

Project Narrative

I. Basic Project Information – Project Description, Location, and Parties

Project Description

The Maine Department of Transportation (MaineDOT) is seeking \$9,344,000 from the U.S. Department of Transportation (DOT) Federal Highway Administration (FHWA) Wildlife Crossings Pilot Program for the proposed MaineDOT Caribou Wildlife and Aquatic Habitat Crossings Project (the Project) carrying Route 164 (Main Street) and Route 1 over Prestile Brook in rural Caribou, Maine. The Project has multiple benefits including improving safety by immediately reducing Wildlife Vehicle Collisions (WVCs) in this corridor, removing two documented barriers to wildlife and fish passage, improving habitat connectivity for terrestrial and aquatic species, improving species survival rate, and adding resiliency to climate change. WVCs in the project area are documented safety issue with both culverts age and condition make them a failure risk during more frequent storm events.

The existing culverts shown in Figure 1, currently do not allow for wildlife passage.

Figure 1: Route 164 Large Culvert #931080
Existing Prestile Brook Culvert



Route 1 Bridge #6248 Existing Prestile Brook
Culvert



Additionally, flow depths through both culverts are too shallow, velocities are too high, and natural light is restricted. The existing 30-50-foot-tall roadway embankments located along this “valuable stream corridor”¹ currently act as a connectivity barrier to safe passage of terrestrial wildlife such as white-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces*), a Species of Greatest Conservation Need in Maine (SGCN).² This is a significant concern due to a high number of deer collisions in this corridor resulting in serious injuries. Over a 20-year period between 2003-2022 in a two-mile segment along the study area, there were 127 total reported WVCs involving deer or moose. Of those 127 crashes, 11 resulted in a minor or possible injury. Consistent with national trends indicating significant under-reporting of WVCs,³ local police and

¹ A. DeMusz, Maine Inland Fisheries and Wildlife, Personal Communication, July 17, 2023.

² Maine’s Wildlife Action Plan, Prepared by Maine Department of Inland Fisheries and Wildlife, 2015.
https://www.maine.gov/ifw/docs/2015%20ME%20WAP%20Element%201_DRAFT23.pdf

³ <https://www.fhwa.dot.gov/publications/research/safety/08034/08034.pdf>

Game Wardens report that there are approximately 12 WVCs at the Route 164 crossing per year which is substantially higher than reported crash data. This discrepancy in reported crashes is also expected at the Route 1 crossing. Due to this collected data as well as local knowledge of the issue at the Project site, this location has been prioritized as a critical location for addressing an immediate need for motorist safety and wildlife survival.

Figure 2: Deer Crossing Route 164



Improvements to Route 164 Large Culvert #931080 - In addition to wildlife crossing concerns, physical elements of the culvert are also failing including the existing inslopes, wingwalls and gabion walls. In the past, the entire roadway flooded, likely due to the Project being at the bottom of two significant downslopes. The slopes at the inlet and outlet of the culvert show continual signs potential failure. Heavy rains and spring melt cause concern for this structural on an annual basis. The concrete box is deteriorating and has exposed rebar and crumbling concrete. Flooding and erosion issues are expected to become more problematic at the site as Maine experiences an increasing number of extreme precipitation events per year due to climate change.⁴

The existing culvert will be replaced with an open bottom pre-cast concrete arch culvert, approximately 30 feet wide, by 17 feet high, by 96 feet long and will incorporate a simulated natural stream channel with a raised shelf along the top of the channel bank to provide passage for moose, deer, and other large wildlife designed in accordance with the FHWA “Wildlife Crossing Structure Handbook” (CFL/TD-11-003, March 2011) as illustrated in Figure 3. The effective opening height of the structure will be 21.7 feet. Additionally, manmade and natural barriers along the base of the roadway embankment slopes are proposed to encourage wildlife movement towards the culvert crossing under the roadway. The barriers will have a one-way escape gate on each side of the road to allow wildlife that wander into the roadway to exit safely.

To access the construction area, a temporary access road has been preliminarily designed and planned for. The alignment and vertical profile of Route 164 will remain unchanged. The Project has undergone an alternatives analysis in 2018 (Appendix E-1) and Preliminary Design that was finalized in 2020. A Preliminary Design Report (PDR), found in Appendix E-3, was submitted, along with a Habitat Connectivity Design Report (Hydraulic and Scour Report), found in Appendix E-2, also completed in 2020 to support the PDR/Plan Impacts Complete (PIC) process. The previous funds expended for completing this work to date has totaled \$200,000.

⁴ MCC STS. 2024. Scientific Assessment of Climate Change and Its Effects in Maine - 2024 Update. A Report by the Scientific and Technical Subcommittee (STS) of the Maine Climate Council (MCC). Augusta, Maine. 268 pp. https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/STS_2024_digital.pdf

Improvements to Route 1 Bridge #6248- As shown in Figure 4, the location of this culvert is on a section of Route 1 that experiences numerous WVCs. Currently the large culvert has a rating of a 5 which indicates moderate to major deterioration of the steel bridge culvert. If this bridge culvert ages at a rate similar to other culverts, MaineDOT believes the condition is likely to drop again in the next five years.

At this time, design on the Route 1 crossing has not been completed. It is anticipated that wildlife fencing along the base of the roadway embankment slopes will

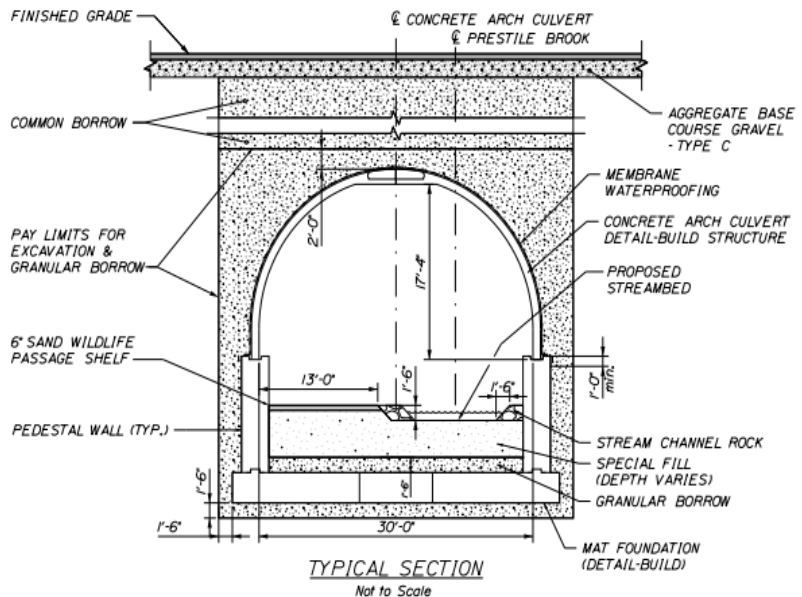
provide sufficient encouragement for wildlife to utilize the crossing. Like the barrier design for the Route 164 crossing, fencing will have a one-way escape gate on each side of the road to allow wildlife that wander into the roadway to exit safely.

The Project would open approximately 8.43 river miles upstream of the crossing to fish passage⁵ as well as provide connectivity between 659-acre and 271-acre undeveloped habitat block with improvements to Route 164 crossing and an additional 3,555 acre block with Route 1.⁶ These habitat blocks represent both important summer and winter habitat for the species that could be found in the project area. Both aquatic and terrestrial species will benefit from the Project including brook trout (*Salvelinus fontinalis*, an SGCN), moose, white-tailed deer, American black bear, North American beaver (*Castor canadensis*), racoon (*Procyon lotor*), Canada lynx, bobcat (*Lynx rufus*), coyote (*Canis latrans*) and numerous other species such as lagomorphs, mustelids, sciurids, and murids.

Both culverts will be sized to accommodate moose crossing with a cobble-gravel surfaced passage shelf through the culvert. In addition to the wildlife barriers, a selection of native grass or forb species known to be unpalatable or undesirable to deer will be planted to further deter them from going into the road.

In addition, replacing the existing culverts will support and benefit local economic development by providing a more reliable connection along Route 164 and Route 1 (Main Street) for residents and commercial users in Caribou and is a critical project to adapt to the impacts of climate change and extreme precipitation events. Other on-going or planned economic improvements in and around the City of Caribou include a federal Brownfields Clean-up grant to help revitalize

Figure 3: Proposed Rt. 164 Prestile Brook Crossing



⁵ <https://webapps2.cgis-solutions.com/MaineStreamViewer/>

⁶ Maine Department of Environmental Protection, The Bureau of Land Resources and Water Quality: the Beginning with Habitat Map <https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/>

the Aroostook River within the City limits by cleaning up the former diesel plant. The Caribou Riverfront Renaissance Committee is working on creating a Riverfront Renaissance Master plan to guide growth and economic development along the Aroostook River.⁷ Once the area is remediated, plans include recreational parks, fishing as well as new commercial and residential development. This clean-up effort will improve water quality within the Project area for aquatic species and habitat growth.

