

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



SIERRA COUNTY, CALIFORNIA

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
LOYALTON, CITY OF	060361
SIERRA COUNTY, UNINCORPORATED AREAS	060630

**REVISED PRELIMINARY:
OCTOBER 15, 2025**

REVISED:

TBD

FLOOD INSURANCE STUDY NUMBER

06091CV000C

Version Number 2.8.5.6



FEMA

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Flood Profiles	<u>Panel</u>
Downie River	01-02 P
Goodyears Creek	03 P
North Yuba River	04-10 P
North Yuba River Near Downieville	11-12 P
North Yuba River Near Goodyears Bar	13 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT SIERRA COUNTY, CALIFORNIA

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built

by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Sierra County, California.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Loyalton, City of	060361	18020123	06091C0217D, 06091C0236D	
Sierra County, Unincorporated Areas	060630	16050102, 18020123, 18020125, 18080003	06091C0025C, 06091C0050C ¹ , 06091C0075C, 06091C0100C, 06091C0125C, 06091C0150C, 06091C0175C, 06091C0183D, 06091C0184D, 06091C0185E ¹ , 06091C0191D, 06091C0192D, 06091C0193D, 06091C0194D, 06091C0200D, 06091C0203D, 06091C0204D, 06091C0205E ¹ , 06091C0208D, 06091C0209D, 06091C0210E ¹ , 06091C0211D, 06091C0212D, 06091C0213D, 06091C0214D, 06091C0216D, 06091C0217D, 06091C0220D ¹ , 06091C0228D, 06091C0236D, 06091C0237C ¹ , 06091C0238D, 06091C0239D, 06091C0250D, 06091C0275C, 06091C0294D, 06091C0300D, 06091C0313D, 06091C0314D, 06091C0316D, 06091C0317D, 06091C0318D, 06091C0319D, 06091C0325D, 06091C0329D, 06091C0330C, 06091C0335C, 06091C0336C, 06091C0337D, 06091C0340C, 06091C0341D, 06091C0342C, 06091C0345C, 06091C0353C, 06091C0354C, 06091C0355C, 06091C0358C, 06091C0359C, 06091C0360C, 06091C0361C, 06091C0365C, 06091C0366C, 06091C0367C, 06091C0370C, 06091C0378C, 06091C0380C, 06091C0400C, 06091C0406D, 06091C0407D, 06091C0410D, 06091C0425D, 06091C0426D, 06091C0427D ¹ , 06091C0428D, 06091C0429D, 06091C0440D, 06091C0450C, 06091C0475C, 06091C0500C, 06091C0525C, 06091C0550C, 06091C0575C, 06091C0600C, 06091C0625C, 06091C0650C, 06091C0675C, 06091C0700C, 06091C0725C	

¹ Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1-percent-annual-chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1-percent-annual-chance and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 33, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The initial Countywide FIS Report for Sierra County became effective on June 8, 1998. Refer to Table 27 for information about subsequent revisions to the FIRMs.

- The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/flood-insurance/rules-legislation/community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.

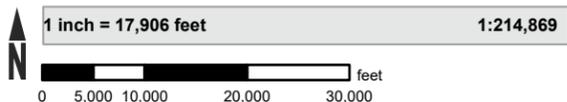
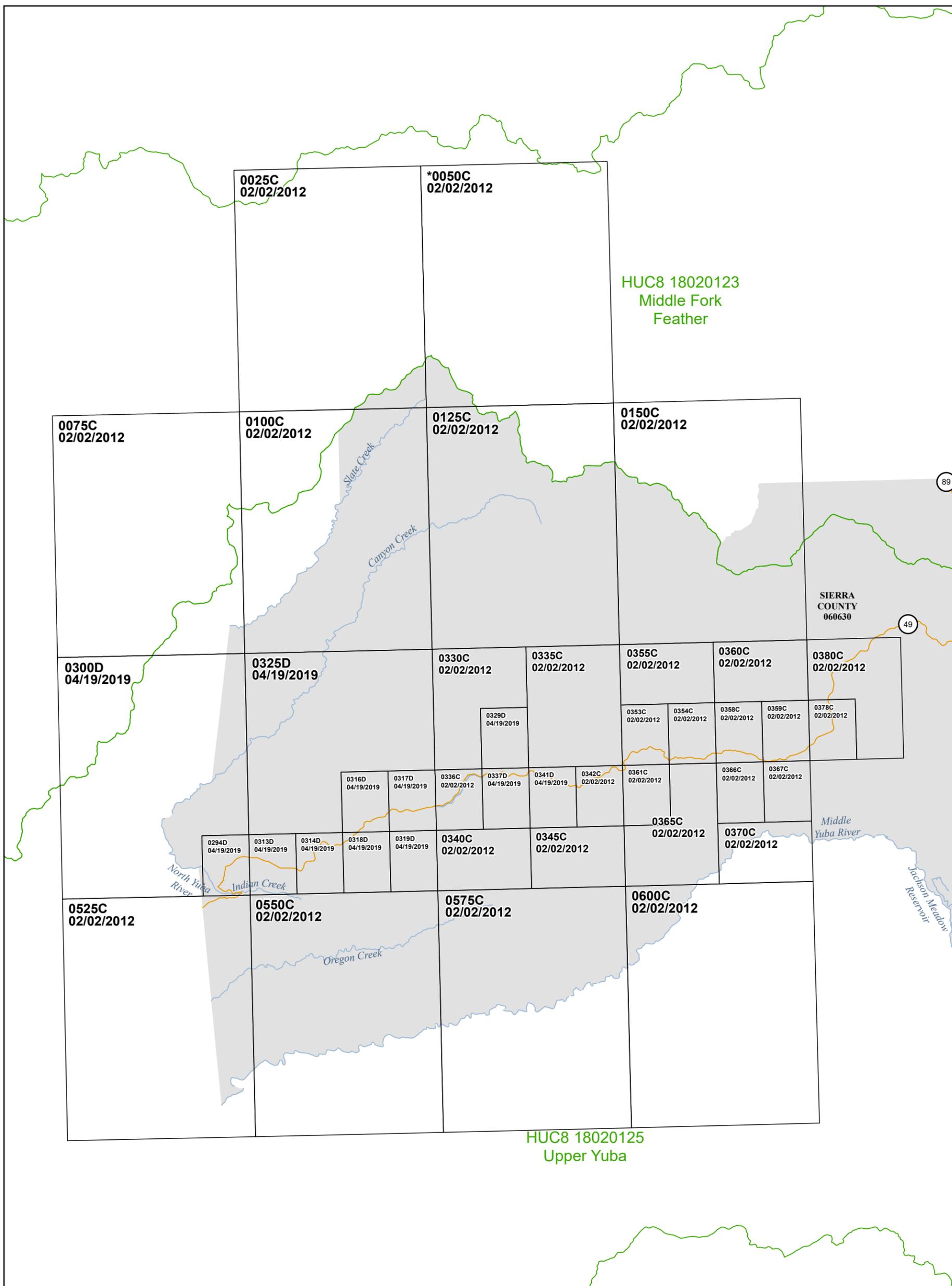
- FEMA does not design, build, inspect, operate, maintain, or certify levees. FEMA is responsible for accurately identifying flood hazards and communicating those hazards and risks to affected stakeholders. FEMA has identified one or more levee systems in this jurisdiction summarized in Table 8 of this FIS Report. For FEMA to accredit the identified levee systems, the levee systems must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled “Mapping of Areas Protected by Levee Systems.”

Information on the levee systems in this jurisdiction can be obtained from the USACE National Levee Database (<https://levees.sec.usace.army.mil/>). For additional information, the user should contact the appropriate jurisdiction floodplain administrator and the levee owner or sponsor.

- The U.S. Survey Foot was deprecated on December 31, 2022, in favor of the International Foot (referred to as foot). It may still be necessary to use U.S. Survey Feet for legacy data or for new data collected in locations which have not yet adopted the International Foot convention. The U.S. Survey Foot will not be supported in the modernized National Spatial Reference System (NSRS).
- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/flood-maps/tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Sierra County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Index



Map Projection:
NAD 1983 UTM Zone 10N
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

SIERRA COUNTY, CALIFORNIA, AND INCORPORATED AREAS

PAGE 1 OF 2

PANELS PRINTED:

0025, 0075, 0100, 0125, 0150, 0294, 0300, 0313, 0314, 0316, 0317, 0318, 0319, 0325, 0329, 0330, 0335, 0336, 0337, 0340, 0341, 0342, 0345, 0353, 0354, 0355, 0358, 0359, 0360, 0361, 0365, 0366, 0367, 0370, 0378, 0380, 0525, 0550, 0575, 0600



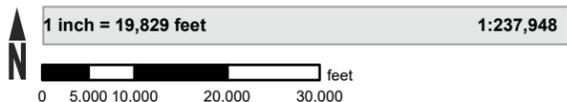
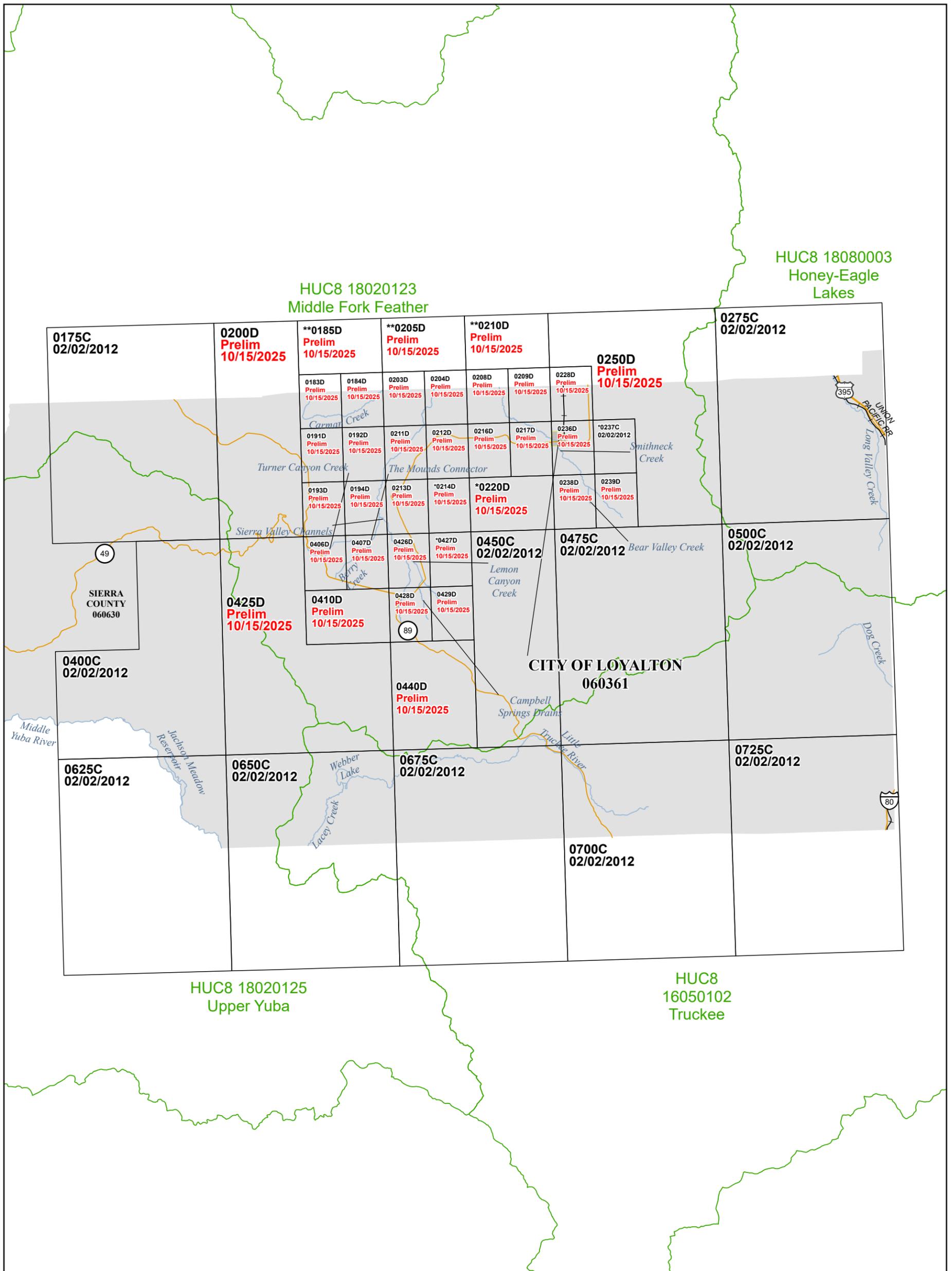
FEMA

MAP NUMBER
06091CIND1C

EFFECTIVE DATE
Prelim Issue Date: 10/15/2025

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

Figure 1: FIRM Index (continued)



Map Projection:
NAD 1983 UTM Zone 10N
Vertical Datum: NAVD88

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

SIERRA COUNTY, CALIFORNIA, AND INCORPORATED AREAS

PAGE 2 OF 2

PANELS PRINTED:

0175, 0183, 0184, 0191, 0192, 0193, 0194, 0200, 0203, 0204, 0208, 0209, 0211, 0212, 0213, 0216, 0217, 0228, 0236, 0238, 0239, 0250, 0275, 0400, 0406, 0407, 0410, 0425, 0426, 0428, 0429, 0440, 0450, 0475, 0500, 0625, 0650, 0675, 0700, 0725



FEMA

MAP NUMBER
06091CIND2C

EFFECTIVE DATE
Prelim Issue Date: 10/15/2025

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
**PANEL NOT PRINTED - AREA OUTSIDE COUNTY BOUNDARY

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

<p style="text-align: center;">NOTES TO USERS</p> <p>For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.</p> <p>Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.</p> <p>For community and countywide map dates, refer to Table 27 in this FIS Report.</p> <p>To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.</p> <p><u>PRELIMINARY FIS REPORT:</u> FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.</p>
<p>The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.</p> <p><u>BASE FLOOD ELEVATIONS:</u> For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.</p>

Figure 2. FIRM Notes to Users (continued)

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may have reduced flood hazards due to flood control structures. Refer to Section 4.3 "Dams and Other Flood Hazard Reduction Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 10N. The horizontal datum was the North American Datum of 1983 NAD83. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 33 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on FIRMs dated TBD was provided in digital format by the United States Geological Survey (USGS). The base map shown is the USGS National Map: Orthoimagery. Last refreshed October 2020.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Sierra County, California, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 27 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

Figure 2. FIRM Notes to Users (continued)

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Sierra County, California, effective **TBD**.

