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August 3, 2022

Mr. Harry Katz, CFM
Floodplain Management and Insurance, Mitigation Division
FEMA Region VIII

RE: Post-2022 Montana Flood Event Policy and "No-Rise" Interim Guidance

Definitions:

Existing Conditions:	Post-Flood/Pre-Project conditions utilizing best available data such as Post-Flood LiDAR or ground survey data
Proposed Conditions:	Post-Project conditions; Existing Conditions plus the proposed design elements
Effective Conditions:	Regulatory conditions shown on most recent FIRM/FIS or approved Letter of Map Revision (LOMR)
Pre-Flood Conditions:	Pre-Flood LiDAR/Terrain data plus other pre-flood data as available
No-Rise:	≤ 0.00 Feet for Zone AE with Floodway, and ≤ 0.50 Feet for Zone AE without Floodway

Dear Harry:

Communities in Montana's Yellowstone River Basin recently experienced historic flooding resulting in widespread damage to structures and public infrastructure. High velocity flows from the flood event caused significant bank erosion, migration, aggregation, and/or degradation to rivers, streams, and tributaries; which impacted the accuracy of the effective Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FIS). In many of the flooded areas, the riverine Existing Conditions may no longer match the Effective Conditions.

For communities that participate in the National Flood Insurance Program (NFIP), any development occurring in the Special Flood Hazard Area (SFHA) requires a floodplain development permit from the local community prior to the start of construction and must meet all adopted floodplain management regulations. In order to support communities, property owners and other entities making recovery decisions, the Montana Department of Natural Resources and Conservation (DNRC) is providing this interim policy guidance to clarify project analysis procedures and how to satisfy local floodplain permit requirements. This interim guidance is intended to provide clarification for those communities located in the declared counties (DR-4655-MT) where Effective FIRM and FIS information no longer

matches Existing Conditions. It is not intended to apply in communities outside the declared counties or for projects unrelated to current flood recovery efforts. This interim guidance may be superseded as additional flood hazard information becomes available and is not meant to repeal any other local, state, or Federal requirements.

Additionally, this interim guidance is not meant to supersede or contradict FEMA Policy #104-008-2 *Guidance on the use of Available Flood Hazard Information* but rather provide a means for local communities to make sound permitting decisions based on the unique set of circumstances of the disaster. This guidance may not be appropriate for all projects, for example, flood recovery projects being funded by FEMA Public Assistance (PA) may be subject to other requirements. In all cases involving other federal or state funds, the appropriate agency Project Officer or program contact (e.g. FEMA, NRCS, USACE, DNRC, etc.) should be consulted prior to the project commencement.

POLICY GUIDANCE

The following guidance applies to projects that are located within a regulatory floodway or in a floodplain with BFEs where a floodway has not been defined; and therefore, may require a No-Rise analysis, Conditional Letter of Map Revision (CLOMR) and/or Letter of Map Revision (LOMR). If the project does not fall into one of the scenarios below or is located in an Approximate (Zone A) mapped floodplain, then officials and/or design professionals are encouraged to contact staff from the local floodplain administrator and/or the DNRC (listed below).

Restoring to Effective Conditions:

Channels may be restored to effective conditions without further analysis. Effective condition is considered the modeled condition reflected in the effective Flood Insurance Study, including floodplain and floodway boundaries, base flood elevations, flows, and channel geometry. The project must adhere to any other federal, state or local regulations and permit requirements.

Projects that were properly designed, permitted, and constructed prior to the flood may be replaced in-kind without further analysis so long as the conveyance equals that of the original structure. The project must adhere to any other federal, state, or local regulations and permit requirements. Reduction in conveyance as a result of sedimentation may require channel modification. Changes in structure design or channel modification must go through the normal review process which may include a No-Rise analysis, CLOMR, and LOMR.

Stream Crossings and Restoration Projects:

Where current and effective conditions do not match and the community does not intend to return the channel to effective conditions, hydrologic and hydraulic analysis will be required for proposed projects. A No-Rise analysis must demonstrate that the proposed project does not increase water surface elevations of the base flood.