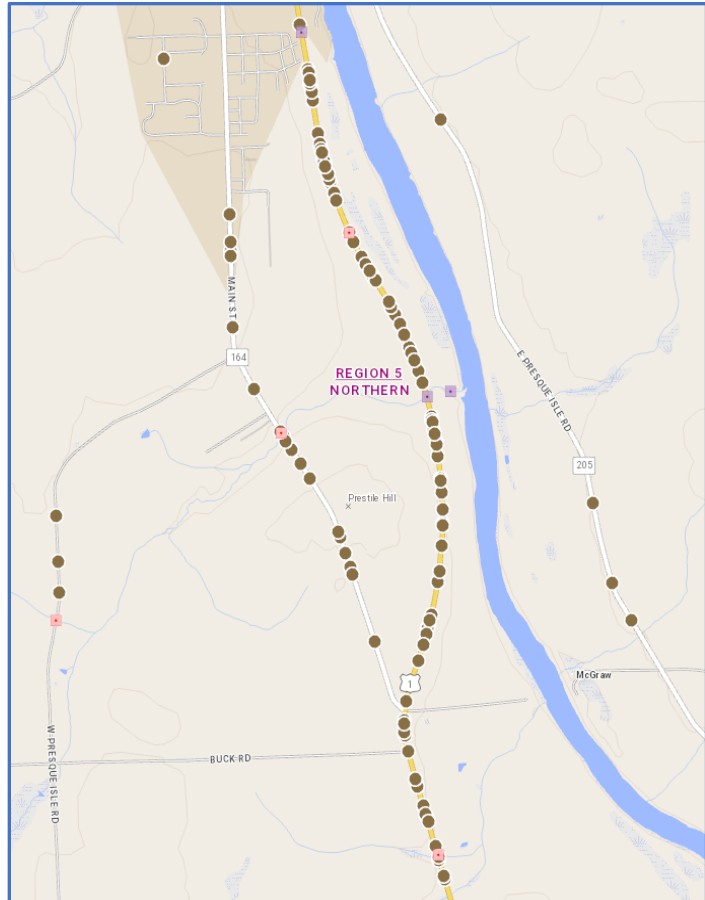
MaineDOT recognizes that ensuring sustainability of habitats, ecosystems and transportation infrastructure can occur in concert rather than in conflict. Toward that end, MaineDOT endeavors to exercise reasonable stewardship over both natural resources and transportation infrastructure through its commitment to reducing WVCs, addressing aquatic organisms, wildlife habitat and fish passage in cooperation with natural resource agencies, while weighing all aspects of the Project.

Project Location

The Project is located in Caribou, the second largest City in Aroostook County, Maine. Aroostook County, which borders Canada, is the northerly most county in Maine. Census data indicates a resident population estimate of 7,441⁸ people in 2022 and per CEJST the Project is located in a Disadvantaged Community census tract.⁹ The Project is located on Route 1 and Route 164 (Main Street) at the Prestile Brook Crossings. Figure 5 shows the Project location and the various connections to existing transportation infrastructure.

Prestile Brook flows through a deeply incised valley at these two road crossings and is a natural wildlife corridor from the Aroostook River to forested habitat to the west. The corridor represents a natural drainage way and forested habitat through inhabited parts of Caribou as well as farming activities.

Figure 4: WVCs along Route 164 and Route 1



⁷ [Riverfront Renaissance – City of Caribou, Maine \(cariboumaine.org\)](https://www.cariboumaine.org/riverfront-renaissance/) <https://www.cariboumaine.org/riverfront-renaissance/>

⁸ U.S. Census Bureau QuickFacts: Caribou city, Maine: <https://www.census.gov/quickfacts/cariboucitymaine>

⁹ <https://screeningtool.geoplatform.gov/en/#10.29/46.8333/-68.0394> Tract Number: 23003951400

Caribou Wildlife and Aquatic Habitat Crossings Project – Caribou, Maine

Prestile Brook crosses Route 164 and Route 1 approximately 2 miles south of downtown Caribou, and approximately 4,000 and 700 feet upstream (respectively) of the confluence of Prestile Brook with the Aroostook River. Route 164 runs parallel to Route 1 and connects the commercial downtown area with Route 1 south of the Project. Route 164 follows a vertical sag curve across this valley, but the roadway is still approximately 50 feet above the valley floor at the crossing location. The roadway runs along the top of a tall embankment as wide as 160 feet at its base.

- The Project is located in rural Aroostook County, Maine/FIPS Code 2310565.
- Project GPS coordinates:
 - *Route 164 Large Culvert #931080:*
 - Latitude: 46.82792
 - Longitude: - 68.00616
 - *Route 1 Bridge #6248*
 - Latitude: 46.82990
 - Longitude: - 67.99474
- The Project is in Maine’s 2nd Congressional District.
- The Project is located in a rural area since it is not in an FHWA Adjusted Urban Area.
- The Project is not located in one of the four federally designated community

Figure 5: Project Location Map

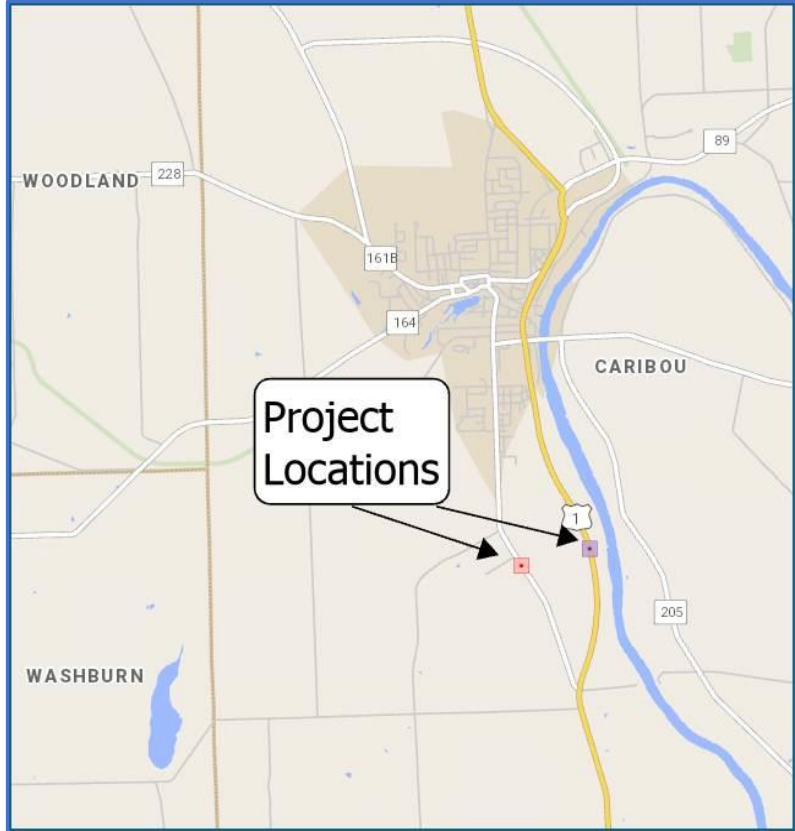
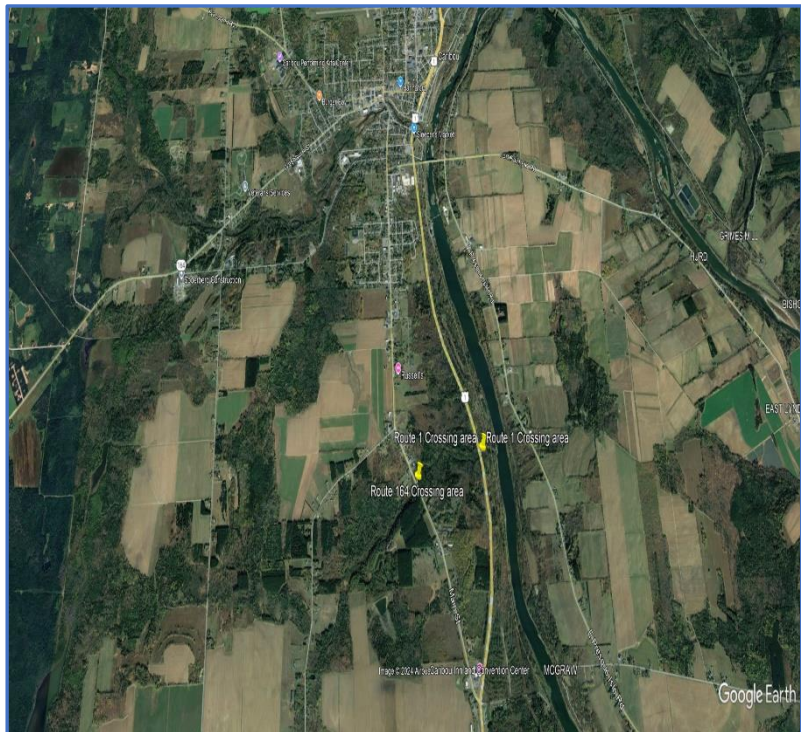


Figure 6: Habitat Corridors and Project Locations



Caribou Wildlife and Aquatic Habitat Crossings Project – Caribou, Maine

development zones: *Opportunity Zones, Empowerment Zones, Promise Zones, or Choice Neighborhoods.*

- The Project is located within an Area of Persistent Poverty (census tract 9514).
- The Project is not located on Federally recognized Indian Tribal land.

MaineDOT will partner with the Maine Department of Inland Fisheries and Wildlife (MDIFW) for the monitoring phase of this Project. MaineDOT and MDIFW have partnered on other projects and MaineDOT will lead this Project with support from MDIFW. MDIFW will be involved with the monitoring effort as described in the Project Merit Criteria section under *Criterion #2.5: Monitoring and Research.*

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

MaineDOT is requesting an 80 percent Federal match, or \$9,344,000 and is providing a 20 percent non-Federal match of \$2,336,000. The total Project construction cost is \$11,680,000. The MaineDOT is committed to providing those funds and to Project completion. Any costs beyond grant/match funding will be 80 percent FHWA core funding and 20 percent state funding. MaineDOT has included a match commitment letter accompanying this application.

