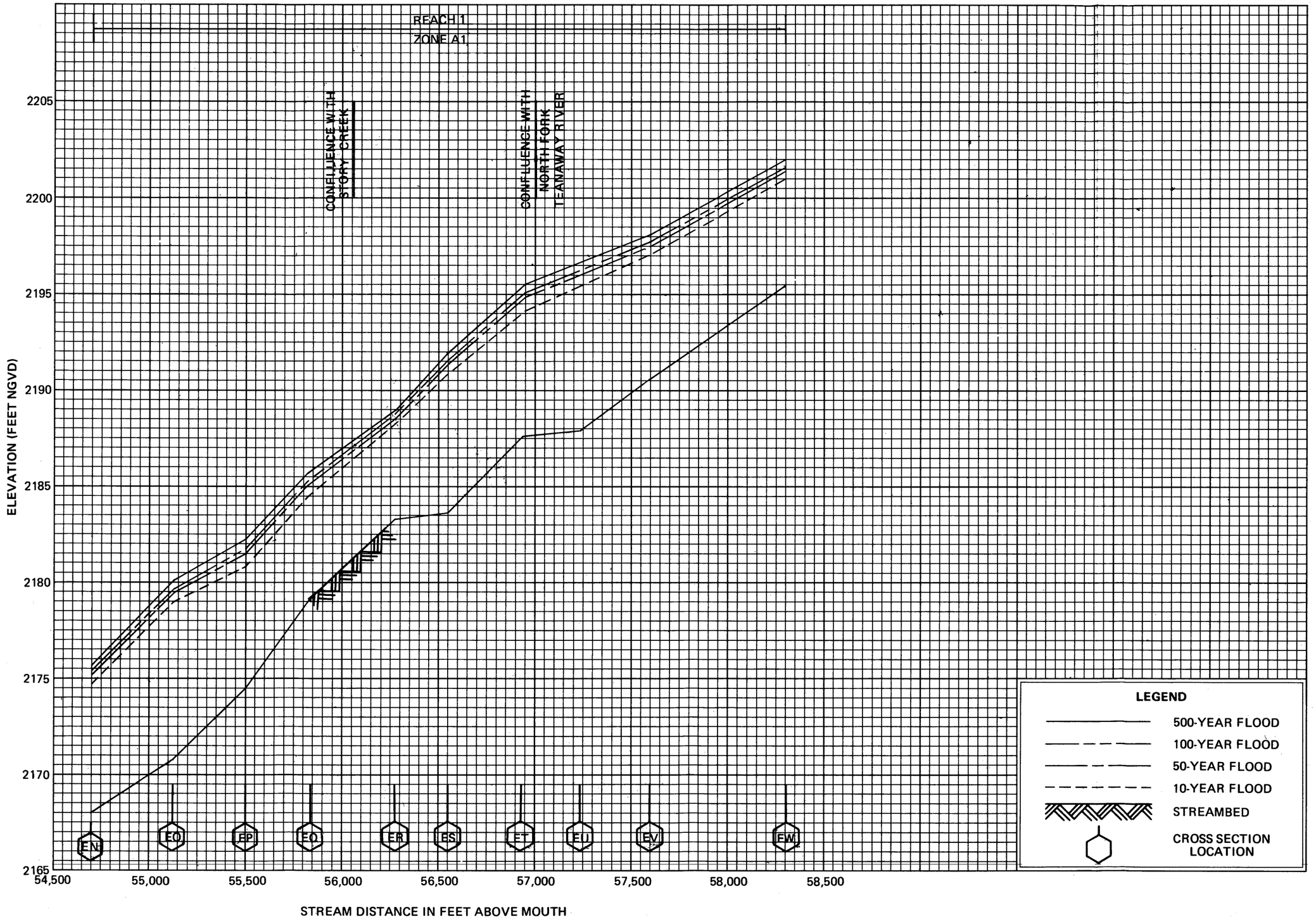


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

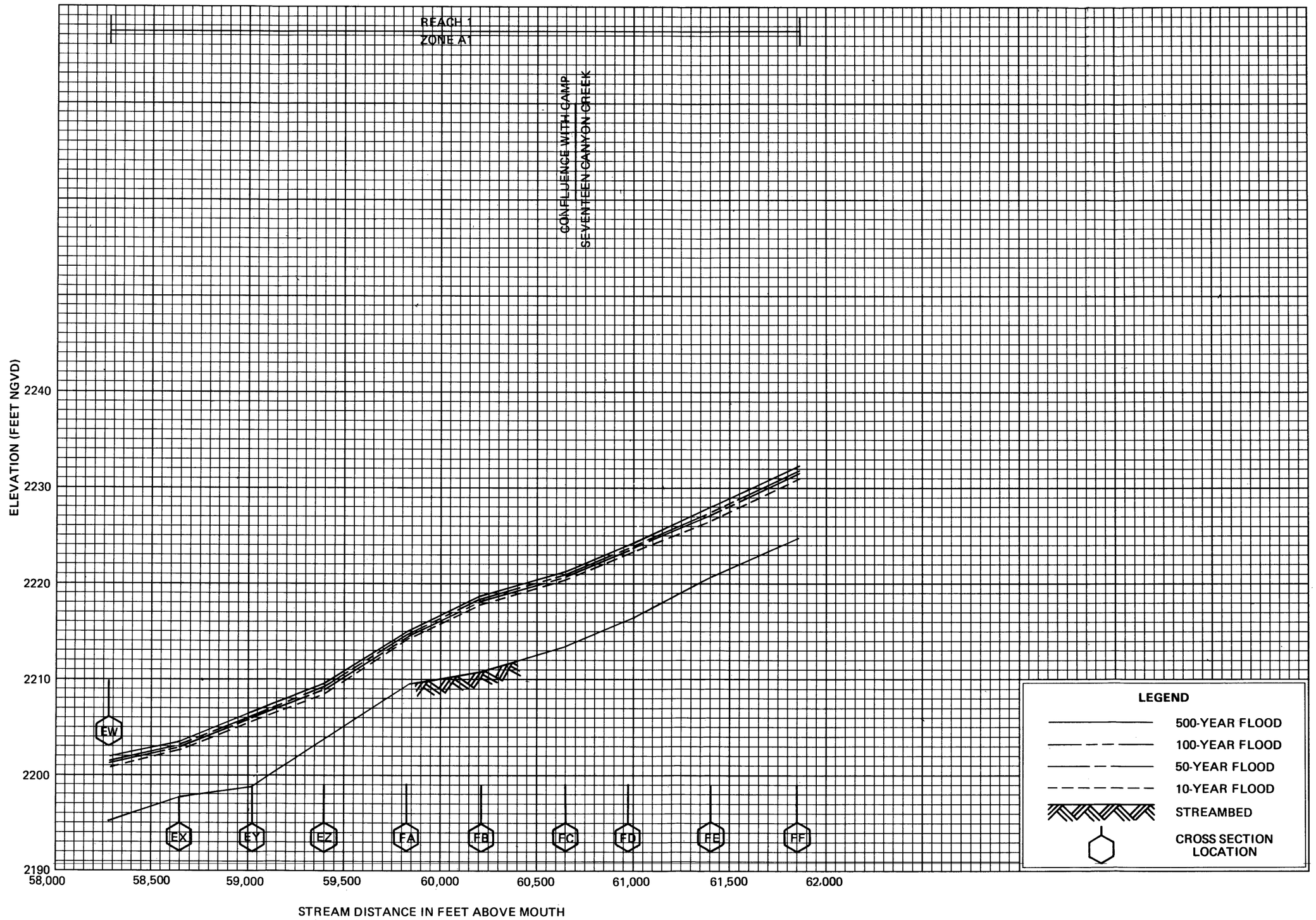


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

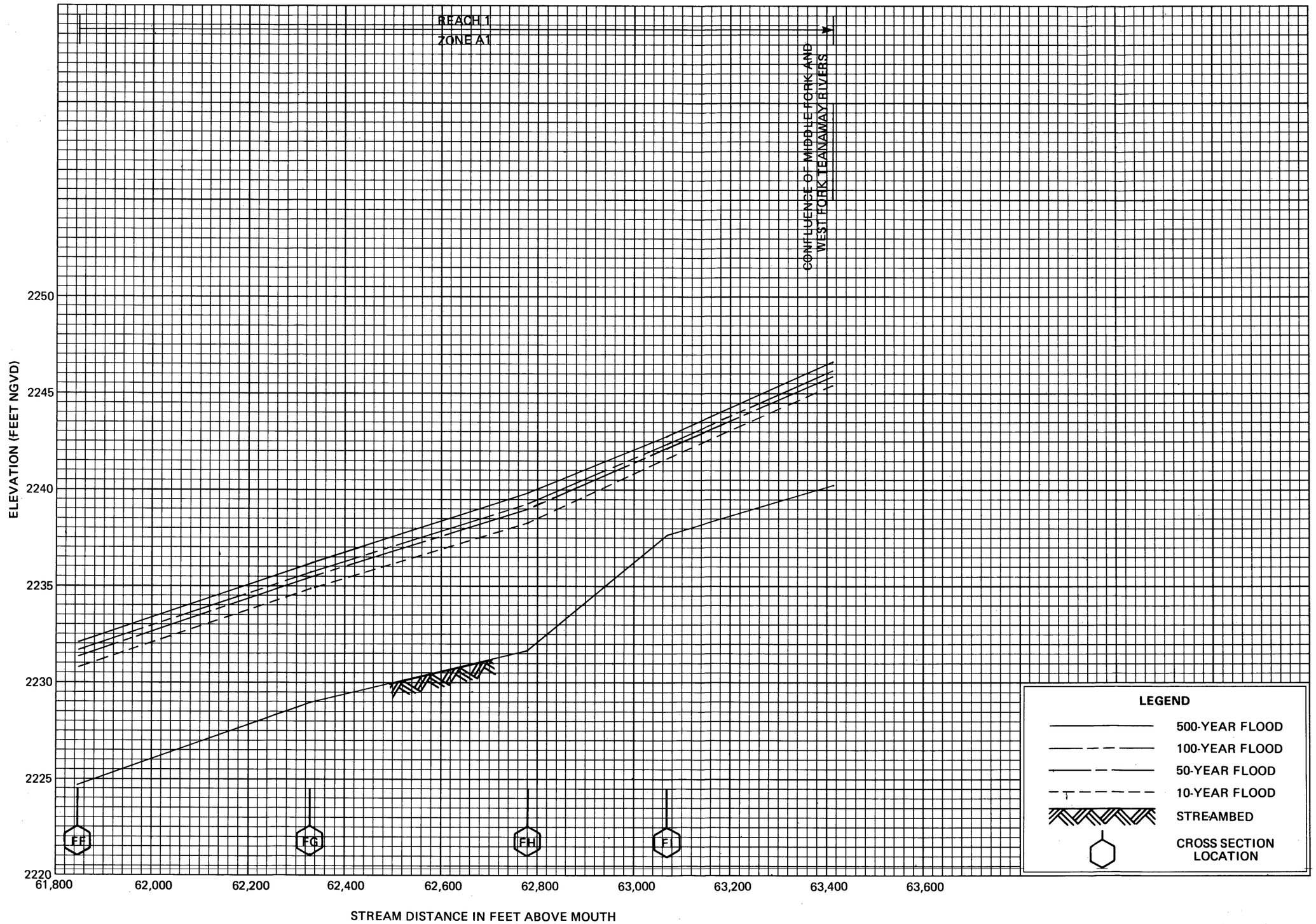


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

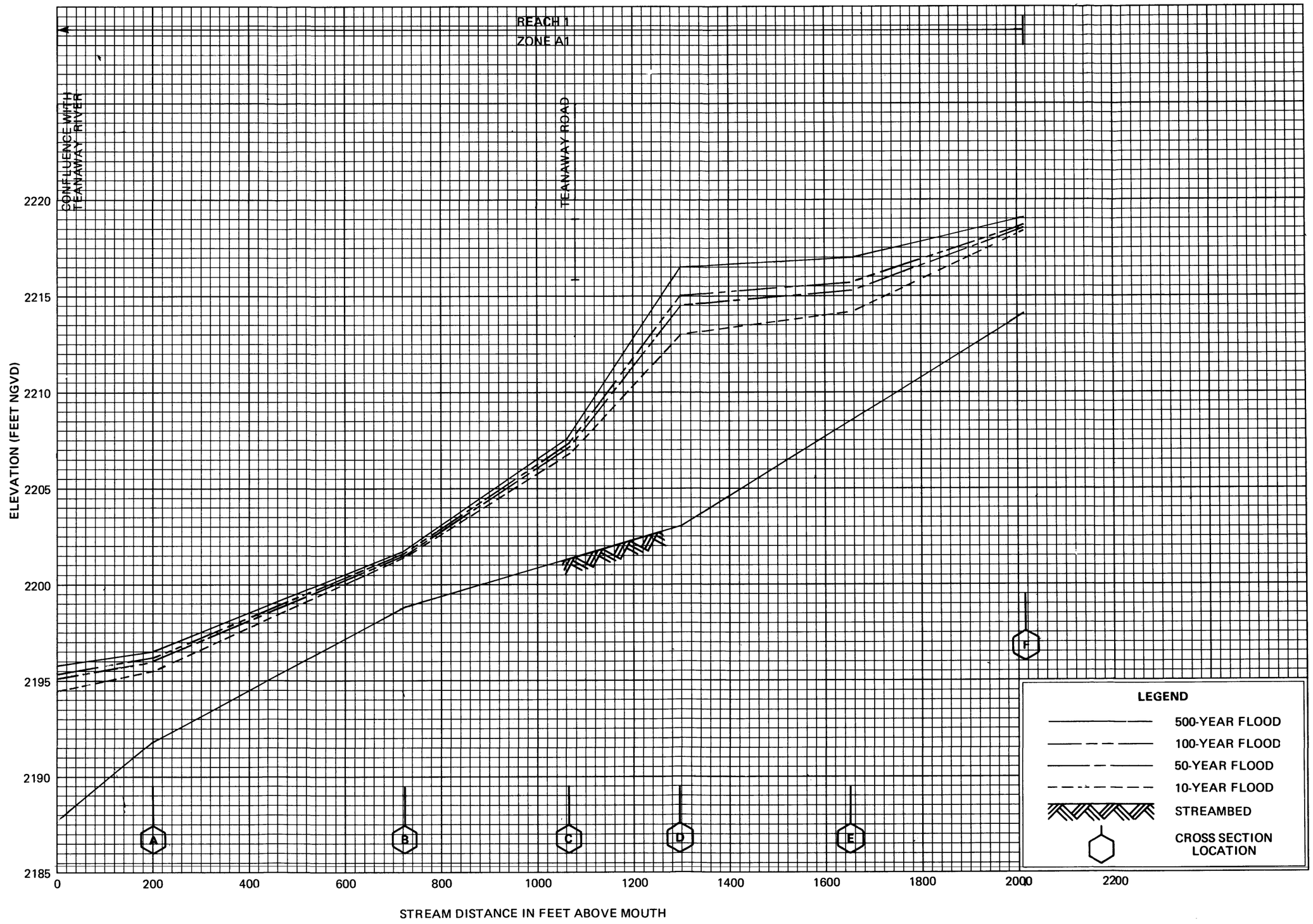


FLOOD PROFILES

TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

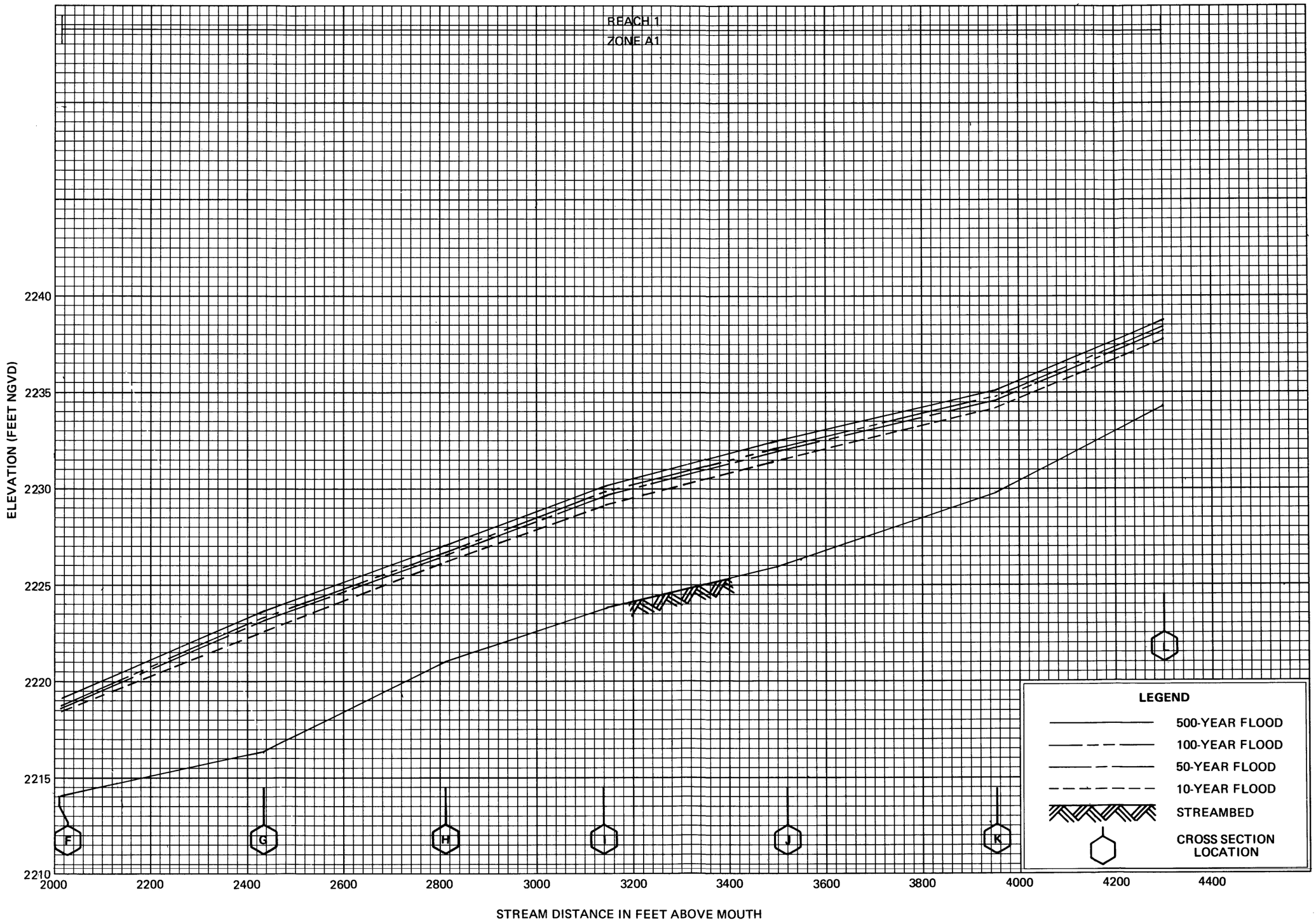


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



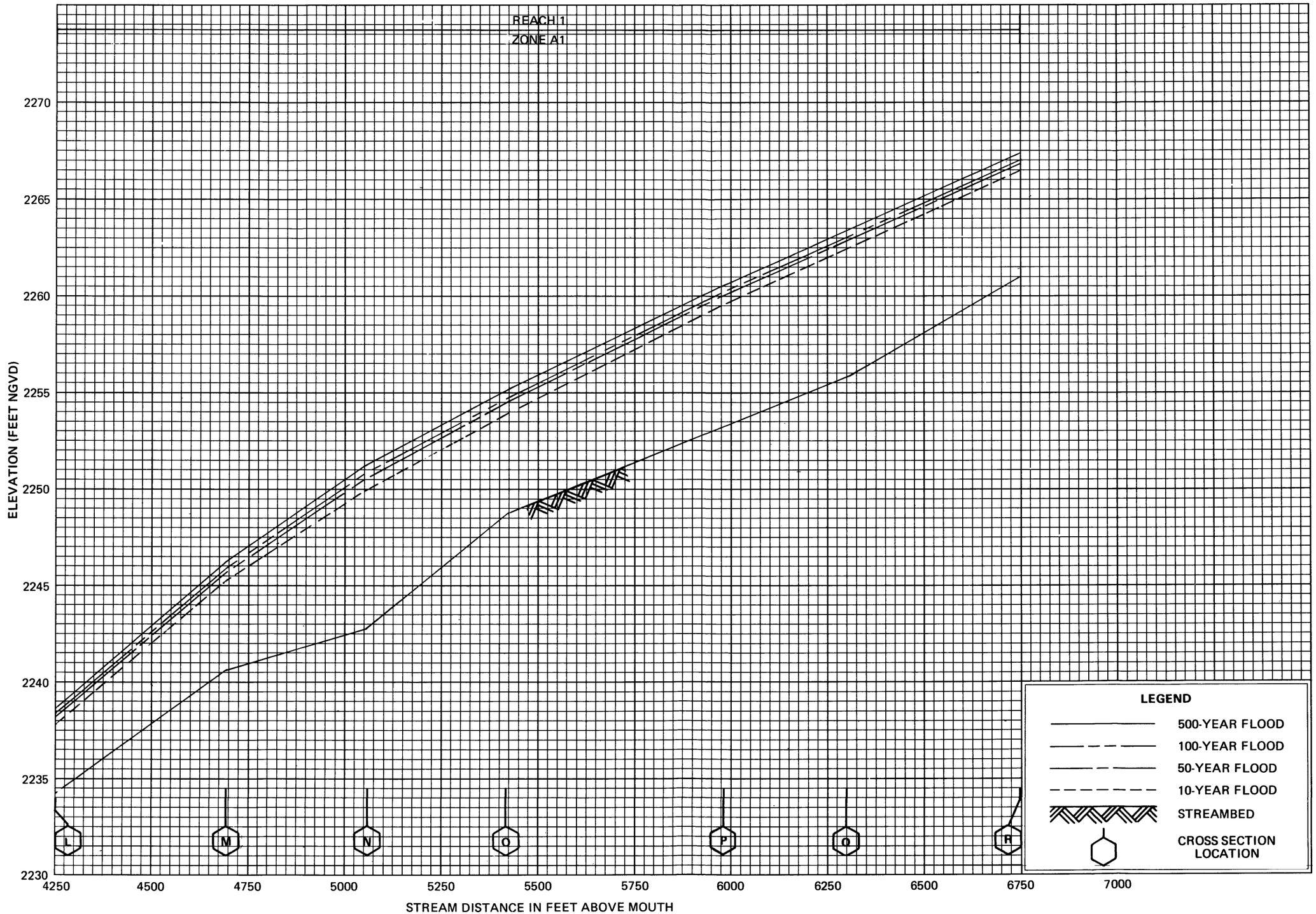
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

