

ATTACHMENT 1 –U.S. ROUTE 1A FRANKFORT HIGHWAY RESILIENCY IMPROVEMENT PROJECT
APPLICATION

AUGUST 18, 2023

SUBMITTED BY MAINE DEPARTMENT OF TRANSPORTATION

Project Narrative

I. Basic Project Information	
Project Title	U.S. Route 1A Frankfort Highway Resiliency Improvement Project
Lead Applicant	Maine Department of Transportation (MaineDOT) is the lead and sole applicant. MaineDOT is a cabinet-level state agency with primary responsibility for statewide transportation by all modes of travel. MaineDOT employs approximately 1,600 people and expends or disburses more than \$675 million per year, including federal, state, and local funds. MaineDOT’s mission is to support economic opportunity and quality of life by responsibly providing customers the safest and most reliable transportation system possible, given available resources.
Facility	<input checked="" type="checkbox"/> highway project eligible for assistance under this title; <input type="checkbox"/> public transportation facility or service eligible for assistance under chapter 53 of title 49; <input type="checkbox"/> facility or service for intercity rail passenger transportation (as defined in section 24102 of title 29); or <input type="checkbox"/> port facility, including that: <ol style="list-style-type: none"> a. connects a port to other modes of transportation. b. improves the efficiency of evacuation and disaster relief; or aids transportation. (23 U.S.C. 176(d)(5)(C)).
Project Description	<p>The project presented in this application will improve the resilience of U.S. Route 1A (aka Bangor Road) using climate adaptation measures and nature-based solutions. This section of U.S. Route 1A is a Priority 1 roadway located between the towns of Frankfort and Prospect in rural Maine (Figure 1).</p> <p>The full project area begins just south of Seavey Bridge (#2752), which crosses the low-lying Seavey Brook adjacent to the South Branch Marsh River, flowing to the east. The project length totals 7,100 linear feet (1.34 mi), ending just north of large culvert #94455 (Figures 1 and 2). The current project plan includes improvements to Seavey Bridge (#2752), which is included within the project limits to take advantage of economies of scale and reduce disruptions to the traveling public. However, funding for improvements to this bridge are not included in this grant funding request. The resiliency improvement project begins just south of Mount Waldo Road</p>

and ends at the northern terminus of the full project area.

The existing road is built on a causeway across tidal marsh fed by Seavey Brook, Marsh Stream, the Penobscot River, and ultimately by Penobscot Bay. The road and causeway are vulnerable to sea level rise due to their low elevation and direct proximity to tidal waters. The project involves raising the profile of the existing road to above the regional Highest Astronomical Tide (HAT) of +3.9 feet, thereby decreasing flooding vulnerability associated with sea level rise and extreme tides. The project also includes replacing and upsizing large culvert #94455 as it currently sits 2.5 feet below the +3.9 feet HAT (Figure 2). The existing culvert is a 60-inch precast concrete pipe listed as in good condition. The replacement structure will be sized to accommodate more natural tidal flows as well as enhance passage and habitat connectivity for anadromous fish, including federally and state endangered Atlantic salmon (*Salmo salar*), short-nosed sturgeon (*Acipenser brevirostrum*), and Atlantic sturgeon (*Acipenser oxyrinchus*). Modifications to Seavey Bridge (#2752) are included only to the extent that grade will be matched to final roadway elevation and guardrail will be added.

Climate adaptation and resilience will be achieved by raising the roadway for the project length (0.42 miles) by an average of two feet and large culvert #94455 by 2.5 feet to meet the HAT +3.9 feet. In addition to improving the safety and resiliency of these assets, changes to the road profile and culvert diameter will provide opportunities to apply nature-based flood management techniques and improve biodiversity conditions, while ensuring accessibility and safe transportation routes for rural travelers.



FIGURE 1: LOCATION OF PROPOSED RESILIENCY IMPROVEMENTS ON U.S. ROUTE 1A IN FRANKFORT, MAINE.



FIGURE 2: LARGE CULVERT #94455.

<p>Funding Category</p>	<p><input checked="" type="checkbox"/> Resilience Improvement</p> <p><input type="checkbox"/> Community Resilience and Evacuation Routes</p> <p><input type="checkbox"/> At-Risk Coastal Infrastructure</p>	
<p>Previous Experience with Receipt and Expenditure of Federal-aid Highway Program Funds</p>	<p>MaineDOT is a very experienced, thorough, and responsible recipient of previous TIGER, FASTLANE, INFRA, CHBP, BUILD and RAISE grant funding. USDOT can rely on MaineDOT to fully fund and begin construction well prior to the obligation of funds date and complete the Project without risk. MaineDOT expends or disburses more than \$675 million per year, including federal, state, and local funds. All funding received is fully allocated as per MaineDOT’s three-year work plan.</p>	
<p>Location</p>	<p>Physical</p>	<p>Start: U.S. 1A, Mile 21.88, Frankfort, ME 04438 Coordinates: 44.57854955, -68.86184383</p> <p>End: U.S. 1A, Mile 21.88, Frankfort, ME 04438 Coordinates: 44.59759309, -68.86589041</p>
	<p>Description</p>	<p>The project consists of a 1.34-mile section of U.S. Route 1A located between the rural towns of Frankfort and Prospect (Figure 3). Frankfort, Maine is the oldest town in the Penobscot River Valley and served as a key location along trading routes between Bangor to the north and the ports along Mid-Coast Maine throughout the 18th and 19th Centuries. Situated along the U.S. Route 1A corridor, Frankfort is an ideal location for those commuting to Bangor to the north or Coastal Maine to the south. The existing section of U.S. Route 1A in the project area is on a raised causeway through tidal marsh. The associated culvert crosses a tributary to the South</p>

Branch Marsh River, described by the National Oceanographic and Atmospheric Administration (NOAA) as a low-lying area. Fluctuations in the water level of the low-lying area correspond to water levels of the river, increasing in elevation during high tide and storm events.

