

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2



FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BERGER, CITY OF	290132
FRANKLIN COUNTY, UNINCORPORATED AREAS	290493
GERALD, CITY OF*	290734
LESLIE, VILLAGE OF*	290304
MIRAMIGUOA PARK, VILLAGE OF	290992
NEW HAVEN, CITY OF	290133
OAK GROVE, VILLAGE OF	290554
PACIFIC, CITY OF	290134
PARKWAY, VILLAGE OF*	290532
ST. CLAIR, CITY OF	290135
SULLIVAN, CITY OF	290136
UNION, CITY OF	290137
WASHINGTON, CITY OF	290138

*No Special Flood Hazard Areas Identified



FEMA

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FLOOD INSURANCE STUDY NUMBER

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Version Number 2.4.3.5

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Volume 2

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Brush Creek	14P-17P
Busch Creek	18P-21P
Calvey Creek	22P-26P
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Dubois Creek	28P-31P
Fenton Creek	32P
Fiddle Creek	33P-36P
Flat Creek	37P-40P
Flat Creek North Tributary	41P
Guenzler Creek	42P
Happy Sock Creek	43P-44P
Labadie Creek	45P
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Saint John's Creek	98P
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Winch Creek	106P-109P
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Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT FRANKLIN COUNTY, MISSOURI

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 Franklin County, Missouri.

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.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

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

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Berger, City of	290132	10300200	29071C0015D	

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
Franklin County, Unincorporated areas	290493	10300200, 07140103, 07140102, 07140104	29071C0005D, 29071C0010D 29071C0015D, 29071C0020D 29071C0040D, 29071C0050D 29071C0065D, 29071C0075D	
Franklin County, Unincorporated areas	290493	10300200, 07140103, 07140102, 07140104	29071C0100D, 29071C0105E 29071C0110D, 29071C0125D 29071C0130D, 29071C0135D 29071C0140D, 29071C0145D 29071C0165D, 29071C0170D 29071C0175D, 29071C0180D 29071C0185D, 29071C0190D 29071C0195E, 29071C0205D 29071C0213E, 29071C0215E 29071C0225E, 29071C0250D 29071C0255D, 29071C0260D 29071C0265D, 29071C0270D 29071C0280D, 29071C0285D 29071C0290D, 29071C0295D 29071C0305D, 29071C0310D 29071C0315D, 29071C0316E 29071C0320E, 29071C0330E 29071C0331E, 29071C0332E 29071C0333E, 29071C0334E 29071C0340E, 29071C0345E 29071C0351E, 29071C0353E 29071C0355E, 29071C0365E 29071C0375D, 29071C0380D 29071C0385D, 29071C0390D 29071C0395D, 29071C0405D 29071C0410D, 29071C0415D 29071C0420D, 29071C0430D 29071C0435D, 29071C0440E 29071C0445E, 29071C0451E 29071C0455E, 29071C0460E 29071C0465E, 29071C0470E 29071C0480E, 29071C0485E 29071C0490E, 29071C0495E 29071C0501E, 29071C0525E 29071C0550D, 29071C0555D 29071C0560D, 29071C0575D 29071C0577E, 29071C0580E 29071C0585E, 29071C0600D 29071C0625E, 29071C0650E	
Gerald, City of ¹	290734	07140103, 10300200	29071C0250D	
Leslie, Village of ¹	290304	07140103, 10300200	29071C0265D	

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
Miramiguo Park, Village of	290992	07140102	29071C0577E, 29071C0585E	
New Haven, City of	290133	10300200	29071C0105E	
Oak Grove, Village of	290554	07140103	29071C0560D	
Pacific, City of	290134	07140102	29071C0213E, 29071C0331E, 29071C0332E, 29071C0334E, 29071C0351E, 29071C0353E, 29071C0355E	
Parkway, Village of ¹	290532	07140102	29071C0455E	
St. Clair, City of	290135	07140103, 07140102	29071C0315D, 29071C0435D, 29071C0451E, 29071C0455E	
Sullivan, City of	290136	0714103, 0714102	29071C0420D, 29071C0555D, 29071C0560D, 29071C0575D ¹	
Union, City of	290137	07140103	29071C0285D, 29071C0295D, 29071C0305D, 29071C0315D, 29071C0316E	
Washington, City of	290138	10300200	29071C0130D, 29071C0135D, 29071C0140D, 29071C0145D, 29071C0165D	

¹ No Special Flood Hazard Areas Identified

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% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% 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 31, "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 Franklin County became effective on October 18, 2011. Refer to Table 28 for information about subsequent revisions to the FIRMs.

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

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

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

- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees 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."

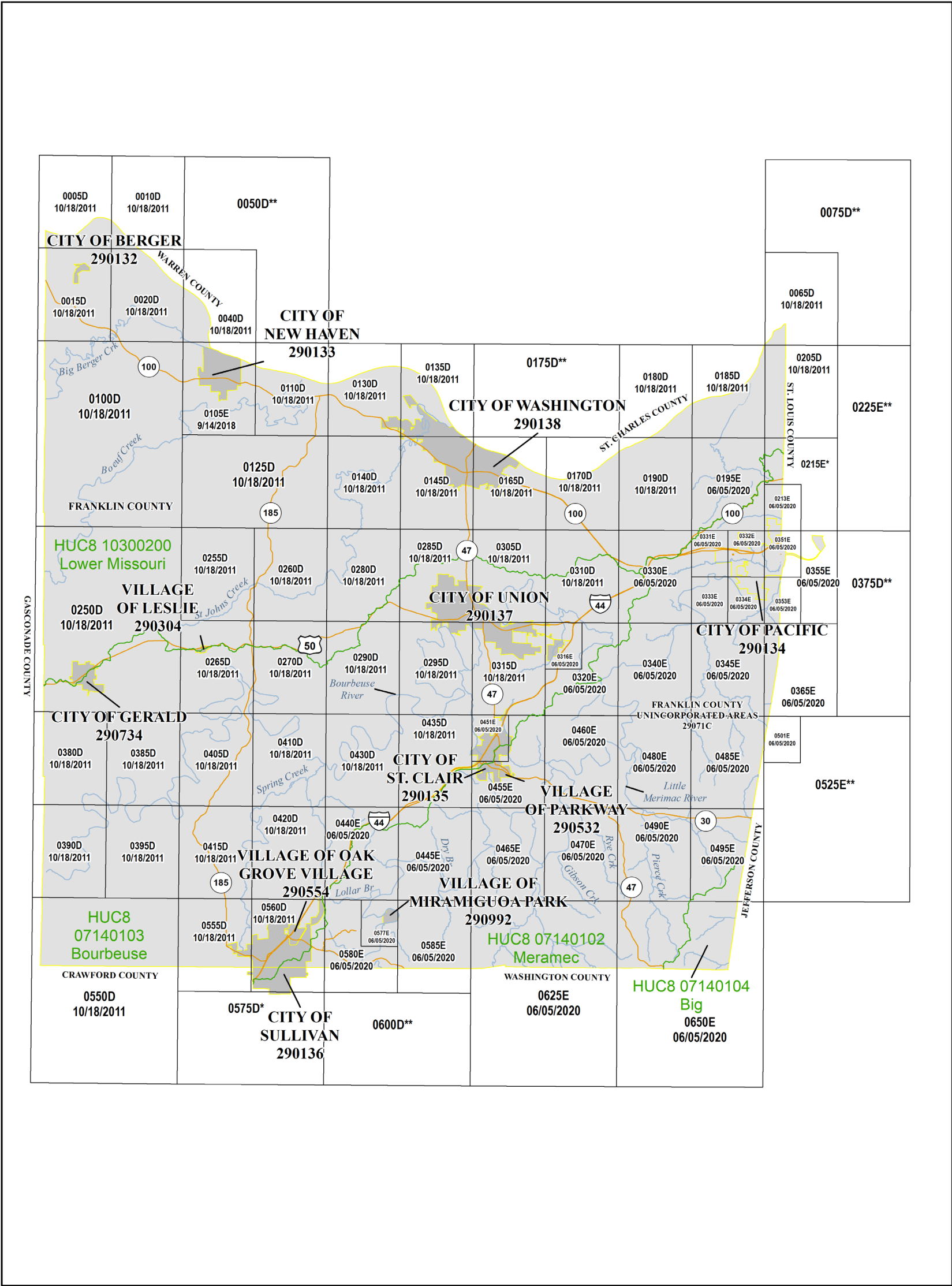
Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE National Levee Database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

Please also note that FEMA has identified one or more levees in this jurisdiction that have not been demonstrated by the community or levee owner to meet the requirements of 44 CFR 65.10, of the NFIP regulations as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. As such, there are temporary actions being taken until such time as FEMA is able to initiate a new flood risk project to apply new levee analysis and mapping procedures to leveed areas. These temporary actions involve using the flood hazard data shown on the previous effective FIRM exactly as shown on that prior FIRM and identifying the area with bounding lines and special map notes. If a vertical datum conversion was executed for the county, then the Base Flood Elevations shown on the FIRM will now reflect elevations referenced to the North American Vertical Datum of 1988 (NAVD88). These levees are on FIRM panel 29071C0105D, on the Missouri River, and are identified on FIRM panels as potential areas of flood hazard data changes based on further review. Please refer to Section 4.4 of this FIS Report for more information.

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

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Franklin 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 = 23,333 feet 1:280,000
0 6,000 12,000 24,000 36,000 48,000 Feet

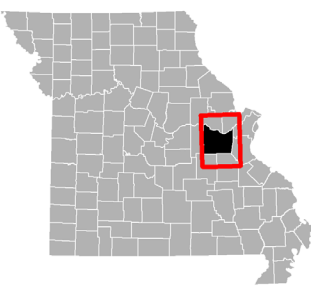
Map Projection:
State Plane Missouri East FIPS Zone 2401 (Feet),
North American Datum 1983.

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

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

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

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP INDEX

FRANKLIN COUNTY, MO and Incorporated Areas

PANELS PRINTED:

0005, 0010, 0015, 0020, 0040, 0065, 0100, 0105, 0110, 0125,
0130, 0135, 0140, 0145, 0165, 0170, 0180, 0185, 0190, 0195,
0205, 0213, 0250, 0255, 0260, 0265, 0270, 0280, 0285, 0290,
0295, 0305, 0310, 0315, 0316, 0320, 0330, 0331, 0332, 0333,
0334, 0340, 0345, 0351, 0353, 0355, 0365, 0380, 0385, 0390,
0395, 0405, 0410, 0415, 0420, 0430, 0435, 0440, 0445, 0451,
0455, 0460, 0465, 0470, 0480, 0485, 0490, 0495, 0501, 0550,
0555, 0560, 0577, 0580, 0585, 0625, 0650



MAP NUMBER
29071CIND0C
MAP REVISED
JUNE 05, 2020

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

Figure 2: FIRM Notes to Users

NOTES TO USERS

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

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

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

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Missouri State Plane East zone (FIPSZONE 2401). The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

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

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by United States Department of Agriculture Farm Service Agency at a scale of 1:5,000. All panels use base map information provided by the U.S. Geological Survey at a scale of 1:12,000. For information about base maps, refer to section 6.2 "Base Map" in the 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 Franklin County, Missouri, 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 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

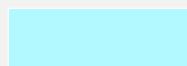
ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before March 20, 2020.

FLOOD RISK REPORT: A Flood Risk Report (FRR) is 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 Franklin County.

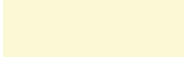
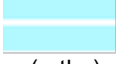
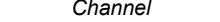
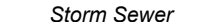
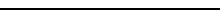
Figure 3: Map Legend for FIRM

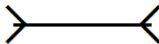
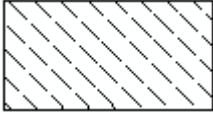
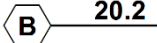
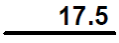
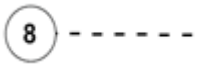
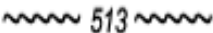
SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*



Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

- Zone A The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
- Zone AE The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
- Zone AH The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
- Zone AO The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
- Zone AR The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- Zone A99 The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
- Zone V The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
- Zone VE Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
NO SCREEN	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
  (ortho) (vector)	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
   	Channel, Culvert, Aqueduct, or Storm Sewer
  	Dam, Jetty, Weir

	Levee, Dike, or Floodwall
 Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): <i>CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.</i>	
 CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
 OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
 22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
 17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
 8	Coastal Transect
 	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation. Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
 513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth

**ZONE AO
(DEPTH 2)
(VEL 15 FPS)**

Zone designation with Depth and Velocity

BASE MAP FEATURES

	<i>Missouri Creek</i>	River, Stream or Other Hydrographic Feature
		Interstate Highway
		U.S. Highway
		State Highway
		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% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% 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 Franklin 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% 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 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% 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% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% 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 Franklin 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 13. 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% annual chance floodplain corresponds to the SFHAs. The 0.2% 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.

Within this jurisdiction, there are one or more levees that have not been demonstrated by the communities or levee owners to meet the requirements of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. As such, the floodplain boundaries in this area are subject to change. Please refer to Section 4.4 of this FIS Report for more information on how this may affect the floodplain boundaries shown on this FIRM.

