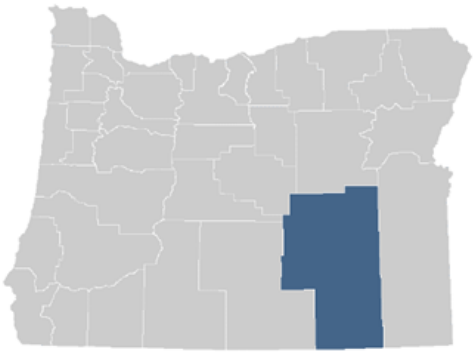
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BURNS PAIUTE RESERVATION	410281
BURNS, CITY OF	410084
HARNEY COUNTY, UNINCORPORATED AREAS	410083
HINES, CITY OF	410085

FEMA

REVISED:

FEBRUARY 8, 2024

FLOOD INSURANCE STUDY NUMBER
41025CV000B
Version Number 2.6.5.6

TABLE OF CONTENTS
Volume 1

Figures

Page

Tables

Page

Volume 1

Exhibits

Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
HARNEY COUNTY, OREGON

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 Harney County, Oregon.

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

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Burns Paiute Reservation	410281	17120001, 17120002	41025C1402F, 41025C1403E[1], 41025C1404F, 41025C1406F, 41025C1408F, 41025C1412F, 41025C1440E, 41025C1445E, 41025C1475E, 41025C1500E, 41025C1525E[1], 41025C1850E	
Burns, City of	410084	17120002	41025C1402F, 41025C1404F, 41025C1406F, 41025C1408F	

[1] Panel Not Printed

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
Harney County, Unincorporated Areas	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C0025E[1], 41025C0050E[1], 41025C0075E[1], 41025C0100E[1], 41025C0125E[1], 41025C0150E[1], 41025C0175E[1], 41025C0200E[1], 41025C0225E[1], 41025C0250E[1], 41025C0275E[1], 41025C0300E[1], 41025C0320E, 41025C0325E[1], 41025C0330E, 41025C0335E, 41025C0340E, 41025C0345E, 41025C0375E[1], 41025C0400E, 41025C0425E, 41025C0450E[1], 41025C0475E[1], 41025C0500E[1], 41025C0525E[1], 41025C0550E[1], 41025C0575E[1], 41025C0595E, 41025C0600E[1], 41025C0615E, 41025C0620E, 41025C0625E[1], 41025C0630E, 41025C0635E, 41025C0640E, 41025C0645E, 41025C0655E, 41025C0660E, 41025C0675E[1], 41025C0685E, 41025C0700E[1], 41025C0725E[1], 41025C0750E[1], 41025C0775E, 41025C0800E, 41025C0825E, 41025C0850E[1], 41025C0875E[1], 41025C0900E[1], 41025C0925E[1], 41025C0950E[1], 41025C0975E[1], 41025C1000E[1], 41025C1005E, 41025C1010E, 41025C1015E[1], 41025C1020E, 41025C1036F, 41025C1037F, 41025C1038F, 41025C1039F, 41025C1043F, 41025C1044F, 41025C1045F[1], 41025C1050E[1], 41025C1065E, 41025C1075E[1], 41025C1100E[1], 41025C1125E[1], 41025C1150E[1], 41025C1175E[1], 41025C1200E[1], 41025C1225E[1], 41025C1250E[1], 41025C1275E[1], 41025C1300E[1], 41025C1325E[1], 41025C1350E[1], 41025C1375E[1], 41025C1400E[1], 41025C1401E[1], 41025C1402F, 41025C1403E[1], 41025C1404F, 41025C1406F, 41025C1407F, 41025C1408F, 41025C1409F	

[1] Panel Not Printed

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
Harney County, Unincorporated Areas (continued)	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C1411E, 41025C1412F, 41025C1415E, 41025C1416E, 41025C1420E, 41025C1430E, 41025C1435E, 41025C1440E, 41025C1445E, 41025C1475E, 41025C1500E, 41025C1525E[1], 41025C1550E[1], 41025C1575E[1], 41025C1600E[1], 41025C1625E[1], 41025C1650E[1], 41025C1675E[1], 41025C1700E, 41025C1725E, 41025C1750E, 41025C1775E, 41025C1800E, 41025C1825E, 41025C1850E, 41025C1875E, 41025C1900E, 41025C1925E, 41025C1950E[1], 41025C1975E[1], 41025C2000E[1], 41025C2025E[1], 41025C2050E[1], 41025C2075E, 41025C2100E, 41025C2125E, 41025C2150E, 41025C2175E, 41025C2200E, 41025C2225E, 41025C2250E, 41025C2275E, 41025C2300E, 41025C2325E, 41025C2350E, 41025C2375E[1], 41025C2400E[1], 41025C2425E[1], 41025C2450E[1], 41025C2475E[1], 41025C2500E, 41025C2525E, 41025C2550E, 41025C2575E, 41025C2600E, 41025C2625E[1], 41025C2650E, 41025C2675E[1], 41025C2700E, 41025C2725E[1], 41025C2750E[1], 41025C2775E[1], 41025C2800E[1], 41025C2825E[1], 41025C2850E[1], 41025C2875E[1], 41025C2900E[1], 41025C2925E, 41025C2950E, 41025C2975E, 41025C3000E, 41025C3025E[1], 41025C3050E[1], 41025C3075E[1], 41025C3100E[1], 41025C3125E[1], 41025C3150E[1], 41025C3175E[1], 41025C3200E[1], 41025C3225E[1], 41025C3250E[1], 41025C3275E[1], 41025C3300E[1], 41025C3325E, 41025C3350E, 41025C3375E, 41025C3400E[1], 41025C3425E[1], 41025C3450E[1], 41025C3475E[1]	

[1] Panel Not Printed

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
Harney County, Unincorporated Areas *(continued)*	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C3500E[1], 41025C3525E[1], 41025C3550E[1], 41025C3575E[1], 41025C3600E[1], 41025C3625E[1], 41025C3650E[1], 41025C3675E[1], 41025C3700E[1], 41025C3725E[1], 41025C3750E[1], 41025C3775E[1], 41025C3800E[1], 41025C3825E[1], 41025C3850E[1], 41025C3875E[1], 41025C3900E[1], 41025C3925E[1], 41025C3950E[1], 41025C3975E[1], 41025C4000E[1], 41025C4025E[1], 41025C4050E[1], 41025C4075E[1], 41025C4100E[1], 41025C4125E[1], 41025C4150E[1], 41025C4175E[1], 41025C4200E[1], 41025C4225E[1], 41025C4250E[1], 41025C4275E[1], 41025C4300E[1], 41025C4325E[1], 41025C4350E[1], 41025C4375E[1], 41025C4400E[1], 41025C4425E[1], 41025C4450E[1], 41025C4475E[1], 41025C4500E[1], 41025C4525E[1], 41025C4550E[1], 41025C4575E[1], 41025C4600E[1], 41025C4625E[1], 41025C4650E[1], 41025C4675E[1], 41025C4700E[1], 41025C4725E[1], 41025C4750E[1], 41025C4775E[1], 41025C4800E[1], 41025C4825E[1], 41025C4850E[1], 41025C4875E[1], 41025C4900E[1], 41025C4925E[1], 41025C4950E[1], 41025C4975E[1], 41025C5000E[1], 41025C5025E[1], 41025C5050E[1], 41025C5075E[1], 41025C5100E[1], 41025C5125E[1], 41025C5150E[1], 41025C5175E[1], 41025C5200E[1], 41025C5225E[1], 41025C5250E[1], 41025C5275E[1], 41025C5300E[1], 41025C5325E[1], 41025C5350E[1], 41025C5375E[1], 41025C5400E[1], 41025C5425E[1], 41025C5450E[1], 41025C5475E[1], 41025C5500E[1], 41025C5525E[1], 41025C5550E[1], 41025C5575E[1], 41025C5600E[1], 41025C5625E[1],	

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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
Harney County, Unincorporated Areas *(continued)*	410083	16040201, 16040205, 17050109, 17050116, 17070201, 17070303, 17120001, 17120002, 17120003, 17120004, 17120005, 17120007, 17120008, 17120009	41025C5650E[1], 41025C5675E[1], 41025C5700E[1], 41025C5725E[1]	
Hines, City of	410085	17120002	41025C1404F, 41025C1411E, 41025C1412F	

[1] Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

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

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

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

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance

purposes. Community map repository addresses are provided in Table 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 Harney County became effective on April 20, 2022. Refer to Table 27 for information about subsequent revisions to the FIRMs.

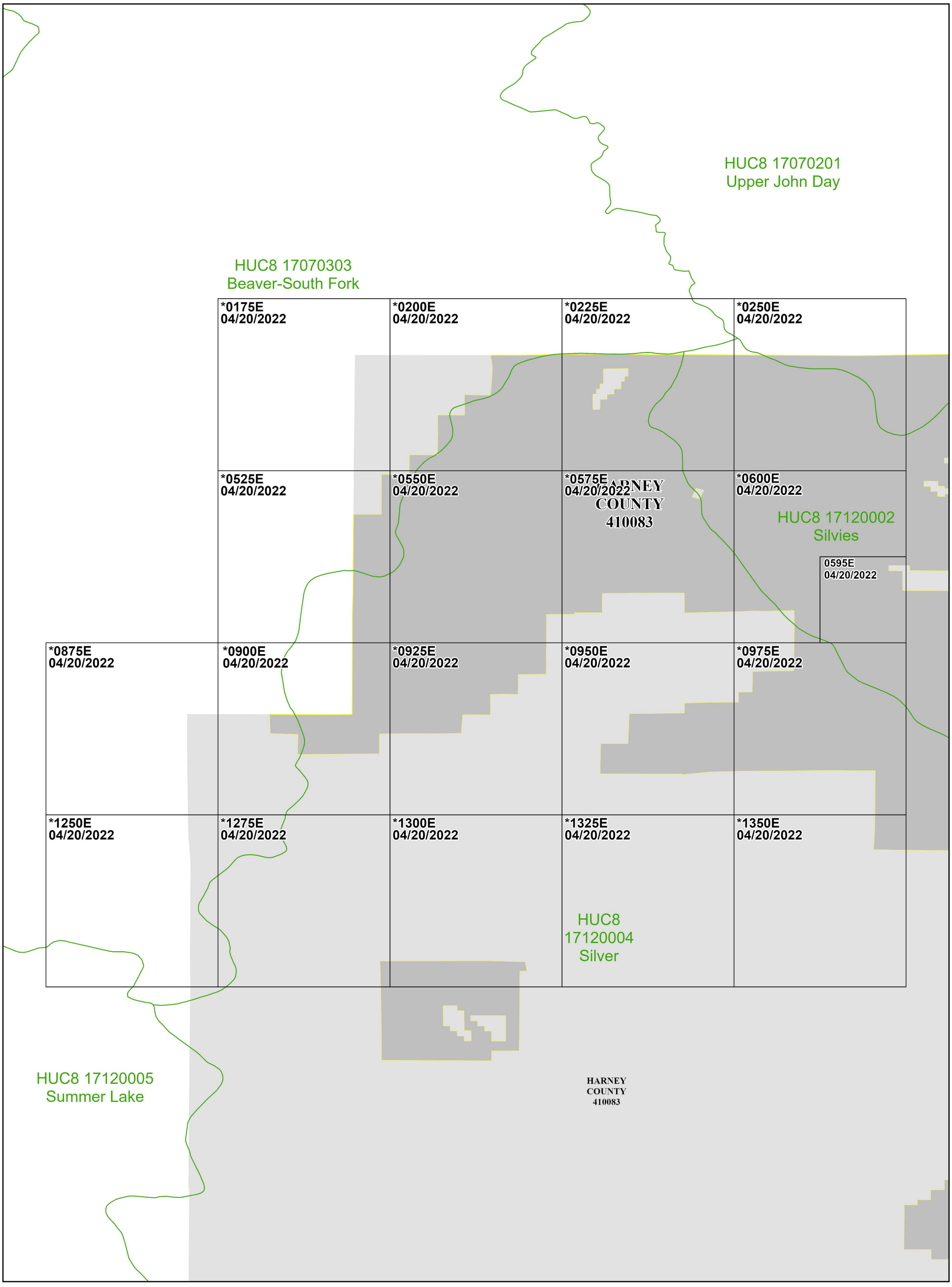
- FEMA does not design, build, inspect, operate, maintain, or certify levees. FEMA is responsible for accurately identifying flood hazards and communicating those hazards and risks to affected stakeholders. FEMA has identified one or more levee systems in this jurisdiction summarized in Table 8 of this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

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

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/flood-maps/tutorials.

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

Figure 1: FIRM Index



1 inch = 25,109 feet 1:301,308

feet
0 10,000 20,000 40,000 60,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 1 OF 8

PANELS PRINTED:

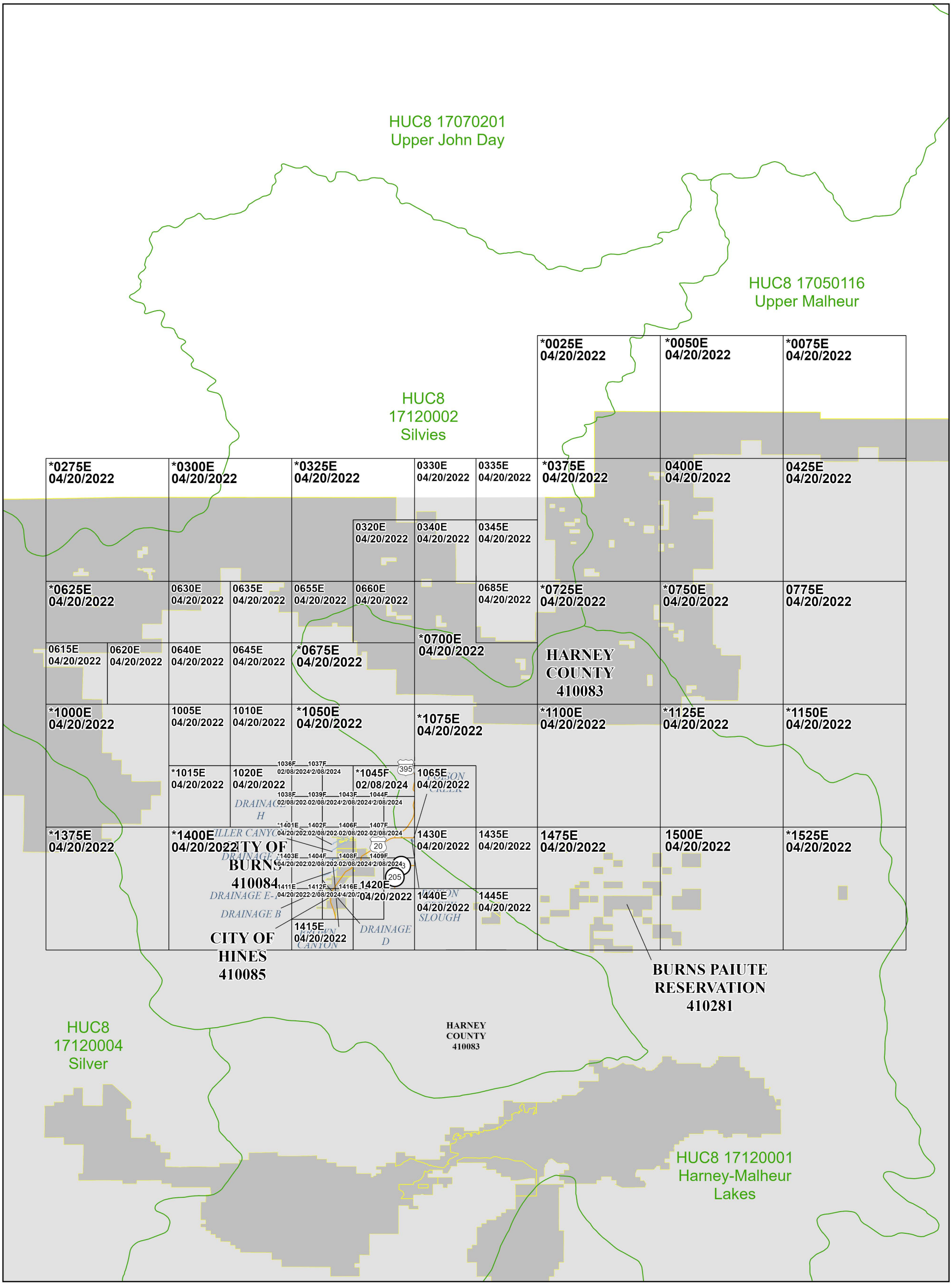
0595

FEMA

MAP NUMBER
41025CIND1B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 35,153 feet 1:421,831

feet

0 15,000 30,000 60,000 90,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 2 OF 8

