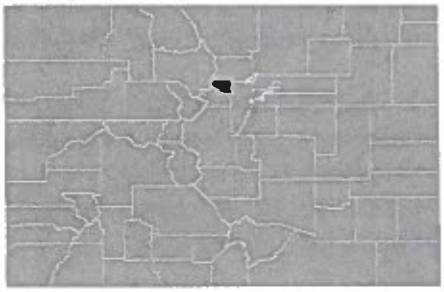
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



GILPIN COUNTY, COLORADO

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BLACK HAWK, CITY OF	080076
CENTRAL CITY, CITY OF	080077
GILPIN COUNTY, UNINCORPORATED AREAS	080075

FEMA

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TABLE OF CONTENTS

Volume 1

Figures

Page

Tables

Page

Volume 1

Exhibits

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
GILPIN COUNTY, COLORADO

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 that will be used to establish actuarial flood insurance rates and 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 Gilpin County, Colorado.

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
Black Hawk, City of	080076	10190004	08047C0109D, 08047C0117D, 08047C0128D, 08047C0136D	
Central City, City of	080077	10190004	08047C0108D, 08047C0109D, 08047C0116D, 08047C0117D, 08047C0136D, 08047C0140D	
Gilpin County, Unincorporated Areas	080075	10190004 10190005	08047C0025D, 08047C0050D, 08047C0075D, 08047C0100D, 08047C0108D, 08047C0109D, 08047C0110D, 08047C0116D, 08047C0117D, 08047C0125D, 08047C0128D, 08047C0130D, 08047C0136D, 08047C0140D, 08047C0150D, 08047C0175D	

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 30, "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 Gilpin County became effective on April 6, 2022. Refer to Table 27 for information about subsequent revisions to the FIRMs.

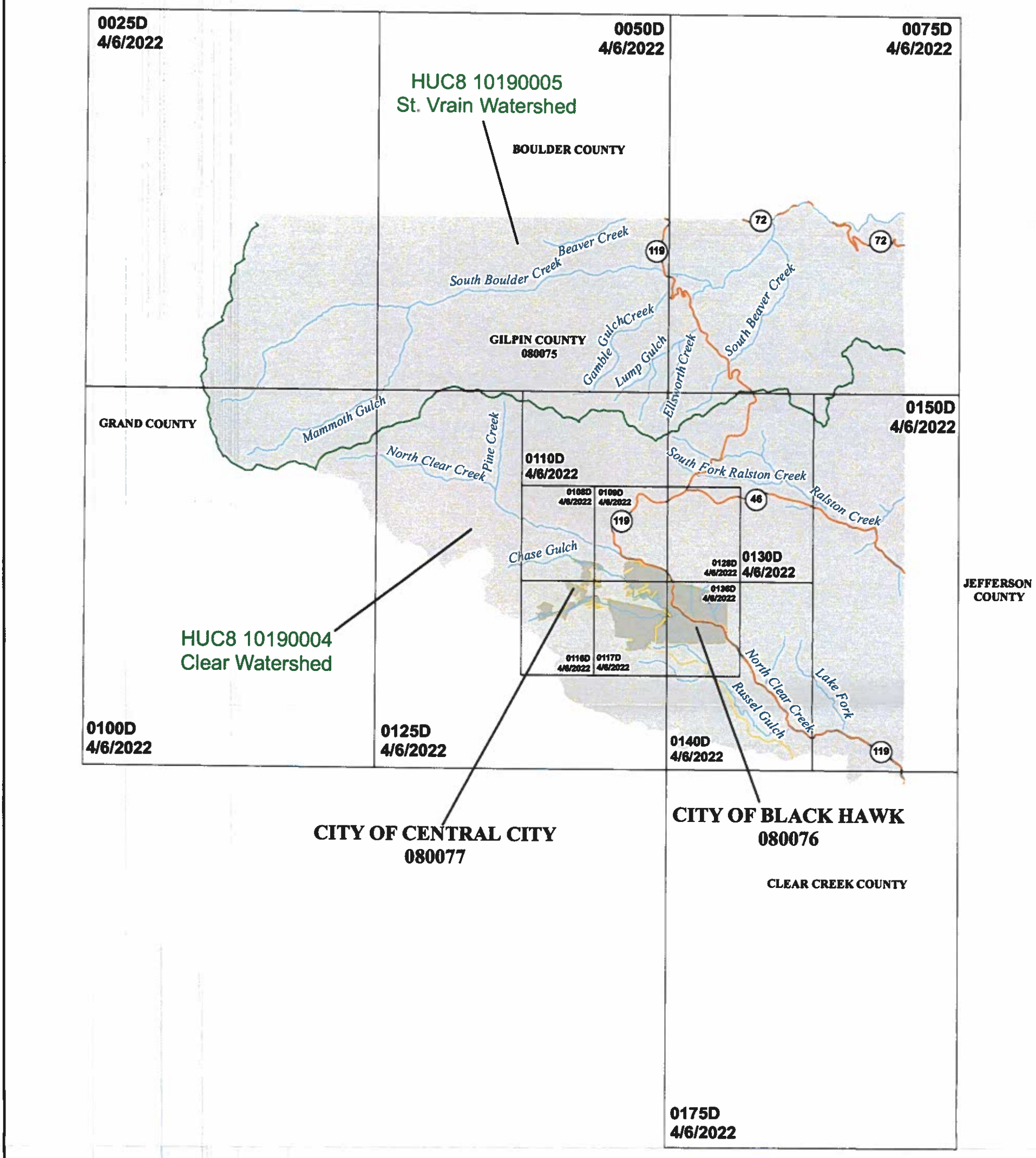
- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map (FBFM) panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- 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/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Gilpin 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



1 inch = 12,500 feet 1:150,000

0 3,500 7,000 14,000 21,000 28,000 feet

Map Projection:
Universal Transverse Mercator Zone 13 North;
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

GILPIN COUNTY, COLORADO and Incorporated Areas

PANELS PRINTED:

0025, 0050, 0075, 0100, 0108, 0109, 0110, 0116, 0117, 0125, 0128, 0130, 0136, 0140, 0150, 0175

FEMA

MAP NUMBER
08047CIND0A

EFFECTIVE DATE
APRIL 6, 2022

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

NOTES TO USERS

For information and questions about this map, 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 Map Information 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 Map Information eXchange.

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.

For community and countywide map dates, refer to Table 27 in this FIS Report.

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.

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.

BASE FLOOD ELEVATIONS: 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.

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 be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection 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 UTM Zone 13N. The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. 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.

Figure 2. FIRM Notes to Users

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 30 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on this FIRM was derived from U.S. Census Bureau TIGER files, dated 2010. For information about base maps, refer to Section 6.2 "Base Map" in this FIS Report.

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 Gilpin County, CO, 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.

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Gilpin County, CO, effective April 6, 2022.

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 Gilpin 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

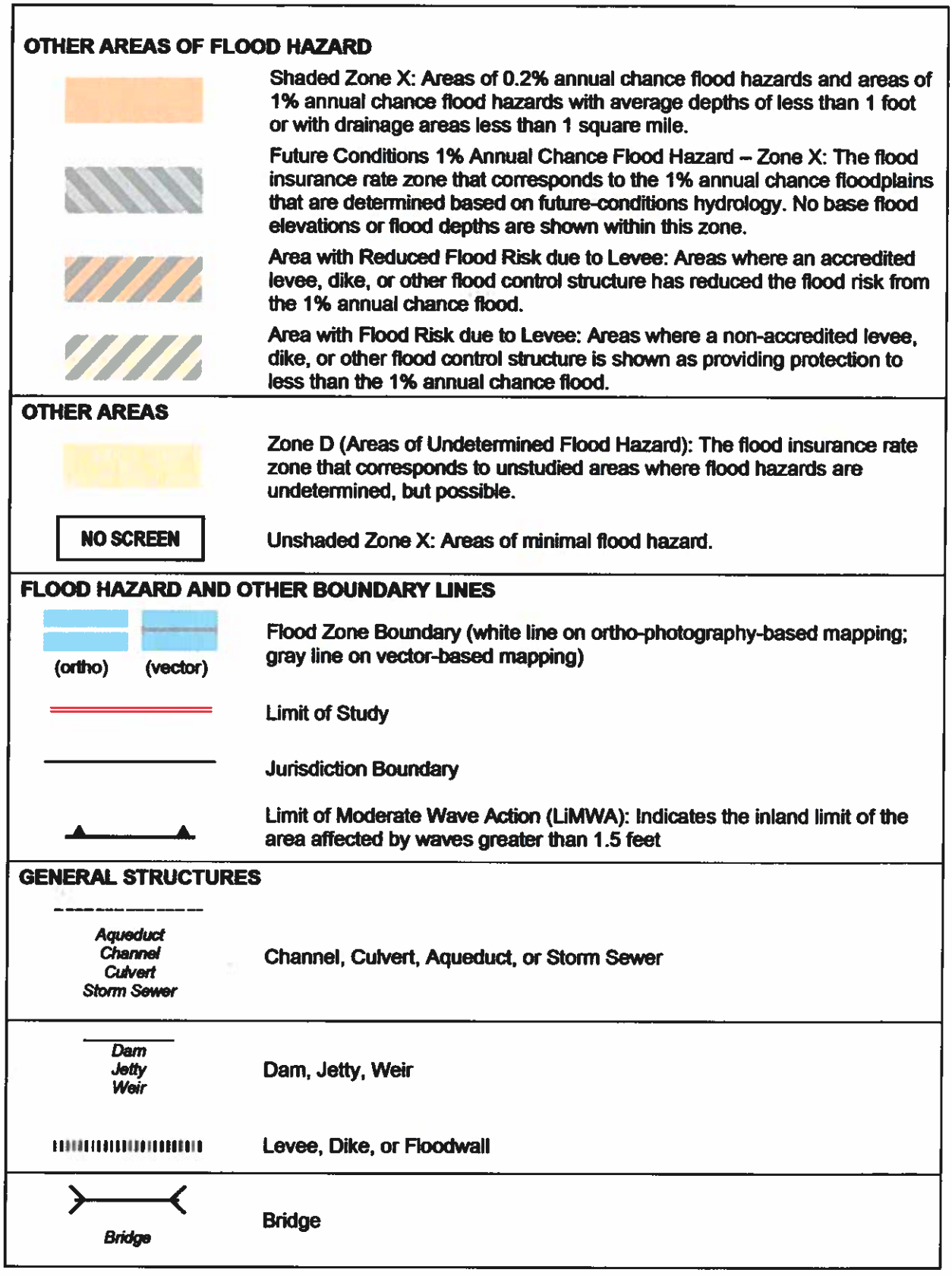


Figure 3: Map Legend for FIRM

REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	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.
513	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	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad

Figure 3: Map Legend for FIRM

————	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
$^{42}76^{000m}$E	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 Gilpin 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 Gilpin 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
Beaver Creek	Gilpin County, Unincorporated Areas	Confluence with South Boulder Creek	1.2 miles above Forest Service Camp Road	10190005	3.2		N	A	1/8/2019
Chase Gulch	Black Hawk, City of	130 feet downstream of Chase Street	0.25 miles from confluence with North Clear Creek	10190004	0.3		N	AE	6/24/2005
Chase Gulch	Black Hawk, City of; Central City, City of; Gilpin County, Unincorporated Areas;	0.25 miles from confluence with North Clear Creek	0.4 miles above Columbine Campground Road	10190004	4.3		N	A	1/8/2019
Colorado Creek	Gilpin County, Unincorporated Areas	Confluence with Lump Gulch	1.5 miles above Lump Gulch	10190005	1.5		N	A	1/8/2019
Ellsworth Creek	Gilpin County, Unincorporated Areas	Confluence with South Boulder Creek	3.6 miles above South Boulder Creek	10190005	3.6		N	A	1/8/2019
Eureka Gulch	Central City, City of; Gilpin County, Unincorporated Areas	Confluence with Gregory Gulch	250 feet upstream of Mack Road	10190004	1.2		N	AE	1/8/2019
Eureka Gulch	Central City, City of; Gilpin County, Unincorporated Areas	250 feet upstream of Mack Road	200 feet upstream of Bald Mountain Ln	10190004	1.8		N	A	1/8/2019
Fourmile Creek	Black Hawk, City of; Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	1.4 miles above Central City municipal boundary	10190004	0.9		N	A	1/8/2019
Gamble Gulch Creek	Gilpin County, Unincorporated Areas	Confluence with South Boulder Creek	300 feet above Dory Hill Road	10190005	4.3		N	A	1/8/2019
Gregory Gulch	Black Hawk, City of; Central City, City of	Confluence with North Clear Creek	Confluence of Eureka Gulch	10190004	1.1		N	AE, AO	1/8/2019

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
Illinois Gulch	Gilpin County, Unincorporated Areas	Confluence with Russel Gulch	1.8 miles above Russel Gulch	10190004	1.8		N	A	1/8/2019
Lake Fork	Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	1.9 miles above State Highway 119	10190004	2.8		N	A	1/8/2019
Lump Gulch	Gilpin County, Unincorporated Areas	Confluence with Ellsworth Creek	1.2 miles above Mountain View Road	10190005	2.4		N	A	1/8/2019
Mammoth Gulch	Gilpin County, Unincorporated Areas	Confluence with South Boulder Creek	5.9 miles above Union Pacific Railroad	10190005	6.1		N	A	1/8/2019
Nevada Gulch	Black Hawk, City of; Central City, City of	Confluence with Gregory Gulch	0.3 miles above Gregory Gulch	10190004	0.3		N	A	1/8/2019
North Clear Creek	Black Hawk, City of; Gilpin County, Unincorporated Areas	180 feet above confluence with Clear Creek	85 feet upstream of confluence of Silver Gulch	10190004	6.6		N	A	1/8/2019
North Clear Creek	Black Hawk, City of	85 feet upsteam of confluence of Silver Gulch	0.7 miles above confluence of Chase Gulch	10190004	1.8		N	AE	9/30/2005
North Clear Creek	Black Hawk, City of; Gilpin County, Unincorporated Areas	0.7 miles above confluence of Chase Gulch	2.0 miles above confluence of Mosquito Creek	10190004	9.2		N	A	1/8/2019
Pine Creek	Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	0.5 miles above Elk Park Road	10190004	2.2		N	A	1/8/2019
Ralston Creek	Gilpin County, Unincorporated Areas	50 feet above Ralston Creek Road	1.1 miles above State Highway 119	10190004	6.9		N	A	1/8/2019
Russel Gulch	Central City, City of; Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	1.8 miles above Central City Parkway	10190004	4.9		N	A	1/8/2019