No-Rise Analysis Procedure:

For all approaches below in **Zone AE** floodplains, *Proposed Conditions* must tie into *Existing Conditions* within 0.00 ft at the upstream and downstream limits of the project area.

- **Approach 1:** Utilize best available information, specifically Post-Flood event LiDAR/Terrain and/or field survey data, to create a HEC-RAS hydraulic model that best

represents the Existing (Post-Flood) Conditions. Use the Existing Conditions model to build a Proposed Conditions model; which incorporates the proposed/remedial project elements. Both Existing Conditions and Proposed Conditions models shall use the effective FIS hydrology unless more current data is available from DNRC and FEMA[1] (currently limited to Carbon County). Compare the Existing Conditions model to the Proposed Conditions model to determine if rises occur in the water surface elevations of the 1% annual chance flood or Base Flood Elevations (BFEs). If the model comparison results indicate "No-Rise" in BFEs (see definition above), then a FEMA CLOMR is NOT required for the project prior to issuance of a floodplain development permit by the community. If No-Rise is not satisfied, then proceed to Approach 2.

Additional engineering will be required to determine Existing Conditions in areas where the channel has migrated. Existing Conditions should not reflect any man-made temporary work such as temporary crossings, bridges, culverts, hydraulic structures, or other developments that have been constructed since the flood.

[1]Note: When applied with Approach 3, only the effective FIS hydrology may be used.

- **Approach 2[2]:** Utilize the most recent Pre-Flood LiDAR/Terrain and/or survey data if available (refer to attached DNRC study county figures and tables) to create a Pre-Flood Conditions HEC-RAS hydraulic model and compare to the Proposed Conditions model that was developed in Approach 1. Both Proposed Conditions and Pre-Flood Conditions models shall use the effective FIS hydrology unless more recent analyses are available from DNRC and FEMA (currently limited to Carbon County). Pre-Flood Draft floodplain study HEC-RAS models are available from DRNC for some river reaches within Carbon County (refer to attached DNRC figure for details).

  Compare the Proposed Conditions model (from Approach 1) to the Pre-Flood Conditions model to determine if rises occur in the water surface elevations of the 1% annual chance flood or BFEs. If the model comparison results satisfy "No- Rise" in BFEs (see definition above), then a FEMA CLOMR is NOT required for the project prior to issuance of a floodplain development permit by the community. Alternatively, if No-Rise is not satisfied, then a CLOMR is required prior to issuance of a floodplain development permit by the community.

  [2]Note: If creating a Pre-Flood model is not possible because adequate Pre-Flood information is not available, then skip Approach 2 and proceed to Approach 3.

- **Approach 3:** In areas with effective detailed/enhanced studies (i.e. Zone AE) with published FIS profiles and BFEs, compare the Proposed Conditions model (from Approach 1) to the current Effective Conditions to determine if there are any rises. When available, the effective regulatory model data should be utilized. This approach may offer another option to evaluate "No-Rise" criteria without creating an additional model. If the comparison results still signify a rise, then a CLOMR is required before the community may issue a floodplain development permit.

CLOMR Requirements:
A CLOMR may be required when Existing Conditions show increases in water surface elevations of the base flood compared to Proposed Conditions. If the project is located in a regulatory floodway, a CLOMR is required if a no-rise certification cannot be completed according to the guidance outlined above. If the project is located in a floodplain with published BFEs without a regulatory floodway, a CLOMR is required if the project causes more than 0.50 feet of increase in BFEs. For CLOMRs, the standard FEMA MT-2 application and process must be followed.

LOMR Requirements:
A LOMR must be submitted within six months of completion for all projects when the Proposed Conditions model shows an increase or mappable decrease in BFEs compared to the Effective model. The standard FEMA MT-2 application and process must be followed, including as-built information showing Post-Project conditions. It is the community's responsibility to ensure all information is submitted to FEMA in a timely manner.

