Chapter 2
Alternatives Analysis

Chapter 2 presents the alternatives analysis. It introduces the range of reasonable alternatives developed to meet the study purpose and needs and the USACE's basic project purpose. It identifies those alternatives retained or dismissed from more detailed study and the reasons for their retention or dismissal.

2.1 Introduction

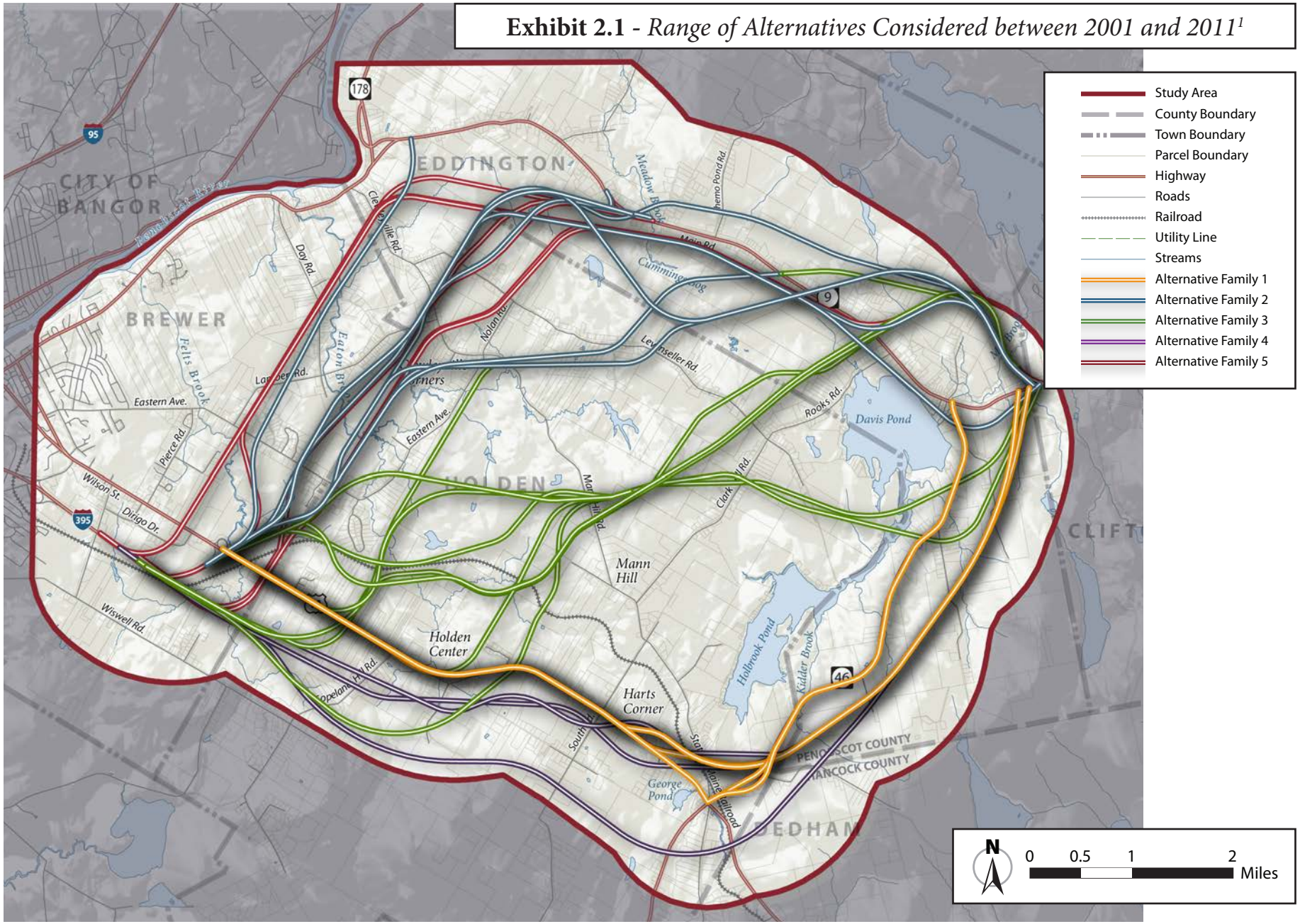
From 2001 to 2011, MaineDOT and the FHWA conceptually designed and analyzed the No-Build Alternative and more than 70 build alternatives that could potentially satisfy the study purpose and needs and the USACE basic project purpose (exhibit 2.1). In conceptually designing and analyzing alternatives, MaineDOT and the FHWA consulted with regulatory and resource agencies at the state and federal level, local officials, special-interest groups, native American tribal governments and the public. At the end of the process of identifying, developing, analyzing, and screening alternatives, four alternatives, including the No-Build Alternative, were retained for further consideration and detailed study.

Alternatives were identified, developed, and analyzed in accordance with requirements of NEPA and Section 404 of the CWA. NEPA requires MaineDOT and FHWA to consider the impacts of an action on the environment and to disclose those impacts in a public decision-making process. Alternatives generally should be discussed at a comparable level of detail. Although the No-Build Alternative (generally consisting of maintenance and short-term minor improvements) might not seem reasonable for satisfying the study purpose and needs, it must always be included in the analysis with its consequences fully developed. The No-Build Alternative serves as a benchmark against which the impacts of other alternatives can be compared.

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Section 404 requires a permit from the USACE before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from regulation (e.g., certain farming and forestry activities).

Chapter Contents

Exhibit 2.1 - *Range of Alternatives Considered between 2001 and 2011*[1]



[1] **Note:** *Alternative alignments shown here have been grouped into families. For a detailed discussion of each family, please refer to Appendix C of the DEIS.*

Under Section 404, no discharge of dredged or fill material into waters of the United States may be permitted if (1) a practicable alternative exists that is less damaging to the aquatic environment, or (2) the nation's waters would be significantly degraded. To be granted a permit, the project must show that it has, to the extent practicable:

- taken steps to avoid waters and wetlands impacts
- minimized potential impacts on waters and wetlands
- provided compensation for remaining unavoidable impacts

2.2 Alternatives Identification, Development, and Analysis Process

In May 2001, MaineDOT and the FHWA, with public and PAC assistance, identified potential corridors for alternatives using low-level, high-resolution aerial photography and mapping of the land use, social features, and natural resources of the study area.

MaineDOT and the FHWA compiled and refined the suggested corridors into 45 alternatives. These initial 45 alternatives fit into the following four broad "families":

- Family 1: The Upgrade Alternatives
- Family 2: The Northern Alternatives
- Family 3: The Central Alternatives
- Family 4: The Southern Alternatives

To reduce the number of alternatives identified and conceptually designed to a reasonable range, MaineDOT and the FHWA sought to identify one alternative from each family to be studied in detail. The decision of whether to dismiss or retain alternatives for further analysis was based on their ability to satisfy the study purpose and needs, results of the preliminary impacts analysis, and consideration of overall engineering feasibility. If more than one alternative in each family fully satisfied the study purpose and needs and was practicable, the alternative was selected based on potential impacts to the features and resources. Alternatives that were more environmentally damaging than others were dismissed from further consideration and alternatives that were the least environmentally damaging were retained for further consideration.

In June 2004, alternatives were identified and developed parallel to the utility easements with the Bangor Hydro-Electric Company transmission lines. This family of alternatives, which start with the number 5, began at or near the I-395/Route 1A interchange and largely paralleled the electric transmission lines in the City of Brewer and the towns of Holden and Eddington.

The process of identifying, developing, and screening alternatives or modifying alternatives continued. In January 2008, the following seven alternatives were preliminarily identified for further consideration and development and detailed study:

Wetlands subject to Section 404 can be defined as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (CWA, Section 404).

Practicable may be defined as "available and capable of being done after considering cost, existing technology, and logistics in light of the overall project purpose."

The regulations implementing the NEPA (40 CFR 1502.14) require that the lead agencies:

a. Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their elimination.
b. Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.
c. Include reasonable alternatives not within the jurisdiction of the lead agency
d. Include the alternative of no action.
e. Identify the agency's preferred alternative or alternatives, if one or more exists, in the DEIS and identify such alternative in the FEIS, unless another law prohibits the expression of such a preference.
f. Include appropriate mitigation measures not already included in the proposed action or alternatives.