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
Silver Gulch	Black Hawk, City of; Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	0.2 miles above Black Hawk municipal boundary	10190004	1.1		N	A	1/8/2019
Smith Hill Gulch	Gilpin County, Unincorporated Areas	Confluence with North Clear Creek	1.3 miles above confluence with North Clear Creek	10190004	1.3		N	A	1/8/2019
South Beaver Creek	Gilpin County, Unincorporated Areas	Confluence with South Boulder Creek	1.5 miles above Gold Road	10190005	5.4		N	A	1/8/2019
South Boulder Creek	Gilpin County, Unincorporated Areas	150 feet downstream of Gilpin County boundary	400 feet above Rogers Peak Lake	10190005	19.6		N	A	1/8/2019
South Fork Ralston Creek	Gilpin County, Unincorporated Areas	Confluence with Ralston Creek	0.7 miles above State Highway 119	10190004	2.9		N	A	1/8/2019
Unnamed Tributary to Chase Gulch	Black Hawk, City of	Confluence with Chase Gulch	0.17 miles above Chase Gulch	10190004	0.2		N	A	1/8/2019
Unnamed Tributary to Chase Gulch 1	Black Hawk, City of	Confluence with Unnamed Tributary to Chase Gulch	341 feet upstream of Unnamed Tributary to Chase Gulch	10190004	0.1		N	A	1/8/2019
Unnamed Tributary to Ralston Creek 1	Gilpin County, Unincorporated Areas	Confluence with Ralston Creek	0.3 miles above Ralston Creek	10190004	0.3		N	A	1/8/2019
Unnamed Tributary to Ralston Creek 2	Gilpin County, Unincorporated Areas	Confluence with Ralston Creek	1.69 miles above Ralston Creek	10190004	1.9		N	A	1/8/2019
Unnamed Tributary to Ralston Creek 3	Gilpin County, Unincorporated Areas	Confluence with Ralston Creek	0.7 miles above Golden Gate Canyon Road	10190004	0.8		N	A	1/8/2019

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
Unnamed Tributary to Ralston Creek 4	Gilpin County, Unincorporated Areas	Confluence with Ralston Creek	70 feet above Rudoph Ranch Road	10190004	0.7		N	A	1/8/2019
Unnamed Tributary to Silver Gulch	Black Hawk, City of	Confluence with Silver Gulch	0.3 miles above Silver Gulch Road	10190004	0.4		N	A	1/8/2019
Unnamed Tributary to Unnamed Tributary to Ralston Creek 2	Gilpin County, Unincorporated Areas	Confluence with Unnamed Tributary to Ralston Creek 2	0.52 miles upstream of Unnamed Tributary to Ralston Creek 2	10190004	0.6		N	A	1/8/2019

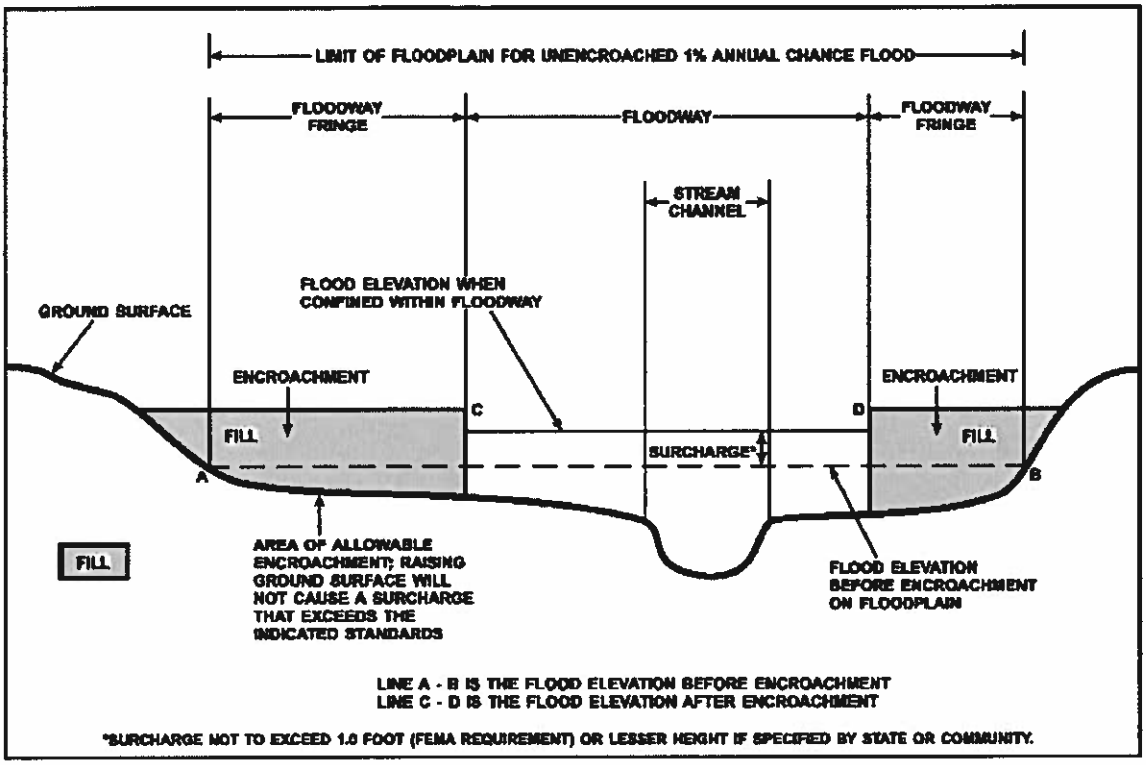
2.2 Floodways

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. Regulations for State require communities in Gilpin County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions. 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



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.

BFEs are primarily intended for flood insurance rating purposes. 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 insurance zones in Gilpin County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Black Hawk, City of	A, AE, AO, X
Central City, City of	A, AE, AO, X
Gilpin 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)*
Clear	10190004	Clear Creek	Major watershed for the southern portion of Gilpin County	83
St. Vrain	10190005	St. Vrain Creek	Major watershed for the northern portion of Gilpin County	70

*Drainage Area within Gilpin County

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Eureka Gulch	Eureka Gulch is very steep, resulting in very high channel and overbank water velocities when floods occur. Future development of flood plain area must consider depth of floodwater as well as possibly destructive high velocities. The flood hazard to the community will continue to increase unless adequate flood plain regulations are adopted.
Gregory Gulch	Gregory Gulch was enclosed in underground conduits below the respective streets in order to make more room for development. This in turn has resulted in a unique flooding problem, with floodwater flowing in the streets once these conduits reach their capacity.

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

Table 6: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Non-Levee Flood Protection Measures

Table 7 contains information about non-levee flood protection measures within Gilpin County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 7: Non-Levee Flood Protection Measures

[Not Applicable to this Flood Risk Project]

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 8: Levees

[Not Applicable to this Flood Risk Project]

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 and for flood insurance rates. 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.

In addition to these flood events, the "1-percent-plus", or "1%+", annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1-percent-annual-chance flood elevation and a 1-percent-annual-chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% "plus"). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1-percent-

annual-chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 26, "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

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.

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	1% Annual Chance Plus	0.2% Annual Chance
Chase Gulch	At Mouth	4.2	320	*	840	1,160	*	2,100
Eureka Gulch	Downstream of Prosser Street	1.8	48	86	134	212	378	529
Eureka Gulch	At Prosser Street (H Street)	1.4	18	33	56	102	182	312
Eureka Gulch	Below Water Treatment Plant	1.2	11	14	26	55	97	194
Gregory Gulch	Downstream of Lawrence Street	3.6	307	507	708	970	1,726	1,837
Gregory Gulch	Upstream of Lawrence Street	3.2	216	368	527	740	1,316	1,466
Gregory Gulch	Upstream of D Street	3.0	205	348	489	699	1,244	1,383
North Clear Creek	At Wastewater Treatment Facility	34.3	1,265	*	2,275	2,670	*	4,950
North Clear Creek	Upstream of Confluence with Chase Gulch	24.1	900	*	1,650	2,050	*	3,800
South Boulder Creek	Downstream of the confluence of Black Gulch	78.1	249	661	1,262	2,205	2,248	6,171
South Boulder Creek	Downstream of the confluence of Beaver Creek	71.4	194	541	1,067	1,916	2,127	5,561
South Boulder Creek	Downstream of the confluence of Lump Gulch	51.7	86	312	710	1,384	1,536	4,420
South Boulder Creek	At State Highway 119	44.0	86	301	677	1,301	1,444	4,088

*Data Not Available

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: Steam Gage Information used to Determine Discharges

[Not Applicable to this Flood Risk Project]

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. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS 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	Analyses Completed	Flood Zone on FIRM	Special Considerations
Beaver Creek	Confluence with South Boulder Creek	1.2 miles above Forest Service Camp Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Chase Gulch	130 feet downstream of Chase Street	0.25 miles from confluence with North Clear Creek	Storm-generated runoff analysis to produce Peak floodflows	HEC-2	6/24/2005	AE	
Chase Gulch	0.25 miles from confluence with North Clear Creek	0.4 miles above Columbine Campground Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Colorado Creek	Confluence with Lump Gulch	1.5 miles above Lump Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Ellsworth Creek	Confluence with South Boulder Creek	3.6 miles above South Boulder Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Eureka Gulch	Confluence with Gregory Gulch	250 feet upstream of Mack Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	AE	
Eureka Gulch	250 feet upstream of Mack Road	200 feet upstream of Bald Mountain Ln	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Fourmile Creek	Confluence with North Clear Creek	1.4 miles above Central City municipal boundary	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Gamble Gulch Creek	Confluence with South Boulder Creek	300 feet above Dory Hill Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	

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	Analyses Completed	Flood Zone on FIRM	Special Considerations
Gregory Gulch	Confluence with North Clear Creek	Confluence of Eureka Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	AE, AO	
Illinois Gulch	Confluence with Russel Gulch	1.8 miles above Russel Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Lake Fork	Confluence with North Clear Creek	1.9 miles above State Highway 119	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Lump Gulch	Confluence with Ellsworth Creek	1.2 miles above Mountain View Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Mammoth Gulch	Confluence with South Boulder Creek	5.9 miles above Union Pacific Railroad	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Nevada Gulch	Confluence with Gregory Gulch	0.3 miles above Gregory Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
North Clear Creek	180 feet above confluence with Clear Creek	85 feet upstream of confluence of Silver Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
North Clear Creek	85 feet upsteam of confluence of Silver Gulch	0.7 miles above confluence of Chase Gulch	Storm-generated runoff analysis to produce Peak floodflows	HEC-2	9/30/2005	AE	
North Clear Creek	0.7 miles above confluence of Chase Gulch	2.0 miles above confluence of Mosquito Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	

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	Analyses Completed	Flood Zone on FIRM	Special Considerations
Pine Creek	Confluence with North Clear Creek	0.5 miles above Elk Park Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Ralston Creek	50 feet above Ralston Creek Road	1.1 miles above State Highway 119	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Russel Gulch	Confluence with North Clear Creek	1.8 miles above Central City Parkway	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Silver Gulch	Confluence with North Clear Creek	0.2 miles above Black Hawk municipal boundary	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Smith Hill Gulch	Confluence with North Clear Creek	1.3 miles above confluence with North Clear Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
South Beaver Creek	Confluence with South Boulder Creek	1.5 miles above Gold Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
South Boulder Creek	150 feet downstream of Gilpin County boundary	400 feet above Rogers Peak Lake	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
South Fork Ralston Creek	Confluence with Ralston Creek	0.7 miles above State Highway 119	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Chase Gulch	Confluence with Chase Gulch	0.17 miles above Chase Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	

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	Analyses Completed	Flood Zone on FIRM	Special Considerations
Unnamed Tributary to Chase Gulch 1	Confluence with Unnamed Tributary to Chase Gulch	341 feet upstream of Unnamed Tributary to Chase Gulch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Ralston Creek 1	Confluence with Ralston Creek	0.3 miles above Ralston Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Ralston Creek 2	Confluence with Ralston Creek	1.69 miles above Ralston Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Ralston Creek 3	Confluence with Ralston Creek	0.7 miles above Golden Gate Canyon Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Ralston Creek 4	Confluence with Ralston Creek	70 feet above Rudoph Ranch Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Silver Gulch	Confluence with Silver Gulch	0.3 miles above Silver Gulch Road	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	
Unnamed Tributary to Unnamed Tributary to Ralston Creek 2	Confluence with Unnamed Tributary to Ralston Creek 2	0.52 miles upstream of Unnamed Tributary to Ralston Creek 2	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 5.0 and up	1/8/2019	A	

Table 13: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Chase Gulch	0.022-0.058	0.025-0.080
Eureka Gulch	0.013-0.05	0.013-0.12
Gregory Gulch	0.013-0.1	0.013-0.12
North Clear Creek	0.022-0.058	0.025-0.080
South Boulder Creek	0.035-0.07	0.035-0.1

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% 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 Gilpin 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 Gilpin 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: Steam-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Chase Gulch	+4.62
North Clear Creek	+4.62

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/media-library/resources-documents/collections/361.