150P

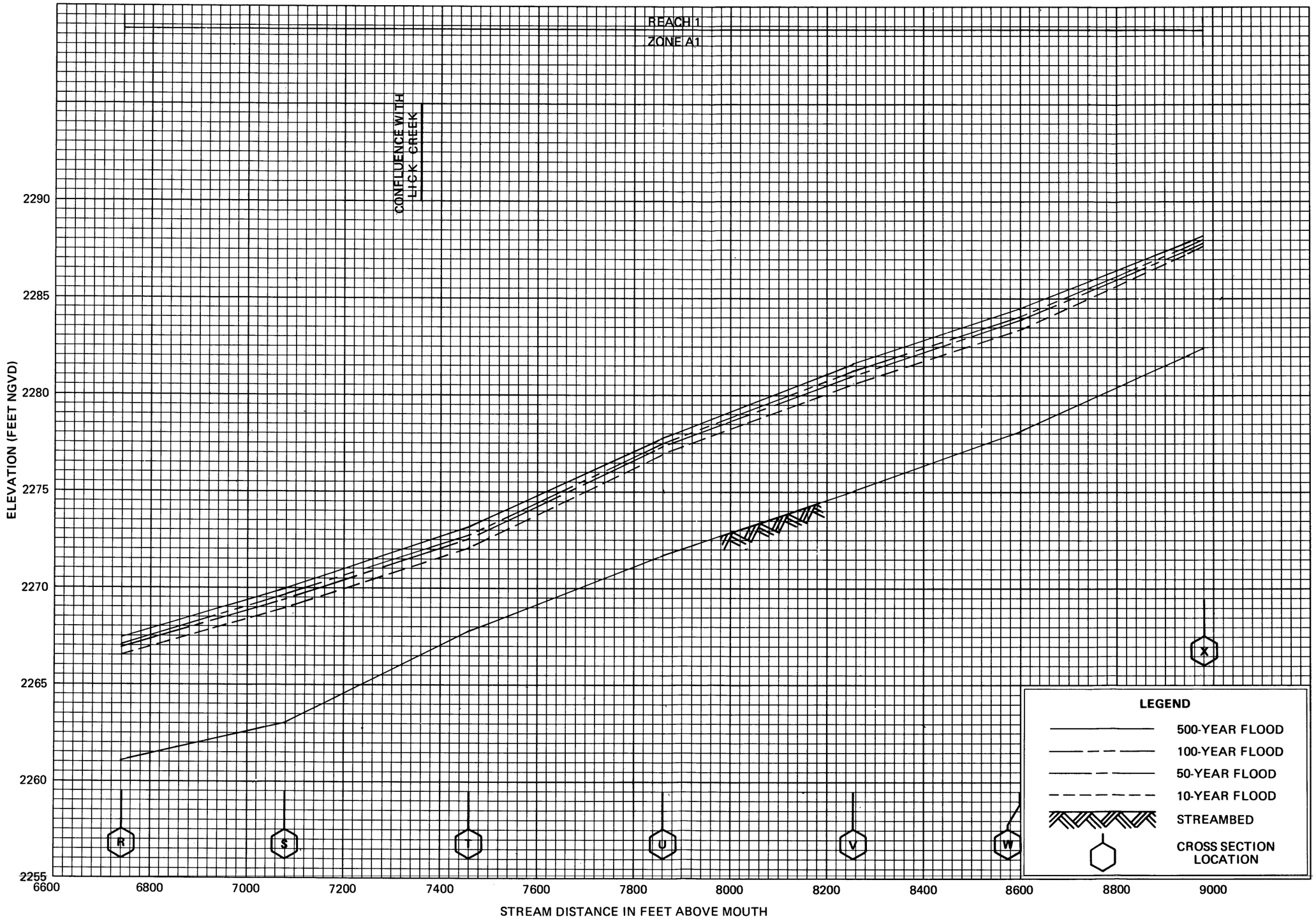


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

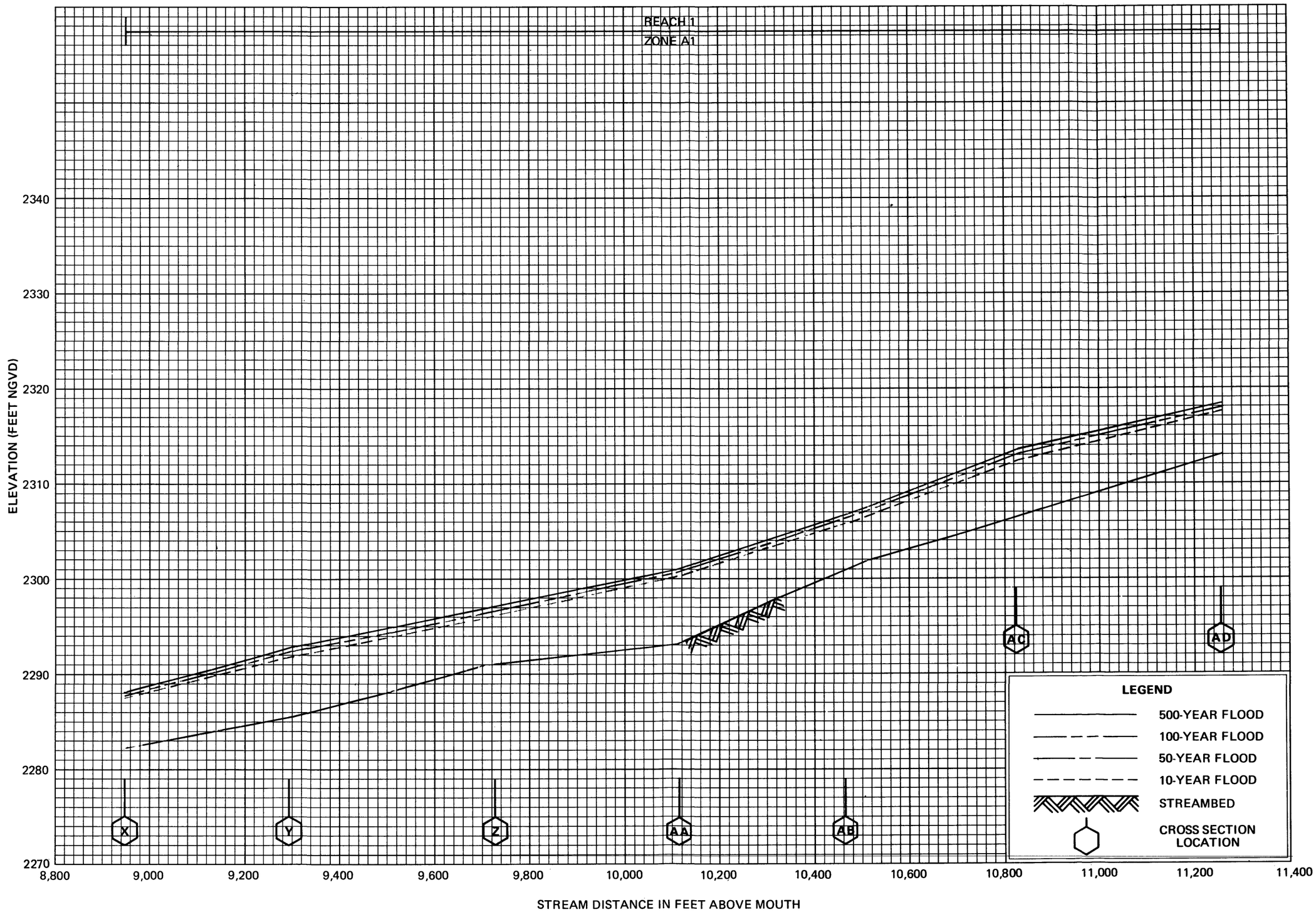


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

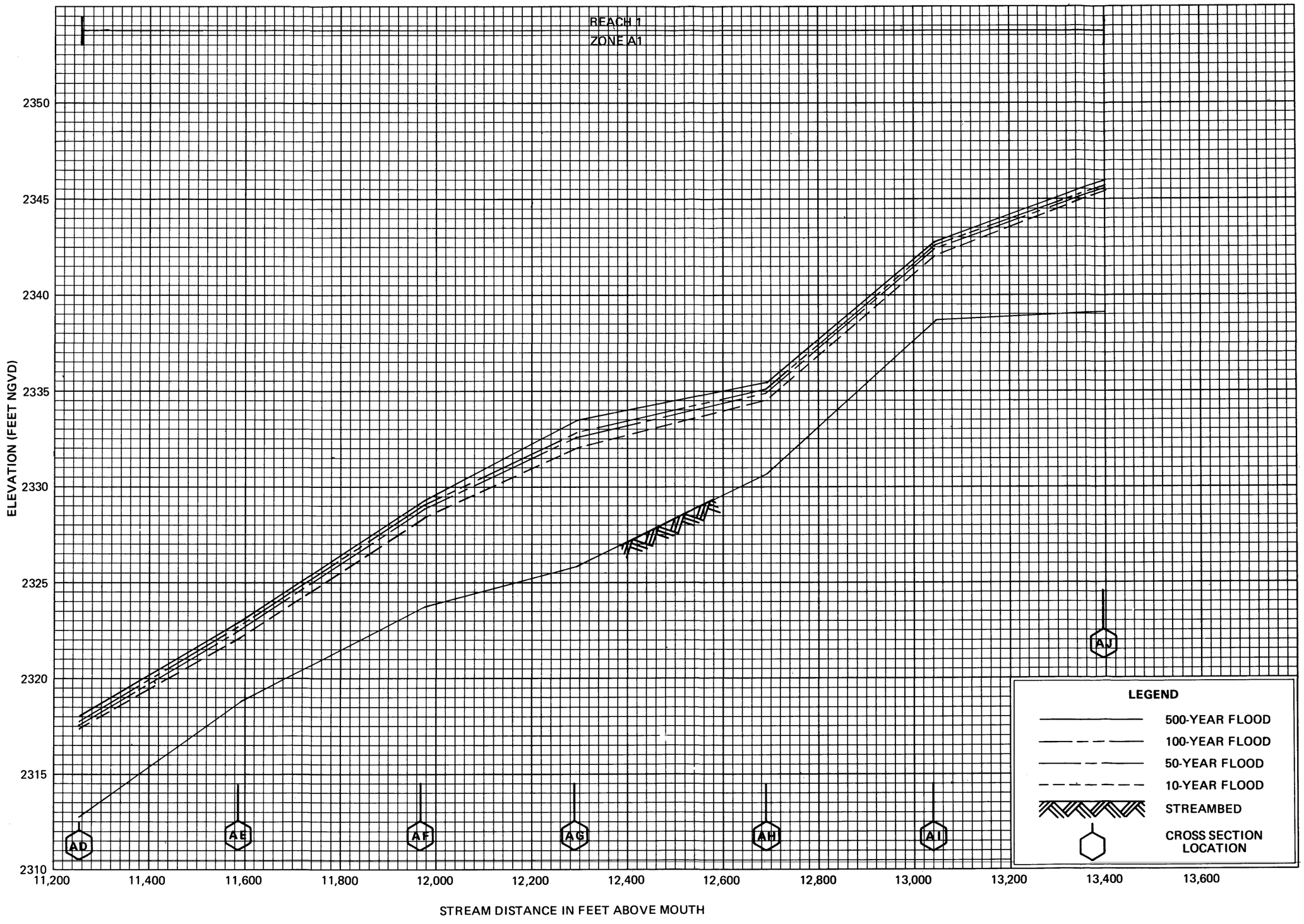


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



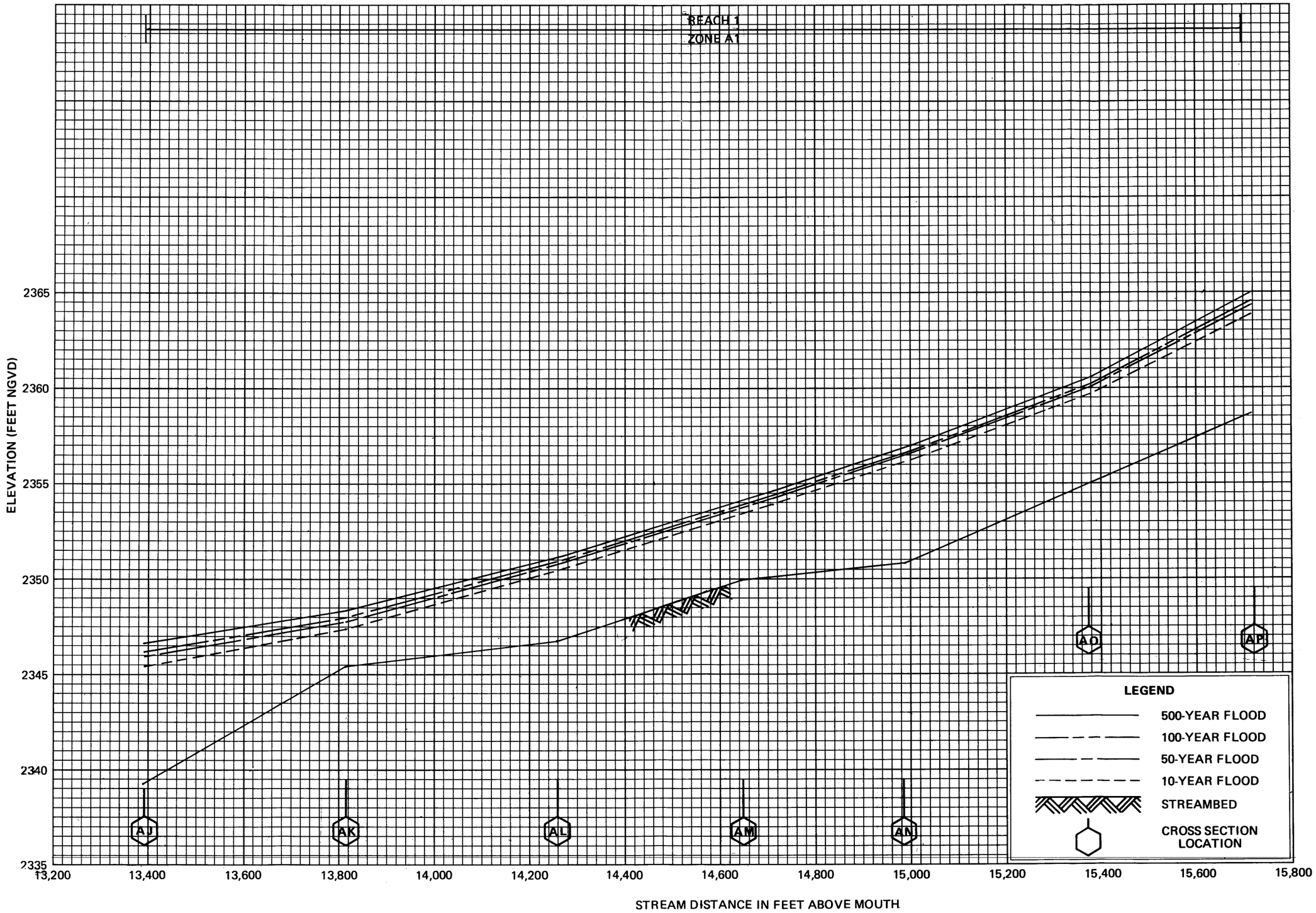
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

154P



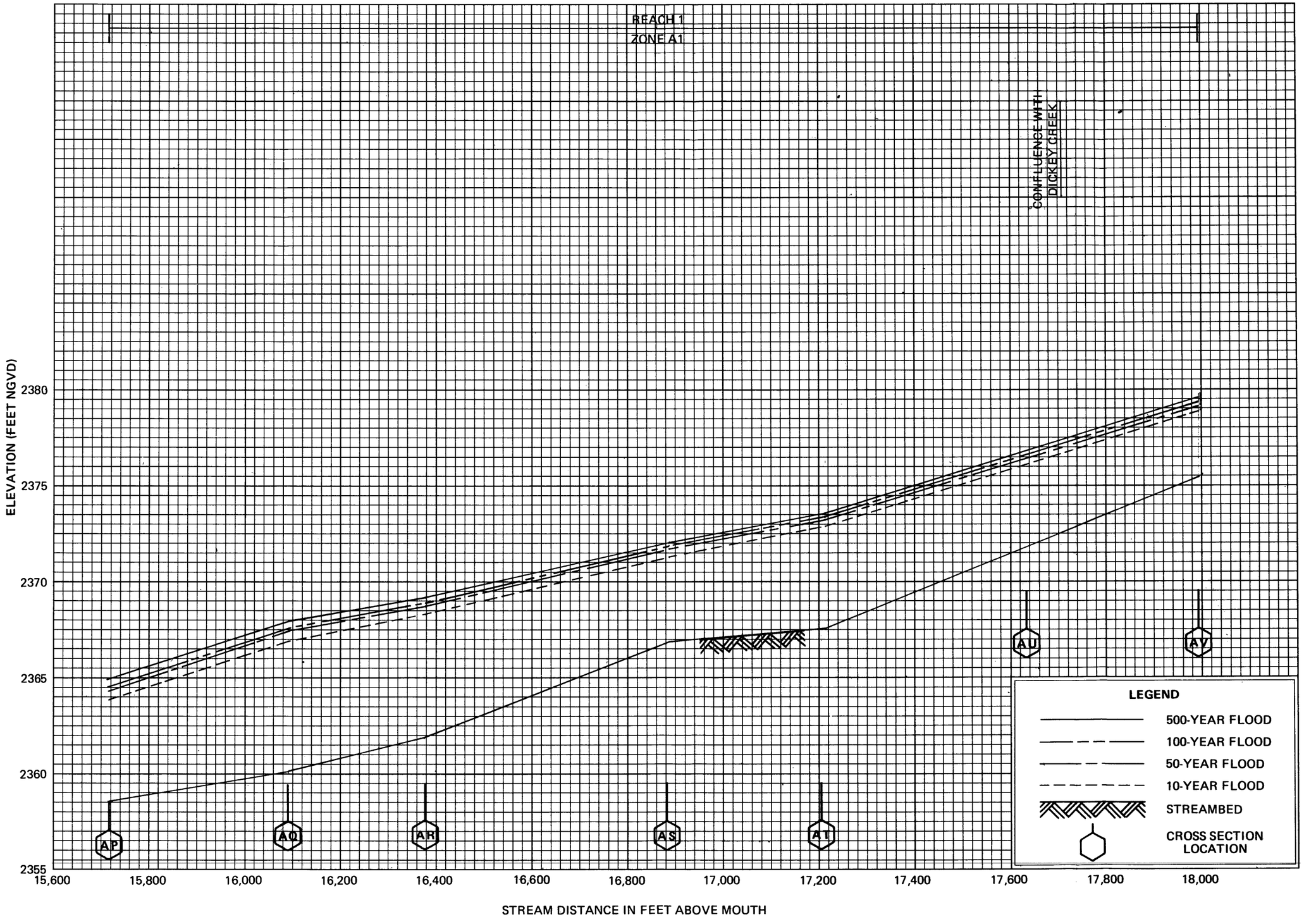
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