NON-ACCREDITED LEVEE SYSTEM: This panel contains a levee system that has not been accredited and is therefore not recognized as reducing the 1-percent-annual-chance flood hazard.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Sierra County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.	
	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.
	Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM (continued)

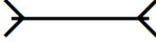
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Hazard due to Accredited or Provisionally Accredited Levee System: Area is shown as reduced flood hazard from the 1-percent-annual-chance or greater flood by a levee system. Overtopping or failure of any levee system is possible. See Notes to Users for important information.
	Area with Undetermined Flood Hazard due to Non-Accredited Levee System: Analysis and mapping procedures for non-accredited levee systems were applied resulting in a flood insurance rate zone where flood hazards are undetermined, but possible.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
 (ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
GENERAL STRUCTURES	
 Aqueduct Channel Culvert Storm Sewer	Channel, Culvert, Aqueduct, or Storm Sewer
 Dam Jetty Weir	Dam, Jetty, Weir
	Levee, Dike, or Floodwall
 Bridge	Bridge

Figure 3: Map Legend for FIRM (continued)

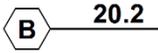
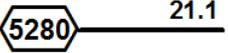
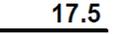
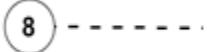
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad

Figure 3: Map Legend for FIRM (continued)

—————	Horizontal Reference Grid Line
—	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
4276⁰⁰⁰mE	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Sierra County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1-percent-annual-chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 22), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1-percent and 0.2-percent-annual-chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1-percent-annual-chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1-percent and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Sierra County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 12. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1-percent-annual-chance floodplain corresponds to the SFHAs. The 0.2-percent-annual-chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

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. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Bear Valley Creek	Sierra County, Unincorporated Areas	Confluence with Smithneck Creek	Approximately 0.7 mile upstream of confluence with Smithneck Creek	18020123	0.7	-	N	AE	2024
Berry Creek	Sierra County, Unincorporated Areas	Confluence with Turner Canyon Creek	Approximately 2.4 miles upstream of confluence with Turner Canyon Creek	18020123	2.4	-	N	AE	2024
Campbell Springs Drains	Sierra County, Unincorporated Areas	Confluence with Lemon Canyon Creek	Approximately 2.0 miles upstream of the confluence with Lemon Canyon Creek	18020123	2.0	-	N	AE	2024
Carman Creek	Sierra County, Unincorporated Areas	At Plumas County/Sierra County boundary	Approximately 1.2 miles upstream of Westside Road	18020123	3.6	-	N	AE	2024
	Sierra County, Unincorporated Areas	Approximately 1.2 miles upstream of Westside Road	Approximately 2.6 miles upstream of Westside Road	18020123	1.4	-	N	A	2021
Cold Stream	Sierra County, Unincorporated Areas	Approximately 2.4 miles downstream of State Highway 49	Approximately 0.8 mile upstream of State Highway 49	18020123	3.2	-	N	A	2019
Downie River	Sierra County, Unincorporated Areas	Confluence with North Yuba River Near Downieville	Approximately 1.0 mile upstream of Lavezzola Road	18020125	1.8	-	Y	AE	2011
Fletcher Creek	Sierra County, Unincorporated Areas	Confluence with Sierra Valley Channels	Approximately 1.4 miles upstream of State Highway 89	18020123	5.7	-	N	AE	2019

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Goodyears Creek	Sierra County, Unincorporated Areas	Confluence with North Yuba River Near Goodyears Bar	Approximately 0.3 mile upstream of Goodyear Creek Road	18020125	1.1	-	Y	AE	2011
Hamlin Creek	Sierra County, Unincorporated Areas	Approximately 1.2 miles downstream of State Highway 49	Just upstream of West Willow Street	18020123	2.5	-	N	AE	2019
Lemon Canyon Creek	Sierra County, Unincorporated Areas	At Plumas County/Sierra County boundary	Approximately 1.2 miles upstream of Westside Road	18020123	2.8	-	N	AE	2024
North Yuba River	Sierra County, Unincorporated Areas	Approximately 0.2 mile upstream of Mountain House Road	Approximately 1.1 miles downstream of Nevada Drive	18020125	2.8	-	N	AE	1975
North Yuba River Near Downieville	Sierra County, Unincorporated Areas	Approximately 1.0 miles downstream of Nevada Drive	Approximately 0.1 mile upstream of Slate Castle Ranch Road	18020125	2.2	-	Y	AE	2011
North Yuba River Near Goodyears Bar	Sierra County, Unincorporated Areas	Approximately 0.1 mile downstream of the confluence with Goodyears Creek	Approximately 0.2 mile upstream of Mountain House Road	18020125	0.7	-	Y	AE	2011
Perry Creek	Sierra County, Unincorporated Areas	Confluence with Sierra Valley Channels	Approximately 0.3 mile downstream of West Willow Street	18020123	4.7	-	N	AE	2019
Sierra Valley Channels	Sierra County, Unincorporated Areas	At Plumas County/Sierra County Boundary	Approximately 12.7 miles upstream of Plumas County/ Sierra County boundary	18020123	12.7	-	N	AE	2024

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Smithneck Creek	Loyalton, City of; Sierra County, Unincorporated Areas	At Plumas County/Sierra County boundary	At Limit of Detailed Study	18020123	8.8	-	N	AE	2024
The Mounds Connector	Sierra County, Unincorporated Areas	Confluence with Sierra Valley Channels	Approximately 1.1 miles upstream of confluence with Sierra Valley Channels	18020123	1.1	-	N	AE	2024
Turner Canyon Creek	Sierra County, Unincorporated Areas	Confluence with Berry Creek	Approximately 3.3 miles upstream of the Confluence with Berry Creek	18020123	3.3	-	N	AE	2024
All Lacustrine Zone A Flooding Sources	Sierra County, Unincorporated Areas	Downstream limit of shoreline	Upstream limit of shoreline	16050102, 18020125	-	6.4	N	A	2009
All Riverine Zone A Flooding Sources	Sierra County, Unincorporated Areas	Downstream limit of study for Zone A study reaches	1 square mile drainage area of all Zone A streams	16050102, 18020123, 18020125, 18080003	367.7	-	N	A	2009

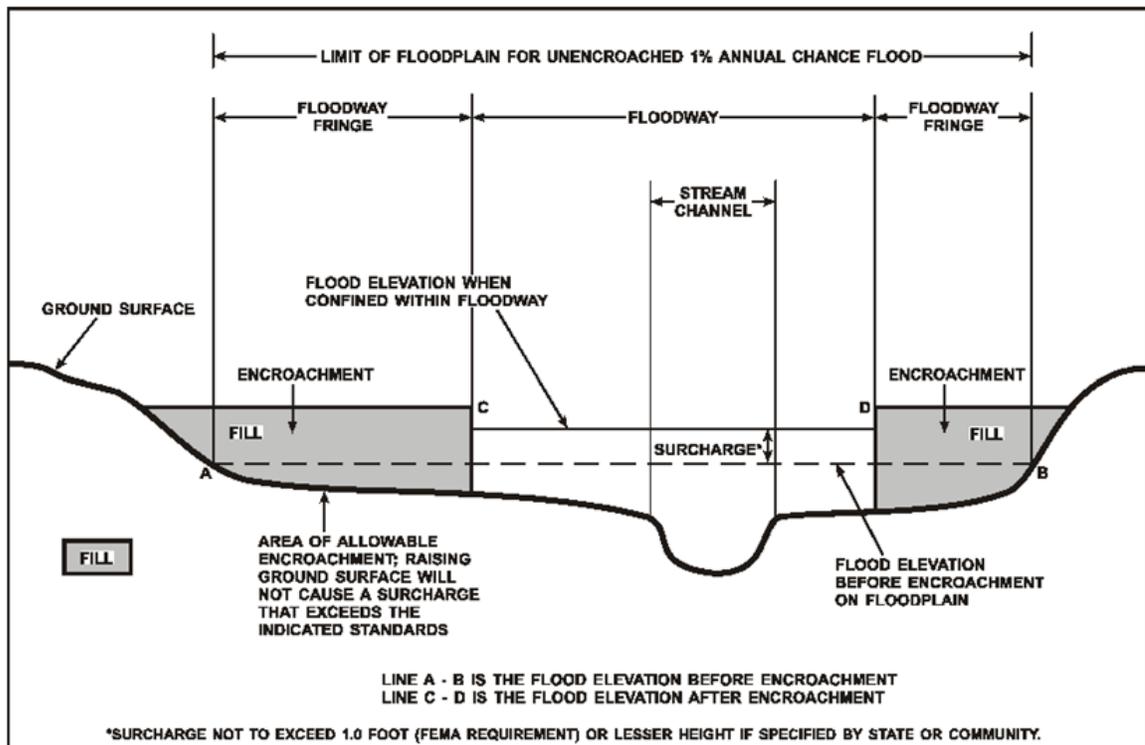
2.2 Floodways

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 balancing floodplain development against increasing flood hazard. With this approach, the area of the 1-percent-annual-chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1-percent-annual-chance flood. The floodway fringe is the area between the floodway and the 1-percent-annual-chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1-percent-annual-chance 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 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The BFE is the elevation of the 1-percent-annual-chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. For example, the user may use the FIRM to determine the stream station of a location of interest and then use the profile to determine the 1-percent annual chance elevation at that location. Because only selected cross sections may be shown on the FIRM for riverine areas, the profile should be used to obtain the flood elevation between mapped cross sections. Additionally, for riverine areas, whole-foot elevations shown on the FIRM may not exactly reflect the elevations derived from the hydraulic analyses; therefore, elevations obtained from the profile may more accurately reflect the results of the hydraulic analysis.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic
[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic
[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood zones in Sierra County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Loyalton, City of	AE, X
Sierra County, Unincorporated Areas	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 4 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Honey-Eagle Lakes	18080003	Long Valley Creek	Flows north to south through lakes, meeting northeast corner of Sierra County	2,805
Middle Fork Feather	18020123	Middle Fork Feather River	Tributaries to Middle Fork Feather River flow south to north through central Sierra County	1,365
Truckee	16050102	Truckee River	Flows west to east across the southeast corner of Sierra County	1,218
Upper Yuba	18020125	Yuba River	Flows northeast to southwest through western Sierra County, joining Sacramento River at downstream end	1,344

4.2 Principal Flood Problems

Table 5 contains a description of the principal flood problems that have been noted for Sierra County by flooding source.

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Downie River, Goodyears Creek, and North Yuba River	Portions of Downie River, Goodyears Creek, and the North Yuba River contain shallow flooding. These areas are subject to inundation by floodwaters having hazardous velocities which increases the risk of flood damage and heightens potential flood hazards.
Sierra Valley Channels	The flood hydrology of the Sierra Valley is driven by snow accumulation and the subsequent snowmelt with rain on snow being a source for extreme flood events. When flooding occurs in the valley it is typically due to streams overflowing their banks at numerous locations due to the flat topography of the valley.
Smithneck Creek	The City of Loyalton experienced out of bank flooding and roadway overtopping on February 9, 2017, a day before high flows reached Portola at the downstream end of the watershed. Flooding occurred along Smithneck Creek at West Main Street and Taylor Avenue. According to available stream gage data on the Middle Fork Feather River near Portola, the peak flow of 12,891 cfs on February 10, 2017 is the flood of record. Rain gage records indicate this flood occurred after 4.2 to 12.4 inches of rainfall fell over the watershed during a period of 10 days on an above average snowpack. Given that the theoretical 1% annual chance rainfall across sub-watersheds contributing to Loyalton is two times the February 9, 2017 rainfall over the same duration, it is expected that discharges and flooding extents will be much greater during a 100-year flood event for the Loyalton area as compared to the observed February 2017 flooding.

Table 6 contains information about historic flood elevations in the communities within Sierra County.

Table 6: Historic Flooding Elevations
[Not Applicable to this Flood Risk Project]

4.3 Dams and Other Flood Hazard Reduction Measures

Table 7 contains information about non-levee flood hazard reduction measures within Sierra County such as dams or jetties. Levee systems are addressed in Section 4.4 of this FIS Report.