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
Local, Major and Highways	U.S. Census Bureau	2016	N/A	Spatial and attribute information for roads and railroads derived from the U.S. Census Bureau TIGER files.
Municipal Boundaries in Gilpin County, Colorado	Gilpin County (GC)	2015	N/A	Municipal and county boundaries derived from Gilpin County GIS datasets.
Watershed Boundaries	United States Geological Survey (USGS)	2017	N/A	HUC8 boundaries were derived from the USGS
Public Land Survey System	Bureau of Land Management (BLM)	2017	N/A	Spatial and attribute information for PLSS dataset.

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."

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1-percent-annual-chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1-percent-annual-chance floodplain boundaries 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 . All topographic data used for modeling or mapping has been converted as necessary to NAVD88. The 1-percent-annual-chance elevations for selected cross sections along these flooding sources, along with their non-encroachment widths, if calculated, are shown in Table 24, "Flood Hazard and Non-Encroachment Data for Selected Streams."

Table 22: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Gilpin County, Unincorporated Areas	All within HUC of Gilpin County, Unincorporated Areas	Light Detection and Ranging data (LiDAR)	0.1 meter		CWCB 2016
Central and Northern Colorado Counties	All within HUC of Central and Northern Colorado Counties	Light Detection and Ranging data (LiDAR)	0.6 meter		USGS 2013
City of Boulder	All within HUC 1,655 square miles in Colorado surrounding the City of Boulder	Light Detection and Ranging data (LiDAR)	0.14 meter		BakerAECOM 2011

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

[Not Applicable to this Flood Risk Project]

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 30, "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/letter-map-amendment-loma 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/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information 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/letter-map-amendment-loma 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 Map Information 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/online-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/media-library/assets/documents/1343 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 Map Information 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 Gilpin County FIRM are listed in Table 26.

Table 26: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
04-08-0333P	06-24-2005	North Clear Creek	08047C0136D
04-08-0678P	09-25-2005	North Clear Creek	08047C0136D
17-08-0165P	10-06-2017	North Clear Creek	08047C0136D

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 "Flood Map Revision Processes" 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 Gilpin County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) 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 27, "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 27, 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 Gilpin County FIRMs in countywide format was April 6, 2022.

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)
Black Hawk, City of	08/30/1974	08/30/1974	08/13/1976	10/16/1984	04/06/2022
Central City, City of	08/30/1974	08/30/1974	04/9/1976	03/01/1986	04/06/2022 02/16/1994
Gilpin County, Unincorporated Areas	06/10/1977	06/10/1977	N/A	03/01/1986	04/06/2022

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 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
North Clear Creek and Tributaries	04/06/2022	AECOM	CT 2016-1452	January 2019	City of Black Hawk, City of Central City, and Gilpin County, Unincorporated Areas
North Clear Creek, Gregory Gulch, Chase Gulch	04/16/1984	Owen Ayres and Associates	N/A	June 1980	City of Black Hawk

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 29. 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
Black Hawk, City of	04/06/2022	12/14/2018	Flood Risk Review	CWCB, FEMA, AECOM
		3/7/2019	Initial CCO	City of Black Hawk, CWCB, AECOM
		7/1/2020	Final CCO	City of Black Hawk, CWCB, FEMA, AECOM
Central City, City of	04/06/2022	12/14/2018	Flood Risk Review	City of Central City, CWCB, FEMA, AECOM
		7/1/2020	Final CCO	City of Central City, CWCB, FEMA, AECOM
Gilpin County, Unincorporated Areas	04/06/2022	12/14/2018	Flood Risk Review	CWCB, FEMA, AECOM
		7/1/2020	Final CCO	Gilpin County, CWCB, FEMA, AECOM

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 Gilpin County (FEMA 2012).

Table 30 is a list of the locations where FIRMs for Gilpin 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
Black Hawk, City of	Community Planning & Development 211 Church Street	Black Hawk	CO	80422
Central City, City of	City Hall 141 Nevada Street	Central City	CO	80427
Gilpin County, Unincorporated Areas	Courthouse 203 Eureka Street 2nd Floor	Central City	CO	80427

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 31.

Table 31 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/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov

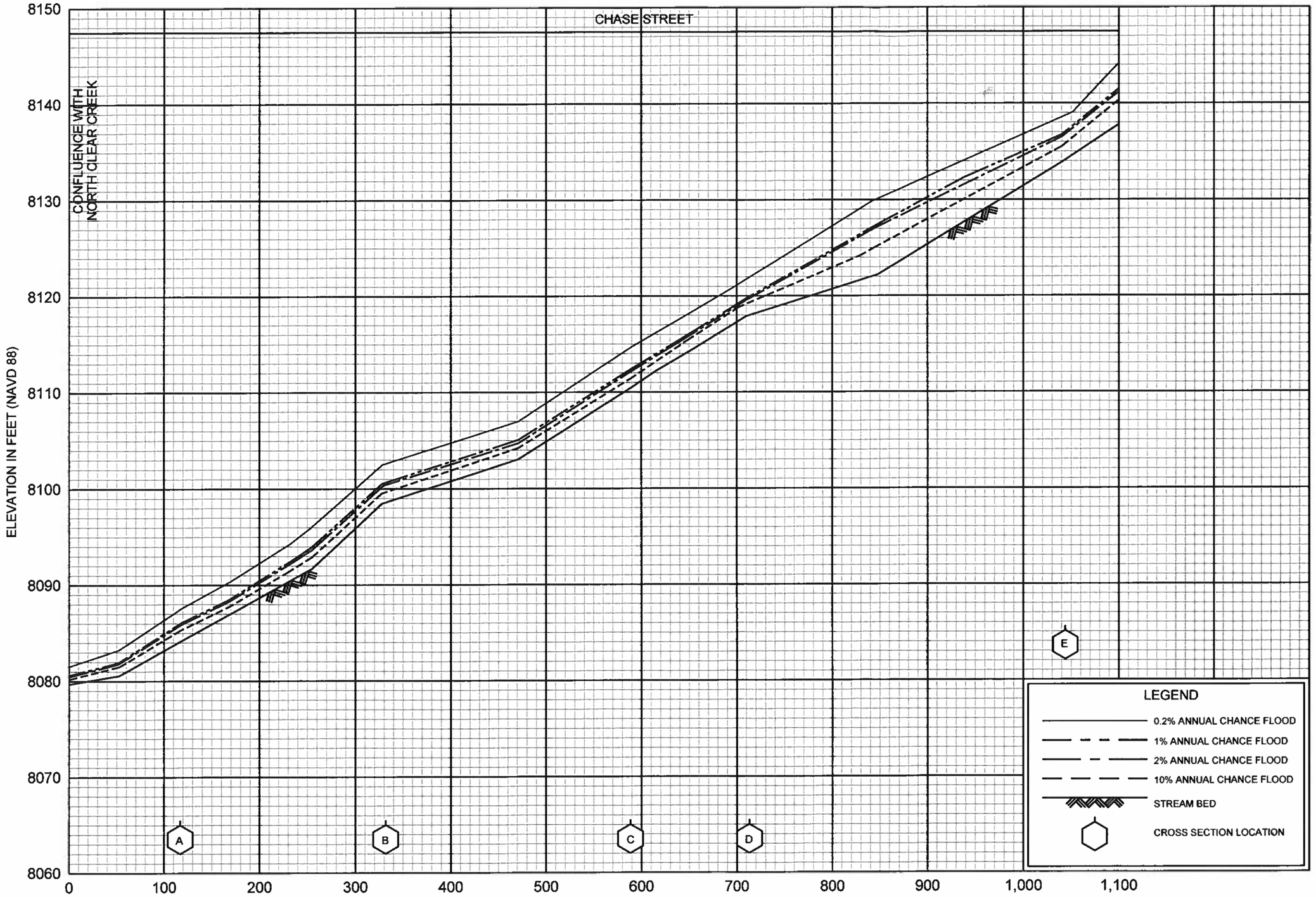
FEMA Region VIII	Denver Federal Center, Building 710 P.O. Box 25267 Denver, CO 80255-0267 (303) 235-4812
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Doug Mahan, CFM CWCB Community Assistance Program Coordinator 1313 Sherman Street, Rm. 718 Denver, CO 80203 (303) 866-3441 x3221 doug.mahan@state.co.us
State GIS Coordinator	Jon Gottsegen Statewide GIS Coordinator 601 E. 18th Ave Denver, CO 80203 Phone: (303) 764-7712 jon.gottsegen@state.co.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 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
BLM 2017	Bureau of Land Management	*Public Land Survey System*	BLM	Washington, D.C.	1/23/2017	
CWCB 2017	Colorado Water Conservation Board	*Hydraulic Analysis for Select Streams in the CHAMP Study Area (St Vrain Y1)*	AECOM	Greenwood Village, CO	2/28/2017	
CWCB 2018	Colorado Water Conservation Board	*Hydrology, Hydraulics, and Floodplain Mapping submittal for Gilpin County*	CWCB	Denver, CO	1/12/2018	
CWCB 2019	Colorado Water Conservation Board	*Redelineation*	AECOM	Greenwood Village, CO	4/1/2019	
FEMA 1984	Federal Emergency Management Agency	*Flood Insurance Study, City of Black Hawk*	FEMA	Washington, D.C.	4/16/1984	
FEMA 1994	Federal Emergency Management Agency	*Flood Insurance Study, City of Central City*	FEMA	Washington, D.C.	2/16/1994	
FEMA 2012	Federal Emergency Management Agency	*Flood Insurnace Study #08013C, Gilpin County, Colorado.*	FEMA	Washington, D.C.	December 2012	FEMA Flood Map Service Center msc.fema.gov
Gilpin 2015	Gilpin County	*Municipal Boundaries in Gilpin County*	Gilpin County	Central City, CO	2/9/2015	
USCB 2016	U.S. Census Bureau	*TIGER/Line Shapefile, 2016*	USCB	Washington, D.C.	10/6/2016	
USGS 2016	U.S. Geologic Survey	*USGS Digital Orthophoto Quarter Quadrangles*	USGS	Reston, VA	11/11/2016	
USGS 2017	U.S. Geologic Survey	*National Hydrography Dataset (NHD)*	USGS	Reston, VA	9/15/2017	



FLOOD PROFILES

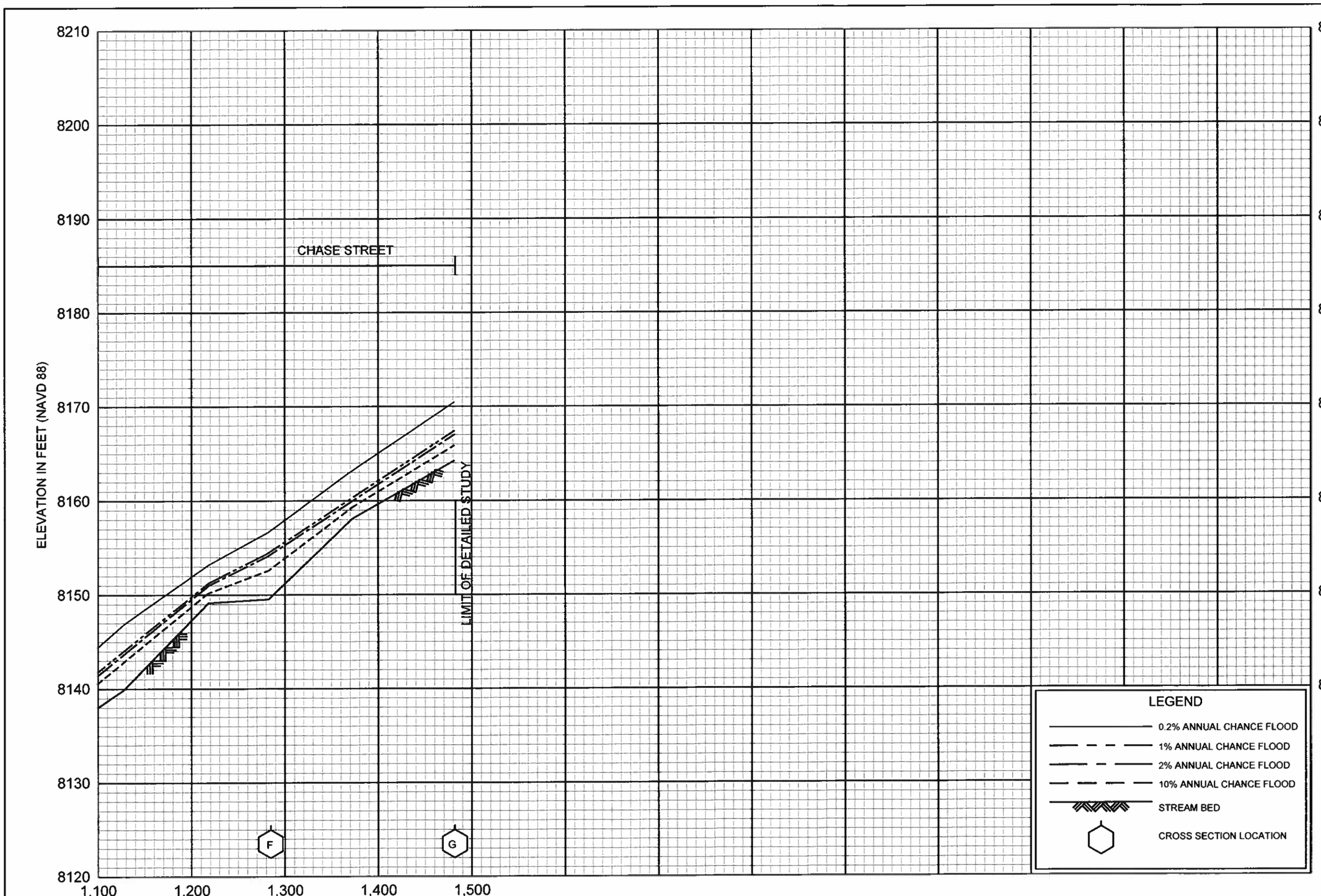
CHASE GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