155P

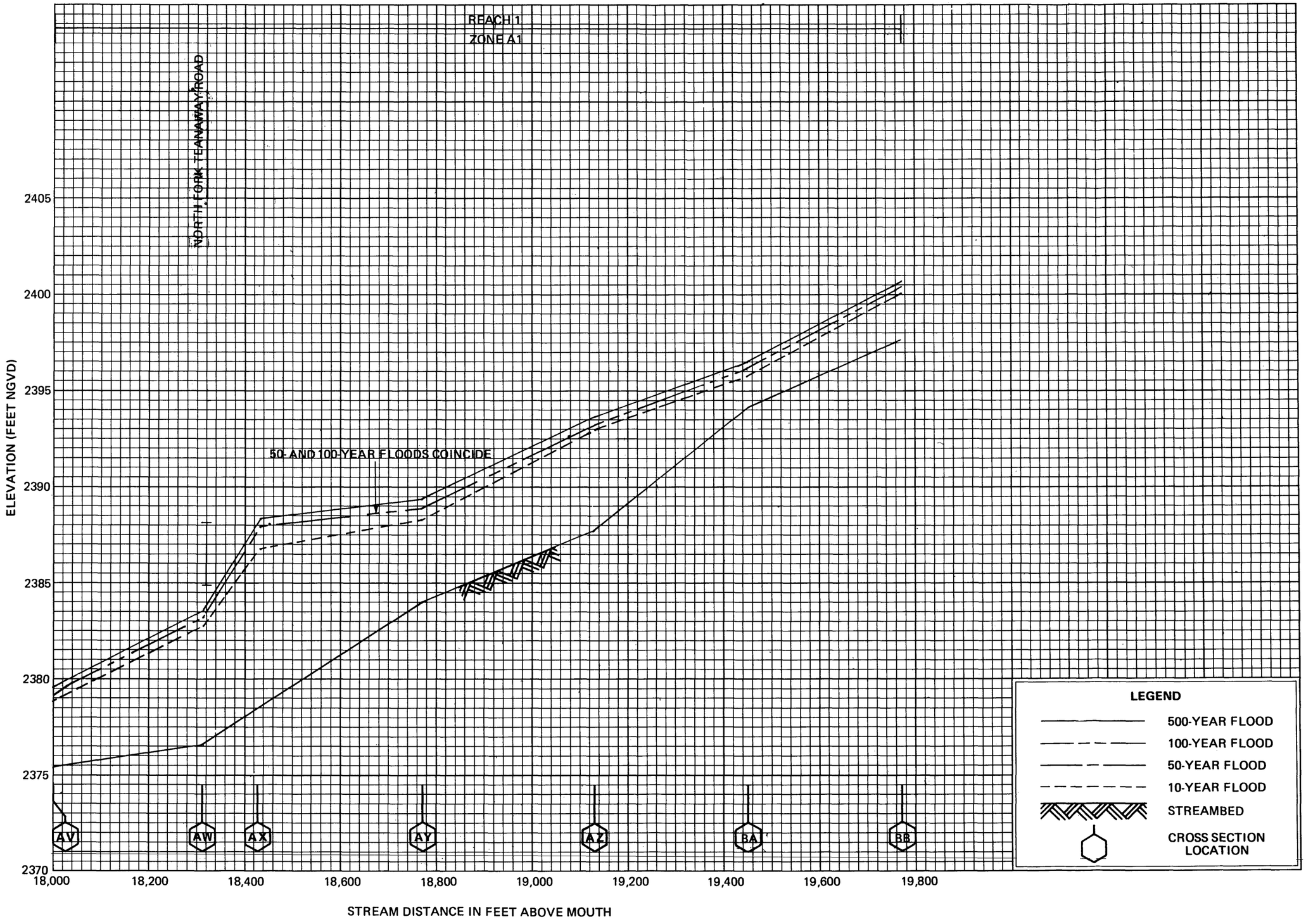


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

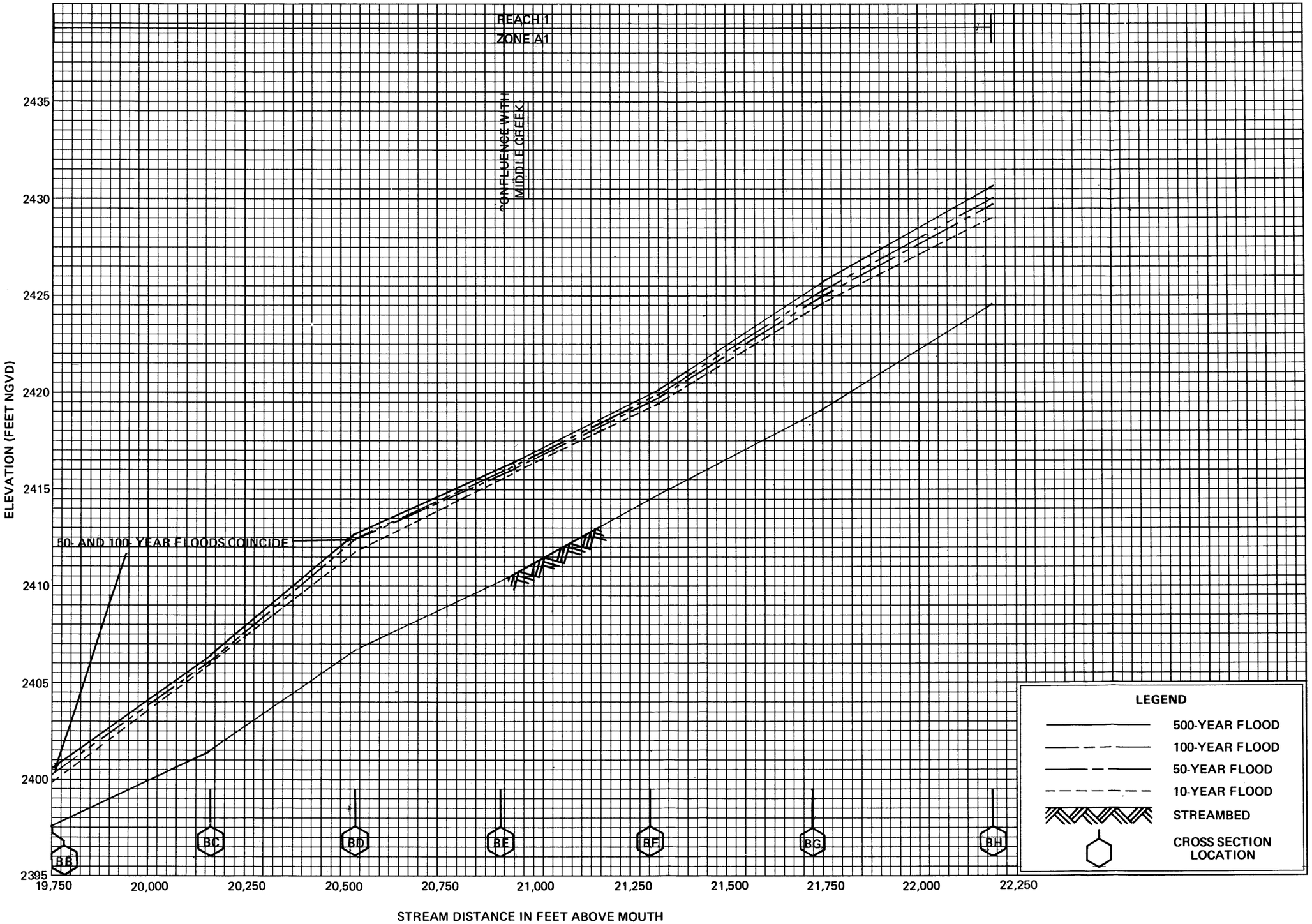


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

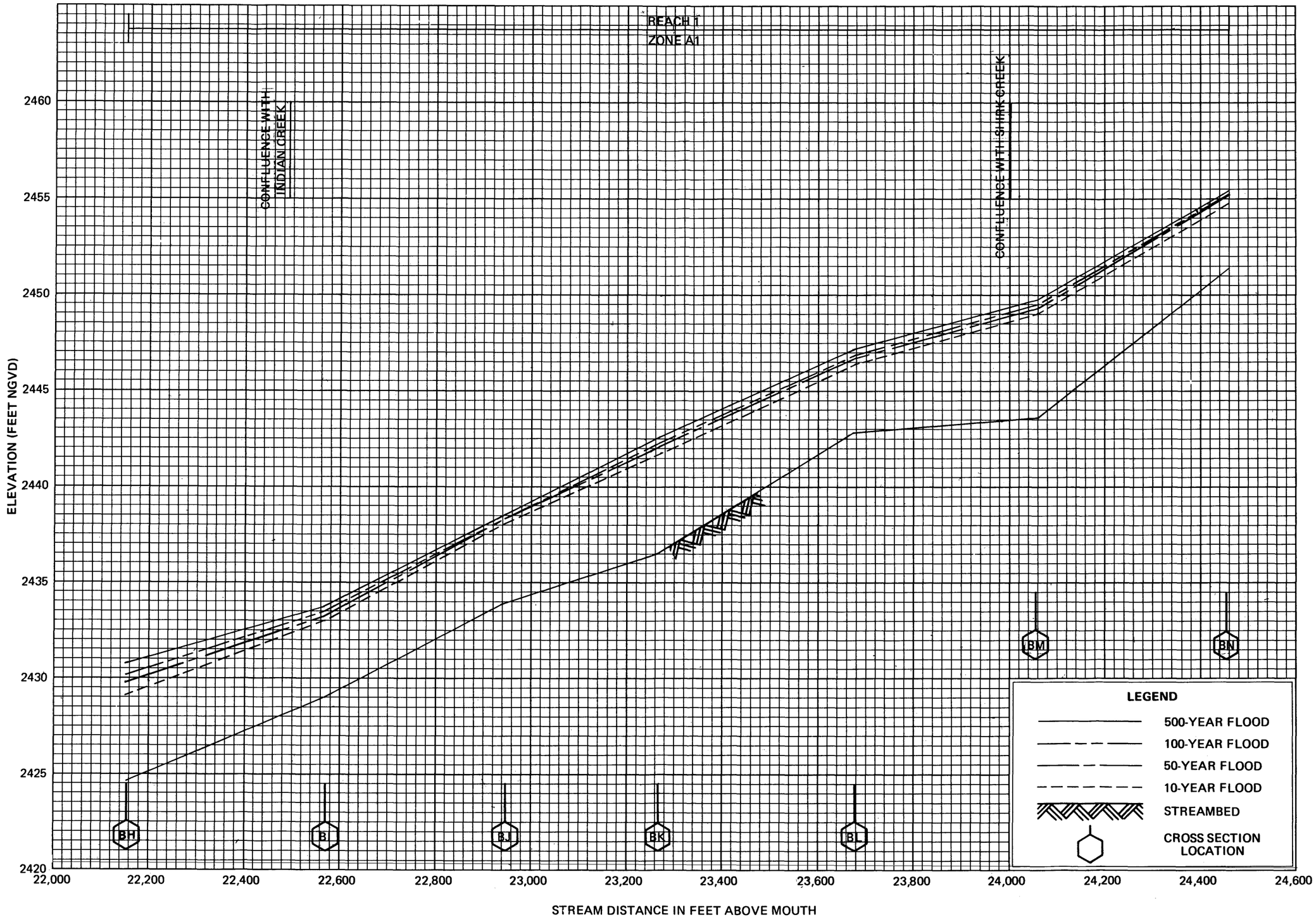


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



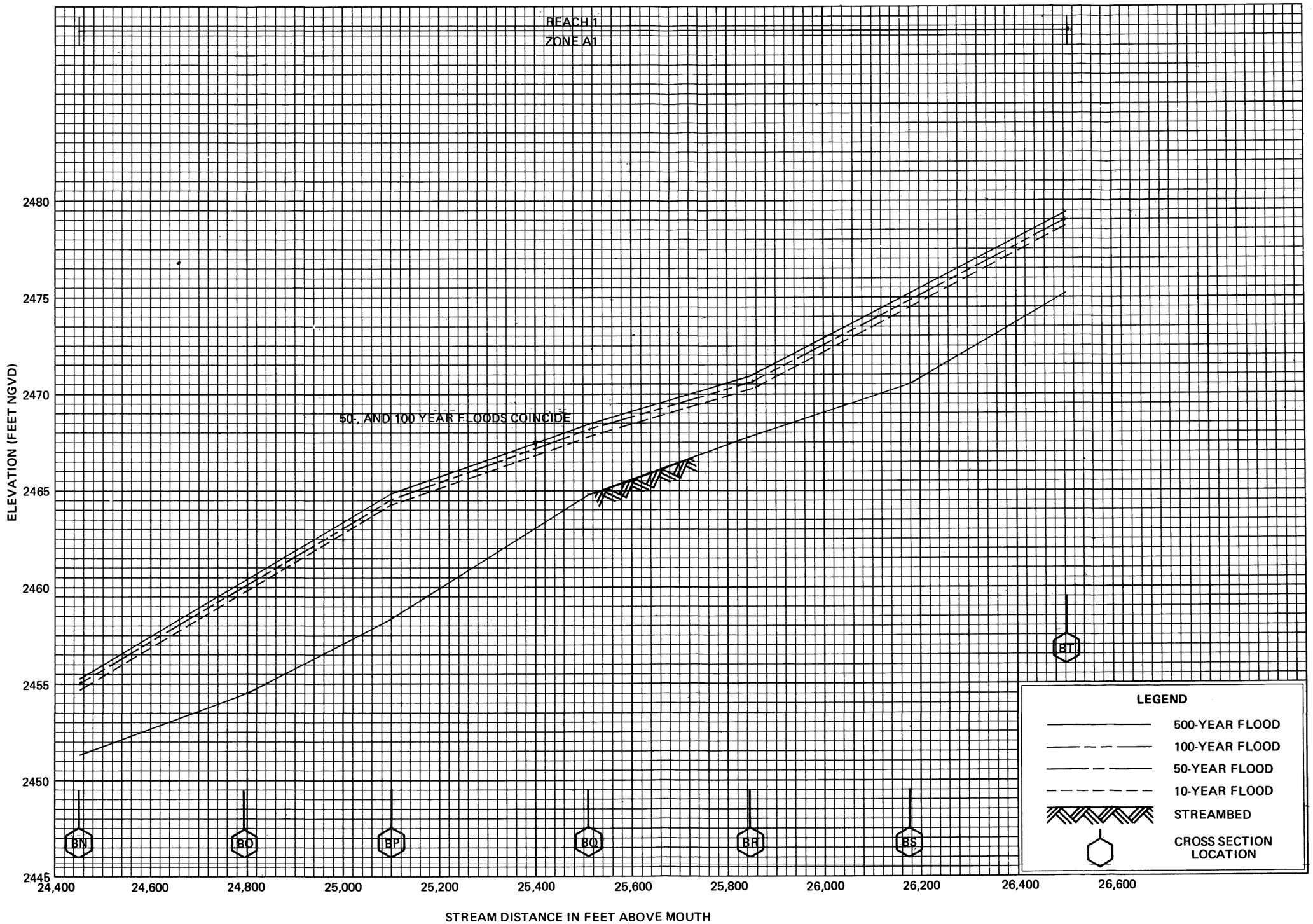
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

159P



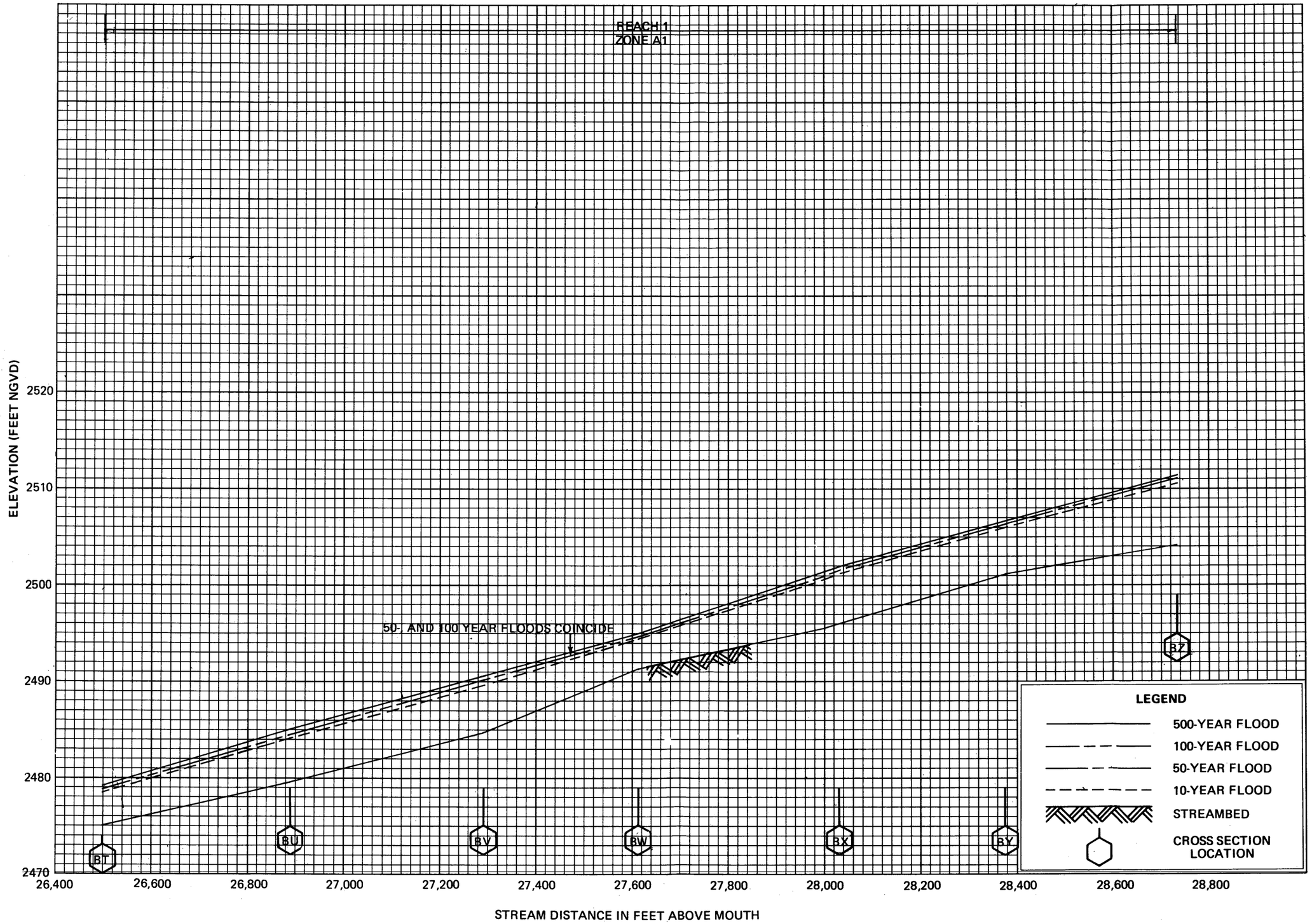
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

160P

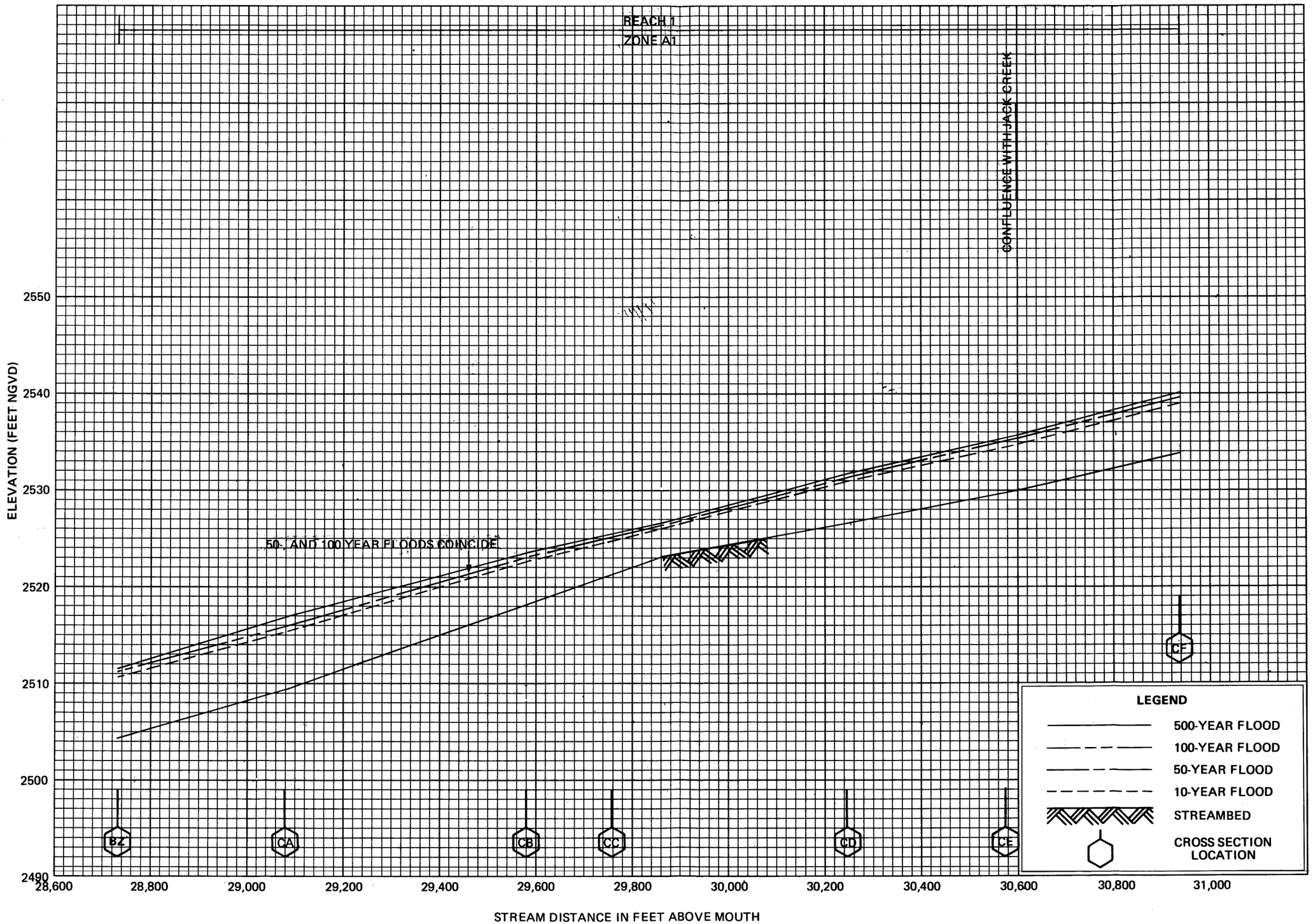


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



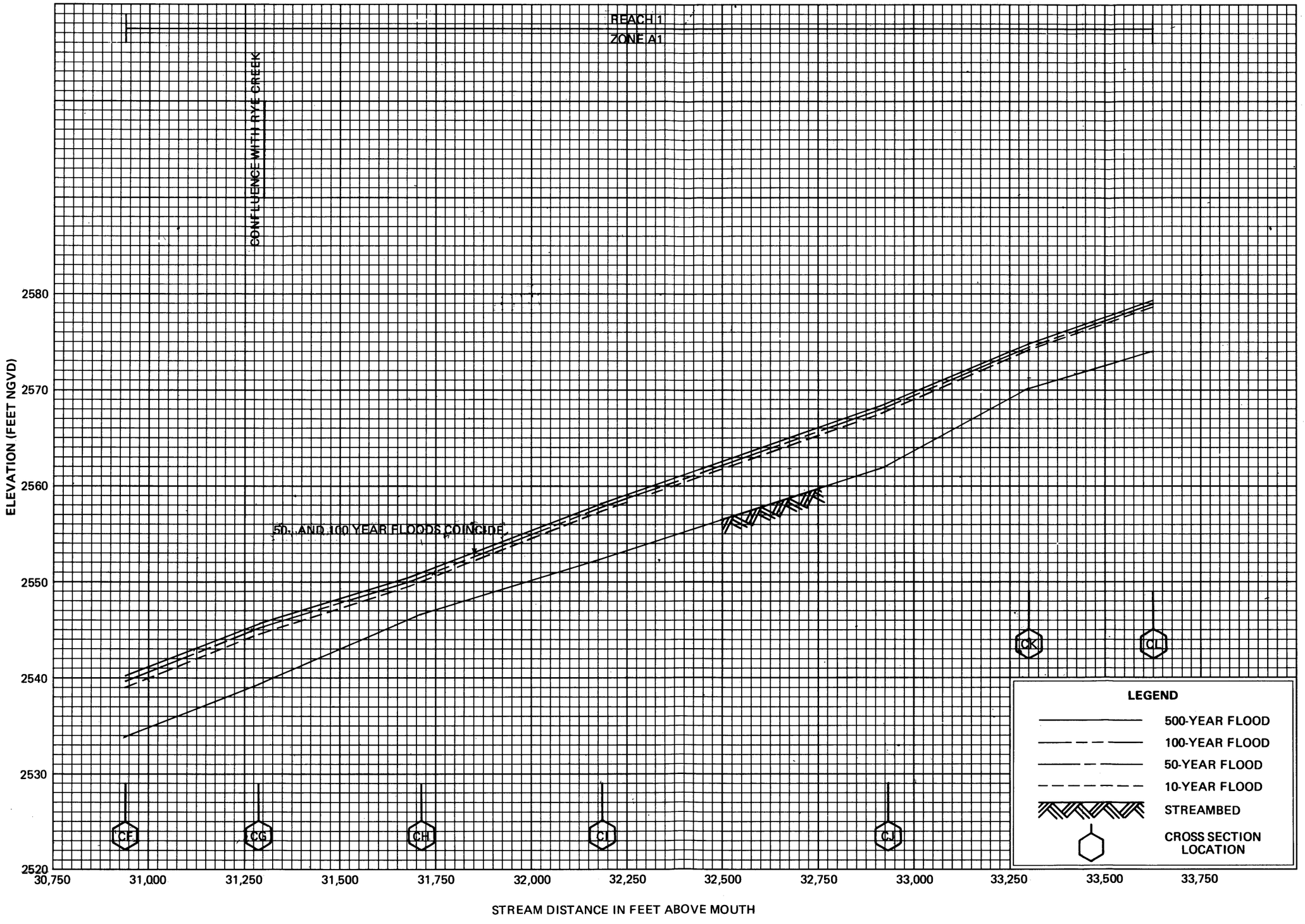
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

