



Final Report

Androscoggin-to-the Kennebec Bicycle Path Feasibility Study

February, 2004



Submitted to

Town of Brunswick and City of Bath

Submitted by

TYLIN INTERNATIONAL

In Association with

*Terrence J. DeWan & Associates
Woodlot Alternatives, Inc.*

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY	1
II. INTRODUCTION	3
A. PURPOSE AND NEED.....	3
B. HISTORY	5
C. REGIONAL CONTEXT	5
D. PLANNING PROCESS	6
E. FEASIBILITY STUDY GOALS	7
F. SIGNIFICANCE AND BENEFITS	8
III. FEASIBILITY STUDY	12
A. DESIGN CRITERIA.....	12
B. EXISTING CONDITIONS	12
C. EVALUATION OF ALTERNATIVES	12
IV. RECOMMENDATIONS	17
A. SECTIONS.....	17
B. COST ESTIMATES.....	19
C. SECTION I - COMMERCIAL STREET, FRONT STREET AND NORTH STREET FROM THE SAGADAHOC BRIDGE TO FIVE CORNERS	20
D. SECTION II - CONGRESS AVENUE FROM FIVE CORNERS TO THE SOUTHBOUND ROUTE ONE ON-RAMP	25
E. SECTION III - NORTH SIDE OF ROUTE ONE FROM CONGRESS AVENUE TO THE NEW MEADOWS ROAD	28
F. SECTION IV - NORTH SIDE OF ROUTE ONE FROM THE NEW MEADOWS ROAD TO PETERSON ROAD.....	29
G. SECTION V - NORTH SIDE OF ROUTE ONE FROM PETERSON ROAD TO DEERFIELD ROAD	30
H. SECTION VI - NORTH SIDE OF ROUTE ONE FROM DEERFIELD ROAD TO OLD BATH ROAD.....	31
I. SECTION VII - NORTH SIDE OF ROUTE ONE FROM OLD BATH ROAD TO THE EASTERLY END OF THE EXISTING ANDROSCOGGIN RIVER BIKE PATH INCLUDING A LINK OVER ROUTE ONE TO THE BATH ROAD / AMES PLAZA / OLD BATH ROAD INTERSECTION.	32

J. OPTIONAL SECTION VIII - UPGRADES TO DEERFIELD ROAD (COULD BE COMBINED WITH OTHER SECTIONS)	33
K. OPTIONAL SECTION IX - UPGRADES TO PETERSON ROAD (COULD BE COMBINED WITH SECTION V)	33
L. INTERSECTION ANALYSIS	34
M. FUNDING	34
N. ADDITIONAL INFORMATION	35

APPENDIX A - BACKGROUND INFORMATION.....36

A. REGIONAL CONTEXT.....	36
B. DESIGN CRITERIA.....	37
C. EXISTING CONDITIONS	40
D. EVALUATION OF ALTERNATIVES.....	44
E. INTERSECTION ANALYSIS	51
F. ENVIRONMENTAL REGULATORY ASSESSMENT	53
G. TRAILSIDE AMENITIES:	54
H. SCENIC VISTA ASSESSMENT	55
I. TRAIL LIGHTING ASSESSMENT.....	56
J. TRAIL SIGNAGE PROGRAM.....	56

APPENDIX B - CORRIDOR CONCEPT PLANS63

APPENDIX C - COST ESTIMATES.....64

APPENDIX D - ENVIRONMENTAL CONSTRAINTS ASSESSMENT REPORT ..65

APPENDIX E - PUBLIC MEETING MINUTES66

I. EXECUTIVE SUMMARY

The Androscoggin-to-the-Kennebec Transportation Path Feasibility Study evaluates the feasibility of developing an integrated, shared-use trail system connecting Brunswick, West Bath and Bath, Maine. The study was initiated by the Municipalities of Bath and Brunswick and was funded by the Maine Department of Transportation (MDOT) through Federal Enhancement funds with a 20% match shared by Bath and Brunswick. This study analyzes the advantages and disadvantages of many on-road and off-road routes connecting the Sagadahoc Bridge in Bath with the existing Androscoggin River Bikepath in Brunswick, details the recommended alignment and develops cost estimates for future project engineering and construction funding. It is the result of a rigorous effort that reviewed a number of different alignment corridors, polled the public through workshops and public meetings, and worked closely with Municipal

Image 1



Sagadahoc Bridge in Bath

Image 2



Existing Androscoggin Trail in Brunswick

and State officials.

Based on the results of the Public Workshop portion of the study, the most important criteria for alignment selection were safety, aesthetics, security, privacy, connections to existing paths and construction costs. The alignment recommended in this report uses a combination of on-road facilities in Bath beginning at the Sagadahoc Bridge and including Commercial Street, Front Street, North Street and Congress Avenue. The alignment then parallels the northerly side of Route One from Congress Avenue in Bath to the easterly end of the existing path in Brunswick. The municipalities of Bath and Brunswick, based on the results of the Public Workshop and Public Meetings, determined that this alignment best satisfies the project criteria.

The transportation path would be approximately 38,125 linear feet (7.2 Miles) in length. Along Route One the path would generally be comprised of a 14 foot wide, shared-use, paved pathway. The estimated cost for the entire path is approximately \$10,790,000. During final design however, the possibility of reducing this portion of the path to 12 feet or 10 feet should be examined for Sections III - VII. If a 10 foot path were constructed instead of a 14 foot path in this area, a cost savings of approximately \$546,200 could be realized. On the existing street system in Bath, the path would vary from a 10 foot wide shared use path separated from portions of Congress Avenue by a narrow grass/landscaped buffer, to on-street, striped bikelanes with sidewalks. The Public Workshops concluded that the pathway should be constructed to serve pedestrians, bicyclists, in-line skaters and wheelchair users. The pathway was considered to be important for both commuters and recreational users.

The majority of the pathway system can be constructed within the existing public rights-of-way, although there are some areas along Route One where construction of the path on private property would reduce construction costs and/or provide a more pleasing alignment. The recommended path would connect to the existing Androscoggin River bikepath in Brunswick, the existing striped bikelanes and side-

walks on the Sagadahoc Bridge in Bath, residential neighborhoods, commercial districts, schools and recreational facilities. It would provide an extension of existing recreational and alternative transportation routes currently available in Brunswick and Bath.

Besides the path itself, the following elements will be significant parts of the path design and construction:

- A. Reconstruction of existing slopes under the Old Bath Road bridge over Route One to accept construction of the path
- B. A new bridge parallel to Old Bath Road over Route One
- C. Retaining walls near, and a widened bridge over the New Meadows River on Route One
- D. Possibly a new bridge over the railroad tracks just east of the New Meadows Interchange
- E. Removal of ledge at various locations along Route One

The Feasibility Study Report is broken into the following sections:

- Introduction
- Feasibility Study
- Recommendations
- Appendices for Background Information, Concept Plans, Cost Estimates, Environmental Constraints Assessment Report, and Public Meeting Minutes.

II. INTRODUCTION

A. PURPOSE AND NEED

The existing Androscoggin River Bicycle Path opened in 1998 and connects Topsham and the downtown Brunswick area to the Cook's Corner area of Brunswick. This award-winning, multi-use facility has enjoyed more widespread and enthusiastic public acclaim than any other public facility in Brunswick's recent history. The bike path is used by approximately 2000 members of the public each week from spring through fall. It is plowed in the winter when usage is estimated at approximately 1200 per week. This path has played a major role in connecting these two portions of Brunswick and has provided a safe and attractive transportation alternative to walking or riding on busy local roads.

Image 3



Existing Androscoggin Trail in Brunswick

The extension of the path to Bath would provide similar opportunities for a greater population and provide safer, non-motorized facilities throughout a greater area. The purpose of this study is to determine if the extension of the path is feasible, based on an evaluation of user-demand, safety, economics, environmental impact, and aesthetics. It will also determine the preferred alignment and provide cost estimates for future design and construction phases. The study has generally focussed on the Old Brunswick/Old Bath Road and Route One corridors. See *Study Area* graphic illustrated on the next page. The railroad corridors and other connections between the two major corridors were also reviewed. The Purpose and Need Statement was used in the establishment of the plan-

ning process and the selection of alternative alignments. The path is intended to integrate into the natural environment while providing recreational and alternative transportation options to residents, school-children and local employees.

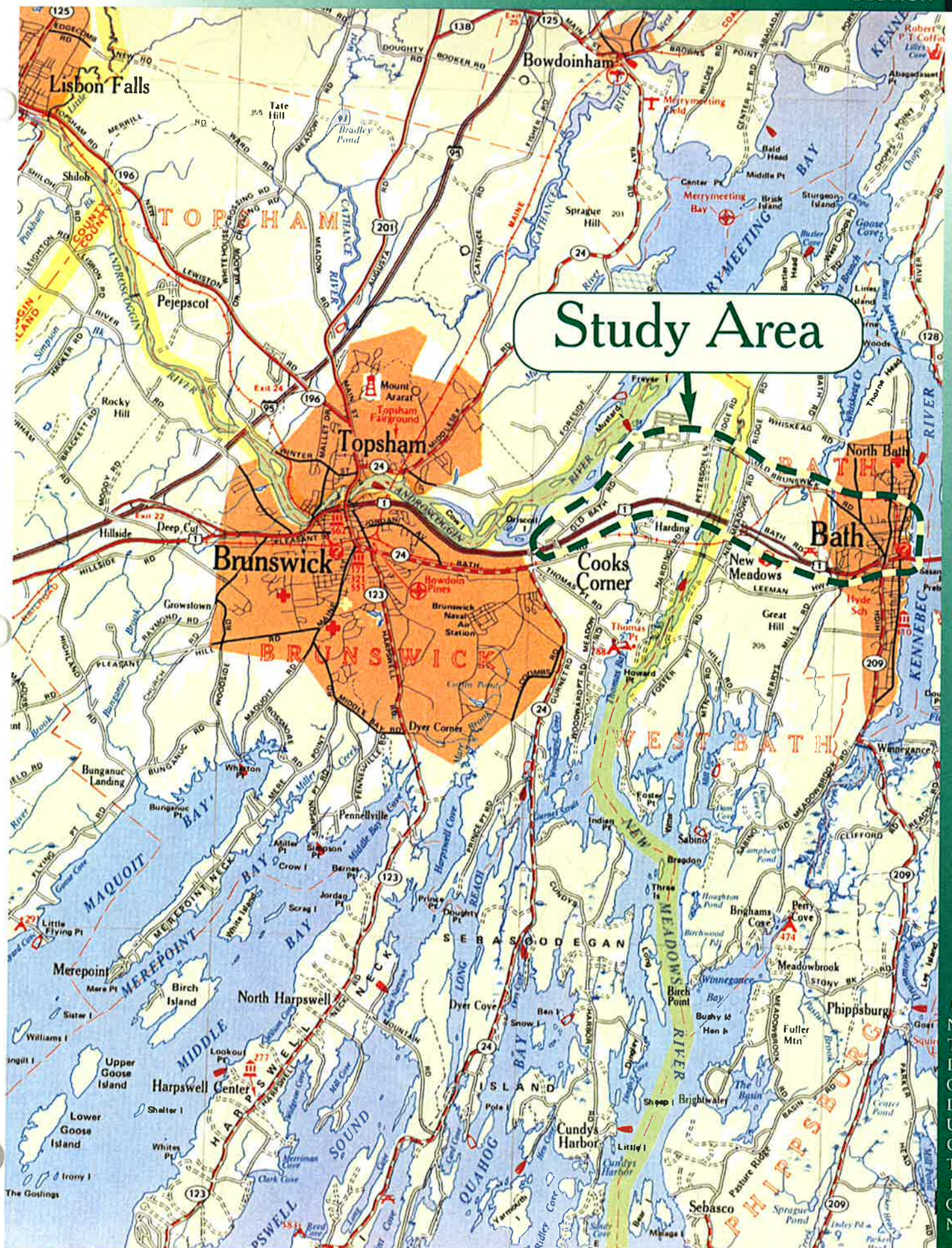
The purpose and need statement for this project demonstrates the importance of the project, the benefits resulting from its construction and provides a context for the review of potential impacts. It is consistent with the MDOT's vision statement which is to create and maintain a safe, efficient and economical transportation system that is cost effective, energy efficient, environmentally sound and responsive to the diverse needs and values of the people of Maine. The Statement of Purpose and Need for the Androscoggin-to-the-Kennebec Transportation Path project is as follows:

1) Purpose

- (a) To establish a four-season, non-motorized, multipurpose, transportation and recreation trail connecting Brunswick and Bath.
- (b) To provide for an alternative transportation system providing residents and visitors a connection between residential, recreational, commercial and social facilities.
- (c) To ensure that the trail system could be used as a link in the East Coast Greenway and is consistent with previous local and regional plans.
- (d) To connect the urban areas of Bath, Brunswick, Topsham, Cooks Corner and Woolwich with alternative transportation choices
- (e) To expand the existing trail system thereby increasing the benefits associated with trail facilities such as reductions in traffic congestion, increases in the health and wellness of trail users, increases in air quality and increases in recreational opportunities.

2) Need

- (a) The trail will connect to the network of multi-use trails in the United States and Canada by



intersecting with the route for the East Coast Greenway.

- (b) The trail system will provide a safer alternative connection between Bath and Brunswick for users of all ages and abilities. Existing connections are characterized by high volume and/or high-speed vehicular traffic, numerous driveway/sidestreet crossings, and few provisions for walking or cycling.

B. HISTORY

In 1998 the existing Androscoggin River Bike Path opened providing the region with an off-road facility where it is safe to walk or cycle. However, currently there are no safe, designated bike and pedestrian facilities connecting Brunswick to Bath. There are also many areas within the City of Bath where there are poor or non-existent pedestrian and bicycle facilities. Over the years a number of studies have noted the importance of this type of connection. Some of these include:

- 1) The Brunswick Bicycle and Pedestrian Advisory Committee's 1998 "***Brunswick Bicycle and Pedestrian Improvements Plan***". According to the report, this committee was formed so that the existing Androscoggin River Bike Path "would become a link in a much larger network of alternative transportation routes, rather than exist as a stand-alone facility. Benefits of linkage would be enjoyed by residents of Brunswick, Freeport, Harpswell, Topsham, West Bath, Bath, and beyond". Their Bicycle Action Plan included the extension of the Androscoggin River Trail and the Old Bath Road corridor, both of which were studied for this Feasibility Study. Construction of the recommended alternative from this Feasibility Study will meet the easterly portion of the committee's goals.
- 2) The Merrymeeting Council of Governments' 1998 "***City of Bath Pedestrian and Bicyclist Transportation Plan***". This plan includes the North Street area in its recommended Primary Pedestrian Network and both the North Street and Congress Avenue areas

are included in the recommended Primary Bicycle Network.

- 3) The Merrymeeting Council of Governments' 1998 "***Bath-Brunswick-Topsham Regions Multi-Modal Transportation Plan***". In addition to the pedestrian improvements noted above for Bath, this Multi-Modal plan's Primary Pedestrian Network also includes connections from the easterly end of the existing Androscoggin River Bike Path to Old Bath Road, and then over Route One to the Cook's Corner area. In addition to the Bicycle facilities noted above for Bath, the Primary Bicycle Network in the Multi-Modal plan also includes the connection from the existing Androscoggin River Bike Path to Cook's Corner and the Old Bath Road/Old Brunswick Road corridors. This Feasibility Study includes all of these recommendations in its evaluated alternatives and incorporates many of them in the Recommended Alternative.
- 4) The ***Cook's Corner Master Plan*** also recommends a significant amount of improvements within the Cook's Corner area to improve pedestrian and bicycle access and safety. The Recommended Alternative in this Feasibility study provides a connection between the existing Androscoggin River Bike Path over Route One to Cook's Corner, which is in line with the recommendations included in the Master Plan.
- 5) The 2002 "***A Parks, Recreation & Open Space Plan for Brunswick, Maine***" included the recommendation to extend the existing Androscoggin River Bike Path to Bath.
- 6) The "***1993 Comprehensive Plan, Town of Brunswick***" recommends that the Town "coordinate with neighboring communities in the planning of bicycle paths that cross town lines in order to establish safe and efficient bicycle routes."

C. REGIONAL CONTEXT

See *Appendix A* for Regional Context.

D. PLANNING PROCESS

In September of 2001 the Town of Brunswick and City of Bath distributed a request for proposals for an engineering/feasibility study for a multi-use path connecting the Androscoggin River Bike Path in Brunswick with the Sagadahoc Bridge in Bath. The \$75,000 project was funded through the Maine Department of Transportation's (MDOT's) Enhancement Program which includes 20% matching funds from the two communities.

1) Feasibility Study Advisory Committee

A committee was formed to oversee the Feasibility Study Process. The Feasibility Study Advisory Committee was comprised of officials from both Bath and Brunswick, as well as from the MDOT. The following members served on the Committee during the course of this study:

- Theo Holtwijk Brunswick Director of Planning and Development
- Phil Carey Brunswick Town Planner
- John Foster Brunswick Public Works
- Thomas Farrell Brunswick Parks and Rec
- Jim Upham Bath Director of Planning and Development
- Denis Hebert Bath Director Cemetery and Parks
- Peter Owen Bath Director of Public Works
- John Balicki MDOT Bicycle and Pedestrian Coordinator

2) Study Team

The study was conducted by T.Y. Lin International, transportation engineers in Falmouth, with support from Terrence J. DeWan & Associates, landscape architects, Yarmouth, and Woodlot Alternatives, Inc., environmental scientists, in Topsham.

3) Objectives

The study team was responsible for working with the Feasibility Study Advisory Committee and the general public to determine alternative routes, evaluate environmental impacts, determine engineering and

Figure 2

Phase I

MDOT/Municipal Coordination
Public Meeting
Identification of Potential Trail Alignments
Field Inventory
Base Mapping/ROW Review
Determination of Environmental Constraints

Phase II

Review of Selected Trail Segments
Development of Trail Access/Parking
Review of Drainage/Structure Needs
Environmental Impact Review
Cost Estimates
Development of Recommendations
Public Workshop

Phase III

Development of Final Report
1" = 100' Mapping
Cost Estimates
Final Public Meeting

Recommended Path Phasing

construction costs, review property issues, review safety concerns and recommend a preferred alternative.

4) Study Process

The Androscoggin-to-the-Kennebec Path Feasibility Study process was based on a thorough investigation of existing conditions, an understanding of current environmental regulations, and an appreciation for private properties along the route. It was conducted in three phases:

(a) Phase I - Project Initiation and Scoping

The original Feasibility Study contract included the review of a path from the Sagadahoc Bridge through the city of Bath to the five corners intersection. The

study would then follow the Old Brunswick/Old Bath Road to Brunswick. The overall scope of the project also required a review of the Route One crossing to Cook's Corner at Bath Road and the Ames Plaza intersection. This phase of work included review of existing conditions along the above mentioned corridors, confirmation of the underlying project needs, development of design criteria, and review of any additional pertinent existing data required for the path. This process included coordination with the Feasibility Study Advisory Committee, other Local Officials, and MDOT. Opportunities and constraints for both on-road and off-road path alignments were reviewed. Potential path segments were identified, verified using existing mapping and aerial photography, and then field checked. Particular attention was paid to issues such as environmental and right-of-way constraints, and to issues that would increase permitting requirements or project costs. The first phase also included establishment of the public involvement process. This took the form of a Public Meeting in which the results of the Phase I review were explained, and public comments on the path alignment and feasibility were noted.

Based on the comments received at the initial public meeting, it was decided by the Feasibility Study Advisory Committee and the MDOT that an alternate corridor should also be studied. The Study Team then went back to complete the same Phase I work on the Route One corridor as an alternative to the Old Brunswick/Old Bath Road corridor. An additional \$23,000 was funded through MDOT for these additional studies including a 20% match by Brunswick and Bath. This increased the budget for the study to a total of \$98,000.

(b) Phase II - Alternatives Analysis/Preliminary Recommendations

This phase of work included a more detailed review and analysis of the potential trail segments identified in Phase I for both the Old Brunswick/Old Bath Road and Route One corridors. These trail segments were evaluated based on their ease of implementation, relative safety, relative cost, environmental impact, and on how well their location met the needs of the potential users (i.e. the Purpose and Need for this project).

Details such as trailhead parking, drainage needs, right-of-way requirements and construction costs were reviewed. The resulting trail system was detailed on aerial mapping and a second public forum was held. This time the meeting was in the form of a Public Workshop with attendees addressing key issues such as "who are the primary path users for whom we should be designing", "what are the priorities for the path", and "what are the pros and cons of the Old Brunswick/Old Bath Road and the Route One corridors". The Feasibility Study Advisory Committee analyzed the results of the Public Workshop and determined that the Route One corridor was preferred by a great majority of the attendees and best met the criteria for this study.

(c) Phase III - Final Recommendations and Report

The third phase of work encompassed the development of this report which provides detailed descriptions of the proposed conceptual path alignment including photographs and mapping. Both on and off-road alignments are outlined including conceptual cost estimates and potential environmental permitting requirements. The report outlines the trail alignment, typical section, drainage needs and the locations requiring new bridges. In addition, sections of this report address Trailside Amenities, Scenic Vistas, Trail Signage and Trail Lighting. A final Public Meeting was held to provide an overview of the recommended alignment.

Throughout the study process, State Involvement was ensured through coordination with MDOT. John Balicki, MDOT's Bicycle and Pedestrian Coordinator was a member of the Feasibility Study Advisory Committee, was active in each of the Public Meetings, reviewed conceptual alignments and attended field visits.

E. FEASIBILITY STUDY GOALS

The City of Bath and Town of Brunswick established the following feasibility study goals that guided the planning process and selection of alignments:

- 1) Study the feasibility of a multi-use, four-season path serving local residents and visitors, usable

as a link in the East Coast Greenway, and enhancing the existing pedestrian and bicycle corridor by connecting the urban areas of Woolwich, Bath, Cooks Corner Brunswick and Topsham.

- 2) Study alternatives that would safely and logically connect the destination areas including the urban areas of Bath, Brunswick and Topsham, Cooks Corner and Woolwich as well as the Brunswick naval Air Station and Bowdoin College
- 3) Provide a path that will realize the benefits associated with reduced traffic congestion, increased health and wellness of path users, increased availability of recreational facilities and enhanced air quality.
- 4) Provide connections to existing trails, sidewalks, recreation areas, schools, highly concentrated residential areas and shopping districts (e.g. Androscoggin River Bike Path, Cook's Corner, downtown Bath, Maplewood, Deerfield Road, Bay Bridge Estates, Bath Middle School and playing fields, etc.).
- 5) Design a path that would accommodate all potential user groups, meeting the recommendations of the Americans with Disabilities Act.
- 6) Identify a path alignment, determine design criteria, complete engineering and construction cost estimates, and suggest construction phasing.
- 7) Minimize impact on private properties and existing land uses.

Image 4



Scenic vista near New Meadows River

- 8) Minimize environmental impacts.
- 9) Meet the environmental permitting requirements for state and federal agencies.
- 10) Provide an attractive, visually interesting experience that is easily maintained.
- 11) Coordinate the path alignment with other plans completed by Bath and Brunswick.
- 12) Provide a public forum for open participation and discussion.
- 13) Review the potential for taking advantage of Scenic Vistas, and developing the need and location for Trailside Amenities, Trail Signage and Trail Lighting.

F. SIGNIFICANCE AND BENEFITS

1) Regional Connections

The East Coast Greenway (ECG) is a national trail

Figure 3



system that is proposed to extend over 2,100 miles from Key West, Florida to Calais, Maine. The ECG Alliance website indicates that their goal is "to connect existing and planned trails that are locally owned and managed to form a continuous, safe, green route - easily identified by the public through signage, maps, users guides, and common services".

The existing Androscoggin River Bikepath is a link in the ECG. The ECG currently is planned for the Old Brunswick/Old Bath Road corridor, but after construction of the recommended alternative along Route One it is reasonable to assume that the ECG might be redesignated along that corridor. This extension will further this national vision while connecting Maine's coastal communities.

2) Local Connections

The extension of the path to Bath along Route One would provide the nearby communities with safe, off- and on-road access to many commercial areas, residential areas, recreational facilities, schools, parks and open spaces in Bath and Brunswick (See *Figure 4* on next page for illustration of included areas):

(a) Commercial Areas

- Downtown Brunswick
- Downtown Bath
- Cook's Corner
- Businesses on Route One in Woolwich
- Lower Topsham Village
- Topsham Mall Area

(b) Residential Areas

- In-Town Brunswick
- Topsham Village
- Other areas in Topsham with access to the existing Androscoggin River Bikepath via bikelanes, sidewalks and bikepaths connecting to the Merrymeeting Bridge
- Portions of Old Bath Road near the proposed path alignment (Brunswick)
- Maplewood development (Brunswick)
- Deerfield Road (Brunswick)
- Peterson Road and portions of Old Bath Road near the northerly end of Peterson

Road (Brunswick)

- New Meadows Road near the Route One interchange (West Bath)
- All areas in downtown Bath with connections to Congress Avenue, North Street, Front Street and Commercial Street.

(c) Parks and Open Spaces

- Open Spaces along the Androscoggin River Bike Path in Brunswick
- Picnic Area on Grover Lane in Brunswick
- City Pier and Kennebec Riverfront Park on Commercial Street in Bath
- Library Park in Bath

(d) Schools

- Bath Middle School
- Dike Newall School
- Bowdoin College



City of Bath Athletic Fields

(e) Athletic Fields and Playgrounds

- Bath Athletic Fields on Congress Avenue near the Middle School
- Foreside Road Recreation Area in Topsham

(f) Recreation Facilities

- Androscoggin River Bike Path in Brunswick
- YMCA in Bath

3) Community Benefits

The pathway extension will provide a safe alternative to traditional ground transportation. The extension will result in more pedestrian and bike traffic, will reduce the number of cars on the road and will provide an alternative, non-motorized connection between Brunswick and Bath. More residents will have direct access to the path network without having to drive to one of the trailhead parking areas. In addition, having a longer, integrated path system may serve to attract more out-of-town visitors using the system for the day, providing additional patrons for local businesses.

4) Health Benefits

A vast majority of people using the existing path system do so for exercise or recreational reasons. This extension of the path will greatly expand the region's sidewalk and trail network and provide many opportunities for residents and visitors to walk and bike in a safe environment.

5) ADA Compliance

The path extension will be constructed in compliance with the Maine Human Rights Act and the Americans with Disabilities Act, similar to the existing Androscoggin River Bike Path. It will provide a safe opportunity for all people to enjoy the path system.

6) Transportation Benefits

The existing connections between Brunswick and Bath consist of Route One (a divided freeway), Bath Road, and Old Bath/Old Brunswick Road. Cyclists

and pedestrians are not currently allowed on this portion of Route One. The other two roadways are very dangerous for pedestrians and cyclists. Bath Road is a high-speed, predominately commercial corridor with numerous driveway openings and sideroads. Old Brunswick/Old Bath Roads are more rural and residential in nature, but are quite narrow with gravel shoulders. There are many driveway openings and areas such as the New Meadows causeway and the Railway Trestle Underpass where the cyclist or pedestrian is forced onto the narrow pavement due to width restrictions. Neither of these corridors have any provisions for cycling or walking. The construction of the path extension along Route One will provide an efficient, safe and alternative means of transportation between these two communities.

7) Environmental Benefits

The environmental conditions along the recommended path alignment could be enhanced by the development of the pathway. The project provides an opportunity to decrease the dependency on the automobile as a primary form of local transportation. The construction of the path could also include the installation of native plants to increase the habitat available for wildlife and to create an inviting place in which to recreate and commute.

8) Air Quality Benefits

The expansion of alternative transportation opportunities should encourage more people to walk and bike to work, school and shop. The State of Maine Department of Environmental Protection Air Quality Bureau references the Transportation Equity Act for the 21st Century (TEA-21) and the "Congestion Mitigation and Air Quality Improvement Program" (CMAQ) as a program created specifically to fund projects that improve air quality. The Bureau supports the development of transportation alternatives such as public transit, shared-ride programs, bicycle and pedestrian facilities, and employer trip reduction programs as a way to decrease dependence on the automobile. This project falls in line with these goals.



Existing Old Bath Road

III. FEASIBILITY STUDY

A. DESIGN CRITERIA

All applicable Federal and State design criteria were used to evaluate the feasibility of the proposed path. See *Appendix A* for a complete discussion of design criteria including design standards, right-of-way, environmental impacts, costs and aesthetics/experience.

B. EXISTING CONDITIONS

A number of on-road and off-road alternatives were reviewed for inclusion in this path system. For a complete discussion on existing conditions for each section of the path, please refer to *Appendix A*.

C. EVALUATION OF ALTERNATIVES

Several alternative routes were evaluated for this study. These include using the Old Brunswick/Old Bath Road corridor, using portions of the railway trestle, using the Route One corridor (north side or median), using portions of the Wing Farm Industrial Park, and using several other local roadways. A full discussion of the alternatives studied can be found in *Appendix A*.

1) Structures

There are a number of structures that were studied as a part of the above listed alternatives. These include:

(a) *Old Brunswick/Old Bath Road bridge over the New Meadows River*

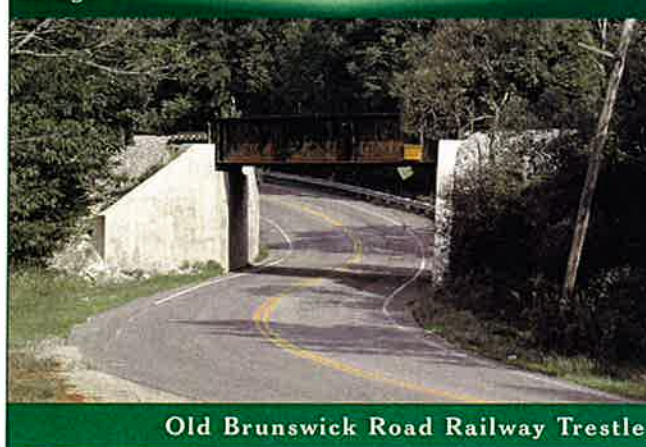
The causeway and bridge over the New Meadows River were studied to determine if it was feasible to construct a path along this corridor. Various alternative routes were reviewed to the north of the existing structure, however these were rejected due to unacceptable environmental impacts to the river. Allowing the cyclists and pedestrians to share the road with the vehicles was also unacceptable due to the narrow roadway width and the long causeway distance. If the Old Brunswick/Old Bath Road corridor had been selected as the recommended solution, it was determined that the best option would be to construct the path

behind the northerly guardrail and use a retaining wall system to avoid or minimize impacts to the river. The existing structure type of the Old Brunswick/Old Bath Road Bridge over the New Meadows River, a through girder supported on full height abutments, is not conducive to widening and would not be cost competitive with a new parallel multi-use bridge. If this alignment were used, a separate 55' to 65' pre-fabricated steel truss bridge founded on independent abutments would be required at this river crossing. Costs for structures at this location were not investigated because the bridge is not located along the recommended alignment.

(b) *The trestle on Old Brunswick Road*

A number of alternatives were discussed at this location. Allowing the cyclists and pedestrians to share the roadway with vehicular traffic was not deemed safe in this location due to the narrow width of the roadway under the trestle and the curvilinear nature of the road which leads to poor sight distance. Jacking a large diameter culvert or concrete box behind one of the existing abutments could allow the path to be constructed through the tunnel, but this option would be costly and there are still issues on each approach with stream impacts, right-of-way impacts and sight distance. The option that was shown at the Public Meeting involved constructing a path on the northerly side of

Image 7



Old Brunswick Road from the Middle School to a point approximately 1500 feet east of the trestle. Then the path would leave the roadway and extend northerly crossing the tracks at-grade, follow the north side of the rail line to a point just north of the trestle at its intersection with Old Brunswick Road, and then continue along the northerly side of Old Brunswick Road.

(c) *The Railroad Crossing on Route One (east of the New Meadows Interchange)*

The railroad line currently passes beneath existing bridges on both northbound and southbound Route One. The proposed path following the north side of Route One will also have to pass over this rail line. Due to the current usage of the tracks, it might be possible to use an at-grade crossing at this location. MDOT should be contacted during the Final Design Process to determine if an at-grade crossing would be acceptable based on the current usage at that time. However, for the purposes of this study we have assumed that a grade separated structure is required. Three structural alternatives were considered for this location:

- Widening the existing Route One Bridge.
- New 165' pre-fabricated steel truss bridge founded on stub abutments located near the top of the trail approach slope.
- New 60' pre-fabricated steel truss bridge founded on stub abutments located behind retained fill approach slopes.

The existing Route One Bridge over the MDOT railroad is a continuous four span concrete deck steel girder superstructure founded on three column pier bents and stub abutments located near the top of the approach slope. The existing bridge crosses only one existing rail line and has total length of approximately 415 feet. Widening of the existing bridge was determined to be cost prohibitive for the following reasons:

- Existing bridge length significantly greater than the minimum length required to cross the existing rail line.

- Widening required at five substructure units. One new pier would be required at each of the existing three pier bents.

The required bridge length of the two separate new multi-use bridge options was derived using the railroad clearance and section requirements of the current MDOT Bridge Design Manual. The crossing will accommodate the existing single-track rail line with an off-track maintenance way. The two multi-use bridge options were considered equal in terms of aesthetics, maintenance, and constructibility.

