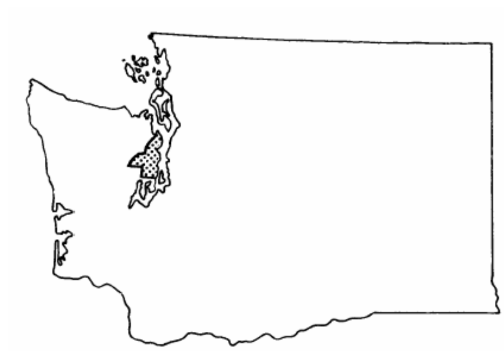
# FLOOD INSURANCE STUDY

# KITSAP COUNTY, WASHINGON AND INCORPORATED AREAS



| COMMUNITY NAME | COMMUNITY NUMBER |
|---|---|
| BAINBRIDGE ISLAND, CITY OF | 530307 |
| BREMERTON, CITY OF | 530093 |
| KITSAP COUNTY, UNINCORPORATED AREAS | 530092 |
| PORT ORCHARD, CITY OF | 530094 |
| POULSBO, CITY OF | 530241 |

**Federal Emergency Management Agency**

**Flood Insurance Study Number**
**41049CV000A**

**NOTICE TO**

**FLOOD INSURANCE STUDY USERS**

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

Selected Flood Insurance Rate Map panels for the community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

| Old Zone | New Zone |
| --- | --- |
| A1 through A30 | AE |
| V1 through V30 | VE |
| B | X |
| C | X |

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by a Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS report components.

Initial Countywide FIS Effective Date:

Revised Countywide FIS Dates:

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## PUBLISHED SEPARATELY

# FLOOD INSURANCE STUDY
# KITSAP COUNTY AND INCORPORATED AREAS

## 1.0 INRODUCTION

### 1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates information on the existence and severity of flood hazards in the geographic area of Kitsap County, including the Cities of Bainbridge Island, Bremerton, Port Orchard, and Poulsbo; and the unincorporated areas of Kitsap County (referred to collectively herein as Kitsap County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the City of Winslow has been renamed. It is now known as the City of Bainbridge Island. All mention of the City of Winslow has been removed from this study.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence, and the State (or other jurisdictional agency) will be able to explain them.

### 1.2 Authority and Acknowledgments

The sources of authority for this FIS report are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Tudor Engineering Company, for the Federal Insurance Administration, under Contract No. H-4025. This study was completed in November 1977.

### 1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, the state, and the study contractor to explain the nature and purpose of a FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final CCO meetings held for Kitsap County and the incorporated communities within its boundaries are shown in Table 1, "Initial and Final CCO Meetings."

Table 1. Initial and Final CCO Meetings

| Community | Initial CCO Date | Final CCO Date |
|---|---|---|
| Bainbridge Island, City of | November 5, 1984 | March 21, 1985 |
| Bremerton, City of | April 19, 1976 | June 27, 1978 |
| Kitsap County Unincorporated Areas | April 19, 1976 | March 7, 1979 |
| Port Orchard, City of | April 19, 1976 | June 27, 1978 |
| Poulsbo, City of | April 9, 1976 | June 26, 1978 |

For this countywide FIS, the scoping meeting was held on__________. This meeting was attended by representatives of FEMA; ______________.

## 2.0 AREA STUDIED

### 2.1 Scope of Study

This FIS report covers the geographic area of Kitsap County, including the incorporated communities listed in Section 1.1. The areas studied by detailed methods were selected with priority given to all known flood hazards and areas of projected development or proposed construction through 1982.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon, by FEMA and ____________.

### 2.2 Community Description

Kitsap County is located just west of the metropolitan Seattle area, across Puget Sound, in west-central Washington.

Kitsap County shares county borders to the east with Island, Snohomish, and King Counties through Puget Sound; to the south with Pierce and Mason Counties; and, to the west with Jefferson County.

The estimated population in 2004 was 239,138. This was an increase of 3.09% from the 2000 census (Reference 1).

The economy of Kitsap County depends heavily on activity at the Puget Sound Naval Shipyard in Bremerton and on the construction and development of the Trident Submarine Support Base at Bangor. In addition to these influences, Kitsap County supports a variety of activities, such as substantial lumber and wood products industry; dairying; raising of livestock and poultry; and growing of berries, fruits, bulbs, holly, and Christmas trees. The picking and packing of cascara bark, huckleberry, salal, and cedar boughs for use in floral displays on a national basis also produces substantial income.

Kitsap County has a characteristically maritime climate, typified by relatively short, cool, dry summers and prolonged, mild, wet winters. Average wintertime temperatures range from a low of approximately 30°F to a high of approximately 45°F. Normal summertime temperatures reach an average high of 75°F, with an average low temperature of 50°F at night.

Precipitation is moderate in the southern county areas, while the northern end of the county, lying more directly in the rain shadow of the Olympic Mountain, receives considerable less rainfall. Mean annual precipitation ranges from 26 inches in the north to 80 inches in the west-central portion of the county. While the average annual precipitation is 40 inches, only 2.5 inches of precipitation is normally received during the summer months. The average annual snowfall is 7.9 inches (References 2 and 3).

The land surface of the Kitsap Peninsula consists primarily of low rolling hills, which are remnants of a glacial drift plain. As a result of the irregular topography of the area, only a few major stream systems have developed. Most of study area is drained by small, relatively short streams that discharge directly into surrounding marine water. Lakes are generally small; the 14 lakes studied for this report have an average surface area of less than 90 acres.

Numerous buildings are located within the flood plains of the study area. The majority of these are situated along the shores of Puget Sound, where the flood plain rises to an elevation of 9.8 feet.

<u>City of Bainbridge Island</u>

The City of Bainbridge Island is located in east-central Kitsap County. It is bordered on the north and west by unincorporated areas of Kitsap County. Bainbridge Island is bordered on the east by Puget Sound and on the south by Eagle Harbor. The population in 2003 was estimated at 21,701 (Reference 1).

Bainbridge Island is located on part of the land surface of the Kitsap Peninsula, which primarily consists of low rolling hills, which are remnants of a glacial drift plain. Elevations in the city vary from sea level to approximately 200 feet. As a result of the irregular topography of the area, only a few major stream systems have developed. Most of the study area is drained by small, relatively short streams that discharge directly into the marine waters.

City of Bremerton

Bremerton is located on State Highways 3, 303, and 304, on the Olympic Peninsula. It is in the central portion of Kitsap County. It is approximately 15 miles west of Seattle and 33 miles north of Tacoma. It is situated on the western shore of Sinclair Inlet, a deepwater arm of Puget Sound.

In 2004, the population of Bremerton was estimated at 39,597 (Reference 1). While Bremerton has not experienced the highest growth rate in Kitsap County, it is the largest city.

The majority of Bremerton residents are employed by the Federal Government at the Puget Sound Naval Shipyard and at the Naval Torpedo Station. In May 1976, such employment made up over 95 percent of those employed by the six largest industrial and manufacturing concerns. Because of its central location and high population concentration, Bremerton is the center of commerce for the Kitsap Peninsula.

Gorst Creek has a drainage area of approximately 8 square miles. The basin displays the same low-relief glacial topography that is found throughout the Kitsap Peninsula.

Having its source near the unincorporated community of Sunnyslope, the main stream follows a north-northwesterly course toward Old Belfair Valley Road. It then moves gradually toward the east, heading into Sinclair Inlet (Reference 4). Parish Creek joins the main stem immediately west of the unincorporated community of Gorst.

City of Port Orchard

Port Orchard, the Kitsap County seat, is located on the south shore of Sinclair Inlet, across from the Puget Sound Naval Shipyard at Bremerton. It is approximately 15 miles west of Seattle and 20 miles north of Tacoma. The city is located in southeastern Kitsap County.

In 2003, the city's population was estimated at 7,903 (Reference 1). The County Planning Department forecasts a substantial growth in the city due to the development of the Trident Submarine Support Base in nearby Bangor, Washington.

Blackjack Creek has a drainage area of approximately 13.4 square miles at its mouth on Sinclair Inlet. The basin displays the characteristically low-relief glacial topography found throughout the Kitsap Peninsula. Land elevations range from sea level to approximately 520 feet at the divide near Square and Mathews Lakes. The main drainage follows a northeasterly course for approximately 6 miles to the mouth (Reference 4).

<u>City of Poulsbo</u>

Poulsbo was settled in the late 1880s as an agricultural trade center. It is located in the northern part of Kitsap County. Situated at the head of Liberty Bay off Puget Sound, Poulsbo is approximately 20 miles west of Seattle and 65 miles north of Tacoma.

The population has grown to 7,336 in 2003 (Reference 1). Substantial growth was expected in the 1970s because of the nearby development of the Trident Submarine Base at Bangor, Washington.

Poulsbo is a retail trade center for northern Kitsap County, and is supported by a variety of other activities, such as an oyster cannery, a clam processor, and a thriving marina which approximately 50 purse seiners call homeport.

Dogfish Creek has a drainage area of approximately 8.1 square miles. The basin displays the typical low-relief glacial topography characteristic of the Kitsap Peninsula. Elevations range from sea level to approximately 480 feet. The watershed has no lakes, but some surface storage is provided in the large marshy area near the West Fork of Dogfish Creek (Reference 3).

## 2.3 Principal Flood Problems

Kitsap County, in general, has no recorded history of major floods. The topography is such that excess precipitation is carried off by numerous small drainage features to the nearest arm of Puget Sound within a very short time. In addition, mean annual precipitation in the county is generally lower than that received in other parts of western Washington.

Research on flooding problems for this report consisted of reviews of newspaper files and interviews with local government officials and residents. Five notable flooding events were found to have occurred in the county. These included flood on February 22, 1949; January 20, 1967; December 7, 1970; March 26, 1972; and, January 17, 1974. The flood of January 17, 1974, on Chico Creek, is the most recent flood of records. It has a recurrence interval of approximately 3 years. It should be noted that discharge records do not exist past 1979 at www.usgs.gov. Some streams have records in the 1990s, but there isn't enough data to draw any conclusions about the severity of the discharge.

Each of these storms resulted in damage to roadways and roadway culverts. Property was inundated and earth slides occurred. In addition, schools and businesses were closed due to interruption of transportation.

The flood of February 22, 1949, is the best documented and, apparently, the largest in the history of the county. Stream gage records are available at the following five sites for this event.

| Stream Name and Location | Peak Flow (Cubic Feet Per Second) | Recurrence Interval |
|---|---|---|
| Dogfish Creek Near Poulsbo (Gage No. 120700) | 333 | 22-year |
| Chico Creek Near Bremerton (Gage No. 120720) | 1640 | 100-year |
| Union River Near Bremerton (Gage No. 120630) | 476 | --[1] |
| Union River Near Belfair (Gage No. 120635) | 1610 | 17-year |
| Blackjack Creek at Port Orchard (Gage No. 120725) | 285 | --[1] |

[1]Periods of Record Were Too Short to Provide Recurrence Interval

Newspaper accounts of the February 1949 flood describe numerous instances of the collapse of bulkheads and retaining walls caused by the thawing rains. Several houses were destroyed when earth slides damaged or displaced foundations. "An 81-year-old Port Orchard matron narrowly escaped serious injury last night when she fell into a road washout 50 feet deep near her home on Division Street" (Reference 5). A 40-foot section of State Highway 21-B at Brownsville was also destroyed. "Gorst Creek, flowing at the highest level on record, filled almost to capacity the two four-foot culverts under the old Navy Yard highway" (Reference 5).

With respect to coastal flooding, the four highest tides of record measured at the Seattle gage were as follows:

| | |
|---|---|
| December 5, 1967 | 11.9 feet NAVD |
| February 6, 1904 | 11.8 feet NAVD |
| December 24, 1968 | 11.8 feet NAVD |
| January 1, 1974 | 11.7 feet NAVD |

Each of these tides occurred in the morning during daylight hours when a large storm was off the Washington coast. As noted, the highest tides of record occurred on December 5, 1967, and reached a height of 11.9 feet, which was 1.7 feet above the predicted level. At the time, a low barometric pressure system covered all of western Washington; the barometric pressure was 29.30 inches at Sea-Tac Airport, which is located 5 miles south of Seattle, near the coast of Puget Sound.

Tides of the magnitude listed above resulted in widespread and serious damage to coastal structures throughout Puget Sound. However, the recurrence intervals of these tides have frequencies of less than 2 years.

### 2.4 Flood Protection Measures

No major flood protection structures are located within the study area. In 1955, the City of Bremerton started construction on Casad Dam, approximately 6 miles west of Bremerton on the Union River; however, the dam has no floodwater storage capacity.

Other flood protection measures are small, privately owned bulkheads along the shoreline of Sinclair Inlet in the Cities of Bremerton and Port Orchard. The shoreline of Liberty Bay in the City of Poulsbo also has small, privately owned bulkheads.

Numerous lakes throughout the county serve to mitigate peak flows on their outlet streams by providing uncontrolled storage.

The coastal areas are not protected by systematic protection works, but many individual, uncoordinated, protective works, such as riprap and low bulkheads, have been constructed by individual landowners.

On July 11, 1977, the Board of County Commissioners of Kitsap County, Washington, passed a resolution adopting the Shoreline Master Program of Kitsap County. It was effective as of August 15, 1977, and carries out the responsibilities required by the Shoreline Management Act of 1971, of the State of Washington.

Blackjack Creek, from Sinclair Inlet upstream to State Highway 16, is regulated by the provisions of the Shoreline Management Act of the State of Washington, and any development within 200 feet of the creek requires the approval of a Substantial Development.

## 3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood-hazard data required for this study. Flood events of a magnitude that is expected to be equaled 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 floodplain management and for flood insurance rates. These evens, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled 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 that equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

### 3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Of the streams studied, only four have gaging station records of significant length. The gages, all operated by the U.S. Geological Survey, are listed in the following table, along with their associated length of record:

| Gage Name | Number | Period of Record |
|---|---|---|
| Union River Near Bremerton | 120630 | October 1945 to September 1959 |
| Union River Near Belfair | 120635 | July 1947 to September 1957<br>March 1961 to September 1974 |
| Dogfish Creek Near Poulsbo | 120700 | July 1947 to September 1971 |
| Chico Creek Near Bremerton | 120720 | July 1947 to September 1958 |

One additional gage, No. 120725, was operated near the mouth of Blackjack Creek from 1947 to 1950.

Because of the paucity of available streamflow records, the synthetic hydrograph method was used to calculate floodflows. The relatively large flood event of February 22, 1949 was selected for analysis, and the HEC-1 computer model (Reference 6) was used to reconstruct the event. The results of this analysis were tested, using a frequency curve developed by standard log-Pearson Type III methods (Reference 7) for the gage with the longest period of record (Dogfish Creek) and found acceptable.

The river basins in the study area were divided into 54 subbasins for the calculation of discharges for each recurrence interval desired.

Peak discharge-drainage area relationships for streams studied by detailed methods are shown in Table 2, Summary of Discharges.

Computations to determine the flood elevations of Kitsap Lake for the selected recurrence intervals were performed using the TR-20 computer (Reference 8) developed by the U.S. Soil Conservation Service.

Streams selected for approximate study were investigated using discharges developed in a manner similar to those developed for detailed analysis, but for the 1-percent-annual recurrence interval only.

A HEC-RAS model was created for Kitsap County Public Works as part of the Clear Creek Watershed Silverdale Drainage Analysis in 2001**.** In 2005 a restudy was done and included No Name Creek No. 7. Channel sections were surveyed in November 2005, and overbank areas were defined using the most recent LIDAR data from the Puget Sound LIDAR Consortium.

Annual instantaneous peak discharges for the 10-, 2-, 1- and 0.2-percent chance floods were estimated for Clear Creek and No Name Creek No. 7 following FEMA guidelines. Since no gages exist on Clear Creek that could provide a significant period of record, peak annual flows were computed using the HEC-HMS modeling software.

## 3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods on the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS

## Table 2. Summary of Discharges

| Flooding Source and Location | Drainage Area (square miles) | Peak Discharges (cubic feet per second) | | | |
|---|---|---|---|---|---|
| | | 10-Percent-Annual-Chance | 2-Percent-Annual-Chance | 1-Percent-Annual-Chance | 0.2-Percent-Annual-Chance |
| BARKER CREEK | | | | | |
| At Mouth | 4.2 | 140 | 195 | 225 | 310 |
| BEAVER CREEK | | | | | |
| At Mouth | 1.9 | 80 | 100 | 115 | 150 |
| BLACKJACK CREEK | | | | | |
| At Confluence With Tributary Southeast of Sidney Road | 5.3 | 140 | 210 | 240 | 330 |
| At Mouth | 13.4 | 390 | 570 | 660 | 910 |
| CHICO CREEK | | | | | |
| At Dickerson Creek | 9.8 | 780 | 1,225 | 1,465 | 2,135 |
| At Mouth | 14.0 | 980 | 1,480 | 1,750 | 2,500 |
| CLEAR CREEK | | | | | |
| At Mouth | 7.8 | 370 | 475 | 555 | 715 |
| CURLEY CREEK | | | | | |
| At Long Lake | 8.4 | 245 | 360 | 425 | 600 |
| At Mouth | 12.6 | 425 | 610 | 730 | 1,010 |
| DICKERSON CREEK | | | | | |
| At Mouth | 2.1 | 180 | 275 | 305 | 385 |
| DOGFISH CREEK | | | | | |
| At Mouth | 8.1 | 290 | 430 | 500 | 715 |
| EAST FORK DOGFISH CREEK | | | | | |
| At Mouth | 3.3 | 105 | 160 | 185 | 265 |
| EAST FORK UNION RIVER | | | | | |
| At Mouth | 2.5 | 245 | 325 | 365 | 465 |

**Table 2. Summary of Discharges**

| Flooding Source and Location | Drainage Area (square miles) | Peak Discharges (cubic feet per second) 10-Percent-Annual-Chance | 2-Percent-Annual-Chance | 1-Percent-Annual-Chance | 0.2-Percent-Annual-Chance |
|---|---|---|---|---|---|
| GORST CREEK | | | | | |
| At Parish Creek | 6.4 | 650 | 845 | 930 | 1,190 |
| At Mouth | 7.9 | 800 | 1,040 | 1,145 | 1,460 |
| HAZEL CREEK | | | | | |
| At Mouth | 0.6 | 60 | 80 | 90 | 115 |
| KITSAP CREEK | | | | | |
| At Mouth | 3.6 | 155 | 190 | 210 | 255 |
| NO NAME CREEK NO. 3 | | | | | |
| At Mouth | 1.1 | 110 | 140 | 160 | 205 |
| NO NAME CREEK NO. 4 | | | | | |
| At Mouth | 0.6 | 65 | 85 | 90 | 115 |
| NO NAME CREEK NO. 6 | | | | | |
| At Mouth | 1.9 | 105 | 155 | 170 | 230 |
| NO NAME CREEK NO. 7 | | | | | |
| At the Confluence with Clear Creek | 3.2 | 150 | 215 | 250 | 340 |
| PARISH CREEK | | | | | |
| At Mouth | 1.8 | 180 | 230 | 255 | 325 |
| ROSS CREEK | | | | | |
| At Mouth | 2.1 | 200 | 265 | 295 | 375 |
| SOUTH FORK BLACKJACK CREEK | | | | | |
| At Mouth | 2.0 | 55 | 80 | 90 | 120 |
| TRIBUTARY TO NO NAME CREEK NO. 6 | | | | | |
| At the Confluence with No Name Creek No. 6 | 0.8 | 50 | 65 | 70 | 95 |
| UNION RIVER | | | | | |
| At Hazel Creek | 5.9 | 585 | 760 | 855 | 1,110 |
| At No Name Creek No. 3 | 7.0 | 695 | 900 | 1,015 | 1,315 |
| At the Confluence With East Fork Union River | 10.6 | 1,040 | 1,360 | 1,525 | 1,975 |

report.  Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes.  For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Water-surface elevations were computed through use of the U.S. Army Corps of Engineers HEC-2 step-backwater computer program (Reference 9).  A HEC-RAS model was used to calculate normal depth as the starting water-surface elevations for Clear Creek and No Name Creek No. 7. Cross sectional physical data for streams in the area were field surveyed. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Channel and overbank roughness factors (Manning's "n") were based on field inspection and photographs at each cross section location.  A detailed listing of Manning's "n" values for each stream is shown in Table 3.

Detailed-studied streams that were not re-studied as part of this map update may include a "profile base line" on the maps.  This "profile base line" provides a link to the flood profiles included in the FIS report.  The detail-studied stream centerline may have been digitized or redelineated as part of this revision.  The "profile base lines" for these streams were based on the best available data at the time of their study and are depicted as they were on the previous FIRMs. In some cases where improved topographical data was used to redelineate floodplain boundaries, the "profile base line" may deviate significantly from the channel centerline or may be outside the SFHA.

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 was computed (Section 4.2), selected cross-section locations are also shown on the FIRM.

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).

Starting water-surface elevations for the streams were computed by the slope-area method for studies beginning inland, and mean higher-high water elevations were used where the study reach extended inland from Puget Sound.

The Kitsap County lakes selected for detailed analysis were field surveyed to obtain information on outlet elevations and other control features. Physical data and aerial photographs of the lakes were obtained from a Washington State Department of Ecology publication (Reference 10).

Table 3. Mannings "n" values

| Stream | Maximum | Minimum |
|---|---|---|
| Barker Creek | | |
| Channel | 0.050 | 0.045 |
| Overbank | 0.800 | 0.080 |
| No Name Creek No. 6 and Tributary to No Name Creek No. 6 | | |
| Channel | 0.060 | 0.020 |
| Overbank | 0.100 | 0.080 |
| Clear Creek and No Name Creek No. 7 | | |
| Channel | 0.065 | 0.040 |
| Overbank | 0.065 | 0.012 |
| Beaver Creek | | |
| Channel | 0.060 | 0.060 |
| Overbank | 0.100 | 0.100 |
| Blackjack Creek (Upper Reach) | | |
| Channel | 0.040 | 0.040 |
| Overbank | 0.080 | 0.080 |
| South Fork Blackjack Creek | | |
| Channel | 0.040 | 0.040 |
| Overbank | 0.080 | 0.080 |
| Ross Creek | | |
| Channel | 0.045 | 0.040 |
| Overbank | 0.085 | 0.080 |
| Gorst Creek | | |
| Channel | 0.040 | 0.300 |
| Overbank | 0.080 | 0.080 |
| No Name Creek No. 4 | | |
| Channel | 0.040 | 0.040 |
| Overbank | 0.080 | 0.080 |
| Parish Creek | | |
| Channel | 0.040 | 0.040 |
| Overbank | 0.080 | 0.080 |
| Chico Creek | | |
| Channel | 0.045 | 0.030 |
| Overbank | 0.100 | 0.080 |

Table 3. Mannings "n" values

| Stream | Maximum | Minimum |
|---|---|---|
| Dickerson Creek | | |
| Channel | 0.045 | 0.030 |
| Overbank | 0.080 | 0.080 |
| Kitsap Creek, Curley Creek, Dogfish Creek, East Fork Dogfish Creek | | |
| Channel | 0.040 | 0.040 |
| Overbank | 0.080 | 0.080 |
| Union River | | |
| Channel | 0.050 | 0.040 |
| Overbank | 0.100 | 0.100 |
| East Fork Union River | | |
| Channel | 0.050 | 0.040 |
| Overbank | 0.100 | 0.100 |
| No Name Creek No. 3 | | |
| Channel | 0.050 | 0.050 |
| Overbank | 0.100 | 0.100 |
| Hazel Creek | | |
| Channel | 0.060 | 0.060 |
| Overbank | 0.080 | 0.080 |

Computations for the flood elevations of the lakes for the selected recurrence intervals were performed using the TR-20 computer model (Reference 11) developed by the U.S. Soil Conservation Service.

Detailed flooding analysis was also performed for selected reaches along Puget Sound throughout Kitsap County. Methodology consisted of statistical analysis of the 77 years of tidal elevation records at the nearby Seattle gage to determine the elevations associated with the various frequency floods.

There are two areas of hydraulic complexity within the Clear Creek system. A split flow occurs at Silverdale Way due to backwater from an undersized culvert at Waaga Way. The model predicts that the creek will overtop the road at this location and flow down Silverdale Way. Because the flooding in the split flow is shallow (less than 3 feet) and the hydraulics in the split flow are complex, it was studied using approximate methods.

A lateral weir was used to model the overflow for Clear Creek in the HEC-RAS model. The lateral weir was used to estimate the amount of water flowing out of the creek and accordingly reduced the amount of water flowing downstream within the creek. The split flow reenters Clear Creek near Myhre Road. A flow change location just downstream of Myhre Road includes the flow that was removed from the system for the split flow analysis.

A weir coefficient of 2.0 was used for this structure. This coefficient is lower than is typically recommended for broad crested weirs and was used because the overflow being modeled is not a true broad crested weir and would not have the same flow characteristics. In order to ensure that a higher weir coefficient would not result in flows that would use flooding along Silverdale Way to exceed 3 feet. A weir coefficient of 3.2 was used to determine the sensitivity of the weir. Using a weir coefficient of 3.2 resulted in an overflow of approximately 65 cfs which did not cause flooding in excess of 3 feet. Therefore, approximate methods for this area are appropriate.

The second area of complexity occurs upstream of the Schold Road culverts. Backwater from the Schold Road culverts causes Clear Creek to overtop its banks and flow into the west fork. A lateral weir was used in the model to simulate this effect.

Comparison of corresponding historical flood elevations between the Seattle gage and gages in Kitsap County at Port Gamble and Seabeck demonstrated that the average difference in recorded elevations for specific events at these gages was approximately 0.3 foot, with a maximum difference of approximately 0.5 foot.

Meteorological effects may cause the water level in Puget Sound to rise as much as 2.5 feet above the predicted tidal elevation. These meteorological effects are greatest when a fast-moving, low-pressure system, accompanied by strong onshore coastal winds, moves over Puget Sound from the southwest. Windwaves produced during these storms will rarely exceed 2 feet because of the limited fetch for south to southwest winds. Wave heights due to high winds were analyzed based on fetch length, wind velocity, exposure direction, and beach slope. One-half of the predicted wave height was added to the predicted tidal height to yield elevations for the various frequency floods.

Elevations for floods of the selected recurrence intervals for flooding sources studied by detailed methods are shown in Table 4.

Table 4. Summary of Elevations

| | Elevation (Feet NAVD) | | | |
|---|---|---|---|---|
| Flooding Source | 10-Year | 50- Year | 100-Year | 500-Year |
| All Saltwater Coastal Reaches | 12.7 | 13.1 | 13.3 | 13.6 |
| Sinclair Inlet | 12.7 | 13.1 | 13.3 | 13.6 |
| William Symington Lake | 391.1 | 392.1 | 392.5 | 393.7 |
| Wye Lake | 307.1 | 307.9 | 308.3 | 309.4 |
| Bear Lake | 407.5 | 407.7 | 407.7 | 407.8 |
| Wildcat Lake | 382.4 | 383.1 | 383.5 | 384.7 |
| Tahuya Lake | 595.8 | 596.2 | 596.3 | 596.8 |
| Panther Lake | 502.4 | 502.9 | 503.1 | 503.7 |
| Mission Lake | 520.4 | 520.9 | 521.2 | 521.8 |
| Horseshoe Lake | 277.5 | 278.0 | 278.2 | 278.8 |
| Farview Lake | 390.0 | 390.0 | 390.0 | 390.2 |
| Long Lake | 123.0 | 123.6 | 123.8 | 124.4 |
| Kitsap Lake | 162.0 | 162.4 | 162.6 | 163.2 |
| Island Lake | 222.4 | 222.7 | 222.8 | 222.9 |
| Tiger Lake | 499.4 | 499.7 | 499.9 | 500.4 |

Flood depths for the approximate study areas were estimated in the field by use of a programmable calculator using the normal depth methods.

Using a hand level and approximate distances, flooded areas corresponding to the estimated depth of flooding were then mapped in the field. Culverts were investigated individually in similar fashion.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

### 3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations ca be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

To accurately convert flood elevations for Kitsap County from the current NGVD29 datum to the newer NAVD88 datum, the following procedure was implemented. Locations at the quadrangle corners within the county and outside the county within 2.5 miles, were evaluated using the USACE's CORPSCON (Reference 12) datum conversion software. The final NAVD88 elevation provided for Kitsap County was completed by adding 3.5 feet to the existing NGVD29 data.

Flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the NGVD and NAVD, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services<br>
NOAA, N/NGS12<br>
National Geodetic Survey<br>
SSMC-3, #9202<br>
1315 East-West Highway<br>
Silver Spring, Maryland 20910-3282<br>
(301) 713-3242<br>
(301) 713-4172 (fax)

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

## 4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS report provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1- and 0.2-percent-annual-chance floodplains; and a 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

### 4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross section, the boundaries were interpolated using topographic maps at a scale of 1:24,000, enlarged to scale of 1:12,000, with contour intervals of 20, 25, and 40 feet (References 13, 14, and 15).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations, but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

Using the elevations determined in Section 3.2, flood boundaries for the coastal and lake shorelines studied by detailed methods were interpolated on topographic maps (References 13, 14, and 15).

For streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM.

Approximate 1-percent-annual-chance floodplain boundaries in some portions of the study were taken directly from the Flood Hazard Boundary Map for Kitsap County (Reference 16). For areas studied by approximate methods, flood plains that permanently narrowed to less than 200 feet wide were designated areas of minimal flooding.

## 4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal-conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross section (see Table 5, Floodway Data). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway is shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation (WSEL) of the base flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| BARKER CREEK | | | | | | | | |
| A | 0.010 | 130 | 1,295 | 0.2 | 16.2 | 16.2 | 17.0 | 0.8 |
| B | 0.158 | 31 | 253 | 0.9 | 16.2 | 16.2 | 17.0 | 0.8 |
| C | 0.337 | 51 | 237 | 0.9 | 26.7 | 26.7 | 26.7 | 0.0 |
| D | 0.504 | 30 | 62 | 3.6 | 38.7 | 38.7 | 38.8 | 0.1 |
| E | 0.659 | 25 | 32 | 7.1 | 49.5 | 49.5 | 49.5 | 0.0 |
| F | 0.800 | 17 | 37 | 6.1 | 58.4 | 58.4 | 58.9 | 0.5 |
| BEAVER CREEK | | | | | | | | |
| A | 0.203 | 20 | 91 | 1.3 | 31.4 | 31.4 | 31.9 | 0.5 |
| B | 0.342 | 23 | 64 | 1.8 | 40.7 | 40.7 | 40.7 | 0.0 |
| C | 0.551 | 17 | 30 | 3.8 | 60.7 | 60.7 | 60.8 | 0.1 |
| D | 0.736 | 17 | 20 | 5.8 | 84.0 | 84.0 | 84.0 | 0.0 |
| BLACKJACK CREEK (LOWER REACH) | | | | | | | | |
| A | 0.097 | 86 | 436 | 1.5 | 13.3 | 11.2[2] | 11.2 | 0.0 |
| B | 0.300 | 67 | 187 | 3.5 | 13.3 | 13.1[2] | 13.1 | 0.0 |
| C | 0.575 | 55 | 92 | 7.1 | 23.4 | 23.4 | 23.4 | 0.0 |

[1]MILES ABOVE MOUTH

[2]ELEVATIONS WITHOUT CONSIDERATION OF BACKWATER FROM SINCLAIR INLET

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**BARKER CREEK - BEAVER CREEK - BLACKJACK CREEK (LOWER REACH)**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| BLACKJACK CREEK (UPPER REACH) | | | | | | | | |
| A | 2.975 | 49 | 263 | 2.2 | 163.7 | 163.7 | 164.7 | 1.0 |
| B | 3.123 | 58 | 415 | 1.4 | 169.2 | 169.2 | 169.6 | 0.4 |
| C | 3.270 | 102 | 870 | 0.7 | 172.6 | 172.6 | 173.0 | 0.4 |
| D | 3.440 | 30 | 253 | 0.9 | 172.6 | 172.6 | 173.0 | 0.4 |
| E | 3.660 | 18 | 157 | 1.5 | 174.1 | 174.1 | 174.5 | 0.4 |
| F | 3.893 | 26 | 84 | 2.9 | 174.2 | 174.2 | 175.0 | 0.8 |
| G | 4.093 | 17 | 70 | 3.4 | 176.7 | 176.7 | 176.7 | 0.0 |
| H | 4.240 | 65 | 134 | 1.8 | 182.2 | 182.2 | 182.2 | 0.0 |
| I | 4.423 | 24 | 53 | 4.6 | 186.1 | 186.1 | 186.1 | 0.0 |
| J | 4.670 | 15 | 68 | 3.5 | 189.2 | 189.2 | 189.5 | 0.3 |
| K | 4.900 | 97 | 368 | 0.7 | 191.2 | 191.2 | 191.6 | 0.4 |
| L | 5.050 | 29 | 122 | 2.0 | 191.2 | 191.2 | 191.7 | 0.5 |
| M | 5.203 | 120 | 329 | 0.7 | 191.2 | 191.2 | 192.0 | 0.8 |
| N | 5.397 | 8 | 11 | 3.7 | 191.2 | 191.2 | 192.0 | 0.8 |
| O | 5.620 | 20 | 13 | 3.2 | 203.2 | 203.2 | 203.8 | 0.6 |
| P | 5.775 | 25 | 22 | 6.8 | 218.9 | 218.9 | 218.9 | 0.0 |
| CHICO CREEK | | | | | | | | |
| A | 0.410 | 41 | 147 | 11.4 | 30.3 | 30.3 | 30.3 | 0.0 |
| B | 0.505 | 113 | 344 | 4.9 | 36.5 | 36.5 | 36.5 | 0.0 |
| C | 0.630 | 87 | 190 | 8.8 | 43.5 | 43.5 | 43.6 | 0.1 |
| D | 0.750 | 65 | 288 | 5.8 | 48.6 | 48.6 | 48.7 | 0.1 |
| E | 0.950 | 100 | 258 | 6.5 | 61.7 | 61.7 | 61.7 | 0.0 |
| F | 1.085 | 80 | 178 | 9.4 | 69.0 | 69.0 | 69.0 | 0.0 |
| G | 1.275 | 80 | 248 | 5.9 | 81.1 | 81.1 | 81.1 | 0.0 |
| H | 1.495 | 37 | 130 | 8.2 | 93.5 | 93.5 | 93.6 | 0.1 |
| I | 1.703 | 33 | 100 | 10.7 | 111.4 | 111.4 | 111.4 | 0.0 |

[1]MILES ABOVE MOUTH

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**BLACKJACK CREEK - CHICO CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CLEAR CREEK | | | | | | | | |
| A | 42 | 223 | 1,432 | 1.1 | 13.3 | 8.6[2] | 8.9 | 0.3 |
| B | 308 | 19 | 218 | 13.7 | 13.3 | 7.4[2] | 7.5 | 0.1 |
| C | 371 | 177 | 2,102 | 0.8 | 17.7 | 17.7 | 18.3 | 0.6 |
| D | 527 | 224 | 2,912 | 0.6 | 17.7 | 17.7 | 18.3 | 0.6 |
| E | 618 | 198 | 2,395 | 0.7 | 17.7 | 17.7 | 18.3 | 0.6 |
| F | 772 | 223 | 2,767 | 0.6 | 17.7 | 17.7 | 18.3 | 0.6 |
| G | 948 | 198 | 1,944 | 0.8 | 17.7 | 17.7 | 18.3 | 0.6 |
| H | 1,199 | 129 | 1,262 | 1.3 | 17.7 | 17.7 | 18.3 | 0.6 |
| I | 1,549 | 81 | 650 | 2.4 | 17.7 | 17.7 | 18.3 | 0.6 |
| J | 1,829 | 70 | 455 | 3.5 | 17.8 | 17.8 | 18.4 | 0.6 |
| K | 2,009 | 42 | 316 | 6.4 | 18.1 | 18.1 | 18.6 | 0.5 |
| L | 2,161 | 36 | 235 | 6.8 | 18.8 | 18.8 | 19.3 | 0.5 |
| M | 2,404 | 47 | 291 | 5.5 | 21.4 | 21.4 | 21.5 | 0.1 |
| N | 2,628 | 33 | 176 | 9.0 | 22.0 | 22.0 | 22.6 | 0.6 |
| O | 2,882 | 60 | 393 | 4.1 | 24.5 | 24.5 | 24.8 | 0.3 |
| P | 3,120 | 48 | 247 | 6.4 | 25.0 | 25.0 | 25.4 | 0.4 |
| Q | 3,412 | 70 | 383 | 4.2 | 26.4 | 26.4 | 27.4 | 1.0 |
| R | 3,649 | 95 | 501 | 3.2 | 27.2 | 27.2 | 28.3 | 1.1 |
| S | 3,905 | 142 | 739 | 2.2 | 27.9 | 27.9 | 29.0 | 1.1 |
| T | 4,146 | 47 | 207 | 7.7 | 28.3 | 28.3 | 29.0 | 0.7 |
| U | 4,342 | 73 | 443 | 3.9 | 29.9 | 29.9 | 30.9 | 1.0 |
| V | 4,393 | 40 | 307 | 4.7 | 30.0 | 30.0 | 31.0 | 1.0 |
| W | 4,479 | 48 | 327 | 4.5 | 30.5 | 30.5 | 31.2 | 0.7 |
| X | 4,581 | 72 | 617 | 2.4 | 30.8 | 30.8 | 31.6 | 0.8 |
| Y | 4,818 | 78 | 320 | 4.6 | 31.0 | 31.0 | 31.7 | 0.7 |
| Z | 5,006 | 241 | 864 | 1.7 | 31.7 | 31.7 | 32.7 | 1.0 |

[1]FEET ABOVE CONFLUENCE WITH DYES INLET

[2]ELEVATIONS WITHOUT CONSIDERATION OF BACKWATER FROM DYES INLET

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**CLEAR CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CLEAR CREEK | | | | | | | | |
| AA | 5,048 | 241 | 879 | 1.7 | 31.8 | 31.8 | 32.8 | 1.0 |
| AB | 5,161 | 258 | 971 | 1.5 | 32.0 | 32.0 | 32.9 | 0.9 |
| AC | 5,466 | 241 | 1,097 | 1.3 | 32.1 | 32.1 | 33.1 | 1.0 |
| AD | 5,693 | 206 | 694 | 2.1 | 32.2 | 32.2 | 33.1 | 0.9 |
| AE | 6,114 | 40 | 159 | 10.5 | 34.3 | 34.3 | 34.3 | 0.0 |
| AF | 6,300 | 40 | 671 | 4.6 | 38.5 | 38.5 | 38.5 | 0.0 |
| AG | 6,729 | 455 | 1,522 | 1.0 | 39.1 | 39.1 | 39.1 | 0.0 |
| AH | 7,016 | 46 | 269 | 5.4 | 39.0 | 39.0 | 39.1 | 0.1 |
| AI | 7,075 | 62 | 384 | 3.6 | 39.7 | 39.7 | 40.7 | 1.0 |
| AJ | 7,114 | 86 | 400 | 3.6 | 39.7 | 39.7 | 40.7 | 1.0 |
| AK | 7,220 | 172 | 800 | 0.3 | 40.1 | 40.1 | 41.0 | 0.9 |
| AL | 7,334 | 126 | 813 | 0.3 | 40.1 | 40.1 | 41.0 | 0.9 |
| AM | 7,456 | 82 | 259 | 0.9 | 40.1 | 40.1 | 41.0 | 0.9 |
| AN | 7,695 | 20 | 108 | 2.1 | 40.2 | 40.2 | 41.1 | 0.9 |
| AO | 7,897 | 11 | 63 | 3.5 | 40.4 | 40.4 | 41.3 | 0.9 |
| AP | 8,099 | 22 | 91 | 2.5 | 41.0 | 41.0 | 41.8 | 0.8 |
| AQ | 8,219 | 32 | 93 | 2.4 | 41.3 | 41.3 | 42.0 | 0.7 |
| AR | 8,286 | 8 | 65 | 5.3 | 41.4 | 41.4 | 42.0 | 0.6 |
| AS | 8,343 | 91 | 343 | 0.7 | 44.6 | 44.6 | 45.0 | 0.4 |
| AT | 8,393 | 199 | 394 | 0.6 | 44.6 | 44.6 | 45.0 | 0.4 |
| AU | 8,530 | 108 | 236 | 3.1 | 44.7 | 44.7 | 45.1 | 0.4 |
| AV | 8,777 | 83 | 364 | 2.0 | 45.5 | 45.5 | 46.2 | 0.7 |
| AW | 9,048 | 96 | 406 | 1.8 | 45.9 | 45.9 | 46.8 | 0.9 |
| AX | 9,370 | 106 | 408 | 1.8 | 46.4 | 46.4 | 47.3 | 0.9 |
| AY | 9,566 | 69 | 264 | 2.7 | 46.8 | 46.8 | 47.6 | 0.8 |
| AZ | 9,661 | 105 | 375 | 1.9 | 47.4 | 47.4 | 48.4 | 1.0 |

[1]FEET ABOVE CONFLUENCE WITH DYES INLET

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**CLEAR CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CLEAR CREEK | | | | | | | | |
| BA | 9,946 | 135 | 441 | 1.6 | 48.2 | 48.2 | 49.1 | 0.9 |
| BB | 10,109 | 154 | 525 | 1.4 | 48.4 | 48.4 | 49.4 | 1.0 |
| BC | 10,541 | 206 | 482 | 1.5 | 49.1 | 49.1 | 50.1 | 1.0 |
| BD | 10,785 | 275 | 546 | 1.3 | 49.7 | 49.7 | 50.8 | 1.1 |
| BE | 11,028 | 315 | 293 | 2.5 | 51.2 | 51.2 | 52.2 | 1.0 |
| BF | 11,360 | 475 | 569 | 1.3 | 54.5 | 54.5 | 55.6 | 1.1 |
| BG | 11,599 | 253 | 416 | 1.7 | 57.2 | 57.2 | 58.1 | 0.9 |
| BH | 11,984 | 359 | 492 | 1.5 | 60.6 | 60.6 | 61.6 | 1.0 |
| BI | 12,320 | 290 | 468 | 1.6 | 63.8 | 63.8 | 64.8 | 1.0 |
| BJ | 12,539 | 170 | 325 | 2.2 | 66.1 | 66.1 | 67.1 | 1.0 |
| BK | 12,924 | 112 | 175 | 3.2 | 71.2 | 71.2 | 72.0 | 0.8 |
| BL | 13,269 | 57 | 123 | 4.6 | 75.8 | 75.8 | 76.8 | 1.0 |
| BM | 13,713 | 31 | 80 | 7.1 | 84.0 | 84.0 | 84.3 | 0.3 |
| BN | 14,065 | 49 | 110 | 5.1 | 90.0 | 90.0 | 90.2 | 0.2 |
| BO | 14,571 | 30 | 89 | 6.4 | 98.7 | 98.7 | 99.7 | 1.0 |
| BP | 14,958 | 27 | 76 | 7.4 | 107.3 | 107.3 | 107.6 | 0.3 |
| BQ | 15,386 | 19 | 75 | 7.5 | 115.5 | 115.5 | 116.1 | 0.6 |
| BR | 15,575 | 24 | 91 | 6.2 | 118.6 | 118.6 | 119.6 | 1.0 |
| BS | 15,673 | 17 | 70 | 8.1 | 120.7 | 120.7 | 121.3 | 0.6 |
| BT | 15,691 | 27 | 72 | 3.5 | 122.2 | 122.2 | 122.3 | 0.1 |
| BU | 15,716 | 13 | 50 | 5.1 | 122.4 | 122.4 | 122.4 | 0.0 |
| BV | 15,883 | 18 | 49 | 5.2 | 124.1 | 124.1 | 125.1 | 1.0 |
| BW | 16,403 | 15 | 83 | 3.1 | 133.3 | 133.3 | 133.8 | 0.5 |
| BX | 16,977 | 20 | 34 | 7.4 | 145.6 | 145.6 | 145.6 | 0.0 |
| BY | 17,249 | 21 | 51 | 5.0 | 150.8 | 150.8 | 150.8 | 0.0 |
| BZ | 17,717 | 16 | 41 | 6.2 | 159.5 | 159.5 | 159.5 | 0.0 |

[1]FEET ABOVE CONFLUENCE WITH DYES INLET

| TABLE 5 | FEDERAL EMERGENCY MANAGEMENT AGENCY<br>**KITSAP COUNTY, WA**<br>**AND INCORPORATED AREAS** | **FLOODWAY DATA**<br>**CLEAR CREEK** |
|---|---|---|

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CLEAR CREEK | | | | | | | | |
| CA | 18,150 | 18 | 45 | 5.6 | 168.0 | 168.0 | 168.0 | 0.0 |
| CB | 18,373 | 16 | 39 | 6.5 | 172.5 | 172.5 | 172.5 | 0.0 |
| CC | 18,486 | 17 | 32 | 7.9 | 180.8 | 180.8 | 181.7 | 0.9 |

[1]FEET ABOVE CONFLUENCE WITH DYES INLET

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**CLEAR CREEK**

**TABLE 5**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| CURLEY CREEK | | | | | | | | |
| A | 0.670 | 33 | 102 | 7.2 | 22.8 | 22.8 | 23.0 | 0.2 |
| B | 0.850 | 32 | 73 | 8.9 | 41.5 | 41.5 | 41.5 | 0.0 |
| C | 1.050 | 93 | 77 | 5.5 | 55.3 | 55.3 | 55.3 | 0.0 |
| D | 1.250 | 42 | 89 | 4.8 | 62.5 | 62.5 | 62.6 | 0.1 |
| E | 1.465 | 34 | 78 | 5.5 | 70.6 | 70.6 | 70.7 | 0.1 |
| F | 1.675 | 71 | 64 | 6.7 | 95.7 | 95.7 | 95.7 | 0.0 |
| G | 1.902 | 30 | 69 | 6.1 | 111.0 | 111.0 | 111.1 | 0.1 |
| H | 2.045 | 125 | 151 | 2.8 | 115.8 | 115.8 | 115.8 | 0.0 |
| I | 2.215 | 29 | 98 | 4.3 | 120.3 | 120.3 | 120.4 | 0.1 |
| J | 2.460 | 64 | 231 | 1.8 | 121.9 | 121.9 | 122.5 | 0.6 |
| K | 2.663 | 44 | 187 | 2.3 | 122.5 | 122.5 | 123.3 | 0.8 |
| L | 2.825 | 38 | 136 | 3.1 | 123.6 | 123.6 | 124.3 | 0.7 |
| DICKERSON CREEK | | | | | | | | |
| A | 0.025 | 39 | 41 | 7.4 | 90.3 | 90.3[2] | 90.3 | 0.0 |
| B | 0.335 | 30 | 39 | 7.9 | 127.9 | 127.9 | 127.9 | 0.0 |
| DOGFISH CREEK | | | | | | | | |
| A | 0.015 | 80 | 261 | 1.9 | 10.4 | 10.4[3] | 10.4 | 0.0 |
| B | 0.360 | 43 | 72 | 5.7 | 16.4 | 16.4 | 16.7 | 0.3 |
| C | 0.463 | 159 | 1,079 | 0.4 | 32.5 | 32.5 | 32.5 | 0.0 |
| D | 0.565 | 80 | 630 | 0.7 | 32.6 | 32.6 | 32.6 | 0.0 |
| E | 0.690 | 41 | 116 | 3.5 | 32.6 | 32.6 | 32.6 | 0.0 |
| F | 0.845 | 24 | 44 | 4.0 | 37.0 | 37.0 | 37.0 | 0.0 |
| G | 0.950 | 18 | 24 | 7.3 | 43.6 | 43.6 | 43.6 | 0.0 |

[1]MILES ABOVE MOUTH

[2]ELEVATION COMPUTED WITHOUT CONSIDERATION OF BACKWATER EFFECTS FROM CHICO CREEK

[3]ELEVATION SHOWN WITHOUT CONSIDERATION OF BACKWATER FROM LIBERTY BAY

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**CURLEY CREEK - DICKERSON CREEK - DOGFISH CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| EAST FORK DOGFISH CREEK | | | | | | | | |
| A | 0.022 | 50 | 87 | 2.1 | 40.0 | 40.0 | 40.5 | 0.5 |
| B | 0.136 | 30 | 37 | 5.1 | 50.0 | 50.0 | 50.0 | 0.0 |
| C | 0.272 | 40 | 43 | 4.3 | 65.8 | 65.8 | 65.8 | 0.0 |
| EAST FORK UNION CREEK | | | | | | | | |
| A | 0.064 | 51 | 180 | 2.0 | 149.5 | 149.5 | 150.5 | 1.0 |
| B | 0.321 | 100 | 161 | 2.3 | 158.0 | 158.0 | 158.9 | 0.9 |
| C | 0.557 | 70 | 134 | 2.7 | 167.5 | 167.5 | 168.5 | 1.0 |
| D | 0.883 | 43 | 107 | 2.6 | 180.8 | 180.8 | 180.8 | 0.0 |
| E | 1.309 | 44 | 41 | 6.7 | 223.4 | 223.4 | 223.4 | 0.0 |
| GORST CREEK | | | | | | | | |
| A | 0.100 | 99 | 492 | 2.3 | 14.3 | 14.3 | 14.4 | 0.1 |
| B | 0.280 | 55 | 144 | 8.0 | 18.4 | 18.4 | 18.4 | 0.0 |
| C | 0.530 | 31 | 98 | 10.1 | 29.3 | 29.3 | 29.3 | 0.0 |
| D | 0.630 | 36 | 300 | 3.3 | 42.0 | 42.0 | 42.0 | 0.0 |
| E | 0.750 | 143 | 572 | 1.7 | 56.0 | 56.0 | 57.0 | 1.0 |
| F | 0.848 | 140 | 465 | 2.0 | 56.8 | 56.8 | 57.5 | 0.7 |
| G | 0.990 | 111 | 398 | 1.3 | 62.7 | 62.7 | 62.7 | 0.0 |
| H | 1.173 | 54 | 76 | 7.5 | 71.2 | 71.2 | 71.2 | 0.0 |
| HAZEL CREEK | | | | | | | | |
| A | 0.048 | 24 | 15 | 6.0 | 185.4 | 185.4 | 185.4 | 0.0 |
| B | 0.378 | 34 | 24 | 3.7 | 242.4 | 242.4 | 242.4 | 0.0 |

[1]MILES ABOVE MOUTH

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**EAST FORK DOGFISH CREEK - EAST FORK UNION CREEK - GORST CREEK - HAZEL CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| KITSAP CREEK | | | | | | | | |
| A | 0.095 | 100 | 36 | 5.8 | 95.1 | 95.1 | 95.1 | 0.0 |
| B | 0.250 | 76 | 40 | 5.2 | 112.4 | 112.4 | 112.4 | 0.0 |
| C | 0.440 | 102 | 34 | 6.3 | 129.2 | 129.2 | 129.2 | 0.0 |
| D | 0.600 | 62 | 30 | 7.0 | 153.6 | 153.6 | 153.6 | 0.0 |
| NO NAME CREEK NO. 3 | | | | | | | | |
| A | 0.053 | 70 | 47 | 3.4 | 181.1 | 181.1 | 181.1 | 0.0 |
| B | 0.656 | 108 | 177 | 0.9 | 205.9 | 205.9 | 206.0 | 0.1 |
| C | 0.827 | 60 | 49 | 3.3 | 229.3 | 229.3 | 229.3 | 0.0 |
| D | 1.055 | 21 | 45 | 3.6 | 249.4 | 249.4 | 249.6 | 0.2 |
| NO NAME CREEK NO. 4 | | | | | | | | |
| A | 0.050 | 16 | 14 | 6.4 | 30.8 | 30.8 | 30.8 | 0.0 |
| B | 0.220 | 17 | 15 | 5.9 | 66.3 | 66.3 | 66.3 | 0.0 |
| NO NAME CREEK NO. 6 | | | | | | | | |
| A | 0.083 | 5 | 26 | 6.6 | 16.5 | 16.5 | 16.5 | 0.0 |
| B | 0.183 | 6 | 17 | 9.7 | 25.4 | 25.4 | 25.4 | 0.0 |
| C | 0.251 | 19 | 40 | 4.3 | 34.4 | 34.4 | 34.4 | 0.0 |
| D | 0.346 | 25 | 47 | 3.6 | 42.0 | 42.0 | 42.3 | 0.3 |
| E | 0.442 | 21 | 24 | 6.9 | 54.4 | 54.4 | 54.4 | 0.0 |
| F | 0.535 | 13 | 21 | 8.0 | 64.8 | 64.8 | 65.0 | 0.2 |
| G | 0.657 | 21 | 42 | 4.1 | 78.9 | 78.9 | 79.1 | 0.2 |
| H | 0.765 | 11 | 28 | 2.7 | 91.2 | 91.2 | 91.4 | 0.2 |
| I | 0.903 | 10 | 12 | 6.3 | 109.9 | 109.9 | 109.9 | 0.0 |
| J | 1.020 | 10 | 11 | 6.6 | 133.8 | 133.8 | 133.8 | 0.0 |
| K | 1.100 | 29 | 32 | 2.3 | 139.7 | 139.7 | 139.7 | 0.0 |

[1]MILES ABOVE MOUTH

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**KITSAP CREEK - NO NAME CREEK NO. 3 - NO NAME CREEK NO. 4 - NO NAME CREEK NO. 6**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| NO NAME CREEK NO. 7 | | | | | | | | |
| A | 108[2] | 89 | 482 | 2.3 | 40.2 | 40.2 | 41.0 | 0.8 |
| B | 173[2] | 139 | 764 | 1.5 | 40.3 | 40.3 | 41.1 | 0.8 |
| C | 263[2] | 14 | 167 | 13.6 | 41.1 | 41.1 | 41.1 | 0.0 |
| D | 356[2] | 130 | 817 | 1.4 | 44.5 | 44.5 | 45.4 | 0.9 |
| E | 442[2] | 137 | 762 | 1.0 | 44.5 | 44.5 | 45.5 | 1.0 |
| F | 749[2] | 50 | 155 | 4.0 | 44.5 | 44.5 | 45.4 | 0.9 |
| PARISH CREEK | | | | | | | | |
| A | 0.135 | 113 | 142 | 1.8 | 71.2 | 71.2 | 71.8 | 0.6 |
| B | 0.299 | 20 | 32 | 8.0 | 87.5 | 87.5 | 87.5 | 0.0 |
| C | 0.467 | 38 | 34 | 7.4 | 112.9 | 112.9 | 112.9 | 0.0 |
| ROSS CREEK | | | | | | | | |
| A | 0.070 | 274 | 2,700 | 0.1 | 17.8 | 17.8 | 17.8 | 0.0 |
| B | 0.150 | 60 | 380 | 0.8 | 17.8 | 17.8 | 17.8 | 0.0 |
| C | 0.310 | 26 | 44 | 6.6 | 26.0 | 26.0 | 26.0 | 0.0 |
| D | 0.480 | 34 | 41 | 7.2 | 43.1 | 43.1 | 43.1 | 0.0 |
| E | 0.665 | 51 | 48 | 6.1 | 63.6 | 63.6 | 63.6 | 0.0 |
| F | 0.835 | 39 | 50 | 5.9 | 86.9 | 86.9 | 86.9 | 0.0 |
| G | 0.995 | 22 | 39 | 7.6 | 111.4 | 111.4 | 111.4 | 0.0 |
| SOUTH FORK BLACKJACK CREEK | | | | | | | | |
| N[3] | 0.050 | 195 | 495 | 0.4 | 191.3 | 191.3 | 192.3 | 1.0 |
| O[3] | 0.270 | 13 | 40 | 4.9 | 196.4 | 196.4 | 197.0 | 0.6 |
| P | 0.490 | 20 | 67 | 1.3 | 205.0 | 205.0 | 206.0 | 1.0 |
| Q | 0.720 | 13 | 25 | 3.6 | 212.3 | 212.3 | 212.6 | 0.3 |
| R | 0.940 | 35 | 16 | 5.7 | 231.7 | 231.7 | 231.7 | 0.0 |

[1] MILES ABOVE MOUTH

[2] FEET ABOVE CONFLUENCE WITH CLEAR CREEK

[3] CROSS SECTION SHARED WITH BLACKJACK CREEK (UPPER REACH)

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**NO NAME CREEK NO. 7 - PARISH CREEK - ROSS CREEK - SOUTH FORK BLACKJACK CREEK**

| FLOODING SOURCE | | FLOODWAY | | | 1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION | | | |
|---|---|---|---|---|---|---|---|---|
| CROSS SECTION | DISTANCE[1] | WIDTH (FEET) | SECTION AREA (SQ.FEET) | MEAN VELOCITY (FEET/SEC.) | REGULATORY (FEET NAVD) | WITHOUT FLOODWAY (FEET NAVD) | WITH FLOODWAY (FEET NAVD) | INCREASE (FEET) |
| TRIBUTARY TO NO NAME CREEK NO. 6 | | | | | | | | |
| A | 0.080 | 7 | 14 | 5.1 | 96.6 | 96.6 | 96.7 | 0.1 |
| UNION RIVER | | | | | | | | |
| A | 4.565 | 70 | 294 | 5.2 | 138.6 | 138.6 | 139.0 | 0.4 |
| B | 4.813 | 70 | 220 | 6.9 | 146.5 | 146.5 | 146.8 | 0.3 |
| C | 5.028 | 70 | 370 | 4.1 | 149.5 | 149.5 | 150.4 | 0.9 |
| D | 5.263 | 161 | 201 | 5.0 | 164.6 | 164.6 | 164.8 | 0.2 |
| E | 5.491 | 75 | 359 | 2.8 | 177.3 | 177.3 | 177.3 | 0.0 |
| F | 5.800 | 51 | 130 | 5.2 | 184.2 | 184.2 | 184.3 | 0.1 |
| G | 5.949 | 170 | 180 | 3.7 | 198.3 | 198.3 | 198.3 | 0.0 |
| H | 6.244 | 33 | 100 | 6.7 | 217.0 | 217.0 | 217.0 | 0.0 |
| I | 6.474 | 31 | 85 | 7.9 | 237.8 | 237.8 | 237.9 | 0.1 |

[1]MILES ABOVE MOUTH

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, WA**

**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**TRIBUTARY TO NO NAME CREEK NO. 6 - UNION RIVER**

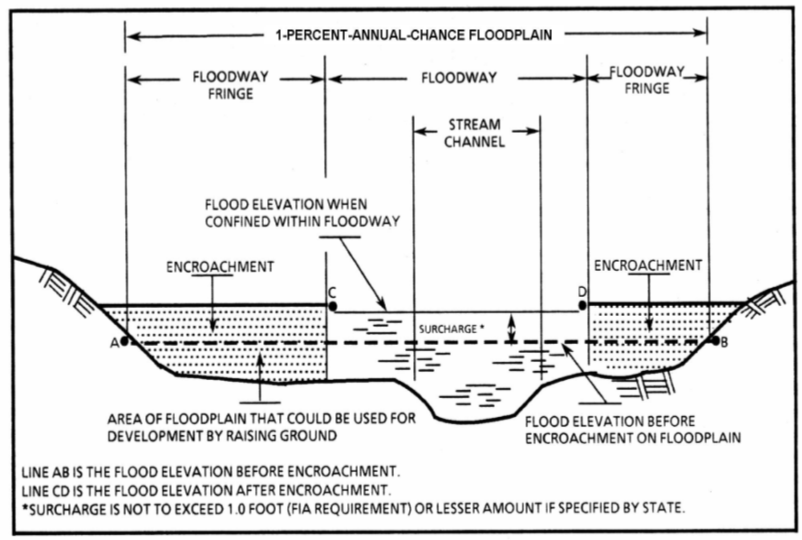


**Figure 1. Floodway Schematic**

## 5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

**Zone A**

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base (1-percent-annual-chance) flood elevations (BFEs) or depths are shown within this zone.