162P

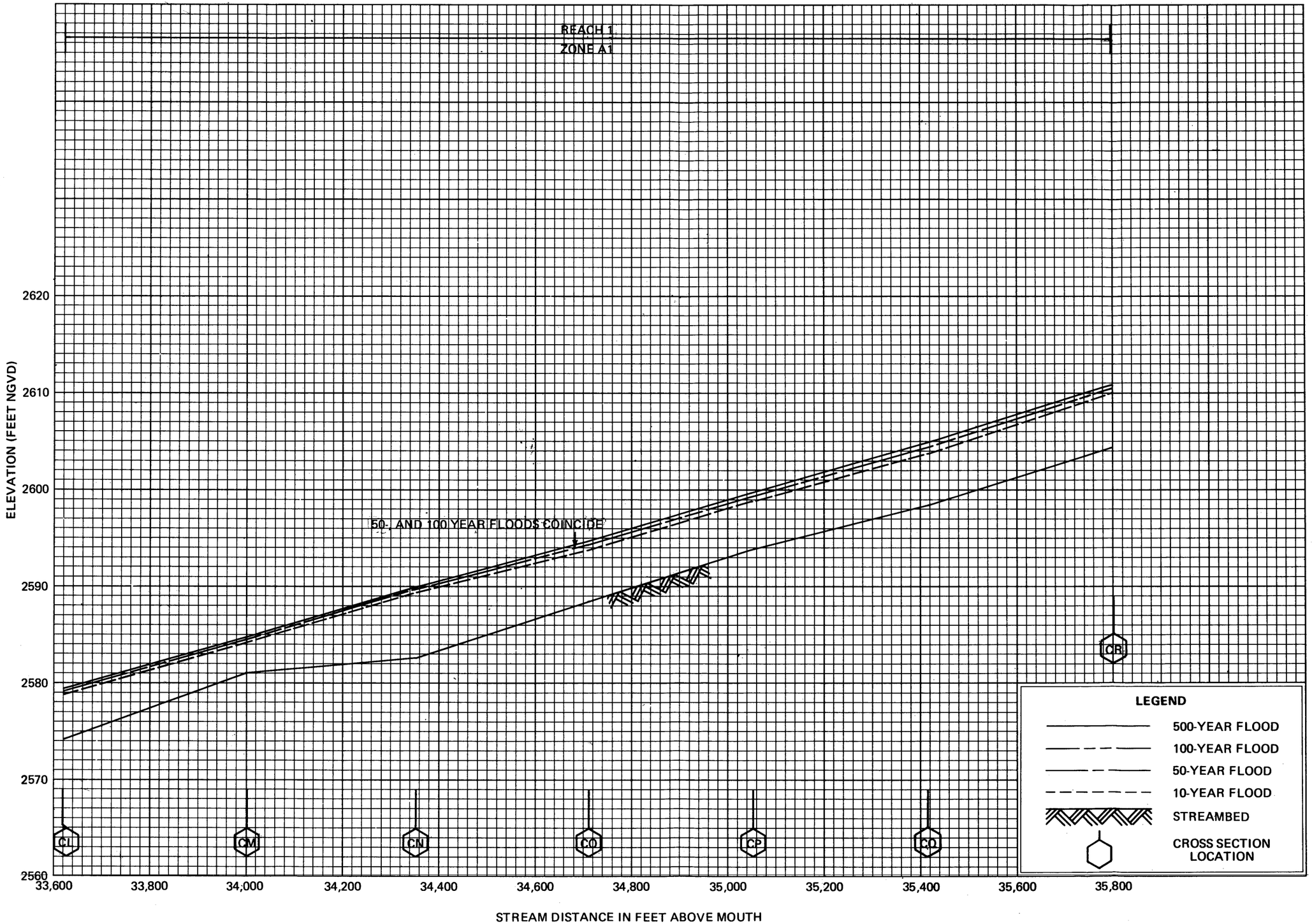


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

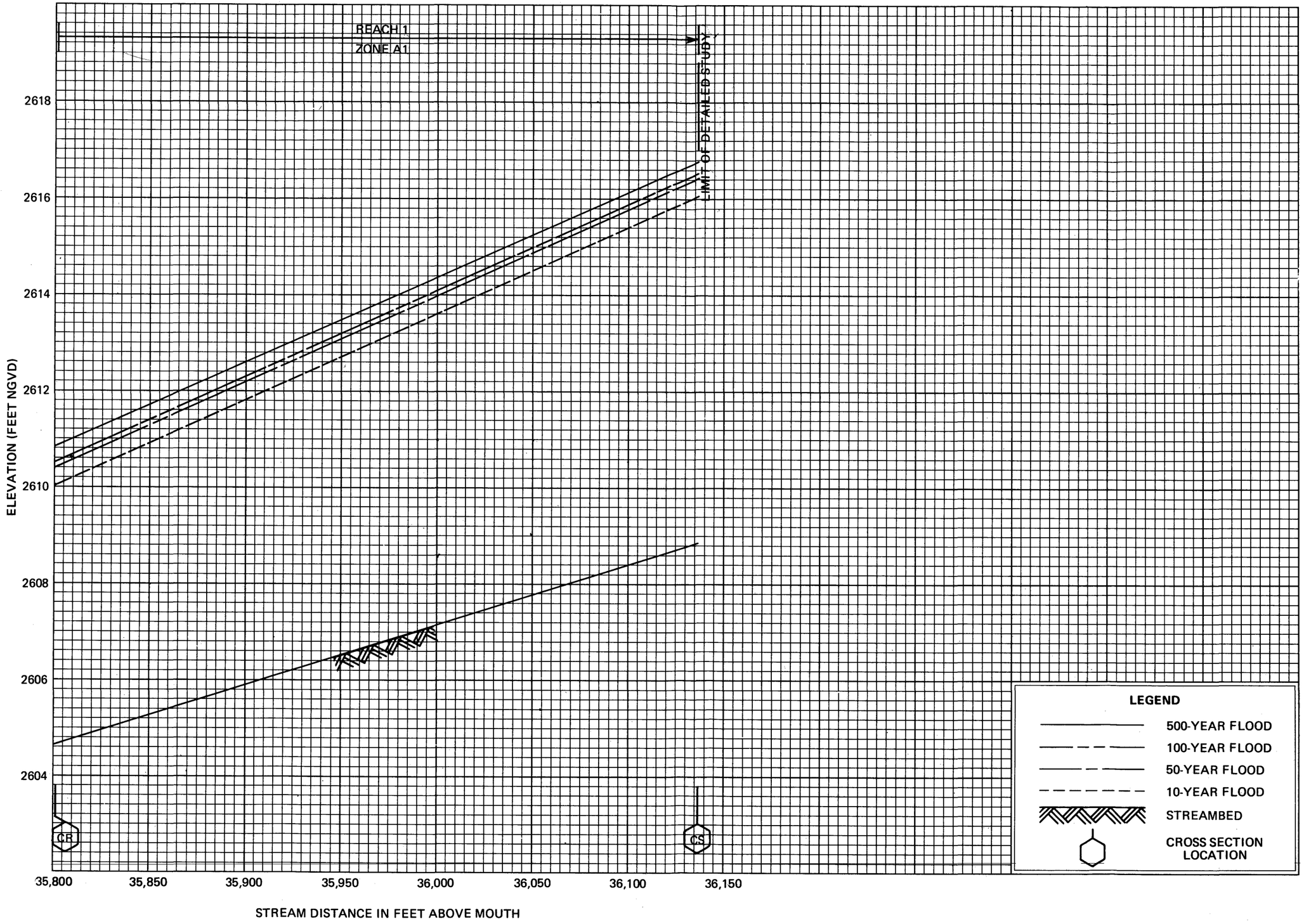


FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



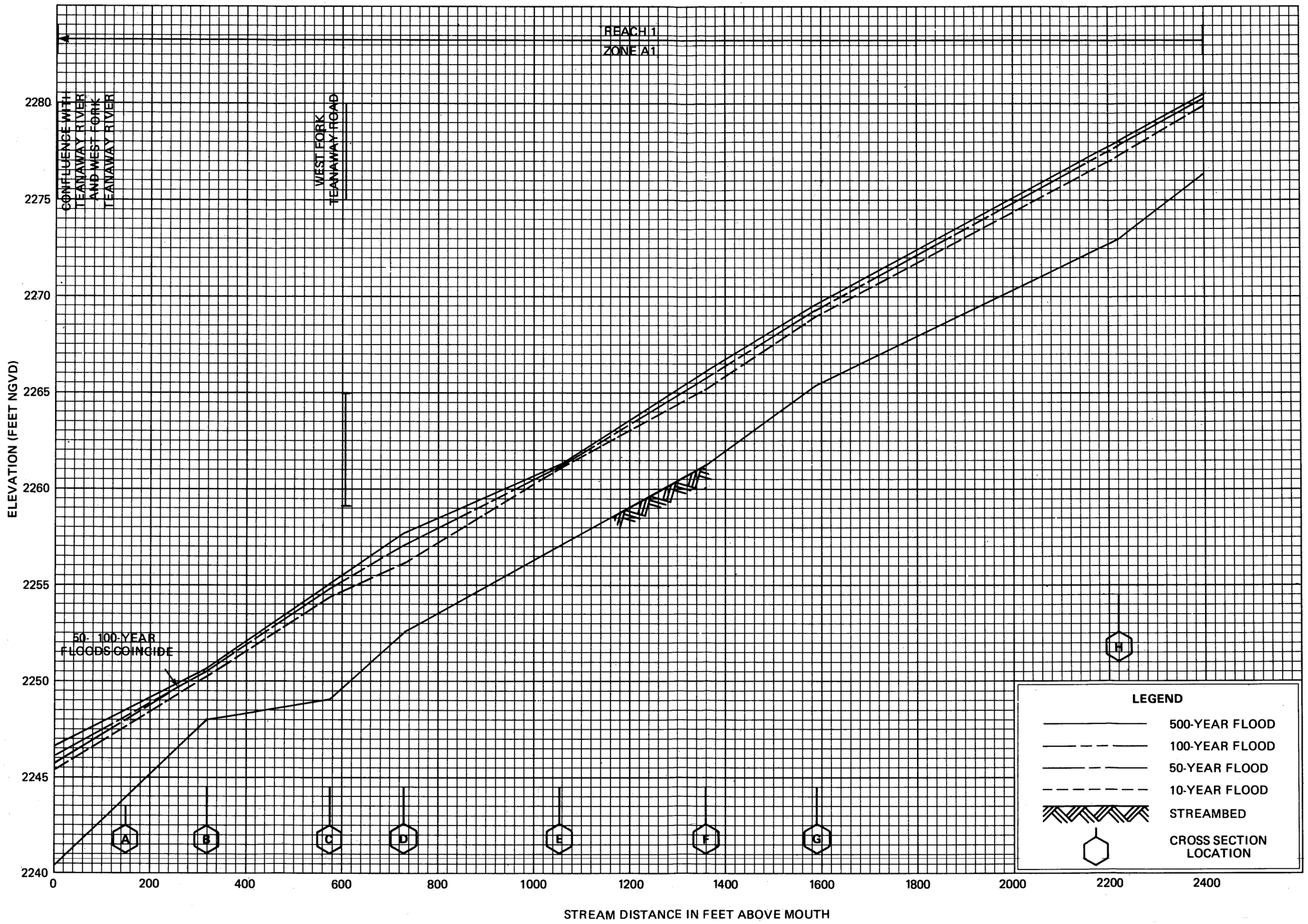
FLOOD PROFILES

NORTH FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

165P



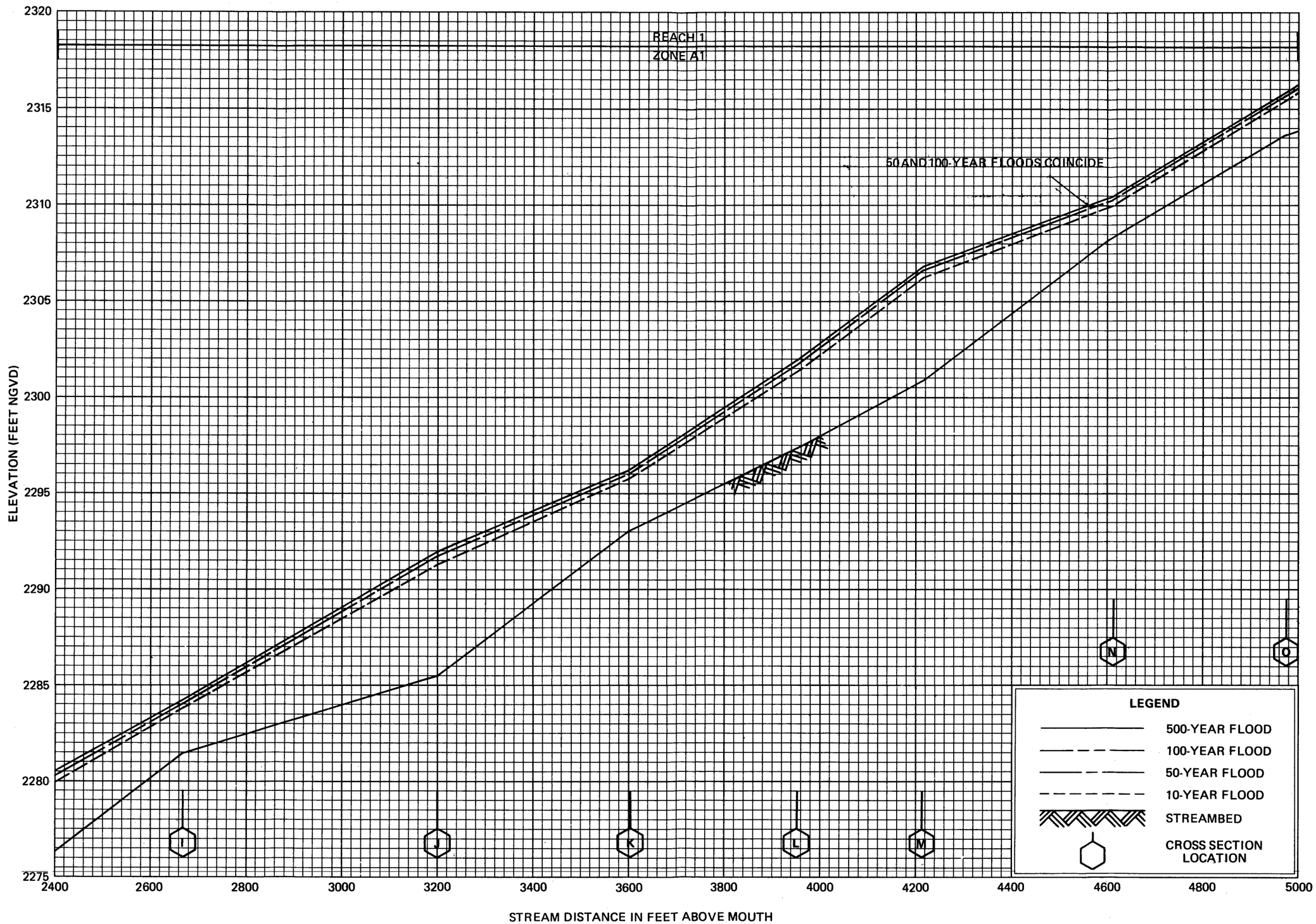
FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

166P



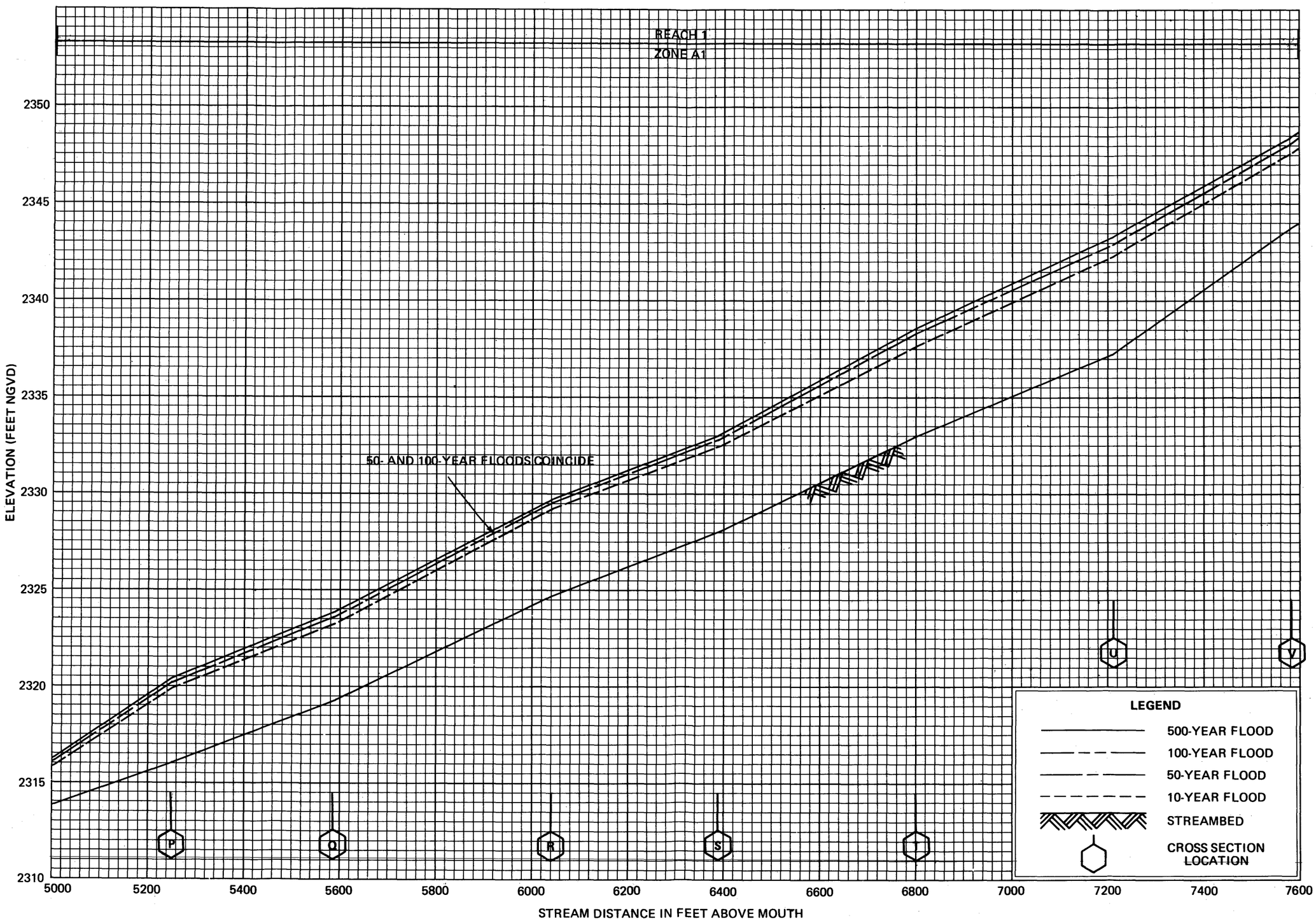
FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

167P

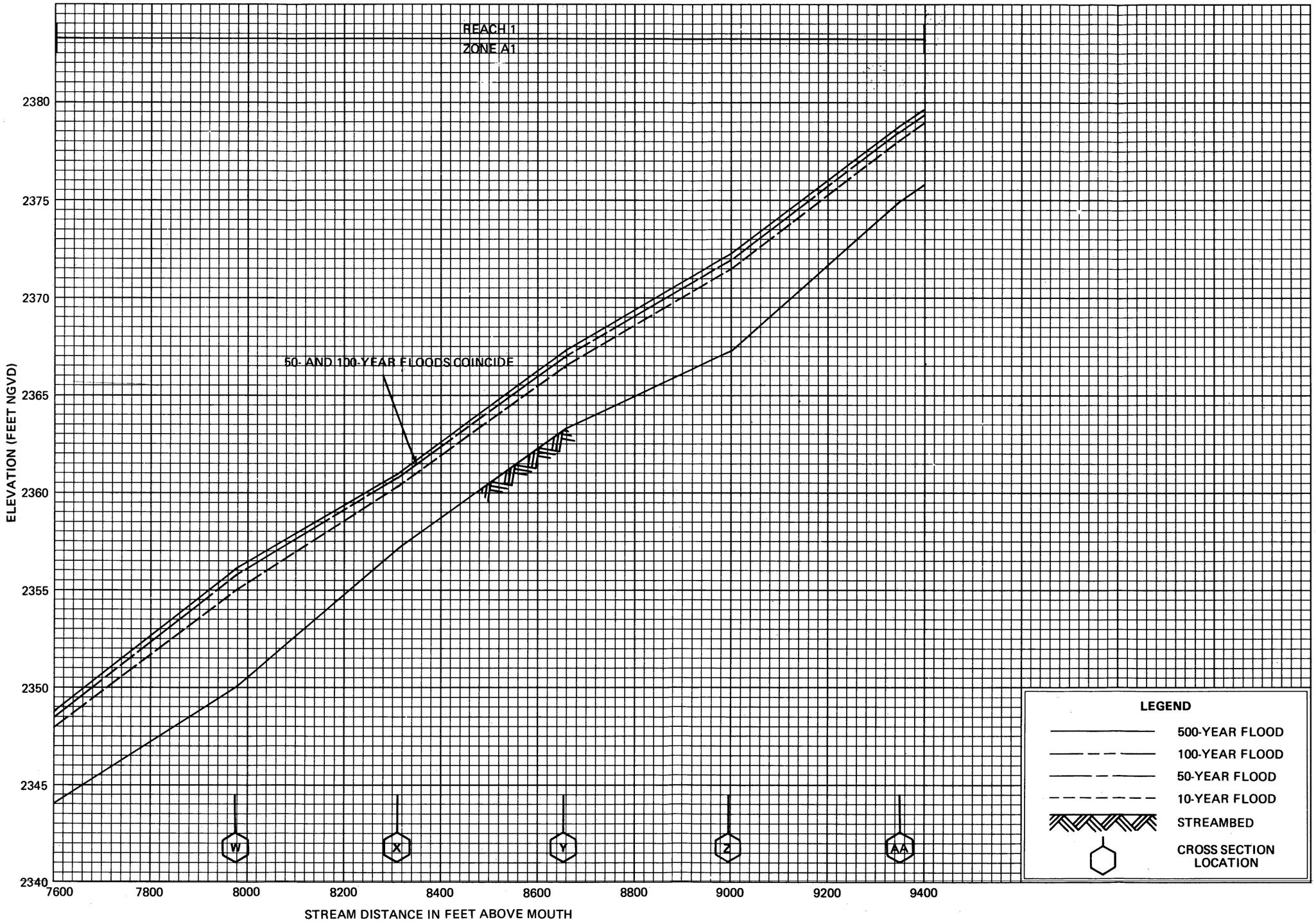


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

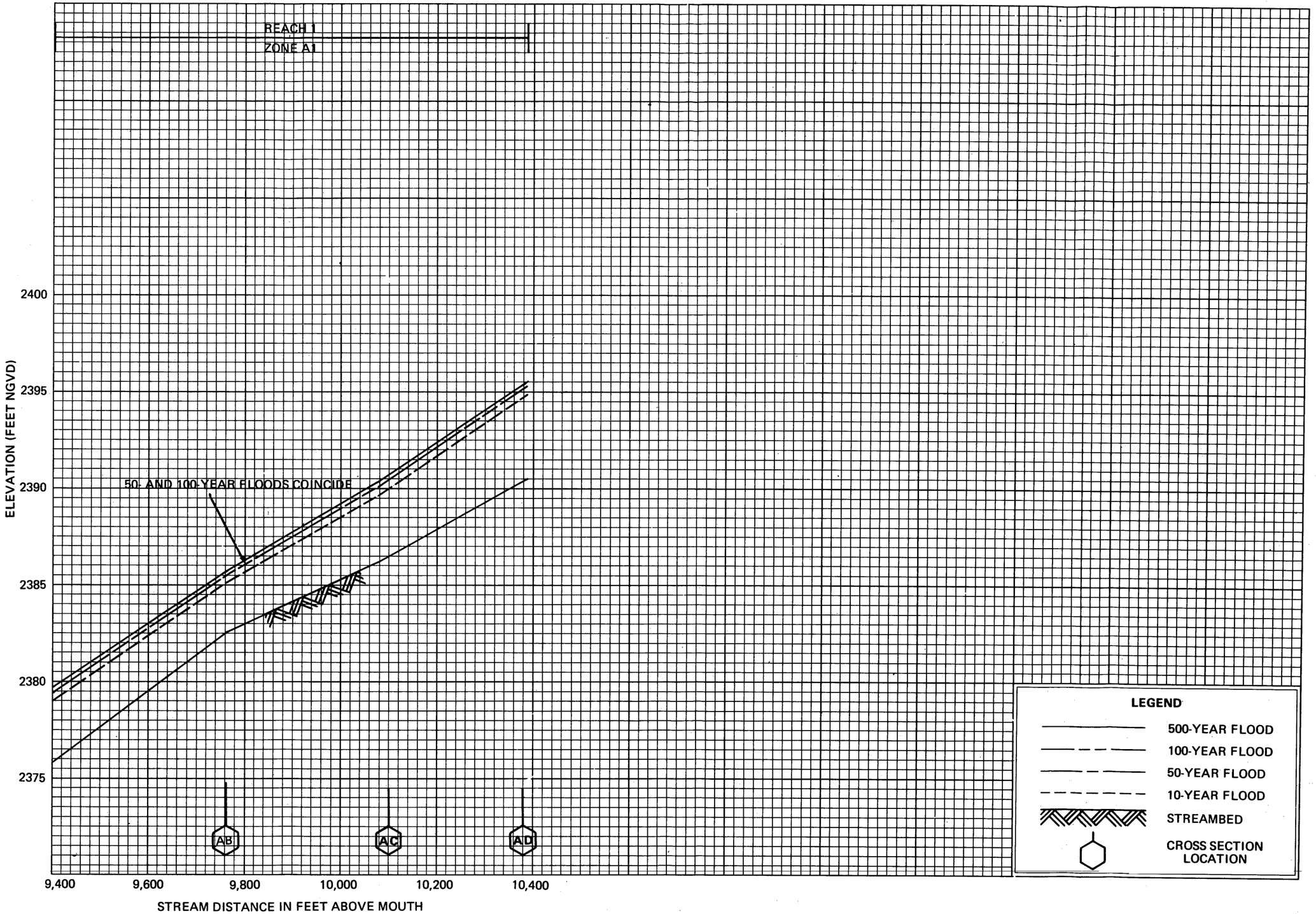


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



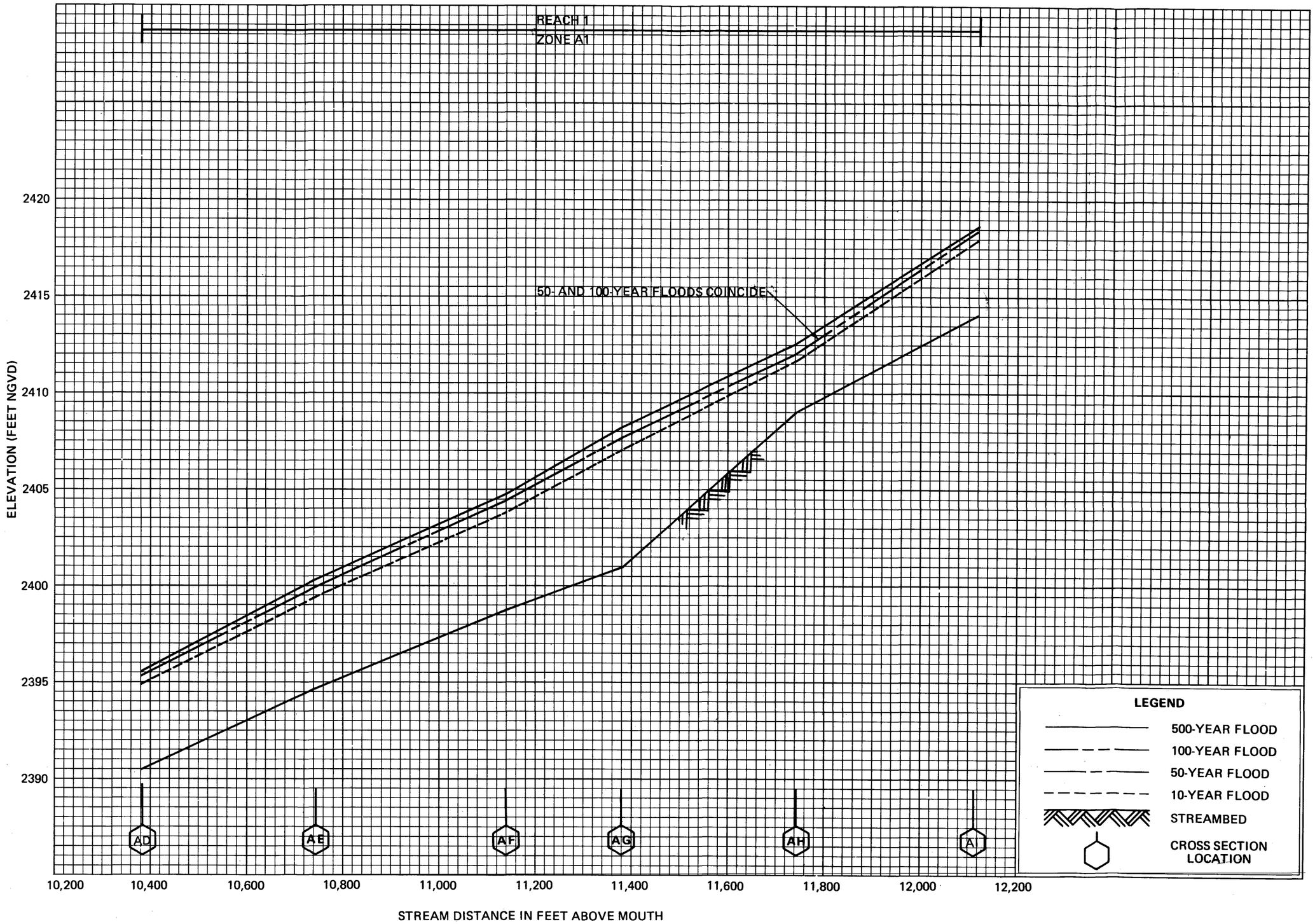
FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

