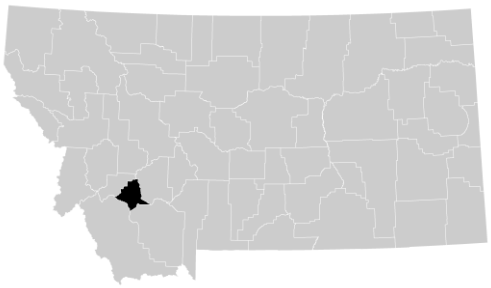
FLOOD INSURANCE STUDY
FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



BUTTE-SILVER BOW COUNTY, MONTANA
(ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER
BUTTE-SILVER BOW COUNTY	300077
WALKERVILLE, CITY OF*	300134

*No Special Flood Hazard Areas Identified

FEMA

PRELIMINARY
8/28/2020

REVISED:
TBD

FLOOD INSURANCE STUDY NUMBER
30093CV001B
Version Number 2.6.3.6

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Exhibits

Flood Profiles	Panel
Basin Creek	01-10 P
Big Hole River	11 P
Blacktail Creek	12-20 P
Brookside Canyon	21-27 P
Gregson Creek	28-29 P

Volume 2

Exhibits

Flood Profiles	Panel
Grove Gulch Creek	30-41 P
Miles Crossing Split	42 P
Mode-S Canyon	43-51 P
Railroad Split	52 P
Reese Canyon	53-56 P
Sand Creek	57-60 P
Sand Creek Diversion	61-62 P
Santa Claus Road Split	63 P
Silver Bow Creek	64-81 P
Silver Bow Creek (Near Butte)	82-83 P
South Rocker Road Split	84 P
Tramway Gulch	85-87 P

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
BUTTE-SILVER BOW COUNTY, MONTANA

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 Butte-Silver Bow County, Montana.

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.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

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
Butte-Silver Bow County	300077	10020004, 10020005, 17010201	30093C0025E [2] 30093C0050E 30093C0075E [2] 30093C0100E [2] 30093C0115E 30093C0120F 30093C0125E [2] 30093C0140F 30093C0145F	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Butte-Silver Bow County (continued)	300077	10020004, 10020005, 17010201	30093C0150E 30093C0155E 30093C0160E 30093C0163F 30093C0165F 30093C0169E 30093C0170E 30093C0188E 30093C0200E 30093C0225E [2] 30093C0250E 30093C0275E 30093C0280F 30093C0285F 30093C0290E 30093C0295E 30093C0302F 30093C0305E [2] 30093C0306F 30093C0307E 30093C0308E 30093C0309E 30093C0315E 30093C0320E 30093C0326E 30093C0327E 30093C0328E 30093C0329E 30093C0335E [2] 30093C0340E 30093C0345E 30093C0375E 30093C0400E 30093C0425E 30093C0450E 30093C0456E 30093C0475E 30093C0500E 30093C0525E [2] 30093C0550E [2] 30093C0575E 30093C0590E 30093C0595E 30093C0600E 30093C0613E 30093C0625E	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Butte-Silver Bow County (continued)	300077	10020004, 10020005, 17010201	30093C0650E 30093C0675E [2] 30093C0700E [2]	
Walkerville, City of [1]	300134	17010201	30093C0169E 30093C0170E	

[1] No Special Flood Hazard Areas Identified
[2] 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 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.

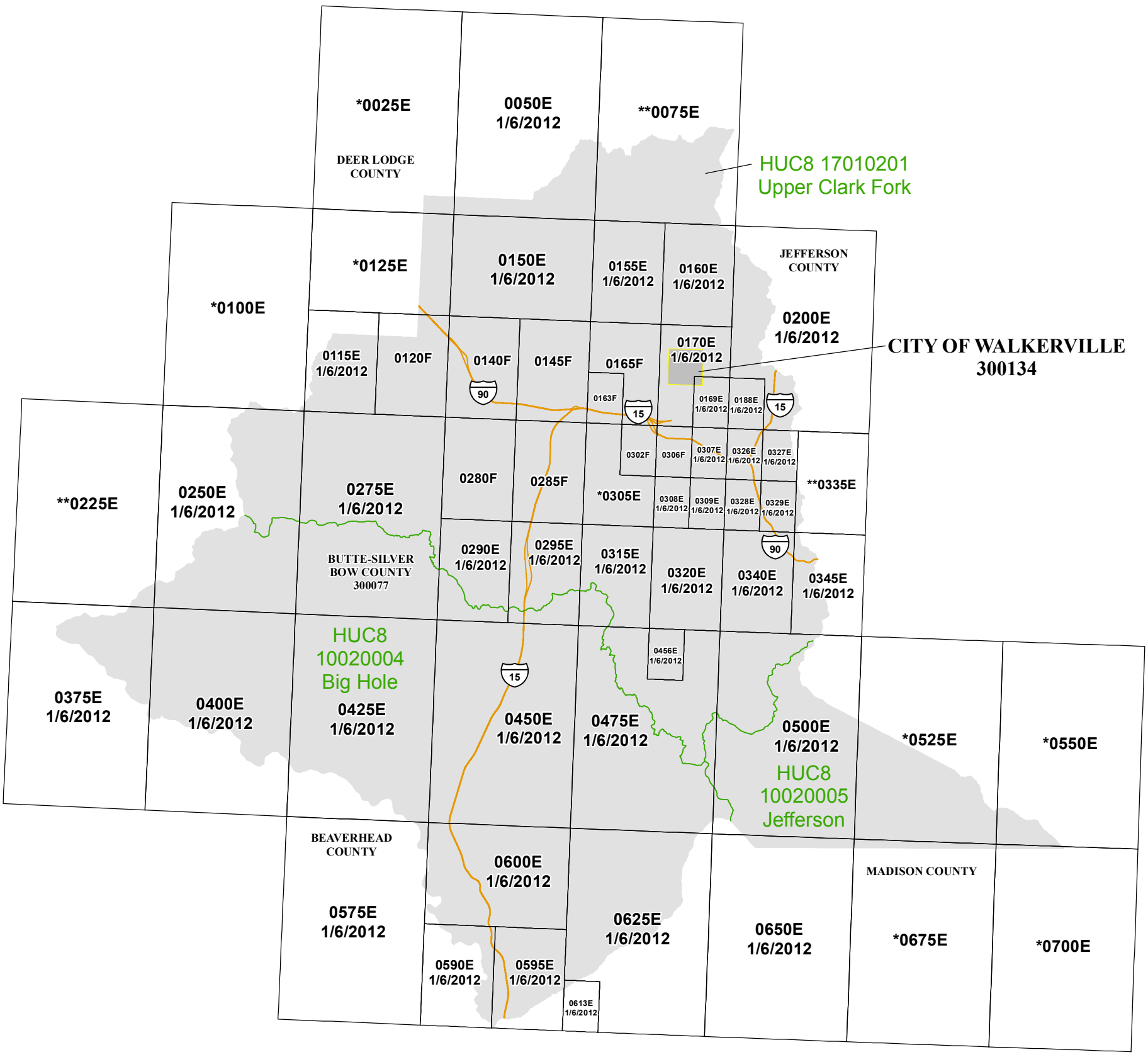
  The initial Countywide FIS Report for Butte-Silver Bow County became effective on January 6, 2012. Refer to Table 27 for information about subsequent revisions to the FIRMs.

- 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/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.

- 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 Butte-Silver Bow 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



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information at the time of publication. As such, they may be more current than those shown on FIRM panels issued before [date].

N

1 inch = 27,154 feet 1:325,854

Feet
0 14,500 29,000 58,000

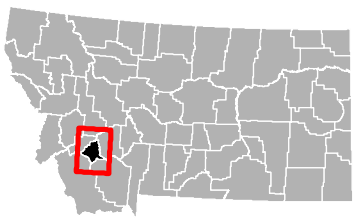
Map Projection:
State Plane Lambert Conformal Conic, Montana Zone, FIPS 2500. North American Datum 1983

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

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS
** PANEL NOT PRINTED - AREA IN ZONE D

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

BUTTE-SILVER BOW COUNTY, MONTANA All Jurisdictions

PANELS PRINTED:
0050, 0115, 0120, 0140, 0145, 0150, 0155, 0160, 0163, 0165, 0169, 0170, 0188, 0200, 0250, 0275, 0280, 0285, 0290, 0295, 0302, 0306, 0307, 0308, 0309, 0315, 0320, 0326, 0327, 0328, 0329, 0340, 0345, 0375, 0400, 0425, 0450, 0456, 0475, 0500, 0575, 0590, 0595, 0600, 0613, 0625, 0650

FEMA

PRELIMINARY
8/28/2020

MAP NUMBER
30093CIND0B

MAP REVISED

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 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.

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.

PRELIMINARY FIS REPORT: 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.

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.

Figure 2. FIRM Notes to Users

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane Lambert Conformal Conic, Montana Zone, FIPS 2500. 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.

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 FIRM panels 120, 140, 145, 163, 165, 280, 285, 302, and 306 was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency. This imagery was flown in 2017 and 2018 and was produced with a 60-centimeter ground sample distance. Additional base map information was obtained from the Montana State Library, the Montana Department of Transportation, and the Federal Emergency Management Agency. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

Base map information shown on the remaining FIRM panels was derived from NAIP orthophotography produced with a one-meter ground resolution from photography dated 2005.

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 Butte-Silver Bow, Montana, 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.

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before [TBD].

Figure 2. FIRM Notes to Users

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 Butte-Silver Bow 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

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 Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
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.
NO SCREEN	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
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
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

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 Butte-Silver Bow 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 Butte-Silver Bow 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)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Basin Creek	Butte-Silver Bow County	Confluence with Blacktail Creek	615 ft downstream of Rt 393	17010201	7.6	Y	AE	2010
Basin Creek	Butte-Silver Bow County	615 ft downstream of Rt 393	Beaverhead-Deerlodge National Forest	17010201	2.1	N	A	1977
Beer Straight Gulch	Butte-Silver Bow County	Confluence with Oro Fino Gulch	City of Walkerville Boundary	17010201	0.8	N	A	1977
Big Hole River	Butte-Silver Bow County	Beaverhead County Boundary	0.6 miles upstream of Beavehead County Boundary	10020004	0.6	Y	AE	2010
Big Hole River	Butte-Silver Bow County	0.6 miles upstream of Beavehead County Boundary	Deerlodge County Boundary	10020004	33.7	N	A	1977
Blacktail Creek	Butte-Silver Bow County	Confluence with Silver Bow Creek (Near Butte)	At MT State Rt 2	17010201	8.4	Y	AE	1977
Brookside Canyon	Butte-Silver Bow County	Confluence with Blacktail Creek	2,000 ft upstream of Interstate 90 (at BNSF RR)	17010201	1.3	Y	AE	1977
Browns Gulch	Butte-Silver Bow County	Confluence with Silver Bow Creek	1.7 miles upstream of Hail Columbia Gulch Confluence	17010201	9.4	N	A	1977
Bull Run Creek	Butte-Silver Bow County	Confluence with Browns Gulch	2.5 miles upstream of confluence with Browns Gulch	17010201	2.5	N	A	1977
Camp Creek	Butte-Silver Bow County	Interstate 15	3 miles upstream of Interstate 15	10020004	3.0	N	A	1977

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)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
China Gulch	Butte-Silver Bow County	Confluence of Basin Creek	Beaverhead-Deerlodge National Forest Boundary	17010201	0.3	N	A	1977
Divide Creek	Butte-Silver Bow County	Confluence with Big Hole River	2 miles upstream of confluence with Tucker Creek	10020004	8.3	N	A	1977
Gregson Creek	Butte-Silver Bow County	Deer Lodge County Boundary	1.5 upstream of Deer Lodge County Boundary	17010201	1.5	Y	AE	1977
Grove Gulch Creek	Butte-Silver Bow County	Confluence with Blacktail Creek	1,000 ft upstream of Montana St (at RR line)	17010201	2.6	Y	AE	1977
Hail Columbia Gulch	Butte-Silver Bow County	Browns Gulch	550 ft above confluence with Sheep Gulch	17010201	0.8	N	A	1977
Herman Gulch	Butte-Silver Bow County	Confluence with Basin Creek	0.7 miles upstream of confluence with Basin Creek	17010201	0.7	N	A	1977
Little Basin Creek	Butte-Silver Bow County	Confluence with Basin Creek	1,500 ft upstream of intersection of Little Basin Creek Rd and Elkhorn Ln	17010201	4.1	N	A	1977
Little Blacktail Creek	Butte-Silver Bow County	Confluence with Blacktail Creek	0.7 miles upstream of crossing of Blacktail Canyon Rd	17010201	2.0	N	A	1977
Miles Crossing Split	Butte-Silver Bow County	Confluence with Railroad Split	Divergence from Silver Bow Creek	17010201	0.1	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)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Mode-S Canyon	Butte-Silver Bow County	Confluence with Blacktail Creek	3,000 ft upstream of Saddle Rock Dr (at BNSF RR)	17010201	1.3	Y	AE	1977
Moose Creek	Butte-Silver Bow County	Confluence with Big Hole River	1.4 miles upstream of Interstate 15	10020004	3.7	N	A	1977
Oro Fino Gulch	Butte-Silver Bow County	Confluence with Browns Gulch	City of Walkerville Boundary	17010201	5.1	N	A	1977
Railroad Split	Butte-Silver Bow County	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	17010201	0.8	N	AE	2019
Reese Canyon	Butte-Silver Bow County	Confluence with Blacktail Creek	700 ft upstream of Saddle Rock Dr (at BNSF RR)	17010201	1.4	Y	AE	1977
Reese Canyon Split Flow	Butte-Silver Bow County	Confluence with Reese Canyon	Divergence from Reese Canyon	17010201	0.2	Y	AE	1977
Sand Creek	Butte-Silver Bow County	Confluence with Silver Bow Creek	2.9 miles upstream of intersection of Buxton Rd and Interstate 15	17010201	7.6	N	A	1977
Sand Creek	Butte-Silver Bow County	Confluence with Blacktail Creek	200 ft upstream of RR (2,000 ft upstream of Wynne Ave)	17010201	3.5	Y	AE	2010
Sand Creek Diversion	Butte-Silver Bow County	Confluence with Basin Creek	Divergence from Sand Creek	17010201	1.0	Y	AE	2010
Santa Claus Rd Split	Butte-Silver Bow County	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	17010201	0.1	N	AE	2019
Silver Bow Creek (Near Butte)	Butte-Silver Bow County	Montana St	150 ft upstream of Farrell St (at BNSF RR)	17010201	1.6	Y	AE	1977

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)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Silver Bow Creek	Butte-Silver Bow County	650 ft upstream of Interstate 15	Montana St	17010201	1.4	N	A	1977
Silver Bow Creek	Butte-Silver Bow County	Deer Lodge County Boundary	650 ft upstream of Interstate 15	17010201	17.1	Y	A, AE	2019
South Rocker Rd Split	Butte-Silver Bow County	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	17010201	0.1	Y	AE	2019
Tramway Gulch	Butte-Silver Bow County	Confluence with Reese Canyon	200 ft upstream of Carosel Way (at BNSF RR)	17010201	0.6	Y	AE	1977

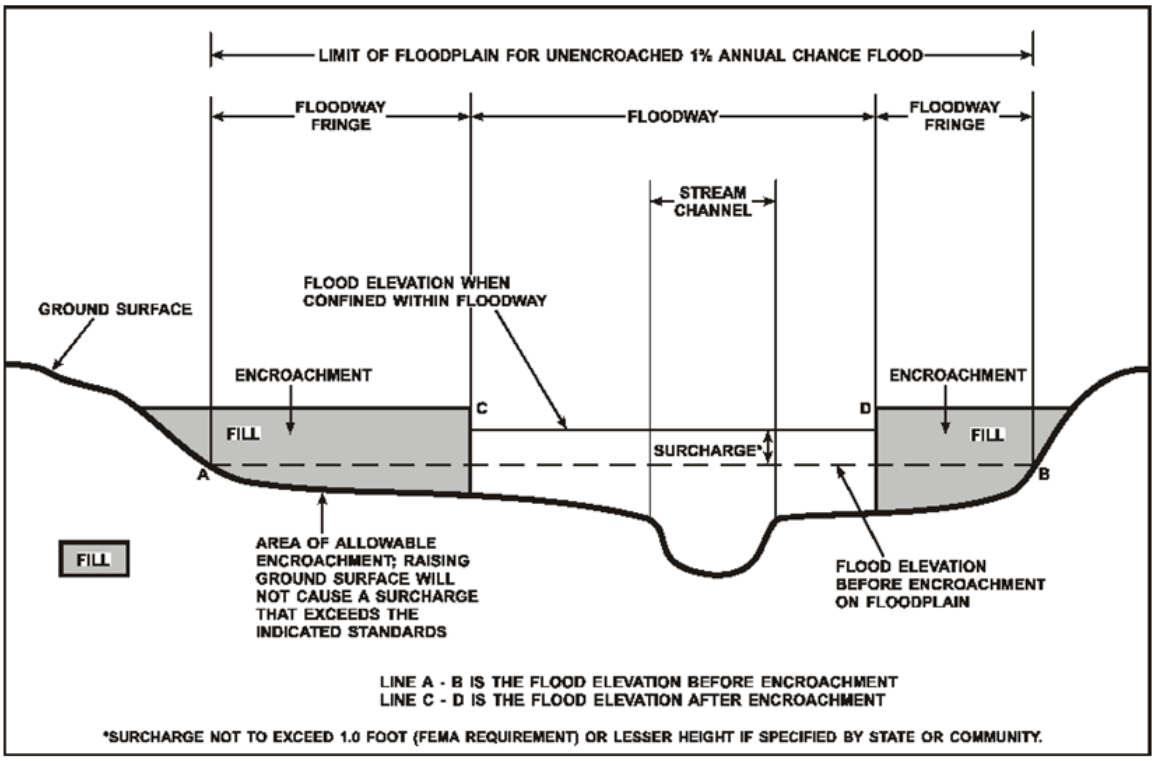
2.2 Floodways

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 Montana require communities in Butte-Silver Bow 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



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.

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 Butte-Silver Bow County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Butte-Silver Bow County	A, AE, D, X
Walkerville, City of	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)
Big Hole	10020004	Big Hole River	Mid-sized watershed within Butte-Silver Bow County, encompassing the southwest portion of the county	2,789
Jefferson	10020005	Jefferson River	Smallest watershed within Butte-Silver Bow County, encompassing the eastern tip of the county	1,299
Upper Clark Fork	17010201	Clark Fork River	Largest watershed within Butte-Silver Bow County, encompassing the north and central portion of the county	1,875

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Grove Gulch Creek	Two floods on Grove Gulch Creek in the vicinity of the landfill have caused flooding over the top of Little Basin Creek Road.
Sand Creek	Flooding has caused problems along the low-lying areas of Sand Creek. The largest flood recorded on Sand Creek was on July 31, 1931, as the result of a thundershower preceded by a less intense rainfall. During this storm, the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks at the upper end of the study were washed out. Several houses were flooded at that time, and the areas now have a heavier concentration of rainfall.
Silver Bow Creek	The primary flooding cause on Silver Bow Creek is spring snowmelt mixed with rain (according to historical records). There are historical records from several U.S. Geological Survey (USGS) stream gages on the creek that date back to 1984, which document basin flood history.

Table 6 contains information about historic flood elevations in the communities within Butte-Silver Bow County.

Table 6: Historic Flooding Elevations

[Not Applicable to this Flood Risk Project]

4.3 Non-Levee Flood Protection Measures

This section is not applicable to this Flood Risk Project.

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.

A summary of the discharges is provided in Table 9. Stream gage information is provided in Table 11.