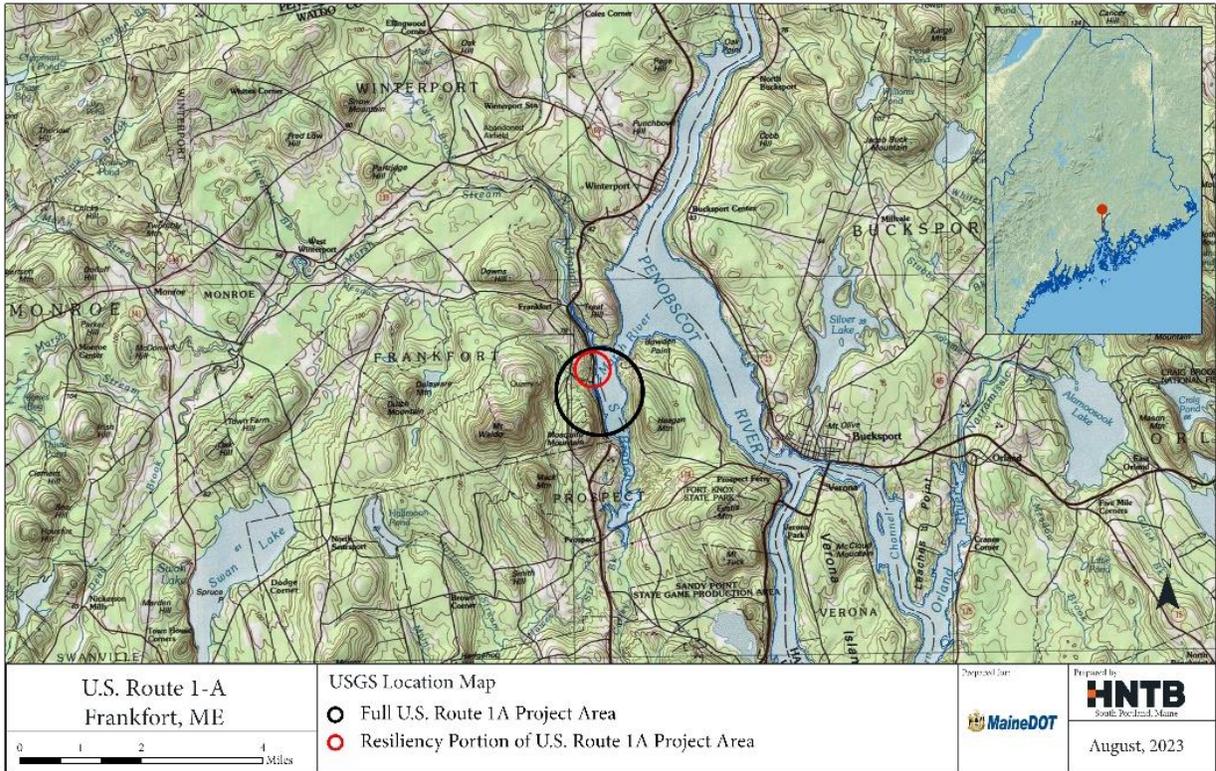


FIGURE 3: USGS LOCATION MAP OF GREATER PROJECT AREA.

- a) The project is included in Census Tract 420 in Waldo County, Maine, which USDOT’s Transportation Disadvantaged Census Tracts tool identifies as a Historically Disadvantaged Community in terms of both Transportation and Health (Figure 4).¹