170P



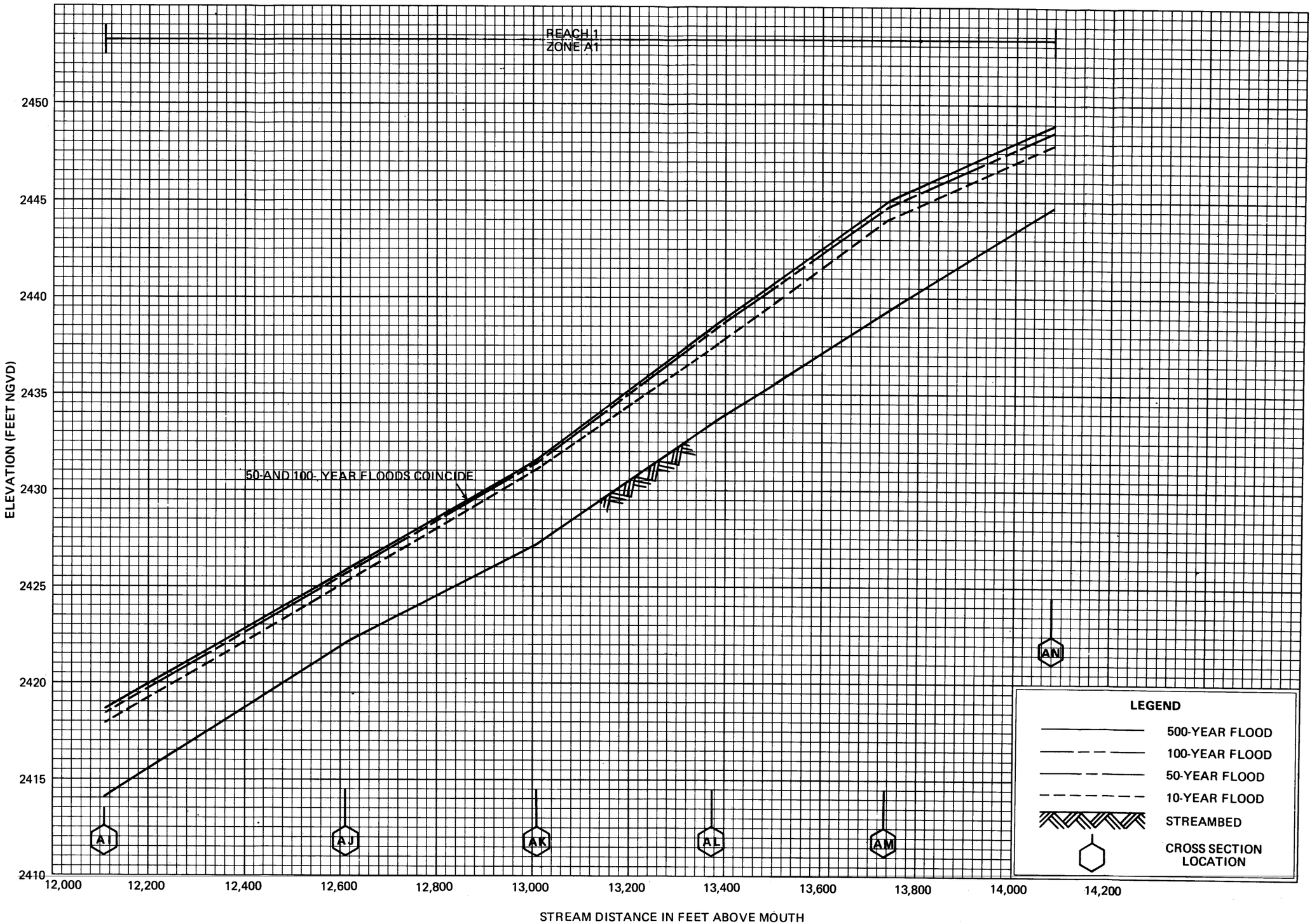
FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

171P

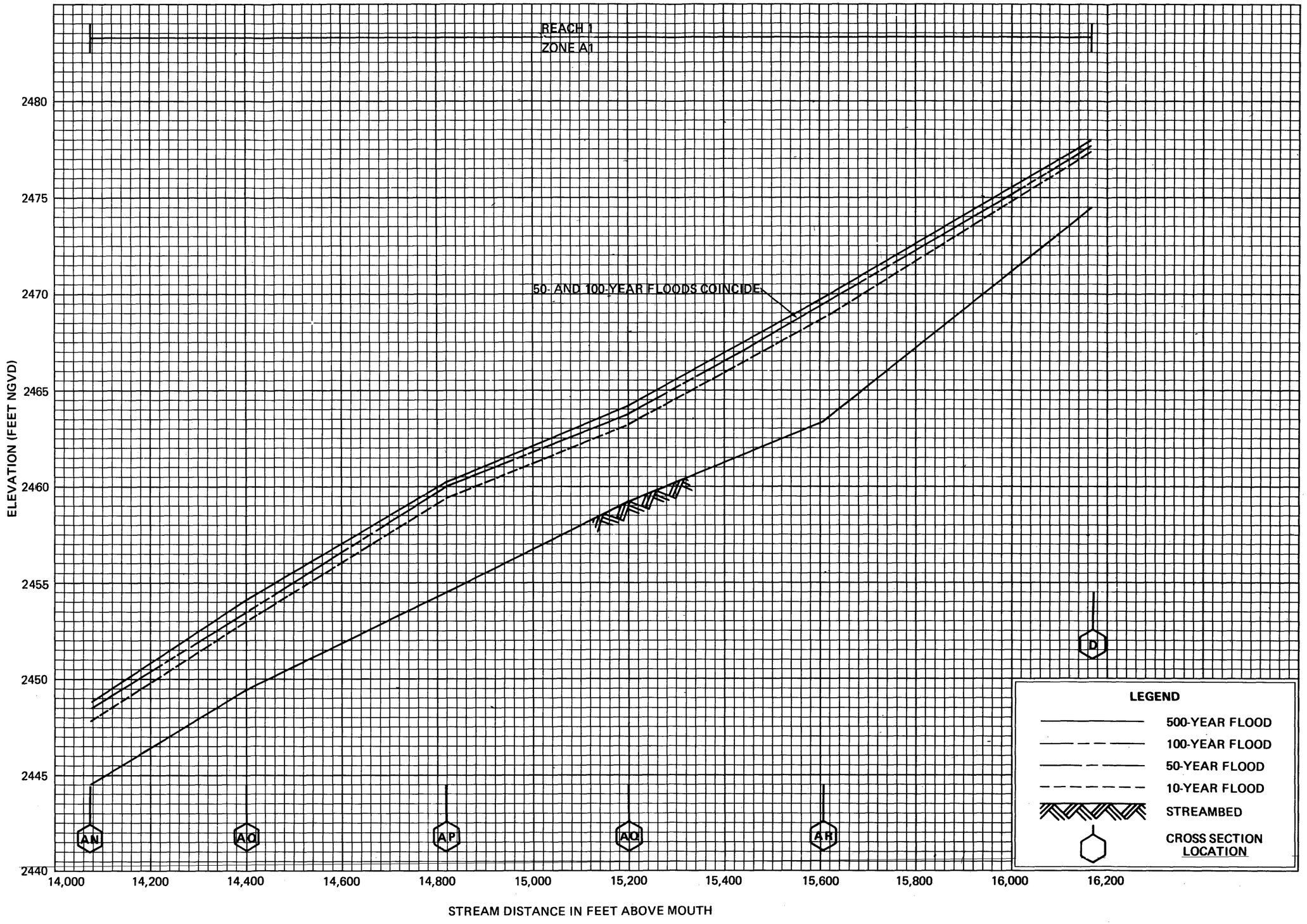


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



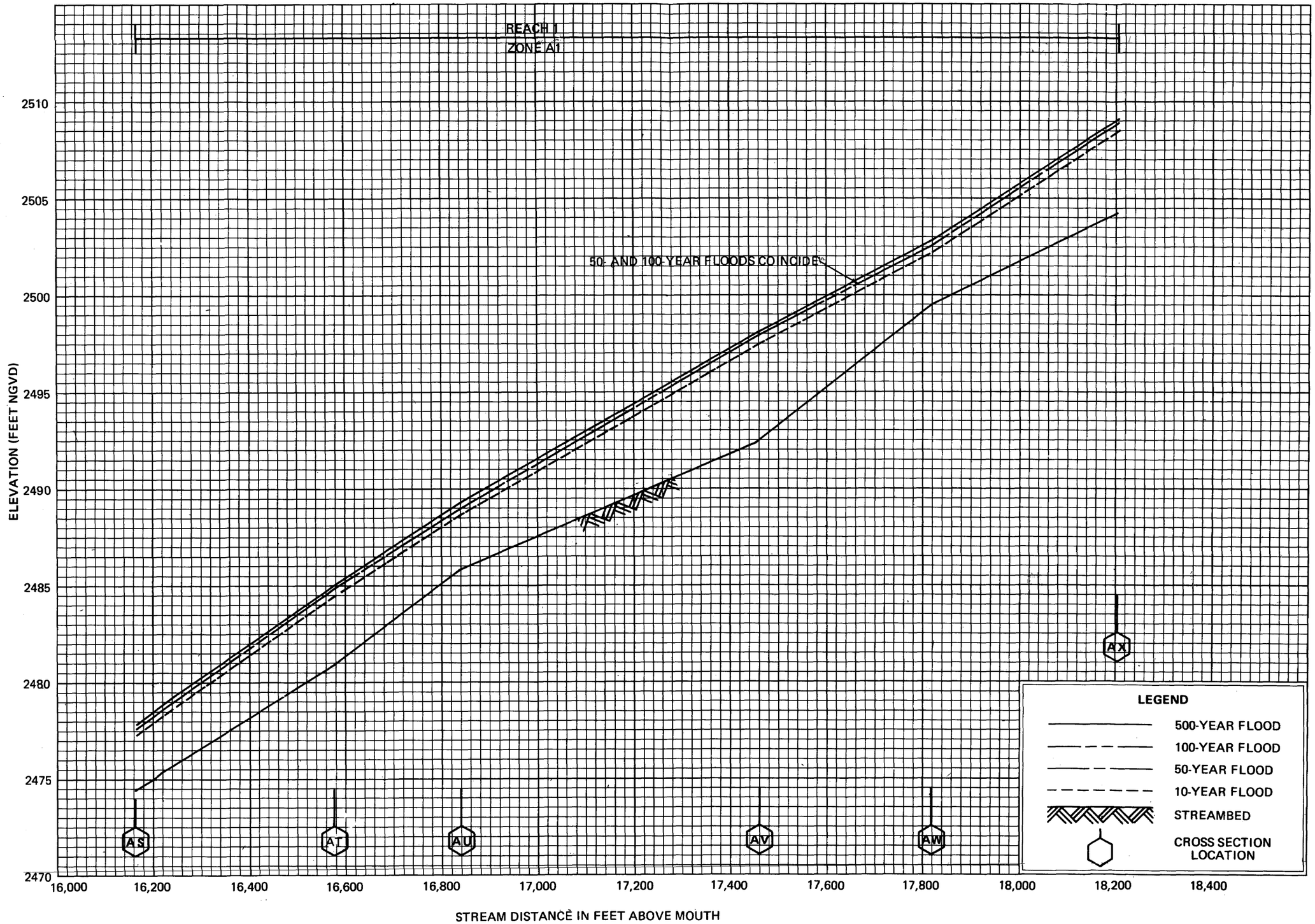
FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