Table 7: Dams and Other Flood Hazard Reduction Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Downie River	Old Foundry Dam	Dam	Approximately 0.2 mile upstream of U.S. Highway 49	Flood control structure
Jackson Meadows Reservoir	Jackson Meadows Dam	Dam	Along the Nevada County/Sierra County boundary approximately 6 miles southeast of Sierra City	This structure impounds the Middle Fork of the Yuba River and is part of the Yuba-Bear Hydroelectric Project
Stampede Reservoir	Stampede Dam	Dam	Little Truckee River approximately 16 miles southeast of Sierraville	Earthen and rock-filled dam that impounds the Little Truckee River. Owned and operated by the Bureau of Reclamation.
Smithneck Creek	SMI_4-09000	Weir	Unavailable	Provides flow regulation

4.4 Levee Systems

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the flood hazard from the 1-percent-annual-chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate flood hazard zone.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levee systems that exist within Sierra County. Table 8, “Levee Systems,” lists all accredited levee systems, PALs, and non-accredited levee systems shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification

systems that were listed in previous FIS Reports. Levee systems identified in the table are displayed on the FIRM with notes to users to indicate their flood hazard mapping status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding the levee systems presented in the table may be obtained by accessing the National Levee Database. For additional information, contact the levee owner/sponsor or the local community shown in Table 33.

Table 8: Levee Systems

Community	Flooding Source(s)	NLD Levee System ID	NLD Levee System Name	Levee System Status on Effective FIRM	FIRM Panel(s)	Levee Owner(s) / Sponsor(s)
Sierra County, Unincorporated Areas	North Fork Yuba River	1905062000	Sierra County Levee 1	Non-Accredited	06091C0337D	Unavailable

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources 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 are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2-percent-annual-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 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 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.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 12. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 9.

Table 9: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Bear Valley Creek	At the confluence of Bear Valley Creek and Smithneck Creek	52.6	9,117	10,978	12,528	14,164	18,605
	Approximately 3,800 feet upstream from confluence with Smithneck Creek	12.7	1,493	2,192	2,801	3,503	5,476
Berry Creek	At Highway 49 Yuba-Donner Scenic Byway	21.2	4,312	5,099	5,766	6,454	8,263
Campbell Springs Drains	At Campbell Hot Springs Road	3.7	715	834	769	1,041	1,326
Carman Creek	At Westside Road	23.2	3,372	4,089	4,656	5,250	6,755
Cold Stream	At the Town of Sierraville	27.4	3,980	4,863	5,685	6,561	8,828
Cottonwood Creek	At confluence of Cottonwood Creek and Cold Stream	22.7	3,059	3,774	4,473	5,210	7,154
Downie River	Downstream of confluence of North Yuba River	72.6	*	*	*	19,549	*
	Upstream of confluence of North Yuba River	46.6	*	*	*	14,367	*
	At Jersey Flat Bridge	26.0	*	*	*	*	*
Fletcher Creek	At Westside Road	7.3	1,099	1,344	1,530	1,735	2,255
Goodyears Creek	At confluence with North Yuba River	12.9	*	*	*	6,032	*
Hamlin Creek	Just upstream of State Highway 49	21.2	4,286	5,076	5,742	6,423	8,218

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Lemon Canyon Creek	Near County Road 650	13.8	2,653	3,116	2,862	3,895	4,921
North Yuba River	At River Mile 9.29	230.6	*	*	*	41,748	*
	Downstream of confluence with Downie River	217.6	*	*	*	40,819	*
	Upstream of confluence with Downie River	141.4	*	*	*	30,808	*
North Yuba River Near Downieville	Below confluence with Downie River	217.6	*	*	*	40,819	*
	Above confluence with Downie River	141.4	*	*	*	30,808	*
North Yuba River Near Goodyears Bar	Below confluence of Goodyears Creek	243.5	*	*	*	44,567	*
Perry Creek	At the Town of Sierraville	27.4	3,980	4,863	5,685	6,561	8,828
Sierra Valley Channels	Marble Hot Springs Road west of A-24 ¹	296.3	10,846	13,056	14,336	15,982	19,215
	East Main Street/ Highway 49	37.7	1,592	2,553	3,466	4,504	7,481
	Confluence with Bonta Creek	36.9	1,524	2,591	3,579	4,699	8,083
Smithneck Creek	At Main Street	60.9	5,978	8,751	11,241	14,152	22,445
	Confluence with Bear Valley Creek	52.7	5,079	7,431	9,675	12,237	19,503
	Approximately 2,200 feet upstream from Bear Valley Road	31.8	2,665	3,714	4,762	5,997	9,734

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Turner Canyon Creek	Approximately 1,700 feet upstream of Meadow Lane	3.6	1,524	1,826	2,062	2,271	2,894

*Not calculated for this Flood Risk Project

¹Discharge location falls within Plumas County, California

**Figure 7: Frequency Discharge-Drainage Area Curves
[Not Applicable to this Flood Risk Project]**

**Table 10: Summary of Non-Coastal Stillwater Elevations
[Not Applicable to this Flood Risk Project]**

Table 11: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Middle Fork Feather River	MFP	CDWR	Middle Fork Feather River near Portola	586	02/01/2007	03/31/2018

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 23, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 12. Roughness coefficients are provided in Table 13. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 12: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Bear Valley Creek	Confluence with Smithneck Creek	Approximately 0.7 mile upstream of confluence with Smithneck Creek	HEC-HMS 4.3	HEC-RAS 5.0.7	09/30/2024	AE	2D hydraulic model
Berry Creek	Confluence with Turner Canyon Creek	Approximately 2.4 miles upstream of confluence with Turner Canyon Creek	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
Campbell Springs Drains	Confluence with Lemon Canyon Creek	Approximately 2.0 miles upstream of the confluence with Lemon Canyon Creek	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
Carman Creek	At Plumas County/Sierra County boundary	Approximately 1.2 miles upstream of Westside Road	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
	Approximately 1.2 miles upstream of Westside Road	Approximately 2.6 miles upstream of Westside Road	HEC-HMS 4.11	HEC-RAS 6.5	10/02/2021	A	
Cold Stream	Approximately 2.4 miles downstream of State Highway 49	Approximately 0.8 mile upstream of State Highway 49	HEC-HMS 4.3	HEC-RAS 5.0.7	12/17/2019	A	2D hydraulic model
Downie River	Confluence with North Yuba River Near Downieville	Approximately 1.0 mile upstream of Lavezzola Road	HEC-1	HEC-RAS 4.1.0	09/01/2011	AE w/ Floodway	
Fletcher Creek	Confluence with Sierra Valley Channels	Approximately 1.4 miles upstream of State Highway 89	HEC-HMS 4.3	HEC-RAS 5.0.7	12/17/2019	AE	2D hydraulic model in Calpine
Goodyears Creek	Confluence with North Yuba River Near Goodyears Bar	Approximately 0.3 mile upstream of Goodyear Creek Road	HEC-1	HEC-RAS 4.1.0	09/01/2011	AE w/ Floodway	

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hamlin Creek	Approximately 1.2 miles downstream of State Highway 49	Just upstream of West Willow Street	HEC-HMS 4.3	HEC-RAS 5.0.7	12/17/2019	AE	2D hydraulic model
Lemon Canyon Creek	At Plumas County/Sierra County boundary	Approximately 1.2 miles upstream of Westside Road	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
North Yuba River	Approximately 0.2 mile upstream of Mountain House Road	Approximately 1.1 miles downstream of Nevada Drive	Gage Analysis	HEC-2	01/01/1975	AE	
North Yuba River Near Downieville	Approximately 1.0 miles downstream of Nevada Drive	Approximately 0.1 mile upstream of Slate Castle Ranch Road	HEC-1	HEC-RAS 4.1.0	09/01/2011	AE w/ Floodway	
North Yuba River Near Goodyears Bar	Approximately 0.1 mile downstream of the confluence with Goodyears Creek	Approximately 0.2 mile upstream of Mountain House Road	HEC-1	HEC-RAS 4.1.0	09/01/2011	AE w/ Floodway	
Perry Creek	Confluence with Sierra Valley Channels	Approximately 0.3 mile downstream of West Willow Street	HEC-HMS 4.3	HEC-RAS 5.0.7	12/17/2019	AE	2D hydraulic model in Sierraville
Sierra Valley Channels	At Plumas County/Sierra County Boundary	Approximately 12.7 miles upstream of Plumas County/ Sierra County boundary	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
Smithneck Creek	At Plumas County/Sierra County boundary	At Limit of Detailed Study	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model in Loyalton
The Mounds Connector	Confluence with Sierra Valley Channels	Approximately 1.1 miles upstream of confluence with Sierra Valley Channels	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model

Table 12: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Turner Canyon Creek	Confluence with Berry Creek	Approximately 3.3 miles upstream of the Confluence with Berry Creek	HEC-HMS 4.11	HEC-RAS 6.5	09/30/2024	AE	2D hydraulic model
All Lacustrine Zone A Flooding Sources	Downstream limit of shoreline	Upstream limit of shoreline	*	*	06/01/2009	A	The California Department of Water Resources (CADWR) completed Awareness Floodplain Mapping studies for all California counties. The Awareness Floodplain Maps are not FEMA regulatory floodplain maps; however, at the request of the community FEMA included the data on the county's maps.
All Riverine Zone A Flooding Sources	Downstream limit of study for Zone A study reaches	1 square mile drainage area of all Zone A streams	*	*	06/01/2009	A	

* Data unavailable

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Bear Valley Creek	0.025-0.160	0.025-0.160
Berry Creek	0.025-0.160	0.025-0.160
Campbell Springs Drains	0.025-0.160	0.025-0.160
Carman Creek	0.025-0.160	0.025-0.160
Cold Stream	0.025-0.160	0.025-0.160
Downie River	0.020	0.015-0.100
Fletcher Creek	0.025-0.160	0.025-0.160
Goodyears Creek	0.020	0.015-0.100
Hamlin Creek	0.025-0.160	0.025-0.160
Lemon Canyon Creek	0.025-0.160	0.025-0.160
North Yuba River	0.020	0.015-0.100
North Yuba River Near Downieville	0.020	0.015-0.100
North Yuba River Near Goodyears Bar	0.020	0.015-0.100
Perry Creek	0.025-0.160	0.025-0.160
Sierra Valley Channels	0.025-0.160	0.025-0.160
Smithneck Creek	0.025-0.160	0.025-0.160
The Mounds Connector	0.025-0.160	0.025-0.160
Turner Canyon Creek	0.025-0.160	0.025-0.160
All Lacustrine Zone A Flooding Sources	*	*
All Riverine Zone A Flooding Sources	*	*

* Data unavailable

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

**Table 14: Summary of Coastal Analyses
[Not Applicable to this Flood Risk Project]**

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

**Figure 8: 1-Percent-Annual-Chance Total Stillwater Elevations for Coastal Areas
[Not Applicable to this Flood Risk Project]**

**Table 15: Tide Gage Analysis Specifics
[Not Applicable to this Flood Risk Project]**

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 16: Coastal Transect Parameters
[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map
[Not Applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

Table 18: Results of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

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 can 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 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs 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 NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov.

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 archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Sierra County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

A countywide conversion factor could not be generated for Sierra County because the maximum variance from average exceeds 0.25 feet. Calculations for the vertical offsets on a stream by stream basis are depicted in Table 20.

Table 20: Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Bear Valley Creek	3.845
Carman Creek	3.481
Cold Stream	3.714
Downie River	3.051
Fletcher Creek	3.501
Goodyears Creek	2.940
Hamlin Creek	3.753
North Yuba River	2.986
North Yuba River Near Downieville	3.025
North Yuba River Near Goodyears Bar	2.946
Perry Creek	3.629
Sierra Valley Channels	3.547
Smithneck Creek	3.742

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA’s FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA’s *Guidelines and Standards for Flood Risk Analysis and Mapping*,

www.fema.gov/flood-maps/guidance-partners/guidelines-standards.

Base map information shown on the FIRM was derived from the sources described in Table 21.

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
County boundary for County of Sierra	National Atlas of the United States	2002	1:200,000	2000 county boundary for Sierra County
Digital Orthophoto	USDA Farm Service Agency	2018	1:24,000	Base Imagery
Digital Orthophotos 2-foot GSD	USDA Farm Service Agency	2018	1:24,000	Base Imagery
Federal Lands of the United States	National Atlas of the United States	2000	1:2,000	This map layer includes federal land polygon features for all 50 of the United States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. The minimum map resolution is 640 acres or one square mile.
General Structures	California Department of Water Resources	2010	1:24,000	Location and attributes for culverts, bridges and flood control structures shown on the flood profiles and FIRM
HUC-8 Subbasins	U.S. Geological Survey	2020	1:24,000	USGS Watershed Boundary Dataset
National Hydrography Dataset (NHD)	U.S. Geological Survey	2020	1:100,000	Streams, rivers, and lakes were derived from NHD data
Permanent Bench Mark Data Sheets	National Geodetic Survey	2002	1:6,000	To provide information about public land use for the State of California
Political boundaries	Federal Emergency Management Agency	2019	1:24,000	Municipal and county boundaries
Public Land Survey System Sections	California Department of Conservation, Geologic Energy Management Division	2019	1:24,000	Location and attributes of sections, townships, and ranges on the FIRM
Tiger/Line Files, 2006 Second Edition	U.S. Census Bureau, Geography Division	2006	1:200,000	U.S. Census seamless national transport line database
Transportation Features	U.S. Census Bureau	2019	1:24,000	TIGER/Line Shapefiles
USGS 7.5-Minute Series Topographic Maps	U.S. Geological Survey	1989	1:6,000	Spatial and attribute information for the index of USGS 7.5-Minute Series Topographic Map boundaries
USGS Digital Orthophoto Quadrangle	U.S. Geological Survey	1989	1:6,000	Spatial and attribute information for the index of USGS DOQ boundaries

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 22.