¹ <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

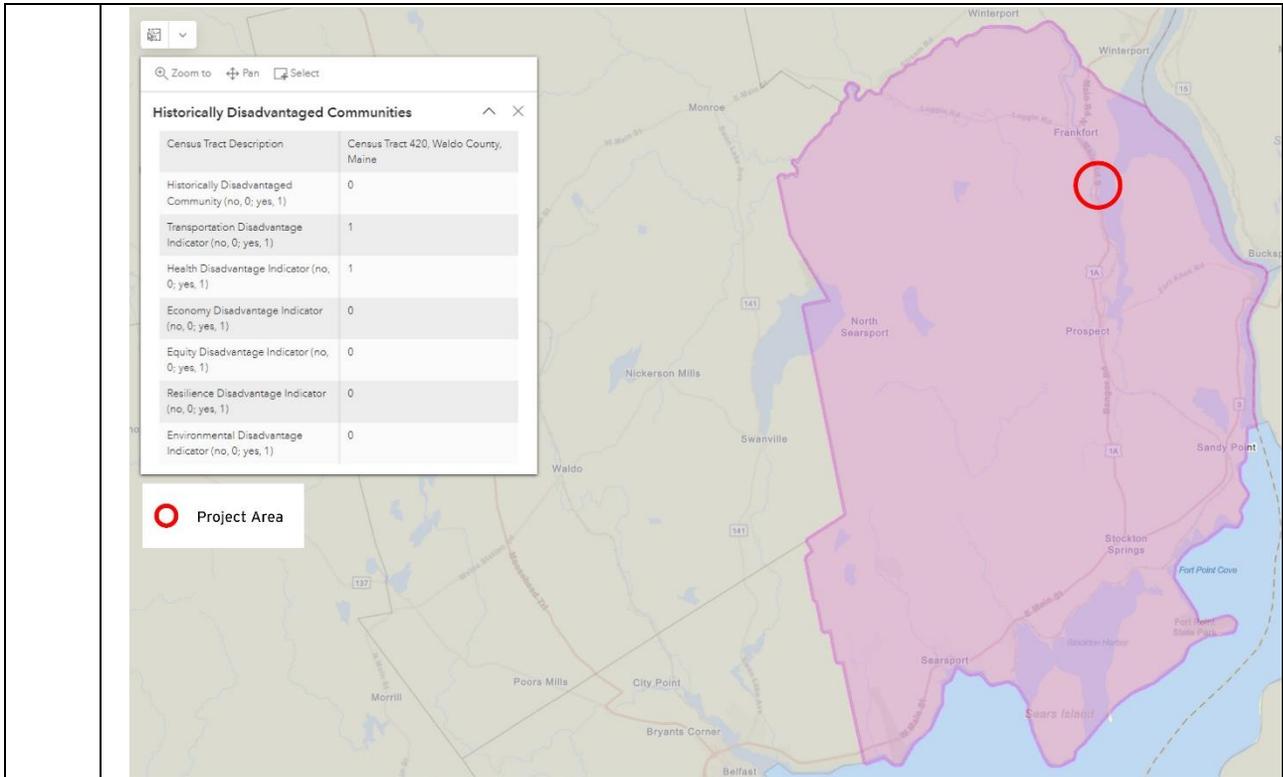


FIGURE 4: CENSUS TRACT 420, WALDO COUNTY, MAINE.²

- b) The project is not currently identified in any local, regional, or state Resilience Improvement Plan (RIP). While some communities in Maine are creating RIPs, Frankfort, Prospect and MaineDOT do not have these in place as of this submittal date.
- c) Federal Emergency Management Administration (FEMA) flood maps identify the project area as located within the South Branch Marsh River floodplain (Figure 5).³ Further localized flood hazard data is accessible via Maine Geological Survey Maine FEMA Floodplain Maps.⁴

² <https://usdot.maps.arcgis.com/apps/dashboards/d6f90dfcc8b44525b04c7ce748a3674a>

³ <https://msc.fema.gov/portal/search?AddressQuery=Maine>

⁴ <https://www.maine.gov/dacf/flood/mapping.shtml>

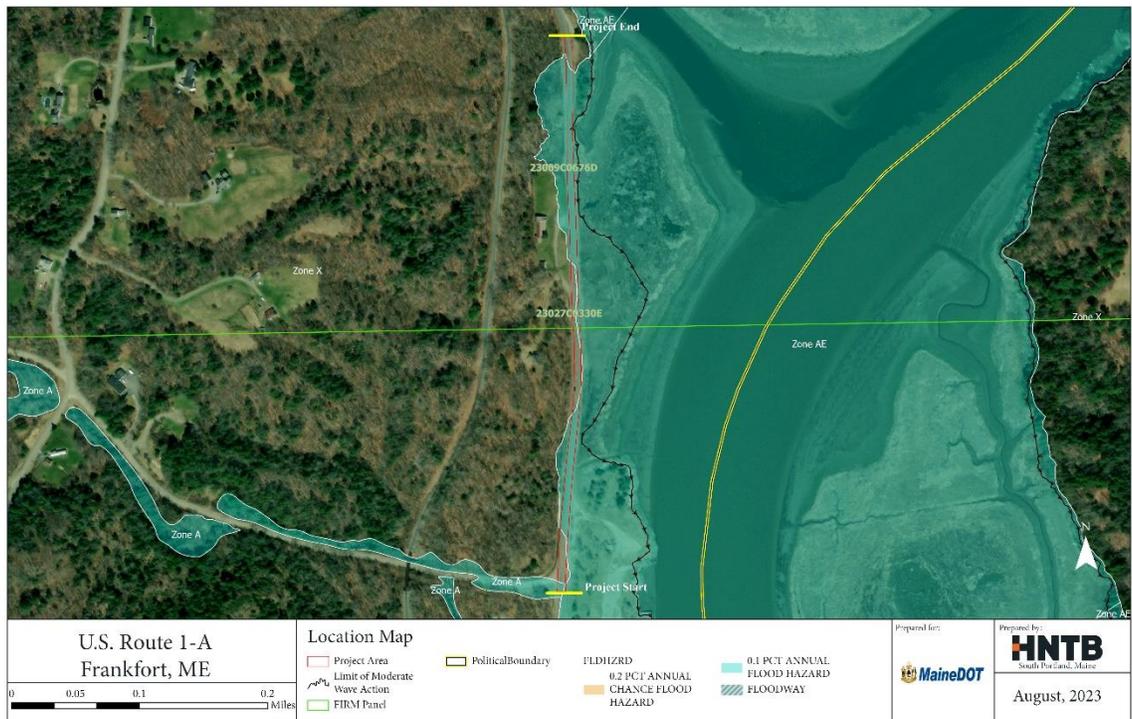


FIGURE 5: FEMA NATIONAL FLOOD HAZARD MAP.³

d)

The Maine Geological Survey’s (MGS) Sea Level Rise/Storm Surge Viewer identifies inundation of portions of the roadway starting at the culvert in 4ft sea level rise scenario.⁵ This dataset approximates the potential inland extent of inundation from several scenarios (1.2, 1.6, 3.9, 6.1, 8.8 and 10.9 feet) of sea level rise or storm surge along the Maine coastline on top of the HAT. That HAT layer displays the maximum predicted astronomical high tide for the current National Tidal Datum Epoch (1983-2001). The sea level rise scenarios were developed by using available long-term sea level rise data from Portland, Bar Harbor, and Eastport tide gauges and the US Army Corps of Engineers Sea-Level Change Curve Calculator⁶ and sea level rise scenarios established by NOAA et al. prepared for the US National Climate Assessment in 2017.⁷ Scenarios include low, intermediate low, intermediate, intermediate high, high, and extreme sea level rise at the 50% confidence interval. The data were developed with a static (“bathtub”) inundation model that uses LiDAR topographic data as a base digital elevation model, and first adjusts HAT tidal predictions to consider variability in elevation datums along the Maine coastline, and then adds the storm surge/sea level rise scenarios to that initial starting elevation. The primary purpose of these data is to help inform storm surge and sea level rise vulnerability assessments and community planning.