173P

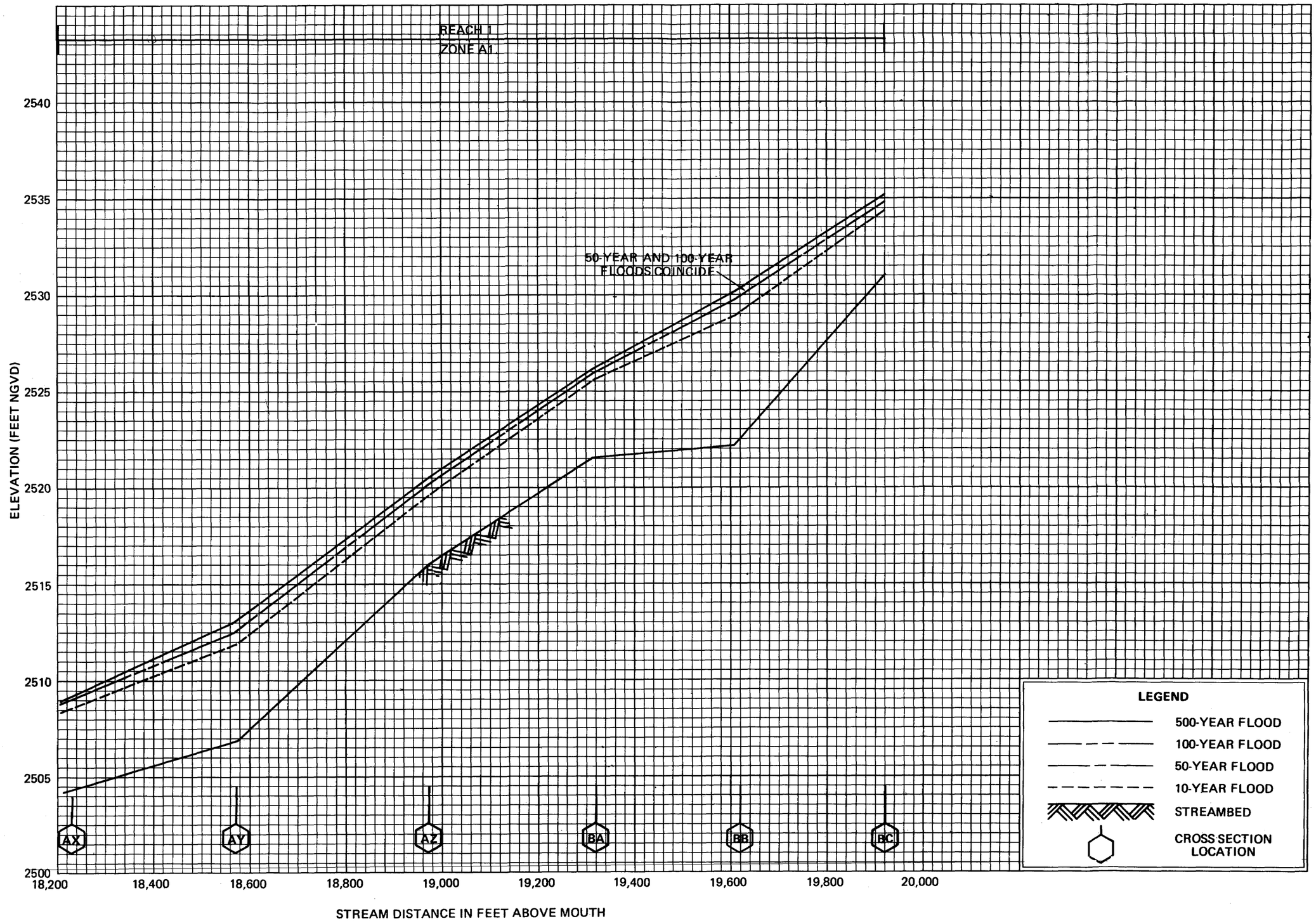


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

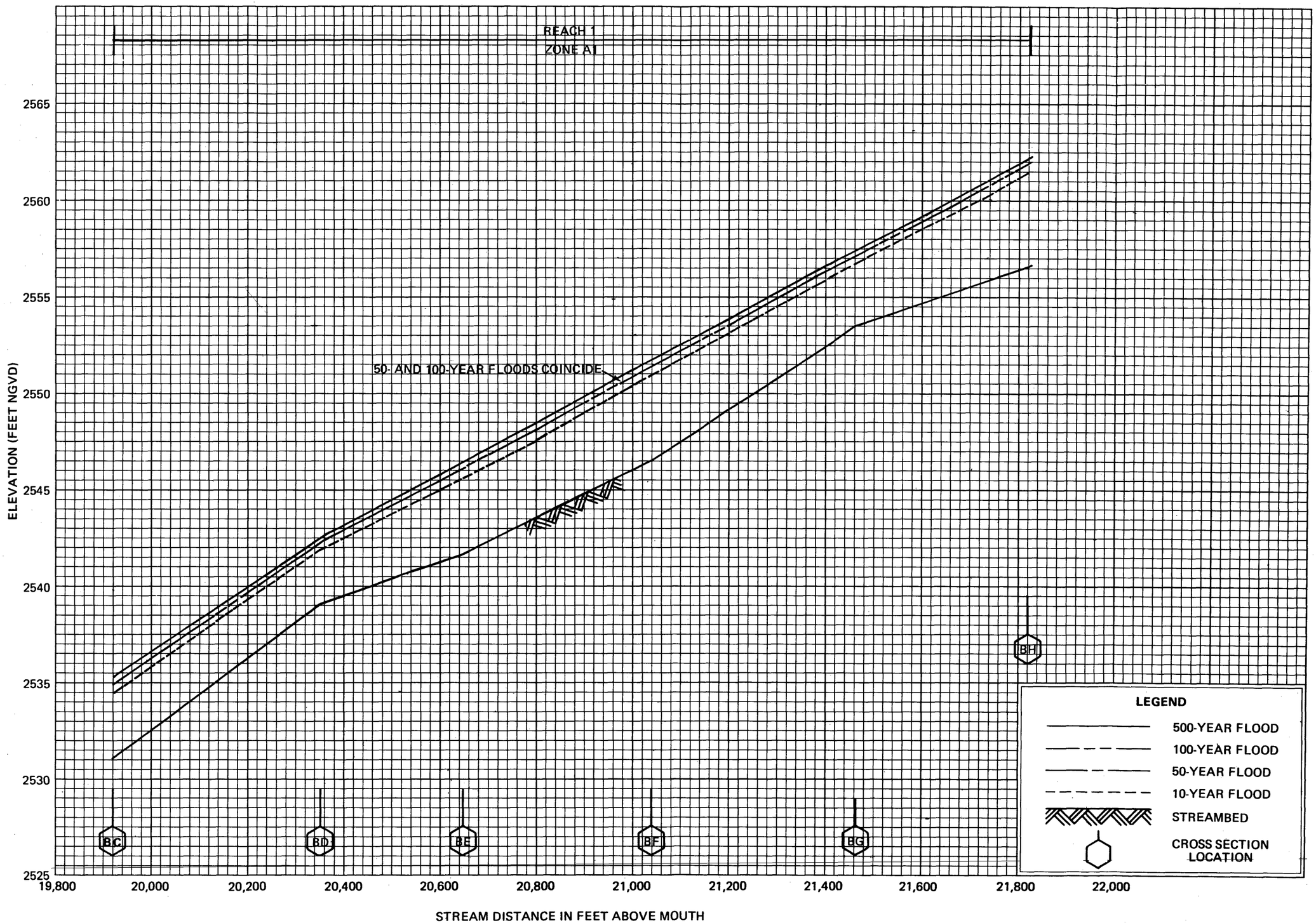


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

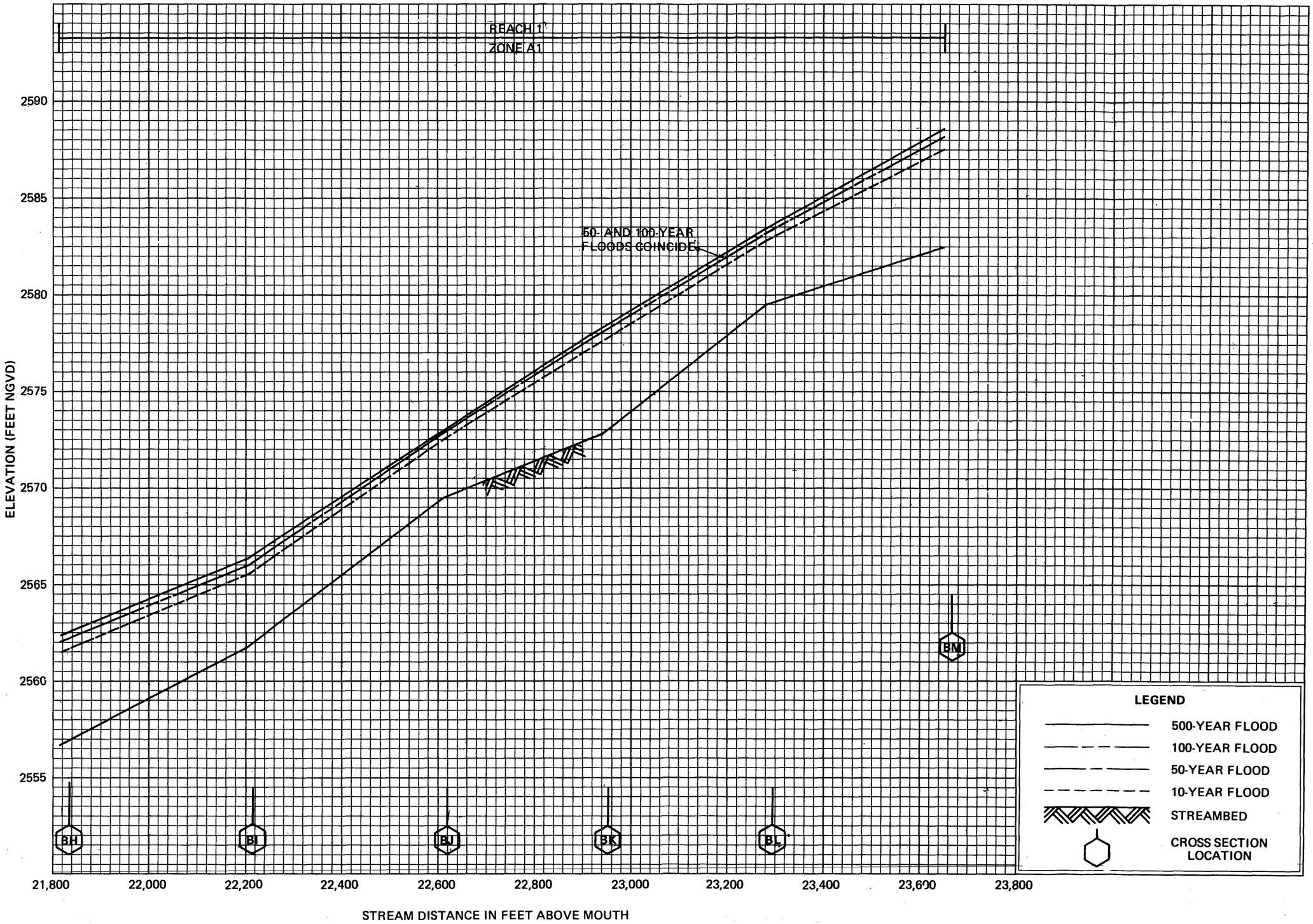


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

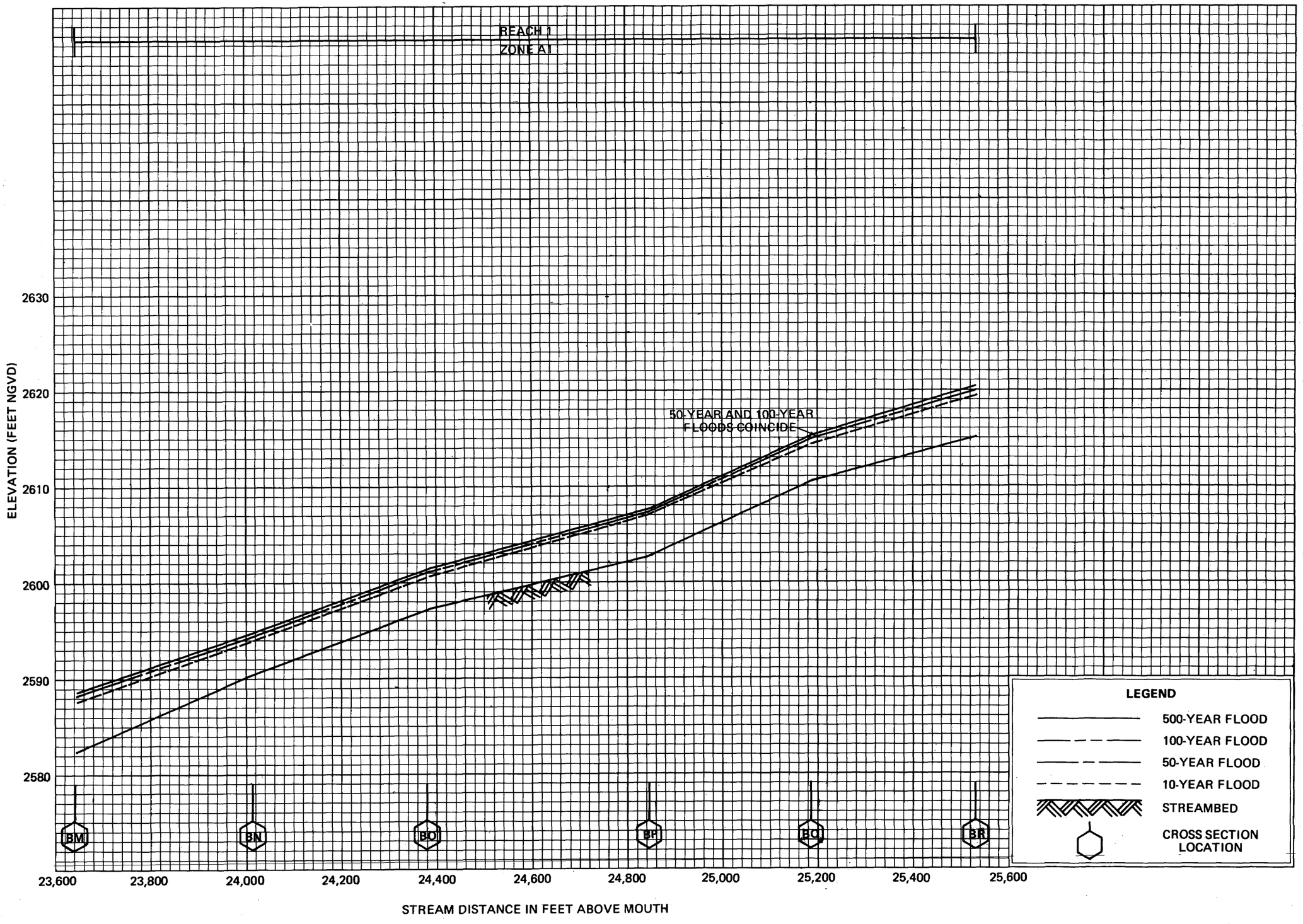


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

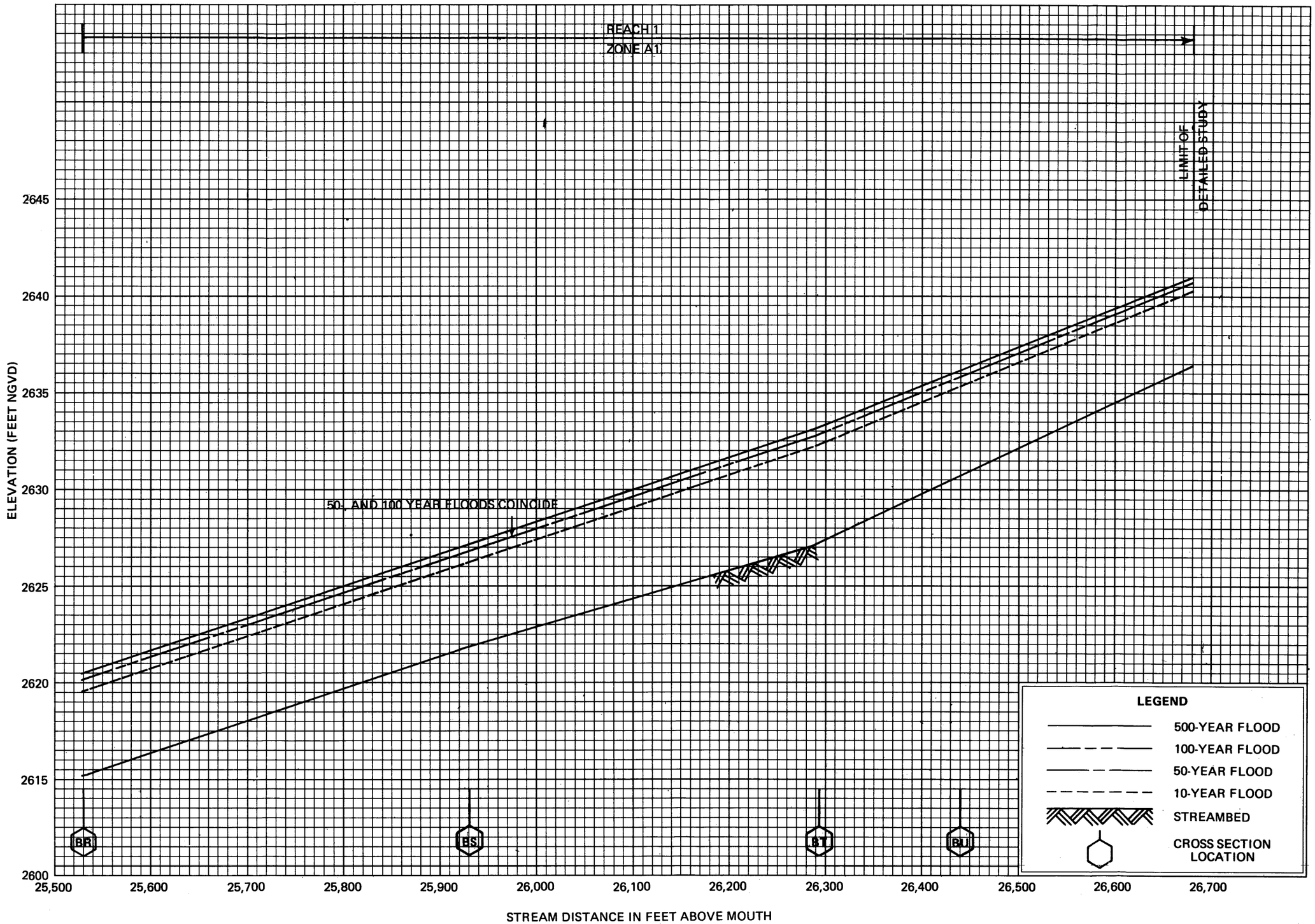


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

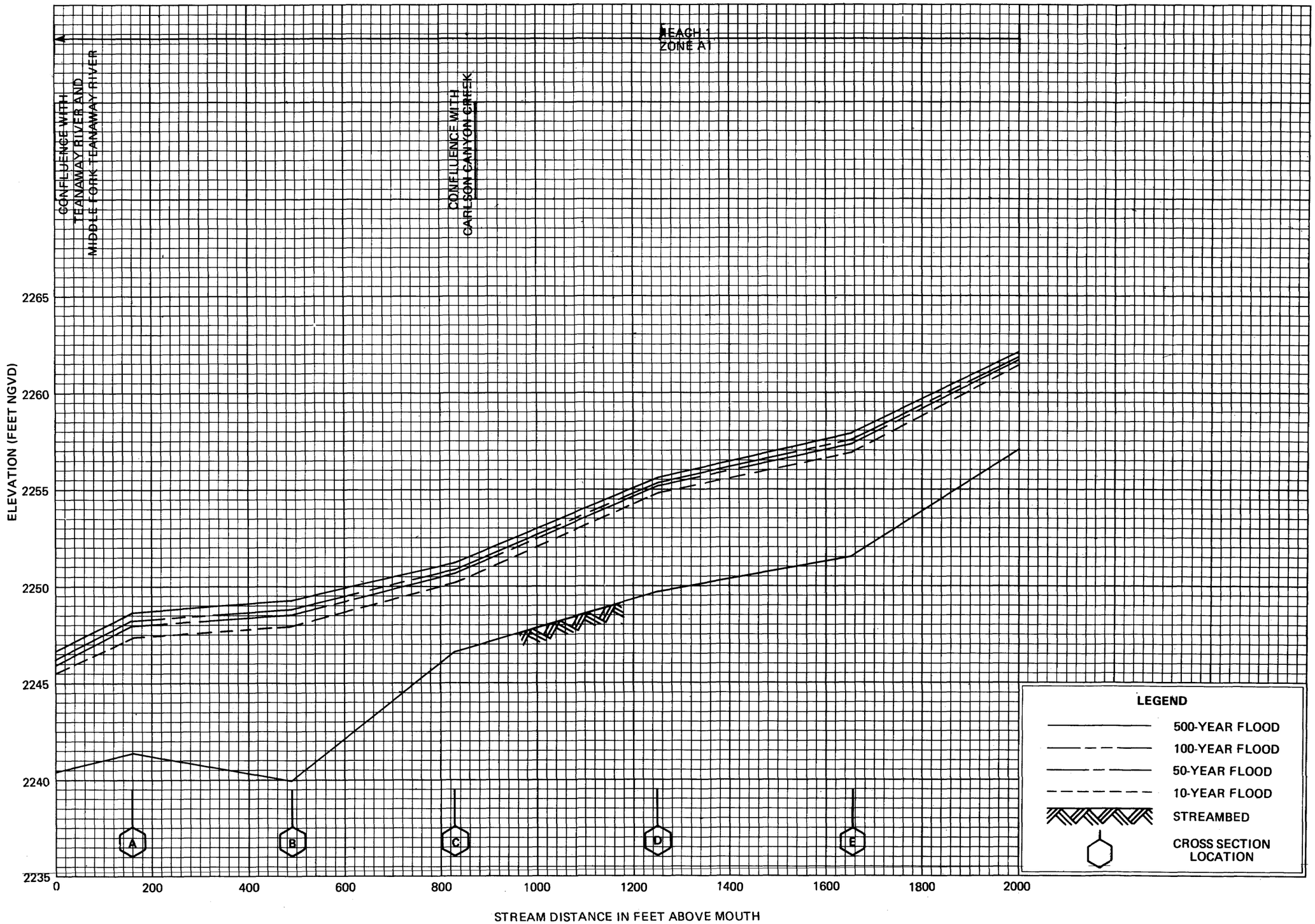


FLOOD PROFILES

MIDDLE FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



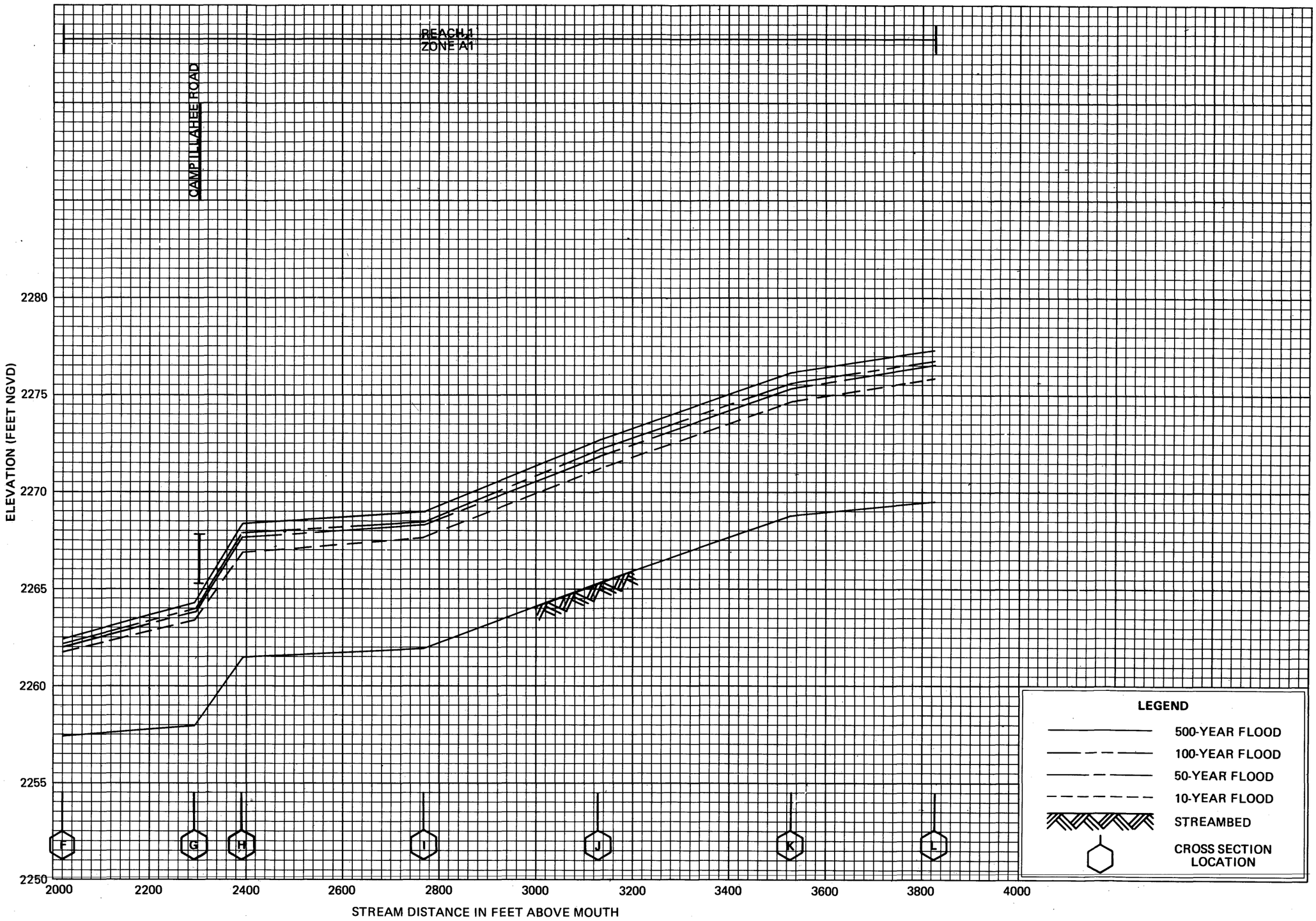
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

180P



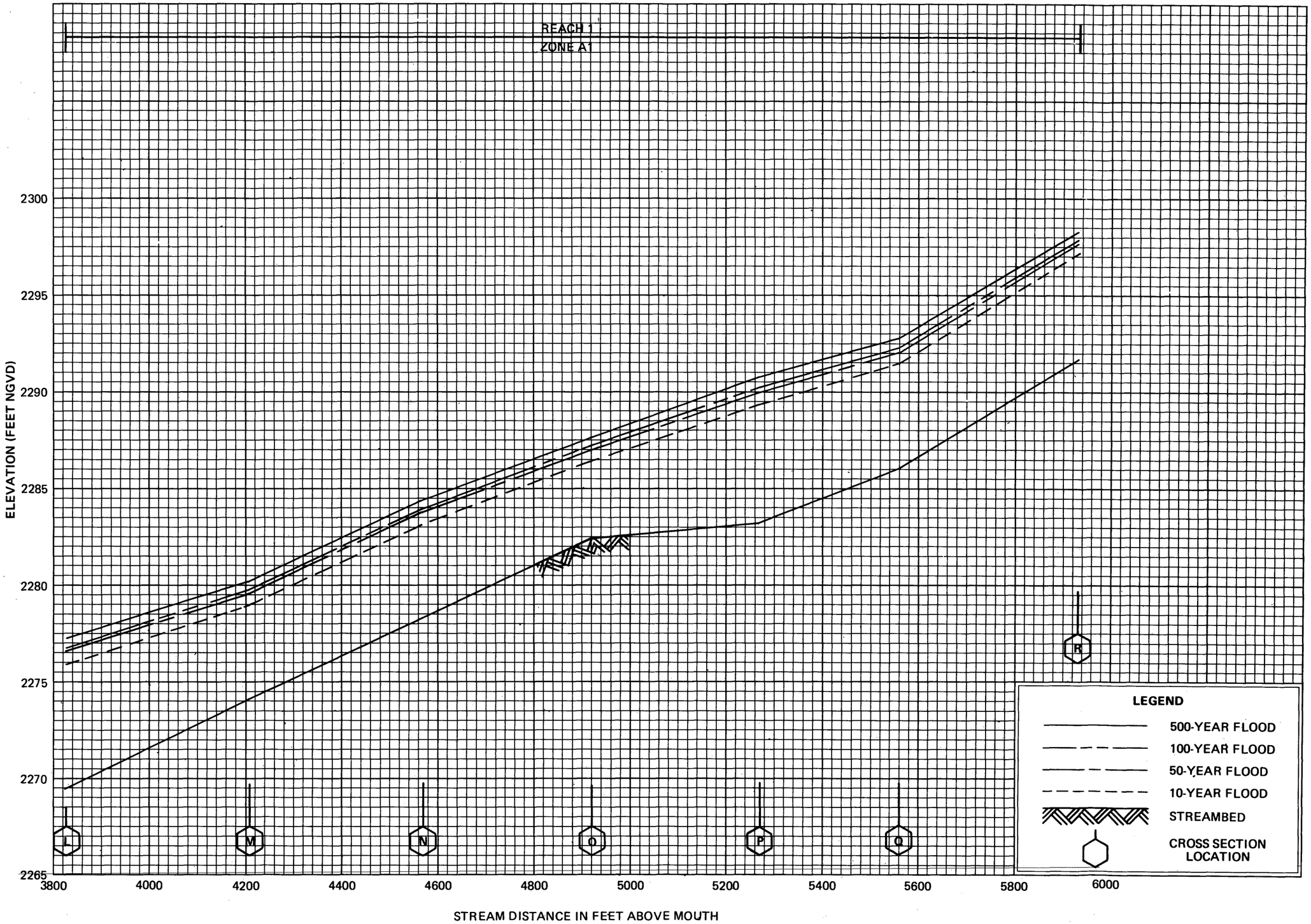
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

181P



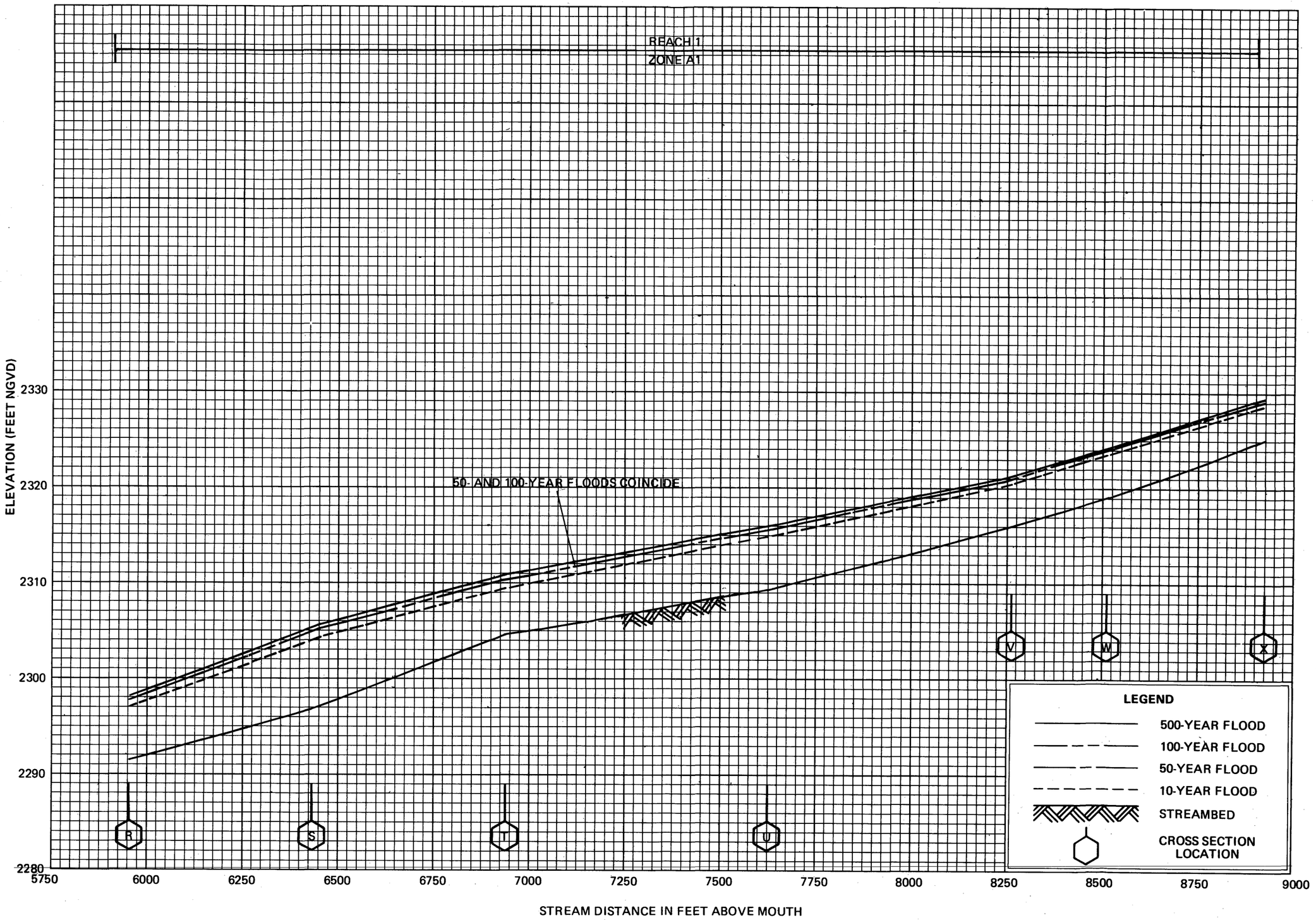
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