In cases where the 1-percent 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.

The floodway widths presented in this FIS Report and on the FIRM 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. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 23, "Floodway Data."

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Loyalton, City of; Sierra County, Unincorporated Areas	Sierra Valley and tributaries	2018-2019 USGS Lidar: Northern California Wildfire - QL1	8.7 cm NVA at a 95% confidence level	*	USGS 2019
Sierra County, Unincorporated Areas	Downie River, Goodyears Creek, and North Yuba River	Light Detection and Ranging data (LiDAR)	*	*	WOOD ROGERS 2011
Sierra County	All Zone A Flooding	Digital Elevation Model (DEM)	*	*	CADWR 2008
Sierra County, Unincorporated Areas	North Yuba River	Contour Lines	*	*	CALTRANS 1966

*Data unavailable

BFEs shown at cross sections on the FIRM represent the 1-percent-annual-chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 23: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	140	201	2,662	7.3	2,900.8 ²	2,900.8 ²	2,900.8	0.0
B	251	116	1,654	11.8	2,900.8 ²	2,900.8 ²	2,900.9	0.1
C	289	134	1,862	10.5	2,901.6	2,901.6	2,901.9	0.3
D	1,238	99	1,526	12.8	2,905.9	2,905.9	2,906.7	0.8
E	1,867	68	1,005	19.5	2,909.8	2,909.8	2,910.6	0.8
F	1,888	73	1,258	15.5	2,913.7	2,913.7	2,914.0	0.3
G	2,301	104	1,777	11.0	2,916.9	2,916.9	2,917.7	0.8
H	3,323	86	1,422	13.7	2,923.5	2,923.5	2,924.5	1.0
I	4,527	87	1,613	12.1	2,936.4	2,936.4	2,936.4	0.0
J	4,592	90	1,373	14.6	2,936.7	2,936.7	2,936.7	0.0
K	5,043	82	1,028	19	2,941.1	2,941.1	2,941.1	0.0
L	6,910	87	1,054	18.6	2,963.3	2,963.3	2,963.3	0.0
M	7,468	84	1,059	18.5	2,970.8	2,970.8	2,970.8	0.0
N	8,102	105	1,301	15.0	2,980.9	2,980.9	2,980.9	0.0
O	8,695	101	1,312	11.0	2,987.1	2,987.1	2,987.1	0.0

¹ Stream distance in feet above confluence with North Yuba River near Downieville

² Includes backwater from North Yuba River near Downieville

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY
SIERRA COUNTY, CALIFORNIA
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: DOWNIE RIVER

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	188	109	521	11.6	2,644.1 ²	2,644.1 ²	2,644.3	0.2
B	308	63	545	11.1	2,646.0	2,646.0	2,646.0	0.0
C	420	105	656	9.2	2,648.6	2,648.6	2,648.6	0.0
D	556	70	464	13.0	2,649.8	2,649.8	2,649.8	0.0
E	1,637	70	460	13.1	2,674.6	2,674.6	2,674.6	0.0
F	1,765	57	481	12.5	2,676.5	2,676.5	2,677.2	0.7
G	1,829	76	743	8.1	2,680.5	2,680.5	2,681.2	0.7
H	2,325	58	425	14.2	2,687.1	2,687.1	2,687.9	0.8
I	2,842	48	390	15.5	2,704.2	2,704.2	2,704.7	0.5
J	3,514	41	376	16.1	2,719.3	2,719.3	2,720.2	0.9
K	4,028	50	384	15.7	2,736.5	2,736.5	2,737.1	0.6
L	4,538	37	354	17.1	2,751.6	2,751.6	2,752.3	0.7
M	5,432	40	358	16.8	2,769.9	2,769.9	2,770.3	0.4

¹ Stream distance in feet above confluence with North Yuba River
² Includes backwater from North Yuba River

TABLE 23	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	SIERRA COUNTY, CALIFORNIA	FLOODING SOURCE: GOODYEARS CREEK
	AND INCORPORATED AREAS	

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Z	64,772	126	1,974	20.7	2,848.5	2,848.5	2,848.9	0.4
AA	66,923	242	3,565	11.5	2,870.7	2,870.7	2,871.2	0.5
AB	67,411	156	2,030	20.1	2,875.6	2,875.6	2,875.7	0.1
AC	67,609	121	1,902	21.5	2,878.2	2,878.2	2,878.2	0.0
AD	67,982	214	3,734	10.9	2,885.8	2,885.8	2,886.5	0.7
AE	69,326	146	2,964	13.8	2,895.1	2,895.1	2,895.4	0.3
AF	69,357	139	3,615	11.3	2,899.8	2,899.8	2,900.7	0.9
AG	70,132	100	1,732	17.8	2,901.1	2,901.1	2,902.1	1.0
AH	70,383	100	1,431	21.5	2,903.5	2,903.5	2,903.5	0.0
AI	71,171	157	2,101	14.7	2,918.7	2,918.7	2,918.7	0.0
AJ	71,302	139	1,664	18.5	2,919.0	2,919.0	2,919.0	0.0
AK	71,624	148	1,746	17.6	2,925.5	2,925.5	2,925.5	0.0
AL	71,992	153	2,533	12.2	2,931.9	2,931.9	2,931.9	0.0
AM	73,580	140	1,923	16.0	2,943.5	2,943.5	2,943.5	0.0
AN	73,953	171	1,776	17.4	2,948.2	2,948.2	2,948.2	0.0
AO	75,104	159	2,796	11.0	2,972.4	2,972.4	2,973.0	0.6
AP	75,228	123	2,036	15.1	2,973.6	2,973.6	2,974.4	0.8

¹ Stream distance in feet above Highway 49 Crossing at North Yuba River

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY
SIERRA COUNTY, CALIFORNIA
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: NORTH YUBA RIVER NEAR DOWNIEVILLE

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANGE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
U	45,383	196	2,512	17.7	2,637.4	2,637.4	2,638.4	1.0
V	46,817	411	7,754	5.4	2,649.9	2,649.9	2,650.9	1.0
W	47,847	285	3,413	12.2	2,654.1	2,654.1	2,655.1	1.0
X	47,928	300	4,032	10.4	2,658.5	2,658.5	2,658.6	0.1
Y	48,171	245	3,843	10.9	2,659.1	2,659.1	2,659.6	0.5

¹ Stream distance in feet above Highway 49 Crossing at North Yuba River

TABLE 23

**FEDERAL EMERGENCY MANAGEMENT AGENCY
SIERRA COUNTY, CALIFORNIA
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: NORTH YUBA RIVER NEAR GOODYEARS BAR

Table 24: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 25: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 33, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/flood-maps/tutorials.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/flood-maps/change-your-flood-zone for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Mapping and Insurance eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at www.fema.gov/flood-maps/tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/flood-maps/change-your-flood-zone and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Sierra County FIRM are listed in Table 29. Please note that while this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision, the FIS Report includes all previously issued LOMRs prior to effective date.

Table 26: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
12-09-0242P ¹	02/03/2012	Sierraville Stream	06091C0428D

¹ This LOMR was partially incorporated

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal

period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the Floods & Maps “Change Your Flood Zone Designation” section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Sierra County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 30, “Community Map History.” A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or “pending” (for Preliminary FIS Reports) is shown. If the community is listed in Table 30 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide

studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Sierra County FIRMs in countywide format was 06/08/1998.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Loyalton, City of	06/04/1976	06/04/1976	N/A	09/01/1988	TBD 02/02/2012 06/08/1998
Sierra County, Unincorporated Areas	09/01/1988	N/A	N/A	09/01/1988	TBD 04/19/2019 02/02/2012 06/08/1998

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 31 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Bear Valley Creek	TBD	Compass	HSFE60-15-D-0003	December 2019	Sierra County, Unincorporated Areas
Berry Creek	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
Campbell Springs Drains	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Carman Creek	TBD	California Department of Water Resources	*	October 2021	Sierra County, Unincorporated Areas
Carman Creek	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
Cold Stream	TBD	Compass	HSFE60-15-D-0003	December 2019	Sierra County, Unincorporated Areas
Downie River	04/19/2019	BakerAECOM	HSFEHQ-09-D0368	September 2011	Sierra County, Unincorporated Areas
Fletcher Creek	TBD	Compass	HSFE60-15-D-0003	December 2019	Sierra County, Unincorporated Areas
Hamlin Creek	TBD	Compass	HSFE60-15-D-0003	December 2019	Sierra County, Unincorporated Areas
Lemon Canyon Creek	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
North Yuba River	09/01/1988	USACE	*	January 1975	Sierra County, Unincorporated Areas
Goodyears Creek	04/19/2019	BakerAECOM	HSFEHQ-09-D0368	September 2011	Sierra County, Unincorporated Areas
North Yuba River Near Downieville	04/19/2019	BakerAECOM	HSFEHQ-09-D0368	September 2011	Sierra County, Unincorporated Areas
North Yuba River Near Goodyears Bar	04/19/2019	BakerAECOM	HSFEHQ-09-D0368	September 2011	Sierra County, Unincorporated Areas
Perry Creek	TBD	Compass	HSFE60-15-D-0003	December 2019	Sierra County, Unincorporated Areas
Sierra Valley Channels	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
Smithneck Creek	TBD	STARR II	HSFE60-15-D-0003	September 2024	Loyalton, City of; Sierra County, Unincorporated Areas

Table 28: Summary of Contracted Studies Included in this FIS Report (continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
The Mounds Connector	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
Turner Canyon Creek	TBD	STARR II	HSFE60-15-D-0003	September 2024	Sierra County, Unincorporated Areas
All Lacustrine Zone A Flooding Sources	02/02/2012	MAP IX-Mainland	EMF-2003-CO-0047	June 2009	Sierra County, Unincorporated Areas
All Riverine Zone A Flooding Sources	02/02/2012	MAP IX-Mainland	EMF-2003-CO-0047	June 2009	Sierra County, Unincorporated Areas

*Data unavailable

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 32. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Loyalton, City of	TBD	TBD	CCO Meeting	TBD
		02/22/2022	CCO Meeting	FEMA, State of California, STARR II, Sierra County and the City of Loyalton
		02/03/2021	Flood Risk Review Meeting	FEMA Region 9, California Department of Water Resources, Compass, and community officials
Sierra County, Unincorporated Areas	TBD	TBD	CCO Meeting	TBD
		02/22/2022	CCO Meeting	FEMA, State of California, STARR II, Sierra County and the City of Loyalton
		02/03/2021	Flood Risk Review Meeting	FEMA Region 9, California Department of Water Resources, Compass, and community officials

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Sierra County, California and Incorporated Areas, (FEMA 2019). In addition, the California Department of Water Resources completed Awareness Floodplain Mapping studies for all California counties. The intent of the project was to identify flood hazard areas for all regions for mapped under FEMA's NFIP. The awareness maps identify the 1-percent-annual-chance flood hazard areas using approximate assessment procedures. These floodplains are shown as flood prone areas without specific depths and other flood hazard data (CADWR 2008).

Table 33 is a list of the locations where FIRMs for Sierra County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 30: Map Repositories

Community	Address	City	State	Zip Code
Loyalton, City of	City Hall 605 School Street	Loyalton	CA	96118
Sierra County, Unincorporated Areas	Sierra County Planning and Building 101 Courthouse Square	Downieville	CA	95936

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 34.