Throughout all scenarios, there is a progressive encroachment by the river with moderate wave action already abutting the road in multiple locations within the project area. The encroachment is an indicator of the increased potential for outages of the roadway during high tide and storm surge following severe rain events. Figure 6 shows current extents of HAT and Figure 7 shows the extent of expected permanent inundation at 3.9+ ft of

⁵ <https://coast.noaa.gov/slr/#/layer/slr/0/-7540566.428209165/5558910.403820061/16/satellite/12/0.8/2050/interHigh/midAccretion>

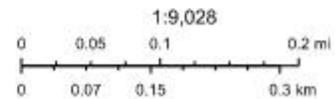
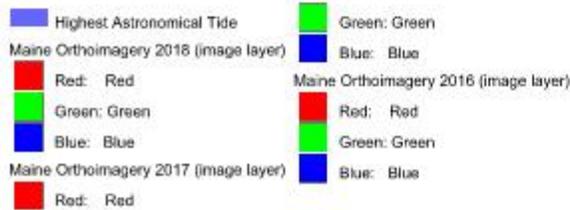
⁶ https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html

⁷ <https://coast.noaa.gov/slr/#/layer/slr>

sea level rise, which is the elevation used in MaineDOT's Bridge Design Guidance.⁸



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Maine Geolibrary, Esri, HERE, Garmin, IFC, Nascar

Maine Geological Survey
2015

FIGURE 6: MGS SEA LEVEL RISE/STORM SURGE SCENARIOS – CURRENT CONDITIONS AT PROJECT AREA ON U.S. ROUTE 1A, FRANKFORT, MAINE.⁸

⁸ https://www.maine.gov/dacf/mgs/hazards/slr_ss/index.shtml



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FIGURE 7: MGS SEA LEVEL RISE/STORM SURGE SCENARIOS IN THE PROJECT AREA UNDER HAT +3.9 FT OF SEA LEVEL RISE.⁹

II. Grant Funds, Sources and Uses of all Project Funding

III. Merit Criteria

1	Vulnerability and Risk	Most climate models project that Maine will continue to get wetter over the next century as increased heating from climate
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⁹ <https://www.maine.gov/dacf/mgs/hazards/coastal/index.shtml>

change intensifies the hydrologic cycle. Maine has experienced an increase in the average number of heavy precipitation events per year, sea levels, and storm surge frequency.¹⁰

The principal vulnerability for the project area is potential road and/or culvert failures and temporary road closures due to flooding caused by extreme weather. As described in Section I, the project area currently experiences inundation associated with coastal storm surge and extreme high tide events. The existing structure lies within the NOAA identified Current Mean Higher High Water and is expected to experience more frequent closures as sea levels rise. In addition, longer term compromising of emergency access and economic impacts are anticipated to result from predicted sea level rise in the South Branch Marsh River.

a) Exposure

Active flooding of this section of Route 1A is caused by a combination of the low roadway elevation relative to current weather and climate conditions. A portion of the project area is regularly overtopped during high water events, forcing road closures. Increasing water elevations are anticipated, whether permanent through incremental sea level rise and higher high tides, or temporary due to extreme weather and storm surge events. The project would mitigate the risk of flooding across the bridge by elevating the roadway and increasing hydrologic capacity of the stream crossing structure. Tidal levels captured at the boat launch just south of the project area by USGS show intense fluctuations in daily tides reaching as high as 9ft consistently (Figure 8).

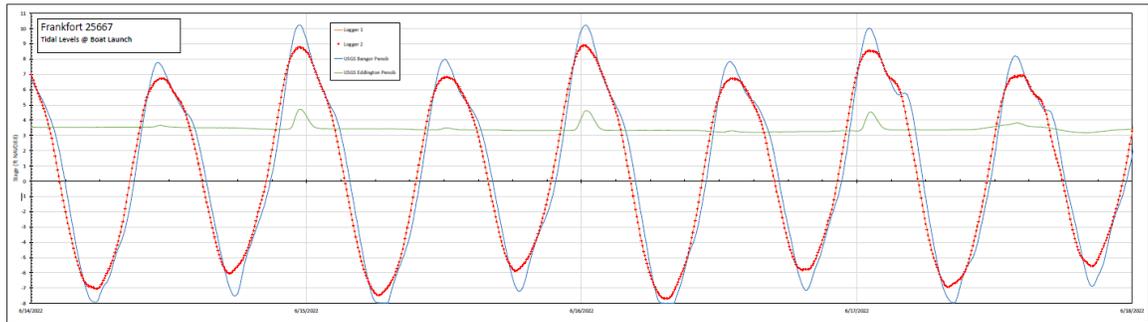


FIGURE 8: FRANKFORT TIDAL LEVELS

¹⁰ https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/GOPIF_STS_REPORT_092320.pdf

b)	Sensitivity	<p>The existing roadway is highly sensitive to the impacts of flooding from high tides. The project location encompasses the low point of the road where flooding and ponding regularly occur after tidal or extreme weather events. Large culvert #94455 is in good condition but is not sized to accommodate existing hydrologic conditions or optimal habitat connectivity between the marsh and river.</p>
c)	Adaptive Capacity	<p>In its existing condition, this section of Route 1A has little capacity to adapt to future changes in sea levels or storm surge frequency. The same is true of the existing large culvert crossing. The proposed road profile and crossing structure mitigate the hazard of flooding by raising the road, adding adaptive capacity through the project area. The road and adjacent bridge will be raised to meet HAT +3.9 feet to improve resiliency to existing and increased water elevations. The upsizing of large culvert #94455 will improve the hydrologic relationship of the marsh and brook, allowing for more natural flows. This in turn will increase the ability of the adjacent wetlands to diffuse and buffer storm surges, flooding, and higher sea levels. Raising the road and carrying the updated profile through to the Bridge #2752, located just to the south of the project area on Route 1A, will continue the adaptive capacity along the causeway, creating safer traveling conditions. Additionally, the side slopes of the causeway will be stabilized such that they are resilient to wave activity, using green infrastructure where feasible to minimize impact to immediately adjacent marsh.</p>
2	Criticality to Community	<p>U.S. Route 1A is a critical connector and evacuation route for communities across mid-coast Maine. This auxiliary highway connects coastal communities to the City of Bangor. Bangor, the largest city in the region, and many amenities unavailable in the rural surroundings require an extensive detour to reach if the roadway is impassable due to flooding or damage. Regular roadway flooding severs the connection between the surrounding rural and coastal areas with Bangor.</p> <p>During road closures, an additional 15.7 vehicle miles traveled (VMT) are required from abut to abut of the full project area (Figure 9). Satellite imagery identifies potentially shorter routes; however, the suitability of these alternatives varies, including a gravel road and low-capacity rural roads unable to handle the traffic from the US Route 1A. Outages of the project area during flooding interferes with the ability of residents in coastal communities to reach the economic opportunities of Bangor as well as significantly increases EMS and Fire response times south of the project area during outages.</p>