Recommended Practice:
As-built hydraulic, topographic, and other relevant data must be provided to the community after the project is completed, along with site inspections, and LOMR submittals when necessary. DNRC advises community floodplain administrators to list these requirements as conditions in their floodplain development permits when applicable.

Local floodplain development permits should also be considered outside of the effective Special Flood Hazard Area (SFHA) where projects are now subject to flood damage as a result of channel migration. This determination must be made by the local floodplain administrator using best available information.

Regards,

Steve Story, PE, CFM
Chief, Water Operations Bureau
406-444-6816 sestory@mt.gov

CC: Dawn Brabenec, Risk Analysis Branch Chief, FEMA Region VIII
Thuy Patton, Risk Map Portfolio Manager, FEMA Region VIII
Traci Sears, Montana NFIP/CAP Coordinator

Attachments:
- DNRC Primary Points of Contact
- "Effective" Floodplain Study Inventory Figures and Tables for Carbon County, Park County, and Stillwater County
- "Draft" Floodplain Study Figure and Table for Carbon County

DNRC Primary Points of Contact:

Floodplain Permitting Technical Assistance:

Carbon, Park, Stillwater, Sweet Grass, Treasure, and Yellowstone Counties:

- Sam Johnson, PE, CFM, Billings Regional Office
  406-247-4423
  Sam.johnson@mt.gov

Flathead County:

- Larry Schock, CFM, Missoula Regional Office
  406-542-5885
  lschock@mt.gov

Existing Floodplain Study Data Requests: Refer to attached county maps and tables.

- Peri Turk, EI, CFM, Helena Water Resources Division Office
  406-444-6656
  Peri.turk@mt.gov

NFIP/Community Assistance Program:

- Traci Sears, CFM, State Coordinator, Helena Water Resources Division Office
  406-444-6654
  tsears@mt.gov

Effective Detailed Study Reaches

Index*	Flooding Source	Study Year	Completed By
CFYR-1	Clarks Fork Yellowstone River	2008	USACE
RC-1	Rock Creek	1977	Morrison-Maierle
RC-2	Rock Creek	1988	USBR
YRC-1	Yellowstone River	2013	USACE/Michael Baker

***Study Reach Label Identification**

0 2 4 8 12 16 Miles

FEMA Effective Mapping

- Approximate
- Limited Detail
- Detailed
- County Boundary
- City Limits
- Federal Lands
- Crow Reservation
- Study Reach Boundary Limits
- FIRM Panel *Not Printed

STILLWATER
YELLOWSTONE
CARBON
Crow Reservation
BIG HORN
WYOMING

Laurel
Billings
Park City
Columbus
Silesia
Rockvale
Absarokee
Joliet
Edgar
Pryor
Nye
Fishtail
Dean
Roscoe
Boyd
Fromberg
Roberts
Bridger
Luther
Red Lodge
Washoe
Belfry
Bearcreek
Alpine
Chance
Warren

Yellowstone River
Stillwater River
Rock Creek
Red Lodge Creek
Pryor Creek
Rosebud Creek
East Rosebud Creek
Butcher Creek
Volney Creek
East Red Lodge Creek
Willow Creek
Elbow Creek
Yellowstone
Clark Fork
Silver Tip Creek
Cottonwood Creek
Sage Creek
Crooked Creek
Bighorn River

Custer National Forest
Absaroka-Beartooth Wilderness
Bighorn Canyon National Recreation Area

YRC-1
CFYR-1
RC-1
RC-2

Available Lidar

- QL1 DNRC, flown June-July 2019, available from Montana State Library
- USACE, flown May 2007, available from Montana State Library