- No-Build Alternative
- Alternative 1-1
- Alternative 2B-2
- Alternative 3A-3EIK-1
- Alternative 3EIK-2
- Alternative 5A2E3K
- Alternative 5B2E3K

In a continued effort to avoid and minimize adverse impacts in December 2008, six connectors between the three western most build alternatives were identified, conceptually designed, and analyzed at the beginning of the phase of considering alternatives in detail. Of the six alternatives that resulted from connecting Alternative 5A2E3K to Alternative 2B-2, two were retained for further consideration because they resulted in comparable or less impact to wetlands and fewer residential displacements than Alternatives 2B-2 and 5A2E3K. These alternatives were named Alternative 5A2B-2 and Alternative 5A2E3K-2.

In May 2009, a meeting took place with the federal and state regulatory and resource agencies to review the range of alternatives being considered. It was agreed that Alternatives 1-1 and 3A-3EIK-1 should be dismissed from further consideration because they did not meet all of the study's purpose and needs or it was more environmentally damaging than other alternatives.

In December 2009, the system linkage need and Route 9 were reexamined in greater detail. Specifically, Route 9 was reexamined to understand more fully if it could reasonably accommodate the future traffic volumes that were foreseeable within the next 20 years. After careful consideration of those factors, MaineDOT determined that Route 9, with the exception of the sections approaching the intersection of Routes 9 and 46 where the posted speed limit is lower than other segments of Route 9, could reasonably accommodate future traffic volumes for the next 20 years (due to the 2008 economic downturn and increase in the price of gas, traffic in the study area has not grown as fast as previously forecast) without additional improvements beyond the existing right-of-way.

In September and December 2010, meetings with the federal cooperating agencies took place, the purpose of which was to solidify the range of alternatives to be considered in detail. MaineDOT, the FHWA, and the federal cooperating agencies further considered the remaining build alternatives and concluded, although available and practicable, Alternatives 3EIK-2, 5A2E3K, 5A2E3K-2, and 5B2E3K-1 were more environmentally damaging than other build alternatives and were dismissed from further consideration (see DEIS Chapter 2 for a complete alternatives analysis). Alternative 5B2B-2 was created by connecting Alternative 5B2E3K to Alternative 2B-2.

The purposes and needs of this study and its solutions lie specifically in the study area. The privately funded East-West Highway concept has its own purposes, needs, and solutions in a different area. There has been much recent discussion about not needing a connection to the Interstate system in the I-395/Route 9 study area because a proposed new East-West highway would meet the system-linkage need between I-395 and Route 9. MaineDOT and FHWA would continue to consider the I-395/Route 9 Transportation Study because the East-West highway would not satisfy the purpose and needs of the study. Specifically:

- The system linkage need would not be satisfied.
  - The I-395/Route 9 connector provides a distinct and more southerly connection. The traffic between the Canadian Maritime Provinces and the New England states is different from the traffic from the Maritime Provinces that want to travel to and from the larger markets of Quebec, Ontario, and the Midwestern United States to the West.
  - The I-395/Route 9 connector is more sub-regional and local in nature. Only 1% of the traffic studied in the 1998 Origin-Destination Study traveled from the Maritime Provinces to other western Canadian destinations.
  - The portions of Routes 1A and 46 in the study area would not provide an operationally efficient transportation facility for regional connectivity and mobility through the study area.
- The traffic congestion need would not be satisfied. Traffic would continue to operate at unacceptable quality of traffic flow and speed on Route 1A.

The current AADT along Route 9 in Eddington between the terminus of the Alternative 2B-2 and the Route 46 intersection is approximately 5,000 vehicles per day. The posted speed in this section of Route 9 is predominantly 45 mph, with 35 mph near the Route 46 intersection. Traffic on Route 9 can comfortably travel at the current posted speeds. This segment of Route 9 was constructed to a width that meets current National Highway System standards for 2-lane highways (12-foot travel lanes and 8-foot shoulders).

With Alternative 2B-2, the 2035 AADT along this segment of Route 9 is forecast to be approximately 12,000 vehicles per day. At that level of traffic flow, Route 9 can easily be maintained at the current posted speeds. There are many locations in Maine where AADTs of 15,000 to 17,000 are accommodated on 2-lane highways with 35-to-50 mph speeds. Many of these locations have more intense commercial development than Route 9 in Eddington. This indicates that traffic volume growth on Route 9 can be accommodated well beyond the year 2035.

As part of its planning process, MaineDOT regularly monitors traffic volume and traffic safety trends on all state highways, including Route 9. Traffic volumes are updated every three years, and crash data is reviewed annually to identify emerging conditions that would compromise safety and mobility. MaineDOT regulates development access to Route 9 through application of access management rules. These rules require a new development to provide safe access and maintain adequate mobility on the highway.

One way of maintaining safety and mobility along Route 9 as future development occurs is by establishing turn lanes where needed to minimize conflicts between turning traffic and through traffic. This treatment improves the safety of turns while maintaining or improving the flow of through traffic. There are examples in Maine where AADTs of 17,000 to 19,000 are accommodated on 3-lane highways (which have a 2-way left turn lane between the through lanes) with 40-to-50 mph speeds. Route 9 is adaptable ***within the existing Right-of-Way*** to this type of treatment, if conditions warrant.

With the capacity to accommodate much more than the forecasted traffic, the regular monitoring of safety and mobility conditions by MaineDOT, and the ability to accommodate additional development in a safe and efficient manner, the transportation benefits of Alternative 2B-2 would be sustainable well beyond 2035.

2.3 Range of Reasonable Alternatives Retained for Consideration

Four alternatives, including the No-Build Alternative, were retained for further consideration and analyzed in detail (exhibit 2.2).

- No-Build Alternative
- Alternative 2B-2
- Alternative 5A2B-2
- Alternative 5B2B-2

The cooperating agencies concurred with this range of alternatives to be retained for detailed analysis. MaineDOT and the FHWA would continue to work with the state and federal regulatory and resource agencies to ensure that environmental impacts are avoided and minimized to the extent practicable should a build alternative be selected and advanced to design and construction.

The build alternatives would be controlled-access highways and were conceptually designed using MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an appropriate 200-foot-wide right-of-way (exhibit 2.3). The 200-foot-wide right-of-way provides a sufficient width to allow a future widening, if needed; the need to widen beyond the 200-foot-wide right-of-way is beyond the reasonable foreseeable future time period.*

** While there were brief discussions regarding reducing the width from 200 feet to 100 or 125 feet, the right of way width was never changed and remains the 200-foot width as described in the DEIS.*