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% Plus Annual Chance	0.2% Annual Chance
Basin Creek	At confluence of diversion channel from Sand Creek	41.7	222	*	273	282	*	301
Basin Creek	At Airport Culvert – 4,250 ft upstream of Elizabeth Warren Ave.	41.7	121	*	155	160	*	172
Basin Creek	Above Airport Pipe	46.5	390	*	585	692	*	995
Basin Creek	At Confluence with Little Basin Creek	37.9	290	*	443	523	*	758
Basin Creek	At Cross Section T	25.6	193	*	294	349	*	506
Big Hole River	Below Trapper and Camp Creeks	2,365	11,950	*	15,130	16,280	*	18,590
Big Hole River	Above Trapper and Camp Creeks	2,282	11,670	*	14,800	15,930	*	18,210
Big Hole River	Below Moose Creek	2,250	11,560	*	14,670	15,800	*	18,060
Big Hole River	Below Divide Creek	2,146	11,200	*	14,250	15,350	*	17,580
Big Hole River	Above Divide Creek	2,054	10,880	*	13,860	14,950	*	17,140
Big Hole River	Below Jerry Creek	1,999	10,690	*	13,640	14,710	*	16,880
Big Hole River	Below Wise River	1,942	10,490	*	13,390	14,450	*	16,600
Big Hole River	Above Wise River	1,682	9,530	*	12,250	13,250	*	15,280
Big Hole River	Upper Limit of Study	1,609	9,260	*	11,920	12,900	*	14,900
Blacktail Creek	At Mouth of Blacktail Creek	97.8	666	*	976	1,136	*	1,583
Blacktail Creek	At Cross Section D	87.7	538	*	763	850	*	1,105
Blacktail Creek	At Cross Section J	32.7	343	*	524	619	*	896
Blacktail Creek	At Cross Section L	32.1	317	*	484	571	*	827
Blacktail Creek	At Cross Section P	31.7	298	*	458	543	*	786

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	1% Plus Annual Chance	0.2% Annual Chance
Blacktail Creek	At Cross Section R	31.4	273	*	420	498	*	722
Blacktail Creek	At Cross Section T	26.8	225	*	346	410	*	594
Blacktail Creek	At Confluence With Little Blacktail Creek	22.8	173	*	270	322	*	468
Brookside Canyon	At Mouth	1.5	26	*	45	54	*	82
Gregson Creek	Below Butte, Anaconda and Pacific Railroad	4.3	28	*	33	41	*	44
Gregson Creek	Above Butte, Anaconda and Pacific Railroad	4.3	80	*	98	119	*	178
Grove Gulch Creek	At Mouth	6.5	76	*	87	95	*	113
Grove Gulch Creek	Above Tailing Pile	5	84	*	136	164	*	245
Miles Crossing Split	At Divergence From Silver Bow Creek	--	68	110	148	192	290	307
Mode-S Canyon	At Mouth	1.7	25	*	41	50	*	75
Railroad Split	At Divergence From Silver Bow Creek	--	39	53	62	72	94	99
Railroad Split	At Convergence With Miles Crossing Split	--	107	163	210	264	384	406
Reese Canyon	At Mouth	1	18	*	30	37	*	56
Sand Creek	At Cross Section Z	8.4	101	*	166	201	*	300
Sand Creek	Downstream of diversion structure located at Four Mile View Rd.	8.4	--	*	48	79	*	171
Santa Claus Rd Split	At Divergence From Silver Bow Creek	--	5	27	54	90	181	205

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	1% Plus Annual Chance	0.2% Annual Chance
Silver Bow Creek	Silver Bow Creek below Blacktail Creek at Butte, MT	1.0	313	400	473	554	729	774
Silver Bow Creek	Rocker, MT	1,058	333	429	511	601	797	847
Silver Bow Creek	Sand Creek	980	341	440	526	620	824	876
Silver Bow Creek	Browns Gulch	930	432	578	704	847	1,164	1,237
Silver Bow Creek	McCleery Gulch	902	580	809	1,013	1,249	1,787	1,902
Silver Bow Creek	German Gulch	879	604	848	1,066	1,318	1,896	2,018
Silver Bow Creek	Deer Lodge County Boundary	137	679	969	1,231	1,537	2,247	2,392
Silver Bow Creek	At Montana Avenue	103.8	683	*	997	1,158	*	1,630
Silver Bow Creek	At Confluence with Blacktail Creek (Cross Section C)	21.8	104	*	153	179	*	232
South Rocker Rd Split	At Divergence From Silver Bow Creek	--	10	45	82	126	233	261
Tramway Gulch	At Mouth	0.7	12	*	20	25	*	38

* Not calculated for this Flood Risk Project
- 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: 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
Big Hole River	6-0255	USGS	Approximately 20 miles downstream of the Continental Divide	-	1923	1977
Silver Bow Creek	12323250	USGS	Silver Bow Creek below Blacktail Creek at Butte, MT	125	1984	2017
Silver Bow Creek	12323600	USGS	Silver Bow Creek at Opportunity, MT	343	1989	2017

- Data not available

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	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Basin Creek	Confluence with Blacktail Creek	615 ft downstream of Rt 393	Other	HEC-RAS 4.0.0	01/2010	AE w/ Floodway	The hydrologic analysis used the USGS Gage Transfer Method.
Basin Creek	615 ft downstream of Rt 393	Beaverhead-Deerlodge National Forest	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Beer Straight Gulch	Confluence with Oro Fino Gulch	City of Walkerville Boundary	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Big Hole River	Beaverhead County Boundary	0.6 miles upstream of Beavehead County Boundary	Log Pearson Type III Frequency Analysis	WSP-2	01/2010	AE w/ Floodway	Gage No. 6-0255 was used in the hydrologic analysis.
Big Hole River	0.6 miles upstream of Beavehead County Boundary	Deerlodge County Boundary	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Blacktail Creek	Confluence with Silver Bow Creek (Near Butte)	At MT State Rt 2	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Brookside Canyon	Confluence with Blacktail Creek	2,000 ft upstream of Interstate 90 (at BNSF RR)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Browns Gulch	Confluence with Silver Bow Creek	1.7 miles upstream of Hail Columbia Gulch Confluence	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Bull Run Creek	Confluence with Browns Gulch	2.5 miles upstream of confluence with Browns Gulch	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Camp Creek	Interstate 15	3 miles upstream of Interstate 15	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.

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
China Gulch	Confluence of Basin Creek	Beaverhead-Deerlodge National Forest Boundary	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Divide Creek	Confluence with Big Hole River	2 miles upstream of confluence with Tucker Creek	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Gregson Creek	Deer Lodge County Boundary	1.5 upstream of Deer Lodge County Boundary	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Grove Gulch Creek	Confluence with Blacktail Creek	1,000 ft upstream of Montana St (at RR line)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Hail Columbia Gulch	Browns Gulch	550 ft above confluence with Sheep Gulch	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Herman Gulch	Confluence with Basin Creek	0.7 miles upstream of confluence with Basin Creek	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Little Basin Creek	Confluence with Basin Creek	1,500 ft upstream of intersection of Little Basin Creek Rd and Elkhorn Ln	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Little Blacktail Creek	Confluence with Blacktail Creek	0.7 miles upstream of crossing of Blacktail Canyon Rd	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Miles Crossing Split	Confluence with Railroad Split	Divergence from Silver Bow Creek	Other	HEC-RAS 5.0.6	05/17/2019	AE	The hydrologic analysis used the Two-Station Logarithmic Gage Interpolation Method.

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
Mode-S Canyon	Confluence with Blacktail Creek	3,000 ft upstream of Saddle Rock Dr (at BNSF RR)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Moose Creek	Confluence with Big Hole River	1.4 miles upstream of Interstate 15	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Oro Fino Gulch	Confluence with Browns Gulch	City of Walkerville Boundary	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Railroad Split	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	Other	HEC-RAS 5.0.6	05/17/2019	AE	The hydrologic analysis used the Two-Station Logarithmic Gage Interpolation Method.
Reese Canyon	Confluence with Blacktail Creek	700 ft upstream of Saddle Rock Dr (at BNSF RR)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Reese Canyon Split Flow	Confluence with Reese Canyon	Divergence from Reese Canyon	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Sand Creek	Confluence with Silver Bow Creek	2.9 miles upstream of intersection of Buxton Rd and Interstate 15	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Sand Creek	Confluence with Blacktail Creek	200 ft upstream of RR (2,000 ft upstream of Wynne Ave)	Other	HEC-RAS 4.0.0	01/2010	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Sand Creek Diversion	Confluence with Basin Creek	Divergence from Sand Creek	Other	HEC-RAS 4.0.0	01/2010	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).

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
Santa Claus Rd Split	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	Other	HEC-RAS 5.0.6	05/17/2019	AE	The hydrologic analysis used the Two-Station Logarithmic Gage Interpolation Method.
Silver Bow Creek (Near Butte)	Montana St	150 ft upstream of Farrell St (at BNSF RR)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).
Silver Bow Creek	650 ft upstream of Interstate 15	Montana St	Other	Other	06/1977	A	The hydrologic analysis used rough computations. The hydraulic analysis used field investigations and engineering judgement.
Silver Bow Creek	Deer Lodge County Boundary	650 ft upstream of Interstate 15	Other	HEC-RAS 5.0.6	05/17/2019	A, AE w/ Floodway	The hydrologic analysis used the Two-Station Logarithmic Gage Interpolation Method.
South Rocker Rd Split	Confluence with Silver Bow Creek	Divergence from Silver Bow Creek	Other	HEC-RAS 5.0.6	05/17/2019	AE w/ Floodway	The hydrologic analysis used the Two-Station Logarithmic Gage Interpolation Method.
Tramway Gulch	Confluence with Reese Canyon	200 ft upstream of Carosel Way (at BNSF RR)	Other	HEC-2	06/1977	AE w/ Floodway	The hydrologic analysis used “A Method for Estimating Magnitude and Frequency of Flows in Montana” (USGS 1976).

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Basin Creek	0.027-0.040	0.060-0.100
Big Hole River	0.040-0.055	0.040-0.100
Blacktail Creek	0.030-0.050	0.040-0.800
Brookside Canyon	0.050-0.065	0.070-0.075
Gregson Creek	0.045-0.065	0.065-0.070
Grove Gulch Creek	0.040-0.065	0.060-0.065
Miles Crossing Split	0.060	0.060
Mode-S Canyon	0.050-0.065	0.080
Railroad Split	0.050-0.060	0.050-0.060
Reese Canyon	0.060-0.075	0.070-0.095
Sand Creek	0.027-0.040	0.060-0.100
Santa Claus Rd Split	0.060	0.060
Silver Bow Creek (Near Butte)	0.025-0.045	0.045-0.065
Silver Bow Creek	0.037-0.053	0.020-0.150
South Rocker Rd Split	0.060	0.060
Tramway Gulch	0.035-0.065	0.070-0.090

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 Butte-Silver Bow County are provided in Table 19.

Table 19: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

Table 20: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

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
Digital Orthophoto	United States Department of Agriculture: Farm Service Agency	2017/ 2018	60-cm ground sample distance	Color orthoimagery was provided for the county and shown on FIRM panels 120, 140, 145, 163, 165, 280, 285, 302, and 306.
Digital Orthophoto	United States Department of Agriculture: Farm Service Agency	2005	1-m ground resolution	Color orthoimagery was provided for the county, converted to black and white, and shown on the remaining FIRM panels.
Political boundaries	FEMA National Flood Hazard Layer	2020	1:24,000	Municipal and county boundaries
Public Land Survey System (PLSS)	Montana State Library	2018	1:24,000	PLSS data were digitized from USGS quadrangles
Transportation Features	Montana Department of Transportation	2020	1:24,000	Transportation lines
Watershed Boundaries	United States Geological Survey	2014	1:24,000	HUC8 watershed sub-basin 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
Butte Silver Bow County	Railroad Split, Miles Crossing Split, Santa Claus Road Split, Silver Bow Creek, South Rocker Road Split	Light Detection and Ranging data (LiDAR)	2.6 cm RMSEz	1 meter at 95% confidence level	Quantum Spatial, 2017
Butte Silver Bow County	All other flooding sources	USGS Topographic Maps with Contour Intervals of 20, 40, and 80 feet	*	*	USGS, various

* Data not available

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. Rounded whole-foot elevations may be shown on the FIRM in areas of ponding and other areas with static base flood elevations.

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	313	43	153	1.9	5,468.5	5,464.1[2]	5,464.1[2]	0.0
B	1,196	24	70	4.0	5,468.5	5,466.1[2]	5,466.2[2]	0.1
C	1,888	54	90	3.1	5,468.5	5,467.8[2]	5,467.9[2]	0.1
D	2,897	42	129	2.2	5,472.2	5,472.2	5,472.6	0.4
E	3,043	41	146	1.9	5,472.8	5,472.8	5,472.9	0.1
F	3,413	42	85	3.3	5,474.1	5,474.1	5,474.2	0.1
G	3,772	51	99	2.9	5,475.0	5,475.0	5,475.1	0.1
H	5,054	25	59	4.8	5,479.4	5,479.4	5,479.4	0.0
I	5,303	268	714	0.2	5,484.0	5,484.0	5,484.0	0.0
J	8,022	20	26	6.3	5,489.8	5,489.8	5,490.0	0.2
K	9,165	29	40	4.0	5,494.4	5,494.4	5,494.4	0.0
L	12,759	26	54	3.0	5,506.6	5,506.6	5,506.7	0.1
M	13,849	250	2,156	0.3	5,517.8	5,517.8	5,517.8	0.0
N	15,699	575	1,824	0.3	5,518.1	5,518.1	5,518.1	0.0
O	16,809	212	845	0.6	5,522.4	5,522.4	5,522.6	0.2
P	18,359	419	2,431	0.2	5,528.7	5,528.7	5,529.1	0.4
Q	20,169	109	327	1.6	5,529.5	5,529.5	5,530.0	0.5
R	21,039	227	1,050	0.5	5,536.5	5,536.5	5,536.5	0.0
S	22,509	96	196	2.7	5,537.8	5,537.8	5,538.3	0.5
T	24,789	69	184	2.8	5,547.3	5,547.3	5,547.8	0.5
U	27,059	171	364	1.4	5,554.5	5,554.5	5,554.7	0.2
V	28,109	197	234	2.2	5,558.1	5,558.1	5,558.5	0.4
W	30,549	137	449	0.8	5,567.3	5,567.3	5,567.3	0.0

[1] Feet above confluence with Blacktail Creek
[2] Computed without consideration of backwater effects from Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BASIN CREEK

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
X	32,449	131	269	1.3	5,575.7	5,575.7	5,576.2	0.5
Y	34,269	62	297	1.2	5,588.2	5,588.2	5,588.5	0.3
Z	35,139	32	88	4.0	5,591.3	5,591.3	5,591.8	0.5
AA	37,019	23	64	5.5	5,625.6	5,625.6	5,625.6	0.0
AB	37,709	67	92	3.8	5,631.8	5,631.8	5,632.3	0.5

[1] Feet above confluence with Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BASIN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	550	300/150	3,506	3.3	5,171.2	5,171.2	5,171.4	0.2
B	1,775	280/200	1,804	6.5	5,174.2	5,174.2	5,174.6	0.4

[1] Feet above Butte-Silver Bow County limits
[2] Total floodway width / width within jurisdiction

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BIG HOLE RIVER

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	710	110/150[2]	860	1.3	5,449.7	5,449.7	5,450.1	0.4
B	1,790	65	447	2.5	5,450.3	5,450.3	5,450.7	0.4
C	2,840	69	605	1.2	5,452.7	5,452.7	5,453.0	0.3
D	3,840	318	2,162	0.4	5,452.8	5,452.8	5,453.1	0.3
E	5,230	290	1,746	0.5	5,453.7	5,453.7	5,454.0	0.3
F	5,800	511	2,511	0.3	5,453.8	5,453.8	5,454.1	0.3
G	7,330	415	1,522	0.6	5,455.7	5,455.7	5,455.7	0.0
H	8,750	60	395	2.2	5,461.9	5,461.9	5,461.9	0.0
I	9,160	40	300	2.8	5,462.0	5,462.0	5,462.0	0.0
J	10,620	233	408	1.5	5,462.5	5,462.5	5,462.7	0.2
K	11,520	37	139	4.5	5,463.1	5,463.1	5,463.6	0.5
L	11,960	100	459	1.2	5,468.5	5,468.5	5,468.5	0.0
M	12,500	104	314	1.8	5,468.5	5,468.5	5,468.5	0.0
N	14,100	237	280	2.0	5,472.3	5,472.3	5,472.4	0.1
O	15,100	36	124	4.6	5,473.3	5,473.3	5,473.7	0.4
P	16,430	332	1,313	0.4	5,483.3	5,483.3	5,483.4	0.1
Q	17,450	95/20[2]	157	3.5	5,483.3	5,483.3	5,483.4	0.1
R	19,550	176	178	2.8	5,490.2	5,490.2	5,490.6	0.4
S	21,040	226	810	0.6	5,498.4	5,498.4	5,498.4	0.0
T	21,890	111	208	2.4	5,498.5	5,498.5	5,498.6	0.1
U	23,590	85	158	2.6	5,501.9	5,501.9	5,502.2	0.3
V	25,540	149	127	3.2	5,507.8	5,507.8	5,508.1	0.3
W	27,350	148	202	2.0	5,513.1	5,513.1	5,513.5	0.4

[1] Feet above confluence with Silver Bow Creek (Near Butte)
[2] Left channel width / Right channel width

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BLACKTAIL CREEK

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
X	28,500	113	163	2.5	5,517.0	5,517.0	5,517.5	0.5
Y	30,050	144	202	1.6	5,521.4	5,521.4	5,521.8	0.4
Z	32,550	151	171	1.9	5,528.5	5,528.5	5,529.0	0.5
AA	34,850	199	195	1.7	5,537.7	5,537.7	5,538.2	0.5
AB	36,050	128	205	1.6	5,541.0	5,541.0	5,541.4	0.4
AC	38,550	56	87	3.7	5,549.1	5,549.1	5,549.2	0.1
AD	40,490	30	108	3.0	5,564.0	5,564.0	5,564.3	0.3
AE	43,290	40/80[2]	114	2.8	5,591.7	5,591.7	5,592.2	0.5
AF	44,690	174	106	3.0	5,614.4	5,614.4	5,614.8	0.4

[1] Feet above confluence with Silver Bow Creek (Near Butte)
[2] Left channel width / Right channel width

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BLACKTAIL CREEK

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	300	18	26	2.1	5,496.1	5,496.1	5,496.6	0.5
B	800	45	18	3.0	5,502.2	5,502.2	5,502.2	0.0
C	1,100	52	58	0.9	5,503.3	5,503.3	5,503.4	0.1
D	1,490	26	32	4.7	5,503.8	5,503.8	5,504.0	0.2
E	2,480	30	14	3.9	5,519.2	5,519.2	5,519.2	0.0
F	2,650	40	81	0.7	5,524.2	5,524.2	5,524.2	0.0
G	3,330	91	263	0.2	5,543.0	5,543.0	5,543.4	0.4
H	4,060	26	79	6.9	5,588.3	5,588.3	5,588.6	0.3
I	4,510	8	10	5.7	5,608.4	5,608.4	5,608.4	0.0

[1] Feet above confluence with Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: BROOKSIDE CANYON

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	0	30[2]	17	2.4	5,097.0	5,097.0	5,097.4	0.4
B	1,570	359	537	0.2	5,119.8	5,119.8	5,120.3	0.5
C	2,920	111	195	0.6	5,134.5	5,134.5	5,135.0	0.5
D	6,310	77	131	0.9	5,177.1	5,177.1	5,177.5	0.4
E	7,970	40	36	3.3	5,206.3	5,206.3	5,206.6	0.3

[1] Feet above Butte-Silver Bow County limits
[2] Width lies entirely outside county limits

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: GREGSON CREEK

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	175	118	320	0.3	5,452.7	5,447.2[2]	5,447.3	0.1
B	775	490	265	0.4	5,452.7	5,448.5[2]	5,448.8	0.3
C	1,600	59	146	0.7	5,457.2	5,457.2	5,457.6	0.4
D	3,150	94	186	0.5	5,465.5	5,465.5	5,465.5	0.0
E	4,810	41	55	1.7	5,477.7	5,477.7	5,477.9	0.2
F	5,500	40	17	5.6	5,479.0	5,479.0	5,479.0	0.0
G	8,500	125	453	0.4	5,533.6	5,533.6	5,534.0	0.4
H	10,730	30	75	2.0	5,559.9	5,559.9	5,559.9	0.0
I	12,150	15	23	7.1	5,585.7	5,585.7	5,586.0	0.3
J	13,975	21	62	2.7	5,638.4	5,638.4	5,638.4	0.0
K	14,775	23	36	4.6	5,655.9	5,655.9	5,656.3	0.4
L	16,075	19	25	6.6	5,691.8	5,691.8	5,691.8	0.0
M	16,735	12	35	4.7	5,711.0	5,711.0	5,711.1	0.1

[1] Feet above confluence with Blacktail Creek
[2] Computed without consideration of backwater effects from Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: GROVE GULCH CREEK

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	400	27	19	2.6	5,496.0	5,496.0	5,496.2	0.2
B	1,000	77	347	0.2	5,507.8	5,507.8	5,508.2	0.4
C	1,900	26	19	2.6	5,522.0	5,522.0	5,522.1	0.1
D	4,155	8	9	5.8	5,581.4	5,581.4	5,581.4	0.0
E	5,155	10	12	4.2	5,640.6	5,640.6	5,641.1	0.5
F	6,990	7	8	6.3	5,803.3	5,803.3	5,803.3	0.0

[1] Feet above confluence with Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: MODE-S CANYON

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	100	21	10	3.7	5,470.7	5,470.7	5,470.7	0.0
B	390	26	21	1.8	5,474.7	5,474.7	5,475.0	0.3
C	700	18	13	2.9	5,478.6	5,478.6	5,478.6	0.0
D	2,225	6	7	5.2	5,502.4	5,502.4	5,502.7	0.3
E	2,930	96	88	0.4	5,520.7	5,520.7	5,521.2	0.5
F	3,550	16	16	2.3	5,524.2	5,524.2	5,524.5	0.3
G	4,710	17	10	3.9	5,542.5	5,542.5	5,542.6	0.1
H	5,820	15	14	2.6	5,572.2	5,572.2	5,572.2	0.0
I	6,820	7	11	3.5	5,613.8	5,613.8	5,613.9	0.1

[1] Feet above confluence with Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: REESE CANYON