To request lidar data, please visit: http://msl.mt.gov/gis/lidarinventory

Carbon County Effective Floodplain Study Inventory
07/31/2022

Scale: 1 : 350,000
Base Layer: ESRI

8/3/2022

Carbon County Effective Floodplain Study Inventory

								Hydraulics		
Index	Flooding Source	Study Year	FIS	Completed By	Study Type	Zone	Hydrology Source (Completed By)	Model Type	Are Model Run Files Available	Are Study-Specific Shapefiles Available
CFYR-1	Clarks Fork Yellowstone River	2008	Carbon County (2017)	USACE	Detailed	AE with Floodway	FIS (Morrison-Maierle)	HEC-RAS 4.0*	No*	No*
RC-1	Rock Creek	1977	Carbon County (2017)	Morrison-Maierle	Detailed	AE with Floodway	FIS (Morrison-Maierle)	HEC-2	Microfiche Scans	No
RC-2	Rock Creek	1988	Carbon County (2017)	USBR	Limited Detail	AE	FIS (USBR)	HEC-2*	No*	No
YRC-1	Yellowstone River	2013	Carbon County (2017)	USACE/Michael Baker	Detailed	AE with Floodway	FIS (USACE/Michael Baker)	HEC-RAS 4.1.0	Yes	Yes

*DNRC does not have a copy of this data at this time, but is working towards obtaining a copy. Please contact DNRC if you would like to be notified when these are available.

Data Requests: Peri Turk, EI, CFM, DNRC Helena Water Resources Division Office - 406-444-6656, Peri.Turk@mt.gov
Permitting Assistance: Sam Johnson, PE, CFM, DNRC Billings Regional Office - 406-247-4423, Sam.Johnson@mt.gov

Acronyms

FIS	Flood Insurance Study
HEC-RAS	Hydrologic Engineering Center - River Analysis System
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation

0 3 6 12 18 24 Miles

Park County Effective Floodplain Study Inventory

07/31/2022

Scale: 1 : 400,000
Base Layer: ESRI

FEMA Effective Mapping

- Approximate
- Approximate (XDS Study)
- Detailed
- County Boundary
- City Limits
- Yellowstone National Park
- Study Reach Boundary Limits
- FIRM Panel *Not Printed

Available Lidar

- QL1 USFS, flown 08/2020, available late Summer 2022
- QL2 USGS 3DEP, flown 10/2022, available Fall 2022

To request lidar data, please visit:
http://msl.mt.gov/gis/lidarinventory

MEAGHER
GALLATIN
PARK
SWEET GRASS
STILLWATER
WYOMING
Yellowstone National Park

Ringling
Sixteen
Wilsall
Sedan
Shields
Clyde Park
Grannis
Bozeman
Livingston
Elton
Springdale
Big Timber
Greycliff
Mc Leod
Pine Creek
Contact
Pray
Emigrant
Chico
Miner
Corwin Springs
Jardine
Gardiner
Limestone
Nye
Cooke City
Silver Gate

Potter Creek
Shields River
Muddy Creek
Flathead Creek
Cottonwood Creek
Rock Creek
Brackett Creek
Willow Creek
East Gallatin River
Billman Creek
Yellowstone River
Boulder River
West Boulder River
Mill Creek
Big Creek
Tom Miner Creek
Hellroaring Creek
Buffalo Creek
Slough Creek
Stillwater River

YR-1
YR-2
YR-3
YR-4

Effective Detailed Study Reaches			
Index*	**Flooding Source**	**Study Year**	**Completed By**
YR-1	Yellowstone River	2006	USACE
YR-2	Yellowstone River	2009	Clear Creek Hydrology, Inc.
YR-3	Yellowstone River	2007	Tetra Tech
YR-4	Yellowstone River	2005	USGS (XDS Study)