Exhibit 2.2 - *Alternatives Retained for Further Consideration*

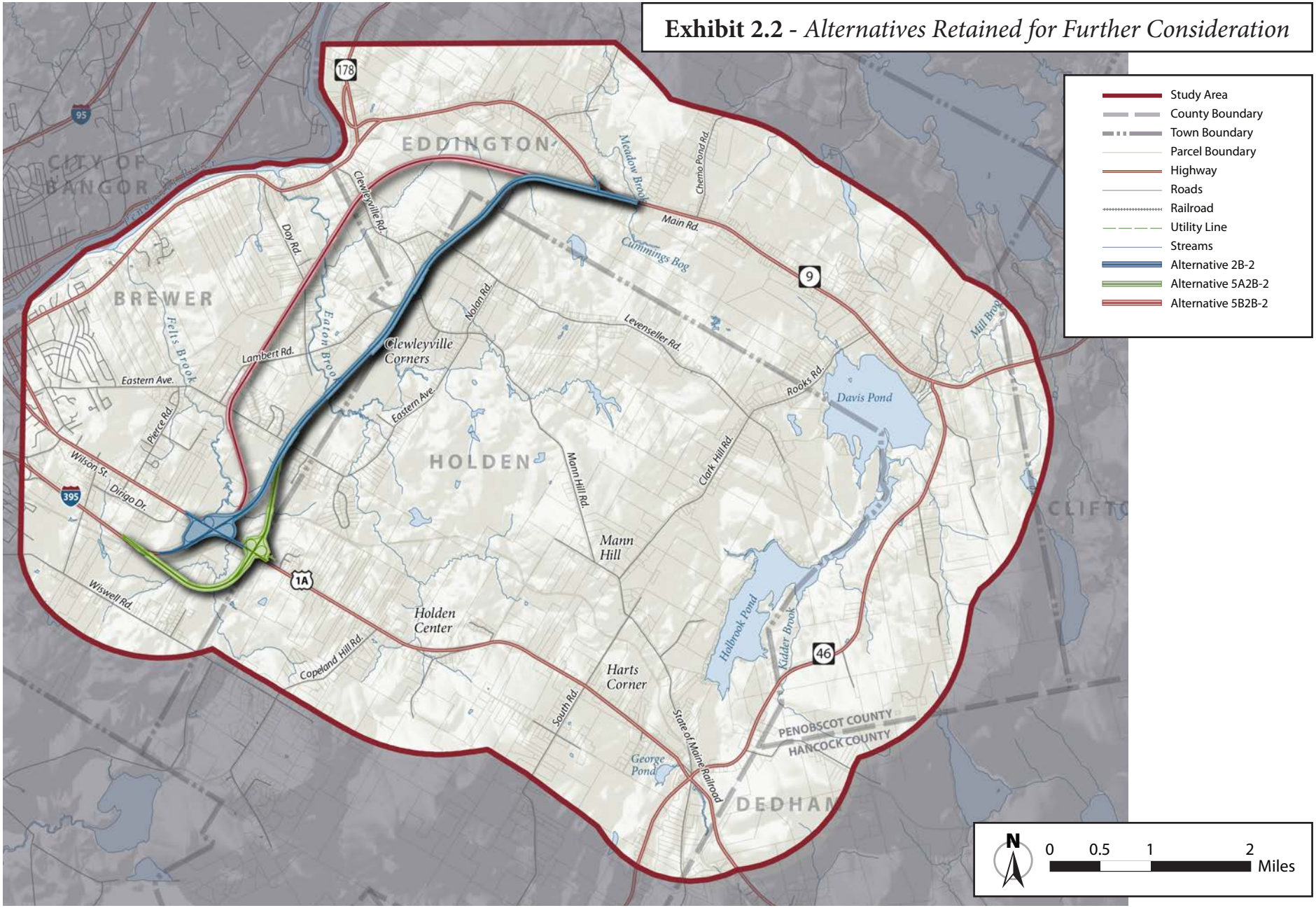
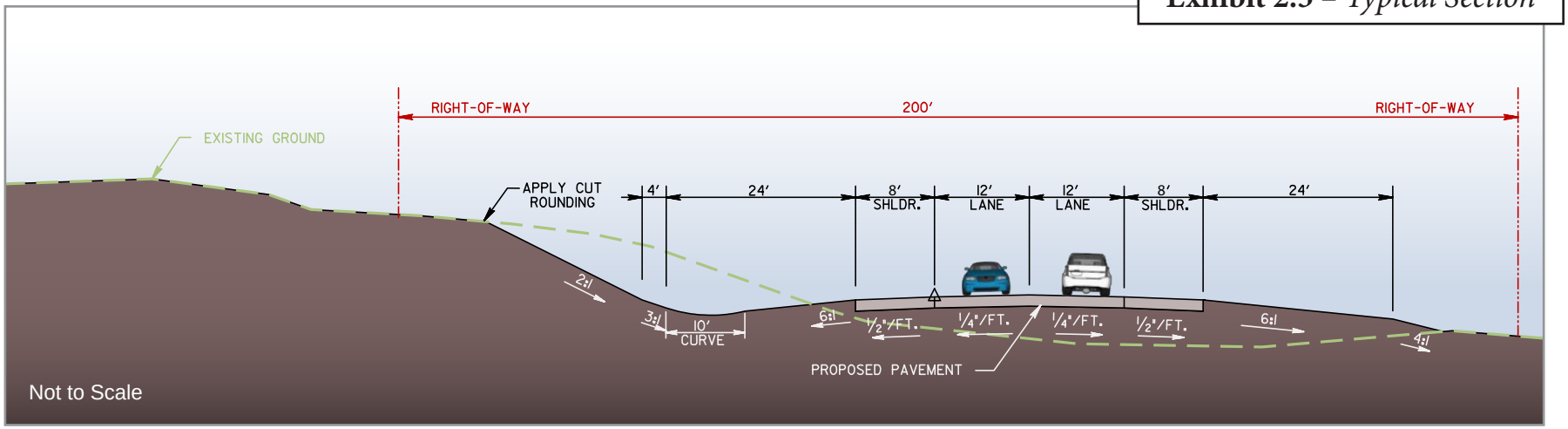


Exhibit 2.3 – *Typical Section*



During the study, it appeared that other alternatives would best satisfy the study purpose and needs. MaineDOT and FHWA studied those alternatives until it became clear that 1) those alternatives would result in greater adverse environmental impacts than Alternative 2B-2, and 2) Route 9 had adequate capacity and would continue to operate at an acceptable level of service and operating speed up to and beyond the year 2035 (the time period that has been determined to be reasonably foreseeable).

On three occasions during the study, Alternative 2B-2 (including earlier versions Alternative 2B and 2B-1) was tentatively dismissed from the range of reasonable alternatives considered for satisfying the study purpose and needs only to be added back to the range of alternatives considered. On each occasion, the DOT, in consultation with the PAC, tentatively dismissed it and, in subsequent discussions with the Federal cooperating agencies, reconsidered it because it was practical and resulted in less adverse environmental impacts than other alternatives.

A preferred alternative that best satisfies the study purpose and needs with the least adverse environmental impact was not identified prior to the identification of Alternative 2B-2 as the preferred alternative in the DEIS. After careful consideration of the range of alternatives developed in response to the study's purpose and needs and in coordination with its cooperating and participating agencies, MaineDOT and the FHWA identified Alternative 2B-2 as the preferred alternative because it best satisfies the study purpose and needs, would fulfill their statutory mission and responsibilities, and has the least adverse environmental impact between the present time and the design year 2035. In identifying Alternative

2B-2 as their preferred alternative, MaineDOT and the FHWA have identified the environmentally preferable alternative because it best meets the purpose and needs for the study; causes the least damage to the biological and physical environment; and best protects, preserves, and enhances the historic, cultural, and natural resources of the study area.

Alternative 2B-2 was identified on July 31, 2012 as the LEDPA by the USACE (see Appendix B), and as such the alternative that could receive a permit from the USACE.

2.3.1 No-Build Alternative

The No-Build Alternative consists of maintenance and Transportation System Management (TSM) improvements. Regular maintenance consists of surface and shoulder work, ditch, bridge, culvert maintenance, snow and ice removal, emergency maintenance, mowing, brush control and other vegetation management, maintenance of stormwater runoff and management systems, erosion repair, striping, sign installation, and guardrail replacement. TSM is a set of relatively low-cost measures to increase capacity and/or provide safety improvements on an existing transportation system. These measures typically include traffic-signal timing or phasing adjustments, designation of turning lanes at specific intersections or driveways, access-management improvements, and enhanced signage or markings. The No-Build Alternative serves as the baseline to which other alternatives can be compared. The No-Build Alternative proposes that there be no new construction or major reconstruction of the transportation system in the study area; regular maintenance to I-395 and Routes 1A, 46, and 9 would be continued at its present level; and the intersection of Routes 46 and 9 would be improved.

Improvements to the intersection of Routes 9 and 46 were conceptually designed to have additional through-travel and turn lanes. The improvements to this intersection could be accomplished within the existing rights-of-way of Routes 9 and 46 with no impact to the natural and social features adjacent to the intersection. MaineDOT is committed to improving the intersection of Route 9 and Route 46; given the future need and the limited scope of the improvements to the intersection, the improvements would be added to future work plans for MaineDOT. The proposed intersection would be studied and further developed during final design and discussed at a future public meeting.

The No-Build Alternative would not satisfy the study's purpose and needs or the USACE's basic purpose as it would not improve regional mobility and system linkage; would not improve safety; and would not reduce traffic congestion. The No-Build Alternative is retained for detailed analysis to allow equal comparison to the build alternatives and to help

decision makers understand the ramifications of taking no action. The impacts of the No-Build Alternative were fully developed for design year 2035 to demonstrate the full impact of taking no action. Comparing the build alternatives with the current and future No-Build Alternative is essential for measuring the true benefits and adverse impacts of the build alternatives considered in detail.

2.3.2 Alternative 2B-2/The Preferred Alternative

Alternative 2B-2/the Preferred Alternative would continue north from the I-395 interchange with Route 1A, roughly paralleling the Brewer/Holden town line, and connect with Route 9 west of Chemo Pond Road (exhibit 2.4). Route 9 would not be widened to four lanes. The existing I-395/Route 1A interchange would be used (to the extent possible) and expanded to become a semi-directional interchange (exhibit 2.5). A semi-directional interchange reduces left turns and cross traffic; the only traffic movement that would require a left turn would be Route 1A south to the Alternative 2B-2/the Preferred Alternative north. The land required for the northern portion of the interchange is owned by the State of Maine.

Alternative 2B-2/the Preferred Alternative would bridge over Felts Brook in two locations at the I-395 interchange. It would pass underneath Eastern Avenue between Woodridge Road and Brian Drive. Alternative 2B-2/the Preferred Alternative would bridge over Eaton Brook, bridge over Lambert Road, pass underneath Mann Hill Road, and bridge over Levenseller Road connecting to Route 9 at a "T" intersection (exhibit 2.6). Route 9 eastbound would be controlled with a stop sign.