182P



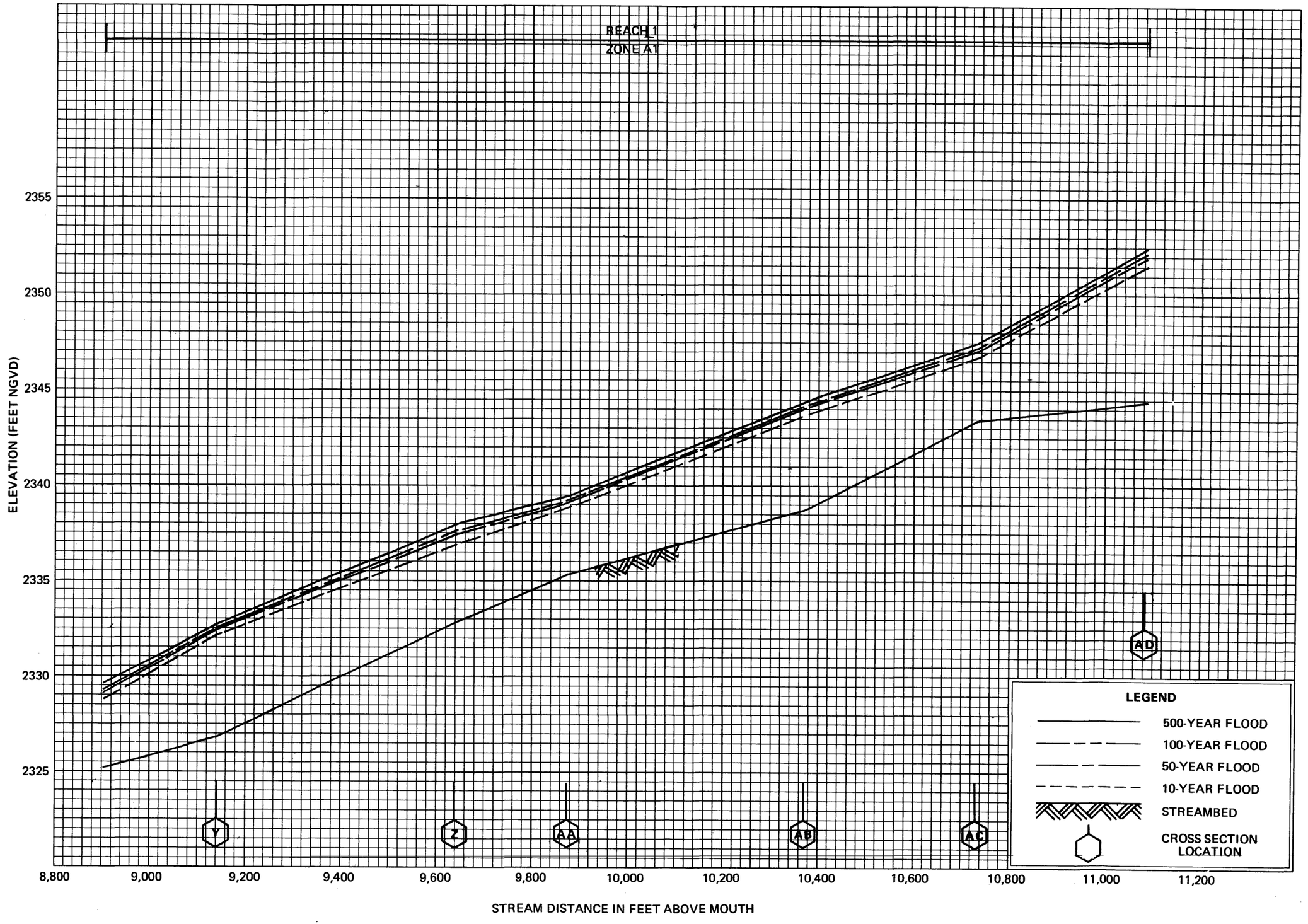
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

183P

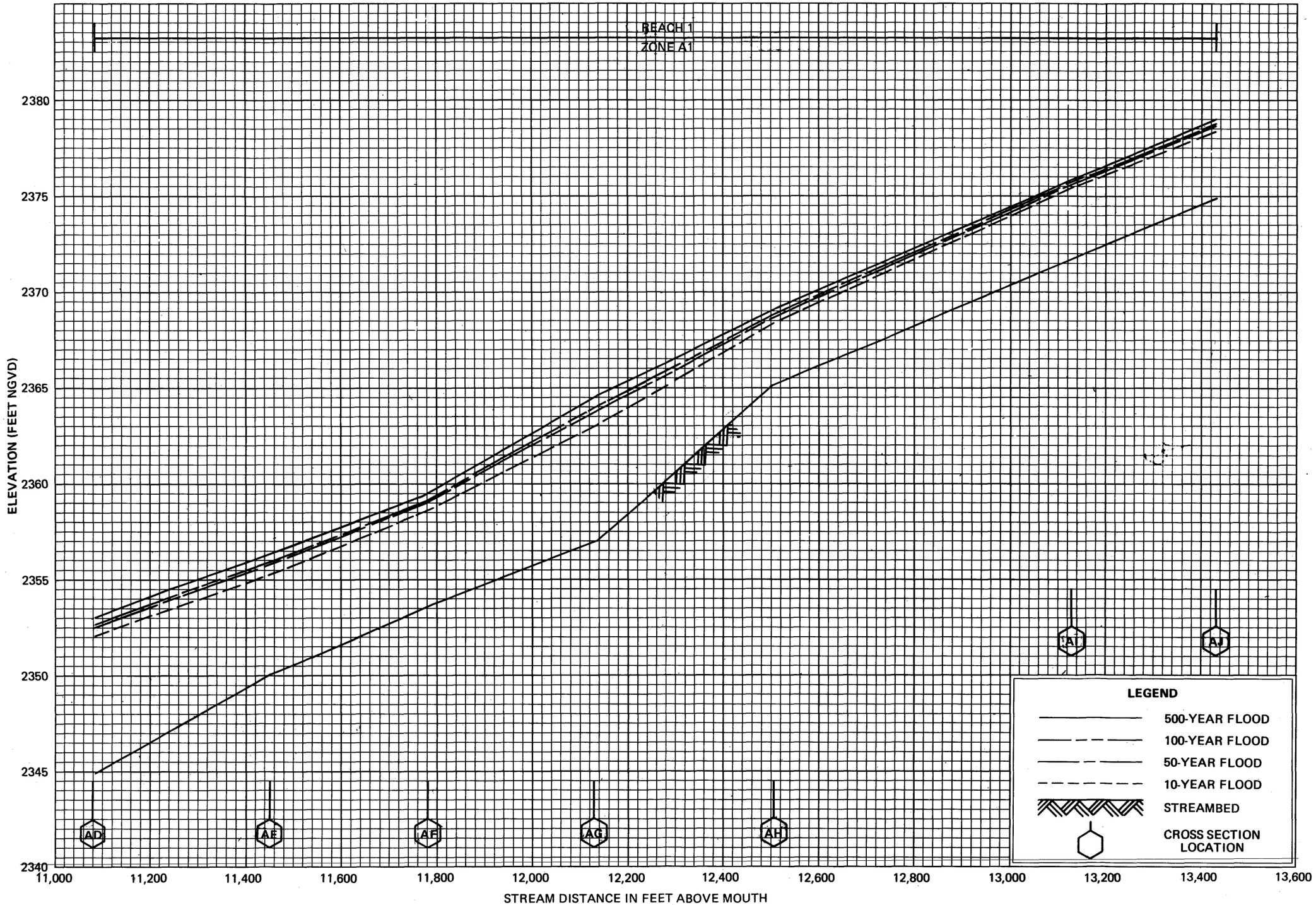


FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



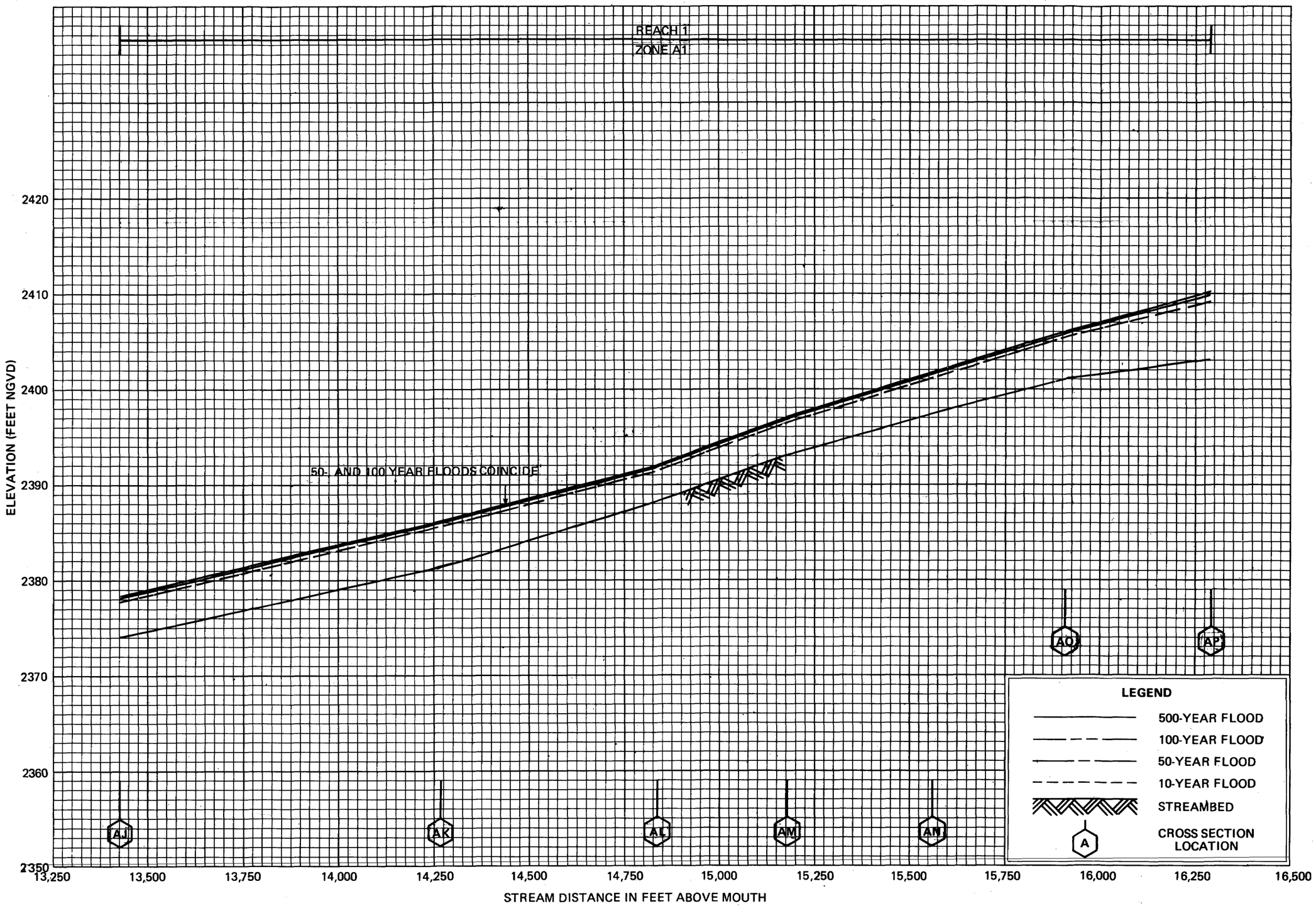
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

185P



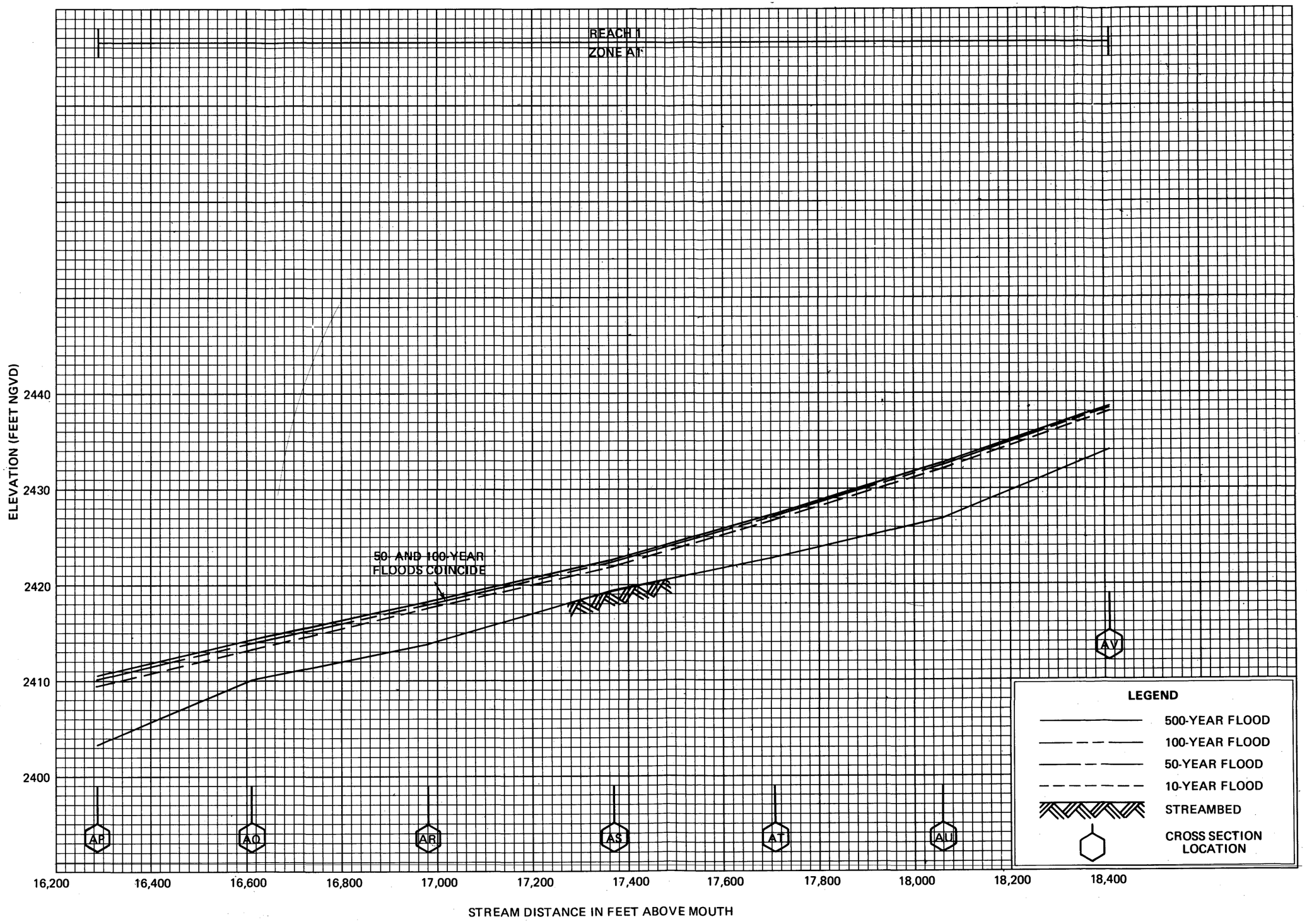
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

186P

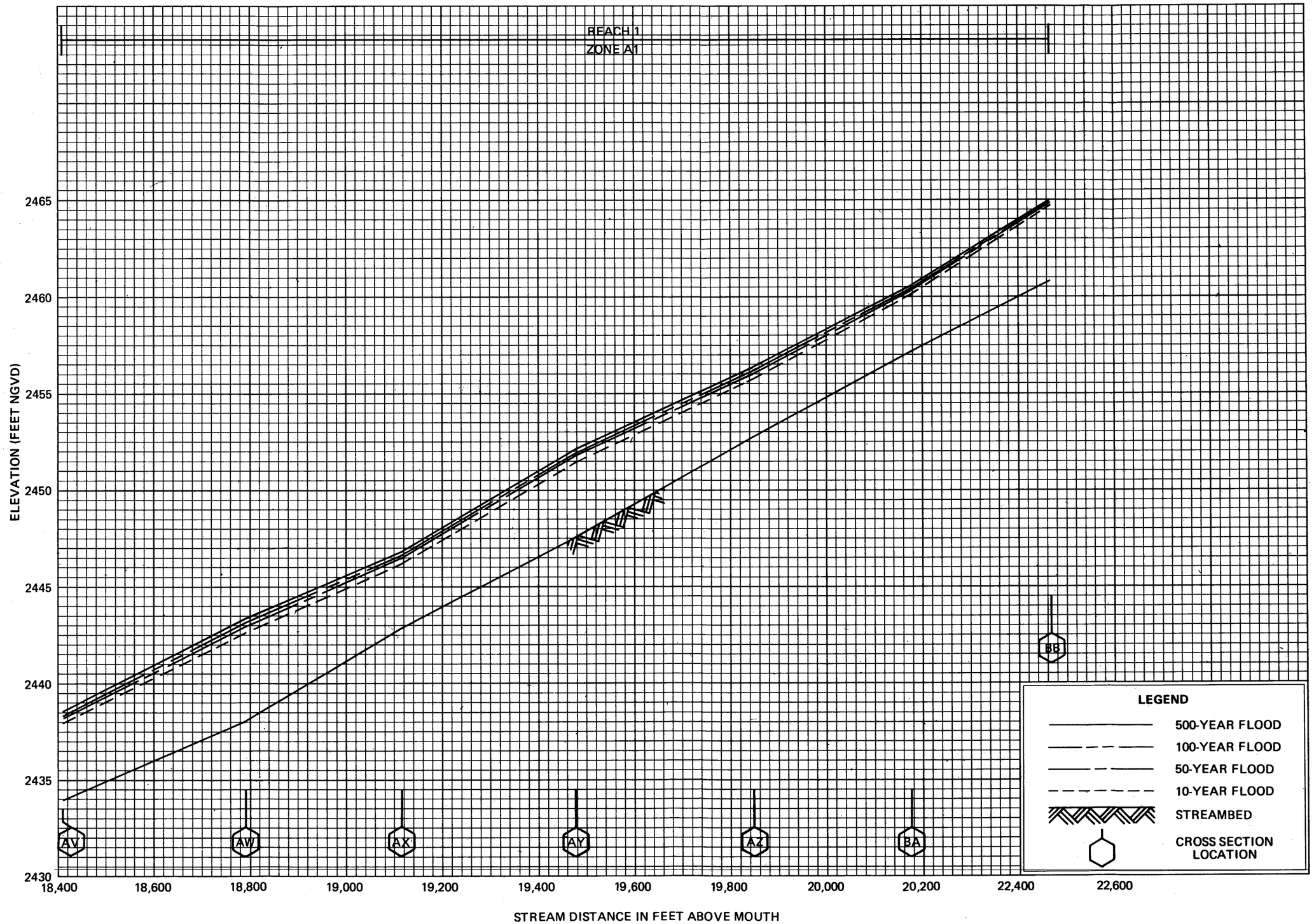


FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



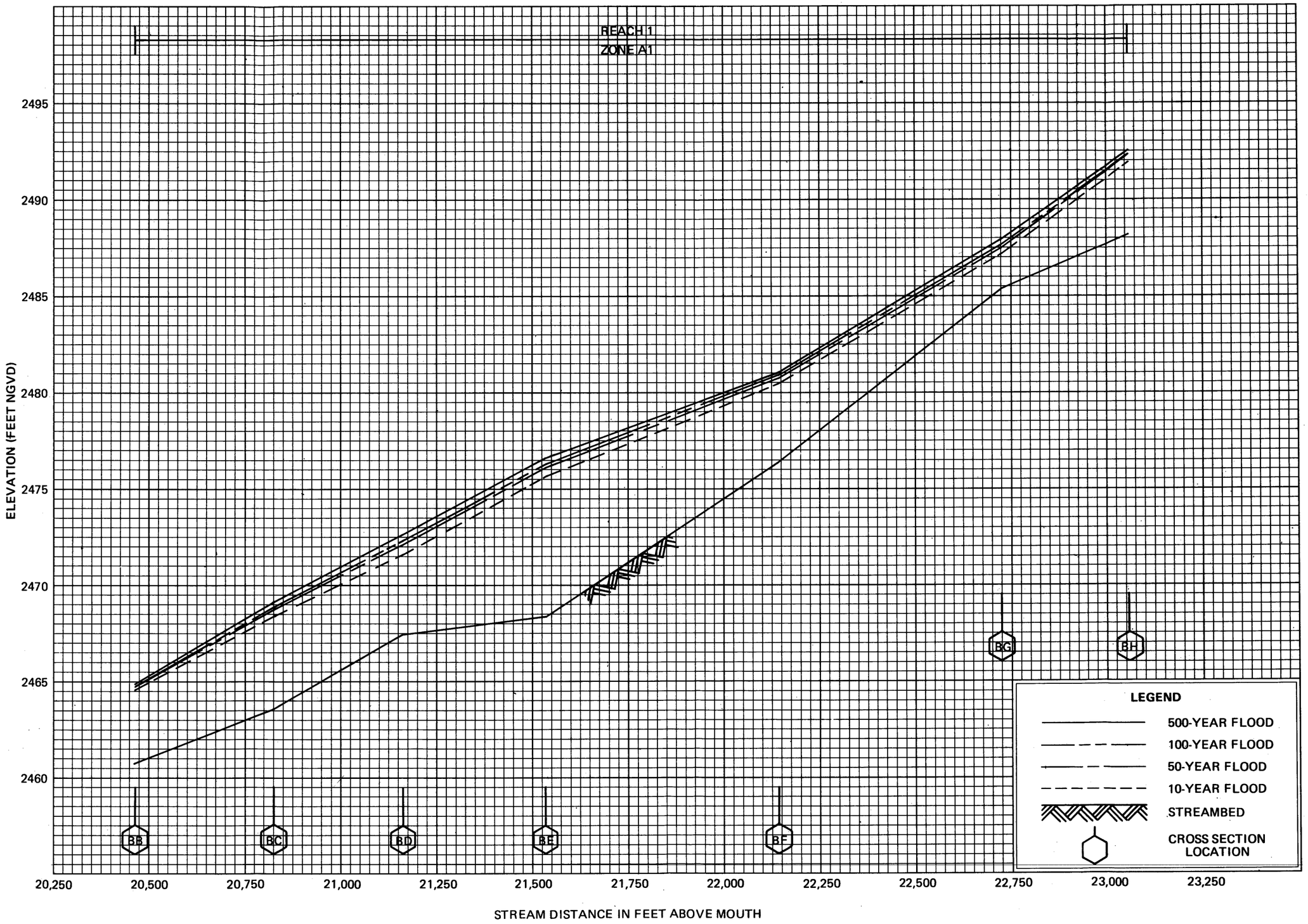
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