The new 60' pre-fabricated steel truss bridge founded on stub abutments located behind retained fill approach slopes is the least cost alternative and is recommended at this location. The desire to maintain separation between the new path and Route One and the availability of existing right-of-way at this crossing location also supports the recommendation of a new separate structure. It is recommended that at least 30' of separation be included in the final design of this structure to minimize maintenance issues resulting from plowing on Route One. Along the northwest approach, slopes would extend beyond the existing right-of-way. For this study, we have assumed a construction easement could be obtained for this slope. If required, a retained fill slope could be constructed along this approach.

(d) *New Meadows Road Bridge over Route One*

During the study the possibility of passing the path beneath the existing New Meadows Road bridge in front of the northerly abutment was reviewed. However, this abutment is founded on ledge which extends in front of the abutment toward the roadway. There is not enough room to place the path in front of the existing ledge and removal of the ledge without impact to the bridge superstructure or abutment would be impossible. The proposed path was therefore re-routed such that it stays on the north side of the southbound off-ramp near the right-of-way line. It then crosses New Meadows Road near the southbound off ramp or District Court intersection, follows the west side of New

Meadows Road toward Route One, and then turns westerly sloping down the existing grade on the north side of Route One until it reaches the New Meadows River.

(e) *Route One Bridge over the New Meadows River*

To minimize environmental impacts at this location, the path approaches to the river crossing will be located on the existing causeway, placed adjacent the existing Route One roadway, and located behind the existing roadway guardrail. There will be a five foot buffer area behind the guardrail to a new chainlink fence. There will then be a 1 foot shoulder, a narrower 10 foot path and another 1 foot shoulder to another fence. Behind the fence a retaining wall will be placed to minimize impact to the river.

Two structural alternatives were considered for the New Meadows River crossing:

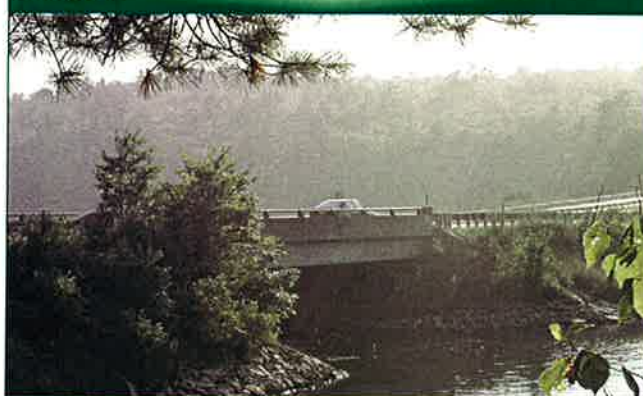
- Widening the existing Route One bridge.
- New 85' pre-fabricated steel truss bridge founded on stub abutments located near the top of the trail approach slope.

The existing Route One Bridge over the New Meadows River is a single span concrete deck steel girder superstructure founded on stub abutments located near the top of the approach slope. The existing bridge span is approximately 85 feet. The existing structure type could be easily widened to accommodate the new path. Widening of the existing bridge is recommended for the following reasons:

- Cost competitive initial construction.
- Impacts minimized.
- Alignment desirable.
- Visual appeal of the path will be enhanced through an integrated crossing in comparison to two independent but closely spaced structures.
- It is likely that roadway maintenance operations on Route One (snow removal and road sanding) will have an adverse effect on a closely spaced structure. A closely spaced separate parallel structure would be subject to salt laden spray and sand abra-

sion from snow removal operations and vehicle spray. This type of adverse environment would likely increase future maintenance needs and decrease the life of the parallel structure.

Image 8



Route 1 Bridge over the New Meadows River

- Some future maintenance costs will likely be deferred to the MDOT as part of the existing bridge. Examples would be deck rehabilitation/replacement and painting of the superstructure.
- Future replacement costs will likely be deferred to the MDOT as part of the existing bridge.

(f) *Old Bath Road bridge over Route One, Brunswick*

The existing Old Bath Road bridge over Route One is too narrow to accommodate sidewalks and bikelanes. It is recommended that a new bridge be constructed to the east of the existing bridge to carry the pathway. Three structural alternatives were considered for this location:

- Widening the existing Old Bath Road bridge.
- New two span (195' - 195') pre-fabricated steel truss bridge founded on a single column concrete pier located within the Route One median and stub abutments located near the top of the trail approach slope.
- New three span (130' - 130' - 130') pre-

fabricated steel truss bridge founded on two single column concrete piers located within the Route One median and stub abutments located near the top of the trail approach slope.

The existing Old Bath Road Bridge over the Route One follows a curvilinear alignment and is a non-continuous six span concrete deck steel girder superstructure founded on three column pier bents and stub abutments located near the top of the approach slope. Utilities are supported on the exterior side of fascia beams on both sides of the bridge. Widening of the existing bridge was determined to be cost prohibitive for the following reasons:

- Cost of widening 5 existing highway bridge pier bents significantly greater than construction of new multi-use bridge piers.
- Existing span arrangement and alignment not conducive to efficient superstructure design.
- Design and construction complicated by the existing bridge's curvilinear alignment, superelevation, drainage needs, and support of utilities.

The required bridge length of the two separate new multi-use bridge options was established by maintaining the same set back of the abutments from Route One. The two multi-use bridge options were considered equal in terms of aesthetics, maintenance, and constructibility.

The new two span (195' - 195') pre-fabricated steel truss bridge founded on a single column concrete pier located within the Route One median and stub abutments located near the top of the trail approach slope is the least cost alternative and is recommended at this location. The availability of existing right-of-way at this crossing location also supports the recommendation of a new separate structure.

In addition, the path along the north side of Route One will also have to pass beneath the existing and proposed bridges in front of the northerly abutment. The proposed bridge would be constructed to accommodate this

pathway. The existing bridge should be modified in a similar manner to the Cook's Corner interchange bridge over Route One. The existing sloped concrete surface under the bridge in front of the abutment will be replaced with a retaining wall to allow room for the path construction. The new path will be partially cut

Image 9



Old Bath Road Bridge over Route One

into the existing fore slope in front of the existing Old Bath Road bridge abutment. To minimize cut into the fore slope under the bridge, the path will rise and maintain a minimum vertical underclearance of 10 feet to the existing bridge above. A short (5' to 7' maximum height) reinforced modular block wall is recommended to retain the path fill between the path and the existing roadway drainage ditch along Route One. A fence will be mounted to the top of this wall to provide fall protection. A similar smaller wall (1' to 3' maximum height) may be required on the inside slope to retain fill up to the existing abutment breastwall. Existing slope paving removed for construction of the path and walls will be replaced in kind.

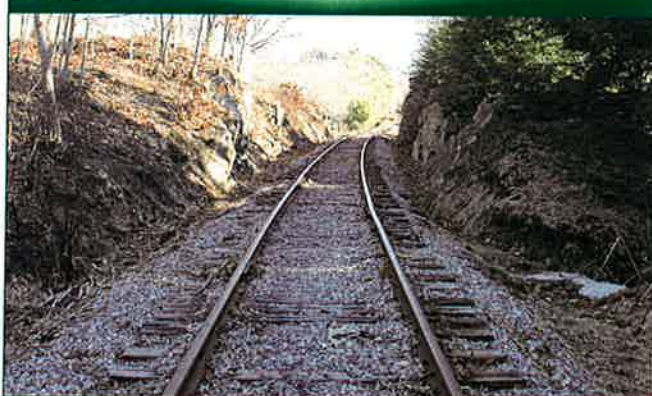
2) Route One Feasibility Study

Currently the MDOT is conducting a feasibility study for Route One as it passes through Bath from Congress Avenue to the Sagadahoc Bridge.

According to the City of Bath website, the MDOT has begun the study to "determine the future design of Route One in Bath. The study will look at the elevated portion of Route One (called the viaduct), the

gateway portion of Route One (from High Street to the West Bath town line), and ways to get commuters into and out of BIW. The study will culminate with a new look for Route One, one that will invite tourists off the highway and into the downtown, will promote north-south local-street connectivity, and will continue to support regional mobility. The unattractive viaduct might be replaced by a much more aesthetically pleasing structure with lines like the Sagadahoc Bridge, or an at-grade (city-street-level) highway, or even a facility that puts Route One below grade." The website for this study also indicates that the location of the rail line in Bath and pedestrian/bicycle access will also be a part of this study. This study will be completed after this Androscoggin-to-the-Kennebec Feasibility Study, but prior to design of the recommended path system. Therefore, before final design on any portion of the path east of the New Meadows interchange begins, the results of the Route One study should be reviewed. It is possible that some of the recommendations from that study would provide a safer path system with fewer impacts than the one recommended in this report. Examples of potential alternatives that could result from the Route One study are as follows:

Image 10



Existing Rail Line

- (a) If the Route One study includes the realigning the rail line from the New Meadows interchange to the Carleton Bridge within the Route One corridor, then the existing rail alignment would be available for a rails-to-trails corridor. Removing the rails and replacing them with a paved path would provide an alignment connecting the Sagadahoc Bridge to

Image 11



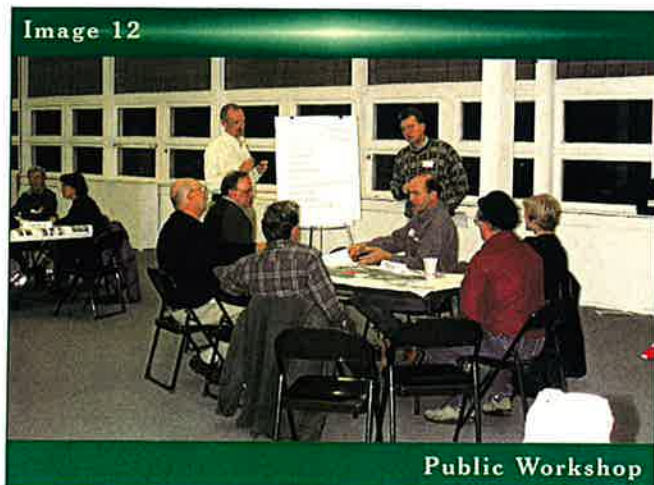
Photo Simulation of Rails to Trails

Old Brunswick Road through the center of Bath, and then from Old Brunswick Road to Route One east of the New Meadows interchange. Use of this alignment would have no property impacts, no driveway crossings and few street crossings. It would avoid having to use on-street bikelanes through the City and would use an otherwise abandoned alignment.

- (b) If the Route One study includes bicycle and pedestrian paths parallel to Route One, then the portion of the recommended alternative contained in this report that uses Congress Avenue, North Street, Front Street and Commercial Street could be replaced with this alternative. The path would then be able to begin on the Sagadahoc Bridge and use this alignment that might be developed along reconstructed Route One to connect into our recommended path along the north side of Route One to Brunswick.

IV. RECOMMENDATIONS

Based on the results of this study and the Public Workshop held November 7, 2002, a 7.2 mile long, multiple-use pathway using city streets in Bath and paralleling the north side of the Route One corridor from Bath to Brunswick is being recommended to meet the project goals of connecting the Sagadahoc Bridge in Bath to the existing Androscoggin River Bike Path in Brunswick. Approximately 2.2 miles of this trail will be an on-road system of bikelanes and sidewalks while the remaining 5.0 miles will be an off-road path. Of all of the options studied, this alternative has the most acceptance by both the public and the Feasibility Study Advisory Committee. It accomplishes all of the project goals while meeting necessary design standards. As the design and construction of each trail segment is begun, re-evaluation of current circumstances (including design standards, environmental regulations and current land use) should be completed to ensure that the recommendations made in this report are still valid, and that additional opportunities have not arisen (i.e. the ability to use the rail line if the existing rail line is abandoned or relocated along Route One).



This study has only identified the conceptual feasibility of the path system within the study area. It is essential that the design phase of work for each segment confirm the recommendation made in this report based on topographical survey, right-of-way research, and a review of current conditions at the time of design.

A. SECTIONS

The pathway has been divided into a number of sections as shown on *Figure 5b* on the next page. It is anticipated that each section would be incorporated into a separate design and construction contract, with each contract constructed in different years. Several factors were used in the development of these sections. The order of implementation of these sections has not yet been determined. The numbering of the sections does not reflect the priority of the phasing.

Figure 5a

Section	From-To	Length (Miles)	On/Off Road	Estimated Cost
1	Sagadahoc Bridge to Five Corners (Commercial, Front, North Streets)	1.35	On	\$ 351,200
2	Five Corners to Route One along Congress Avenue	0.96	On/Off	\$ 1,443,100
3	Congress Avenue to New Meadows Road along north side of Route One	1.69	Off	\$ 2,927,400
4	New Meadows Road to Peterson Road along north side of Route One	0.53	Off	\$ 1,613,800
5	Peterson Road to Deerfield Road along north side of Route One	0.85	Off	\$ 897,500
6	Deerfield Road to Old Bath Road along north side of Route One	0.99	Off	\$ 770,000
7	Old Bath Road to easterly end of the existing Androscoggin River Bike Path along north side of Route One - including connection to Bath Road	0.71	Off	\$ 2,704,000
8	Connection from southerly end of Deerfield Road to Route One path	0.04	Off	\$ 27,600
9	Connection from southerly end of Peterson Road to Route One path	0.09	Off	\$ 55,400
Total: 7.21 Miles				\$ 10,790,000

Recommended Path Sections

- The project was broken into sections that are of a design and construction cost that meets a reasonable spending limit that will enable the municipalities to provide the 20% match
- Each section has a logical beginning and ending point that connects to existing paths, sidewalks, neighborhoods, or other significant destinations
- Allows connectivity and continuity of the trail system as additional sections are constructed. This can be accomplished by either working from the existing Androscoggin River Bike Path toward Bath or starting at both ends and meeting in the middle after a number of years

Androscoggin-Kennebec Trail Recommended Path Sections

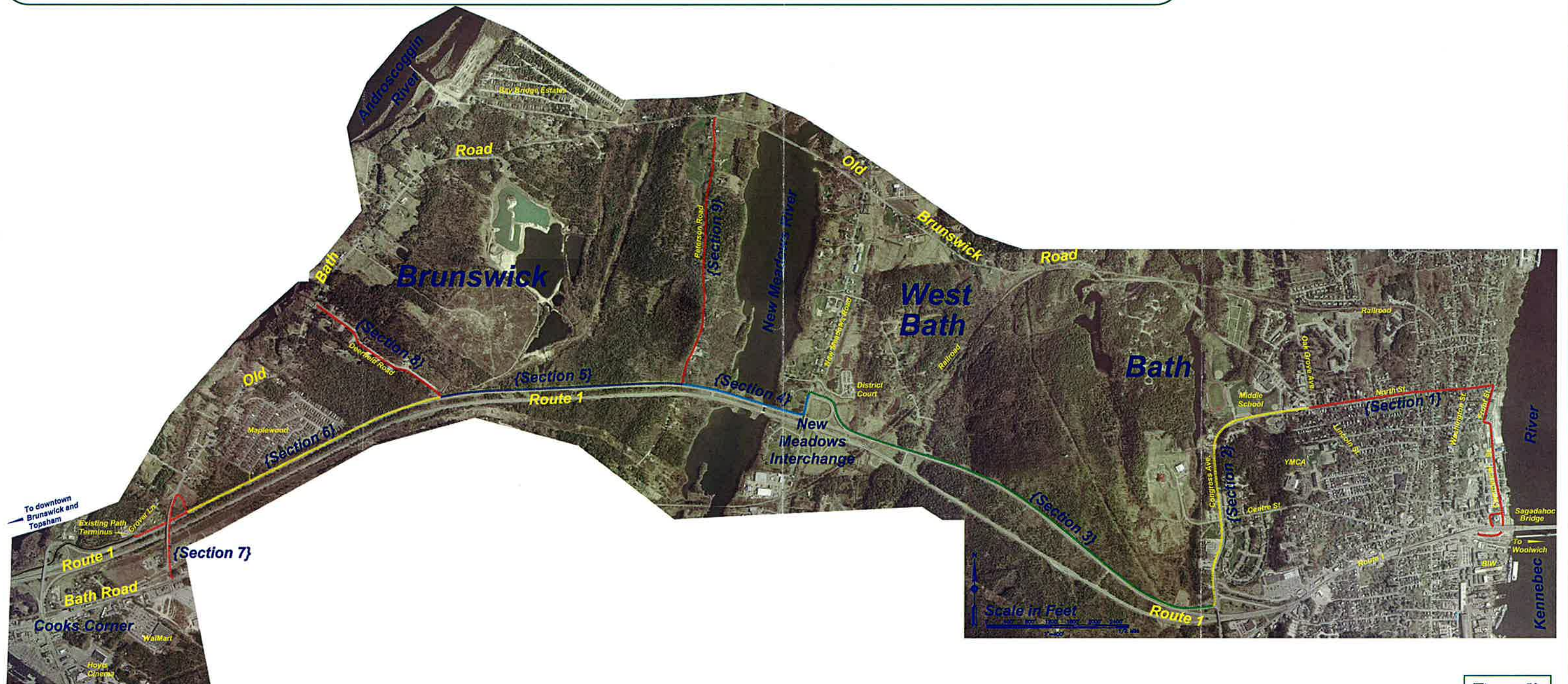


Figure 5b

as construction continues.

It is possible that Brunswick, Bath, and possibly West Bath could apply for joint funding to construct more than one section at a time. For the purposes of this study, it is assumed that the MDOT Transportation Enhancement Funds (requiring 20% local matching) would be the most likely funding source.

Each section is described in more detail below including photos and typical sections. The Concept Plans showing the path alignment for each section can be found in the appendix.

B. COST ESTIMATES

A preliminary opinion of cost was developed for each section by applying current unit prices to the quantities of materials anticipated. Since the cost projections are based on year 2003 construction costs, they should be revised at the time of future funding applications to bring them in line with current unit prices.

The cost estimates provided are based upon preliminary information. Final design may require the following additional data to design a pathway that meets the requirements of ADA as well as local, state, and federal environmental agencies:

- 1) Detailed topographic survey
- 2) Utilities and physical features survey
- 3) Boundary surveys (right-of-way, property lines)
- 4) Wetland delineation and function and values assessment
- 5) Additional ecological studies
- 6) Soil core samples to identify existing subgrade conditions
- 7) New Meadows River flood studies and engineering analysis of the existing flow

The detailed cost estimates for each section can be found in *Appendix C*. The cost estimate for the entire project outlined in this study totals approximately \$10,790,000.

Each Section was developed such that it had a logical beginning and ending point, and also had a reasonable cost that could be accommodated within one design and construction contract. However, some of the Sections could still be too costly for a single

design/construction contract. Therefore, some sections were broken into smaller increments within the cost estimate summaries so that the municipalities could fund a portion of a Section rather than the entire Section. For instance, Section VII becomes costly due to the large bridge required over Route 1. To mitigate this high cost Section VII was broken into segments a and b within the cost estimate summary sheets. This would enable the Town to construct Section VIIa first and Section VIIb at a later date. Since Section VIIa would then not have a logical end point, Section VI was also broken into Sections VIa and VIb. This would allow the Town to fund Section VIIa and VIb at one time resulting in a reasonable cost for a single contract and a path with reasonable endpoints at Grover Lane and Maplewood. Sections VIIb and VIa could then be funded at a later time.

C. SECTION I - COMMERCIAL STREET, FRONT STREET AND NORTH STREET FROM THE SAGADAHOC BRIDGE TO FIVE CORNERS

Image 13



Section I Area Location

Section I extends from the Sagadahoc Bridge to Five Corners via local city streets including Commercial Street, Front Street, and North Street. This Segment has been broken up into 7 Segments which have different existing conditions or proposed revisions.

1) Segment 1

Location:

From the easterly end of the Sagadahoc Bridge along Commercial Street past the old Railroad Station, passing under the Sagadahoc Bridge and extending to Lambard Street. From the end of the bridge to the parking area under the bridge the roadway is one-way in the eastbound direction. From there to Lambard Street the roadway is two-way traffic.

The City of Bath is currently working with consultants on the design of the Commercial Street Extension Improvement Plan. This project includes upgrades of Commercial Street for vehicular, pedestrian and bicycle traffic connecting the Railroad Station and the Waterfront Park. Sidewalks, parking, bike-lanes and additional parking areas will all be included. At the current time, it appears that the Commercial Street Extension Improvement Project will be constructed prior to any of the bicycle/pedestrian trails outlined in this report. Therefore, we have not included construction cost estimates for this area.

Should the Commercial Street Extension Improvement Project not be constructed due to currently unforeseen problems, the City should consider implementing items discussed in the major recommendations below.

Length:

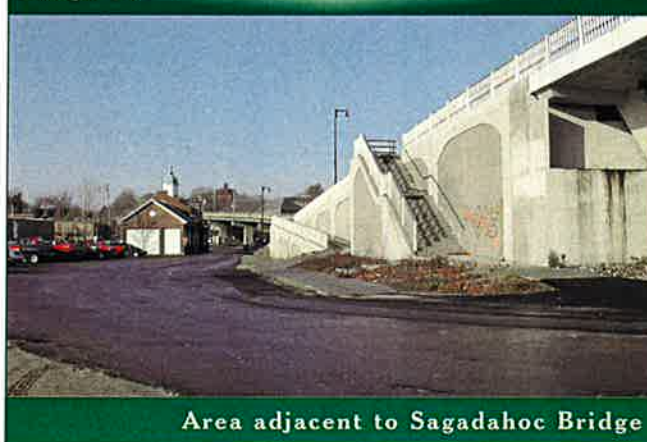
750 feet

Major Recommendations

(Only if the Commercial Street Extension Improvement Project is not constructed)

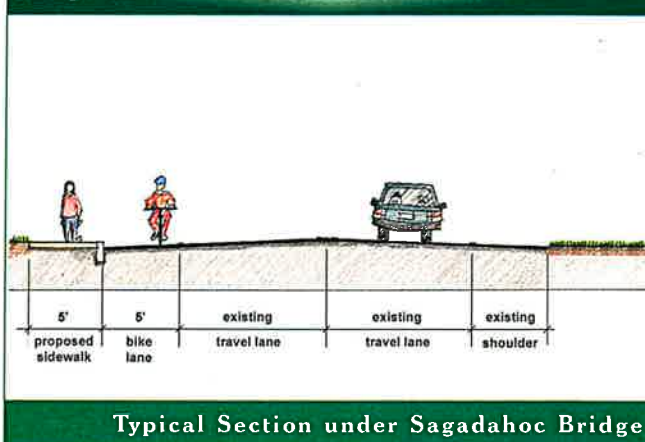
- Construct sidewalk connecting the pedestrian stairway and ramp at the westerly end of the bridge to the existing Lambard Street.
- Construct bikepath from the bikeramp at the westerly end of the bridge to Lambard Street. Use appropriate bikepath pavement markings.

Image 14



Area adjacent to Sagadahoc Bridge

Image 15



Typical Section under Sagadahoc Bridge

- Provide signage to identify the pathway location and use, and the East Coast Greenway.
- Retain existing on-street parking.
- Use existing sidewalks where they currently exist near the bridge.

2) Segment 2

Location:

From the easterly end of the Sagadahoc Bridge along Front Street to Lambard Street, and then along Lambard Street to Commercial Street.

Length:

450 feet

Major Recommendations

- Provide signage to identify the pathway and the East Coast Greenway.
- This section would be a shared roadway (signing to direct users to the path starting on Commercial Street and directing drivers to share the road with cyclists)
- Use existing sidewalk system for pedestrians
- Provide necessary crosswalks at Lambard/Commercial Street intersection

Image 16



Front Street near Sagadahoc Bridge

3) Segment 3

Location:

On Commercial Street from Lambard Street to Front

Street.

Length:

1850 feet

Major Recommendations:

- Requirements will vary depending on location along Commercial Street, the existing fair condition of the pavement is acceptable for use with bikelanes, however an overlay would be preferred.
- From Lambard to Broad Street it is anticipated that the Commercial Street Extension Improvement Project will be constructed by the City prior to this project's implementation. That project will include provisions for bicycle and pedestrian traffic through this area. Should the improvement project not be constructed for some unforeseen reason, the City should consid-

Image 17

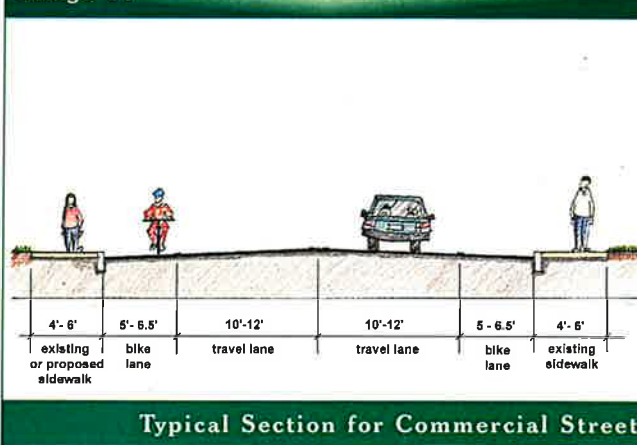


Image 18

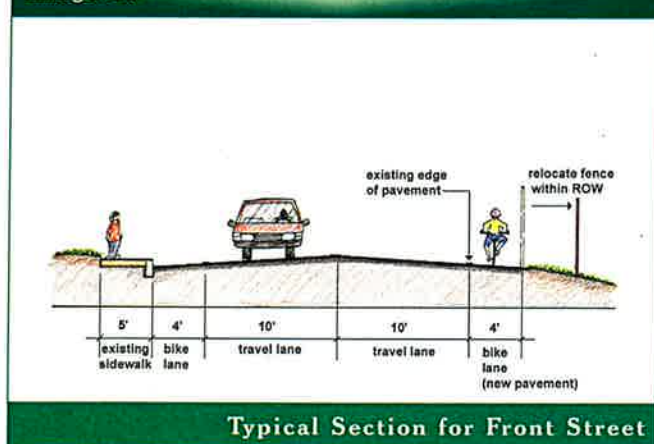


Municipal Parking Area

er implementing the following:

- Use existing sidewalks and stripe the roadway for 12 foot lanes and 5.5 foot bikepaths on either side. Use appropriate bikepath pavement markings and signing. No costs have been included for this portion of Commercial Street since it is currently anticipated that the Commercial Street Extension Improvement Project will cover necessary improvements in this area.
- From Broad Street to the Municipal Parking lot, construct a new sidewalk on the easterly side of the road along the existing parking area. Widen the easterly side of the road by 2 to 3.5 feet and stripe the roadway for 5 foot bikelanes and 11 foot lanes. (An alternative would be to get approval for an exception to use the existing pavement width striped as 4.5 foot bikelanes and 10 foot travel lanes)
- Avoid impact to the newly constructed brick sidewalks on the west side of the street.
- From the Municipal Parking Lot to Front Street, stripe the existing pavement for a minimum of 6 foot bikelanes and 12 foot travel lanes. Construct a sidewalk on the westerly side of the street (requiring curbing and enclosed drainage).
- Near the 90 degree corner at the northerly end of Commercial Street, steep sideslopes will require a significant amount of fill during sidewalk construction

Image 19



4) Segment 4

Location:

On Front Street from Commercial Street to North Street.

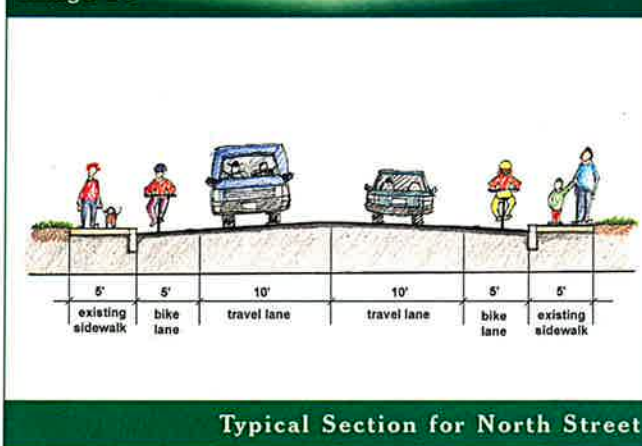
Length:

700 feet

Major Recommendations

- Provide necessary crosswalks at the Front Street/Commercial Street Intersection to accommodate the new sidewalk on Commercial Street.
- Remove on-street parking
- Avoid impact to existing west-side curbing and sidewalk
- Relocate fence on the easterly side of the road away from the roadway by about 4 feet
- Widen the existing roadway by about 4 feet

Image 20



- Determine exact Right-of-Way location to ensure roadway will remain within existing right-of-way.
- Have utility poles and fire hydrants relocated on easterly side of the street
- Stripe existing roadway for 4' bikelanes and 10' travel lanes. Use appropriate bikepath pavement markings and signing.
- Overlay existing pavement as soon as possible

to improve surface for cyclists.

5) Segment 5

Location:

On North Street from Front Street to Washington Street.

Length:

450 feet

Major Recommendations

- Use existing pavement striped with 4.5 to 5 foot bikelanes and 10 foot travel way Use appropriate bikepath pavement markings and signing.
- Remove existing on-street parking (the existing width is really too narrow for parallel parking on both sides even though it is currently allowed)
- Use existing sidewalks on both sides of the street
- Relocate utility poles behind sidewalk if possible
- Pavement repairs may be necessary in certain locations along the bikelane. Drainage grates may need to be upgraded.
- During any future planned street repairs/upgrade, attempt to widen pavement by 2 to 4 feet and upgrade condition of sidewalks.

6) Segment 6

Location:

On North Street from Washington Street to High Street.

Length:

1050 feet

Major Recommendations

- Use existing pavement striped with 5 foot bikelanes and 10 foot travel way Use appropriate bikepath pavement markings and signing.

- Continue to prohibit on-street parking
- Use existing sidewalk on north side of the street. Construction of a sidewalk on the southerly side of the street would be difficult and costly. Retaining walls would be required for a portion of this segment to construct missing segments of sidewalk due to homes located close to the roadway and steep front yard grades. The cost estimates currently do not include construction of a sidewalk in this location.
- Even though the 5 foot bikepath can be located between the travelway and the face of utility pole, it would be preferable to relocate the utility poles behind sidewalk at some point in time.

Image 21



Utility Poles on North Street

- Sidewalk repairs may be necessary in certain areas.
- Pavement is in poor condition in places, so a pavement overlay should be scheduled for this link. During any future planned street repairs/upgrade, attempt to widen pavement by 2 to 4 feet and upgrade condition of sidewalks.

7) Segment 7

Location:

On North Street from High Street to Lincoln Street/Oak Grove Avenue (Five Corners).

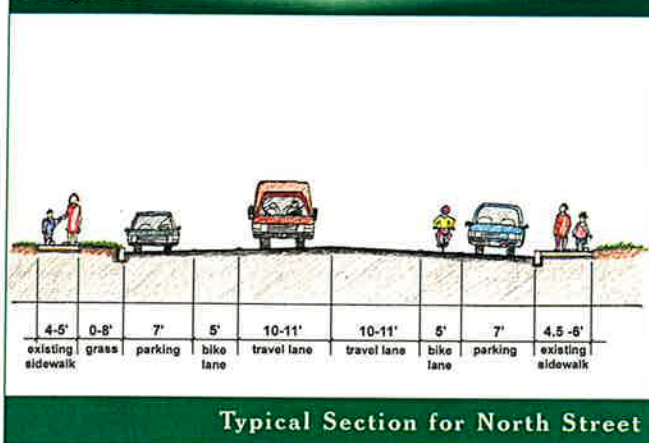
Length:

1900 feet

Major Recommendations

- Restripe the existing pavement for 7 foot parallel parking stalls, 5 foot bikelanes and 10 foot travel ways on either side of the street. Use appropriate bikepath pavement markings and signing.
- Many areas will allow the travel lanes to increase to at least 11 feet.
- Use existing sidewalks on both sides of the street.

Image 22



- For a short section of the street just west of High Street, the curbing on the southerly side of the road will have to be relocated 1 foot to the south and street pavement widened by 1 foot to provide the necessary pavement width. This will not impact the existing sidewalk since there is a grass buffer present in this location between the curb and sidewalk.

D. SECTION II - CONGRESS AVENUE FROM FIVE CORNERS TO THE SOUTHBOUND ROUTE ONE ON-RAMP

Image 23



Section II Area Location

Section II extends from Five Corners to the Southbound Route One on-ramp via Congress Avenue. This Phase has been broken up into 2 Segments which have different existing conditions or proposed revisions.

1) Segment 1

Location:

On Congress Avenue from Lincoln Street/Oak Grove Avenue (Five Corners) to Shopping Center Court.

Length:

4600 feet

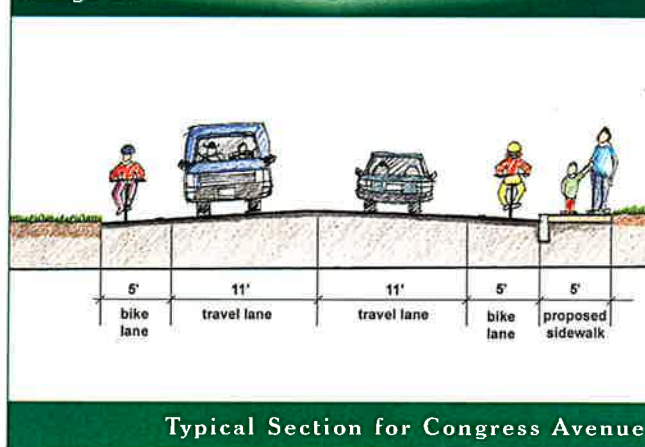
Major Recommendations

- From the Five Corners Intersection to the entrance to the athletic fields at the Middle School, construct a sidewalk on the northerly side of the street and restripe the existing pavement to provide 5 foot bikelanes and 11 foot lanes on either side of the street. Curbing and drainage will be required on the north side of the street next to the proposed sidewalk. Use appropriate bikepath pavement markings and signing.
- In certain areas near the Five Corners intersec-

tion, the curbing may need to be reset to allow room for the bikelanes near the turning lanes. A one-foot widening would allow 4 foot bikelanes, 2 ten-foot eastbound turning lanes, and an 11-foot westbound through lane. A three-foot paved island currently exists in front of the small shopping center on the northwesterly corner of the intersection. To achieve a five foot sidewalk in this location the distance from the island to the storefront will have to be reduced by 2 feet. Using the existing 90 degree parking stalls, this distance is unacceptable. The City should work with the owner to determine if 45 or 60 degree parking stalls would be acceptable to enable this option to work properly. Utility pole relocation also required in this area.