01P



FLOOD PROFILES

CHASE GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO
AND INCORPORATED AREAS

02P

OPERA HOUSE FLUME

10%, 4%, AND 2% ANNUAL CHANCE FLOODING CONTAINED IN CULVERT

1% ANNUAL CHANCE FLOODING OVERTOPPING OPERA HOUSE FLUME IS LESS THAN 1 FOOT DEEP

ELEVATION IN FEET (NAVD 88)

8,460
8,450
8,440
8,430
8,420
8,410
8,400
8,390
8,380
8,370

5,800 5,900 6,000 6,100 6,200 6,300 6,400 6,500 6,600

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH NORTH CLEAR CREEK

CONFLUENCE WITH GREGORY GULCH

A

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- "1%+" ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A CROSS SECTION LOCATION

FLOOD PROFILES

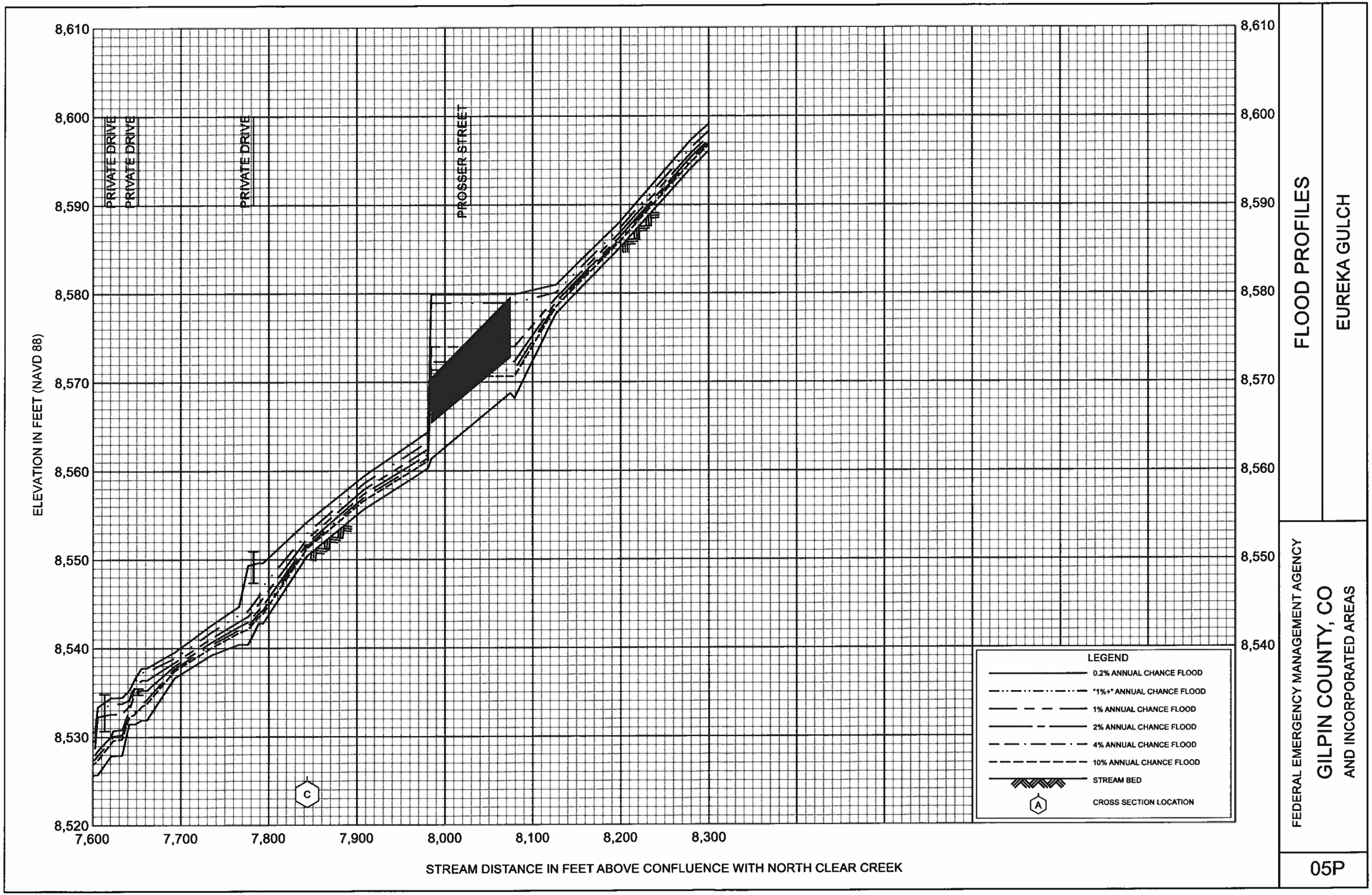
EUREKA GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

03P


8,610
8,600
8,590
8,580
8,570
8,560
8,550
8,540
8,530
8,520
ELEVATION IN FEET (NAVD 88)
PRIVATE DRIVE
PRIVATE DRIVE
PRIVATE DRIVE
PROSSER STREET
C
7,600
7,700
7,800
7,900
8,000
8,100
8,200
8,300
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH NORTH CLEAR CREEK
LEGEND
0.2% ANNUAL CHANCE FLOOD
"1%+" ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
4% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
A
CROSS SECTION LOCATION
FLOOD PROFILES
EUREKA GULCH
FEDERAL EMERGENCY MANAGEMENT AGENCY
GILPIN COUNTY, CO
AND INCORPORATED AREAS
05P

OPERA HOUSE FLUME

10%, 4%, AND 2% ANNUAL CHANCE FLOODING CONTAINED IN CULVERT

1% ANNUAL CHANCE FLOODING OVERTOPPING OPERA HOUSE FLUME IS LESS THAN 1 FOOT DEEP

PEDESTRIAN BRIDGE

FOUNDRY FLUME

ELEVATION IN FEET (NAVD 88)

8,540
8,530
8,520
8,510
8,500
8,490
8,480
8,470
8,460
8,450

6,600 6,700 6,800 6,900 7,000 7,100 7,200 7,300 7,400 7,500 7,600

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH NORTH CLEAR CREEK

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- "1%+" ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A — CROSS SECTION LOCATION

B

FLOOD PROFILES

EUREKA GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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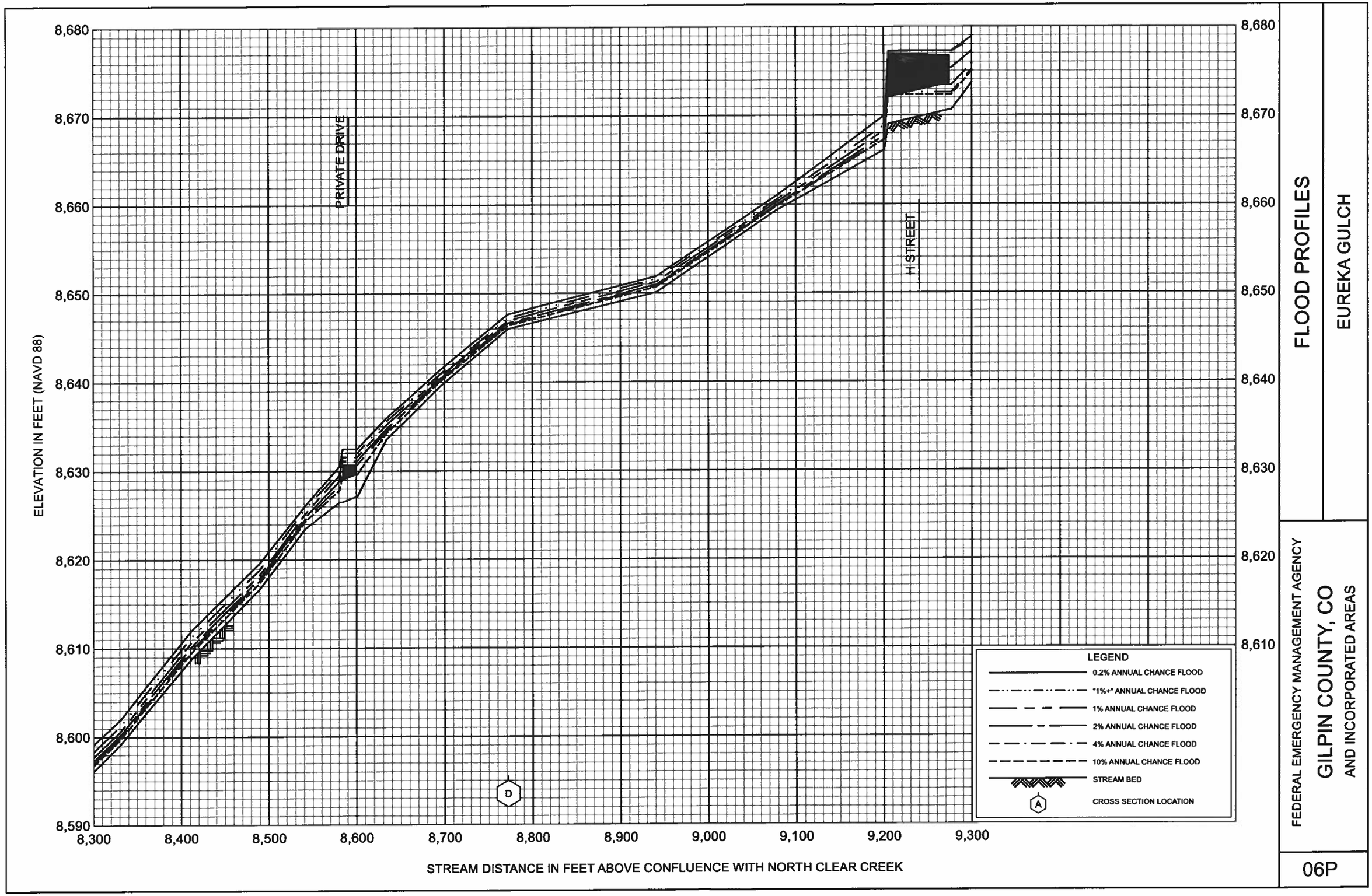

FLOOD PROFILES

EUREKA GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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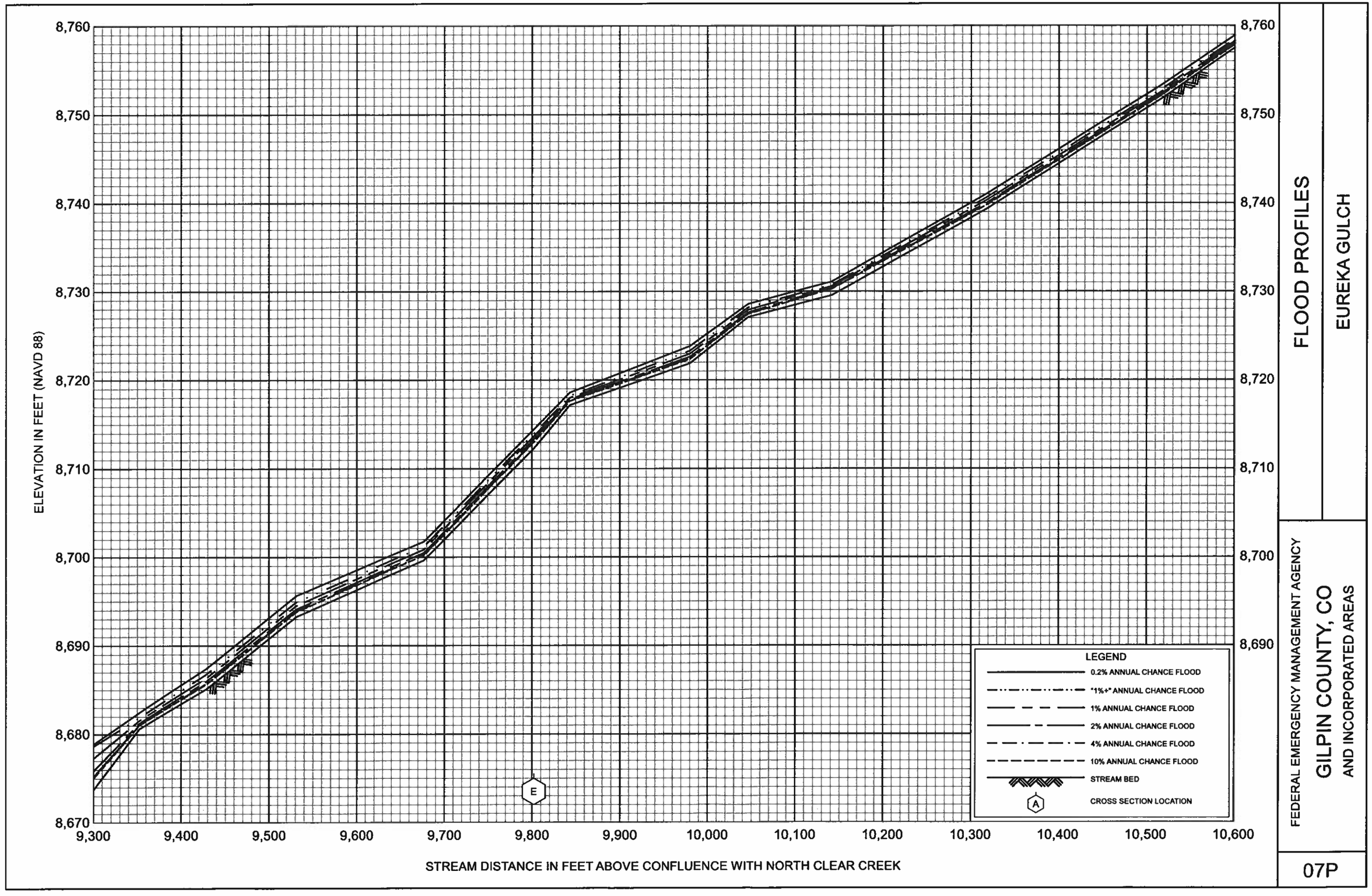