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
Birch Creek	Franklin County, Unincorporated Areas; St. Clair, City of; Union, City of	Approximately 0.21 mile downstream of State Highway 50	Prairie Del Road	07140103	3.9		N	VE, AE, AO	1989
Bourbeuse River	Franklin County, Unincorporated Areas; Union, City of	Approximately 0.22 mile downstream of St. Marys Road	Franklin County boundary	07140103	96.0		Y	AE	1997
Bourbeuse River Tributary	Franklin County, Unincorporated Areas; Union, City of	Approximately 0.57 mile downstream of State highway 50	Approximately 1.1 miles upstream of St. Andrews Drive	07140103	2.5		Y	AE	2007
Brown's Branch	Franklin County, Unincorporated Areas	Confluence with Dubois Creek	North Goodes Mill Road	10300200	4.9		N	AE	1997
Brush Creek	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Meramec River	Approximately 909 feet upstream of Robertsville Road	07140102	8.2		Y	AE	2017
Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Dubois Creek	Approximately 1 mile upstream of State Highway 100	10300200	4.9		Y	AE	2010
Calvey Creek	Franklin County, Unincorporated Areas	Confluence with the Meramec River	Jefferson/Franklin County Boundary	07140102	8.0		Y	AE	2017
Calvey Creek and Tributaries	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	1 square mile drainage area of all Zone A streams	07140102	6.2		N	A	2017
Calvey Creek Tributary 1	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Approximately 60 feet downstream of South Shore Drive	07140102	1.4		Y	AE	2017

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
Dubois Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Meramec River	Approximately 0.38 mile upstream of Calvey Creek Road	10300200	8.0		N	AE	2010
Fenton Creek	Franklin County, Unincorporated Areas; Union, City of	From approximately 0.27 mile downstream of confluence of Busch Creek	Approximately 1.2 miles upstream of State Highway 47	07140103	1.2		N	AE	2009
Fiddle Creek	Franklin County, Unincorporated Areas	From 165 feet downstream of Labadie Bottom Road	Fiddle Creek Road	10300200	3.8		Y	AE	1984
Flat Creek	Franklin County, Unincorporated Areas; Union, City of	From confluence with Bourbeuse River	Judith Springs Road	07140103	3.8		Y	AE	1981
Flat Creek North Tributary	Franklin County, Unincorporated Areas; Union, City of	From confluence with Flat Creek	Approximately 1.09 miles upstream of Park Avenue	07140103	1.2		Y	AE	1981
Guenzler Creek	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Jefferson/Franklin County Boundary	07140102	1.2		Y	AE	2017
Happy Sock Creek	Franklin County, Unincorporated Areas; St. Clair, City of	From confluence with Bourbeuse River	Approximately 0.27 mile upstream of County Highway AB	07140103	4.2		Y	AE	1984
Indian Creek and Tributaries	Franklin County, Unincorporated Areas	Indian Creek Confluence with Meramec River	1 square mile drainage area of all Zone A streams	07140102	21.6		N	A	2017
Labadie Creek	Franklin County, Unincorporated Areas	From confluence with Missouri River	County Highway MM	10300200	4.3		N	A	1984
Labadie Creek Tributary	Franklin County, Unincorporated Areas	From confluence with Labadie Creek	Approximately 0.63 mile upstream of County Highway T	10300200	0.7		N	A	1984

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
Little Fox Creek	Franklin County, Unincorporated Areas	Franklin/St. Louis County boundary	Approximately 2,525 feet upstream of Spring Valley Road	07140102	2.3		Y	AE	2017
Little Calvey Creek	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Approximately 1.6 miles upstream of Creek Bend Crossing	07140102	6.3		Y	AE	2017
Little Meramec River	Franklin County, Unincorporated Areas	Confluence of Pierce Creek	Approximately 1.6 miles upstream of Mo-F1	07140102	6.8		Y	AE	2017
Little Meramec River and Tributaries	Franklin County, Unincorporated Areas	Confluence with Little Meramec River	1 square mile drainage area of all Zone A streams	07140102	16.3		N	A	2017
Little Tavern Creek	Franklin County, Unincorporated Areas	From Chicago Rock Island Railroad	Approximately 0.46 mile upstream of County Highway T	10300200	1.5		N	AE	1984
Meramec River	Franklin County, Unincorporated Areas	Approximately 0.85 mile downstream of confluence of Wild Horse Creek	Franklin County boundary	07140102	70.5		Y	AE	2017
Meramec River and Tributaries	Franklin County, Unincorporated Areas	Confluence with Meramec River	1 square mile drainage area of all Zone A streams	07140102	48.4		N	A	2017
Missouri River	Franklin County, Unincorporated Areas; New Haven, City of; Washington, City of	From approximately 3.35 miles downstream of the Franklin County boundary	The upstream Franklin County boundary	10300200	44.5		Y	AE	1984
Monroe Branch	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Brush Creek	Approximately 60ft upstream of N Monroe Street	07140102	1.2		Y	AE	2017
Phelan Branch	Franklin County, Unincorporated Areas	Confluence with Meramec River	Jefferson/Franklin County Boundary	07140102	1.3		Y	AE	2017

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
Pin Oak Creek	Franklin County, Unincorporated Areas	Confluence with Bourbeuse River	County Highway AT	07140103	1.4		Y	AE	1984
Pin Oak Creek Tributary	Franklin County, Unincorporated Areas	Confluence with Pin Oak Creek	Approximately 0.2 mile upstream	07140103	0.2		N	AE	1984
Possum Creek	Franklin County, Unincorporated Areas	Confluence with Flat Creek	Approximately 0.65 mile upstream of Main Street	07140103	1.0		Y	AE	1984
South Branch Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.85 mile upstream of State Highway 100	10300200	1.1		Y	AE	1981
Southwest Branch Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.91 mile upstream of Country Club Road	10300200	4.4		Y	AE	1981
Saint John's Creek	Franklin County, Unincorporated Areas; Washington, City of	Missouri Pacific Railroad	Approximately 1.25 miles upstream of County Highway 100	10300200	3.8		Y	AE	1981
Thornton Branch	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Brush Creek	Approximately 2,119 feet upstream of Viaduct Street	07140102	0.9		Y	AE	2017
Unnamed Tributary to Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.3 mile upstream	07140102	0.3		Y	AE	1981
Wild Horse Creek	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Meramec River	Just downstream of Interstate 44	07140102	1.0		N	AE	2017
Winch Creek	Franklin County, Unincorporated Areas	Confluence with Meramec River	Approximately 1,562 feet upstream of Turkey Creek Road	07140102	4.3		Y	AE	2017
Winsel Creek	Franklin County, Unincorporated Areas; Oak Grove, Village of; Sullivan, City of	Bacon Ridge Road	Just upstream of Elmont Road	07140103	7.6		Y	AE	1979

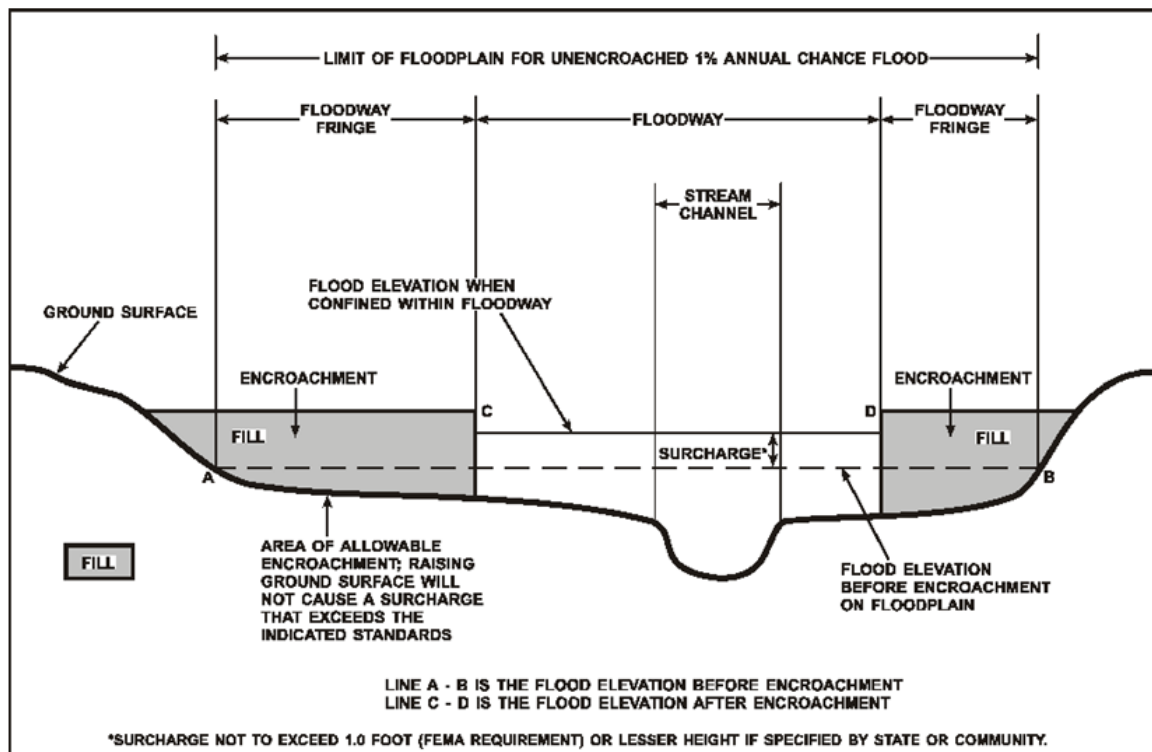
2.2 Floodways

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% 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% annual chance flood. The floodway fringe is the area between the floodway and the 1% 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% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

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

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross

sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "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% 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% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs 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.

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% 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% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Franklin County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Berger, City of	A, AE, X
Franklin County, Unincorporated areas	A, AE, X
Gerald, City of	X
Leslie, Village of	X
Miramiguo Park, Village of	AE, X
New Haven, City of	A, AE, D, X
Oak Grove, Village of	A, AE, X
Pacific, City of	AE, X
Parkway, Village of	X
St. Clair, City of	A, AE, X
Sullivan, City of	A, AE, X
Union, City of	AE, X
Washington, City of	A, AE, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information
[Not applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 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 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Lower Missouri Basin	10300200	Missouri River	Affects the northern portion of the county splitting through the middle of the City of Gerald and continues northeast	1,591
Bourbeuse River Basin	07140103	Bourbeuse River	Enters on the west of the county on the southern half of the City of Gerald, it continues east fully encompassing the City of Union, and then cuts back to the southwest bisecting both City of St. Clair and City of Sullivan	844
Meramec River Basin	07140102	Meramec River	Covers the other halves of the City of St. Clair and City of Sullivan and encompasses the southeastern portion of the county	2,150
Big River Basin	07140104	Big River	Smallest watershed within Franklin County, encompassing the southeastern corner of the county	970

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Franklin County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Pryors Branch	Most of the City of Berger in Franklin County is situated in the upland area above the floodplain of the Missouri River. Pryors Branch and its tributaries form the major stream system within the corporate limits. Road and railroad crossings, which constrict the flow during periods of heavy rains, produce flooding at and above the crossings. The area of the city that extends north of the Missouri Pacific Railroad embankment between the Missouri River and the bluff line is vulnerable to floods from the Missouri River. This area is sparsely populated and is used predominantly for agriculture.
Missouri River	Records dating back to 1844 indicate flood heights on the Missouri River at Hermann, Missouri, seven miles upstream, have exceeded flood stage many times. The flood of 1973, which was the highest in the last several years, was considered a 4 percent annual chance event. The flood of 1951 had a peak discharge of 618,000 cubic feet per second (cfs), and was estimated to be approximately the 1 percent annual chance event. In the past 25 years, water levels above flood stage have been recorded in 1951, 1952, 1958, 1960, 1961, 1972 and 1973 and in 1993. The Missouri River is the major source of flooding in Franklin County. In recent times, the elevation of 501.0 feet (approximately 2 percent annual chance event) recorded in 1951, has been the highest stage reached. During this flood, sandbagging prevented the New Haven central business district from being inundated but widespread flooding occurred in basements as a result of seepage and backups. In 1973, the river reached an elevation of 499.4 feet (Approximately 4 percent annual chance event), the highest since 1951. The construction of a levee protection system in 1955, which has an elevation of 504.2 feet, protected the central business district; but due to the prolonged length of time, the river was above flood stage, and seepage into basements and ground settlements caused problems to the city and individuals. The upland streams will experience minor flooding as a result of localized storms. In the Midwest, where large masses of cold and warm air collide, intense thunderstorm activity is common. The flash flooding which results from this activity is characterized by a rapid rise in stream levels with durations usually restricted to several hours. In 1993, what is known as “The Great Flood of 1993” caused unprecedented widespread flooding throughout the upper Mississippi River watershed. The record breaking flood stages caused an estimated \$20 billion worth of damage from the Missouri River and Mississippi River. Franklin County sharing its northern border with the Missouri River did not escape the damage.
Localized Rainfall	From December 2015 to January 2016 there was excess rainfall in central and southeastern United States; with more than 20 inches of rain falling in a 19-day period from December 12 to December 31, 2015. This resulted in major flooding, with 172 USGS stream gages recording peaks that ranked in the top 5 all time for the period of record. Franklin County, along with 36 other Missouri Counties and the City of St. Louis was declared Federal Disaster Areas.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Brush Creek	Land along the streams within the City of Pacific, Missouri is subject to flooding; and flood damage has occurred on several occasions in the past. The principal flood problems occur along the eastern edge of the corporate limits due to Meramec River flooding and along the entire reach of Brush Creek that is within the corporate limits.
Winsel Creek	Winsel Creek in Franklin County is another major source of flooding and the floodplains are primarily farmland or undeveloped, therefore, flood problems are limited to the inundation of fields and a few crossroads. The tributaries of Winsel Creek extend into the more urbanized areas of the city and cause minor flooding, generally due to restricted culvert openings. The area's most commonly affected are the intersection of Elmont Road and Springfield Road in the southern end of the city, and at the ends of Grace Avenue and Meramec Drive in the north. Minor flooding also occurs between Clark and Church Streets, northwest of the railroad track in the downtown area. This flooding often extends down Euclid Avenue toward the Elmont Road/Springfield Road area previously mentioned. Flooding in these areas and along Winsel Creek is generally caused by flash flooding from localized storms. Flash flooding results from the intense thunderstorm activity associated with the Midwest where large masses of cold and warm air collide. This type of flooding is characterized by a rapid rise in stream levels with durations usually restricted to several hours. The most recent occurrences of this type occurred on August 26, 1975, and August 10 and 22, 1977. Rainfall amounts for these dates were 3.71, 3.70, and 4.91 inches, respectively.
Missouri River	Much of the City of Washington is situated in the upland area above the floodplain of the Missouri River. Busch Creek, Saint Johns Creek, Dubois Creek and their tributaries also have floodplain areas within the corporate limits. The community has experienced flooding from the Missouri River and the tributary streams that flow through the community. Flooding from the Missouri River has already been covered early in this text.