PANELS PRINTED:

0320, 0330, 0335, 0340, 0345, 0400, 0425, 0615, 0620, 0630, 0635, 0640, 0645, 0655, 0660, 0685, 0775, 1005, 1010, 1020, 1036, 1037, 1038, 1039, 1043, 1044, 1065, 1402, 1404, 1406, 1407, 1408, 1409, 1411, 1412, 1415, 1416, 1420, 1430, 1435, 1440, 1445, 1475, 1500

FEMA

MAP NUMBER
41025CIND2B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)

N

1 inch = 18,599 feet 1:223,191

feet

0 5,000 10,000 20,000 30,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 3 OF 8

PANELS PRINTED:

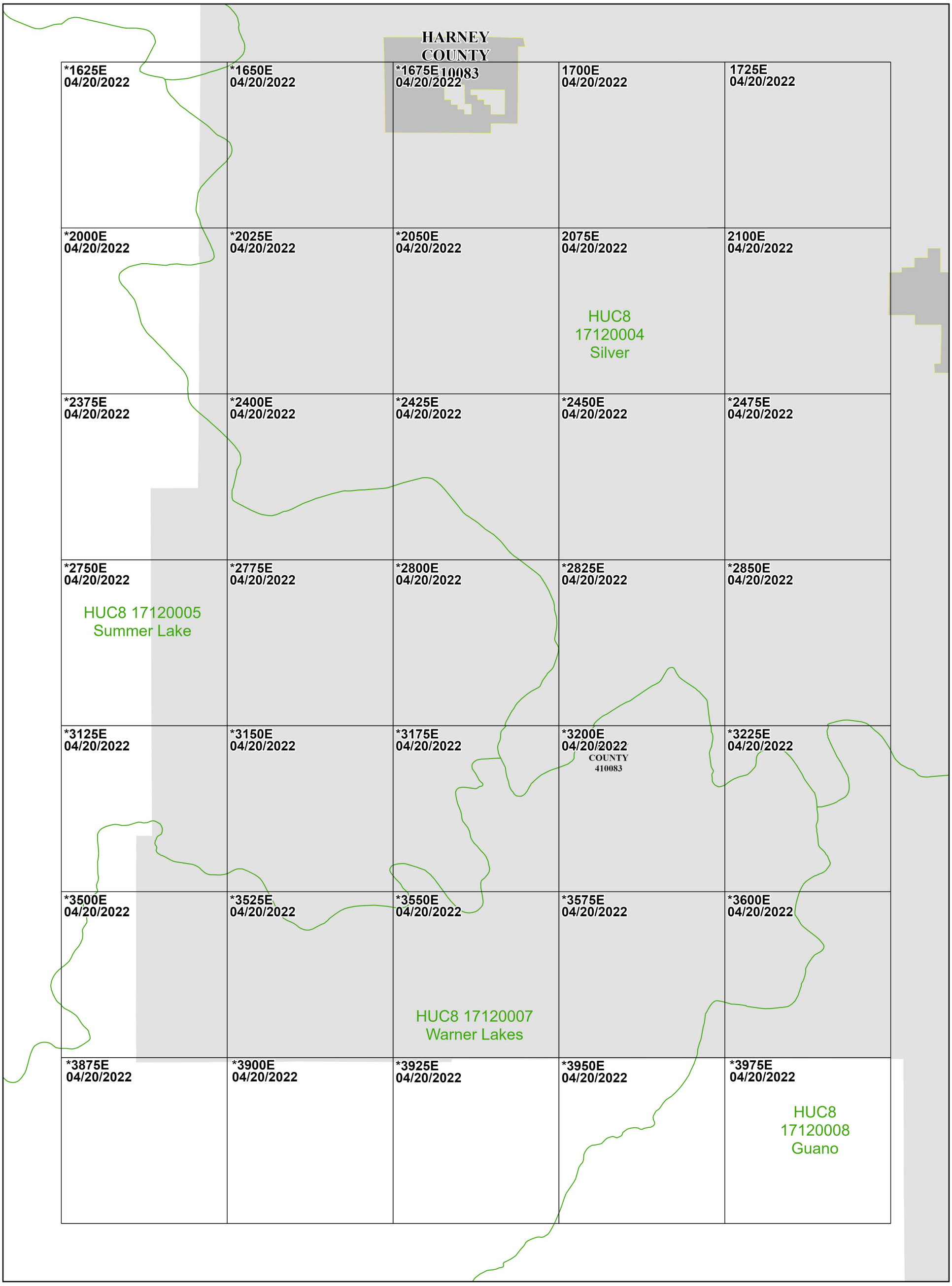
0800, 0825

FEMA

MAP NUMBER
41025CIND3B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



N

1 inch = 26,039 feet 1:312,467

feet

0 10,000 20,000 40,000 60,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 4 OF 8

PANELS PRINTED:

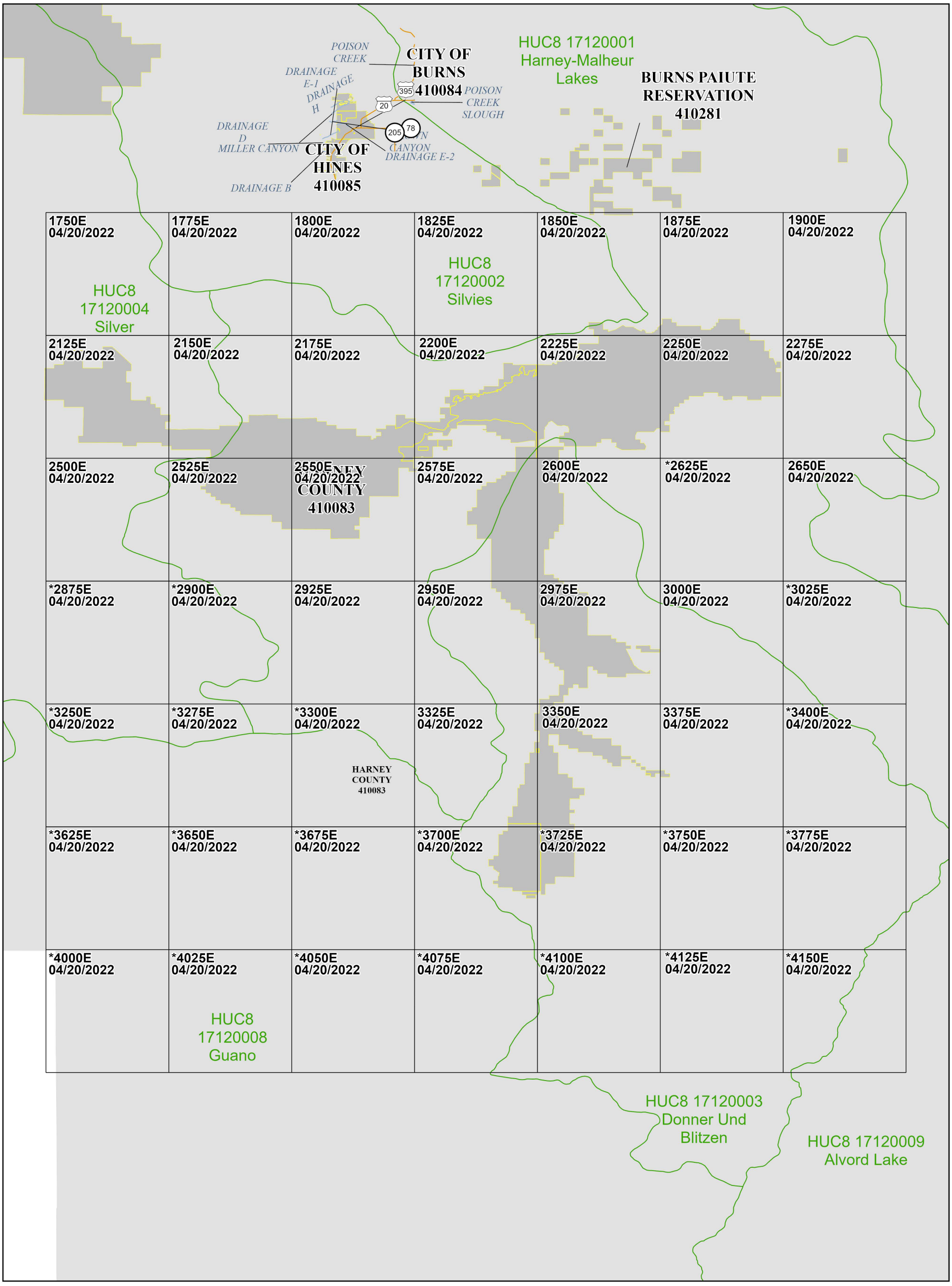
1700, 1725, 2075, 2100

FEMA

MAP NUMBER
41025CIND4B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



1 inch = 35,153 feet 1:421,831

N

feet

0 15,000 30,000 60,000 90,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 5 OF 8

PANELS PRINTED:

1750, 1775, 1800, 1825, 1850, 1875, 1900, 2125, 2150, 2175, 2200, 2225, 2250, 2275, 2500, 2525, 2550, 2575, 2600, 2650, 2925, 2950, 2975, 3000, 3325, 3350, 3375

FEMA

MAP NUMBER
41025CIND5B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)

1 inch = 26,039 feet 1:312,467

N

feet

0 10,000 20,000 40,000 60,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 6 OF 8

PANELS PRINTED:

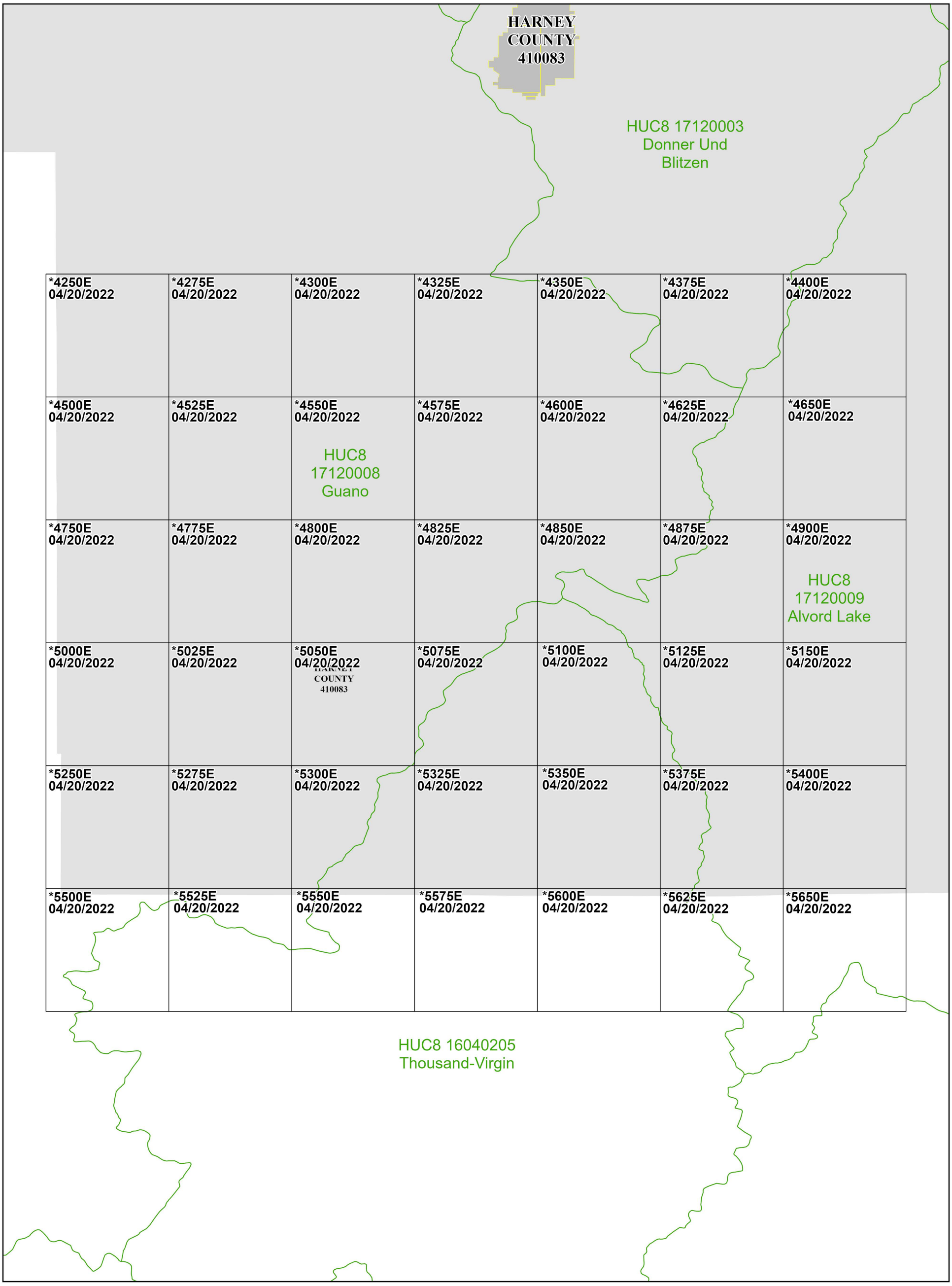
1925, 2300, 2325, 2350, 2700

FEMA

MAP NUMBER
41025CIND6B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



N

1 inch = 35,153 feet 1:421,831

feet

0 15,000 30,000 60,000 90,000

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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

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SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

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NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 7 OF 8