FLOOD PROFILES

EUREKA GULCH

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GILPIN COUNTY, CO
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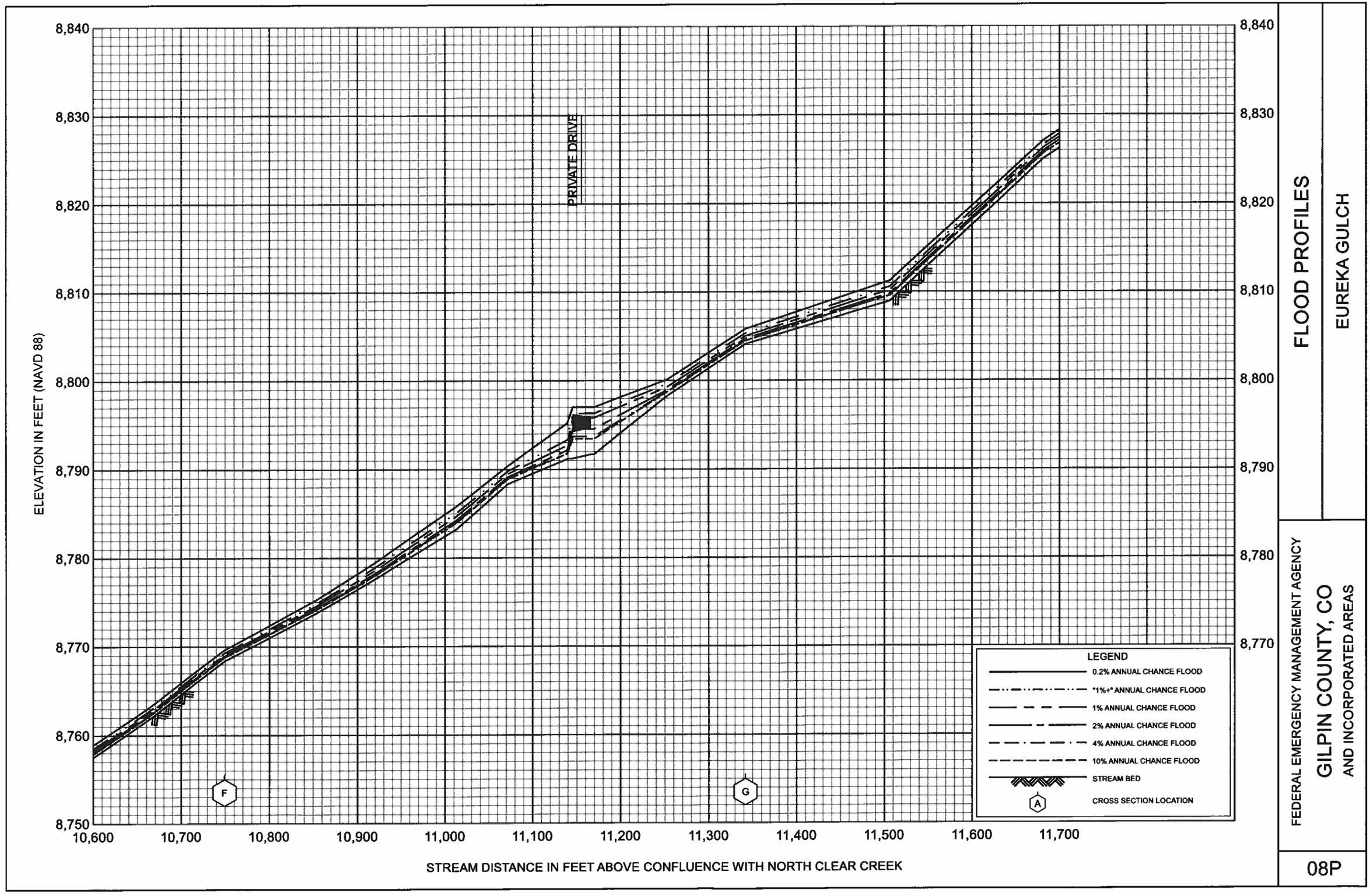
8,840
8,830
8,820
8,810
8,800
8,790
8,780
8,770
8,760
8,750
ELEVATION IN FEET (NAVD 88)
PRIVATE DRIVE
F
G
10,600
10,700
10,800
10,900
11,000
11,100
11,200
11,300
11,400
11,500
11,600
11,700
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH NORTH CLEAR CREEK
LEGEND
0.2% ANNUAL CHANCE FLOOD
"1%+" ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
2% ANNUAL CHANCE FLOOD
4% ANNUAL CHANCE FLOOD
10% ANNUAL CHANCE FLOOD
STREAM BED
A
CROSS SECTION LOCATION
FLOOD PROFILES
EUREKA GULCH
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GILPIN COUNTY, CO
AND INCORPORATED AREAS
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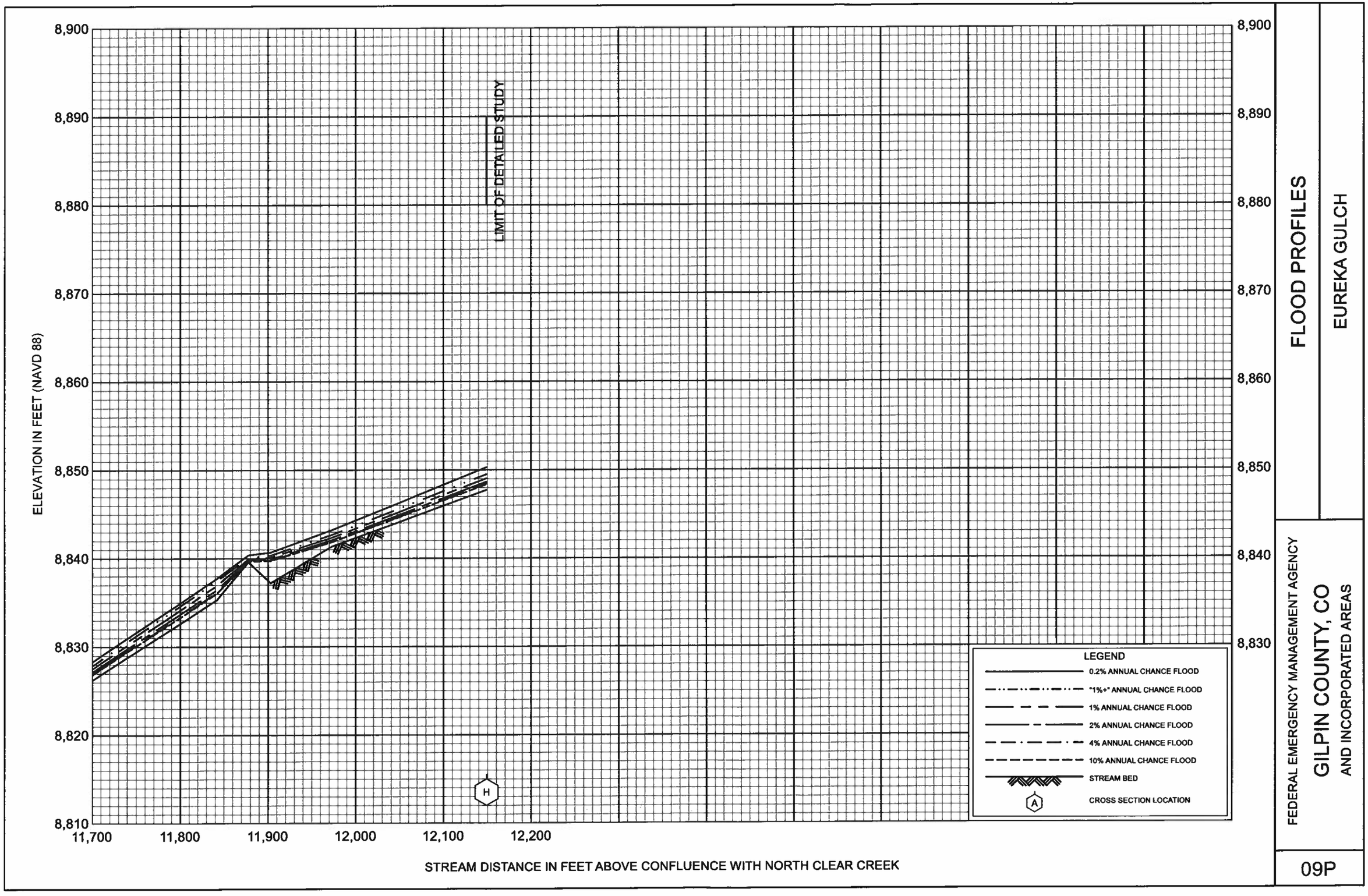

FLOOD PROFILES

EUREKA GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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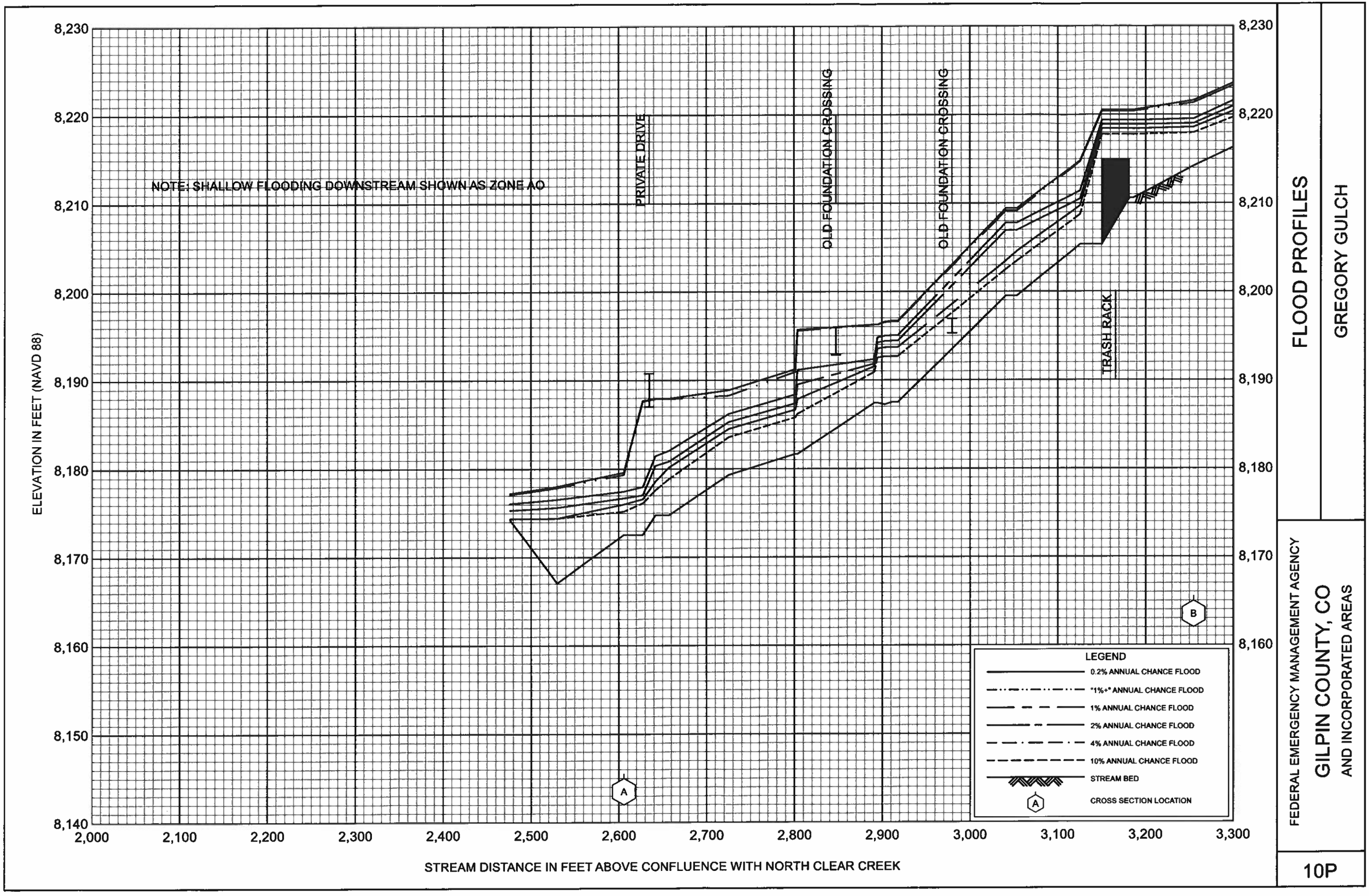

