KENTUCKY EMERGENCY MANAGEMENT

Andy Beshear
Governor

Boone National Guard Center
100 Minuteman Parkway
Frankfort, KY 40601-6168

Eric Gibson
Director

April 22, 2025

The Honorable James Comer
United States House of Representatives
300 South 3rd Street
Paducah, KY 42003

Dear Representative Comer:

Kentucky Emergency Management (KYEM) is pleased to learn that the City of Frankfort is pursuing funds through opportunities provided by the Department of Homeland Security-Federal Community Project funding grant to complete bank stabilization efforts. Founded on the banks of one of the many S-curves along the Kentucky River, Frankfort's location and low-lying floodplains make the city susceptible to flooding.

Frankfort is not adequately protected from flooding and embankment collapse. Existing retaining walls along certain sections of river in Frankfort are older. In other downtown waterfront stretches, riprap alone is not effective at controlling erosion. Many of the slopes along Main Street and Wilkinson Boulevard are earthen with no bank stabilization measures. The proposed project will include measures such as tuckpointing of exiting retaining walls, the installation of gabion baskets on steep slopes, and placement of riprap and concrete blocks. These efforts will elevate the protection of life and property in flood-prone areas by lessening the impact of disasters and safeguarding public infrastructure from disaster events

The KYEM staff and I look forward to working with the City of Frankfort. If you have any questions, please contact the State Hazard Mitigation Officer Geni Jo Brawner at (502) 607-5797.

Sincerely,

Stephanie Robey
Assistant Director

Cc: Eric Gibson
Geni Jo Brawner

April 22, 2025

The Honorable James Comer
2420 Rayburn House Office Building
Washington, DC 20515

Re: Support for Riverbank Stabilization "Community Project Funding" Request

Dear Congressman Comer:

I write in support of the City of Frankfort's Community Project Funding request. Frankfort seeks Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) funding to support critical downtown bank stabilization efforts. Founded on the banks of one of the many S-curves along the Kentucky River, Frankfort's location and low-lying floodplains make the city susceptible to flooding.

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Please give the highest consideration to the City of Frankfort's request for Community Project Funding.

Sincerely,

Layne Wilkerson

Layne Wilkerson
Mayor

315 W Second Street, Frankfort KY 40602
502-875-8500
www.frankfort.ky.gov
EQUAL OPPORTUNITY EMPLOYER
EQUAL HOUSING OPPORTUNITY

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Please give the highest consideration to the City of Frankfort's request for Community Project Funding.

Sincerely,

Robin Antenucci

Robin Antenucci
Executive Director

Frankfort/ Franklin County Tourist Commission
300 St. Clair St., Suite 102, Frankfort, KY 40601 800-960-7200
502-875-8687
www.visitfrankfort.com

CONSTRUCTION

Phase 1 - Preliminary geotechnical report	$32,500.00
Phase 1 - Preliminary engineering	$101,857.50
Phase 1 - 30% design	$203,715.00
Phase 1 - 60% design	$203,715.00
Phase 1 - 100% design	$101,857.50
Phase 1 – Permitting	$67,905.00
Phase 1 - Bidding phase services	$15,000.00
Phase 1 - Project management costs (5%)	$404,752.50
Phase 2 – Construction	$6,790,500.00
Phase 2 - Grant management construction	$200,000.00
Phase 2 - Construction admin	$108,000.00
Phase 2 - Resident project representative	$270,000.00
SUBTOTAL	**$8,499,802.50**
MANAGEMENT	
Management Cost	$404,752.50
SUBTOTAL	**$404,752.50**
TOTAL	**$8,904,555**

COST SHARE

Construction

75% Federal	25% Local
$6,374,851.87	$2,124,950.63

Management

100% Federal	0% Local
$404,752.50	$0

TOTAL FEDERAL REQUEST: $6,779,604.37

TOTAL COST SHARE: $2,124,950.63

Project Configuration

Introduction

A benefit cost analysis (BCA) was conducted for the proposed Main Street and Wilkinson Boulevard Riverbank Stabilization Projects in support of the Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant application for federal funding assistance. The BCA analysis was performed using The FEMA BCA Toolkit, Version 6.0, to estimate the present value of the expected annual benefits and costs associated with the proposed project.