Alternative 2B-2/the Preferred Alternative would further the study's purpose and satisfy the system linkage need in the near term (before 2035). Alternative

The section of Route 9, from the intersection of 2B-2/the Preferred Alternative to the eastern edge of the study area, has adequate capacity and would continue to operate at an acceptable level of service and operating speed up to and beyond the year 2035 (the time period that has been determined to be reasonably foreseeable). Beyond the year 2035, should this section of Route 9 begin to operate at an unacceptable level of service, operating speed or safety, MaineDOT and FHWA would consider the need for additional improvements. The scope of the additional improvements could range from limited improvements within the existing right-of-way (e.g., small improvements at a specific location, additional turn lanes at intersections, addition of a center turn lane) to widening or a bypass of portions of Route 9.

2B-2/the Preferred Alternative would be a controlled access highway and conceptually designed using MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved (beyond the improvements necessary to connect the preferred alternative), and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the study need related to traffic congestion and safety. It would satisfy the USACE's basic purpose statement.

MaineDOT submitted an Interstate Modification Report to FHWA in October 2012 which received conceptual approval in February 2013. Final approval of the Interstate Modification Report cannot occur until after the process for complying with the NEPA is completed (see adjacent text box).

Title 23, U.S. Code, Highways Section 111 (23 USC 111) provides that all agreements between the Secretary of the U.S. Department of Transportation and the State Departments of Transportation for the construction of projects on the Interstate System shall contain a clause providing that the State would not add any points of access to, or exit from, the project in addition to those approved by the Secretary in the plans for such a project without prior approval of the Secretary. The Secretary has delegated the authority to administer 23 USC 111 to the FHWA pursuant to 49 CFR 1.48(b)(10). A policy statement consolidating a series of policy memoranda including guidance for justifying and documenting the need for additional access to the existing sections of the Interstate System, was published in the Federal Register on October 22, 1990 (55 FR 42670) entitled "Access to the Interstate System" and was then modified on February 11, 1998 (63 FR 7045) and on August 27, 2009 (74 FR 20679).

An Interchange Modification Report (IMR) was prepared by MaineDOT and the FHWA to analyze, document and justify the new section of highway proposed by the I-395/Route 9 Transportation Study. The documentation is outlined in eight policy points, specified in FHWA's *Interstate Access Informational Guide*:

1. Need for Access Point Modification,
2. Reasonable Alternatives,
3. Operational and Safety Analyses,
4. Access Connections and Design,
5. Land Use and Transportation Plans,
6. Future Interchanges,
7. Coordination, and
8. Environmental Processes.

The IMR analyzed each of these policy points in detail and concluded that the poor system linkages, safety deficiencies and traffic congestion currently plaguing the study area combined with the reasonableness of the selected alternatives; and the ability of those alternatives to meet the future traffic needs, improve safety and system linkages in the study area, and leave relatively small impacts on the environment; meant that the I-395 to Route 9 project in Brewer, Maine meets the eight policy points of Interstate System access. The FHWA Division Administrator determined the IMR is acceptable from an operational and engineering standpoint on February 7, 2013. It is noted that final approval of the IMR cannot occur until after the completion of the NEPA process.

Exhibit 2.4 – *Alternative 2B-2/the Preferred Alternative*

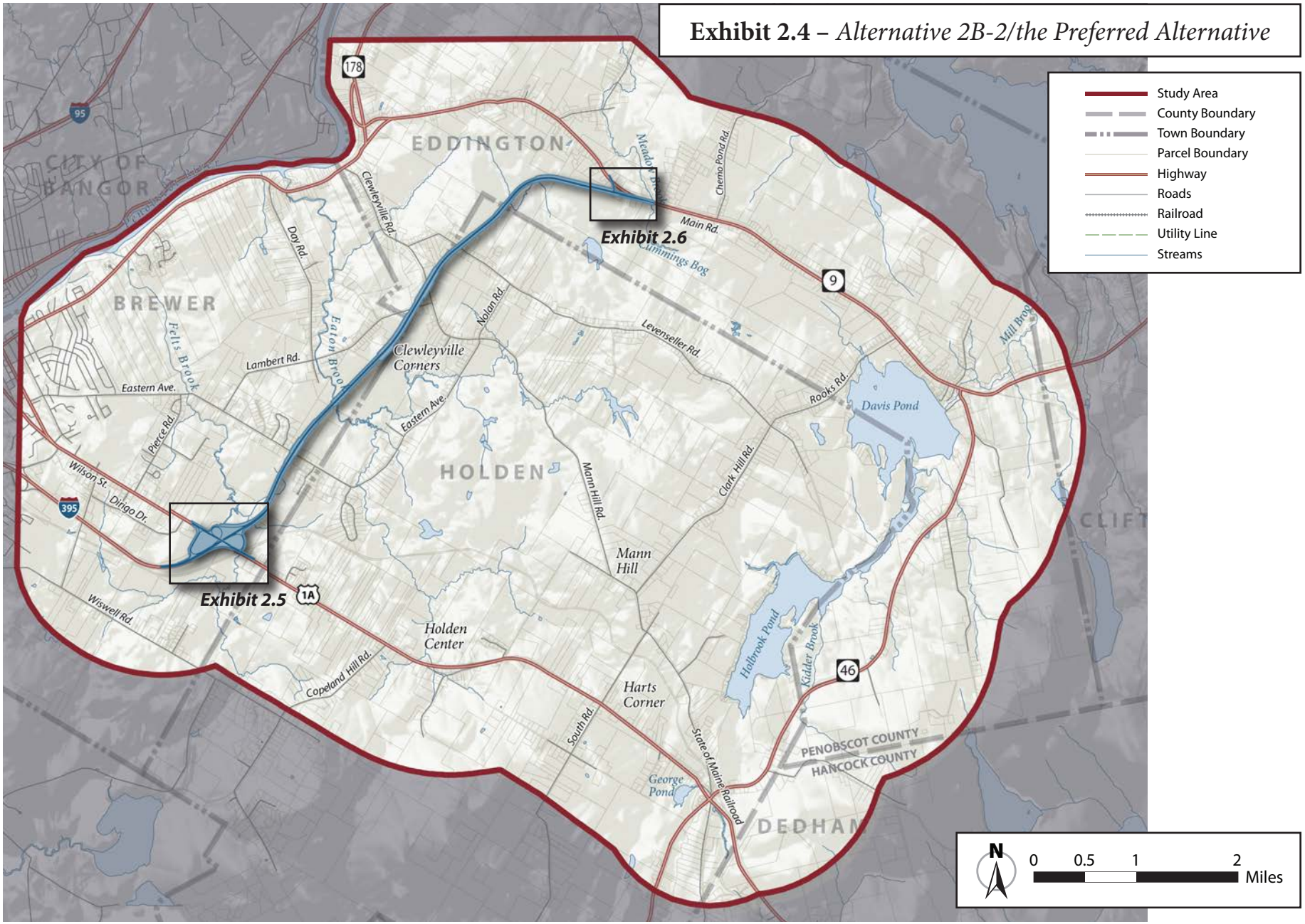


Exhibit 2.5 – *Interchange of Alternatives 2B-2/the Preferred Alternative and 5B2B-2 and Route 1A*