- From the athletic field entrance to Shopping Center Court, the roadway will have to be widened by approximately 9 feet. The existing gravel shoulders can be used for this widening. The resulting roadway should be striped for 5 foot bikelanes and 11 foot travel lanes. Use appropriate bikepath pavement markings and signing.
- From the athletic field entrance to Shopping Center Court, a new sidewalk will also have to be constructed on the north and westerly side of the street. New curbing and enclosed drainage will be required.

Image 24



Typical Section for Congress Avenue

- On the west side of Congress Avenue south of the Centre Street intersection, a retaining wall will be required in one location in order for the

Image 25



Congress Avenue Retaining Wall Location

sidewalk to be constructed.

- South of Anchor Road on the west side of Congress Avenue, the guardrail will have to be relocated away from the centerline of the street and additional fill placed (or a short retaining wall constructed) in order to have room to construct the sidewalk. Alternatively, the sidewalk could be constructed behind the guardrail, with additional fill or a short retaining wall still being required.
- At the Shopping Center Court intersection, appropriate signing, crosswalks and perhaps a flashing signal will be required for cyclists crossing the street.

Image 26



Congress Avenue Guardrail Area

2) Segment 2

Location:

On Congress Avenue from Shopping Center Court to the southbound Route One on-ramp.

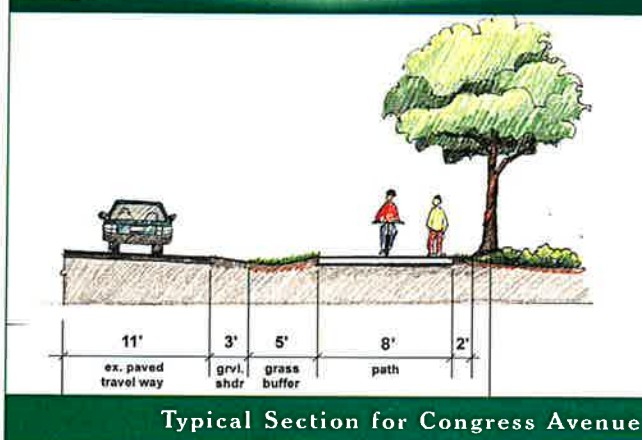
Length:

450 feet

Major Recommendations

- From Shopping Center Court to the southbound, Route One on-ramp there will be a multi-use, bi-directional path constructed on the west side of the street. This path will be 8 feet wide and will be separated from the edge of pavement by a grass buffer of at least 5 feet.

Image 27



- Guardrail relocation and additional fill (or a retaining wall) will be required to construct the

Image 28



Congress Avenue at Shopping Center Drive

path behind the existing guardrail. The 48" concrete pipe under Congress Avenue will have to be extended. In front of the existing animal hospital revisions to the existing ditch and culvert under the access drive will be required.

- Provide appropriate crosswalk signing and striping on the north side of the intersection.
- Appropriate signing directing users along Route One for continuation of the bikepath and East Coast Greenway alignment (if so designated) will be required.

E. SECTION III - NORTH SIDE OF ROUTE ONE FROM CONGRESS AVENUE TO THE NEW MEADOWS ROAD

Image 29



Section III Area Location

Location:

Beginning at Congress Avenue the path would be constructed parallel to the Southbound On-Ramp on the northerly side. At the easterly end of the On-Ramp it would then follow the north side of Route One to the New Meadows interchange. The path will meander within the space between the edge of roadway and the edge of right-of-way depending on existing conditions and topography. In some locations alternatives that extend outside the right-of-way have been shown. At the New Meadows interchange the path will follow the right-of-way line along the Southbound Off-Ramp and will intersect with New Meadows Road near the District Court access drive. A crosswalk will be provided to cross New Meadows Road.

Length:

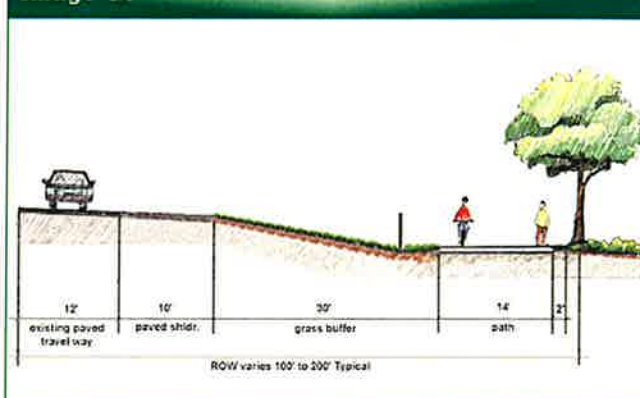
8925 feet

Major Recommendations

- Seek to acquire trail easements from abutting property owners to provide additional options during design and to reduce construction cost associated with ledge removal and steep slopes within Route One R/W
- Maintain maximum buffer between path and Route One

- Install guardrail where trail and Route One separation is less than 20 feet.
- Work with MDOT to safely incorporate trail into rest stop area, enhancing rest stop with additional pedestrian/bicyclist amenities

Image 30



Typical Section of Route One

F. SECTION IV - NORTH SIDE OF ROUTE ONE FROM THE NEW MEADOWS ROAD TO PETERSON ROAD

Image 31



Section IV Area Location

Location:

Beginning at New Meadows Road crosswalk (see Section II), the path will follow the westerly side of New Meadows Road toward Route One. Before reaching Route 1 the path will turn toward the west and continue following the northerly side of Route One. As with Section III, the path will meander within the space between the edge of roadway and the edge of right-of-way depending on existing conditions and topography. In some locations alternatives that extend outside the right-of-way have been shown. At the New Meadows River, the path will be close to the highway and retaining walls and a parallel bridge will be used to cross the river area. As the path approaches Peterson Road, curves will be introduced to the alignment to provide the flattest grade possible as the path climbs the existing hill.

Length:

2800 feet

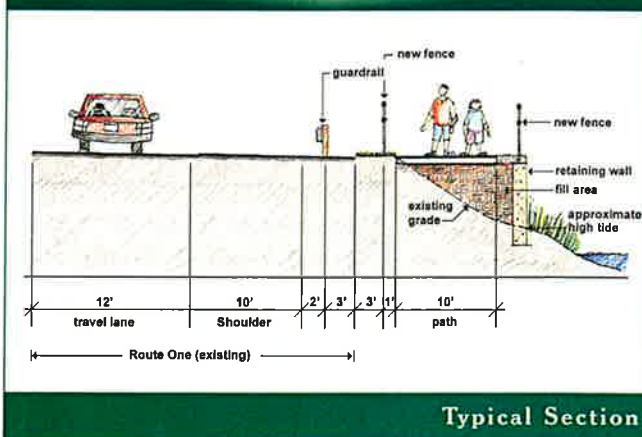
Major Recommendations

- Seek to acquire trail easements from abutting property owners to provide additional options during design and to reduce construction cost associated with ledge removal and steep slopes within Route One R/W
- Maintain maximum buffer between path and

U.S. Route One

- Install guardrail where trail and U.S. Route One separation is less than 20 feet.
- Retaining wall will be necessary along New Meadows River crossing from Station 963 to Station 976 approximately
- Provide pathway connection to Peterson Road
- Consider the construction of a trailhead parking lot on Peterson Road
- Coordinate with CMP representatives to provide additional pathway alignment options

Image 32



Typical Section

G. SECTION V - NORTH SIDE OF ROUTE ONE FROM PETERSON ROAD TO DEERFIELD ROAD

Image 33



Section V Area Location

Location:

Beginning near Peterson Road, the path will continue to follow the north side of Route One to a point near Deerfield Road. As with Sections III and IV, the path will meander within the space between the edge of roadway and the edge of right-of-way depending on existing conditions and topography. In some locations alternatives that extend outside the right-of-way have been shown.

Length:

4500 feet

Major Recommendations

- Seek to acquire trail easements from abutting property owners to provide additional options during design and to reduce construction cost associated with ledge removal and steep slopes within Route One R/W
- Maintain maximum buffer between path and Route One
- Install guardrail where trail and Route One separation is less than 20 feet.
- Provide pathway connector to Deerfield Road

H. SECTION VI - NORTH SIDE OF ROUTE ONE FROM DEERFIELD ROAD TO OLD BATH ROAD

Image 34



Section VI Area Location

Location:

Beginning near Deerfield Road, the path will continue to follow the north side of Route One to a point just east of Old Bath Road. As with Sections III through V, the path will meander within the space between the edge of roadway and the edge of right-of-way depending on existing conditions and topography. In some locations alternatives that extend outside the right-of-way have been shown. A short connection to the Maplewood development would be included in this phase of work.

Length:

5250 feet

Major Recommendations

- Seek to acquire trail easements from abutting property owners to provide additional options during design and to reduce construction cost associated with ledge removal and steep slopes within Route One R/W
- Maintain maximum buffer between path and Route One
- Install guardrail where trail and Route One separation is less than 20 feet.
- Provide pathway connector to Maplewood neighborhood

- Additional landscaping may be required to provide privacy for Maplewood residents

I. SECTION VII - NORTH SIDE OF ROUTE ONE FROM OLD BATH ROAD TO THE EASTERLY END OF THE EXISTING ANDROSCOGGIN RIVER BIKE PATH INCLUDING A LINK OVER ROUTE ONE TO THE BATH ROAD/AMES PLAZA/OLD BATH ROAD INTERSECTION.

Image 35



Section VII Area Location

Location:

Beginning at a point just east of Old Bath Road, the path will continue to follow the north side of Route One to the existing easterly end of the Androscoggin River Bike Path. An additional link ramping up to the easterly side of Old Bath Road, and then crossing Route One on a new parallel structure is included in this phase. After crossing Route One, this spur will continue on the easterly side of Old Bath Road until it connects with Bath Road at the Ames Plaza intersection. A crossing of Bath Road to the Ames Plaza drive is included as well.

Length:

3750 feet

Major Recommendations

- Maintain maximum buffer between path and Route One path
- Construct an 8-foot path on the easterly side of Old Bath Road from the Route One pathway up to the Old Bath Road elevation, and then southerly along the east side of the road to the Bath Road/Ames Plaza intersection.

Minimum offset from the roadway should be 5 feet. Fencing, additional fill and the lengthening of a 24" Corrugated Metal Pipe will be required. Appropriate signing (including rail crossing signage) will be required.

- See Section L below for additional recommendations at the Old Bath Road/Bath Road/Ames Plaza intersection.

The following intersection revisions are suggested at this location to ensure a safe roadway crossing:

- Install a crosswalk on the east side of the intersection. Re-stripe the Bath Road stop bars on this approach.
- Adjust the signal to provide for pedestrian phases and install pedestrian signal heads.
- Install No Turn on Red signs for the westbound right turn lane. This will avoid the possibility of right turners who are looking to their left not seeing pedestrians or bicyclists coming from their right.
- A northbound No Turn on Red sign for the right turn lane should also be considered.

Image 36



Bath Rd/Old Bath Rd/Ames Plaza Intersection

J. OPTIONAL SECTION VIII - UPGRADES TO DEERFIELD ROAD (COULD BE COMBINED WITH OTHER SECTIONS)

Image 37



Section VIII Area Location

Location:

This section of the project would include improvements to Deerfield Road so that it can be incorporated into the trail system. These improvements can occur as a separate phase after the primary trail has been completed, or can be funded along with the construction of Section V or VI. Improvements would include construction of a short connection between the end of Deerfield Road and the Route One path. In addition, directional signing to the path could be added near the Old Bath Road/Deerfield Road intersection and signing for shared use of Deerfield Road could be installed along the roadway. Widening the pavement and striping could also be included, but are probably not necessary and have not been included at this time.

Length:

200 feet construction (2850 feet signing)

Major Recommendations

- Construct 8 foot wide path from end of Deerfield Road to Route One path
- Coordinate with property owners for optimum path placement
- Include landscaping or fencing if necessary to buffer path from homes

- Include appropriate signing

K. OPTIONAL SECTION IX - UPGRADES TO PETERSON ROAD (COULD BE COMBINED WITH SECTION V)

Location:

This section of the project would include improvements to Peterson Road so that it can be incorporated into the trail system. These improvements can occur as a separate phase after the primary trail has been completed, or can be funded along with the construction of Section IV or V. Improvements would include construction of a 500 foot long connection between the end of Peterson and the Route One path. In addition, directional signing to the path could be added near the Old Bath Road/Peterson Road intersection and signing for shared use of Peterson Road could be installed along the roadway. No improvements to Peterson Road's gravel surface have been included in the project at this time, but should be considered in the future. Construction of a gravel trail-head parking area near the end of Peterson Road on the west side of the travel way is also included in this phase of work. This would be a small lot for approximately 6 vehicles.

Image 38



Proposed Parking Area

Length:

500 feet construction (4550 feet signing)

Major Recommendations

- Construct 8 foot wide path from end of

Peterson Road to Route One path

- Follow existing gravel path along current right-of-way
- Coordinate with abutting property owners regarding placement of gravel trailhead parking area. Keep parking area within exiting right-of-way
- Include appropriate signing

L. INTERSECTION ANALYSIS

The recommended alternative includes a connection with Bath Road at the Bath Road/Old Bath Road/Ames Plaza intersection. Due to the heavy traffic volumes at this intersection, the intersection was analyzed to ensure a crossing could be safely constructed in this location. *Appendix A* includes a complete discussion of this analysis.

M. FUNDING

Construction of this project will most likely take many years to complete. The actual schedule will be based on the people's desire to see the pathway extended, available funding sources, the municipalities' success at securing the necessary funds, and their willingness to raise the necessary matching funds.

A variety of private and public funding sources should be pursued. Some of the likely sources could include:

1) Federal Highway Administration's



Transportation Enhancement Program

This funding program helps communities expand their transportation and livability choices, and is probably the most common method municipalities in Maine have used recently to fund these types of projects. These funds are highly competitive with other communities throughout the state. In the 2002/2003 funding cycle the program had approximately \$7 million and received requests for over \$15 million. For further information see: www.state.me.us/mdot/community-programs/223.php.

2) Recreational Trails Grants



These funds are administered by the Maine Bureau of Parks and Lands and provides funding for trail development and trailhead parking. Up to \$30,000 is available to any applicant. A 20% local match is required. For further information see: www.state.me.us/doc/parks/programs/community/trailsfund.html.

3) Roadway Improvement Projects

Any recommendations made in this report for the on-road phases could be constructed as part of potential local or state roadway improvement projects scheduled for these streets.

4) Private Donations

Private donations could take the form of money towards the path construction, land for the path or associated trailhead parking areas, or materials/labor for the path construction.

5) Municipal Funds

Raised through the Town/City annual budgeting process these funds can be used to fund portions of the trail or to match other funding opportunities.

6) Private Development

For some of the on-road segments of the trail, especially along the Congress Avenue and Commercial Street links, the City could require developers of adjacent properties to construct the portion of the path in front of their property as part of the approval of the development plans.

In addition, there are potential opportunities to reduce costs through the use of volunteer labor and/or donated materials. Scout groups, the National Guard, and other civic organizations frequently volunteer time and funding for community projects. Suppliers may be willing to donate lumber or sand and gravel for the project while construction companies may be willing to donate time, materials and equipment to the project (as was the case in the construction of the original segment of the Beth Condon

Pathway in Yarmouth).

N. ADDITIONAL INFORMATION

See *Appendix A* for additional information on Environmental Regulatory Assessments, Trailside Amenities, Scenic Vista Assessments, Trail Signing and Trail Lighting Assessments.

APPENDIX A - BACKGROUND INFORMATION

INTRODUCTION

This appendix includes more detailed information on some of the topics that were only discussed briefly in the main report.

A. REGIONAL CONTEXT

Brunswick was founded in 1739 and by 1889 it had "shrugged off its rural chrysalis, yet still avoided the centralizing tendencies of business and metropolitan life." In many ways, this describes the Brunswick area today: Maine's largest town (population 21,500) is a mix of Franco-Americans whose great-grandparents were recruited to work in the town's textile and paper mills, of military families, of Bowdoin and retired Bowdoin faculty and alumni, of old seafaring families, and an increasing number of professionals who commute the half hour to work in Portland or Augusta. According to a Brunswick Cultural Assessment Project report, the Pejepscot area, which includes neighboring Topsham and Harpswell, is also home to more than 500 artists and art-related groups.

Tourists heading up the Maine coast tend to see Brunswick as the first stretch of Route One that they hit after leaving Interstate 95. Several good restaurants, art galleries, crafts and antiques shops, and book and music stores are present. The top of Maine's widest street borders a grassy mall, the scene of farmers' markets on Tuesdays and Fridays. The First Parish Church at the head of the street is a

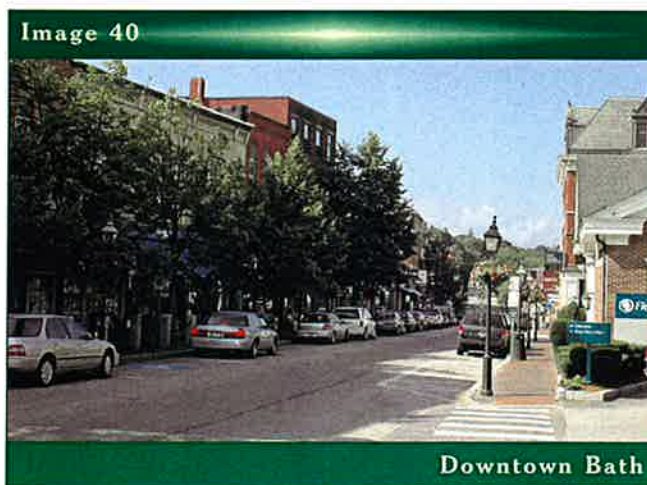


hinge between the town and the parklike Bowdoin College campus just beyond.

A small college chartered in 1794, Bowdoin is now a magnet for the best and brightest from throughout the country, but its campus is surprisingly welcome to visitors, especially in July and August, when its buildings are filled with practicing and performing virtuoso musicians and when the Pickard Theater is the stage for the Maine State Music Theatre.

Brunswick's downtown is invitingly walkable with an unusually wide variety of restaurants, and several serious art galleries and crafts stores.

Source: Downtown Brunswick Association and Curtis Library websites, July 2003.



Nestled along the sparkling Kennebec River, Bath is an old seafaring town, and recently deemed one of the best small cities in America! It's recorded maritime history began only 12 miles down the Kennebec when 400 years ago the first ship built by settlers in the New World was launched. Shipyards once lined the river's edge and Bath-built vessels sailed the seas of the world.

Bath has sailed into the present bringing a taste of her history with her and is now home of the world-class shipbuilder Bath Iron Works. At the south end of the city the nationally acclaimed Maine Maritime Museum is often visited by Tall Ships. Downtown Bath has a unique mix of shops, restaurants and services. The 19th century brick buildings and narrow

streets have the charm of childhood revisited...a slower pace and a friendly pedestrian atmosphere. The City's tree-lined avenues are graced by humble and grand examples of classic American architecture.

Source: City of Bath, Maine website, July 2003.

B. DESIGN CRITERIA

The design team and the Feasibility Study Advisory Committee went through a lengthy process to evaluate the advantages and disadvantages of the various alternatives for the extension of the Androscoggin River Bike Path. This portion of the report describes the methodology and criteria used to evaluate the feasibility of extending the existing path. The key Design Criteria were determined to include:

- Safety
- Aesthetics
- Security
- Privacy (Impact on Abutters)
- Connections to existing facilities
- Construction Costs

The primary concern for those attending the public meetings during this study was safety of the users. Each route was examined for possible vehicular conflicts at sideroad intersections and driveways. Sight distance was also a factor in determining locations for crosswalks. The need for fencing, retaining walls or guardrails was examined in situations requiring significant grade changes or where the path is in close proximity to high speed roadways.

1) Design Standards

A number of current references were used in the development of the design criteria for the pathway, including: the AASHTO Guide for the Development of Bicycle Facilities, 1999; the AASHTO Roadside Design Guide, 2002; and the MDOT Maine Highway Design Guide, December 2001.

The recommended path alternative will be a shared-use path accommodating pedestrians, cyclists, in-line skaters, and wheelchair users. The paved surface will provide a safe surface for all of these users while requiring a minimum of maintenance. As recommend-

ed by AASHTO the path will be designed for a design speed of 20 to 30 miles per hours, a minimum horizontal curve radius of 100', and a maximum grade of 5 percent. For short sections of path where a grade greater than 5 percent is necessary due to the existing terrain, the suggestions developed by AASHTO will be followed. There will generally be three different typical cross-section configurations depending on the location along the path. These sections are as follows:

(a) *Commercial Street from the Sagadahoc Bridge to Front Street, Front Street from Commercial Street to North Street, North Street from Front Street to the Five Corners Intersection, and Congress Avenue from the Five Corners Intersection to the shopping center intersection*

- **Bikelanes** - A minimum of 5 foot paved bike-lane using the existing roadway surface or a reconstructed roadway shoulder matching the current pavement structure is proposed for these areas. AASHTO guidelines use a minimum width of 5 feet for bikelanes where curbing or parking is present. Appropriate bikelane striping, pavement markings and signage will be proposed.
- **Sidewalks** - Many of the roadways along

Image 41



Commercial Street in Bath

this portion of the path system already have exiting sidewalks. For areas without existing sidewalks, new sidewalks will be constructed. Following the guidelines in the Bath Pedestrian and Bicyclist Transportation Plan, the sidewalks will be between 5 and

7 feet in width, depending on the location along the path. Where possible, a vegetated buffer of 2 feet will be constructed.

(b) Congress Avenue from the shopping center entrance to the westbound on-ramp

- **Paved Path** - A 10 foot paved surface with 3" of bituminous pavement is proposed for this portion of Congress Avenue. AASHTO guidelines use a minimum width of 10 feet for multi-use facilities.

The paved portion of the path will have a maximum cross slope of 2% to maintain drainage and meet ADA requirements.

The Vertical Clearance for the pathway will be a minimum of 10' as recommended by AASHTO. This clearance will be required for areas passing under roadside trees.

- **Shoulders** - Vegetated 2 foot wide should-



ders will be provided on both sides of the path. These shoulders will have a cross slope of 1:6 and will increase to a minimum of 3 feet where the path is adjacent to trees, poles, walls, fences, guardrails or other obstructions as recommended by AASHTO. Where steep side-slopes are encountered a 5 foot clear zone from the edge of pavement to the top of the slope will be provided. Between the path and the roadway, a vegetated buffer of at least 5 feet will be provided.

(c) Route One

- **Paved Path** - A 14 foot paved surface with 3" of bituminous pavement is proposed for the majority of the Route One portion of the path which extends from Congress Avenue to the easterly end of the existing Androscoggin River Bike Path. Pavement widths may be reduced to 10' or 12' in certain constrained areas where inadequate right-of-way, costly ledge removal or negative environmental impacts exist. AASHTO guidelines use a minimum width of 10 feet for multi-use facilities, with increases up to 14 feet where there will be substantial use by bicycles, joggers, skaters and pedestrians, and where there will be large maintenance vehicles and/or steep grades. Based on the projected types of trail users, a reduction to either 12' or 10' for all off-road trail widths should be considered during final design. Where steep grades are shown on portions of the trail, a wider path may be appropriate.



The paved portion of the path will have a maximum cross slope of 2% to maintain drainage and meet ADA requirements.

The Vertical Clearance for the pathway will be a minimum of 10' as recommended by AASHTO. This clearance will be required for areas passing under roadside trees and when the pathway passes under the Old Bath Road bridge over Route

One.

- Shoulders - Vegetated 2 foot wide shoulders will be provided on either side of the pavement. These shoulders will have a cross slope of 1:6 and will increase to a minimum of 3 feet where the path is adjacent to trees, poles, walls, fences, guardrails or other obstructions as recommended by AASHTO. Where steep side-slopes are encountered a 5 foot clear zone from the edge of pavement to the top of the slope will be provided.

Such path elements as bridges, railings, fencing, retaining walls, and guardrail will meet AASHTO design standards where feasible.

2) Right-of-Way

The majority of the recommended alignment could be constructed within the public right-of-way on either state, town or city owned property with no additional impact on the abutting private property or existing land use. The Right-of-Way information used in this study was obtained from the Maine Department of Transportation and from local GIS databases. The right-of-way lines shown on the mapping contained in this report are approximate; actual boundaries will have to be determined in more detail during the final design process.

Portions of the pathway will have to have temporary easements for access and/or grading during the construction of the path. In a few instances, permanent easements or acquisitions will need to occur. In various locations along the Route One corridor the path could be constructed within the existing Right-of-Way, but the plans show that an alternative alignment on private property would be beneficial from a cost, environmental impact, grading or aesthetic reason. If the municipalities decide that the alternatives shown on private land are preferable, agreements will have to be worked out with the property owners. While costs were estimated for engineering and construction of the entire path system, costs associated with the additional right-of-way required for these alternative alignments were not.

3) Environmental Impacts

Environmentally sensitive areas were defined by a reconnaissance-level assessment performed by Woodlot Alternatives, Inc. Woodlot also requested a review of the Federal and State databases of protected resources. The Androscoggin-to-the-Kennebec Multi-Use Path Extension; Brunswick and Bath, Maine; Environmental Assessment Summary provides a detailed description of these resources and the potential permitting requirements required to construct the path. The results of their assessment indicate that the path is feasible from an environmental standpoint, provided that wetland impacts are avoided and minimized. A copy of the Summary is included in the Appendix.

Image 44



New Meadows River

The New Meadows River area, including its associated wetlands, are the most significant environmental resource within the project area since they are considered Wetlands of Special Significance. The river is also listed as one of the 17 priority coastal waters to receive federal, state, and local focus for non-point source pollution abatement activities. The two major corridors studied, Old Bath/Old Brunswick Road and Route One, have between 21 and 24 other smaller wetlands near the path alignment and each pass near seven Maine Department of Environmental Protection-defined streams. Minimizing impacts to these resources was a major factor in the determination of the preferred alignment.

4) Costs

It is anticipated that the engineering and construction funding for the project will be provided by Federal funds administered by the MDOT. These funds typi-

cally require a 20% match from the local communities, which will be a significant cost to Brunswick, Bath and, perhaps, West Bath. In addition, the local communities will be responsible for trail management and maintenance activities, to ensure a safe and high quality experience for all users. Maintenance is expected to include such items as plowing, sweeping, trimming, and patching of the trail surface. Costs for these services would also be borne by the local communities.

With this in mind, each alternative was examined to compare the construction and maintenance costs to their perceived public value and safety. A preliminary opinion of cost was prepared for each of the segments for the recommended path alignment. Prior to construction, these costs will have to be reviewed and updated with current unit prices, based on the final design configuration.

5) Aesthetics and Experience

The path as viewed by abutting roadways and properties, as well as the views from the path itself will have to be carefully considered during the final design phase. The sections of this report on trail amenities, scenic vistas, signing and lighting contain suggestions that will enhance the aesthetics of and from the trail, and the experience of the trail users. The alignment of the path was developed to take advantage of existing scenic vistas and maximize the ability of the trail to fit into the existing environment. It was also sited to minimize any negative aesthetic impacts caused by construction of the path itself as compared to the existing views from the roadway or abutting land uses. Part of this mitigation would be in the form of project landscaping.

C. EXISTING CONDITIONS

A number of on- and off-road alternatives were reviewed for inclusion in this path system. The two basic corridors studied for the connection of Bath and Brunswick were the Old Brunswick/Old Bath Road corridor and the Congress Avenue/Route One corridor. Either of these alternatives would use city streets (Commercial Street, Front Street and North Street) to connect the Sagadahoc Bridge to the Five Corners intersection. These streets are currently configured as

follows:

- Commercial Street - Sagadahoc Bridge to Lambard Street. Existing pavement is 33 to 35 feet in width, mostly uncurbed, mostly no on-street parking. On small section near the parking area behind the Customs Building has about 29' of pavement for the travel way plus about 8' for parallel parking and curbing on one side of the roadway.
- Commercial Street - Lambard Street to the Municipal Parking Area. Existing pavement is about 28.5 to 37 feet wide for travel way and shoulders. Existing sidewalks present on one or both sides. No parallel parking is allowed on either side.

Image 45



Commercial Street near the Custom Buildings

- Commercial Street - Municipal Parking Area to Front Street. Existing pavement is generally 36 feet wide (extending to 46 feet wide around the sharp corner at the northerly end of the

Image 46



Commercial St (Lambard St. <> Mun. Park Area)

street). There is no parallel parking allowed on either side of the street. There are no sidewalks and few areas with existing curbing.

Image 47



Commercial Street north of Municipal Parking Area

- Front Street - Commercial Street to North Street. The existing pavement is about 24 to 30 feet wide. There is no striping for parallel parking, but signing indicates that it is allowed on one side. Curbing and sidewalks are present on one side of the street. (See *Image 48*)

Image 48



Front Street (Commercial St. <> North St.)

- North Street - Front Street to Washington Street. The existing pavement is 30 feet wide from curb to curb and parking is allowed on both sides of the street. Sidewalks are present on both sides of the street. (See *Image 49*)
- North Street - Washington Street to High Street. Pavement on this portion of the street ranges from 29 to 30 feet in width. Sidewalks are present on one or both sides of the street.

Image 49



North Street (Front St. <> Washington St.)

Curbing exists in locations where there is a sidewalk. There is no parallel parking on this part of North Street. (See *Image 50*)

- North Street - High Street to Five Corners (Lincoln Street and Oak Grove Avenue. Pavement in this vicinity widens to 43 to 48 feet from curb to curb. This includes parallel parking stalls on both sides of the street. Sidewalks are also currently present on both sides of North Street. (See *Image 51*, following page)

Image 50



North Street (Washington St. <> High St.)

From Five Corners to the existing Androscoggin River Bikepath, a number of alignments were reviewed. The overall existing condition and configuration of these two corridors are as follows:

1) Old Brunswick/Old Bath Road Corridor

This corridor begins at the Five Corners intersection

Image 51



North Street (High St. <=> Five Corners)

(Congress Ave/Oak Grove Ave/North St/Lincoln St/Old Brunswick Rd) and extends along Old Brunswick Road to the New Meadows River. Old Brunswick Road turns into Old Bath Road at this point. The corridor would continue westerly along Old Bath Road to Grover Lane and then to the easterly end of the existing Androscoggin River Bike Path. These are generally rural residential roads of approximately 24 to 25 feet in width. There are some isolated areas where the pavement is as narrow as 22.5 feet, and other areas where it is as wide as 32 feet. Variable width shoulders are present in most areas (typically 2 to 4 feet in width) with very few areas of existing curbing. There are currently no safe locations for pedestrians or cyclists to travel along this corridor. There are many locations with roadside drainage ditches, trees, front lawns, fences, landscaping and stone walls that would be impacted by construction of a separated bikepath. The existing pavement width at the Whiskeag Creek crossing is about

Image 52



Old Brunswick Rd./Old Bath Rd. Causeway

30 feet (face of guardrail to face of guardrail). Steep sideslopes exist directly behind the existing guardrail on either side. Near the railway trestle, sharp curves and a narrow under-trestle opening create poor sight distance and little room for pedestrians or cyclists. East of the trestle, the railroad tracks come to within 19 feet of the Old Brunswick Road. Using clearance requirements from AASHTO and MDOT there is not enough room between the road and railroad to accommodate the pathway. Lastly, at the New Meadows River, a 900 foot long causeway and bridge connect Bath and Brunswick. The narrow causeway is only 22 feet wide abutting the guardrail with steep sideslopes. Steep slopes behind the guardrail leave little room for construction of a path in this area.

2) Congress Avenue/Route One Corridor

This corridor also begins at Five Corners but extends along Congress Avenue and Route One to reach the easterly end of the existing Androscoggin River Bike Path. After the turning lanes transition back down to a normal travelway near the Five Corners intersection, Congress Avenue currently consists of approximately 37 feet of pavement with curbing on one side. No on-street parallel parking is allowed in this area and curbing is only present on one side for the majority of this section. There are no sidewalks.

Image 53



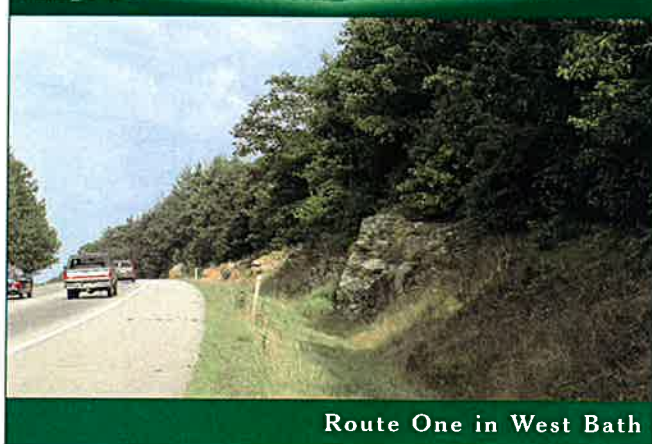
Congress Avenue near Athletic Fields

After the access drive to the Middle School Playing fields, Congress Avenue becomes approximately 24 feet in width from edge of pavement to edge of pavement. Gravel shoulders of 8 to 14 feet are on either

side of the roadway except in guardrail areas where the pavement is about 4 feet wider. No curbing or sidewalks are present.