**Zone AE**

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS report by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

**Zone X**

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile (sq. mi.), and areas protected from the base flood by levees. No BFEs or depths are shown within this zone.

## 6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied be detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For flood management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Morrow County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 6, "Community Map History."

## 7.0 OTHER STUDIES

The State of Washington, in cooperation with the U.S. Geological Survey, published a water resources report in 1965 covering the water resources and geology of Kitsap Peninsula (Reference 3). The report does not treat the phenomenon of flooding in any detail but does contain descriptions of the physical properties of streams in the area and analysis of existing rainfall and streamflow records.

The Federal Insurance Administration previously published a Flood Hazard Boundary Map for Kitsap County (Reference 16). The present study, however, represents a more detailed analysis of the area.

This FIS report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

| COMMUNITY NAME | INITIAL IDENTIFICATION | FLOOD HAZARD BOUNDARY MAP REVISION DATE(S) | FLOOD INSURANCE RATE MAP EFFECTIVE DATE | FLOOD INSURANCE RATE MAP REVISION DATE(S) |
|---|---|---|---|---|
| Bainbridge Island, City of | November 5, 1984 | --1 | February 5, 1986 | - |
| Bremerton, City of | April 16, 1976 | --1 | August 15, 1979 | - |
| Kitsap County Unincorporated Areas | April 16, 1976 | --1 | May 15, 1980 | - |
| Port Orchard, City of | April 16, 1976 | --1 | November 15, 1979 | - |
| Poulsbo, City of | April 9, 1976 | --1 | August 11, 1981 | - |

[1] **Not applicable** [2] **Map rescinded** [3] **Never mapped** [4] **Non-Floodprone**

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

**KITSAP COUNTY, OR**

**AND INCORPORATED AREAS**

**COMMUNITY MAP HISTORY**

## 8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region X, Federal Regional Center, 130 228th Street, SW, Bothell, Washington 98021-9796.

## 9.0 BIBLIOGRAPHY AND REFERENCES


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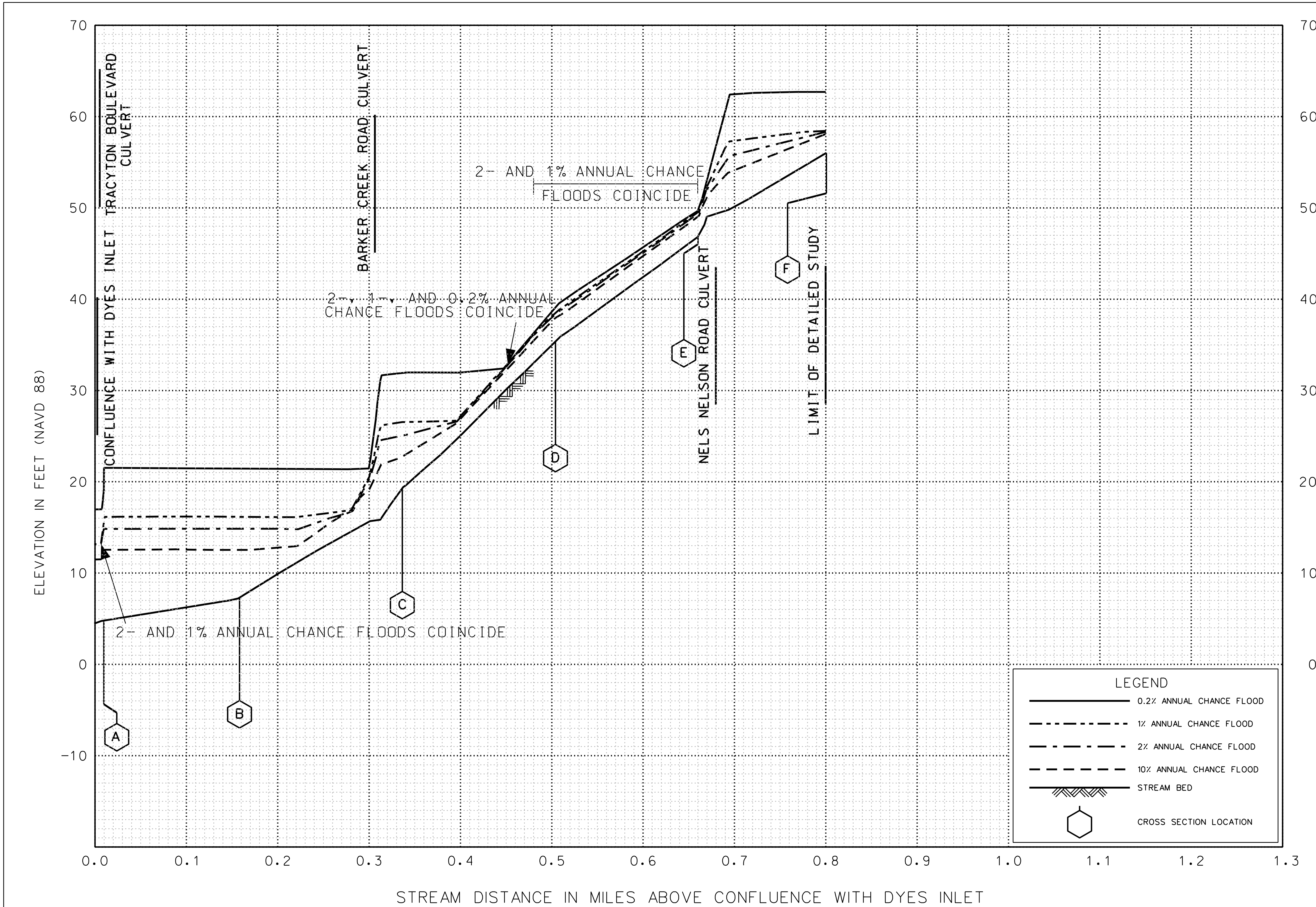


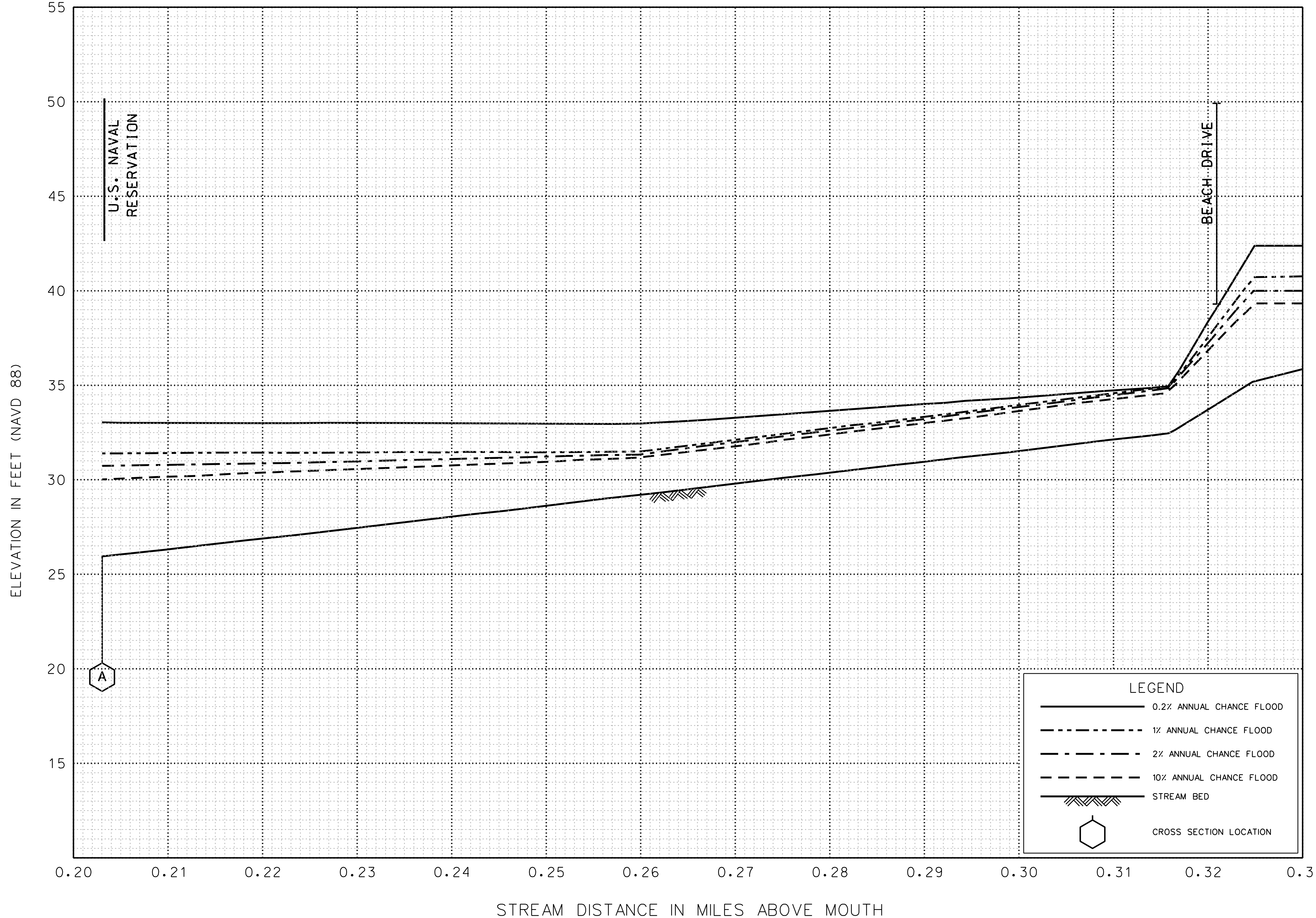

FLOOD PROFILES

BARKER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

01P



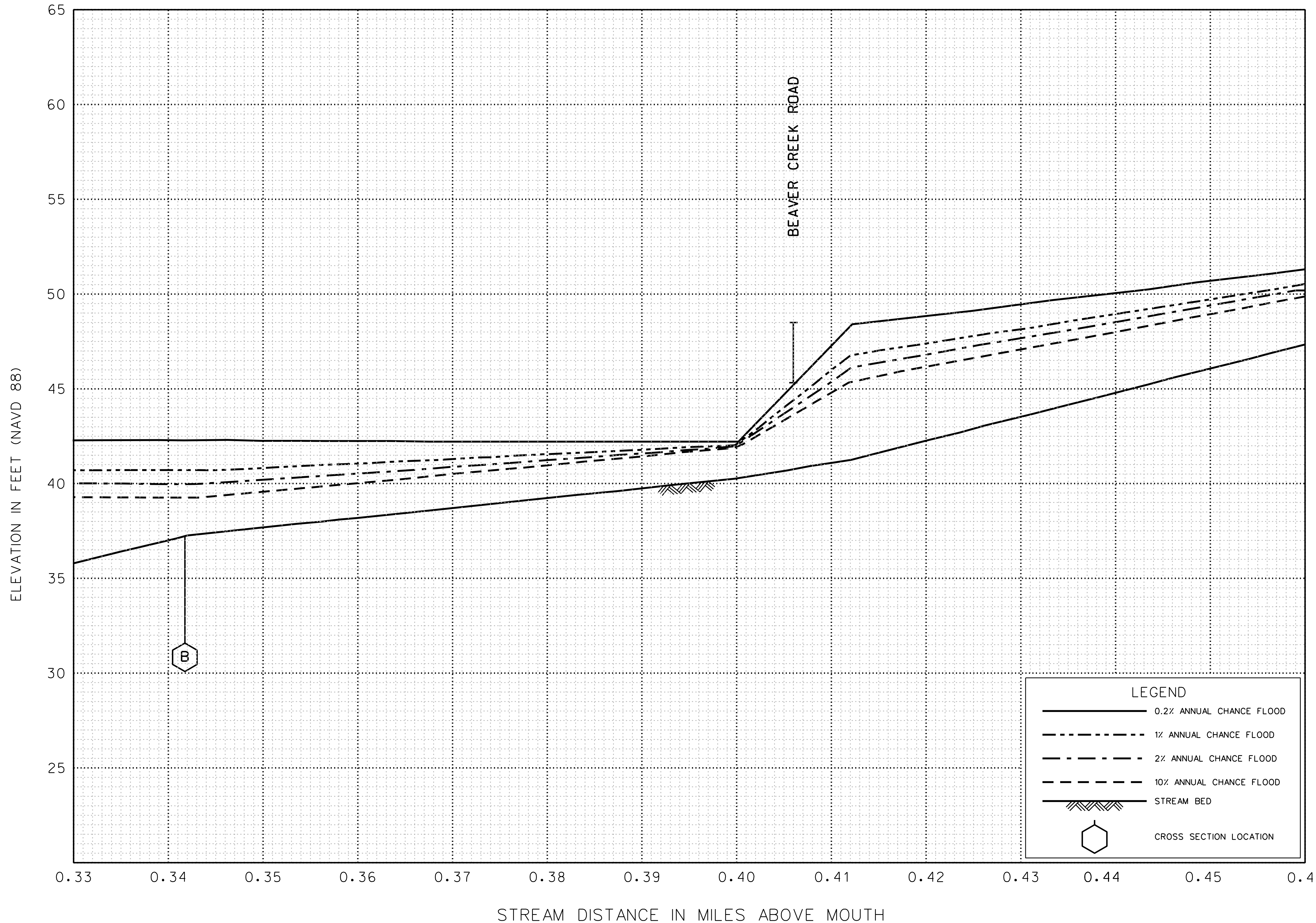

FLOOD PROFILES

BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

02P



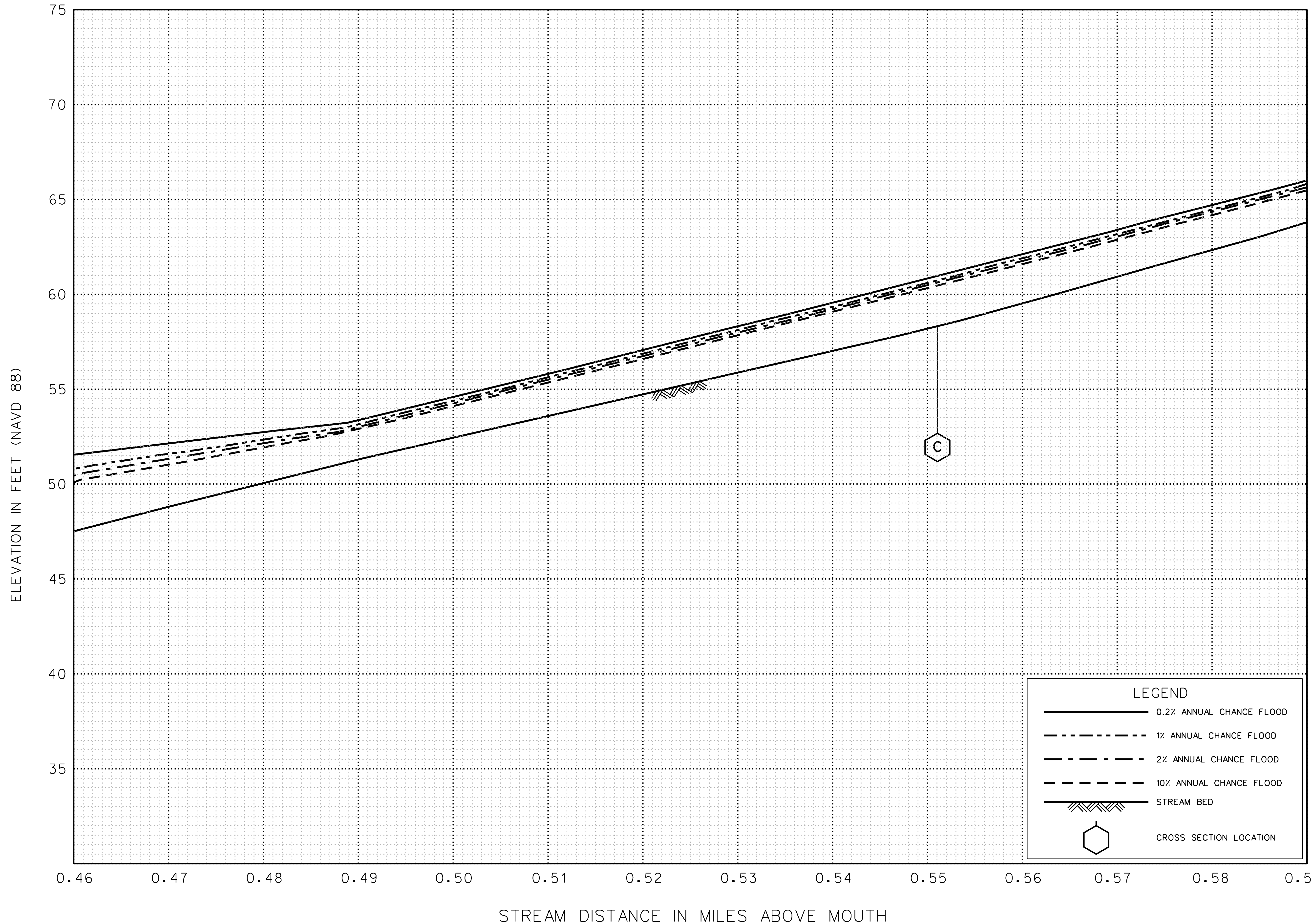

FLOOD PROFILES

BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

03P



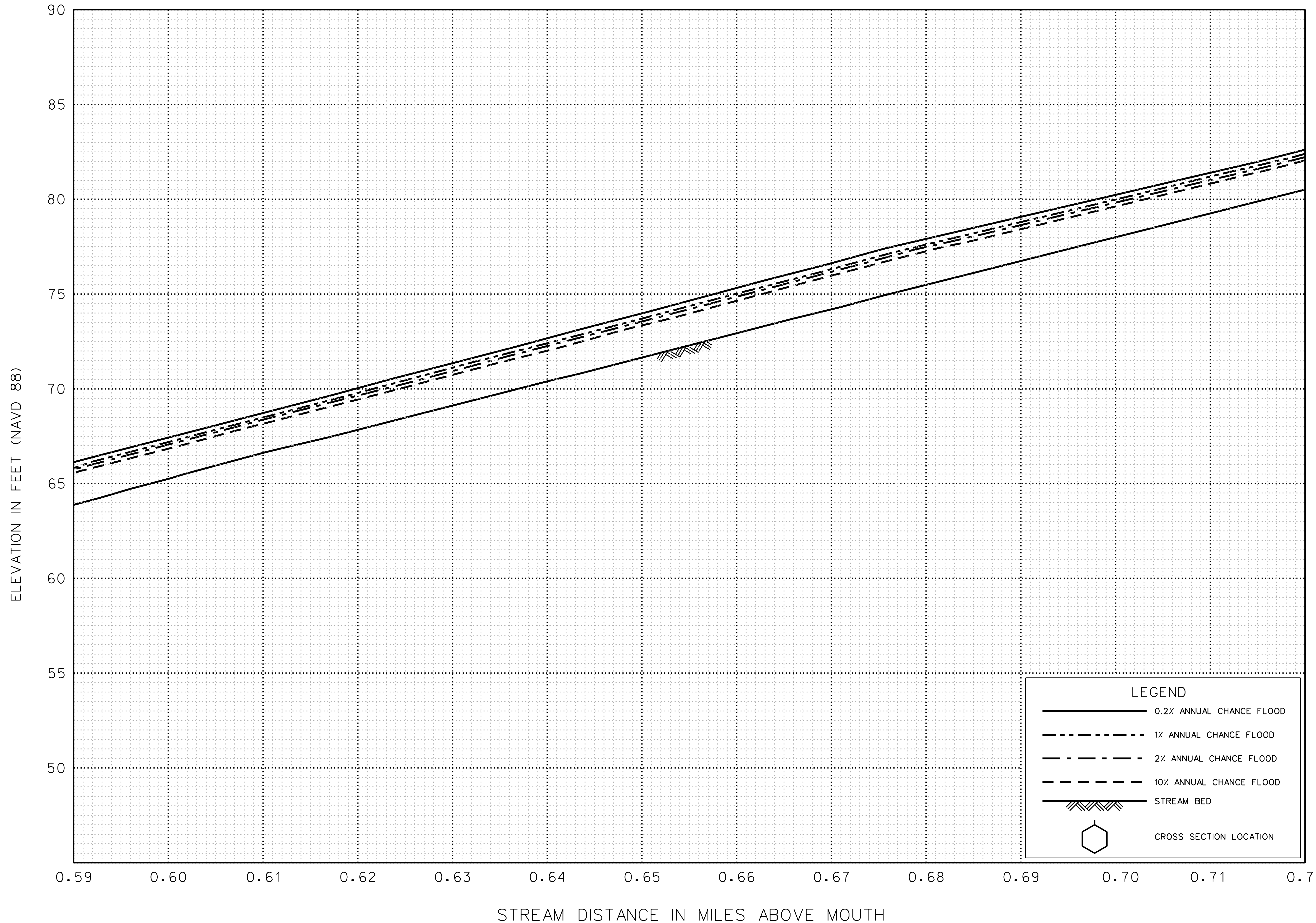

FLOOD PROFILES

BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

04P



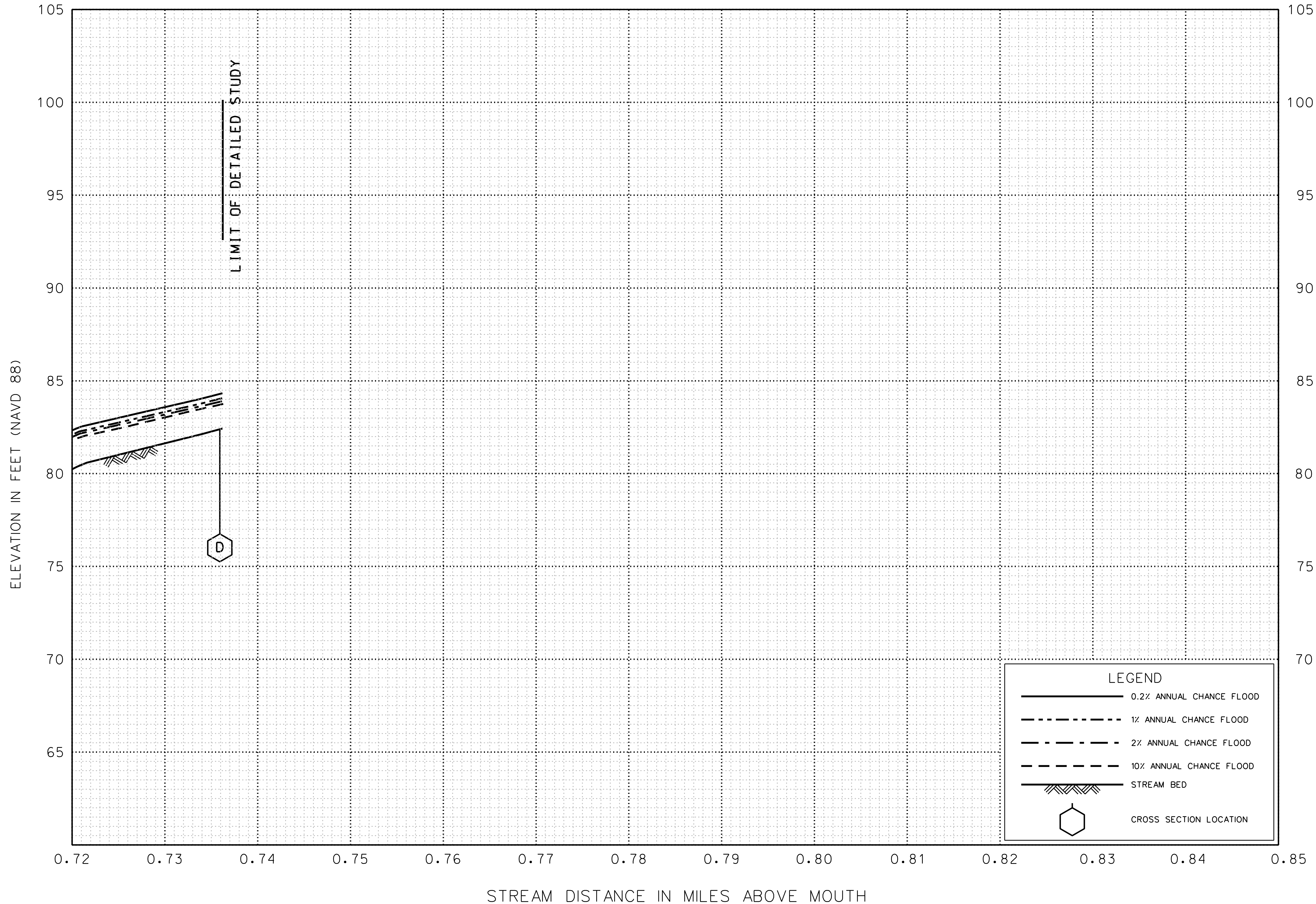

FLOOD PROFILES

BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

05P




FLOOD PROFILES

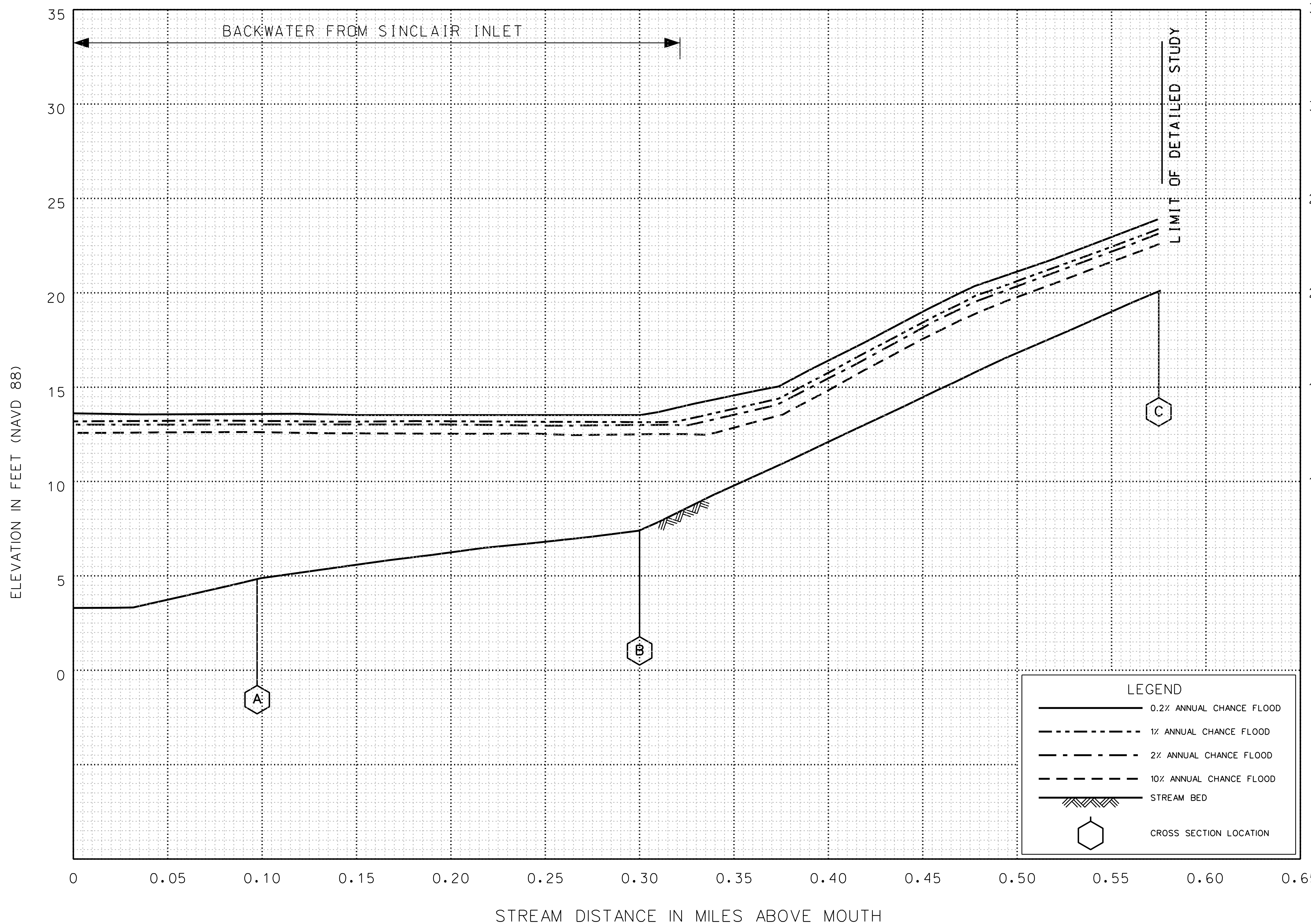
BEAVER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON

AND INCORPORATED AREAS

06P



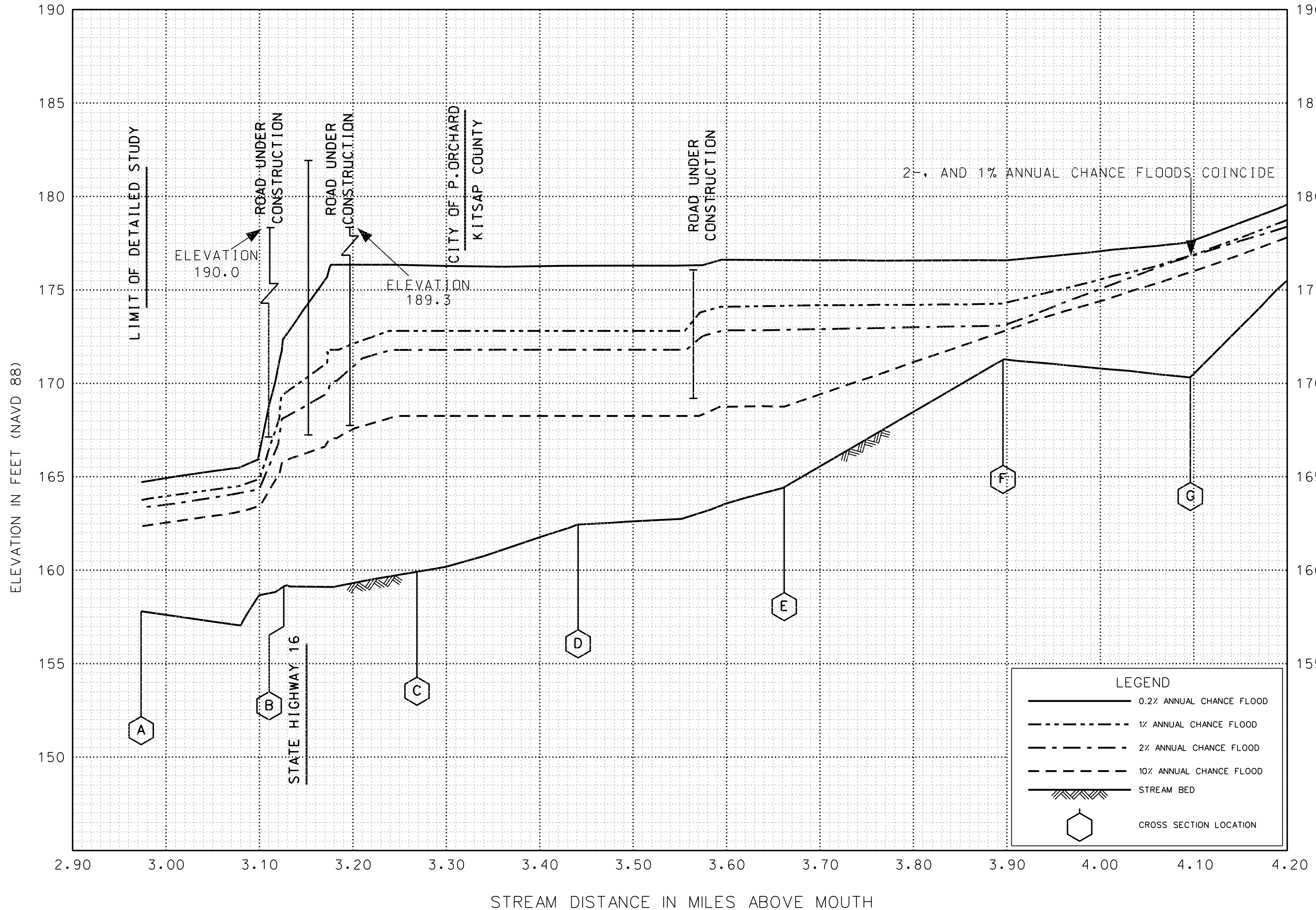

FLOOD PROFILES

BLACKJACK CREEK (LOWER REACH)

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

07P



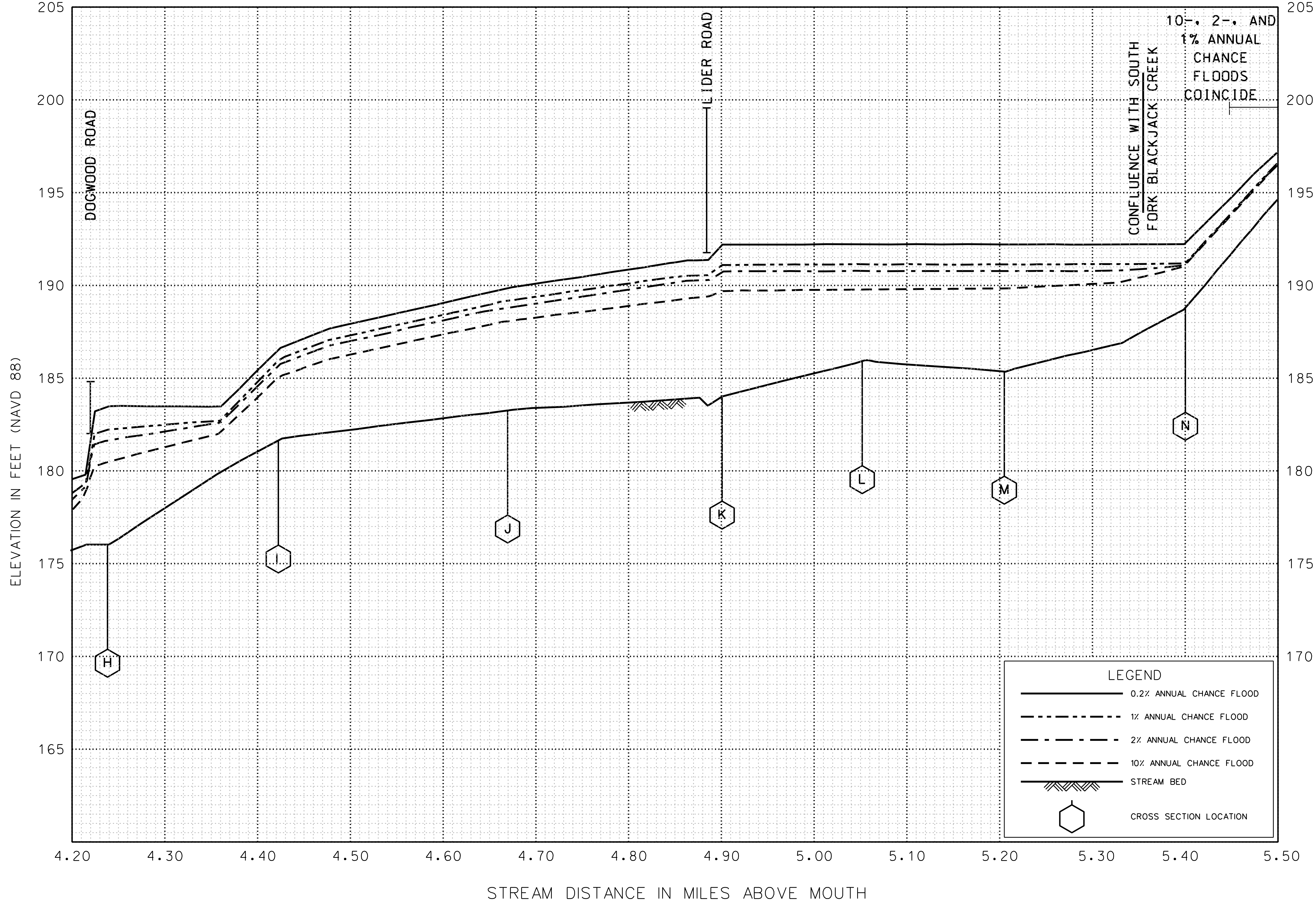

# FLOOD PROFILES

## BLACKJACK CREEK (UPPER REACH)

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

08P

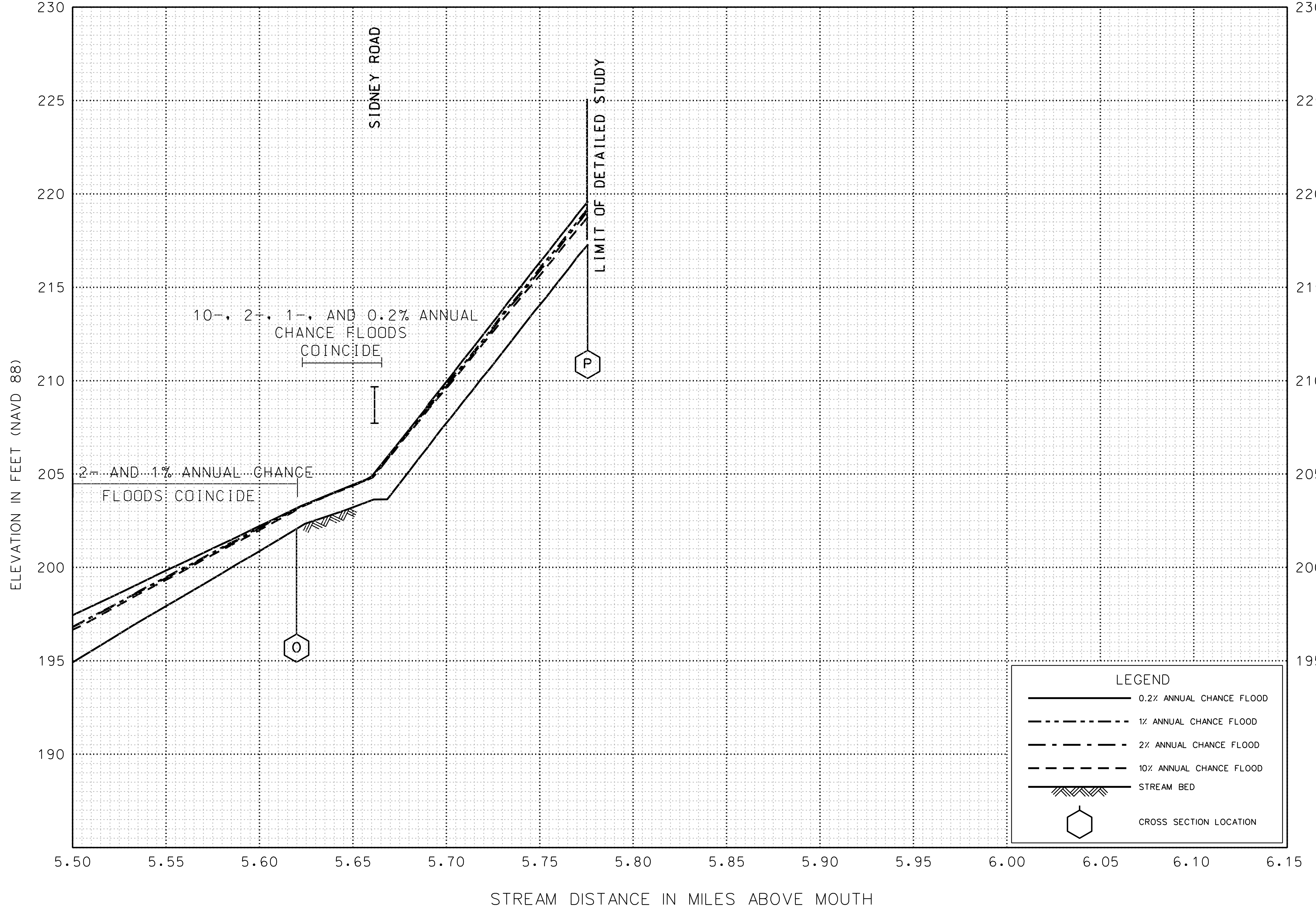



FLOOD PROFILES

BLACKJACK CREEK (UPPER REACH)

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

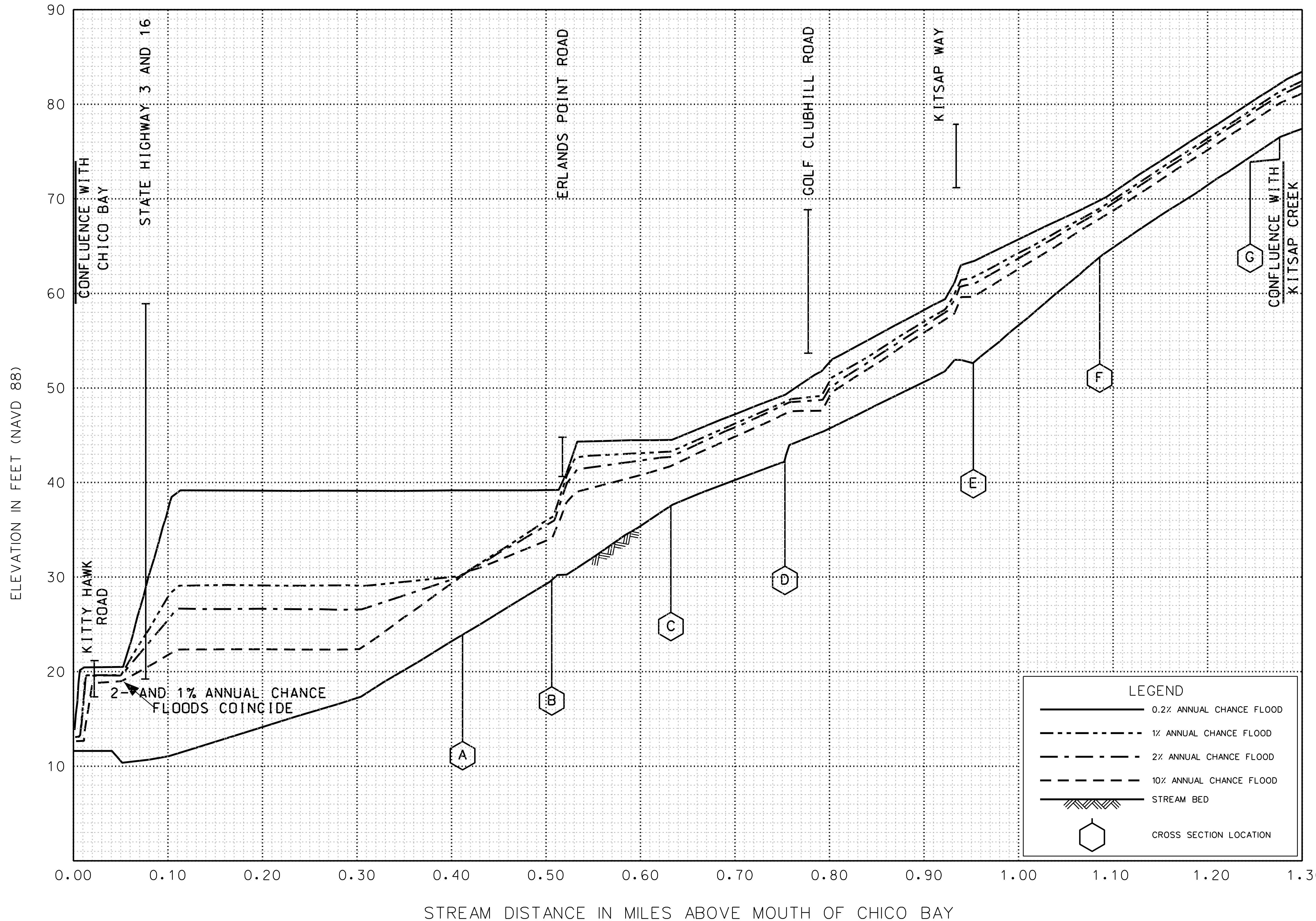



# FLOOD PROFILES

## BLACKJACK CREEK (UPPER REACH)

FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

10P



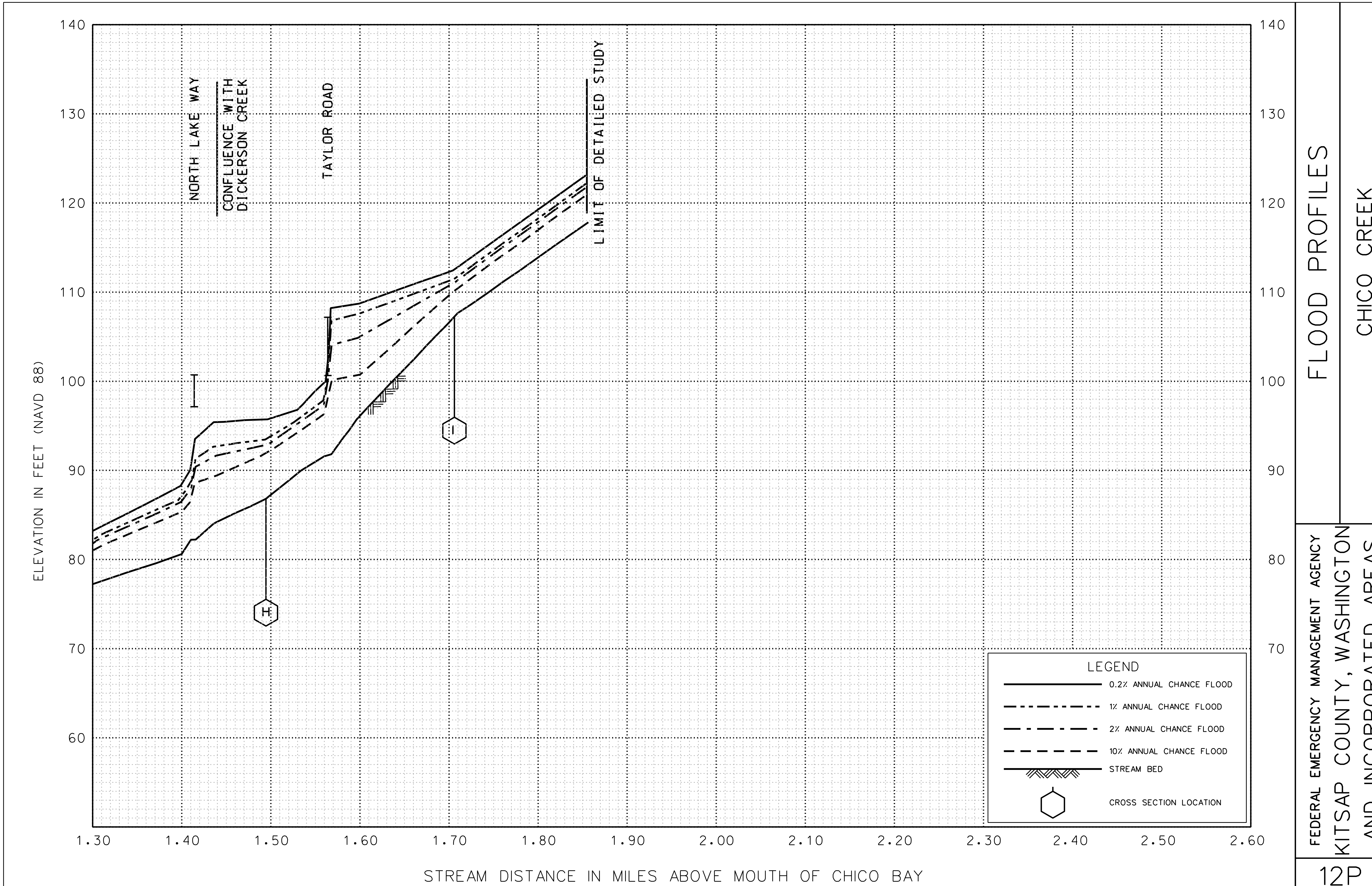

# FLOOD PROFILES

## CHICO CREEK

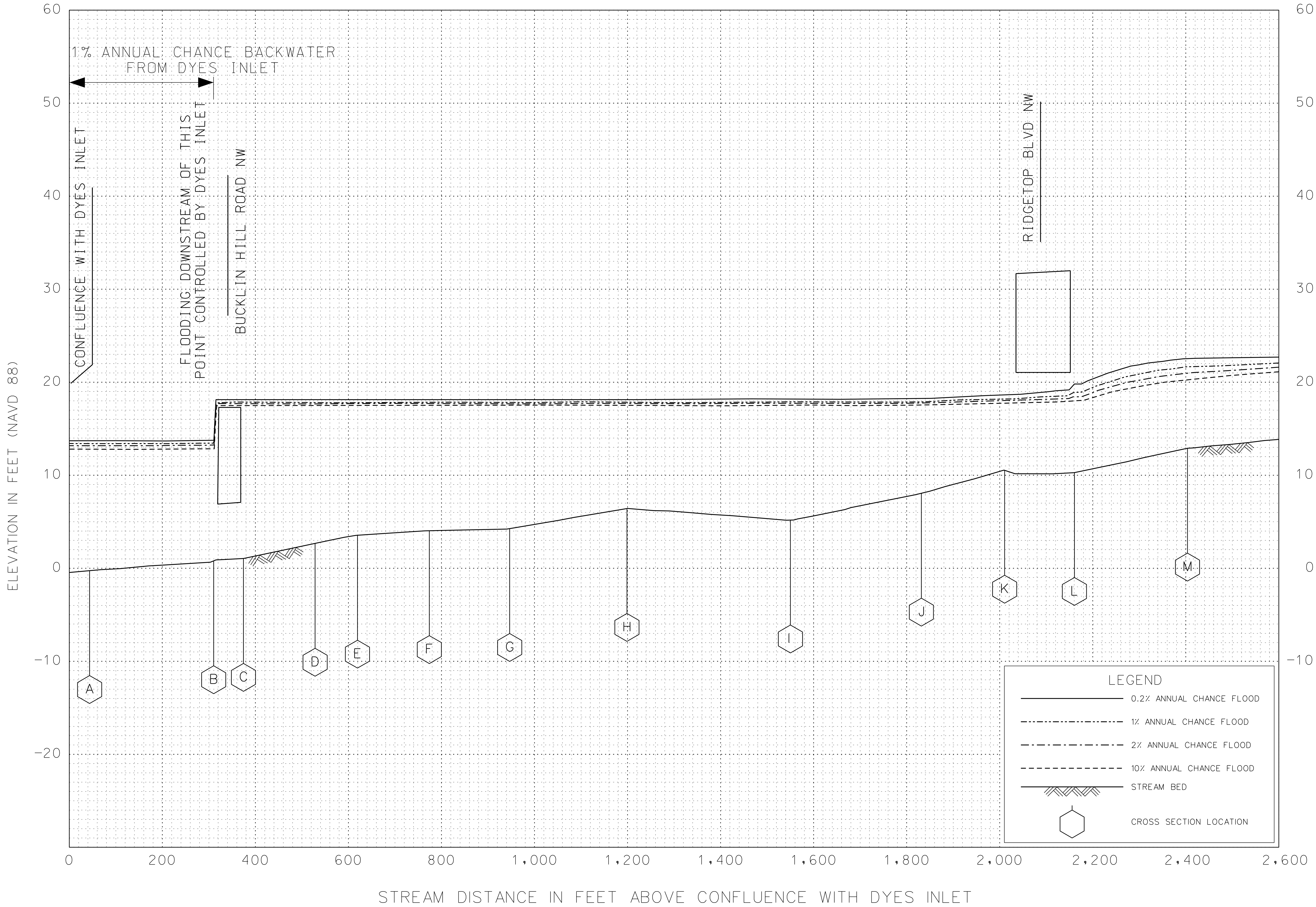
FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