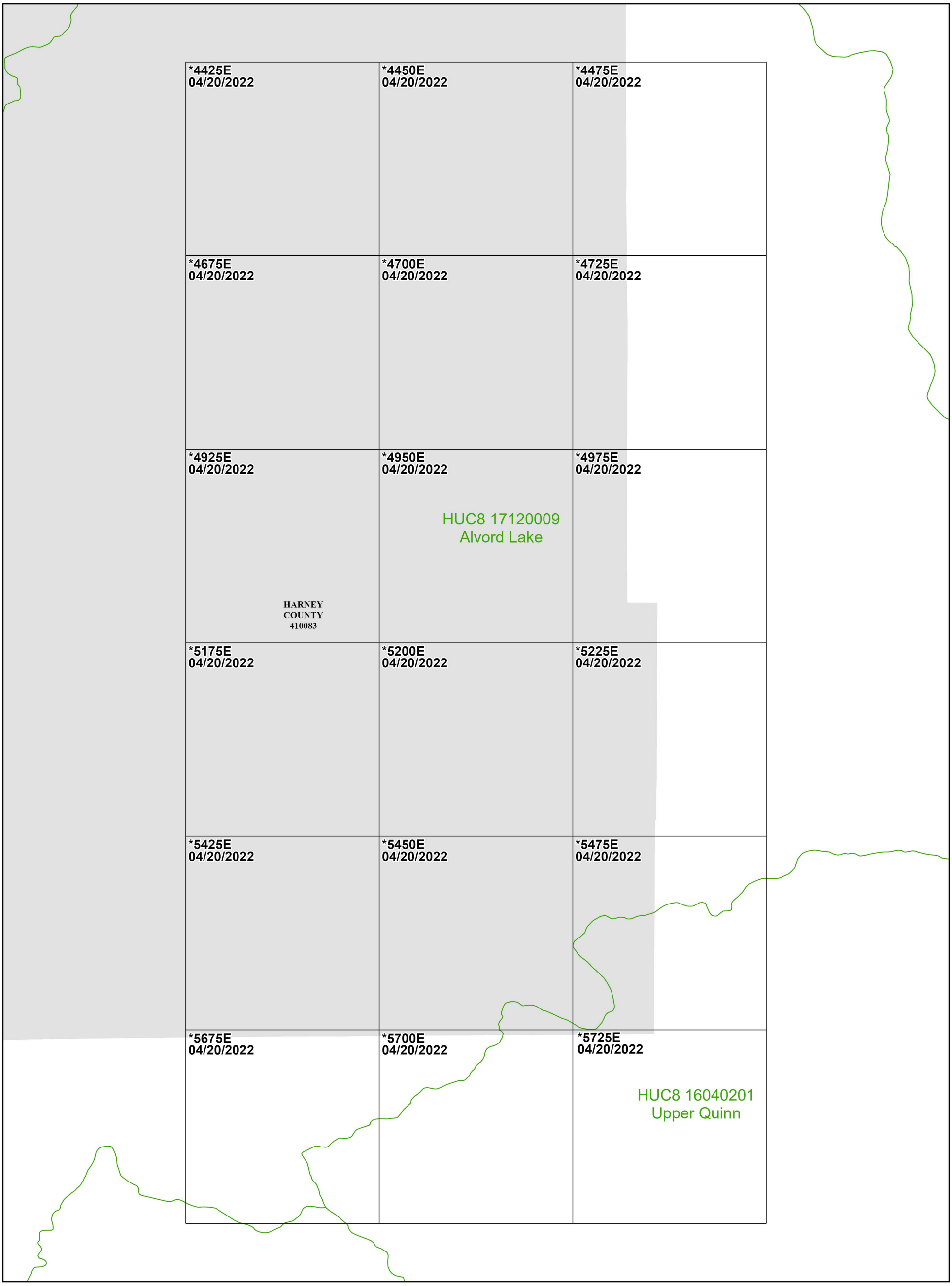
PANELS PRINTED:

FEMA

MAP NUMBER
41025CIND7B

EFFECTIVE DATE
February 08, 2024

Figure 1: FIRM Index (continued)



N

1 inch = 22,319 feet 1:267,829

feet

0 9,980 19,960 39,920 59,880

Map Projection:
GCS WGS 1984
Vertical Datum: NAVD88

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

HTTPS://MSC.FEMA.GOV

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* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

HARNEY COUNTY, OREGON AND INCORPORATED AREAS

PAGE 8 OF 8

PANELS PRINTED:

FEMA

MAP NUMBER
41025CIND8B

EFFECTIVE DATE
February 08, 2024

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 Flood Insurance Rate Map (FIRM), available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Mapping and Insurance eXchange.

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.

Figure 2: FIRM Notes to Users, continued

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

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was the North American Datum of 1983 (NAD83), GRS 1980 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 (NAVD88). 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 the FIRM panels dated 04/20/2022 was provided in digital format by the Oregon Department of Geology and Mineral Industries, the Oregon Department of Transportation, the Bureau of Land Management, the United States Geological Survey and the United States Department of Agriculture - Farm Service Agency (USDA-FSA) Aerial Photography Field Office as part of the National Agriculture Imagery Program (NAIP). NAIP data was derived from digital orthophotography at a 1-meter resolution from photography dated 2016. Basemap information for FIRM panels dated February 8, 2024 was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Dates include most recently refreshed data. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

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

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

NOTES FOR FIRM INDEX

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

Figure 2: FIRM Notes to Users, continued

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Harney County, Oregon**,** effective February 8, 2024.

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

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

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

Figure 3: Map Legend for FIRM, continued

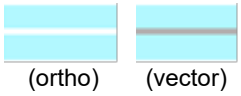
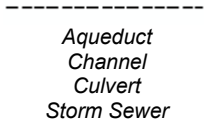
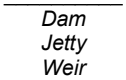
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Hazard due to Accredited or Provisionally Accredited Levee System: Area is shown as reduced flood hazard from the 1-percent-annual-chance or greater flood by a levee system. Overtopping or failure of any levee system is possible.
	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.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	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	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM, continued

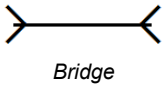
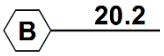
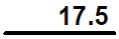
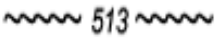
	Levee, Dike, or Floodwall
	Bridge
REFERENCE MARKERS	
	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
	Unlettered Cross Section with Regulatory Water Surface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

Figure 3: Map Legend for FIRM, continued

234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
_____	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 Harney 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 Harney County, respectively.

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

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Brown Canyon	Burns Paiute Reservation; Burns, City of; Harney County Unincorporated Areas	Confluence with Silvies River	Approximately 6,200 feet upstream of Foley Drive	17120002	1.8		N	AE	11/30/2021
Cricket Creek	Harney County, Unincorporated Areas	At the confluence with Emigrant Creek	61 feet southwest of centerline of Hines Logging Road	17120002	3.9		N	A	12/10/2012
Drainage B	Harney County, Unincorporated Areas; Hines, City of	Approximately 50 feet west of the intersection of South Hilltop Avenue and Howell Street	Approximately 1,465 feet upstream of outlet	17120002	0.3		N	A / X (Shaded)	12/10/2012
Drainage C	Harney County, Unincorporated Areas; Hines, City of	Highway 20	N Section Avenue	17120002	0.6		N	A / X (Shaded)	1982
Drainage D	Harney County, Unincorporated Areas; Hines, City of	Hiker/Biker Trail near Sewage Lagoon	Approximately 650 feet upstream of King Avenue	17120002	1.3		N	AE	11/30/2021
Drainage E	Burns, City of; Harney County, Unincorporated Areas; Hines, City of	Confluence with Drainage D	Confluences of Drainage E-1 and Drainage E-2	17120002	1.7		N	AE	11/30/2021
Drainage E-1	Burns Paiute Reservation; Burns, City of; Harney County Unincorporated Areas	Confluence with Drainage E	Approximately 3,400 feet upstream of W Monroe Street	17120002	0.9		N	AE	11/30/2021
Drainage E-2	Burns, City of	Confluence with Drainage E	Approximately 4,300 feet upstream of confluence with Drainage E	17120002	0.8		N	AE	11/30/2021

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

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Drainage H	Burns Paiute Reservation; Harney County, Unincorporated Areas	Confluence with Miller Canyon	Approximately 2,000 feet upstream of Pasigo Street	17120002	0.7		N	A	11/30/2021
East Fork Silvies River	Harney County, Unincorporated Areas	Confluence with Malheur Lake	Separation of Silvies River into two forks	17120001, 17120002	31.4		N	A	06/17/2016
East Harney County Basin	Burns Paiute Reservation; Harney County, Unincorporated Areas	Area east of City of Burns and north of Malheur Lake	Area east of City of Burns and north of Malheur Lake	17120001, 17120002		14.2	N	A	10/15/2020
Emigrant Creek	Harney County, Unincorporated Areas	At the confluence with the Silvies River	1,943 feet upstream of the confluence of Little Emigrant Creek	17120002	19.4		N	A	12/10/2012
Foley Slough	Harney County, Unincorporated Areas	At Fry Road	At West Loop Road	17120002	4.4		Y	AE	11/30/2021
Foley Slough	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.2		N	A	11/30/2021
Foley Slough Flow Split 1	Harney County, Unincorporated Areas	Convergence with Silvies River East Overbank Flow Split	Divergence from Foley Slough	17120002	2.8		Y	AE	11/30/2021
Foley Slough Flow Split 2	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough	17120002	1.5		Y	AE	11/30/2021
Foley Slough Flow Split 3	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough Flow Split 1	17120002	0.8		Y	AE	11/30/2021

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

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Foley Slough Flow Split 4	Harney County, Unincorporated Areas	Convergence with Foley Slough Flow Split 3	Divergence from Foley Slough Flow Split 2	17120002	0.5		Y	AE	11/30/2021
Foley Slough Flow To Silvies River	Harney County, Unincorporated Areas	Convergence with Silvies River	Divergence from Foley Slough	17120002	0.5		Y	AE	11/30/2021
Hay Creek	Harney County, Unincorporated Areas	At the confluence with Emigrant Creek	4,846 feet upstream of the confluence of West Fork Hay Creek	17120002	4.4		N	A	12/10/2012
Malheur River	Harney County, Unincorporated Areas	In the vicinity of Drewsey	In the vicinity of Drewsey	17050116	2.0		N	A	1982
Miller Canyon	Burns Paiute Reservation; Harney County, Unincorporated Areas	Confluence with Silvies River	Approximately 4,600 feet upstream of Radar Lane	17120002	1.2		N	A	11/30/2021
Poison Creek	Harney County, Unincorporated Areas	Confluence with Poison Creek Slough at Highway 20	Approximately 8,600 feet north of Highway 20	17120001	1.7		N	A	06/17/2016
Poison Creek	Harney County, Unincorporated Areas	Approximately 4,200 feet north of Highway 20	Approximately 200 feet east of Highway 395	17120001	2.0		N	A	06/17/2016
Poison Creek Slough	Harney County, Unincorporated Areas	Approximately 15,500 feet east of Highway 78 along Rye Grass Lane	Confluence of Poison Creek at Highway 20	17120001	14.2		N	A	06/17/2016

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

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Silvies River	Harney County, Unincorporated Areas	Separation of Silvies River into two forks	Approximately 2,700 feet downstream from Highway 78	17120002	1.1		N	A	06/17/2016
Silvies River	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas	Approximately 2,700 feet downstream from Highway 78	At West Loop Road	17120002	8.6		Y	AE	11/30/2021
Silvies River	Harney County, Unincorporated Areas	At West Loop Road	Approximately 19,300 feet upstream of West Loop Road	17120002	3.7		N	A	11/30/2021
Silvies River	Harney County, Unincorporated Areas;	Approximately 19,300 feet upstream of West Loop Road	4,903 feet upstream from the confluence with Charlie Creek	17120002	6.7		N	A	12/10/2012
Silvies River Reach 2	Harney County, Unincorporated Areas	4,903 feet upstream from the confluence with Charlie Creek	6,027 feet south of the intersection of Highway 395 and Silvies Hopper Lane	17120002	40.8		N	A	12/10/2012
Silvies River East Overbank Flow Split	Harney County, Unincorporated Areas	Approximately 2,900 feet downstream of Highway 78	Divergence from Silvies River	17120002	2.3		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 1	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.7		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 1	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021

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

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Silvies River Flow Split To Foley Slough 2	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.3		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 2	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021
Silvies River Flow Split To Foley Slough 3	Harney County, Unincorporated Areas	Convergence with Foley Slough	At West Loop Road	17120002	0.6		Y	AE	11/30/2021
Silvies River Flow Split To Foley Slough 3	Harney County, Unincorporated Areas	At West Loop Road	Divergence from Silvies River	17120002	0.3		N	A	11/30/2021
Silvies River Flow Split To Foley Slough 4	Harney County, Unincorporated Areas	Convergence with Foley Slough	Divergence from Silvies River	17120002	0.4		Y	AE	11/30/2021
Trout Creek	Harney County, Unincorporated Areas	At the confluence with the Silvies River	2,820 feet upstream of King Mountain Lookout Road	17120002	10.4		N	A	12/10/2012
West Fork Silvies River	Harney County, Unincorporated Areas	Confluence with Malheur Lake	Separation of Silvies River into two forks	17120001, 17120002	33.4		N	A	06/17/2016

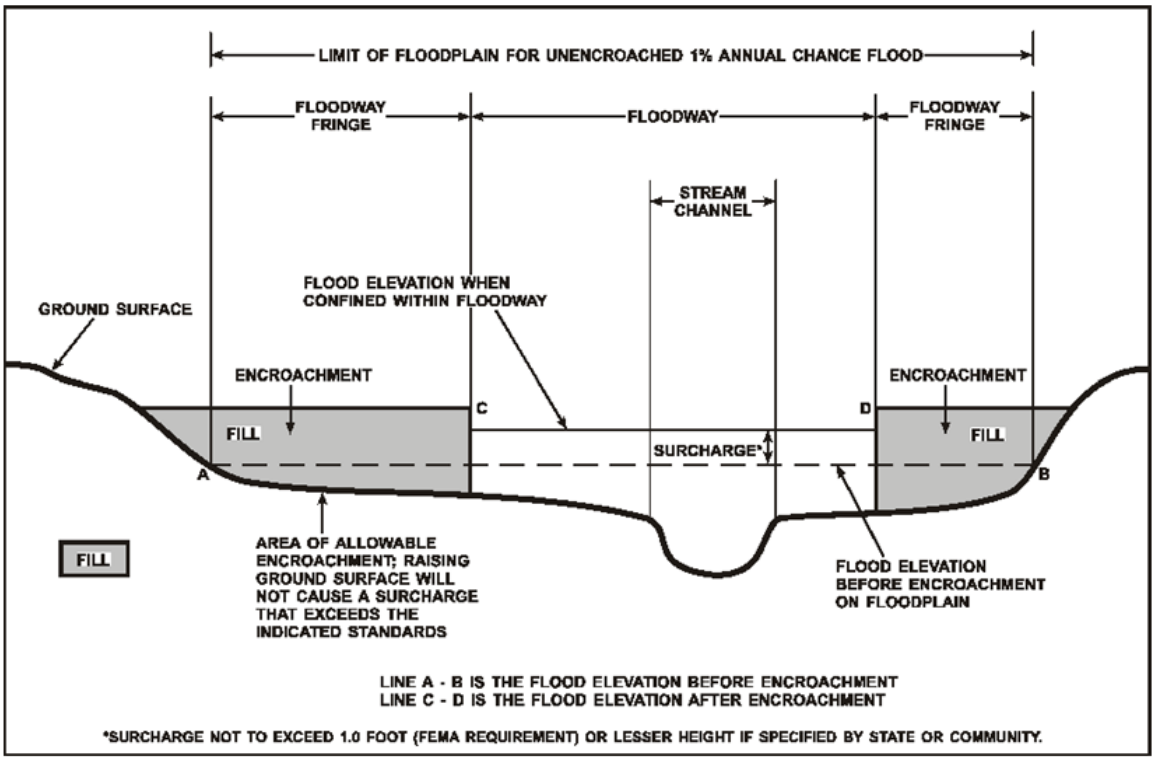
2.2 Floodways

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 Oregon require communities in Harney County to limit increases caused by encroachment to 1.0 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 Base Flood Elevation (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 Harney County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Burns Paiute Reservation	A, AE, X
Burns, City of	A, AE, X
Harney County, Unincorporated Areas	A, AE, X
Hines, City of	A, AE, X

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

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

Table 4: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Alvord Lake	17120009	Alvord Lake	Affecting the southeastern corner of Harney County	2,132
Beaver-South Fork	17070303	Beaver-South Fork	Affecting a very small northwest portion of Harney County	1,549
Crooked-Rattlesnake	17050109	Crooked-Rattlesnake	Affecting a very small eastern portion of Harney County	1,337

Table 4: Basin Characteristics (continued)