Non-Federal funding for the Project comes from MaineDOT state funds and there are no conditional or expenditure time restrictions on the funds. MaineDOT is an experienced, thorough, and responsible recipient of previous TIGER, FASTLANE, INFRA, CHBP, BUILD and RAISE grant funding and has proved its ability to match and manage Federal funds and is prepared to do the same for this Project.

MaineDOT previously expended \$200,000 for completion of Preliminary Design of Large Culvert 931080 on Route 164 and once notice of a grant award is received, final design will commence at an additional cost of \$200,000. There has been no previous expenditure on the Route 1 crossing. There are no full property acquisitions or relocations required. If awarded, MaineDOT will complete preliminary engineering, final engineering, and ROW. Note that grant funding will only be used for Project construction costs, including construction engineering and inspection fees, totaling \$11,680,000 per Table 1.

Table 1: Costs and Funding Sources

Fund Sources	Construction/CE	Contingency	Totals For Project	Percent of Total	Overages
FHWA Formula	\$0.00	\$0.00	\$0.00	0.00%	80.00%
MaineDOT (Non-Federal Match)	\$2,136,000.00	\$200,000.00	\$2,336,000.00	20.00%	20.00%
WCPP Grant Request	\$8,544,000.00	\$800,000.00	\$9,344,000.00	80.00%	0.00%
Funding Stage Totals	\$10,680,000.00	\$1,000,000.00	\$11,680,000.00	100.00%	100.00%

III. Project Merit Criteria

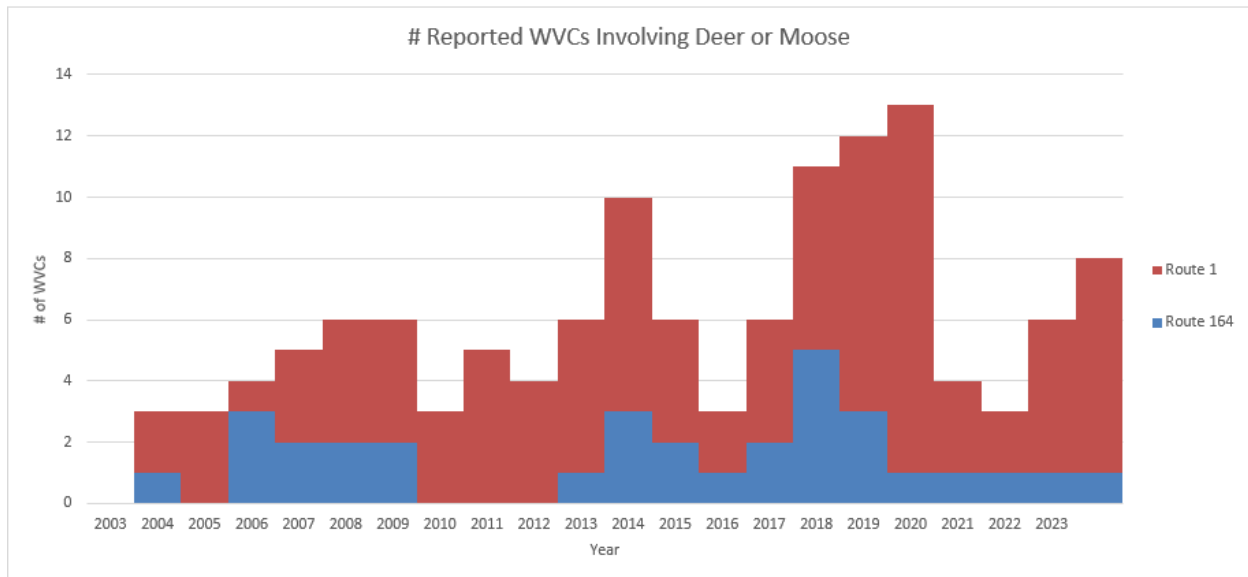
a. Primary Merit Criteria

Criterion #1.1 Reduction of Wildlife Vehicle Collisions

WVCs cause danger to human safety, property damage, and impact wildlife survival.¹⁰ The proposed Project contributes to the primary criterion of *Reduction of Wildlife Vehicle Collisions* within the Project area by removing an existing connectivity barriers on Route 164 and Route 1 in Caribou, Maine to facilitate wildlife crossings to occur through two new crossings that will be sized to accommodate species as large as moose. With this, the addition of other man made or natural features along the roadway will help encourage use by white-tailed deer and moose by funneling their movement towards the crossing structure. A selection of native grass or forb species known to be unpalatable or undesirable to deer will be planted to further deter them from going into the road.

Vehicle crash data for a two-mile segment along Routes 164 and 1 near the Prestile Brook was obtained from the MaineDOT Office of Safety and Mobility and reviewed to determine the number of reported WVCs within the Project area. Figure 7 represents the collisions involving wildlife and vehicles between 2003 and 2023, which indicates a total of 127 WVC crashes in the study area.

Figure 7: Reported WVC on Route 164 and Route 1



Furthermore, local Police and Game Wardens report that there are approximately 12 WVCs at the Route 164 crossing per year, which is consistent with national trends suggesting that WVCs are substantially underreported.¹¹ This illustrates the increased need for WVC mitigation within the Project area. In Maine, deer crashes tend to peak in November during the breeding period while moose crashes peak in June when they are likely looking to exploit available nutritional

¹⁰ <https://rosap.ntl.bts.gov/view/dot/21863>

¹¹ <https://www.fhwa.dot.gov/publications/research/safety/08034/08034.pdf>

Caribou Wildlife and Aquatic Habitat Crossings Project – Caribou, Maine

resources closer to the roadways.¹² Aroostook County, where the Project is located, experiences the highest number of moose crashes in the State as shown in Figure 8.¹³

Based on conservative estimates from property damage, human injury and fatality, and lost hunting license revenues, the cost of a wildlife-vehicle collision is likely to be in the tens of thousands of dollars for large mammals.¹⁴ Therefore, particularly in areas where traveled roadways coincide with optimal habitat and higher wildlife population densities such as the proposed Project corridor, inaction may cost taxpayers more than implementing solutions that facilitate the safe crossing of wildlife. Figure 9 presents the 2020 costs for deer, and moose for vehicle repair, average human injury, average human fatality and passive use value per collision.¹⁵

Figure 8: Moose Crashes by County in Maine

MOOSE	2017	2018	2019	2020	2021	TOTAL
ANDROSCOGGIN	0	0	1	3	3	7
AROOSTOOK	131	120	115	113	121	600
CUMBERLAND	6	3	3	0	5	17
FRANKLIN	18	27	17	20	20	102
HANCOCK	4	3	6	7	3	23
KENNEBEC	0	4	5	7	6	22
KNOX	1	0	0	0	0	1
LINCOLN	3	1	0	0	1	5
OXFORD	14	13	18	3	15	63
PENOBSCOT	58	41	43	56	58	256
PISCATAQUIS	8	9	5	11	10	43
SAGadahoc	0	0	1	0	1	2
SOMERSET	25	17	18	20	27	107
WALDO	2	0	0	2	1	5
WASHINGTON	13	15	22	16	19	85
YORK	4	3	2	1	3	13
TOTAL	287	256	256	259	293	1,351

Route 164 is designated as a Rural, major/urban collector with a posted speed limit of 50 miles per hour and travels over Prestile Brook to form the crossing. The 2021 Annual Average Daily Traffic (AADT) was 1,900 at SR 164 (South Main Street) north of US Route 1 just south of the Project site. Lane widths vary from 10-12 feet while shoulder widths vary from 2-6 feet within the study area. No traffic analysis was conducted within the Project area as part of the Preliminary Design Report for Route 164 culvert since the function of the roadway will not be changed at either location.

Route 1 is on the NHS and designated as a Rural, Other Principle Arterial with a posted speed limit of 55 miles per hour and travels over Prestile Brook. The 2021 AADT at the location of the crossing over Prestile Brook was 6,535.

Figure 9: 2020 Cost Per Collision by Animal

Cost category	Costs per collision							
	Deer	Elk	Moose	Gray wolf	Grizzly bear	Cattle	Horse	Burro
<i>Direct costs</i>								
Vehicle repair	\$4,418	\$7,666	\$9,435	\$4,418	\$4,418	\$9,435	\$9,435	\$7,666
Human injuries	\$6,116	\$14,579	\$26,811	\$6,116	\$6,116	\$26,811	\$26,811	\$14,579
Human fatalities	\$3,480	\$23,200	\$46,400	\$3,480	\$3,480	\$46,400	\$46,400	\$23,200
Sub total	\$14,014	\$45,445	\$82,646	\$14,014	\$14,014	\$82,646	\$82,646	\$45,445
<i>Passive use value</i>	\$5,075	\$27,751	\$27,751	\$40,342	\$4,235,770	?	?	?
Total	\$19,089	\$73,196	\$110,397	\$54,356	\$4,249,784	\$82,646	\$82,646	\$45,445

¹² https://www.maine.gov/mdot/safety/docs/dpr/WildlifeSafe_Brochure.pdf

¹³ <https://www.maine.gov/mdot/safety/docs/2023/Collisions%20between%20Wildlife%20and%20Motor%20Vehicles%202017-2021.pdf>

¹⁴ <https://www.pewtrusts.org/-/media/assets/2022/02/reducing-wildlife-vehicle-collisions-by-building-crossings.pdf>

¹⁵ <https://pooledfund.org/Details/Study/610>

Caribou Wildlife and Aquatic Habitat Crossings Project – Caribou, Maine

Source: TPF-5(358) Part 4 - Cost Effective Solutions: Animal Vehicle Collision Reduction and Habitat Connectivity Final Report Pooled Fund

Other MaineDOT Wildlife Crossing Projects

In 2012, MaineDOT constructed a new road corridor in Caribou approximately 3.5 miles from the Project and used motion-sensor game cameras to monitor associated crossing structures. The new bypass corridor included areas of tall fencing to funnel wildlife to upsized drainage crossing structures. At the time, this was a newly constructed corridor so previous crash data was not available to compare and develop performance results.