11P



FLOOD PROFILES
CHICO CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS
12P
ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN MILES ABOVE MOUTH OF CHICO BAY
NORTH LAKE WAY
CONFLUENCE WITH DICKERSON CREEK
TAYLOR ROAD
LIMIT OF DETAILED STUDY
H
I
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
140
130
120
110
100
90
80
70
60
1.30
1.40
1.50
1.60
1.70
1.80
1.90
2.00
2.10
2.20
2.30
2.40
2.50
2.60



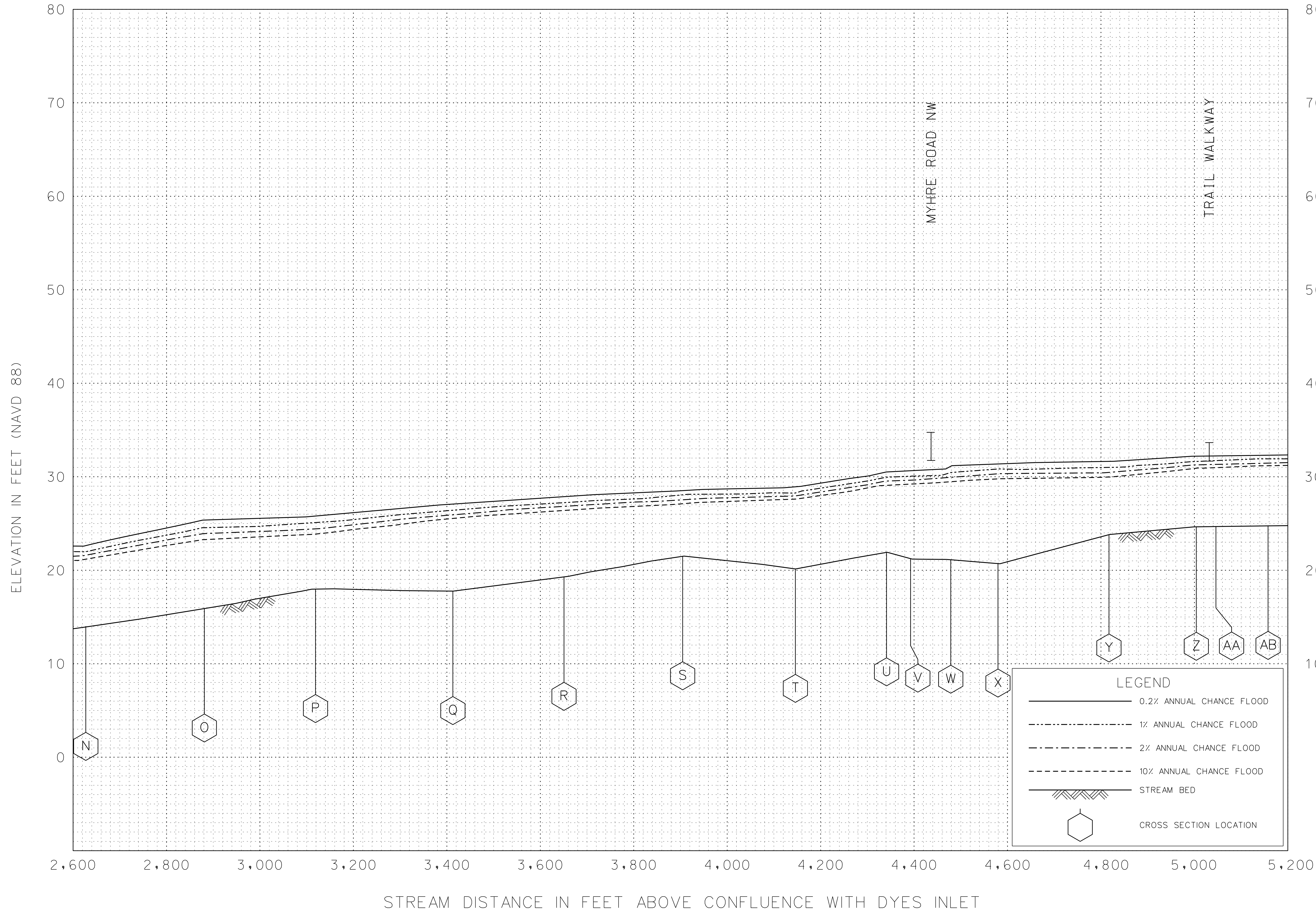

FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

13P

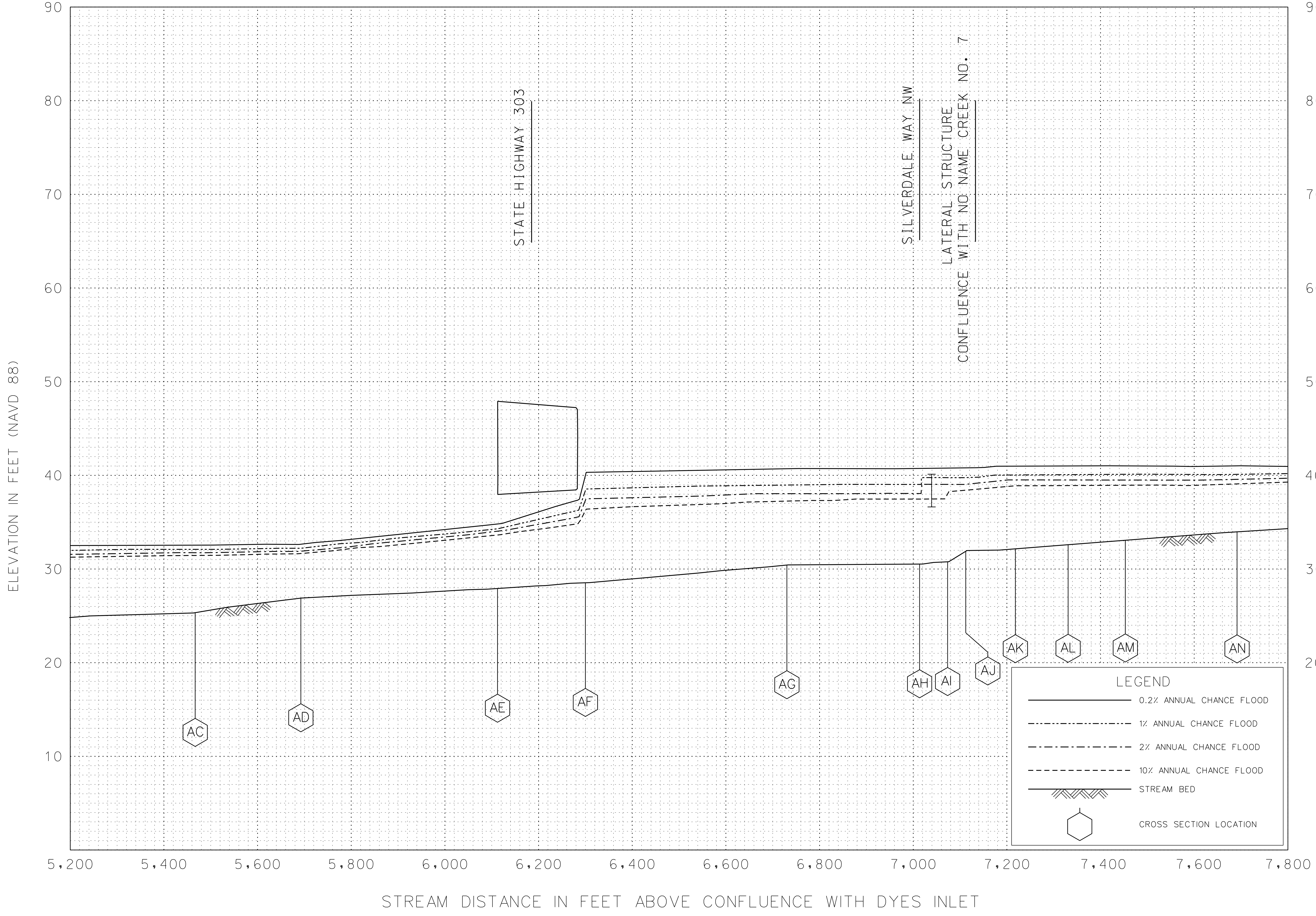



FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS




FLOOD PROFILES

CLEAR CREEK

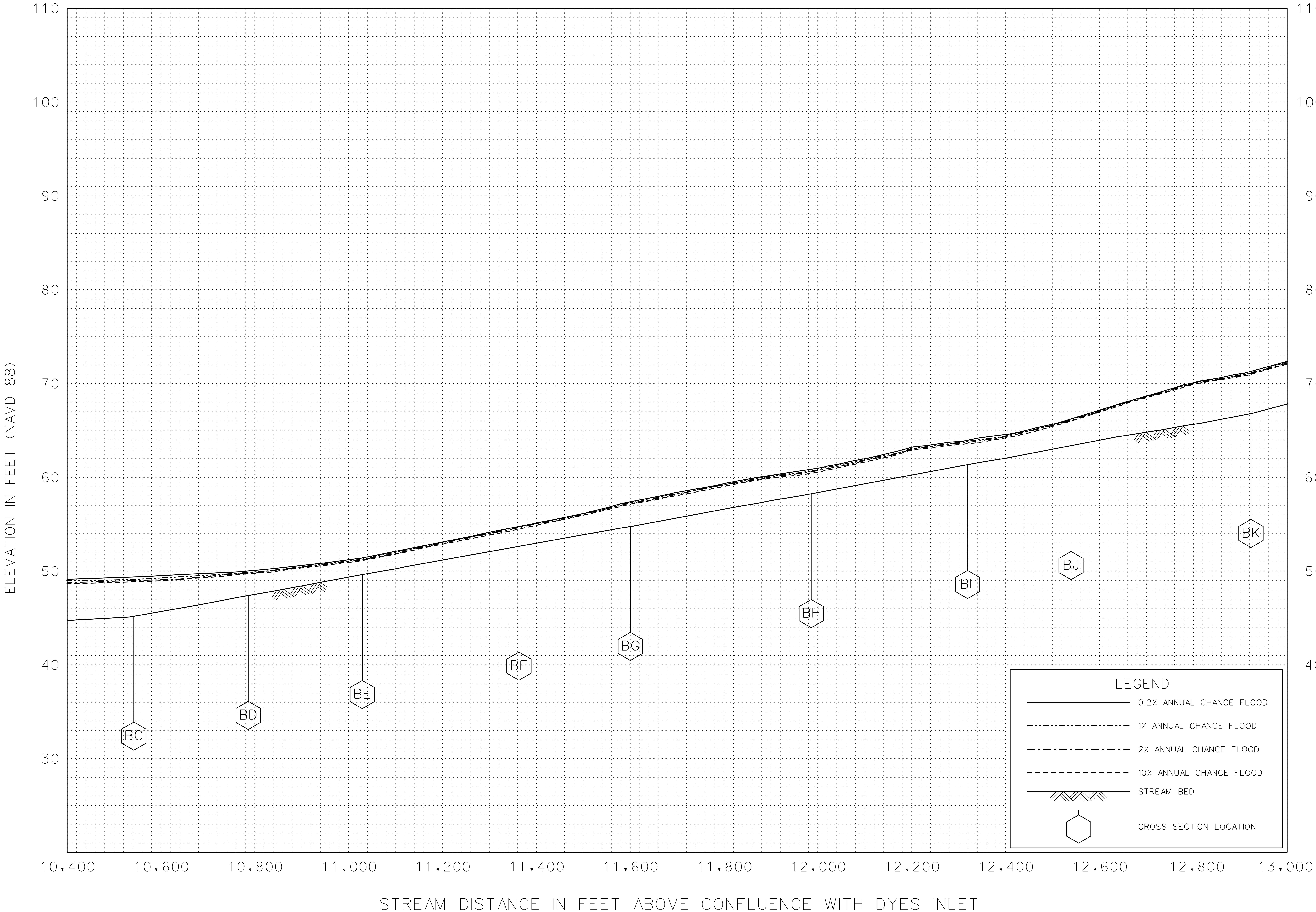
FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

15P

100
90
80
70
60
50
40
30
20
ELEVATION IN FEET (NAVD 88)
SCHOLD ROAD NW
TRAIL WALKWAY
AO
AP
AQ
AR
AS
AT
AU
AV
AW
AX
AY
AZ
BA
BB
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
7,800
8,000
8,200
8,400
8,600
8,800
9,000
9,200
9,400
9,600
9,800
10,000
10,200
10,400
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH DYES INLET
FLOOD PROFILES
CLEAR CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS


16P

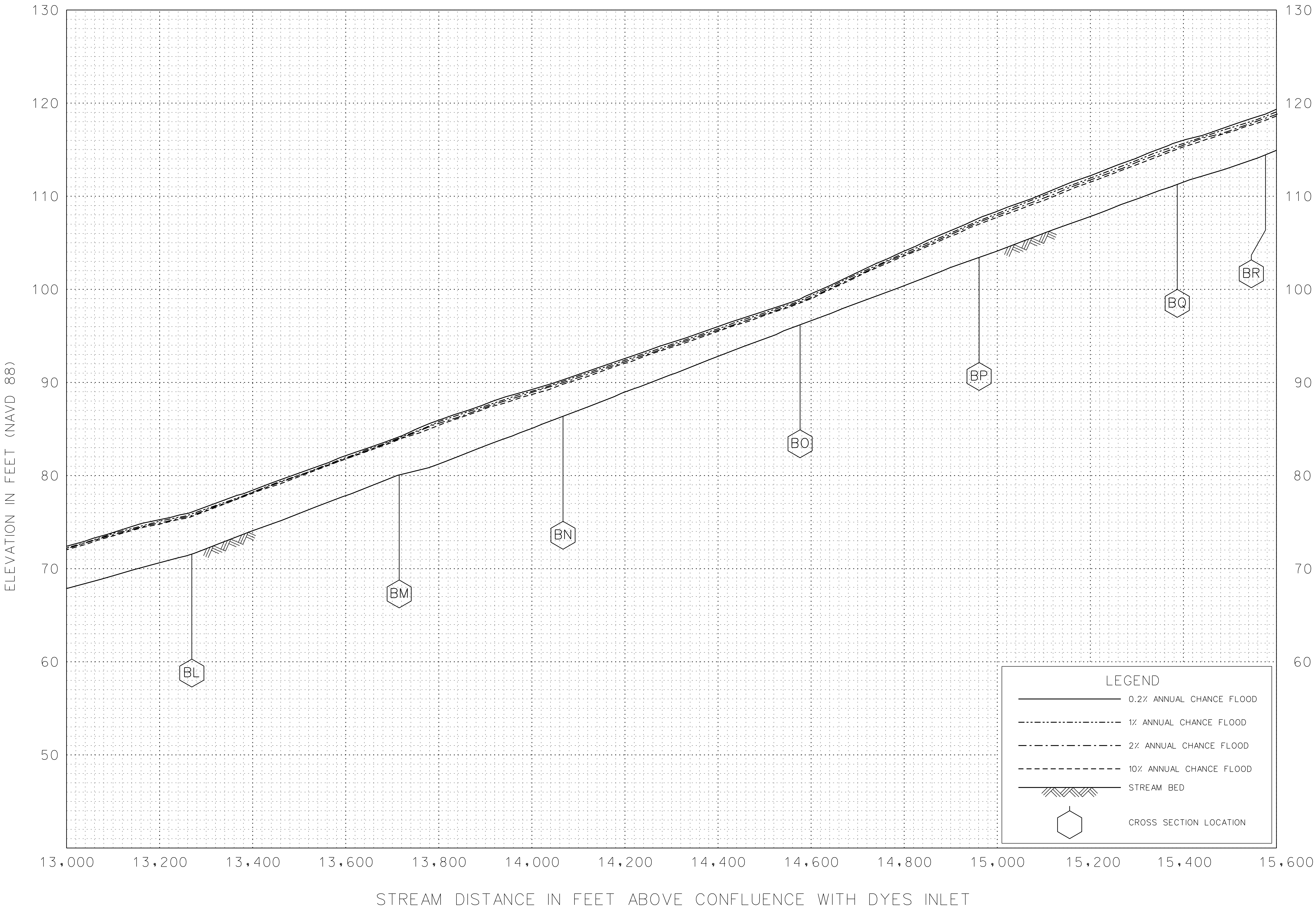



FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

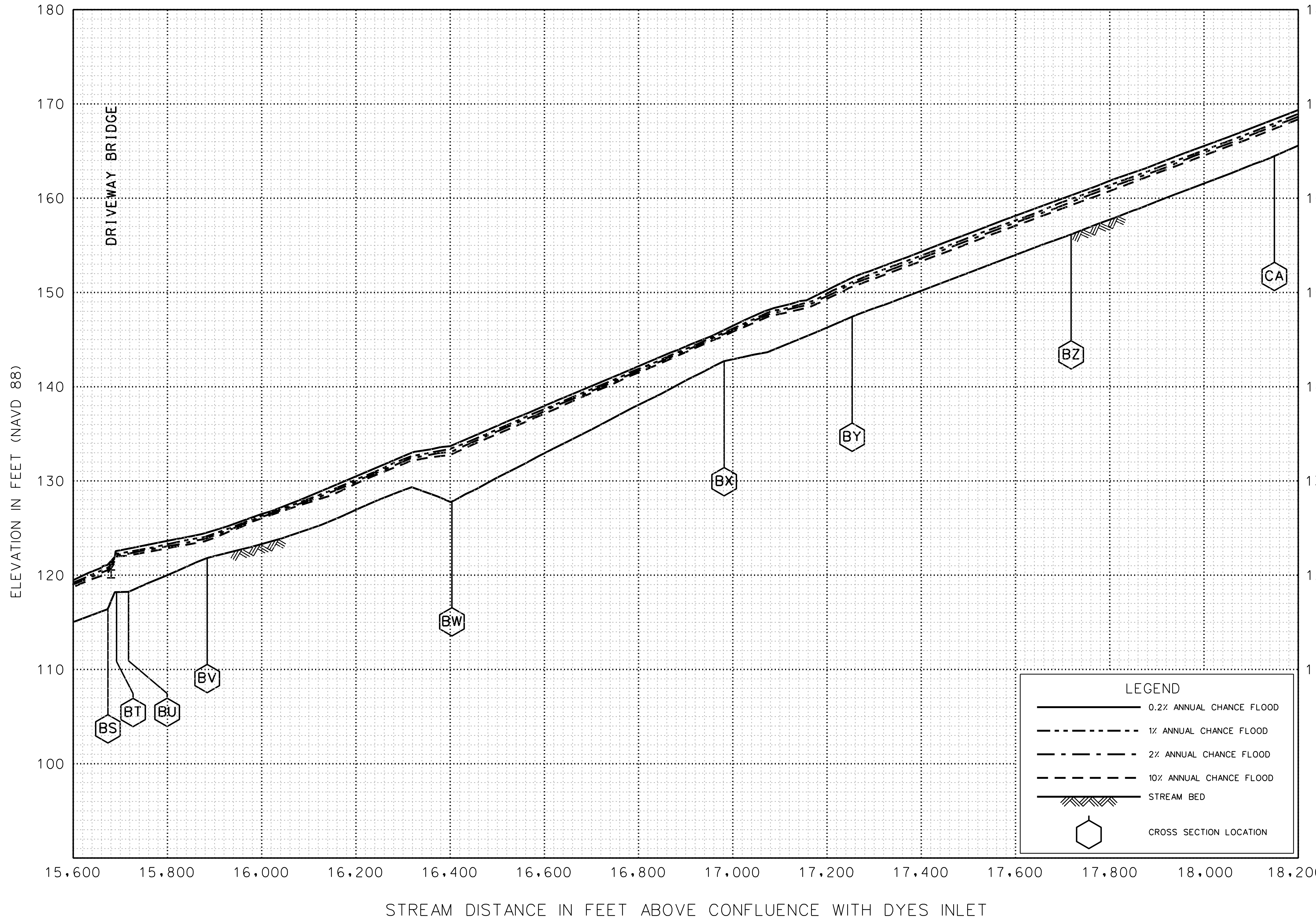



FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



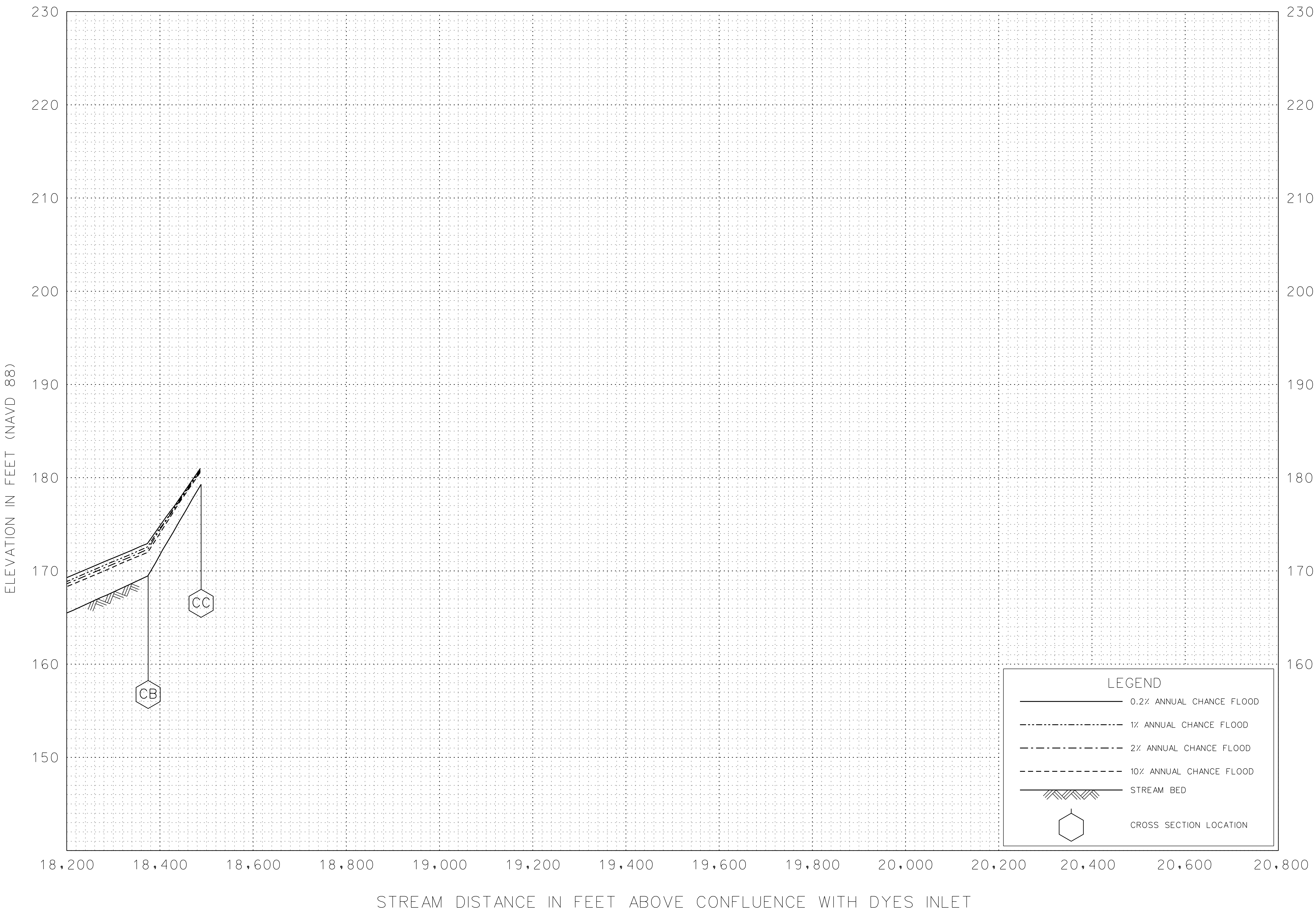

FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

19P

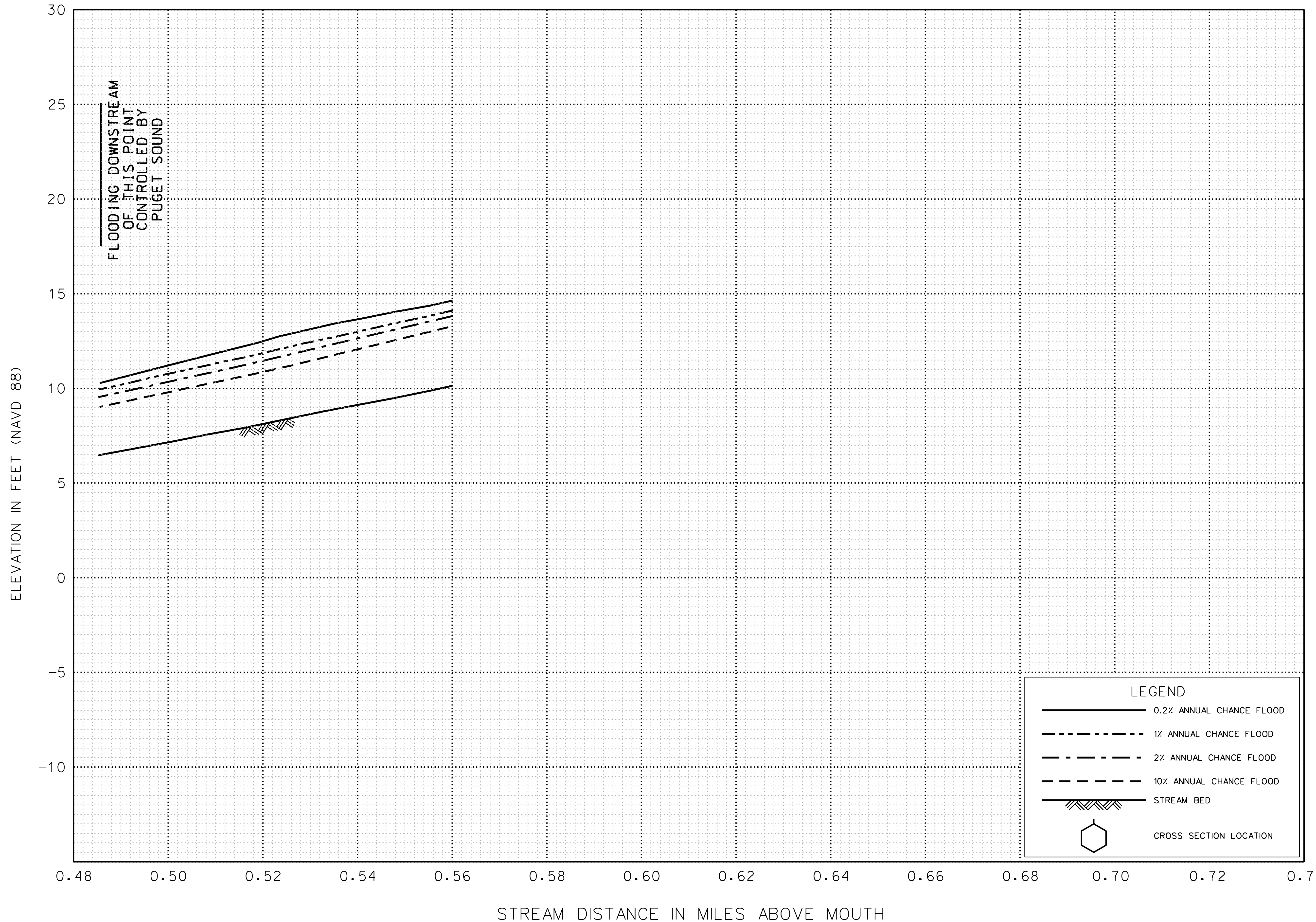



FLOOD PROFILES

CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

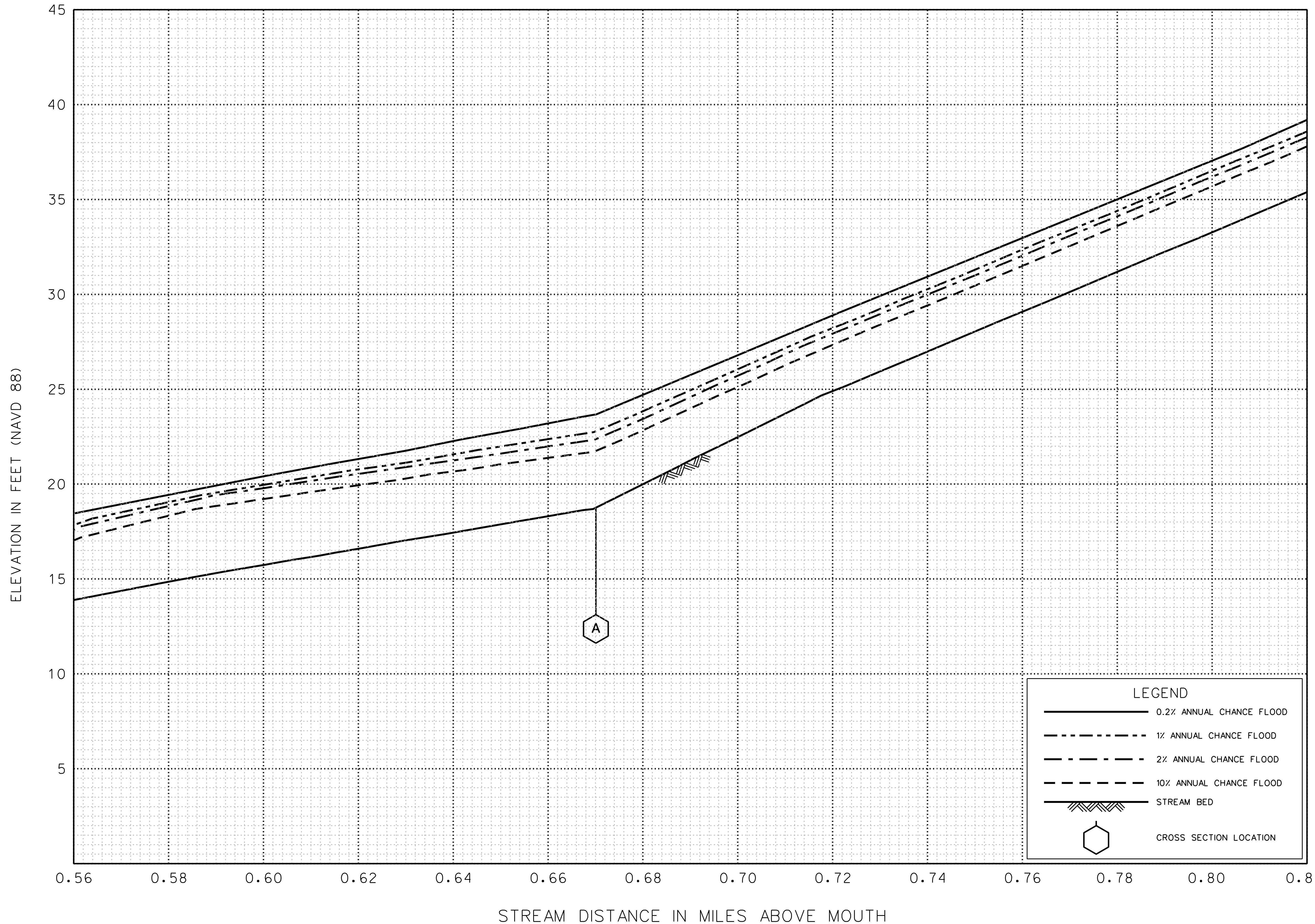



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

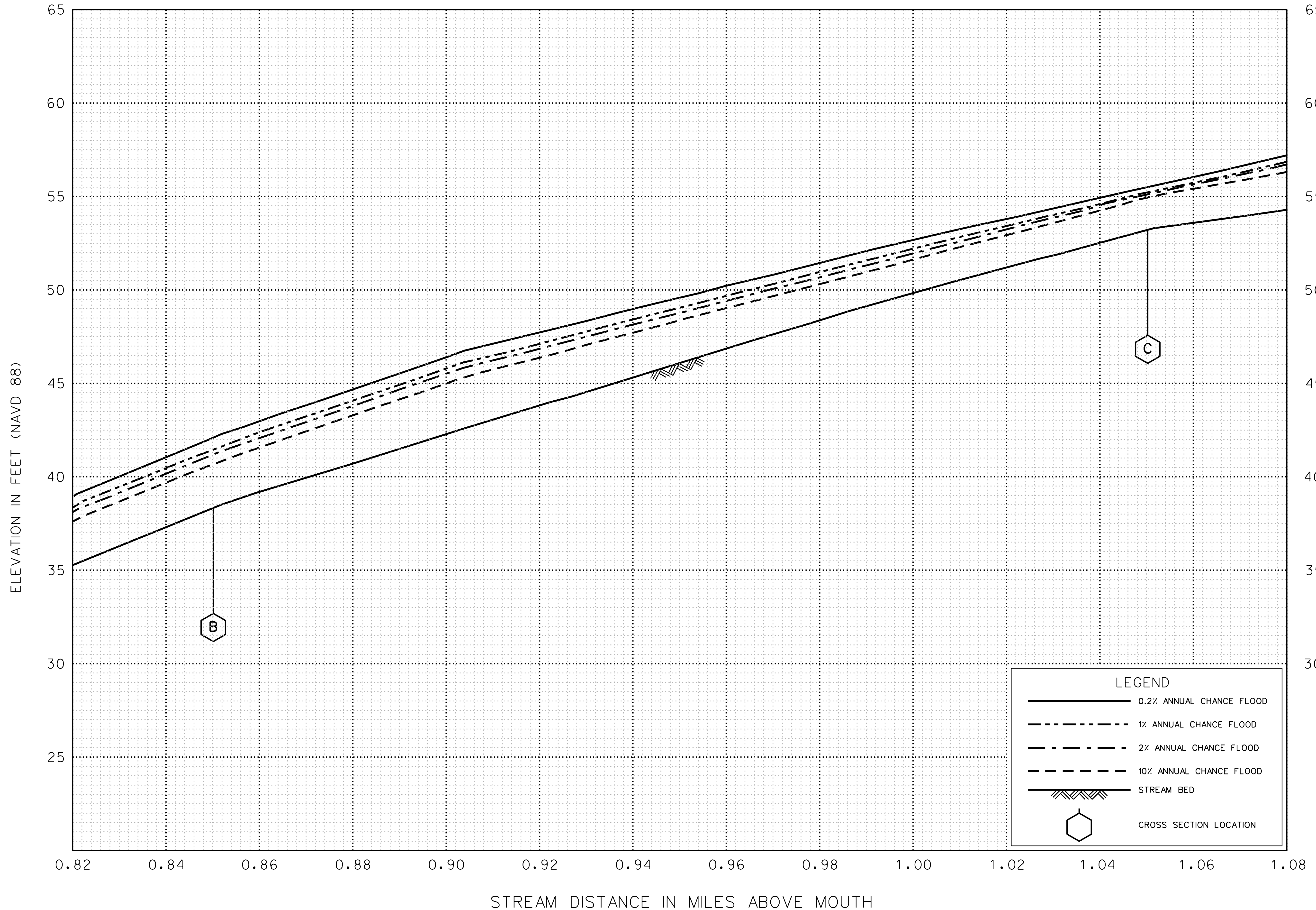



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

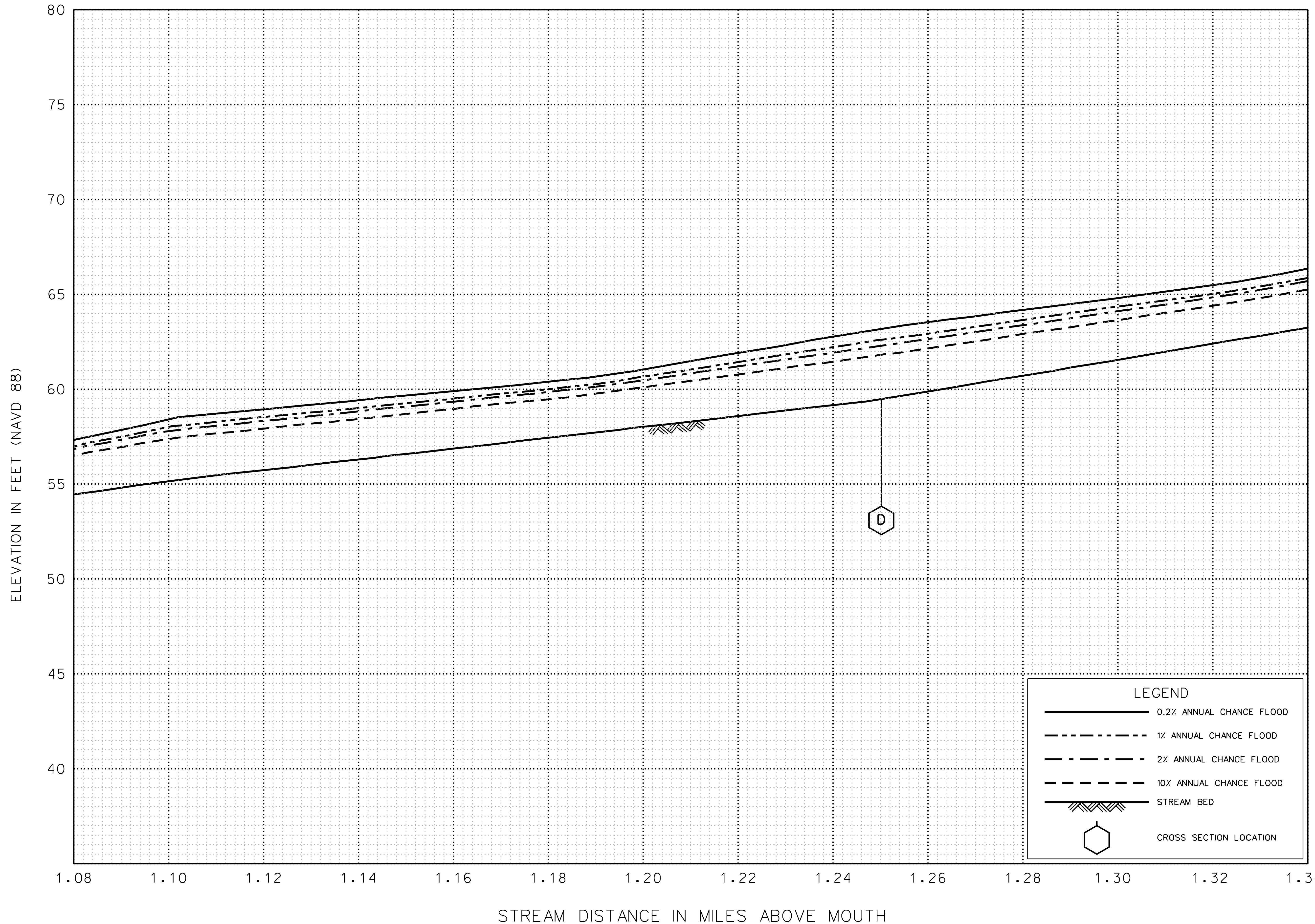



# FLOOD PROFILES

## CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

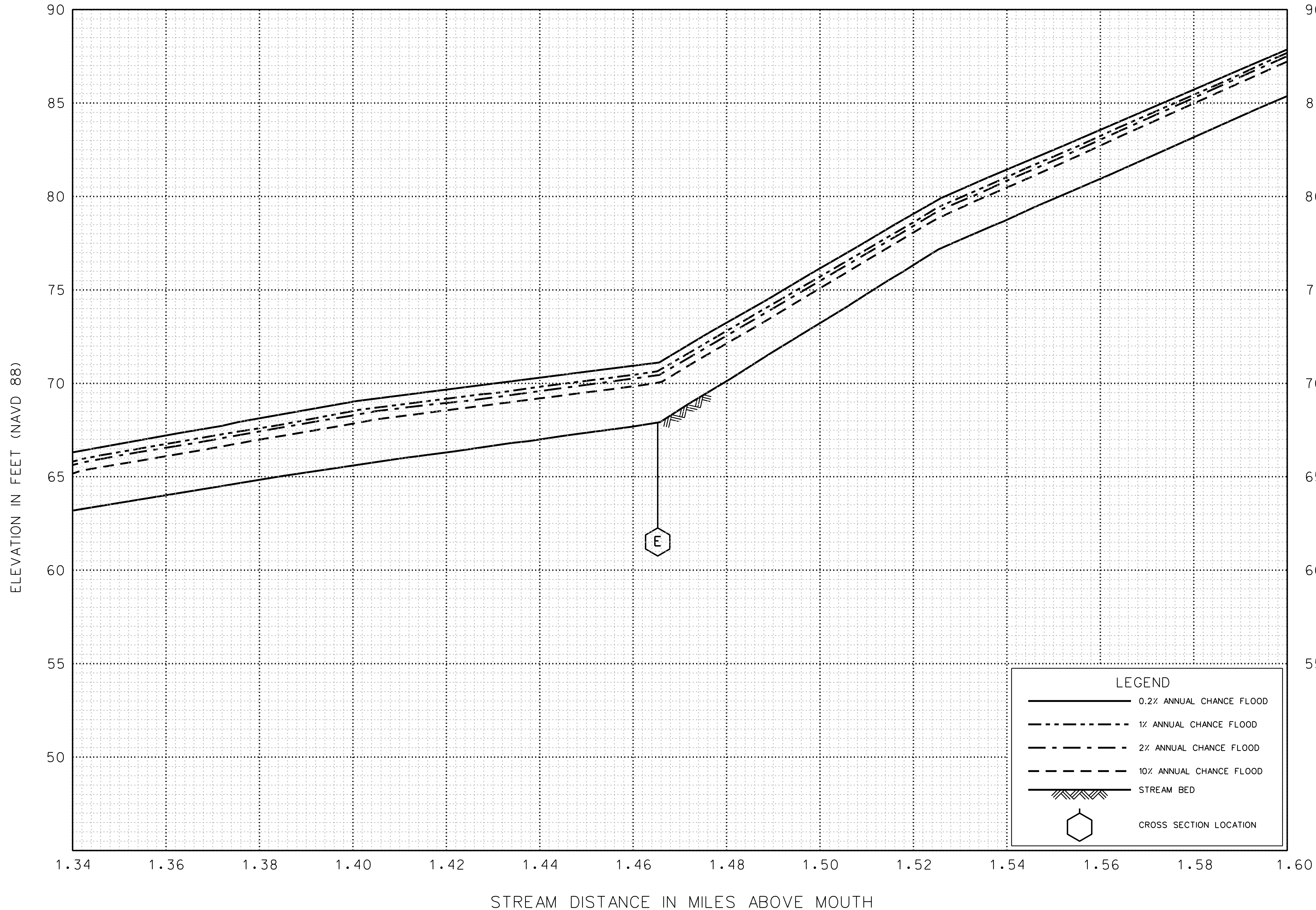



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

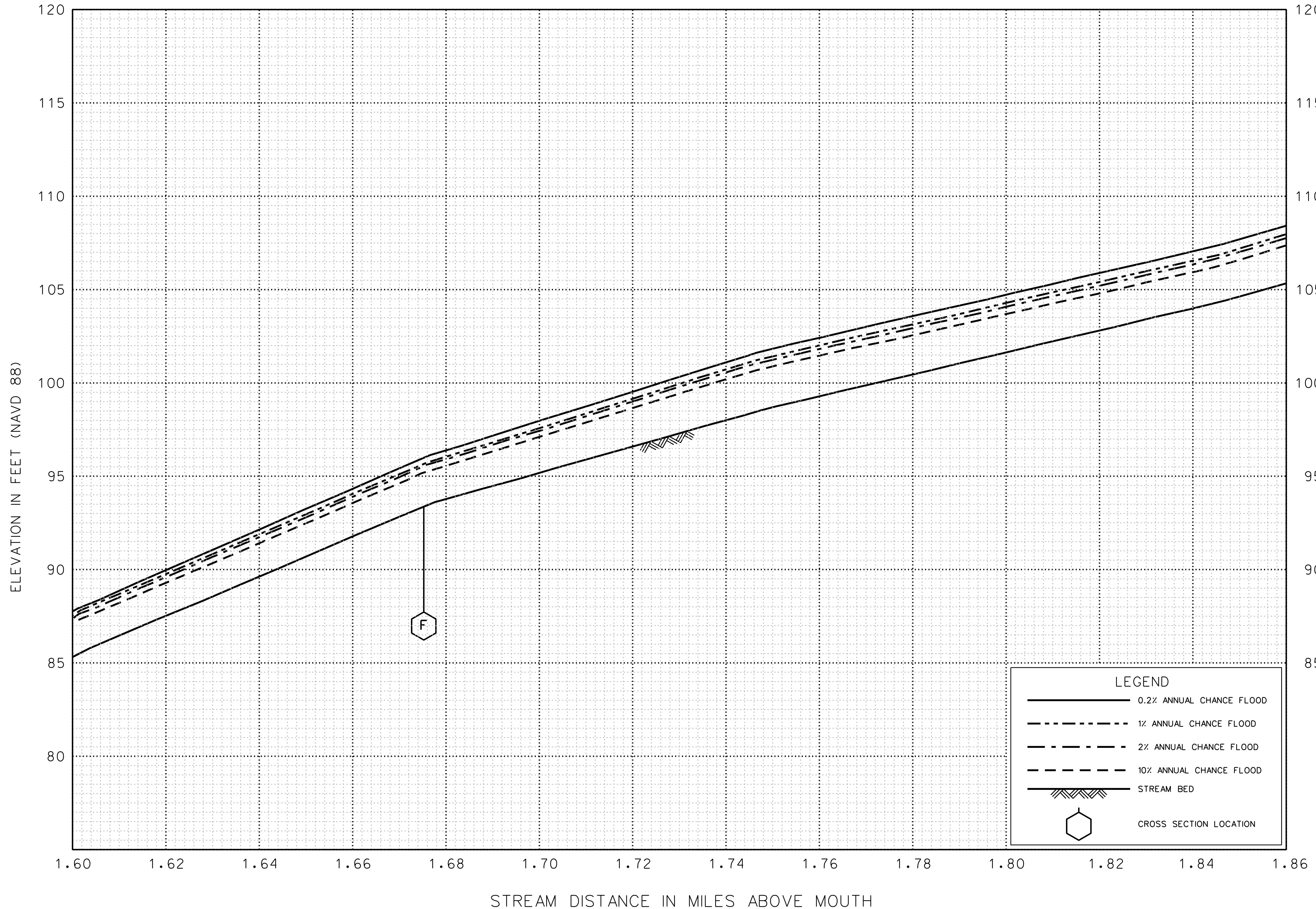



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

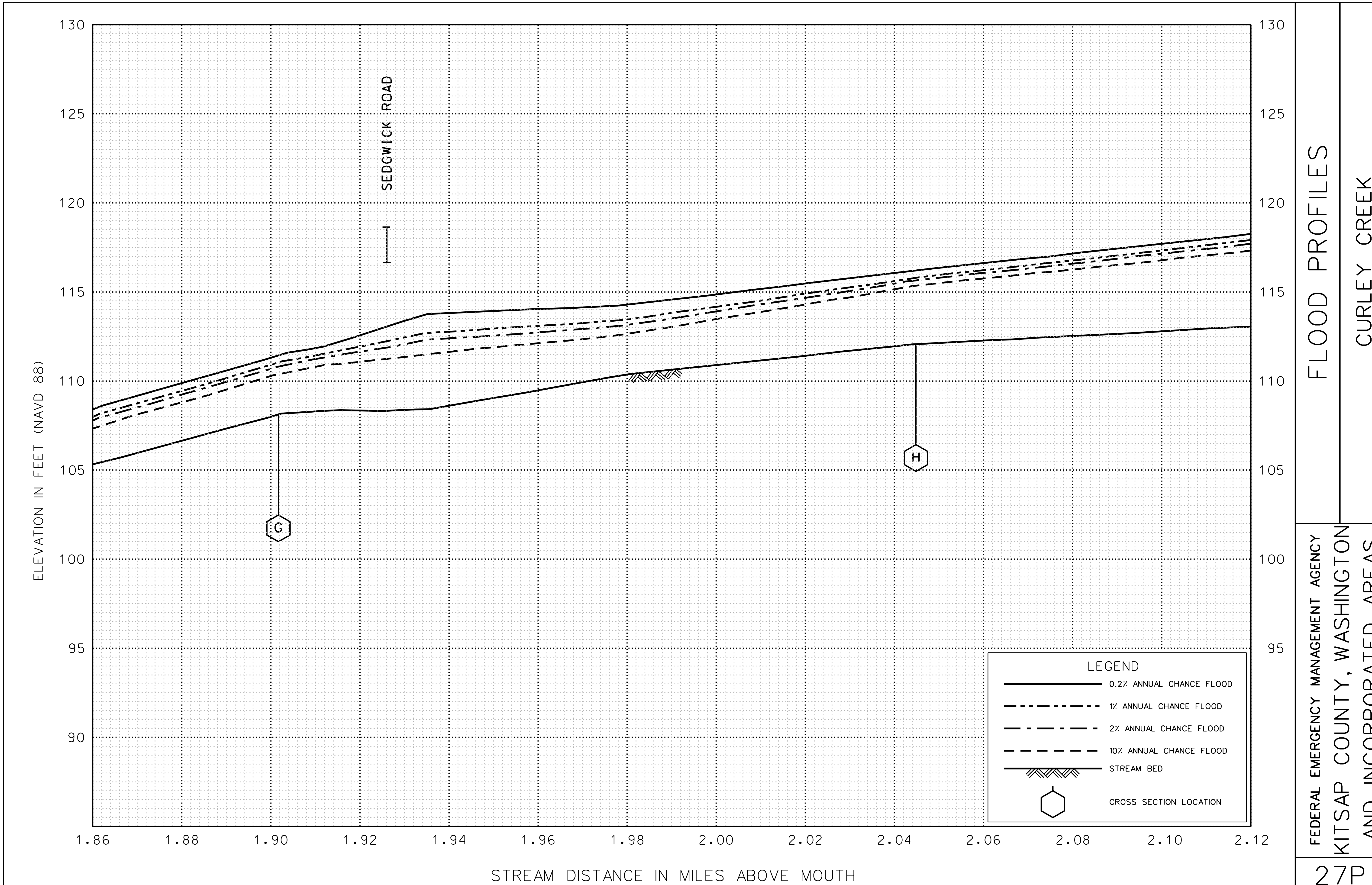


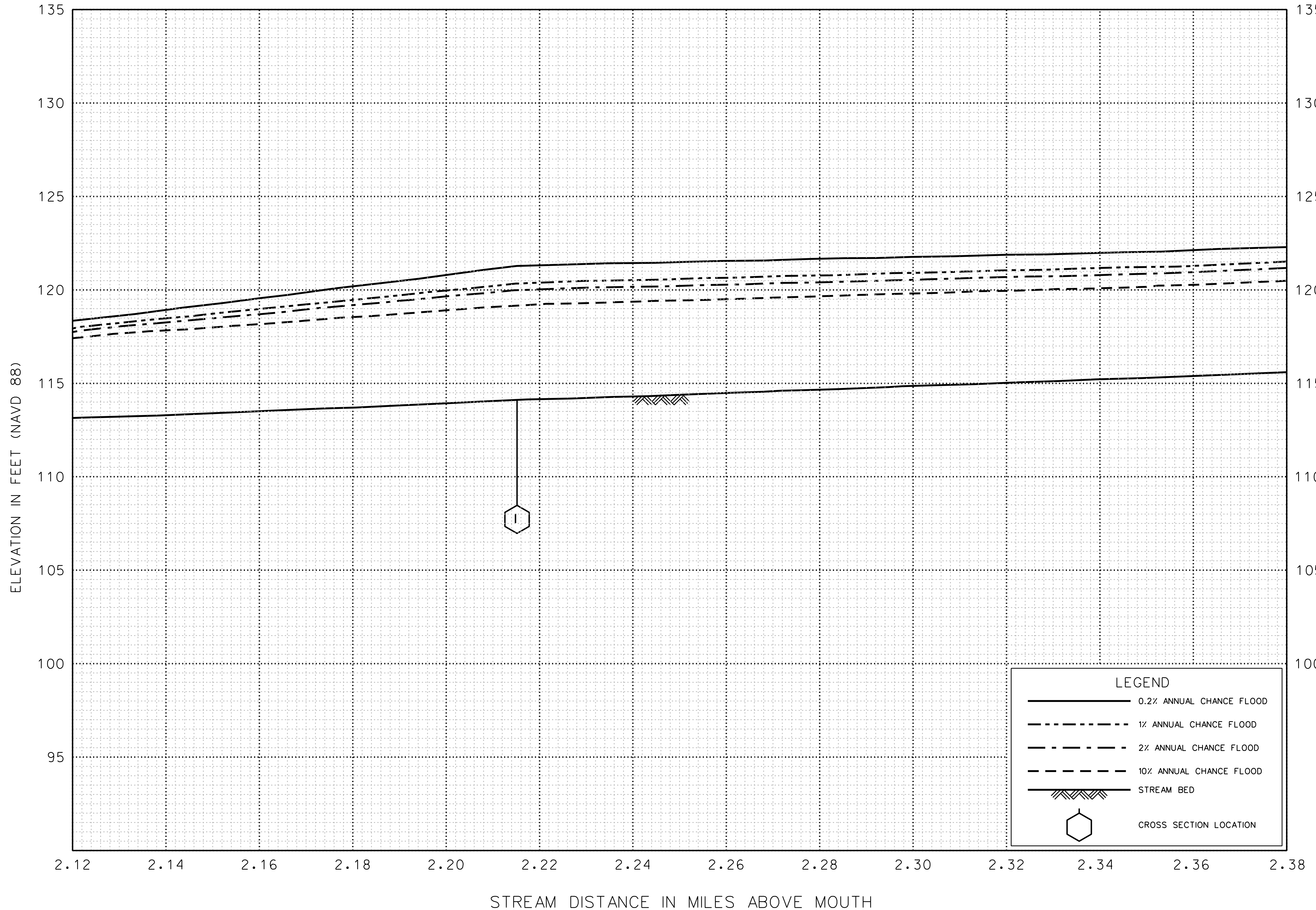

FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS


FLOOD PROFILES
CURLEY CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS
27P
SEDGWICK ROAD
ELEVATION IN FEET (NAVD 88)
STREAM DISTANCE IN MILES ABOVE MOUTH
130
125
120
115
110
105
100
95
90
1.86
1.88
1.90
1.92
1.94
1.96
1.98
2.00
2.02
2.04
2.06
2.08
2.10
2.12
G
H
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION

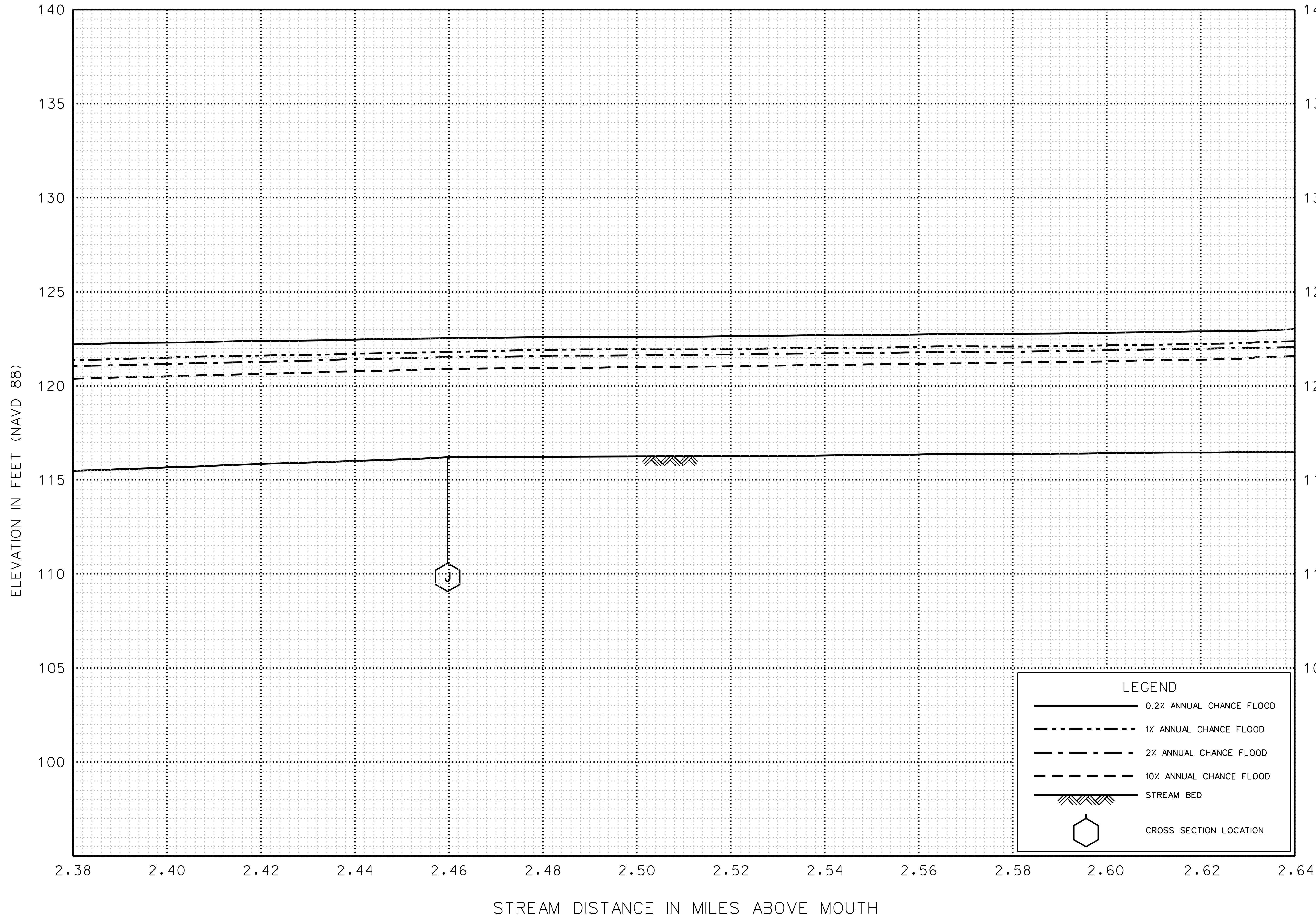



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

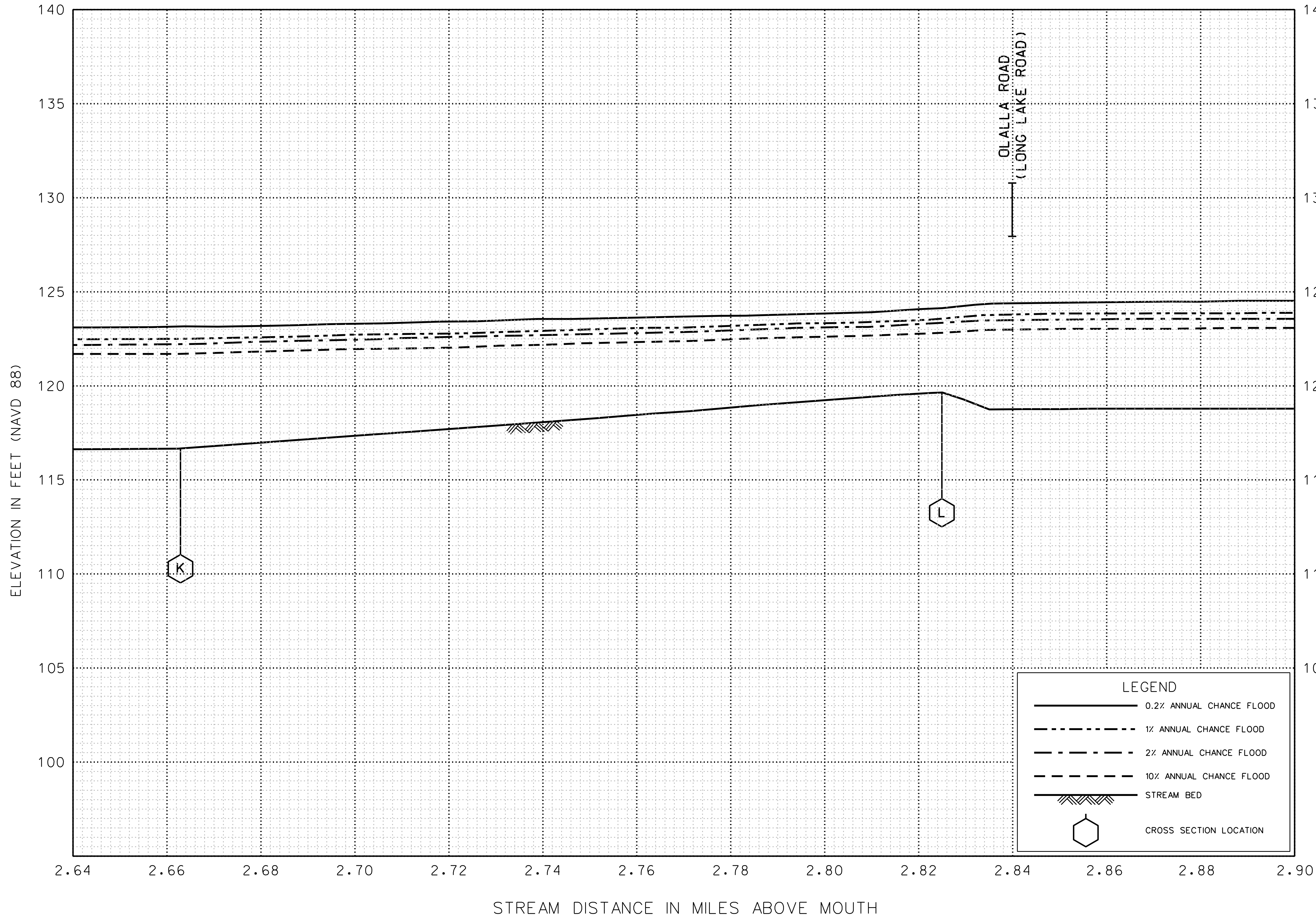



FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

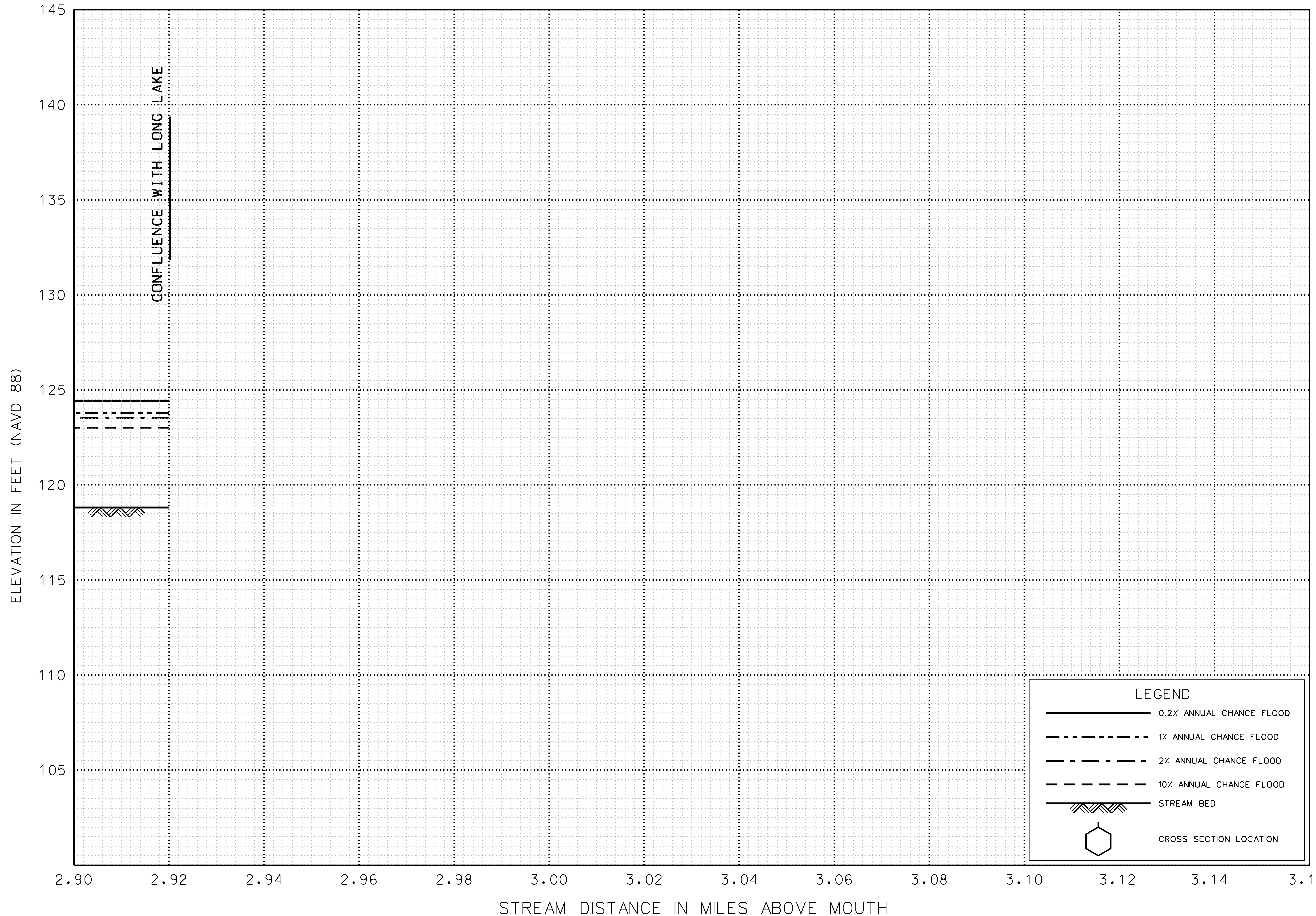



# FLOOD PROFILES

## CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS



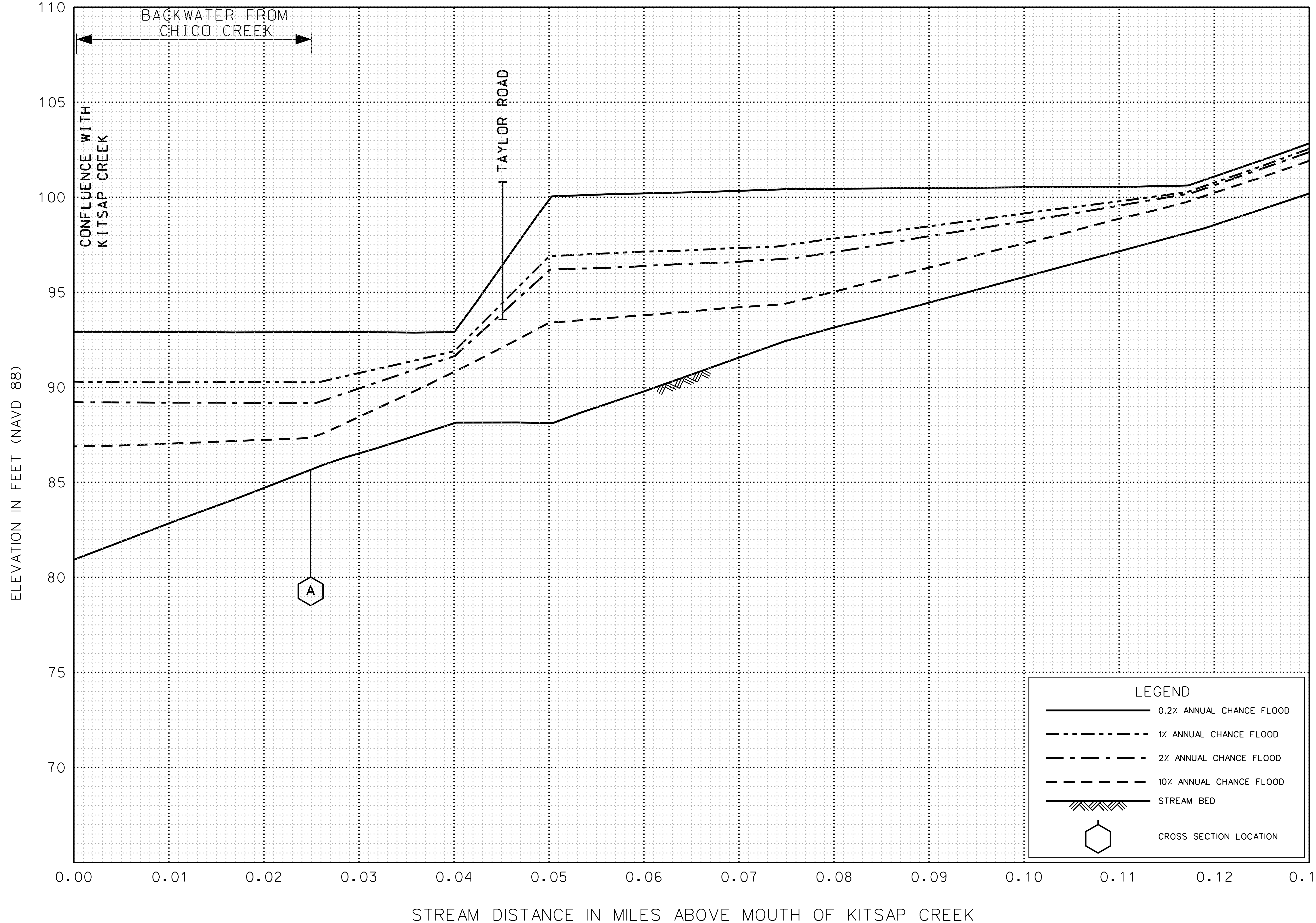

FLOOD PROFILES

CURLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON

AND INCORPORATED AREAS

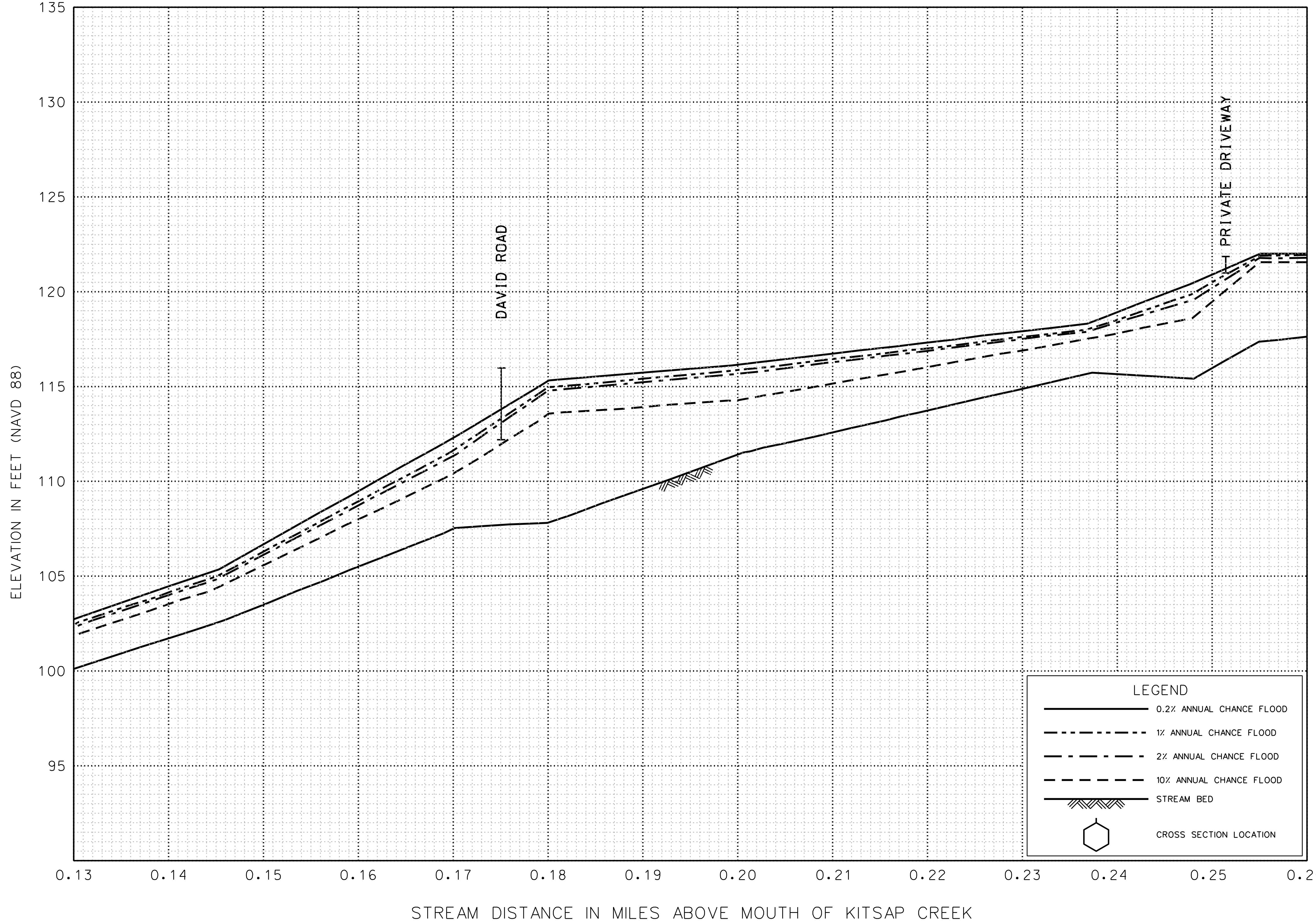



FLOOD PROFILES

DICKERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

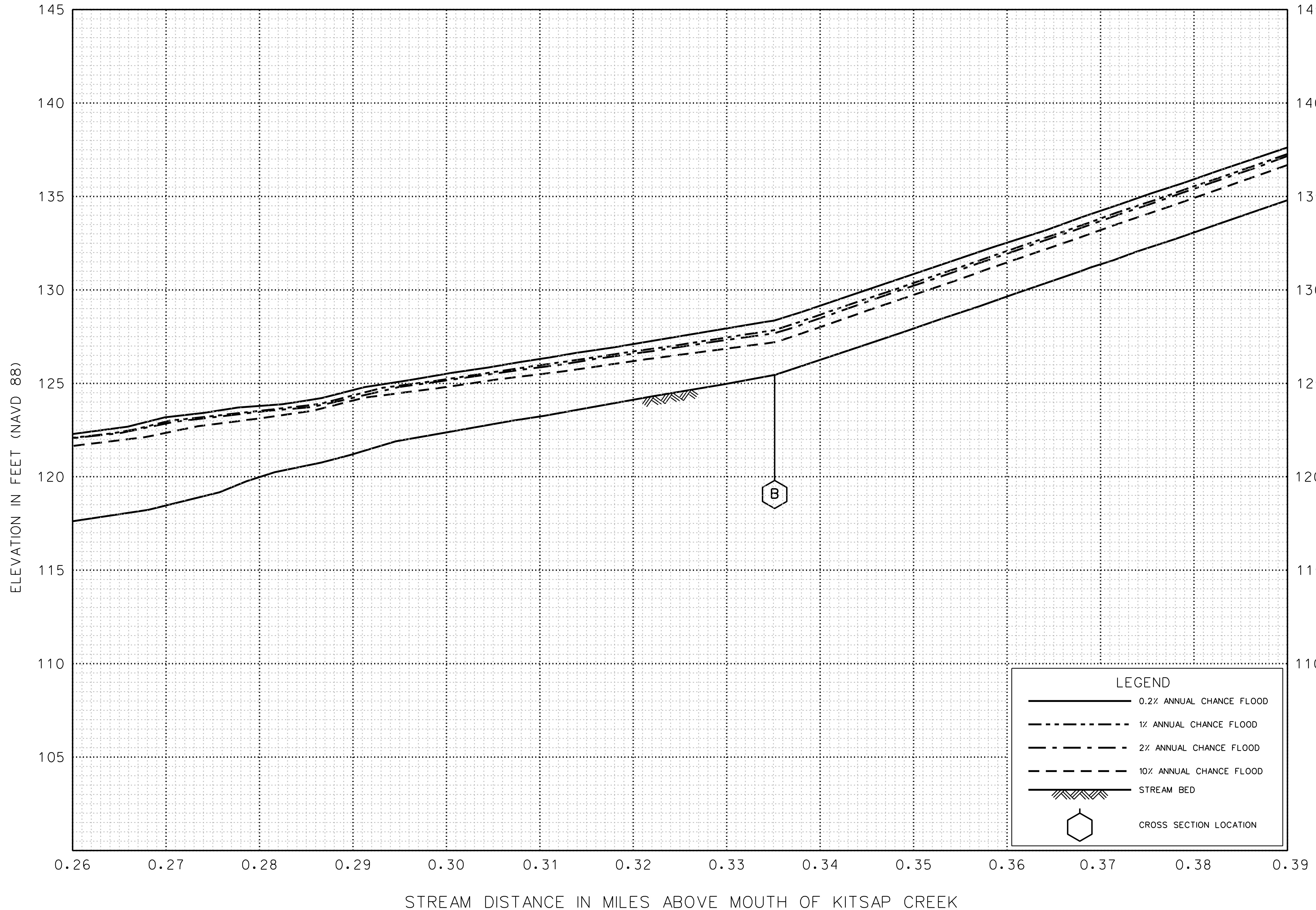



FLOOD PROFILES

DICKERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



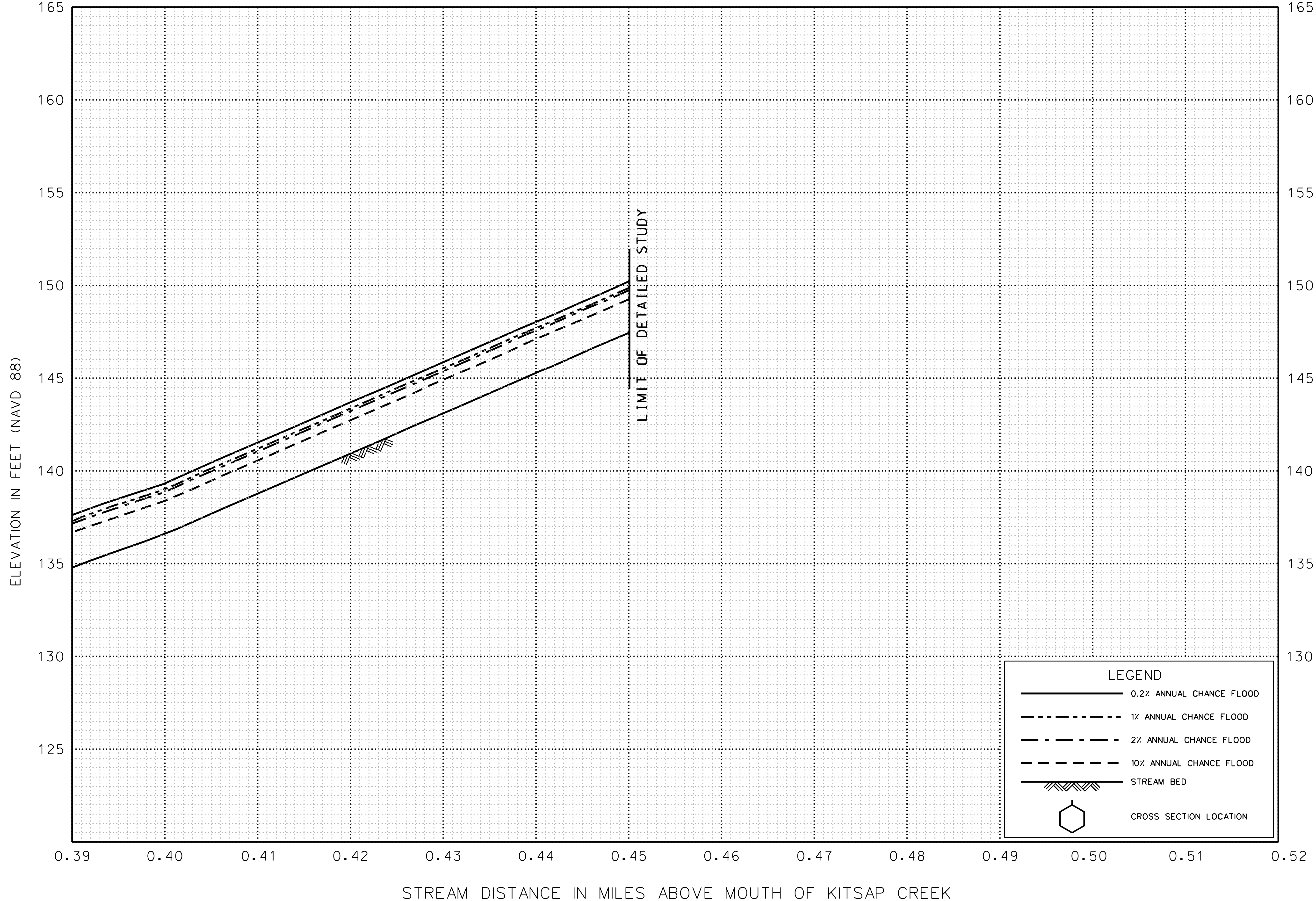

FLOOD PROFILES

DICKERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

34P



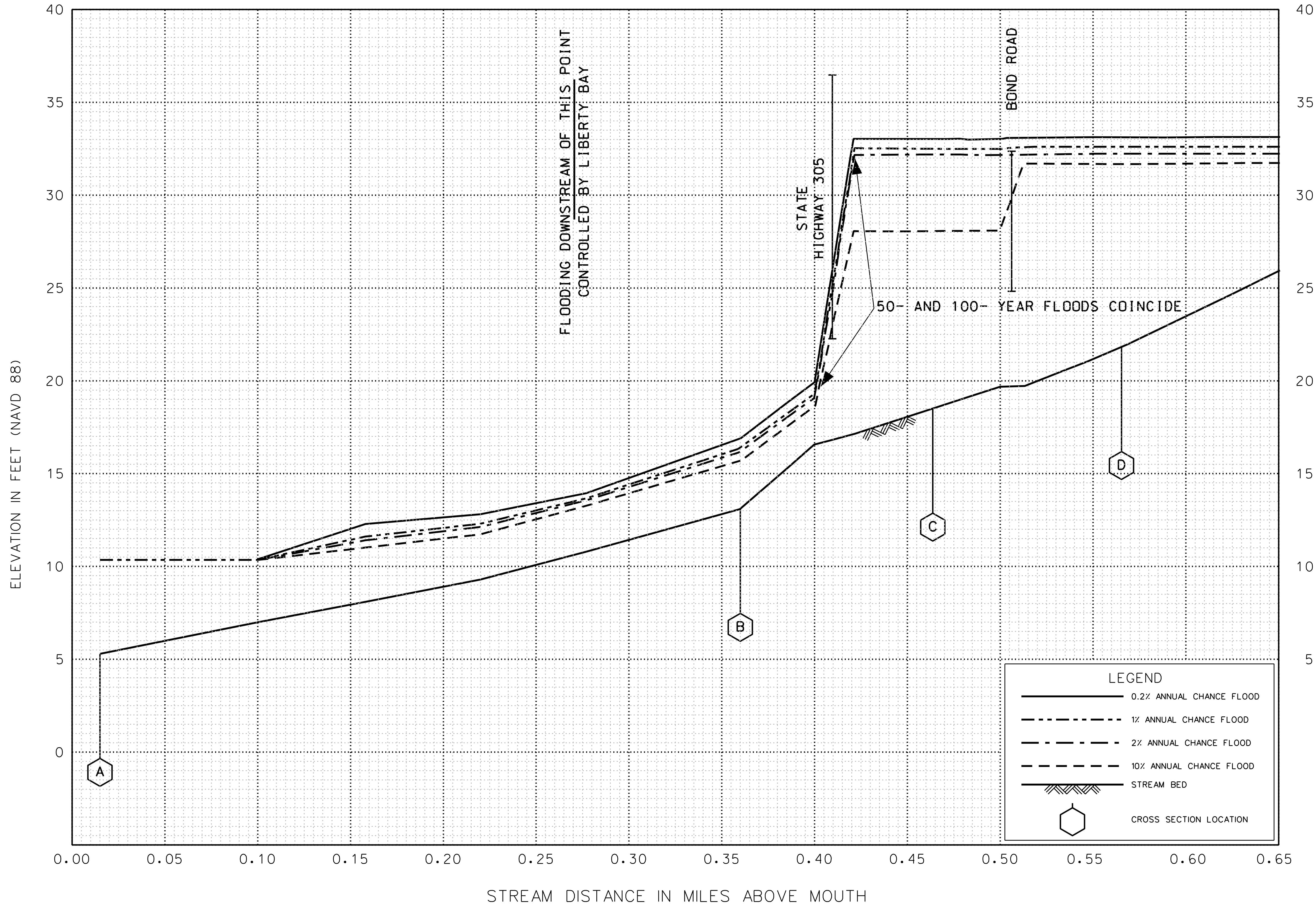

FLOOD PROFILES

DICKERSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

35P

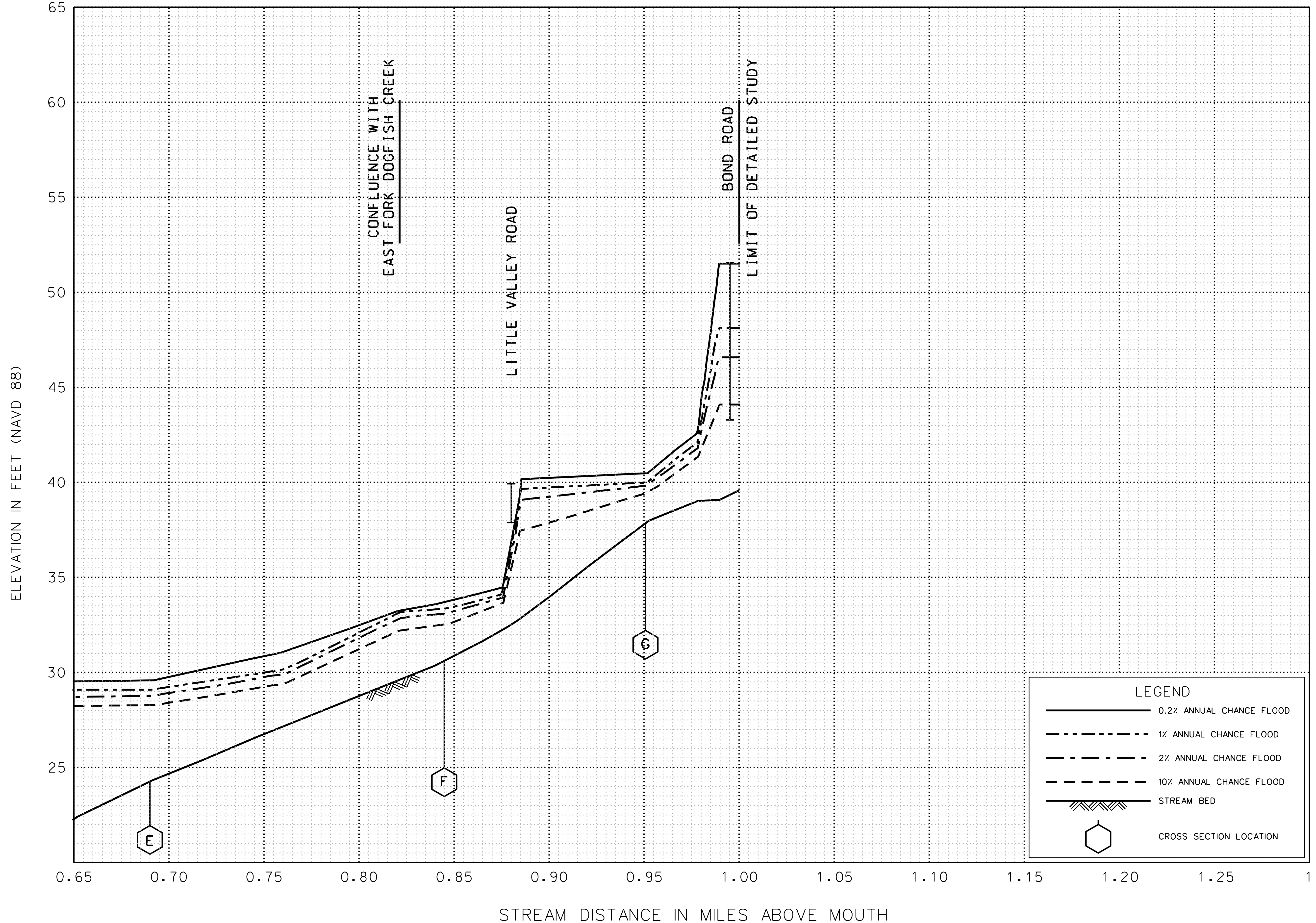



# FLOOD PROFILES

## DOGFISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

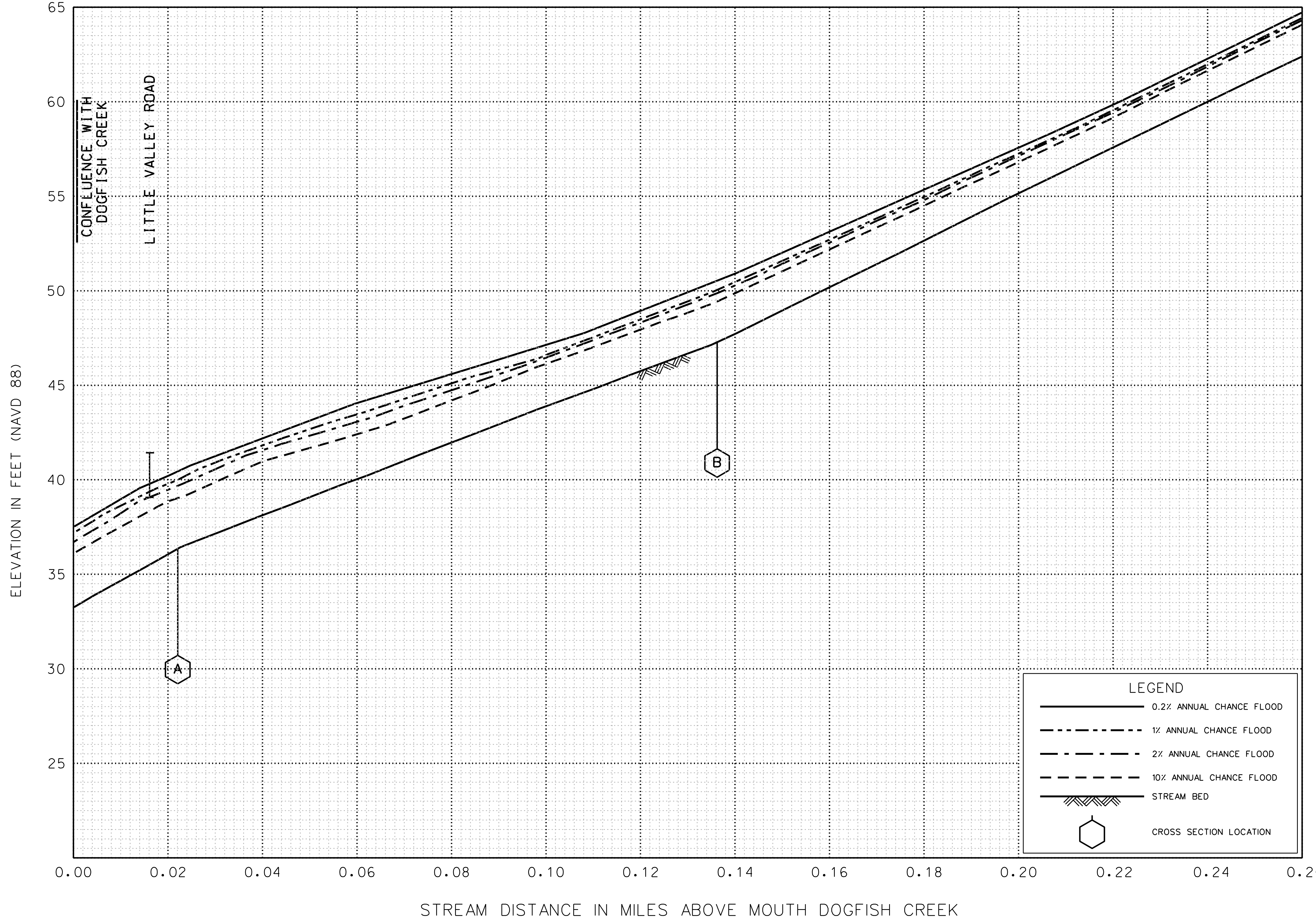



FLOOD PROFILES

DOGFISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

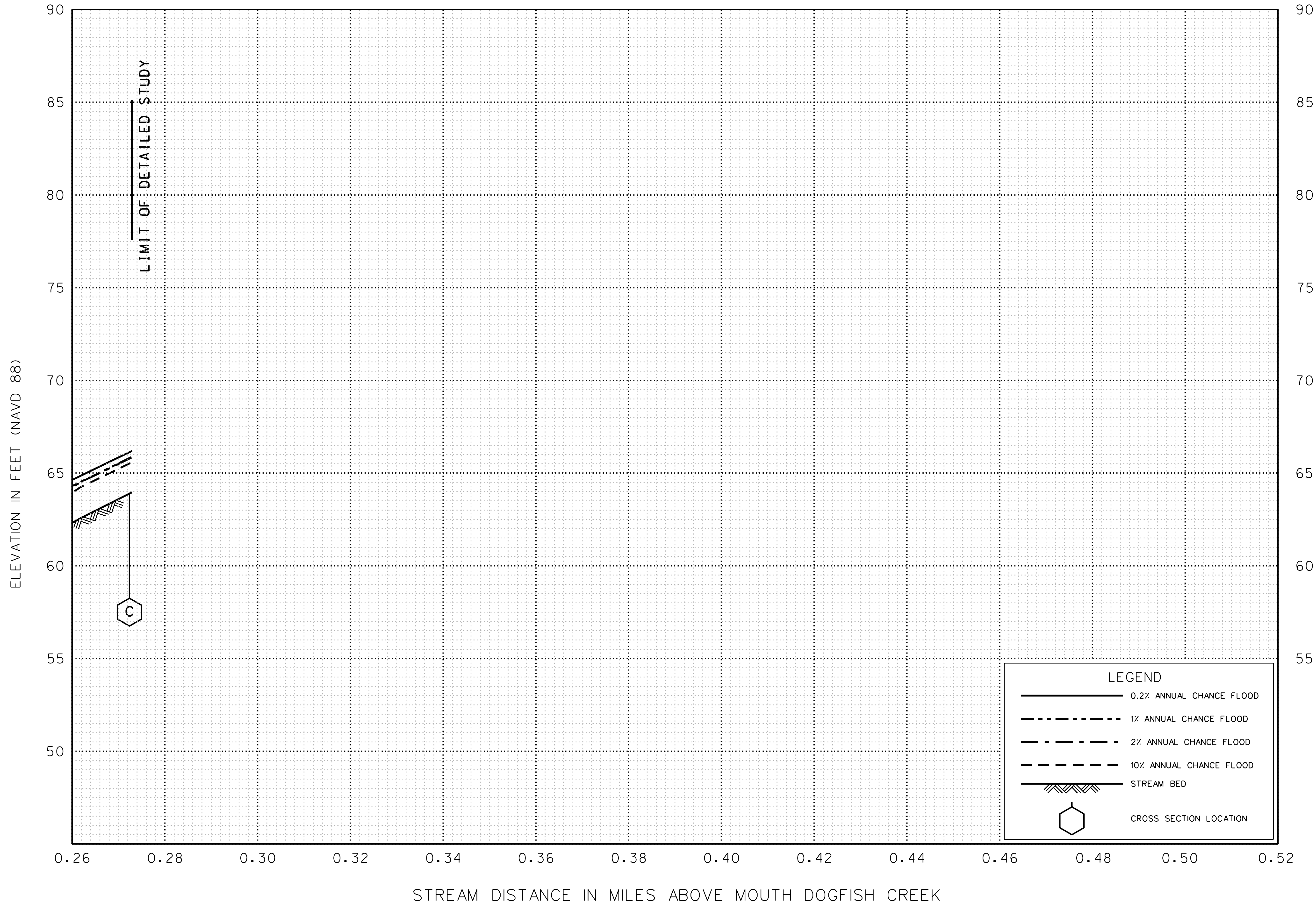



# FLOOD PROFILES

## EAST FORK DOGFISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

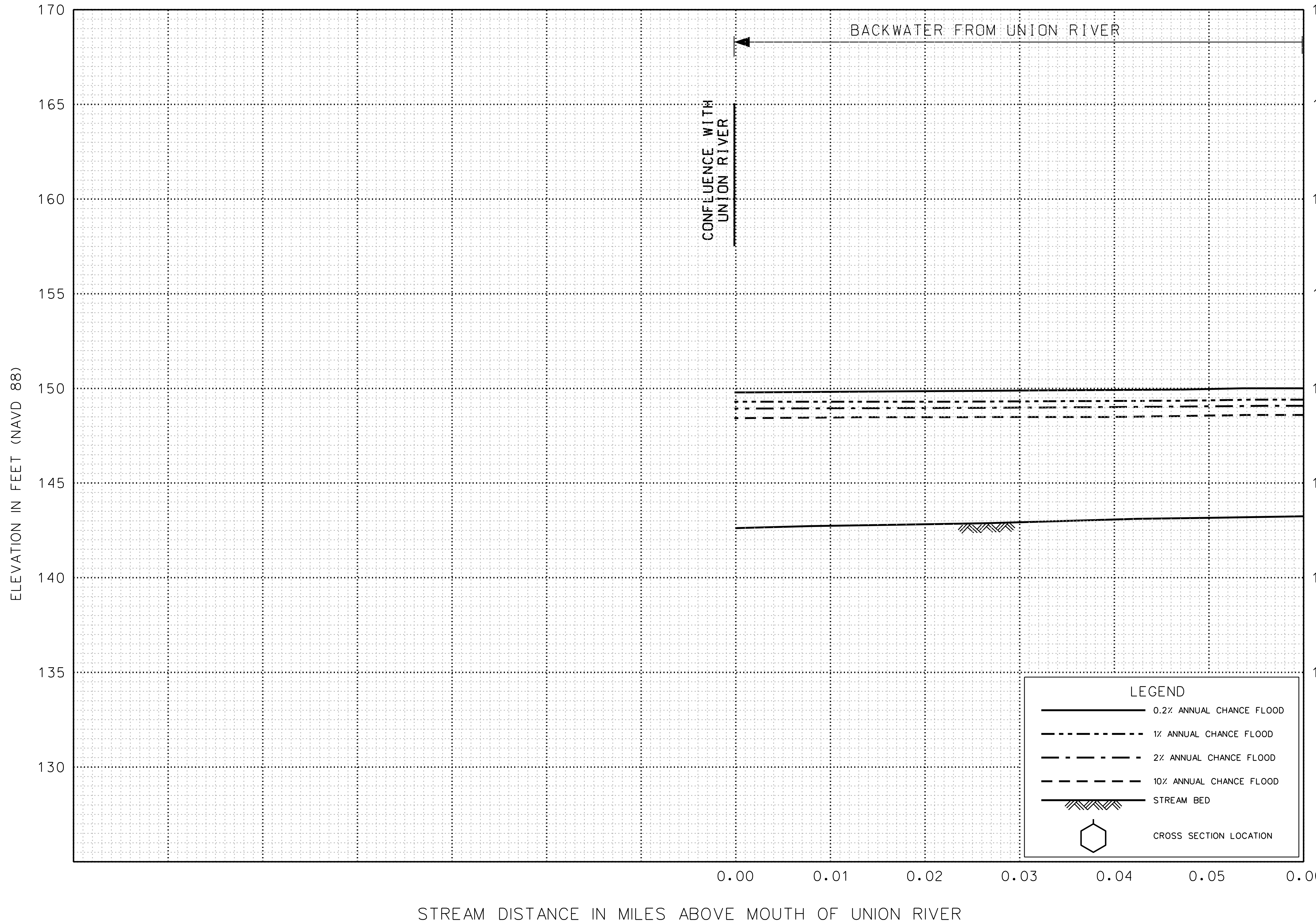



FLOOD PROFILES

EAST FORK DOGFISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

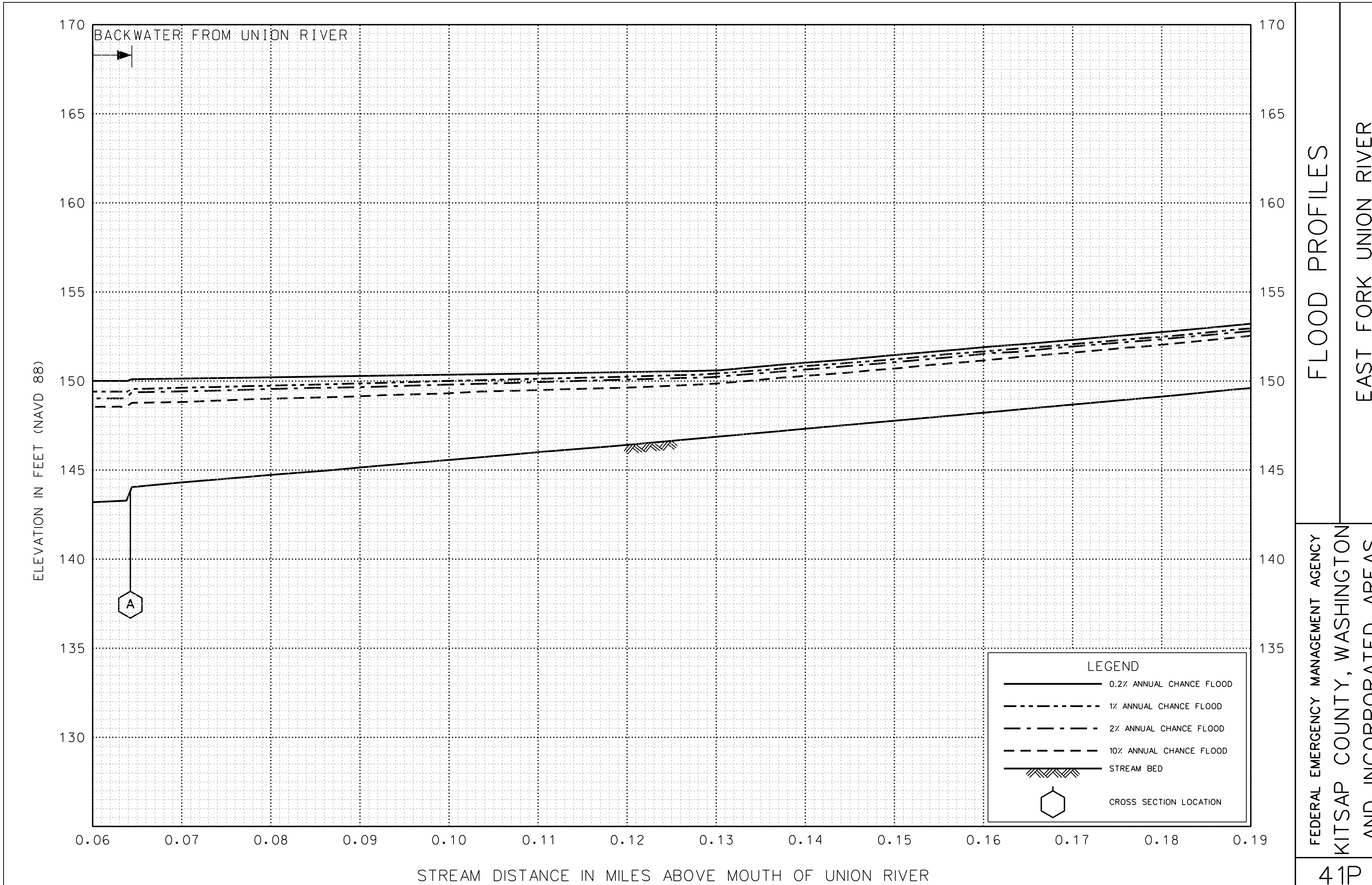



FLOOD PROFILES

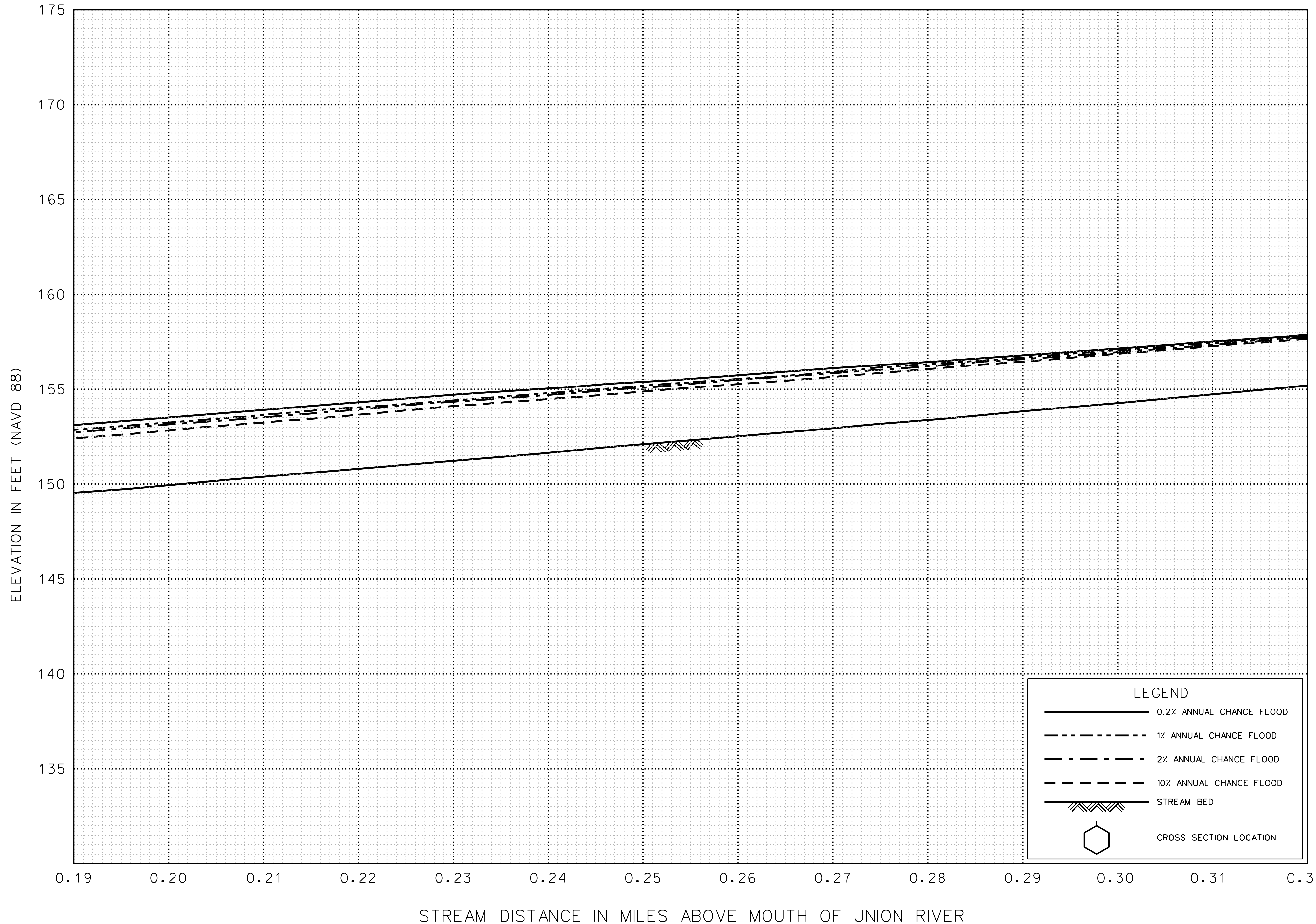
EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