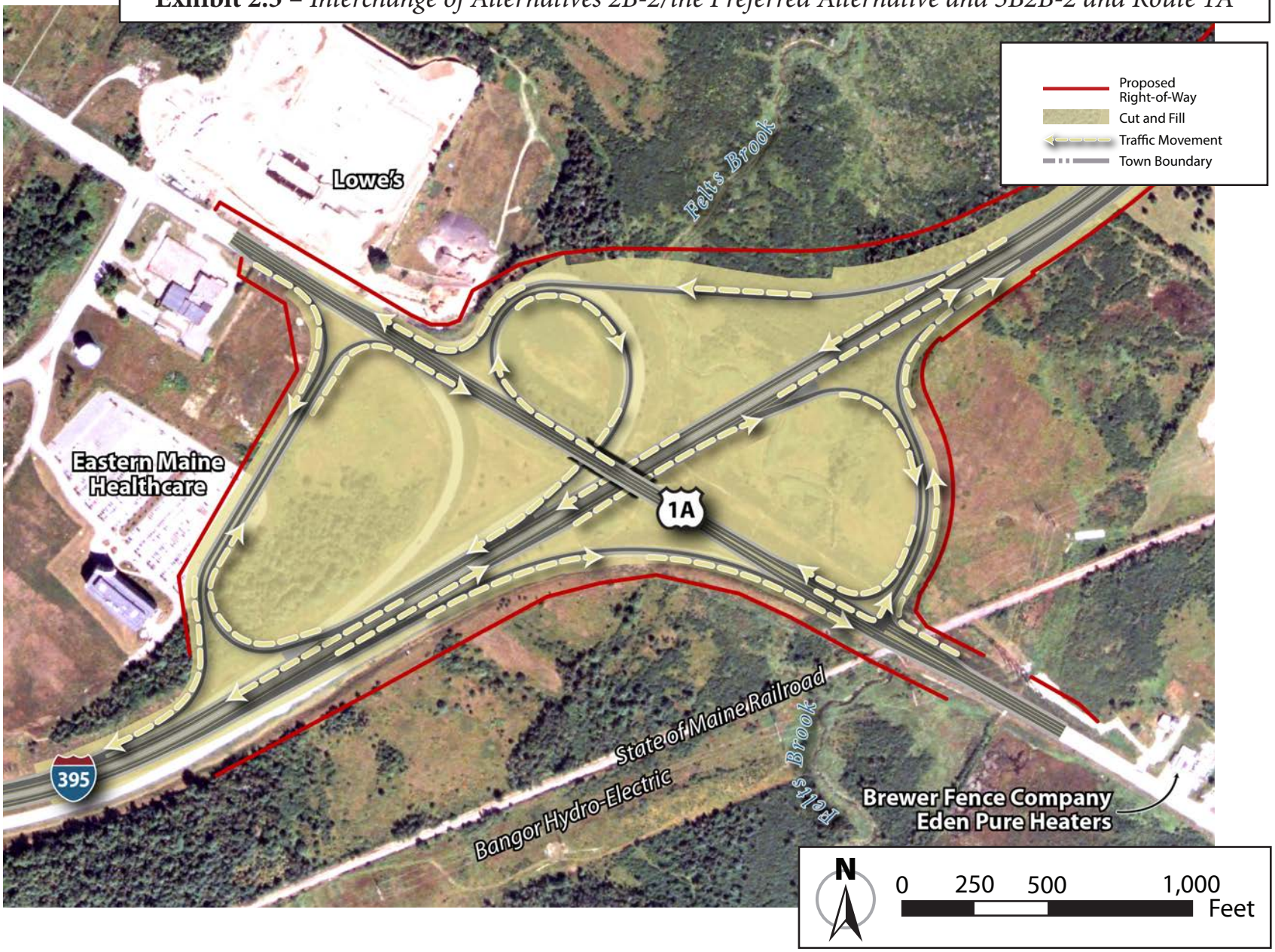
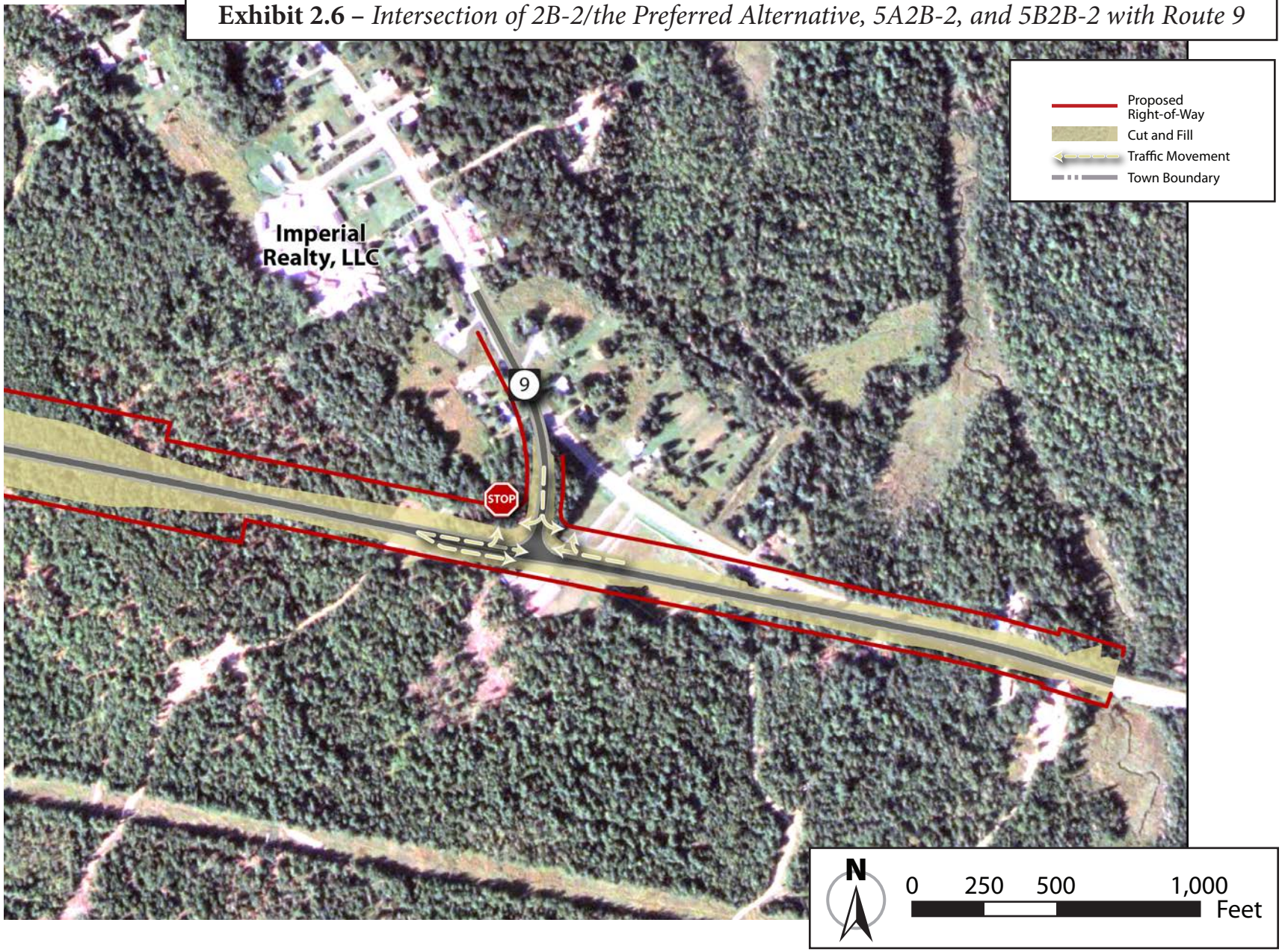


Exhibit 2.6 – *Intersection of 2B-2/the Preferred Alternative, 5A2B-2, and 5B2B-2 with Route 9*



2.3.3 Alternative 5A2B-2

Alternative 5A2B-2 would start from I-395 for approximately one mile along the southern side of Route 1A in the town of Holden before turning northward, crossing over Route 1A, and paralleling the Bangor Hydro-Electric Company utility easement and connect with Route 9 west of Chemo Pond Road (exhibit 2.7). Route 9 would not be widened to four lanes. Alternative 5A2B-2 would connect to Route 1A with a modified-diamond interchange (exhibit 2.8), which would provide all traffic movements and require two left turns across traffic. A left-turn lane would be provided on Route 1A to 5A2B-2 north. The modified-diamond interchange design would reduce the amount of property that must be acquired. It would connect to Route 9 at a "T" intersection (exhibit 2.6). Route 9 eastbound would be controlled with a stop sign.

Alternative 5A2B-2 would further the study's purpose and satisfy the system linkage need, in the near term (before 2035). Alternative 5A2B-2 would be a controlled-access highway and conceptually designed using MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved (beyond the improvements necessary to connect the preferred alternative), and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the study need related to traffic congestion and safety. It would satisfy the USACE's basic purpose statement.

Alternative 5A2B-2 would require the construction of a new interchange at I-395 and Route 1A in a location with poor soils and the existing interchange would need to be removed. The railroad crossings would be grade separated.

2.3.4 Alternative 5B2B-2

Alternative 5B2B-2 would continue north from the I-395 interchange with Route 1A before turning east and connecting with Route 9 west of Chemo Pond Road (exhibit 2.9). Route 9 would not be widened to four lanes. The existing I-395/Route 1A interchange would be used (to the extent possible) and expanded to become a semi-directional interchange (exhibit 2.5). The only traffic movement that would require a left turn would be Route 1A south to Alternative 5B2B-2 north. This interchange would require more land than a diamond interchange. The land required for the northern portion of the interchange is owned by the State of Maine.