Figure 10: Gorham Bypass Culvert Wildlife Crossing source: MaineDOT

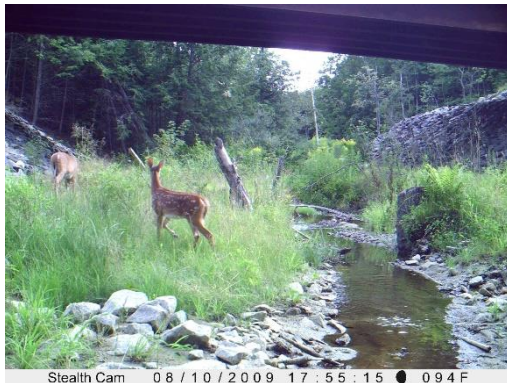


Figure 11: Caribou Bypass Culvert Wildlife Crossing source: MaineDOT



Through this monitoring, MaineDOT documented consistent wildlife use including moose, deer, American black bear (*Ursus americanus*), and even the occasional Canada lynx (*Lynx canadensis*), a federally threatened species and state Species of Special Concern.

While this new bypass corridor was largely at grade so there was not an opportunity to build an underpass to accommodate large mammals. Yet, MaineDOT has implemented larger underpass infrastructure strategies in new road corridor projects elsewhere such as the Gorham Bypass and the relocation of Route 180 in Ellsworth Maine. MaineDOT received a Federal Highway Administration Exemplary Ecosystem Initiative award in 2011 for wildlife crossing and connectivity work as part of the Gorham Bypass Project.¹⁶

Prestile Brook flows through a deeply incised forested valley at this road crossing and provides a natural wildlife corridor from the Aroostook River to forested habitat to the west. This represents a natural drainage way that has a forested corridor through inhabited parts of Caribou as well as significant agricultural activities which is optimal for deer movement. Prestile Brook is an undeveloped area south of the Caribou town center that connects habitat in the east to larger habitat blocks to the west. Figure 12 demonstrates how the forested connection lies in the landscape. There is also a forested corridor along the Aroostook River to the south of the Prestile Brook crossing of Route 1. West of Route 1 is a forested block between Route 1 and Route 164. West of 164, the landscape is a mosaic of forested blocks and agricultural fields. Prestile Brook creates a corridor extending southwesterly, and a patchwork of woodlots and wetlands create a corridor to the west that connects to the industrial forests of Maine. Many of these habitats tend

¹⁶ https://www.environment.fhwa.dot.gov/pubs_resources_tools/resources/eei_awards/2011me.aspx

to be favored by edge-dwelling wildlife species such as deer, moose and many small to mid-sized mammals.

Figure 12: Habitat Corridor Map



Research on factors associated with the overall effectiveness of crossing structures has produced variable results which may in part be explained by the difference in focal species and measured habitats in these studies.¹⁷ For large mammals, research has found that the overall structure and placement of wildlife underpasses was the most significant factor associated with use.¹⁸ For small-to-medium sized mammals, traffic volume as well as associated noise levels and road width was found to impact use of culverts for road crossings.¹⁹ This illustrates the importance of identifying and gaining a complete understanding of a focal species and pertinent habitat features of a site when planning for the construction of a wildlife crossing structure. The existing culvert prohibits terrestrial wildlife passage, and the existing 50-foot-tall roadway embankment presents a barrier for passage by deer and moose. This is a significant concern as moose and deer arguably cause the greatest risk to motorist safety and there have already been a number of documented collisions at this location.

The Project proposes a wildlife fence to funnel animals towards the underpass. Studies indicate fencing between 6.5-8 feet tall running parallel to the roadway in conjunction with an underpass can reduce collisions with deer and other large animals by an average of 87 percent.²⁰ More recent studies from other state transportation agencies in the US have reviewed effectiveness of similar approaches to WVC projects. One study demonstrated a 52 percent reduction in WVCs for wildlife crossing structures with short, fenced areas less than 5km in length.²¹ In addition, results from another study indicated a 58 percent reduction in deer mortality for underpasses and

¹⁷ <https://www.sciencedirect.com/science/article/abs/pii/S0006320704002319>

¹⁸ <https://wildlife.onlinelibrary.wiley.com/doi/abs/10.1002/jwmg.160>

¹⁹ <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1046/j.0021-8901.2001.00678.x>

²⁰ <https://www.fhwa.dot.gov/publications/research/safety/08034/08034.pdf>

²¹ <https://www.sciencedirect.com/science/article/abs/pii/S0006320716300350>

fencing.²² MaineDOT plans to implement as much fencing at the Project site as private property access allows.

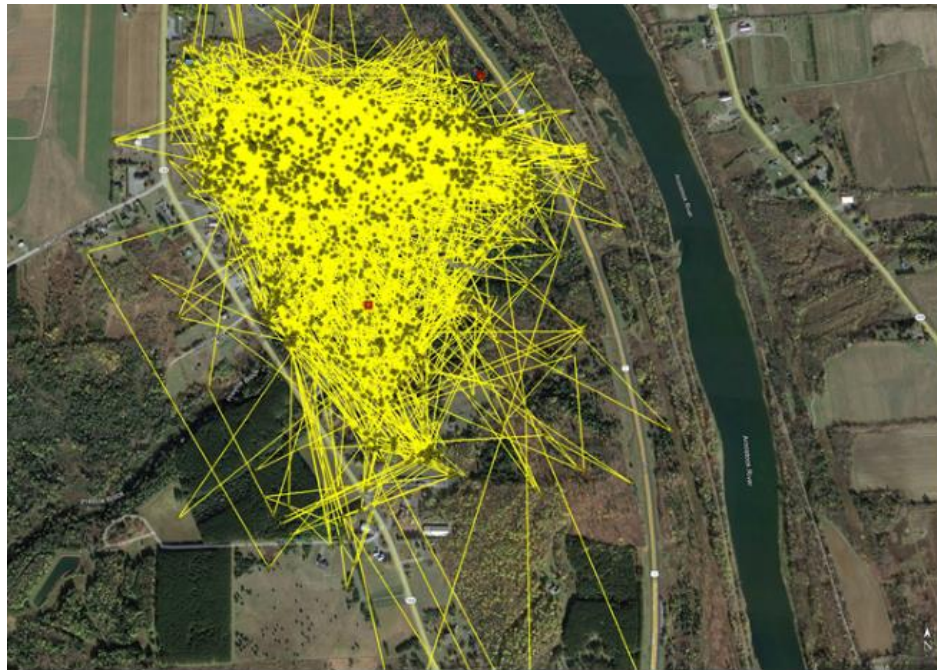
The replacement structures will be inspected by bridge maintenance staff every two years. A maintenance plan will be established to ensure that the crossing structures are free from flooding, plant overgrowth, and debris. The wildlife passage shelves will be maintained as well to clear debris. The stream flow will be monitored to ensure scouring or erosion do not impact barriers to use the structures.

Criterion #1.2: Improvement of Terrestrial and Aquatic Habitat Connectivity

Landscapes must maintain their connectivity and permeability to aid in wildlife population sustainability²³ and it has been well documented that the presence of roads can decrease landscape connectivity and increase wildlife mortality.²⁴ Even with commonly occurring species

such as white-tailed deer, levels of habitat fragmentation and landscape structure can impact their space use and foraging efficiency²⁵ which may ultimately impact their survival. Moreover, given the current concern in the northeast with the impacts of winter tick (*Dermacentor albipictus*) on overwinter survival of juvenile moose,²⁶ facilitating

Figure 13: GPS-collared adult female deer movements



increased habitat connectivity, especially during periods of nutritional stress such as winter and early-spring, is expressly important. The Project seeks to provide connectivity between three habitat blocks that have been identified as undeveloped.²⁷ The Project contributes to the *Improvement of Terrestrial and Aquatic Habitat Connectivity* criterion by removing two identified barriers to fish passage and providing the ability for large mammals such as deer and moose to travel under the roadway. As is evidenced by the attached statement of support from the MDIFW (Appendix G), GPS-collared adult female deer have been heavily documented using

²² <https://www.usgs.gov/publications/effectiveness-wildlife-underpasses-and-fencing-reduce-wildlife-vehicle-collisions>

²³ <https://escholarship.org/uc/item/0jq176tg>

²⁴ <https://www.jstor.org/stable/20616780>

²⁵ <https://academic.oup.com/jmammal/article/94/2/398/910372>

²⁶ <https://cdnsiencepub.com/doi/pdf/10.1139/cjz-2018-0140>

²⁷ <https://webapps2.cgis-solutions.com/beginningwithhabitat/mapviewer/>

the Project area, locations of which have been mapped and connected by yellow lines (Figure 13). This bolsters the contention that the Project will greatly enhance connectivity in the Project corridor for deer and other terrestrial wildlife. Improved aquatic and terrestrial connectivity will also increase the resilience of the watershed and undeveloped habitat blocks to the impacts of climate change, by allowing species to move across the landscape to find suitable habitat conditions in a changing climate.