Table 7 contains information about historic flood elevations in the communities within Franklin County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Bourbeuse River	Highway 50 Bridge, East of Union, MO	34.48	2015	362	USGS gage 07016500
Bourbeuse River	Highway 50 Bridge, East of Union, MO	28.80	2017	60	USGS gage 07016500
Meramec River	Highway F Bridge, South East of Pacific, MO	33.42	2015	100	USGS gage 07017020

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Meramec River	Highway F Bridge, South East of Pacific, MO	33.05	2017	100	USGS gage 07017020

4.3 Non-Levee Flood Protection Measures

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

**Table 8: Non-Levee Flood Protection Measures
[Not Applicable to this Flood Risk Project]**

4.4 Levees

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 risk from the 1% 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 FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% 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 Section 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's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in 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 Franklin County.

Figure 3 and in Table 9. 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 Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance

deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within Franklin County. Table 9, "Levees," lists all accredited levees, PALs, and de-accredited levees 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. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 9 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE National Levee Database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 31.

Please note that FEMA has identified levees in this jurisdiction that have not been demonstrated by the community or levee owner to meet the requirements of 44 CFR 65.10 of the NFIP regulations as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. As such, the existing flood hazard analysis in the affected areas has been carried forward from the previously-printed effective FIRM panel(s) and the area has been clearly identified on the FIRM panel with notes and bounding lines. This has been done to inform users that a temporary mapping action has been put in place until such time as FEMA is able to initiate a new flood risk project to apply new flood hazard mapping procedures for leveed areas. These levees occur on FIRM panel(s) 29071C0105E, on the Missouri River, and are identified on the FIRM panel(s) as potential areas of flood hazard data changes based on further review. Levees and their accreditation status are listed in Table 9 of this FIS Report.

Table 9: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
New Haven, City of	Missouri River	Left Bank	Berger Levee District of Franklin County, Missouri	Yes	3605000117	Yes	29071C0105E

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% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the “1-percent-plus”, or “1%+”, annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% “plus”). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for

each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brady Creek	At the confluence with Calvey Creek	21.76	1,030	1,460	1,840	2,260	*	3,400
Brady Creek	Approximately 3,270 feet upstream of Calvey Creek Road	3.01	880	1250	1,580	1,940	*	2,970
Brady Creek	At the confluence with Brady Creek Tributary 1	2.17	640	910	1,140	1,420	*	2,200
Brady Creek	At Mount Pleasant Drive	0.4	120	170	210	260	*	390
Brady Creek Tributary 1	At the confluence with Brady Creek	1.29	410	590	750	930	*	1,420
Brady Creek Tributary 1	Approximately 3,500 feet upstream of Calvey Creek Road	0.71	240	350	450	550	*	840
Birch Creek	At confluence with Bourbeuse River	12.3	4,406	*	6,675	7,683	*	12,715
Birch Creek	At Prairie Dell Road	5.7	2,155	*	3,265	3,761	*	6,246
Bourbeuse River	At the confluence with the Meramec River	846	23,300	*	33,900	38,900	*	51,800
Bourbeuse River	Approximately 3.5 miles upstream of Northbend Road	781	26,900	*	40,300	46,400	*	62,500
Bourbeuse River	At County Highway CC	608	31,200	*	51,400	61,800	*	91,000

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Bourbeuse River	Approximately 6.4 miles upstream of County Highway H	471	28,600	*	46,600	55,400	*	79,700
Bourbeuse River	Union Gage at U.S. Highway 50	808	23,700	*	34,500	39,600	*	52,600
Bourbeuse River Tributary	At the confluence with Bourbeuse River	3	1,285	*	1,951	2,248	*	3,729
Brown's Branch	At the confluence with Dubois Creek	14.1	3,450	*	5,300	6,100	*	8,400
Brown's Branch	Upstream of tributary, approximately 0.76 mile downstream of Busch Road	7.9	2,450	*	3,700	4,250	*	6,100
Brown's Branch	Approximately 0.94 mile upstream of North Goodes Mill Road	2.4	1,200	*	1,850	2,100	*	2,900
Brown's Branch	At North Goodes Mill Road	1.1	750	*	1,150	1,300	*	1,800
Brush Creek	Approximately 4,210 feet downstream of Gray Summit Road	3.96	1,170	1,650	2,070	2,590	*	3,960
Brush Creek	Approximately 66 feet upstream of South 1st Street	10.58	2,900	4,130	5,190	6,370	*	10,000
Brush Creek	Approximately 64 feet upstream of Denton Road	8.96	2,410	3,440	4,330	5,310	*	8,430

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brush Creek	Approximately 7,111 feet downstream of Gray Summit Road	4.96	1,470	2,070	2,590	3,230	*	4,960
Brush Creek	Approximately 1,447 feet upstream of confluence with Meramec River	10.88	2910	4140	5230	6430	*	10,070
Brush Creek	Approximately 1,640 feet upstream of confluence with Meramec River	10.74	2,870	4,090	5,160	6,350	*	9,940
Brush Creek	At the confluence with Monroe Branch	8.93	2,410	3,440	4,330	5,310	*	8,430
Brush Creek	Approximately 577 feet upstream of Trail House Loop Road	1.73	620	890	1,130	1,400	*	2,130
Brush Creek	Approximately 168 feet upstream of Quarry Road	2.33	750	1,070	1,380	1,710	*	2,660
Brush Creek	Approximately 2,862 feet upstream of Quarry Road	1.82	630	920	1,170	1,440	*	2,200
Brush Creek	Approximately 9,066 feet downstream of Gray Summit Road	5.71	1,660	2,360	2,930	3,620	*	5,640
Brush Creek	At the confluence with Thornton Branch	8.01	2,220	3,150	3,930	4,840	*	7,640
Brush Creek	Approximately 4,973 feet downstream of Gray Summit Road	4.73	1,410	1,990	2,480	3,100	*	4,750

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brush Creek	Approximately 1,198 feet downstream of Gray Summit Road	3.08	910	1,300	1,650	2,040	*	3,170
Brush Creek	Approximately 4,057 feet downstream of Gray Summit Road	3.25	950	1,350	1,700	2,120	*	3,260
Brush Creek	Approximately 909 feet upstream of Robertsville Road	1.29	480	690	870	1,070	*	1,610
Brush Creek	Approximately 286 feet upstream of Denton Road	9.13	2,460	3,510	4,420	5,420	*	8,590
Brush Creek	At the confluence with the Meramec River	10.9	2,820	4,030	5,090	6,280	*	9,870
Brush Creek	Approximately 2,382 feet downstream of S 1st Street	10.69	2,890	4,110	5,180	6,370	*	9,980
Calvey Creek	At the confluence with the Meramec River	40.93	7,480	10,400	13,330	16,690	*	25,880
Calvey Creek	Approximately 5,840 feet downstream of the confluence with Calvey Creek Tributary 1	39.95	7,490	10,400	13,370	16,750	*	26,000
Calvey Creek	Approximately 2,168 feet downstream of the confluence with Calvey Creek Tributary 1	39.13	7,750	10,690	13,670	17,060	*	26,440

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Calvey Creek	At the confluence with Calvey Creek Tributary 1	38.48	7,700	10,580	13,550	16,930	*	26,240
Calvey Creek	At the confluence with Little Calvey Creek	36.45	7,390	10,170	13,200	16,570	*	25,740
Calvey Creek	Approximately 70 feet downstream of Calvey Crossing Lane	27.74	5,340	7,750	9,920	12,240	*	18,640
Calvey Creek	At the confluence with Calvey Creek Tributary 2	26.67	5,200	7,570	9,660	11,930	*	18,190
Calvey Creek	At the confluence with Brady Creek	25.24	5,050	7,400	9,440	11,610	*	17,670
Calvey Creek	Approximately 1,580 feet downstream of the confluence with Guenzler Creek	21.28	4,610	6,770	8,540	10,450	*	15,570
Calvey Creek	At the confluence with Guenzler Creek	21.2	4,650	6,820	8,580	10,480	*	15,670
Calvey Creek	Approximately 470 feet upstream of Highway HH	15.82	3,800	5,520	6,890	8,490	*	12,640
Calvey Creek	Approximately 2,225 feet upstream of Tom Frost Road	13.55	3,450	4,960	6,290	7,780	*	11,720
Calvey Creek	Approximately 470 feet upstream of Highway HH	0.7	220	310	390	480	*	730

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Calvey Creek	Approximately 1,965ft downstream of Calvey Church Road	10.74	3,020	4,290	5,370	6,600	*	9,920
Calvey Creek	Approximately 2,710 feet upstream of Calvey Church Road	5.87	1,630	2,290	2,870	3520	*	5,250
Calvey Creek	Approximately 340 feet upstream of Woodland Road	3.38	940	1,320	1,660	2,040	*	3,050
Calvey Creek	Approximately 630 feet downstream of Gravois Road	0.96	310	430	540	660	*	1,000
Calvey Creek Tributary 1	Approximately 75 feet upstream of the confluence with Calvey Creek	1.69	490	700	880	1,090	*	1,640
Calvey Creek Tributary 1	Approximately 4,165 feet upstream of the confluence with Calvey Creek	1.43	430	610	770	940	*	1,410
Calvey Creek Tributary 1	Approximately 7,265 feet upstream of the confluence with Calvey Creek	0.61	160	230	300	370	*	560
Calvey Creek Tributary 2	Approximately 1,270 feet upstream of the confluence with Calvey Creek	0.95	300	420	530	660	*	1,010

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Dubois Creek	Downstream of confluence with Busch Creek	34.5	13,000	*	20,400	24,100	*	42,200
Dubois Creek	Upstream of confluence with Busch Creek	22.4	7,990	*	13,100	15,600	*	27,500
Dubois Creek	Approximately 0.66 mile downstream of N Goodes Mill Road	7.1	2,050	*	3,100	3,500	*	4,750
Dubois Creek	At Bieker Road	4.0	1,600	*	2,450	2,850	*	3,800
Dubois Creek	At State Highway 47	2.4	1,250	*	1,950	2,250	*	3,000
Dubois Creek	Approximately 1.16 miles upstream of State Highway 47	1.1	780	*	1,200	1,400	*	1,950
Fiddle Creek	At Chicago, Rock Island & Pacific Railroad	9.4	2,900	*	4,600	5,300	*	7,100
Fiddle Creek	Upstream of tributary (near first crossing of Fiddle Creek Road)	5.8	2,400	*	3,750	4,300	*	6,000
Fiddle Creek	At Fiddle Creek Road (second crossing)	3.9	1,800	*	2,750	3,200	*	4,400
Fiddle Creek	At Fiddle Creek Road (fourth crossing)	2.4	1,300	*	2,050	2,400	*	3,250
Flat Creek North Tributary	Confluence with Flat Creek	1.9	1,310	*	1,950	2,230	*	2,660

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Happy Sock Creek	At confluence with Bourbeuse River	8.2	3,200	*	5,500	6,200	*	9,400
Happy Sock Creek	At County Highway AD	6.4	2,800	*	4,850	5,500	*	8,200
Happy Sock Creek	At Happy Sock Road North Crossing	6.7	2,750	*	4,700	5,400	*	7,800
Happy Sock Creek	At Happy Sock Road South Crossing	5.2	2,600	*	4,350	5,100	*	7,200
Happy Sock Creek	At East Happy Sock Road	4.0	2,400	*	3,850	4,450	*	5,200
Happy Sock Creek	Approximately 1,000 feet upstream of County Highway AB	3.1	2,200	*	3,550	4,050	*	5,600
Labadie Creek	At downstream Missouri and Pacific Railroad	15.2	3,500	*	5,400	6,200	*	8,900
Labadie Creek	At Missouri and Pacific Railroad (2,000 feet downstream of County highway MM)	10.5	3,400	*	5,300	6,100	*	8,500
Labadie Creek	At County Highway MM	4.6	1,800	*	2,700	3,150	*	4,200
Labadie Creek Tributary	At confluence with Labadie Creek	1.5	760	*	1,150	1,300	*	1,800
Little Calvey Creek	Just upstream of the confluence with Calvey Creek	8.06	2,310	3,260	4,090	5,030	*	7,380