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Donner Und Blitzen	17120003	Donner Und Blitzen	Begins at mouth of Donner Und Blitzen River, extends southeast, affecting a center portion of Harney County	758
Guano	17120008	Guano	Affecting the southwestern corner of Harney County	3,007
Harney-Malheur Lakes	17120001	Harney-Malheur Lakes	A large watershed affecting the center portion of Harney County	1,434
Silver	17120004	Silver	Begins along Buzzard Creek, extends northwest, affecting the northwest corner of Harney County	1,682
Silvies	17120002	Silvies	Begins approximately 8,500 feet upstream from Malheur Lake, extends northwest, affecting one eighth of Harney County	1,320
Summer Lake	17120005	Summer Lake	Affecting a small western portion of Harney County	4,147
Thousand-Virgin	16040205	Thousand-Virgin	Affecting a southern portion of Harney County	1,168
Upper John Day	17070201	Upper John Day	Affecting a very small northwest portion of Harney County	2,136
Upper Malheur	17050116	Upper Malheur	Affecting the northeast corner of Harney County	2,453
Upper Quinn	16040201	Upper Quinn	Affecting a very small southeastern corner of Harney County	3,526
Warner Lakes	17120007	Warner Lakes	Affecting a small southwestern corner of Harney County	1,912

4.2 Principal Flood Problems

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

Table 5: Principal Flood Problems

Flooding Source	Description of Flood Problems
Brown Canyon/ Drainage F	There are eight distinct drainages in the foothills west and northwest of Burns, Burns Paiute Reservation, and Hines; Brown Canyon is among the most significant. Thunderstorm floods can cause major flood damage to the small, local drainage areas in the foothills. The eight drainages, separately or together, have the potential of flooding a common floodplain between the base of the hills and the Silvies River. Brown Canyon does not have a direct channel across the floodplain to the Silvies River; in addition, the gradients of its meandering ditches are very flat, thereby causing overflow along its route. There is little information concerning the flood history of this drainage.
Drainages B, C, and D	Flooding occurs regularly in the Burns-Hines area and cannot be viewed separately as isolated phenomenon in either of the jurisdictions. Runoff occurs from the relatively steep mountains immediately west of the City of Hines. Drainages B, C, and D present flooding problems to Hines. A flooding potential ponding area between the cities of Burns and Hines is an area called the Sump, which is a collection point for several of the side-hill drainages. Besides the runoff flooding that occurs rather regularly in spring, the worst type of flooding event is a major rainstorm combined with warm weather conditions on frozen ground. The channels that carry the floodwater from Drainages B, C, and D all have separate routes across the higher portion of the floodplain, and each is subject to overflow. There is little information concerning the flood history of these drainages.
Drainages D, E-1, and E-2	There are eight distinct drainages in the foothills west and northwest of Burns, Burns Paiute Reservation, and Hines; Drainages D, E-1, and E-2 are among the most significant. Thunderstorm floods can cause major flood damage to small, local drainage areas in the foothills. Besides the runoff flooding that occurs rather regularly in spring, the worse type of flooding event is a major rainstorm combined with warm weather conditions on frozen ground. The eight drainages, separately or together, have the potential of flooding a common floodplain between the base of the hills and the Silvies River. The channels that carry the floodwater from the drainages all have separate routes across the higher portion of the floodplain, and each is subject to overflow. There is little information concerning the flood history of these drainages.
Silvies River	Floods on the Silvies River and its tributaries are generally classified as winter floods; spring floods, which result from rapid snowmelt augmented by rainfall; and thunderstorm floods. Spring floods generate both widespread and prolonged flooding of the Silvies River, accounting for most of the annual flood damage. Flooding occurs on the Silvies River because of an inadequate natural channel capacity to contain spring floodflows. Historical and eyewitness accounts indicate that flooding from the Silvies River spreads out like a fan as it flows southerly and westerly into Malheur Lake. The flooding ranges upward from 20 to 30 miles through the swampy valley floor. During high-water periods, the area appears as a large lake. Floods of significant size have occurred in 1897, 1904, 1921, 1943, 1952, 1957, 1964, 1983, 1984, 1986, and 2011. The flood of 1897 is the largest known flood on the Silvies River. It occurred before any stream gages were installed. Although little historical data are available, the flood is estimated to have had a flow of approximately 9,000 cubic feet per second (cfs) and an occurrence probability of approximately once in 300 years.

Table 5: Principal Flood Problems (continued)

Flooding Source	Description of Flood Problems
East Harney County Basin	Historical and eyewitness accounts indicate that flooding from the Silvies River spread out like a fan as it flows southerly and westerly into Malheur Lake. The flooding ranges upward from 20 to 30 miles through the swampy valley floor. During high-water periods, the area appears as a large lake.

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

Table 6: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Malheur Lake	3,300 feet east from the intersection of State Highway 78 and S. Newton Road	4,105.5	1986	*	USFWS
Silvies River	18,994 feet upstream of Charlie Creek	4,214.1	1952	*	USGS gage

*Not provided

4.3 Dams and Other Flood Hazard Reduction Measures

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

Table 7: Dams and Other Flood Hazard Reduction Measures

[Not Applicable to this Flood Risk Project]

4.4 Levee Systems

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

Levee systems that are determined to reduce the hazard from the 1-percent-annual-chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA

is awaiting data and/or documentation to demonstrate compliance with 44 CFR 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee system's accreditation status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Figure 3. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system no longer meets 44 CFR 65.10, FEMA will consider the levee system as non-accredited and issue an effective FIRM showing the levee-impacted area as a SFHA or Zone D.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levee systems that exist within Harney County, Table 8 "Levee Systems," lists all accredited levee systems, PALs, and non-accredited levee systems shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levee systems identified in the table are displayed on the FIRM with notes to users to indicate their flood hazard mapping status.

Please note that the information presented in Table 8 is subject to change at any time. For that reason, the latest information regarding the levee systems presented in the table may be obtained by accessing the National Levee Database. For additional information, contact the levee owner/sponsor or the local community shown in Table 30.

Table 8: Levee Systems

Community	Flooding Source(s)	NLD Levee System ID	NLD Levee System Name	Levee System Status on Effective FIRM	FIRM Panel(s)	Levee Owner(s) / Sponsor(s)
Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas	Silvies River	490005000004	Burns Levee System	Non-Accredited	41025C1406F, 41025C1408F	Harney County

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.

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. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 10. 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	0.2% Annual Chance
Brown Canyon	At outlet of Brown Canyon near Foley Drive	1.3	45	83	108	184	347
Cricket Creek	At the confluence with Emigrant Creek.	49	*	*	*	879	*
Drainage B	50 West of the intersection of S Hilltop Avenue And Howell Street.	1.0	*	*	*	46	*
Drainage D	At outlet of Drainage D Above City of Hines	2.2	114	177	263	383	469
Drainage E	Downstream of confluence with Drainage E-1 And Drainage E-2	1.9	68	123	157	275	450
Drainage E-1	Above confluence with Drainage E	1.3	49	84	102	212	310
Drainage E-2	Above confluence with Drainage E	0.6	22	36	49	79	138
East Fork Silvies River	Discharge of East Fork Silvies into Malheur Lake	91.7	*	*	*	1,333	*
East Fork Silvies River	Inflow to East Fork Silvies River	51.9	*	*	*	1,585	*
East Fork Silvies River	Upstream Most Point East Fork Silvies	29.4	*	*	*	1,163	*
Emigrant Creek	At the confluence with the Silvies River.	259	*	*	*	3,066	*
Hay Creek	At the confluence with Emigrant Creek.	33.4	*	*	*	660	*
Poison Creek	Confluence of Poison Creek into Poison Creek Slough	85.5	*	*	*	2,627	*

*Not calculated for this Flood Risk Project

Table 9: Summary of Discharges (continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Poison Creek	16 feet South of the Centerline of Highway 20.	79.9	*	*	*	1,269	*
Poison Creek Slough	Third outlet Poison Creek Slough	89.2	*	*	*	547	*
Poison Creek Slough	First outlet Poison Creek Slough	7.1	*	*	*	283	*
Poison Creek Slough	Second outlet Poison Creek Slough	1.4	*	*	*	60	*
Silvies River[1]	At USGS Gage 10393500	934	2,809	3,732	4,453	5,196	7,012
Silvies River Reach 2	4,903 feet Upstream From the confluence with Charlie Creek.	889	*	*	*	4,826	*
Trout Creek	At the confluence with the Silvies River.	58.6	*	*	*	1,006	*
West Fork Silvies River	Discharge of West Fork Silvies River into Malheur Lake	261.3	*	*	*	6,776	*
West Fork Silvies River	Downstream Location of West Fork Silvies River	254.6	*	*	*	6,814	*
West Fork Silvies River	Inflow From Northwest of West Fork Silvies River	234.1	*	*	*	6,832	*
West Fork Silvies River	Upstream Most Point West Fork Silvies River	83	*	*	*	7,133	*

[1]See Table 12 for information regarding discharges for Foley Slough, Foley Slough Flow Splits and Silvies River Flow Splits

*Not calculated for this Flood Risk Project

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
Silvies River Near Burns, OR	10393500	OWRD	OWDR/USGS gage on Silvies River near Burns, OR	934	4/11/2010	5/21/2015
Silvies River Near Burns, OR	10393500	USGS	OWDR/USGS gage on Silvies River near Burns, OR	934	6/1/1903	9/30/2012

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
Brown Canyon	Confluence with Silvies River	Approximately 6,200 feet upstream of Foley Drive	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Stream was modeled hydraulically using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded). A reach of this stream was named 'Drainage F' in previous FIS versions.
Cricket Creek	At the confluence with Emigrant Creek	61 feet southwest of centerline of Hines Logging Road	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Drainage B	Approximately 50 feet west of the intersection of South Hilltop Avenue and Howell Street	Approximately 1,465 feet upstream of outlet	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A / X (Shaded)	
Drainage C	Highway 20	N Section Avenue	Other	Other	1982	A / X (Shaded)	Zone A delineations within Harney County Unincorporated Areas were maintained from prior FIS versions.

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
Drainage D	Hiker/Biker Trail near Sewage Lagoon	Approximately 650 feet upstream of King Avenue	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Drainage E	Confluence with Drainage D	Confluences of Drainage E-1 and Drainage E-2	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Drainage E-1	Confluence with Drainage E	Approximately 3,400 feet upstream of W Monroe Street	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

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
Drainage E-2	Confluence with Drainage E	Approximately 4,300 feet upstream of confluence with Drainage E	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Drainages D, E, E-1 and E-2 were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Drainage H	Confluence with Miller Canyon	Approximately 2,000 feet upstream of Pasigo Street	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Brown Canyon and Drainage H were assessed in a single hydraulic model using 2D methodologies. Profiles were not produced. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
East Fork Silvies River	Confluence with Malheur Lake	Separation of Silvies River into two forks	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
East Harney County Basin	Area east of City of Burns and north of Malheur Lake	Area east of City of Burns and north of Malheur Lake	HEC-HMS version 4.3	HEC-RAS 5.0.7 (USACE 2019)	10/15/2020	A	Rain-on-grid methodologies were used to transform rainfall into overland flooding.

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
Emigrant Creek	At the confluence with the Silvies River	1,943 feet upstream of the confluence with Little Emigrant Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Foley Slough	At Fry Road	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Foley Slough Flow Split 1	Convergence with Silvies River East Overbank Flow Split	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.

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
Foley Slough Flow Split 2	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow Split 3	Convergence with Foley Slough Flow Split 1	Divergence from Foley Slough Flow Split 1	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow Split 4	Convergence with Foley Slough Flow Split 3	Divergence from Foley Slough Flow Split 2	HEC-SSP version 2.1.1(USACE 2017)	HEC RAS version 5.0.7(USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Foley Slough Flow To Silvies River	Convergence with Silvies River	Divergence from Foley Slough	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.

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
Hay Creek	At the confluence with Emigrant Creek	4,846 feet upstream of the confluence with West Fork Hay Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Malheur River	In the vicinity of Drewsey	In the vicinity of Drewsey	Other	Other	1982	A	Approximate flood elevations along the Malheur River at Drewsey were developed using normal-depth calculations. The 100-year approximate flood plain boundary was developed from aerial photographs (USACE, 1979b).
Miller Canyon	Confluence with Silvies River	Approximately 4,600 feet upstream of Radar Lane	HEC-HMS version 4.6.1 (USACE 2020) HEC-RAS version 5.0.7 (USACE 2019)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	Discharges were computed using 2D rain-on-grid methodologies applying excess rainfall from HEC-HMS into a HEC-RAS model. Miller Canyon and Drainage H were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Poison Creek	Confluence with Poison Creek Slough at Highway 20	Approximately 8,600 feet north of Highway 20	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Poison Creek	Approximately 4,200 feet north of Highway 20	Approximately 200 feet east of Highway 395	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.

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
Poison Creek Slough	Approximately 15,500 feet east of Highway 78 along Rye Grass Lane	Confluence of Poison Creek at Highway 20	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Silvies River	Separation of Silvies River into two forks	Approximately 2,700 feet downstream from Highway 78	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.
Silvies River	Approximately 2,700 feet downstream from Highway 78	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River	At West Loop Road	Approximately 19,300 feet upstream of West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River	Approximately 19,300 feet upstream of West Loop Road	4,903 feet upstream from the confluence with Charlie Creek	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	

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
Silvies River Reach 2	4,903 feet upstream from the confluence with Charlie Creek	6,027 feet south of the intersection of Highway 395 and Silvies Hopper Lane	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
Silvies River East Overbank Flow Split	Approximately 2,900 feet downstream of Highway 78	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 1	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 1	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

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
Silvies River Flow Split To Foley Slough 2	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 2	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).
Silvies River Flow Split To Foley Slough 3	Convergence with Foley Slough	At West Loop Road	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Silvies River Flow Split To Foley Slough 3	At West Loop Road	Divergence from Silvies River	HEC-SSP version 2.1.1 (USACE 2017)	HEC RAS version 5.0.7 (USACE 2019)	11/30/2021	A	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded).

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
Silvies River Flow Split To Foley Slough 4	Convergence with Foley Slough	Divergence from Silvies River	HEC-SSP version 2.1.1(USACE 2017)	HEC RAS version 5.0.7(USACE 2019)	11/30/2021	AE w/ Floodway	USGS stream gage 10393500 was used in the hydrologic analyses. All Silvies River and Foley Slough reaches were assessed in a single hydraulic model using 2D methodologies. Areas with average depths less than 1-foot are mapped as Zone X (shaded). Profiles were not produced.
Trout Creek	At the confluence with the Silvies River	2,820 feet upstream of King Mountain Lookout Road	Regression Equations	HEC-RAS 3.1.1 and up	12/10/2012	A	
West Fork Silvies River	Confluence with Malheur Lake	Separation of Silvies River into two forks	HEC-HMS 3.0 and up (Dec 2005)	FLO-2D v. 2007.06 and 2009.06	06/17/2016	A	Effects of hydraulic structures were not considered in the models.