BACKWATER FROM UNION RIVER
170
165
160
155
150
145
140
135
130
ELEVATION IN FEET (NAVD 88)
A
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
0.06
0.07
0.08
0.09
0.10
0.11
0.12
0.13
0.14
0.15
0.16
0.17
0.18
0.19
STREAM DISTANCE IN MILES ABOVE MOUTH OF UNION RIVER
FLOOD PROFILES
EAST FORK UNION RIVER
FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS
41P

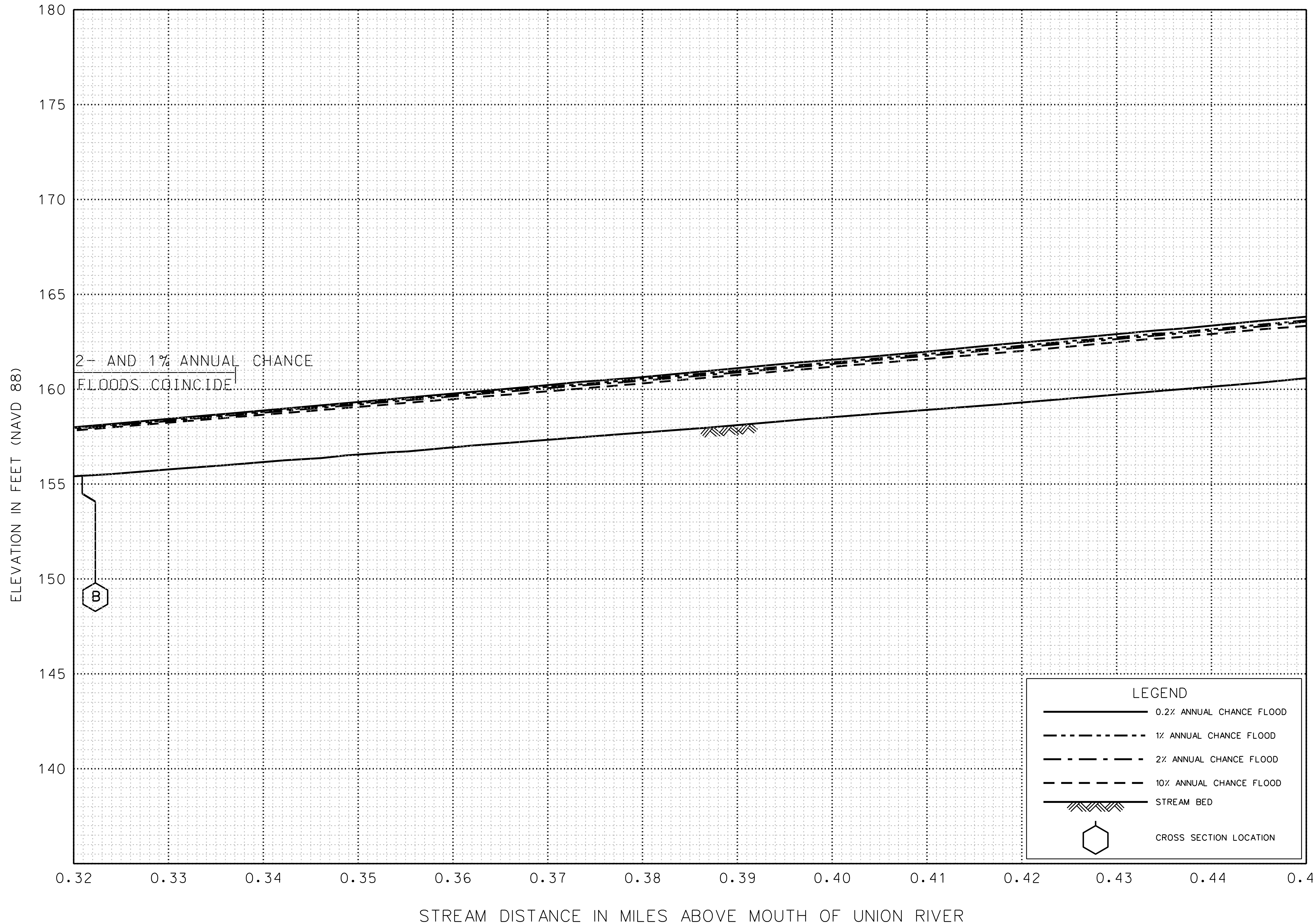



FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

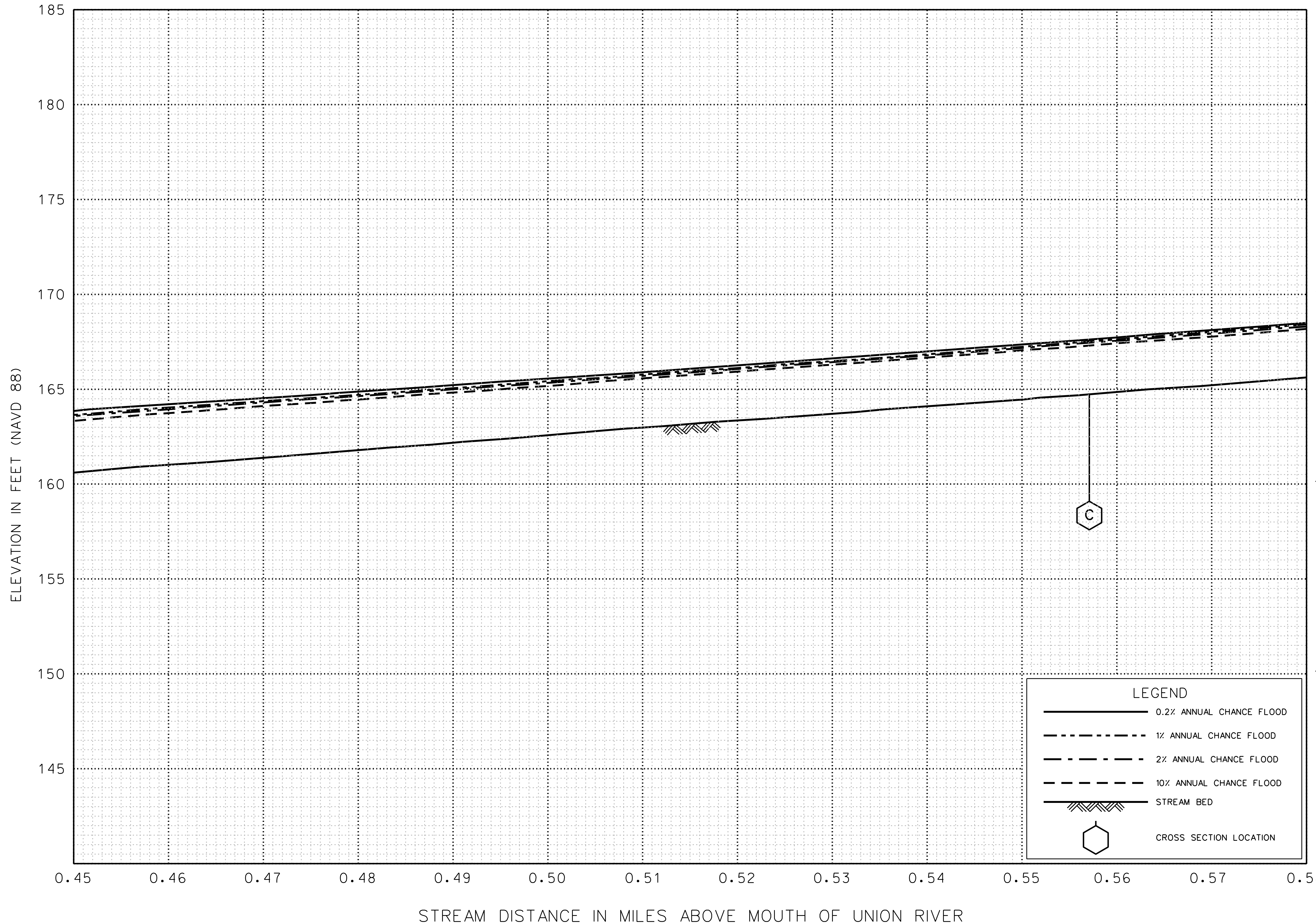



FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

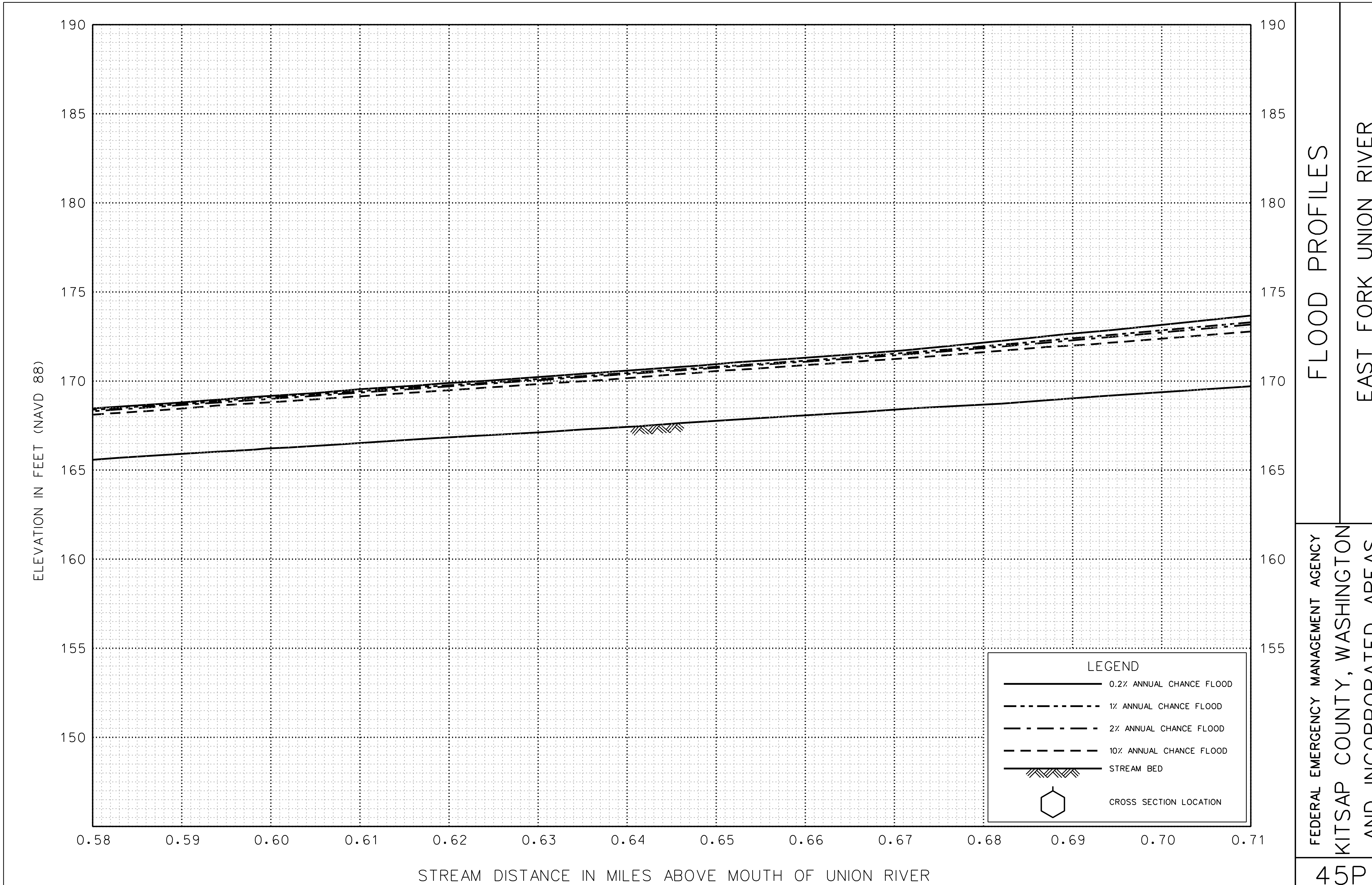



FLOOD PROFILES

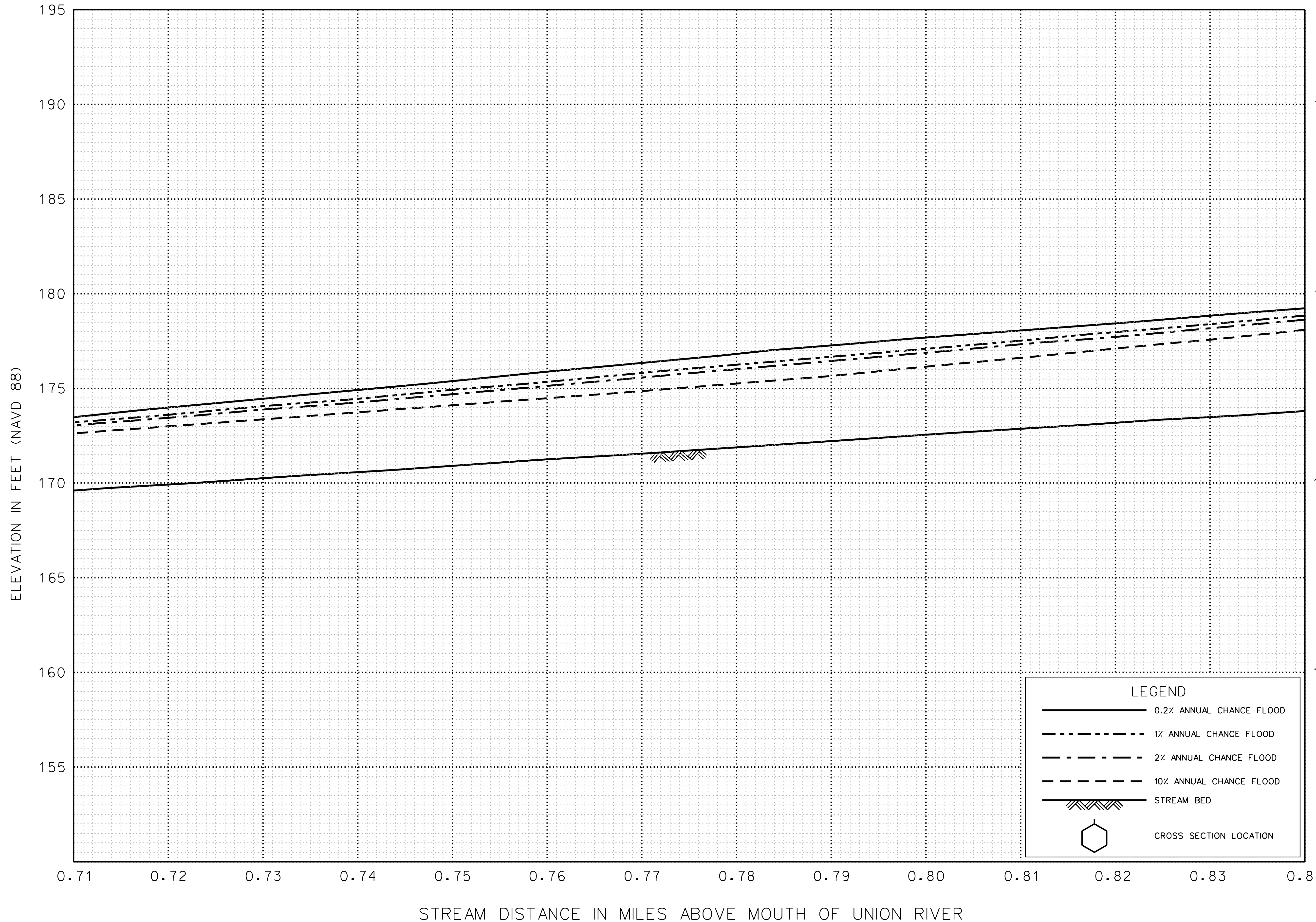
EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS



190
185
180
175
170
165
160
155
150
ELEVATION IN FEET (NAVD 88)
0.58
0.59
0.60
0.61
0.62
0.63
0.64
0.65
0.66
0.67
0.68
0.69
0.70
0.71
STREAM DISTANCE IN MILES ABOVE MOUTH OF UNION RIVER
LEGEND
0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
EAST FORK UNION RIVER
FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS
45P