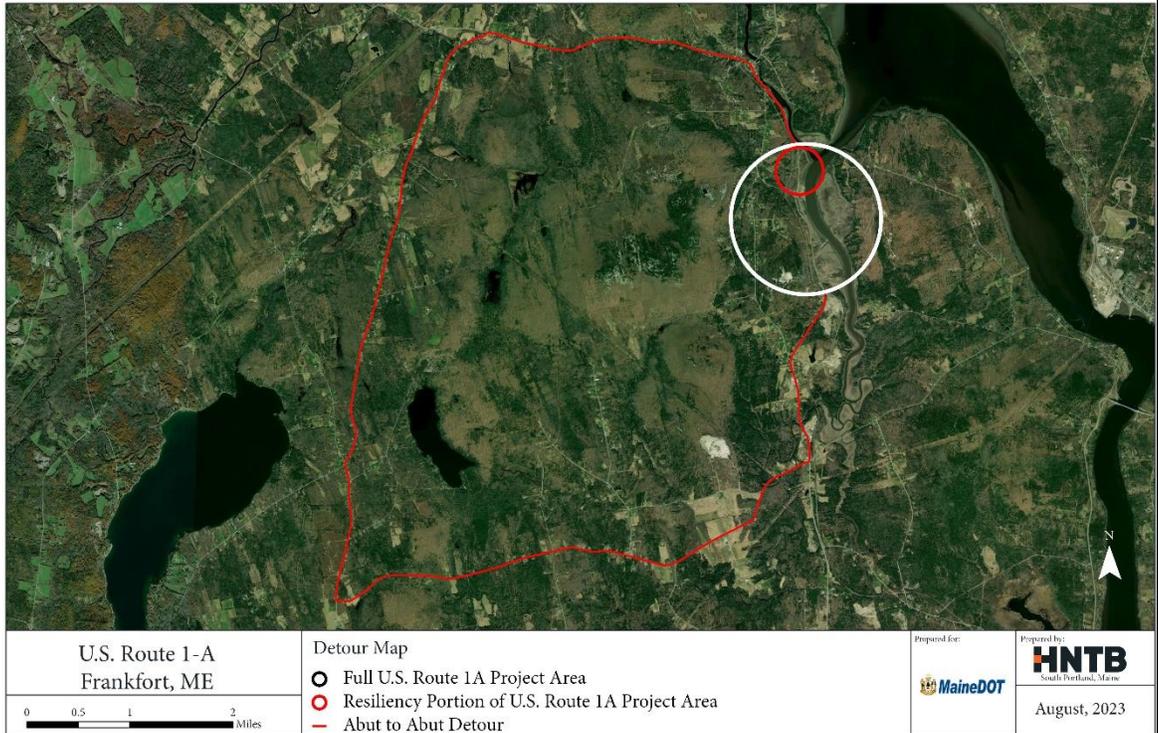


FIGURE 9: U.S. ROUTE 1A DETOUR MAP, FRANKFORT, MAINE.

Additionally, the project area is part of Maine Hurricane Evacuation Route HX, which serves evacuation Zone A along the South Branch Marsh River (Figure 10). Class A zones are described by Maine Emergency Management Agency (MEMA) as generally most at risk of flooding and storm surge. The operability of the roadway is critical for evacuation purposes of the surrounding areas and the vulnerability of the structure to flood risk limits the structures' ability to function during emergency evacuation scenarios.¹¹ This project aims to mitigate the potential of interruptions in service by elevating the roadway and reducing the impact of flooding events.