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	55	33	62	1.3	5,452.8	5,446.0[2]	5,446.0	0.0
B	733	24	42	1.9	5,452.8	5,451.6[2]	5,451.6	0.0
C	1,430	36	65	1.2	5,456.0	5,456.0	5,456.0	0.0
D	1,612	19	37	2.1	5,458.0	5,458.0	5,458.0	0.0
E	2,195	23	48	1.6	5,458.4	5,458.4	5,458.4	0.0
F	2,316	24	35	2.3	5,458.5	5,458.5	5,458.5	0.0
G	2,641	19	15	5.3	5,462.6	5,462.6	5,462.6	0.0
H	2,908	31	51	1.5	5,467.3	5,467.3	5,467.3	0.0
I	3,930	32	18	4.4	5,469.1	5,469.1	5,469.1	0.0
J	4,260	22	30	2.6	5,470.4	5,470.4	5,470.4	0.0
K	5,286	28	18	4.5	5,474.5	5,474.5	5,474.5	0.0
L	6,276	34	34	2.3	5,480.0	5,480.0	5,480.0	0.0
M	6,623	64	28	2.9	5,481.4	5,481.4	5,481.4	0.0
N	8,449	24	25	3.2	5,489.7	5,489.7	5,489.7	0.0
O	8,869	15	24	3.3	5,492.1	5,492.1	5,492.1	0.0
P	9,375	14	14	5.6	5,495.2	5,495.2	5,495.2	0.0
Q	9,611	17	53	1.5	5,497.5	5,497.5	5,497.7	0.2
R	9,954	20	16	4.8	5,497.8	5,497.8	5,497.9	0.1
S	10,477	20	16	5.0	5,500.8	5,500.8	5,500.8	0.0
T	12,042	14	20	3.9	5,510.4	5,510.4	5,510.4	0.0
U	13,884	25	32	6.3	5,521.5	5,521.5	5,521.5	0.0
V	15,133	19	28	7.1	5,525.8	5,525.8	5,525.8	0.0
W	15,697	36	69	2.9	5,529.4	5,529.4	5,529.4	0.0

[1] Feet above confluence with Blacktail Creek
[2] Elevation computed without consideration of backwater effects from Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SAND CREEK

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
X	16,076	45	82	2.5	5,530.4	5,530.4	5,530.5	0.1
Y	17,665	20	29	6.9	5,545.5	5,545.5	5,545.5	0.0
Z	17,839	48	221	0.9	5,546.9	5,546.9	5,546.9	0.0

[1] Feet above confluence with Blacktail Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SAND CREEK

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	774	222	433	3.5	5,078.6	5,078.6	5,079.0	0.4
B	1,996	236	301	5.1	5,084.9	5,084.9	5,085.3	0.4
C	3,304	393	710	2.2	5,093.4	5,093.4	5,093.4	0.0
D	4,758	57	198	7.8	5,102.2	5,102.2	5,102.4	0.2
E	6,136	110	243	6.3	5,110.4	5,110.4	5,110.5	0.1
F[2]	6,792	*	*	*	5,115.0	5,115.0	*	*
G[2]	7,591	*	*	*	5,125.4	5,125.4	*	*
H[2]	8,947	*	*	*	5,130.6	5,130.6	*	*
I[2]	10,138	*	*	*	5,138.2	5,138.2	*	*
J[2]	11,313	*	*	*	5,151.1	5,151.1	*	*
K[2]	12,184	*	*	*	5,162.3	5,162.3	*	*
L[2]	13,431	*	*	*	5,169.3	5,169.3	*	*
M[2]	15,165	*	*	*	5,181.4	5,181.4	*	*
N[2]	16,922	*	*	*	5,193.8	5,193.8	*	*
O[2]	18,357	*	*	*	5,203.8	5,203.8	*	*
P[2]	19,518	*	*	*	5,214.1	5,214.1	*	*
Q[2]	20,775	*	*	*	5,220.8	5,220.8	*	*
R[2]	22,054	*	*	*	5,237.5	5,237.5	*	*
S[2]	23,406	*	*	*	5,243.4	5,243.4	*	*
T[2]	24,690	*	*	*	5,252.1	5,252.1	*	*
U[2]	26,025	*	*	*	5,259.1	5,259.1	*	*
V[2]	27,530	*	*	*	5,260.6	5,260.6	*	*
W[2]	28,038	*	*	*	5,262.4	5,262.4	*	*

[1] Feet above Deer Lodge County limits
[2] Floodway not computed/shown for this cross section
* Data not available

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SILVER BOW CREEK

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
X[2]	29,087	*	*	*	5,263.3	5,263.3	*	*
Y[2]	31,077	*	*	*	5,264.6	5,264.6	*	*
Z[2]	32,457	*	*	*	5,267.7	5,267.7	*	*
AA[2]	33,389	*	*	*	5,269.7	5,269.7	*	*
AB[2]	35,079	*	*	*	5,272.6	5,272.6	*	*
AC[2]	36,352	*	*	*	5,275.4	5,275.4	*	*
AD[2]	37,394	*	*	*	5,278.6	5,278.6	*	*
AE[2]	38,702	*	*	*	5,283.2	5,283.2	*	*
AF[2]	40,331	*	*	*	5,284.3	5,284.3	*	*
AG[2]	41,164	*	*	*	5,286.0	5,286.0	*	*
AH[2]	43,145	*	*	*	5,289.4	5,289.4	*	*
AI[2]	44,896	*	*	*	5,292.7	5,292.7	*	*
AJ[2]	46,642	*	*	*	5,295.2	5,295.2	*	*
AK[2]	48,882	*	*	*	5,299.5	5,299.5	*	*
AL[2]	50,997	*	*	*	5,303.3	5,303.3	*	*
AM	52,168	147	355	2.4	5,306.7	5,306.7	5,307.1	0.4
AN	53,469	225	493	1.7	5,309.1	5,309.1	5,309.6	0.5
AO	55,902	123	344	2.5	5,314.5	5,314.5	5,314.9	0.4
AP[2]	56,569	*	*	*	5,319.1	5,319.1	*	*
AQ[2]	58,246	*	*	*	5,322.3	5,322.3	*	*
AR[2]	59,417	*	*	*	5,325.2	5,325.2	*	*
AS[2]	60,953	*	*	*	5,330.1	5,330.1	*	*
AT[2]	62,761	*	*	*	5,335.4	5,335.4	*	*

[1] Feet above Deer Lodge County limits
[2] Floodway not computed/shown for this cross section
* Data not available

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SILVER BOW CREEK

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
AU[2]	64,068	*	*	*	5,340.2	5,340.2	*	*
AV[2]	65,329	*	*	*	5,343.5	5,343.5	*	*
AW	66,531	43	132	4.7	5,348.5	5,348.5	5,348.5	0.0
AX	68,086	53	227	2.7	5,352.9	5,352.9	5,353.3	0.4
AY	70,345	299	493	1.3	5,357.9	5,357.9	5,358.2	0.3
AZ	71,345	42	177	3.5	5,361.6	5,361.6	5,361.9	0.3
BA	72,420	89	217	2.9	5,364.6	5,364.6	5,364.9	0.3
BB	75,786	66	203	3	5,374.5	5,374.5	5,374.9	0.4
BC	76,850	52	184	3.3	5,378.5	5,378.5	5,378.8	0.3
BD	78,396	56	193	2.5	5,383.4	5,383.4	5,383.9	0.5
BE[2]	79,558	*	*	*	5,387.3	5,387.3	*	*
BF[2]	80,566	*	*	*	5,390.5	5,390.5	*	*
BG[2]	81,670	*	*	*	5,394.2	5,394.2	*	*
BH[2]	83,417	*	*	*	5,399.7	5,399.7	*	*
BI[2]	84,962	*	*	*	5,405.6	5,405.6	*	*
BJ[2]	86,027	*	*	*	5,410.9	5,410.9	*	*
BK[2]	87,789	*	*	*	5,414.8	5,414.8	*	*
BL[2]	89,421	*	*	*	5,420.4	5,420.4	*	*
BM[2]	90,215	*	*	*	5,424.7	5,424.7	*	*

[1] Feet above Deer Lodge County limits
[2] Floodway not computed/shown for this cross section
* Data not available

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SILVER BOW CREEK

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	0	32	190	6.1	5,446.8	5,446.8	5,447.1	0.3
B	390	400	1,124	1.0	5,448.5	5,448.5	5,449.0	0.5
C	1,130	71	222	0.9	5,448.6	5,448.6	5,449.1	0.5
D	2,210	31	101	1.8	5,449.3	5,449.3	5,449.6	0.3
E	3,580	30	76	2.4	5,452.7	5,452.7	5,452.7	0.0
F	4,900	36	127	1.4	5,461.1	5,461.1	5,461.6	0.5
G	5,780	28	65	2.7	5,462.9	5,462.9	5,462.9	0.0
H	6,570	20	35	5.1	5,466.2	5,466.2	5,466.2	0.0
I	7,140	60	88	2.0	5,469.2	5,469.2	5,469.2	0.0
J	7,870	36	56	3.2	5,474.0	5,474.0	5,474.0	0.0
K	8,150	36	84	2.1	5,478.0	5,478.0	5,478.0	0.0

[1] Feet above City of Butte corporate limits

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SILVER BOW CREEK (NEAR BUTTE)

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	94	52	93	1.3	5,384.0	5,384.0	5,384.5	0.5
B	321	40	67	1.8	5,385.8	5,385.8	5,385.9	0.1

[1] Feet above junction Silver Bow Creek

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: SOUTH ROCKER ROAD SPLIT

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	700	18	9	2.8	5,576.5	5,576.5	5,576.6	0.1
B	1,730	9	6	3.9	5,593.1	5,593.1	5,593.2	0.1
C	2,080	23	17	1.5	5,598.4	5,598.4	5,598.4	0.0
D	2,510	16	16	1.6	5,607.8	5,607.8	5,607.8	0.0

[1] Feet above confluence with Reese Canyon

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

FLOODWAY DATA

FLOODING SOURCE: TRAMWAY GULCH

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 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/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 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/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 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 Butte-Silver Bow County FIRM are listed in Table 26.

Table 26: Incorporated Letters of Map Change

[Not Applicable to this Flood Risk Project]

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 Butte-Silver Bow 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 Butte-Silver Bow County FIRMs in countywide format was 01/06/2012.

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)
Butte-Silver Bow County	06/14/1974	06/14/1974	08/08/1978 04/16/1976	09/28/1979	TBD 01/06/2012 02/23/1982
Walkerville, City of [1,2]	01/06/2012	N/A	N/A	01/06/2012	TBD

[1] No Special Flood Hazard Areas Identified
[2] This community did not have a FIRM prior to the first countywide FIRM for Butte-Silver Bow County

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
Basin Creek	01/06/2012	PBS&J, Inc.	HSFE08-08-J-0041	January 2010	Butte-Silver Bow County
Basin Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Beer Straight Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Big Hole River	01/06/2012	PBS&J, Inc.	HSFE08-08-J-0041	January 2010	Butte-Silver Bow County
Big Hole River	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Blacktail Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Brookside Canyon	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Browns Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Bull Run Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Camp Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
China Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Divide Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Gregson Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Grove Gulch Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Hail Columbia Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Herman Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Little Basin Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Little Blacktail Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Miles Crossing Split	TBD	Pioneer Technical Services, Inc.	N/A	December 2019	Butte-Silver Bow County
Mode-S Canyon	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Moose Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Oro Fino Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Railroad Split	TBD	Pioneer Technical Services, Inc.	N/A	December 2019	Butte-Silver Bow County
Reese Canyon	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Reese Canyon Split Flow	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Sand Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Sand Creek	01/06/2012	PBS&J, Inc.	HSFE08-08-J-0041	January 2010	Butte-Silver Bow County
Sand Creek Diversion	01/06/2012	PBS&J, Inc.	HSFE08-08-J-0041	January 2010	Butte-Silver Bow County

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Santa Claus Rd Split	TBD	Pioneer Technical Services, Inc.	N/A	December 2019	Butte-Silver Bow County
Silver Bow Creek (Near Butte)	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Silver Bow Creek	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County
Silver Bow Creek	TBD	Pioneer Technical Services, Inc.	N/A	December 2019	Butte-Silver Bow County
South Rocker Rd Split	TBD	Pioneer Technical Services, Inc.	N/A	December 2019	Butte-Silver Bow County
Tramway Gulch	03/28/1979	Morrison-Maierle, Inc.	H-4027	June 1977	Butte-Silver Bow County

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
Butte-Silver Bow County	TBD	06/08/2017	Initial Planning Meeting	Montana DEQ, Butte-Silver Bow County, and the study contractor
		01/31/2018	Floodplain Mapping Meeting	FEMA, Montana DEQ, Montana DNRC, Butte-Silver Bow County, Compass, and the study contractor
		TBD	CCO Meeting	TBD
Walkerville, City of	01/06/2012	12/19/2008	Initial CCO Meeting	FEMA, Montana DNRC, Butte-Silver Bow County, the study contractor, and other attendees
		06/15/2010	Final CCO Meeting	FEMA, Montana DNRC, Butte-Silver Bow County, and the study contractor

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 Butte-Siver Bow County, (FEMA 2012).

Table 30 is a list of the locations where FIRMs for Butte-Silver Bow 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
Butte-Silver Bow County	Butte-Silver Bow Courthouse 155 West Granite Street	Butte	MT	59701
Walkerville, City of [1]	City Hall 40 West Daly Street	Walkervillle	MT	59701

[1] No Special Flood Hazard Areas Identified

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

Table 31: Additional Information (continued)

FEMA and the NFIP (continued)	
FEMA Region VIII	Denver Federal Center Building 710, P.O. Box 25267 Denver, CO 80225-0267 (303) 235-4800
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Traci Sears Montana Department of Natural Resources and Conservation 1424 Ninth Avenue, P.O. Box 201601 Helena, MT 59620-1601 (406) 444-6654 tsears@mt.gov
Bureau Chief of Water Operations	Stephen Story Montana Department of Natural Resources and Conservation 1424 Ninth Avenue, P.O. Box 201601 Helena, MT 59620-1601 (406) 444-6816 sestory@mt.gov
Butte-Silver Bow County Floodplain Administrator	Lori Casey Butte-Silver Bow Courthouse 155 West Granite Street, Room 108 Butte, MT 59701 (406) 497-6255 lcasey@bsb.mt.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

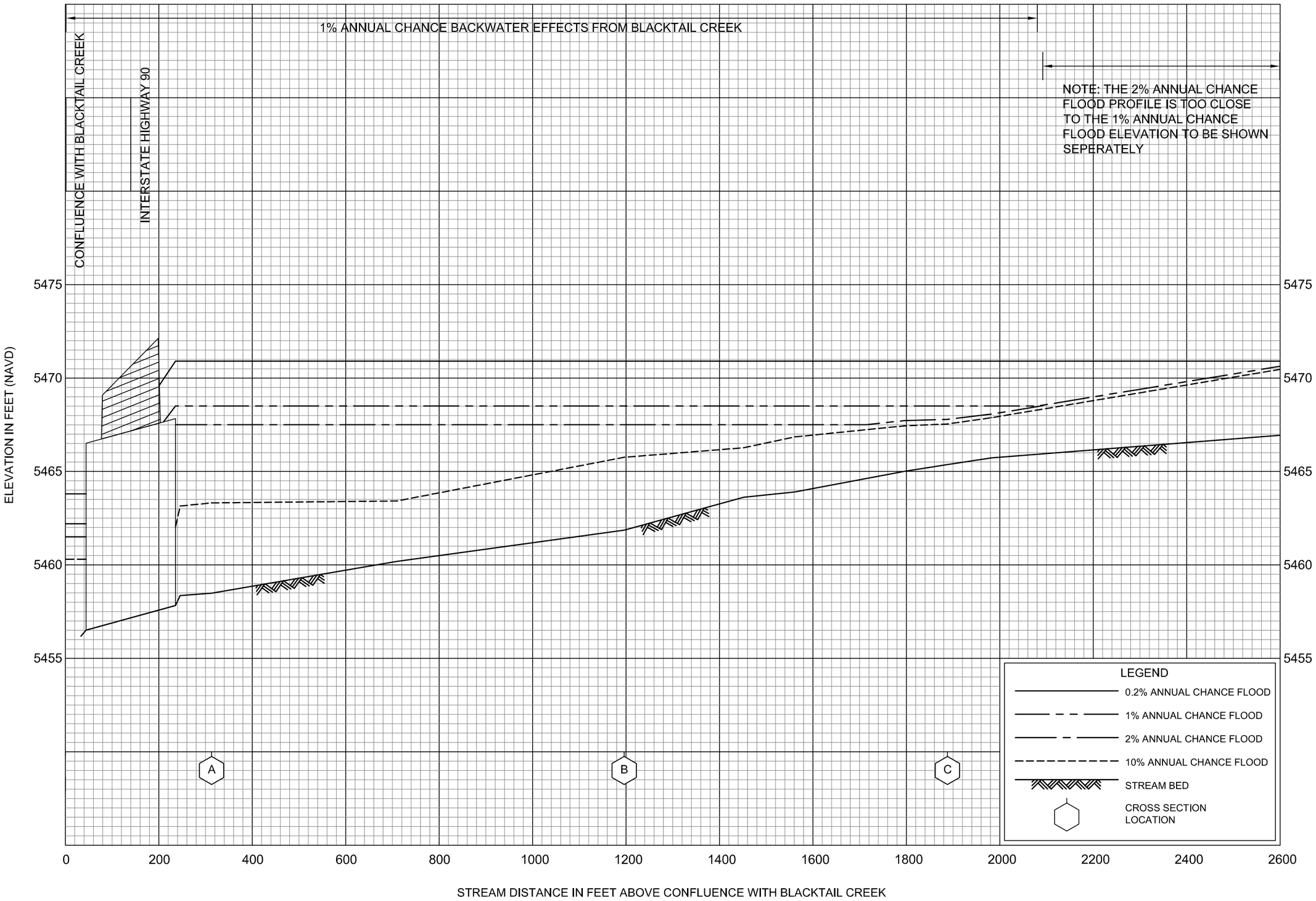
Table 32 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

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
FEMA, 2012	Federal Emergency Management Agency	*Flood Insurance Rate Map and Flood Insurance Study, Butte-Silver Bow County, Montana*	FEMA	Washington, D.C.	January 2012	FEMA Flood Map Service Center msc.fema.gov
MSL, 2018	Montana State Library	*Public Land Survey System Framework*	Montana State Library	Helena, MT	November 2018	http://geoinfo.msl.mt.gov/msdi/cadastral/CadNSDI
MDOT, 2020	Montana Department of Transportation	*Off System Routes, On System Routes, Railroads*	Montana Department of Transportation	Helena, MT	January 2020	https://gis-mdt.opendata.arcgis.com/
NAIP, 2005	United States Department of Agriculture: Farm Service Agency	*National Agricultural Imagery Program (NAIP) - 2005 Aerial Imagery*	United States Department of Agriculture: Farm Service Agency	Washington, D.C.	2005	http://geoinfo.msl.mt.gov/data/Aerial_Photos/NAIP_2005
NAIP, 2019	United States Department of Agriculture: Farm Service Agency	*National Agricultural Imagery Program (NAIP) - 2017/2018 Aerial Imagery*	United States Department of Agriculture: Farm Service Agency	Washington, D.C.	June 2019	http://geoinfo.msl.mt.gov/data/Aerial_Photos/NAIP_2017
NRCS, 1986	U.S. Natural Resources Conservation Service	*Flood Plain Management Study – Big Hole River, Silver Bow County, Montana*	NRCS	Washington, D.C.	December 1986	
Quantum, 2017	Quantum Spatial Inc.	*Silver Bow Creek, Montana, LiDAR Technical Data Report*	Quantum Spatial Inc.	Corvalis, OR	November 2017	http://quantumspatial.com/
Pioneer Technical Services, 2018	Pioneer Technical Services, Inc	*Physical Map Revision, Silver Bow Creek, Structure and Bathymetric Survey Report*	Pioneer Technical Services, Inc	Helena, MT	November 2018	http://pioneer-technical.com/

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
Pioneer Technical Services, 2018	Pioneer Technical Services, Inc	*Physical Map Revision, Silver Bow Creek, Hydrologic Analysis Report*	Pioneer Technical Services, Inc	Helena, MT	October 2018	http://pioneer-technical.com/
Pioneer Technical Services, 2019	Pioneer Technical Services, Inc	*Physical Map Revision, Silver Bow Creek, Hydraulic Analysis Report*	Pioneer Technical Services, Inc	Helena, MT	May 2019	http://pioneer-technical.com/
USGS, 1976	U.S. Geological Survey	*A Method for Estimating Magnitude and Frequency of Floods in Montana*	M.V. Johnson and R.J. Omong	Washington, D.C.	January 1976	https://pubs.usgs.gov/of/1975/0650/report.pdf
USGS, 2014	U.S. Geological Survey	*HUC8 Watershed Boundaries Dataset*	USGS	Washington, D.C.	2014	
USGS, various	U.S. Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1:24,000 and 1:62,500, Contour Interval 20, 40, 80 Feet*	USGS	Washington, D.C.	Various	http://topomaps.usgs.gov/



FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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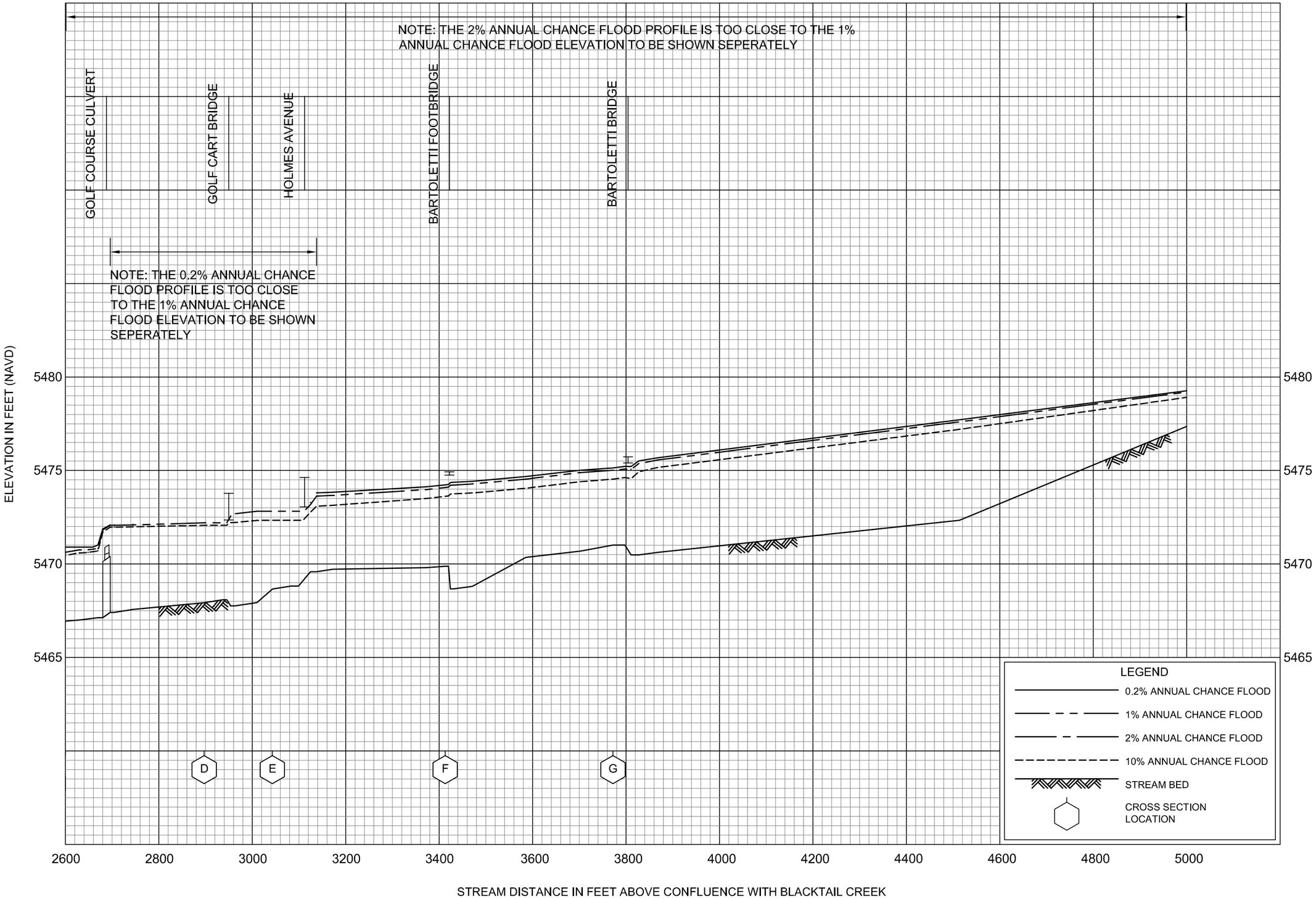

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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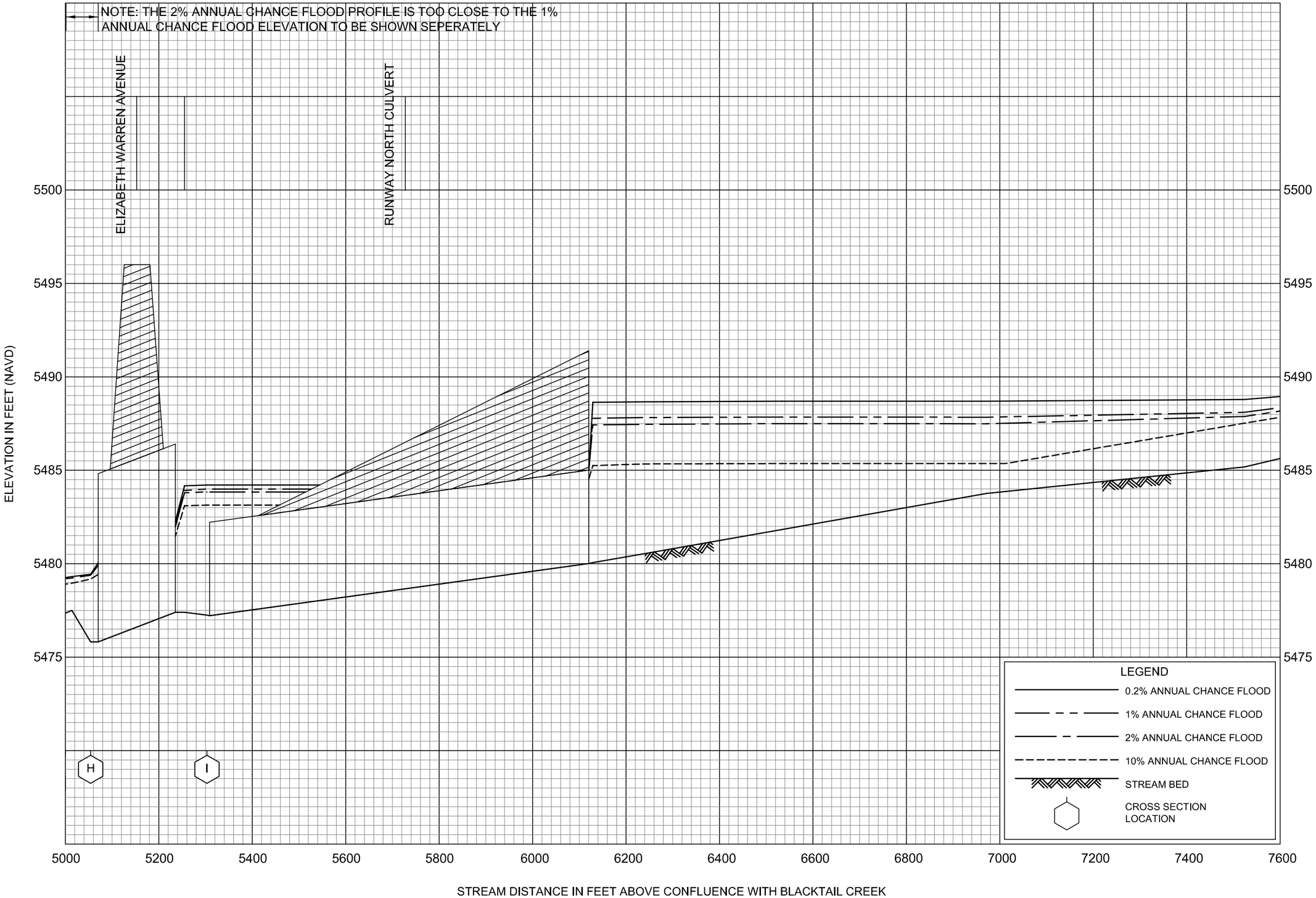

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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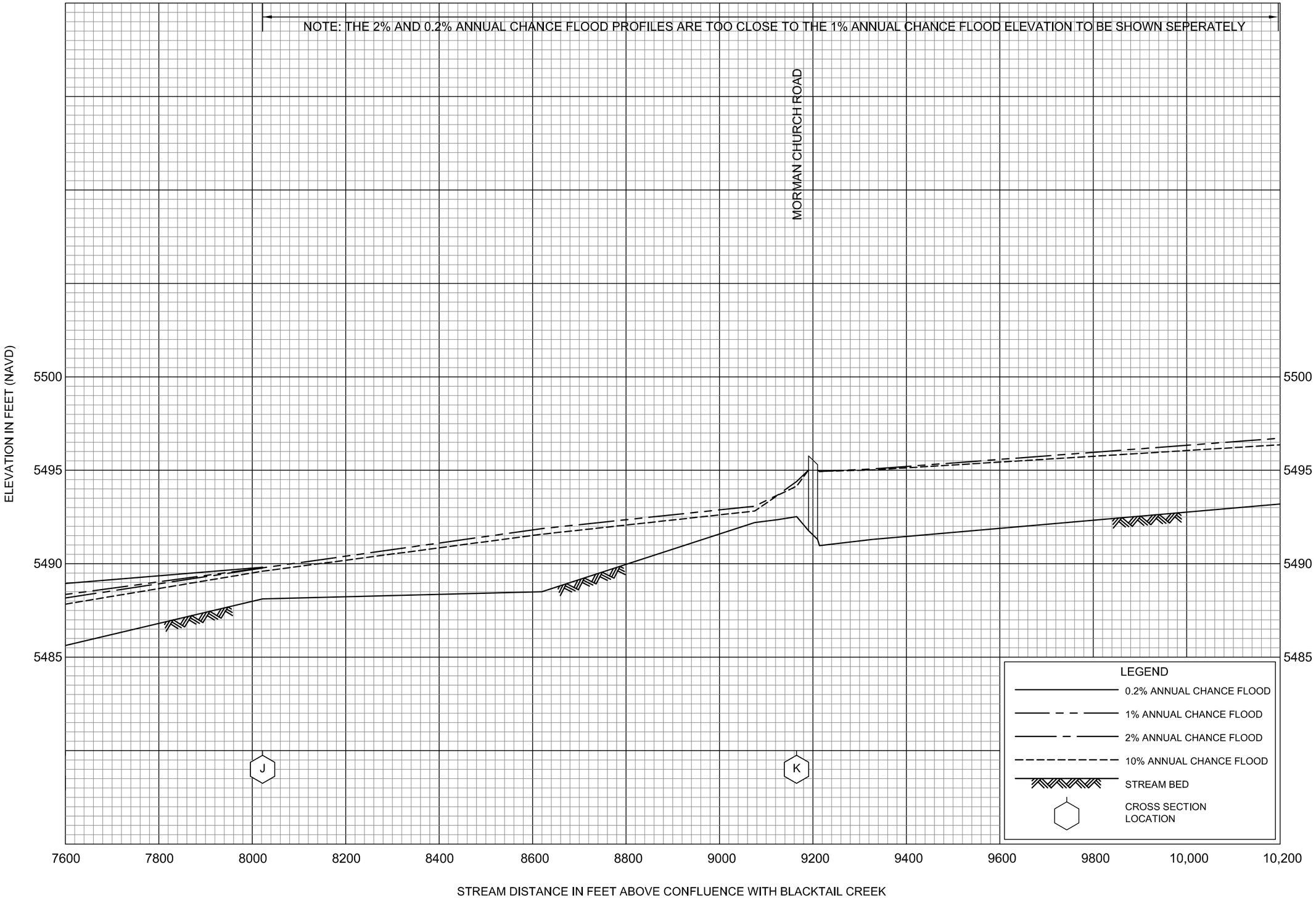

FLOOD PROFILES

BASIN CREEK

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BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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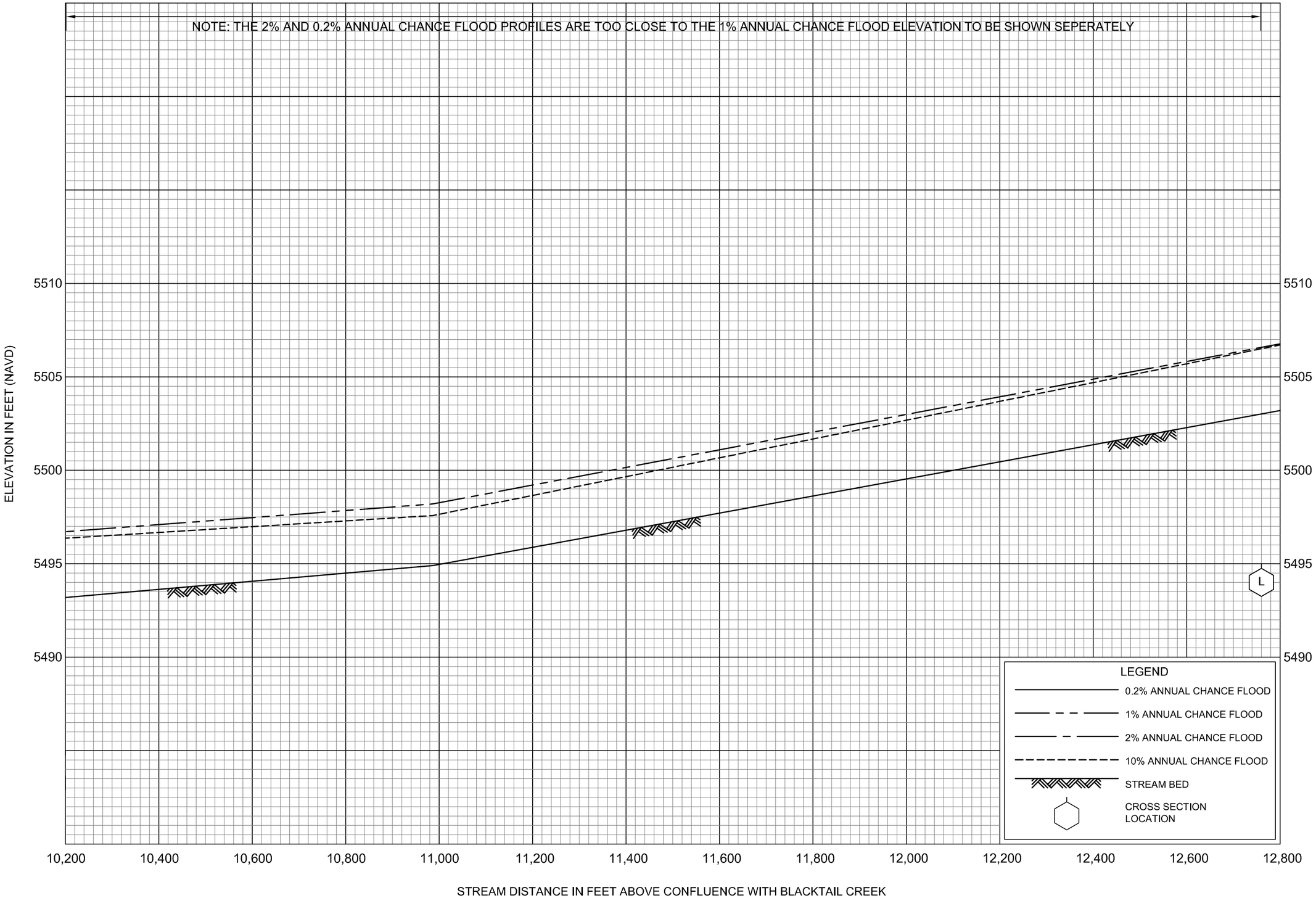

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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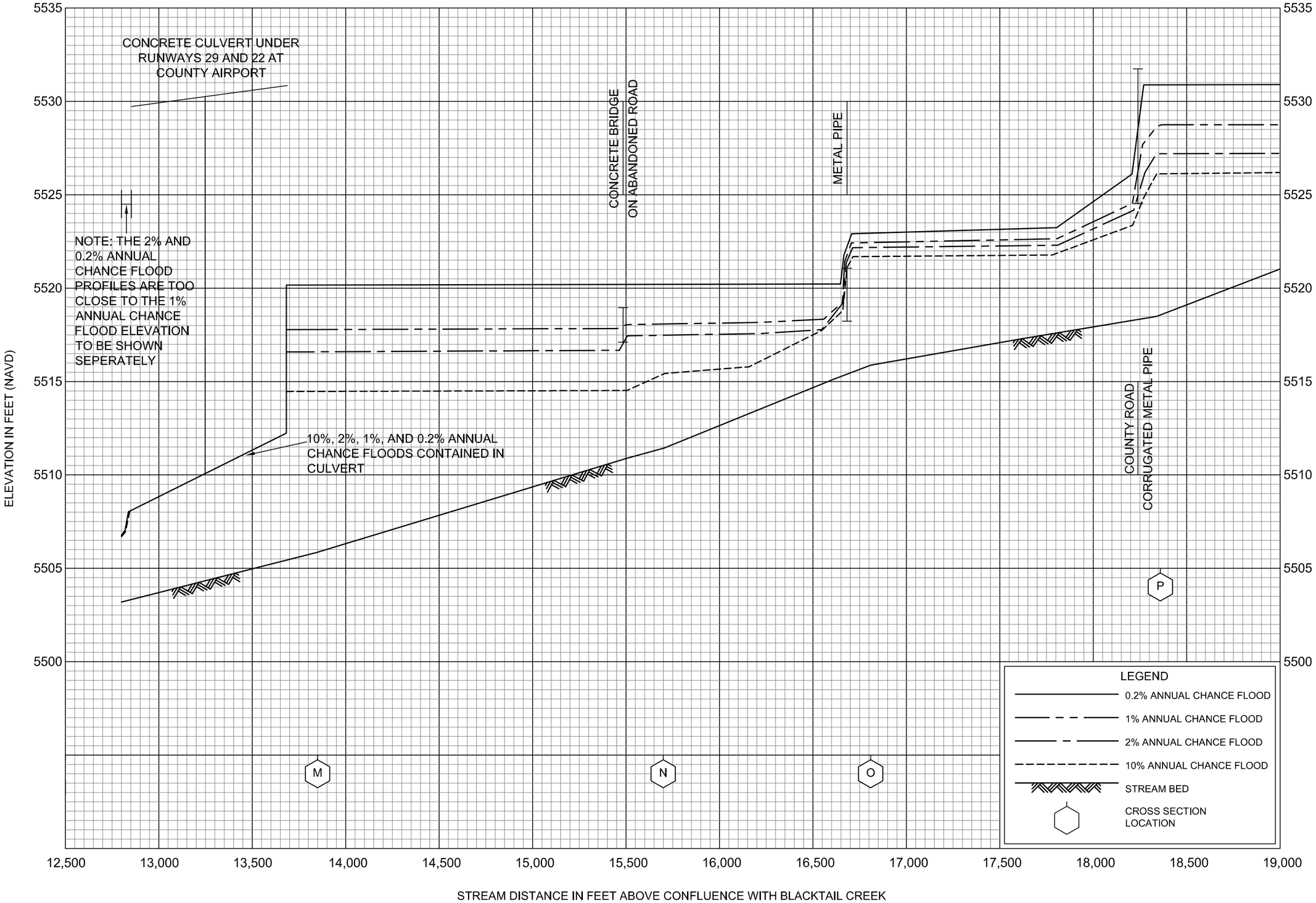

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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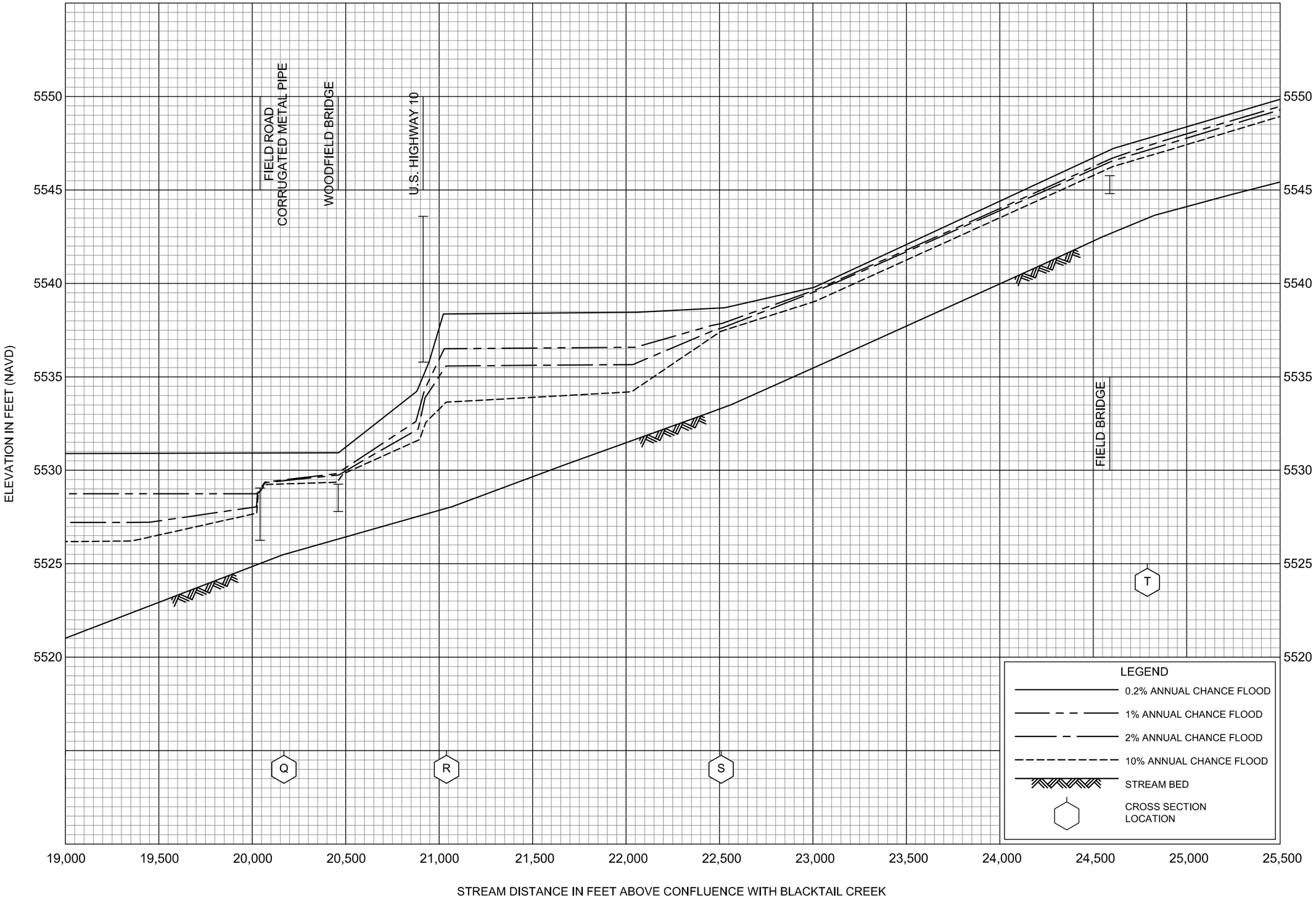