Table 34 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/flood-maps/products-tools/know-your-risk/engineers-surveyors-architects
NFIP website	www.fema.gov/flood-insurance
NFHL Dataset	msc.fema.gov
FEMA Region 9	Federal Regional Center 1111 Broadway, Suite 1200 Oakland, CA 94607-4052 (510) 627-7181
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	California Department of Water Resources 3464 El Camino Avenue, Room 200 Sacramento, CA 95821
State GIS Coordinator	Agency Information Officer California Resources Agency 1416 Ninth Street, Room 1311 Sacramento, CA 95814

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 35 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Baker 2013	BakerAECOM	<i>Floodplain information, North Yuba and Downie Rivers, Sierra County, California</i>	BakerAECOM	Sierra, CA	2013	
BakerAECOM 2011	BakerAECOM	<i>Downie River and Yuba River in Sierra County FEMA 100-Year Floodplain Evaluation and Delineation Technical Support Data Notebook</i>	Wood Rogers, Inc.	Sierra, CA	September 2011	
CADWR 2008	California Department of Water Resources	<i>Awareness Floodplain Mapping</i>	CDWR	Sacramento, CA	2008	
CADWR 2019	California Department of Water Resources	<i>General Structures</i>	CADWR, Wood Rodgers	Sacramento, CA	2010	
CalGEM 2019	California Department of Conservation, Geologic Energy Management Division	<i>Public Land Survey System Sections</i>	CalGEM	Sacramento, CA	May 2019	https://gis.data.ca.gov/datasets/2b43d73d12664b73943478741dc5dbf41
CALTRANS 1966	California Department of Transportation	<i>Contour Line Maps</i>	Caltrans	Sacramento, CA	1965/1966	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Compass 2019	Compass PTS JV	<i>Sierra Valley Flood Hazard Re-Study Hydraulic Modeling Report Sierra and Plumas Counties, CA</i>	Compass/ AECOM	Oakland, CA	December 2019	https://hazards.fema.gov/
Compass 2019a	Compass PTS JV	<i>Sierra Valley Flood Hazard Re-Study Hydrologic Modeling Report Sierra and Plumas Counties, CA</i>	Compass	Arlington, VA	November 2019	https://hazards.fema.gov/
Compass 2020	Compass PTS JV	<i>Sierra Valley Flood Hazard Re-Study Floodplain Mapping</i>	Compass	Oakland, CA	December 2020	https://hazards.fema.gov/
CSIL 1997	California Spatial Information Library	Public Land Survey System (PLSS)	California Spatial Information Library	Sioux Falls, SD	October 1997	https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products
FEMA 1988	Federal Emergency Management Agency	<i>Flood Insurance Rate Map, Sierra County, California and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	September 1988	https://msc.fema.gov/
FEMA 1997a	Federal Emergency Management Agency	Flood Insurance Rate Map, Sierra, County of	Federal Emergency Management Agency	Washington, D.C.	June 1997	https://msc.fema.gov/
FEMA 1997b	Federal Emergency Management Agency	<i>Flood Insurance Study, Sierra, County of</i>	Federal Emergency Management Agency	Washington, D.C.	June 1997	https://msc.fema.gov/
FEMA 1998a	Federal Emergency Management Agency	<i>Flood Insurance Study, Sierra County, California and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	June 1998	https://msc.fema.gov/

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	<i>Publication Title, "Article," Volume, Number, etc.</i>	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 1999	Federal Emergency Management Agency	Letter of Map Revision 99-09-835P	Federal Emergency Management Agency	Washington, D.C.	November 1999	https://msc.fema.gov/
FEMA 2012	Federal Emergency Management Agency	<i>Flood Insurance Study, Sierra County, California and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	February 2012	https://msc.fema.gov/
FEMA 2012a	Federal Emergency Management Agency	<i>Letter of Map Revision 12-09-0242P</i>	Federal Emergency Management Agency	Washington, D.C.	February 2012	https://msc.fema.gov/
FEMA 2013	Federal Emergency Management Agency	<i>Letter of Map Revision 13-09-0454P</i>	Federal Emergency Management Agency	Washington, D.C.	August 2013	https://msc.fema.gov/
FEMA 2019	Federal Emergency Management Agency	<i>Flood Insurance Study and Flood Insurance Rate Map, Sierra County, California and Incorporated Areas</i>	Federal Emergency Management Agency	Washington, D.C.	April 2019	https://msc.fema.gov/
FEMA 2019a	Federal Emergency Management Agency	<i>Political boundaries</i>	Federal Emergency Management Agency	Washington, D.C.	January 2019	https://msc.fema.gov/
FEMA 2019b	Federal Emergency Management Agency	<i>Sierra County Effective Data</i>	Federal Emergency Management Agency	Washington, D.C.	April 2019	https://msc.fema.gov/
FEMA 2019c	Federal Emergency Management Agency	<i>Sierra County Effective Data</i>	Federal Emergency Management Agency	Washington, D.C.	April 2019	https://msc.fema.gov/

Table 32: Bibliography and References (continued)

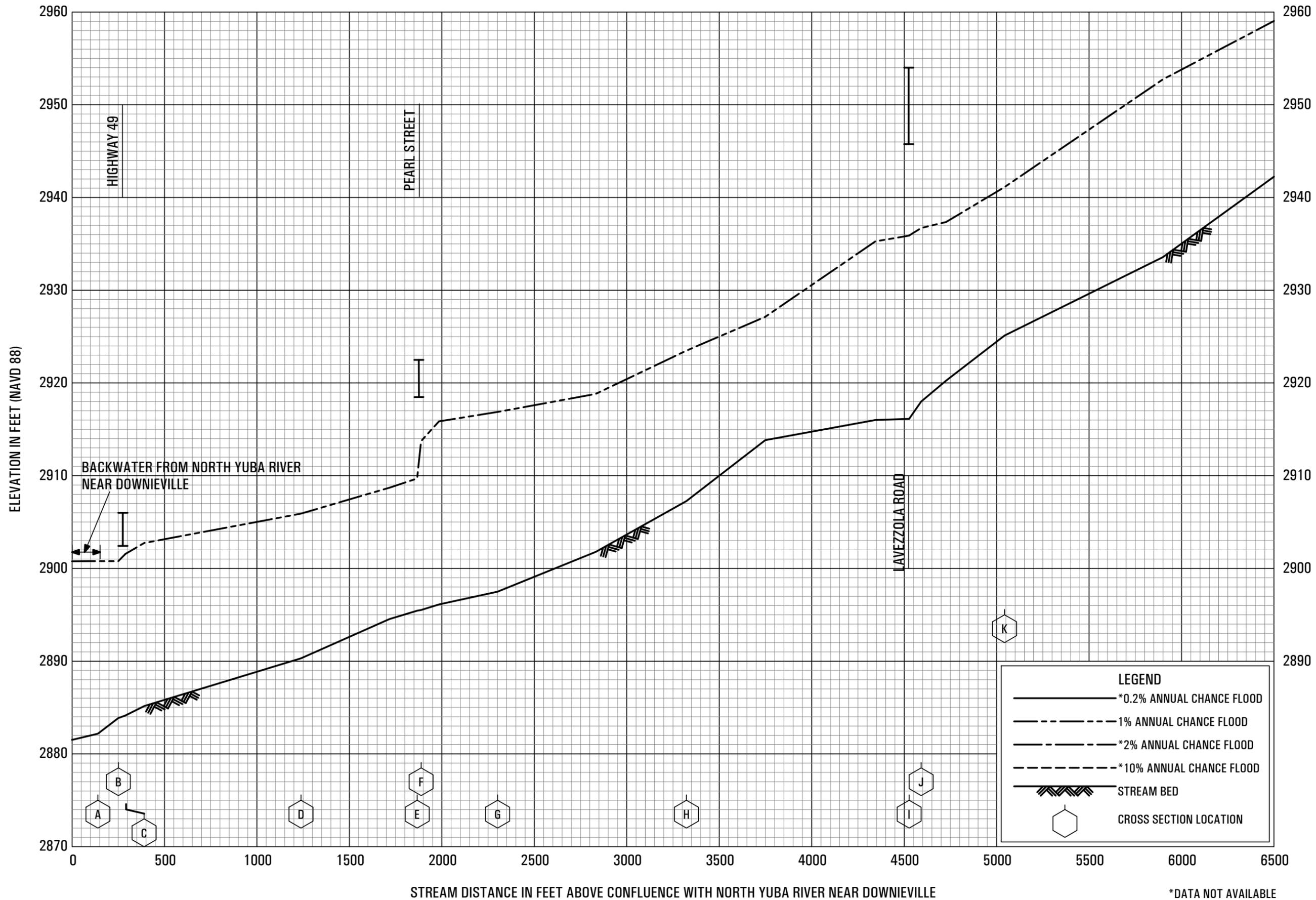
Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2019d	Federal Emergency Management Agency	<i>Sierra County Effective Data</i>	Federal Emergency Management Agency	Washington, D.C.	April 2019	https://msc.fema.gov/
NAUS 2000	National Atlas of the United States	Federal Lands of the United States	National Atlas of the United States	Reston ,VA	October 2000	
NAUS 2004	National Atlas of the United States	County boundary for the County of Sierra	National Atlas of the United States	Reston VA	April 2002	
NGS 2002	National Geodetic Survey	<i>Permanent Bench Mark Data Sheets</i>	National Geodetic Survey	Silver Spring, MD	2002	
SCDWR 2021	State of California Department of Water Resources	<i>Sierra Valley FEMA 100-Year Floodplain Evaluation and Delineation</i>	State of California Department of Water Resources	Sacramento, CA	October 2021	
STARR II 2024	Federal Emergency Management Agency	<i>Detailed Study Data Capture Submission for Sierra Valley, Sierra County, Plumas County, CA, USA</i>	STARR II	Calverton, MD	September 2024	
USACE 1975	U.S. Department of the Army, Corps of Engineers, Sacramento District	<i>Flood Plain Information, North Yuba and Downie Rivers, Downieville, California</i>	U.S. Army Corps of Engineers	Sacramento, CA	January 1975	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE 1981	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-1 Flood Hydrograph Package, Generalized Computer Program</i>	U.S. Army Corps of Engineers	Davis, CA	September 1981	
USACE 1991	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water-Surface Profiles, Generalized Computer Program, Version 4.6.2</i>	U.S. Army Corps of Engineers	Davis, CA	May 1991	
USACE 2018	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>Hydrologic Modeling System (HEC-HMS version 4.3)</i>	U.S. Army Corps of Engineers	Davis, CA	November 2018	
USACE 2019	U.S. Army Corps of Engineers, Hydrologic Engineering Center	<i>HEC-RAS River Analysis System v5.0.7</i>	U.S. Army Corps of Engineers	Davis, CA	March 2019	
USCB 2019	U.S. Census Bureau	<i>Transportation Features</i>	U.S. Census Bureau	Washington, D.C.	January 2019	
USDA 2005	USDA Farm Service Agency	<i>Digital Orthophoto</i>	USDA FSA Aerial Photography Field Office	Davis, CA	September 2005	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USDA 2018	USDA Farm Service Agency	<i>Digital Orthophotos 2-foot GSD</i>	USDA National Imagery Program (NAIP)	Fort Worth, TX	January 2018	https://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/
USDC 2006	U.S. Census Bureau, Geography Division	<i>TIGER/Line Files, 2006 Second Edition</i>	U.S. Census Bureau, Geography Division	Washington, D.C.	January 2006	
USGS1989a	U.S. Geological Survey	<i>USGS 7.5-Minute Series Topographic Maps</i>	U.S. Geological Survey	Reston, VA	January 1989	
USGS1989b	U.S. Geological Survey	<i>USGS Digital Orthophoto Quadrangle</i>	U.S. Geological Survey	Sioux Falls, SD	August 1989	
USGS 2019	U.S. Geological Survey	<i>2018-2019 USGS Lidar: Northern California Wildfire - QL1</i>	U.S. Geological Survey	Reston, VA	October 2019	
USGS 2020a	U.S. Geological Survey	<i>National Hydrography Dataset (NHD)</i>	U.S. Geological Survey	Reston, VA	October 2020	
USGS 2020b	U.S. Geological Survey	<i>HUC-8 Subbasins</i>	U.S. Geological Survey	Denver, CO	December 2020	https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products
WOOD 2011	Wood Rogers, Inc.	<i>Light Detection and Ranging data (LiDAR)</i>	Wood Rogers, Inc.	Sacramento, CA	January 2011	