FLOOD PROFILES

GREGORY GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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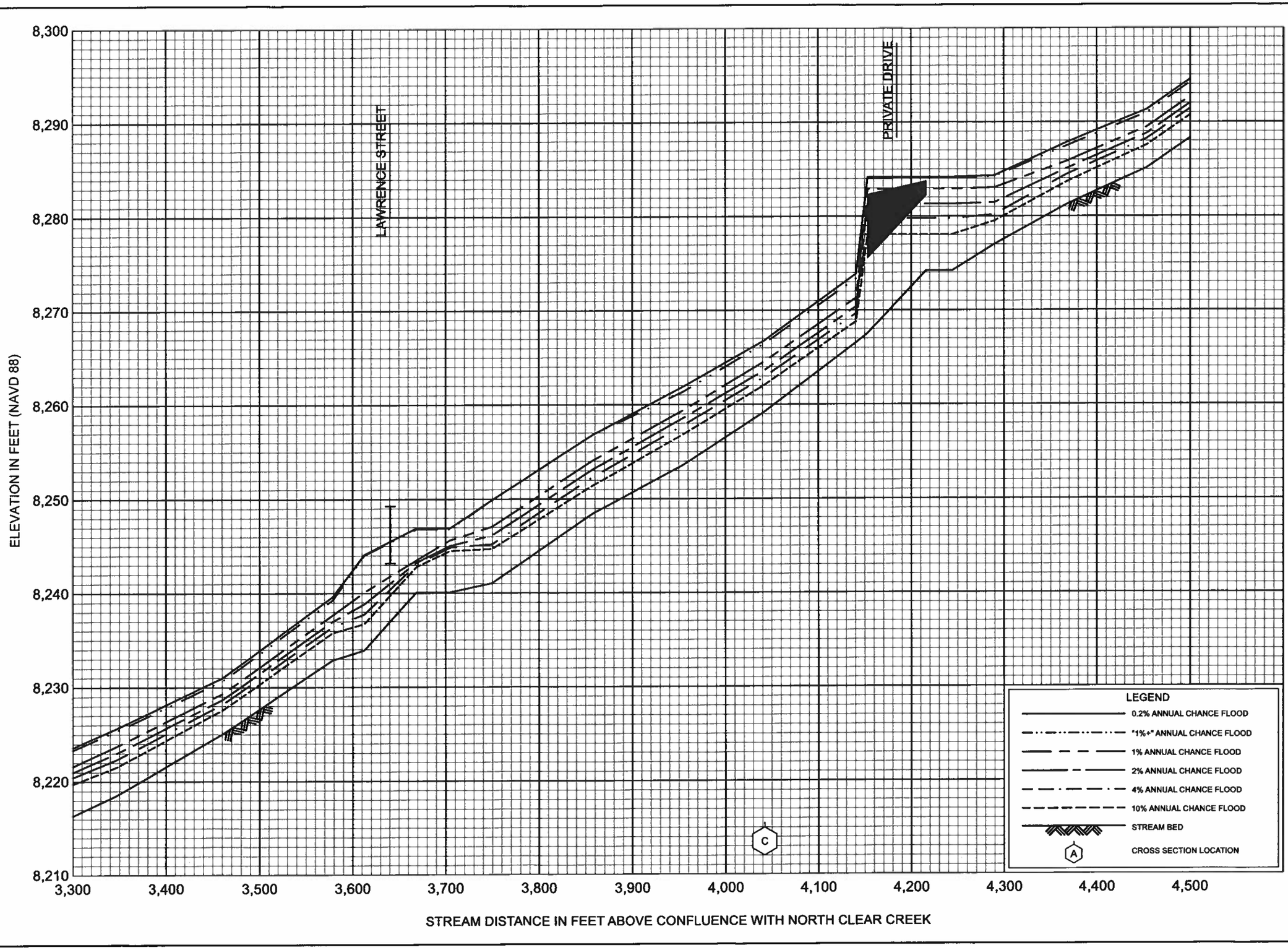

FLOOD PROFILES

GREGORY GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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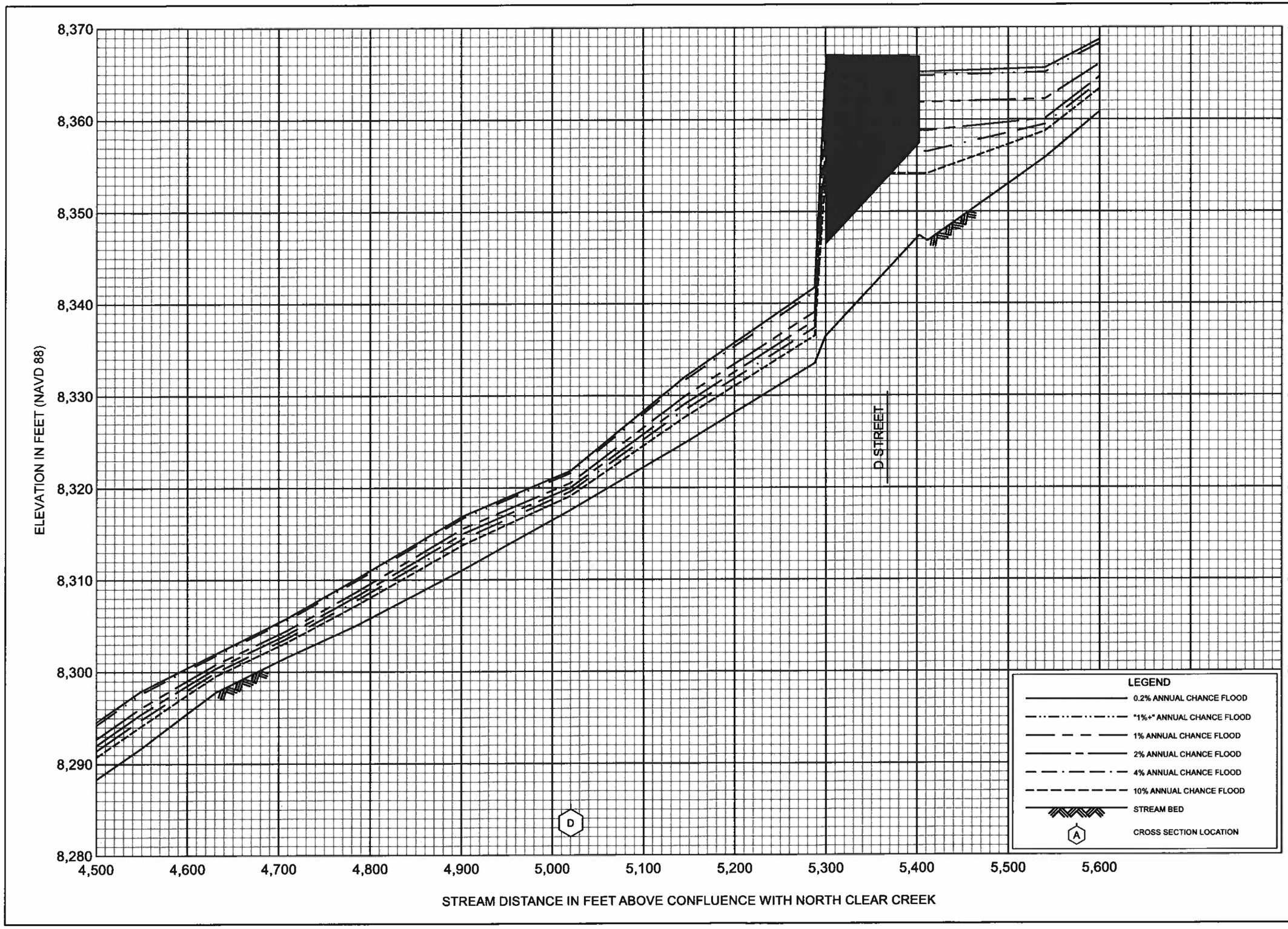

FLOOD PROFILES

GREGORY GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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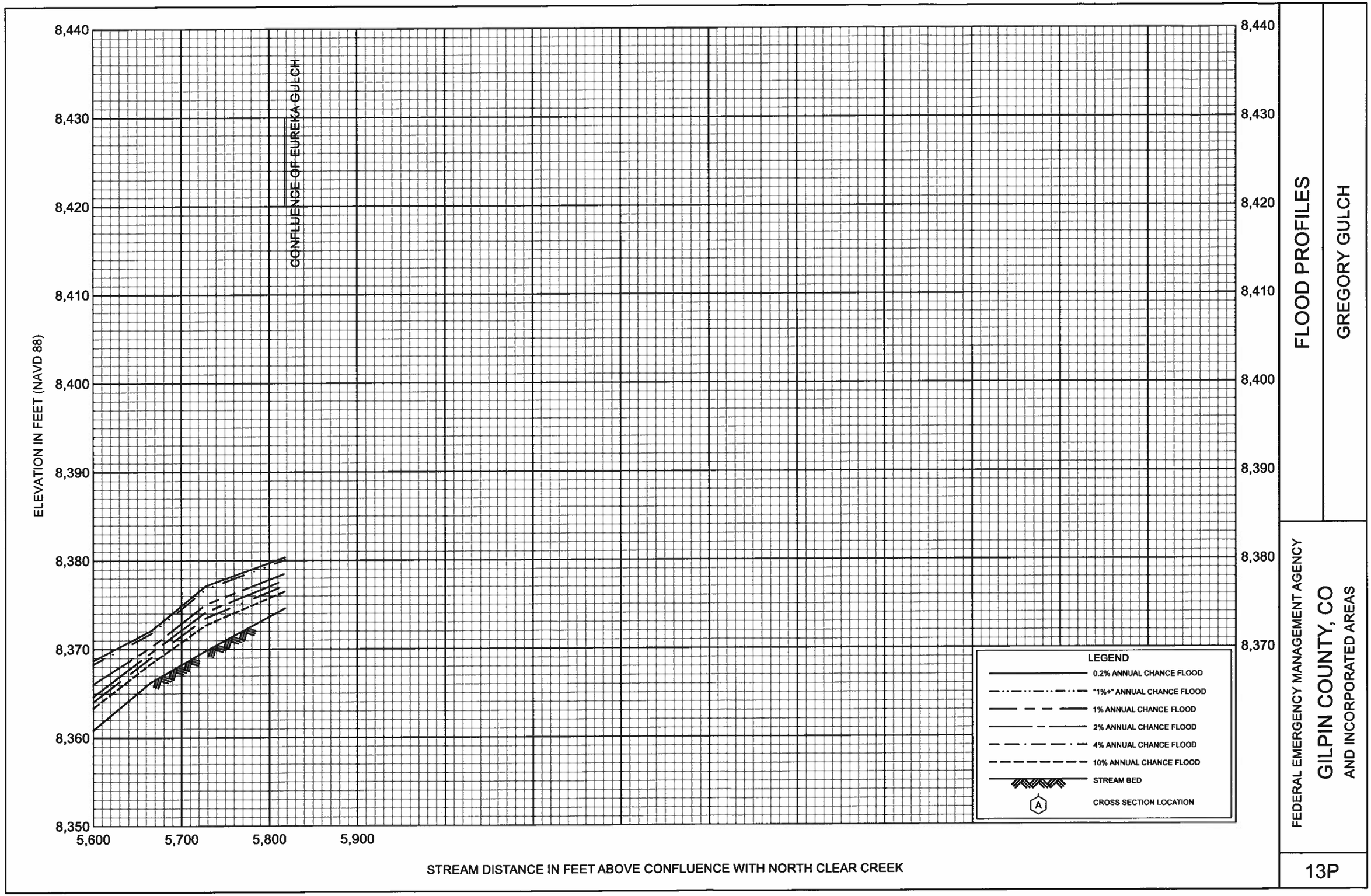

FLOOD PROFILES

GREGORY GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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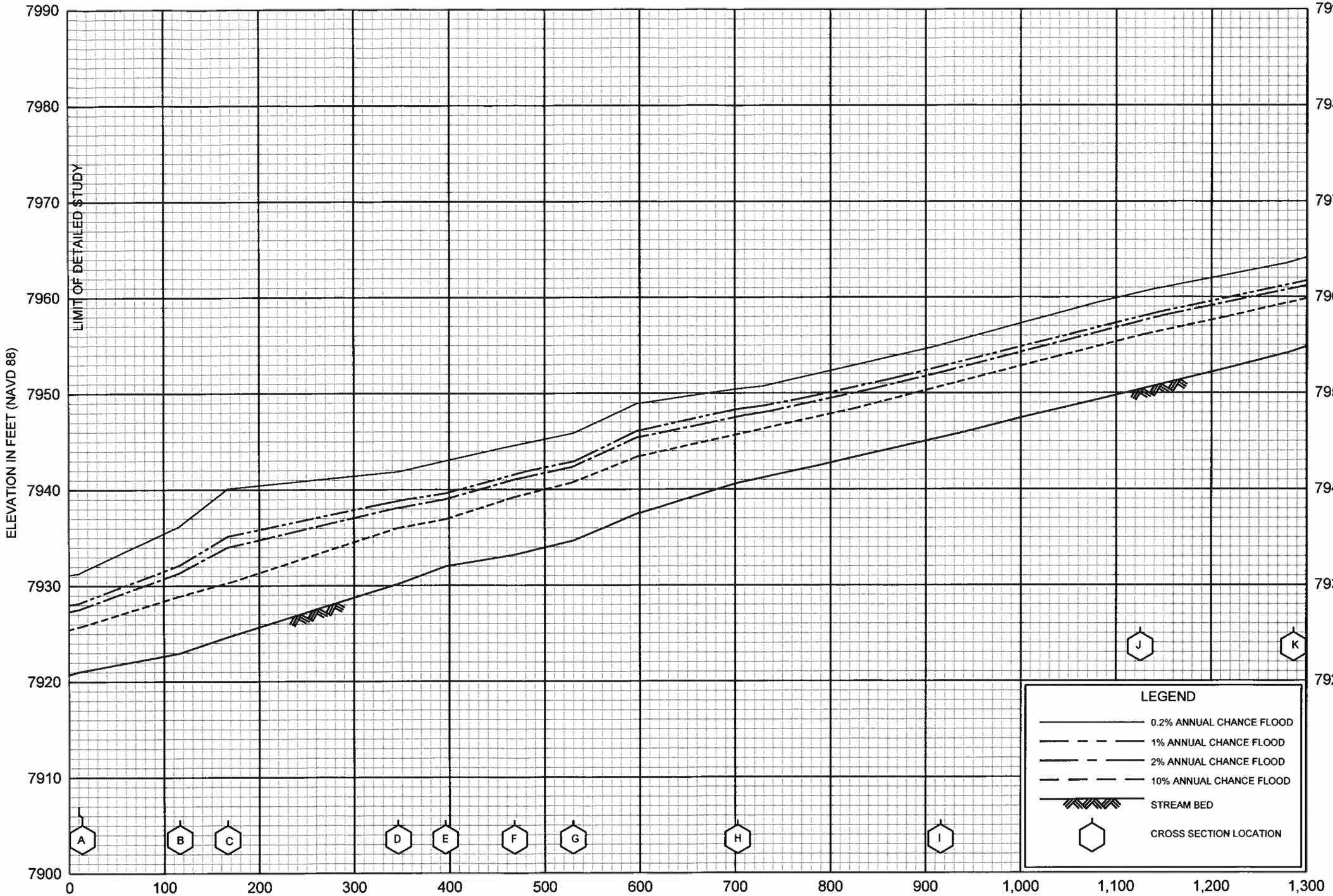