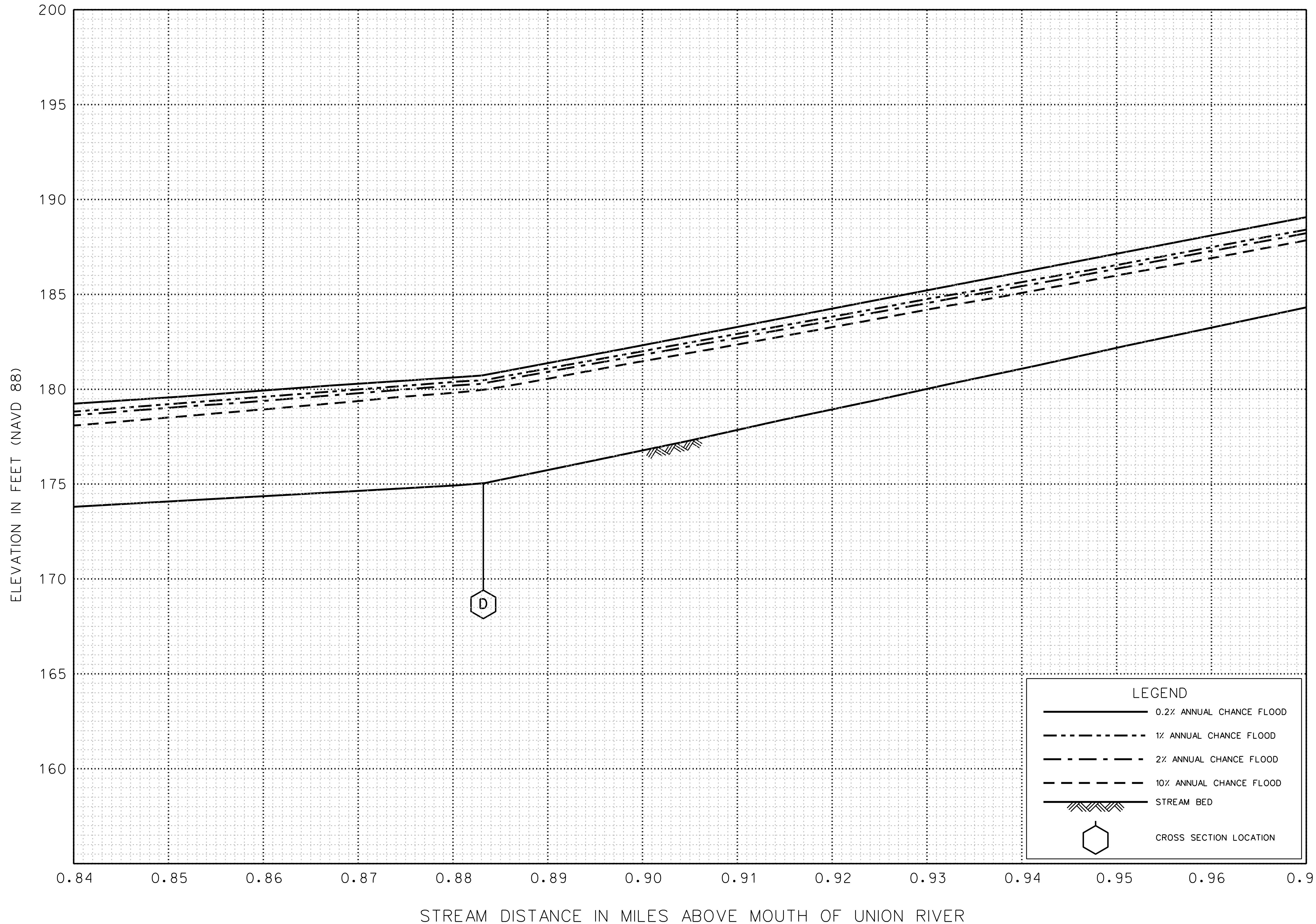

FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

46P

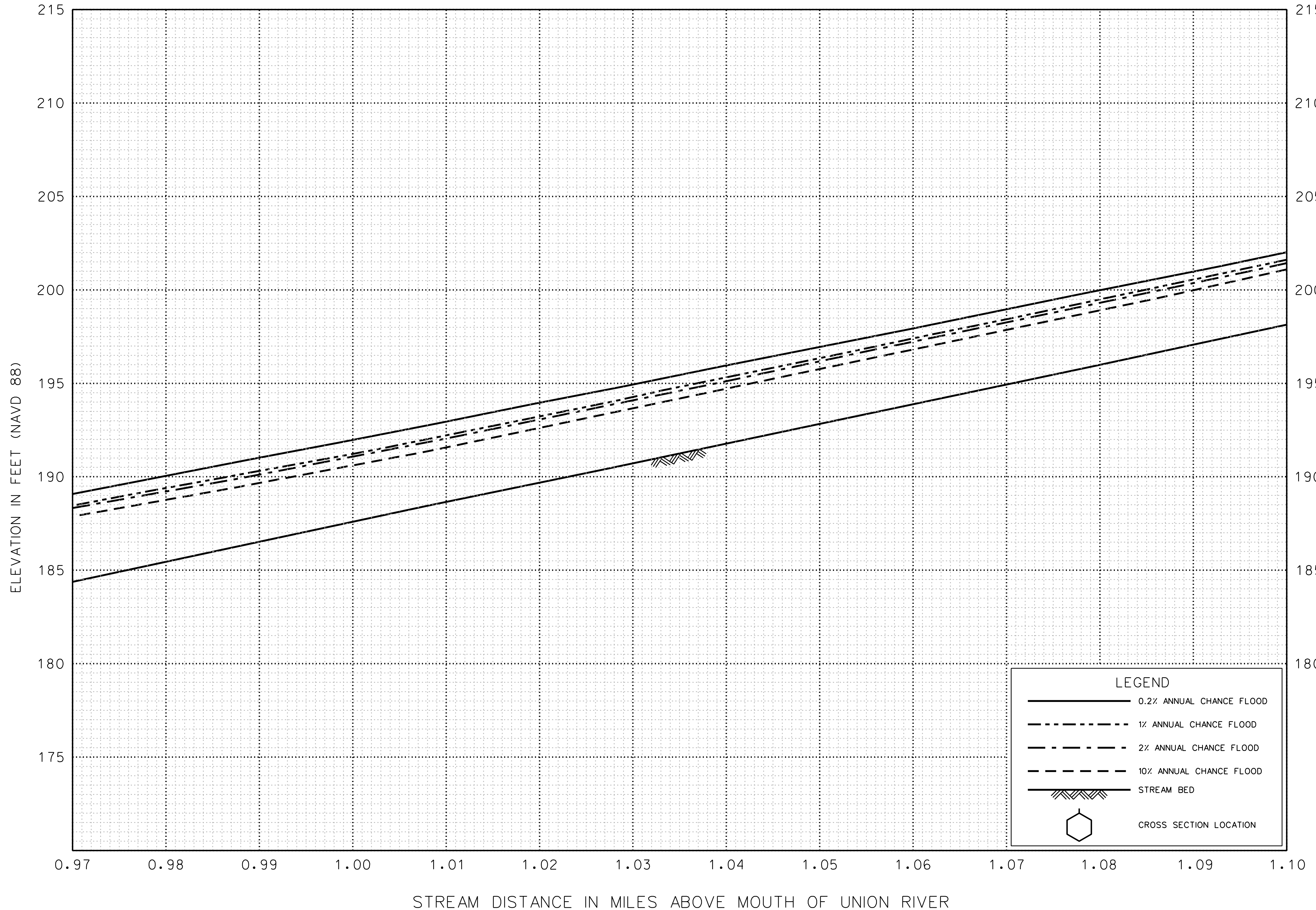



FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

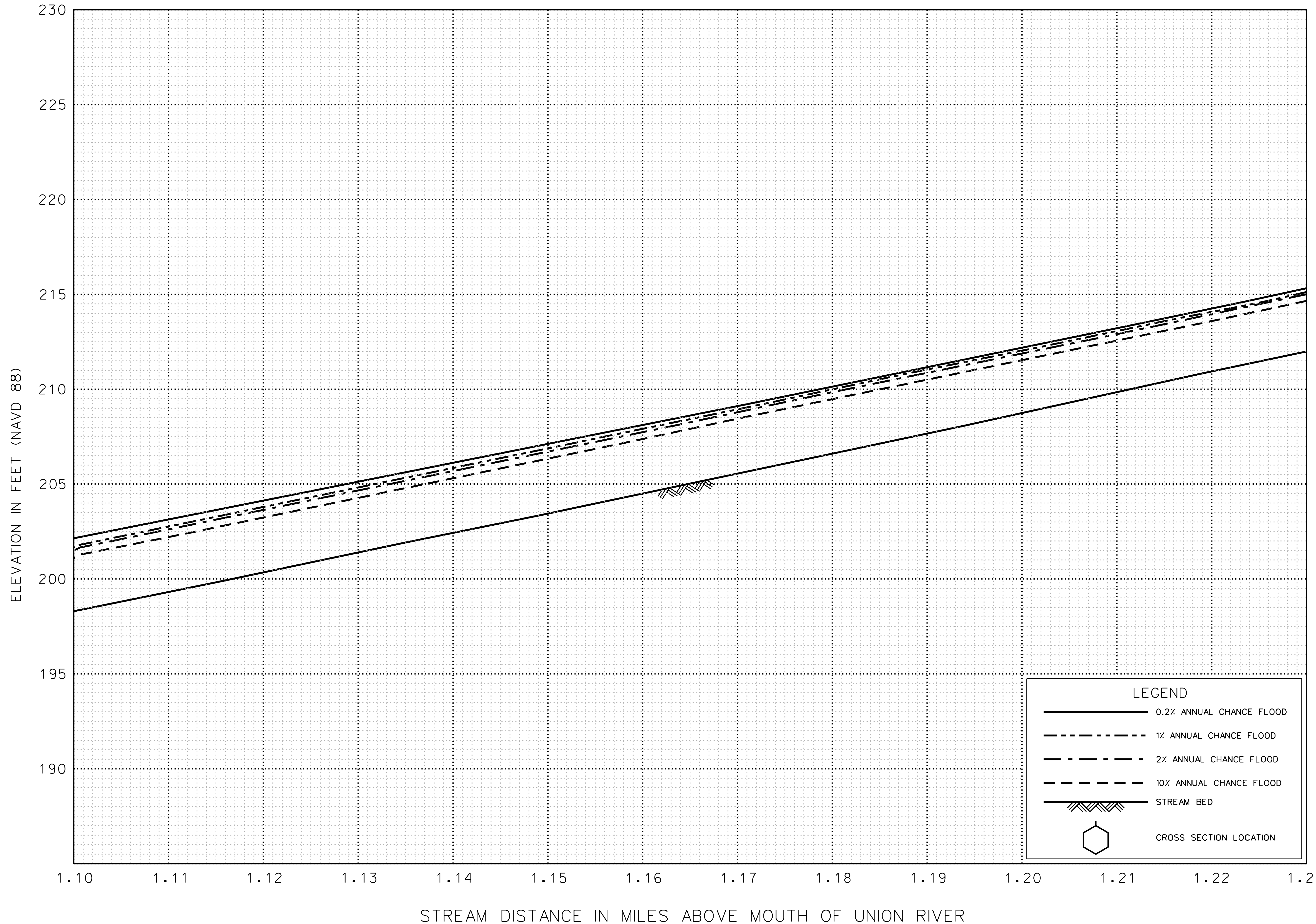



FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

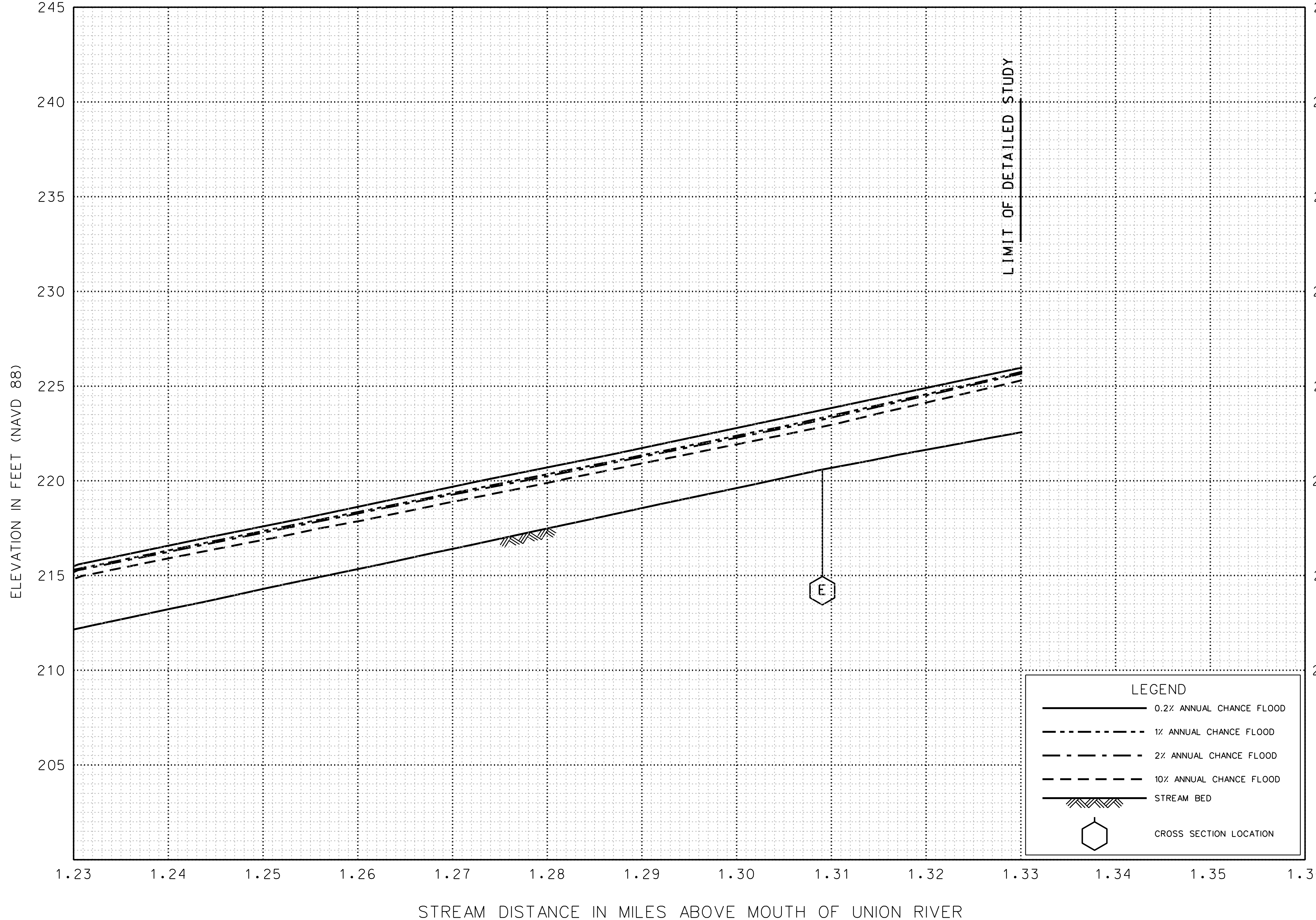



FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS



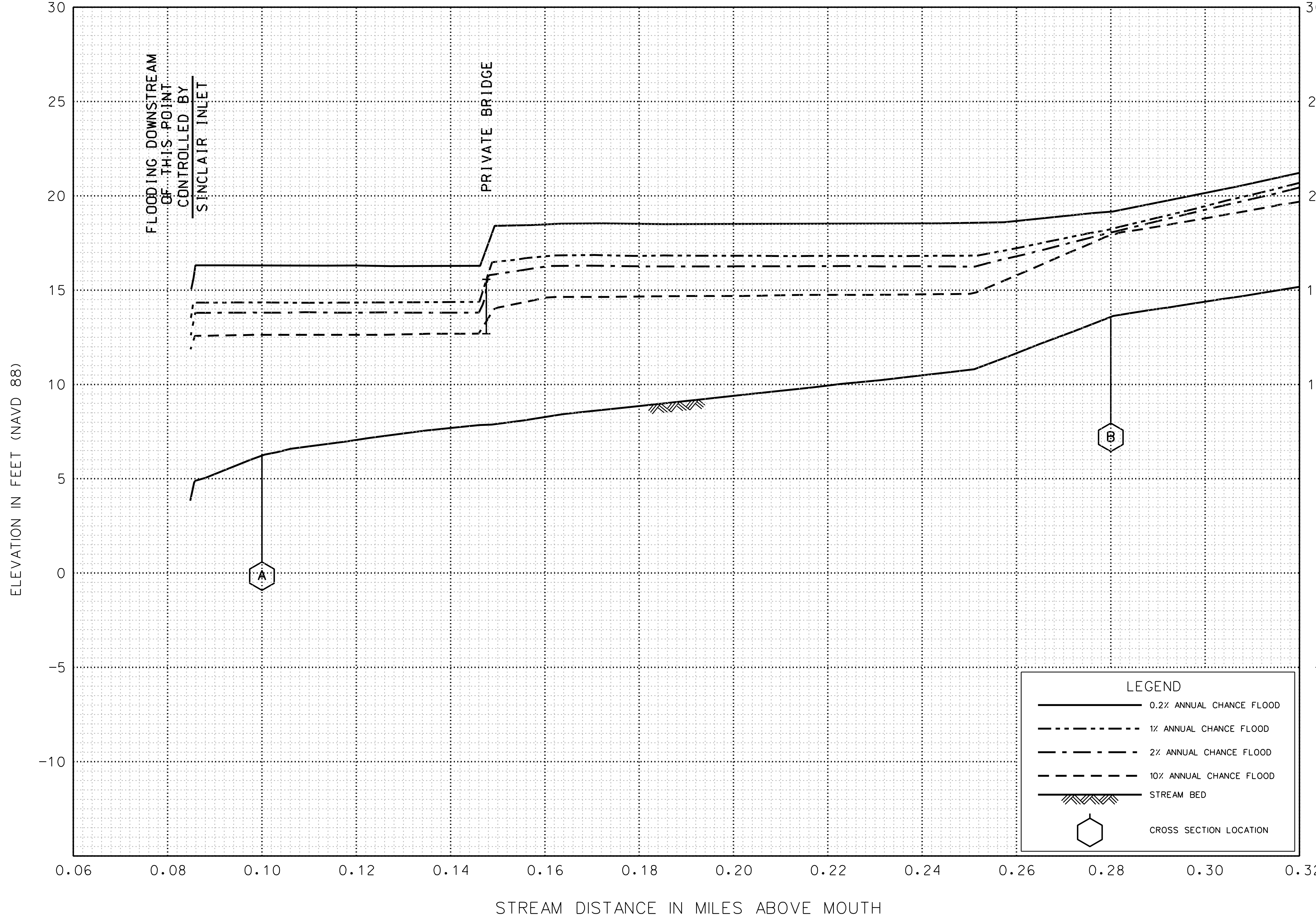

FLOOD PROFILES

EAST FORK UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

50P

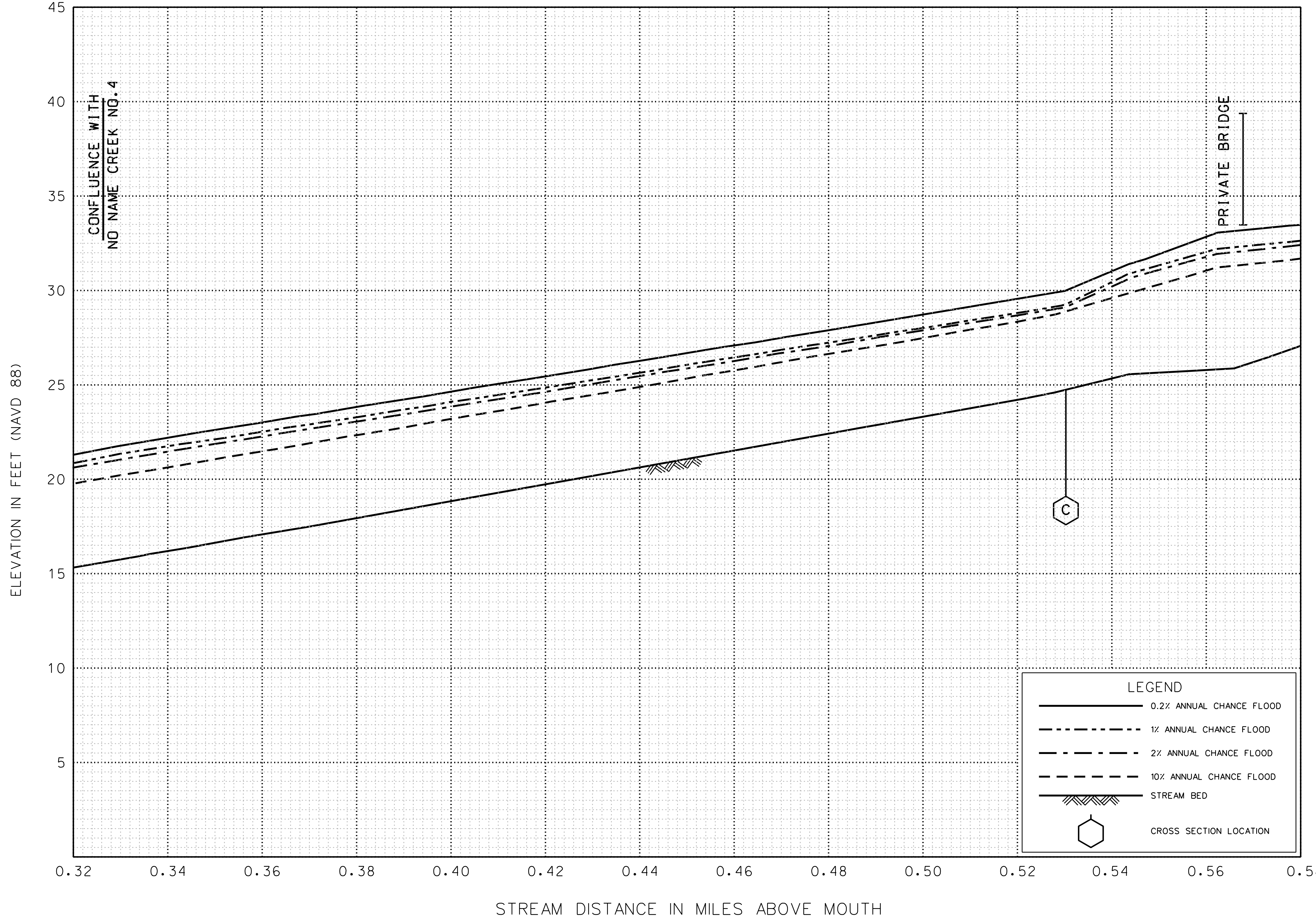



FLOOD PROFILES

GORST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



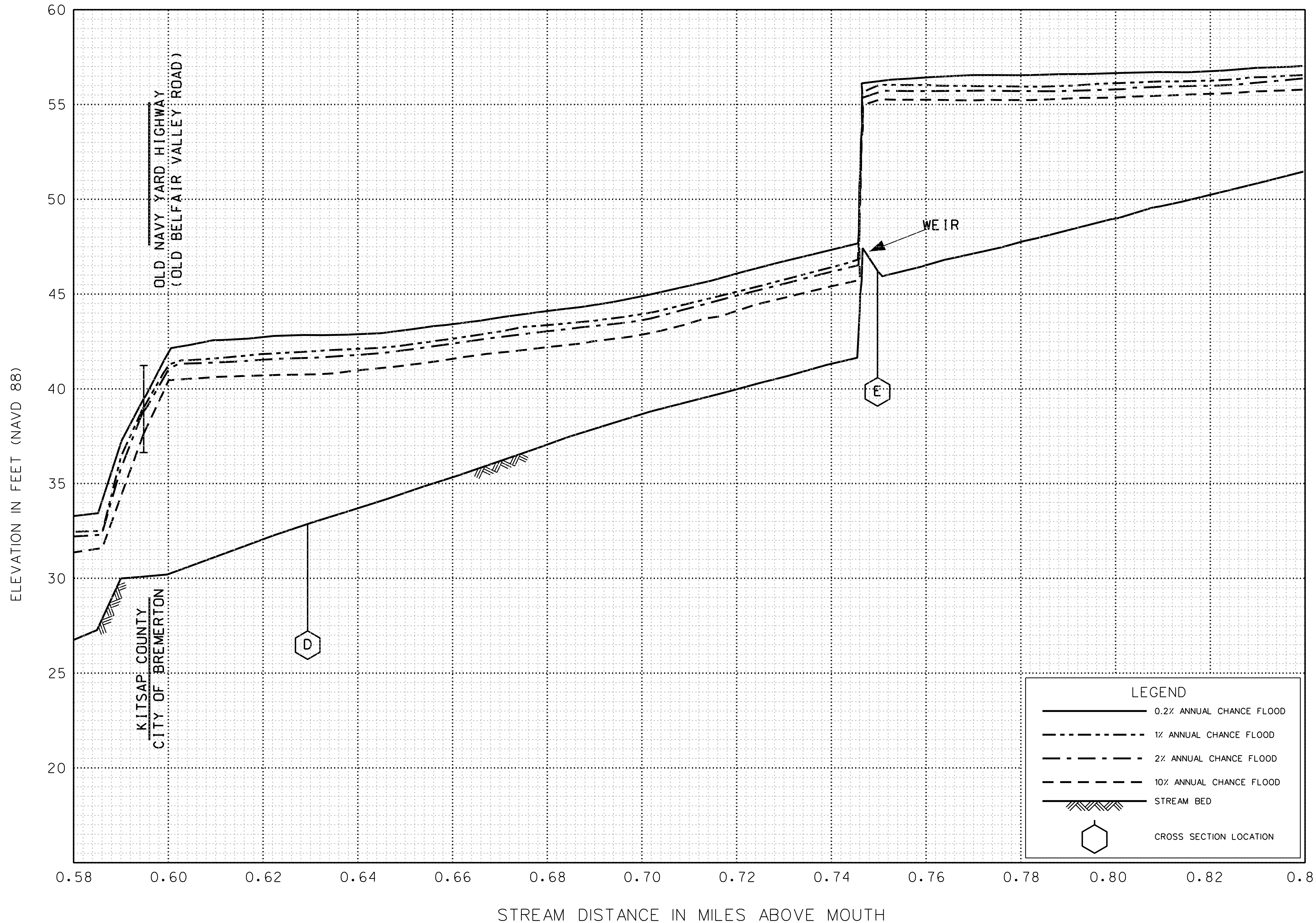

FLOOD PROFILES

GORST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

52P

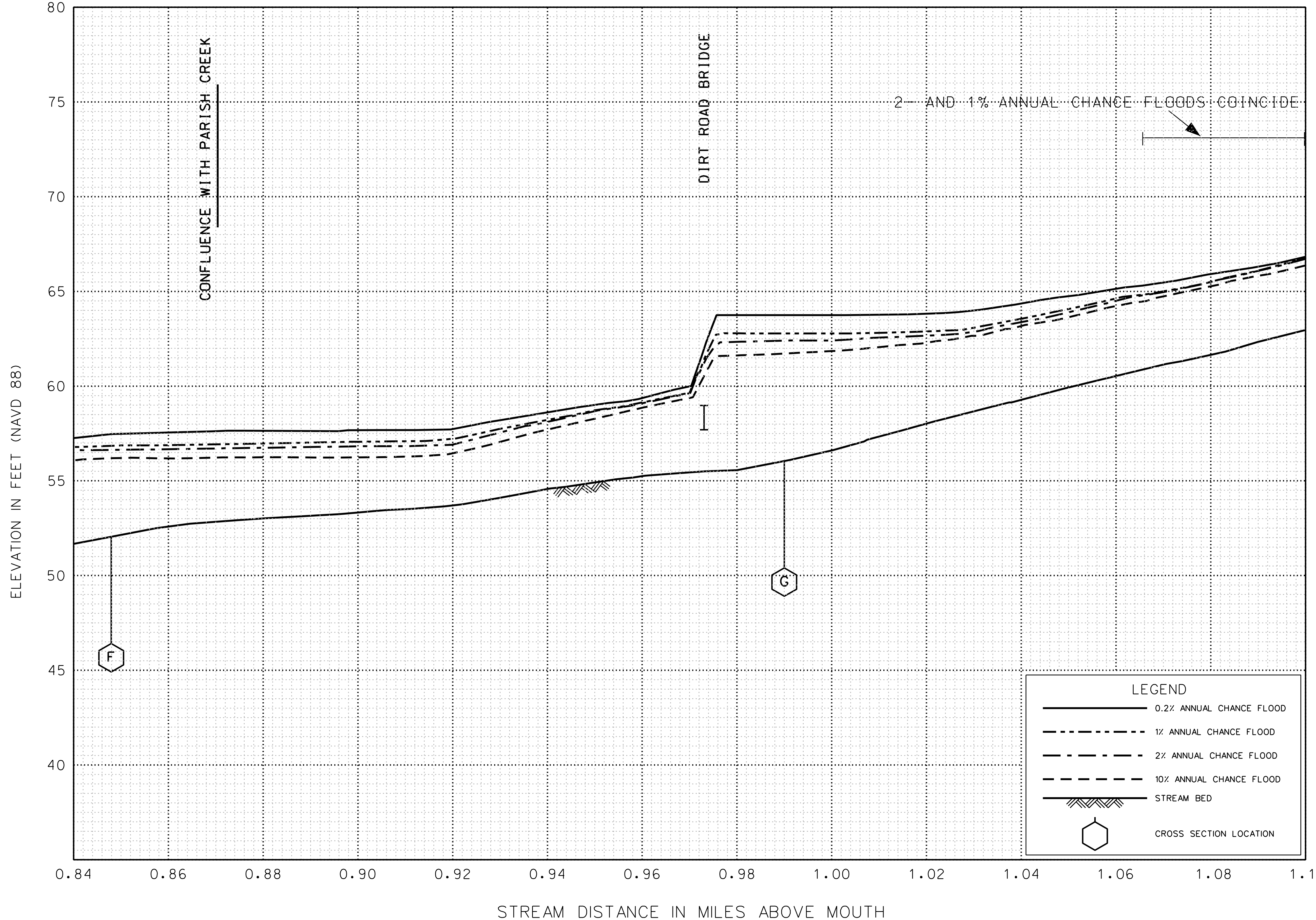



# FLOOD PROFILES

## GORST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

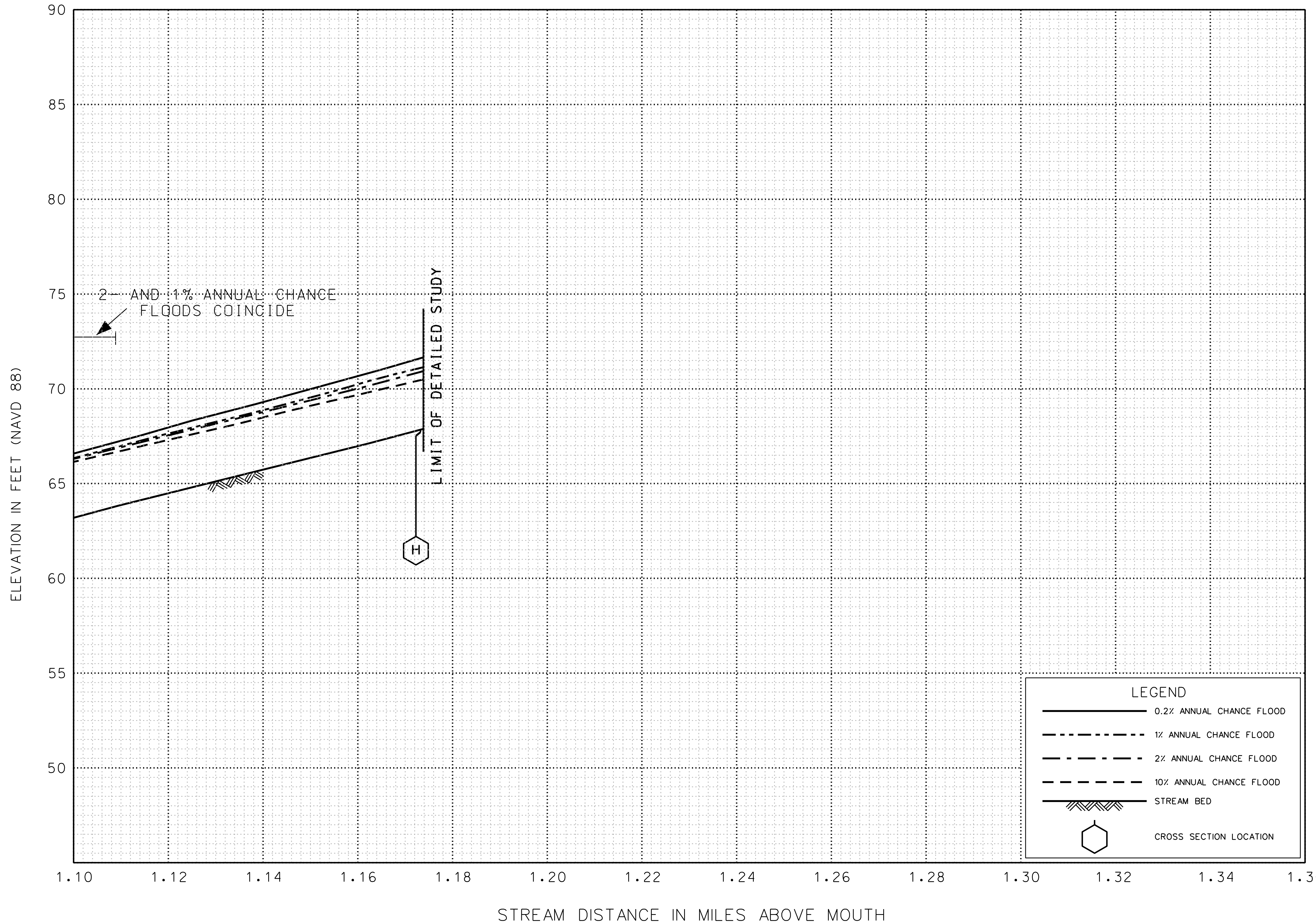



FLOOD PROFILES

GORST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

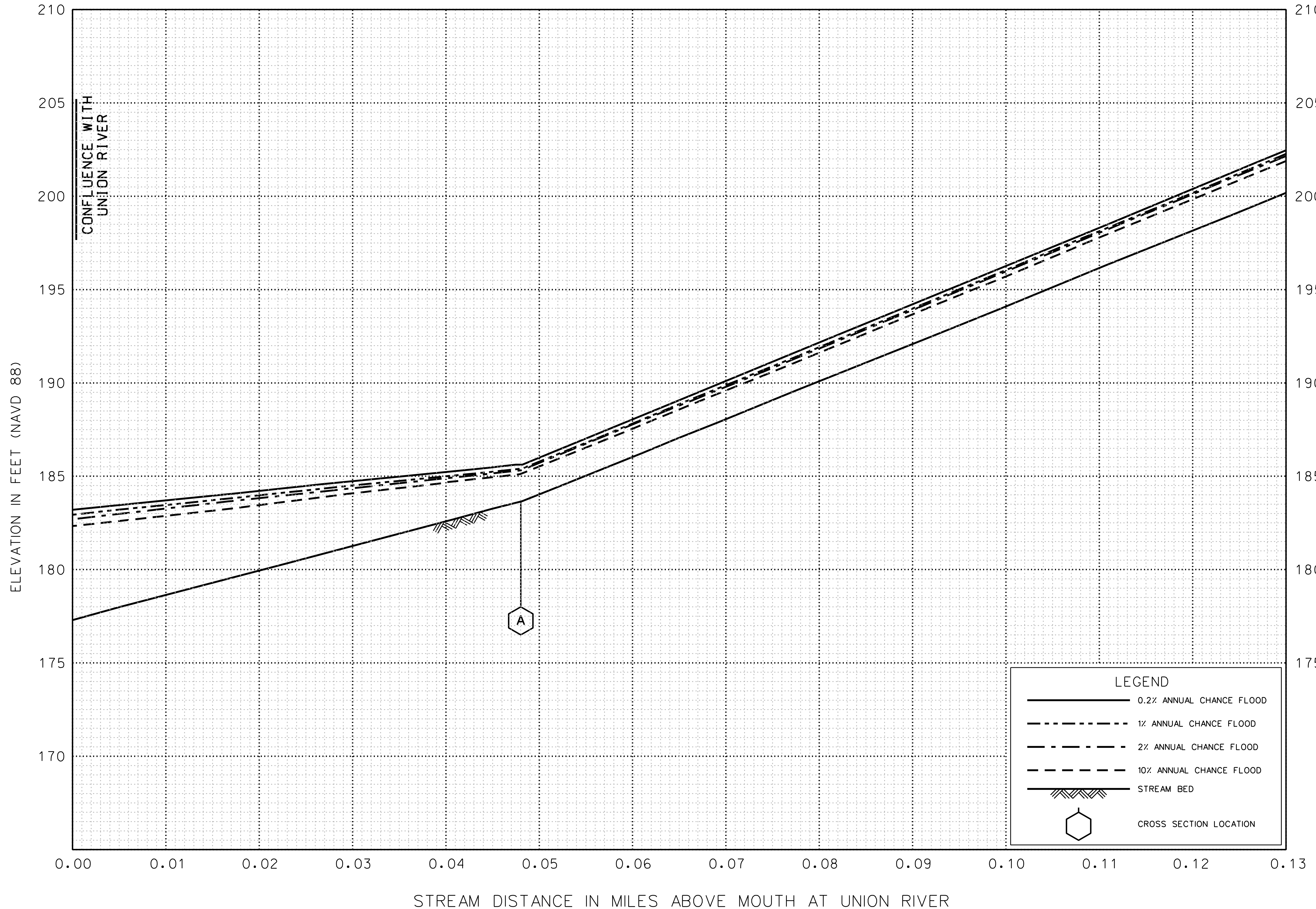



FLOOD PROFILES

GORST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

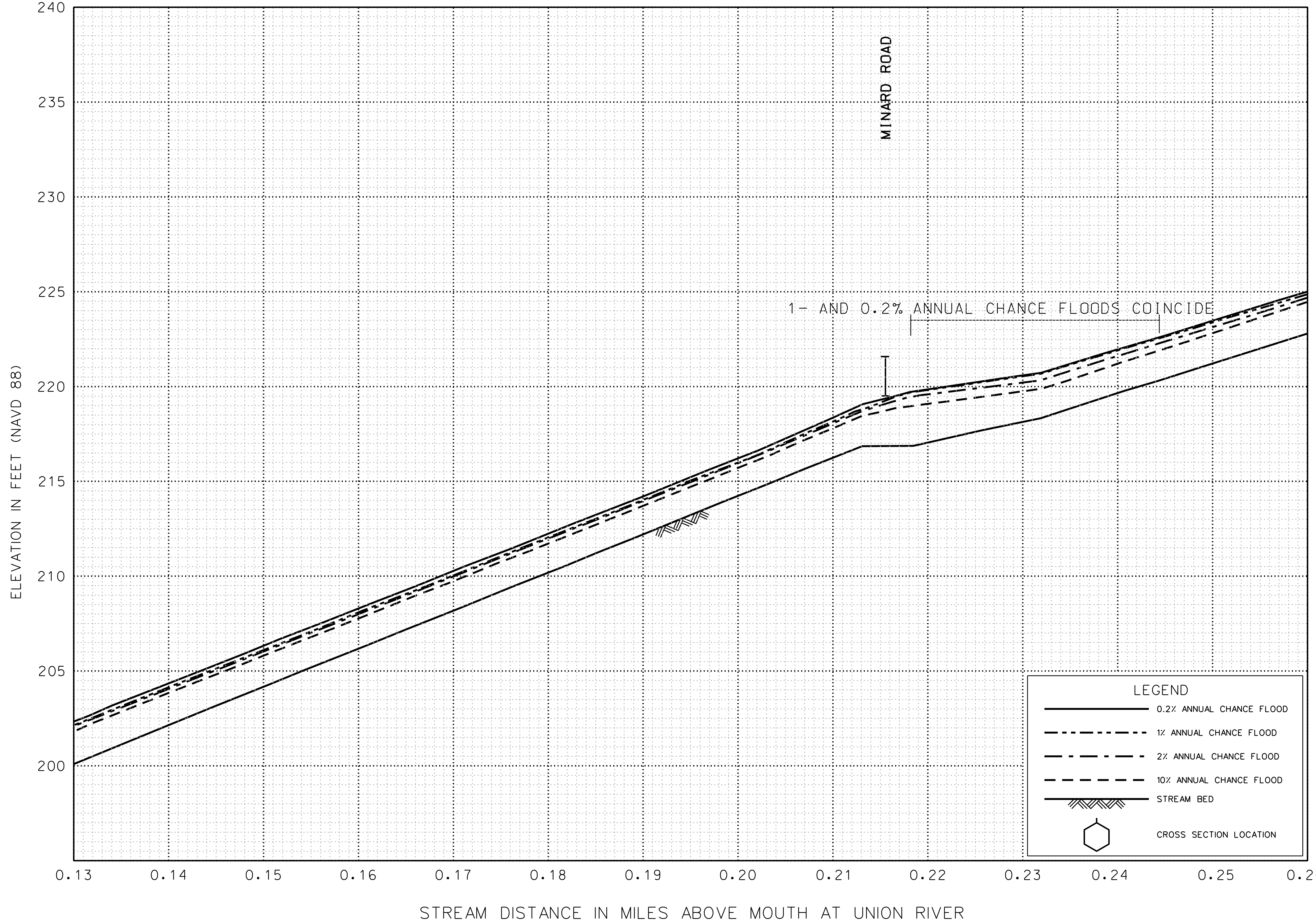



FLOOD PROFILES

HAZEL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

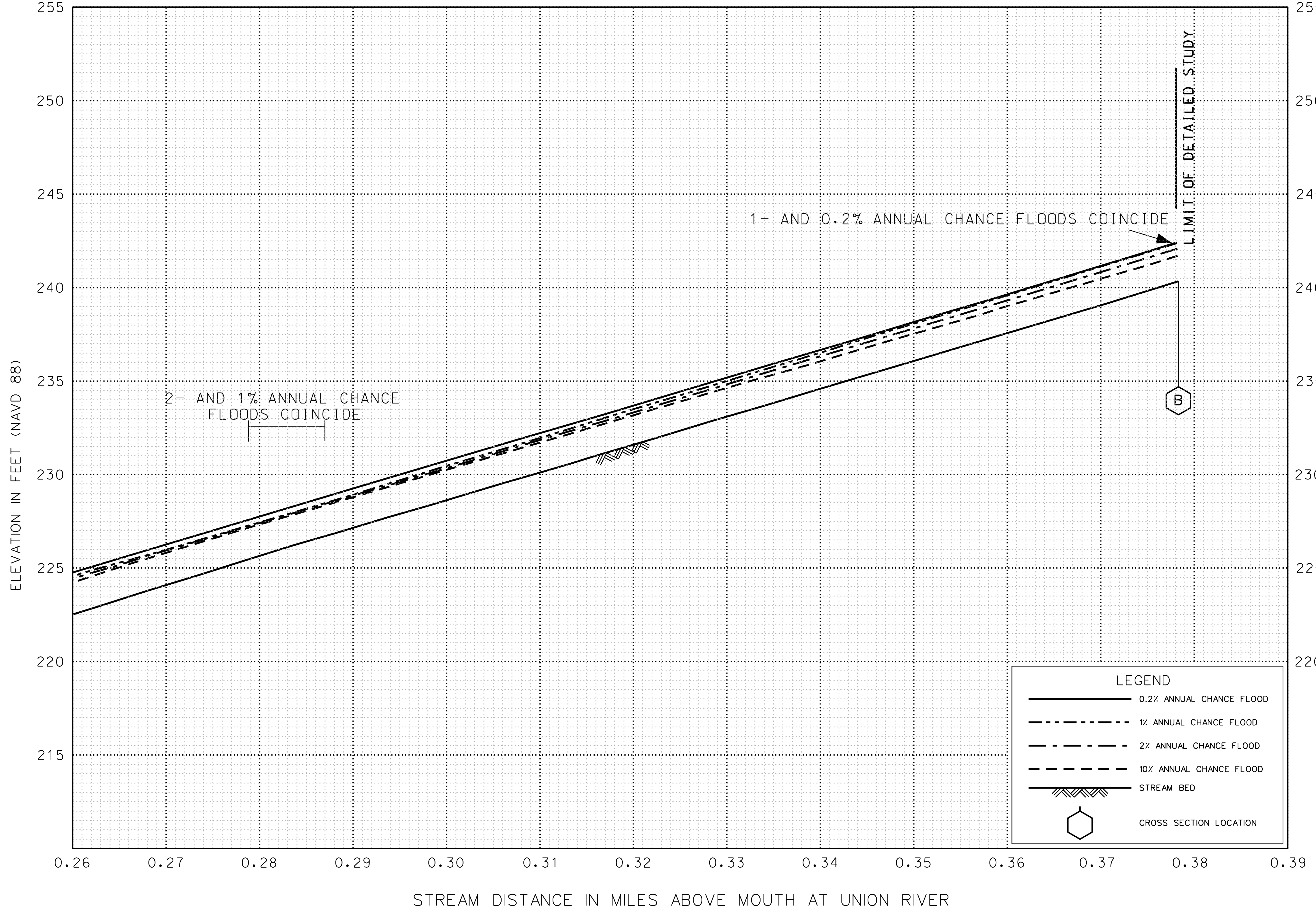



FLOOD PROFILES

HAZEL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

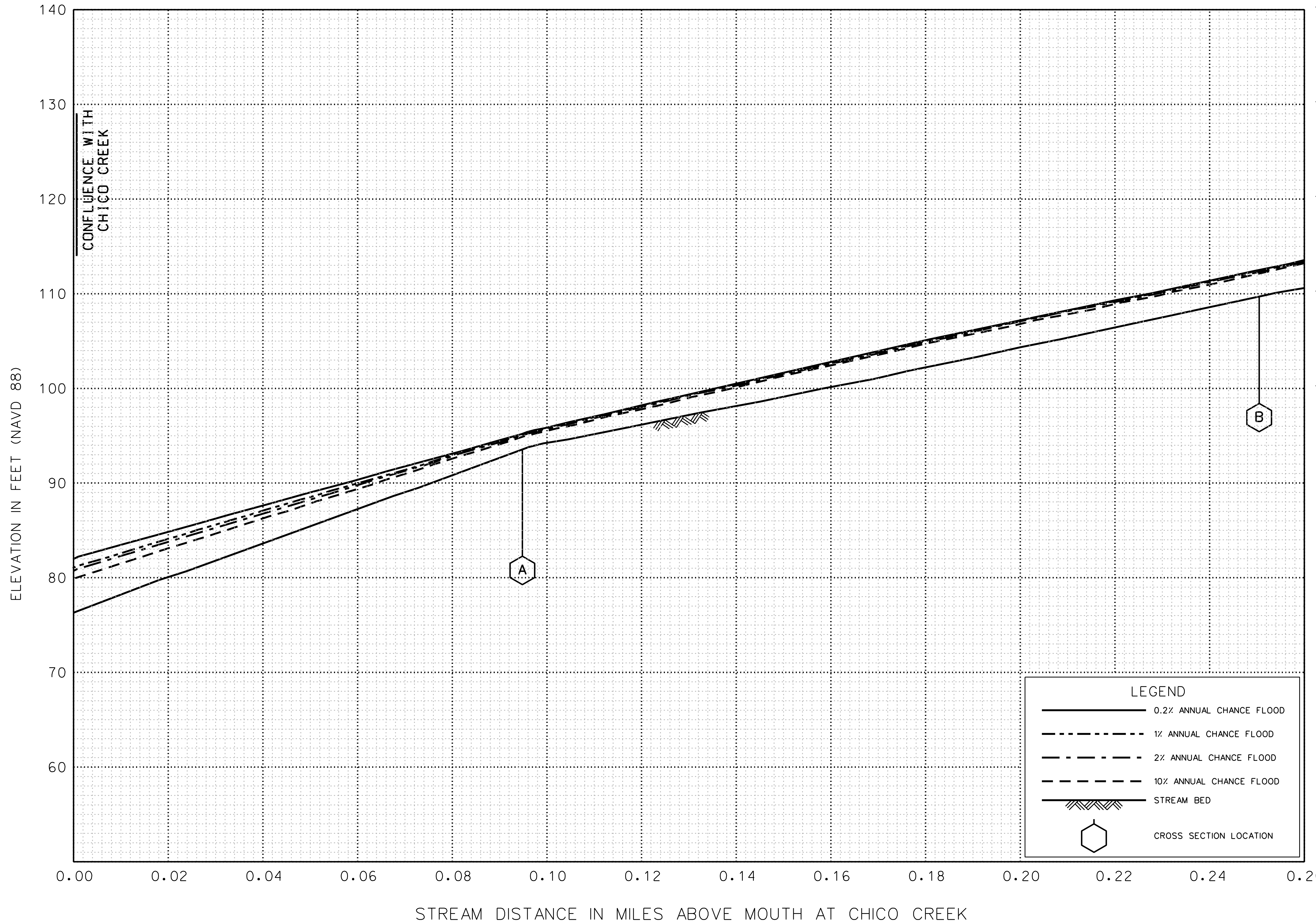



FLOOD PROFILES

HAZEL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

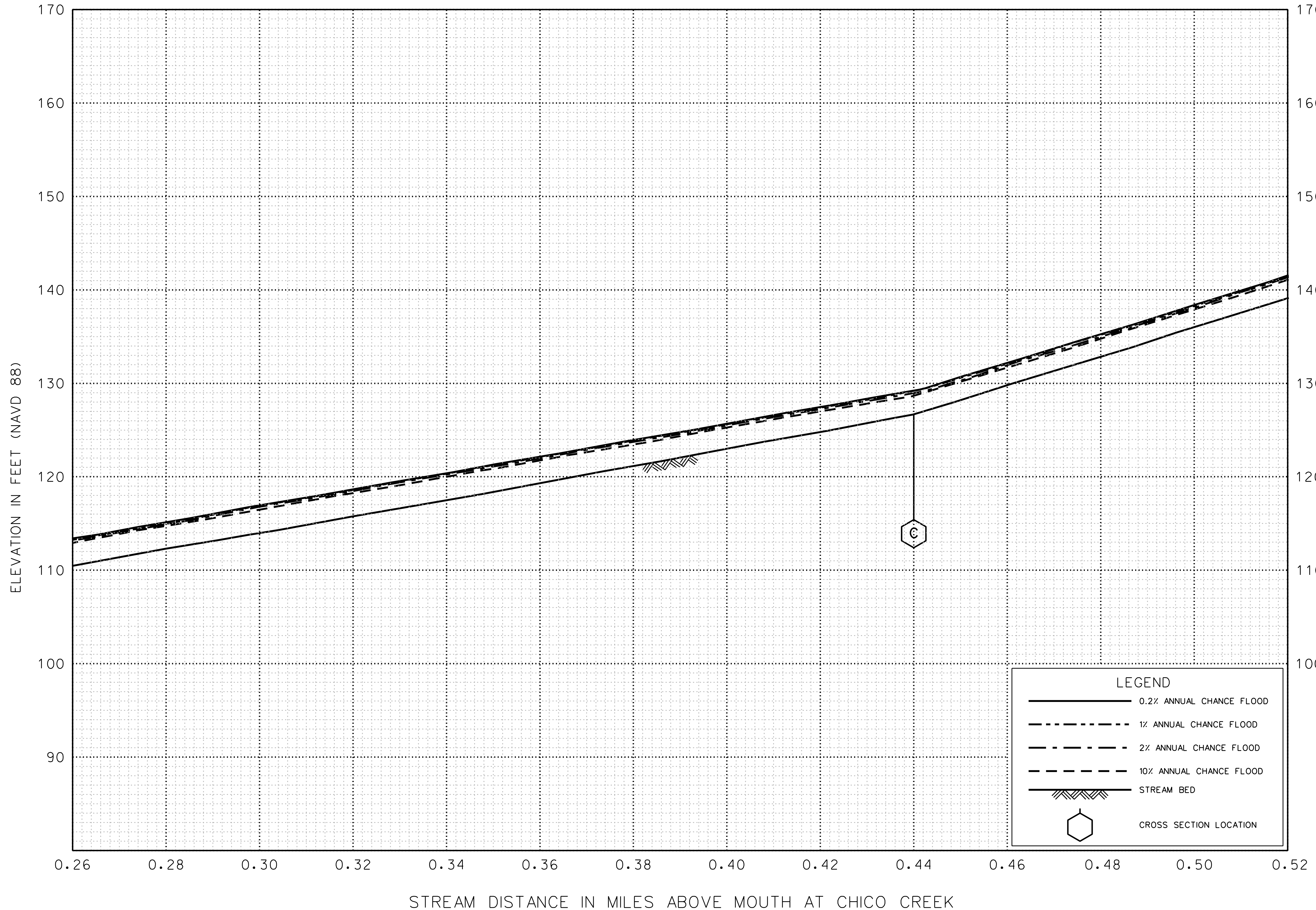



FLOOD PROFILES

KITSAP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

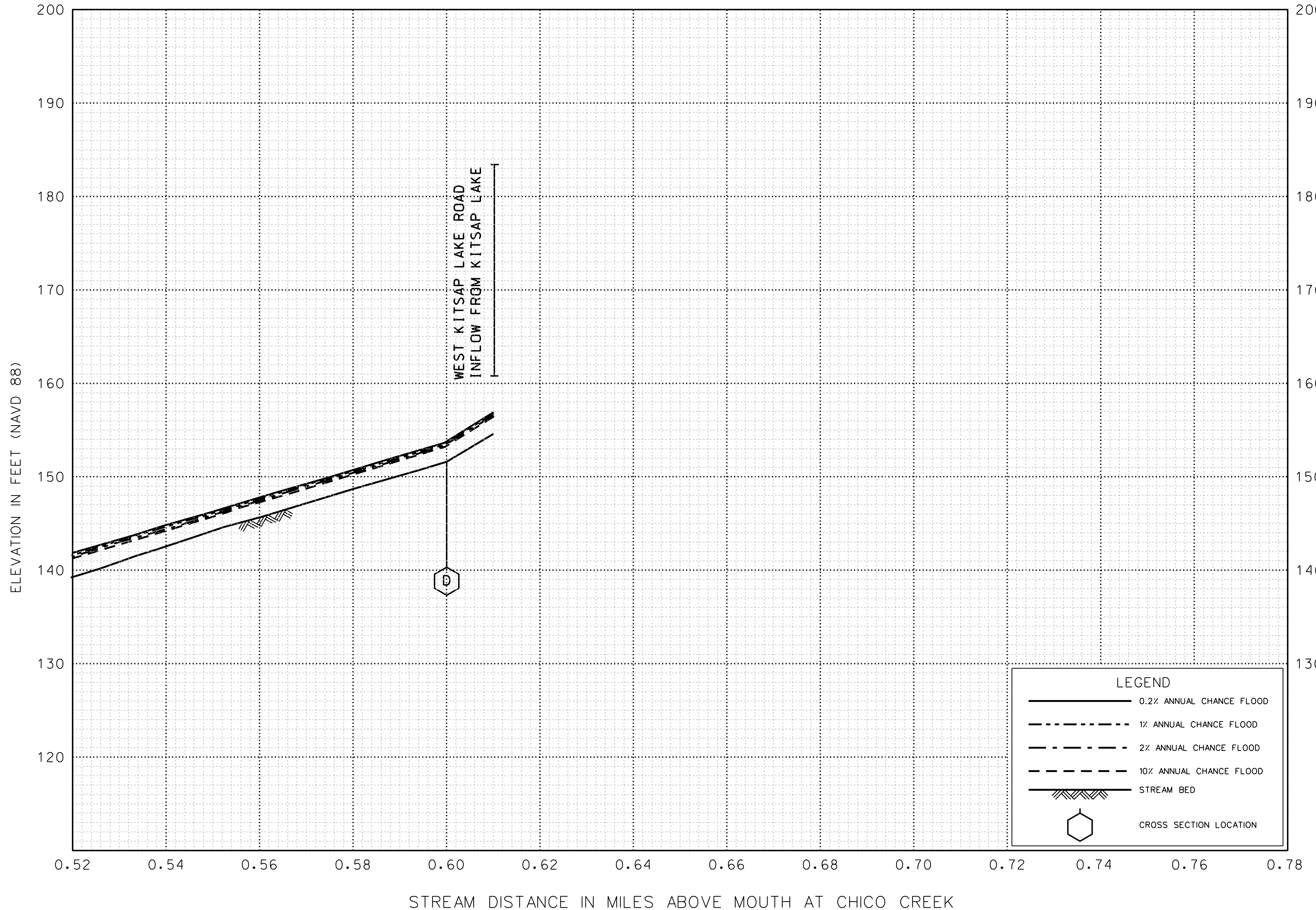



FLOOD PROFILES

KITSAP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



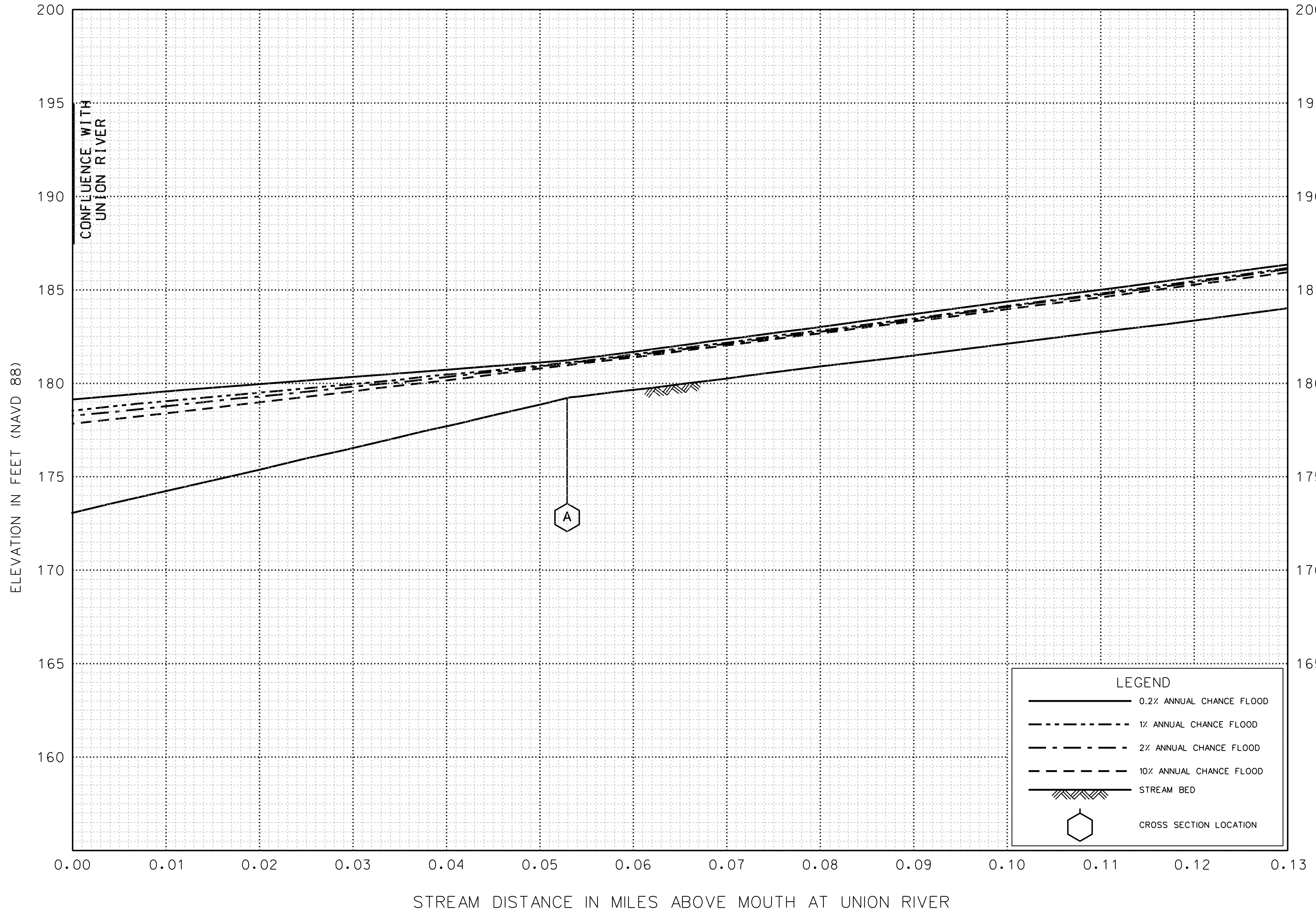

FLOOD PROFILES