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Calvey Creek	Approximately 901 feet downstream of Little Calvey Valley Road	7.34	2,160	3,050	3,830	4,720	*	6,980
Little Calvey Creek	Approximately 30 feet downstream of Little Calvey Creek Road	6.6	2,010	2,840	3,580	4,430	*	6,560
Little Calvey Creek	Approximately 2,780 feet downstream of Woodland Hills Road	5.43	1,740	2,470	3,120	3,860	*	5,720
Little Calvey Creek	Approximately 410 feet upstream of Woodland Hills Road	5.25	1,450	2,060	2,590	3,190	*	4,750
Little Calvey Creek	Approximately 15 feet downstream of Finney Road	3.73	1,060	1,500	1,890	2,320	*	3,450
Little Calvey Creek	At Creek Bend Crossing	3.11	890	1,260	1,580	1,940	*	2,880
Little Calvey Creek	Approximately 4,285 feet upstream of Creek Bend Crossing	2.27	650	920	1,150	1,410	*	2,100
Little Calvey Creek	Approximately 7,220 feet upstream of Creek Bend Crossing	1.48	400	570	720	880	*	1,320
Little Calvey Creek	Approximately 8,335 feet upstream of Creek Bend Crossing	0.77	190	270	350	430	*	640

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Fox Creek	Approximately 233 feet downstream of Fox Creek Crossing Drive	4.69	1,190	1,740	2,230	2,780	*	4,260
Little Fox Creek	Approximately 2,525 feet upstream of Spring Valley Road	1.02	260	370	480	590	*	900
Little Fox Creek	Approximately 2,541 feet upstream of Spring Valley Road	1.72	440	630	810	1,010	*	1,540
Little Fox Creek	Approximately 50 feet upstream of the confluence with Fox Creek	5.23	1,310	1,920	2,460	3,070	*	4,710
Little Fox Creek	Approximately 520 feet downstream from State Highway 00	2.44	620	900	1,150	1,440	*	2,200
Little Fox Creek	Approximately 1,373 feet downstream of Spring Valley Drive	3.5	910	1,320	1,690	2,100	*	3,220
Little Meramec River	Approximately 211 feet upstream of the confluence with the Meramec River	35.83	8,010	11,410	14,530	18,060	*	27,860
Little Meramec River	Approximately 1,245 feet downstream of Highway FF	12.78	3,440	4,860	6,170	7,680	*	11,630
Little Meramec River	Approximately 1,333 feet upstream of Project Road	1.36	390	540	680	830	*	1,240

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Meramec River	Approximately 3,292 feet upstream of the confluence with Little Meramec River Tributary 2	4.29	1,210	1,710	2,150	2,650	*	3,960
Little Meramec River	Approximately 5,232 feet upstream of Mill Hill Road	34.25	8,260	11,710	14,830	18,360	*	28,250
Little Meramec River	Approximately 1,267 feet upstream of Highway FF	11.81	3,250	4,600	5,820	7,230	*	10,910
Little Meramec River	Approximately 1,932 feet upstream of Gravois Road	13.58	3,630	5,110	6,490	8,090	*	12,280
Little Meramec River	Approximately 1,300 feet downstream of Mill Hill Road	35.22	8,230	11,640	14,830	18,390	*	28,360
Little Meramec River	Approximately 4,383 feet downstream of the confluence with Pierce Creek	32.57	8,050	11,420	14,460	17,890	*	27,430
Little Meramec River	Approximately 63 feet upstream of the confluence with Pierce Creek	14.31	3,740	5,230	6,630	8,260	*	12,700
Little Meramec River	At the confluence with Little Meramec River Tributary 1	9.15	2,610	3,690	4,650	5,740	*	8,590
Little Meramec River	At the confluence with Little Meramec River Tributary 3	1.82	500	710	900	1,110	*	1,670
Little Meramec River	At the confluence with Little Meramec River Tributary 2	5.28	1,480	2,100	2,640	3,250	*	4,860

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Meramec River	Approximately 60 feet upstream of the confluence with Little Meramec Tributary 3	1.5	430	600	750	920	*	1,370
Little Tavern Creek	At Chicago Rock Island & Pacific Railroad	1.7	*	*	*	*	*	*
Little Tavern Creek	Approximately 0.38 mile downstream of County Highway T	1.3	*	*	*	*	*	*
Little Tavern Creek	At County Highway T	0.9	*	*	*	*	*	*
Missouri River	At Creve Coeur Creek	523,969	443,000	*	606,000	674,000	*	829,000
Missouri River	At Femme Osage River	523,801	442,000	*	606,000	674,000	*	830,000
Missouri River	At Charrette Creek	523,423	441,000	*	605,000	674,000	*	831,000
Missouri River	At Lost Creek	523,060	440,000	*	605,000	673,000	*	832,000
Missouri River	At Hermann Gage	522,488	439,000	*	604,000	673,000	*	833,000
Monroe Branch	Approximately 60 feet upstream of N Monroe Street	0.35	120	170	220	280	*	430
Monroe Branch	Approximately 79 feet upstream of Thornton Street	0.56	190	280	360	450	*	700
Monroe Branch	Approximately 68 feet Upstream of the confluence with Brush Creek	0.74	260	380	490	610	*	940
Pin Oak Creek	At confluence with the Bourbeuse River	7.2	2,920	*	4,600	5,300	*	7,300

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Pin Oak Creek	Just downstream of Unnamed Tributary (Approximately 0.95 mile upstream of mouth)	6.1	2,870	*	4,550	5,300	*	7,100
Pin Oak Creek	Approximately 0.38 mile downstream of County Highway AT	4.0	2,130	*	3,390	3,920	*	5,400
Pin Oak Creek	At County Highway AT	1.9	1,170	*	1,830	2,110	*	2,900
Pin Oak Creek Tributary	At confluence with Pin Oak Creek	1.9	950	*	1,560	1,730	*	2,450
Possum Creek	At confluence with Flat Creek	0.5	630	*	920	1,040	*	1,180
South Branch Busch Creek	At confluence with Dubois Creek	2.7	1,760	*	2,800	3,260	*	5,540
South Branch Busch Creek	Approximately 370 miles upstream of State Highway 47	2.6	1,193	*	1,823	2,104	*	3,512
South Branch Busch Creek	Approximately 0.53 mile upstream of State Highway 47	1.4	842	*	1,311	1,521	*	2,585
Southwest Branch Busch Creek	At confluence of Busch Creek	5.6	2,170	*	3,260	4,200	*	7,670
Southwest Branch Busch Creek	Just downstream of State Highway 47	4.8	1,855	*	2,908	3,383	*	5,785

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Southwest Branch Busch Creek	Approximately 0.61 mile upstream of State Highway 47	4.6	2,487	*	3,818	4,413	*	7,407
St. John's Creek	Chicago-Rock Island and Missouri Pacific railroad bridge	85.4	7,000	*	10,000	11,500	*	15,000
St. John's Creek	At State Highway 100	82.6	7,000	*	*	*	*	*
Thornton Branch	Approximately 2,119 feet upstream of Viaduct Street	1.01	280	410	520	650	*	1,020
Thornton Branch	Approximately 52 feet upstream of W Union Street	1.3	390	550	700	860	*	1,350
Thornton Branch	Approximately 41 feet upstream of the confluence with Brush Creek	1.44	430	620	780	950	*	1,450
Unnamed Tributary to Busch Creek	At confluence with Busch Creek	1.0	736	*	1,190	1,400	*	2,430
Wild Horse Creek ¹	At the confluence with Meramec River.	0.84	N/A	N/A	N/A	N/A	N/A	N/A
Wild Horse Creek ¹	Approximately 40 feet downstream of E Sand Street	0.46	150	210	270	340	*	530
Winch Creek	At Phelan Farm Road	5.45	1,410	2,070	2,660	3,240	*	4,820
Winch Creek	Approximately 1,715 feet upstream of Turkey Creek Road	0.98	260	380	480	600	*	910

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Winch Creek	Approximately 90 feet downstream of Turkey Creek Road	1.1	290	420	540	670	*	1,020
Winch Creek	Approximately 2,080 feet downstream of Turkey Creek Road	1.53	420	610	770	960	*	1,460
Winch Creek	At Harmon Hill Lane	2.27	620	890	1,140	1,410	*	2,150
Winch Creek	Approximately 30 feet upstream of Highway 3	2.8	750	1,090	1,390	1,730	*	2,640
Winch Creek	Approximately 2,278 feet downstream of State Highway 0	3.57	960	1,400	1,790	2,210	*	3,360
Winch Creek	Approximately 4,972 feet downstream of State Hwy 0	4.17	1,110	1,620	2,070	2,570	*	3,900
Winch Creek	Approximately 5,884 feet upstream of Phelan Farm Road	4.36	1,150	1,680	2,150	2,670	*	4,050
Winch Creek	Approximately 6,050 feet upstream of Phelan Farm Road	0.54	180	250	320	390	*	590
Winch Creek	Approximately 6,700 feet upstream of Phelan Farm Road	5.1	1,350	1,970	2,530	3,140	*	4,740
Winsel Creek	At Bacon Ridge Road	8.8	2,790	*	4,810	5,520	*	8,200
Winsel Creek	At Interstate Highway 44	6.8	2,520	*	4,100	4,830	*	6,800

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Winsel Creek	Approximately 2,200 feet upstream of Springfield Road	5.5	2,350	*	3,850	4,500	*	6,500
Winsel Creek	At Springfield Road	4.3	2,020	*	3,170	3,870	*	5,600
Winsel Creek	At Acid Mine Road	4.0	1,880	*	3,020	3,630	*	5,200
Winsel Creek	Downstream corporate limits	4.0	1,880	*	3,020	3,630	*	4,814
Winsel Creek	County Highway AF	3.0	1,690	*	2,720	3,240	*	4,120
Winsel Creek	Approximately 7,200 feet upstream of County Highway AF	4.0	1,650	*	2,580	3,050	*	3,700
Winsel Creek	At Elmont Road	4.0	500	*	810	940	*	1,190

*Not calculated for this Flood Risk Project

¹Hydrology and hydraulics performed using two-dimensional rain-on-grid analysis method in HEC-RAS

Figure 7: Frequency Discharge-Drainage Area Curves

[Not applicable to this Flood Risk Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

[Not applicable to this Flood Risk Project]

Table 12: Stream Gage Information used to Determine Discharges

[Not applicable to this Flood Risk Project]

5.2 Hydraulic Analyses

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

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. 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 13: 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
Birch Creek	Approximately 0.21 mile downstream of State Highway 50	Prairie Del Road	USACE HEC1 Flood Hydrograph Package	HEC-RAS 4.0	1989	VE, AE, AO	
Bourbeuse River	Approximately 0.22 mile downstream of St. Marys Road	Franklin County boundary	Gage Regression	USACE HEC-2 Step-backwater Program	1997	A, AE	
Bourbeuse River Tributary	Approximately 0.57 mile downstream of State Highway 50	Approximately 1.1 miles upstream of St. Andrews Drive	USACE HEC1 Flood Hydrograph Package	HEC-RAS 4.0	2007	A, AE	
Brown's Branch	Confluence with Dubois Creek	North Goodes Mill Road	Rural Regression	USACE HEC-2 Step-backwater Program	1997	A, AE	
Brush Creek	Franklin/St. Louis County Boundary	Approximately 909 feet upstream of Robertsville Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Busch Creek	Confluence with Dubois Creek	Approximately 1 mile upstream of State Highway 100	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2010	A, AE	
Calvey Creek	Confluence with the Meramec River	Jefferson/Franklin County Boundary	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: 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
Calvey Creek and Tributaries	Confluence with Calvey Creek	1 square mile drainage area of all Zone A streams	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	A	None
Calvey Creek Tributary 1	Confluence with Calvey Creek	Approximately 60ft downstream of South Shore Drive	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Dubois Creek	Confluence with Meramec River	Approximately 0.38 mile upstream of Calvey Creek Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2010	A, AE	
Fenton Creek	Approximately 0.27 mile downstream of confluence of Busch Creek	Approximately 1.2 miles upstream of State Highway 47	USACE HEC1 Flood Hydrograph Package	Redelineation	2009	A, AE	
Fiddle Creek	165 feet downstream of Labadie Bottom Road	Fiddle Creek Road	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Flat Creek	Confluence with Bourbeuse River	Judith Springs Road	USACE HEC1 Flood Hydrograph Package	Redelineation	2011	A, AE	
Flat Creek North Tributary	Confluence with Flat Creek	Approximately 1.09 miles upstream of Park Avenue	USACE HEC1 Flood Hydrograph Package	Redelineation	2011	A, AE	
Guenzler Creek	Confluence with Calvey Creek	Jefferson/Franklin County Boundary	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: 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
Happy Sock Creek	Confluence with Bourbeuse River	Approximately 0.27 mile upstream of County Highway AB	Urban Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Indian Creek and Tributaries	Indian Creek Confluence with Meramec River	1 square mile drainage area of all Zone A streams	Rural Regression	HEC-RAS 4.1	10/1/2017	A	None
Labadie Creek	Confluence with Missouri River	County Highway MM	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A	
Labadie Creek Tributary	Confluence with Labadie Creek	Approximately 0.63 mile upstream of County Highway T	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A	
Little Calvey Creek	Confluence with Calvey Creek	Approximately 1.6 miles upstream of Creek Bend Crossing	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Little Fox Creek	Franklin/St. Louis County Boundary	Approximately 2,525 feet upstream of Spring Valley Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: 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
Little Meramec River	Confluence with the Meramec River	Confluence with Little Meramec River Tributary 2	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Little Meramec River and Tributaries	Confluence with Little Meramec River	1 square mile drainage area of all Zone A streams	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	A	
Little Tavern Creek	Chicago Rock Island Railroad	Approximately 0.46 mile upstream of County Highway T	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Meramec River	Franklin/St. Louis County boundary	Crawford/Washington County boundary	Gage-Regression	HEC-RAS 5.0.3	10/1/2017	AE w/ Flood-way	Discharges determined by performing analysis of gage records at USGS 07014500 and USGS 07019000 in accordance with methodologies discussed in USGS Scientific Investigations Report 2014-5165
Meramec River and Tributaries	Confluence with Meramec River	1 square mile drainage area of all Zone A streams	Rural Regression	HEC-RAS 4.1	10/1/2017	A	