Table 13: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Brown Canyon	0.040	0.030 - 0.120
Cricket Creek	0.040	0.040
Drainage B	0.040	0.040
Drainage D	0.040	0.030 - 0.120
Drainage E	0.040	0.030 - 0.120
Drainage E-1	0.040	0.030 - 0.120
Drainage E-2	0.040	0.030 - 0.120
Drainage H	0.040	0.030 - 0.120
East Fork Silvies River	N/A	0.030 - 0.100
Emigrant Creek	0.040	0.040
Foley Slough	0.040	0.030 - 0.120
Foley Slough Flow Split 1	N/A	0.030 - 0.120
Foley Slough Flow Split 2	N/A	0.030 - 0.120
Foley Slough Flow Split 3	N/A	0.030 - 0.120
Foley Slough Flow Split 4	N/A	0.030 - 0.120
Foley Slough Flow To Silvies River	N/A	0.030 - 0.120
Hay Creek	0.040	0.040
Miller Canyon	0.040	0.030 - 0.120
Poison Creek Segment 1	N/A	0.030 - 0.100
Poison Creek Segment 2	N/A	0.030 - 0.100
Poison Creek Slough	N/A	0.030 - 0.100
Silvies River	0.025 - 0.055	0.030 - 0.120
Silvies River East Overbank Flow Split	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 1	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 2	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 3	N/A	0.030 - 0.120
Silvies River Flow Split To Foley Slough 4	N/A	0.030 - 0.120
Trout Creek	0.040	0.040
West Fork Silvies River	N/A	0.030 - 0.100

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

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

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

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

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

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

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

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

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

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

Table 18: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov.

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

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

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

Table 19: Countywide Vertical Datum Conversion

[Not applicable to this Flood Risk Project]

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

Table 20: Stream-Based Vertical Datum Conversion

Flooding Source	Average Vertical Datum Conversion Factor (feet)
Brown Canyon	3.920
Drainage D	3.946
Drainage D Split to King Avenue	3.940
Drainage E-1	3.928
Drainage E-2	3.928
Drainage F	3.940
Silvies River	3.891

6.2 Base Map

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

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

Table 21: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
2011 Silvies River High Water Marks	U.S. Army Corps of Engineers	2011		Spatial attributes and features contributing to High Water Marks. (USACE, 2011)
911 Emergency Transportation Layer (Geosolve)	Harney County, Oregon	2011	1:24,000	Spatial and attribute information for roads. (GEOSOLVE, 2011)
911 Emergency Transportation Layer (Harney County)	Harney County, Oregon	2013	1:24,000	Spatial and attribute information for roads (HARNEY COUNTY, 2013b)

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
911 Emergency Transportation Layer (Harney County)	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for roads (HARNEY COUNTY, 2021b)
Aerial Photograph Burns Paiute indian Reservation, Scale 1:4,800	U.S. Army Corps of Engineers	1975	1:4,800	Aerial photo used in delineating flood plain boundaries (USACE, 1975)
Aerial Photograph, Scale 1:2,400, Flown September 11, 1979	U.S. Army Corps of Engineers	1979	1:2,400	Aerial photo used in delineating flood plain boundaries (USACE, 1979a)
Aerial Photographs, City of Burns, Scale 1:6,000, Flown November 8, 1979	U.S. Army Corps of Engineers	1979	1:6,000	Aerial photo used in delineating flood plain boundaries (USACE, 1979b)
Aerial Photos, Scale 1:12,000	U.S. Army Corps of Engineers	1979	1:12,000	Aerial photo used in delineating flood plain boundaries (USACE, 1979c)
Airport Tarmacs Digitized On Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	2012	1:2,500	Spatial and attribute information for roads (DOGAMI, 2012)
Datum Conversions Derived from Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	2011		Spatial and attribute information for points used to determine datum conversion factors (DOGAMI, 2011)
DOGAMI DFIRM Task	Oregon Department of Geology and Mineral Industries	2016	1:24,000	Spatial and attribute information for FIRM panels (DOGAMI, 2016a)
Harney County Basemap Submittal	Federal Emergency Management Agency	2016		Basemap submittal for Harney County (DOGAMI, 2016b)
Harney County City and Reservation Limits	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for municipal and reservation boundaries (HARNEY COUNTY, 2021c)

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
Harney County City Limits	Harney County, Oregon	2013	1:24,000	Spatial and attribute information for municipal boundaries (HARNEY COUNTY, 2013a)
Harney County Water Lines	Harney County, Oregon	2021	1:6,000	Spatial and attribute information for streams (HARNEY COUNTY, 2021b)
NHD Data	United States Geological Survey	2020	1:24,000	Spatial and attribute information for lakes, reservoirs, and creeks (USGS, 2020)
Oregon/Washington Surface Management Ownership	Bureau of Land Management	2011	1:24,000	Spatial and attribute information for county boundaries (BLM, 2011a)
Pacific Northwest Hydrography Framework	U.S. Geological Survey	2011	1:24,000	Spatial and attribute information for lakes, reservoirs, and creeks (USGS, 2011)
Public Land Survey System from BLM Geographic Coordinate Database	Bureau of Land Management	2011	1:24,000	Spatial and attribute information for PLSS data on FIRM panels (BLM, 2011b)
Streams Digitized from Lidar Collected in 2011 and 2015 and 2011 NAIP Imagery	Oregon Department of Geology and Mineral Industries	2015	1:2,500	Spatial and attribute information for lakes and ponds (DOGAMI, 2015b)
USDA-FPAC-BC Digital Ortho Mosaic for FIRM panels dated April 22, 2022	U.S. Department of Agriculture-Farm Service Agency	2016	1 Meter	NAIP basemap orthoimagery and spatial and attribute information for raster base map tile index (USDA, 2016)
USGS National Map: Orthoimagery for FIRM panels dated February 8, 2024	United States Geological Survey National Map	2020*	Not Provided	Orthorectified digital aerial photographs and satellite images of 1-meter (m) pixel resolution or finer (USGS National Map)

*Most recently refreshed data

Table 21: Base Map Sources (continued)

Data Type	Data Provider	Data Date	Data Scale	Data Description
Water Bodies Digitized from Lidar Collected in 2011 and 2015 and 2011 NAIP Imagery	Oregon Department of Geology and Mineral Industries	2015	1:2,500	Spatial and attribute information for lakes and ponds (DOGAMI, 2015a)

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 studied with 1D analysis, 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 inTable 22. For riverine flooding sources studied with 2D analysis, the mapped floodplain boundaries shown on the FIRM have been delineated using the mesh developed during the hydraulic tasks.

In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

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
Burns Paiute Reservation; Burns, City of; Harney County; Hines, City of	Cricket Creek, Brown Canyon, Drainage B (Zone A), Drainage D, Drainage E, Drainage E-1, Drainage E-2, Drainage H, East Fork Silvies River, Emigrant Creek, Foley Slough, Foley Slough Flow Split 1, Foley Slough Flow Split 2, Foley Slough Flow Split 3, Foley Slough Flow Split 4, Foley Slough Flow To Silvies River, Hay Creek, Miller Canyon, Poison Creek, Poison Creek Slough, Silvies River, Silvies River East Overbank Flow Split, Silvies River Flow Split To Foley Slough 1, Silvies River Flow Split To Foley Slough 2, Silvies River Flow Split To Foley Slough 3, Silvies River Flow Split To Foley Slough 4, Trout Creek, West Fork Silvies River	2015 LIDAR, 2011 LIDAR, and 10m DEM mosaic	0.06m RMSE	*	DOGAMI, 2015c
Harney County, Unincorporated Areas; Hines, City of	Drainage B (Zone X [Shaded]) and Drainage C	7.5-Minute Series Topographic Map, Scale 1:24,000, Contour Interval 20 feet	1.85 m RMSE	+/- 40 ft at 90% confidence	USGS, 1960b

*Not provided

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[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	687	263	2,521	1.6	4,158.4	4,158.4	4,158.8	0.4
B	1,155	104	1,050	2.3	4,158.8	4,158.8	4,159.5	0.7
C	2,139	262	2,733	2.1	4,159.6	4,159.6	4,160.4	0.8
D	2,570	215	2,342	2.0	4,160.0	4,160.0	4,160.9	0.9
E	2,723	237	2,538	1.9	4,160.2	4,160.2	4,161.0	0.8
F	3,229	220	2,520	1.7	4,160.9	4,160.9	4,161.7	0.8
G	3,826	321	3,637	1.6	4,162.0	4,162.0	4,162.7	0.7
H	4,853	173	2,217	2.0	4,163.0	4,163.0	4,163.6	0.6
I	5,581	229	2,640	2.2	4,164.0	4,164.0	4,164.5	0.5
J	6,583	364	4,099	1.4	4,164.6	4,164.6	4,165.2	0.6
K	9,092	688	6,235	1.9	4,165.9	4,165.9	4,166.5	0.6
L	9,778	667	5,646	2.6	4,166.4	4,166.4	4,167.0	0.6
M	10,395	617	5,176	1.9	4,167.0	4,167.0	4,167.9	0.9
N	10,875	1,474	11,732	1.5	4,167.5	4,167.5	4,168.4	0.9
O	11,089	1,872	14,764	1.7	4,167.9	4,167.9	4,168.6	0.7
P	12,424	695	5,826	3.1	4,168.9	4,168.9	4,169.6	0.7
Q	13,255	511	5,839	1.7	4,172.0	4,172.0	4,172.9	0.9
R	14,199	978	11,041	1.1	4,172.2	4,172.2	4,173.1	0.9
S	14,857	1,155	12,542	1.3	4,172.4	4,172.4	4,173.2	0.8
T	15,494	1364	14,782	1	4,172.6	4,172.6	4,173.3	0.7
U	16,997	1294	13,141	1.1	4,172.8	4,172.8	4,173.4	0.6
V	17,552	1088	10,807	1.5	4,173.0	4,173.0	4,173.6	0.6
W	17,949	942	9,407	1.6	4,173.2	4,173.2	4,173.7	0.5
X	18,324	843	8,487	1.9	4,173.4	4,173.4	4,174.0	0.6

[1] Feet above Fry Road

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Y	18,649	856	8,699	1.9	4,173.6	4,173.6	4,174.2	0.6
Z	18,913	823	8,371	1.9	4,173.8	4,173.8	4,174.4	0.6
AA	19,070	775	7,981	2.0	4,174.0	4,174.0	4,174.6	0.6
AB	19,296	705	7,305	2.1	4,174.2	4,174.2	4,174.8	0.6
AC	19,678	656	6,787	1.7	4,174.4	4,174.4	4,175.1	0.7
AD	22,403	225	2,343	2.8	4,176.0	4,176.0	4,176.6	0.6
AE	22,839	231	2,618	2.5	4,176.9	4,176.9	4,177.7	0.8
AF	23,021	244	2,861	1.8	4,177.4	4,177.4	4,178.2	0.8
AG	23,106	142	1,680	0.7	4,177.5	4,177.5	4,178.2	0.7

[1] Feet above Fry Road

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	939	1,238	3,258	0.9	4,153.2	4,153.2	4,153.9	0.7
B	1,420	1,636	3,691	0.8	4,153.4	4,153.4	4,154.1	0.7
C	2,882	1,491	3,794	1.1	4,154.0	4,154.0	4,154.4	0.4
D	3,181	1,543	4,601	1.2	4,154.4	4,154.4	4,154.8	0.4
E	4,094	1,312	4,376	1.4	4,154.9	4,154.9	4,155.3	0.4
F	4,848	1,155	4,007	1.3	4,155.9	4,155.9	4,156.3	0.4
G	5,477	686	2,986	1.6	4,156.5	4,156.5	4,156.9	0.4
H	5,772	835	3,705	1.3	4,156.8	4,156.8	4,157.2	0.4
I	6,345	734	3,651	1.4	4,157.2	4,157.2	4,157.5	0.3
J	6,636	401	2,171	2.0	4,157.4	4,157.4	4,157.9	0.5
K	6,891	392	2,226	1.8	4,157.6	4,157.6	4,158.2	0.6
L	7,139	224	1,286	1.8	4,157.8	4,157.8	4,158.4	0.6
M	8,005	455	2,715	1.7	4,158.2	4,158.2	4,158.8	0.6
N	8,397	348	2,431	2.5	4,159.1	4,159.1	4,159.6	0.5
O	8,874	285	2,114	1.8	4,159.7	4,159.7	4,160.3	0.6
P	9,088	168	1,294	1.9	4,162.4	4,162.4	4,163.0	0.6
Q	9,354	157	1,221	1.2	4,162.4	4,162.4	4,163.1	0.7
R	10,791	161	1,188	2.0	4,162.6	4,162.6	4,163.4	0.8
S	11,183	87	599	2.7	4,162.9	4,162.9	4,163.7	0.8
T	11,857	163	1,194	2.4	4,164.0	4,164.0	4,164.8	0.8
U	12,461	133	991	2.2	4,164.6	4,164.6	4,165.3	0.7

[1] Feet above convergence with Silvies River East Overbank Flow Split

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOLEY SLOUGH FLOW SPLIT 1

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,376	246	462	1.1	4,154.0	4,154.0	4,154.5	0.5
B	1,942	233	343	1.5	4,154.4	4,154.4	4,155.1	0.7
C	2,257	222	297	1.8	4,155.0	4,155.0	4,155.6	0.6
D	2,862	203	472	1.7	4,155.8	4,155.8	4,156.4	0.6
E	3,867	316	812	0.9	4,156.0	4,156.0	4,156.7	0.7
F	4,380	268	525	1.0	4,156.2	4,156.2	4,156.9	0.7
G	4,994	152	254	2.2	4,156.9	4,156.9	4,157.6	0.7
H	5,841	288	662	0.8	4,158.0	4,158.0	4,158.6	0.6
I	6,838	195	586	1.1	4,158.4	4,158.4	4,159.1	0.7
J	7,244	123	368	2.5	4,158.6	4,158.6	4,159.4	0.8

[1] Feet above convergence with Foley Slough Flow Split 1

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,195	655	1,721	1.1	4,157.1	4,157.1	4,157.3	0.2
B	1,948	409	1,549	1.3	4,157.6	4,157.6	4,157.8	0.2
C	2,466	48	208	1.8	4,158.0	4,158.0	4,158.5	0.5
D	3,356	73	388	2.1	4,159.0	4,159.0	4,159.7	0.7

[1] Feet above convergence with Foley Slough Flow Split 1

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	348	255	470	0.9	4,157.6	4,157.6	4,157.7	0.1
B	844	247	344	1.1	4,157.7	4,157.7	4,157.8	0.1
C	1,462	286	889	1.1	4,158.0	4,158.0	4,158.4	0.4
D	1,955	165	466	1.3	4,159.0	4,159.0	4,159.6	0.6

[1] Feet above convergence with Foley Slough Flow Split 3

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,434	184	864	1.1	4,171.7	4,171.7	4,171.9	0.2
B	2,199	127	551	1.5	4,171.8	4,171.8	4,172.5	0.7

[1] Feet above convergence with Silvies River

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,307	55	361	1.7	4,153.9	4,153.9	4,154.0	0.1
B	8,978	78	319	1.9	4,154.1	4,154.1	4,154.2	0.1
C	10,211	83	342	2.1	4,154.5	4,154.5	4,154.7	0.2
D	12,094	50	293	2.9	4,155.5	4,155.5	4,155.7	0.2
E	13,304	41	244	3.5	4,156.5	4,156.5	4,156.8	0.3
F	15,086	91	510	2.1	4,157.5	4,157.5	4,157.8	0.3
G	16,325	60	453	2.5	4,158.0	4,158.0	4,158.3	0.3
H	17,965	58	370	4.2	4,159.2	4,159.2	4,159.6	0.4
I	18,479	44	362	4.3	4,159.9	4,159.9	4,160.5	0.6
J	19,135	60	417	4.0	4,160.6	4,160.6	4,161.4	0.8
K	21,481	112	648	3.1	4,162.4	4,162.4	4,163.3	0.9
L	22,571	74	757	2.7	4,163.0	4,163.0	4,164.0	1.0
M	23,463	83	604	3.4	4,163.7	4,163.7	4,164.6	0.9
N	25,515	74	528	3.9	4,165.2	4,165.2	4,166.1	0.9
O	27,317	71	652	3.1	4,166.5	4,166.5	4,167.5	1.0
P	30,134	187	1,166	1.8	4,167.6	4,167.6	4,168.4	0.8
Q	32,519	150	891	2.3	4,168.3	4,168.3	4,169.0	0.7
R	36,392	72	765	1.9	4,171.8	4,171.8	4,172.1	0.3
S	38,024	67	786	1.8	4,172.0	4,172.0	4,172.4	0.4
T	39,668	77	738	1.9	4,172.3	4,172.3	4,172.6	0.3
U	41,285	63	644	2.2	4,172.6	4,172.6	4,173.0	0.4
V	43,929	79	684	2.2	4,173.4	4,173.4	4,173.7	0.3
W	45,942	60	578	2.6	4,174.0	4,174.0	4,174.3	0.3