188P

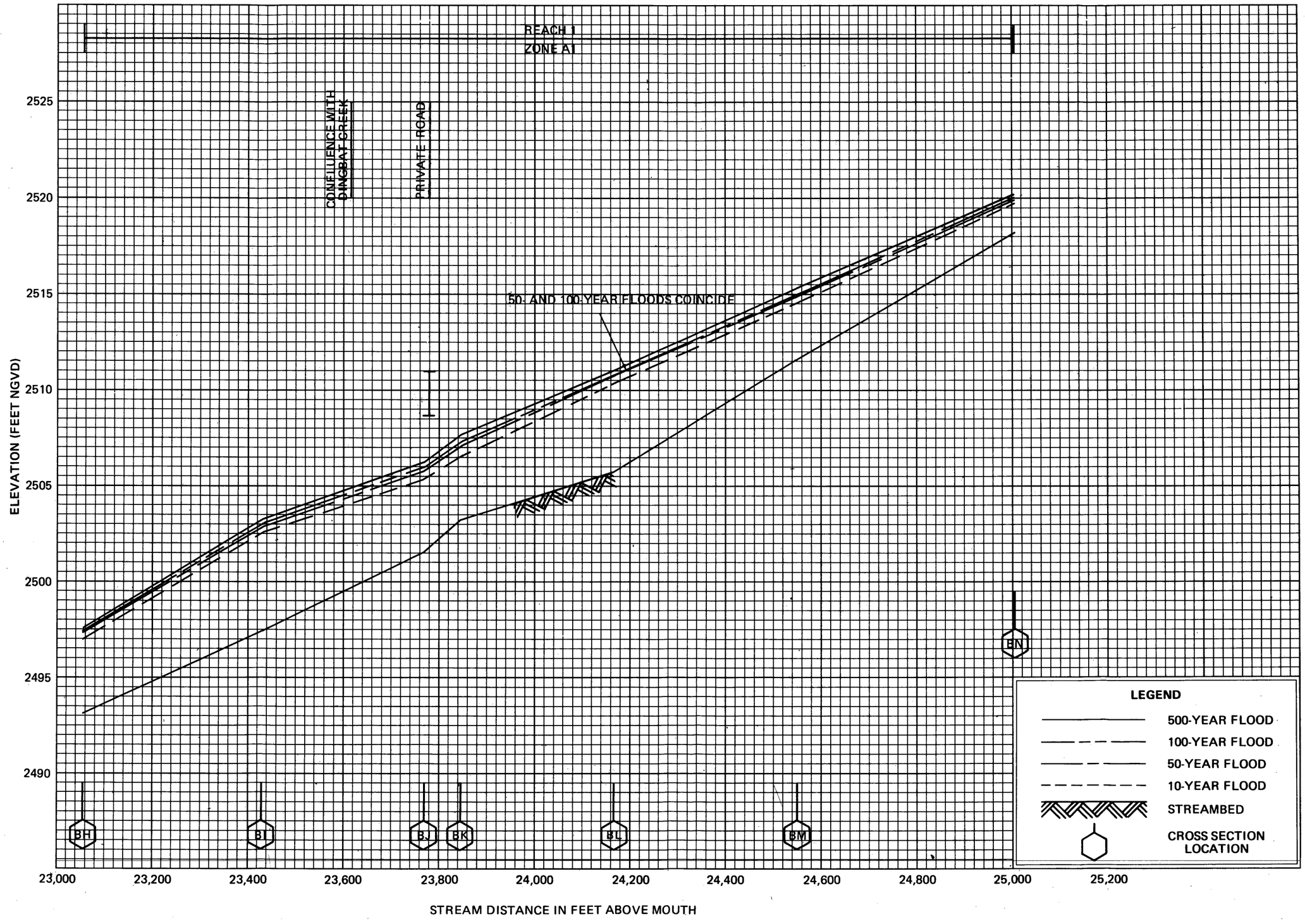


FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



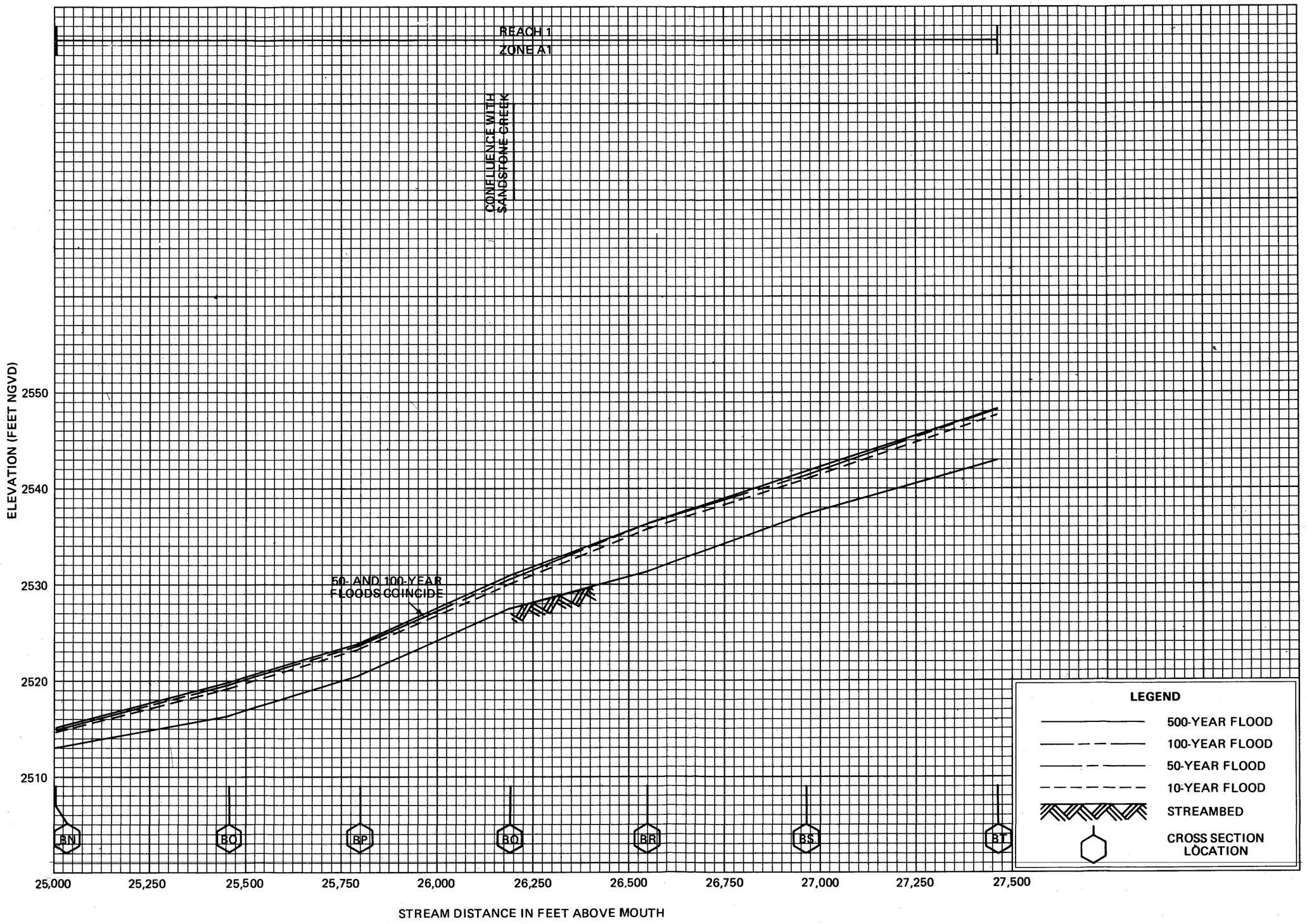
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

190P



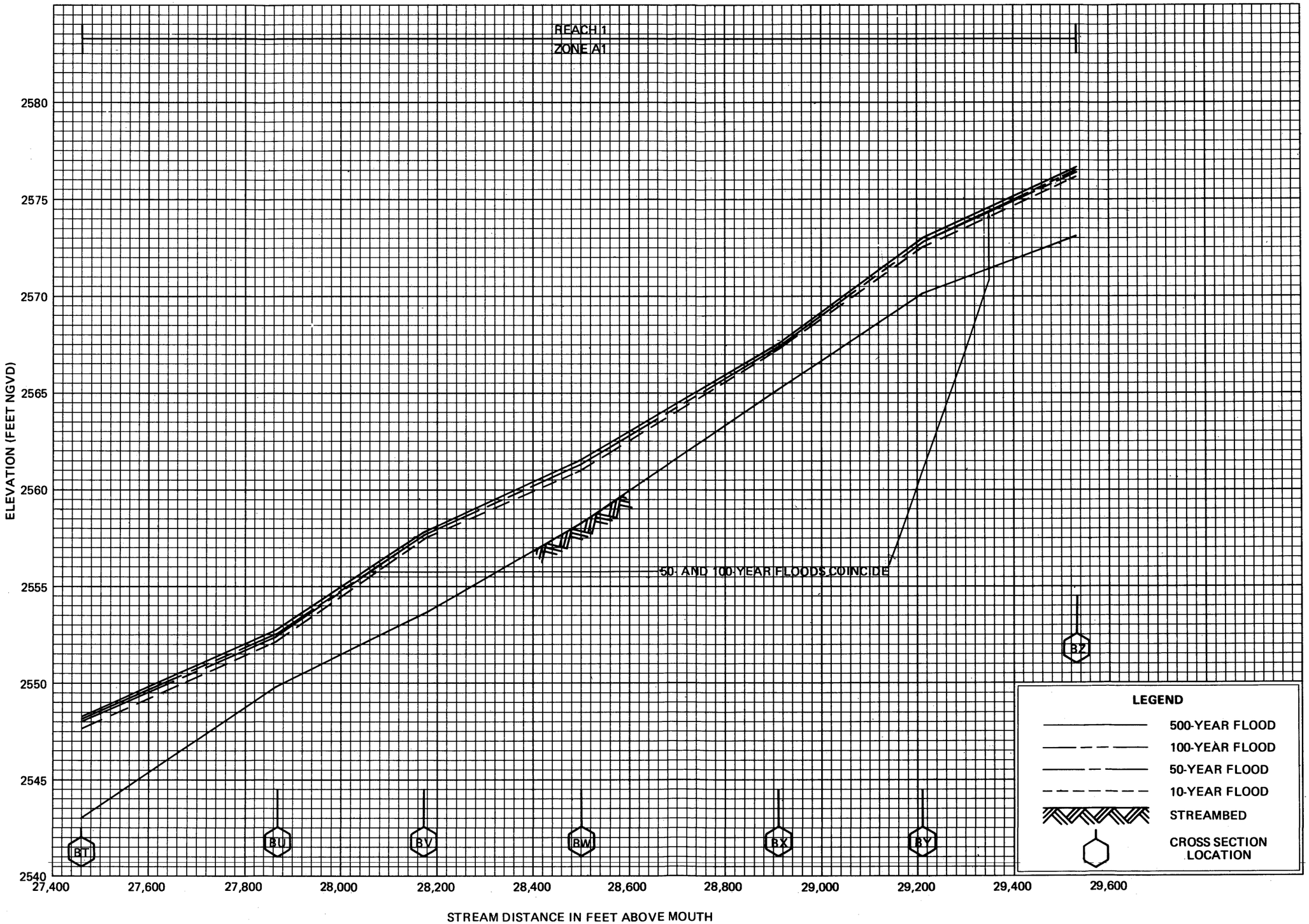
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

191P



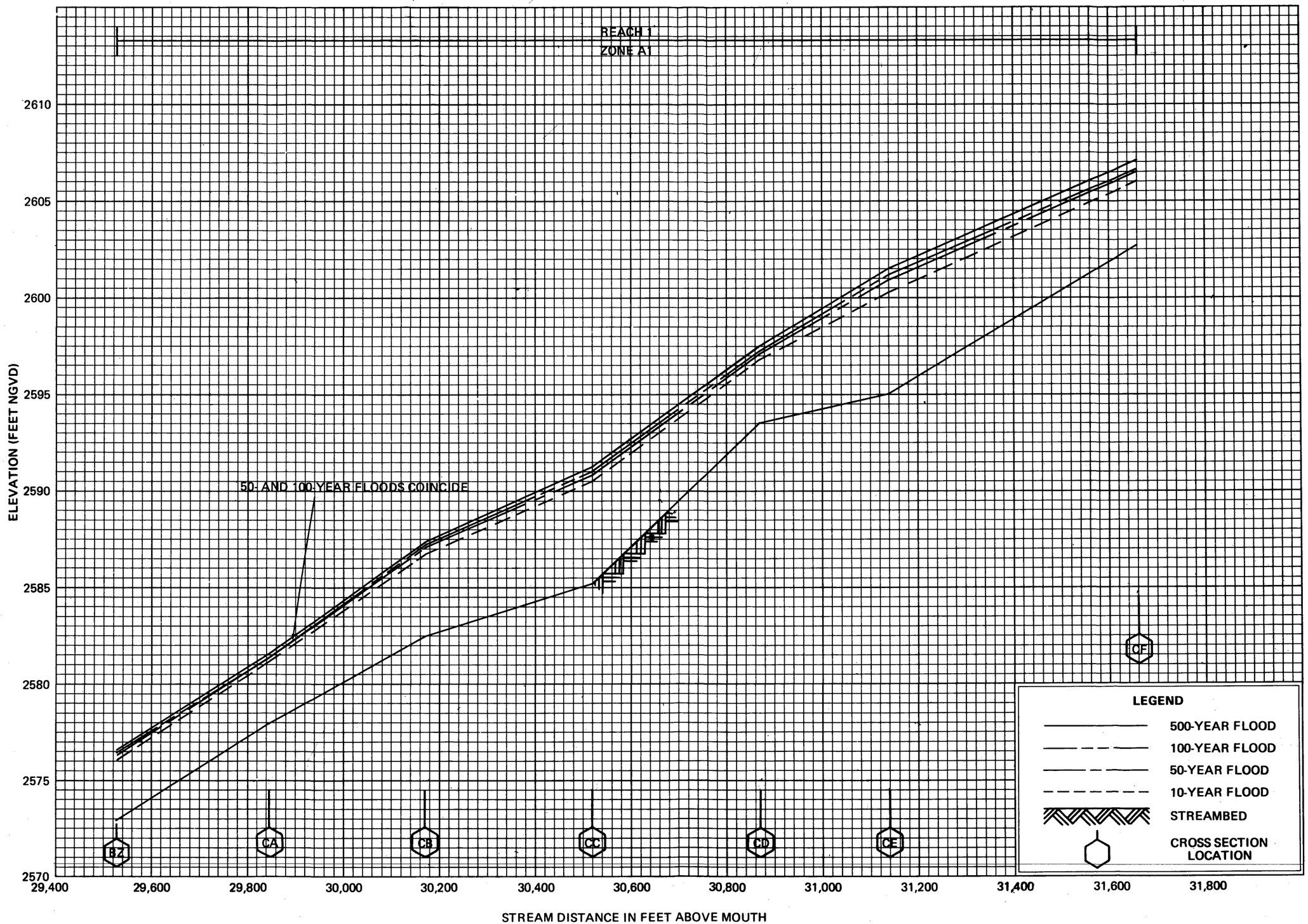
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

192P



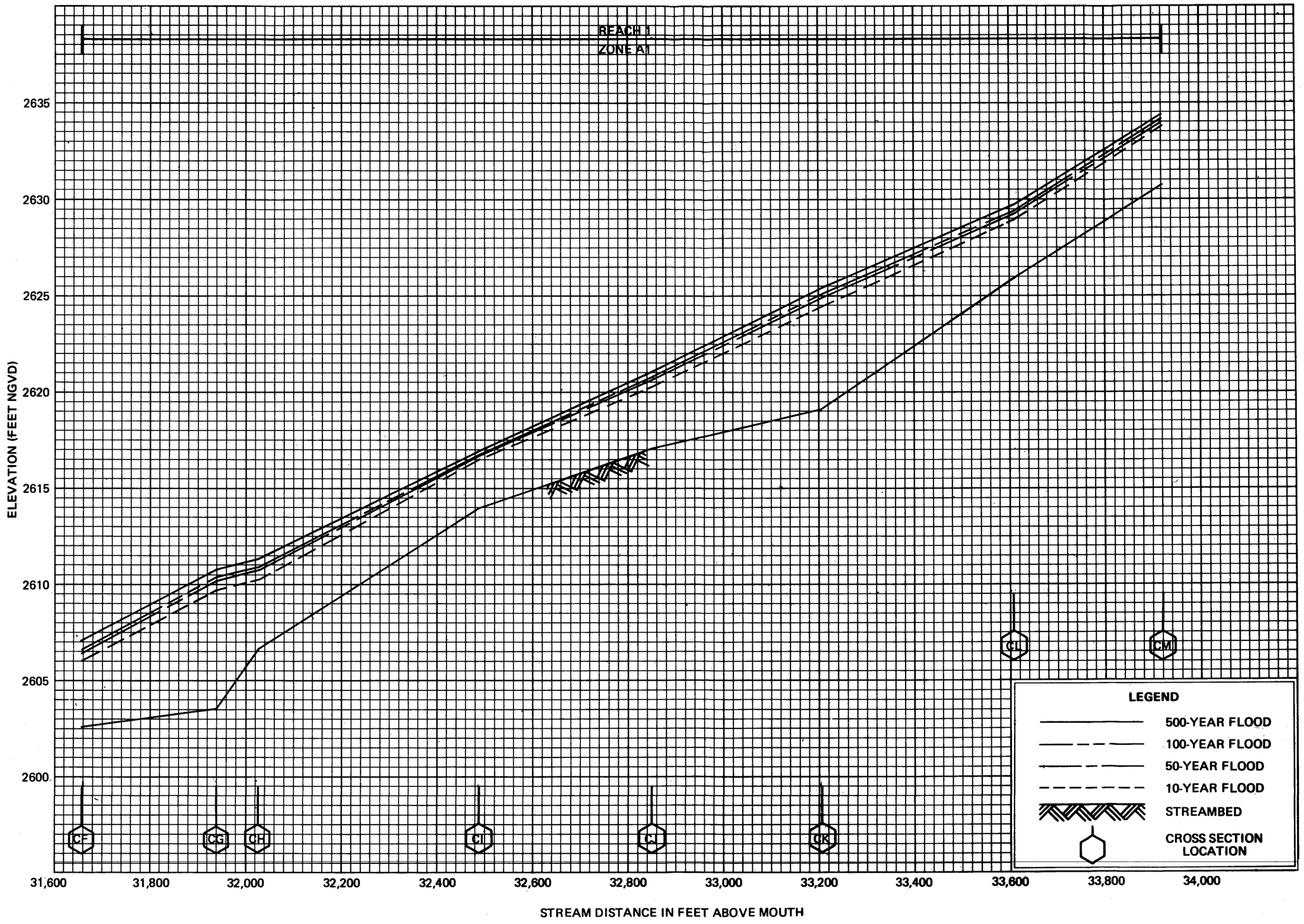
FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

193P

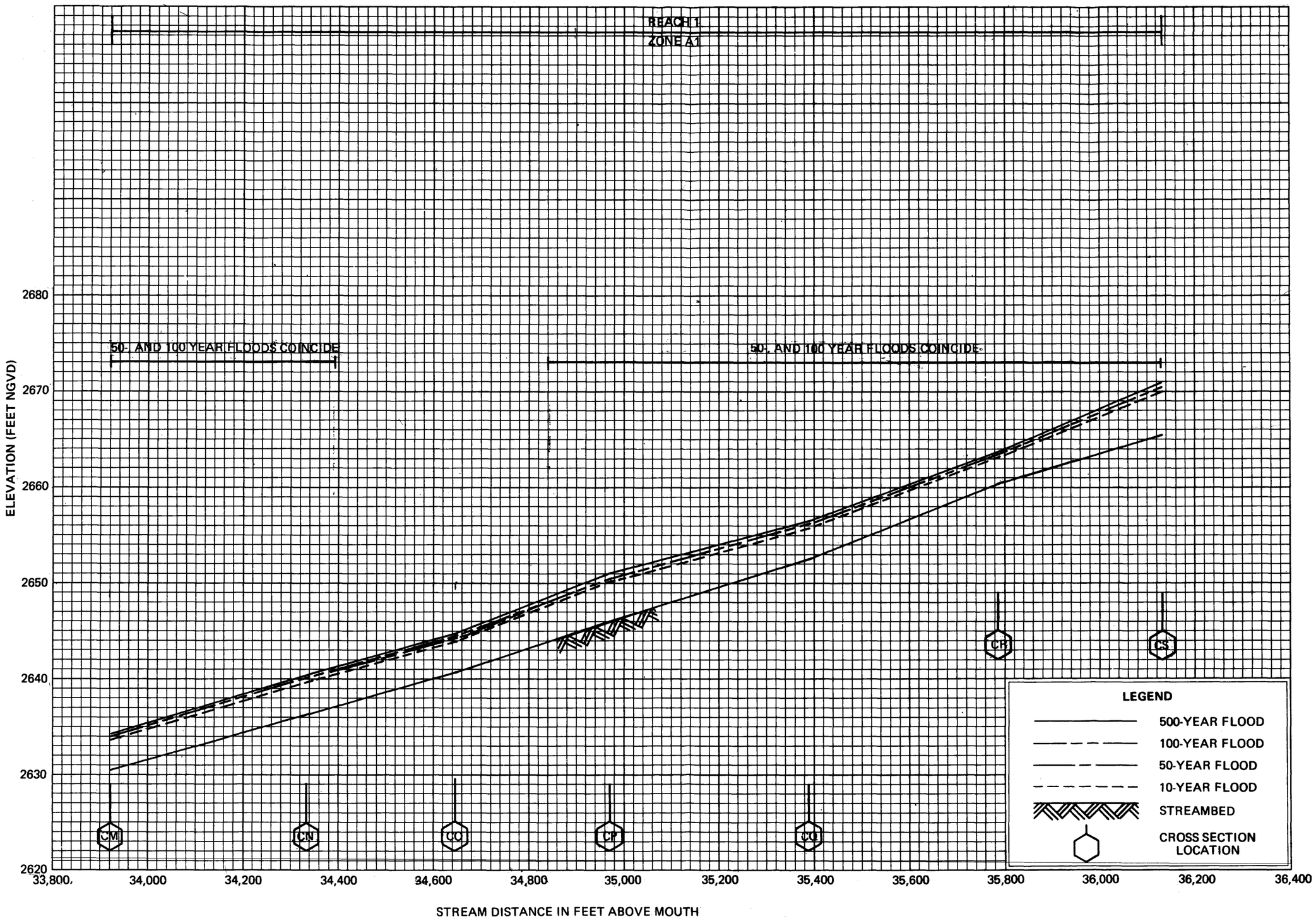


FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

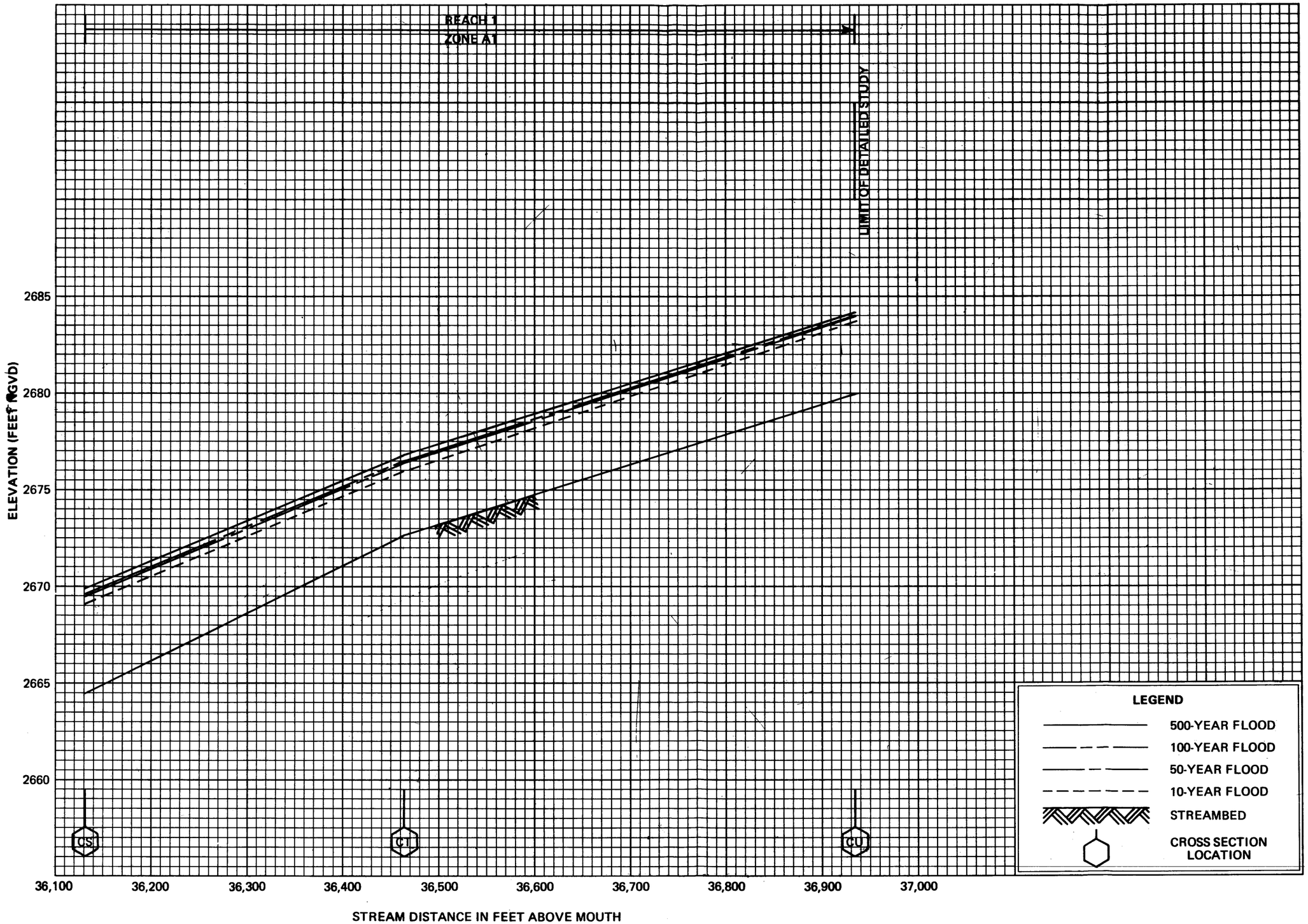


FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA



FLOOD PROFILES

WEST FORK TEANAWAY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITTITAS COUNTY, WA

196P