Table 13: 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
Missouri River	Approximately 3.35 miles downstream of the Franklin County boundary	Upstream Franklin County boundary	Log Pearson Type III Analysis	UNET Unsteady Flow Computer Modeling Program	2003	N/A	
Monroe Branch	Confluence with Brush Creek	Approximately 60 feet upstream of N Monroe Street	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Phelan Branch	Confluence with Meramec River	Jefferson/Franklin County Boundary	Rural Regression	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Region 2 rural regression equations listed in USGS Scientific Investigations Report 2014-5165
Pin Oak Creek	Confluence with Bourbeuse River	County Highway AT	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Pin Oak Creek Tributary	Confluence with Pin Oak Creek	Approximately 0.2 mile upstream	Rural Regression	USACE HEC-2 Step-backwater Program	2011	A, AE	
Possum Creek	Confluence with Flat Creek	Approximately 0.65 mile upstream of Main Street	USACE HEC-1NFlood Hydrograph Package	Redelineation	2011	A, AE	

Table 13: 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
South Branch Busch Creek	Confluence with Busch Creek	Approximately 0.85 mile upstream of State Highway 100	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2011	A, AE	
Southwest Branch Busch Creek	Confluence with Busch Creek	Approximately 0.91 mile upstream of Country Club Road	Rainfall-Runoff Model (HEC-HMS)	Redelineation	2011	A, AE	
Saint John's Creek	Missouri Pacific Railroad	Approximately 1.25 miles upstream of County Highway 100	Rural Regression	Redelineation	2011	A, AE	
Thornton Branch	Confluence with Brush Creek	Approximately 2,119 feet upstream of Viaduct Street	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Unnamed Tributary to Busch Creek	Confluence with Busch Creek	Approximately 0.3 mile upstream	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2011	A, AE	
Wild Horse Creek	Franklin/St. Louis County Boundary	Downstream of I-44	Excess Rainfall	HEC-RAS 5.0.3	10/1/2017	A, AE	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Winch Creek	Confluence with the Meramec River	Approximately 1,562 feet upstream of Turkey Creek Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Winsel Creek	Bacon Ridge Road	Just upstream of Elmont Road	Empirical Relations based on Regional Regression	USACE HEC-2 Step-backwater Program	2011	A, AE	

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Birch Creek	0.020 – 0.030	0.020 – 0.090
Bourbeuse River	0.030 – 0.060	0.035 – 0.110
Bourbeuse River Tributary	0.020 – 0.030	0.020 – 0.090
Brown’s Branch	0.030 – 0.100	0.030 – 0.180
Brush Creek	0.042 – 0.045	0.020 – 0.120
Busch Creek	0.017 – 0.060	0.020 – 0.100
Calvey Creek	0.015 – 0.120	0.013 – 0.120
Calvey Creek Tributary 1	0.045 – 0.120	0.045 – 0.120
Dubois Creek	0.017 – 0.060	0.020 – 0.100
Fenton Creek	*	*
Fiddle Creek	*	*
Flat Creek	0.045 – 0.065	0.060 – 0.090
Flat Creek North Tributary	*	*
Guenzler Creek	0.045 – 0.120	0.045 – 0.120
Happy Sock Creek	0.045 – 0.065	0.060 – 0.090
Labadie Creek	*	*
Labadie Creek Tributary	*	*
Little Calvey Creek	0.013 – 0.120	0.011 – 0.110
Little Fox Creek	0.045 – 0.120	0.0130 – 0.120
Little Meramec River	0.015 – 0.120	0.015 – 0.120
Little Tavern Creek	*	*
Meramec River	0.035 – 0.040	0.013 – 0.150
Missouri River	0.014 – 0.038	0.030 – 0.200
Monroe Branch	0.045 – 0.120	0.020 – 0.120
Pin Oak Creek	0.045 – 0.065	0.060 – 0.090
Pin Oak Creek Tributary	0.045 – 0.065	0.060 – 0.090
Phelan Branch	0.045 – 0.120	0.060 – 0.120
Possum Creek	*	*
South Branch Busch Creek	0.017 – 0.060	0.020 – 0.100
Southwest Branch Busch Creek	0.017 – 0.060	0.020 – 0.100
St. John’s Creek	0.03 – 0.100	0.030 – 0.180
Thornton Branch	0.045 – 0.110	0.090 – 0.120
Unnamed Tributary to Busch Creek	0.017 – 0.060	0.020 – 0.100
Wild Horse Creek	*	*
Winch Creek	0.045 – 0.120	0.060 – 0.120

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Winsel Creek	0.035 – 0.075	0.035 – 0.085
Various Zone A Streams	0.015 – 0.120	0.015 – 0.120

*Data Not Available

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses

[Not applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not applicable to this Flood Risk Project]

Table 16: 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 17: 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 18: Summary of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

Table 19: 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 or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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.

Table 20: Countywide Vertical Datum Conversion
[Not Applicable to this Flood Risk Project]

Table 21: Stream-Based Vertical Datum Conversion
[Not Applicable to this Flood Risk Project]

6.2 Base Map

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

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Orthography	NAIP	2016	1:5,000	Location of roads, railroads, bridges, streams, and other physical features shown on the FIRM
Political boundaries	FEMA	2006	1:12,000	Municipal and county boundaries
Public Land Survey System (PLSS)	MDA	2014	1:12,000	Spatial and attribute information for sections and land grants in Franklin County, USA
Transportation Features	MDOT	2014	1:12,000	Spatial and attribute information of transportation features shown on the FIRM
Flood Risk Project Areas	FEMA	2016	1:12,000	Spatial and attribute information of the revised areas in the flood risk project
FIRM Panels	FEMA	2016	1:12,000	Spatial and attribute information about the FIRM panel area

6.3 Floodplain and Floodway Delineation

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

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

described in Table 23. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% 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 24, "Floodway Data."

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. All topographic data used for modeling or mapping has been converted as necessary to NAVD88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-encroachment widths, if calculated, are shown in Table 25, "Flood Hazard and Non-Encroachment Data for Selected Streams."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Franklin County, Unincorporated areas	10300200, 07140103, 07140102, 07140104	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Pacific, City of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Miramiguoa Park, Village of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Parkway, Village of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Union, City of	07140103	Elevation contour data, 2-foot intervals	Unknown	Unknown	City of Union, 1996

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Washington, City of	10300200	Elevation contour data, 2-foot intervals	Unknown	Unknown	City of Washington, 1996
Berger, City of	10300200	*	*	*	*
Gerald, City of	07140103, 10300200	*	*	*	*
Leslie, Village of	07140103, 10300200	*	*	*	*
New Haven, City of	10300200	*	*	*	*
Oak Grove, Village of	07140103	*	*	*	*
Sullivan, City of	0714103, 0714102	*	*	*	*
St. Clair, City of	07140103, 07140102	*	*	*	*

*Data Not Available

BFEs shown at cross sections on the FIRM represent the 1% 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 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,750	288	1,315	5.8	499.0	490.7 ²	491.7	1.0
B	5,086	120	938	8.2	499.0	494.9 ²	494.9	0.0
C	8,000	310	1,203	6.4	500.1	500.1	500.4	0.3
D	9,565	115	959	8.0	503.7	503.7	504.6	0.9
E	12,620	127	585	13.1	510.7	510.7	510.7	0.0
F	13,930	160	1,198	6.4	515.6	515.6	515.6	1.0
G	15,930	95	725	10.6	519.6	519.6	519.7	0.1
H	17,700	63	521	7.2	524.3	524.3	525.0	0.7
I	20,030	61	435	8.6	528.6	528.6	529.5	0.9
J	24,164	42	349	10.8	543.3	543.3	543.3	0.5

¹Feet above confluence with Bourbeuse River

²Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	FRANKLIN COUNTY, MISSOURI	
	AND INCORPORATED AREAS	

FLOODING SOURCE: BIRCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,584	810	10,220	3.8	489.9	489.9	490.8	0.9
B	11,933	1,701	26,032	1.5	492.7	492.7	493.7	1.0
C	20,064	543	9,519	4.1	494.1	494.1	495.0	0.9
D	29,462	1,480	22,123	1.8	495.9	495.9	496.8	0.9
E	34,003	681	9,874	3.9	496.8	496.8	497.7	0.9
F	44,352	1,386	16,246	2.4	499.7	499.7	500.6	0.9
G	45,698	433	7,092	5.5	500.3	500.3	501.2	0.9
H	48,628	959	14,564	2.7	502.0	502.0	502.8	0.8
I	53,539	415	6,476	6.0	503.4	503.4	504.3	0.9
J	60,720	1,195	19,039	2.0	507.3	507.3	508.2	0.9
K	67,003	405	6,937	5.6	509.4	509.4	510.3	0.9
L	78,672	1,380	22,980	1.7	514.0	514.0	514.9	0.9
M	83,213	475	8,293	4.8	515.5	515.5	516.1	0.6
N	89,180	1,430	23,392	1.7	519.5	519.5	520.1	0.6
O	95,410	812	14,597	2.7	521.5	521.5	522.3	0.8
P	99,686	2,006	27,744	1.4	523.2	523.2	524.1	0.9
Q	106,181	1,031	15,490	2.8	526.4	526.4	527.3	0.9

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
R	113,520	352	8,580	5.0	532.6	532.6	533.6	1.0
S	122,126	1,094	17,230	2.5	536.4	536.4	537.4	1.0
T	132,000	620	11,925	3.9	540.3	540.3	541.3	1.0
U	136,752	1,400	25,718	1.8	542.2	542.2	543.1	0.9
V	149,424	408	9,413	4.9	548.5	548.5	549.5	1.0
W	166,267	1,222	23,363	2.0	554.9	554.9	555.9	1.0
X	173,237	400	8,092	5.7	558.5	558.5	559.2	0.7
Y	181,738	1,100	17,042	2.7	563.2	563.2	564.0	0.8
Z	195,360	785	17,878	2.6	569.5	569.5	570.4	0.9
AA	205,920	498	11,359	4.1	571.7	571.7	572.7	1.0
AB	216,480	500	9,771	4.7	577.1	577.1	578.0	0.9
AC	227,040	1,050	17,125	2.7	582.4	582.4	583.2	0.8
AD	232,320	450	10,079	4.6	584.1	584.1	585.0	0.9
AE	237,600	935	14,491	3.2	586.9	586.9	587.7	0.8
AF	242,880	475	9,016	6.2	589.9	589.9	590.6	0.7
AG	253,440	990	22,005	2.6	593.4	593.4	594.4	1.0
AH	258,720	275	6,259	9.0	594.6	594.6	595.5	0.9

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AI	269,280	1,365	23,285	2.4	602.1	602.1	603.0	0.9
AJ	285,120	765	13,129	4.3	606.0	606.0	606.9	0.9
AK	290,400	1,415	21,415	2.6	608.3	608.3	609.1	0.8
AL	300,960	669	12,807	4.4	611.4	611.4	612.1	0.7
AM	306,240	1,625	24,122	2.3	612.9	612.9	613.7	0.8
AN	316,800	785	11,666	4.8	618.3	618.3	619.0	0.7
AO	322,080	1,320	22,849	2.5	620.7	620.7	621.5	0.8
AP	337,920	960	17,695	3.3	626.4	626.4	627.1	0.7
AQ	348,480	1,710	22,275	2.6	629.6	629.6	630.4	0.8
AR	353,760	810	10,390	5.7	632.3	632.3	632.9	0.6
AS	364,320	1,410	28,379	2.1	637.9	637.9	638.7	0.8
AT	369,600	823	13,589	4.3	639.0	639.0	639.7	0.7
AU	380,160	1,450	25,162	2.3	644.3	644.3	645.1	0.8
AV	390,720	848	17,695	3.3	647.8	647.8	648.6	0.8
AW	396,000	1,100	11,557	5.1	650.3	650.3	651.2	0.9
AX	406,560	478	9,367	6.3	657.1	657.1	657.9	0.8
AY	416,592	950	14,928	3.9	662.8	662.8	663.7	0.9

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	FRANKLIN COUNTY, MISSOURI		FLOODING SOURCE: BOURBEUSE RIVER	
	AND INCORPORATED AREAS			

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AZ	421,872	738	12,549	4.9	667.0	667.0	667.6	0.6
BA	430,320	1,409	25,174	2.5	669.8	669.8	670.6	0.8
BB	441,672	1,029	17,839	3.5	673.0	673.0	673.8	0.8
BC	451,176	977	11,691	5.3	675.7	675.7	676.5	0.8
BD	459,466	1,563	25,996	2.4	679.9	679.9	680.8	0.9
BE	475,200	1,041	15,831	3.6	685.3	685.3	686.0	0.7
BF	481,272	1,748	24,713	2.3	687.8	687.8	688.7	0.9
BG	489,456	900	9,449	6.0	690.4	690.4	691.3	0.9
BH	500,544	1,903	21,228	2.6	696.7	696.7	697.4	0.7
BI	506,299	776	12,261	4.5	700.9	700.9	701.6	0.7