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

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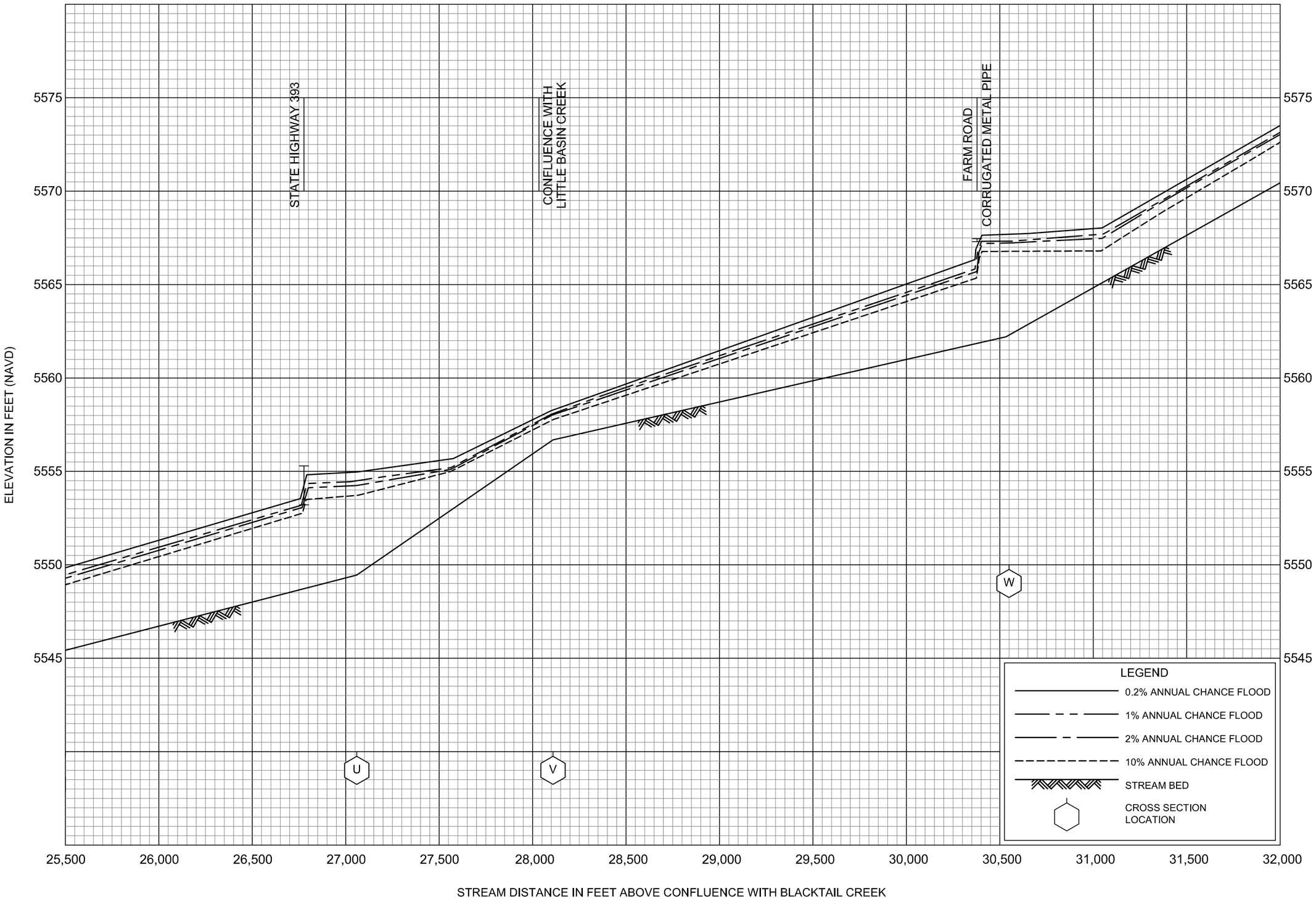

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)

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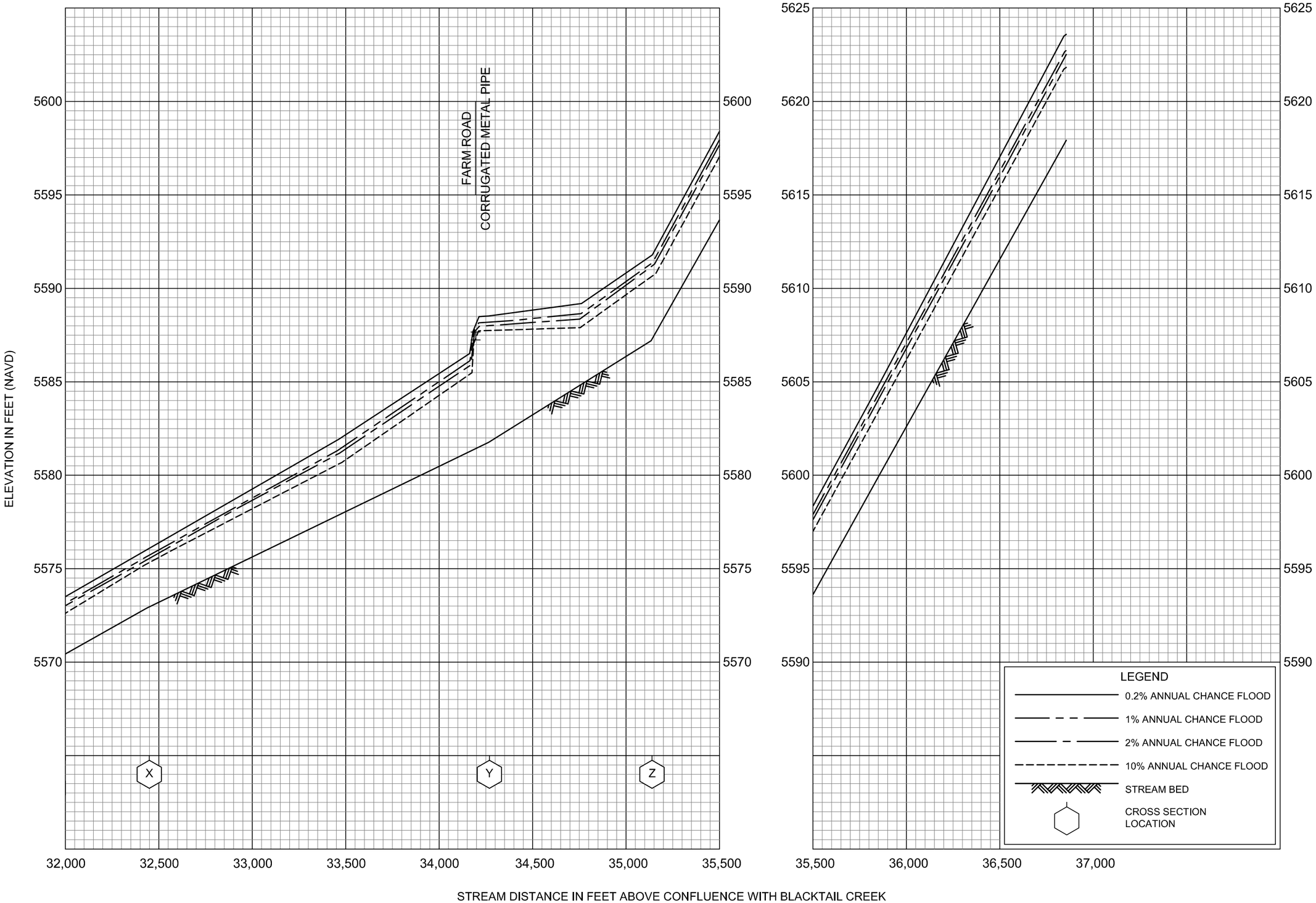

FLOOD PROFILES

BASIN CREEK

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BUTTE-SILVER BOW COUNTY, MT

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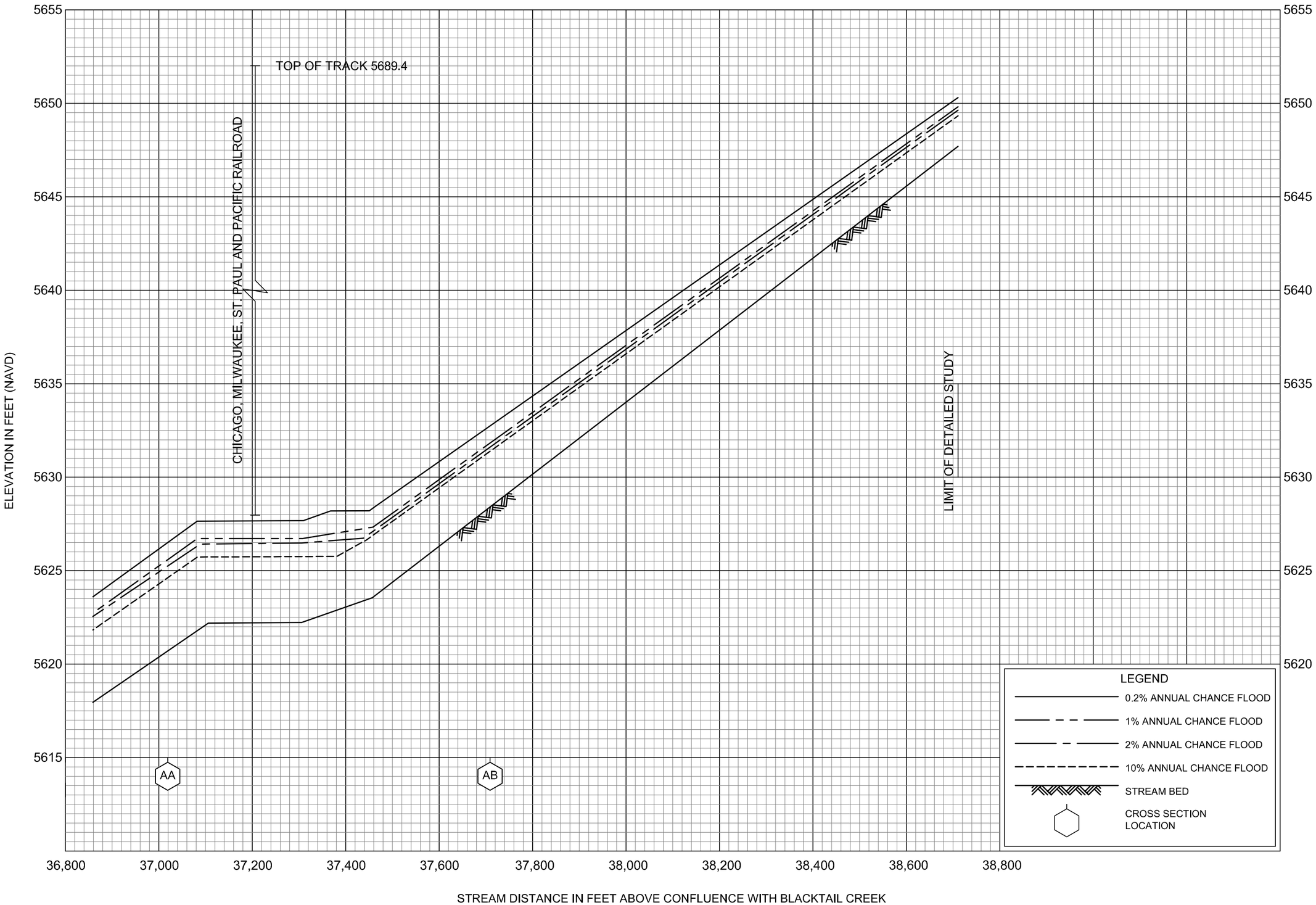

FLOOD PROFILES

BASIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

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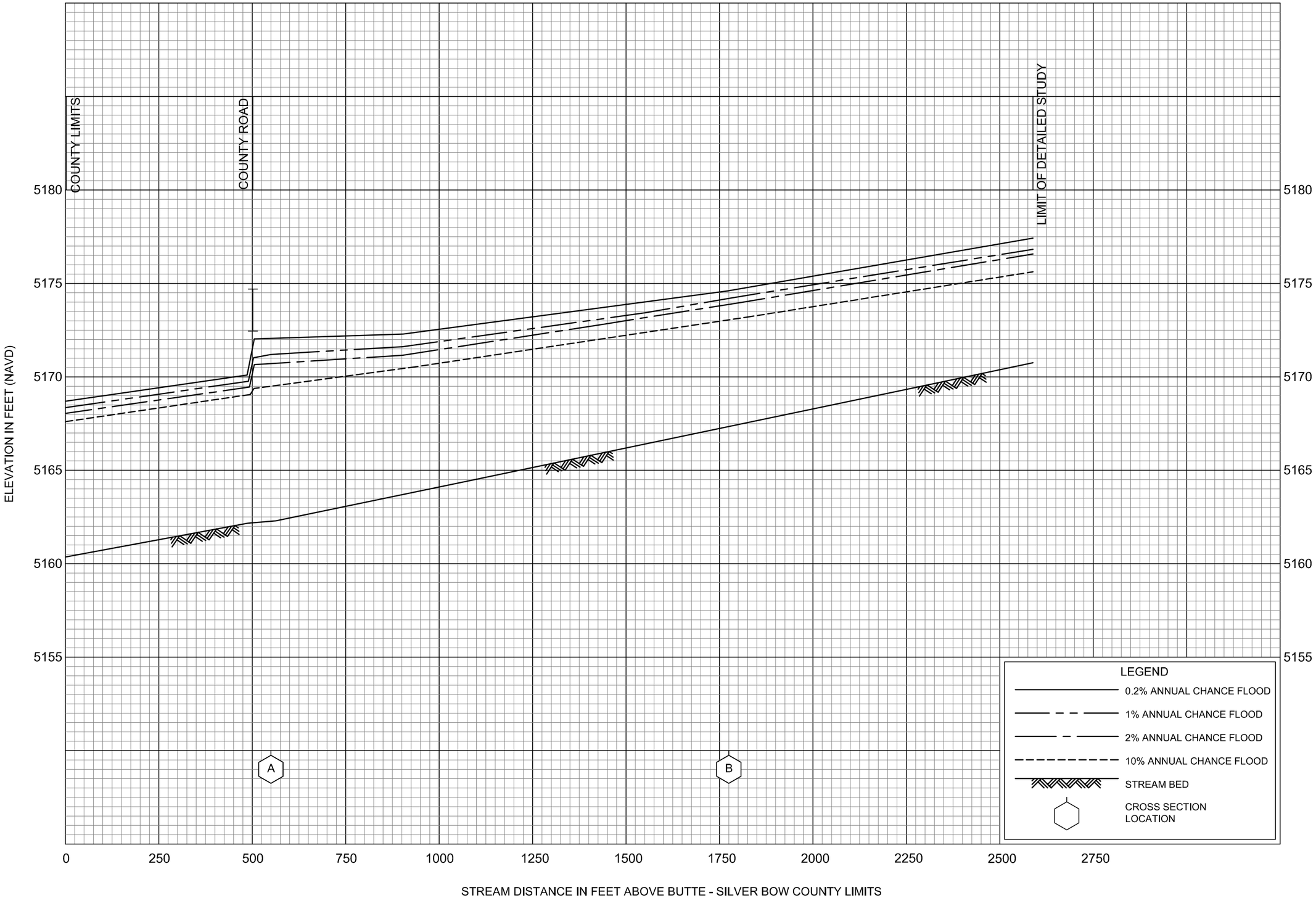


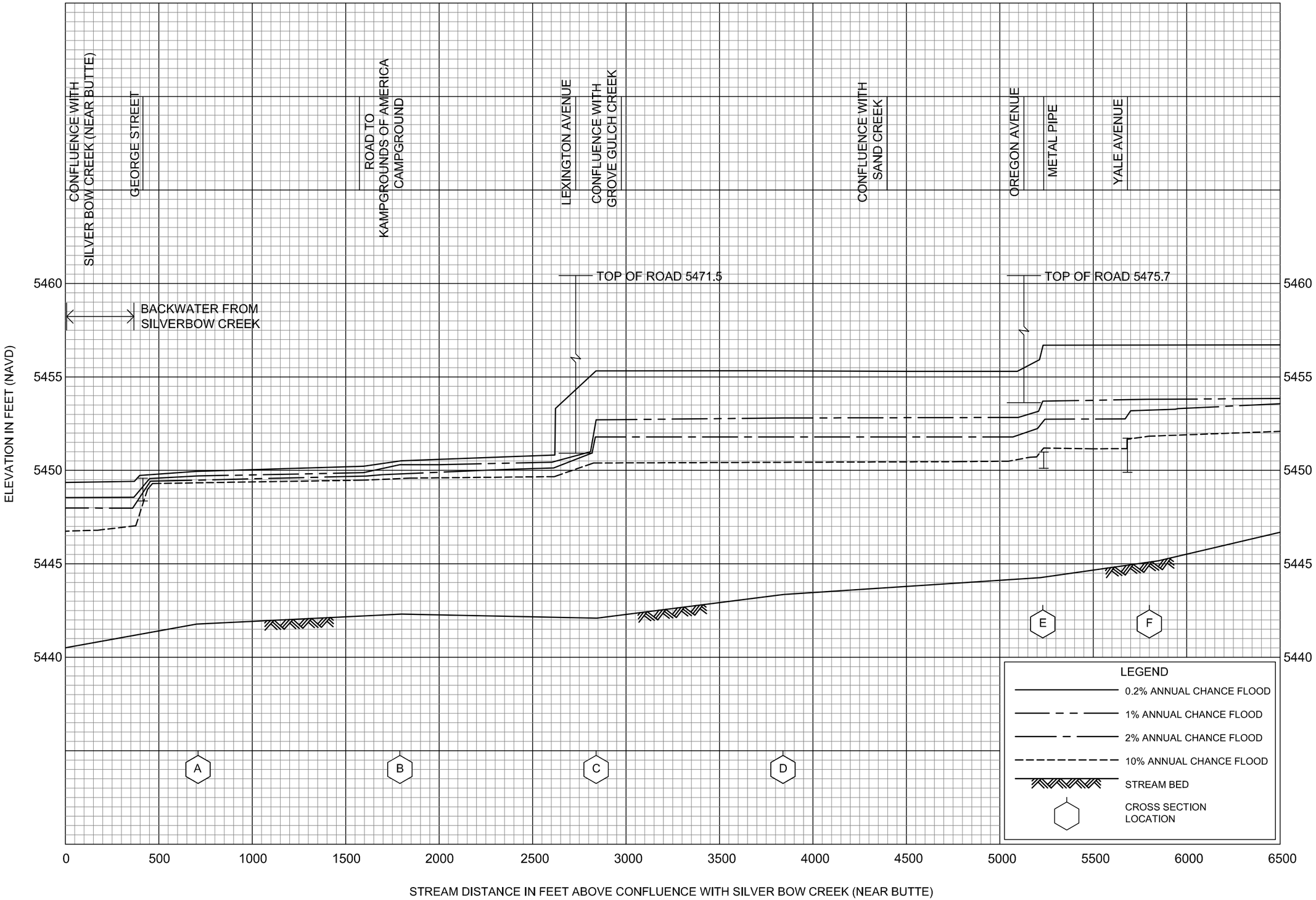
FLOOD PROFILES

BIG HOLE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



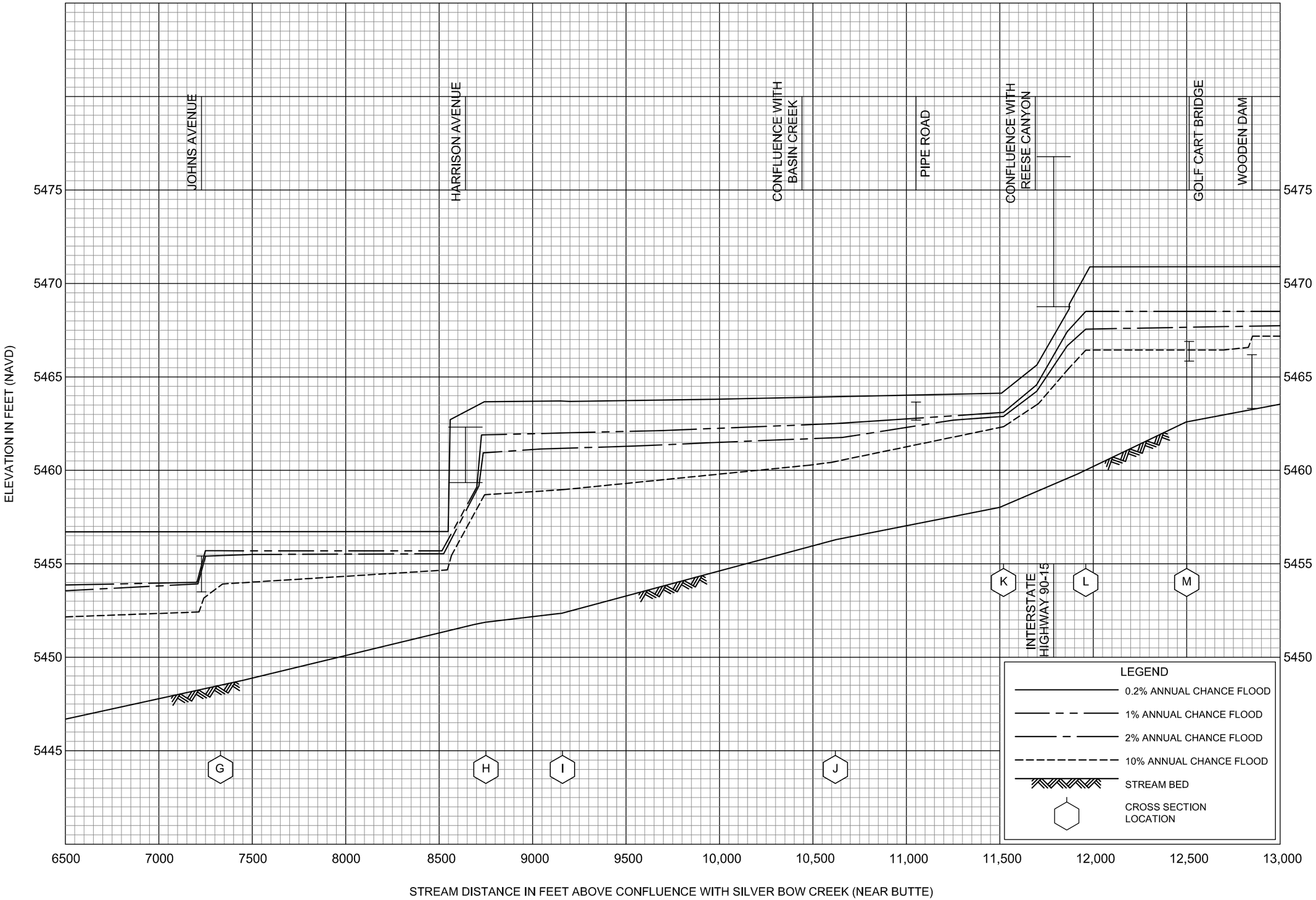
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