On each side of a variable-width, vegetated median, this portion of Route One was constructed as a divided freeway, with two 12-foot lanes, a 4' inside shoulder next to the median and a 10-foot outside shoulder. Route One is limited access, and the posted speed is 55 MPH. Within the project area other features along Route One include two rest areas, the Route One bridge over the railroad tracks, the New Meadows Interchange, the Route One bridge over the New Meadows River, and the Old Bath Road bridge passing over Route One. In the vicinity of the Route One Bridge over the New Meadows River, there is a causeway of approximately 900 feet in length. There is also a significant amount of ledge, and some guardrail areas with steep sideslopes.

Image 54



Route One in West Bath

3) Bath Road Corridor

Besides these two corridors, there is one additional corridor that was not included in this feasibility study. The Bath Road corridor extends from Cooks Corner over Witch Spring Hill to Bath along the southerly side of Route One. This corridor was not included in the study since it would not provide nearly as many residential connections as the other alternatives, and would require a much longer bridge crossing the New Meadows River. Bath Road is characterized by many commercial drives, high turning movements, and high traffic volumes/speeds. There is development on both sides of Bath Road, so there is not as much room beside the road to provide a separated path such as

Image 55



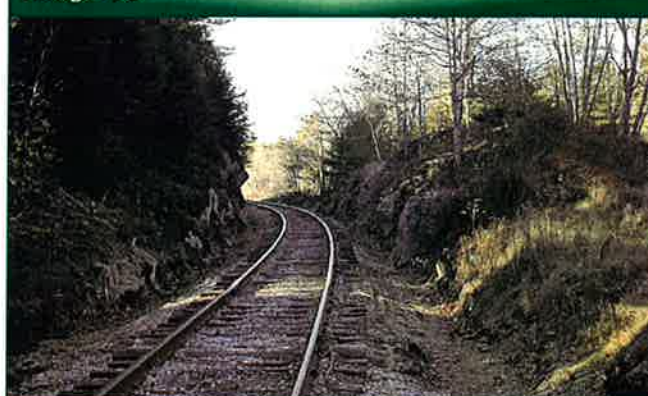
Existing Development on Bath Road in West Bath

the one suggested for Route One. Therefore, the path would have to be very near the roadway, similar to the options studied for Old Brunswick/Old Bath Road. However, compared to Old Brunswick/Old Bath Road the speeds, turning movements and traffic volumes are much higher, which would result in a path with less safety for path users.

In addition, the land between Old Brunswick/Old Bath Road and Route One was also reviewed for potential path alignments. Areas that could potentially be used as part of the trail system that were reviewed include the following:

- The Wing Farm property, an industrial park north of Route One and west of Congress Avenue. This industrial park still has open land and the access road intersects with Congress Avenue across from Centre Street. The access road is relatively narrow and quite steep.
- New Meadows Road, which connects the New

Image 56



Rail Line

Meadows interchange on Route One to Old Brunswick Road in Bath. The roadway runs in a north-south direction, has pavement in fair condition, and is generally residential.

- The rail lines extend from a point on Route One just east of the New Meadows interchange to a point on Old Bath Road where a trestle crosses over the roadway. This rail line has recently been rehabilitated and is therefore not available as a "rails-to-trails" option. The existing Right-of-Way is approximately 66 feet, although it varies in many areas.
- Peterson Road, a dead-end, rural roadway constructed of gravel. This roadway is in fairly good condition with a width of approximately 22 feet (which varies in many areas) and some relatively steep grades in certain locations.

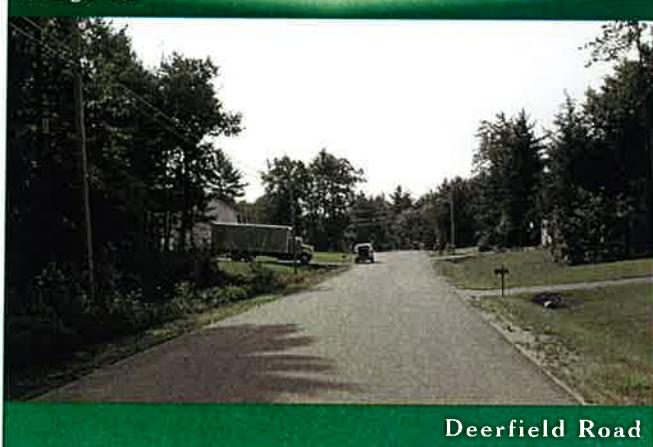
Image 57



Peterson Road

- Deerfield Road, a dead-end, residential street

Image 58



Deerfield Road

with a 24-foot wide, paved roadway. The pavement condition is very good since the roadway was recently constructed.

D. EVALUATION OF ALTERNATIVES

This study reviewed several alternative routes that evolved from the requirements of the initial "Request for Proposals", further discussions with the Feasibility Study Advisory Committee, field review, and input from the community.

1) Alternatives Studied

Within the general corridors previously discussed, a number of different alignments were reviewed (Refer to *Figure 4* in the main report):

- (a) Along one side of Old Brunswick/Old Bath Road from Five Corners in Bath to Grover Lane in Brunswick.
- (b) Along one side of Old Brunswick/Old Bath Road from Five Corners in Bath to Grover Lane in Brunswick, with the exception of the vicinity of the railway trestle. We reviewed a couple of alternatives to avoid passing under the narrow trestle.
- (c) Along the north side of Route One from Congress Avenue to the existing Androscoggin River Bike Path. This would include a path along one or both sides of Congress Avenue from Five Corners to Route.
- (d) Along the north side and median of Route One from Congress Street to the existing Androscoggin River Bike Path. The median areas were considered where there were reasonable locations to cross over or under the southbound lanes of Route One, and where there is sufficient room within the median for a trail and appropriate buffers.
- (e) In Bath as an alternative to using Congress Avenue from Centre Street to Route One, we reviewed an option connecting Congress Avenue at the Centre Street intersection to the Route One Southbound Rest Area using a path through the Industrial Park.
- (f) In Bath from the Sagadahoc Bridge to Five

Corners, a number of different combinations of existing streets were reviewed. The majority of this study focussed on the Commercial Street/Front Street/ North Street linkages. Portions of other streets such as Centre, Lincoln, High, Oak, Winter and Washington streets were examined at various times during the study.

- (g) Options were studied that would replace or parallel the existing railroad line from the Sagadahoc Bridge to the trestle on Old Brunswick Road instead of using local streets. Also studied was the possibility of continuing on the rail line from Old Brunswick Road to the Route One alignment at a point east of the New Meadows Interchange.
- (h) Peterson and Deerfield Roads were reviewed as either side connections to the main trail or as portions of the main trail itself. These could be either on-road facilities or could be separated paths running parallel to the existing roadways.

Many of these options had a variety of sub-routes that were also evaluated.

2) Old Brunswick/Old Bath Road

For the routes following along one side of Old Brunswick/Old Bath Road, we reviewed both sides of the road for the entire length of the roadway. We evaluated options using one side or the other for the entire length of the roadway, as well as some alternatives where the path shifts sides at certain points along the trail to minimize property impacts, minimize environmental impacts or maximize the connections to residential areas. Options using bikelanes instead of a separated path were also discussed.

This route was initially chosen due to its rural, residential nature, which would be more aesthetically pleasing and quieter than Route One. It would also connect more directly with a larger number of residents in Bath and Brunswick.

Difficulties included mitigating the necessary impacts on front yards, finding room within the right-of-way to place the path with appropriate offsets from the roadway, finding space to replace drainage ditches that would be displaced by the path with either new ditch-

es or underground pipes, and ensuring safety at the significant number of drive crossings. Other issues were being able to provide safe crossings of the roadway and being able to avoid unacceptable environmental and cost impacts at the Whiskeag Creek crossing, the New Meadows Road causeway and the railway trestle.

Image 59



Old Bath Road Ditches/Driveways

At the first public meeting it was evident that the members of the community were not comfortable with the level of safety and necessary impacts caused by this alignment. Due to public opinion and the fact that the Route One option accomplished the project objectives with fewer conflicts, it was decided that this alternative would not be part of the final recommendations.

Image 60



First Public Meeting

3) Old Brunswick/Old Bath Road with Alternatives near Rail Trestle

This alignment is essentially identical to the previous alternative, with the addition of alternative alignments that avoid passing under the narrow railway trestle crossing on Old Brunswick Road. One alternative studied would leave the roadway approximately 1500 feet east of the trestle, extend northerly crossing the tracks at-grade, follow the north side of the rail line to a point just north of the trestle at its intersection with Old Brunswick Road, and then along the northerly side of Old Brunswick Road. Issues with this option include costly ledge removal and a significant amount of fill in one ravine area. Costly retaining walls would be required to fit the path into the existing contours. There were also steep grades extending from the track elevation down to the roadway elevation when connecting back to Old Brunswick Road at the westerly end of this alternative. Lastly, there was a stream crossing that would have to be

addressed.

Another option would be to start on the southerly side of Old Brunswick Road southeasterly of the trestle, then follow an existing causeway crossing the tracks at-grade west of the trestle, and then connect back with Old Brunswick Road. This option had difficulties as well since the south side of Old Brunswick Road east of the trestle has limited room for a pathway due to steep sideslopes, ledge and one home very near the roadway. There are also no appropriate locations for a roadway crossing due to insufficient sight distance.

Finally, we reviewed the feasibility of jacking a large-diameter culvert under the rail embankment behind the trestle abutment to serve as a tunnel for the path. This would be a costly option and the approaches are still difficult. As noted previously, there are problems with both sides of Old Bath Road to the east of the trestle and sight distance is poor for any road crossings on either side of the trestle. The railway trestle itself is currently not planned for replacement and the construction of an entirely new trestle at this location that would allow a wider roadway beneath would not be cost effective.

Due to these reasons, and the fact that the remainder of the corridor is identical to the alternative outlined above, this alternative was not selected for inclusion in the final recommendations.

4) North Side of Route One

After the first Public Meeting, the analysis of the Route One corridor was added to the study. This alignment would provide a more direct connection between Bath and Brunswick and would have far less property impacts. In addition, there would be few driveway conflicts, which was perceived as being much safer for the path users. In addition, with a significant amount of the trail visible from Route One, the users would have a sense of security when using the path. The path would still directly connect to some of the larger residential developments in the area, but would miss the connection with Bay Bridge Estates which was available with the Old Brunswick/Old Bath Road corridor.

For the routes following Route One, many options were studied to and to provide a safe crossing at the

Image 61

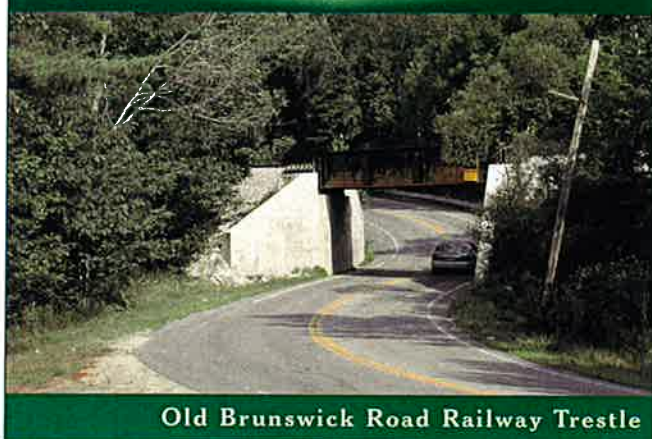
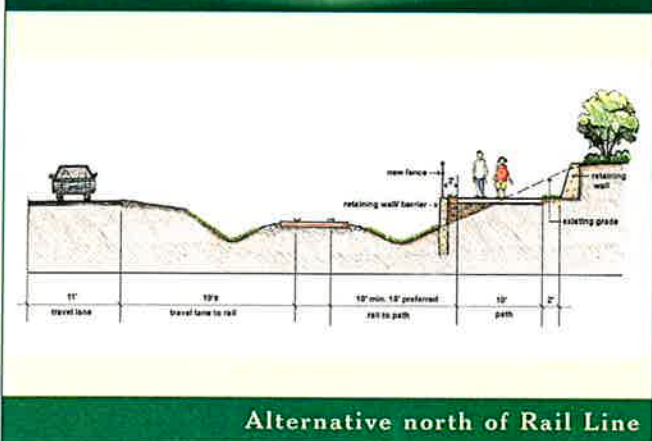


Image 62



New Meadows interchange and the railroad, to minimize environmental impacts at the New Meadows River, to minimize property impacts near the Maplewood development, and to provide a safe crossing at the Old Bath Road overpass. In addition, the entire length of Route One required many sub-route alternatives to be studied to determine the best location for the path between the edge of Route One and the right-of-way line. The routes attempted to minimize ledge removal costs, minimize property impacts to abutters, minimize environmental impacts at wetlands or streams, avoid steep grades, take advantage of scenic vistas and provide the most buffer available

Image 63



Route One in West Bath

from the Route One traffic to provide the user with a pleasant experience and minimize noise impacts for the user.

Difficulties with this alignment focussed on being able to keep the path a safe distance from the Route One

Image 64



Route One near New Meadows River

traffic, being able to safely and cost effectively get under the existing Route One bridge and around the existing New Meadows Road interchange, and to find a safe way to connect the easterly end of the Route One alignment with the Sagadahoc Bridge.

5) North Side and Median of Route One

In addition to studying a trail using the north side of Route One, we also reviewed the potential to use portions of the Route One median for the trail.

Advantages to using the median would be that it would be entirely on public land, that there would be no driveway crossings, and that it would be a direct route from Bath to Brunswick. The path would also be visible to passing motorists giving users a sense of security. However, there were a number of disadvantages with this option as well. Using the median of Route One would be very noisy and not very aesthetically pleasing. There would also be conflicts when crossing the authorized vehicle U-turn roadways and there are some areas with a significant amount of ledge present. Depending on which portion of the trail used the median, connections with abutting residential areas such as New Meadows Road, Peterson Road, Deerfield Road, and Maplewood would be missed. Lastly, there are access issues since the path would have to go over or under the southbound Route One lanes to reach the median. Paths using tunnels under roadways are generally perceived to be potential security and vandalism issues since they are not visible to the passing motorists. Either a tunnel or a bridge option would also be expensive. Due to these potential problems, and the fact that the option along

Image 65



Route One Median at New Meadows River

the northerly side of Route One would work as well with fewer obstacles to overcome, it was decided that this option would not be included in the final recommendations.

6) Route One Alignment with the Wing Farm Option

Due to the limited space and relatively high traffic volumes/speeds on Congress Avenue, we reviewed an option that would use the Wing Farm site to bypass this portion of Congress Avenue. This option would follow the Wing Farm access road from the Centre Street/Congress Avenue intersection into the Wing Farm Industrial Park, and then connect the industrial park to the Route One alignment near the rest area by constructing a path through the wooded area. This option did have some steep grades and environmental impacts to contend with. The existing access road is also very steep, narrow and site distance is limited. Through discussions with representatives from the industrial park it was determined that two of the current tenants are planning on expanding. In addition to this leaving less space to construct the path, they would not be supportive of a path in this type of environment and would not want to have the path share the access road. As an alternative, the City of Bath also spoke with the abutting landowner to the north of the industrial park to determine if the path could be shifted to that location. However, that parcel of land also has plans for development that would not be compatible with the path. Use of this property to the north would also be difficult due to steep grades, narrow roadways and narrow bridges between it and Congress Avenue. Due to these issues it was decided

that this option would not be included as a recommended alternative at this time. However, when it is time to design this portion of the path this option should be reviewed one last time to verify that the development, ownership and land use at that time is not more compatible with construction of a path.

7) On-street alignments in Bath

Connecting the Sagadahoc Bridge to either the Old Brunswick/Old Bath Road or Route One alignment required a significant amount of research regarding the existing conditions along many of the city streets. Existing conditions such as posted speeds, traffic volumes, width, parking, sidewalks, right-of-way, intersection configuration and connectivity to other streets with potential for safe bicycle and pedestrian access were all studied both in the field and on existing mapping obtained from the City of Bath. In addition, discussions with the Feasibility Study Advisory Committee and comments from the public also shaped our decision making process.

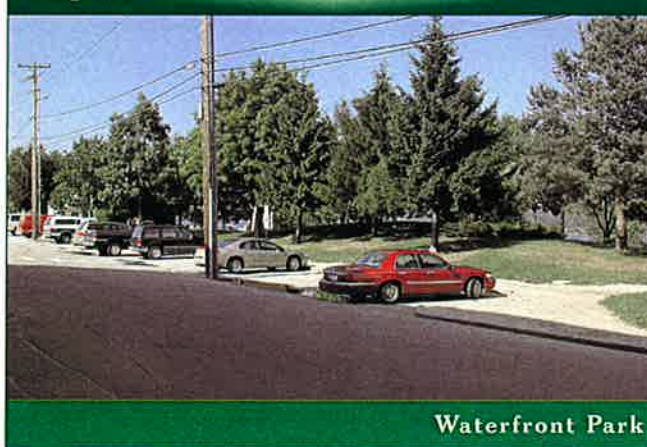
In addition to the recommended Commercial Street/Front Street/ North Street/Congress Street alignment, portions of other City streets such as Centre, Lincoln, High, Oak, Winter and Washington were studied. Commercial and North Streets were wider, less heavily traveled and less commercial than some of the other streets studied. It was determined that the bikelanes and any necessary sidewalk construction or reconstruction could be accommodated on these streets with the least amount of impact to on-street parking, abutting property owners and intersection configurations. This alignment is not the most

Image 66



Wing Farm in Bath

Image 67



Waterfront Park

direct, but does circumvent the busiest streets and intersections in Bath including the downtown business district along Front, Centre and Water Streets, the congested street system near the courthouse (Center and High Streets) and the shopping center area. Yet the path will still abut the downtown shopping district which is already well-connected with sidewalks and crosswalks. If bike racks are placed strategically along the Commercial Street portion of the path or at the Waterfront Park, cyclists could leave their bikes and still access the downtown area on foot.

8) Railroad Alignment

The existing railroad alignment could potentially be used to construct a path parallel to the active rail lines. The portion of the rail line between Route One and Old Brunswick Road has a right-of-way of approximately 66 feet (although it varies in some areas). This could possibly be wide enough for the active rail line and the pathway, but there are also many steep sideslopes on this portion of the rail line that would make construction difficult and would require construction easements from abutters. It also appears that there could be a significant amount of environmental impact from construction along this alignment. From the Sagadahoc Bridge to Old Brunswick Road at the railway trestle the right-of-way varies considerably and is too narrow in many locations to support both the active rail line and the path. There would also be significant impacts to many abutting properties in this vicinity.

It was determined that this study would not spend a great deal of time reviewing this alternative since it did not appear to provide a benefit over other options already studied, would be at least as costly as the other alternatives and would most likely require more environmental impacts.

9) Peterson/Deerfield

Other connections between Old Brunswick/Old Bath Road and Route One were reviewed. It was determined that using a portion of one of the two primary corridors, then using one of these two local roads to connect to the other primary corridor to continue the path did not provide any benefit to the overall path system. It could provide direct access to more users,

but would have to use portions of Old Brunswick/Old Bath Road, which have already been dropped from consideration as part of the recommended alternative.

However, these two local streets could be an important part of the trail system by providing additional access points to the Route One path. Deerfield Road could be used "as is" as a shared roadway due to its residential nature, low traffic volumes and low speed limit. With additional signing and a short 200 foot

Image 68



Potential Deerfield Road Connector

connection from the southerly end of Deerfield Road to the path along the northerly side of Route One it could provide access to the Route One path from residents on Deerfield Road and those living on the portion of Old Bath Road near the Deerfield intersection. An easement would be required from one of the lots in the subdivision for the connector path.

Similarly, Peterson Road could be used as a link from

Image 69



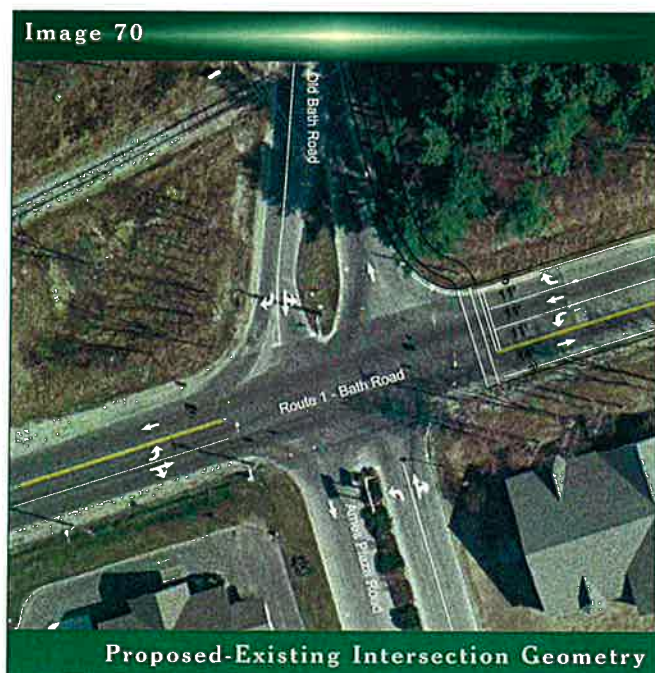
Potential Peterson Road Connector

Old Bath Road to the Route One path. However, Peterson Road is currently gravel and has some steep grades in certain locations. A number of options could be available for the upgrade of this connection. All of these options would require a new connection of approximately 500 feet from the southerly end of Peterson Road to the Route One path. These range from simply adding signing and using the facility as a shared roadway, to paving the roadway with or without bikelanes, to constructing a separated paved path parallel to Peterson Road within the existing right-of-way.

E. INTERSECTION ANALYSIS

The recommended alignment includes a connection over Route One parallel to the Old Bath Road. This link would cross Bath Road at the Bath Road/Old Bath Road/Ames Plaza intersection to provide access to the Cook's Corner shopping area. Future projects recommended in the Cook's Corner Master Plan Study will connect from this intersection through the Ames Plaza and Wal-Mart developments and eventually to the Cook's Corner Shopping Center. The Bath Road/Old Bath Road/Ames Plaza intersection is currently oriented completely toward vehicles with no provisions for pedestrians or cyclists.

An analysis was performed to determine if a crosswalk could safely be constructed at this intersection. In addition, a review of both the west and east sides of the intersection were studied to determine which side would provide the safest crossing. Other revisions to the intersection were also suggested to have the resulting crosswalk be as safe as possible for the users while providing a minimal impact on the vehicular traffic.



The intersection was analyzed using the projected PM peak hour traffic volumes from the Mid Coast Hospital Final Plan Application (March 1999) and Syncro 5.0 software. It was determined that, due to lower turning movement volumes, a crossing on the

east side of the intersection would be safer than one on the west side. Using a 27-second actuated combined Walk/Flashing Don't Walk phase, the analysis showed that the intersection would still operate at an overall Level of Service (LOS) B during the PM peak hour. The analyses also determined that the intersection could accommodate a 40% increase in traffic volumes before the operations would become unacceptable. With the 40% increase in traffic, the overall intersection would operate at a LOS D with some individual turning movements reduced to LOS E.

The following intersection revisions are suggested at this location to ensure a safe roadway crossing:

- Install a crosswalk on the east side of the intersection. Re-stripe the Bath Road stop bars on this approach.
- Adjust the signal to provide for pedestrian phases and install pedestrian signal heads.
- Install No Turn on Red signs for the westbound right turn lane. This will avoid the possibility of right turners who are looking to their left not seeing pedestrians or bicyclists coming from their right.
- A northbound No Turn on Red sign for the right turn lane should also be considered.



An additional crosswalk will be required across the Ames Plaza leg of the intersection, or a path needs to be constructed on the east side of the Ames Plaza access road with a crosswalk at another location within the development.

At this time, the Town Planning Board has approved a new development at this location which could generate more traffic than previously anticipated. The Bath Road and driveway crosswalks should be taken into account during the developer's analysis of this intersection and re-design of the access road. Preliminary discussions with the Traffic Engineer for the developer indicate that these crosswalks will be taken into account during the final traffic study.

F. ENVIRONMENTAL REGULATORY ASSESSMENT

The following information is provided as an overview of local, state and federal permitting requirements for the pathway project. This information is based on the preliminary evaluation of mapping, aerial photography, agency contacts, and field review for the wetland areas or sensitive areas that might be impacted by the proposed pathway. See the Androscoggin-to-the-Kennebec Multi-Use Path Extension; Brunswick and Bath, Maine; Environmental Assessment Summary by Woodlot Alternatives, Inc. for a detailed description of permitting (included in the Appendix).

1) State and Federal Regulations

Once the final location and design of the pathway extension is determined, a wetland delineation should be performed at all wetland, stream and river crossings. The need for environmental permitting can only be determined after the wetland delineation has been completed. The Maine Department of Environmental Protection (MDEP) and the U.S. Army Corps of Engineers (Corps) regulate all wetlands identified in the study area. This project will likely require a National Resources Protection Act (NRPA) Tier 3 permit application that is reviewed by both of these agencies. In addition, the Corps will also likely require additional permits under Section 10 of the River and Harbors Act of 1899. Due to potential impact to wetlands that are considered "Wetlands of Special Significance" a wetland function and value assessment, along with compensation and long-term monitoring, could be required.

For the New Meadows Road bridge, a Section 10 permit may be required from the U.S. Coast Guard. Work within the New Meadows River could also require an Essential Fish Habitat review and a request for Approval of Timing of Activity from the Maine Department of Marine Resources (MDMR). The National Marine Fisheries Service (NMFS) will review any permit application submitted to the Corps and will also require mitigation for any impacts to the salt marsh.

Further study of the forested wetlands along the Route One corridor may be required during final

design if impact cannot be avoided. The wetlands in this area may contain vernal pool habitat and it would be necessary to determine if amphibians and invertebrates breed within these basins. Elevated boardwalks could be required if it is determined that this is a breeding area and if avoidance is not possible.

Image 72



Forested Wetland

2) Local Regulations

The Town of Brunswick will require a Flood Hazard Permit since construction will occur within a 100-year floodplain (as mapped by FEMA). They will also require all the necessary state and federal permits for work in wetlands. Since the project will impact streams and rivers within the Town's Natural Resources Protection Zone, a Major Development Review will be required by the Planning Board.

The City of Bath will require a Flood Hazard Permit since the project will fall in the 100-year floodplain as mapped by FEMA. It is possible that the Town of West Bath may require this permit as well. West Bath and Bath will also require the project to meet the land use guidelines outlined in their Shoreland Protection Zone/District.

The final design of the project should also address the Deer Wintering Area near the southern end of Peterson Lane. There do not appear to be any federally-listed species within the project area under the jurisdiction of the U.S. Fish and Wildlife Service. There are no known areas along Route One that would be sensitive as prehistoric archaeological sites, except for the river area. Documentary research will be required and at least some archaeological testing

may be required. There are currently no properties listed on the National Register of Historic Places within the study area. However, this area has not been comprehensively surveyed and an architectural survey of the corridor will be needed.

During the Final Design phase for each phase of the path additional field based surveys and environmental analyses should be conducted to confirm these conclusions and to generate the additional, detailed information required by the regulatory agencies. In addition, the design phase should include provisions for all necessary permitting activities and for the coordination with the reviewing agencies. In general, the permitting and wetland compensation process can be time-consuming and costly. Therefore, the final design of each Phase of the project should be designed to avoid and minimize wetland and stream impacts. In addition, the proposed trail system will be constructed in phases depending on project funding. A pre-application meeting with the agencies early in the final design process is encouraged to determine how the agencies will view the project. It is possible that they will consider the path phases separately, but may consider the entire system as one project. An early decision on the way the agencies will view the project will help plan future project activities most efficiently.

G. TRAILSIDE AMENITIES:

Pedestrian and bicycle amenities along the Androscoggin to the Kennebec Pathway are designed to optimize and promote more intensive use of the current bike path, provide for a safer pathway, and provide for emergency situations. Because of the pathway location, along a heavily traveled highway, aesthetics along the path should be regarded as a high priority. To increase the user experience a variety in amenities such as, furnishings, public art, and generous plantings are recommended.

Trailhead Parking

Trailhead parking provides points of access for all trail users that do not have a direct connection to the trail. It is anticipated that many trail users will wish to drive to the trail to walk or bike. It is also desirable that there be a number of different parking areas so that users can utilize only a portion of the trail system,

rather than have to start at one end or the other. In an effort to meet these needs, a number of trailhead parking opportunities have been identified as part of this study. Many of these locations are existing, public parking areas that can be used for access to the path system. Final location and design of these parking areas should be coordinated closely with the local municipalities, abutting property owners and the expectations of the trail users.

Construction of any new parking areas, and upgrade of any existing parking areas, should be coordinated with the construction of the various trail segments so that the parking facilities are available when the paths are open. Improvements to existing or proposed parking areas were not included in the final cost estimates for each segment. If the Municipality desires to upgrade or build these parking areas during the Final Design stage, additional federal, state, and municipal monies should be sought.

Figure 6

Potential Trailhead Parking Locations	
Location	Potential Improvements
Waterfront Park, Bath	Signing
Municipal Parking (Between Front and Commercial Street), Bath	Signing
Legion Field, Kelley Field, McMan Field and Tainter Field Parking Areas, Congress Avenue, Bath	Signing
MDOT Rest Area, Route One, West Bath	Signing
District Court Parking Area, New Meadows Road, West Bath	Signing
Peterson Road, Brunswick	Clearing, grading, gravel (possibly pavement and striping), signing
Existing Androscoggin River Bike Path parking area, Grover Avenue, Brunswick	None Required
Existing Androscoggin River Bike Path parking area, Water Street, Brunswick	None Required

Recommended Path Phasing

Crosswalks and Intersections

The following guidelines should apply to all places where the pathway crosses a road or major commercial driveway.

- Crosswalks should be marked with permanent reflective pavement paint.

- Crosswalks should be a minimum of ten feet in width. Painted bars should be two feet in width, spaced one foot apart.
- Adequate sight distance must be provided at all crossings.
- Crossings should be as close to 90 degrees as possible.
- The pathway alignment should force cyclists to slow down as they approach the roadway.
- Vegetation should be managed to maintain clear safe sight distance at all crossings.

Landscaping

The design of the pathway should include several types of landscape treatments:

- Screening in certain locations to provide a sense of safety and preserve residential privacy without interfering with visibility.
- Pruning of existing trees to provide a 10' overhead clear zone along the pathway.
- In strategically located places, e.g., in-town areas, around roadway intersections, planting should include flowering shrubs, ornamental grasses, and perennials to add color and visual interest to the pathway.
- Adding large masses of native trees and shrubs to help minimize the noise and visible activity along Route One, where feasible.
- Around proposed interpretive signage areas, and rest stops to provide interest and identity.

Rest Areas

The pathway should provide resting areas in the form of benches, flat slabs of elevated granite, seating walls, etc. every 500 to 1000 feet in shady locations. Due to the extensive length of the pathway, restrooms should be considered: one per segment of 2-5 miles, if possible. Cost estimates for restrooms have not been included in this report.

H. SCENIC VISTA ASSESSMENT

The Androscoggin to the Kennebec River pathway's scenic resources can be described in terms of its physi-

cal and cultural characteristics. Physical character considers landform, vegetation, shoreline configuration, water features and the land use pattern. The cultural character includes the cultural and historical elements of landscape, the design of structures and landscapes, the state of upkeep, and the symbolic value and meaning of the landscape. The following areas were identified as having scenic, historic, natural or cultural qualities:

Kennebec River - Bath Waterfront

The physical character of the Bath waterfront consists of an urban downtown street grid with older historic structures that are integral to the character of the City. The river's edge near the pathway is comprised of warehouse type structures, docks, and the open space of the Bath Waterfront Park. A portion of the pathway is directly adjacent to the Waterfront Park and shares in river views and vistas. The park and the Bath waterfront in general are considered a key interpretive area for the pathway, due to its cultural and historic features.

Woodland areas between Congress Avenue and the New Meadows River

The physical character of this segment along the pathway consists of a rolling upland terrain, ledge outcrops, wetlands, and streams. Most of the vegetation consists of undeveloped pine and oak woodlands. The abutting land uses are primarily residential but there are no significant views of homes or yards. The significant scenic and natural qualities of this segment are primarily the undeveloped woodlands and large trees.

New Meadows River

The physical character of the New Meadow River near the pathway consists of a tidal river edge with a variety of vegetation ranging from forest to wetlands and grassy marsh. The topography along the banks of the river is relatively steep. The topography and the large extent of natural vegetation help to obscure residential development that is in contrast with the natural landscape. A small peninsula on the west side of the river channel where the pathway crosses the river could serve as an ideal scenic overlook with a western orientation. Interpretive signage depicting the mar-

itime and fishing aspects of the New Meadows River would be appropriate in this location.