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	FRANKLIN COUNTY, MISSOURI		FLOODING SOURCE: BOURBEUSE RIVER	
	AND INCORPORATED AREAS			

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,050	94	318	7.1	499.5	494.4 ²	494.4 ²	0.0
B	5,980	170	1,063	2.1	510.6	510.6	510.6	0.0
C	8,250	61	213	10.5	517.6	517.6	517.6	0.0
D	9,860	65	370	6.1	526.7	526.7	526.7	0.0
E	10,600	34	248	9.1	528.4	528.4	529.2	0.8
F	10,860	60	385	5.8	531.2	531.2	531.9	0.7
G	13,100	60	277	8.1	535.8	535.8	536.4	0.6
H	14,660	99	374	6.0	541.4	541.4	541.9	0.5
I	15,229	35	174	12.9	544.6	544.6	545.0	0.4
J	15,910	39	184	12.2	549.9	549.9	549.9	0.0

¹Feet above confluence with Bourbeuse River

²Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BOURBEUSE RIVER TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,531	200	1,437	4.2	491.4	491.4	492.4	1.0
B	6,291	73	993	6.1	496.2	496.2	496.6	0.4
C	8,351	204	1,815	3.4	499.6	499.6	500.6	1.0
D	10,501	137	1,441	2.9	503.4	503.4	504.3	0.9
E	13,171	478	1,958	2.2	506.3	506.3	507.2	0.9
F	15,868	166	651	4.3	512.7	512.7	513.0	0.3
G	19,566	270	636	4.4	521.1	521.1	521.7	0.6
H	21,400	120	502	4.2	527.3	527.3	528.3	1.0
I	24,798	48	296	4.4	549.1	549.1	549.8	0.7
J	25,822	55	192	6.8	556.2	556.2	556.5	0.3

¹Feet above confluence with Dubois Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BROWN'S BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	15,231	157	969	5.0	482.8	482.8	483.1	0.3
B	16,302	121	900	4.0	485.3	485.3	486.2	0.9
C	19,237	82	623	5.8	492.4	492.4	493.2	0.8
D	22,195	52	414	7.8	501.0	501.0	501.3	0.3
E	24,505	69	431	4.9	509.3	509.3	509.9	0.6
F	24,931	119	885	2.4	513.9	513.9	513.9	0.0
G	28,710	37	259	7.9	525.0	525.0	525.5	0.5
H	28,975	50	324	6.3	527.0	527.0	527.1	0.1
I	30,817	38	306	5.6	532.0	532.0	532.3	0.3
J	32,669	38	224	7.6	537.8	537.8	537.9	0.1
K	33,943	38	254	6.7	543.3	543.3	543.7	0.4
L	34,104	43	259	6.6	544.7	544.7	544.8	0.1
M	34,677	36	220	6.6	546.9	546.9	547.1	0.2
N	35,925	31	171	8.4	552.2	552.2	552.5	0.3
O	37,090	34	181	8.0	557.1	557.1	557.2	0.1
P	39,875	43	277	5.1	567.2	567.2	568.1	0.9
Q	40,096	48	217	6.5	568.9	568.9	569.2	0.3
R	42,488	25	176	6.1	578.1	578.1	578.5	0.4
S	42,944	42	198	5.4	580.8	580.8	580.8	0.0
T	43,491	49	156	6.8	583.6	583.6	584.2	0.6

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA	
		FLOODING SOURCE: BRUSH CREEK	

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	140	244	1,958	6.0	491.3	479.7 ²	480.5	0.8
B	930	243	2,130	5.5	491.3	480.7 ²	481.6	0.9
C	2,750	137	1,910	6.1	491.3	487.2 ²	487.5	0.3
D	3,450	199	2,570	4.6	491.3	488.1 ²	488.6	0.5
E	3,950	362	1,470	8.0	491.3	488.3 ²	488.6	0.3
F	4,400	167	1,750	6.7	491.3	489.2 ²	490.0	0.8
G	5,060	340	3,222	2.7	491.3	490.3 ²	491.3	1.0
H	5,320	397	3,201	2.7	492.6	492.6	493.3	0.7
I	6,070	271	2,059	2.6	492.7	492.7	493.5	0.8
J	6,820	79	1,024	5.2	492.8	492.8	493.6	0.8
K	7,780	65	862	6.1	493.6	493.6	494.3	0.7
L	8,850	87	808	6.5	494.9	494.9	495.6	0.7
M	10,120	90	766	6.9	497.6	497.6	498.5	0.9
N	11,090	76	566	9.3	500.2	500.2	500.9	0.7
O	11,620	174	1,324	4.0	506.2	506.2	506.6	0.4
P	12,000	91	977	5.4	506.4	506.4	506.7	0.3
Q	12,214	93	1,299	3.6	510.4	510.4	510.6	0.2
R	12,850	146	1,544	3.0	510.6	510.6	511.1	0.5
S	13,960	208	1,415	3.3	513.1	513.1	513.6	0.5
T	14,500	117	708	6.5	513.2	513.2	513.8	0.6

¹Feet above confluence with Dubois Creek

²Elevation computed without consideration of backwater effects from Dubois Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
U	14,672	115	583	7.9	513.4	513.4	514.1	0.7
V	14,753	131	994	4.6	516.5	516.5	517.1	0.6
W	15,010	197	1,650	2.8	516.7	516.7	517.5	0.8
X	15,424	123	824	4.4	518.6	518.6	518.9	0.3
Y	15,990	75	426	8.5	518.6	518.6	519.1	0.5
Z	17,190	75	613	5.9	522.4	522.4	522.8	0.4
AA	17,920	61	534	6.8	523.8	523.8	524.1	0.3
AB	18,500	216	979	3.7	526.6	526.6	526.8	0.2
AC	19,062	148	428	8.4	528.4	528.4	528.5	0.1
AD	19,520	204	1,438	2.5	535.2	535.2	535.3	0.1
AE	19,980	158	1,021	3.5	535.4	535.4	535.5	0.1
AF	20,645	131	714	5.1	536.1	536.1	536.5	0.4
AG	20,935	372	5,067	0.5	552.5	552.5	552.5	0.0
AH	21,640	73	728	1.1	552.5	552.5	552.5	0.0
AI	23,290	51	106	7.7	554.5	554.5	554.6	0.1
AJ	26,000	116	223	3.7	581.8	581.8	582.4	0.6

¹Feet above confluence with Dubois Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	13,772	575	6,306	2.7	483.5	483.5	484.0	0.5
B	19,336	380	3,353	3.7	491.1	491.1	491.6	0.5
C	20,354	370	2,791	4.4	492.2	492.2	493.1	0.9
D	22,469	390	2,928	4.1	495.8	495.8	496.6	0.8
E	27,225	685	3,406	3.4	504.9	504.9	505.5	0.6
F	33,512	500	2,954	3.6	518.8	518.8	519.1	0.3
G	39,343	390	2,067	4.1	532.9	532.9	533.4	0.5
H	40,298	275	1,450	5.9	536.7	536.7	536.9	0.2
I ²	43,821	353	1,848	4.2	547.8	547.8	548.0	0.2
J ²	45,019	385	1,459	5.3	550.3	550.3	550.4	0.1
K ²	50,130	245	1,347	4.9	567.0	567.0	567.2	0.2
L ²	51,593	332	1,105	6.0	570.8	570.8	571.0	0.2
M ²	53,658	125	899	7.3	577.1	577.1	577.1	0.0
N ²	55,713	74	373	9.4	585.5	585.5	585.6	0.1
O ²	56,312	101	555	6.3	590.0	590.0	590.4	0.4
P	59,301	129	711	5.0	604.5	604.5	604.8	0.3

¹Feet above confluence with Meramec River

²Located in Jefferson County

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: CALVEY CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,639	41	151	5.5	481.2	481.2	481.2	0.0
B	4,049	38	104	8.0	489.0	489.0	489.0	0.0
C	4,284	59	161	5.1	492.2	492.2	492.9	0.7

¹Feet above confluence with Calvey Creek

TABLE 24

**FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, MISSOURI
AND INCORPORATED AREAS**

FLOODWAY DATA

FLOODING SOURCE: CALVEY CREEK TRIBUTARY 1

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,770	233	2,065	5.3	491.3	482.1 ²	479.3	1.0
B	5,570	123	2,063	5.3	491.3	485.1 ²	480.6	1.0
C	7,424	202	2,353	3.8	491.3	486.1 ²	482.0	1.0
D	11,745	88	1,145	7.8	491.3	482.0	483.4	0.9
E	14,390	342	2,032	4.4	491.3	485.5 ²	486.3	0.8
F	19,055	418	2,959	1.2	491.3	491.3	491.9	0.6
G	22,495	173	1,538	2.3	496.7	496.7	497.3	0.6
H	25,751	73	680	5.1	501.7	501.7	502.4	0.7
I	27,704	221	1,022	3.4	504.3	504.3	504.9	0.6
J	32,581	124	515	5.5	513.8	513.8	514.3	0.5
K	35,870	62	400	7.1	530.6	530.6	530.7	0.1
L	39,299	84	492	5.8	546.1	546.1	546.7	0.6
M	43,163	59	359	6.3	564.5	564.5	565.4	0.9
N	46,863	59	247	5.7	594.7	594.7	595.4	0.7

¹Feet above confluence with Missouri River

²Elevation computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: DUBOIS CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,331	59	252	10.9	514.5	514.5	514.6	0.1
B	1,969	50	485	5.7	522.8	522.8	523.3	0.5
C	3,992	68	372	6.5	534.3	534.3	534.7	0.4
D	4,921	55	292	8.3	544.2	544.2	544.5	0.3

¹Feet above confluence with Flat Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, MISSOURI
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FENTON CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	615	95	838	6.3	479.1	473.9 ²	474.8	0.9
B	1,490	163	1,733	3.1	479.1	477.1 ²	477.9	0.8
C	2,215	389	3,622	1.4	479.1	478.4 ²	479.1	0.7
D	3,570	95	1,241	4.3	479.7	479.7	480.6	0.9
E	4,980	300	3,383	1.6	481.1	481.1	482.0	0.9
F	6,950	135	1,268	4.2	483.6	483.6	484.3	0.7
G	9,750	130	1,680	3.2	488.0	488.0	488.7	0.7
H	12,030	80	850	6.2	491.2	491.2	491.9	0.7
I	13,930	205	1,532	2.8	497.5	497.5	498.0	0.5
J	16,065	176	921	4.7	503.2	503.2	503.7	0.5
K	16,670	62	709	4.5	508.3	508.3	509.3	1.0
L	17,380	175	1,281	2.5	523.0	523.0	523.9	0.9
M	18,230	271	1,282	2.5	524.3	524.3	524.8	0.5
N	18,845	300	1,685	1.9	525.6	525.6	526.0	0.4
O	19,970	200	765	4.2	530.4	530.4	531.2	0.8

¹Feet above limit of floodway 165 feet downstream from Labadie Bottom Road

²Elevation computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: FIDDLE CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,610	150	1,605	5.5	514.5	505.4 ²	506.3 ²	0.9
B	3,902	65	718	7.8	515.3	515.3	515.8	0.5
C	6,299	155	1,249	4.2	531.0	531.0	531.7	0.7
D	7,450	120	577	5.6	535.9	535.9	536.7	0.8
E	8,817	113	313	10.3	544.4	544.4	545.2	0.8
F	11,030	132	439	7.3	565.7	565.7	565.9	0.2
G	12,471	149	892	3.6	575.6	575.6	576.3	0.7
H	14,900	183	716	3.5	588.7	588.7	589.6	0.9
I	12,235	116	731	2.9	610.2	610.2	611.2	1.0
J	18,545	150	450	4.7	615.7	615.7	616.2	0.5
K	19,960	150	413	5.1	624.2	624.2	624.8	0.6

¹Feet above confluence with Bourbeuse River

²Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: FLAT CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	882	55	241	9.2	536.9	536.9	536.9	0.0
B	2,392	65	266	8.4	551.3	551.3	551.7	0.4
C	3,348	65	444	5.0	558.8	558.8	559.7	0.9

¹Feet above confluence with Flat Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: FLAT CREEK NORTH TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,608	129	263	6.0	521.0	521.0	521.3	0.3
B	2,906	96	314	5.0	529.3	529.3	529.5	0.2
C	4,868	47	232	5.6	539.9	539.9	539.9	0.0

¹Feet above confluence with Calvey Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: GUENZLER CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,230	190	1,371	4.5	523.6	516.5 ²	517.5	1.0
B	3,100	305	1,827	3.4	523.6	522.7 ²	523.5	0.8
C	4,575	189	953	5.8	527.4	527.4	528.2	0.8
D	6,005	192	991	5.5	534.1	534.1	534.9	0.8
E	6,405	66	584	9.4	535.7	535.7	536.1	0.4
F	6,960	200	1,312	4.1	538.6	538.6	539.5	0.9
G	8,400	351	2,403	2.2	543.9	543.9	544.9	1.0
H	8,945	166	852	6.3	546.9	546.9	547.8	0.9
I	10,570	106	527	9.7	556.4	556.4	556.8	0.4
J	12,300	94	458	11.1	566.0	566.0	566.2	0.2
K	12,990	151	593	8.6	570.1	570.1	570.8	0.7
L	14,900	181	818	5.4	585.0	585.0	585.9	0.9
M	16,675	101	590	7.5	595.2	595.2	596.0	0.8
N	19,875	113	566	7.2	615.4	615.4	616.3	0.9
O	21,030	244	1,506	2.7	625.9	625.9	625.9	0.0