KITSAP CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

61P

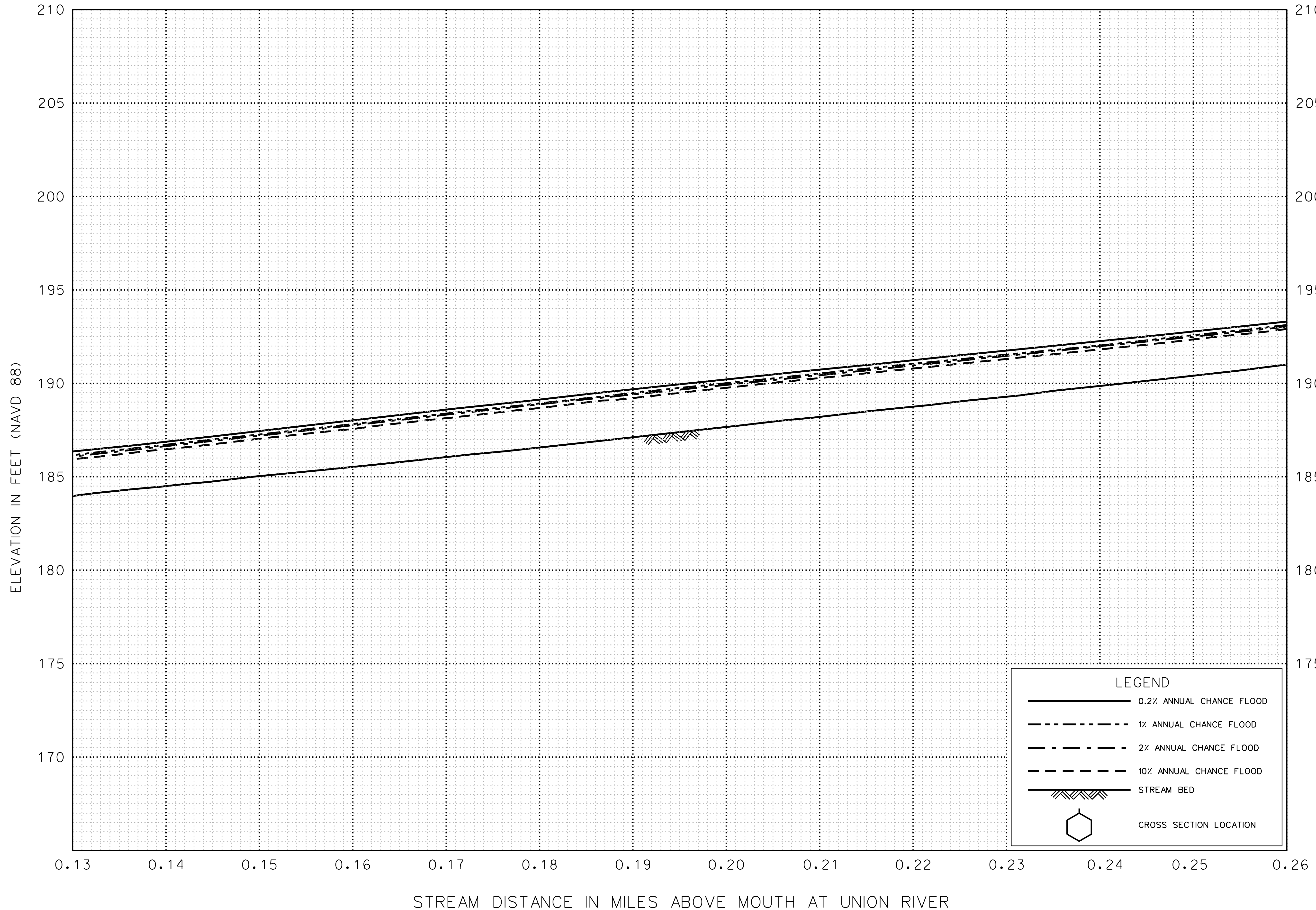



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

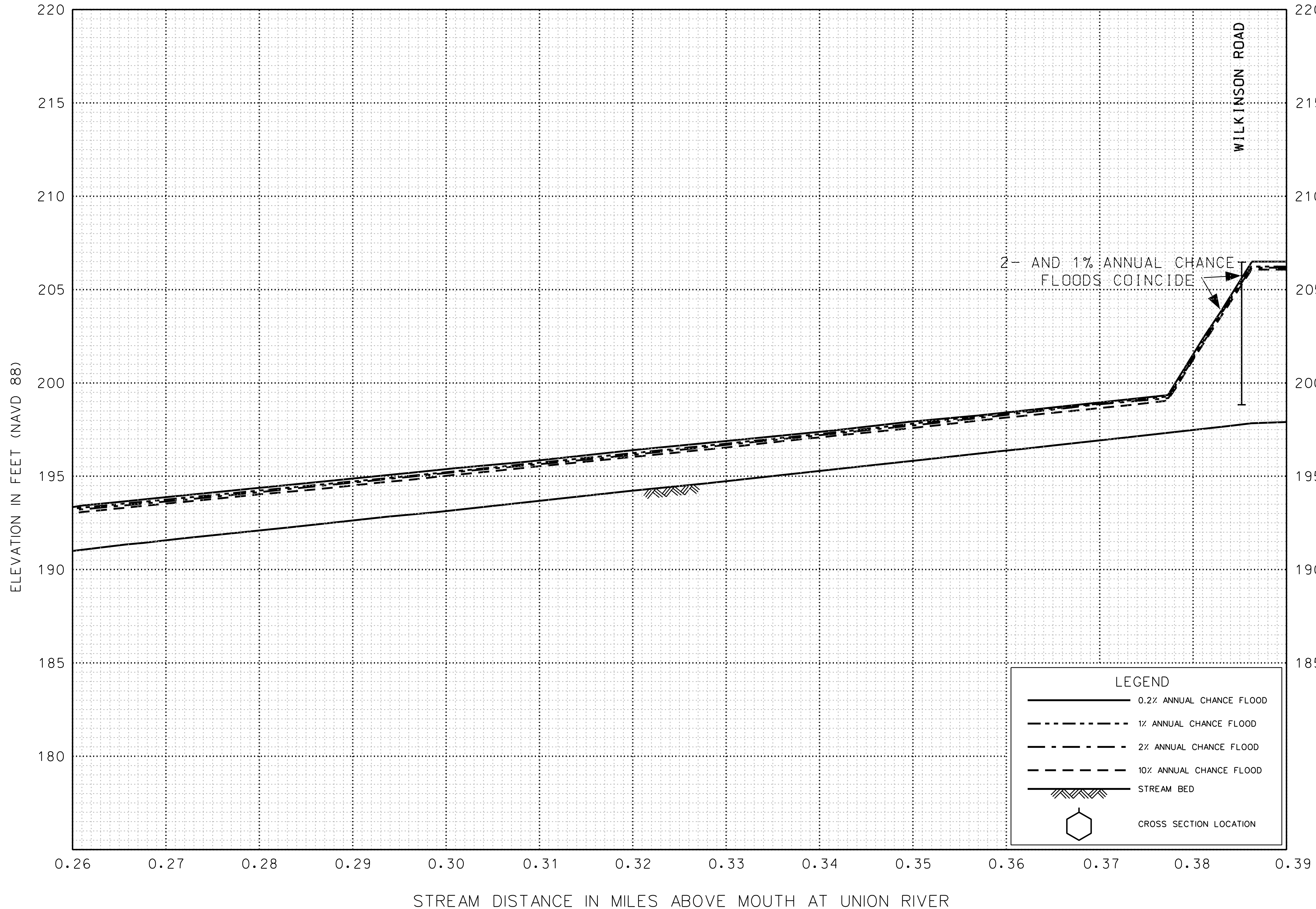



# FLOOD PROFILES

## NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

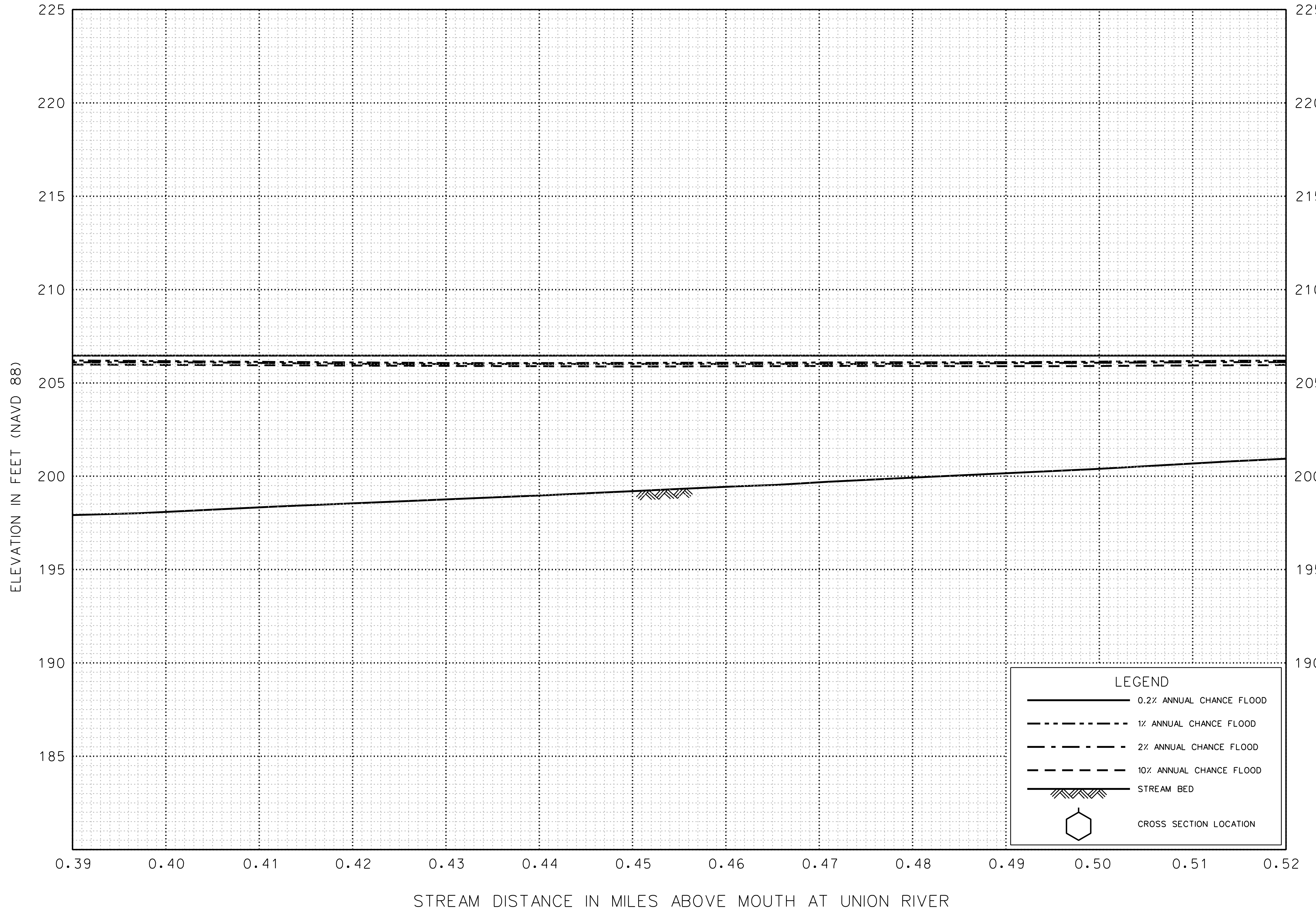



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

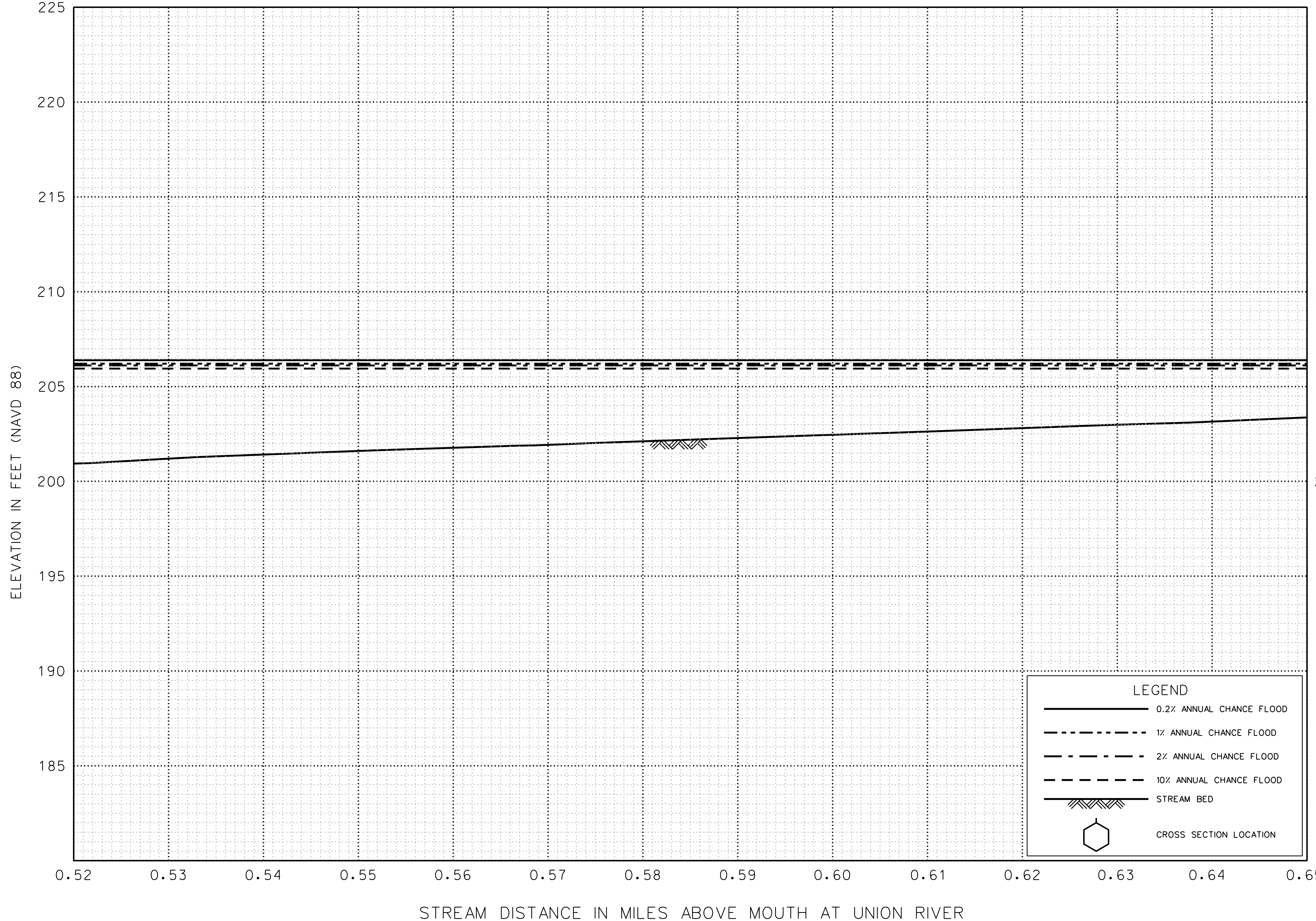



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

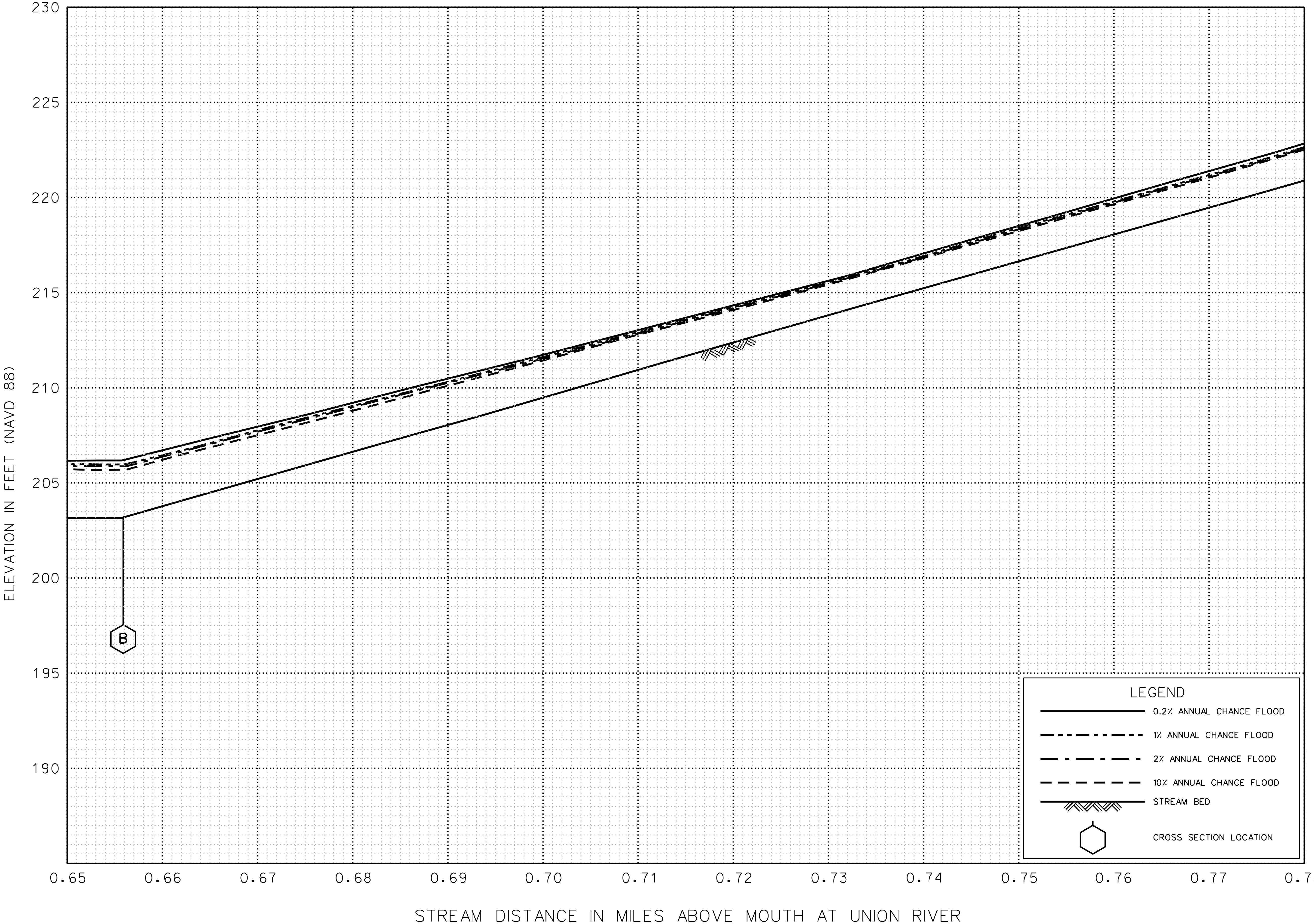



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

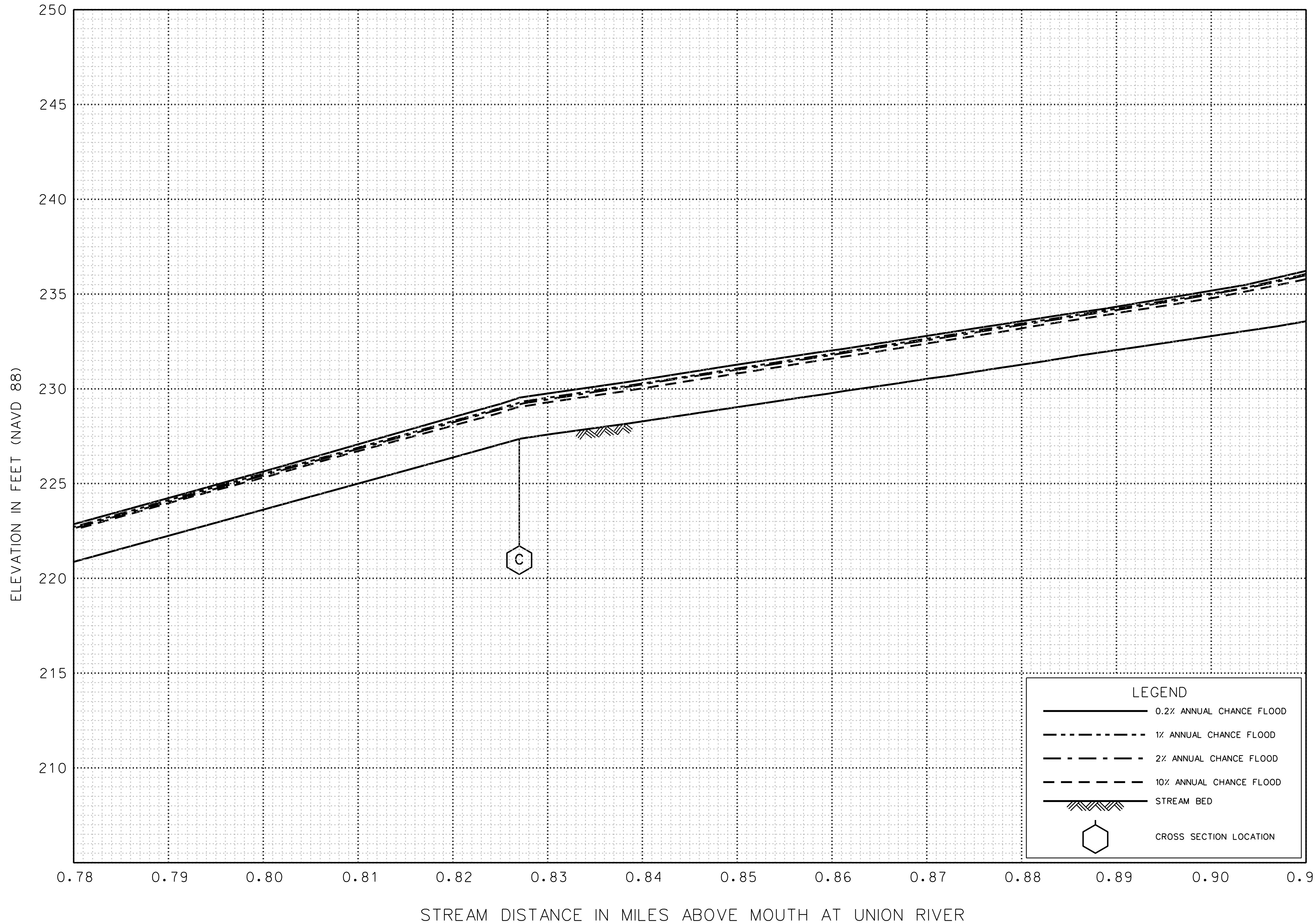



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

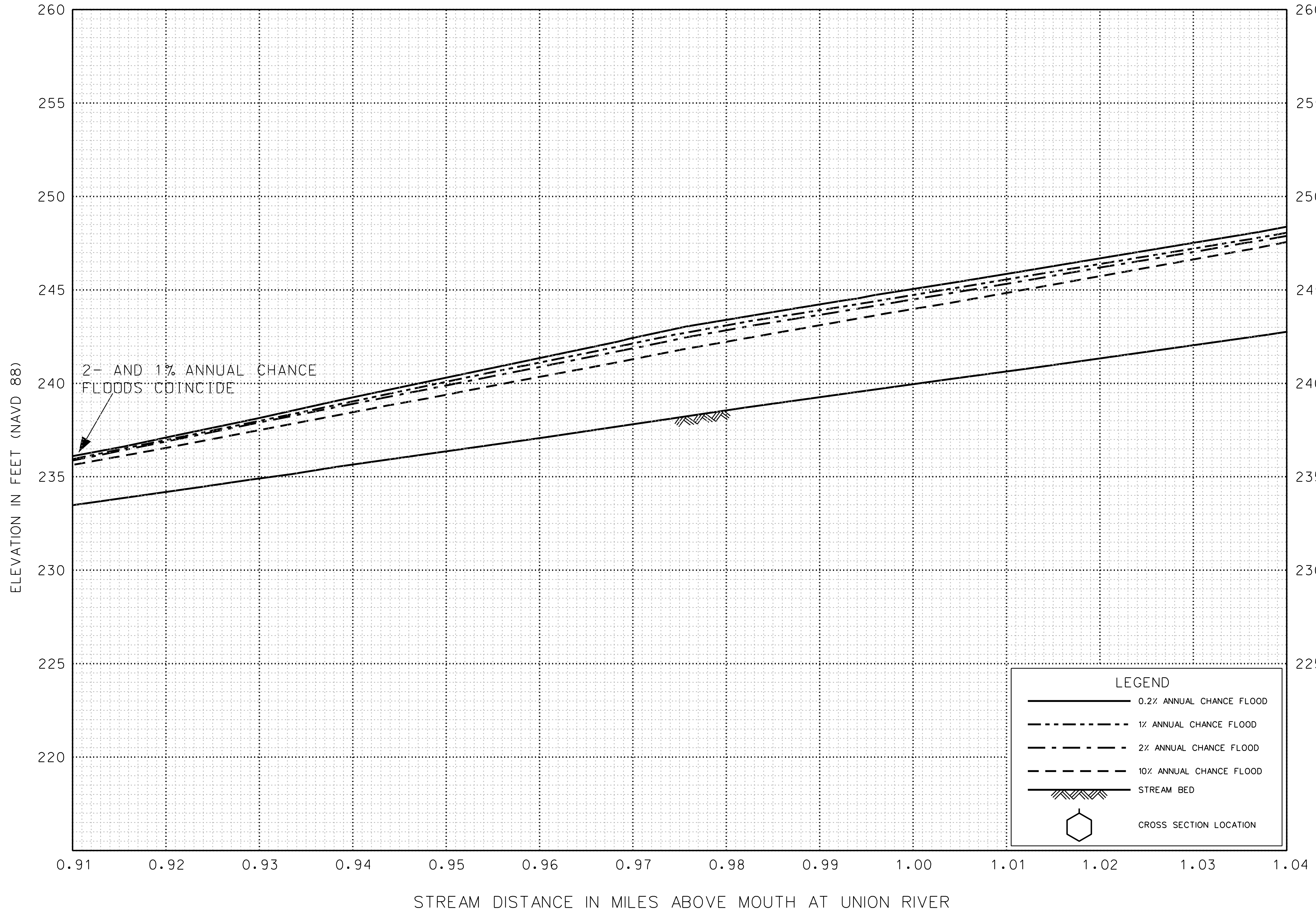



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

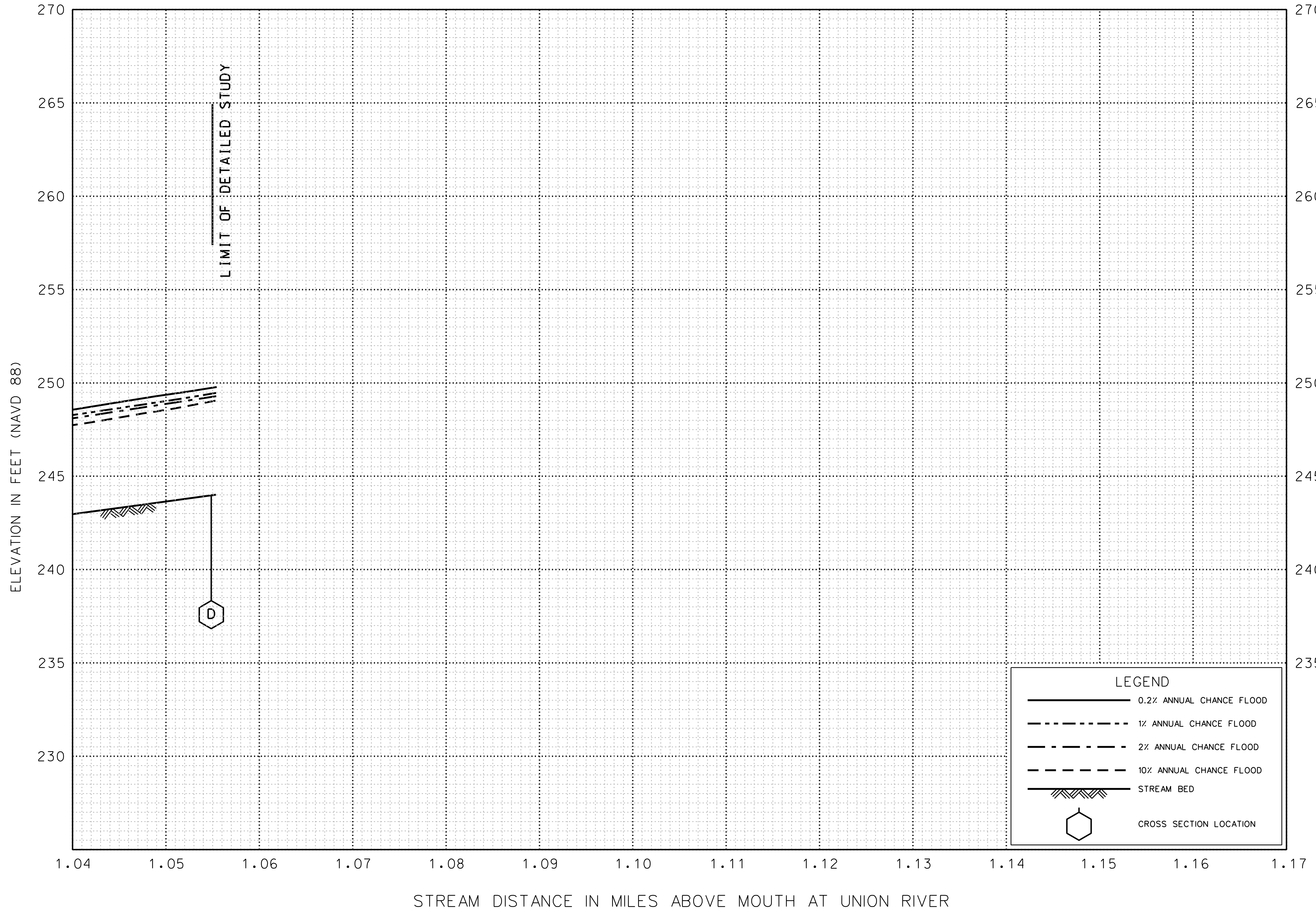



FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



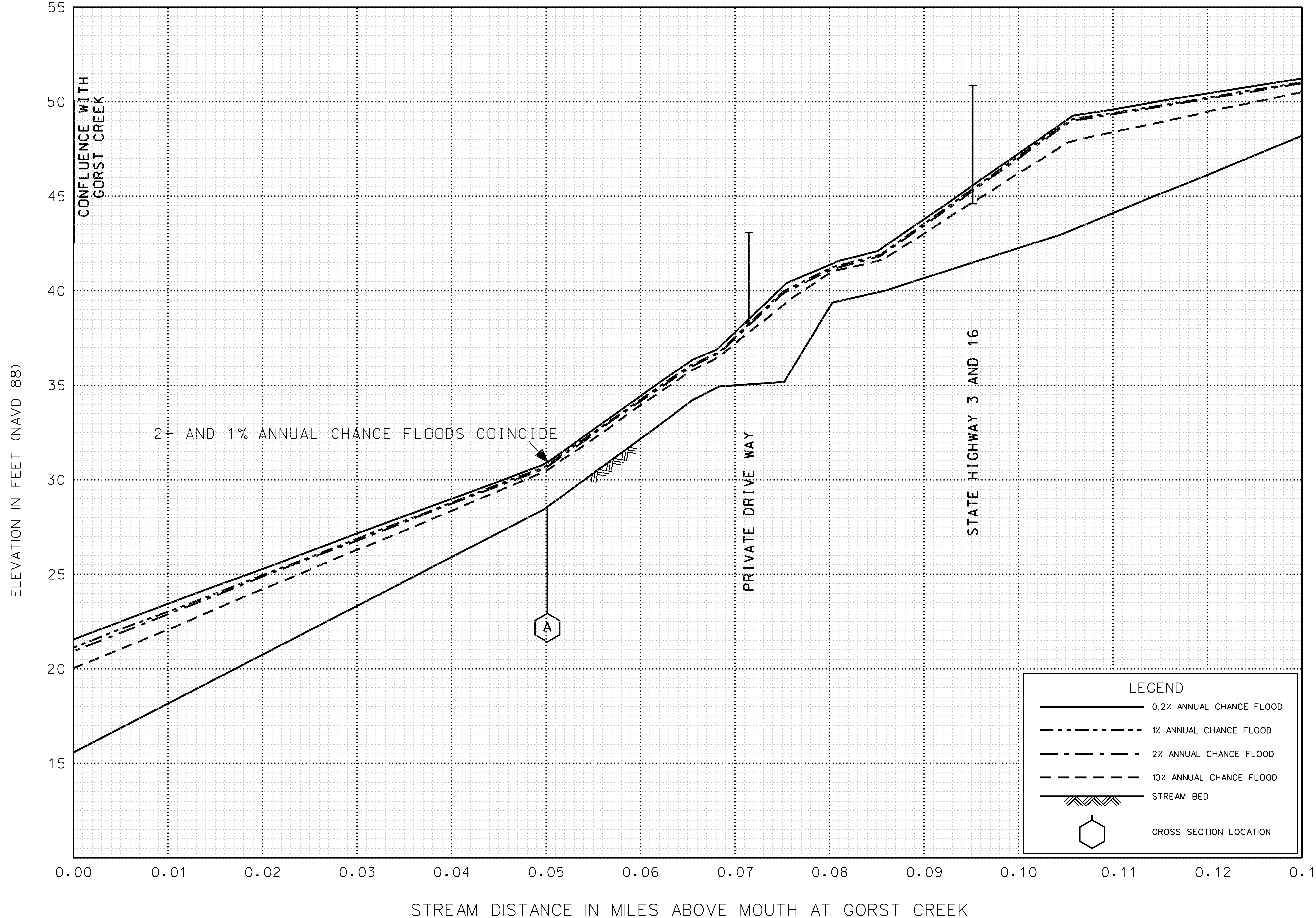

FLOOD PROFILES

NO NAME CREEK NO. 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

70P

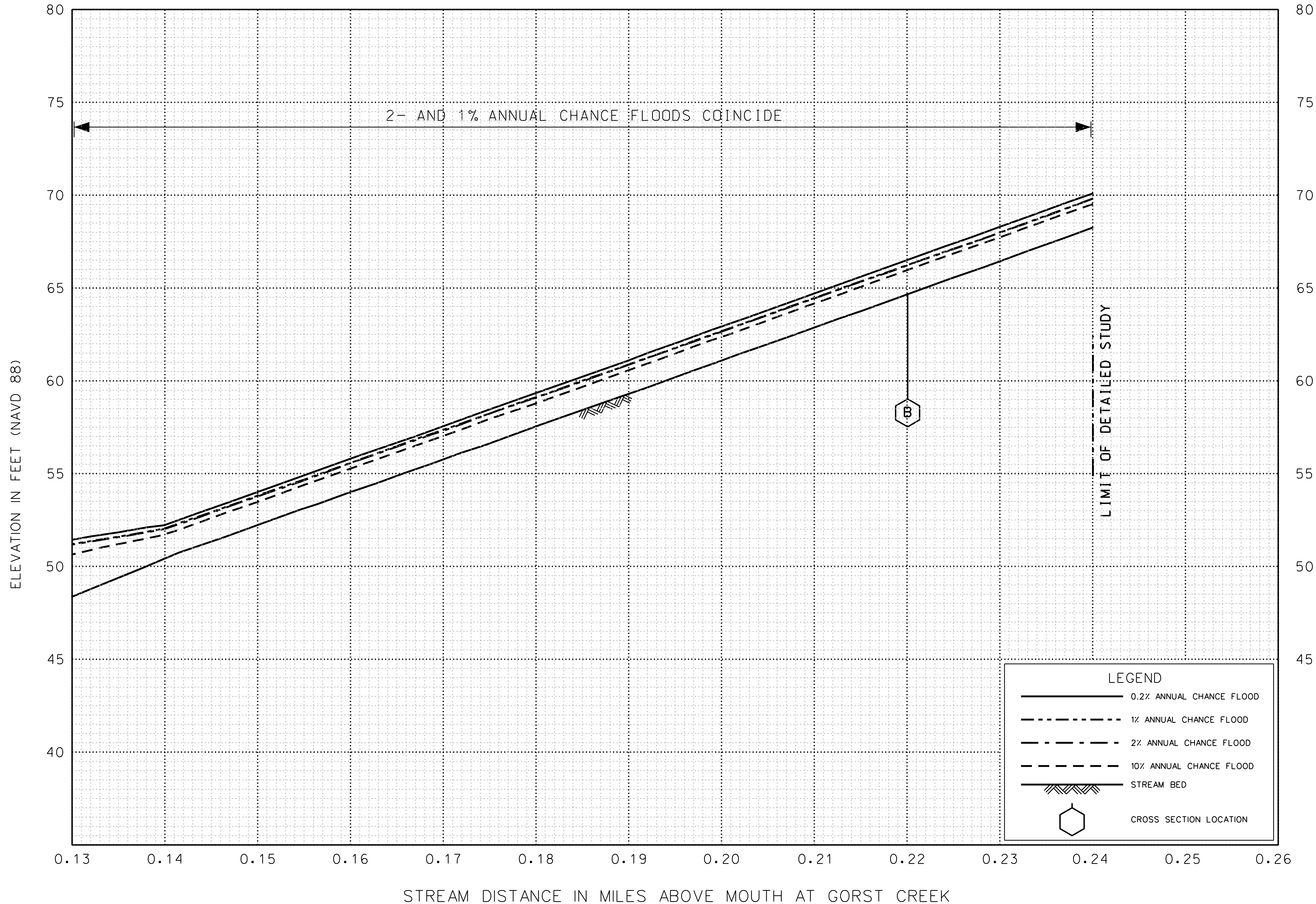



FLOOD PROFILES

NO NAME CREEK NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



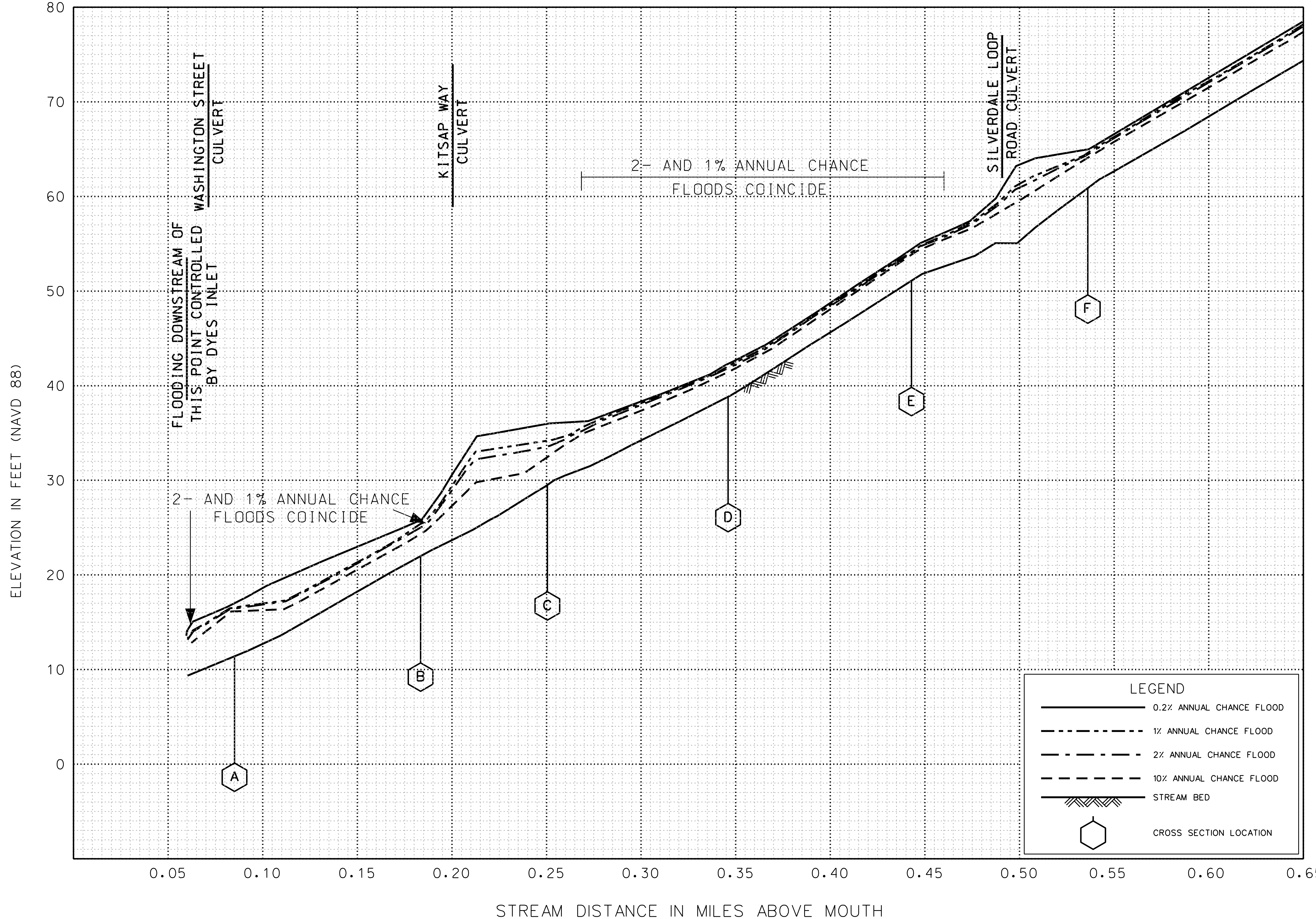

FLOOD PROFILES

NO NAME CREEK NO. 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON

AND INCORPORATED AREAS

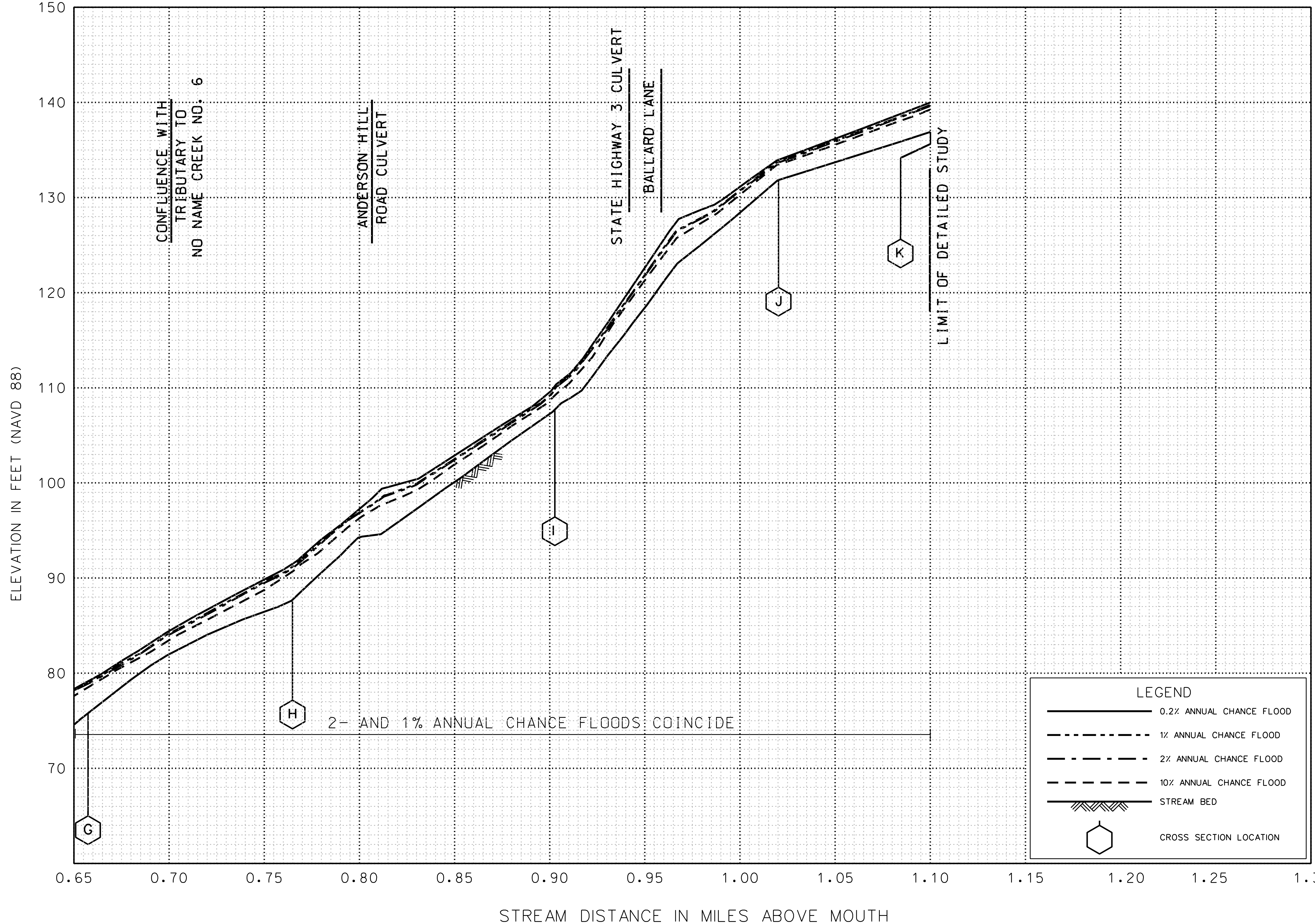



FLOOD PROFILES

NO NAME CREEK NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

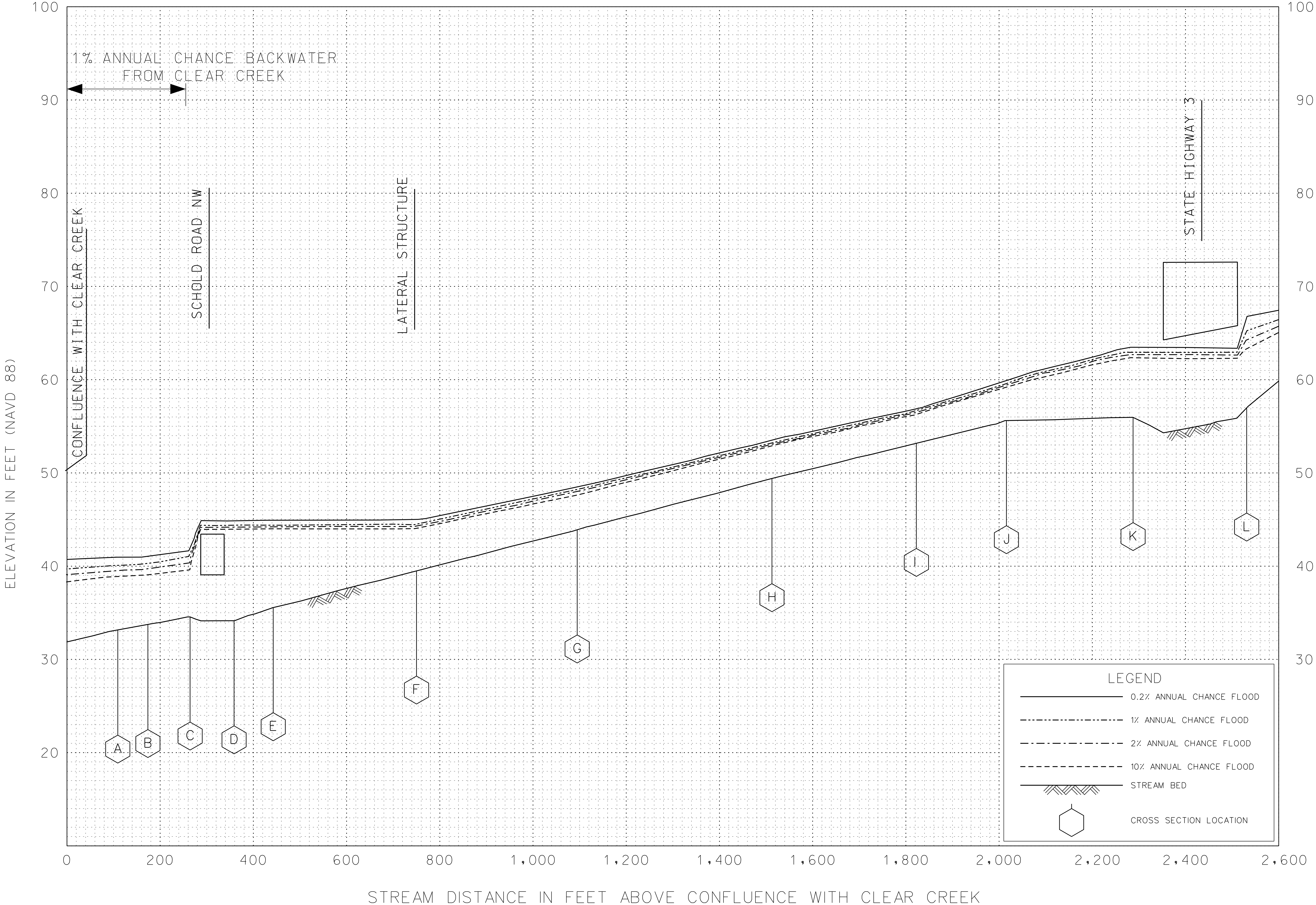



FLOOD PROFILES

NO NAME CREEK NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

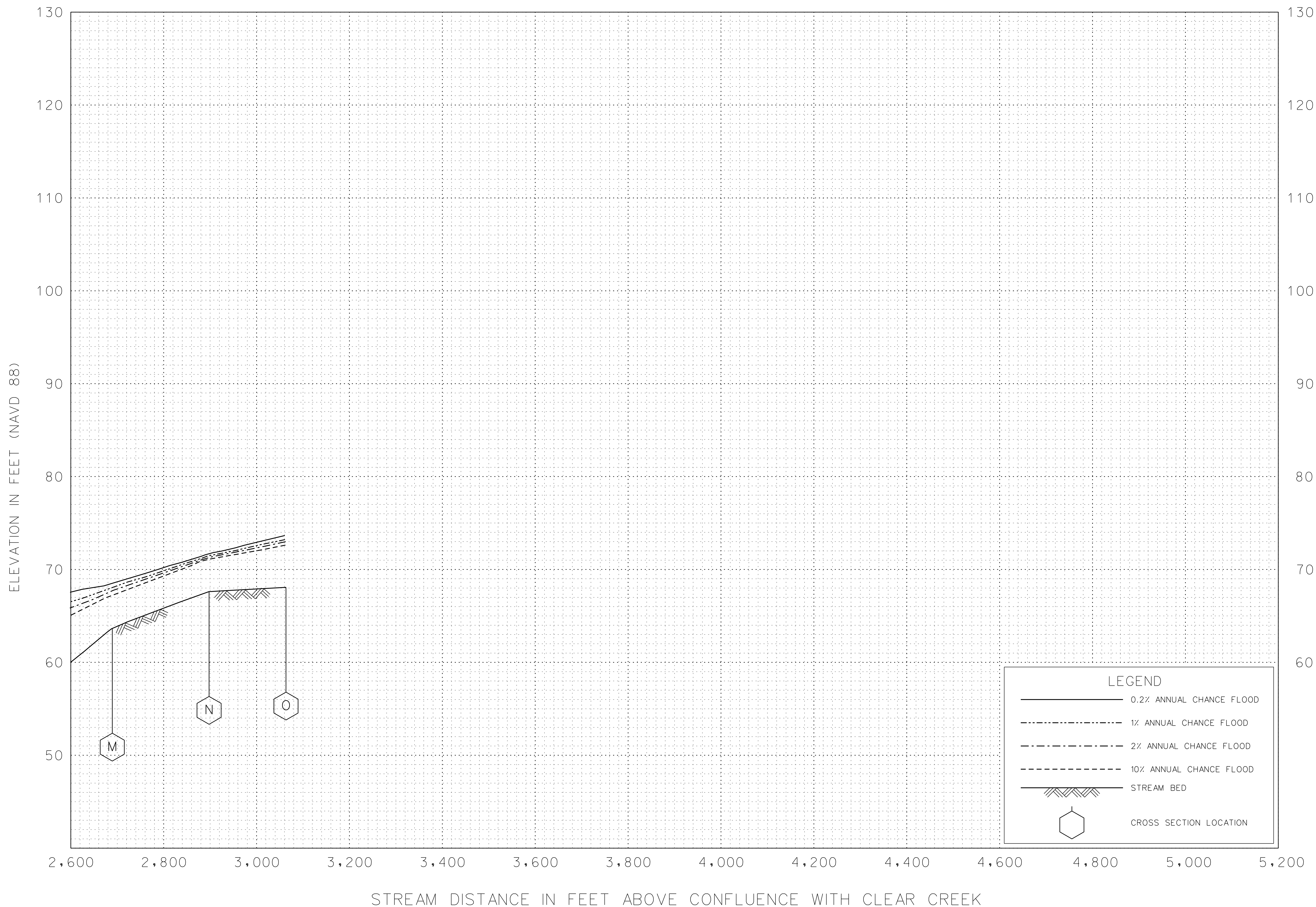
KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS




# FLOOD PROFILES

## NO NAME CREEK NO. 7

FEDERAL EMERGENCY MANAGEMENT AGENCY
KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