Woodland areas between the New Meadows River and Deerfield Road

The physical character of this segment along the pathway consists of rolling upland terrain, ledge outcrops, wetlands, and streams. Most of the vegetation consists of undeveloped pine and oak woodlands. The abutting land uses are primarily residential with a large sand and gravel operation not far from the proposed pathway alignment. There are no significant views of these uses. The significant scenic and natural qualities of this segment are primarily the undeveloped woodlands, large trees, rock outcrops and rock deposits, and an occasional historic stone wall. This segment contains portions of the historic Kings Highway, which would warrant an interpretive sign location.

I. TRAIL LIGHTING ASSESSMENT

Continuous lighting along the entire shared-use pathway is not proposed at this time. During final pathway design, the consultants should evaluate the need and desirability of lighting the entire extension at regular intervals. At a minimum, the final design of the Androscoggin to the Kennebec Pathway should provide lighting along sidewalks, at crosswalks, underpasses, on bridges, parking areas/trailheads, and other areas of higher risk. Cost estimates for continuous pathway lighting have not been included in this report. Lighting for parking areas and crosswalks is included as part of the 10% of construction costs as shown in the final cost estimates.

J. TRAIL SIGNAGE PROGRAM

The signage should be designed for compatibility with the Brunswick's Androscoggin River Bicycle Path existing sign graphics in mind. A signage system consisting of the following should be built, maintained and extended to promote the safe use of the pathway network:

- Signage for safety, distances and direction.
- Regulatory signs (such as Shared Pathway, and End Shared Pathway) for shared pathway designations. These should alleviate conflict

between motorists and cyclists, and pedestrians and cyclists;

- Warning signs, used where a hazard is not obvious to approaching cyclists or pedestrians. e.g., stop signs on the pathway to stop users at all driveway, side road, and street crossings, and/or to alert motorists to pedestrians crossing the roadway; These should also include signage to show attention to steep slopes to warn those in wheelchairs;
- Guide signs, which specify the directional and distance to key destinations - next rest stop, interpretive areas, shopping district, recreational facilities;
- Orientation signs such as maps. These may be located at trailhead parking areas to indicate the extent of the pathway and connections to attractors such as the Cooks Corner, Downtown Bath, Bath waterfront, and the existing Androscoggin River Bike path.
- Interpretive signs to introduce the natural, cultural, and historic resources along the trail. Refer to the appendix for additional detailed information on Interpretive and Informational Signage.
- East Coast Greenway markers, if the extension is accepted as a link.

Note: The first four bulleted items above have been included in the cost estimates but other signage i.e., interpretive and informational signage have not been estimated. Refer to the appendix for additional detailed information on Interpretive and Informational Signage. AASHTO's Guide for the Development of Bicycle Facilities, latest edition, should be used as the basis for regulatory signage, and for roadway signage associated with trail intersections.

Detailed Information For Interpretive And Informational Signage

Siting the Signs

It will be important in all situations to develop a design context for the signs so they do not appear to float in the landscape. A semicircular space - defined by a stone wall, row of boulders, shrub hedge, wood-

en bollards, seating, etc. - is recommended as a design motif that can be adapted to most wayside stops along the pathway. Signs should be orientated away from the direct sun exposure if possible.

Signage Kiosk

A kiosk can be used to house orientation signs, interpretive signs, as well as all extraneous informational signs under one roof. These might include distance information, scenic view-points information, warnings about Lyme disease, safety information, and rules for use of the pathway.

Materials used in the kiosk should be consistent throughout the pathway. Timber framed structures are recommended for their ability to relate to indigenous architectural forms commonly seen in barns and outbuildings.

- **Pathway Map.** An overall map of the pathway that shows major points of interest, towns and villages, and the location of other interpretive and scenic areas. Mileage between stops should be incorporated into the sign, using both standard and metric distances. Universal symbols for restrooms, side trails, and other services should be shown. The specific location should be highlighted ('you are here').
- **Regional Map.** A small map of the East Coast Greenway should be provided to show how the pathway fits into the larger vision and encourage additional support for the pathway.
- **Additional Logos.** A band at the base of the panel could be designed to display other agencies and organizations that have been involved in the pathway planning and construction. This could include the Maine Department of Transportation, East Coast Greenway Alliance, etc.

Sign Layout, Dimensions And Color

Because signage is such an important element in the use and experience of the pathway, it is recommended that a graphic artist be employed for the final sign design. The Final design should consider such things as:

Template

The template gives the framework for the width for columns of type, borders, position of headlines, locations of credit, etc. (See the graphic layout template at the end of this report.)

Flexibility and Creativity

Each sign should be thought of as an individual, stand-alone interpretive graphic, designed for the specific site and message. The designer is urged to use a variety of graphic devices to add interest and maintain a fresh quality.

Horizontal Layouts

Most of the interpretive signs should be laid out in a horizontal (landscape) format, to make it easier for the user to look over the sign and into the landscape, where appropriate. This is also the more natural way that most people read (i.e., left to right).

Vertical Layouts

There may be some situations where vertical signs might be appropriate. For example, where a majestic pine grove creates strong vertical lines that are a prominent part of the landscape. A vertical sign at this location may be appropriate to emphasize the unusual nature of the resource. However, it may demand an equally unique mounting system designed for the particular site.

Dimensions

The standard height of interpretive panels should be 24". The only exception would be for the occasional vertical sign. In this case, the width would be 24". Using the graphic template will result in signage that typically will be 24" x 36" or 24" x 48".

Color

One way to reinforce continuity with multiple signs from site to site would be to use the background colors as topic cues. For example, green could be used behind or with graphics relating to natural or ecological topics; blue for cultural topics and maroon for historical topics. Creativity in design must ensure a balance of colors used so no one panel or groups of pan-

els would be overwhelmed with a singular color.

Text

Length

As a general rule, the signs should have approximately 75-100 words of text for the main interpretive message for a standard (24" x 36" panel). Additional information can be provided in captions or callout boxes. As a basic rule of thumb, approximately 1/3 of the panel should consist of text and the remainder made up of graphics and blank space.

Message Triad

People will generally look at signs and decide to spend either three seconds (reading just the headlines and looking at the illustrations), 30 seconds (reading the headlines, captions and the introductory text), or a full three minutes (reading the entire panel). The sign should be leave a message with a visitor no matter how long they choose to spend in front of it.

Engage the readers

Direct them to touch, look, explore, listen, and participate in the site. Ask questions. Minimize the use of flowery adjectives. Use comparisons and common metaphors to explain complex ideas. Use humor appropriately (and sparingly). Use catchy phrasing, but avoid sounding dated. Answer commonly asked questions and clear up misinformation.

Organize the information

Organize the information in a clear, logical manner: chronological, problems/solutions, cause/effect, etc. Above all... tell an interesting story, leave people with several ideas to take away with them.

Writing style

Text for the interpretive signs should be aimed at an audience with average reading abilities, i.e., 7-8th grade level. Sentences should be relatively short. Passive sentences should be avoided.

Type

Fonts

- As a general rule, there should be no more than two font families used on any one sign.
- Vary the emphasis and add visual interest by using italics, bold, and roman attributes.
- Use upper and lower case throughout for maximum legibility.
- Do not indent paragraphs.
- Use upper and lower case.
- Avoid hyphenation.

Signage Artwork

All artwork, illustrations, and other scanned images should be cropped, enlarged/reduced, adjusted for contrast, etc. in the program in which they were created, and not the page layout program.

It will be important to coordinate all aspects of the sign layout and design with the selected sign manufacturer to avoid problems in production. Most manufacturers have websites that provide specifications to assist the designer.

Each panel may have one photograph or illustration that sets the theme. All other elements should help to reinforce the theme.

All illustrations selected for the panels should help interpret the theme, the place, and the overall story line. Graphics should be high contrast, easily legible, without excessive detailing.

Original illustrations should be considered to help explain historic events, progressive site development, hidden natural phenomenon, or other elements of the area that are not apparent to the casual visitor. While this type of illustration may add to the cost of the sign, creative graphics can add immeasurably to the visitor's understanding of the place.

The use of historic photographs is strongly encouraged to help provide a sense of authenticity and continuity to the interpretive effort. Where possible, the selected photographs should include people to help animate the panel.

Most of the historic photographs will be black and white images (and gray), which could produce a rather drab, monochromatic effect, if used exclusively. It may be effective in many cases to digitally convert these photographs to sepia tone images to convey a

greater sense of history and provide richness to the panel. Background colors should then be selected to complement the photographs.

Photographs or illustrations of artifacts can add another dimension to the panels by focusing on the intimate level of the story. Panels should generally include at least one object where the attention is drawn to the detail level. These can include letters from historic figures, postcards from a historic era, tools used in woodworking or lumbering operations, animal tracks, bird eggs, etc.

Credits to all illustrations and photographs should be verified.

Illustrations and photography should be selected for their dynamic quality. They should animate the sign and provide freshness and movement, with out appearing overly busy.

Avoid

- Illustrations that are only used to fill space or to decorate the panel.
- Photographs that are out of focus, illegible, or poorly composed.
- Maps and other graphics with excessive amounts of information.
- Excessive mixing of photographs and illustrations on a single sign.

Signage Systems

There are many signage systems on the market which are currently used for interpretive signs. Signage for the pathway must be appropriate for a wide range of installations - from forestlands, city streets, and parks.

The signage system selected for the pathway must meet a set of rigorous criteria:

Graphics

- High quality resolution of graphic image
- Color reproduction
- Range of colors available
- Resistance to fading over time
- Environmental compatibility
- Surface attractiveness (tactile quality)

Durability

- Ten year life expectancy
- Resistance to warping, cracking, delamination
- Resistance to scratching, and cigarette burns
- Resistance to vandalism and abuse (rock throwing)
- Adaptability to various mounting systems
- Ease of replacement

Life Cycle

- Relatively low initial production cost (less than \$500 per sign)
- Ease of maintenance (graffiti removal)
- Minimal annual maintenance
- Good overall perceived value

While the ideal product has not yet been developed, there are several systems available which meet these criteria. These are presented in order of preference.

Digital High Pressure Phenolic Resin Laminates

This material was introduced into the marketplace in the mid 1990's and has proven to be a very cost effective, stable, attractive media for many types of outdoor signage. Signs look and feel similar to the countertop material commonly found in contemporary kitchens with non-glare, slightly textured, matte surface. Other finishes include a pebble surface and a smooth surface that is best for showing details.

Interpretive signs made of this material can be designed to fit into a standard frame or can be 1/2" to 1" thick, which is self supporting. Signs produced of this material are fire retardant, graffiti resistant (removable with solvents), unaffected by temperature extremes, and fade-resistant.

Images are printed directly from computer files, eliminating much of the printing process and results in considerable cost savings. Color rendition and detailing from color ink-jet printers is very good. The production costs for a 24" X 36" signs should be in the range of \$300 - 400. Additional colors do not add to the cost of the panel.

The self-supporting aspect of the system opens up many creative possibilities. Signs can be integrated into a variety of support structures, or attached to fences, walls, or buildings. The edges of the signs can be finished as square, rounded, cove, or 45° chamfer. Self supporting signs eliminate the need for aluminum framing systems, which will greatly decrease the overall cost of the signage program.

Companies that produce Digital Laminate Composites include:

- Folia Industries Inc.
5 York Street
Huntingdon, Quebec
www.folia.ca
- KVO Industries
4724 Prospect Avenue
Santa Rosa, CA 95409
www.kvoindustries.com
- Fossil Graphics Corporation
44 Jefryn Boulevard
Deer Park, NY 11729
www.fossilgraphics.com
- CellEx
Grand Visuals
7332 S. Alton Way
Building 13, Suite F
Englewood, CO 80112
www.grandvisuals.com

Digital Fiberglas Embedment

In this process, digital artwork is embedded in a 0.03" to 0.25" layer of Fiberglas, forming rigid, waterproof sign. This is the process that has been commonly used by the National Park Service over the past decade.

Fiberglas signs require a support and framing system due to their relative thinness. Life expectancy is generally up to ten years, but fading and yellowing may occur if the signs are mounted in sunlight. If this system is used, several copies of the artwork should be ordered at the time of the initial fabrication to facilitate replacement at a later date. A typical 24"X36" sign can cost \$450 - 750.

A recent improvement in this process is Zed, which uses a polyester print media embedded in an optically

clear polyester resin, resulting in a more stable product with better color reproduction.

Companies that produce Digital Fiberglas Embedded signs include:

- Pannier Graphics
345 Oak Road
Gibsonia, PA 15044-9805
www.pannier.com
- GS Images
355 South Potomac Street
PO Box 1288
Hagerstown, MD 21741-1288
www.gsimages.com
- KVO Industries
4724 Prospect Avenue
Santa Rosa, CA 95409
www.kvoindustries.com

Porcelain Enamel

Porcelain Enamel panels are made by fusing glass and pigments onto a steel sheet at extremely high temperatures, producing a very durable, permanent sign. This is among the most expensive of the signage systems, with typical 24"X36" panels costing upwards of \$3,000 when full-color photos are used.

Their advantage is their longevity and overall quality. However, as a ceramic material, they are susceptible to chipping and cracking if subjected to direct blows. This material is shown for comparative purposes, but its cost will most likely be prohibitive for the Pathway interpretive signage program.

Companies that produce Porcelain Enamel signs include:

- Winsor Graphics, LLC
312 Columbia Street Northwest
Olympia, WA 9501-1031
www.winsorgraphics.com
- Sea Reach Ltd.
Rode Lodge, OR 97372
- Interpretive Graphics
3590 Summerhill Drive
Salt Lake City, UT 84121
www.interpretivegraphics.com

- KVO Industries
4724 Prospect Avenue
Santa Rosa, CA 95409
www.kvoindustries.com

The KVO Industries website outlines the advantages and disadvantages of each of the above signage systems. KVO produces all three types of sign systems.

Frames

Unframed Panes

The first option is to use a signage system that does not require frames, such as the HP Laminate. As noted earlier, panels can be fabricated that are self-supporting, generally requiring a thickness of at least 1/2". Edges can be square, rounded, or supplied in a number of moulding styles.

There are a number of advantages to this approach:

- Greater flexibility in design.
- Some reduction in overall costs, although thicker panels will add somewhat to the initial panel cost.
- Ability to have a free-form edge treatment.
- Graphics can be taken to the edge of the panel.
- Panel can be inserted into wooden frames (see above).

There are disadvantage of this approach:

- Greater susceptibility to damage.
- Very contemporary look, which may seem somewhat out of place along the pathway.

Framing Systems

With some types of signage systems, the use of anodized aluminum frame, is highly recommended to protect the edge and provide a crisp way of creating a border. Frames can be provided by the sign manufacturer or custom-built by a reputable framemaker.

Wooden Frames

Anodized aluminum frames may seem somewhat out of character in many of the locations along pathway. Custom designed wooden frames should be considered as an attractive and cost-effective alternative for many, if not all locations.

Some of the advantages to wooden frame include:

- Visual compatibility with site detailing (fencing, railings, orientation kiosk, benches, etc.).
- Versatility and adaptability to a variety of situations.
- Relatively low cost.
- Ability to contract with local carpenters, utilizing Maine labor and products.

There are a number of disadvantages which should be considered:

- Higher maintenance costs.
- More easily damaged by scratching, carving, and vandalism.

Mounting

Mounting Height

The typical sign should be mounted at a 30° angle above the horizon, which is the accepted standard throughout the country for accessible signage. The lower edge of the sign should be 32" above the ground surface. For vertical mounting, the bottom of the sign should be 28" above the ground.

Mounting Systems

There are a number of standard and custom mounting systems that would be appropriate for the various situations on the pathway. The supports must be designed to be attractive, durable, and appropriate for the character of the site.

- Standard Frames. Many of the sign manufacturers offer extruded metal frames that can be adapted to a variety of situations. These can be specified with a powder coat finish, painted, or as self-oxidizing steel.
- Wooden Supports. These could consist of customized supports that feature mortise and tenon joinery. The tops of the posts could be finished off by a copper cap or carved by a local artisan. Heavy timbers (e.g. 8-10" square) should be used for the vertical members to achieve a sense of ruggedness.
- Fence mounts. Many of the standard mounting systems enable signs to be mounted on deck

railings or sturdy fences in a way that makes them more integral with the landscape detailing.

- **Stone Walls.** The use of granite blocks and stone walls is encouraged throughout the path-way as a way of celebrating the geologic her-itage of this region of the state and adding a note of permanence to the sites. There are a number of ways that signs can be incorporated into stone walls. The framing system can be embedded into the stonework so the sign appears to float above the top of the wall (which will typically be 18-24" in height). For some situations, it may be appropriate to embed the signs directly into the surface of the wall.
- **Granite Bases.** Granite can be an effective way to support the signs and achieve the proper visual fit. Single posts will be suitable for the smaller signs, while a pair of posts may be required to support signs that are greater than four feet in width. The surface of the bases should be split and/or thermal finished to achieve a more rugged appearance.
- **Surface Mounts.** In some instances the signs might effectively be mounted on existing struc-tures as a way of minimizing clutter. The design of the frame in these instances should relate to the existing structure and not detract from it. i.e., an anodized aluminum frame mounted on a weathered outbuilding would be an inappropriate juxtaposition of materials.

APPENDIX B - CORRIDOR CONCEPT PLANS



1. Looking east at the Sagadahoc Bridge showing existing bikelanes and sidewalks.



3. Under Sagadahoc Bridge looking north. Sidewalk construction and bikeline striping required on west side of Commercial Street.



5. Front Street near end of Sagadahoc Bridge looking north. Bikes to share roadway with vehicles and pedestrians to use existing sidewalk.



7. Commercial Street between Lambard and Broad looking north. New sidewalks proposed on east side and bikes to share roadway.



9. Connection to Waterfront Park.



11. Looking north on Commercial Street north of Municipal Parking. Construct sidewalk on the left and stripe bikelanes both sides.



2. Looking west at the existing Sagadahoc Bridge stairway, ramp, and historic train station.



4. Commercial Street looking north between bridge and Lambard Street. New sidewalk and bike lane proposed on west side.



6. Existing Lambard Street looking west. Use existing sidewalk, bikes share roadway with vehicles.



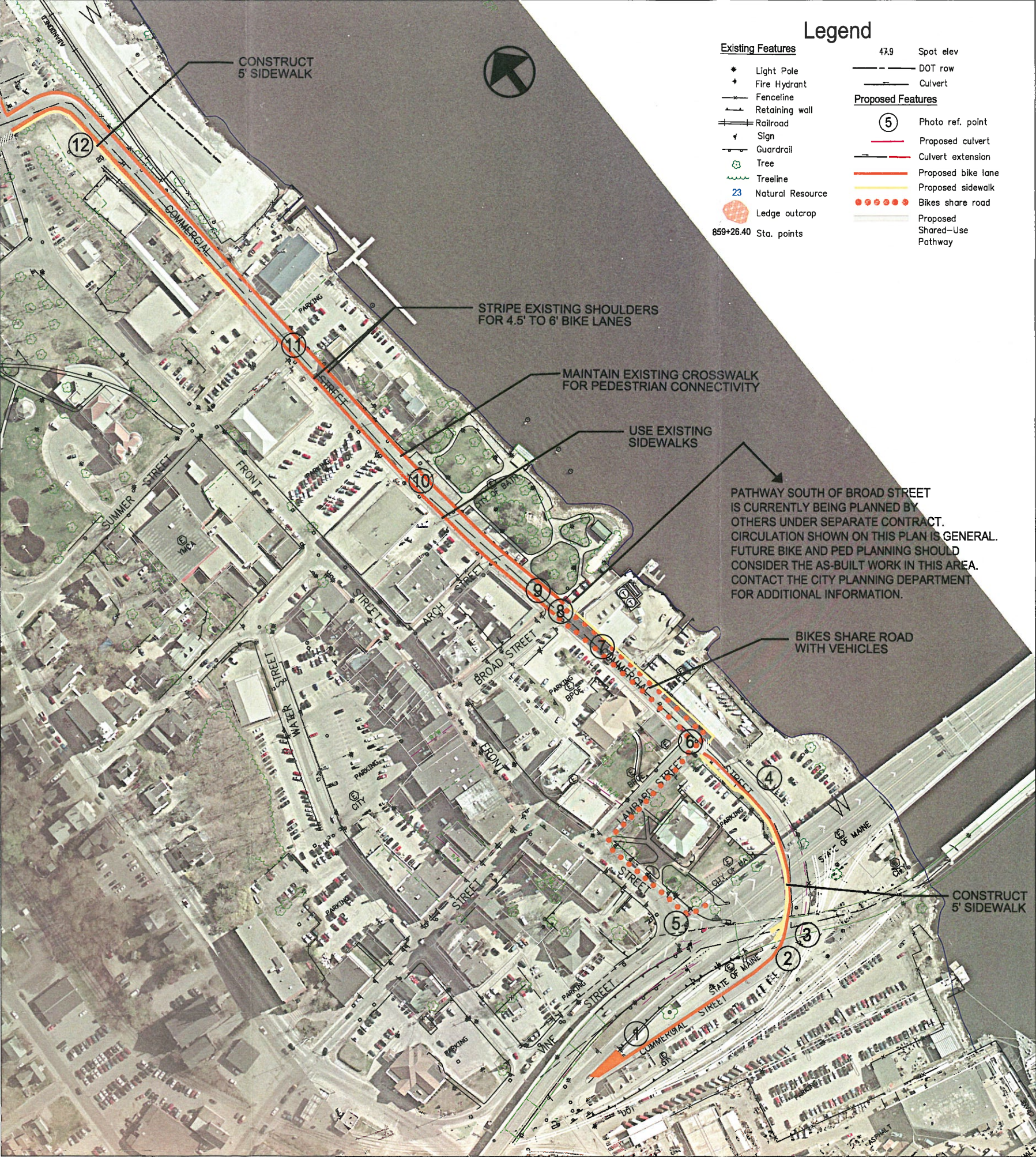
8. Looking north on Commercial Street near Waterfront Park. Stripe bikelanes both sides and use existing sidewalk.



10. Commercial Street looking north. Stripe bikelanes both sides and use existing sidewalk.



12. Commercial Street near Front Street intersection. Construct sidewalk on the left and stripe bikelanes both sides.

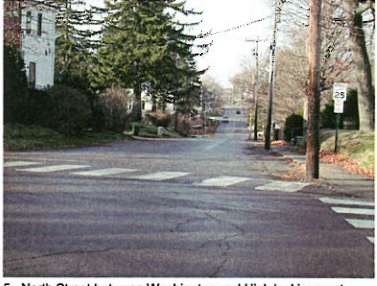




1. Looking north along Front Street between Commercial and North. Pavement widening and removal of on-street parking required to accommodate bikelanes.



2. Looking north along Front Street between Commercial and North showing fence and utility poles to be relocated.



3. North Street between Front and Washington looking west. Existing on-street parking to be removed to accommodate bikelane striping on both sides.



4. North Street between Front and Washington looking west. Repair existing sidewalks as necessary and relocate poles behind sidewalk if possible.



5. North Street between Washington and High looking west. Stripe existing pavement with bikelanes on both sides.



6. North Street between Washington and High looking west. Relocate utility poles behind sidewalk if possible.



7. North Street between Washington and High looking back toward the east. Use existing sidewalks.

8. North Street between Washington and High looking west. Stripe existing shoulders for 5' bike lanes.

9. North Street between Washington and High looking west. Stripe existing shoulders for 4' bike lanes, restrict on-street parking.

10. North Street between Washington and High looking west. Widen pavement on east side of road by 4 feet.

11. North Street between High St and Five Corners looking west. Sidewalk repairs required in some areas.

12. North Street between High St and Five Corners looking west. Stripe roadway to accommodate parking, bikelanes and travel way.

Existing Features		47.9	Spot elev
* Light Pole		—	DOT row
+ Fire Hydrant		—	Culvert
— Fenceline			
— Retaining wall			
— Railroad			
— Sign			
— Guardrail			
— Tree			
— Treeline			
23 Natural Resource			
— Ledge outcrop			
859+26.40 Sta. points			
Proposed Features			
⑤ Photo ref. point			
— Proposed culvert			
— Culvert extension			
— Proposed bike lane			
— Proposed sidewalk			
— Bikes share road			
— Proposed Shared-Use Pathway			





1. North Street between High St and Five Corners looking west. Stripe roadway to accommodate parking, bikelines and travel way.



3. North Street between High St and Five Corners looking back southeasterly from Five Corners intersection.



5. North Street between High St and Five Corners looking westerly at five corners intersection.



7. Congress Ave. west of Five Corners looking west. Stripe existing pavement for bikelines.



9. Congress Ave. west of Five Corners looking west.



2. North Street between High St and Five Corners looking west.



4. North Street between High St and Five Corners looking northwesterly.



6. North Street between High St and Five Corners looking northwesterly.



8. Congress Ave. west of Five Corners looking west. Pavement widening required in some locations for bikelines.



10. Congress Ave. west of Five Corners looking back northeasterly at parking for athletic facilities.

Existing Features

- Light Pole
- Fire Hydrant
- Fenceline
- Retaining wall
- Railroad
- Sign
- Guardrail
- Tree
- Treeline
- Natural Resource
- Ledge outcrop

Proposed Features

- Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed bike lane
- Proposed sidewalk
- Bikes share road
- Proposed Shared-Use Pathway

859+26.40 Sta. points



CORRIDOR CONCEPT PLANS
PHASE I & II
PLAN 3 OF 12
1"=100'

ANDROSCOGGIN-TO-THE-KENNEBEC
TRANSPORTATION PATH FEASIBILITY STUDY
Brunswick - West Bath - Bath, Maine
November 2003

TYLININTERNATIONAL
Terrence J. DeWan & Associates
Woodlot Alternatives, Inc.



1. Congress Ave. looking west. Pavement widening required for bike lanes. Construct new sidewalk on right side.



3. Congress Ave. looking south near existing guardrail.



5. Congress Ave. looking south toward Centre Street intersection. Use existing pavement for bike lanes and construct sidewalk on right.



2. Congress Ave. looking southwesterly. Construct new sidewalk and crosswalk on right side.



4. Congress Ave. looking south near existing guardrail. Construct sidewalk behind rail with significant fill.



6. Congress Ave. looking south toward Centre Street intersection. Use existing pavement for bike lanes and construct sidewalk on right.

Legend

Existing Features

47.9

Spot elev

- * Light Pole
- + Fire Hydrant
- x- Fenceline
- Retaining wall
- ||| Railroad
- ^ Sign
- Guardrail
- Tree
- ~ Treeline
- 23 Natural Resource
- Ledge outcrop
- Sta. points

--- DOT row

--- Culvert

Proposed Features

⑤

Photo ref. point

--- Proposed culvert

--- Culvert extension

--- Proposed bike lane

--- Proposed sidewalk

••••• Bikes share road

--- Proposed
Shared-Use
Pathway

859+26.40



CORRIDOR CONCEPT PLANS
PHASE II
PLAN 4 OF 12
100' 0 100' 200'
1"=100'

ANDROSCOGGIN-TO-THE-KENNEBEC
TRANSPORTATION PATH FEASIBILITY STUDY
Brunswick - West Bath - Bath, Maine
November 2003

TYLIN INTERNATIONAL
Terrence J. DeWan & Associates
Woodlot Alternatives, Inc.



1. Looking west, Congress St. southbound onramp on left



2. Sufficient DOT R.O.W. to meander trail. Proposed pathway along mid slope.



3. Proposed pathway location at mid slope. Minimum of 15' from guardrail.



4. Proposed pathway location to utilize a portion of utility easement to avoid ledge pinch-point along Route One.



5. Pathway adjacent to Route one would require, stormdrain, guardrail, & protective fencing in this pinch-point area.



6. Proposed pathway location within treeline, along toe of slope to Route one rest stop.



7. Approaching South bound rest stop. Pathway location at toe of slope, maintaining tree buffer where feasible.



8. Culvert extension may be required east of rest stop



9. Significant fill required to maintain 5% grade from toe of slope to rest area grade.



10. Minor blasting may be required to locate pathway and 5' buffer at rest area.



11. Minor blasting may be required to locate pathway and 5' buffer at rest area.



12. Congress Ave. looking south near required retaining wall location.



13. Congress Ave. looking south. Construct sidewalk in existing planted area.



14. Congress Ave. looking south near the Shopping Center drive. Install crosswalk and separated path to right after drive.

Legend

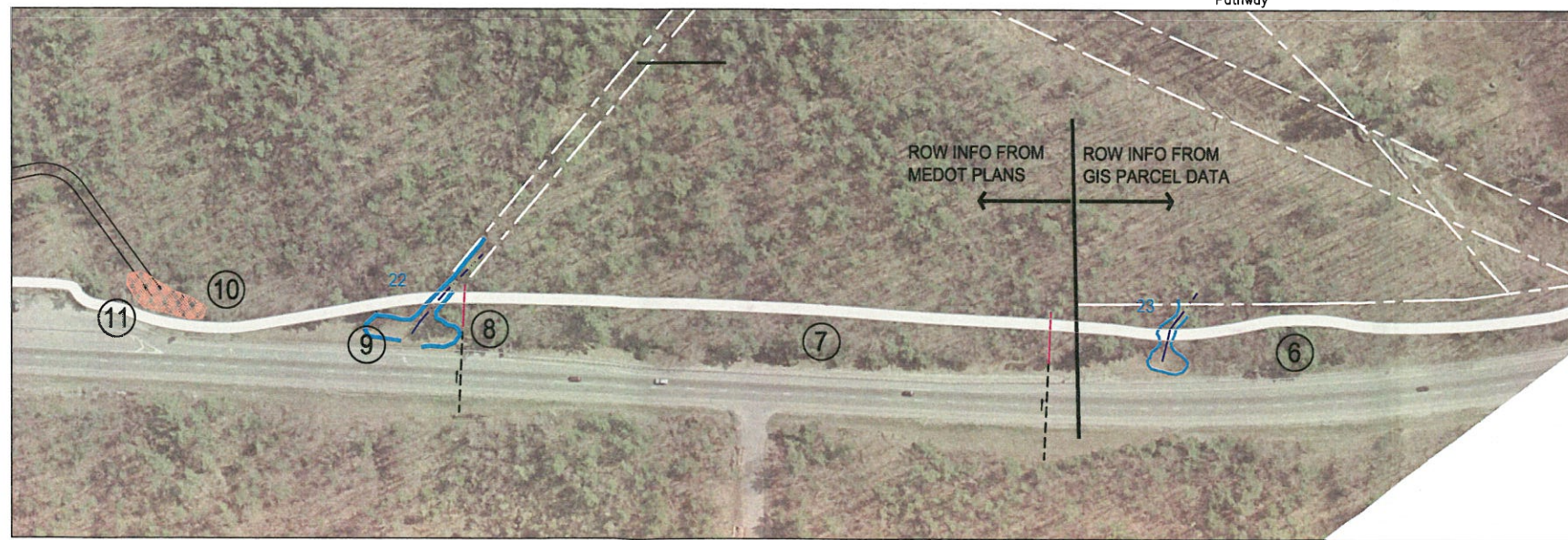
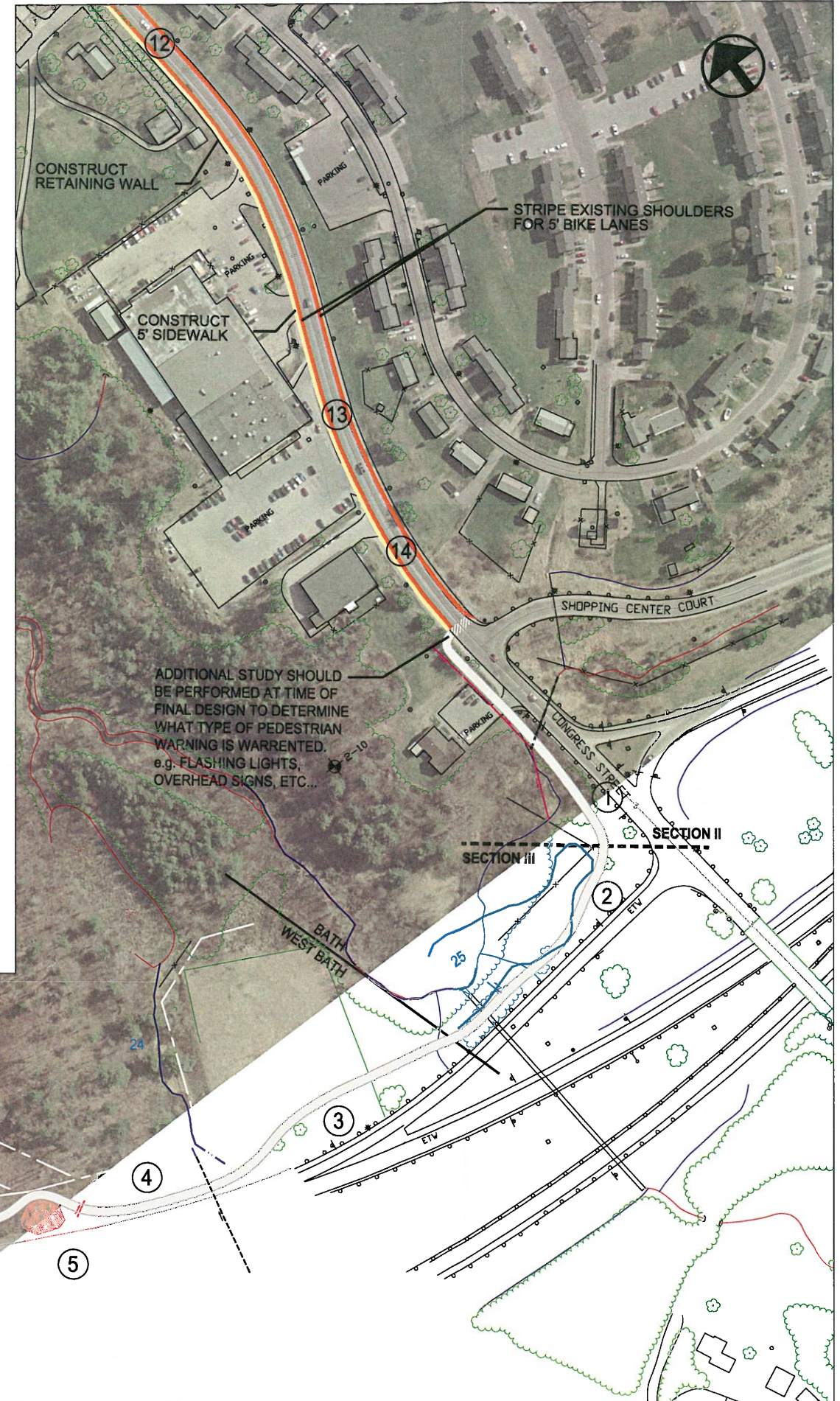
Existing Features

- ★ Light Pole
- ★ Fire Hydrant
- Fenceline
- Retaining wall
- Railroad
- Sign
- Guardrail
- Tree
- Treeline
- 23 Natural Resource
- 859+26.40 Ledge outcrop
- Sta. points

- 47.9 Spot elev
- DOT row
- Culvert

Proposed Features

- ⑤ Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed bike lane
- Proposed sidewalk
- Bikes share road
- Proposed Shared-Use Pathway





1. Fill and a culvert is required to continue pathway and maintain drainage



2. Pathway should be located on top of ledge in some areas due to space constraints.



3. Proposed pathway location to pick up old 'King's Highway' currently an ATV trail. Land ownership unknown.



4. Looking West where old 'King's Highway' ends at Route One. Proposed pathway location on the current ATV trail.



5. Looking West. Proposed pathway to follow toe of slope. Guardrails will need to be connected.



6. Culvert extension and fill required.



7. Ledge outcrop too high and long to go over or behind. Proposed pathway location is between Route one and the Ledge face.