¹¹ <https://storymaps.arcgis.com/stories/4fb502bf0ea6467693ff4191a1859e92>

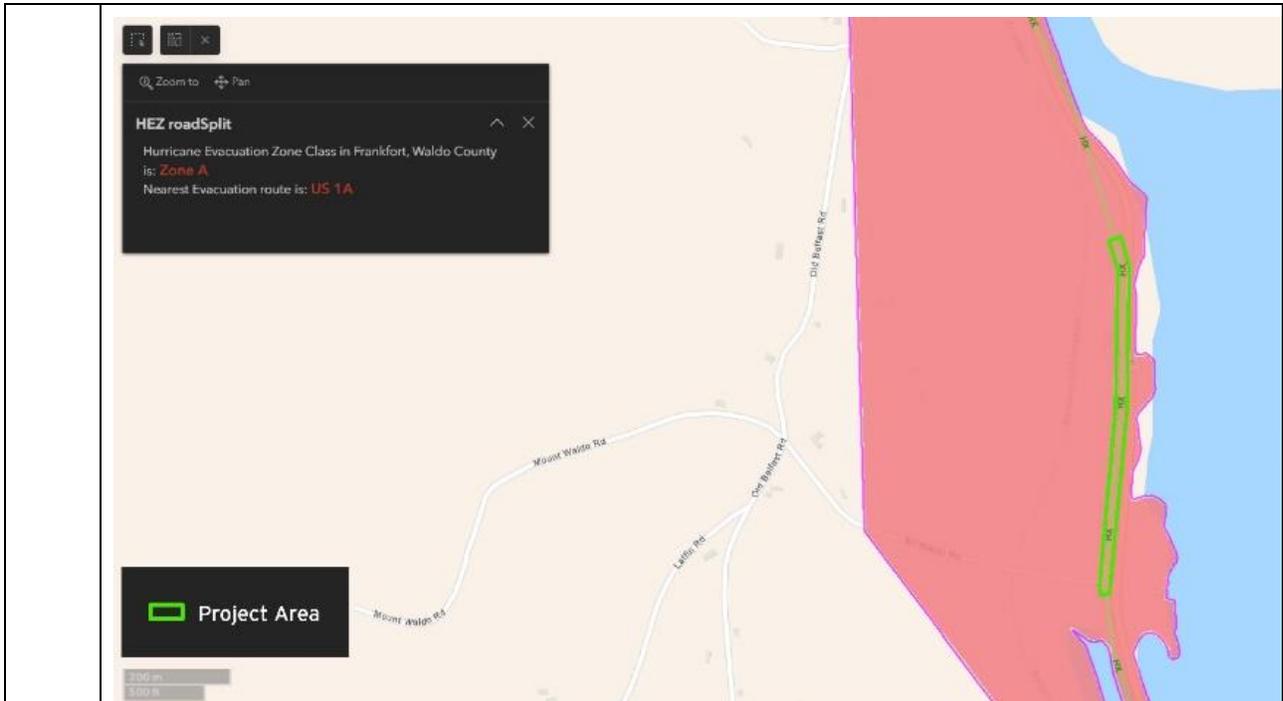


FIGURE 10: MAINE HURRICANE EVACUATION ROUTE HX.

3	Design Elements	<p>The project will increase the existing roadway elevation to accommodate HAT +3.9 feet, resulting in a finished elevation of approximately 12.7 feet at the edge of the travel way. This will require a mill depth of 0.75 feet (assumed) and additional subgrade material removal. Removed material will be used in other places in the project rather than disposing of it offsite. The increased roadway elevation provides the opportunity to upsize large culvert #94455. The resizing of this culvert will improve the hydrologic relationship of the marsh and brook, allowing for more natural flows. This in turn will increase the ability of the adjacent wetlands to diffuse and buffer storm surges, flooding, and higher sea levels. The design includes flattening the unprotected side slopes of the roadway to a universal 4:1 slope to improve safety. Annual maintenance and operational costs are not expected to increase based on this project because the existing structure and roadway are being replaced rather than an additional asset being added to the system. Therefore, preexisting maintenance costs are considered appropriate to support the new crossing structure and roadway throughout the anticipated service life of 20 years.</p>
4	Public Engagement, Partnerships and Collaboration	<p>MaineDOT will use its virtual Public Involvement Management Application (PIMA) for public engagement during program development and implementation. MaineDOT was an early adopter of virtual public involvement during COVID-19 when in-person meetings were restricted</p>

		<p>for public health reasons. Beyond the pandemic, MaineDOT has opted to continue using PIMA as its primarily vehicle to distribute information as well as collect public comment. The number of people accessing the project-specific websites and the number of comments received are significantly higher using PIMA. In addition, people from all corners of the state can access this virtual platform and the level of customer satisfaction with this engagement method is high. PIMA is especially effective in reaching rural communities where travel distance to in-person meetings can be a barrier to public participation.</p>
5	Equity and Justice40	<p>The project area is identified as disadvantaged by the Climate and Economic Justice Screening Tool (CEJST) (Figure 11).¹² Frankfort is included in Census Tract 420, which meets the burden threshold for energy cost and the associated socioeconomic threshold for low income. Census Tract 420 ranks in the 66th percentile of people in households where income is less than or equal to twice the federal poverty level, not including students enrolled in higher education, above the national socioeconomic threshold of the 65th percentile. Additionally, average relative cost and time spent on transportation in the area is identified as a barrier by the tool with the tract ranking in the 97th percentile. Continued outages of the bridge would exacerbate existing transportation barriers in the area as U.S. 1A is the main thoroughfare for the tract.</p> <p>As stated above, the use of PIMA increases the effectiveness of outreach to rural communities where travel distance to in-person meetings can be a barrier. MaineDOT’s virtual public involvement process, combined with direct conversations with the local population, will provide the opportunity to proactively minimize impacts to potentially affected community-based organizations, businesses, and residents during project planning. PIMA is used not only to collect comments on projects, but also to reflect how such input is taken into consideration in decision-making and keep the public informed during construction.</p>