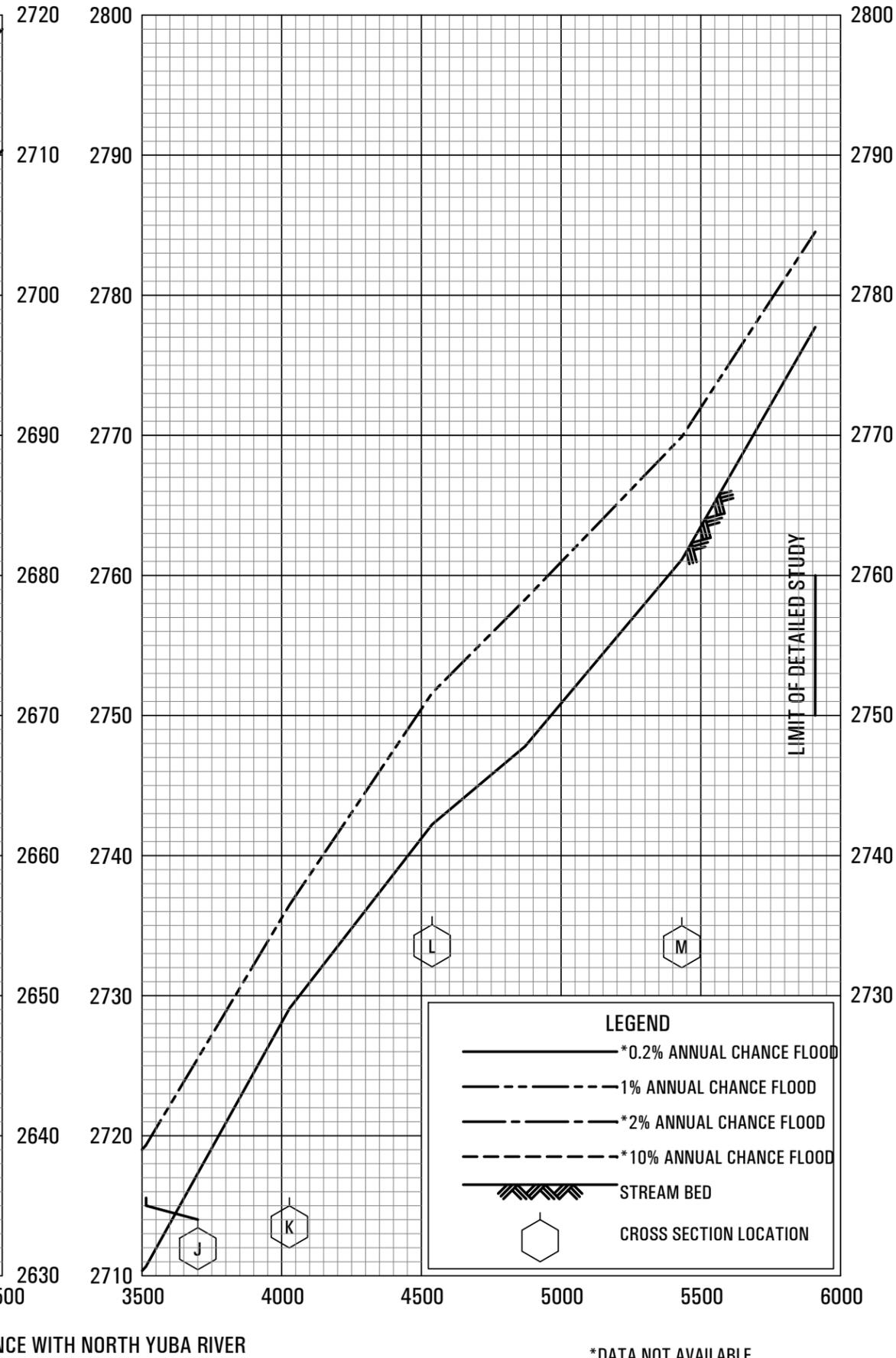
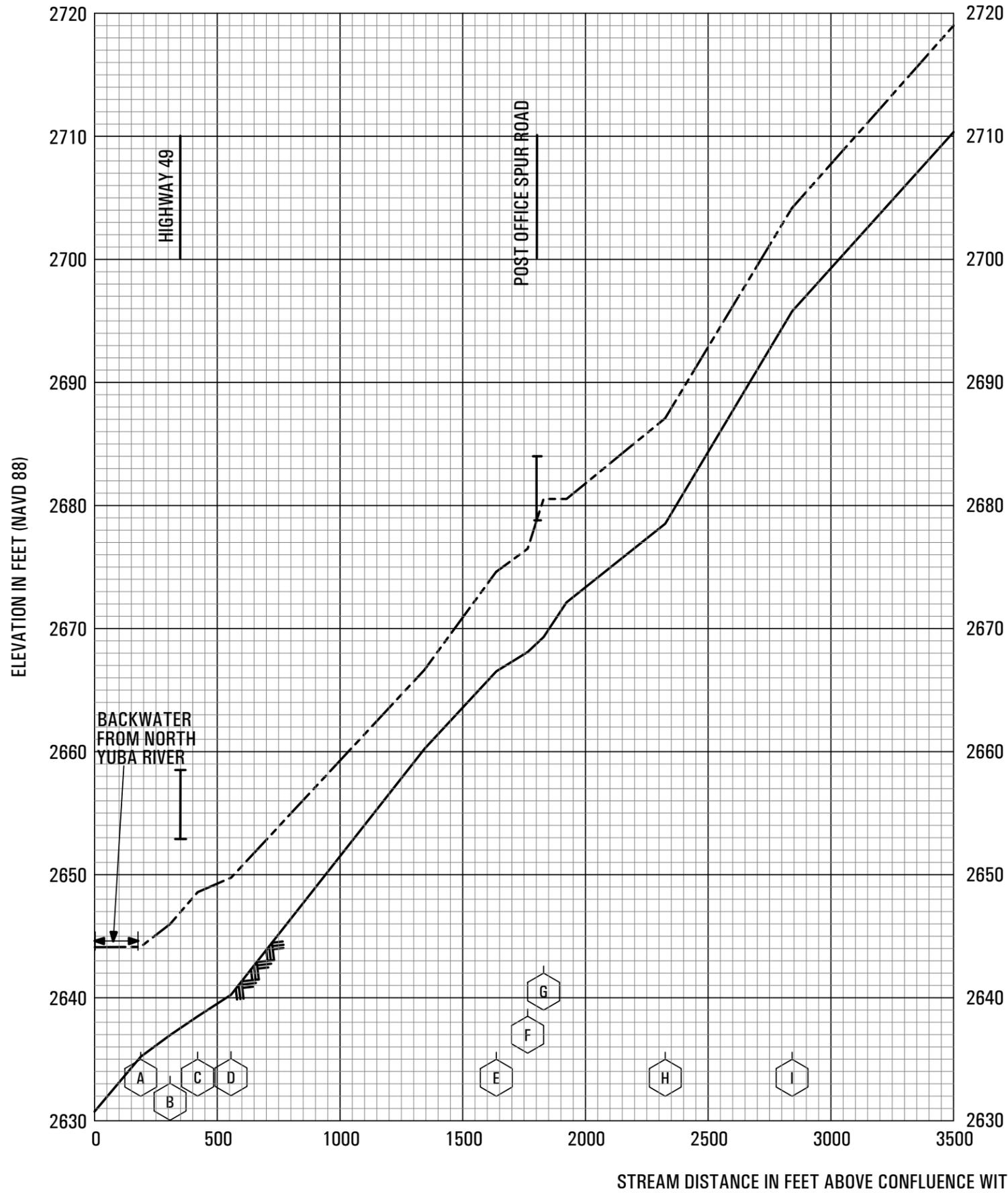
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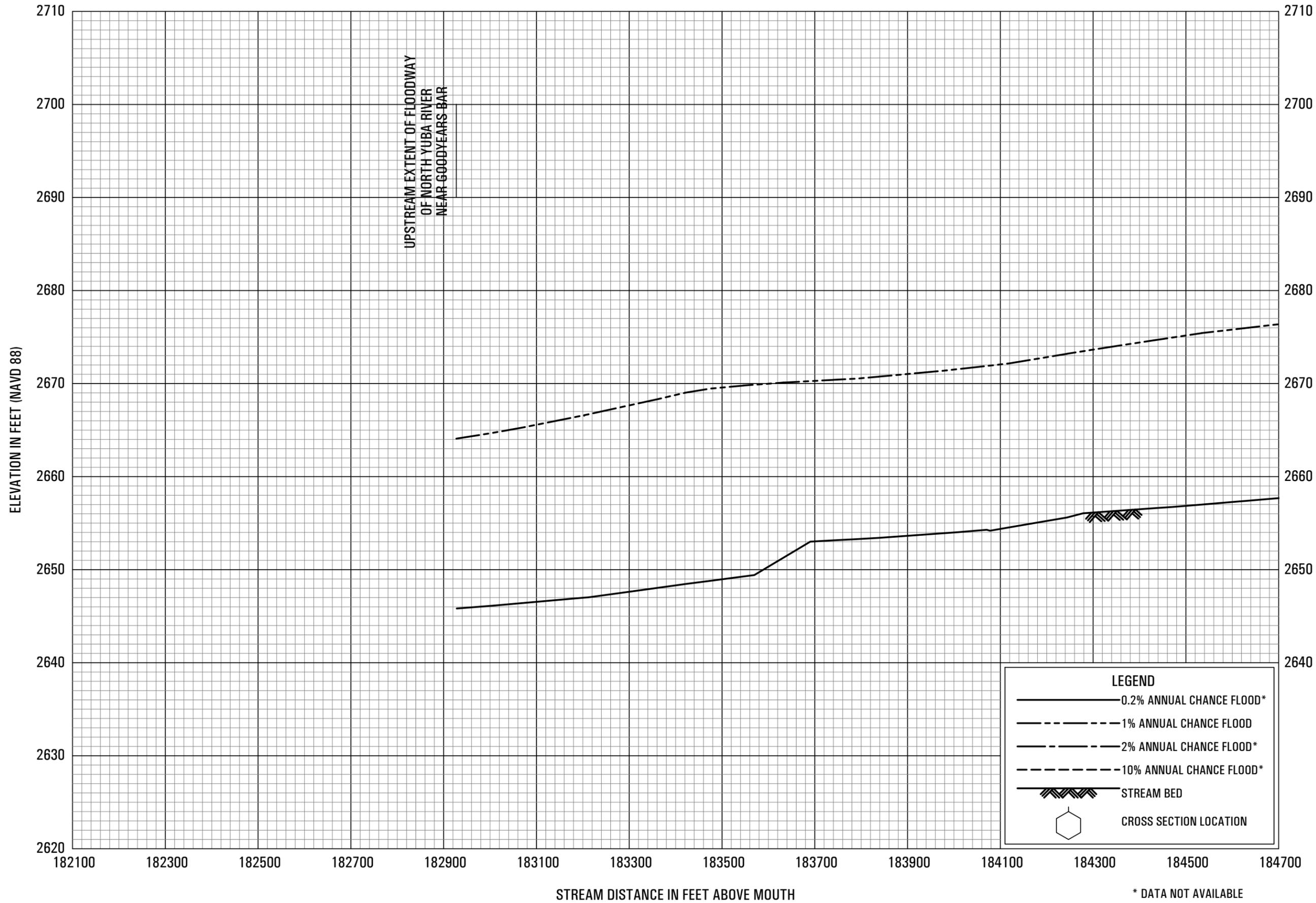
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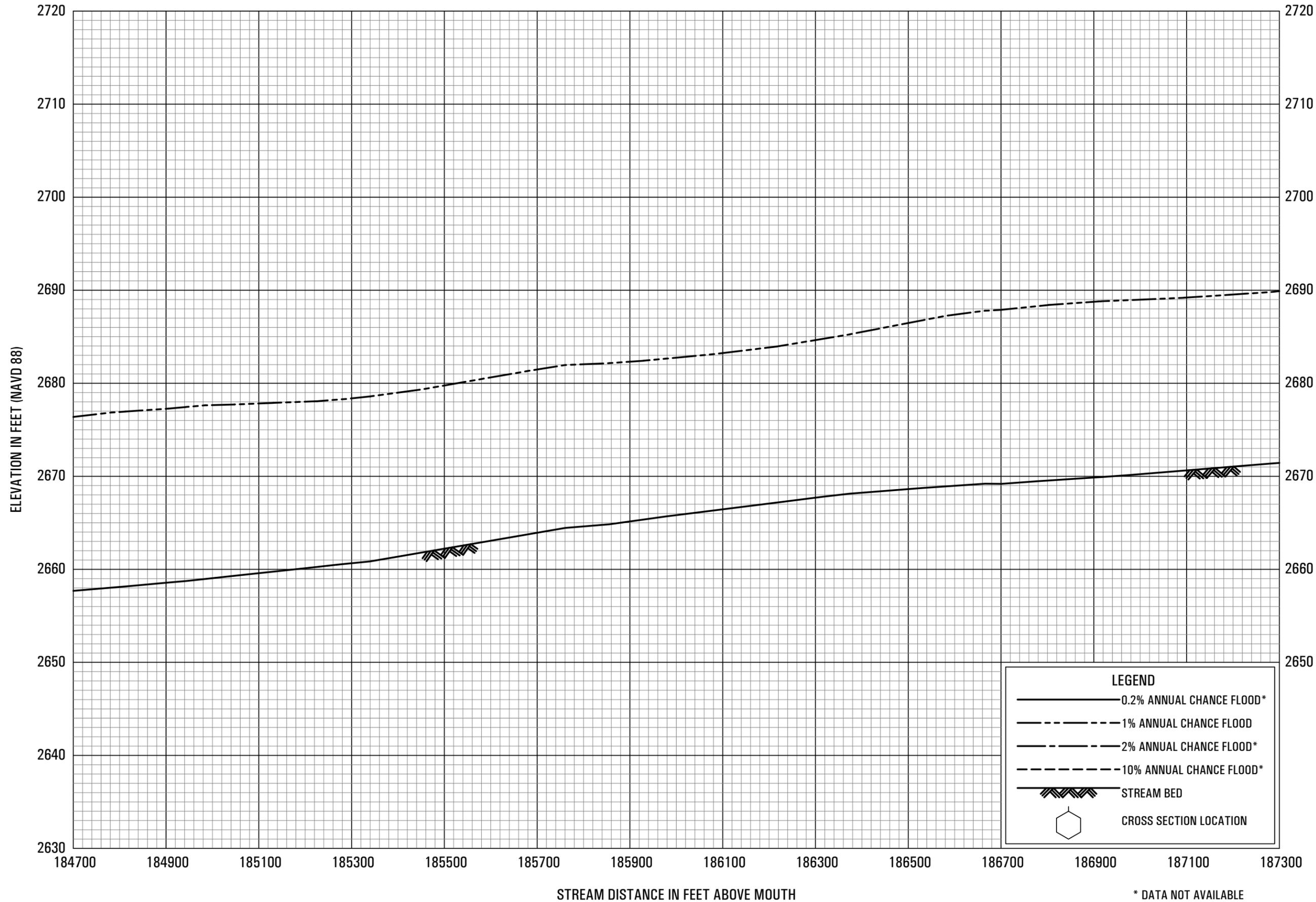
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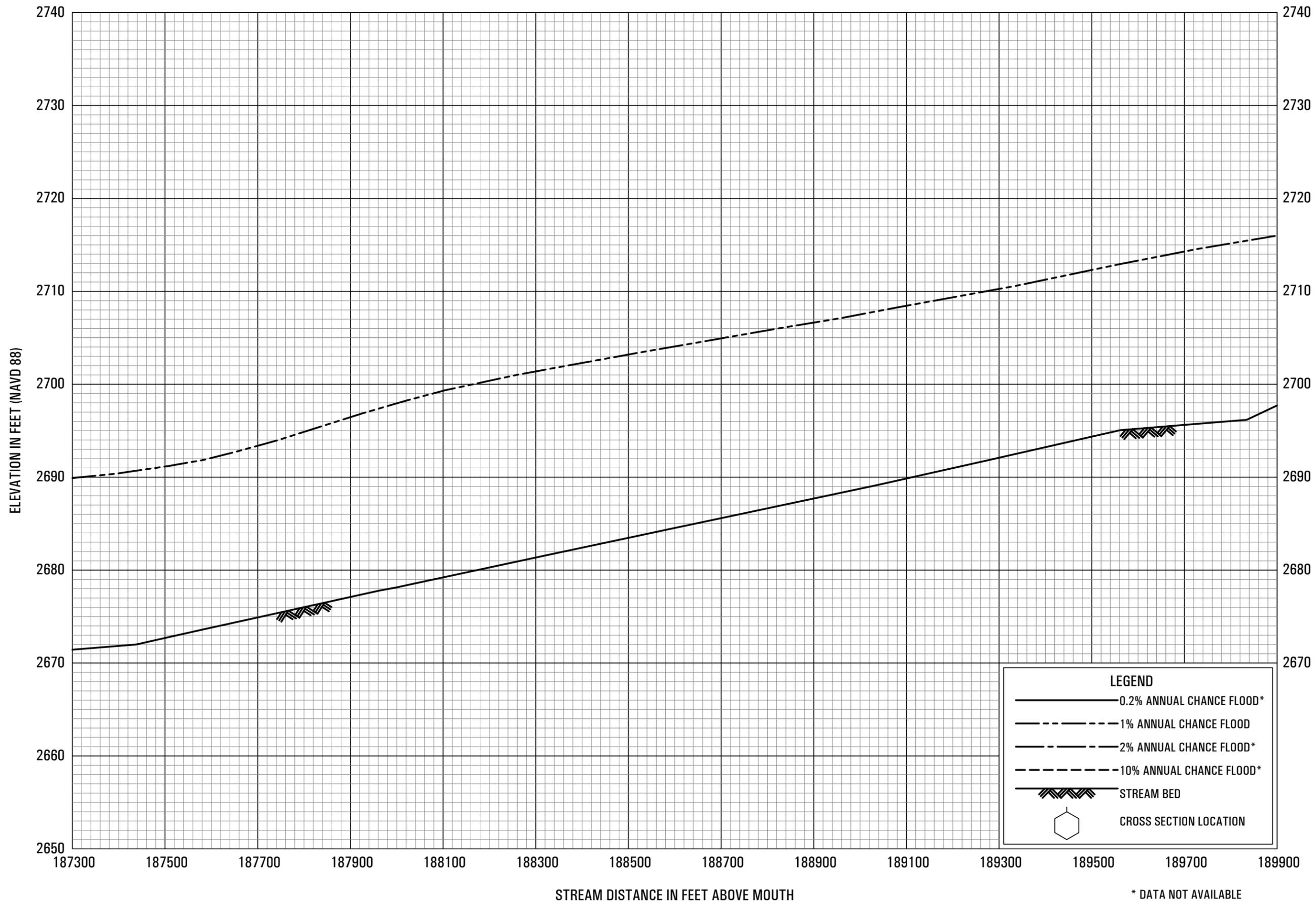
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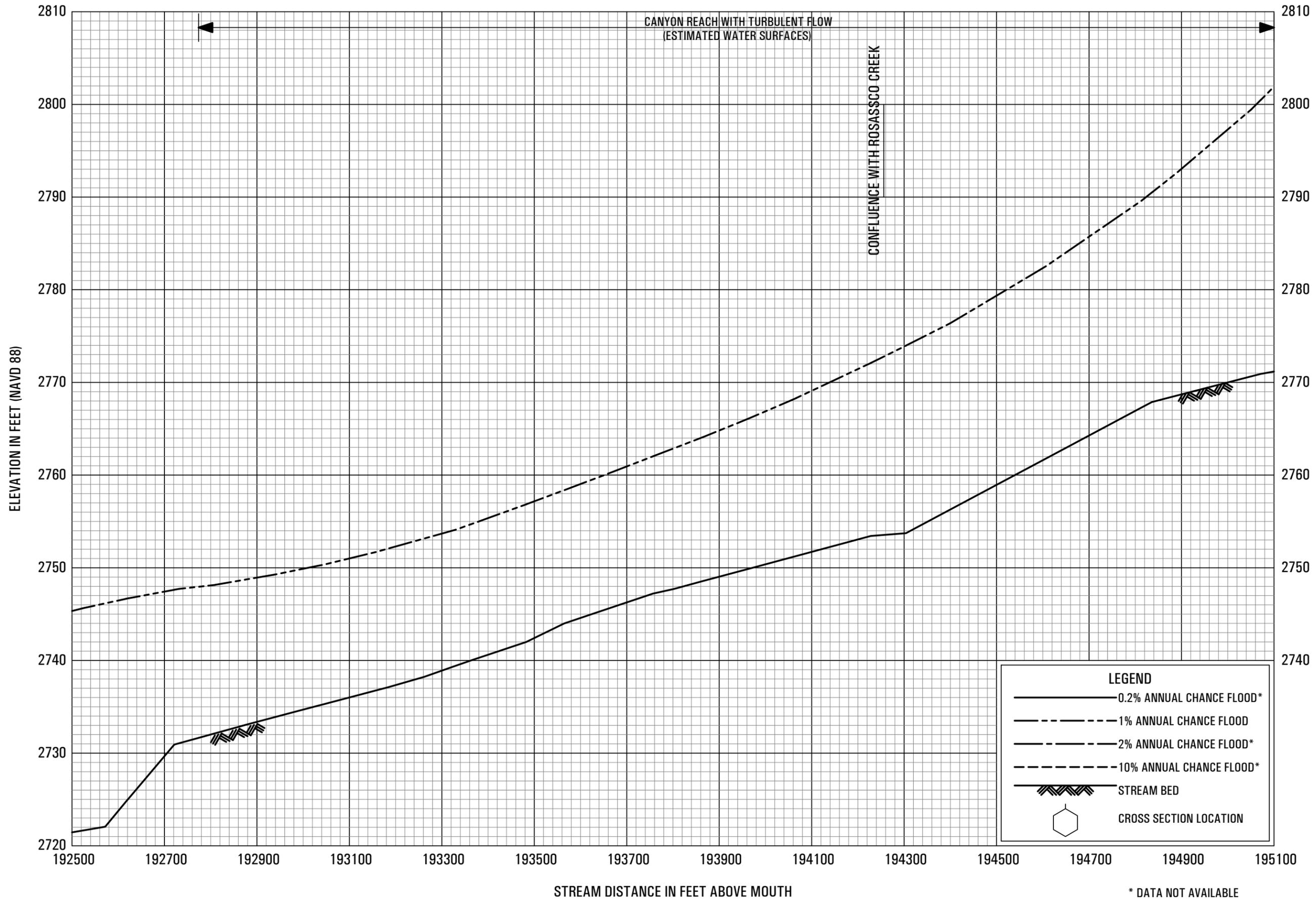
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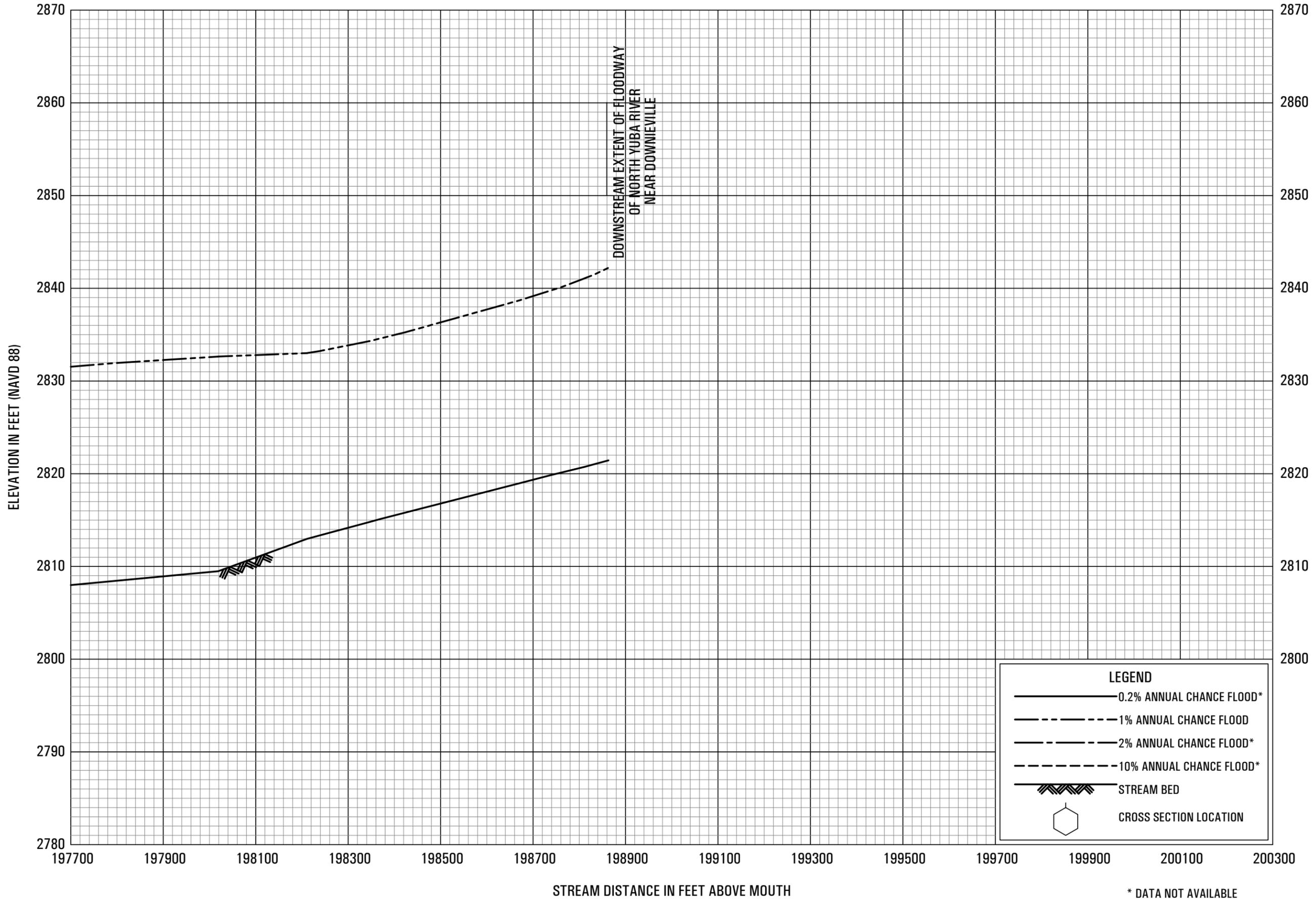