This BCA was developed using a one-time mitigation activity based on the landslide module.

Mitigation Action Type

The proposed project is designed to maintain the functional and operational capacity of the Wilkinson Boulevard and Main Street areas. The primary mitigation action is the construction and installation of new bank stabilization and repairs along the entire stretch of the project area. The City has already experienced one landslide within the project boundary causing a loss of a portion of said property. The core objective of the project is to mitigate potential damage and losses associated with flooding and riverbank failure in Kentucky's capital.

Project Useful Life

A project useful life (PUL) of 25 years is used to correspond with the projected recurrence interval of a damaging landslide event. The recurrence interval was determined based on the preliminary geotechnical investigation performed by Geotechnology in June 2023, as well as the technical memo prepared by Hazen and Sawyer in January 2024.

Scope of Work

The City of Frankfort seeks BRIC funding from FEMA to support critical downtown bank stabilization efforts. Founded on the banks of one of the many S-curves along the Kentucky River, Frankfort's location and low-lying floodplains make the city susceptible to flooding. The community is now experiencing more frequent and more intense flooding events due to climate change.

The ground surface at the water's edge of the Kentucky River is very steep with grades generally on the order of 1 horizontal to 1 vertical (1H:1V) to 1.5H:1V. A recent analysis of the riverbank in downtown Frankfort indicates a stability factor of less than 1, a harbinger of potential slope failure. Bank stabilization efforts are critical to protect lives and property in Frankfort. Specifically, FEMA BRIC funding will support stabilization efforts at two locations – Main Steet and Wilkinson Boulevard. Along Main Street, eleven (11) properties are threatened by repeated flooding, including a bank, commercial businesses, several breweries, and residential structures. A planned Blanton's Landing development is also dependent on these mitigation measures. A geotechnical report was completed for the Main Street segment of the project following a 2021 flooding event that caused a major embankment collapse. At Wilkinson Boulevard, the unstable riverbank impacts Frankfort's multi-million-dollar tourism industry. River View Park along Wilkinson Boulevard provides the city's only public boat launch. One municipal (1) structure is threatened by riverbank instability. Geotechnical studies are currently underway for this segment.

Over the years, Frankfort has invested in multiple mitigation solutions to stabilize the riverbank, including rip rap, concrete blocks, retaining walls, and green infrastructure. Recurring flooding events are removing/weakening these resilience measures. Specific project activities include:

MAIN STREET BANK STABILIZATION

A Preliminary Geotechnical & Geophysical Exploration report was completed in June 2023 on the Main Street site. The purpose of the study was to explore subsurface conditions in the area and to develop preliminary geotechnical conclusions, opinions, and recommendations for bank stabilization efforts.

BRIC funding will support three types of bank stabilization efforts along Main Street:

1. Along stretches of the project site, some retaining walls do exist. The terrain between existing retaining walls and buildings along the right-descending bank of the Kentucky River and the edge of the water are very steep with evidence of creep in the form of leaning, bowed, and swept trees. Retaining walls currently protect the WesBanco Bank (125 W Main St., Frankfort) and the City of Frankfort property (east of 103 E Main St, Frankfort @ 38.197252, -84.873117). Where permanent bank stabilization measures are already in place, tuckpointing and other repairs will occur.
2. In other areas of the site, riprap has been used to armor the riverbank against erosion. Gabion baskets (approximately 15' high), box-shaped containers made primarily of galvanized steel wire mesh and filled with hard stone and aggregate, are a better solution for these sections. Because gabions can be stacked into walls, they're better suited for steep banks and channel linings. Gabions will deflect the impact of waves and slow the flow of water, dissipating the energy of the Kentucky River.
3. The slopes of some portions of the Main Street site are earthen with no bank stabilization measures. Invasive species will first be removed along these segments. Next, a base of 12" of C-33 concrete sand, 6" of #57 stone, and 6" of 2-inch bedding stone will be established on the riverbed. Alternating rows of riprap (2' thick above a geotextile bed) and A-Jacks concrete blocks (2'-long, double-stacked) will next be installed to stabilize the riverbank. Riprap and A-Jacks will be filled and packed with in-situ soil and seeded per planting plans. This solution was effectively employed on properties adjacent to the project site near the Singing Bridge in 2003.