***Study Reach Label Identification**

Park County Effective Floodplain Study Inventory

8/3/2022

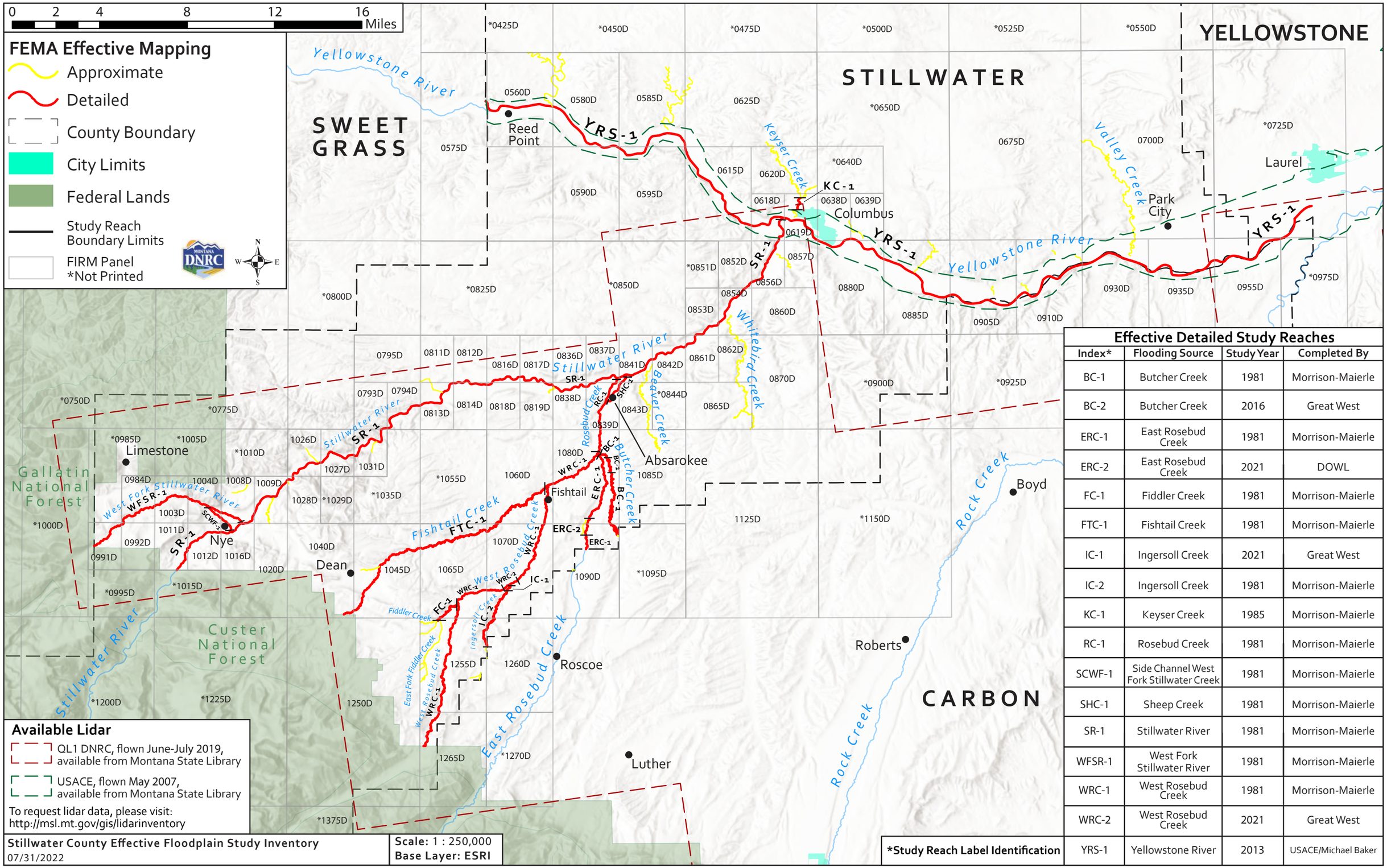
								Hydraulics		
Index	Flooding Source	Study Year	FIS	Completed By	Study Type	Zone	Hydrology Source (Completed By)	Model Type	Are Model Run Files Available	Are Study-Specific Shapefiles Available
YR-1	Yellowstone River	2006	Park County (2011)	USACE	Detailed	AE w/Floodway	FIS (USACE)	HEC-RAS	Yes	Yes
YR-2	Yellowstone River	2009	Park County (2011)	Clear Creek Hydrology, Inc	Detailed	AE w/Floodway	FIS (USACE)	HEC-RAS 3.1.3	Yes	Yes
YR-3	Yellowstone River	2007	Park County (2011)	Tetra Tech/Michael Baker	Detailed	AE w/Floodway	FIS (USGS)	HEC-RAS 3.1.3	Yes	Yes
YR-4	Yellowstone River	2005	Park County (2011)	USGS	Approximate	Zone A	USGS Report (USGS)	HEC-RAS 3.0	Yes	Yes