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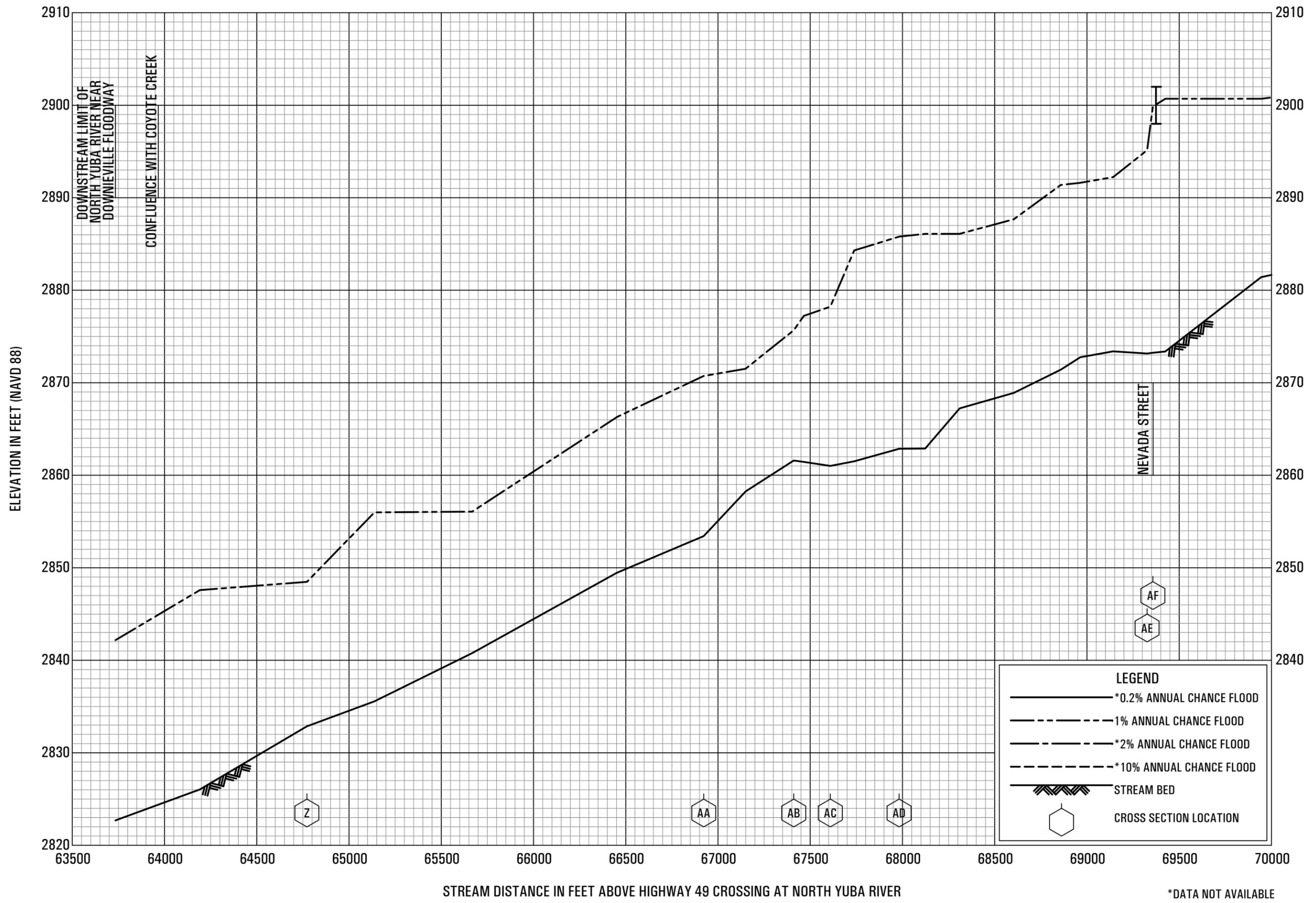
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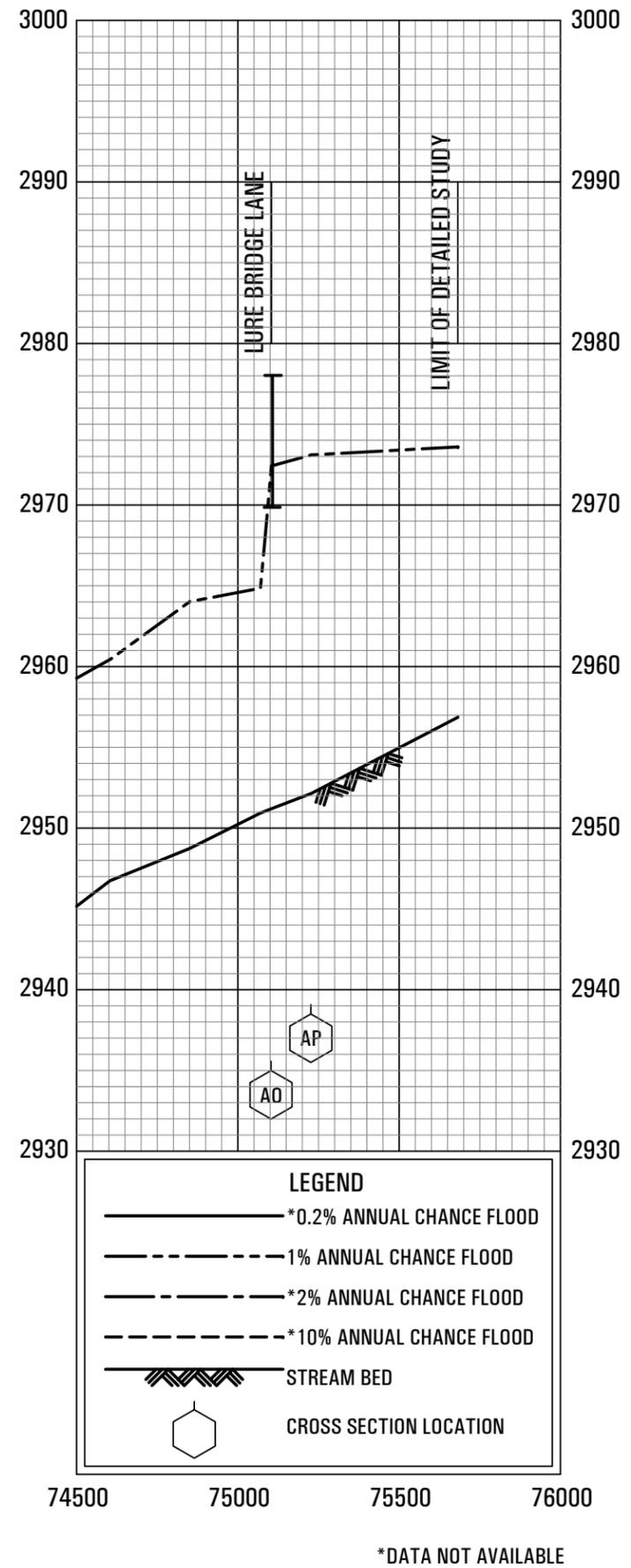
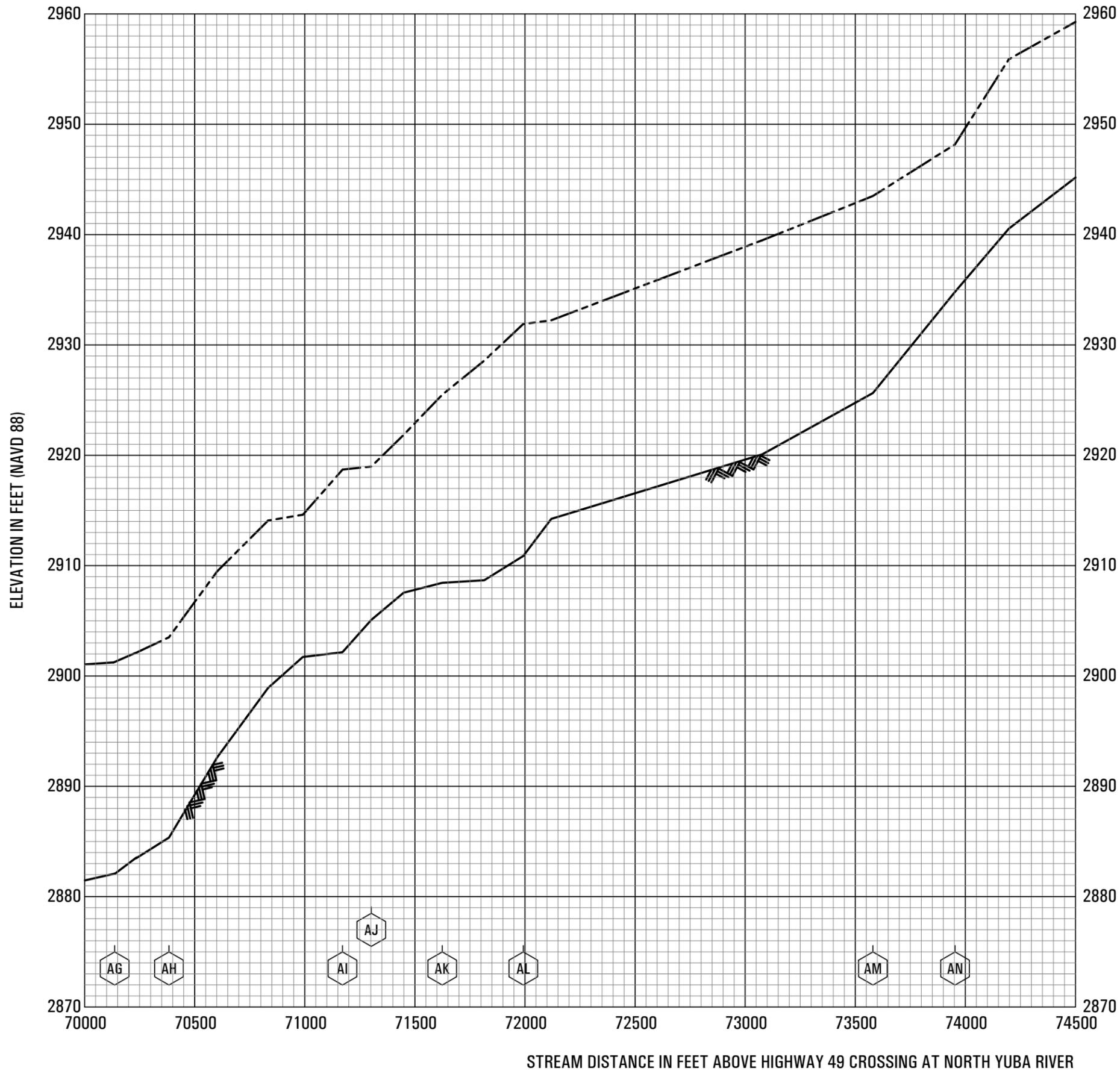
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FLOOD PROFILES