Alternative 5B2B-2 would bridge over Felts Brook in two locations at the I-395 interchange. It would bridge over Eastern Avenue to the immediate east of Lambert Road and bridge over Lambert Road. It would pass under Day Road and Chewleyville Road before turning east and connecting to Route 9 at a "T" intersection (exhibit 2.6). Route 9 eastbound would be controlled with a stop sign.

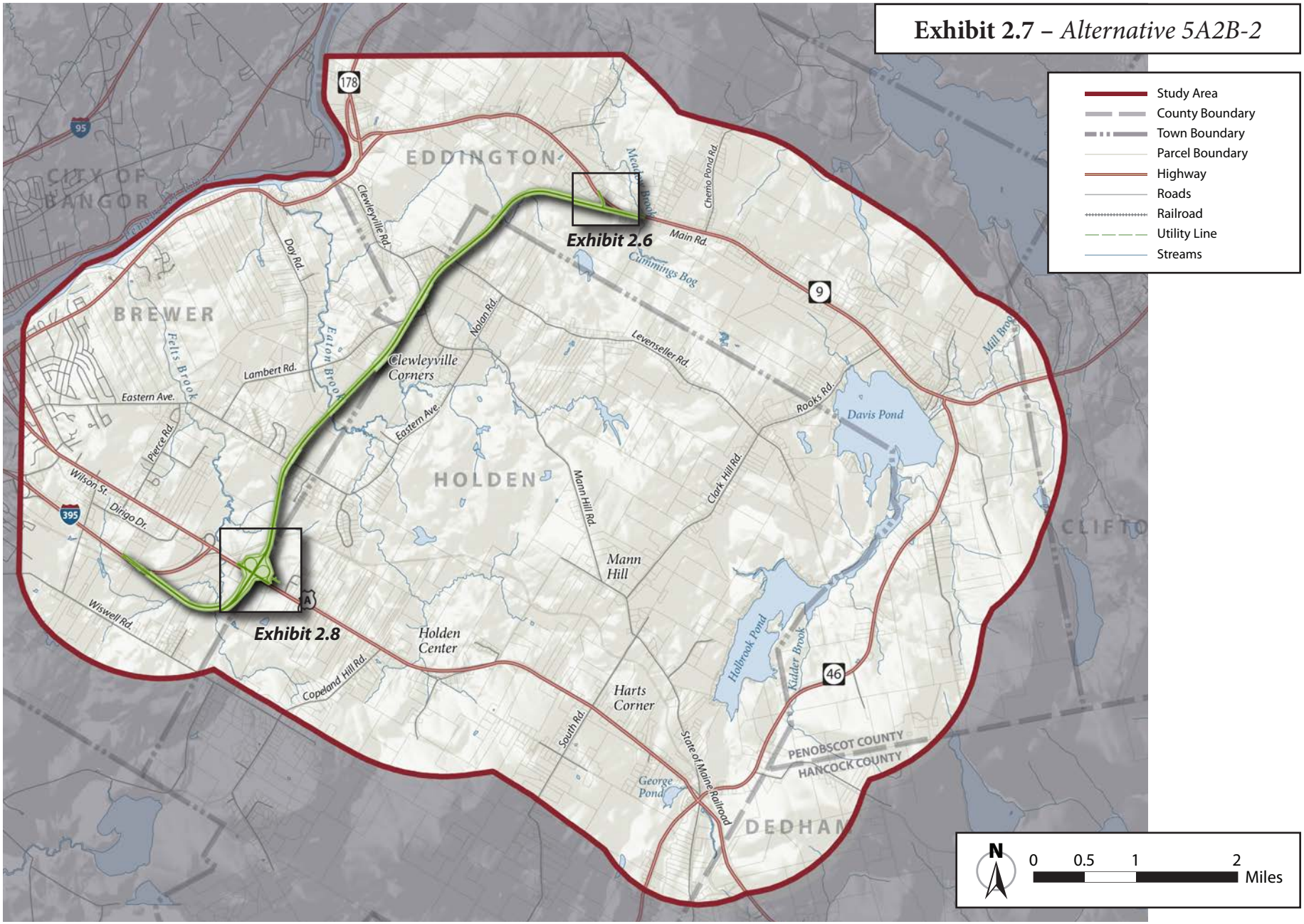
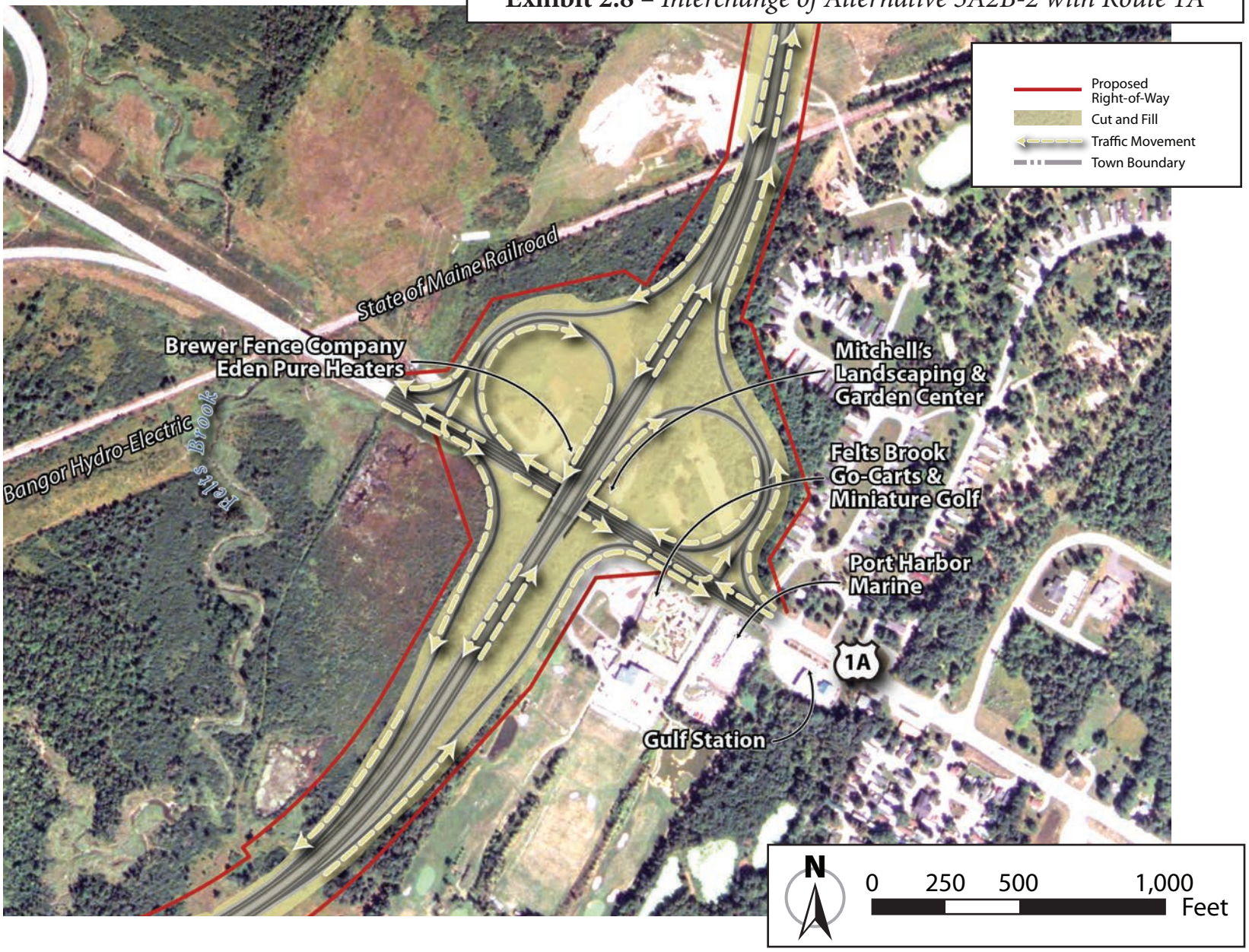


Exhibit 2.7 – Alternative 5A2B-2
Study Area
County Boundary
Town Boundary
Parcel Boundary
Highway
Roads
Railroad
Utility Line
Streams
Exhibit 2.6
Exhibit 2.8
EDDINGTON
BREWER
HOLDEN
DEDHAM
CLIFTON
CITY OF BANGOR
Clewleyville Corners
Holden Center
Mann Hill
Harts Corner
Davis Pond
Cummings Bog
Hollbrook Pond
George Pond
Main Rd.
Levenseller Rd.
Eastern Ave.
Lambert Rd.
Wilson St.
Diriga Dr.
Wiswell Rd.
Copeland Hill Rd.
Mann Hill Rd.
Clark Hill Rd.
Rooks Rd.
South Rd.
Nolan Rd.
Day Rd.
Clewleyville Rd.
Pierce Rd.
Chemo Pond Rd.
Kidder Brook
Felts Brook
Eaton Brook
Mill Brook
State of Maine Railroad
PENOBSCOT COUNTY
HANCOCK COUNTY
178
9
46
95
395
1A
N
0
0.5
1
2
Miles