¹Feet above confluence with Bourbeuse River

²Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: HAPPY SOCK CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,720	200 ²	2,432	2.5	484.8	473.7 ³	474.5	0.8
B	5,390	200 ²	2,013	3.1	484.9	474.2 ³	475.1	0.9
C	8,025	210	1,663	3.7	485.1	476.1 ³	476.9	0.8
D	10,375	180	1,310	4.7	485.4	478.9 ³	479.4	0.5
E	11,245	102	1,161	5.3	485.4	481.2 ³	481.7	0.5
F	12,185	106	998	6.2	485.4	483.6 ³	483.9	0.3
G	13,695	140	1,576	3.9	487.1	487.1	487.3	0.2
H	14,745	160	2,030	3.1	489.0	489.0	489.1	0.1
I	18,705	335	3,586	1.7	495.4	495.4	495.7	0.3
J	19,725	254	2,338	2.7	495.6	495.6	495.9	0.3
K	21,265	325	2,103	2.9	498.8	498.8	499.3	0.5
L	22,455	140	1,017	3.1	499.8	499.8	500.3	0.5

¹Feet above confluence with Missouri River

²Width without considering influence from Missouri River Floodway

³Elevation computed without consideration of flooding controlled by Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: LABADIE CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	645	34	401	3.2	488.9	486.2 ²	486.2	0.0
B	2,455	60	319	4.1	490.7	490.7	491.0	0.3
C	3,745	59	290	4.5	497.3	497.3	497.8	0.5

¹Feet above confluence with Labadie Creek

²Elevation computed without consideration of backwater effects from Labadie Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: LABADIE CREEK TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,461	269	1,220	3.9	495.5	495.5	495.8	0.3
B	7,651	107	745	5.9	504.8	504.8	505.7	0.9
C	11,362	67	471	8.2	519.0	519.0	519.2	0.2
D	15,644	54	384	10.1	534.4	534.4	534.8	0.4
E	18,954	68	447	7.1	551.2	551.2	551.9	0.7
F	20,943	76	466	5.0	561.4	561.4	561.7	0.3
G	22,738	41	231	8.4	571.3	571.3	571.3	0.0
H	26,399	47	235	6.0	592.3	592.3	592.4	0.1
I	28,961	81	271	5.2	608.7	608.7	608.7	0.0
J	30,543	31	115	7.7	617.7	617.7	617.7	0.0
K	32,386	34	124	7.1	629.7	629.7	629.7	0.0
L	33,698	43	86	5.0	644.1	644.1	644.2	0.1

¹Feet above confluence with Calvey Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: LITTLE CALVEY CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
C	8,845	58	324	6.5	559.8	559.8	560.0	0.2
D	11,210	44	168	6.0	578.5	578.5	578.6	0.1
E	12,905	28	150	6.8	595.5	595.5	595.6	0.1
F	14,459	32	167	6.0	612.3	612.3	612.5	0.2
G	15,451	29	120	8.4	621.0	621.0	621.2	0.2
H	17,077	25	75	7.9	641.2	641.2	641.2	0.0
I	19,160	27	114	5.2	666.8	666.8	666.8	0.0

¹Feet above confluence with Fox Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY
FRANKLIN COUNTY, MISSOURI
AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LITTLE FOX CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,875	950	5,053	3.6	503.9	503.9	504.5	0.6
B	16,086	363	3,633	2.3	523.5	523.5	523.7	0.2
C	21,434	359	1,999	4.1	537.1	537.1	537.3	0.2
D	23,299	254	1,415	5.7	541.6	541.6	541.6	0.0
E	26,777	194	1,274	5.7	553.1	553.1	553.5	0.4
F	27,816	389	2,478	2.9	558.0	558.0	558.1	0.1
G	28,376	258	1,502	4.8	559.1	559.1	559.2	0.1
H	30,235	255	1,548	3.7	564.5	564.5	565.3	0.8
I	31,624	218	1,022	5.6	568.4	568.4	568.8	0.4
J	34,099	222	1,218	2.7	578.5	578.5	578.5	0.0
K	35,850	171	593	5.5	584.1	584.1	584.1	0.0

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: LITTLE MERAMEC RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	820	35	309	5.2	477.9	471.0 ²	471.5	0.5
B	1,480	86	527	3.1	477.9	473.4 ²	474.4	1.0
C	2,730	58	376	4.3	480.7	480.7	481.1	0.4
D	3,810	82	446	3.1	488.7	488.7	489.6	0.9
E	4,790	61	331	4.2	496.3	496.3	497.3	1.0
F	5,690	55	275	4.2	501.6	501.6	501.8	0.2
G	6,890	67	295	3.9	510.2	510.2	510.3	0.1
H	7,680	44	179	6.4	517.7	517.7	518.2	0.5

¹Feet above Chicago Rock Island and Pacific Railroad

²Elevation computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: LITTLE TAVERN CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH ² (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AI	263,976	2820 / 1052 ²	47,019	2.9	462.8	462.8	463.7	0.9
AJ	268,654	3107	62,076	2.2	464.7	464.7	465.6	0.9
AK	277,424	2440	59,022	2.2	467.6	467.6	468.4	0.8
AL	282,846	2636	41,354	3.2	470.1	470.1	471.0	0.9
AM	295,012	2409	44,184	3.0	472.8	472.8	473.8	1.0
AN	325,896	1757	37,848	2.7	483.7	483.7	484.5	0.8
AO	335,774	1837	41,883	2.4	485.9	485.9	486.8	0.9
AP	352,066	1821	35,669	2.8	488.8	488.8	489.6	0.8
AQ	359,685	2011	41,109	2.4	492.1	492.1	492.7	0.6
AR	383,048	2368	34,940	2.8	499.0	499.0	499.7	0.7
AS	400,361	2441	39,830	2.5	509.5	509.5	510.4	0.9
AT	405,496	1883	35,019	2.8	512.7	512.7	513.2	0.5
AU	427,060	1120	26,138	3.8	521.6	521.6	522.5	0.9
AV	443,786	1974	41,258	2.4	527.6	527.6	528.4	0.8
AW	464,204	1410	21,438	4.6	535.4	535.4	536.3	0.9
AX	473,651	1503	33,024	2.7	543.2	543.2	543.9	0.7
AY	496,540	2285	31,700	2.8	549.8	549.8	550.5	0.7
AZ	526,612	745	13,660	6.6	563.6	563.6	564.5	0.9
BA	566,565	1305	23,955	3.7	585.2	585.2	586.0	0.8
BB	593,104	743	15,915	5.6	599.3	599.3	600.3	1.0
BC	597,780	1087 / 551 ²	25,518	3.5	603.3	603.3	604.1	0.8

¹Feet above confluence with Mississippi River

²Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	FRANKLIN COUNTY, MISSOURI		FLOODING SOURCE: MERAMEC RIVER	
	AND INCORPORATED AREAS			

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ^{1,2}	WIDTH ³ (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	50.02	8,495 / 810	155,566	4.3	476.1	476.1	476.9	0.8
B	51.13	8,159 / 750	152,832	4.4	476.9	476.9	477.9	1.0
C	52.48	8,234 / 870	155,541	4.3	478.4	478.4	479.3	0.9
D	54.03	10,073 / 560	224,377	3.0	480.1	480.1	481.1	1.0
E	55.03	9,741 / 300	180,522	3.7	480.6	480.6	481.5	0.9
F	56.15	10,729 / 10,030	216,049	3.1	481.9	481.9	482.8	0.9
G	58.98	10,629 / 7,325	215,529	3.1	485.4	485.4	486.4	1.0
H	60.40	11,202 / 4,500	220,082	3.1	486.3	486.3	487.3	1.0
I	62.12	10,307 / 835	198,569	3.4	487.5	487.5	488.5	1.0
J	63.56	9,467 / 585	173,886	3.9	488.6	488.6	489.6	1.0
K	64.86	8,052 / 865	179,402	3.8	490.5	490.5	491.5	1.0
L	66.85	7,849 / 950	179,919	3.8	492.7	492.7	493.7	1.0
M	68.26	9,458 / 1,160	184,095	3.7	493.5	493.5	494.5	1.0
N	69.21	10,564 / 820	211,231	3.2	494.3	494.3	495.2	0.9
O	70.65	12,036 / 4,286	229,928	2.9	495.1	495.1	496.0	0.9
P	71.96	9,225 / 4,337	181,661	3.7	496.0	496.0	496.9	0.9
Q	73.18	8,263 / 2,130	160,999	4.2	496.7	496.7	497.7	1.0

¹Feet above confluence with Mississippi River

²Distance based on the 1960 River Mile stationing, which may not match the measured distance along the profile baseline shown on the maps

³Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	FRANKLIN COUNTY, MISSOURI		FLOODING SOURCE: MISSOURI RIVER	
	AND INCORPORATED AREAS			

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ^{1,2}	WIDTH ³ (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
R	74.39	9,028 / 895	181,751	3.7	497.9	497.9	498.8	0.9
S	75.60	10,973 / 7,803	218,551	3.1	498.9	498.9	499.9	1.0
T	76.42	12,196 / 1,185	221,616	3.0	499.5	499.5	500.5	1.0
U	77.76	11,748 / 1,215	186,634	3.6	500.3	500.3	501.3	1.0
V	79.13	10,201 / 730	172,346	3.9	501.7	501.7	502.6	0.9
W	80.42	10,323 / 730	169,978	4.0	502.9	502.9	503.9	1.0
X	81.73	9,798 / 740	164,354	4.1	504.6	504.6	505.5	0.9
Y	82.71	10,286 / 1,800	165,578	4.1	505.5	505.5	506.3	0.8
Z	83.89	9,994 / 8,259	194,792	3.5	506.7	506.7	507.5	0.8
AA	85.00	9,534 / 8,834	183,966	3.7	507.3	507.3	508.2	0.9
AB	86.11	9,805 / 9,043	181,011	3.7	508.2	508.2	509.1	0.9
AC	87.64	10,172 / 9,618	175,833	3.8	509.4	509.4	510.3	0.9
AD	88.92	9,931 / 9,115	179,355	3.8	510.9	510.9	511.8	0.9
AE	90.18	10,823 / 10,111	187,020	3.6	512.6	512.6	513.5	0.9
AF	90.94	11,965 / 10,575	204,099	3.3	513.5	513.5	514.4	0.9
AG	92.54	11,658 / 3,217	242,219	2.8	515.1	515.1	516.1	1.0
AH	93.85	10,517 / 700	196,289	3.4	515.6	515.6	516.5	0.9

¹Feet above confluence with Mississippi River

²Distance based on the 1960 River Mile stationing, which may not match the measured distance along the profile baseline shown on the maps

³Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	FRANKLIN COUNTY, MISSOURI		FLOODING SOURCE: MISSOURI RIVER	
	AND INCORPORATED AREAS			

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,210	32	123	3.7	461.3	461.4 ²	461.3	0.0
B	1,365	22	70	6.4	461.5	461.5	461.6	0.0
C	1,605	36	70	6.4	467.2	467.2	467.2	0.0
D	2,000	18	57	8.0	470.3	470.3	470.3	0.0
E	2,212	31	157	2.9	474.2	474.2	474.2	0.0
F	2,661	28	82	5.5	475.8	475.8	475.8	0.0
G	3,018	35	256	1.8	482.9	482.9	483.7	0.8
H	3,391	19	56	8.0	483.1	483.1	483.4	0.3
I	4,231	29	172	2.6	495.7	495.7	495.7	0.0
J	4,603	22	91	4.9	497.2	497.2	497.2	0.0
K	4,964	28	207	2.2	504.4	504.4	504.4	0.0
L	5,276	22	76	3.7	505.8	505.8	505.8	0.0
M	5,893	16	37	7.7	510.0	510.0	510.0	0.0
N	6,254	15	33	8.4	517.5	517.5	517.5	0.0
O	6,607	22	39	7.2	524.4	524.4	524.5	0.1
P	6,841	20	36	7.7	527.4	527.4	527.4	0.0

¹Feet above confluence with Brush Creek

²Elevation computed without consideration of backwater effects from Brush Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MONROE BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,228	48	230	7.4	467.7	467.7	467.7	0.0
B	5,146	74	349	4.9	475.5	475.5	475.5	0.0
C	5,553	43	173	7.3	478.7	478.7	478.8	0.1

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: PHELAN BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	80	82	711	7.5	496.7	483.9 ²	484.7	0.8
B	600	74	664	8.0	496.7	486.8 ²	487.1	0.3
C	1,250	76	925	5.7	496.7	490.4 ²	490.7	0.3
D	1,780	133	1,210	4.4	496.7	492.0 ²	492.3	0.3
E	2,315	265	2,042	2.6	496.7	493.0 ²	493.5	0.5
F	3,505	260	1,539	3.4	496.7	495.5 ²	496.3	0.8
G	4,565	215	1,139	4.6	500.3	500.3	500.7	0.4
H	6,420	185	997	3.9	511.0	511.0	511.4	0.4

¹Feet above confluence with Bourbeuse River

²Computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: PIN OAK CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	820	141	281	6.2	518.9	518.9	518.9	0.0

¹Feet above confluence with Pin Oak Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: PIN OAK TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,299	80	244	4.3	536.8	536.8	537.5	0.7
B	2,598	54	211	4.9	559.7	559.7	560.0	0.3