WILKINSON BOULEVARD BANK STABILIZATION

Within River View Park, design activities are underway to develop detailed plans for stabilizing the earthen riverbank. The project scope will involve removing invasive species and then creating a base of 12" of C-33 concrete sand, 6" of #57 stone, and 6" of 2-inch bedding stone on the riverbed. Next, alternating rows of riprap (2' thick above a geotextile bed) and A-Jacks concrete blocks (2'-long, double-stacked) will be installed. This stabilization solution will mirror activities planned for the earthen riverbank sections of the Main Street site.

Project Cost

The projected initial project cost is $6,790,500 as shown in the budget section. This projected project cost includes all expenditures from the design completion through construction and inspection. This projection was derived using the following sources of information:

- **Wilkinson Boulevard Riverbank Stabilization:** $1,728,000 based on the Opinion of Probable Construction Cost developed by a consultant of the City in April of 2023.

- **Main Street Riverbank Stabilization:** $5,062,500 based on the estimated construction cost of $3,250,000 developed by a consultant of the City in 2021, plus $800,000 for stabilization of the retaining wall adjacent to Crumbaugh Properties. This combined cost of $4,050,0000 has been scaled up to account for 25% inflation since the time of estimate of 2021.

Annual Maintenance Cost

Maintenance expenditures will primarily involve annual structural and site inspections, vegetative control and clearing, and riverbank walk maintenance to protect the project infrastructure and are estimated to have an annualized value of $1,500 per year.

Project and Hazard Specific Analysis

Professional Expected Damages Before Mitigation

Expected damages associated with a landslide prior to riverbank stabilization include loss of property value to the twelve (12) structures listed in the project scope, costs associated with loss of business income for commercial structures, costs associated with displacement of inhabitants for residential structures, and loss of building contents. A summary of the parameters used to calculate professional expected damages before mitigation is found below:

Property Value:

The property value of each structure was calculated in one of three ways: (1) total taxable value of the property as shown on the Franklin County, KY Property Valuation Administration (PVA) website, (2) the building valuation as assessed by insurance records, or (3) the building replacement value, calculated by multiplying the square footage of the structure by the cost to rebuild the structure in dollars per square foot. In this case, the building replacement value was estimated using the construction cost calculator RS Means. A property value justification is attached for each of the twelve structures/properties considered. A table of property values and calculation methods is below:

Structure	Address	Structure Type	Estimation Method	Building Size (ft^2)	Building Replacement Value ($/$ft^2$)	Property Value ($)
WesBanco	125 W Main St	Office, 2-4 story with brick veneer / reinforced concrete	RS Means	31,618	$197.06	$6,230,674.53
WesBanco Parking Lot	121 W Main St	Parking Lot	Franklin County PVA	-	-	$120,000.00
Residential	119 1/2 W Main St	Residence, 1-story with brick veneer / reinforced concrete	RS Means	1,600	$436.94	$699,110.74
Residential	119 W Main St	Residence, 1-story with brick veneer / reinforced concrete	RS Means	2,000	$417.71	$835,422.20
Froggy Radio Station	115 W Main St	Office, 1-story with brick veneer / reinforced concrete	RS Means	4,194	$267.32	$1,121,153.22
McCarthy Strategic Solutions	113 W Main St	Office, 1-story with brick veneer / reinforced concrete	RS Means	3,360	$237.53	$798,089.69
Goodwood Frankfort	109-111 W Main St	Restaurant with brick veneer / wood frame	RS Means	10,000	$217.65	$2,176,463.29
Bourbon on Main	103 W Main St	Restaurant with brick veneer / wood frame	RS Means	2,600	$262.17	$681,641.81
The Stone House by Castle & Key AirBnB	101 W Main St	Apartment, 1-3 story with stone veneer / wood frame	RS Means	4,800	$267.09	$1,282,045.73
Crumbaugh Properties	103 E Main St	Office, 2-4 story with stone veneer / wood frame	RS Means	4,589	$274.38	$1,259,129.86
River View Park Boat Ramp	-	Boat Ramp	Assessed	-	-	$800,000.00
City of Frankfort Property - Blanton's Landing	-	City Property	Franklin County PVA	-	-	$837,500.00