In addition, the overarching Project corridor contains identified wild brook trout habitat as well as identified riparian connectors.²⁸ This emphasizes the importance of the Project's ability to increase aquatic habitat connectivity. The existing culvert represents a barrier to aquatic habitat connectivity: the flat concrete culvert bottom causes high-velocity, shallow flow conditions that block fish passage; the 140-foot-long culvert creates an extended dark tunnel discouraging fish passage, and the large scour pool at the culvert outlet creates a break in the riparian stream habitat. The proposed replacement culvert has been designed following MaineDOT Habitat Connectivity Design (HCD) and US Forest Service Aquatic Organism Passage (AOP) techniques to construct a simulated stream channel through the crossing, mimicking the conditions of the existing natural stream channel downstream. This stream-simulation approach incorporates a gravel-cobble streambed with roughened banks transitioning from the surrounding stream through the culvert. The HCD design helps to reduce water flow velocities, increase depths, and provide rest areas for aquatic organisms; and the enlarged culvert span and height greatly increases the openness ratio of the structure to increase natural light through the crossing. In addition to fish, the HCD design improves habitat and connectivity through the crossing for amphibian, reptile, and macroinvertebrate communities within Prestile Brook.

In addition to bisecting habitat for mammals, the Project also likely separates migration routes for various amphibian species. Many northeastern amphibians feature life cycles that require movement between at least two usage areas, and migrations are both proportionally large in distance traveled and explosive in nature where many animals move in short temporal windows due to climatic constraints. As a result, large amounts of amphibian road mortality can result from relatively little traffic and form the majority of vertebrate roadkill for any one area. Localized declines in amphibians are possible from road mortality, especially in concert with habitat fragmentation and isolation. Additional pressure may exist in Aroostook County due to the large amount of deforestation and deficiency in amphibian data for the region.

The existing 30-50-foot-tall roadway embankments at both crossings and small existing culverts presents a connectivity barrier to terrestrial wildlife passage. The proposed culverts will be constructed with a raised shelf to provide a wildlife underpass and will be sized to accommodate species as large as moose. In addition, funneling animals towards the proposed culvert shelf for passage thus connecting habitat on either side of Route 164 and connecting to Route 1.

The Project is in designated Essential Fish Habitat (EFH) for Atlantic Salmon as Prestile Brook is a tributary to the Aroostook River; the Aroostook is designated an EFH.²⁹ Replacement of these two crossings will connect high-quality cold-water habitat to the Aroostook River and provide great benefit to Atlantic salmon. Maine is the only state that still has a wild population of

²⁸ [Wild Brook Trout: Fisheries: Fish & Wildlife: Maine Dept of Inland Fisheries and Wildlife](https://www.maine.gov/ifw/fish-wildlife/fisheries/wild-brook-trout.html)

<https://www.maine.gov/ifw/fish-wildlife/fisheries/wild-brook-trout.html>

²⁹ [EFH Mapper \(noaa.gov\)](https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3&views=view_12) https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3&views=view_12

U.S. Atlantic Salmon in a few of its rivers.³⁰ The remaining Atlantic Salmon population is referred to as the Gulf of Maine distinct population segment (Gulf of Maine DPS) and is listed as endangered under the Endangered Species Act.³¹ Formed in 1983, Atlantic Salmon for Northern Maine is a conservation organization that is dedicated to restoring Atlantic salmon to the Aroostook River.³² The conservancy has been raising salmon eggs at a hatchery in Ashland which is upstream of Caribou to release fry into the Aroostook River for over 35 years. The Atlantic Salmon for Northern Maine organization plans to build a facility to raise adult salmon in Caribou to increase their chance of survival. In addition, the group is also working with the Aroostook band of Micmacs and the Houlton band of Maliseets. Future plans will involve releasing salmon into the Prestile Brook.³³

Wild brook trout are also within the Project area and these crossings of Prestile Brook have been identified as a Wild Brook Trout Priority Area.³⁴ Brook trout are identified as a Species of Greatest Conservation Need in Maine,³⁵ and are also identified as a species that is vulnerable to climate change impacts including warming water temperatures and increasing drought conditions.³⁶ The MDIFW states “Maine’s native and wild brook trout lakes, ponds, and flowing waters represent a unique and abundant resource not available elsewhere in the United States. Not surprisingly the MDIFW places a high priority on the management of this important resource, with a focus on protection, conservation, enhancement, and restoration of self-sustaining populations.” This Project will help to improve habitat connectivity for this priority species.

b. Secondary Merit Criteria

Criterion #2.1: Leveraging Investments

The requested \$9,344,000 in WCPP Grant funding will be matched by a total of \$2,336,000 from MaineDOT. A match commitment letter from MaineDOT is provided as Appendix C. The proposed Project is consistent with MaineDOT’s Long-Range Transportation Plan and will be included in MaineDOT’s 2023-2025 *Work Plan* should funding be awarded and is currently in the Statewide Transportation Improvement Plan (STIP) for 2023-2025. MaineDOT is committed to providing those funds and to Project completion. Any costs beyond grant/match funding will be 80 percent FHWA core funding and 20 percent state funding.

MaineDOT completed the Preliminary Design for the Route 164 Large Culvert #931080 in 2020. The PDR was submitted, and a Habitat Connectivity Design (HCD) Report (Hydraulic and Scour

³⁰ [Atlantic Salmon \(Protected\) | NOAA Fisheries](https://www.fisheries.noaa.gov/species/atlantic-salmon-protected) <https://www.fisheries.noaa.gov/species/atlantic-salmon-protected>

³¹ [Endangered Species Act | NOAA Fisheries](https://www.fisheries.noaa.gov/topic/laws-policies/endangered-species-act) <https://www.fisheries.noaa.gov/topic/laws-policies/endangered-species-act>

³² [Atlantic Salmon for Northern Maine, Inc. | Facebook](https://www.facebook.com/AtlanticSalmonforNorthernMaine) <https://www.facebook.com/AtlanticSalmonforNorthernMaine>

³³ [Atlantic salmon group sees promise in new wild-sourced fish - The County](https://thecounty.me/2019/06/10/living/atlantic-salmon-group-sees-promise-in-new-wild-sourced-fish/)

<https://thecounty.me/2019/06/10/living/atlantic-salmon-group-sees-promise-in-new-wild-sourced-fish/>

³⁴ [Wild Brook Trout: Fisheries: Fish & Wildlife: Maine Dept of Inland Fisheries and Wildlife](https://www.maine.gov/ifw/fish-wildlife/fisheries/wild-brook-trout.html)

<https://www.maine.gov/ifw/fish-wildlife/fisheries/wild-brook-trout.html>

³⁵ Maine’s Wildlife Action Plan, Prepared by Maine Department of Inland Fisheries and Wildlife, 2015.

https://www.maine.gov/ifw/docs/2015%20ME%20WAP%20Element%201_DRAFT23.pdf

³⁶ Whitman, A., A. Cutko, P. deMaynadier, S. Walker, B. Vickery, S. Stockwell, and R. Houston. 2013. Climate Change and Biodiversity in Maine: Vulnerability of Habitats and Priority Species. Manomet Center for Conservation Sciences (in collaboration with Maine Beginning with Habitat Climate Change Working Group) Report SEI-2013-03.

https://www.manomet.org/wp-content/uploads/old-files/2013%20BwH%20Vulnerability%20Report%20CS5v7_0.pdf

Report) was completed in 2020 as well to support the PDR/PIC process. Both reports are attached in Appendix E. The 2020 PDR/PIC effort totaled \$200,000.

Non-Federal funding for the Project comes from MaineDOT state funds.

Criterion #2.2: Economic Development and Visitation Opportunities

The proposed Project contributes to the *Economic Development and Visitation Opportunities* criterion by providing a more reliable connection along Route 164 and Route 1 for residents and commercial users in Caribou and is a critical Project to mitigate against climate change and extreme precipitation events. The Project will support local economic development by benefiting hunting and fishing. The proposed culverts will allow more fish to pass through by removing the existing barrier. In addition, the wildlife crossing structures will likely increase protection of deer and moose from collisions with vehicles thus maintaining populations for additional opportunities for hunting and wildlife viewing. Other on-going or planned economic improvements in and around the City of Caribou include a federal Brownfields Clean-up grant to help revitalize the Aroostook River within the City limits by cleaning up the former diesel plant. The Caribou Riverfront Renaissance Committee is working on creating a Riverfront Renaissance Master plan to guide growth and economic development along the Aroostook River. Once the area is remediated, plans include recreational parks, fishing as well as new commercial and residential development.

Criterion #2.3: Innovation

The proposed Project contributes to the *Innovation* criterion by using newer strategies and design elements when compared to other wildlife crossing structures within Maine/New England and will also be innovative during the construction phase.

Due to the extensive size of the underpass and corresponding required depth below the roadways, an access road will need to be built to bring in the sections of the culvert and facilitate construction for the Routes 164 and 1 culverts. MaineDOT is constantly refining and updating its specifications for these types of crossings: materials, water passageway and shelf-on-side based on newly available research and data. In addition, although improving habitat connectivity is not a novel concept in the United States, implementation is still in its early stages in New England; MaineDOT is continuing to develop and improve HCD in stream crossing culvert projects, learning more from and improving design with each project to further safe travel of motorist through heavily passaged wildlife corridors.

There will be project delivery programmatic agreements in place to bring the contractor in early during the design process to provide input on constructability for both locations, Route 164 and Route 1.

Furthermore, in conjunction with Criterion #2.5, there is limited available research specific to the northeastern U.S. that formally documents and reports post-construction use and effectiveness of wildlife crossing structures at reducing WVCs and improving habitat connectivity. The Project will present MaineDOT with a unique opportunity to perform and present innovative research whose applications can be directly applied to aiding other northeastern transportation agencies with adopting this technology.