8. At the ledge pinch-point the pathway will be narrowed to 12' and built-up above Route One.



9. Pathway to follow mid-slope and retain pine buffer.

Legend

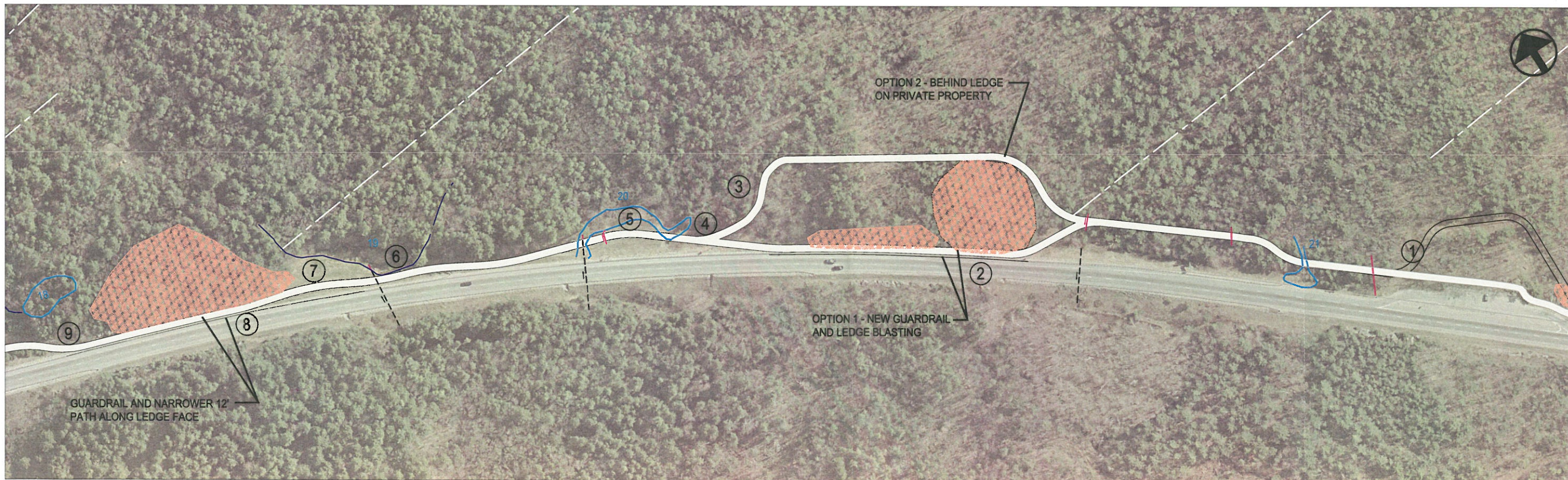
Existing Features

- * Light Pole
- + Fire Hydrant
- x- Fenceline
- Retaining wall
- +++++ Railroad
- ^ Sign
- Guardrail
- Tree
- Tree line
- 23 Natural Resource
- Ledge outcrop

- 859+26.40 Sta. points
- 47.9 Spot elev
- DOT row
- Culvert

Proposed Features

- 5 Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed Shared-Use Pathway





1. West of the ledge pinch point area, the pathway is proposed at mid slope.



2. Pathway proposed at mid slope.



3. Looking east, a mid slope pathway may require some pine tree removals.



4. Looking west toward Route One and the Railroad crossing.



5. General location of proposed at grade railroad crossing.



6. Proposed pathway location along existing R.O.W. fence just west of the railroad.



7. Wetland impacts are anticipated.



8. Pathway to meander toward New Meadows Road to reduce wetland impacts.



9. Meander pathway to avoid wetlands along Court House driveway



10. Approaching New Meadows Road.



11. Looking east toward Route One

Legend

Existing Features

- ★ Light Pole
- ◆ Fire Hydrant
- Fenceline
- Retaining wall
- ++++ Railroad
- Sign
- Guardrail
- Tree
- 23 Natural Resource
- Ledge outcrop

859+26.40 Sta. points

47.9 Spot elev

— DOT row

— Culvert

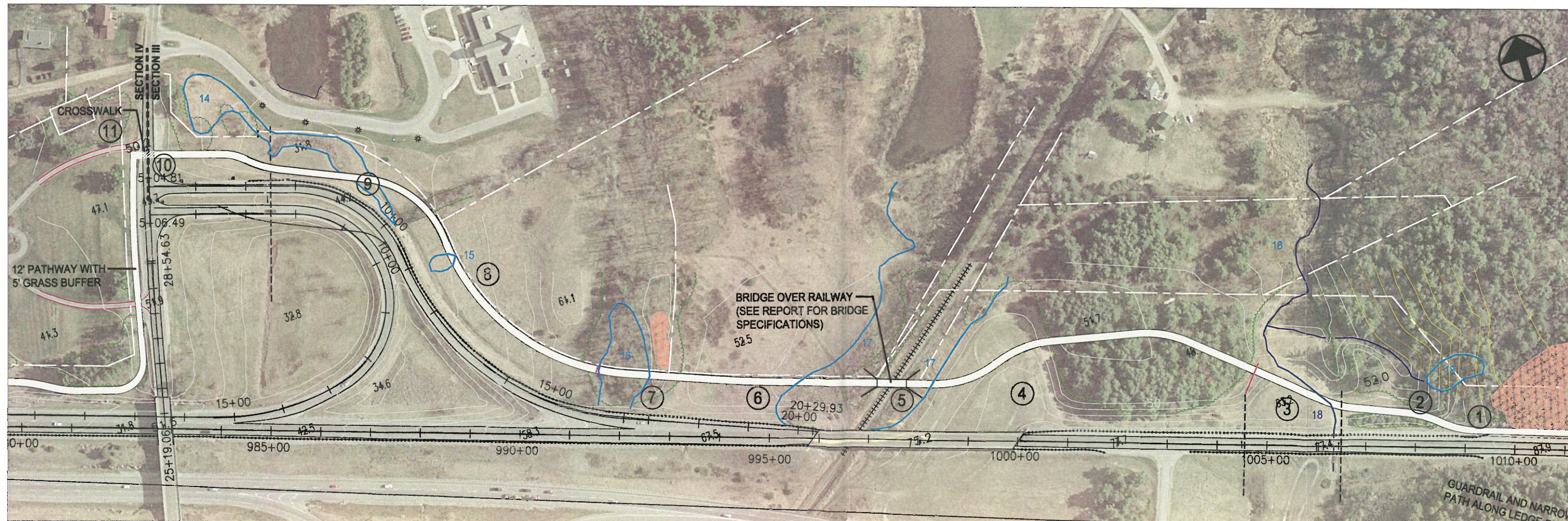
Proposed Features

⑤ Photo ref. point

— Proposed culvert

— Culvert extension

— Proposed Shared-Use Pathway





1. Fill and vegetation clearing required within New Meadows Road ROW



2. Looking West



3. Proposed pathway located at top of slope



4. Pathway to traverse slope and meet ADA compliance.



5. Retaining wall required to locate pathway between Route One and New Meadows River



6. Looking East towards New Meadows River.



7. Pathway to meet ADA accessibility compliance TYP.



8. Proposed pathway goes behind the ledge outcrop seen above



9. Proposed pathway location between a house lot to the right and the ledge face dropping off to Route One to the left



10. Looking North on Old Peterson Road. Proposed 8' pathway connector to the end of Peterson Road.



11. Rock deposits along proposed pathway.

Legend

Existing Features

- * Light Pole
- Fire Hydrant
- Fenceline
- Retaining wall
- Railroad
- ▼ Sign
- Guardrail
- Tree
- Treeline
- 23 Natural Resource
- Ledge outcrop

859+26.40 Sta. points

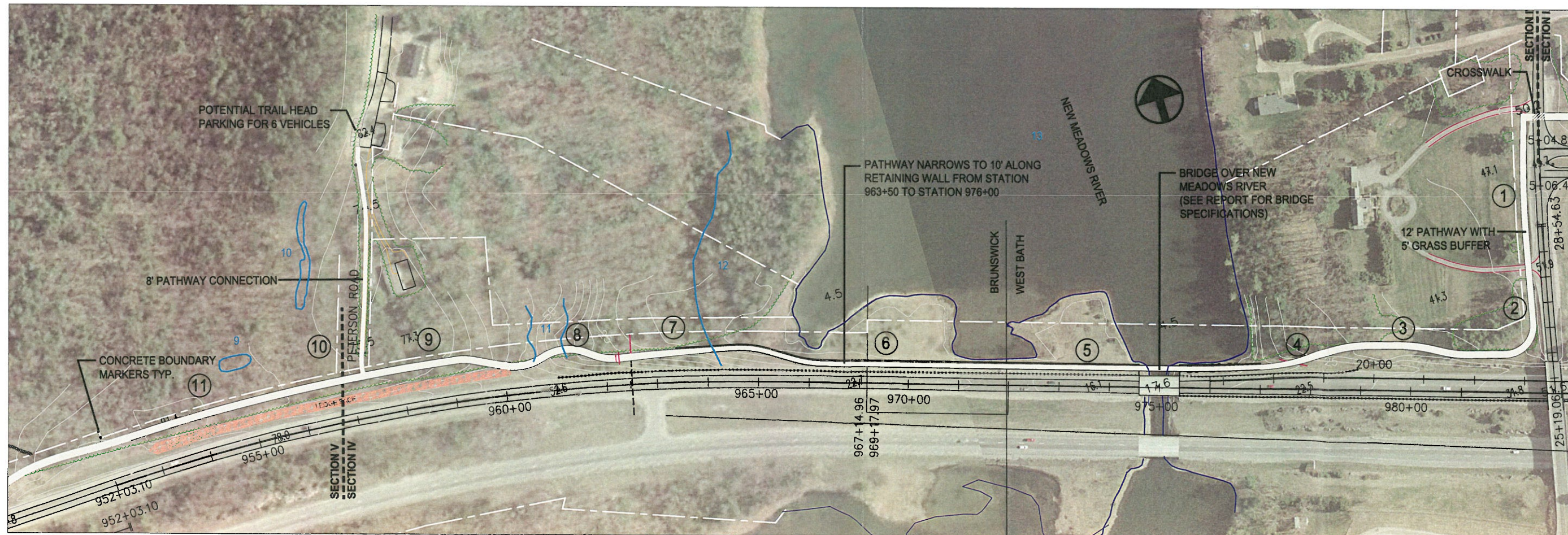
47.9 Spot elev

--- DOT row

--- Culvert

Proposed Features

- ⑤ Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed Shared-Use Pathway





1. Proposed pathway located along top of ledge, West of Peterson Road



2. Existing stone wall along proposed pathway



3. Looking South across Route One from proposed pathway



4. Proposed Pathway goes back toward Route One



5. Proposed pathway at mid slope to maintain a maximum accessible 5% grade while descending from the ledge area



6. Fill will taper to toe of slope to stay within the DOT R.O.W.



7. Proposed pathway located on top and behind this exposed ledge



8. Culvert extension required



9. Meander pathway between tree and DOT R.O.W. fence.

Legend

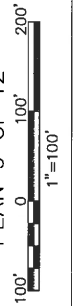
Existing Features

- * Light Pole
- * Fire Hydrant
- Fenceline
- Retaining wall
- Railroad
- Sign
- Guardrail
- Tree
- Treeline
- 23 Natural Resource
- Ledge outcrop

- 859+26.40 Sta. points
- 47.9 Spot elev
- DOT row
- Culvert

Proposed Features

- ⑤ Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed Shared-Use Pathway





1. Proposed pathway along CMP easement for a short distance pending CMP approval



2. Looking North toward Deerfield Road. Proposed use of existing ATV trail pending land-owner approval



3. Winter view of proposed pathway location



4. Looking west just West of Deerfield Road. Proposed pathway just inside treeline



5. Proposed pathway location / existing ATV trail located just inside treeline parallel to Route One



6. Looking northwest toward Maplewood neighborhood.



7. Proposed pathway located to preserve approximately 30' of vegetated buffer between pathway and Maplewood fenceline

Legend

Existing Features

- ✦ Light Pole
- ✦ Fire Hydrant
- Fenceline
- Retaining wall
- ++++ Railroad
- ↓ Sign
- Guardrail
- 🌳 Tree
- Treeline
- 23 Natural Resource
- 🪨 Ledge outcrop

- 859+26.40 Sta. points
- 47.9 Spot elev
- DOT row
- Culvert
- Proposed Features**
- ⑤ Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed Shared-Use Pathway





1. Wetland impacts are anticipated along this section



2. Tree preservation is intended as much as feasible along this section.



3. The DOT R.O.W. is approximately 30' from fenceline



4. Looking at end of Maplewood fenceline from proposed pathway



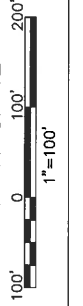
5. West of Maplewood trailer park the proposed pathway location preserves trees between pathway and Route One

Legend

Existing Features

- ◆ Light Pole
- ◆ Fire Hydrant
- Fenceline
- Retaining wall
- ++++ Railroad
- ◆ Sign
- Guardrail
- Tree
- Treeline
- 23 Natural Resource
- Ledge outcrop

- 859+26.40 Sta. points
- 47.9 Spot elev
- DOT row
- Culvert
- Proposed Features**
- ⑤ Photo ref. point
- Proposed culvert
- Culvert extension
- Proposed Shared-Use Pathway





1. Approaching Old Bath Road Bridge on Route One, the proposed pathway location to pass under bridge between guardrail and abutment



2. Looking North, proposed Pathway location at base of earthen berm



3. New pathway will connect to the existing Androscoggin River bikepath and be accessed at the existing end of trail



4. Existing Androscoggin River bikepath trailhead



5. Emergency call boxes should be located along pathway. See report for further information on call boxes



6. New pathway will maintain a 14' width like the existing Androscoggin River Bikepath

Existing Features		859+26.40	Sta. points
* Light Pole		47.9	Spot elev
* Fire Hydrant			DOT row
— Fenceline			Culvert
— Retaining wall			
++++ Railroad			
▼ Sign			
— Guardrail			
● Tree			
— Treeline			
23 Natural Resource			
● Ledge outcrop			

Proposed Features	
⑤	Photo ref. point
—	Proposed culvert
—	Culvert extension
—	Proposed Shared-Use Pathway



APPENDIX C - COST ESTIMATES

ANDROSCOGGIN-TO-THE-KENNEBEC
Summary of Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section I

Commercial Street, Front Street and North Street from the Sagadahoc Bridge to Five Corners
6675 feet long

Total Cost **\$351,216.22**

Section I Average: \$52.62 \$/FT

Section II

Congress Avenue from Five Corners to the south-bound Route One on-ramp.
5000 feet long

Total Cost **\$1,443,044.20**

Section II Average: \$288.61 \$/FT

Section III

North side of Route One from Congress Avenue to the New Meadows Road
8875 feet long

Total Cost **\$2,927,424.92**

Section III Average: \$329.85 \$/FT

Section IV

North side of Route One from the New Meadows Road to Peterson Road.
2800 feet long

Total Cost **\$1,613,755.73**

Section IV Average: \$576.34 \$/FT

ANDROSCOGGIN-TO-THE-KENNEBEC
Summary of Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section V

North side of Route One from Peterson Road to Deerfield Road.

4700 feet long

Total Cost

\$897,511.19

Section V Average: \$190.96 \$/FT

Section VIa

North side of Route One From Deerfield Road to easterly end of Maplewood.

3785 feet long

Total Cost

\$558,922.84

Section VIa Average: \$147.67 \$/FT

Section VIb

North side of Route One From the easterly end of Maplewood to Old Bath Road.

1575 feet long

Total Cost

\$211,092.42

Section VIb Average: \$134.03 \$/FT

Section VIIa

North side of Route One from Old Bath Road to the easterly end of the existing Androscoggin River Bike Path (NOT including the connection over Route One to Bath Road.

1045 feet long

Total Cost

\$194,816.91

Section VIIa Average: \$186.43 \$/FT

ANDROSCOGGIN-TO-THE-KENNEBEC
Summary of Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section VIIb

Covers the connection over Route One to the Bath Road / Ames Plaza / Old Bath Road intersection
(Includes a new bridge over Route 1 and the ramp system from the Route One path up to Old Bath Rd)
1845 feet long

Total Cost **\$2,509,204.84**

Section VIIb Average: \$1,360.00 \$/FT

Section VIII (OPTIONAL)

Upgrades to Deerfield Road (could be combined with other Sections).
220 feet long

Total Cost **\$27,600.31**

Section VIII Average: \$125.46 \$/FT

Section IX (OPTIONAL)

Upgrades to Peterson Road (could be combined with Section V).
460 feet long

Total Cost **\$55,394.54**

Section IX Average: \$120.42 \$/FT

Grand Total Segments 1 through 9 **\$10,789,984.11**

State Share (80%)	\$8,631,987.29
Town Share (20%)	\$2,157,996.82

Total Length of Path (ft):	33195	\$/ft: \$325.05
Total Length of Path (miles):	6.29	\$/mi: \$1,716,255.95

NOTES

1.) For the portion of the path which parallels RTE 1(Sections III - VII), the path cost has been estimated using a 14' path width. If a 10' path width was constructed instead, a cost savings of approximately \$546,200 could be realized.

2.) Rock Excavation, Common Excavation and Common Borrow were estimated based on approximate typical sections, field walk information, photos and existing aerial survey. These items will greatly influence the overall cost of the project. A more accurate quantity estimate, based on field survey, will be required during final design.

3.) Utility relocation costs are not included in this estimate.

4.) Sections VIII and IX are optional.

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section I - Segment 1

From the easterly end of the Sagadahoc Bridge along Commercial Street past the old Railroad Station, passing under the Sagadahoc Bridge and extending to Lambard Street.

750 feet long

Item	Quantity	Unit	Unit Cost	Total

**** It is expected that this section will be incorporated into the Commercial Street Railroad project.**

TOTAL	\$0.00
--------------	---------------

Section I - Segment 2

From the easterly end of the Sagadahoc Bridge along Front Street to Lambard Street, and then along Lambard Street to Commercial Street.

450 feet long

Item	Quantity	Unit	Unit Cost	Total
Signing	6	SF	\$35.00	\$210.00

TOTAL	\$210.00
--------------	-----------------

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section I - Segment 3

On Commercial Street from Broad Street to Front Street.

1400 feet long				
Item	Quantity	Unit	Unit Cost	Total
Signing	2,800	LF	\$0.21	\$588.00
Striping	2,800	LF	\$0.60	\$1,680.00
Bicycle pavement marking symbol	2,800	LF	\$0.10	\$268.80
Striping (crosswalk)	40	LF	\$14.00	\$560.00
2' roadway widening	350	LF		
common excavation	350	LF	\$1.33	\$466.67
common borrow	350	LF	\$1.78	\$622.22
Asphalt Paving (3")	350	LF	\$2.98	\$1,042.71
fine grading/compacting	350	LF	\$0.27	\$93.33
aggregate subbase - gravel	350	LF	\$3.47	\$1,215.28
loam	350	LF	\$1.23	\$432.10
seed/fert/mulch/etc	350	LF	\$1.25	\$437.50
5' sidewalk/bikelanes (no addit. pavement requ'd for bikelane)				
common excavation	800	LF	\$3.11	\$2,488.89
aggregate subbase - gravel	800	LF	\$5.79	\$4,629.63
Asphalt Paving (3")	800	LF	\$4.97	\$3,972.22
common borrow	800	LF	\$1.78	\$1,422.22
loam	800	LF	\$1.98	\$1,580.25
seed/fert/mulch/etc	800	LF	\$2.00	\$1,600.00
fine grading/compacting	800	LF	\$0.44	\$355.56
Curbing and Drainage	1,150	LF		
bituminous curb	1,150	LF	\$8.00	\$9,200.00
15" option III pipe	1,150	LF	\$30.00	\$34,500.00
catch basin	1,150	LF	\$5.17	\$5,941.67
outlet pipe	1,150	LF	\$1.65	\$1,897.50
drive reconstruction	6	EA	\$280.00	\$1,680.00
5' park path paving	350	LF		
Asphalt Paving (3")	33	TON	\$78.00	\$2,548.00
Amenities * use 10% of construction cost				\$7,922.25
* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.				
TOTAL				\$87,144.79

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section I - Segment 4

On Front Street from Commercial Street to North Street.

700 feet long				
Item	Quantity	Unit	Unit Cost	Total
Signing	1,400	LF	\$0.21	\$294.00
bicycle pavement marking symbol	1,400	LF	\$0.10	\$134.40
Striping	1,400	LF	\$0.60	\$840.00
Striping (crosswalk)	40	LF	\$14.00	\$560.00
4' roadway widening	550	LF		
common excavation	550	LF	\$2.22	\$1,222.22
aggregate subbase - gravel	550	LF	\$5.79	\$3,182.87
Asphalt Paving (3")	550	LF	\$4.97	\$2,730.90
common borrow	550	LF	\$1.78	\$977.78
loam	550	LF	\$1.23	\$679.01
seed/fert/mulch/etc	550	LF	\$1.25	\$687.50
fine grading/compacting	550	LF	\$0.44	\$244.44
Additional fill (not included in typical path est.)	326	CY	\$6.00	\$1,956.00
Loam, Seed, Erosion Control				
Loam	15	CY	\$20.00	\$308.64
Seed and Mulch	2,500	SF	\$0.25	\$625.00
Erosion Control silt Fence	400	LF	\$1.50	\$600.00
Resetting Fence	600	LF	\$6.50	\$3,900.00
Drive Reconstruction	2	EA	\$280.00	\$560.00
Amenities * use 10% of construction cost				\$1,950.28

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL **\$21,453.05**

Section I - Segment 5

On North Street from Front Street to Washington Street.

425 feet long				
Item	Quantity	Unit	Unit Cost	Total
Signing	850	LF	\$0.21	\$178.50
bicycle pavement marking symbol	850	LF	\$0.10	\$81.60
Striping	850	LF	\$0.91	\$770.10
Amenities * use 10% of construction cost				\$103.02

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL **\$1,133.22**

ANDROSCOGGIN-TO-THE-KENNEBEC

Conceptual Cost Estimate

Brunswick - West Bath - Bath, Maine

Section I - Segment 6

On North Street from Washington Street to High Street.

1050 feet long				
Item	Quantity	Unit	Unit Cost	Total
Signing	2,100	LF	\$0.21	\$441.00
bicycle pavement marking symbol	2,100	LF	\$0.10	\$201.60
Striping	2,100	LF	\$0.60	\$1,260.00
2' roadway widening	400	LF		
common excavation	400	LF	\$1.33	\$533.33
aggregate subbase - gravel	400	LF	\$3.47	\$1,388.89
Asphalt Paving (3")	400	LF	\$2.98	\$1,191.67
common borrow	400	LF	\$1.78	\$711.11
loam	400	LF	\$1.23	\$493.83
seed/fert/mulch/etc	400	LF	\$1.25	\$500.00
fine grading/compacting	400	LF	\$0.27	\$106.67
5' sidewalk/bikelanes (no addit. pavement requ'd for bikelane)				
common excavation	800	LF	\$3.11	\$2,488.89
aggregate subbase - gravel	800	LF	\$5.79	\$4,629.63
Asphalt Paving (3")	800	LF	\$4.97	\$3,972.22
common borrow	800	LF	\$1.78	\$1,422.22
loam	800	LF	\$1.98	\$1,580.25
seed/fert/mulch/etc	800	LF	\$2.00	\$1,600.00
fine grading/compacting	800	LF	\$0.44	\$355.56
Curbing and Drainage	800	LF		
bituminous curb	800	LF	\$8.00	\$6,400.00
15" option III pipe	800	LF	\$30.00	\$24,000.00
catch basin	800	LF	\$5.17	\$4,133.33
outlet pipe	800	LF	\$1.65	\$1,320.00
Loam, Seed, Erosion Control				
Loam	30	CY	\$20.00	\$592.59
Seed and Mulch	4,800	SF	\$0.25	\$1,200.00
drive reconstruction	11	EA	\$280.00	\$3,080.00
Amenities * use 10% of construction cost				\$6,360.28

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL	\$69,963.06
--------------	--------------------

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section I - Segment 7

On North Street from High Street to Lincoln Street/Oak Grove Avenue (Five Corners)

1900 feet long				
Item	Quantity	Unit	Unit Cost	Total
Signing	3,800	LF	\$0.21	\$798.00
bicycle pavement marking symbol	3,800	LF	\$0.10	\$364.80
Striping	3,800	LF	\$0.60	\$2,280.00
2' roadway widening	300	LF		
common excavation	300	LF	\$1.33	\$400.00
aggregate subbase - gravel	300	LF	\$3.47	\$1,041.67
Asphalt Paving (3")	300	LF	\$2.98	\$893.75
common borrow	300	LF	\$1.78	\$533.33
loam	300	LF	\$1.23	\$370.37
seed/fert/mulch/etc	300	LF	\$1.25	\$375.00
fine grading/compacting	300	LF	\$0.27	\$80.00
5' sidewalk/bikelanes (no addit. pavement requ'd for bikelane)				
common excavation	100	LF	\$3.11	\$311.11
aggregate subbase - gravel	100	LF	\$5.79	\$578.70
Asphalt Paving (3")	100	LF	\$4.97	\$496.53
common borrow	100	LF	\$1.78	\$177.78
loam	100	LF	\$1.98	\$197.53
seed/fert/mulch/etc	100	LF	\$2.00	\$200.00
fine grading/compacting	100	LF	\$0.44	\$44.44
Curbing and Drainage	400	LF		
bituminous curb	400	LF	\$8.00	\$3,200.00
15" option III pipe	400	LF	\$30.00	\$12,000.00
catch basin	400	LF	\$5.17	\$2,066.67
outlet pipe	400	LF	\$1.65	\$660.00
Loam, Seed, Erosion Control				
Loam	12	CY	\$20.00	\$246.91
Seed and Mulch	2,000	SF	\$0.25	\$500.00
drive reconstruction	3	EA	\$280.00	\$840.00
Amenities * use 10% of construction cost				\$2,865.66

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL **\$31,522.26**

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Total of Segment(s) 1 through 7	\$211,426.38
---------------------------------	--------------

Mobilization @ 7%	\$14,799.85
-------------------	-------------

Contingency @ 15%	\$33,933.93
-------------------	-------------

	\$260,160.16
--	--------------

Survey	10 %	\$26,016.02
--------	------	-------------

Engineer & Permitting Fee	15 %	\$39,024.02
---------------------------	------	-------------

Construction Engineering	10 %	\$26,016.02
--------------------------	------	-------------

Grand Total for Section I	\$351,216.22
----------------------------------	---------------------

State Share (80%)	\$280,972.98
-------------------	--------------

Town Share (20%)	\$70,243.24
------------------	-------------

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section II - Segment 1

On Congress Avenue from Lincoln Street/Oak Grove Avenue (Five Corners) to the Bath Shipping Center Drive.

4550 feet long

Item	Quantity	Unit	Unit Cost	Total
5 ' wide bike lane construction	3,240	LF		
Asphalt Paving (3")	302	TON	\$78.00	\$23,587.20
Fine grade and compact	16,200	SY	\$0.80	\$12,960.00
Aggregate base course	4,050	CY	\$25.00	\$101,250.00
Aggregate sub-base	1,200	CY	\$5.79	\$6,948.00
Excavation	1,500	CY	\$9.00	\$13,500.00
Striping	9,100	LF	\$0.60	\$5,460.00
Pavement markings (bicycle symbol)	4,550	LF	\$0.10	\$436.80
36" OPT III culvert	80	LF	\$149.00	\$11,920.00
5 ' wide side walk (minor construction)	1,950	LF	\$67.68	\$131,971.06
5 ' wide side walk (minor construction)	1,470	LF	\$67.68	\$99,485.88
Aggregate sub-base	275	CY	\$5.79	\$1,594.93
5 ' wide side walk (major construction)	750	LF		
Pavement	58	TON	\$65.00	\$3,791.67
Aggregate sub-base	649	CY	\$20.00	\$12,986.11
Earth Borrow	12,319	CY	\$6.00	\$73,916.67
Clearing and grubbing	1.1	AC	\$4,000.00	\$4,400.00
Fence	755	LF	\$20.00	\$15,100.00
Loam, Seed, Erosion Control				
Loam	250	CY	\$29.00	\$7,250.00
Seed and Mulch	44,550	SF	\$0.25	\$11,137.50
Erosion Control silt Fence	2,050	LF	\$1.50	\$3,075.00
Drive reconstruction	19	EA	\$280.00	\$5,320.00
Retaining walls (near grey garage)	1,000	SF	\$35.00	\$35,000.00
New Guardrail	720	LF	\$15.00	\$10,800.00
Additional Drainage in new curb areas				
Assume 1/5 of project	3,425	LF	\$44.82	\$153,497.08
Amenities * use 10% of construction cost	10	%		\$74,538.79

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL **\$819,926.69**

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section II - Segment 2

On Congress Avenue from the Bath Shopping Center Drive to the southbound Route One on-ramp.

450 feet long				
Item	Quantity	Unit	Unit Cost	Total
Flashing beacon	1	LS	\$10,000.00	\$10,000.00
8' wide bike lane construction	450	LF		
Asphalt Paving (3")	67	TON	\$78.00	\$5,241.60
Aggregate Base Course - Crushed (3")	67	TON	\$78.00	\$5,241.60
Fine grade and compact	400	SY	\$0.80	\$320.00
Aggregate sub-base	196	CY	\$20.00	\$3,916.67
Earth Borrow	500	CY	\$6.00	\$3,000.00
Clearing and grubbing	0.2	AC	\$4,000.00	\$800.00
Fence	205	LF	\$20.00	\$4,100.00
Loam, Seed, Erosion Control				
Loam	23	CY	\$29.00	\$676.67
Seed and Mulch	3,780	SF	\$0.25	\$945.00
Erosion Control silt Fence	420	LF	\$1.50	\$630.00
Extend 48" concrete pipe	40	LF	\$148.00	\$5,920.00
Signing	450	LF	\$0.21	\$94.50
Striping (crosswalk)	30	LF	\$14.00	\$420.00
Striping (bike symbols)	450	LF	\$0.10	\$43.20
Remove and relocate guardrail	270	LF	\$10.00	\$2,700.00
Drive reconstruction	1	EA	280.00	\$280.00
Amenities * use 10% of construction cost	10	%		\$4,432.92

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$48,762.16

Total of Segment(s) 1 through 2 \$868,688.85

Mobilization @ 7% \$60,808.22

Contingency @ 15% \$139,424.56

\$1,068,921.63

Survey 10 % \$106,892.16

Engineer & Permitting Fee 15 % \$160,338.24

Construction Engineering 10 % \$106,892.16

Grand Total for Section II \$1,443,044.20

State Share (80%) \$1,154,435.36

Town Share (20%) \$288,608.84

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section III - Segment 1

Norht Side of Route One from Congress Avenue to the New Meadows Rd.

8875 feet long (including bridge over R.R.)