¹Feet above confluence with Flat Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: POSSUM CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,210	130	1,680	6.8	495.1	483.7 ²	484.3	0.6
B	3,685	159	1,519	7.6	495.1	484.6 ²	485.2	0.6
C	4,620	161	1,940	5.9	495.1	486.0 ²	486.9	0.9
D	6,020	132	1,532	7.5	495.1	487.7 ²	488.5	0.8
E	7,370	196	2,088	5.5	495.1	490.2 ²	490.5	0.3
F	10,755	183	2,146	5.4	495.1	493.3 ²	493.7	0.4
G	12,045	271	2,952	3.9	495.1	494.3 ²	494.8	0.5
H	13,910	373	4,667	2.5	495.4	495.4	495.8	0.4
I	17,165	419	3,900	2.9	496.1	496.1	496.7	0.6
J	19,435	373	3,604	3.2	497.0	497.0	497.7	0.7

¹Feet above Mississippi Pacific Railroad

²Computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: SAINT JOHN'S CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0	43 ²	387	8.4	491.3	480.6 ³	481.3	0.7
B	400	42	233	14.0	491.3	484.4 ³	484.4	0.0
C	730	44	407	8.0	491.3	488.4 ³	488.5	0.1
D	940	44	430	7.6	491.3	489.1 ³	489.3	0.2
E	1,180	50	643	5.1	492.1	492.1	492.2	0.2
F	1,550	72	746	4.4	492.4	492.4	492.7	0.3
G	2,980	244	1,242	1.7	493.2	493.2	493.8	0.6
H	3,960	103	544	3.9	493.5	493.5	494.2	0.7
I	4,700	53	303	5.0	494.8	494.8	495.4	0.6
J	5,520	75	313	4.9	497.0	497.0	497.3	0.3

¹Feet above confluence with Busch creek

²Width without considering Influence from Busch Creek Floodway

³Computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: SOUTH BRANCH BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	100	50	559	7.7	492.6	485.3 ²	485.4 ²	0.1
B	500	50	576	7.5	492.6	486.1 ²	486.4 ²	0.3
C	1,163	192	1,839	2.3	492.6	491.5 ²	491.5 ²	0.0
D	1,750	231	1,752	2.5	492.6	491.7 ²	491.7 ²	0.0
E	2,400	90	783	5.5	492.6	491.9 ²	491.9 ²	0.0
F	3,300	140	1,053	4.2	493.1	493.1	493.3	0.1
G	4,752	71	713	6.2	494.5	494.5	495.2	0.7
H	4,883	111	1,174	3.8	500.0	500.0	500.0	0.0
I	6,170	130	849	5.2	500.8	500.8	500.8	0.1
J	7,230	94	770	5.7	502.0	502.0	502.5	0.5
K	7,494	103	761	5.8	502.5	502.5	503.0	0.4
L	8,151	220	1,225	3.6	506.9	506.9	506.9	0.0
M	8,319	162	1,895	2.4	509.0	509.0	509.0	0.0

¹Feet above confluence with Busch Creek

²Computed without consideration of backwater effects from Busch Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: SOUTHWEST BRANCH BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	856	30	152	6.3	477.4	477.0 ²	477.8	0.4
B	1,603	25	112	7.7	481.1	481.1	481.9	0.8
C	2,118	31	210	4.1	492.6	492.6	492.6	0.0
D	2,645	26	116	7.4	494.1	494.1	494.1	0.0
E	3,077	27	118	7.3	498.8	498.8	498.8	0.0
F	3,747	34	104	6.2	503.2	503.2	503.3	0.1
G	4,392	22	84	7.8	508.4	508.4	508.4	0.0
H	4,895	27	108	6.0	513.5	513.5	513.5	0.0

¹Feet above confluence with Brush Creek

²Elevation computed without consideration of backwater effects from Brush Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: THORNTON BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	90	99 ³	424	3.3	536.9	534.5 ²	535.5	1.0
B	390	204 ³	2,720	0.5	551.5	551.5	551.5	0.0
C	700	197	2,901	0.5	551.5	551.5	551.5	0.0
D	1,260	139	1,514	0.9	551.5	551.5	551.5	0.0
E	1,810	117	1,195	1.2	551.5	551.5	551.5	0.0

¹Feet above confluence with Busch Creek

²Computed without consideration of backwater effects from Missouri River

³Width does not match mapped width due to floodway width extending into Busch Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: UNNAMED TRIBUTARY TO BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,661	185	526	4.2	471.8	471.8	471.8	0.0
B	11,781	80	310	5.6	487.8	487.8	487.9	0.1
C	13,135	68	251	6.9	496.2	496.2	496.2	0.0
D	13,740	42	176	9.8	500.0	500.0	500.0	0.0
E	15,285	41	182	7.8	511.9	511.9	512.2	0.3
F	16,440	43	150	9.4	520.4	520.4	520.5	0.1
G	18,719	55	223	4.3	535.9	535.9	536.1	0.2
H	21,175	39	82	8.2	553.3	553.3	553.3	0.0
I	21,731	34	79	8.5	558.4	558.4	558.4	0.0
J	22,616	34	97	6.2	569.2	569.2	569.2	0.0
K	22,982	34	92	6.5	572.3	572.3	572.3	0.0

¹Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: WINCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,335	248	1,557	3.5	820.0	820.0	820.9	0.9
B	2,635	345	1,837	3.0	826.2	826.2	827.2	1.0
C	3,455	134	893	6.2	829.2	829.2	830.2	1.0
D	4,445	257	1,838	3.0	833.3	833.3	834.3	1.0
E	5,605	123	981	5.6	838.3	838.3	839.2	0.9
F	7,205	134	1,205	4.6	842.8	842.8	843.8	1.0
G	8,365	391	2,326	2.4	844.9	844.9	845.9	1.0
H	8,995	151	1,084	5.1	845.7	845.7	846.7	1.0
I	10,257	342	2,163	2.6	849.3	849.3	849.9	0.6
J	11,402	263	1,502	3.2	850.5	850.5	851.4	0.9
K	12,372	193	934	5.2	853.3	853.3	854.2	0.9
L	14,847	150	1,053	4.6	858.6	858.6	859.5	0.9
M	16,062	174	1,256	3.8	861.0	861.0	862.0	1.0
N	17,782	238	1,204	4.0	865.2	865.2	865.7	0.5
O	19,852	266	1,012	4.4	872.4	872.4	873.0	0.6
P	21,112	104	820	5.5	877.2	877.2	877.5	0.3

¹Feet above confluence with Bacon Ridge Road

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: WINSEL CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Q	22,072	257 / 65 ²	2,078	1.9	884.6	884.6	884.8	0.2
R	24,167	236 / 220 ²	1,290	3.0	889.0	889.0	890.0	1.0
S	24,616	319	1,513	2.4	891.3	891.3	892.2	0.9
T	26,096	263	1,426	2.5	893.9	893.9	894.9	1.0
U	27,522	234	1,046	3.5	898.3	898.3	899.3	1.0
V	29,106	384	1,749	2.1	903.7	903.7	904.4	0.7
W	29,836	153 / 125 ²	804	4.5	905.0	905.0	905.8	0.8
X	31,470	90	683	4.7	912.7	912.7	913.6	0.9
Y	32,875	225	1,000	3.2	916.8	916.8	917.8	1.0
Z	34,160	210	1,049	3.1	921.0	921.0	921.9	0.9
AA	36,170	313	1,443	2.2	925.6	925.6	926.5	0.9
AB	37,295	345	1,264	2.4	929.7	929.7	930.7	1.0
AC	39,645	75	173	5.4	938.0	938.0	938.8	0.8

¹Feet above confluence with Bacon Ridge Road

²Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA
		FLOODING SOURCE: WINSEL CREEK

Table 25: 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 26: 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 31, “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/floodplain-management/letter-map-amendment-loma and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

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

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

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill

above the base flood elevation and is, therefore, excluded from the SFHA.

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

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

6.5.3 Letters of Map Revision

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

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

No new LOMCs were incorporated as a part of this map revision.

Table 27: Incorporated Letters of Map Change
[Not applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

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

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the “Flood Map Revision Processes” section.

6.5.5 Contracted Restudies

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

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Franklin County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, “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 28 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 Franklin County FIRMs in countywide format was 10/18/2011.

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Berger, City of	08/30/1974	8/30/1974	01/16/1976	06/15/1982	10/18/2011
Franklin County, Unincorporated areas	01/17/1978	01/17/1978	N/A	10/16/1984	10/18/2011 09/14/2018 06/05/2020
Gerald, City of ^{1,2}	10/18/2011	N/A	N/A	10/18/2011	N/A
Leslie, Village of ^{1,2}	10/18/2011	N/A	N/A	10/18/2011	N/A
Miramiguoa Park, Village of ²	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
New Haven, City of	03/05/1976	03/05/1976	N/A	02/18/1981	10/18/2011 09/14/2018
Oak Grove, Village of	06/03/1977	06/03/1977	N/A	08/19/1986	10/18/2011
Pacific, City of	10/26/1973	10/26/1973	N/A	03/15/1977	8/15/1983 2/19/1992 10/18/2011 06/05/2020
Parkway, Village of ^{1,2}	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
St. Clair, City of ²	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
Sullivan, City of	03/29/1974	03/29/1974	11/14/1975	06/15/1981	10/18/2011
Union, City of	03/08/1974	03/08/1974	07/23/1976	03/02/1983	10/18/2011
Washington, City of	01/09/1974	01/09/1974	10/15/1976	11/03/1982	10/18/2011

¹No Special Flood Hazard Areas

²This Community does not have map history prior to first countywide mapping.

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Birch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; St. Clair, City of; Union, City of
Bourbeuse River	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Bourbeuse River Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Brown's Branch	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Brush Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas; Pacific, City of
Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Calvey Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Calvey Creek and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Calvey Creek Tributary 1	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Dubois Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Fenton Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Fiddle Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Flat Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Flat Creek North Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Guenzler Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Happy Sock Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; St. Clair, City of
Indian Creek and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Labadie Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Labadie Creek Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Little Calvey Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Fox Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Meramec River	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Meramec River and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Tavern Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Meramec River	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Meramec River and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Missouri River	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Monroe Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Phelan Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Pin Oak Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Pin Oak Creek Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Possum Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
South Branch Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Southwest Branch Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Saint John's Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Thornton Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas; Pacific, City of
Unnamed Tributary to Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; Pacific, City of

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Wild Horse Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; Pacific, City of
Winch Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Winsel Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin 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 30. 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 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Berger, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Franklin County, Unincorporated areas	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
Miramiguoa Park, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
New Haven, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Pacific, City of	06/05/2020	10/26/1973	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor
		12/15/1975	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Parkway, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
St. Clair, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
Sullivan, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Union, City of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		12/16/2016	Kickoff	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Washington, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA

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 Franklin County, (FEMA 2011).

Table 31 is a list of the locations where FIRMs for Franklin 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 31: Map Repositories

Community	Address	City	State	Zip Code
Berger, City of	City Hall 405 Rosalie Avenue	Berger	MO	63014
Franklin County, Unincorporated areas	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
Gerald, City of ¹	City Hall 430 West Fitzgerald Avenue	Gerald	MO	63037
Leslie, Village of ¹	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
Miramiguo Park, Village of	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
New Haven, City of	City Hall 101 Front Street	New Haven	MO	63068
Oak Grove, Village of	Village Hall 260 James Street	Sullivan	MO	63080
Pacific, City of	City Hall 301 Hoven Drive	Pacific	MO	63069
Parkway, Village of ¹	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
St. Clair, City of	City Hall #1 Paul Parks Drive	St. Clair	MO	63077
Sullivan, City of	City Hall 209 West Washington Street	Sullivan	MO	63080

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Union, City of	City Hall 500 East Locust Street	Union	MO	63084
Washington, City of	City Hall 405 Jefferson Street	Washington	MO	63090

¹ No Special Flood Hazard Areas Identified

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 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 32: 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 7	Federal Regional Center 11224 Holmes Road, Kansas City, MO 64131-3626 (816) 283-7061
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil

Table 32: Additional Information

State Agencies and Organizations	
State NFIP Coordinator	Karen McHugh, CFM Missouri State Emergency Management Agency 2302 Militia Drive Jefferson City, MO 65101 573-526-9129 Karen.McHugh@sema.dps.mo.gov
State GIS Coordinator	Alexis Gieseke, GISP GIS Specialist State of Missouri Office of Administration Information Technology Services Division Office of Geospatial Information 2302 Militia Drive Jefferson City, MO 65101 Telephone: (573) 418-7687 Email: alexis.gieseke@oa.mo.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 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 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	<i>Publication Title, "Article," Volume, Number, etc.</i>	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA, 2011	FEMA	<i>Flood Insurance Study, Franklin County, Missouri</i>	FEMA	Washington, D.C.	2011	N/A
Hydrology Summary, 2017	FEMA	<i>Hydrology Summary Report</i>	Wood E&IS	Washington, D.C.	2017	N/A
Hydraulics Summary, 2017	FEMA	<i>Hydraulics Summary Report</i>	Wood E&IS	Washington, D.C.	2017	N/A
MSDIS, 2015	Missouri Spatial Data Information Service	<i>Light Detection and Ranging (LiDAR) data</i>	Missouri NRCS State Office	Columbia, Missouri	2014	http://msdis.missouri.edu
USDA NAIP, 2014	United States Department of Agriculture	<i>Orthography</i>	USDA	Washington, D.C.	2014	https://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/