Criterion #2.4: Education and Outreach

The Project contributes to the *Education and Outreach* criterion by MaineDOT continuing to provide education and outreach to the public as well as planning to share findings of the monitoring effort to the public.

Figure 14: Wildlife Ahead Brochure



MaineDOT has already developed an education and outreach campaign to increase public awareness regarding WVCs which strongly aligns with this *Education and Outreach* criterion. Furthermore, A Wildlife Ahead! Brochure (see Figure 14), moose and deer collision information sheets, and a webpage with important tips for motorists are provided on their website.³⁷ MaineDOT also published a report called *State of Maine Wildlife & Motor Vehicle Collisions 2017-2021* which is available to the public on their website. MaineDOT will continue to make these resources available on their website for the public to educate drivers on WVCs in Maine.

Upon notice of funding, MaineDOT will proceed with final design for the Route 165 crossing and preliminary and final design for the Route 1 crossing

and hold a public meeting in to present the Project to the local community and gather feedback for both locations. MaineDOT plans to share findings of the monitoring effort including photographs from the monitoring cameras, a possible peer reviewed scientific journal, or a technical memorandum with the public and at conferences.

Figure 15: Existing MaineDOT Outreach/Education Signage



In addition to these efforts, MaineDOT will partner with the Beginning with Habitat program at the Maine Department of Inland Fisheries and Wildlife to provide free, public education and

³⁷ <https://www.maine.gov/mdot/safety/wildlife/>

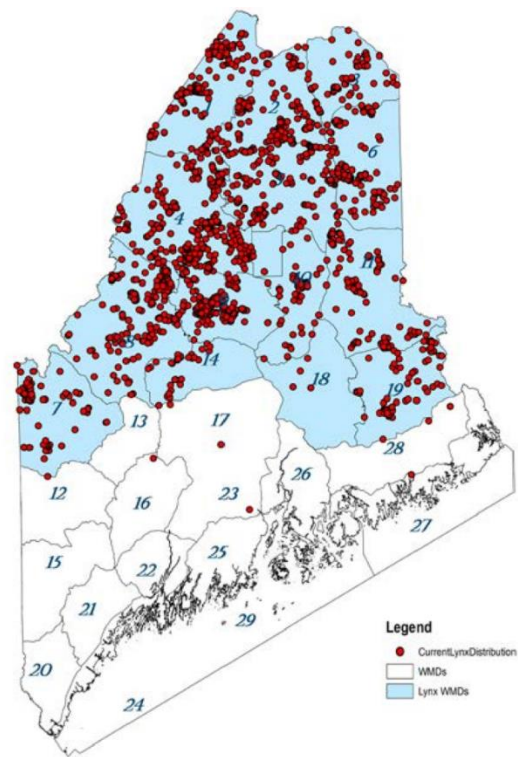
outreach events to landowners, municipal officials, and other interested parties in Caribou and the surrounding communities. Beginning with Habitat provides conservation planning resources and technical assistance to the public, including regularly holding in-person and virtual events to discuss natural resources and conservation actions. The team includes staff dedicated to climate change planning, municipal planning, and private landowner outreach. By partnering to provide public education and outreach, MaineDOT and Beginning with Habitat can increase knowledge regarding efforts to reduce WVCs, the importance of habitat connectivity, and connect users with tools and strategies to address WVCs and habitat connectivity at other priority crossings in the region.

Criterion #2.5: Monitoring and Research

The Project contributes to the Monitoring and Research criterion by committing to a comprehensive monitoring and research study that will monitor, evaluate and report statistically valid data. The monitoring and research study, as indicated in the attached MaineDOT Monitoring Research Prospectus (Appendix E-4), will empirically assess the overall wildlife use of a newly constructed crossing structure in Caribou, Maine. This would provide clarity for the MaineDOT and other transportation entities as to the effectiveness of this approach to mitigate for WVC's and increase habitat connectivity for numerous wildlife species. It will also provide a greater understanding of the application of this method within the unique northern New England landscapes.

MaineDOT has historically monitored wildlife crossings using non-invasive motion-triggered outdoor trail cameras. In order to understand if the proposed wildlife crossing structure is effective, monitoring at this site will use game cameras which is a proven method to document passage structure use as well as fence effectiveness. MaineDOT will document the seasonal and temporal frequency of use as well as the composition of wildlife using the Caribou crossing structure post-construction for a period of three years. Past research has documented a learning curve of a minimum of several years for mammals to use wildlife crossings³⁸ so camera monitoring is expected to continue even after the completion of the formal data collection phase of research. In addition, MaineDOT will continue to collect reported crash data as well as anecdotal observations to compare with existing data to better understand and support possible reductions in WVCs. Following completion of the monitoring phase of the study, MaineDOT will statistically

Figure 16: Credible Lynx Observations in Maine Since 2000



³⁸ https://westerntransportationinstitute.org/wp-content/uploads/2023/01/Report_TPF-5-358_AVC_Best-Practices-Manual.pdf

assess the importance of certain environmental variables that may predict use of the Caribou crossing structure by various wildlife species.

Criterion #2.6: Survival of Species

The proposed Project contributes to the *Survival of Species* criterion by benefiting Canada lynx, which is a Federally threatened species. Over the last 20 years, the DIFW which is a partner of MaineDOT has documented credible sightings of Canada lynx³⁹ as is referenced in Figure 16 near the Project location. This demonstrates that lynx is likely expanding their range within northern Maine and has already been documented in the Project area by MaineDOT. Therefore, the addition of the Project will only aid in lynx survival and population expansion by providing increased habitat connectivity for lynx as well as snowshoe hare (*Lepus americanus*) which is distributed statewide and is universally considered the primary prey species of lynx.⁴⁰

IV. Project Readiness

1. Technical Feasibility

A final MaineDOT Highway PDR for the Project (WIN: 22845.00) was signed on March 5, 2020, and is attached as Appendix E-3 for the Route 164 crossing. The following sections summarize the preliminary engineering design information provided in the PDR and supporting technical memorandum entitled “Habitat Connectivity Design Report, Hydraulic and Scour Report, Prestile Brook Crossing of ME Route 164 (Main Street) Caribou, ME” dated January 8, 2020. If awarded, MaineDOT will begin design work for the Route 1 crossing, which is anticipated to take roughly 12 months.

Several alternatives were explored for replacement of the existing box culvert at Route 164. One set of alternatives proposed a precast concrete arch culvert, with sufficient room to allow wildlife passage on a shelf to be set on one side of the archway. The alternatives analysis determined impacts to setting the proposed new culvert either at the same alignment as the current structure (approximately perpendicular to the roadway) or skewing the new structure at an angle more suitable for improved stream flow. The skewed alignment was preferred for its improvements to channel alignment and hydraulic design considerations. For additional information see the Culvert Replacement Options Memorandum attached as Appendix E-1.

Side slopes throughout the majority of the Project will be 2:1, to reduce the amount of fill and right-of-way (ROW) impacts as much as possible. Other mitigation measures applied during the preliminary design phase included contacting fabricators for the proposed culvert sections to confirm the feasibility of various sectional dimensions for product delivery on site along with equipment installation considerations and needs. Contingencies were included in the preliminary design cost estimates with the percentage of contingency dropping with each interim submission.

The proposed design was also evaluated for compatibility with HCD to ensure consistency with the Maine Atlantic Salmon Programmatic Consultation (MAP) User Guide (March 2017); this evaluation is detailed in the attached Memorandum entitled “Habitat Connectivity Design Report, Hydraulic and Scour Report, Prestile Brook Crossing of ME Route 164 (Main Street) Caribou, ME.” The HCD approach recommended a geomorphic-based stream simulation with a

³⁹ <https://www.maine.gov/ifw/docs/20-MDIFW-24-R&M-non-game.pdf>

⁴⁰ <https://www.pnas.org/doi/10.1073/pnas.94.10.5147>

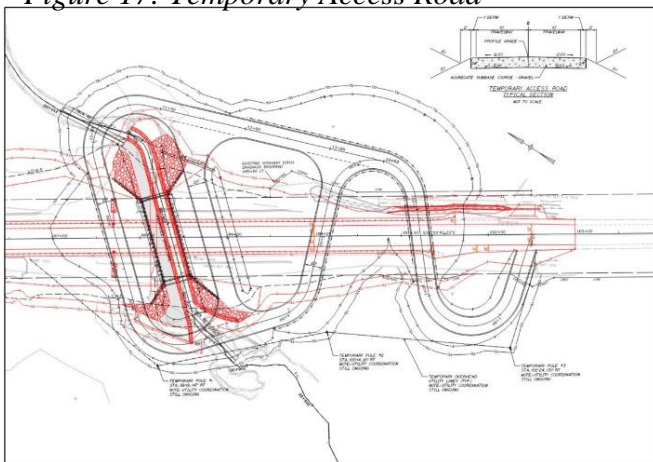
17-foot channel bankfull width (BFW), 1.5-foot channel depth, average longitudinal slope of 1.4 percent, and cobble-gravel channel streambed material (CSM) infill for the streambed; with all stream channel components sized to be consistent with field geomorphic measurements of the downstream stream reference reach. Channel banks would be set back from the walls of the culvert to provide a shelf on each side for terrestrial wildlife passage; a 2-foot shelf above the right bank for small animal passage and an 11-foot shelf above the left bank for moose passage sized to meet FHWA guidance for moose passage (over 10 feet wide with over 15 feet vertical clearance).