Data Requests: Peri Turk, EI, CFM, DNRC Helena Water Resources Division Office - 406-444-6656, Peri.Turk@mt.gov

Permitting Assistance: Sam Johnson, PE, CFM, DNRC Billings Regional Office - 406-247-4423, Sam.Johnson@mt.gov

Acronyms

FIS	Flood Insurance Study
HEC-RAS	Hydrologic Engineering Center - River Analysis System
LOMR	Letter of Map Revision
TSDN	Technical Support DataNotebook
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
XDS	Existing Data Study - used when an existing study is adopted as approximate mapping



Effective Detailed Study Reaches

Index*	Flooding Source	Study Year	Completed By
BC-1	Butcher Creek	1981	Morrison-Maierle
BC-2	Butcher Creek	2016	Great West
ERC-1	East Rosebud Creek	1981	Morrison-Maierle
ERC-2	East Rosebud Creek	2021	DOWL
FC-1	Fiddler Creek	1981	Morrison-Maierle
FTC-1	Fishtail Creek	1981	Morrison-Maierle
IC-1	Ingersoll Creek	2021	Great West
IC-2	Ingersoll Creek	1981	Morrison-Maierle
KC-1	Keyser Creek	1985	Morrison-Maierle
RC-1	Rosebud Creek	1981	Morrison-Maierle
SCWF-1	Side Channel West Fork Stillwater Creek	1981	Morrison-Maierle
SHC-1	Sheep Creek	1981	Morrison-Maierle
SR-1	Stillwater River	1981	Morrison-Maierle
WFSR-1	West Fork Stillwater River	1981	Morrison-Maierle
WRC-1	West Rosebud Creek	1981	Morrison-Maierle
WRC-2	West Rosebud Creek	2021	Great West
YRS-1	Yellowstone River	2013	USACE/Michael Baker

Stillwater County Effective Floodplain Study Inventory

8/3/2022

									Hydraulics		
Index	Flooding Source	Study Year	FIS	Completed By	Study Type	Zone	Survey Data Available (Completed By)	Hydrology Source (Completed By)	Model Type	Are Model Run Files Available	Are Study-Specific Shapefiles Available
BC-1	Butcher Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
BC-2	Butcher Creek	2016	LOMR Hydraulic Report	Great West	Detailed	AE with Floodway	AutoCAD Files (Great West)	FIS (M-M & SCS)	HEC-RAS	Yes	Yes
ERC-1	East Rosebud Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
ERC-2	East Rosebud Creek	2021	LOMR Hydraulic Report	DOWL	Detailed	AE with Floodway	AutoCAD Files (DOWL)	Hydraulic Report (DOWL)	HEC-RAS 4.1.0	Yes	Yes
FC-1	Fiddler Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
FTC-1	Fishtail Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
IC-1	Ingersoll Creek	2021	LOMR Hydraulic Report	Great West	Detailed	AE with Floodway	Bathy updated in model (Great West)	Hydraulic Report (Great West)	HEC-RAS	Yes	Yes
IC-2	Ingersoll Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
KC-1	Keyser Creek	1985	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Data Not Available	FIS (M-M & SCS)	HEC-2*	No	No
RC-1	Rosebud Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
SCWF-1	Side Channel West Fork Stillwater River	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
SHC-1	Sheep Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
SR-1	Stillwater River	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
WFSR-1	West Fork Stillwater River	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
WRC-1	West Rosebud Creek	1981	Stillwater County (2015)	Morrison-Maierle	Detailed	AE with Floodway	Some Field Notes Available (M-M)	FIS (M-M & SCS)	HEC-2	As Microfiche Scans	No
WRC-2	West Rosebud Creek	2021	LOMR Hydraulic Report	Great West	Detailed	AE with Floodway	Bathy updated in model (Great West)	FIS (M-M & SCS)	HEC-RAS	Yes	Yes
YRS-1	Yellowstone River	2013	Stillwater County (2015)	USACE/Michael Baker	Detailed	AE with Floodway	Survey Data provided in excel	FIS (USACE/Michael Baker)	HEC-RAS 4.1.0	Yes	Yes