Percentage of Property Value Lost:

A 75% loss of property value was assumed for a 25-year recurrence interval landslide, and a 100% loss of property value was assumed for a 100-year recurrence interval landslide. This was applied to all structures except for Crumbaugh Properties, located at 103 E Main St. A report prepared by the consultant Geotechnology in June of 2023 estimated that the area surrounding Crumbaugh Properties has a minimum factor of safety for slope failure below 1.0, indicating that failure is imminent. This information was used to estimate 100% property loss in all pre-mitigation scenarios for Crumbaugh Properties.

Loss of Business Income

Another damaging impact of a landslide to these structures would be the lost revenue generated from these businesses while they are undergoing repairs. The lost business income for each structure was calculated using the following formula:

$$Lost\ Business\ Income\ (\$) = \frac{Gross\ Annual\ Revenue\ (\$)}{365\ days/year} * Days\ of\ Displacement$$

A table of gross annual revenue for each commercial property affected is below:

Structure	Address	Gross Annual Revenue ($)	Lost Business Income ($/day)
WesBanco	125 W Main St	-	-
Capital City Communications	115 W Main St	$750,000	$2,055
McCarthy Strategic Solutions	113 W Main St	$1,205,643	$2,055
Goodwood Frankfort	109-111 W Main St	$3,000,000	$8,219
Bourbon on Main	103 W Main St	$1,400,000	$3,836
The Stone House by Castle & Key AirBnB	101 W Main St	$91,104	$250
Crumbaugh Properties	103 E Main St	$82,000	$225
River View Park Boat Dock	-	$902,878	$2,480

The gross annual revenue for Capital City Communications, Goodwood Frankfort, Crumbaugh and Bourbon on Main were derived based on correspondence with business owners. The Stone House is operated as an AirBnB, and rents for $416/night on average. This nightly rental cost was multiplied by 365 days and then multiplied by a standard 60% nightly occupancy rate to calculate the gross annual revenue of the business. Due to lack of information, a gross annual revenue estimate for WesBanco was not applied.

The River View Park Boat Dock is used by Kentucky River Tours to operate the "Bourbon Boat", which offers several weekly tours. In the event of a landslide, the boat dock would be destroyed and revenue from these tours would be lost. A summary of the weekly tours operated by Kentucky River Tours is below:

Bourbon Boat Tours	Price/Tour	Tours/Week	Passengers	Occupancy	Weekly Revenue
KY River Bourbon History Tour	$29.95	4	49	0.75	$4,402.65
The Old Taylor Tour	$69.95	2	49	0.75	$5,141.33
River Tour and Taste	$49.95	2	49	0.75	$3,671.33
Bourbon and Boats Tour	$89.95	1	49	0.75	$3,305.66
KY River Historical Lock Through	$34.95	1	15	0.75	$393.19
KY River Historical Frankfort Tour	$19.95	2	15	0.75	$448.88
				TOTAL	$17,363.03

Displacement

In the event of a landslide, the inhabitants of the two residential structures in the scope of this project would need to seek emergency lodging while their homes were being repaired. The cost of displacement was estimated using the following formula:

$$Displacement\ (\$) = Nightly\ Hotel\ Cost\ (\$) * Days\ of\ Displacement + Daily\ Food\ Cost, per\ diem\ (\$) * Number\ of\ Residents$$

The nightly hotel cost was estimated at $107 per night by using the U.S. General Services Administration's daily lodging rates in the state of Kentucky. Similarly, the cost of food per diem was estimated at $59 and multiplied by the average number of residents per household in Frankfort, KY according to the United States Census Bureau. Using these values, a daily cost of displacement of $234 per day was developed for each residential structure.