Item	Quantity	Unit	Unit Cost	Total
14 ' wide bike lane construction	8,725	LF		
Common Excavation	9,667	CY	\$9.96	\$96,283.32
Rock Excavation	3,113	CY	\$66.49	\$206,970.07
Common Borrow	10,190	CY	\$12.99	\$132,368.10
Asphalt Paving (3")	255	TON	\$61.00	\$15,555.00
Aggregate Base Course - Crushed	1,133	CY	\$114.68	\$129,932.44
Fine Grading	122,150	SF	\$0.80	\$97,720.00
Aggregate Subbase - Gravel	7,162	CY	\$17.20	\$123,186.40
Clearing and Grubbing	9	AC	\$4,000.00	\$37,772.27
Seed and Mulch	225,865	SF	\$0.25	\$56,466.25
Loam	1,482	CY	\$29.00	\$42,978.00
Guard Rail	1,770	LF	\$15.00	\$26,550.00
Fence	2,335	LF	\$20.00	\$46,700.00
Stone Ditch Protection	467	CY	\$41.00	\$19,133.33
Hay Bale Check Dam	14	EA	\$23.00	\$322.00
Erosion Control Blanket	3,578	SY	\$2.50	\$8,944.44
Erosion Control - Silt Fence	6,656	LF	\$1.50	\$9,984.38
Extend 48" concrete pipe	40	LF	\$148.00	\$5,920.00
Extensions 36" concrete pipe	30	LF	\$136.00	\$4,080.00
36" Culvert Pipe Option III	385	LF	\$94.00	\$36,190.00
retaining walls				
Along Pathway, various locations (est.)	1,500	SF	\$35.00	\$52,500.00
Railroad Bridge Area	3,500	SF	\$35.00	\$122,500.00
Bridge - Railroad Crossing on RTE 1	1	EA	\$330,000.00	\$330,000.00
Amenities * use 10% of construction cost	10	%		\$160,205.60

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$1,762,261.60

Total of Segment(s) 1 \$1,762,261.60

Mobilization @ 7% \$123,358.31

Contingency @ 15% \$282,842.99

\$2,168,462.90

Survey 10 % \$216,846.29

Engineer & Permitting Fee 15 % \$325,269.44

Construction Engineering 10 % \$216,846.29

Grand Total for Section III \$2,927,424.92

State Share (80%) \$2,341,939.93

Town Share (20%) \$585,484.98

ANDROSCOGGIN-TO-THE-KENNEBEC

Conceptual Cost Estimate

Brunswick - West Bath - Bath, Maine

Section IV - Segment 1

North Side of Route One from the New Meadows Road to Peterson Road.

2800 feet long (incl'd'g New Meadows Rvr Br.)

Item	Quantity	Unit	Unit Cost	Total
14' wide bike lane construction	2,700	LF		
Common Excavation	946	CY	\$9.96	\$9,422.16
Rock Excavation	583	CY	\$66.49	\$38,763.67
Common Borrow	6,159	CY	\$12.99	\$80,005.41
Asphalt Paving (3")	80	TON	\$61.00	\$4,880.00
Aggregate Base Course - Crushed	352	CY	\$114.68	\$40,367.36
Fine Grading	37,800	SF	\$0.80	\$30,240.00
Aggregate Subbase - Gravel	2,243	CY	\$17.20	\$38,579.60
Clearing and Grubbing	2.46	AC	\$5,860.92	\$14,431.64
Seed and Mulch	51,620	SF	\$0.25	\$12,905.00
Loam	370	CY	\$29.00	\$10,730.00
Fence	1,225	LF	\$20.00	\$24,500.00
Stone Ditch Protection	217	CY	\$41.00	\$8,883.33
Hay Bale Check Dam	7	EA	\$23.00	\$149.50
Erosion Control Blanket	1,661	SY	\$2.50	\$4,152.78
Erosion Control - Silt Fence	2,800	LF	\$1.50	\$4,200.00
Extensions 36" concrete pipe	50	LF	\$136.00	\$6,800.00
36" Culvert Pipe Option III	85	LF	\$94.00	\$7,990.00
Striping (crosswalk)	25	LF	\$14.00	\$350.00
retaining walls				
Along Pathway, various locations (est.)	700	SF	\$35.00	\$24,500.00
New Meadows Road Bridge Area	5,550	SF	\$35.00	\$194,250.00
drive reconstruction	1	EA	\$39.89	\$39.89
BR-widen exist RTE 1 BR over New Meadows RVR	1	EA	\$327,000.00	\$327,000.00
Amenities * use 10% of construction cost	10	%		\$88,314.03

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$971,454.38

Total of Segment(s) 1 \$971,454.38

Mobilization @ 7% \$68,001.81

Contingency @ 15% \$155,918.43

\$1,195,374.61

Survey 10 % \$119,537.46

Engineer & Permitting Fee 15 % \$179,306.19

Construction Engineering 10 % \$119,537.46

Grand Total for Section IV \$1,613,755.73

State Share (80%) \$1,291,004.58

Town Share (20%) \$322,751.15

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section V - Segment 1

North Side of Route One From Peterson Road to Deerfield Road.

4700 feet long

Item	Quantity	Unit	Unit Cost	Total
14 ' wide bike lane construction	4,700	LF		
Common Excavation	6,715	CY	\$9.96	\$66,881.40
Rock Excavation	781	CY	\$66.49	\$51,928.69
Common Borrow	4,634	CY	\$12.99	\$60,195.66
Asphalt Paving (3")	138	TON	\$61.00	\$8,418.00
Aggregate Base Course - Crushed	610	CY	\$114.68	\$69,954.80
Fine Grading	65,800	SF	\$0.80	\$52,640.00
Aggregate Subbase - Gravel	4,047	CY	\$17.20	\$69,608.40
Clearing and Grubbing	5	AC	\$4,000.00	\$21,292.01
Seed and Mulch	139,720	SF	\$0.25	\$34,930.00
Loam	892	CY	\$29.00	\$25,868.00
Fence	2,030	LF	\$20.00	\$40,600.00
Guard Rail	1,955	LF	\$15.00	\$29,325.00
Erosion Control - Silt Fence	570	LF	\$1.50	\$855.00
Extensions 36" concrete pipe	40	LF	\$136.00	\$5,440.00
36" Culvert Pipe Option III	25	LF	\$94.00	\$2,350.00
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$540,286.96

Total of Segment(s) 1 \$540,286.96

Mobilization @ 7% \$37,820.09

Contingency @ 15% \$86,716.06

\$664,823.11

Survey 10 % \$66,482.31

Engineer & Permitting Fee 15 % \$99,723.47

Construction Engineering 10 % \$66,482.31

Grand Total for Section V \$897,511.19

State Share (80%) \$718,008.95

Town Share (20%) \$179,502.24

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section VI a

North side of Route One From Deerfield Road to easterly end of Maplewood.

3785 feet long

Item	Quantity	Unit	Unit Cost	Total
14 ' wide bike lane construction	3,785	LF		
Common Excavation	6,870	CY	\$9.96	\$68,425.20
Rock Excavation	250	CY	\$66.49	\$16,622.50
Common Borrow	842	CY	\$12.99	\$10,937.58
Asphalt Paving (3")	111	TON	\$61.00	\$6,771.00
Aggregate Base Course - Crushed	491	CY	\$114.68	\$56,307.88
Fine Grading	52,990	SF	\$0.80	\$42,392.00
Aggregate Subbase - Gravel	3,225	CY	\$17.20	\$55,470.00
Clearing and Grubbing	4.2	AC	\$4,000.00	\$16,683.20
Seed and Mulch	109,765	SF	\$0.25	\$27,441.25
Loam	701	CY	\$29.00	\$20,329.00
Erosion Control - Silt Fence	800	LF	\$1.50	\$1,200.00
Extensions 36" concrete pipe	85	LF	\$136.00	\$11,560.00
36" Culvert Pipe Option III	25	LF	\$94.00	\$2,322.74
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$336,462.35

Total of Segment(s) a	\$336,462.35
Mobilization @ 7%	\$23,552.36
Contingency @ 15%	\$54,002.21
	\$414,016.92

Survey	10 %	\$41,401.69
Engineer & Permitting Fee	15 %	\$62,102.54
Construction Engineering	10 %	\$41,401.69

Grand Total for Section VIa \$558,922.84

State Share (80%)	\$447,138.27
Town Share (20%)	\$111,784.57

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section VI b

North side of Route One From the easterly end of Maplewood to Old Bath Road.

1575 feet long

Item	Quantity	Unit	Unit Cost	Total
14 ' wide bike lane construction	1,575	LF		
Common Excavation	2,859	CY	\$9.96	\$28,475.64
Rock Excavation	0	CY	\$66.49	\$0.00
Common Borrow	350	CY	\$12.99	\$4,546.50
Asphalt Paving (3")	46	TON	\$61.00	\$2,806.00
Aggregate Base Course - Crushed	204	CY	\$114.68	\$23,394.72
Fine Grading	22,050	SF	\$0.80	\$17,640.00
Aggregate Subbase - Gravel	1,342	CY	\$17.20	\$23,082.40
Clearing and Grubbing	1.7	AC	\$4,000.00	\$6,942.15
Seed and Mulch	45,675	SF	\$0.25	\$11,418.75
Loam	292	CY	\$29.00	\$8,468.00
Erosion Control - Silt Fence	200	LF	\$1.50	\$300.00
Extensions 36" concrete pipe	0	LF	\$136.00	\$0.00
36" Culvert Pipe Option III	0	LF	\$94.00	\$0.00
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL **\$127,074.16**

Total of Segment(s) b \$127,074.16

Mobilization @ 7% \$8,895.19

Contingency @ 15% \$20,395.40

\$156,364.75

Survey 10 % \$15,636.48

Engineer & Permitting Fee 15 % \$23,454.71

Construction Engineering 10 % \$15,636.48

Grand Total for Section VIb **\$211,092.42**

State Share (80%) \$168,873.93

Town Share (20%) \$42,218.48

ANDROSCOGGIN-TO-THE-KENNEBEC

Conceptual Cost Estimate

Brunswick - West Bath - Bath, Maine

Section VIIa

North side of Route One from Old Bath Road to the easterly end of the existing Androscoggin River Bike Path (NOT including the connection over Route One to Bath Road.

1045 feet long

Item	Quantity	Unit	Unit Cost	Total
14' wide bike lane construction	1,045	LF		
Common Excavation	1,897	CY	\$9.96	\$18,894.12
Rock Excavation	0	CY	\$66.49	\$0.00
Common Borrow	233	CY	\$12.99	\$3,026.67
Asphalt Paving (3")	31	TON	\$61.00	\$1,891.00
Aggregate Base Course - Crushed	136	CY	\$114.68	\$15,596.48
Fine Grading	14,630	SF	\$0.80	\$11,704.00
Aggregate Subbase - Gravel	891	CY	\$17.20	\$15,325.20
Clearing and Grubbing	0.6	AC	\$4,000.00	\$2,217.08
Seed and Mulch	30,305	SF	\$0.25	\$7,576.25
Loam	194	CY	\$29.00	\$5,626.00
Pedestrian Crossing Signals / rephasing	0	LS	\$5,000.00	\$0.00
Signing	1,045	LF	\$0.21	\$219.45
Striping (crosswalk)	0	LF	\$14.00	\$0.00
Striping (stopbars)	0	LF	\$8.00	\$0.00
Bicycle pavement marking symbol	1,045	LF	\$0.10	\$100.32
Fence	65	LF	\$20.00	\$1,300.00
Erosion Control - Silt Fence	500	LF	\$1.50	\$750.00
Extensions 36" concrete pipe	50	LF	\$136.00	\$6,800.00
Retaining walls				
(under exist. Old Bath Rd BR. over Rte 1)	750	SF	\$35.00	\$26,250.00
(Old Bath Rd BR Area - for new bridge)	0	SF	\$35.00	\$0.00
Bridge - Old Bath Road over RTE 1	0	EA	\$1,093,000.00	\$0.00
Drive reconstruction	0	EA	\$280.00	\$0.00
Railroad Crossing	0	LU	\$2,000.00	\$0.00
Additional fill (not included in typ. path estimate)	0	CY	\$6.00	\$0.00
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL

\$117,276.57

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Total of Segment(s) a		\$117,276.57
Mobilization @ 7%		\$8,209.36
Contingency @ 15%		\$18,822.89
		<u>\$144,308.82</u>
Survey	10 %	\$14,430.88
Engineer & Permitting Fee	15 %	\$21,646.32
Construction Engineering	10 %	\$14,430.88
		<u></u>
Grand Total for Section VIIa		\$194,816.91

State Share (80%)	\$155,853.52
Town Share (20%)	\$38,963.38

ANDROSCOGGIN-TO-THE-KENNEBEC

Conceptual Cost Estimate

Brunswick - West Bath - Bath, Maine

Section VIIb

Covers the connection over Route One to the Bath Road / Ames Plaza / Old Bath Road intersection
(Includes a new bridge over Route 1 and the ramp system from the Route One path up to Old Bath Rd)

1845 feet long (including Old Bath Rd. Bridge)

Item	Quantity	Unit	Unit Cost	Total
14' wide bike lane construction	1,465	LF		
Common Excavation	3,349	CY	\$9.96	\$33,356.04
Rock Excavation	0	CY	\$66.49	\$0.00
Common Borrow	410	CY	\$12.99	\$5,325.90
Asphalt Paving (3")	54	TON	\$61.00	\$3,294.00
Aggregate Base Course - Crushed	240	CY	\$114.68	\$27,523.20
Fine Grading	25,830	SF	\$0.80	\$20,664.00
Aggregate Subbase - Gravel	1,572	CY	\$17.20	\$27,038.40
Clearing and Grubbing	1.0	AC	\$4,000.00	\$3,909.64
Seed and Mulch	53,505	SF	\$0.25	\$13,376.25
Loam	342	CY	\$29.00	\$9,918.00
Pedestrian Crossing Signals / rephasing	1	LS	\$5,000.00	\$5,000.00
Signing	1,845	LF	\$0.21	\$387.45
Striping (crosswalk)	30	LF	\$14.00	\$420.00
Striping (stopbars)	60	LF	\$8.00	\$480.00
Bicycle pavement marking symbol	1,845	LF	\$0.10	\$177.12
Fence	300	LF	\$20.00	\$6,000.00
Erosion Control - Silt Fence	500	LF	\$1.50	\$750.00
Extensions 36" concrete pipe	0	LF	\$136.00	\$0.00
Retaining walls				
(under exist. Old Bath Rd BR. over Rte 1)	0	SF	\$35.00	\$0.00
(Old Bath Rd BR Area - for new bridge)	4,000	SF	\$35.00	\$140,000.00
Bridge - Old Bath Road over RTE 1	1	EA	\$1,093,000.00	\$1,093,000.00
Drive reconstruction	1	EA	\$280.00	\$280.00
Railroad Crossing	1	LU	\$2,000.00	\$2,000.00
Additional fill (not included in typ. path estimate)	19,600	CY	\$6.00	\$117,600.00
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL

\$1,510,500.00

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Total of Segment(s) b		\$1,510,500.00
Mobilization @ 7%		\$105,735.00
Contingency @ 15%		<u>\$242,435.25</u>
		\$1,858,670.25
Survey	10 %	\$185,867.03
Engineer & Permitting Fee	15 %	\$278,800.54
Construction Engineering	10 %	<u>\$185,867.03</u>
Grand Total for Section VIIb		\$2,509,204.84

State Share (80%)	\$2,007,363.87
Town Share (20%)	\$501,840.97

Sections VIIa and VIIb

Total of Segment(s) a and b		\$1,627,776.57
Mobilization @ 7%		\$113,944.36
Contingency @ 15%		<u>\$261,258.14</u>
		\$2,002,979.07
Survey	10 %	\$200,297.91
Engineer & Permitting Fee	15 %	\$300,446.86
Construction Engineering	10 %	<u>\$200,297.91</u>
Grand Total for Sections VIIa and VIIb		\$2,704,021.75

State Share (80%)	\$2,163,217.40
Town Share (20%)	\$540,804.35

ANDROSCOGGIN-TO-THE-KENNEBEC
Conceptual Cost Estimate
Brunswick - West Bath - Bath, Maine

Section VIII Segment 1

Upgrades to Deerfield Road (could be combined with other Sections).

Item	220 feet long		(2850 ft signing)	
	Quantity	Unit	Unit Cost	Total
8 ' wide bike lane construction	220	LF		
Common Excavation	400	CY	\$9.96	\$3,984.00
Rock Excavation	0	CY	\$66.49	\$0.00
Common Borrow	0	CY	\$12.99	\$0.00
Asphalt Paving (3")	4	TON	\$61.00	\$244.00
Aggregate Base Course - Crushed	17	CY	\$114.68	\$1,949.56
Fine Grading	1,760	SF	\$0.80	\$1,408.00
Aggregate Subbase - Gravel	188	CY	\$17.20	\$3,233.60
Clearing and Grubbing	0.2	AC	\$4,000.00	\$747.47
Seed and Mulch	4,840	SF	\$0.25	\$1,210.00
Loam	33	CY	\$29.00	\$957.00
Drainage	220	LF	\$1.36	\$299.20
Signing	2,850	LF	\$0.21	\$598.50
Striping	2,850	LF	\$0.60	\$1,710.00
Bicycle pavement marking symbol	2,850	LF	\$0.10	\$273.60
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL \$16,614.93

Total of Segment(s) 1 \$16,614.93

Mobilization @ 7% \$1,163.05

Contingency @ 15% \$2,666.70

\$20,444.68

Survey 10 % \$2,044.47

Engineer & Permitting Fee 15 % \$3,066.70

Construction Engineering 10 % \$2,044.47

Grand Total for Section VIII \$27,600.31

State Share (80%) \$22,080.25

Town Share (20%) \$5,520.06

ANDROSCOGGIN-TO-THE-KENNEBEC

Conceptual Cost Estimate

Brunswick - West Bath - Bath, Maine

Section IX Segment 1

Upgrades to Peterson Road (could be combined with Section V).

Item	460 feet long		(4550 ft signing)	
	Quantity	Unit	Unit Cost	Total
8' wide bike lane construction	460	LF		
Common Excavation	835	CY	\$9.96	\$8,316.60
Rock Excavation	0	CY	\$66.49	\$0.00
Common Borrow	0	CY	\$12.99	\$0.00
Asphalt Paving (3")	8	TON	\$61.00	\$488.00
Aggregate Base Course - Crushed	35	CY	\$114.68	\$4,013.80
Fine Grading	3,680	SF	\$0.80	\$2,944.00
Aggregate Subbase - Gravel	392	CY	\$17.20	\$6,742.40
Clearing and Grubbing	0.4	AC	\$4,000.00	\$1,562.90
Seed and Mulch	10,120	SF	\$0.25	\$2,530.00
Loam	69	CY	\$29.00	\$2,001.00
Drainage	460	LF	\$1.36	\$625.60
Signing	4,550	LF	\$0.21	\$955.50
Striping	4,550	LF	\$0.60	\$2,730.00
Bicycle pavement marking symbol	4,550	LF	\$0.10	\$436.80
Amenities * use 10% of construction cost				

* safety devices (signs, crosswalks, phones), benches, water fountains, restroom, etc.

TOTAL	\$33,346.60
--------------	--------------------

Total of Segment(s) 1	\$33,346.60
-----------------------	-------------

Mobilization @ 7%	\$2,334.26
-------------------	------------

Contingency @ 15%	\$5,352.13
-------------------	------------

	<u>\$41,032.99</u>
--	--------------------

Survey	10 %	\$4,103.30
--------	------	------------

Engineer & Permitting Fee	15 %	\$6,154.95
---------------------------	------	------------

Construction Engineering	10 %	\$4,103.30
--------------------------	------	------------

Grand Total for Section IX	\$55,394.54
-----------------------------------	--------------------

State Share (80%)	\$44,315.63
-------------------	-------------

Town Share (20%)	\$11,078.91
------------------	-------------

APPENDIX D - ENVIRONMENTAL CONSTRAINTS ASSESSMENT REPORT

ANDROSCOGGIN-TO-THE-KENNEBEC MULTI-USE PATH EXTENSION BRUNSWICK AND BATH, MAINE ENVIRONMENTAL ASSESSMENT SUMMARY

SEPTEMBER 2002



PREPARED FOR:

T.Y. LIN INTERNATIONAL
5 FUNDY ROAD
FALMOUTH, MAINE 04105

PREPARED BY:

WOODLOT ALTERNATIVES, INC.
30 PARK DRIVE
TOPSHAM, MAINE 04086

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Study Area Description	1
2.0	METHODS	1
2.1	Aerial Photo Interpretation	1
2.2	Field Review	1
2.3	Agency Consultation.....	2
3.0	RESULTS	2
3.1	Wetlands Identified Within the Study Area.....	2
3.1.1	Old Bath Road/Old Brunswick Road	2
3.1.2	U.S. Route One-Congress Street	3
3.1.3	U.S. Route One-Peterson Lane.....	3
3.1.4	U.S. Route One-Picnic Area/Wing Farm Connector.....	3
3.2	Results of Agency Contacts	3
4.0	REGULATORY IMPLICATIONS	5
4.1	State and Federal Regulations.....	5
4.2	Local Regulations	5
4.2.1	Brunswick.....	5
4.2.2	West Bath/Bath.....	5
5.0	SUMMARY	6

APPENDICES

Appendix A	Figures
	Figure 1. Site Location Map
	Figure 2. Wetland Location Map
Appendix B	Representative Photographs
Appendix C	Wetlands Tables
	Table 1. Old Bath Road/Old Brunswick Road Alternative - Wetlands Identified Within Study Area
	Table 2. U.S. Route One-Congress Street Alternative - Wetlands Identified Within Study Area
	Table 3. U.S. Route One-Peterson Lane Alternative - Wetlands Identified Within Study Area
	Table 4. U.S. Route One-Picnic Area/Wing Farm Connector Alternative - Wetlands Identified Within Study Area
Appendix D	Wetlands of Special Significance Defined
Appendix E	Agency Responses

1.0 INTRODUCTION

The Town of Brunswick has expressed an interest in determining the feasibility of a four-season, multi-use path connecting Brunswick to Bath, Maine (Figure 1 in Appendix A). The multi-use path would be an extension of the existing Androscoggin River Bicycle Path from its easterly terminus at Grover Lane in Brunswick to the southerly terminus of the bike lane on the new Sagadahoc Bridge in Bath. Four alternative routes have been identified: (1) the Old Bath Road/Old Brunswick Road route, (2) the U.S. Route One corridor to Peterson Lane, (3) the U.S. Route One corridor to Congress Street, and (4) the U.S. Route One corridor to the Picnic Area/Wing Farm Connector (Figure 2 in Appendix A). Woodlot Alternatives, Inc. (Woodlot) was contracted by T.Y. Lin International to conduct a preliminary evaluation of maps and aerial photographs for wetlands or sensitive areas that might be impacted by the proposed pathway.

For this preliminary reconnaissance-level assessment, limited air photo and map interpretation was conducted to identify wetland areas, significant wildlife habitat areas, and possible rare plant community locations along the proposed pathway extensions that might be crossed or otherwise impacted by construction activities. Subsequent to air photo interpretation, a general-level field review of the proposed pathway extension routes was conducted, and natural resource agencies were contacted.

1.1 Study Area Description

The study area encompasses potential pathway routes along existing roads and/or utility rights-of-way (ROWs) and woods roads. A number of residences are located along both the north and south sides of the Old Bath Road/Old Brunswick Road, in addition to some open fields and wooded areas. The U.S. Route One corridor is primarily comprised of undeveloped woods paralleling the highway except for Maplewood Manor Mobile Home Park, which is situated within ~70 feet of the highway and the picnic area adjacent to U.S. Route One. The Peterson Road spur is a combination of an unimproved road and a woods road with scattered private residences. The Picnic Area/Wing Farm Connector includes a wooded utility ROW, undeveloped woods and field, commercial businesses and existing roadways. Regardless of what route or routes are developed, a crossing at the New Meadows River will be required.

2.0 METHODS

2.1 Aerial Photo Interpretation

True color aerial photos (2000) for the project area were provided by the Greater Portland Council of Government (COG) through T.Y. Lin International and were used as a base map to display the wetlands identified within the study area routes (Figure 2 in Appendix A).

2.2 Field Review

A general-level field review was conducted along each of the four proposed routes using an aerial photo mock-up of the study areas. Information regarding the river and wetlands (e.g., natural communities, hydrology, and landscape position) was recorded in a field notebook and representative photographs were taken (Appendix B). No formal wetland delineations or community surveys were done¹.

¹ It should be noted that although no formal natural community surveys were conducted, Woodlot had prior knowledge of two potential state-listed communities located within the U.S. Route One corridor: (1) Pitch Pine-Heath Barren, and (2) Little Bluestem-Blueberry Sandplain Grassland. Both communities would be ranked S-1, critically imperiled in Maine.

2.3 Agency Consultation

Woodlot contacted federal and state agencies responsible for administering databases for rare, threatened, or endangered species, significant wildlife habitats, unusual natural communities and critical areas, and significant architectural properties listed under the National Register of Historic Places.

- The United States Fish and Wildlife Service (USFWS) was contacted to determine if there are any federally-listed species known to exist in or adjacent to the proposed pathway corridors.
- The United States Coast Guard was contacted to determine if a permit (33CFR322) for the bridge crossing the New Meadows River would be required.
- The National Marine Fisheries Services (NMFS) has been contacted to determine whether the area supports Essential Fish Habitat (EFH)². Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on the EFH, and respond in writing to the fisheries service's recommendations.
- The Maine Department of Inland Fisheries and Wildlife (MDIFW) wildlife and fisheries biologists were contacted to inquire about the presence of state-listed rare, threatened, or endangered animal species, and significant fish and wildlife habitat (e.g., deer wintering areas, coastal and inland wading bird and waterfowl habitat, and significant fisheries resources associated with the New Meadows River).
- The Maine Department of Marine Resources (MDMR) was contacted to determine whether there are any anadromous fish resources associated with the New Meadows River.
- The Maine Natural Areas Program (MNAP) was contacted to determine if any state-listed rare, threatened, or endangered plants, unusual communities, or other natural features of special concern had previously been identified in the study areas.
- The Maine Historic Preservation Commission (MHPC) was also contacted to inquire about the presence of prehistoric and historic features in the vicinity of the study areas.
- The Maine Department of Environmental Protection (MDEP), Environmental Assessment, Water Resources was contacted for information on any significant lakes, ponds, rivers, streams, or brooks located within the study areas.

3.0 RESULTS

3.1 Wetlands Identified Within the Study Area

3.1.1 Old Bath Road/Old Brunswick Road

There were 22 individual wetland areas identified within, and adjacent to, the study area (Figure 2 in Appendix A and Table 1 in Appendix C). There are seven MDEP-defined streams associated with some of the wetlands identified. Some of the larger emergent/open water wetlands identified may be considered *Wetlands of Special Significance*³ as defined under the Natural Resources Protection Act (NRPA) (see Appendix D for *Wetlands of Special Significance* defined). Mill Pond, the New Meadows

² Essential Fish Habitat (EFH) – The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, known as the Sustainable Fisheries Act (SFA), emphasized the importance of habitat protection to healthy fisheries and strengthen the ability of the National Marine Fisheries Service (NMFS) and the councils to protect and conserve the habitat of marine, estuarine, and anadromous finfish, mollusks, and crustaceans. This habitat is termed “essential fish habitat” (EFH) and is broadly defined to include “those waters and substrate necessary to fish for spawning, breeding, or growth to maturity.” Essential Fish Habitat, Volume 1, prepared by New England Fishery Management Council in consultation with NMFS. October 7, 1978.

³ *Wetland of Special Significance* as defined by NRPA; Chapter 310 includes all coastal wetlands and great ponds. In addition, certain freshwater wetlands are considered *Wetlands of Special Significance*.

River, and associated wetlands are considered *Wetlands of Special Significance*. The New Meadows River is listed by the MDEP as one of the 17 priority coastal waters to receive federal, state, and local focus for non-point source pollution abatement activities.

3.1.2 U.S. Route One-Congress Street

There were 25 individual wetland areas identified within, and adjacent to, the study area (Figure 2 in Appendix A and Table 2 in Appendix C). The majority of the wetlands are forested. Five of the forested wetlands may contain potential vernal pool habitat⁴. Seven MDEP-defined streams were identified. Three of these are mapped within the 100-year floodway as mapped by the Federal Emergency Management Agency (FEMA) (i.e., W-12, W-19, and W-25). Wetlands within 25 feet of the New Meadows River or within a mapped 100-year floodway are considered *Wetlands of Special Significance*.

3.1.3 U.S. Route One-Peterson Lane

There were 12 individual wetland areas identified within, and adjacent to, this alternate route (Figure 2 in Appendix A and Table 3 in Appendix C). The majority of the wetlands are forested. Five of the forested wetlands may contain potential vernal pool habitat⁴.

3.1.4 U.S. Route One-Picnic Area/Wing Farm Connector

There were 29 individual wetland areas identified within, and adjacent to, the study area (Figure 2 in Appendix A and Table 4 in Appendix C). Seven MDEP-defined streams were identified. Wetlands within 25 feet of the streams, the New Meadows River, or within a mapped 100-year floodway are considered *Wetlands of Special Significance*.

3.2 Results of Agency Contacts

- The USFWS finds that, based on the information currently available, no federally-listed species under their jurisdiction are known to occur in the project area, with the exception of occasional, transient eagles (*Haliaeetus leucocephalus*).
- The United States Coast Guard has jurisdiction over navigable waters that are below the head of tide. The U.S. Coast Guard considers the New Meadows River navigable, and therefore, requires a permit for bridge work; however, there is a possibility of being granted a waiver from the Coast Guard if specific requirements are met. Part of the permitting process will involve conducting an EFH and possibly an Environmental Impact Statement (EIS). If a Coast Guard permit is required, there may be a Categorical Exclusion that will allow for a more streamlined Advance Approval permit process. Information on permitting requirements is still being collected.
- NMFS comments address the need to avoid and minimize wetland impacts. If wetland impacts are unavoidable, then mitigation may be required, as coastal wetlands are considered high value habitat. The agency will want to be consulted once the plans for the proposed pathway are nearing completion.
- Significant Wildlife Habitats are defined by the MDIFW as “habitat for species appearing on the official state or federal lists of endangered or threatened animal species: high or moderate value

⁴ Vernal pools are considered to be naturally occurring, temporary to permanent bodies of water occurring in shallow depressions that typically fill during the spring and fall and may dry during the summer. Vernal pools have no permanent or viable populations of predatory fish. Vernal pools provide the primary breeding habitat for wood frog, spotted salamander, blue-spotted salamander, and/or fairy shrimp, and often provide habitat for other wildlife including several endangered and threatened species.

deer wintering areas and travel corridors; high or moderate waterfowl and wading bird habitats, including nesting and feeding areas; critical spawning and nursery areas for Atlantic sea run salmon; shorebird nesting, feeding, and staging areas and seabird nesting islands; and significant vernal pools.” The proposed pathway extension corridor will pass moderate value coastal wading bird/waterfowl habitat on the north side of the New Meadows River Bridge on the Old Brunswick Road. The U.S. Route One route may pass through potentially significant vernal pools on the north side of U.S. Route One. There is a Deer Wintering Area on the southern end of Peterson Lane (see MDIFW response map in Appendix E). MDIFW’s review regarding significant fisheries resources indicates that there are no concerns, and that their jurisdiction (fisheries only) ordinarily does not extend to water bodies influenced by salt water. However, with any projects that occur in and around water, MDIFW suggests that the activity be done during the driest time of the year and completed early enough in the year so that exposed soils can be stabilized and vegetated before fall. They recommend that work be conducted sometime between July and mid-August.

- The review and response by the MDMR regarding significant marine resources associated with the New Meadows River indicates that the river provides spawning habitat for alewife, blueback herring, and smelt. MDMR currently stocks prespawn alewives and blueback herring into Whiskeag Creek to enhance the annual spawning run into this series of ponds. The review also indicates that, currently, there are two aquaculture leases within 300 feet of the proposed bike path crossing where the New Meadows River flows under U.S. Route One. The Town of West Bath owns one site and the other is owned by Spinney Creek Shellfish. The commercial harvesting of quahog also occurs in the area of the New Meadows River.

MDMR advises that no work be conducted during the alewife/blueback herring spawning period if upstream migration of these species would be compromised during construction (i.e., spawning generally occurs mid-May to mid-June). The proposed bike path crosses the New Meadows River at the U.S. Route One location. MDMR recommends that the appropriate steps be taken to prevent runoff and siltation during the construction project. It is also strongly recommended that the aquaculture leaseholders be notified prior to construction so lease/construction schedules can be adjusted prior to the commencement of the project.

- The MNAP’s Biological and Conservation Data System files do not indicate any rare botanical features specifically within or adjacent to the study area. However, the lack of data may indicate a minimal survey effort rather than a confirmation of the absence of rare botanical features. Consequently, a site inventory should be initiated by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed. The MHPC’s review of their records indicates that “some of the portions of the proposed Old Bath Road/Old Brunswick Road route are known to be sensitive for prehistoric archaeological sites. The only known historic archaeological site in the vicinity of the proposed pathway is the 17th century fur trading post of Thomas Stevens located near the New Meadows River. However, the Old Bath Road is an old route, which may contain several more historic archaeological sites. Documentary research will be required and at least some archaeological testing, certainly in the vicinity of the 17th century trading post. There are currently no properties listed on the National Register of Historic Places within the study area. This portion of the town has not been comprehensively surveyed and an architectural survey of the corridor will be needed.”
- The MDEP, Environmental Assessment, Water Resources response noted that the New Meadows River above U.S. Route One was of concern as it does not presently attain standards for dissolved oxygen and is listed as a nonattainment segment by the Department. “Any activity that would further contribute to that condition should be avoided.”