NORTH YUBA RIVER NEAR DOWNIEVILLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SIERRA COUNTY, CA
AND INCORPORATED AREAS**

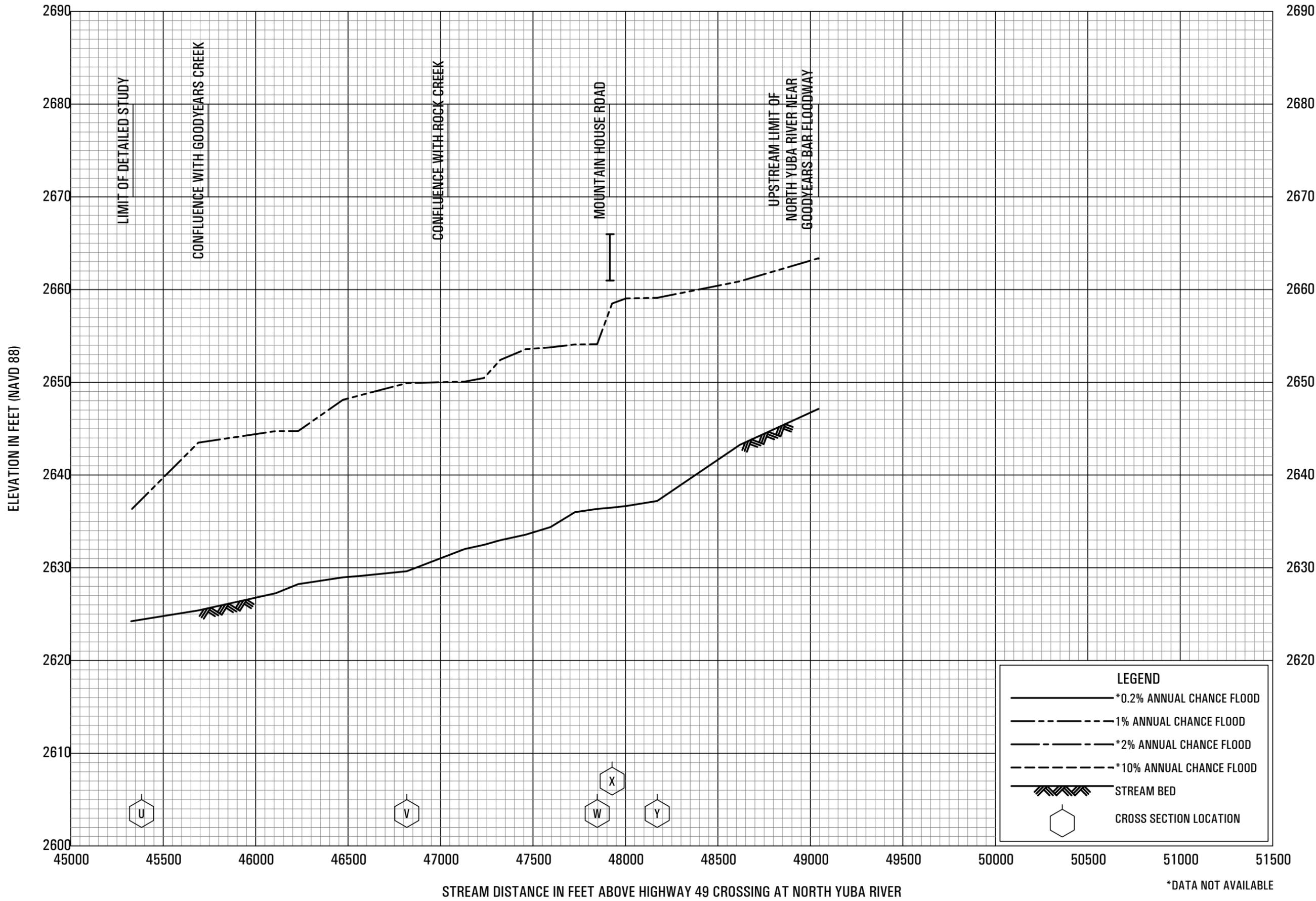


FLOOD PROFILES

NORTH YUBA RIVER NEAR DOWNIEVILLE

FEDERAL EMERGENCY MANAGEMENT AGENCY

**SIERRA COUNTY, CA
AND INCORPORATED AREAS**



FLOOD PROFILES

NORTH YUBA RIVER NEAR GOODYEARS BAR

**FEDERAL EMERGENCY MANAGEMENT AGENCY
SIERRA COUNTY, CA
AND INCORPORATED AREAS**