[1] Feet above split of East Fork Silvies River / West Fork Silvies River

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
X	47,714	57	569	2.6	4,174.6	4,174.6	4,175.0	0.4
Y	50,004	51	532	2.8	4,175.4	4,175.4	4,175.9	0.5
Z	51,316	69	552	3.1	4,176.2	4,176.2	4,176.6	0.4

[1] Feet above split of East Fork Silvies River / West Fork Silvies River

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	572	1,098	6,580	1.7	4,150.9	4,150.9	4,151.8	0.9
B	1,960	2,505	12,472	1.0	4,152.0	4,152.0	4,152.7	0.7
C	2,658	2,239	8,046	1.2	4,152.2	4,152.2	4,152.9	0.7
D	3,108	2,472	10,654	0.6	4,152.9	4,152.9	4,153.7	0.8
E	4,093	2,996	10,042	0.6	4,153.0	4,153.0	4,153.8	0.8
F	5,423	2,918	7,738	0.7	4,153.2	4,153.2	4,153.9	0.7
G	5,754	3,130	7,267	0.8	4,153.4	4,153.4	4,153.9	0.5
H	6,444	2,565	3,270	1.2	4,154.0	4,154.0	4,154.3	0.3
I	7,326	1,031	1,743	1.7	4,154.5	4,154.5	4,155.0	0.5
J	7,725	992	2,629	1.3	4,155.6	4,155.6	4,156.3	0.7
K	8,769	2,353	4,618	0.7	4,155.7	4,155.7	4,156.4	0.7
L	8,902	2,728	5,363	1.0	4,156.0	4,156.0	4,156.4	0.4
M	9,757	2,724	5,316	1.1	4,157.0	4,157.0	4,157.3	0.3
N	10,641	1,772	3,030	0.9	4,158.0	4,158.0	4,158.2	0.2
O	11,288	557	781	1.2	4,159.0	4,159.0	4,159.3	0.3
P	11,474	528	3,402	0.5	4,159.3	4,159.3	4,160.1	0.8
Q	11,793	413	560	1.7	4,159.9	4,159.9	4,160.4	0.5

[1] Feet above a point approximately 2,900 feet downstream of Highway 78

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	463	784	4,346	1.0	4,175.0	4,175.0	4,175.6	0.6
B	2,008	305	1,448	1.0	4,175.3	4,175.3	4,175.7	0.4
C	3,543	1,190	4,441	1.2	4,176.0	4,176.0	4,176.3	0.3

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 1

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,193	206	907	2.3	4,176.0	4,176.0	4,176.6	0.6
B	1,529	112	723	3.2	4,176.8	4,176.8	4,177.7	0.9
C	1,672	122	862	1.1	4,177.4	4,177.4	4,178.2	0.8

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,068	146	594	2.6	4,174.9	4,174.9	4,175.5	0.6
B	2,783	176	905	1.7	4,176.0	4,176.0	4,176.9	0.9

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

Table 23: Floodway Data (continued)

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION[2]	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,315	148	530	0.7	4,174.4	4,174.4	4,175.2	0.8
B	1,695	141	496	1.1	4,174.5	4,174.5	4,175.2	0.7
C	2,111	340	1,271	0.6	4,175.0	4,175.0	4,175.4	0.4

[1] Feet above convergence with Foley Slough

[2] Floodway computed by 2D or hybrid 1D/2D model at this location

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OREGON

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SILVIES RIVER FLOW SPLIT TO FOLEY SLOUGH 4

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/flood-maps/change-your-flood-zone and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

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

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance eXchange; toll free, at 1-877-FEMA MAP (1-877-336-262).

6.5.2 Letters of Map Revision Based on Fill

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

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

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

6.5.3 Letters of Map Revision

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

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

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Harney County FIRM are listed in Table 26. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

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 Floods & Maps "Change Your Flood Zone Designation" section.

6.5.5 Contracted Restudies

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

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Harney 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 Harney County FIRMs in countywide format was 04/20/2022.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Burns Paiute Reservation	07/18/1978	07/18/1978	N/A	09/28/1984	02/08/2024 04/20/2022
Burns, City of	11/30/1973	11/30/1973	01/30/1976	08/15/1984	02/08/2024 04/20/2022 12/22/1998 11/03/1989
Harney County, Unincorporated Areas	04/18/1978	04/18/1978	N/A	04/17/1984	02/08/2024 04/20/2022 12/22/1998
Hines, City of	11/30/1973	11/30/1973	05/21/1976	09/28/1984	02/08/2024 04/20/2022 11/03/1989

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
Brown Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Brown Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Cricket Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Drainage B	04/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas; Hines, City of
Drainage C	12/22/1998	USACE, Walla Walla District	IAA-H-9-79	1982	Harney County, Unincorporated Areas; Hines, City of
Drainage D	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas; Hines, City of
Drainage E	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns, City of; Harney County, Unincorporated Areas; Hines, City of
Drainage E-1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Drainage E-2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns, City of
Drainage H	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Harney County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
East Fork Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
East Harney County Basin	4/20/2022	STARR	HSFEHQ-09-D-0370	October 2020	Burns Paiute Reservation; Harney County, Unincorporated Areas
Emigrant Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Foley Slough	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow Split 4	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Foley Slough Flow to Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Hay Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Malheur River	12/22/1998	USACE, Walla Walla District	IAA-H-9-79	1982	Harney County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Miller Canyon	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Harney County, Unincorporated Areas
Poison Creek	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Poison Creek	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Poison Creek Slough	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas
Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Burns Paiute Reservation; Burns, City of; Harney County, Unincorporated Areas
Silvies River	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River	04/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Silvies River Reach 2	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
Silvies River East Overbank Flow Split	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 1	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas

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

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Silvies River Flow Split to Foley Slough 2	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 3	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Silvies River Flow Split to Foley Slough 4	02/08/2024	STARR II	HSFE60-15-D-0005	November 2021	Harney County, Unincorporated Areas
Trout Creek	4/20/2022	Oregon Department of Geology and Mineral Industries (DOGAMI)	HSFEHQ-09-D-0370	December 2012	Harney County, Unincorporated Areas
West Fork Silvies River	04/20/2022	STARR II	HSFEHQ-09-D-0370	June 2016	Harney County, Unincorporated Areas

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
Burns Paiute Reservation	02/08/2024	09/16/2021	Flood Risk Review	Representatives of Burns Paiute Tribe, Oregon Department of Land Conservation & Development, FEMA, Harney County, OR, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Burns, City of	02/08/2024	09/15/2021	Flood Risk Review	Representatives of City of Burns, Oregon Department of Land Conservation & Development, FEMA, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Harney County, Unincorporated Areas	02/08/2024	09/16/2021	Flood Risk Review	Representatives of Burns Paiute Tribe, Oregon Department of Land Conservation & Development, FEMA, Harney County, OR, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers
Hines, City of	02/08/2024	09/15/2021	Flood Risk Review	Representatives of City of Hines, Oregon Department of Land Conservation & Development, FEMA, STARR II
		06/23/2022	Final CCO	Representatives of Burns Paiute Reservation, City of Burns, City of Hines, FEMA, Harney County, Resilience Action Partners, STARR II, U.S. Army Corps of Engineers

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 Harney County, Unincorporated Areas (Harney Co. FIS, 1998), the FIS Report and FIRM previously prepared for the City of Burns (City of Burns FIS, 1998), the FIS Report and FIRM previously prepared for the Burns Paiute Reservation (Burns Paiute FIS, 1984), and the FIS Report and FIRM previously prepared for the City of Hines (City of Hines FIS, 1989).

Table 30 is a list of the locations where FIRMs for Harney 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
Burns Paiute Reservation	Burns Paiute Tribal Office 100 Pasigo Street	Burns	OR	97720
Burns, City of	City Hall 242 South Broadway Avenue	Burns	OR	97720
Harney County, Unincorporated Areas	Harney County Planning Department 360 North Alvord Avenue	Burns	OR	97720
Hines, City of	City Hall 101 East Barnes Avenue	Hines	OR	97738

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 31.

Table 31 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region 10	Federal Regional Center 130 228th Street SW Bothell, WA 98021-9796 (425) 487-4657
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
Oregon NFIP Coordinator	Celinda Adair, CFM Oregon Dept. of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, OR 97301-2540 Phone: (503) 934-0069 celinda.adair@state.or.us
Interim Oregon Risk MAP Coordinator	Matthew Crall Oregon Dept. of Land Conservation and Development 635 Capitol Street NE, Suite 150 Salem, OR 97301-2540 Phone: (503) 934-0046 matthew.crall@state.or.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

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

Table 32: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
BLM, 2011a	Bureau of Land Management	Oregon/Washington Surface Management Ownership	Bureau of Land Management	Washington, D.C.	September, 2011	https://www.blm.gov/or/gis/data-details.php?data=ds000011
BLM, 2011b	Bureau of Land Management	Public Land Survey System from Blm Geographic Coordinate Database	Bureau of Land Management	Washington, D.C.	September, 2011	https://www.geocommunicator.gov/GeoComm/lsis_home/home/index.htm
BURNS PAIUTE, 1984a	Federal Emergency Management Agency	Burns Paiute indian Reservation, Oregon, Flood Insurance Rate Map 1984	Federal Emergency Management Agency	Oakton, Virginia	September, 1984	https://www.fema.gov/
BURNS PAIUTE, 1984b	Federal Emergency Management Agency	Burns Paiute indian Reservation, Oregon, Flood Insurance Study 1984	Federal Emergency Management Agency	Oakton, Virginia	March, 1984	https://www.fema.gov/
CITY OF BURNS, 1998a	Federal Emergency Management Agency	City of Burns, Oregon, Flood Insurance Rate Map 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
CITY OF BURNS, 1998b	Federal Emergency Management Agency	City of Burns, Oregon, Flood Insurance Study 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
CITY OF HINES, 1989	Federal Emergency Management Agency	City of Hines, Oregon, Flood Insurance Study 1989	Federal Emergency Management Agency	Oakton, Virginia	November, 1989	https://www.fema.gov/

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
DOGAMI, 2011	Oregon Department of Geology and Mineral industries	Datum Conversions Derived from Lidar Collected in 2011	Oregon Lidar Consortium; Watershed Sciences Inc.	Portland, Oregon	August, 2011	
DOGAMI, 2012	Oregon Department of Geology and Mineral industries	Airport Tarmacs Digitized On Lidar Collected in 2011	Oregon Department of Geology and Mineral Industries	Portland, Oregon	2012	https://www.oregongeology.org/
DOGAMI, 2013	Oregon Department of Geology and Mineral industries	DOGAMI Hydrologic Study for A Zones	Oregon Department of Geology and Mineral Industries	Portland, Oregon	December, 2012	https://www.oregongeology.org/
DOGAMI, 2015a	Oregon Department of Geology and Mineral industries	Water Bodies Digitized from Lidar Collected in 2011 and 2015 and 2011 NIAP Imagery	Oregon Department of Geology and Mineral Industries	Portland, Oregon	May, 2015	https://www.oregongeology.org/
DOGAMI, 2015b	Oregon Department of Geology and Mineral industries	Streams Digitized from Lidar Collected in 2011 and 2015 and 2011 NIAP Imagery	Oregon Department of Geology and Mineral Industries	Portland, Oregon	May, 2015	https://www.oregongeology.org/
DOGAMI, 2015c	Oregon Department of Geology and Mineral industries	Terrain Submission for Harney County	Oregon Lidar Consortium; Watershed Sciences Inc.	Portland, Oregon	May, 2015	https://www.oregongeology.org/sub/projects/olc/default.htm

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
DOGAMI, 2016a	Oregon Department of Geology and Mineral industries	DOGAMI DFIRM Task	Oregon Department of Geology and Mineral Industries	Portland, Oregon	April, 2016	https://www.oregongeology.org/
DOGAMI, 2016b	Federal Emergency Management Agency	Harney County Basemap Submittal	Oregon Department of Geology and Mineral Industries	Oakton, Virginia	April, 2016	https://www.fema.gov/
G&W, 1973	G&W Engineering	Topographic Maps, City of Burns, Scale 1:1,200, Contour interval 2 Feet	G&W Engineering	Ontario, Oregon	October, 1973	
GEOSOLVE, 2011	Harney County, Oregon	911 Emergency Transportation Layer (Geosolve)	GEOSOLVE, Inc.	Burns, Oregon	December, 2011	https://www.geosolveinc.com/projects.html
HARNEY COUNTY, 1984	Federal Emergency Management Agency	Harney County, Oregon, Flood Insurance Rate Map 1984	Federal Emergency Management Agency	Oakton, Virginia	April, 1984	https://www.fema.gov/
HARNEY COUNTY, 1998	Federal Emergency Management Agency	Harney County, Oregon, Flood Insurance Study 1998	Federal Emergency Management Agency	Oakton, Virginia	December, 1998	https://www.fema.gov/
HARNEY COUNTY, 2013a	Harney County, Oregon	Harney County City Limits	Harney County Planning Department	Burns, Oregon	August, 2013	https://www.co.harney.or.us/
HARNEY COUNTY, 2013b	Harney County, Oregon	911 Emergency Transportation Layer (Harney County)	Harney County Planning Department	Burns, Oregon	August, 2013	https://www.co.harney.or.us/

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
HARNEY COUNTY, 2021a	Harney County, Oregon	Harney County City and Reservation Limits	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HARNEY COUNTY, 2021b	Harney County, Oregon	Harney County Water Lines	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HARNEY COUNTY, 2021c	Harney County, Oregon	911 Emergency Transportation Layer (Harney County)	Harney County GIS	Burns, Oregon	April, 2021	https://www.co.harney.or.us/
HUD, 1978	U.S. Department of Housing and Urban Development-Federal Insurance Administration	Flood Hazard Boundary Map, Harney County, Oregon	U.S. Department of Housing and Urban Development-Federal Insurance Administration		April, 1978	
NOAA, 2001	NOAA / National Weather Service	NOAA Atlas 2 - Precipitation-Frequency Atlas for The Western United States All-Season Series	NOAA/National Weather Service/office of Hydrologic Development/Hydrometeorological Design Studies Center (HDSC)	Silver Spring, Maryland	December, 2001	
STARR II, 2015	Strategic Alliance for Risk Reduction II	Incorporation of Floodplain Mapping information To The Harney Countywide Study	Strategic Alliance For Risk Reduction II	Laurel, Maryland	August, 2018	

Table 32: Bibliography and References (continued)