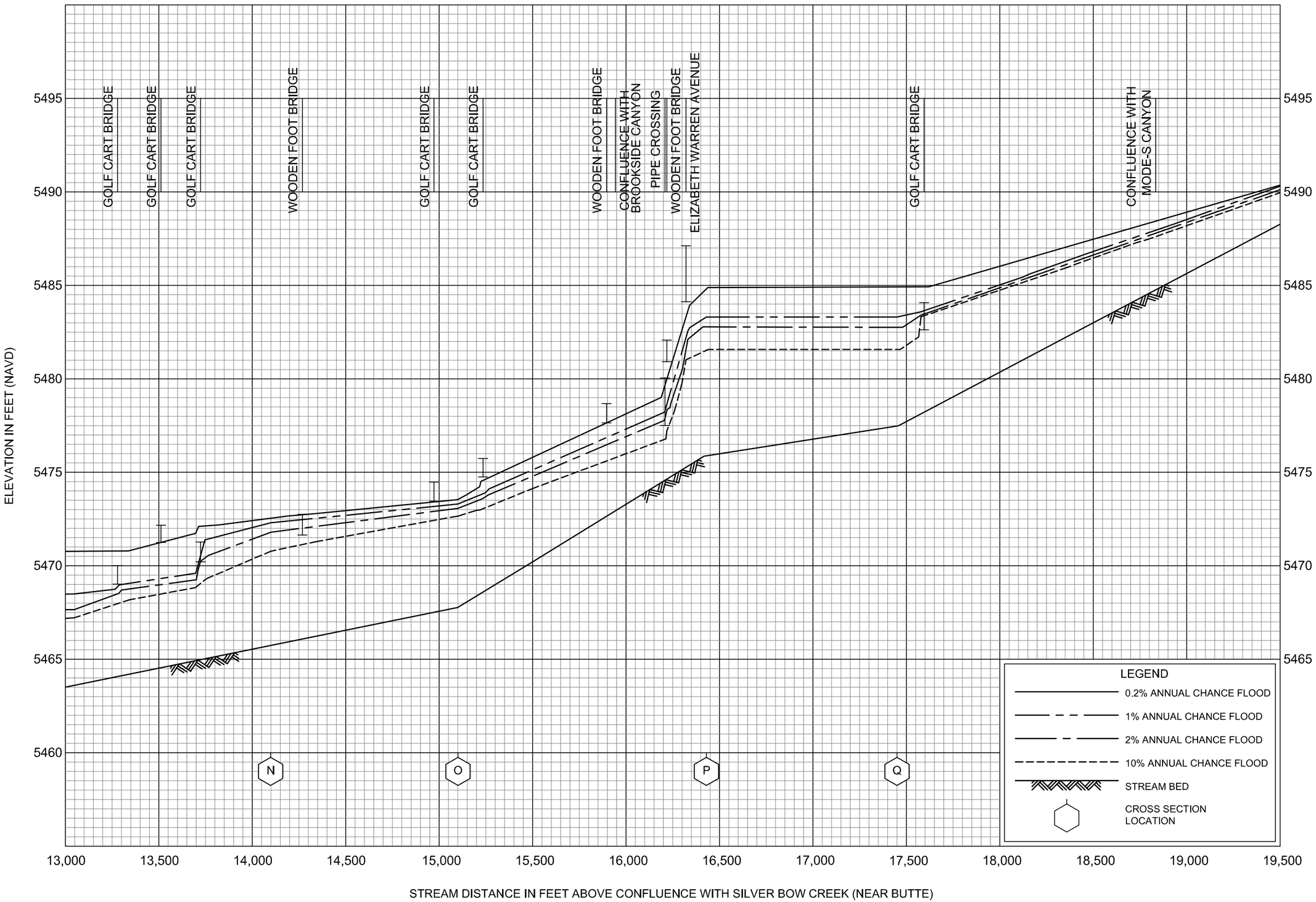
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



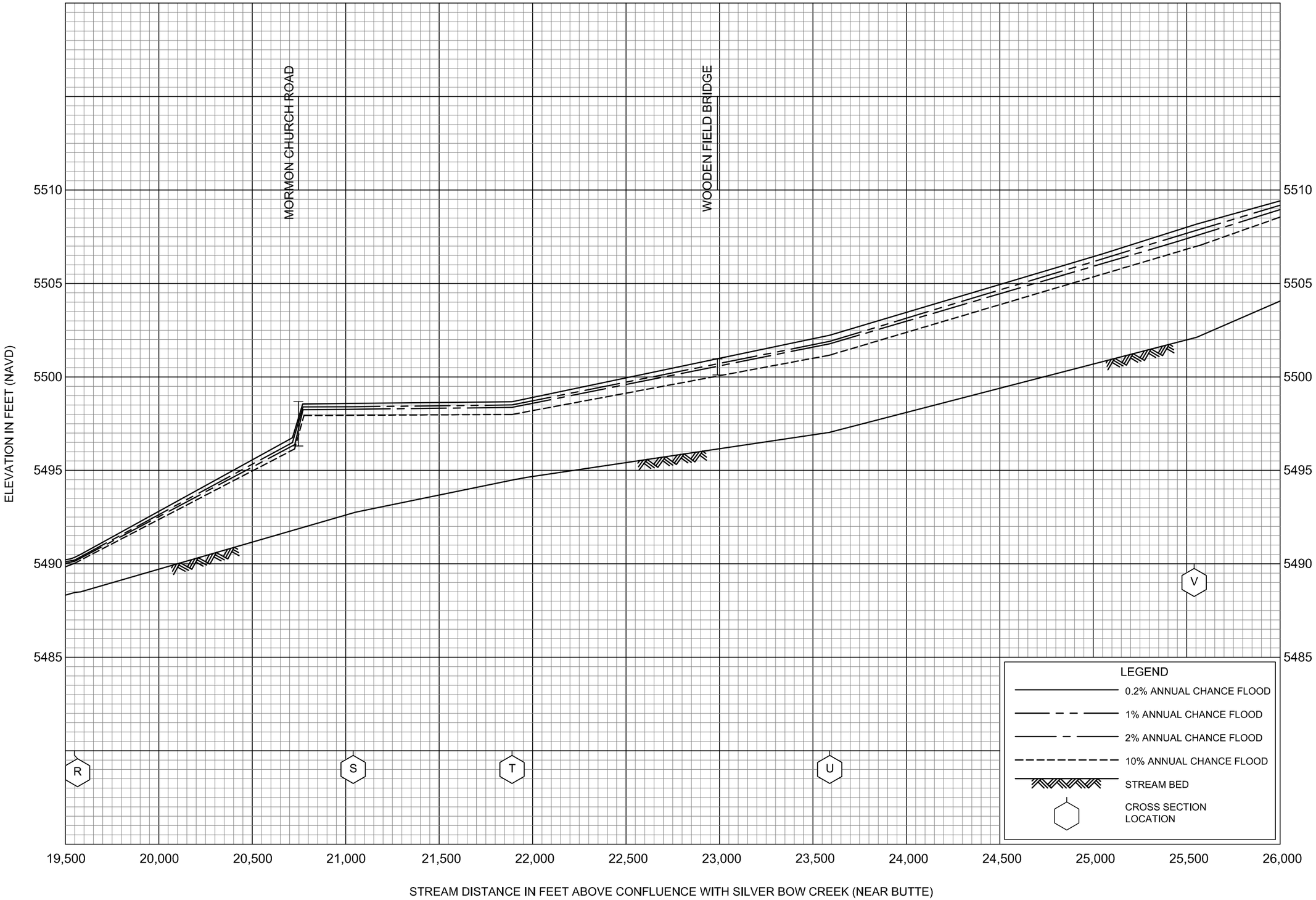
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



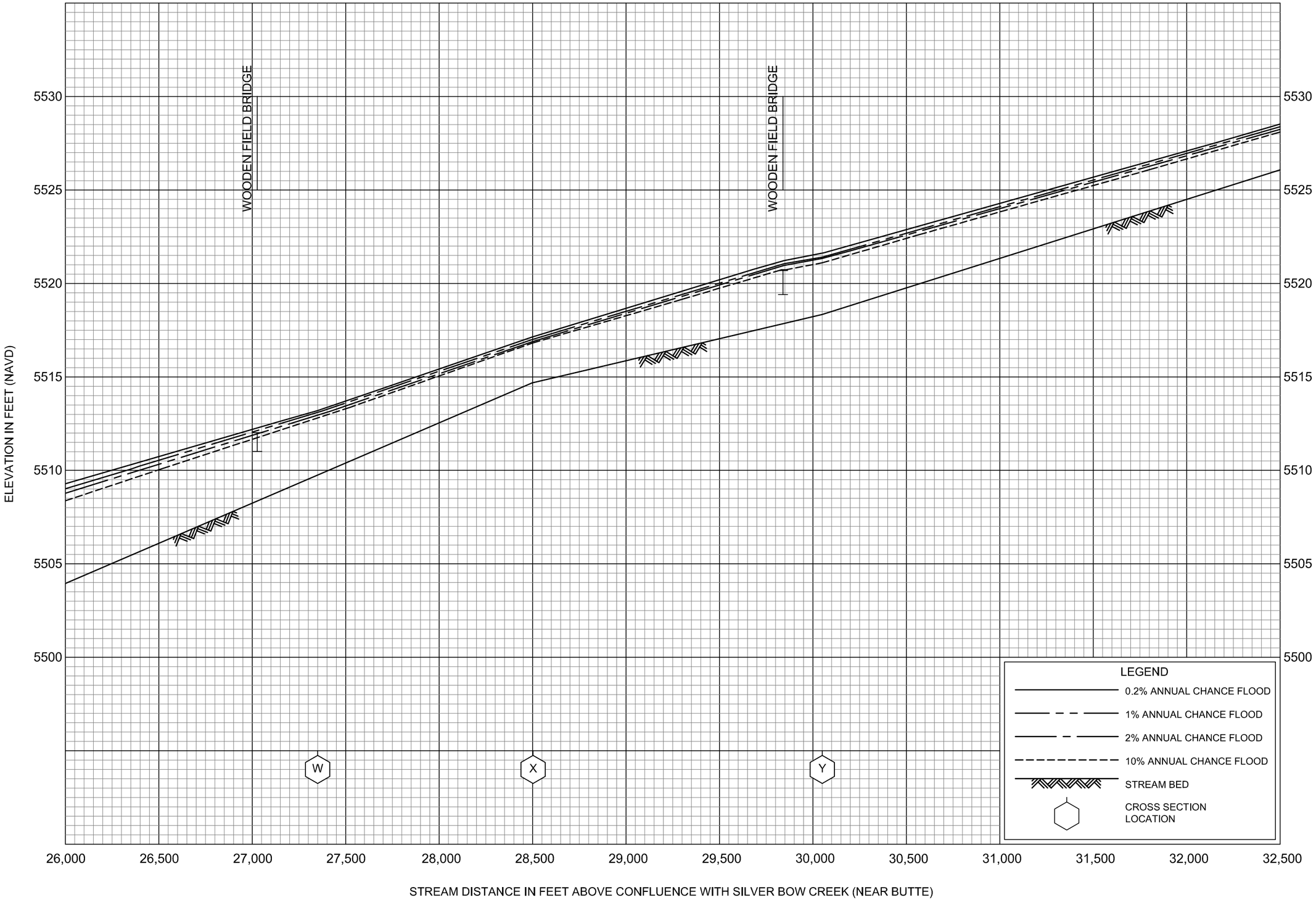
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



FLOOD PROFILES

BLACKTAIL CREEK

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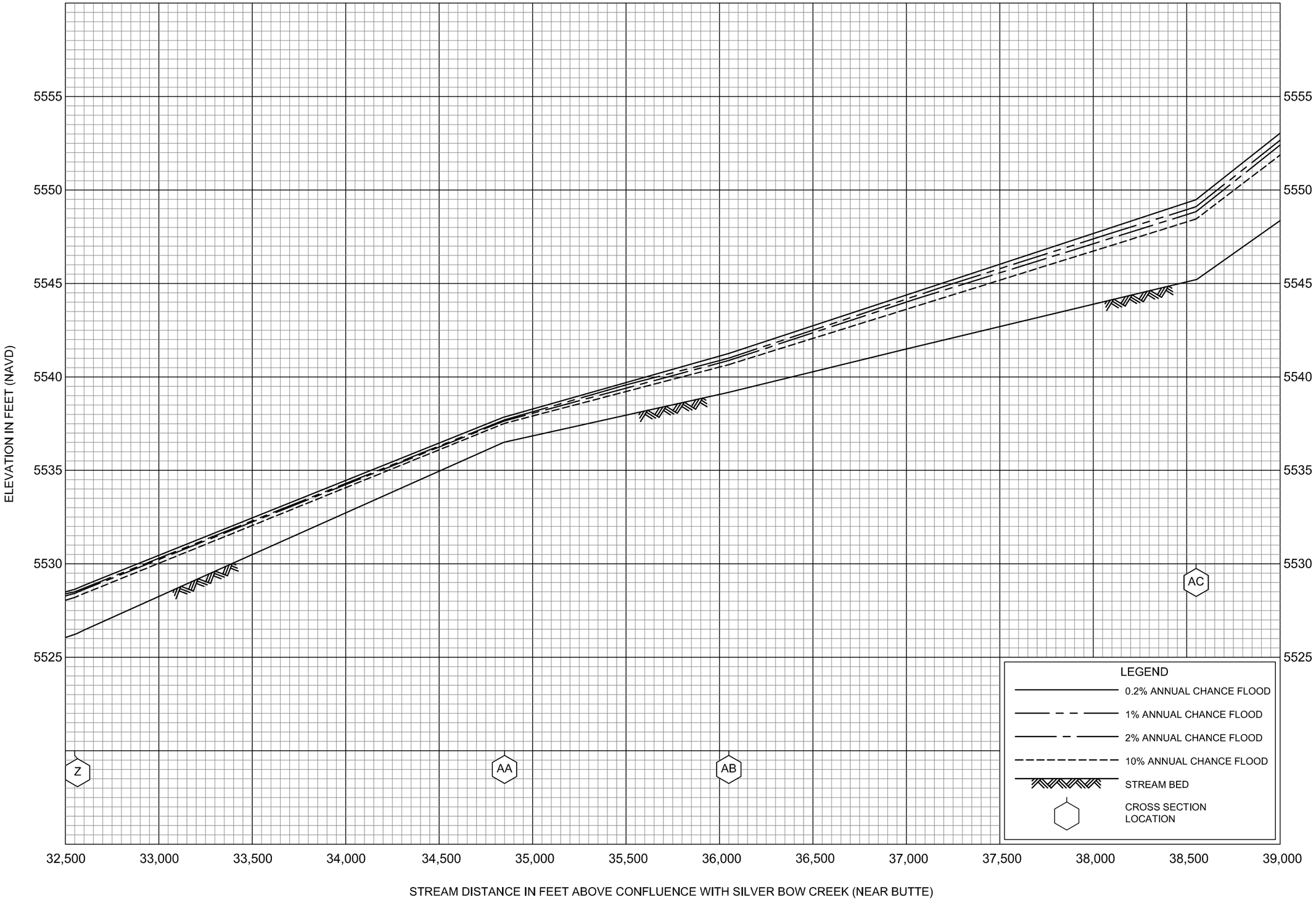
BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



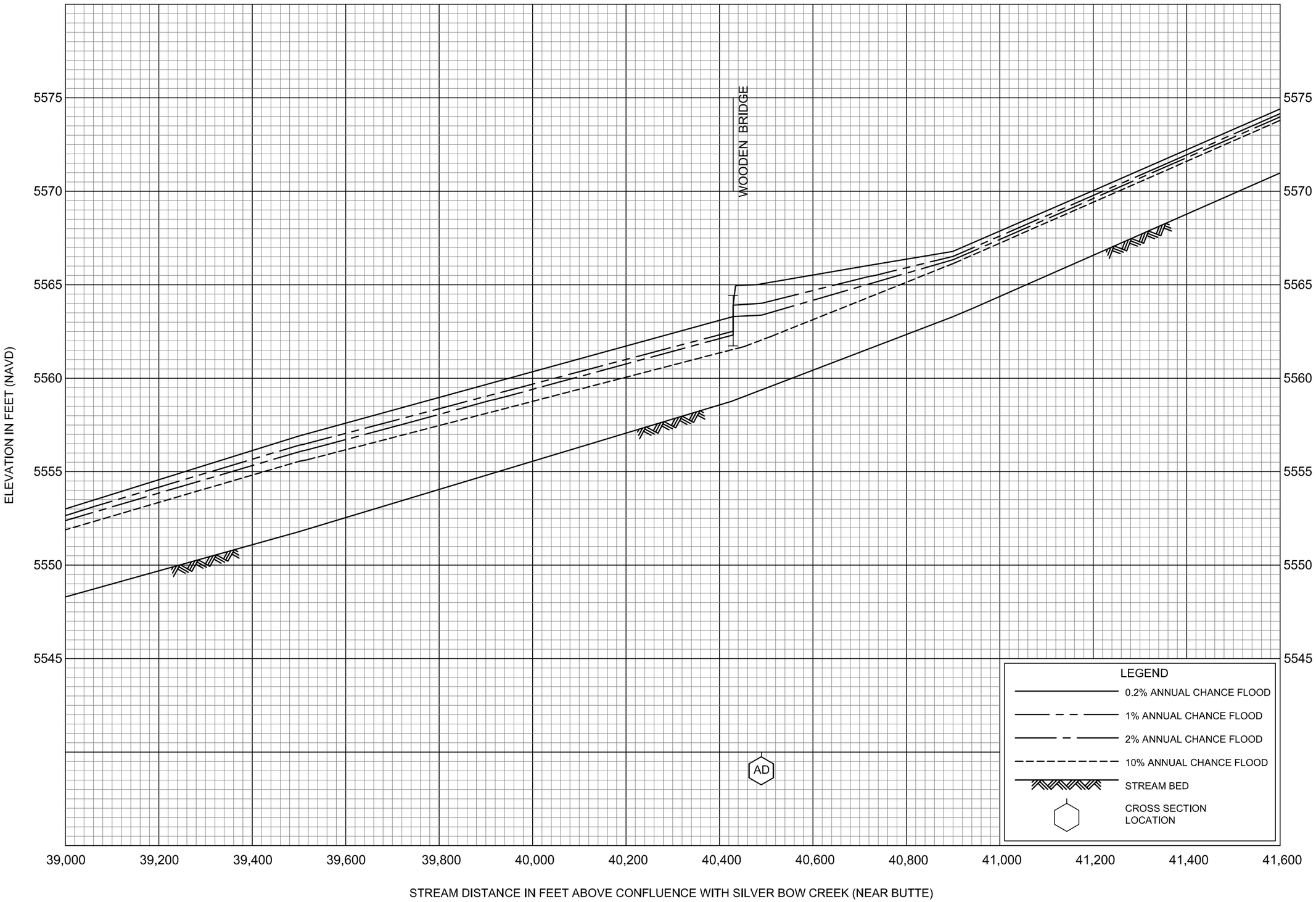
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