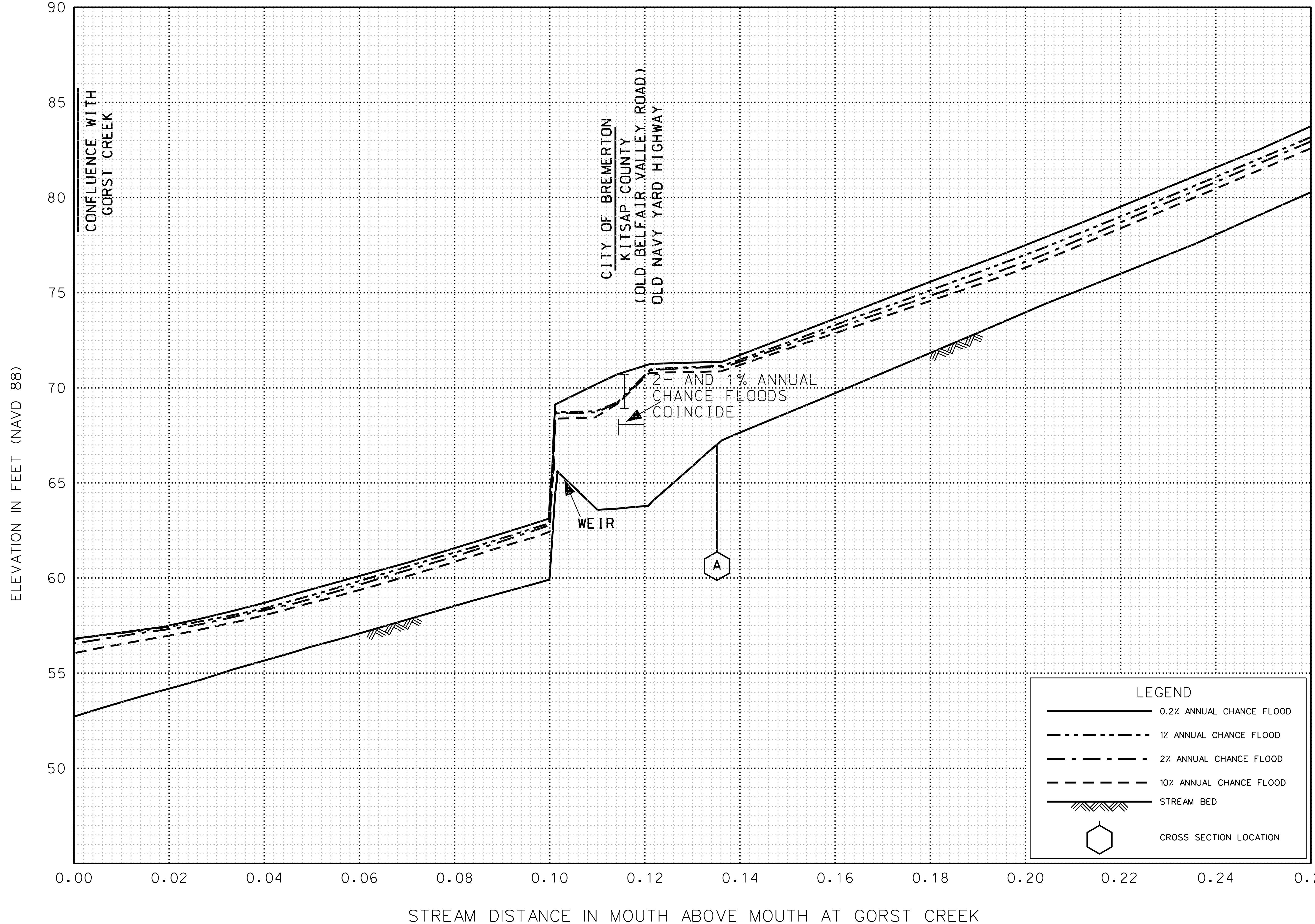



FLOOD PROFILES

NO NAME CREEK NO. 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

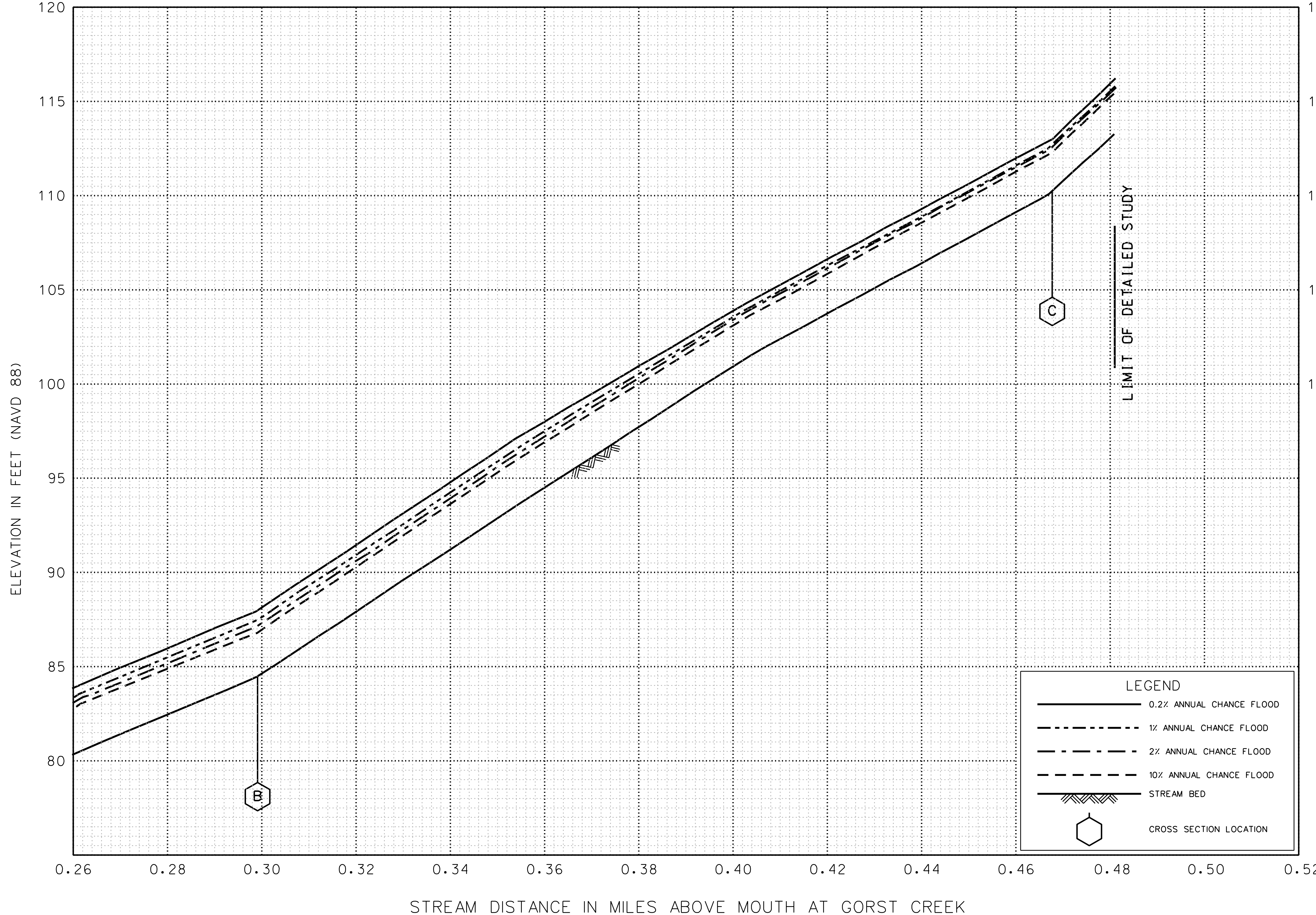



FLOOD PROFILES

PARISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



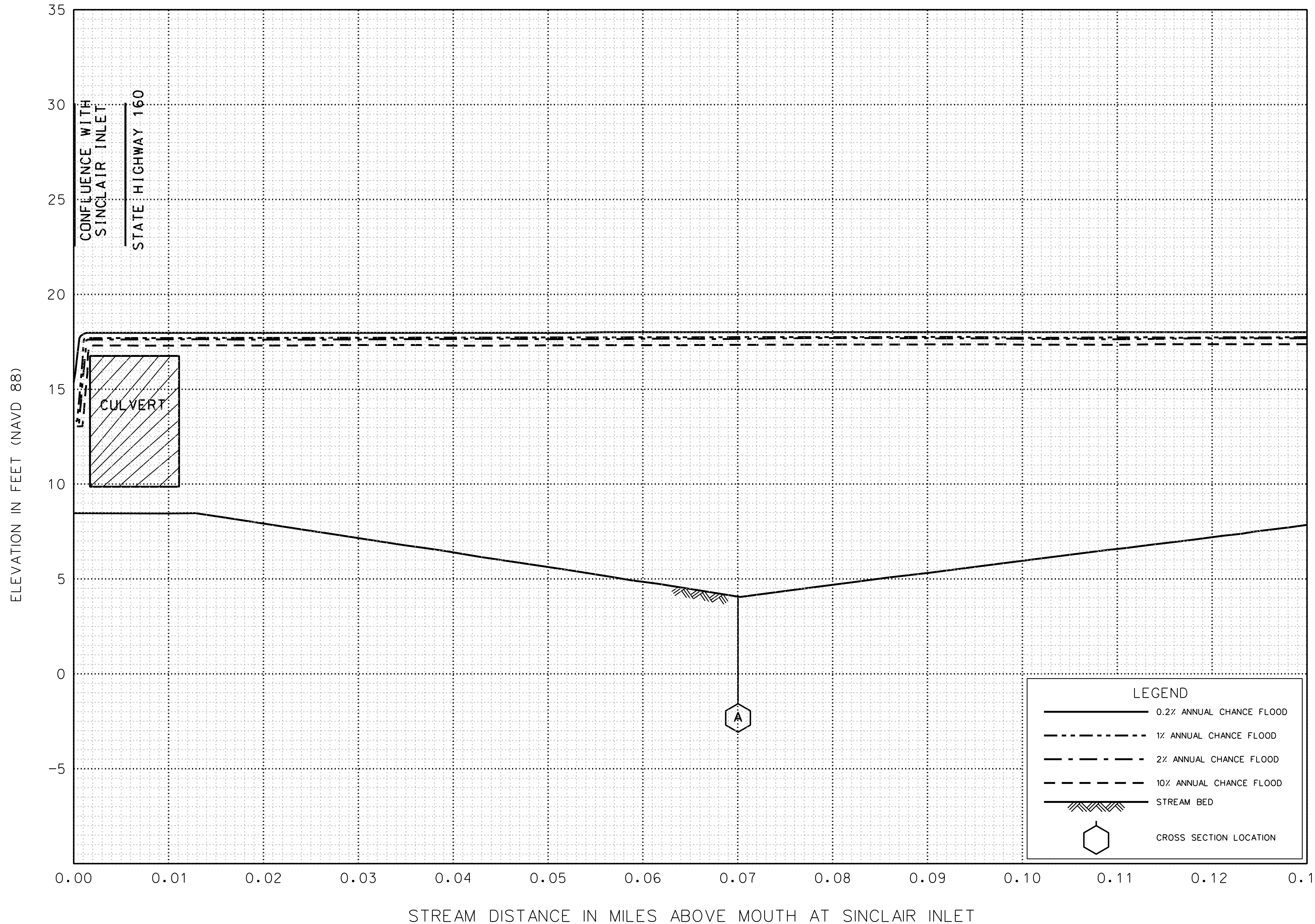

FLOOD PROFILES

PARISH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

78P

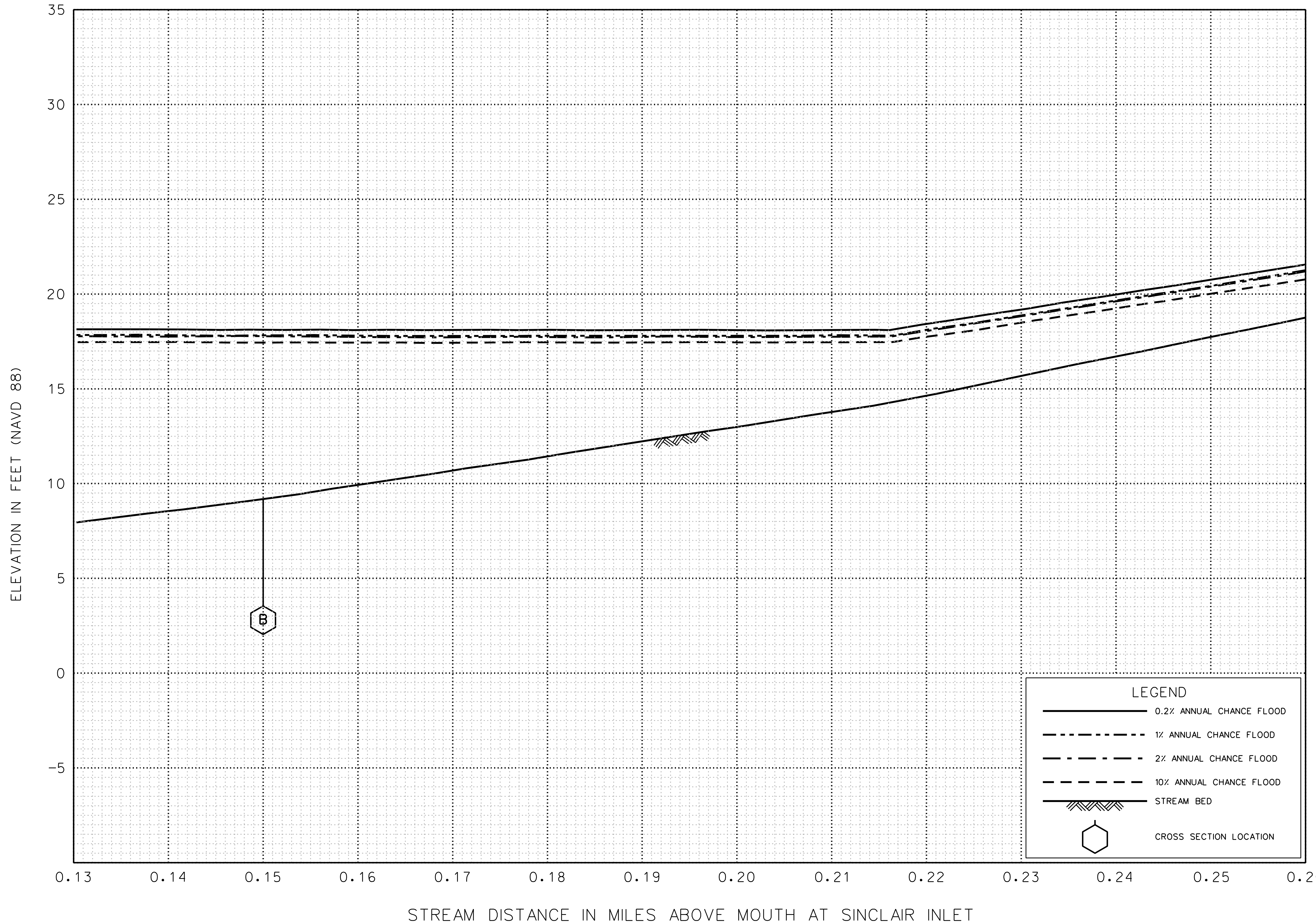



FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



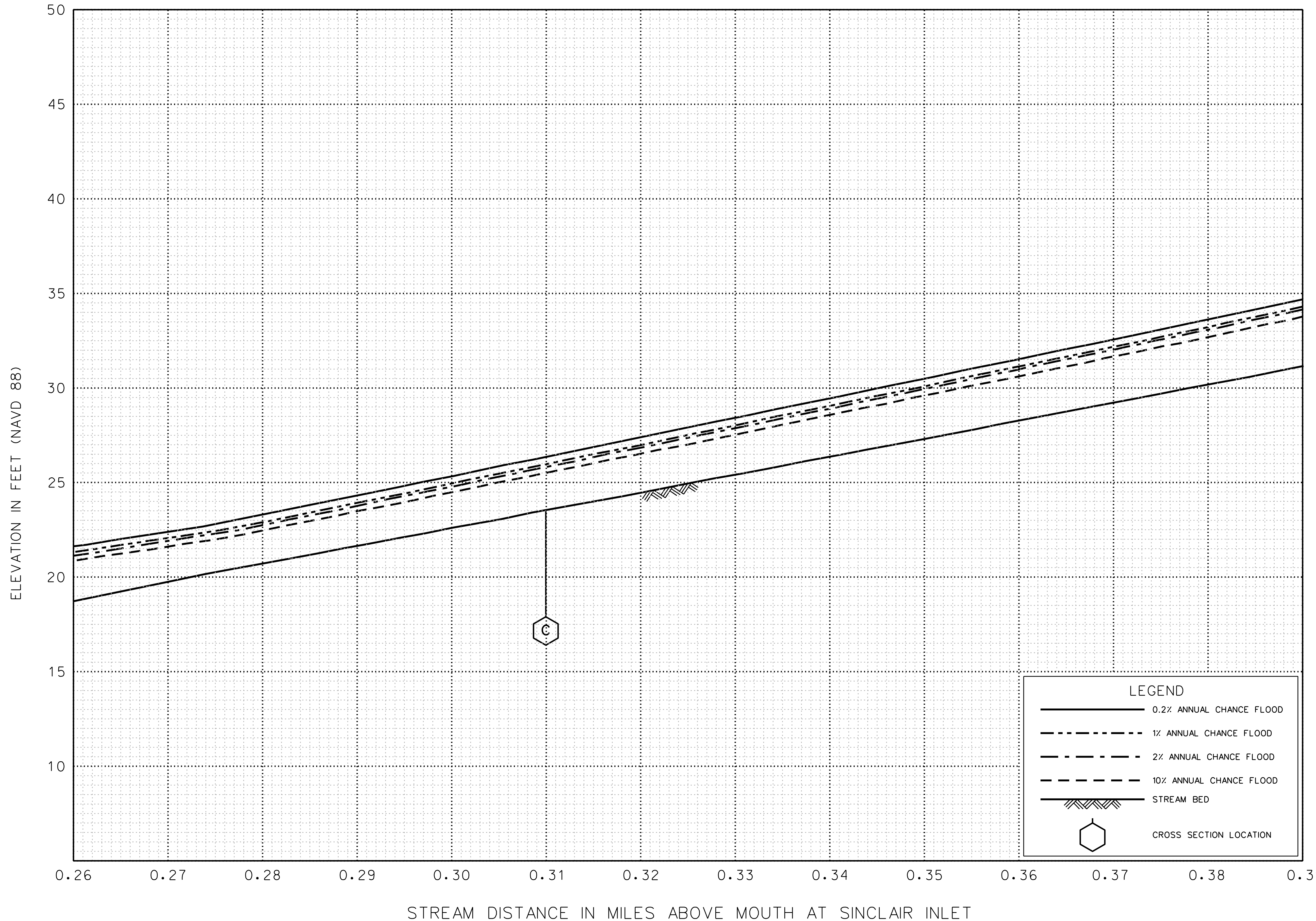

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

80P



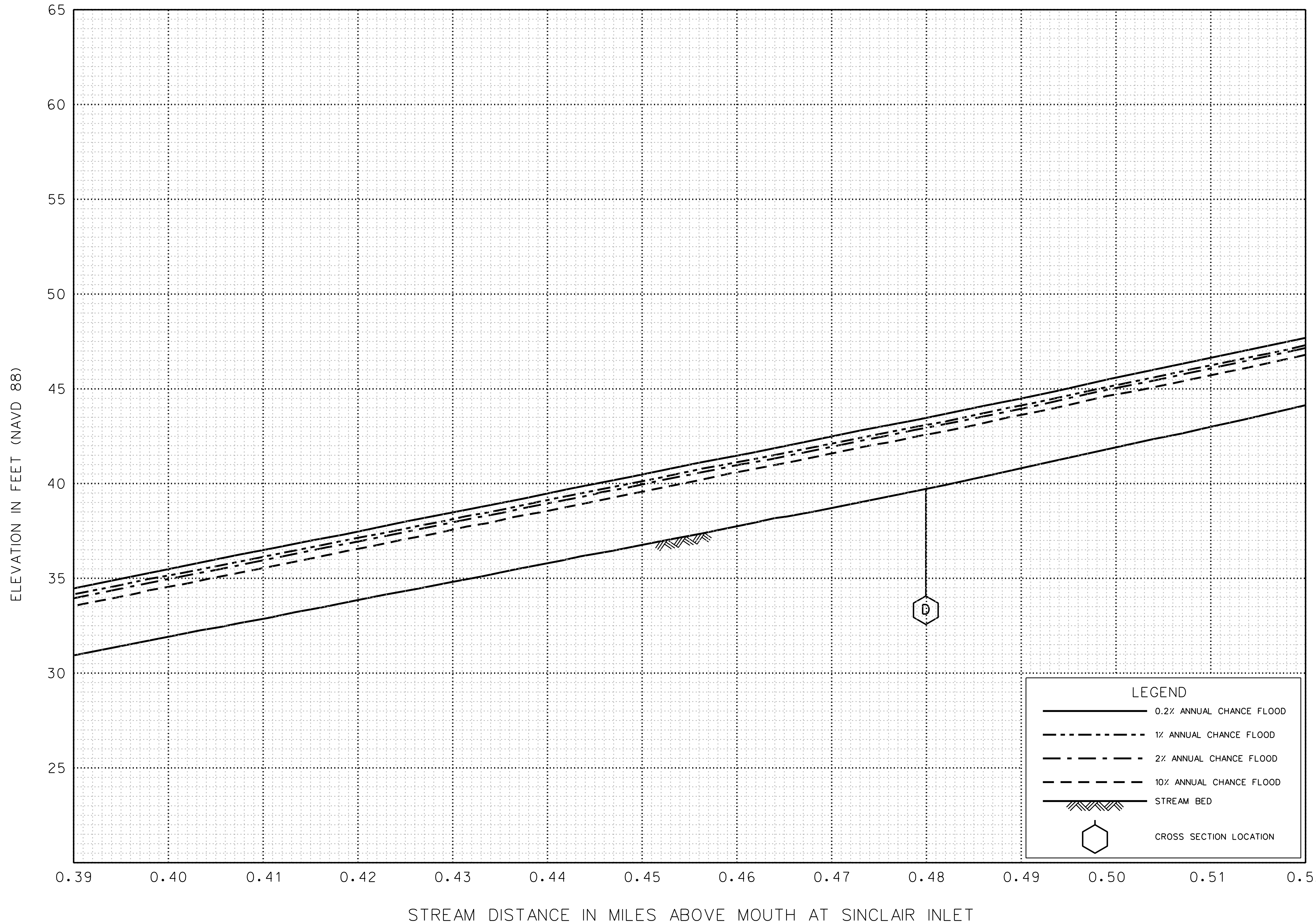

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

81P



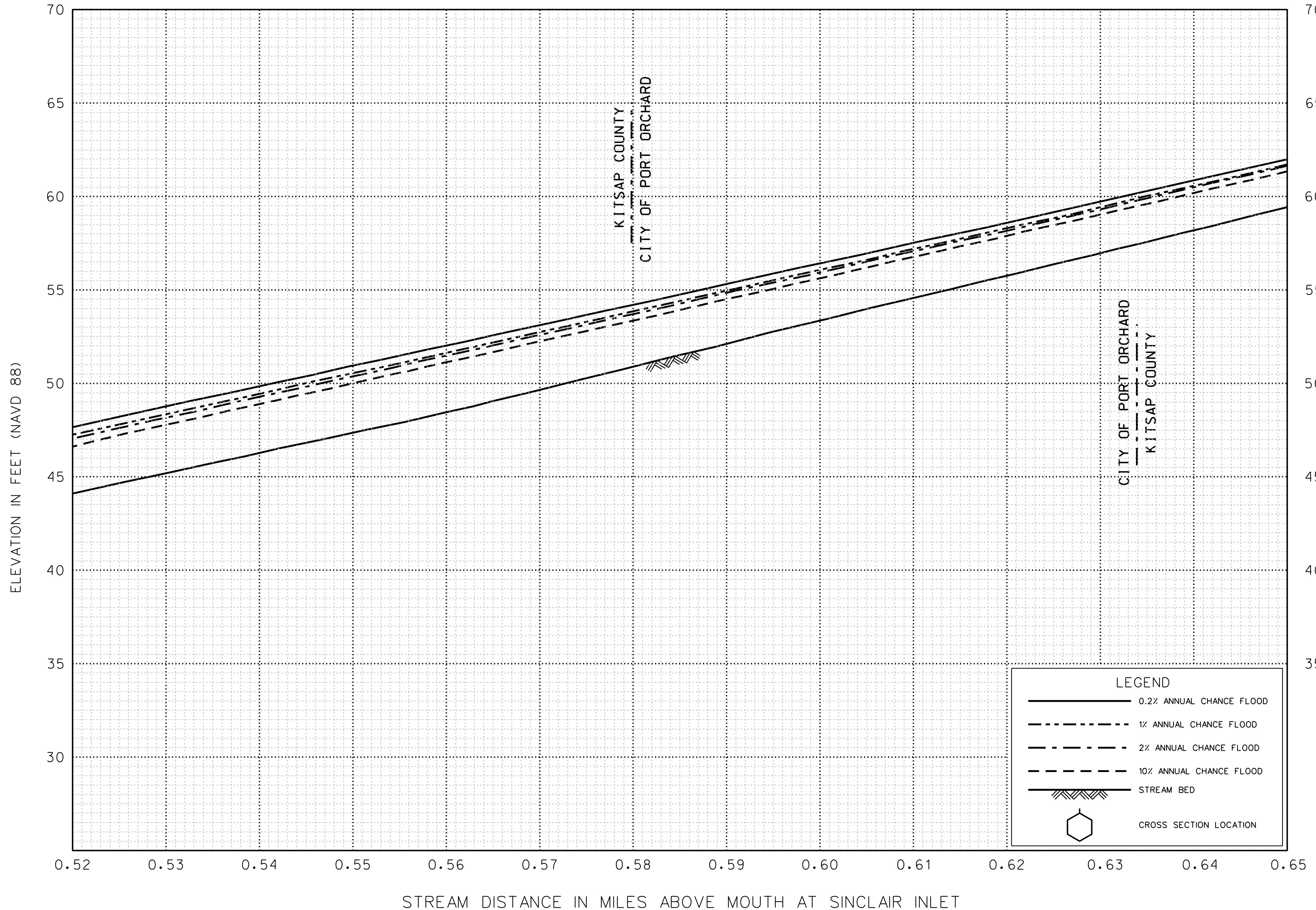

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

82P



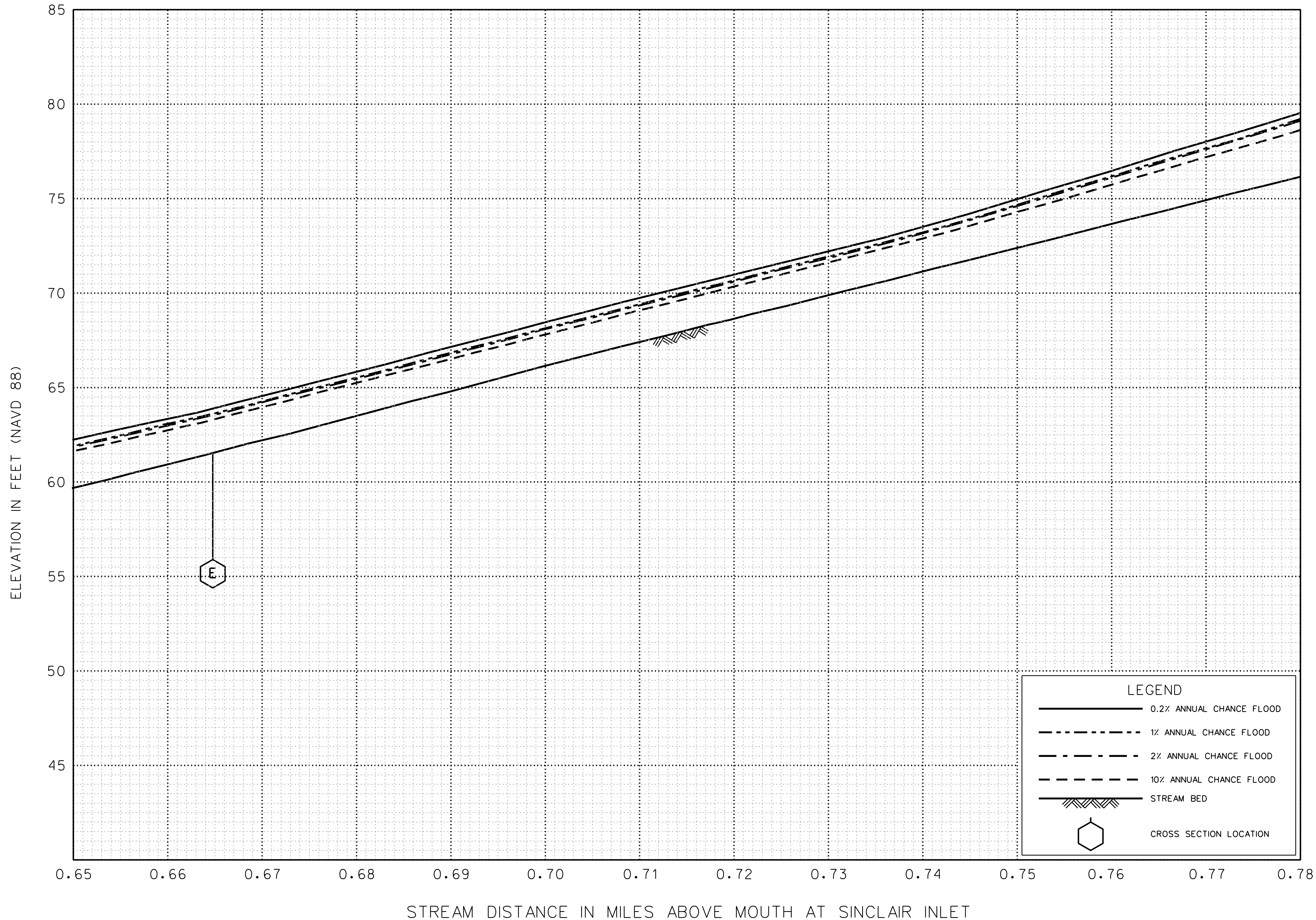

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

83P



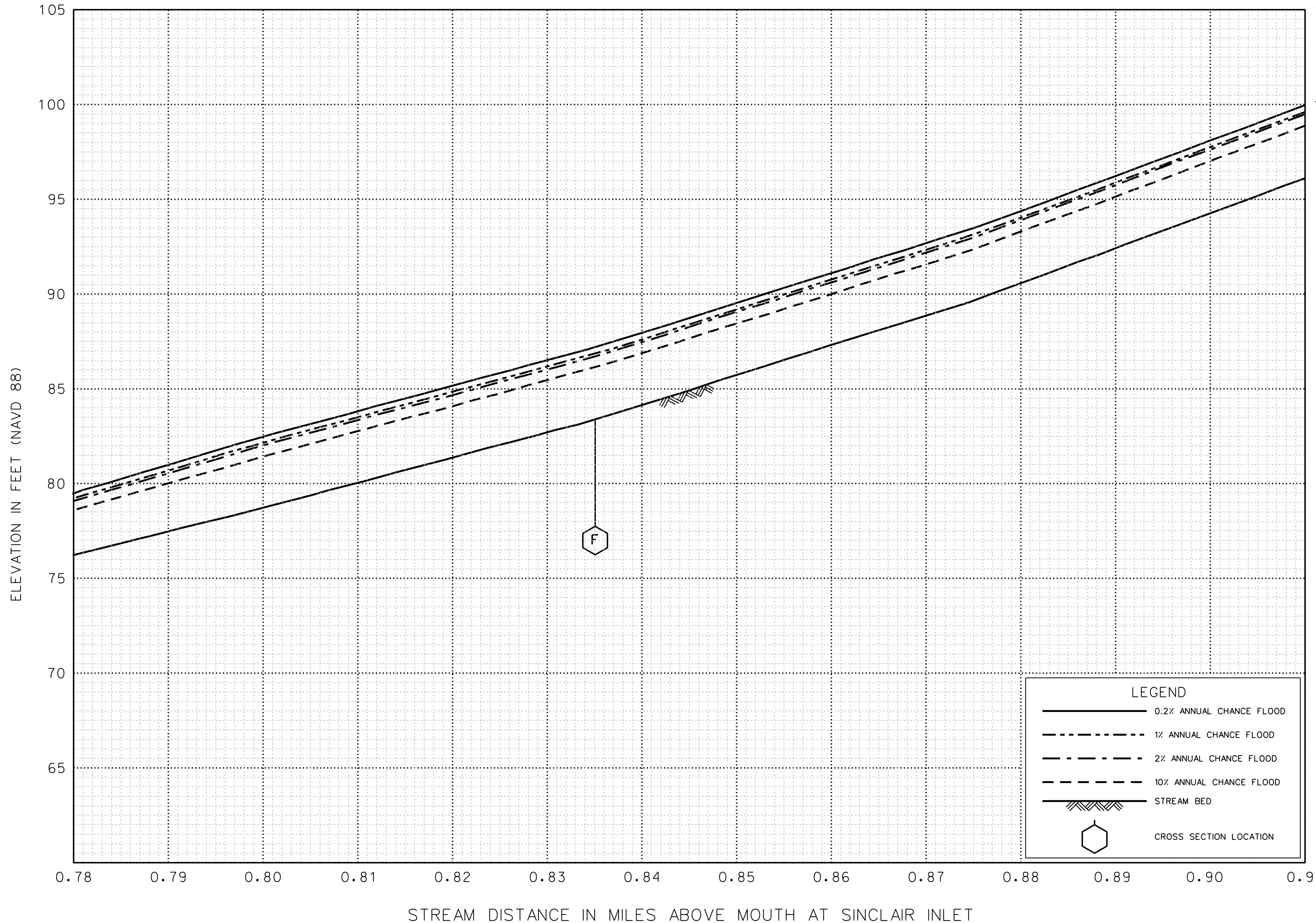

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

84P



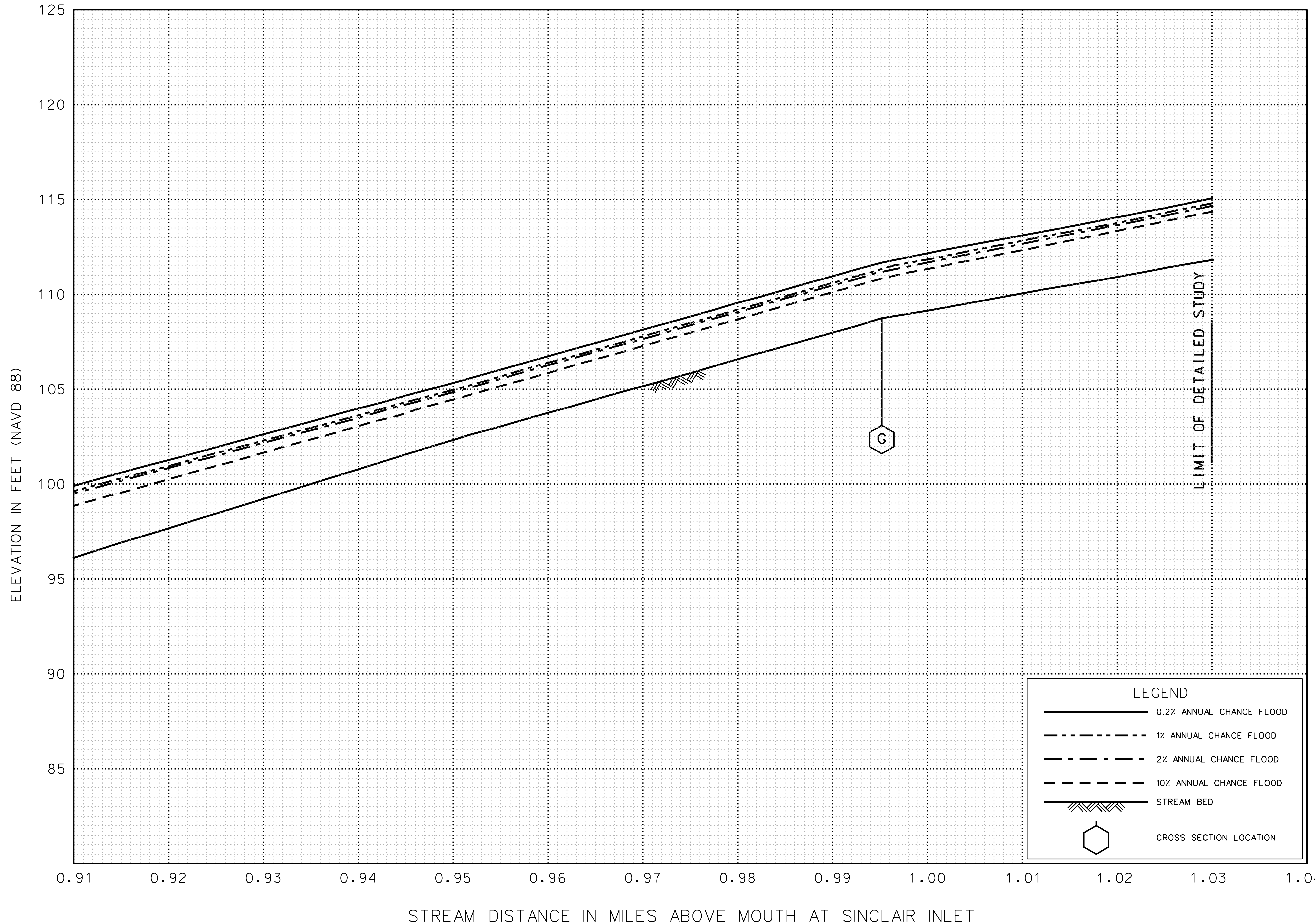

FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

85P

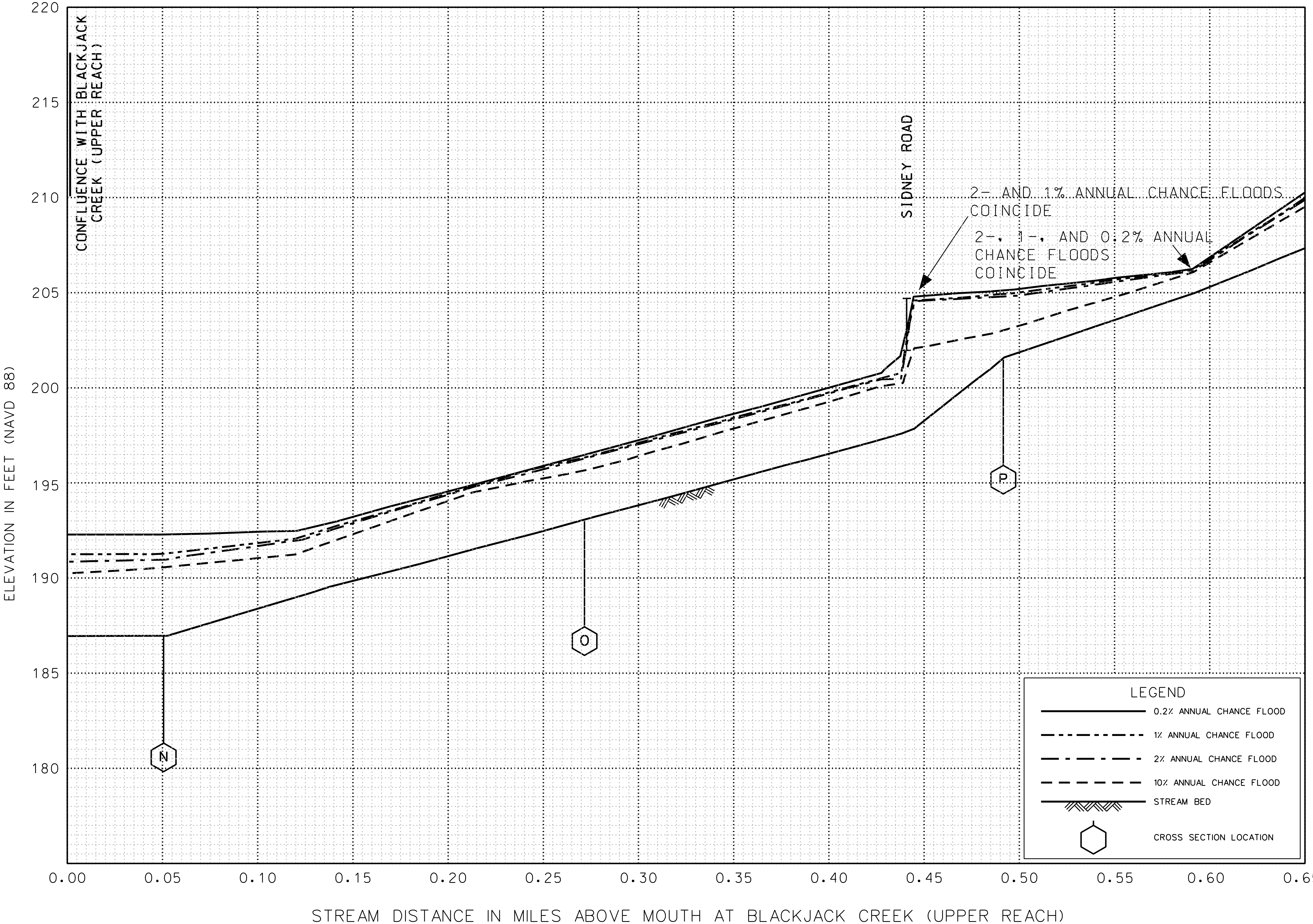



FLOOD PROFILES

ROSS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

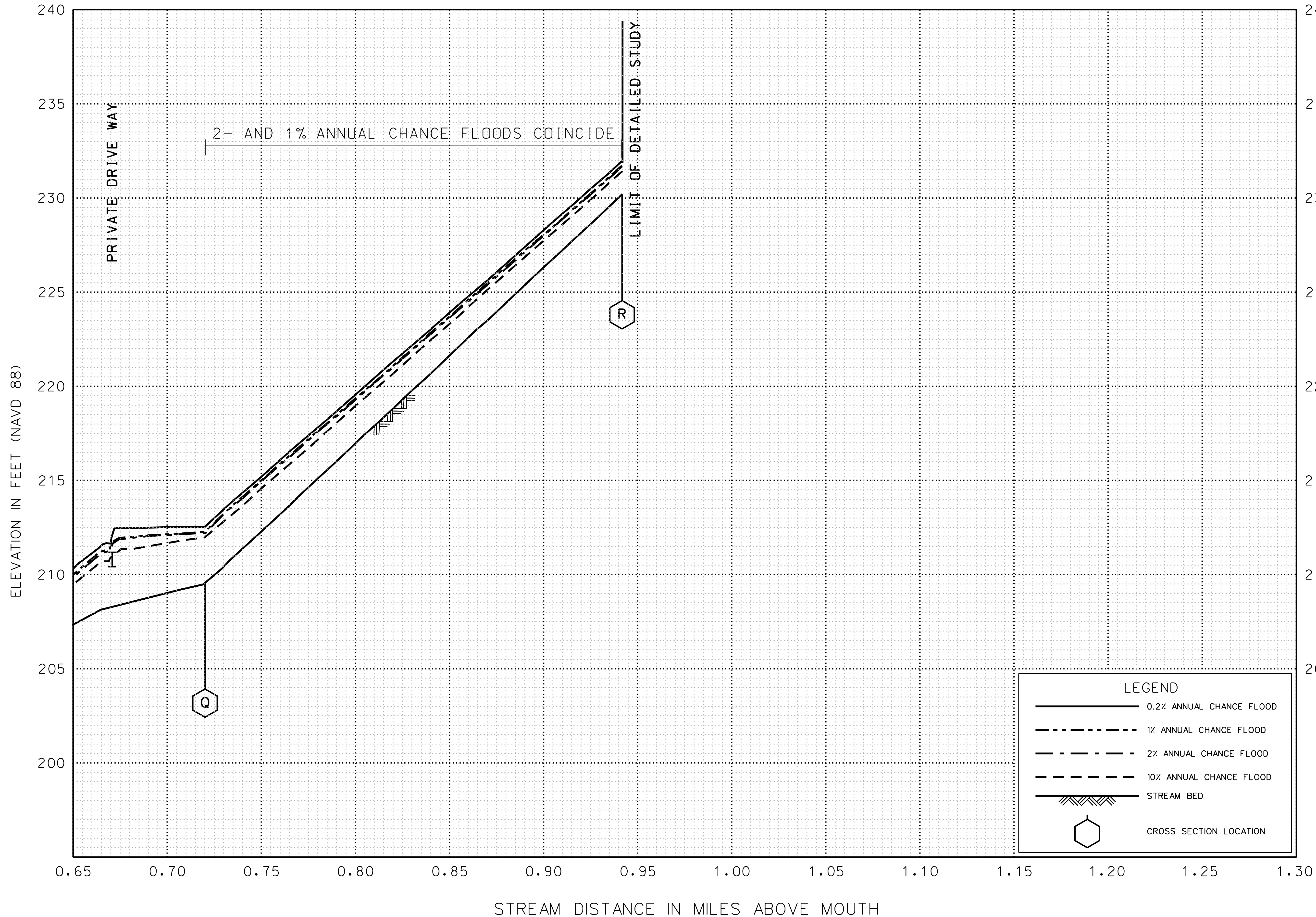



FLOOD PROFILES

SOUTH FORK BLACKJACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



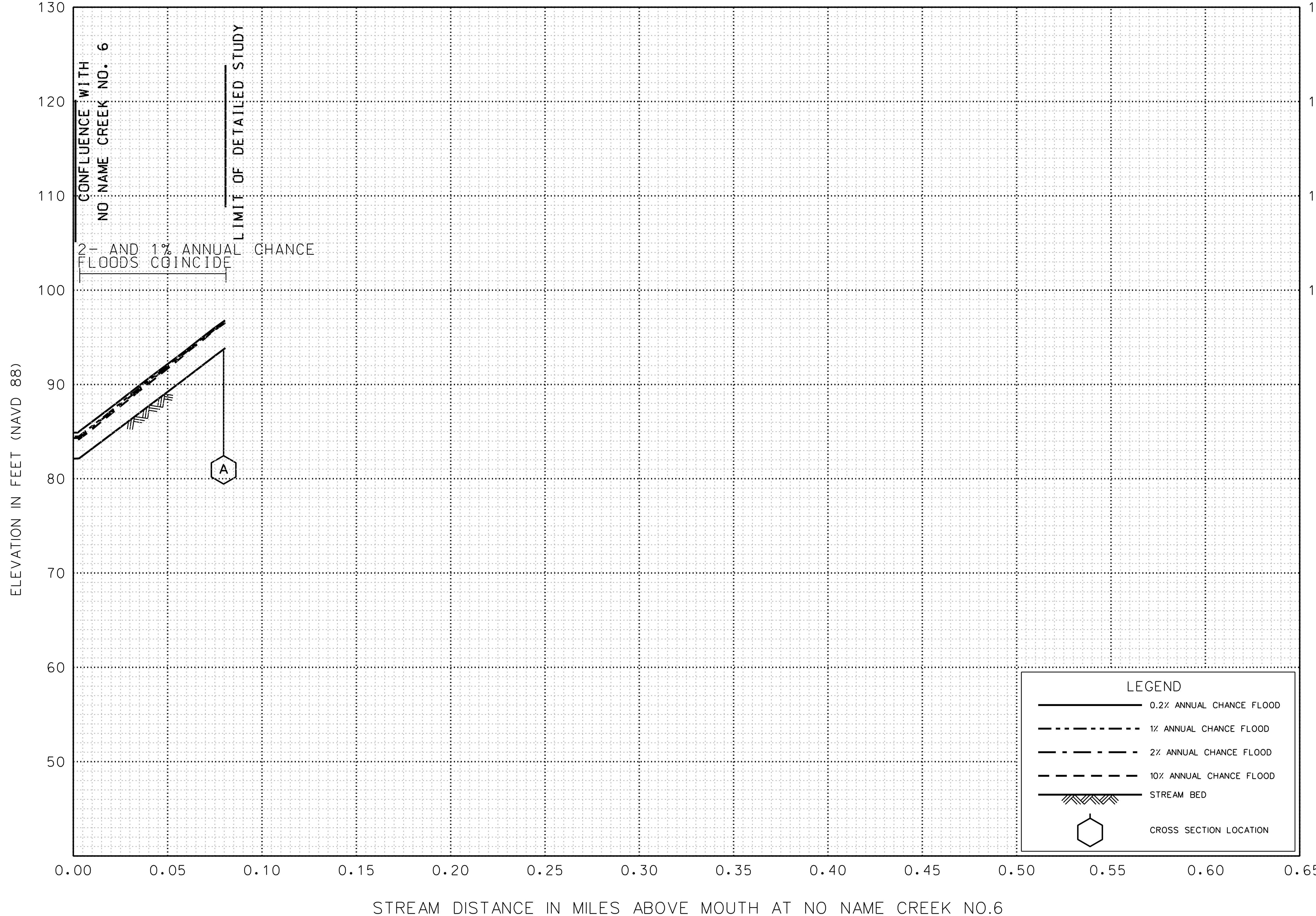

FLOOD PROFILES

SOUTH FORK BLACKJACK CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

88P

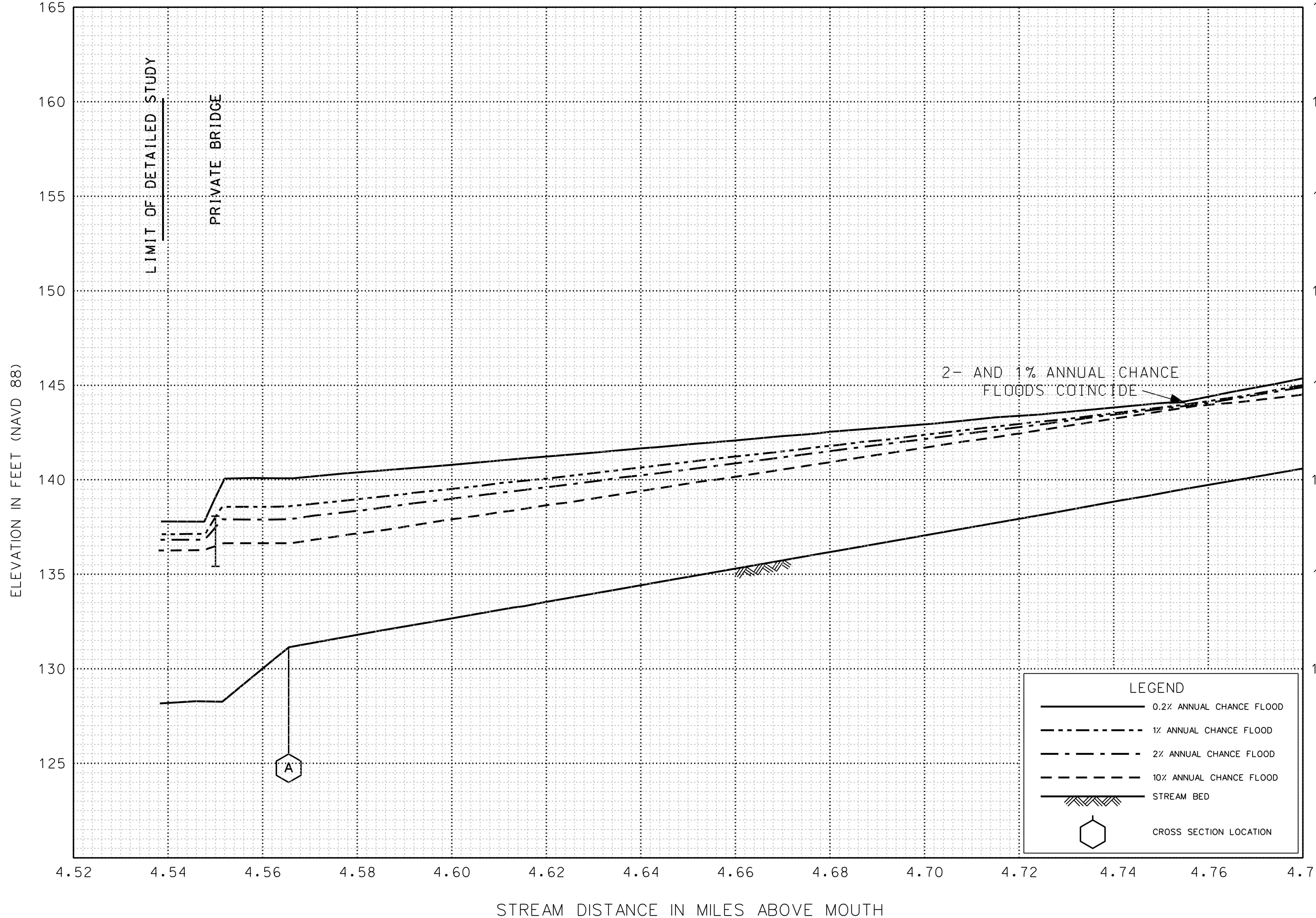



FLOOD PROFILES

TRIBUTARY TO NO NAME CREEK NO. 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

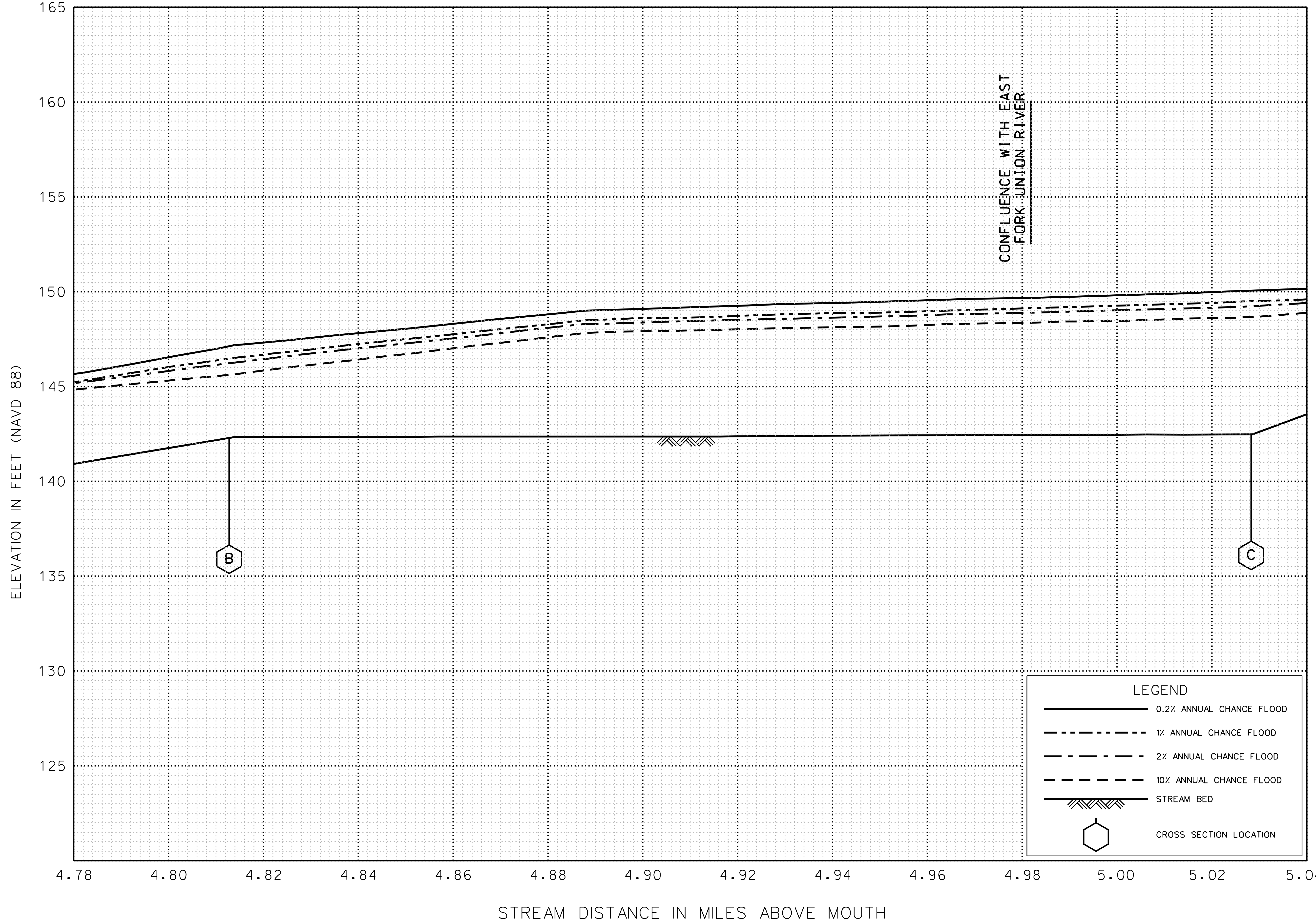



FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS



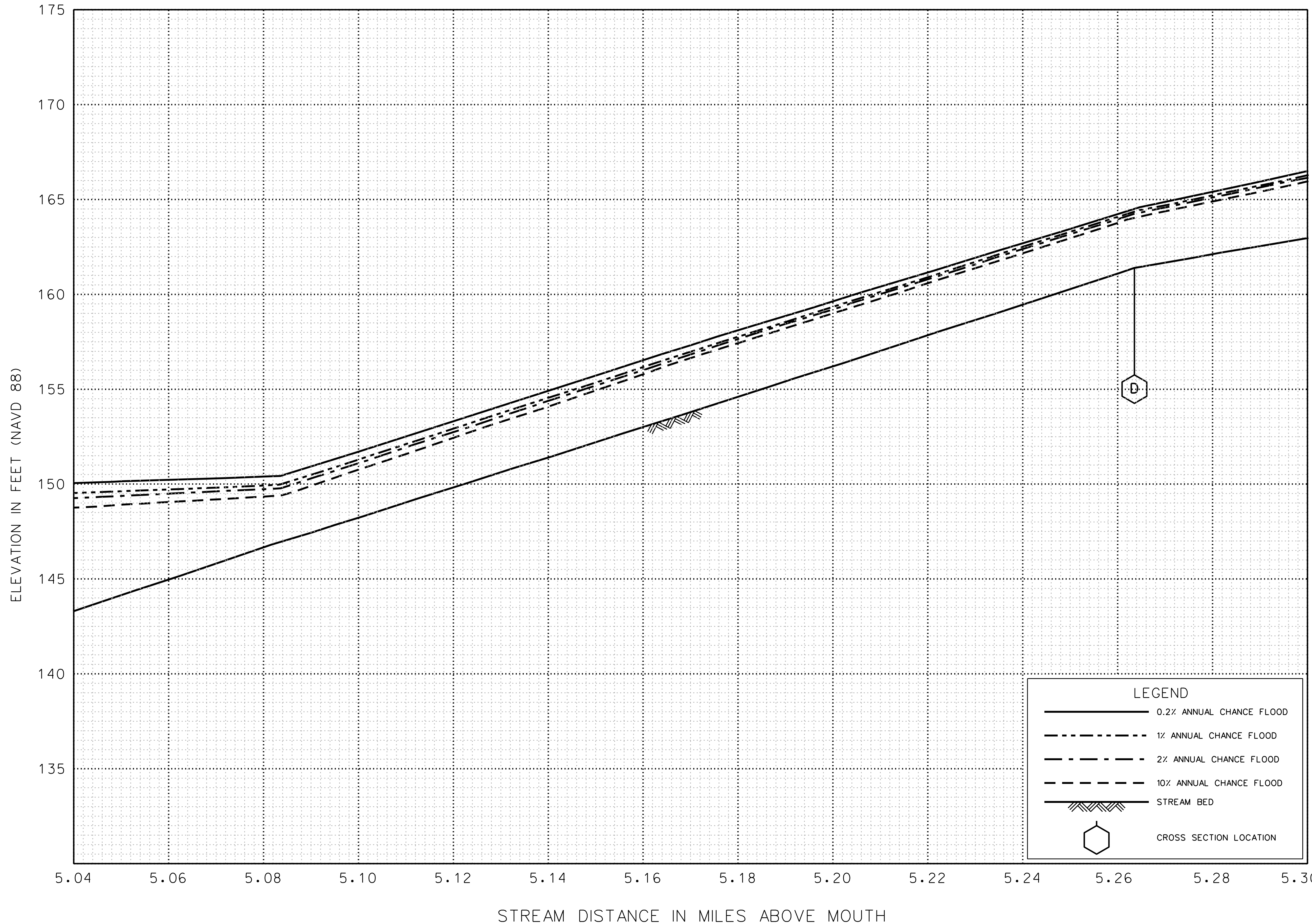

FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

91P



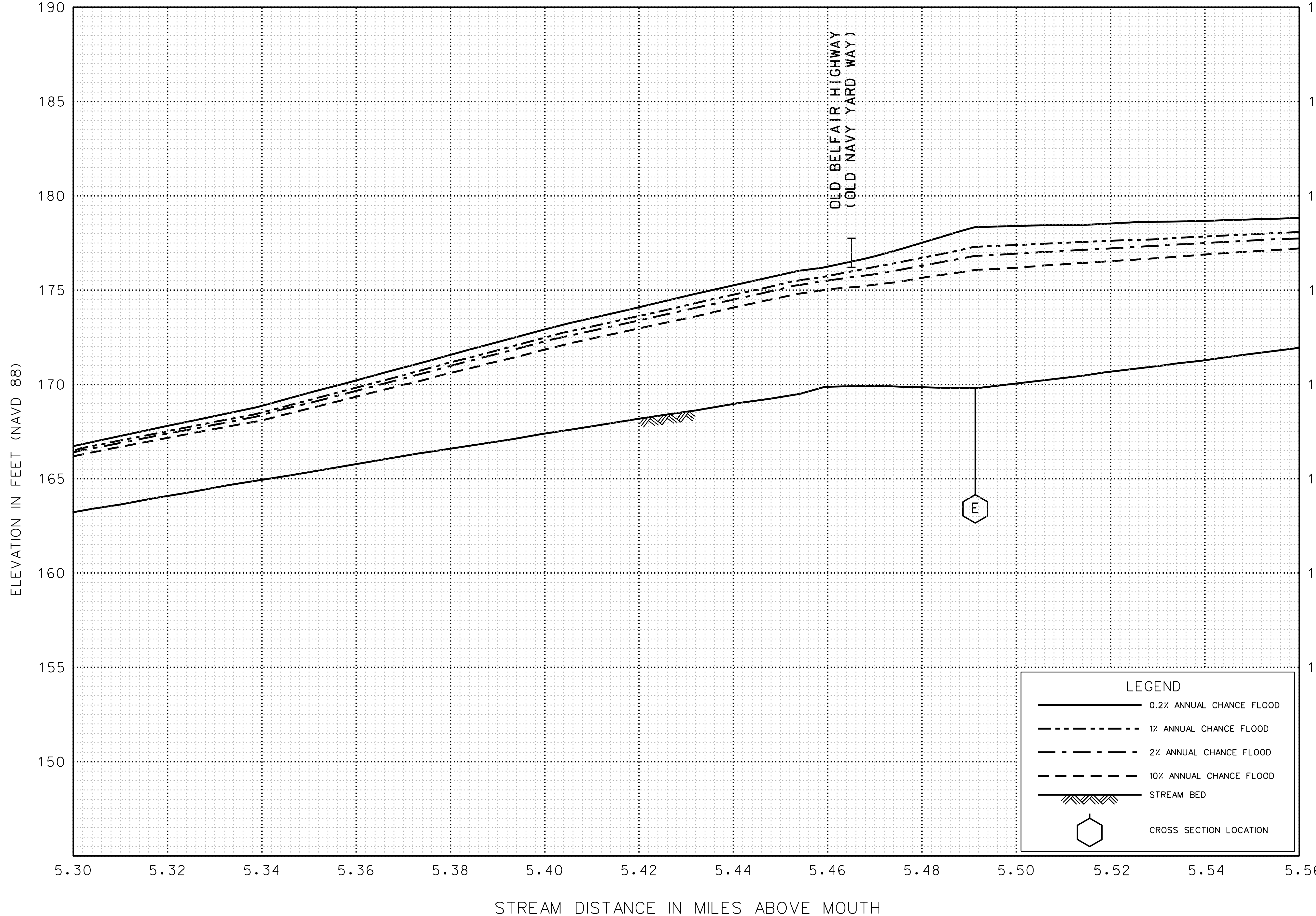

FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON

AND INCORPORATED AREAS

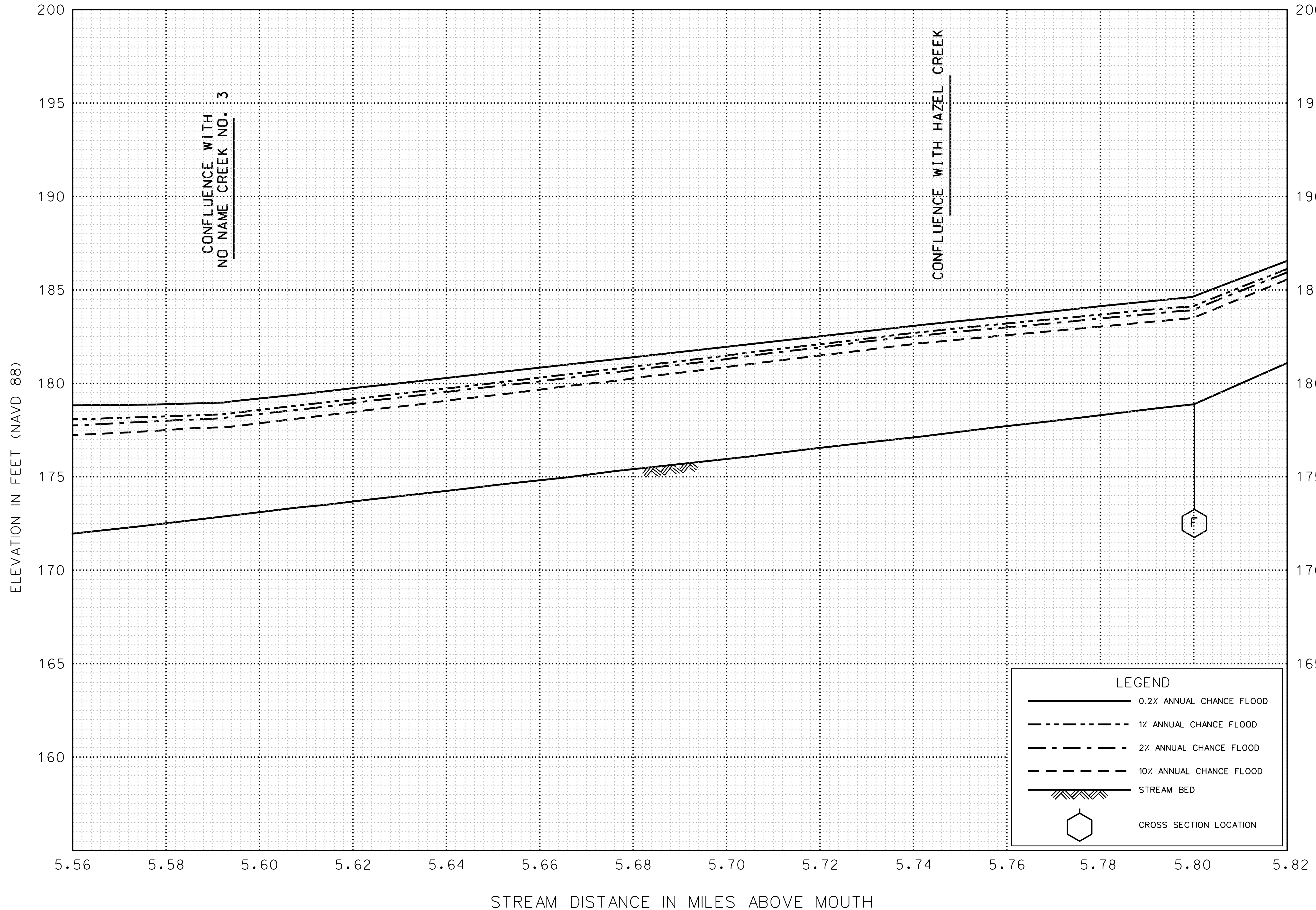



FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

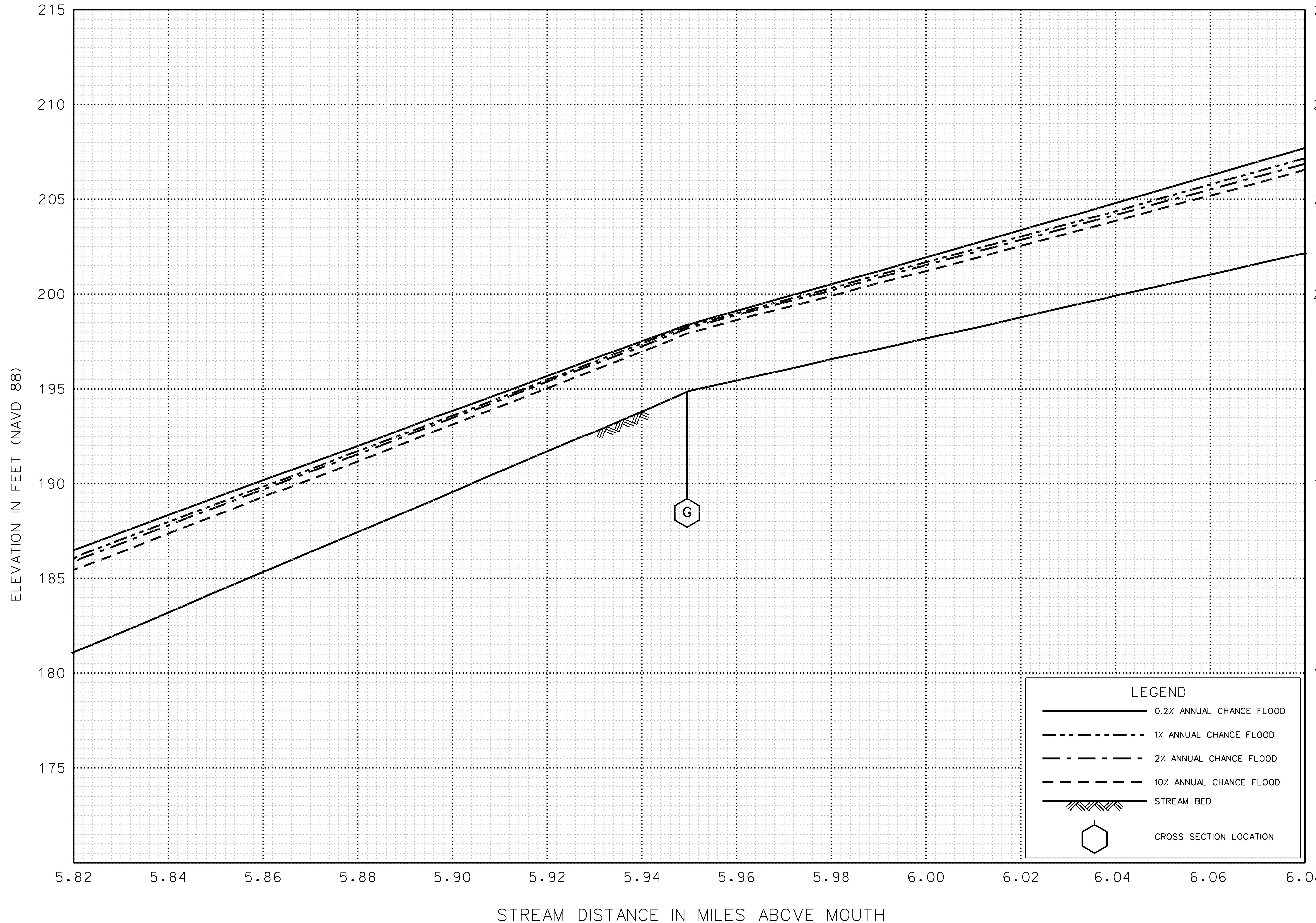



FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS



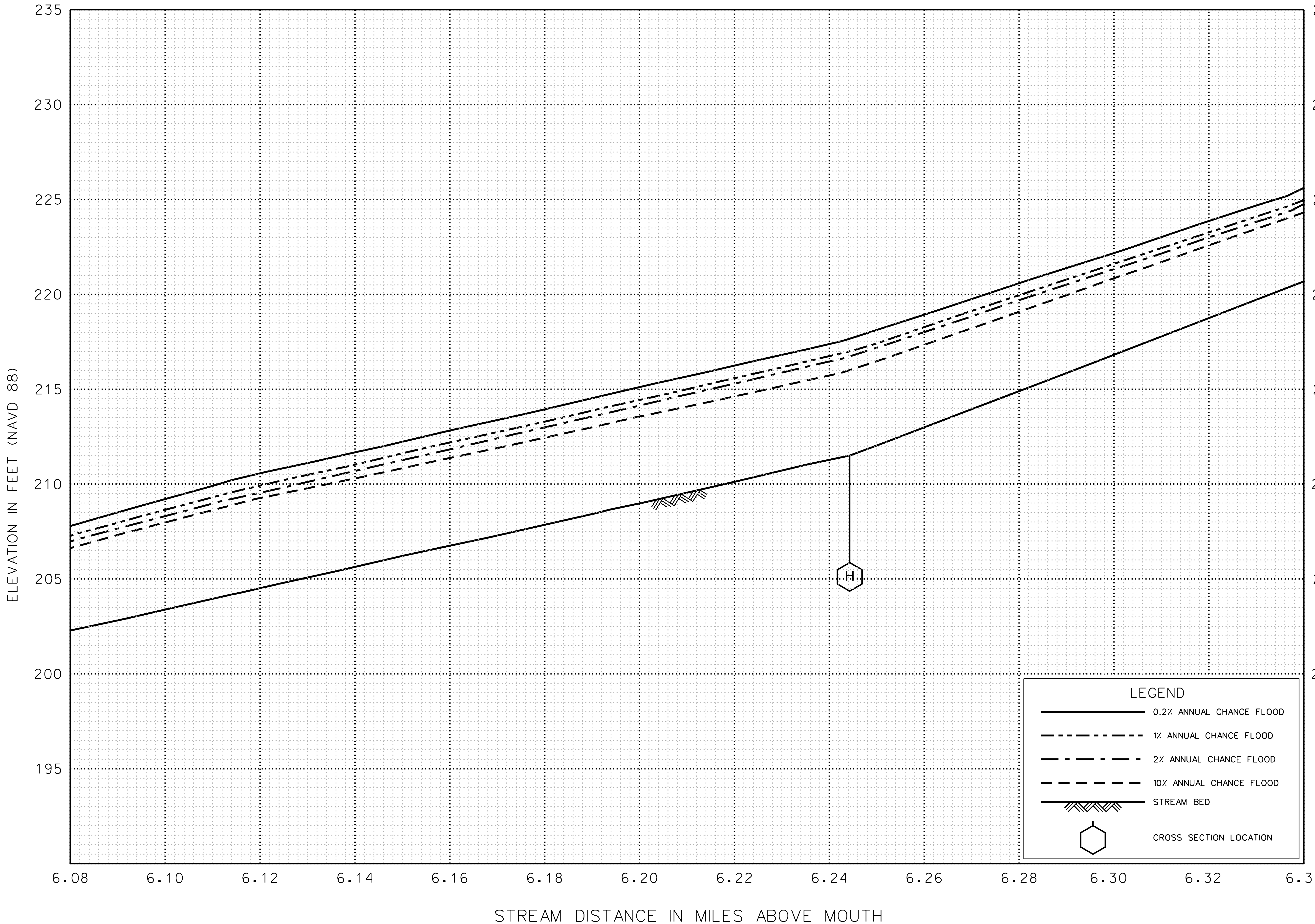

# FLOOD PROFILES

## UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS

95P



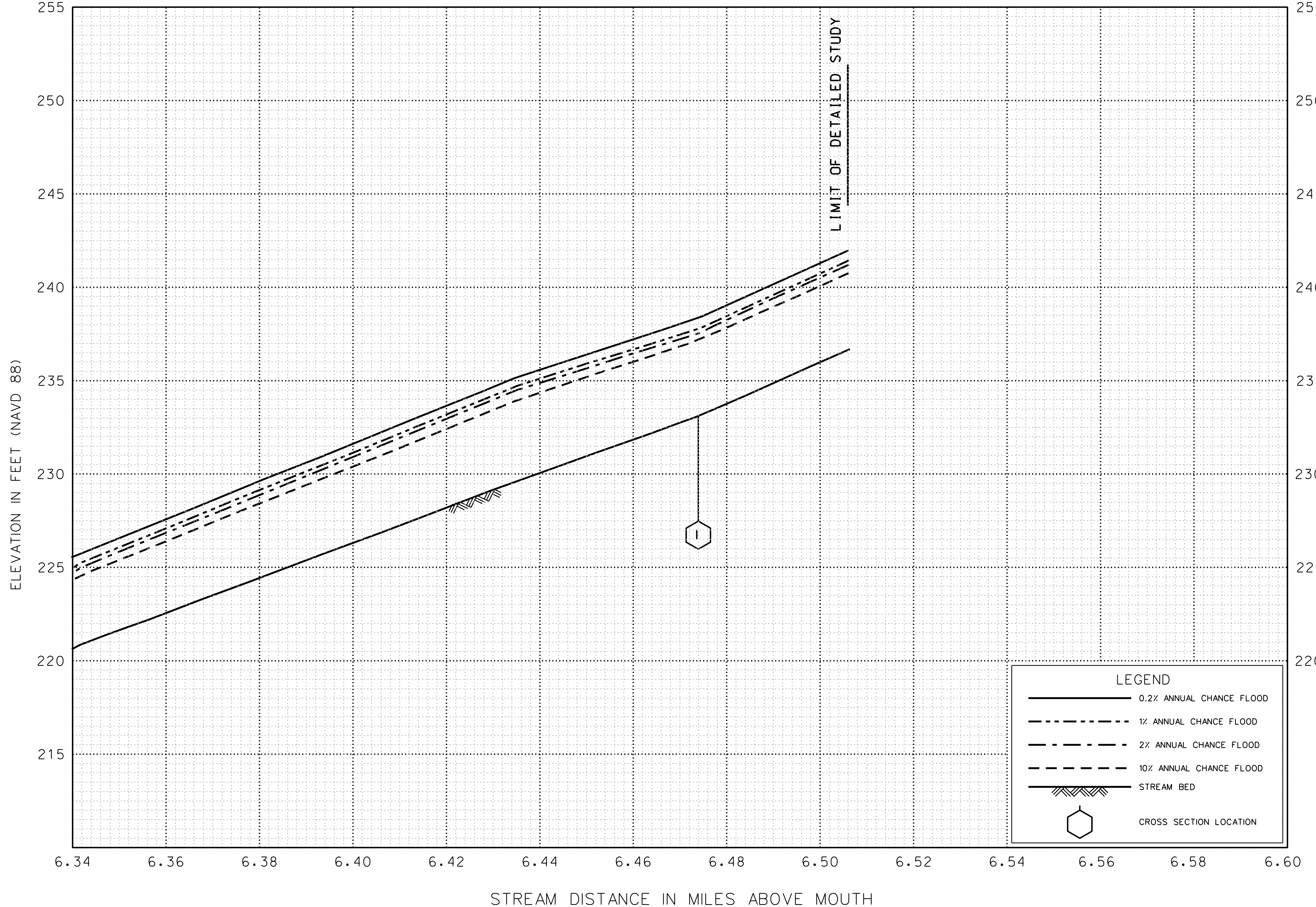

FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON
AND INCORPORATED AREAS

96P




FLOOD PROFILES

UNION RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

KITSAP COUNTY, WASHINGTON AND INCORPORATED AREAS