The proposed design adjusts the alignment of the culvert to a 15-degree skew instead of the perpendicular alignment of the existing culvert, better aligning the culvert to the stream channel to improve hydraulic performance and reduce potential scour by reducing sharp transitions in flow; simulated channel banklines would tie into existing streambanks at the limit of work. Where riprap is placed for abutment or drainage swale protection, CSM would be placed over the riprap to ensure a smooth surface for moose and deer passage. The resulting design exceeds the minimum HCD requirements for 1.2 x BFW span (30 vs. 21.4 ft) and openness ratio (5.74 feet vs 1.97 feet). Hydrologic, Hydraulic, and Scour Analyses for the proposed culvert are also included in the attached Memorandum.

The proposed work on Route 164 will include reconstruction of approximately 0.16 miles of existing Route 164 (see Figure 15). The roadway's proposed vertical alignment essentially follows the existing profile, beginning with a 7 percent downgrade toward the sag curve, then an 8% upgrade toward the Project end. Due to the large inslopes created by the depth of the culvert and stream, it was decided not to raise the vertical alignment and reduce these grades to avoid excessive fill. The Project is located in a long tangent and has existing street lighting, which help to alleviate headlight sight distance concerns.

Approximately 246'-0" of channel will be reconstructed allowing Prestile Brook to flow adjacent to the 13'-0" wide wildlife shelf within the culvert. The installation of this structure will create significant impacts to Route 164 and therefore require full depth reconstruction for a section of Route 164.

Figure 17: Temporary Access Road



There are existing drainage easements at three drainage outlets. All existing right-of-way lines have been identified and additional slope and drainage easements will likely be necessary, as well as temporary rights for utility relocations (see Figure 17 for proposed conceptual construction access road).

Existing utilities include overhead power and communication lines which will require temporary relocation during construction. Coordination with the utility owners and

temporary relocations have been identified. Utility relocation plans will be developed as part of the final design once the project has received funding for construction.

MaineDOT complies with all Federal civil rights obligations and nondiscrimination laws. “In accordance with Title VI of the Civil Rights Act of 1964 and other authorities, MaineDOT is committed to ensuring that the fundamental principles of equal opportunity are upheld in all decisions involving our employees and contractors/consultants, and to ensuring that the public-at-large is afforded access to our programs and services. To that end, no person shall be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any MaineDOT program or activity on the grounds of race, color or national origin. MaineDOT will work with staff, sub-recipients, contractors and service beneficiaries to promote awareness for the provisions of Title VI and the responsibilities associated with that Act”.⁴¹

MaineDOT recently updated its Public Involvement Plans to ensure disadvantaged populations and underserved areas are afforded meaningful opportunities for public involvement, available at: <https://www.maine.gov/mdot/env/NEPA/public/index.shtml>. MaineDOT has also launched a new Diversity, Equity and Inclusion (DEI) initiative that includes an external equity statement of the commitment to ensure all Mainers have access to safe and reliable transportation options.

2. Project Schedule

Following the Alternatives Analysis completed in 2018, MaineDOT completed the Final PDR/Draft PIC process in 2020 for Route 164. The portion of the Project is currently in the pre-NEPA phase. Upon notification of award, MaineDOT will proceed to final design and Public Engagement on the Route 164 culvert. It is anticipated that the Route 164 portion will have an 18-month construction phase. The Route 1 crossing has yet to begin design and will commence that work if awarded funding. Other than proposed dates for construction, all other dates are subject to change based on timing of notification of award, and subsequent execution of a grant agreement.

USDOT can rely on MaineDOT to fully fund and begin construction prior to the September 30, 2027 obligation of funds date, and likely complete construction of the Project within that timeframe without risk. The following Table provides a schedule with key target dates with actual dates for the Route 164 milestones noted with an asterisk.

Table 2: Project Schedule

Route 164 Crossing		Route 1 Crossing	
Key Milestone	Completion Date	Key Milestone	Completion Date
Project Kick Off	1/12/2017*	Project Kick Off	5/16/2026
Preliminary Design Report (PDR)	3/31/2020*	Preliminary Design Report (PDR)	5/5/2027
Plans, Specifications, and Estimates (PS&E)	2/4/2026	Plans, Specifications, and Estimates (PS&E)	8/7/2028
Construction Advertise	2/28/2026	Construction Advertise	8/28/2028
Construction Begins	4/30/2026	Construction Begins	10/30/2028
Construction Complete	4/30/2027	Construction Complete	11/1/2029

⁴¹ <https://www.maine.gov/mdot/civilrights/title-vi/#:~:text=In%20accordance%20with%20Title%20VI,large%20is%20afforded%20access%20to>

3. Required Approvals/ Project Approvals

MaineDOT has initiated communication with environmental agencies and interested parties. Preliminary baseline data collection to identify natural and cultural resources potentially affected by the Project is underway. This information will be refined during final design and will be used to avoid and minimize impacts while meeting the purpose and need of the Project. MaineDOT and various other state and federal departments have executed agreements to review environmental Project impacts expeditiously but thoroughly. MaineDOT will take advantage of its programmatic agreements, where applicable, to streamline the environmental review and approval process. As can be seen from the following table, the environmental resources have already been identified.

i. Environmental Permits and Reviews

National Environmental Policy Act (NEPA): The NEPA process will inform design efforts. In the vast majority of cases, past practice indicates that, because the Project will meet the conditions of the MAP, it will be classified as a Categorical Exclusion in accordance with 23 CFR 771.117(c) (26) or d(13). MaineDOT will prepare NEPA documentation in accordance with *Programmatic Agreement between the Federal Highway Administration, Maine Division and the Maine Department of Transportation regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Projects*. Should any issues arise, MaineDOT will work directly with the respective agencies to quickly resolve them. Public involvement will be completed in accordance with MaineDOT Public Involvement Plan and the MaineDOT NEPA Public Involvement Plan. These plans can be found at this link:

<https://www.maine.gov/mdot/env/NEPA/public/index.shtml>

Anticipated date for NEPA completion for the Route 164 location is March of 2025 while the Route 1 anticipated date is November 2026. Both are dependent on grant award.

Section 404 Clean Water Act Permit (U.S. Army Corps of Engineers): Freshwater wetland and stream impacts are expected to install replacement stream crossings. MaineDOT will avoid and minimize temporary and permanent wetland and waterbody impacts to the extent practicable. MaineDOT anticipates that wetland impacts and any in-water work will be eligible for Category 2 Permits under the Maine Programmatic General Permit. Use of In-lieu fee mitigation payments to the Maine Natural Resources Compensation Program will streamline compensatory mitigation for unavoidable wetland impacts.

National Resources Protection Act (Maine Department of Environmental Protection): Stream impacts are regulated by the Maine Natural Resources Protection Act. MaineDOT anticipates that stream impacts associated with the Project will be eligible for Permit-By-Rule Chapter 305, Section 11, which is a streamlined permit process for State Transportation Facilities or will be permittable under the Individual Permit process.

Stormwater (Maine Department of Environmental Protection): The Project does not trigger Chapter 500 and is not located within a MS4.

Floodway/Floodplains: The Project may require construction with designated Zone A and Zone B floodplains. The crossing will be designed to avoid and minimize encroachments into designated flood zones and in accordance with Executive Order 11988. The crossing will be designed to improve hydraulic capacity and aquatic connectivity.

ii. State and Local Approvals

Historic and Archaeological: For the Route 164 location, MaineDOT received a concurrence letter from Maine Historic Preservation Commission (MHPC) on October 9, 2019, stating there is no effect on historic or archaeological. Tribal notifications were sent out on April 14, 2017. The Route 1 location will need MHPC determination as well as Tribal consultation. There are ongoing discussions about the historic nature of the Route 1 corridor that will be a part of the consultation process.

Endangered Species Act (ESA) and Essential Fisheries Habitat (EFH): The Project is located near designated Essential Fish Habitat for Atlantic salmon. In addition, the Project is located within the range of the federally endangered northern long-eared bat and federally threatened Canada lynx. Collaborative agreements with MaineDOT, USFWS, USACE, and FHWA under the Endangered Species Act will result in a thorough environmental review process that expedites endangered species consultations and aims to meet both wildlife, program, and Project goals. In addition, culvert replacements with a restoration component have historically qualified to use expedited Permit by Rule procedures (Chapter 305, Permit by Rule*) and Maine’s General Permit (2020-2025-MaineGeneralPermits.pdf) to receive Maine Department of Environmental Protection (DEP) and U.S. Army Corps of Engineers (USACE) approval, respectively.

Section 4(f): The MaineDOT Cultural Coordinator has reviewed the Project and determined there are no Section 4(f) resources within the Project limits at both locations.

Public Engagement Opportunities: MaineDOT uses an innovative Public Involvement Management Application (PIMA) to provide and track public engagement on projects. PIMA enables both in-person and virtual opportunities for communities to access Project information and provide comments. As is standard for all projects, public engagement will be completed in accordance with MaineDOT Public Involvement Plan and the MaineDOT NEPA Public Involvement Plan (<https://www.maine.gov/mdot/env/NEPA/public/index.shtml>). The public engagement process will commence once the Project has received construction funding.