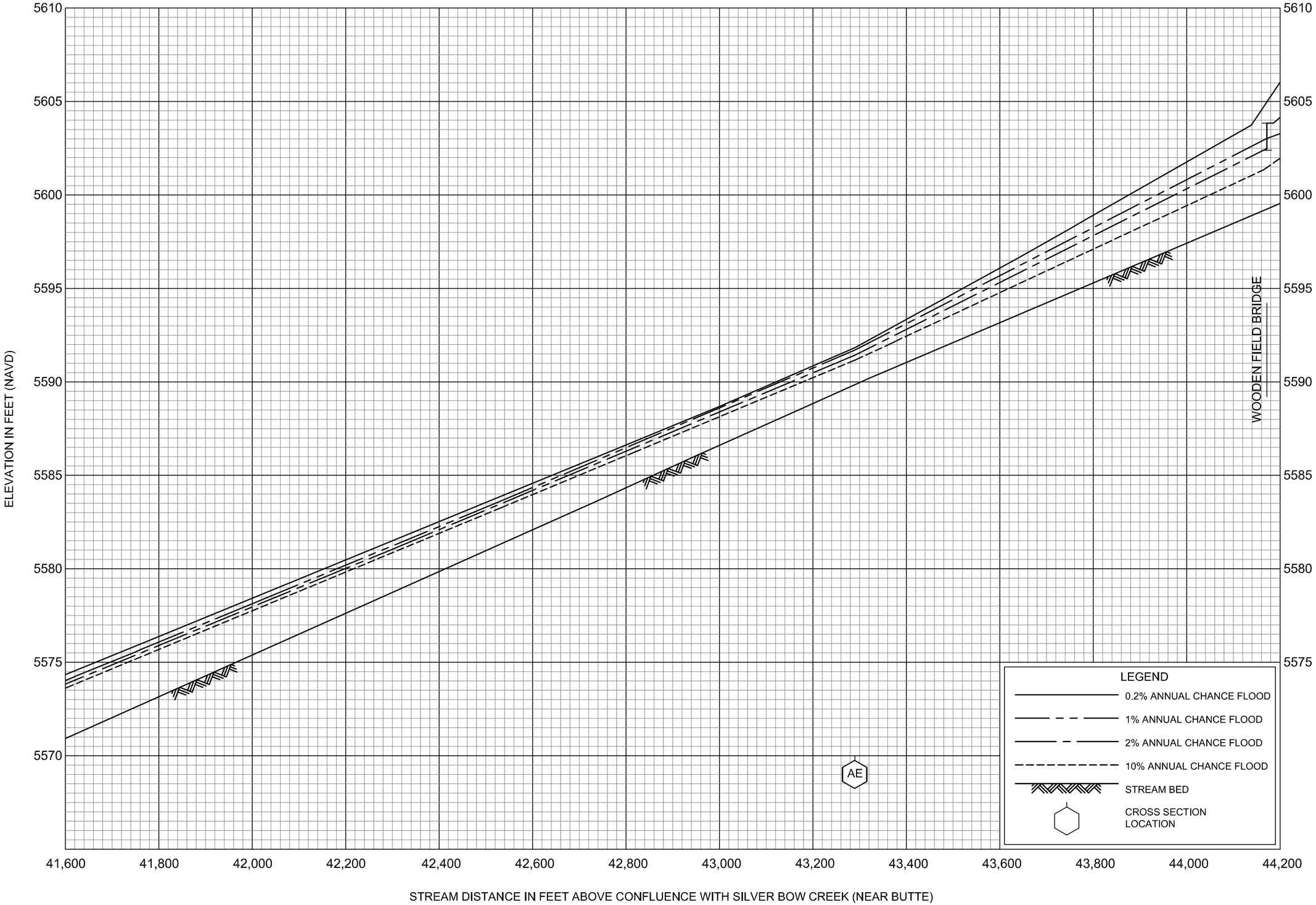
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



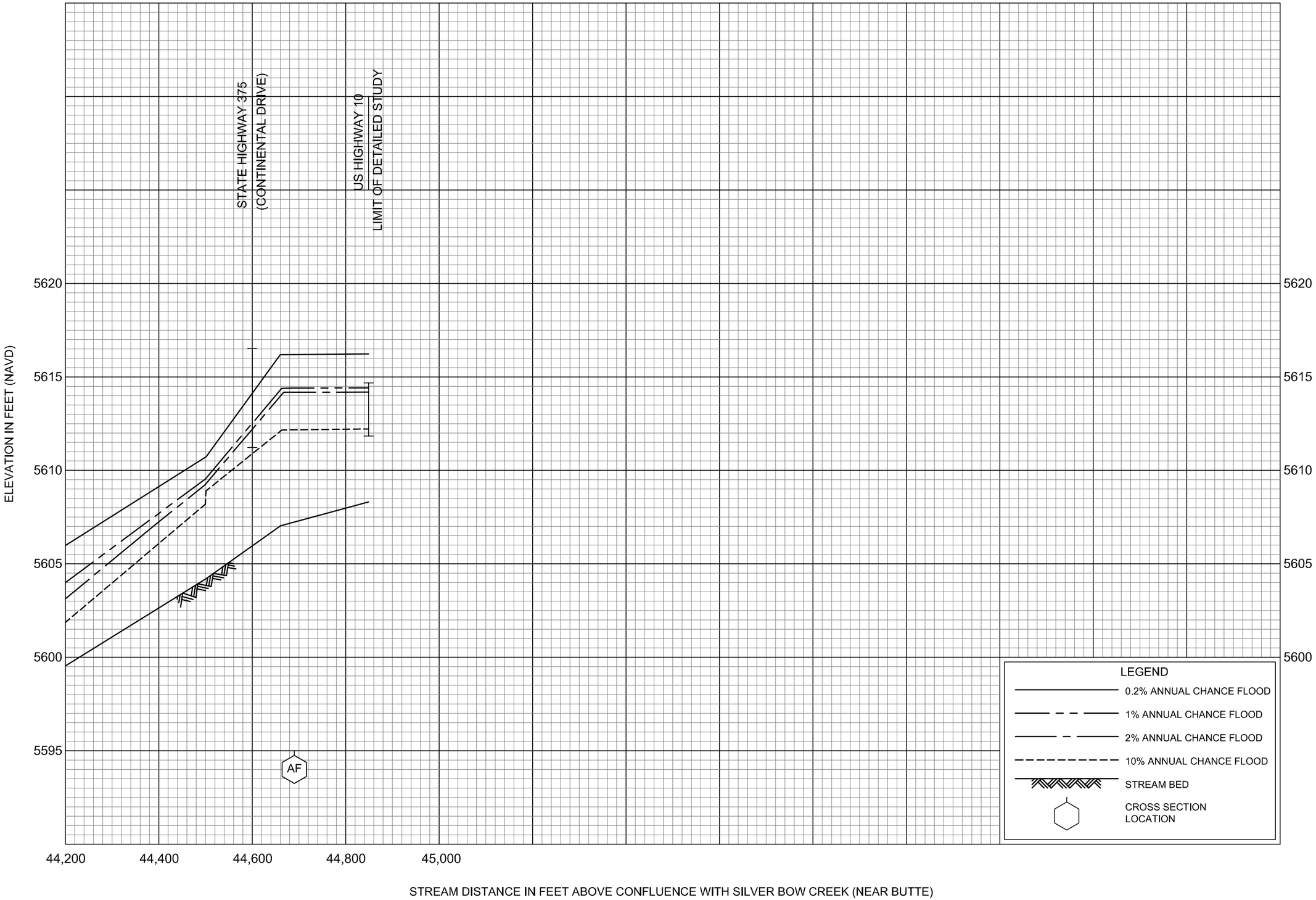
FLOOD PROFILES

BLACKTAIL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



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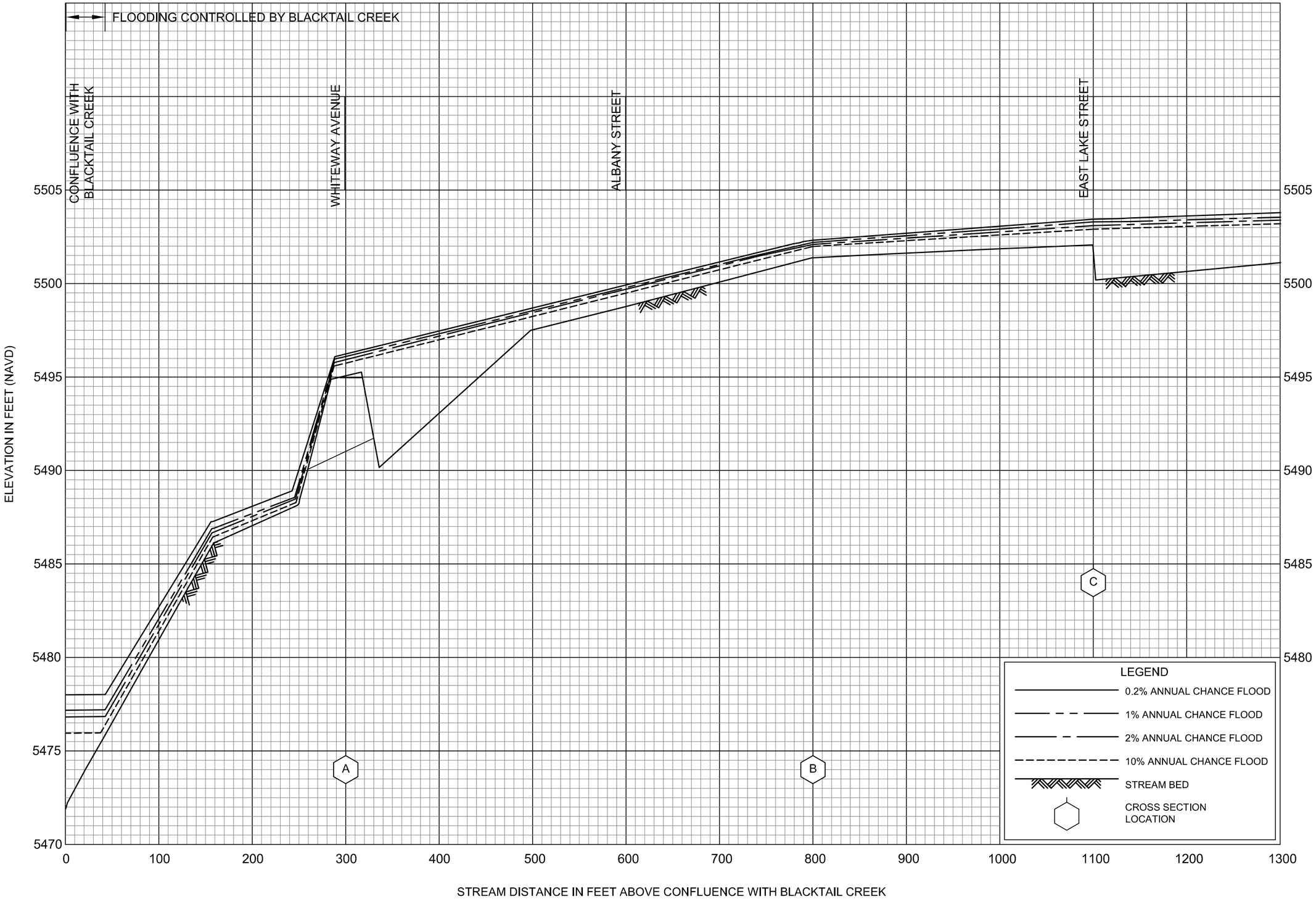
BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



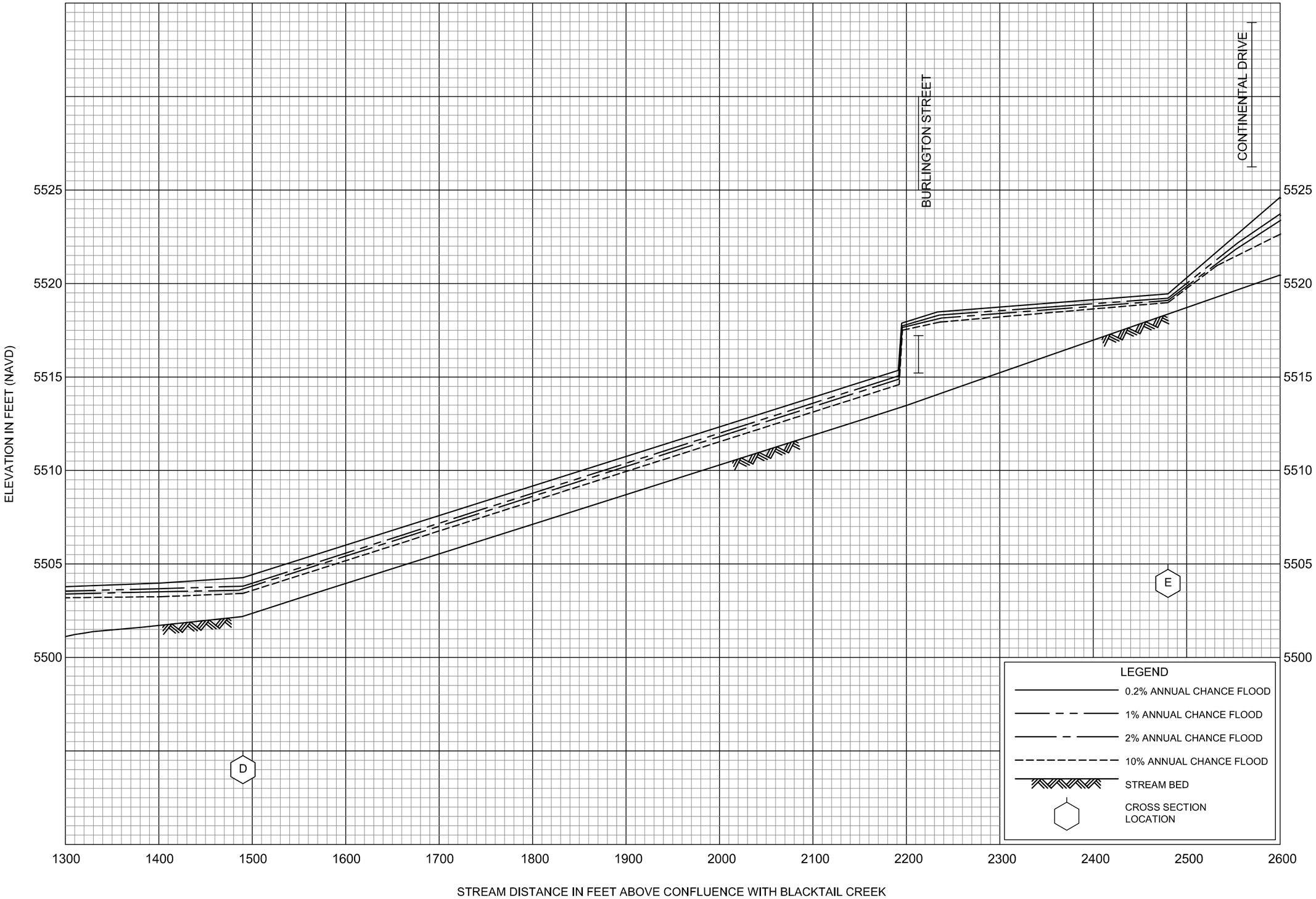
FLOOD PROFILES

BROOKSIDE CANYON

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



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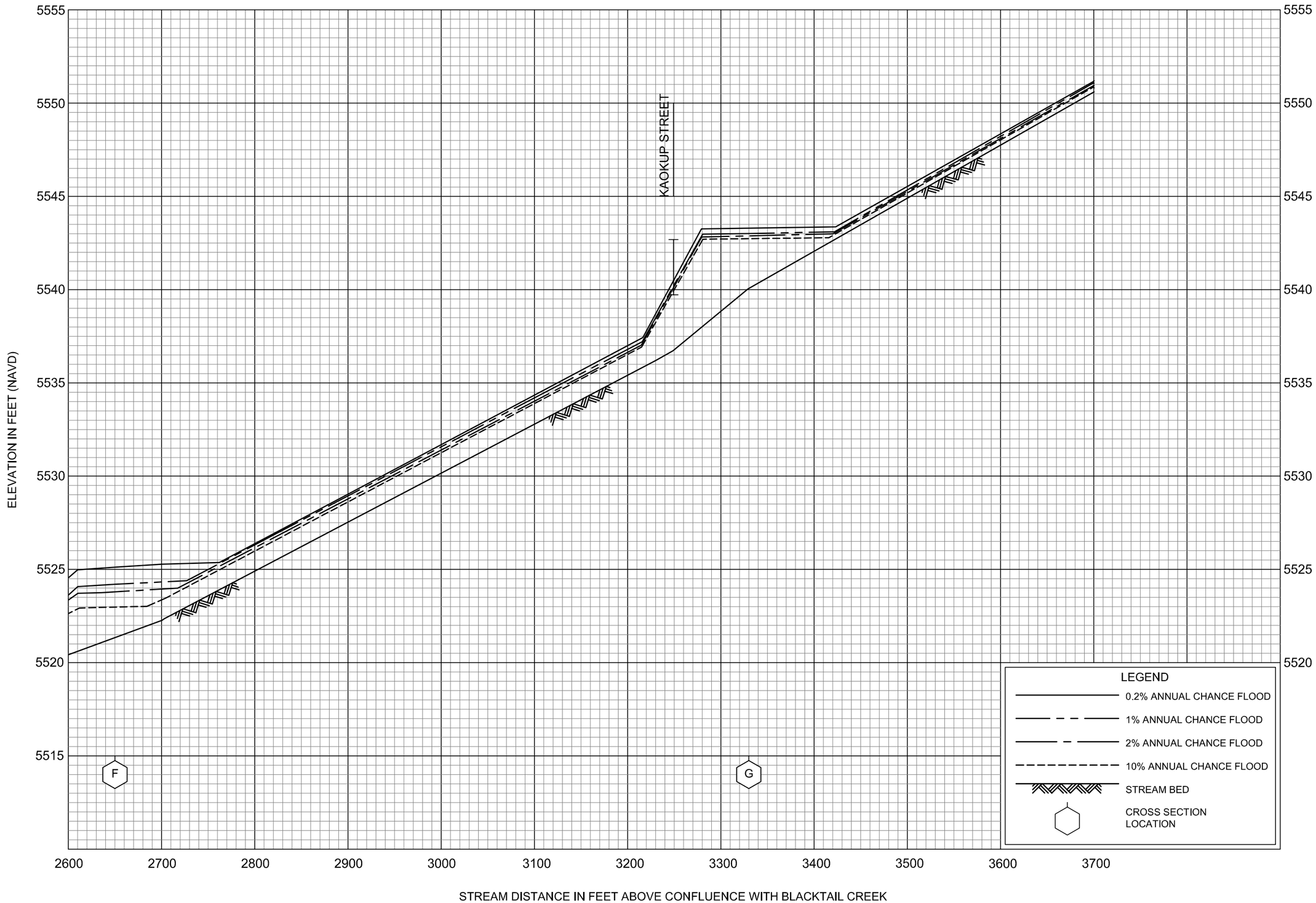