*DNRC does not currently have a copy of this model

Data Requests: Peri Turk, EI, CFM, DNRC Helena Water Resources Division Office - 406-444-6656, Peri.Turk@mt.gov
Permitting Assistance: Sam Johnson, PE, CFM, DNRC Billings Regional Office - 406-247-4423, Sam.Johnson@mt.gov

Acronyms

FIS	Flood Insurance Study
HEC-RAS	Hydrologic Engineering Center - River Analysis System
LOMR	Letter of Map Revision
M-M	Morrison-Maierle, Inc.
SCS	Soil Conservation Service
USACE	U.S. Army Corps of Engineers

0 1.5 3 6 9 12 Miles

Available Lidar

- QL1 DNRC, flown June-July 2019, available from Montana State Library
- USACE, flown May 2007, available from Montana State Library

To request lidar data, please visit: http://msl.mt.gov/gis/lidarinventory

YELLOWSTONE

STILLWATER

CARBON

Custer National Forest

Laurel

Park City

Silesia

Rockvale

Joliet

Edgar

Boyd

Roberts

Fromberg

Bridger

Red Lodge

Washoe

Bearcreek

Belfry

Chance

Stillwater River

Yellowstone River

Clarks Fork Yellowstone

Rock Creek

Red Lodge Creek

Elbow Creek

Bluewater Creek

Bear Creek

CYF-1

CFY-2

NS-1

RC-1

CFY-3

RC-2

4215-1

RC-3

CWC-1

EC-1

U-12

SRLC-1

U-1

CC-1

RLC-1

RC-4

DC-1

RC-5

CFY-4

SKC-1

BWC-1

U-6

BHC-1

BWC-2

ES-1

U-7

CFY-5

CFYS-1

RWC-1

U-8

CFY-6

HC-1

U-11

TMS-1

WFRC-1

STC-1

VG-1

BC-1

FG-1

U-5

BCS-1

LC-1

U-4

U-3

U-2

RC-6

HD-1

DWC-1

U-10

U-9

SC-1

Please refer to Carbon County Draft Floodplain Study Availability spreadsheet for study information and products

Draft Floodplain Study

- Limited Detail (2D)
- Limited Detail (1D)
- Detailed
- County Boundary
- City Limits
- Federal Lands
- Study Reach Boundary Limits

Carbon County Draft Floodplain Study
08/2/2022

Scale: 1 : 200,000
Base Layer: ESRI

N W E S

Carbon County Draft Floodplain Study

8/3/2022

Data Requests: Peri Turk, EI, CFM, DNRC Helena Water Resources Division Office
406-444-6656, Peri.Turk@mt.gov
Permitting Assistance: Sam Johnson, PE, CFM, DNRC Billings Regional Office
406-247-4423, Sam.Johnson@mt.gov

The individual study reaches below are bundeled in two reports as follows. Any requests for just a subset of reaches will result in receiving the entire report, but the reaches are included as individual models.