Programmatic Agreements

MaineDOT and various other state and Federal departments have executed agreements to expeditiously but thoroughly review environmental impacts from projects. MaineDOT will take advantage of the following agreements, where applicable, to streamline the environmental review and approval process:

1. Programmatic Agreement between the Federal Highway Administration, Maine Division and the Maine Department of Transportation Regarding the Processing of Actions Classified as Categorical Exclusions for Federal-Aid Highway Projects;

2. Programmatic Agreement among Federal Highway Administration, Federal Transit Administration, the Advisory Council on Historic Preservation, the Maine State Historic Preservation Officer, and Maine Department of Transportation Regarding Implementation of the Federal Aid Highway and Federal Transit Programs in Maine;
3. Cooperative Agreement between U.S. Department of the Interior Fish and Wildlife Service (USFWS), FHWA and the MaineDOT for State Transportation Reviews by the USFWS in Maine;
4. Maine Atlantic Salmon Programmatic Consultation finalized January 23, 2017;
5. Programmatic Agreement for the State of Maine concerning identification of listed and proposed species and designation of non-Federal representative under the Federal Endangered Species Act between FHWA, Maine Division USACE and MaineDOT;
6. Memorandum of Agreement for Stormwater Management Between the MaineDOT, MTA and Maine Department of Environmental Protection.
7. Memorandum of Agreement between United States Army Corps of Engineers (USACE), New England District and MaineDOT for Expediting Permit Application Evaluations under Section 214 of the Water Resources Development Act of 2000, as amended, and Section 139(j) of Title 23, United States Code, Assistance to Affected State and Federal Agencies, July 2022.

iii. Federal Transportation Requirements Affecting State and Local Planning

All state and local approvals and concerns will be considered as the Project develops. MaineDOT has continued to work with local agencies to integrate the design and construction into state and local planning. This Project is consistent with MaineDOT's Long-Range Transportation Plan and is currently in the Statewide Transportation Improvement Program (STIP).⁴²

iv. Assessment of Project Risks and Mitigation Strategies

MaineDOT has undertaken significant steps to assess risk associated with state transportation system vulnerability to climate change, including storm surge and extreme precipitation events. The hydraulic capacity of the existing undersized culverts will be substantially improved, while improving climate resilience to accommodate larger and more frequent rain events. This Project will remove fish barriers to reduce climate vulnerability of fish and their ecosystems.

Collaborative agreements with MaineDOT, USFWS, USACE, and FHWA under the Endangered Species Act resulted in a thorough environmental review process that expedites endangered species consultations and aims to meet both wildlife, program, and project-specific goals. Specifically, the MAP, implemented in 2017, provides a comprehensive strategy that directly mitigates permitting risk. Standardized review, design and construction best practices included in the MAP streamlines environmental reviews while recognizing the habitat restoration resulting from stream crossing replacements within the GOM DPS. During Project scoping and preliminary design, there is close coordination between the design team and the environmental

⁴² <https://www.maine.gov/mdot/stip/>

team on every crossing replacement Project. This also applies to the proposed Project, ensuring that the Project goals and community needs can be met while avoiding, minimizing, and mitigating potential environmental impacts. MaineDOT has initiated communication with environmental agencies and interested parties. Preliminary baseline data collection to identify natural and cultural resources potentially affected by the Project is underway. This information will be refined during final design and will be used to avoid and minimize impact while meeting the purpose and need of the Project. MaineDOT and various other state and federal departments have executed agreements to review environmental Project impacts expeditiously but thoroughly. Maine DOT will take advantage of its programmatic agreements, where applicable, to streamline the environmental review and approval process.

Table 3: Project Risks and Mitigation Strategies

Project Risks	Mitigation
Environmental permitting/restriction <ul style="list-style-type: none"> • Federally Threatened Canada Lynx, Atlantic Salmon Essential Fish Habitat 	<ul style="list-style-type: none"> • Collaborative agreements with MaineDOT, USFWS, USACE, FHWA and MTA under the Endangered Species Act through a process that expedites endangered species consultations and aims to meet both wildlife and Project goals.⁴³ • Choosing a final design that minimizes in water work • Constructability reviews will be completed during design to ensure the selected alternative is buildable given the various environmental restrictions.

V. Administration Priorities

The Project aligns with the Biden-Harris Administration policies outlined in the NOFO and prioritizes safety, climate change, sustainability, equity, workforce development, job quality, and wealth creation.

Safety

As described in the Merit Criterion 1.1 *Reduction of Wildlife Vehicle Collisions* section, MaineDOT anticipates that providing a new wildlife crossing structures under Route 164 and Route 1 with fencing will help encourage animals to cross through the proposed culvert instead of across the roadway as many do today. There is an average of ~6 reported crashes annually in the project area. We also recognize that local information indicate that there could be 10 or more crashed annually that go unreported. There are approximately 12 deer/moose WVCs at the Route 164 crossing site that go unreported annually. Studies demonstrate the potential reduction

⁴³ <https://www.maine.gov/mdot/maspc/>

of an underpass crossing structure with fencing could reduce crashes by 52-87 percent^{44, 45} at each location. As indicated in the USDOT National Roadway Safety Strategy, rural roads have a disproportion of vehicle miles traveled and fatalities which is consistent with the profile of Route 1 in Aroostook County Maine in this location. The Project aligns with the USDOT National Roadway Safety Strategy Safer System Approach objective of Safer Roads by improving the roadway environment to facilitate safe travel by seeking to reduce conflicts between wildlife and vehicles on Route 164 and Route 1 over Prestile Brook. The Project also aligns with Maine's 2022 Strategic Highway Safety Plan which outlines seven large animal strategies to improve safety.⁴⁶

Climate Change & Sustainability

MaineDOT has undertaken significant steps to assess risk associated with state transportation system vulnerability to climate change, including sea level rise, storm surge and extreme precipitation events. A GIS based risk evaluation tool, Transportation Risk Assessment for Planning and Project Delivery (TRAPPD) was developed by the MaineDOT Environmental Office.

The Project is at the bottom of two significant downslopes, and there have been reported issues with water on the roadway. During one major weather event in 1983 the entire roadway flooded. The proposed culvert will mitigate against climate change, storm surge and extreme precipitation events. This Project will protect the road from flooding in the future and will maintain the integrity of the road.

As described in Merit Criterion 1.2 *Improvement of Terrestrial and Aquatic Habitat Connectivity*, the Project will restore the stream channel through the crossing to mimic the conditions of the existing natural stream channel downstream which in turn will enhance water quality and manage flood flows. The removal of barriers to aquatic organism passage will reestablish physical and biological processes that sustain river ecosystems. Increased hydraulic capacity more sustainably accommodates higher stream flows associated with increasingly common extreme precipitation events and address scour that threatens substructures in the face of flashy, unprecedented storm flows. The Project will remove two documented fish barriers that will improve the climate resilience and reduce climate vulnerability of fish targeted in this funding application and their ecosystems benefiting the deer, moose, lynx, black bear, and other mammal populations that inhabit this corridor.

Equity

The Project demonstrates a commitment to improving equity and addressing barriers to opportunities for disadvantaged communities as the Project is located within a Historically Disadvantaged community census tract (23003951400) per the Climate and Economic Justice

⁴⁴ <https://www.sciencedirect.com/science/article/abs/pii/S0006320716300350>

⁴⁵ <https://www.usgs.gov/publications/effectiveness-wildlife-underpasses-and-fencing-reduce-wildlife-vehicle-collisions#:~:text=Based%20on%20collision%20reports%20from%20adjacent%20highway%20sections%2C.and%20fencing%20reduced%20the%20number%20of%20deer%E2%80%93vehicle%20collisions.>

⁴⁶ https://www.maine.gov/mdot/safety/docs/2023/strategic-hwy-safety-plan_shsp2022.pdf

Screening Tool as well as being identified as an Area of Persistent Poverty per USDOT’s Area of Persistent Poverty list.⁴⁷ MaineDOT recently updated its Public Involvement Plans to ensure disadvantaged populations and underserved areas are afforded meaningful opportunities for public involvement, available at: <https://www.maine.gov/mdot/env/NEPA/public/index.shtml>. MaineDOT has also launched a new Diversity, Equity and Inclusion (DEI) initiative that includes an external equity statement of the commitment to ensure all Mainers have access to safe and reliable transportation options.

Compliance with Section 508 of the Rehabilitation Act of 1973: MaineDOT recognizes the importance of providing all information and communication technology to be accessible to individuals with disabilities.

MaineDOT utilizes the EPA EJSCREEN for all Federally funded projects. The team will engage the public and work to ensure impacts will not disproportionately affect people of color, low-income individuals, or disadvantaged populations. MaineDOT recently updated its Public Involvement Plans, which outline the Department’s efforts to ensure disadvantaged populations are afforded meaningful opportunities for public involvement. The Plan is available at: <https://www.maine.gov/mdot/env/NEPA/public/index.shtml>.

Workforce Development, Job Quality, and Wealth Creation

MaineDOT is responsible for managing and funding the transportation system statewide. The Agency also manages the state’s relationship with transportation-related private entities. Employing approximately 1,600 people, the agency expends and disburses more than \$675 million annually in Federal, state and local funds. MaineDOT works to create good-paying jobs that incorporate strong labor standards.

Federal Contract Compliance: As a condition of grant award and consistent with EO 11246, Equal Employment Opportunity (30 FR 12319, and as amended), MaineDOT will make good faith efforts to meet the goals of 6.9 percent of construction Project hours being performed by women as well as meeting or exceeding goals for work being performed by people of color or those with disabilities.

Domestic Preference Requirements: MaineDOT follows all applicable domestic preference laws including Executive Order 14005, ‘Ensuring the Future Is Made in All of America by All of America’s Workers’ (86 FR 7475) and ensures the use of goods, products and materials produced in the United States for all infrastructure projects.

⁴⁷ <https://screeningtool.geoplatform.gov/en/#10.84/46.8452/-67.9109> ; <https://www.transportation.gov/grants/mpdg-areas-persistent-poverty>