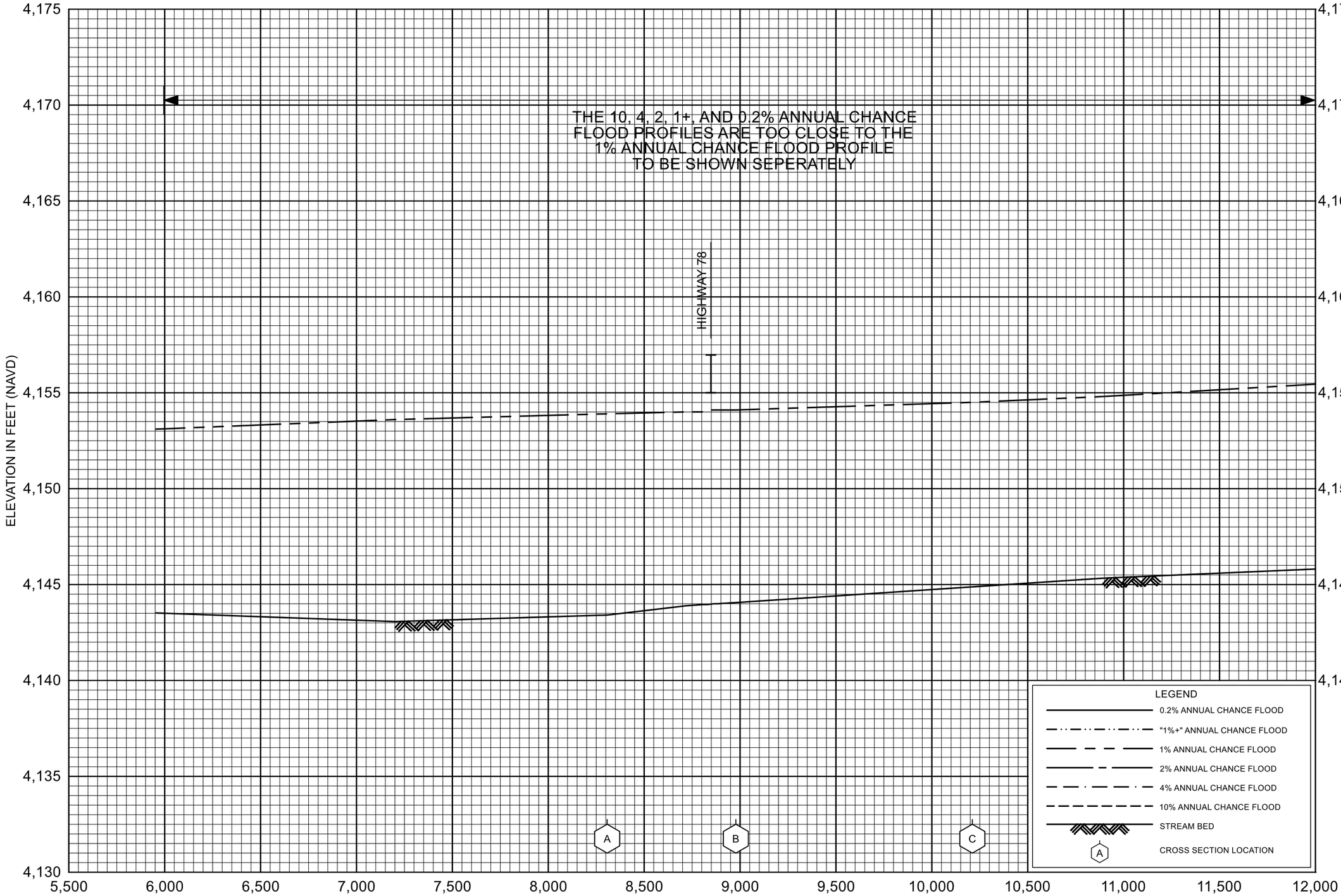
Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II, 2016	Strategic Alliance for Risk Reduction II	STARR II Hydrologic Study for A Zones	Strategic Alliance For Risk Reduction II	Laurel, Maryland	June, 2016	
STARR II, 2020	Strategic Alliance for Risk Reduction II	East Harney Valley Approximate Analyses	Strategic Alliance For Risk Reduction II	Laurel, Maryland	October, 2020	
STARR II, 2022a	Strategic Alliance for Risk Reduction II	DFIRM Database Submission for Harney County	Strategic Alliance For Risk Reduction II	Raleigh, North Carolina	April, 2022	
STARR II, 2022b	Federal Emergency Management Agency	Harney County Phase II Riverine Study	Strategic Alliance For Risk Reduction II	Washington D.C.	May 2022	https://hazards.fema.gov
USACE, 1975	U.S. Army Corps of Engineers	Aerial Photograph Burns Paiute indian Reservation, Scale 1:4,800	U.S. Army Corps of Engineers		March, 1975	
USACE, 1979a	U.S. Army Corps of Engineers	Aerial Photograph, Scale 1:2,400, Flown September 11, 1979	U.S. Army Corps of Engineers		September, 1979	
USACE, 1979b	U.S. Army Corps of Engineers	Aerial Photographs, City of Burns, Scale 1:6,000, Flown November 8, 1979	U.S. Army Corps of Engineers		November, 1979	
USACE, 1979c	U.S. Army Corps of Engineers	Aerial Photos, Scale 1:12,000	U.S. Army Corps of Engineers		1979	

Table 32: Bibliography and References (continued)

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 2011	U.S. Army Corps of Engineers	2011 Silvies River High Water Marks	U.S. Army Corps of Engineers	Portland, Oregon	April, 2011	
USACE, 2019a	U.S. Army Corps of Engineers	HEC-RAS Version 5.0.7	The Hydrologic Engineering Center	Davis, California	2019	https://www.hec.usace.army.mil/software/hec-ras/documentation.aspx
USACE, 2019b	U.S. Army Corps of Engineers	HEC-RAS Version 5.0.7	Brunner, G. W.	Davis, California	2019	
USACE, 2020	U.S. Army Corps of Engineers	HEC-HMS Version 4.6.1	U.S. Army Corps of Engineers	Davis, California	September, 2020	
USDA, 1986	U.S. Department of Agriculture-Farm Service Agency	Urban Hydrology for Small Watersheds, Technical Release 55 (Tr-55), (Second Ed.).	U.S. Department of Agriculture	Washington D.C.	1986	
USDA, 2016	U.S. Department of Agriculture-Farm Service Agency	USDA-FSA-APFO Digital Ortho Mosaic	USDA-FSA Aerial Photography Field office	Salt Lake City, Utah	September, 2016	
USDA, 2019	U.S. Department of Agriculture-Farm Service Agency	Gridded Soil Survey Geographic (GSSURGO) by State	USDA/NRCS Soil Survey Center	Lincoln, Nebraska	2019	https://sdmdataaccess.sc.egov.usda.gov
USDA, 2020	U.S. Department of Agriculture-Farm Service Agency	NAIP basemap orthoimagery used to inform flood hazard delineations	USDA-Farm Production and Conservation Business Center	Salt Lake City, Utah	September, 2020	

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
USGS National Map	United States Geological Survey National Map	USGS National Map: Orthoimagery for FIRM Panels Dated 02/08/2024	U.S. Geological Survey	Reston, Virginia	02/08/2024	https://www.usgs.gov/
USGS, 1960a	United States Geological Survey	15-Minute Series Topographic Maps, Scale 1:62,500, Contour intervals 10, 20, and 40 Feet: Dog Mountain, Oregon (1959); Lowen, Oregon (1959); Crane, Oregon (1960); Burns, Oregon (1960)	U.S. Geological Survey		1960	
USGS, 1960b	United States Geological Survey	7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour interval 20 Feet	U.S. Geological Survey		1960	
USGS, 2011	United States Geological Survey	Pacific Northwest Hydrography Framework	Pacific Northwest Hydrography Framework	Denver, Colorado	July, 2011	https://nhd.usgs.gov/
USGS, 2019	United States Geological Survey	NLCD 2016 Land Cover Conterminous United States	U.S. Geological Survey		2019	
USGS, 2020	United States Geological Survey	NHD Data	U.S. Geological Survey	Washington, D.C.	June, 2020	https://apps.nationalmap.gov/downloader/#/



FLOOD PROFILES

SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

01P

THE 10, 4, 2, 1+, AND 0.2% ANNUAL CHANCE FLOOD PROFILES ARE TOO CLOSE TO THE 1% ANNUAL CHANCE FLOOD PROFILE TO BE SHOWN SEPERATELY

SENECA DRIVE / HIGHWAY 20

ELEVATION IN FEET (NAVD)

4,180
4,175
4,170
4,165
4,160
4,155
4,150
4,145
4,140
4,135

12,000 12,500 13,000 13,500 14,000 14,500 15,000 15,500 16,000 16,500 17,000 17,500 18,000 18,500

STREAM DISTANCE IN FEET ABOVE SPLIT OF EAST FORK SILVIES RIVER / WEST FORK SILVIES RIVER

D E F G H I

LEGEND

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

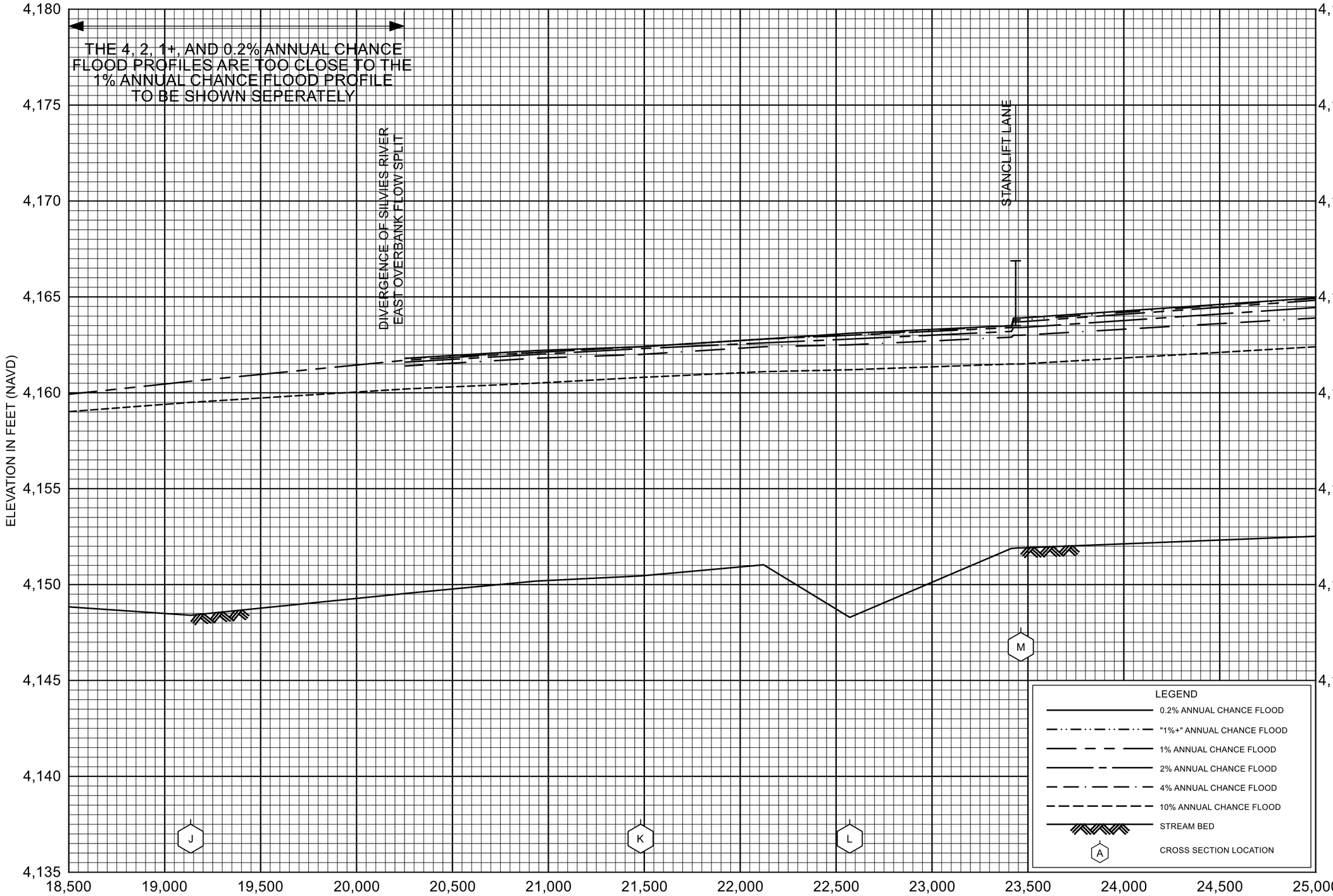
FLOOD PROFILES

SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR
AND INCORPORATED AREAS

02P



FLOOD PROFILES

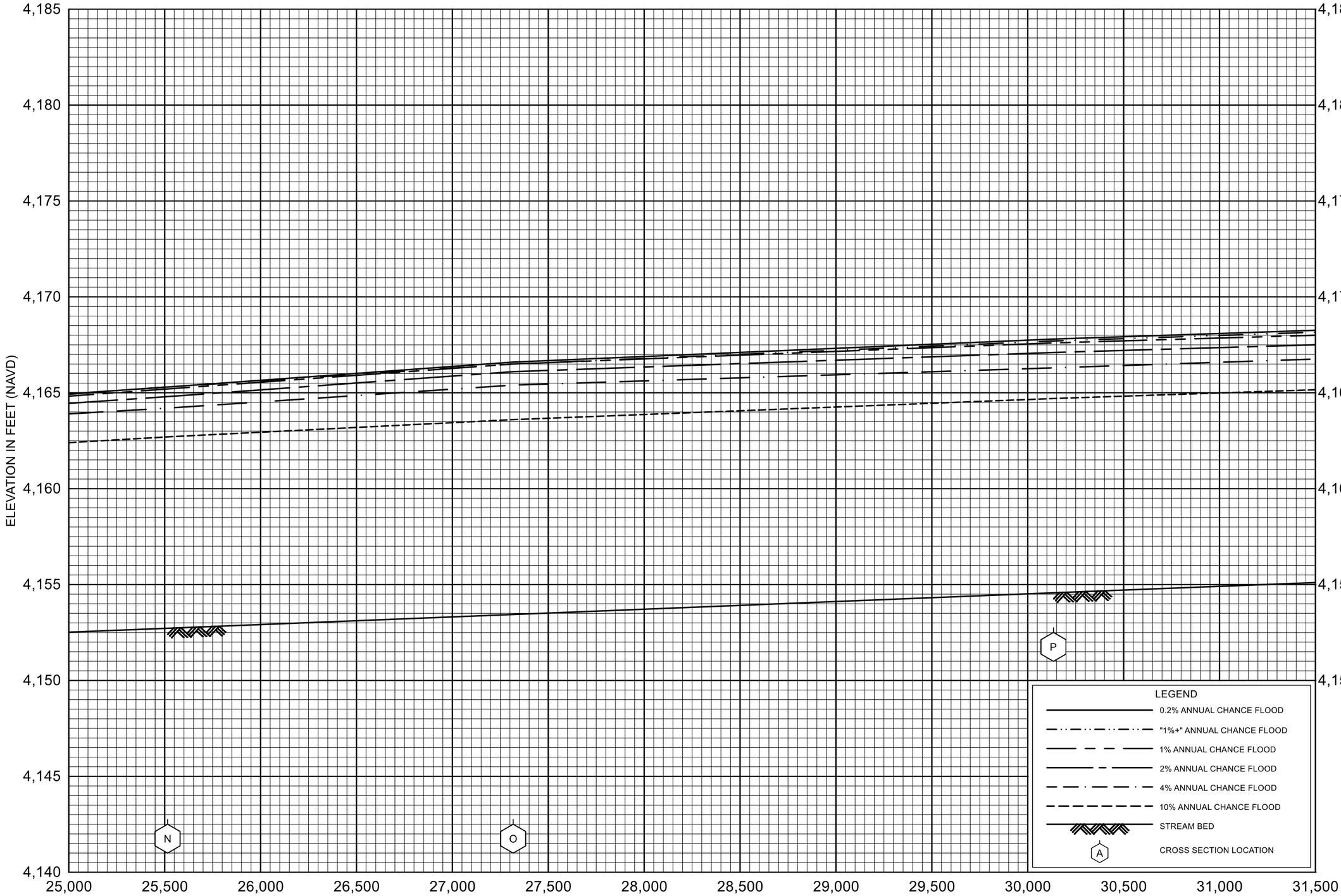
SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR

AND INCORPORATED AREAS

03P



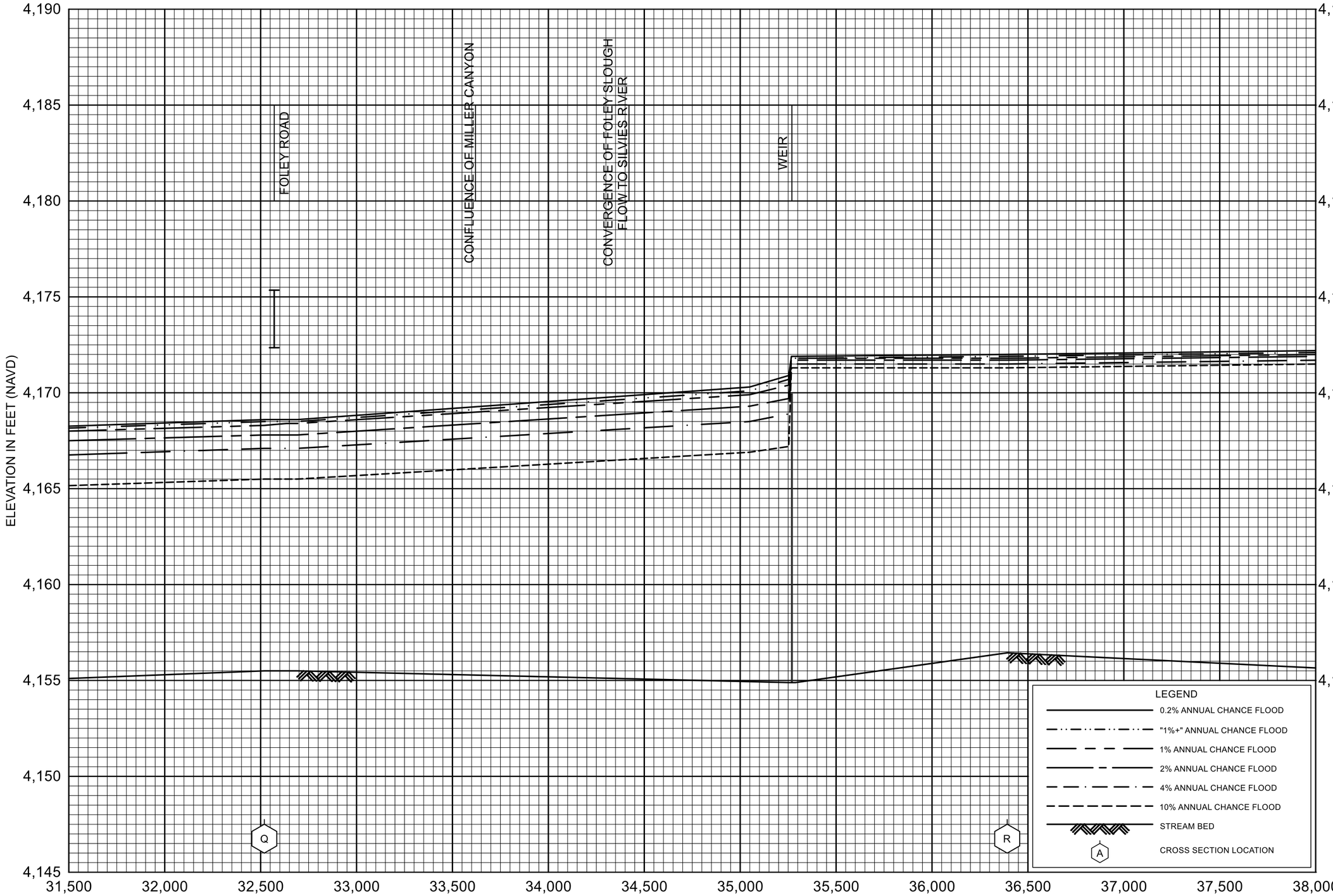
FLOOD PROFILES

SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR
AND INCORPORATED AREAS

04P



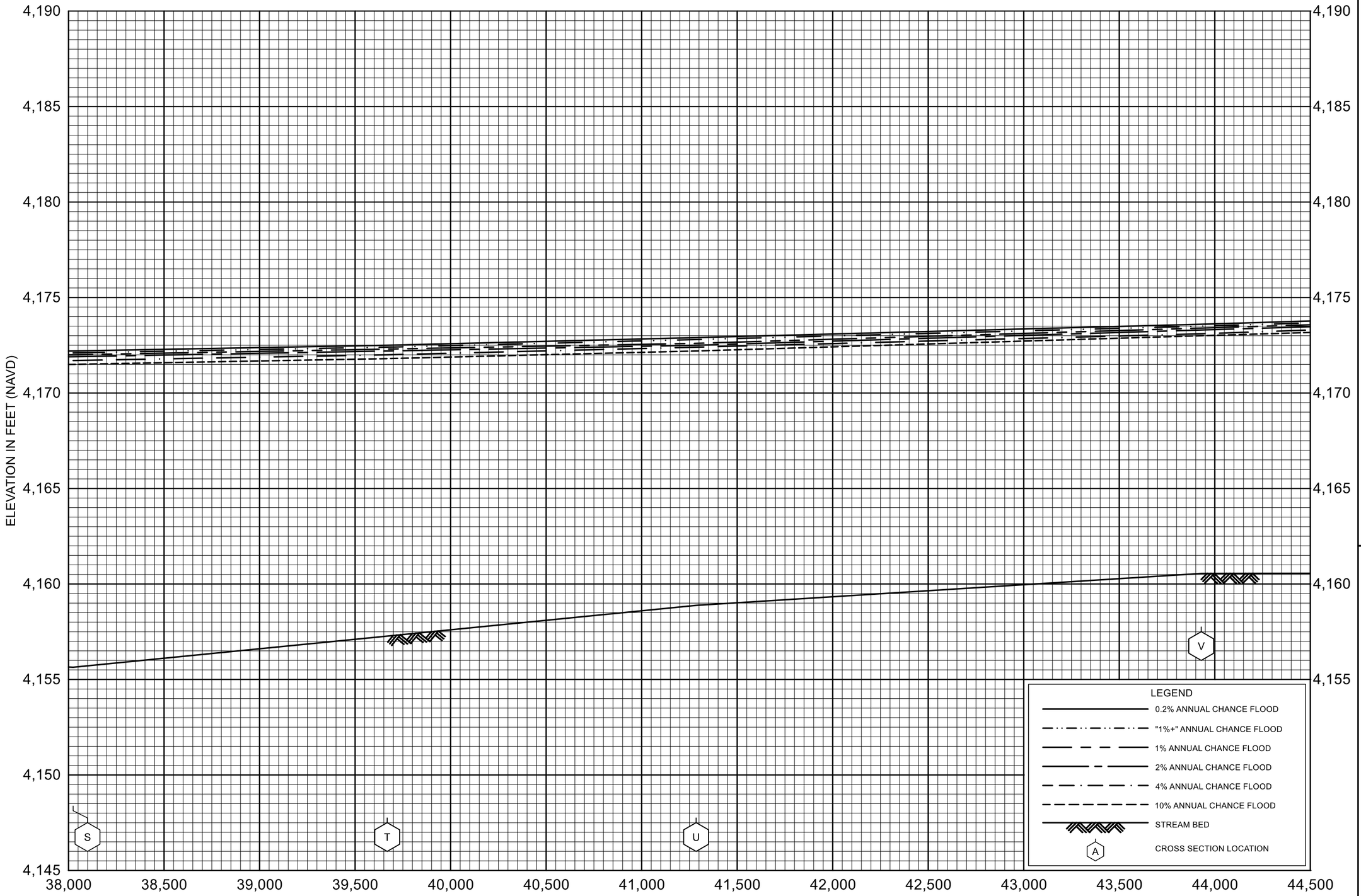
FLOOD PROFILES

SILVIES RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

HARNEY COUNTY, OR
AND INCORPORATED AREAS

05P



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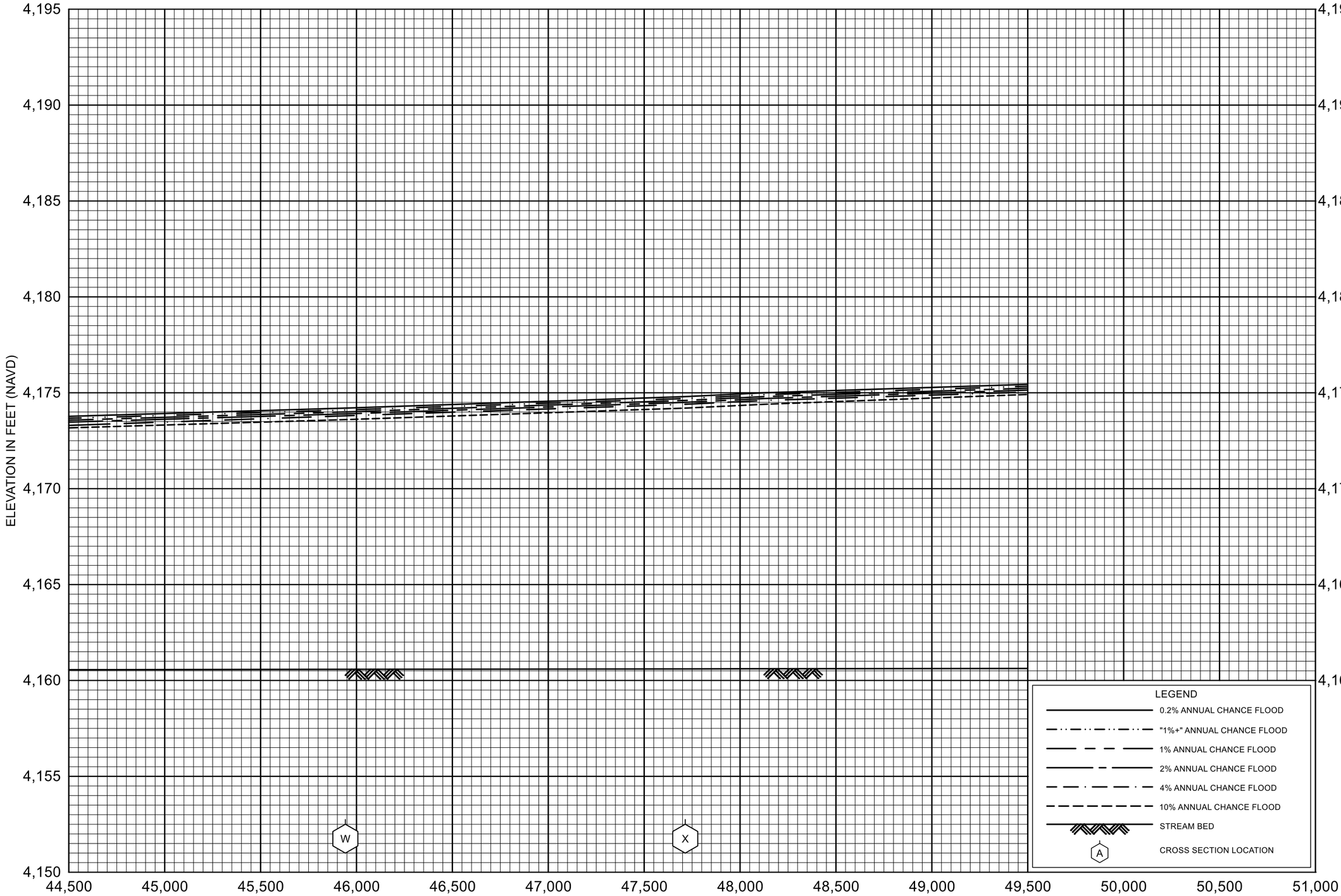
06P



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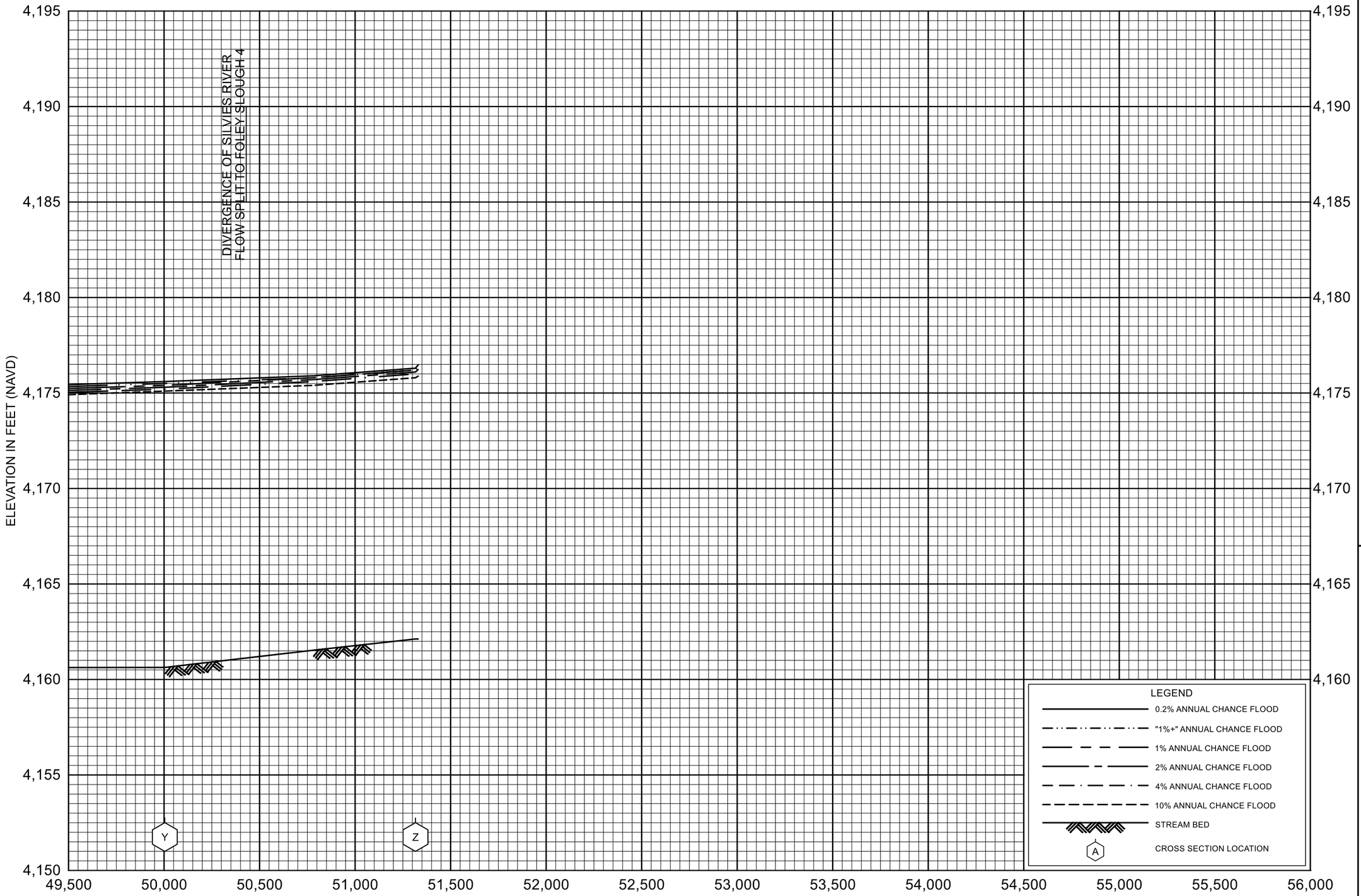
07P



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08P