¹² <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>

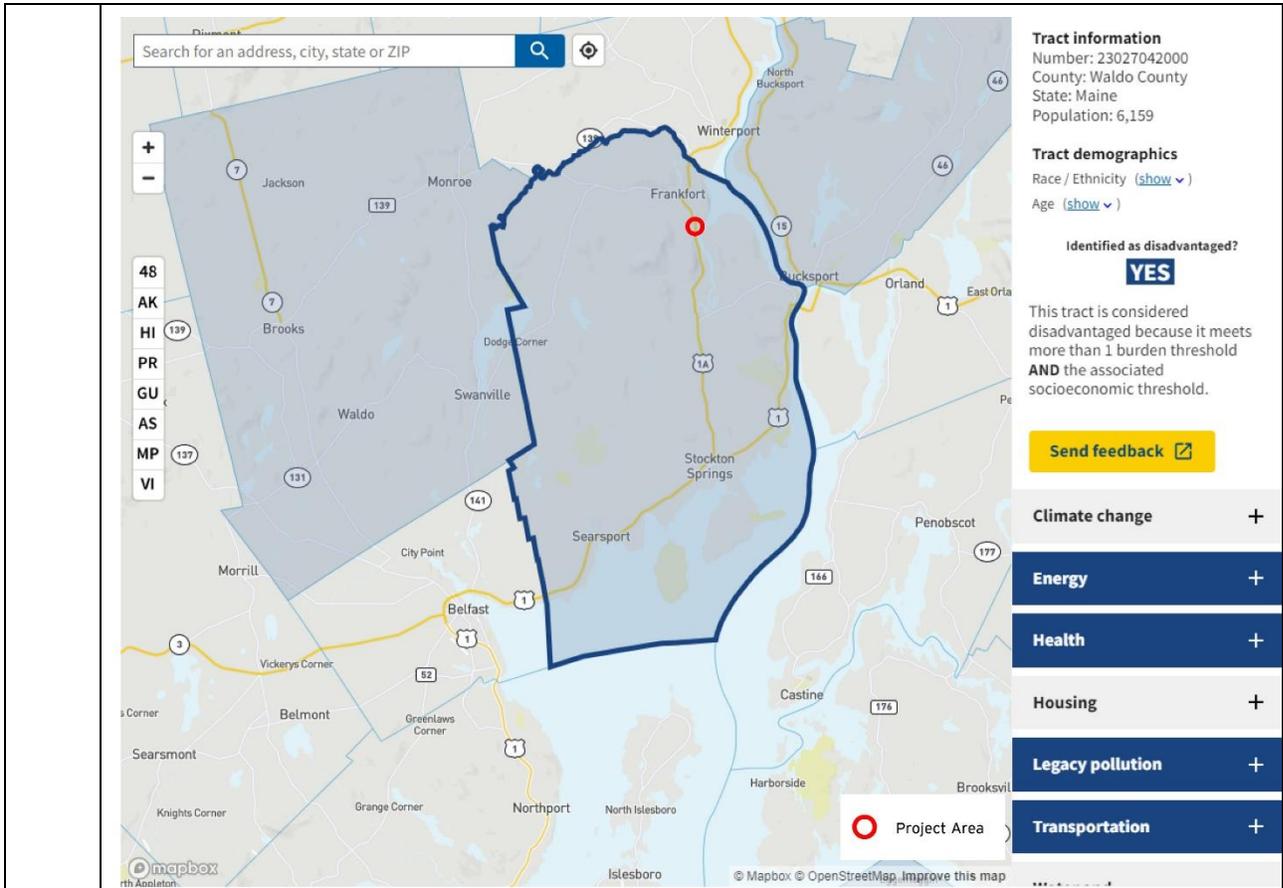


FIGURE 11: CLIMATE AND ECONOMIC JUSTICE SCREENING TOOL (CEJST) RESULTS FOR THE PROJECT AREA, FRANKFORT, MAINE.

6	Climate and Sustainability	<p>The project is located within the habitat of several Federal and State endangered species, including Atlantic salmon, short-nosed sturgeon, and Atlantic sturgeon. Increasing the hydrologic and hydraulic capacity of the existing large culvert will enhance aquatic organism passage, promoting and protecting the biodiversity of the marine environment.</p> <p>Improving and maintaining the crossing to be resilient to projected sea level rise will also contribute to the reduction of greenhouse gas emissions from passenger vehicles. This reduction will be realized from decreased vehicle miles traveled in the event of a required detour because of a road closure due to flooding.</p> <p>Generally, this project provides needed investment in long-term solutions for resilient transportation infrastructure. The project prioritizes public safety in terms of traveler safety and mobility for citizens vulnerable to the multifaceted effects of climate change.</p> <p>Construction of this project will require the removal of subgrade material, which can then be used as fill on site to increase roadway elevation. This reuse eliminates the need for</p>
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		<p>transporting fill material off-site, therefore eliminating emissions associated with heavy truck trips.</p> <p>The project also includes the implementation of nature-based solutions for slope management on the causeway. The stabilizing materials will be designed in a way to promote habitat creation and reduce impacts to the adjacent marsh area.</p>														
7	Schedule and Budget	<p>A detailed project schedule for the project follows (Table 1).</p> <p>TABLE 1: U.S. ROUTE 1A FRANKFORT HIGHWAY RESILIENCY IMPROVEMENT PROJECT SCHEDULE</p> <table border="1"> <thead> <tr> <th>Milestone</th> <th>Finish Date</th> </tr> </thead> <tbody> <tr> <td>Project Kickoff</td> <td>May 2021</td> </tr> <tr> <td>PDR</td> <td>May 2024</td> </tr> <tr> <td>PSE</td> <td>March 2026</td> </tr> <tr> <td>Advertise</td> <td>April 2026</td> </tr> <tr> <td>Construction Begin</td> <td>June 2026</td> </tr> <tr> <td>Construction Complete</td> <td>November 2027</td> </tr> </tbody> </table> <p>MaineDOT is requesting \$11,003,200 in PROTECT grant funds to complete this project, which represents an 80% share of eligible project costs. The entirety of the budget includes costs specifically pertaining to resiliency improvement of Route 1A through the project area. A detailed budget for the anticipated costs of this project is as follows (Table 2).</p>	Milestone	Finish Date	Project Kickoff	May 2021	PDR	May 2024	PSE	March 2026	Advertise	April 2026	Construction Begin	June 2026	Construction Complete	November 2027
Milestone	Finish Date															
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TABLE 2: U.S. ROUTE 1A FRANKFORT HIGHWAY RESILIENCY IMPROVEMENT DETAILED PROJECT BUDGET BY COMPONENT

Fund Sources	Previously Incurred		Post Grant Award				Fund Source Totals	Total Project Cost %		
	PE/ROW	Previously Incurred %	PROTECT Eligible	Construction / CE	Post Grant Award %	Non PROTECT Elements			Construction/ CE	Post Grant Award %
FHWA Formula	\$1,026,400	80.0%		PROTECT Eligible	\$0		0.0%	Non PROTECT Elements	\$800,000	80.0%
MaineDOT	\$256,600	20.0%	\$2,750,800		20.0%	\$200,000	20.0%		\$3,207,400	20.0%
Grant	\$0	0.0%	\$11,003,200		80.0%	\$0	0.0%		\$11,003,200	68.6%
Private	\$0	0.0%	\$0		0.0%	\$0	0.0%		\$0	0.0%
Fund Stage Totals	\$1,283,000			\$13,754,000		\$1,000,000				
Total Project Cost									\$16,037,000	100.0%