Exhibit 2.8 – *Interchange of Alternative 5A2B-2 with Route 1A*



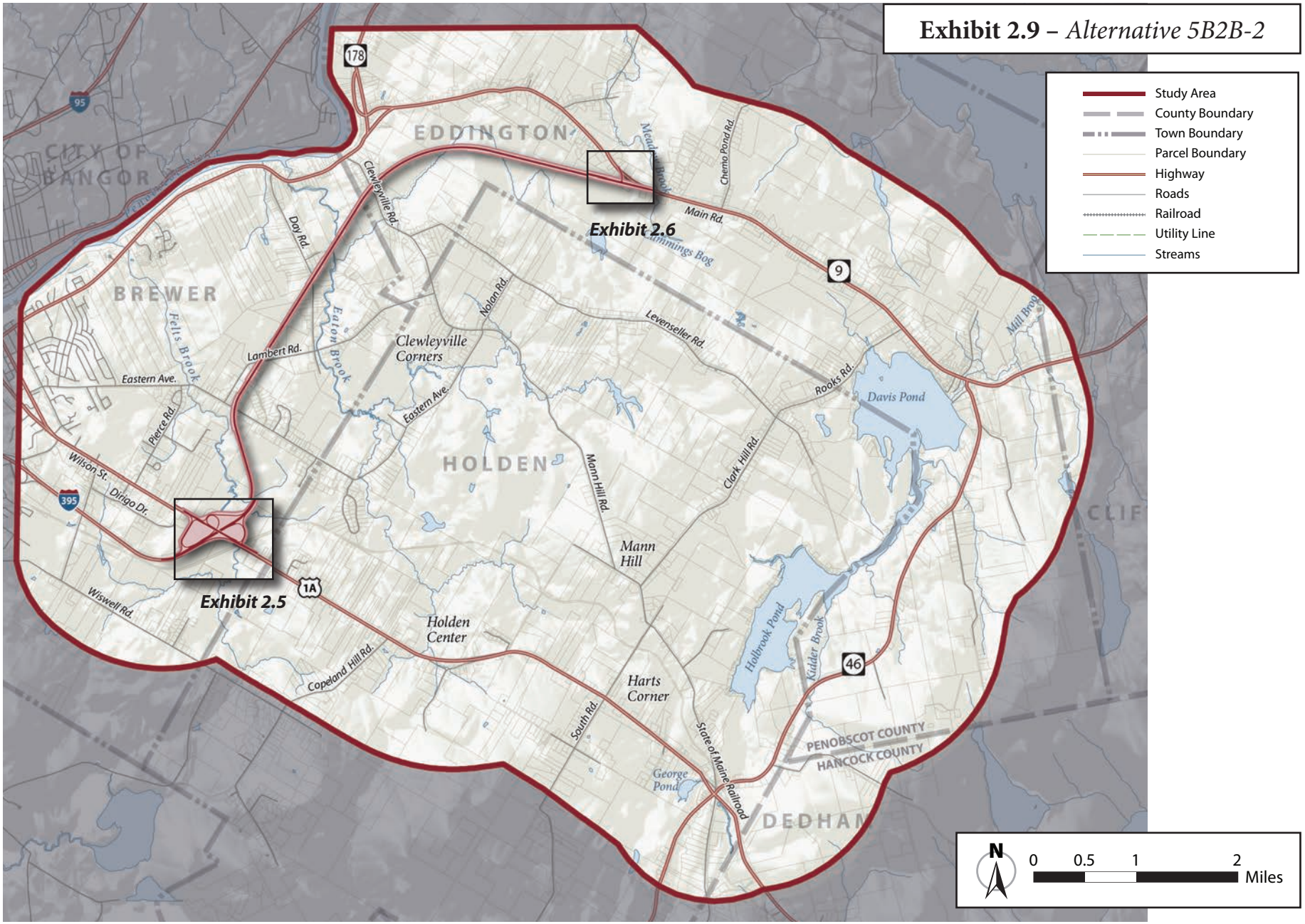


Exhibit 2.9 – Alternative 5B2B-2
Study Area
County Boundary
Town Boundary
Parcel Boundary
Highway
Roads
Railroad
Utility Line
Streams
Exhibit 2.6
Exhibit 2.5
EDDINGTON
BREWER
HOLDEN
DEDHAM
CITY OF BANGOR
Clewleyville Corners
Holden Center
Mann Hill
Harts Corner
Davis Pond
Holbrook Pond
George Pond
Meadow Brook
Cheney Pond Rd.
Main Rd.
Cummings Bog
Clewleyville Rd.
Day Rd.
Nolan Rd.
Levenseller Rd.
Rooks Rd.
Mill Brook
Eaton Brook
Felts Brook
Lambert Rd.
Eastern Ave.
Pierce Rd.
Wilson St.
Dirigo Dr.
Wiswell Rd.
Copeland Hill Rd.
Mann Hill Rd.
Clark Hill Rd.
Kidder Brook
South Rd.
State of Maine Railroad
PENOBSCOT COUNTY
HANCOCK COUNTY
178
9
46
1A
95
395
N
0
0.5
1
2
Miles

Alternative 5B2B-2 would further the study's purpose and satisfy the system-linkage need in the near term (before 2035). Alternative 5B2B-2 would be a controlled-access highway and conceptually designed using MaineDOT design criteria for freeways. Two lanes would be constructed and used for two-way travel within an approximate 200-foot-wide right-of-way.

Route 9 would not be improved (beyond the improvements necessary to connect the preferred alternative), and it would not provide a high-speed, controlled-access connection to the east of East Eddington village. It would satisfy the study need related to traffic congestion and safety. It would satisfy the USACE's basic purpose statement.

2.4 Other Activities Necessary to Construct Alternative 2B-2/ the Preferred Alternative and Estimated Construction Cost

Each build alternative would require preliminary and final engineering design, acquisition of property, and relocation of utilities prior to construction.

2.4.1 Property to Be Acquired for Alternative 2B-2/the Preferred Alternative

The build alternatives were designed to avoid and minimize the impact to properties.

The conceptual design of the build alternatives included an estimation of land that would need to be acquired and used as a right-of-way for the two-lane highway. The proposed right-of-way width for the build alternatives would be the minimum necessary to accommodate a two-lane highway and averages approximately 200 feet. The limits of the proposed right-of-way are irregular because they are a function of topography, earth-moving activities (i.e., cutting and filling), slopes, existing property boundaries, viability of remaining portions of properties acquired, and continued access to individual properties. The amount of land to be acquired for the construction and operation of the build alternatives would be minimized wherever possible.

A preliminary assessment was performed to provide a general understanding of existing properties and ownership and the extent of potential land to be acquired and used for right-of-ways to construct and maintain the build alternatives. Information was collected from aerial photography and property records from the city of Brewer and the towns of Holden, Eddington, and Clifton. Through analysis of property data, discussions with local officials, and observations, potentially impacted properties within the proposed right-of-ways for each build alternative were identified and quantified. The build alternatives would directly impact 44 to 70 properties. The area to be acquired and

used for right-of-way for the build alternatives ranges 163 to 215 acres (exhibit 2.10). The area to be acquired and used for right-of-way would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

2.4.2 Utilities to Be Relocated

The build alternatives were designed to avoid and minimize the impact and relocation of utilities. Construction of the build alternatives would impact electric, telephone, cable television, water, and sewer utilities.

A preliminary assessment of potential impacts of the build alternatives to utilities and their required relocations was performed. Information on utilities was collected from field inspection, interviews with utility owners and representatives, review of utility records and designs, property maps, and aerial photography.

Individual utility companies would be responsible for the cost of relocating utilities inside the rights-of-way of state roads. MaineDOT would be responsible for the cost of relocating utilities located outside the right-of-ways of state roads.

2.4.3 Estimated Construction Costs

As part of the conceptual design of the build alternatives, a preliminary estimate of the cost to construct them was prepared (in 2011 dollars). The cost to construct the build alternatives ranges from $61 million to $81 million.

MaineDOT investigated tolling as one method of partially financing the operation and maintenance costs of a build alternative. MaineDOT and the Maine Turnpike Authority considered the feasibility of tolling the build alternatives to determine if tolling could generate sufficient revenue to (1) cover the construction, operations, and maintenance costs of a toll facility; and (2) provide funding to supplement the operations and maintenance costs of the build alternatives, if one is selected and advanced to construction. Tolling would not be used to supplement the funding for construction of one of the build alternatives due to the low traffic volumes (HNTB, 2010).