FLOOD PROFILES

NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO
AND INCORPORATED AREAS

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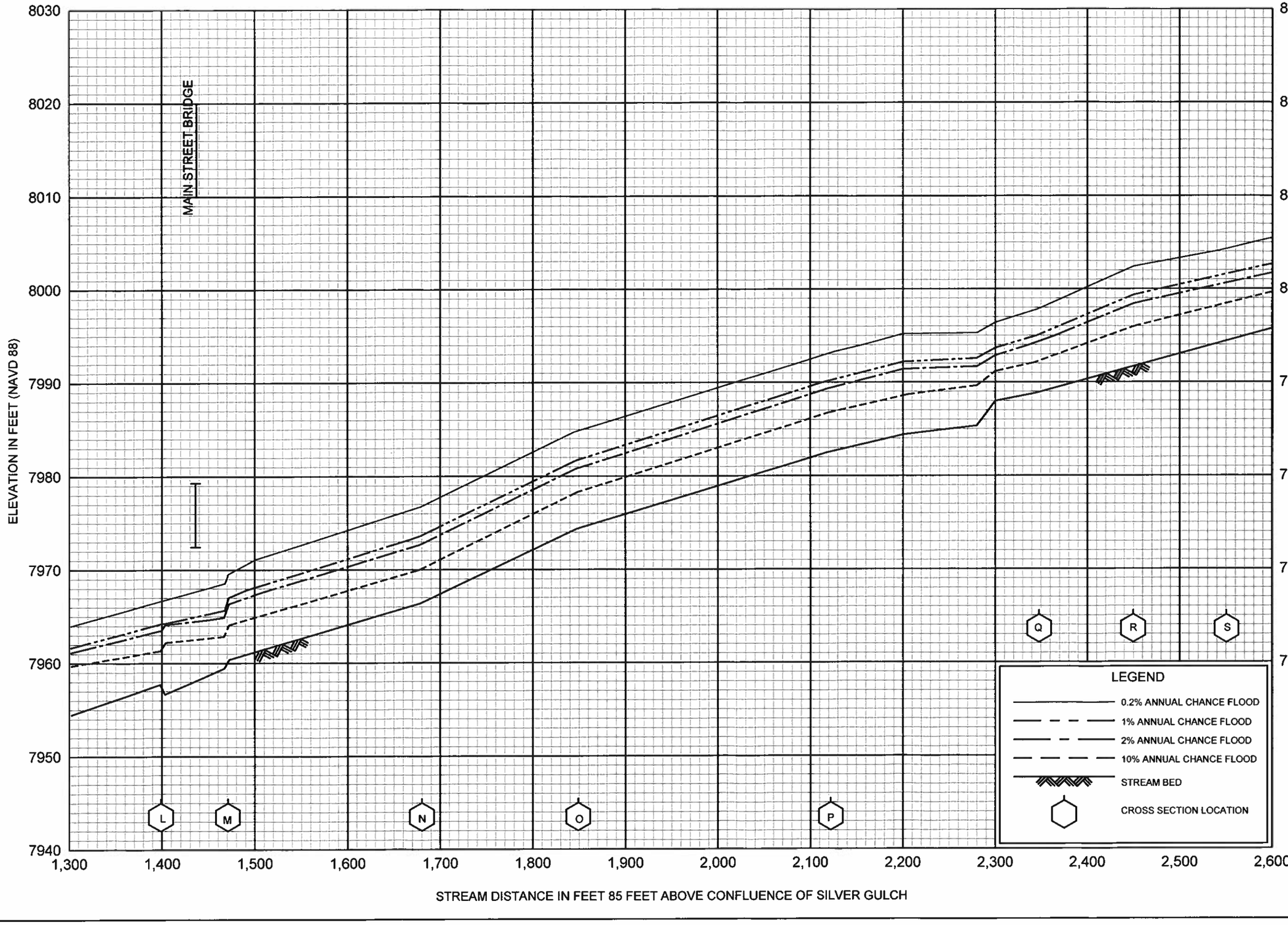

FLOOD PROFILES

NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

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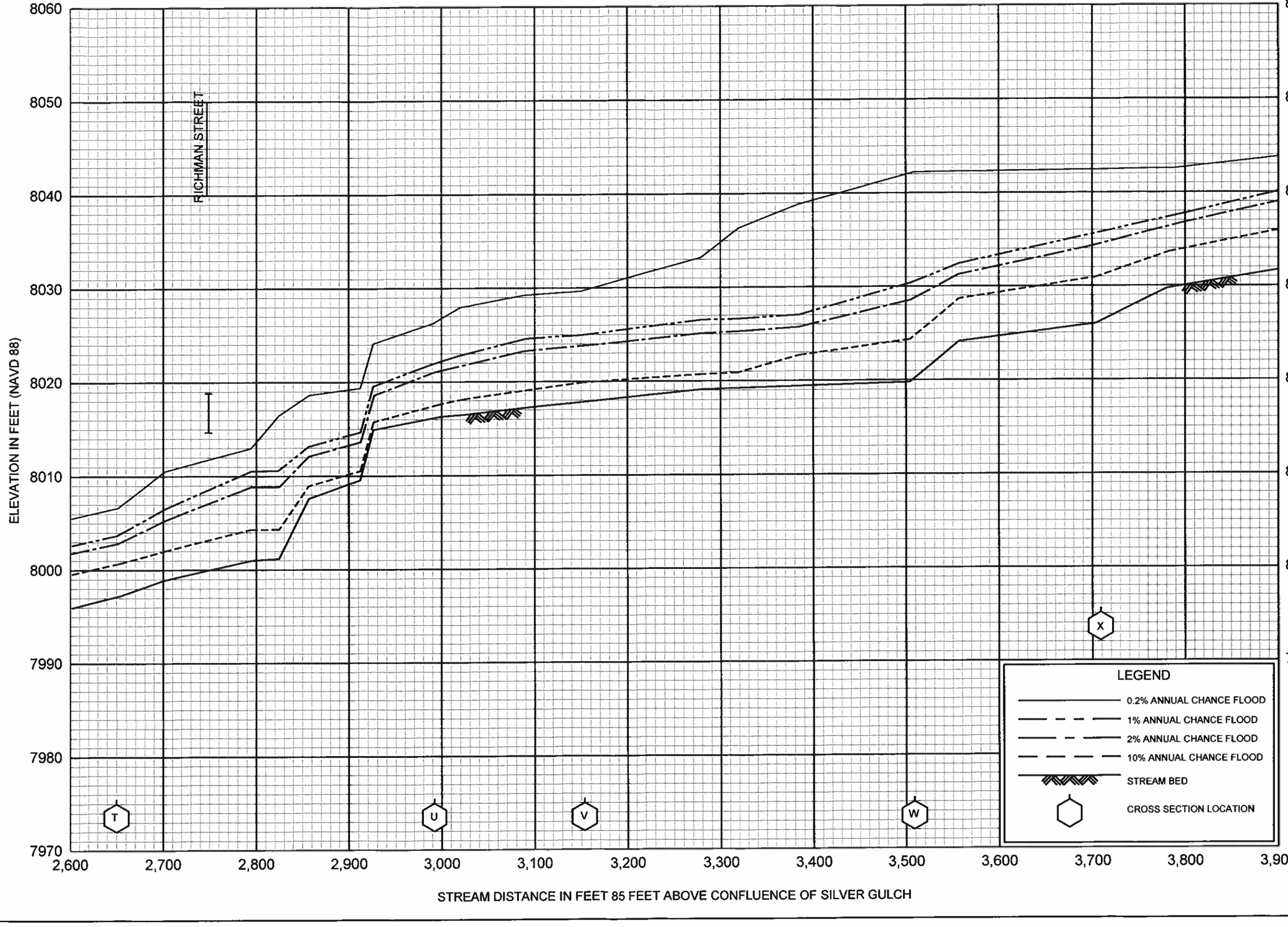


FLOOD PROFILES

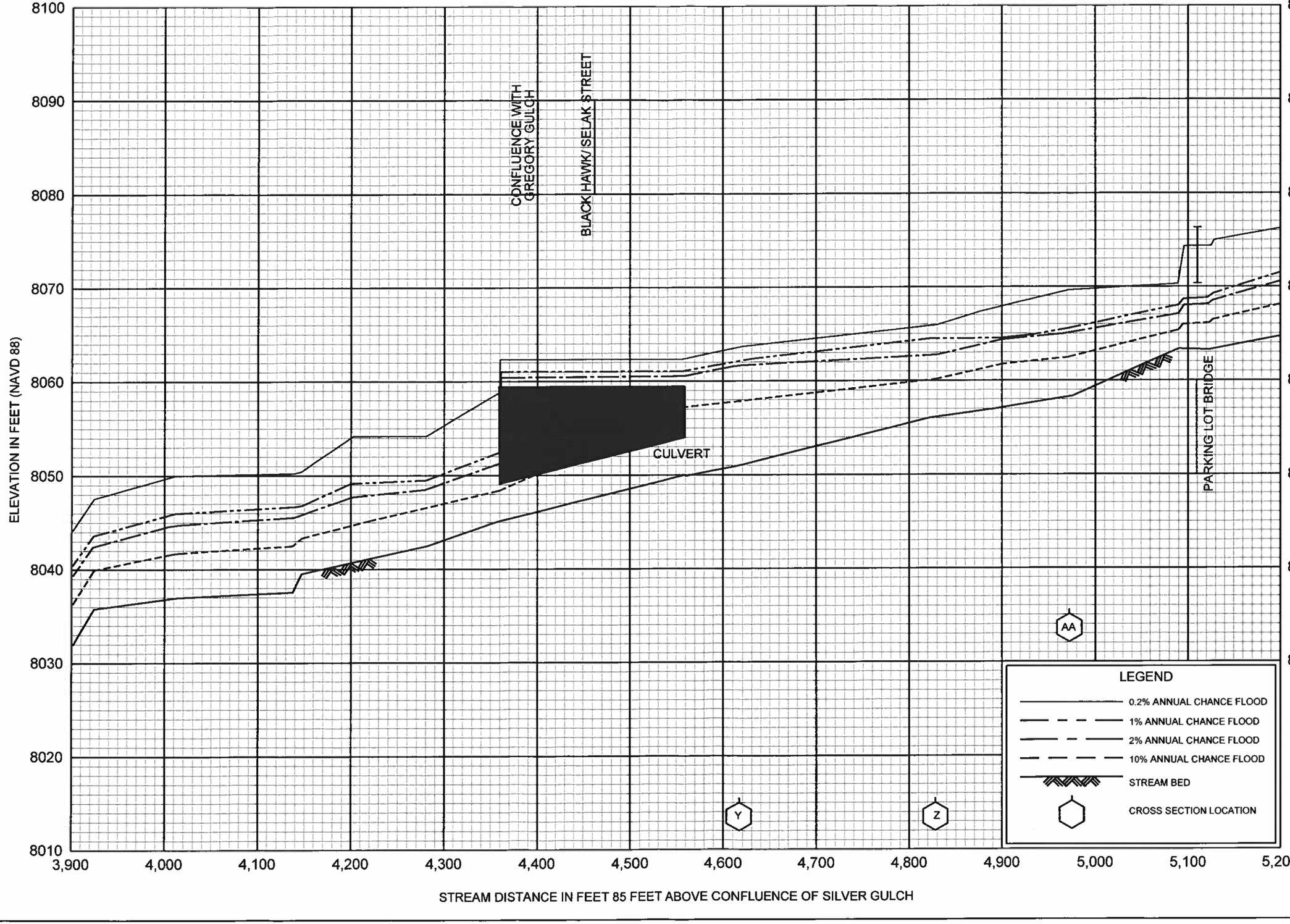
NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