8	Innovation	<p>The project will rely on interagency cooperation and the expertise of MGS to ensure best practices and the best project outcome regarding soils and coastal erosion.</p> <p>Innovative technologies to be implemented as part of the project include precast concrete and lightweight fill where applicable. Precast concrete is reliable and standardly used sustainable building material. Precast manufacturing can utilize recycled manufacturing materials reducing the overall waste of the project. Precast concrete is considered a more efficient product than concrete mixed on site and is cited to use fewer overall materials to produce.</p> <p>Lightweight fill would replace heavier in situ soils on the project site in locations such that the integrity of the improvements would not be compromised. Collaboration with MGS would help identify proper use of lightweight fill. The use of lightweight fill would reduce the impacts of potential settlement in the project area as the synthesized material reduces load on subgrade soils. The use of lightweight fill also reduces construction schedule when compared to preload. Reducing schedule helps with faster connectivity and reduces carbon emissions from construction. Settlement mitigation through lightweight fill is anticipated to increase the life span of the improvements done to the causeway. Using foamed glass aggregate as lightweight fill removes discarded glass bottles from the waste stream.</p> <p>Technologies like precast concrete and lightweight fill are highly reliable with comparable, if not surpassing, life spans of their standard counterparts. Implementing innovative technologies reaffirms MaineDOT's commitment to reducing its carbon footprint, while also improving the resiliency of Maine's transportation infrastructure.</p> <p>The sum of these innovative elements is a project that not only addresses current community resiliency needs but continues to provide reliable transportation connectivity for decades to come.</p>
IV. Economic Analysis		
Benefit-Cost Analysis	<p>For this project, the benefit-cost ratio is 3.72, indicating that the benefits of the project will deliver a net positive result for the community and for the environment. The purpose of the Benefit Cost Analysis (BCA) is to enable FHWA to evaluate the project's cost-effectiveness by comparing its expected benefits to its expected costs, relative to a scenario where the project is either not built or not built with resiliency as a focus. The BCA assigns monetary value to a variety of measures that</p>	

are benefits to society to determine the sustainability and potential expected rewards of a project. For this project, the benefits considered are related to improving the climate adaptivity and resiliency of the bridge and roadway to maintain safe travel and protect against sea level rise. As is the case for the proposed resiliency improvement in Frankfort, a Benefit/Cost ratio of 1.0 or greater indicates that the project is cost-effective. Results of the BCA are summarized in Table 3 and supporting calculations are provided as Attachment A.

TABLE 3: BENEFIT-COST ANALYSIS SUMMARY FOR RESILIENCY IMPROVEMENTS TO ROUTE 1A IN FRANKFORT, MAINE.

Discounted Benefits and Costs
8/8/2023

	Total [#]	\$M
Benefits		
Travel Time Savings	\$7,553,603	\$7.6
Reduced Vehicle Operating Costs	\$5,984,235	\$6.0
Reduced Emissions Damage *	\$377,436	\$0.4
Avoided Emergency Vehicle Delay	\$38,553,001	\$38.6
Reduced Crash Costs	\$186,941	\$0.2
Avoided Rehab/Repair Costs	\$49,987	\$0.0
plus Residual Value	\$773,713	\$0.8
Net Benefits	\$53,478,917	\$53.5
Total Costs	\$14,390,158	\$14.4
B/C Ratio	3.72	3.72
Net Present Value	\$39,088,759	\$39.1

[#] in 2020 dollars

* includes carbon-related benefits discounted at 3%

V. FHWA Priority Considerations

1	Exceptional benefits under merit criteria #5 Equity and Justice 40	The project area is in an area identified as disadvantaged by the Climate and Economic Justice Screening Tool (CJEST). Frankfort is included in Census Tract 420, which meets the burden threshold for energy cost and the associated socioeconomic threshold for low income. In addition to these quantitative criteria, the project area is sparsely developed, rugged terrain. Due to the geography of the area, detour routes are limited and exceptionally long (15.7 miles from abut to abut) causing significant impacts to residents and emergency services ability to travel. Redundant routes require travel on local roadways not designed for the level of daily traffic on Route 1A and infrastructure investments tend to occur on an as needed versus proactive basis.
2	Workforce Development, Job Quality, Wealth Creation	This region of Maine, and Route 1A are integral to Maine’s tourism economy. The surrounding landscape is stunning, with its views of coastal wetlands, rivers, and rural settings. In addition, provided the road is open, there are ample

		<p>opportunities for residents of Frankfort and the surrounding towns to seek and participate in jobs in the tourism and arts industry, which are large and robust in this part of the state. This route connects local communities to tourism centers in Bar Harbor and Acadia National Park to the east, and Camden and Rockland to the southwest. The area is also central to Deer Isle, which is home to the Haystack Mountain School of Arts, an international destination for artists. The Maine Maritime Academy (MMA) in Castine is also accessed via Route 1A. MMA is a renowned school for marine engineering and maritime fields. MMA graduates often go on to well-paid lifelong careers at locations such as Bath Iron Works, one of the largest employers in the state. Future design efforts will consider minimizing effects on the traveling public to the extent practicable.</p> <p>As an employer, Maine DOT is firmly committed to the principles of equal employment opportunity (EEO) and affirmative action. Maine DOT has both external and internal affirmative action/EEO action plans ensuring that federal and state EEO laws are complied with on all Maine DOT projects.</p>
3	Construction Readiness	<p>With the increasing number of road closures due to flooding and the criticality of the causeway to the surrounding communities, upon award the project will be on an accelerated schedule. The project will begin environmental screening, right of way, geotechnical explorations, design, and subsequently will be put out to bid as soon as construction funding is secured. The entirety of project construction is not expected to exceed 18 months from beginning to end.</p>
4	Funding Needs	<p>The proposed project is not currently part of MaineDOT's three-year work plan. However, upon securing funding, it will be added to the next iteration of the plan. Funding must be identified to ensure the project will maximize consideration of transportation, ecology, and resiliency of the project area.</p>

ATTACHMENT A

BENEFIT-COST ANALYSIS CALCULATIONS FOR MAINE DOT'S ROUTE 1A RESILIENCY IMPROVEMENT
PROJECT IN FRANKFORT, MAINE.