Exhibit 2.10 – *Summary of Property to Be Acquired*

Alternative	Displacements			Number of Affected Properties	Area to be Acquired (acres)
	Residential	Commercial	Utility		
No-Build	-	-	-	-	-
2B-2/the Preferred Alternative	8	-	-	54	163
5A2B-2	16	4	-	70	215
5B2B-2	6	-	2	44	186

The analysis considered two basic types of tolling facilities: a traditional barrier tolling facility (e.g., the York toll plaza in York, Maine) and an open-road tolling facility (e.g., the Hampton toll plaza in Hampton, New Hampshire). The analysis included the following toll schedule assumptions:

- Passenger-car cash toll rate would be $1.00 in the opening year
- Heavy-truck cash toll rate would be four times the passenger-car cash toll rate
- E-Z Pass rates would be discounted 10 percent off the cash rate
- Commuter rates would be discounted 50 percent off the cash rate
- Toll increases would occur every five years at an annual inflation rate of 2.7 percent
- Toll rates for cash-paying vehicles would be rounded to the nearest $0.05

The analysis concluded that a traditional barrier tolling facility could generate revenue to cover the costs associated with the construction, operations, and maintenance costs of a toll facility and generate approximately $155,000 annually (in 2011 dollars) to supplement the operations and maintenance costs of one of the build alternatives. The analysis further concluded that an open-road toll facility would not generate enough revenue to cover the construction, operations, and maintenance costs of a toll facility (HNTB, 2010).

Due to the small amount of revenue generated from a toll facility in comparison to the estimated cost of construction, MaineDOT is not considering tolling as a method of partially financing the operation and maintenance costs of a build alternative, if one is selected and advanced to construction.

2.5 Next Steps

After the USACE determination of the LEDPA, completion of an EIS, filing of a ROD by the FHWA, and issuance of a Section 404 permit — MaineDOT would work with the affected municipalities to develop a plan to protect the corridor of Alternative 2B-2/the Preferred Alternative from further development. Methods to protect the corridor include development of zoning and local ordinances and selective acquisition of properties as they become available for sale or at risk for further development. MaineDOT may fund these property acquisitions through its customary programming of state and federal highway-funding mechanisms. Property acquisitions and residential and business relocations would be in accordance with appropriate state and federal laws relevant to acquisition of property for highway purposes.

The acquisition of property for a right-of-way for corridor preservation could begin shortly after the NEPA/Section 404 process is completed. Once MaineDOT has

a corridor-protection system in place, it would work to develop support for a funding plan. In recent years, many states have found that state highway funds, bonding, and federal core apportionments are needed to maintain the transportation system as it exists, with little in additional funds for new capacity projects. Therefore, MaineDOT would work with the Governor, region, and state and federal legislators to devise funding strategies for the full property acquisition and ultimate construction of Alternative 2B-2/the Preferred Alternative.

MaineDOT would include funding in the DOT's next Statewide Transportation Improvement Plan for design and right-of-way acquisition, (which would be dedicated to protect the selected alternative from further development.) Construction funding would be identified subsequent to the development of design plans for the project. Given that design and right-of-way acquisition would not occur until the next work plan cycle, MaineDOT would not expect to be able to fund construction until the following work plan cycle, at the earliest.

MaineDOT would work with the town of Eddington to maintain the safety and preserve the capacity of Route 9 in the study area. MaineDOT manages access points with Maine's rules governing access management (driveway and entrance siting). Safety, traffic congestion, and system linkage remains a priority concern of MaineDOT, as is preservation of the capacity of the existing highway system. Activities that could be considered to maintain safety and preserve the capacity of Route 9, in accordance with Maine's rules governing access management (driveway and entrance siting) can go no further than working with the town of Eddington to change zoning, eliminating existing and future curb cuts, and working with individual landowners to acquire property or development rights. That authority already exists to help both MaineDOT and the community ensure that safety is maintained in the corridor. MaineDOT has no authority beyond the existing rules to force Eddington to do anything to help reduce traffic conflicts, but MaineDOT is directed by statute to work with Eddington to ensure safety and proper access to the state highway system.

MaineDOT would work with town officials and evaluate Route 9 for potential improvements to improve safety for pedestrians and bicyclists along Route 9. Providing safe access for pedestrians and bicyclists along the road system typically consists of paved shoulders, sidewalks in highly developed areas, high visibility crossings where warranted, and signage to help alert drivers of the presence of bicyclists and pedestrians on the road system. A road safety audit would be conducted in conjunction with town officials and residents to develop potential immediate and longer term improvements that the town can consider as options to improve safety for pedestrians and bicyclists.

During final design, MaineDOT would continue to refine the alignment and its right-of-way within the preferred corridor to further avoid and minimize impacts to the natural, social, and economic environments and to coordinate with those that are affected.

In addition to construction and operation of Alternative 2B-2/the Preferred Alternative, MaineDOT is committed to improving the most heavily congested section of Route 1A from I-395 to Route 46 and the intersection of Routes 46 and 9. The proposed intersection would be studied and further developed during final design and discussed at a future public meeting.

2.6 Most Essential Differences among the Alternatives to Be Considered in Decision Making

Distinct differences exist in the potential direct and indirect impacts from the build alternatives (exhibit 2.11). They help to define the alternatives and assist MaineDOT and the FHWA in identifying the preferred alternative. A full accounting of the direct, indirect, and cumulative impacts from the No-Build Alternative and the build alternatives to the natural, social, cultural, and economic environments is in Chapter 3.

Exhibit 2.11 - *Impacts of Alternatives*

Alternatives	Physical and Biological																Land Use					
				Streams																		
	Wetlands (acres)	Roadway contaminants within 100 feet[1] (acres)	Roadway contaminants within 160 feet[2] (acres)	Bridges and culverts/feet	Roadway contaminants within 100 feet[1] (acres)	Roadway contaminants within 160 feet[2] (acres)	Sediments within 3,300 feet[2] acres)	Floodplains (acres)	Vernal pools[3]/ dispersal habitat[4] (acres)	Waterfowl and wading bird habitat (acres)	Deer-wintering areas (acres)	Federally-Listed Endangered Species	Vegetation (acres)	Undeveloped habitat	Area to be acquired (acres)	Historic Properties	4(f) Properties	Residential displacements[5]	Business displacements[6]	Business impacts[7]
No-Build	-	17	64	-	0.3 ac. (17,000 sq. ft.)	0.7 ac. (29,000 sq. ft.)	12 ac.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Impacts from maintenance activities			Impacts from maintenance activities									Impacts from maintenance activities									
2B-2/the Preferred Alternative	26	31	66	5 bridges 1 culvert/ 212 feet	0.9 ac. (39,100 sq. ft.)	1.8 ac. (78,300 sq. ft.)	13 ac.	10	1/17	9 acres along Eaton Brook and its tributaries	-	Yes	103	Eliminates two blocks; fragments three blocks	163	No	No	8	-	-
5A2B-2	31	34	71	5 bridges 1 culvert/ 212 feet	0.6 ac. (24,300 sq. ft.)	1.5 ac. (63,000 sq. ft.)	18 ac.	2	1/25	20 acres along Felts Brook and 9 acres along Eaton Brook	-	Yes	136	Eliminates two blocks; fragments four blocks	215	No	No	16	Brewer Fence Company, Eden Pure Heaters, Mitchell's Landscaping and Garden Center, Town 'N Country Apartments	-
5B2B-2	30	30	80	6 bridges 1 culvert/ 222 feet	1.0 ac. (43,700 sq. ft.)	2.0 ac. (90,000 sq. ft)	17 ac.	11	1/8	3 acres along a tributary to Eaton Brook	3 acres along a tributary to Eaton Brook	Yes	102	Fragments four blocks	186	No	No	6	Bangor Hydro-Electric Co. Building, Maritimes and Northeast Pipeline Compressor Station	-

Notes:

Primary road contaminants are salt and lead.

No-Build Alternative consisted of Route 1A from I-395 to Route 46, and Route 46 from Route 1A to Route 9.

[1]Source: USACE New England District, "Compensatory Mitigation Guidance" , 2010.

[2]Source: Maine Audubon Society, "Conserving Wildlife On and Around Maine's Roads", 2007.

[3]All vernal pools are insignificant.

[4] Upland habitat within 250 ft.

[5] The taking of a residence

[6] The taking of a business

[7] An impact to the business without the taking of the business