Index	Flooding Source	Study Type	Zone
Study Reaches - Rock Creek and Tributaries Rock Creek and its tributaries are combined in one report by Great West			
421S-1	421 Split	Limited Detail	AE
CC-1	Cottonwood Creek	Limited Detail	AE
CWC-1	Cow Creek	Limited Detail	AE
DC-1	Dry Creek	Limited Detail	AE
NS-1	North Split	Detailed	AE with Floodway
RC-1	Rock Creek	Detailed	AE with Floodway
RC-2	Rock Creek	Detailed	AE with Floodway
RC-3	Rock Creek	Detailed	AE with Floodway
RC-4	Rock Creek	Detailed	AE with Floodway
RC-5	Rock Creek	Detailed	AE with Floodway
RC-6	Rock Creek	Detailed	AE with Floodway
RLC-1	Red Lodge Creek	Detailed	AE with Floodway
SRLC-1	Spillway Channel of Red Lodge Creek	Limited Detail	AE
TMS-1	Two Mile Split	Detailed	AE with Floodway
U-1	Unnamed Tributary of Red Lodge Creek	Limited Detail	AE
WFRC-1	West Fork Rock Creek	Detailed	AE with Floodway
Study Reaches - Clarks Fork Yellowstone River and Tributaries The Clarks Fork Yellowstone River and its tributaries are combined in one report by DOWL			
BC-1	Bear Creek	Limited Detail	AE
BCS-1	Bear Creek Split	Limited Detail	AE
BHC-1	Bachelder Creek	Limited Detail	AE
BWC-1	Bluewater Creek	Limited Detail - 2D	AE
BWC-2	Bluewater Creek	Limited Detail	AE
CFY-1	Clarks Fork Yellowstone	Detailed	AE with Floodway
CFY-2	Clarks Fork Yellowstone	Detailed	AE with Floodway
CFY-3	Clarks Fork Yellowstone	Detailed	AE with Floodway
CFY-4	Clarks Fork Yellowstone	Detailed	AE with Floodway
CFY-5	Clarks Fork Yellowstone	Detailed	AE with Floodway
CFY-6	Clarks Fork Yellowstone	Limited Detail	AE
CFYS-1	Clarks Fork Yellowstone Split	Detailed	AE with Floodway
DWC-1	Dilworth Creek	Limited Detail	AE
EC-1	Elbow Creek	Limited Detail	AE
ES-1	East Split	Limited Detail	AE
FG-1	Foster Gulch	Limited Detail	AE
HC-1	Hunt Creek	Limited Detail	AE
HD-1	Hollenbeck Draw	Limited Detail	AE
LC-1	Larkin Coulee	Limited Detail	AE
RWC-1	Rushwater Creek	Limited Detail	AE
SC-1	Sand Coulee	Limited Detail	AE
SKC-1	Skunk Creek	Limited Detail	AE
STC-1	Scotch Coulee	Limited Detail	AE
U-10	Unnamed Tributary of Clarks Fork Yellowstone	Limited Detail	AE
U-11	Unnamed Tributary of Clarks Fork Yellowstone	Limited Detail	AE
U-12	Unnamed Tributary of Elbow Creek	Limited Detail	AE
U-2	Unnamed Tributary of Bear Creek	Limited Detail	AE
U-3	Unnamed Tributary of Bear Creek	Limited Detail	AE
U-4	Unnamed Tributary of Bear Creek	Limited Detail	AE
U-5	Unnamed Tributary of Bear Creek	Limited Detail	AE
U-6	Unnamed Tributary of Bluewater Creek	Limited Detail	AE
U-7	Unnamed Tributary of Bluewater Creek	Limited Detail	AE
U-8	Unnamed Tributary of Clarks Fork Yellowstone	Limited Detail	AE
U-9	Unnamed Tributary of Clarks Fork Yellowstone	Limited Detail	AE
VG-1	Virtue Gulch	Limited Detail	AE

All studies use the August 2020 Hydrology Report by Pioneer Technical Services, available upon request
All studies use 2020 structure and bathymetric survey performed by DOWL, available upon request
All studies were performed in 2020-2021
All models are available in HEC-RAS 5.0.7
All studies have associated shapefiles available