Days of Lost Business Income/Displacement

Based on engineering experience, we estimate 1-3 years after landslide occurrence until each structure can be safely inhabited due to riverbank stability construction, building repairs/construction, mud, rock, and water intrusion, mold mitigation, restoration of water/sewer service, etc. One year of displacement (365 days) was selected as a conservative estimate for the 25-year recurrence interval, where 75% property loss occurs.

The days of lost business income/displacement were scaled proportionally during this assessment to account for differing percentages of property loss. For instance, where 100% property loss was assumed in the before mitigation, 100-year recurrence interval scenario, 485 days of displacement was assumed rather than 365. Similarly, 245 days of displacement was used in the after-mitigation scenario of 50% property loss.

Loss of Building Contents

For each structure considered, the loss of building contents due to landslide damage was deemed to be a source of additional damage. To calculate damages due to loss of building contents, the FEMA standard values for building contents as a percentage of building replacement value was utilized:

Structure Type	Engineered Building	Pre-Engineered Building
Residential	100%	100%
Apartment	10%	12%
Clothing, Retail	29%	36%
Convenience Store	52%	62%
Correctional Facility	24%	27%
Electronics, Retail	65%	81%
Fast Food	15%	17%
Furniture, Retail	14%	18%
Grocery	85%	106%
Hospital	28%	30%
Hotel	15%	19%
Industrial Light	38%	47%

Medical Office	13%	15%
Non-Fast Food	23%	26%
Office One-Story	12%	14%
Protective Services	69%	88%
Recreation	25%	30%
Religious Facilities	7%	8%
Schools	6%	7%
Service Station	66%	83%
Warehouse, Non-Refrigerated	37%	47%
Warehouse, Refrigerated	36%	43%

Each property was classified by structure type, and then the value of building contents was calculated by multiplying the percentages in the table above by the estimated property value. The value of building contents was also multiplied by the percentage of property value lost assigned to each recurrence interval (e.g., 75% property loss for the before-mitigation, 25-year recurrence landslide).

Professional Expected Damages After Mitigation

Expected damages associated with a landslide after riverbank stabilization include loss of property value to the twelve structures listed in the project scope, costs associated with loss of business income for commercial structures, costs associated with displacement for residential structures, and loss of building contents. Each parameter was calculated using the same methodology as in the Before Mitigation scenario, but with varying percentages of lost property value, building contents, and days of displacement/loss of business income.

The 25-year and 100-year recurrence intervals were evaluated after the proposed mitigation action of riverbank stabilization. It is assumed that the proposed mitigation action will fully protect against damages from the 0.04% (25-year) annual landslide event, and therefore total damages were assumed to be zero. For the 0.01% (100-year) annual landslide event, the percentage of property value lost was estimated to decrease from 100% (before mitigation) to 50% (after mitigation). The number of days of displacement/lost business income was proportionally scaled down to 245 days, as well.

Benefit-Cost Summary

This section provides a summary of the final values for cost and benefits, which were used to calculate the benefit cost ratio (BCR). The BCR calculated to determine the final cost-effectiveness of this project was found to be 2.44.

Discount Rate 3% (BRIC)	Value
Total Mitigation Project Benefits ($) 3% Discount:	$ 16,666,212
Total Mitigation Project Cost ($) 3% Discount:	$ 6,816,620
Benefit Cost Ratio – Standard (3% Discount Rate):	2.44