16P



FLOOD PROFILES

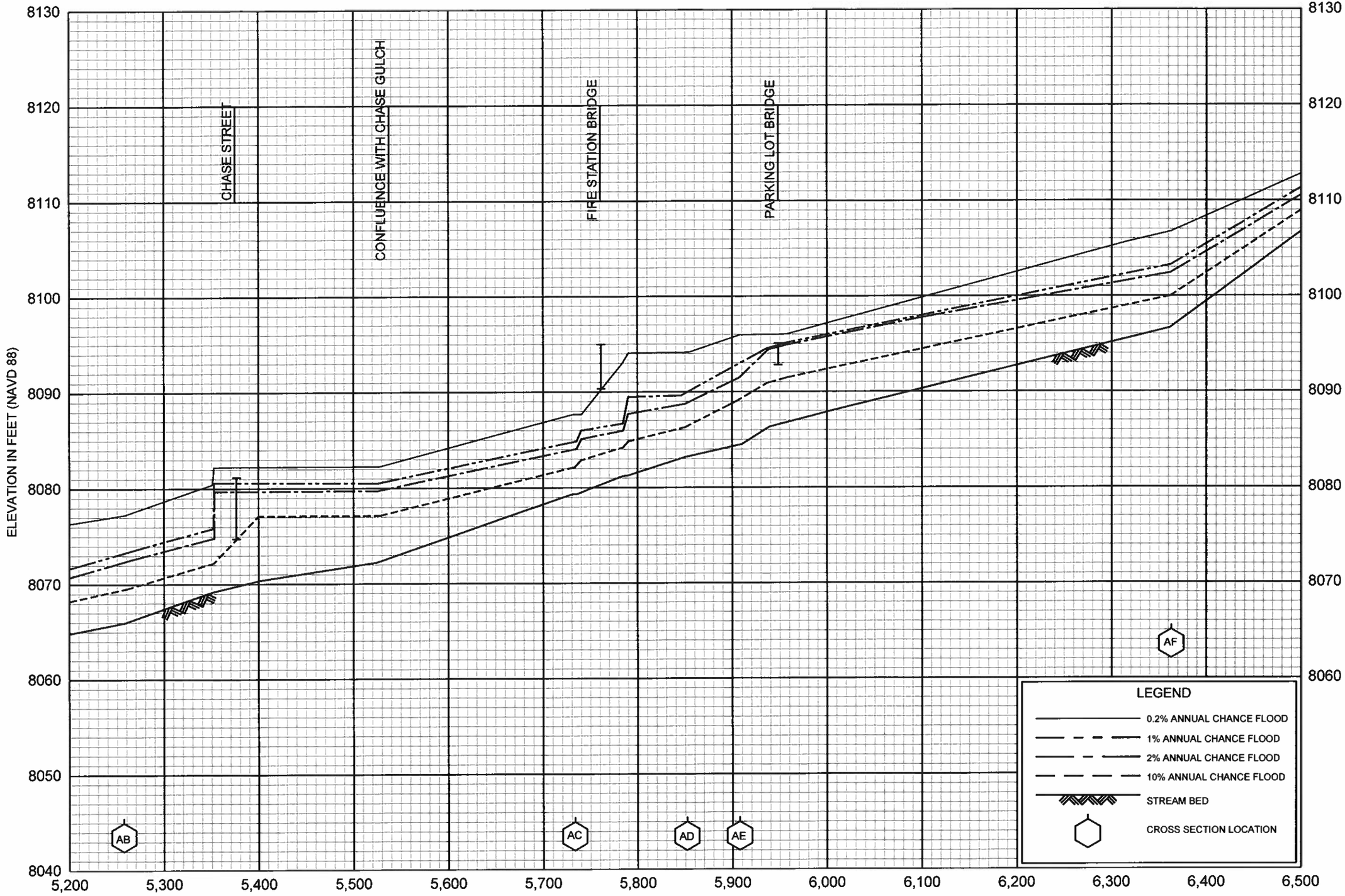
NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

17P



FLOOD PROFILES

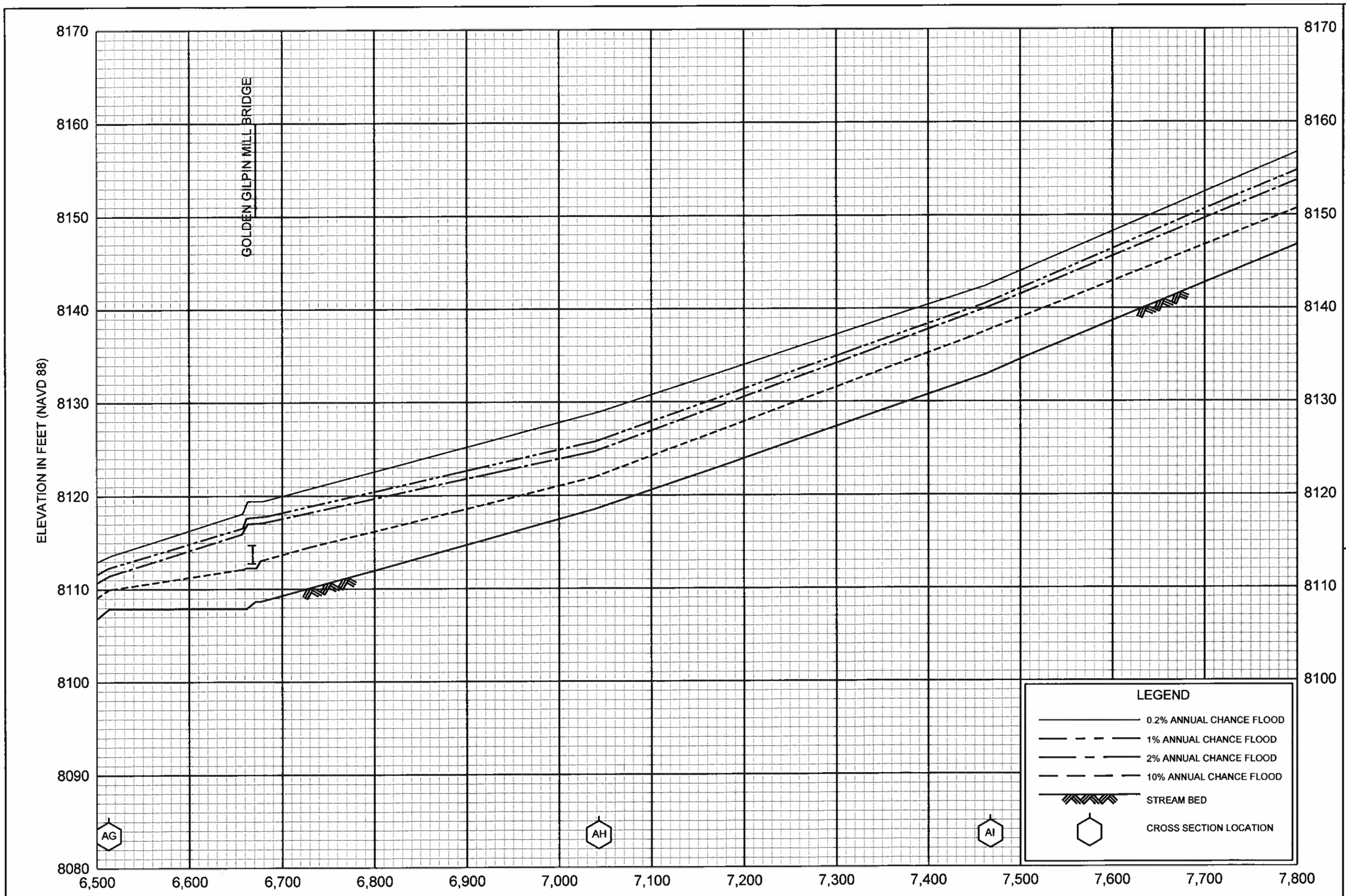
NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO

AND INCORPORATED AREAS

18P



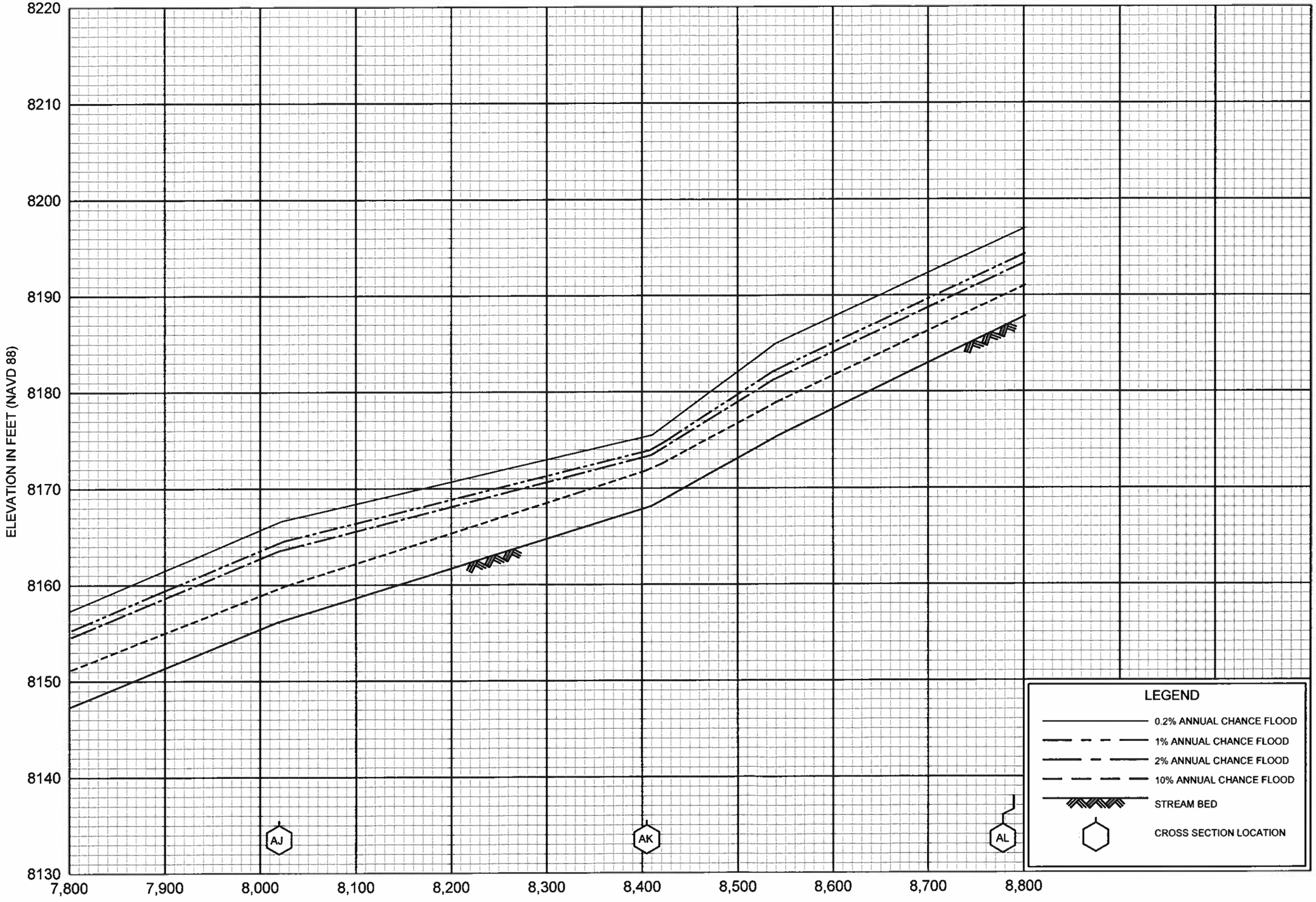
FLOOD PROFILES

NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO
AND INCORPORATED AREAS

19P



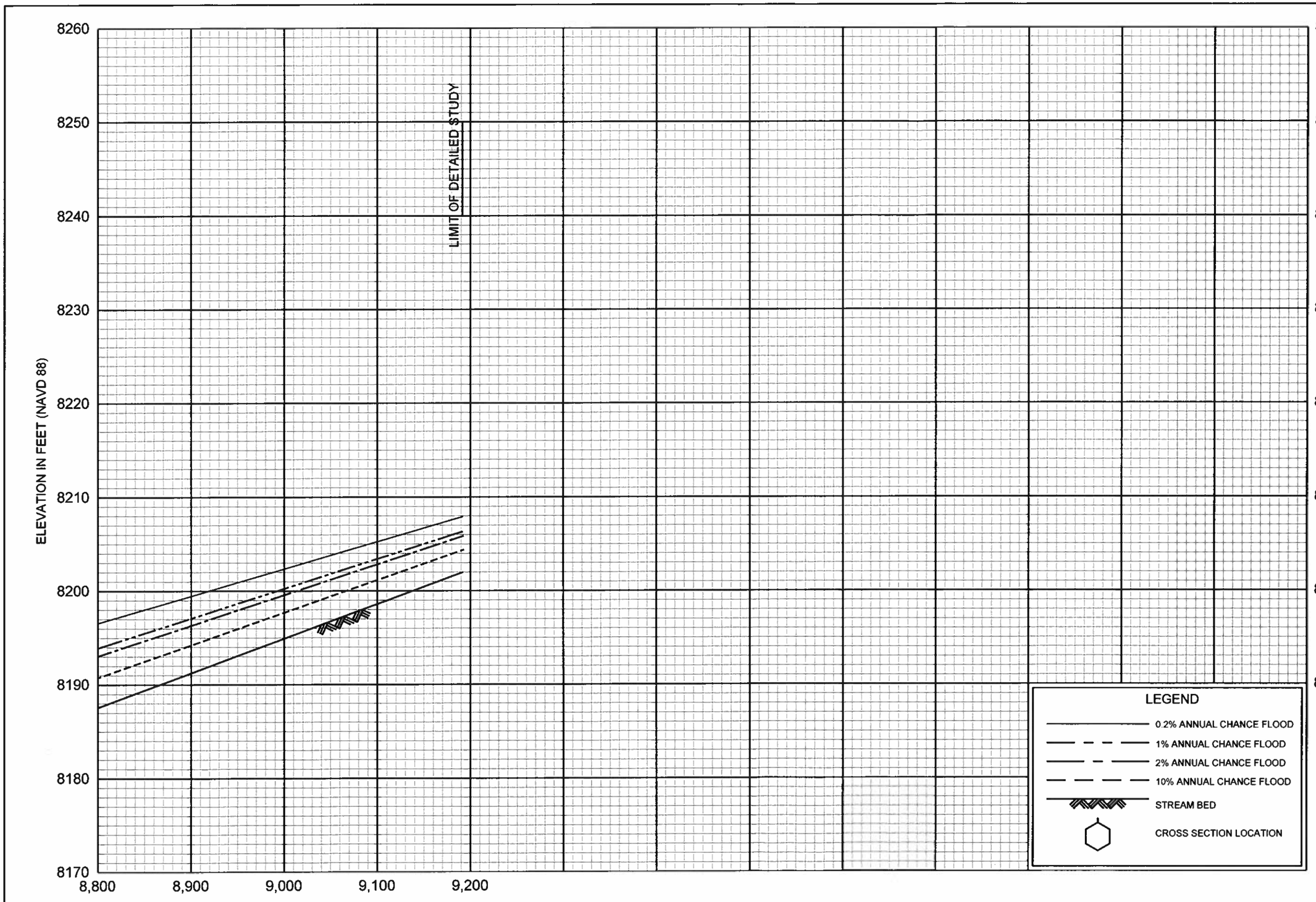
FLOOD PROFILES

NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO
AND INCORPORATED AREAS

20P



FLOOD PROFILES

NORTH CLEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GILPIN COUNTY, CO
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