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BUTTE-SILVER BOW COUNTY, MT

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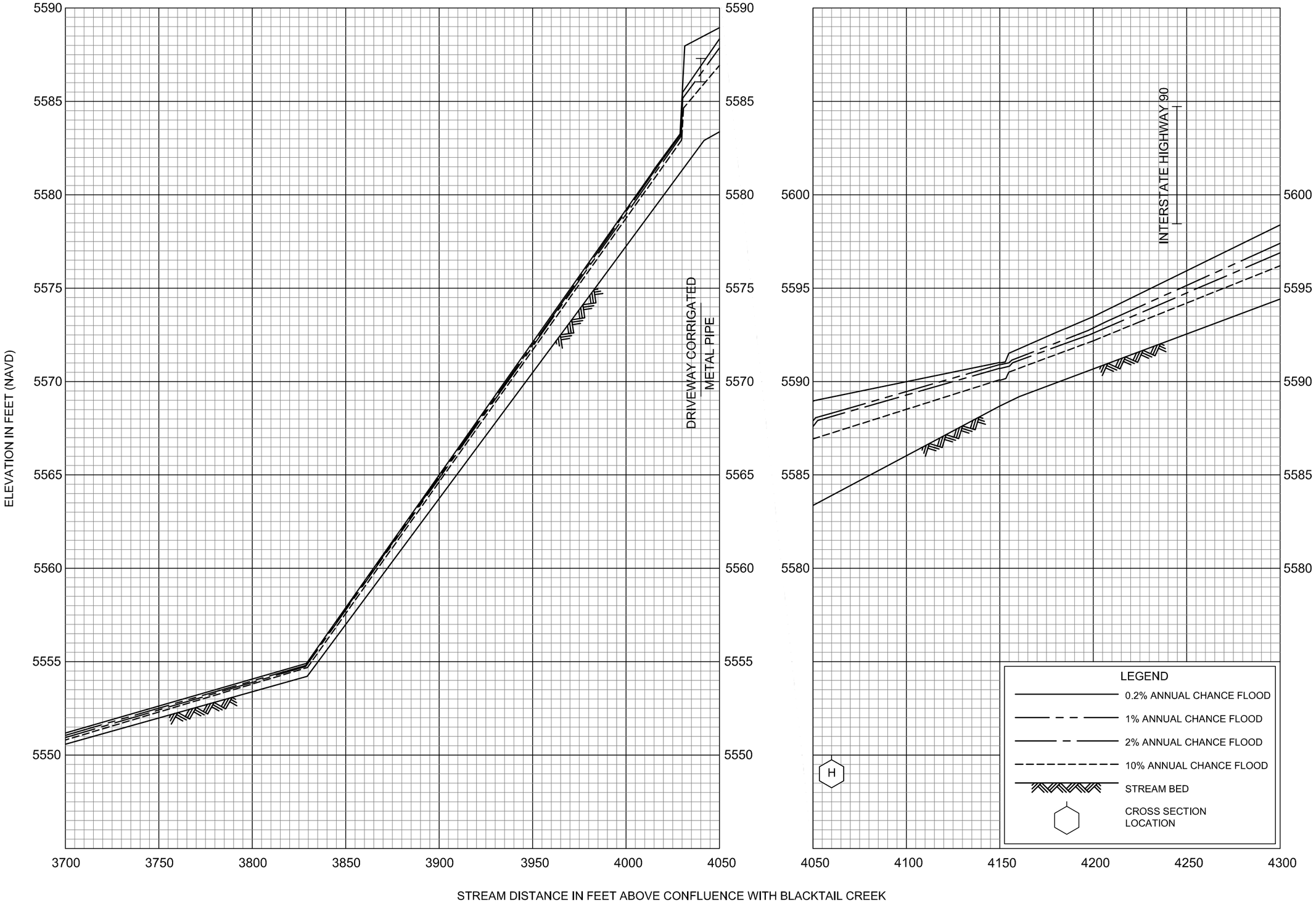

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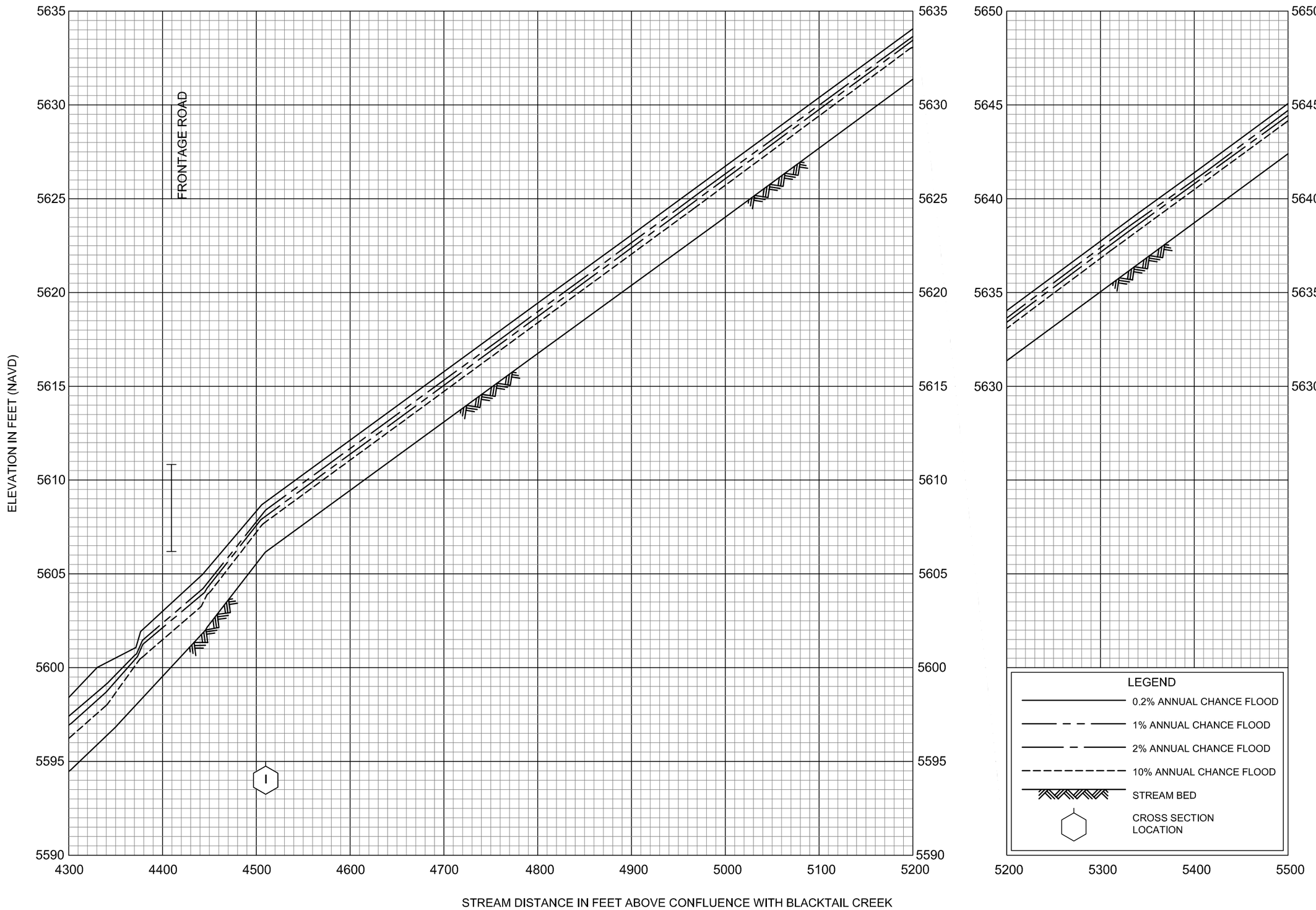

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BUTTE-SILVER BOW COUNTY, MT

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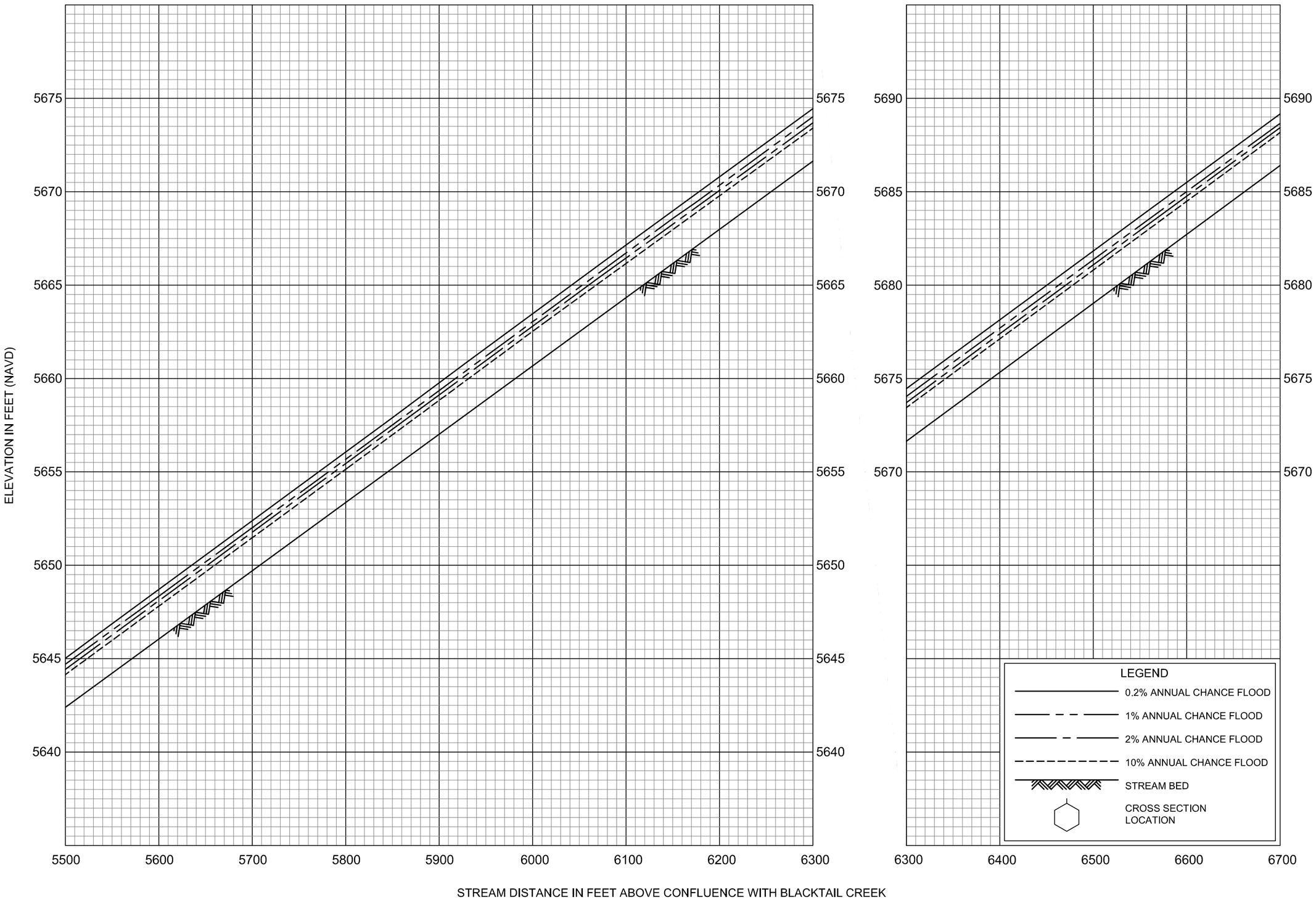

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BUTTE-SILVER BOW COUNTY, MT

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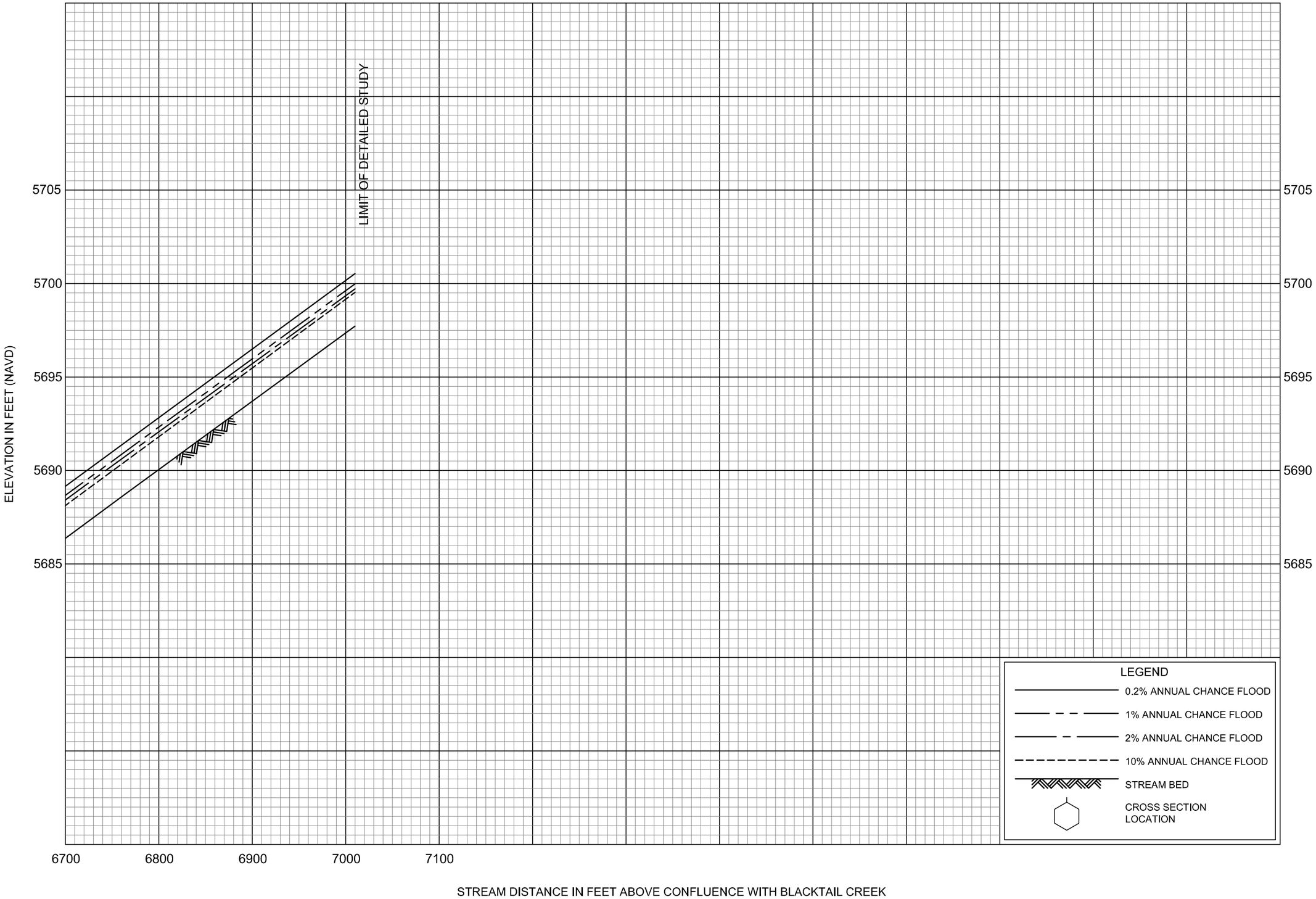

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BUTTE-SILVER BOW COUNTY, MT

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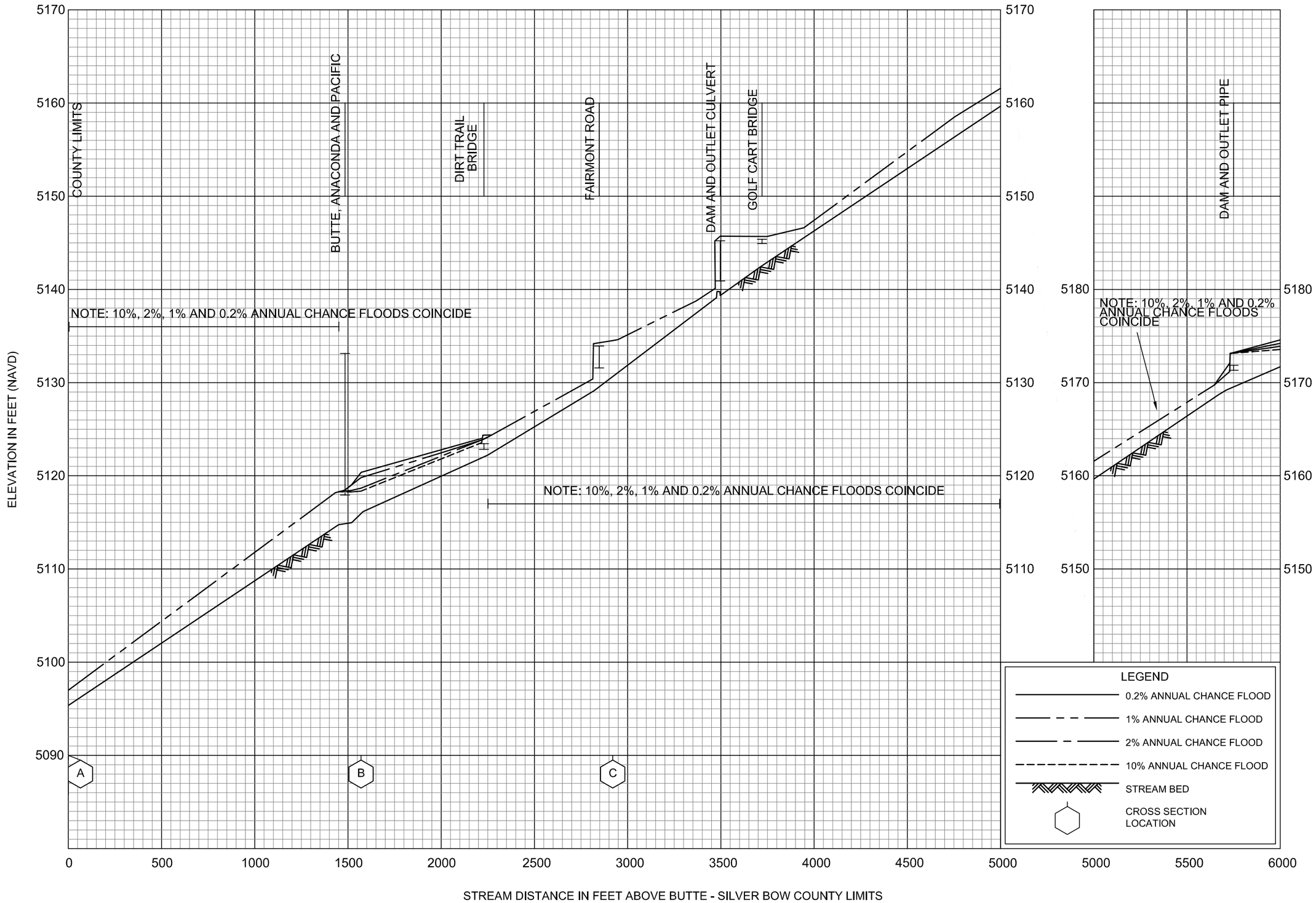


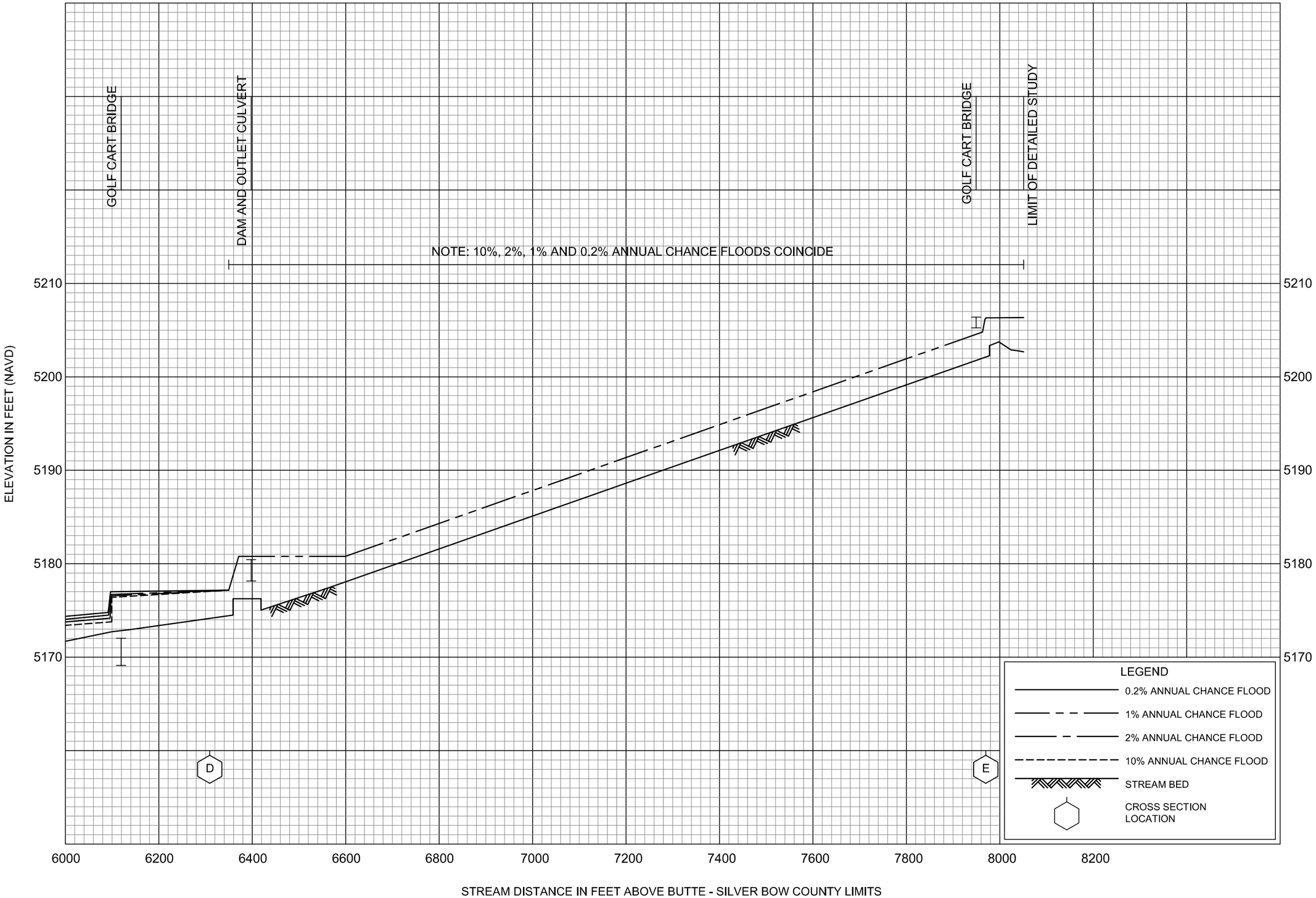
FLOOD PROFILES

GREGSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)



FLOOD PROFILES

GREGSON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUTTE-SILVER BOW COUNTY, MT

(ALL JURISDICTIONS)