4.0 REGULATORY IMPLICATIONS

4.1 State and Federal Regulations

The MDEP and the U.S. Army Corps of Engineers (Corps) regulate all wetlands identified within the study area. Projects resulting in minor wetland impacts are reviewed jointly by both agencies through MDEP's NRPA Tier Application review process. In general, projects that are not located within a wetland, or projects that alter less than 4,300 square feet of wetland (not located in the Shoreland Zone) are exempt from the Tier permitting requirements. Typically, projects with cumulative impacts to wetlands between 4,300 to 15,000 square feet are eligible for review under the Tier 1 process. The Tier 2 review process applies to alterations that affect between 15,000 and 43,560 square feet (1 acre). Cumulative project impacts that exceed 1 acre and impacts to *Wetlands of Special Significance* typically require a Tier 3 review. Wetland mitigation in the form of restoration, enhancement, creation, and/or preservation is accepted by the regulatory agencies to offset lost wetland functions and values, as long as efforts have been made to avoid wetland impacts to minimize unavoidable impacts prior to proposing mitigation. The MDEP and the Corps typically require mitigation when impacts are greater than 20,000 square feet or are within *Wetlands of Special Significance*.

In addition, it appears that the proposed project activities will require additional Corps permits under Section 10 of the Rivers and Harbors Act of 1899. A letter from Jay Clement, Senior Project Manager, Corps' Maine Project Office, outlining the possible permit requirements can be found in Appendix E.

Bridges in tidal navigable waters are a separate category of work under the Rivers and Harbors Act and come under the U.S. Coast Guard jurisdiction. Any bridge work over the New Meadows River would require a permit from the U.S. Coast Guard unless an exemption is granted. Any application to the MDEP and the Corps will require that all correspondence to the U.S. Coast Guard be attached.

4.2 Local Regulations

4.2.1 Brunswick

The Town of Brunswick requires a Flood Hazard Permit for any activity within a 100-year floodplain as mapped by FEMA. In addition, the Town will require all the necessary state and federal permits required for work in wetlands (i.e., freshwater wetlands, coastal wetlands, rivers, streams, ponds, etc.) per a conversation with Tom Wakefield, Code Enforcement Officer, Town of Brunswick on March 12, 2002. Some of the streams and the New Meadows River are located within the Town's Natural Resources Protection Zone (NRPZ) and are subject to the specific guidelines outlined under Article II, Section 211. The project will likely be subject to a Major Development Review by the Planning Board as outlined under Chapter 4, Development Review (Brunswick Zoning Ordinances, amended 1999).

4.2.2 West Bath/Bath

The City of Bath requires a Flood Hazard Permit for any activity within a 100-year floodplain as mapped by FEMA. It is unclear whether the Town of West Bath also has this same requirement. Mill Pond, the streams associated with Wetlands 12 and 21, all freshwater wetlands greater than 10 acres, the New Meadows River, and its associated wetlands are located within both town/city's Shoreland Protection Zones (Resource Protection District in Bath), and are subject to the specific land use guidelines outlined in each town/city's Land Use Ordinances.

5.0 SUMMARY

Based upon a preliminary evaluation of maps, aerial photographs, agency contacts, and field review for wetland areas or sensitive areas that might be impacted by the proposed pathway alternatives, Woodlot concludes the following:

- There will likely be wetland impacts resulting from activities along any one of the proposed routes. Wetland impacts could be minimized significantly by carefully laying out the proposed routes to avoid direct impacts; however, landowner permission, engineering constraints, and finances could impose some restrictions. The project will likely require a NRPA Tier 3 permit application in addition to Corps permits, and possibly a U.S. Coast Guard permit for bridge work along the New Meadows River. A NRPA Tier 3 permit application may be required for any activity impacting wetlands within 25 feet of a stream and/or within a mapped 100-year floodplain and/or within a critically imperiled (S1) or imperiled community (S2) such as the two communities identified along the U.S. Route One Corridor (see Footnote 1). Activities within the New Meadows River could require an EFH review and possibly a Request for Approval of Timing of Activity from MDMR⁵.
- Both the MDEP and the Corp emphasize avoidance and minimization of wetland impacts. Any impacts to the large emergent wetlands along the Old Bath Road/Old Brunswick Road route, the salt marsh associated with the New Meadows River, and any floodplain wetlands associated with the streams identified within the alternative routes and river will likely require a full NRPA permit (Tier 3). These wetlands are considered *Wetlands of Special Significance*. A wetland function and value assessment along with compensation and long-term monitoring could be required.
- NMFS will review any permit application submitted to the Corps and will also require mitigation for any impacts to the salt marsh. Both the Corps and NMFS require a 1:1 ratio for boardwalks (i.e., every 1 foot in width equals 1 foot in height). For example, an eight-foot-wide boardwalk would have to be located eight feet above the surface of the marsh. If the design is unable to accommodate the ratio, it may be possible to request a waiver; however, it is likely that mitigation would be required. This could involve a function and value assessment, a compensation plan, and monitoring. It is also possible that shading of the salt marsh vegetation by the boardwalk could be considered a direct impact that could result in compensation. This ratio applies to any boardwalk constructed over a wetland area.
- Several of the forested wetlands along the U.S. Route One corridor may contain potential vernal pool habitat. A spring survey would be necessary to determine if amphibians and invertebrates breed within these basins. If impacts to these areas are unavoidable, then elevated boardwalks should be considered.
- Once the final pathway extension route or routes have been established, formal wetland delineations should be performed at all wetland, stream, and river crossings. At that point, the amount and type of wetland impacts can be calculated and permitting needs more accurately determined.

⁵ Request for Approval of Timing of Activity: Any activity that results in disturbing the river substrate between October 2 and July 4 may require an Approval of Timing of Activity to prevent any potential impacts to shellfish and fin fish.

Appendix A

Figure 1 – Site Location Map

Figure 2 – Wetland Location Map

ANDROITY STUDY

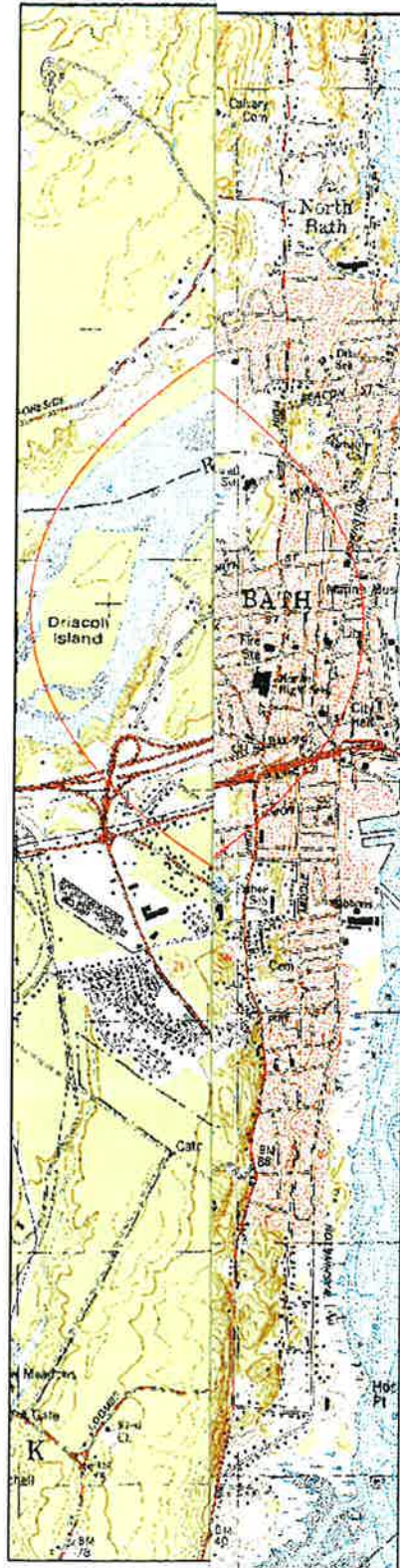


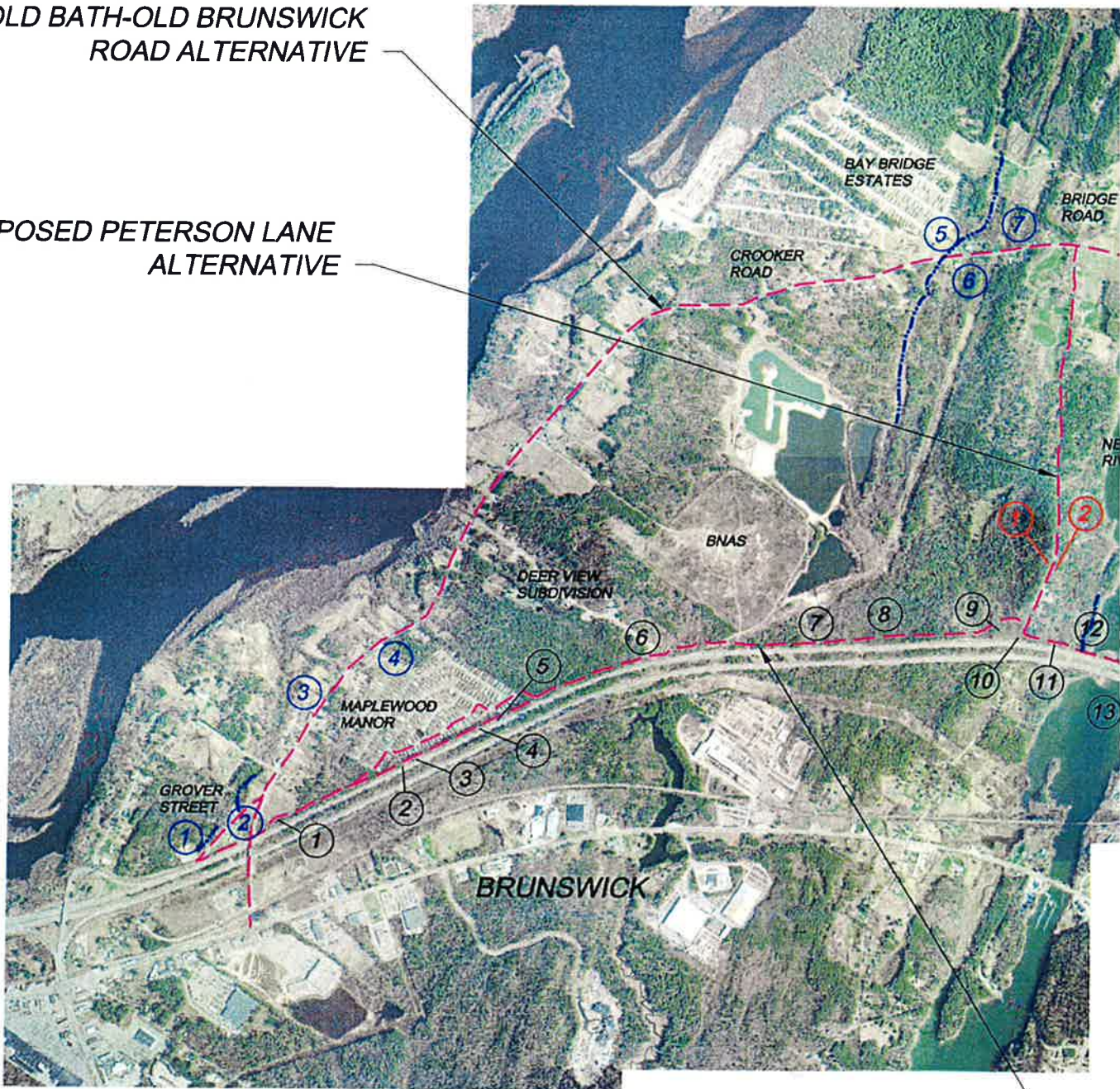
FIGURE 1
PROJECT LOCATION
03/11/02

ANDROSCOGGIN-TO-THE KENNEBEC



PROPOSED
OLD BATH-OLD BRUNSWICK
ROAD ALTERNATIVE

PROPOSED PETERSON LANE
ALTERNATIVE



PR
CO

PROPOSED



Photo 5. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Emergent, scrub-shrub, open water Wetland-12, south side of Old Bath Road, across from Lenfest Road.
Woodlot Alternatives, Inc. December 2001.



Photo 6. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Emergent Wetland-15, east of Creekside Lane, north side of Old Brunswick Road, Bath.
Woodlot Alternatives, Inc. December 2001.



Photo 7. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Emergent, scrub-shrub, open water Wetland-118, Mill Pond Road, south side of Old Brunswick Road. Woodlot Alternatives, Inc. December 2001.



Photo 8. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Mill Pond, north side of Old Brunswick Road, looking east. Woodlot Alternatives, Inc. December 2001.



Photo 9. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Mill Pond, south side of Old Brunswick Road, looking east. Woodlot Alternatives, Inc. December 2001.



Photo 10. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 21, perennial stream west of Morse High School, south side of Old Brunswick Road, looking east. Woodlot Alternatives, Inc. December 2001.



Photo 11. Androscoggin-to-the-Kennebec Pathway Feasibility Study. North side of U.S. Route One, behind Maplewood Manor Mobile Home Park.
Woodlot Alternatives, Inc. March 2002.



Photo 12. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 6, forested, north side of U.S. Route One, south of the terminus of Deer View Road.
Woodlot Alternatives, Inc. March 2002.



Photo 13. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 7, north side of U.S Route One, west of utility ROW crossing. Forested wetland with potential vernal pool habitat. Woodlot Alternatives, Inc. March 2002.



Photo 14. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 8, north side of U.S. Route One, east W-7. Large forested wetland with potential vernal pool habitat. Woodlot Alternatives, Inc. March 2002.



Photo 15. Androscoggin-to-the-Kennebec Pathway Feasibility Study. North side of U.S. Route One, New Meadows River crossing, looking west. Woodlot Alternatives, Inc. March 2002.



Photo 16. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 14, south side of West Bath District Court driveway, emergent swale. Woodlot Alternatives, Inc. March 2002.



Photo 17. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 16, north side of U.S. Route One, east of W-14. Forested wetland with potential vernal pool habitat. Woodlot Alternatives, Inc. March 2002.



Photo 18. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 17, north side of U.S. Route One, west of railroad tracks. Emergent wetland with purple loosestrife. Woodlot Alternatives, Inc. March 2002.



Photo 19. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 17, north side of U.S. Route One, west of railroad tracks. Emergent wetland with purple loosestrife. Proposed crossing. Woodlot Alternatives, Inc. March 2002.



Photo 20. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 19, north side of U.S Route One. This stream flows to the west and merges with a larger system. Woodlot Alternatives, Inc. May 2002.



Photo 21. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 20, north side of U.S Route One. Scrub-shrub wetland, ~50 feet from roadway, downslope. Woodlot Alternatives, Inc. May 2002.



Photo 22. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 21, north side of U.S Route One, west of Picnic Area. Scrub-shrub/forested wetland. Woodlot Alternatives, Inc. May 2002.



Photo 23. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetlands 24 and 25, north side of U.S Route One, west side of Congress Street. Scrub-shrub wetland with streams. Woodlot Alternatives, Inc. May 2002.



Photo 24. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 1, west side of Peterson Road. Scrub-shrub wetland. Woodlot Alternatives, Inc. May 2002.



Photo 25. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Wetland 2, east side of Peterson Road. Scrub-shrub, inundated depressional wetland. Wood frog egg masses observed. Woodlot Alternatives, Inc. May 2002.



Photo 26. Androscoggin-to-the-Kennebec Pathway Feasibility Study. W-2, Picnic Area/Wing Farm Connector. Discharge area south of utility ROW. Woodlot Alternatives, Inc. June 2002.



Photo 27. Androscoggin-to-the-Kennebec Pathway Feasibility Study. W-3, Picnic Area/Wing Farm Connector. Scrub-shrub wetland, disturbed area. Woodlot Alternatives, Inc. June 2002.



Photo 28. Androscoggin-to-the-Kennebec Pathway Feasibility Study. W-4, looking north at stream that connects to Mill Pond to the north. TJ DeWan & Associates (T. Farmer). June 2002.



Photo 29. Androscoggin-to-the-Kennebec Pathway Feasibility Study. W-5, Picnic Area/Wing Farm Connector. Large emergent wetland with stream. Woodlot Alternatives, Inc. June 2002.



Photo 30. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Potential Little Bluestem-Blueberry Sandplain Grassland Community. Brunswick Naval Air Station property. Woodlot Alternatives, Inc. March 2002.



Photo 31. Androscoggin-to-the-Kennebec Pathway Feasibility Study. Potential Pitch Pine-Heath Barrens. Brunswick Naval Air Station property. Woodlot Alternatives, Inc. March 2002.

Appendix C

Wetlands Tables

TABLE 1. Old Bath Road/Old Brunswick Road Alternative–Wetlands Identified Within the Study Area Corridor (refer to Figure 2)

Wetland ID	Wetland Location	Comments
1	North side of Grover Street, Brunswick.	Is a detention basin with stream entering, dominated by cat-tail.
2	Both sides of Grover Street, Brunswick.	Stream on the north side with a drainage swale on south side that appears to be collecting runoff from culvert under the OBR.
3	North side of OBR, east of Dollof Road, Brunswick.	Forested wetland fairly small, adjacent to residences.
4	South side of OBR, east of Maplewood Manor entrance, Brunswick.	Appears to be a collection basin dominated by cat-tail.
5	Both sides of OBR, east of Bay Bridge Estates entrance, Brunswick.	Perennial stream and scrub-shrub wetland.
6	South side of OBR, east of Bay Bridge Estates entrance, Brunswick.	Small scrub-shrub wetland, adjacent to residence.
7	North side of OBR, east of utility right of-way, Brunswick.	Small scrub-shrub/forested wetland.
8	North side of OBR, west of New Meadows River, Brunswick.	Emergent swale.
9	Both sides of New Meadows River (Brunswick & Bath).	Open water/river and emergent wetland.
10	North side of OBSR, east of the New Meadows River, Bath.	Emergent wetland with stream.
11	South side of OBSR, east of Lakeside Road, Bath.	Small scrub-shrub wetland.
12	Both sides of OBSR, west of Lenfest Avenue, Bath.	Emergent wetland with stream on north side, small pond and emergent wetland on south side.
13	East of Lenfest Avenue ~1/2 mile.	Wet meadow on north side between houses. Mowed wet meadow swale on south side with open field.
14	North side of OBSR, Bath (east of #270 residence).	Small emergent and scrub shrub wetland.
15	Both sides of OBSR where railroad veers south.	Emergent wetland.
16	Both sides of OBSR, east of Creekside Lane, Bath.	Narrow stream channel.
17	Both sides of OBSR, at railroad trestle, Bath.	Small pond and emergent wetland, and a causeway bisects the wetland on the south side. North side, emergent/scrub-shrub.
18	South side of OBSR, east of Mill Pond Road, Bath.	Pond and emergent wetland.
19	North side of OBSR, between railroad tracks and road.	Emergent wetland.
20	Both sides of OBSR, Bath.	Mill Pond.
21	Both sides of OBSR, west of Morse High School, Bath.	Forested wetland with stream.
22	North side of OBSR, across from Morse High School gymnasium entrance, Bath.	Emergent wetland, appears to be a disturbed site.

Notes:

OBR – Old Bath Road

OBSR – Old Brunswick Road

TABLE 2. U.S. Route One-Congress Street Alternative –Wetlands Identified Within the Study Area Corridor (refer to Figure 2)

Wetland ID	Wetland Location	Comments
1	East of Old Bath Road, inside tree line.	Drainage swale/forested. Ranges from 1 to 4 feet wide.
2	Behind Maplewood Manor Mobile Home Park.	Toward west end, ~100-foot crossing/forested.
3	Behind Maplewood Manor Mobile Home Park.	~30 feet east of W-2/forested, ~100-foot crossing (inside tree line from Bowdoin College road sign).
4	Behind Maplewood Manor Mobile Home Park.	Scrub-shrub wetland toward east end. ~3-foot crossing.
5	Behind Maplewood Manor Mobile Home Park.	Forested wetland, east end. ~50-foot crossing (inside tree line from blue Next Exit road sign).
6	South of the end of Deer Run subdivision road, west of earthen berm.	Forested wetland, potential vernal pool habitat.
7	East of utility right-of-way crossing, near Emergency Stopping Only road sign.	Forested wetland, potential vernal pool habitat.
8	Just east of W-7.	Large forested wetland/cedar swamp. Upland tongue divides it at Rt. One.
9	Just west of house and woods road.	Forested wetland ~300 feet north of Rt. One.
10	East of W-9 and adjacent to woods road.	Forested wetland with potential vernal pool habitat.
11	East of house and bottom of steep slope.	Forested wetland, ~125-foot crossing.
12	Base of steep, seepy slope and west of New Meadows River.	Forested, floodplain wetland associated with New Meadows River. ~400-foot crossing, also small stream present.
13	New Meadows River.	Will likely need to stay at bridge elevation. Drainage ditch on east side will come into play.
14	South side of West Bath District Court driveway.	Emergent swale, more on south side of fence. Purple loosestrife present.
15	East of W-14.	Wet meadow, drainage. ~8-foot crossing.
16	North of New Meadows Road exit.	Forested wetland with potential vernal pool habitat.
17	West of railroad tracks.	Scrub-shrub wetland parallels RR, purple loosestrife present.
18	East of railroad tracks – contiguous with W-17.	Scrub-shrub wetland parallels RR, purple loosestrife present.
19	East of W-18, adjacent to Rt. 1 – 100-year flood zone.	Contains a stream, flows from culvert under Rt. 1 and small scrub-shrub.
20	East of W-19, adjacent to Rt. 1.	A forested and scrub-shrub wetland, ATV tracks parallel western end.
21	East of W-20, adjacent to Rt. 1.	Linear forested wetland ~50 feet wide.
22	East of Picnic Area.	Forested wetland with stream and utility ROW.
23	East of W-22.	Forested wetland with stream.
24	East of W-23 at base of steep slope.	Stream with wetland fringe.
25	West of Congress Street, base of steep slope.	Scrub-shrub wetland with stream.

TABLE 3. U.S. Route One-Peterson Road Alternative –Wetlands Identified Within the Study Area Corridor (refer to Figure 2)

Wetland ID	Wetland Location	Comments
1	East of Old Bath Road, inside tree line.	Drainage swale/forested. Ranges from 1 to 4 feet wide.
2	Behind Maplewood Manor Mobile Home Park	Toward west end, ~100-foot crossing/forested.
3	Behind Maplewood Manor Mobile Home Park	~30 feet east of W-2/forested, ~100-foot crossing (inside tree line from Bowdoin College road sign).
4	Behind Maplewood Manor Mobile Home Park	Scrub-shrub wetland toward east end. ~3-foot crossing.
5	Behind Maplewood Manor Mobile Home Park	Forested wetland, east end. ~50-foot crossing (inside tree line from blue Next Exit road sign).
6	South end of Deer Run subdivision road, west of earthen berm.	Forested wetland, potential vernal pool habitat.
7	East of utility right-of-way crossing, near Emergency Stopping Only road sign.	Forested wetland, potential vernal pool habitat.
8	Just east of W-7.	Large forested wetland/cedar swamp. Upland tongue divides it at Rt. One.
9	Just west of house and woods road.	Forested wetland ~300 feet north of Rt. One.
10	East of W-9 and adjacent to woods road (Peterson Road).	Forested and scrub-shrub wetland with potential vernal pool habitat.
1-Peterson Road	North of W-10, west side of Peterson Road.	Forested wetland ~3 to 10 feet from road.
2-Peterson Road	North of W-10, east side of Peterson Road.	Small inundated scrub-shrub depressional wetland with egg masses.

TABLE 4. U.S. Route One-Picnic Area/Wing Farm Connector Alternative – Wetlands Identified Within the Study Area Corridor (refer to Figure 2)

Wetland ID	Wetland Location	Comments
1	East of Old Bath Road, inside tree line.	Drainage swale/forested. Ranges from 1 to 4 feet wide.
2	Behind Maplewood Manor Mobile Home Park.	Toward west end, ~100-foot crossing/forested.
3	Behind Maplewood Manor Mobile Home Park.	~30 feet east of W-2/forested, ~100-foot crossing (inside tree line from Bowdoin College road sign).
4	Behind Maplewood Manor Mobile Home Park.	Scrub-shrub wetland toward east end. ~3-foot crossing.
5	Behind Maplewood Manor Mobile Home Park.	Forested wetland, east end. ~50-foot crossing (inside tree line from blue Next Exit road sign).
6	South of the end of Deer Run subdivision road, west of earthen berm.	Forested wetland, potential vernal pool habitat.
7	East of utility right-of-way crossing, near Emergency Stopping Only road sign.	Forested wetland, potential vernal pool habitat.
8	Just east of W-7.	Large forested wetland/cedar swamp. Upland tongue divides it at Rt. One.
9	Just west of house and woods road.	Forested wetland ~300 feet north of Rt. One.
10	East of W-9 and adjacent to woods road.	Forested wetland with potential vernal pool habitat.
11	East of house and bottom of steep slope.	Forested wetland, ~125-foot crossing.
12	Base of steep, seepy slope and west of New Meadows River.	Forested, floodplain wetland associated with New Meadows River. ~400-foot crossing. Also small stream present.
13	New Meadows River.	Will likely need to stay at bridge elevation. Drainage ditch on east side will come into play.
14	South side of West Bath District Court driveway.	Emergent swale, more on south side of fence. Purple loosestrife present.
15	East of W-14.	Wet meadow, drainage. ~8-foot crossing.
16	North of New Meadows Road exit.	Forested wetland with potential vernal pool habitat.
17	West of railroad tracks.	Scrub-shrub wetland parallels RR, purple loosestrife present.
18	East of railroad tracks – contiguous with W-17.	Scrub-shrub wetland parallels RR, purple loosestrife present.
19	East of W-18, adjacent to Rt. One – 100-year flood zone.	Contains a stream, flows from culvert under Rt. One and small scrub-shrub.
20	East of W-19, adjacent to Rt. One.	A forested and scrub-shrub wetland, ATV tracks parallel western end.
21	East of W-20, adjacent to Rt. One.	Linear forested wetland ~50 feet wide.
22	East of Picnic Area.	Forested wetland with stream and single-pole utility ROW.
1-Picnic Area/ Wing Farm	West of W-22, downslope toward large utility ROW.	Appears to be a discharge area with some channelization.
2-Picnic Area/ Wing Farm	East of large utility ROW.	Two stream channels that merge and continue toward W-7.
3-Picnic Area/ Wing Farm	North of W-2 along dirt road, area has been disturbed.	Small wetland pocket/fringe-disturbed area.
4-Picnic Area/ Wing Farm	North of W-3 and rocks, inside tree line.	Narrow stream channel-flows into W-5.
5-Picnic Area/ Wing Farm	Northeast of W-3.	Narrow scrub-shrub wetland that parallels a line white pine trees to the east.
6-Picnic Area/ Wing Farm	Anchor Road.	Large stream associated with Mill Pond.
7-Picnic Area/ Wing Farm	South and Southwest of Wing Farm Parkway Road.	Large emergent/scrub-shrub wetland with stream (W-6 stream).

Appendix D

Wetlands of Special Significance Defined

Natural Resources Protection Act, Chapter 310 - *Wetlands of Special Significance*

Freshwater *Wetlands of Special Significance* has one or more of the following characteristics:

- (1) Critically imperiled or imperiled community. The freshwater wetland contains a natural community that is critically imperiled (S1) or imperiled (S2) as defined by the Natural Areas Program.
- (2) Significant wildlife habitat. The freshwater wetland contains significant wildlife habitat as defined by 38 M.R.S.A. § 480-B(10). (High or moderate value).
- (3) Location near a coastal wetland. The freshwater wetland is located within 250 feet of a coastal wetland.
- (4) Location near a GPA (Great Pond Act) great pond. The freshwater wetland is located within 250 feet of the normal high water line, and within the same watershed, of any lake or pond classified as GPA under 38 M.R.S.A. § 465-A.
- (5) Aquatic vegetation, emergent vegetation, or open water. The freshwater wetland contains under normal circumstances at least 20,000 square feet of aquatic vegetation, emergent marsh vegetation, or open water, unless the 20,000 or more square foot area is the result of an artificial pond or impoundment.
- (6) Wetlands subject to flooding. The freshwater wetland area is inundated with floodwater during a 100-year flood event based on flood insurance maps produced by FEMA or other site-specific information.
- (7) Peatlands. The freshwater wetland is or contains peatlands, except that the department may determine that a previously mined peatland, or portion thereof, is not a *Wetland of Special Significance*.
- (8) River, stream, or brook. The freshwater wetland area is located within 25 feet of a river, stream, or brook.

Appendix E

Agency Responses



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office
1033 South Main Street
Old Town, ME 04468-2023
(207) 827-5938



To: Eugenie F. Moore
Woodlot Alternatives, Inc.
30 Park Drive
Topsham, ME 04086

March 19, 2002

Thank you for your letter requesting information or recommendations from the U.S. Fish and Wildlife Service. This form provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location/County: US Route One Corridor / Brunswick, Bath / Cumberland

Date of Receipt of Incoming Letter: March 8, 2002

Log Number: 02-108

Based on the information currently available to us, no federally-listed species under the jurisdiction of the Service are known to occur in the project area, with the exception of occasional, transient bald eagles (*Haliaeetus leucocephalus*). Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

A list of federally-listed species in Maine is enclosed for your information. Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up to date account of state-listed species in the project area.

If you have any questions, please call Ron Joseph at (207) 827-5938.

Ron Joseph 3/19/02
Biologist LR Date



ANGUS S. KING, JR.
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

GEORGE D. LAPOINTE
COMMISSIONER

March 9, 2002

Eugenie Moore
Woodlot Alternatives, Inc
122 Main Street
Topsham, Maine 04250

RE: Significant Marine Resources associated with the Old Bath Road in Brunswick and U.S. Route 1 in West Bath. (Project # 101146.01)

Dear Ms. Moore,

Old Bath Road – Several species of anadromous fish are found in the Androscoggin River. Shortnose sturgeon, currently on the Federal Endangered Species list, live and reproduce in the Androscoggin River and are found upstream as far as the Brunswick Hydropower Station. Young of the year striped bass currently use the Androscoggin River as nursery habitat based on results of biweekly sampling conducted on the lower Androscoggin. Spawning habitat for alewife, blueback herring and smelt is located at the crossing of the New Meadow River. MDMR currently stocks prespawn alewives and blueback herring into Whiskeag Creek to enhance the annual spawning run into this series of ponds.

US Route 1 – Currently, there are two aquaculture leases within 300' of the proposed bike path crossing where the New Meadows flows under US Route 1. The Town of West Bath owns one site and the other is owned by Spinney Creek Shellfish. The commercial harvesting of quohog also occurs in this area of the New Meadows River.

MDMR advises that no work be conducted during the alewife/blueback spawning period if upstream migration of these species would be compromised during construction. Alewife/blueback spawning generally occurs mid May to mid June.

If the proposed bike path crosses the New Meadows at the US Route 1 location MDMR recommends that appropriate steps be taken to prevent runoff and siltation during the construction project. We also strongly suggest that the aquaculture leaseholders be notified prior to construction so lease/construction schedules can be adjusted prior to the commencement of the construction project. Newly seeded shellfish are particularly vulnerable to sedimentation during the first few weeks – dependent on grow out methods.



PRINTED ON RECYCLED PAPER

Sincerely,

A handwritten signature in dark ink, appearing to read "Michael E. Brown", with a stylized, flowing script.

Michael E. Brown

Marine Resource Scientist I

Androscoggin River Restoration Program

207-624-6341



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

March 18, 2002

Eugenie F. Moore
Woodlot Alternatives, Inc.
30 Park Drive
Topsham, ME 04086

Project: MHPC #0479-02 - U.S. Route 1, Project #101146.01
Location: Brunswick and Bath, Maine

Dear Ms. Moore:

In response to your recent request, I have reviewed the information received March 7, 2002 to initiate consultation on the above referenced project. This project was reviewed pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Based upon the proposed location and scope of work for this project, I have concluded that:

1. The topographic setting of the project area on the north side of Route 1 in Brunswick and Bath is likely to have attracted prehistoric (Indian) settlement because it is relatively flat (less than 10% slope) and is (or was) near navigable water. This area has never been surveyed by a professional archaeologist, therefore we are requesting that you or the applicant contract for a Phase I prehistoric archaeological survey of the proposed pathway corridor that is along Route 1.
2. The project area within Bath has never been surveyed by a professional archaeologist and will require a Phase I survey for historic archaeological resources. The enclosed maps from 1858 indicate areas of concern along the proposed pathway corridor.
3. There has never been an architectural survey of the project corridor, therefore we are also requesting that such survey be completed for the entire project corridor so that we can make a determination regarding the proposed project's effect upon potential historic architectural resources. A list of historic preservation consultants qualified to conduct architectural surveys has also been included

The enclosed material explains the Phase I/II/III approach to archaeological survey that we require, with each step being contingent only upon a positive finding in the previous step. Lists of recommended historic and prehistoric contract archaeologists are also enclosed. Should a significant archaeological resource be located within the project area, it can be excavated with



MAINE HISTORIC PRESERVATION COMMISSION

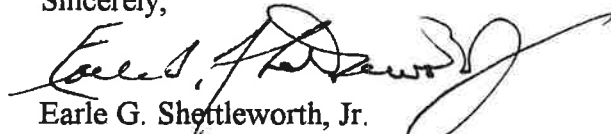
55 Capitol Street
State House Station 65
Augusta, Maine 04333



proper scientific method or protected by redesigning the project area. This office must approve any proposal for archaeological fieldwork. Please contact Dr. Arthur Spiess of this office if you have any archaeology related questions.

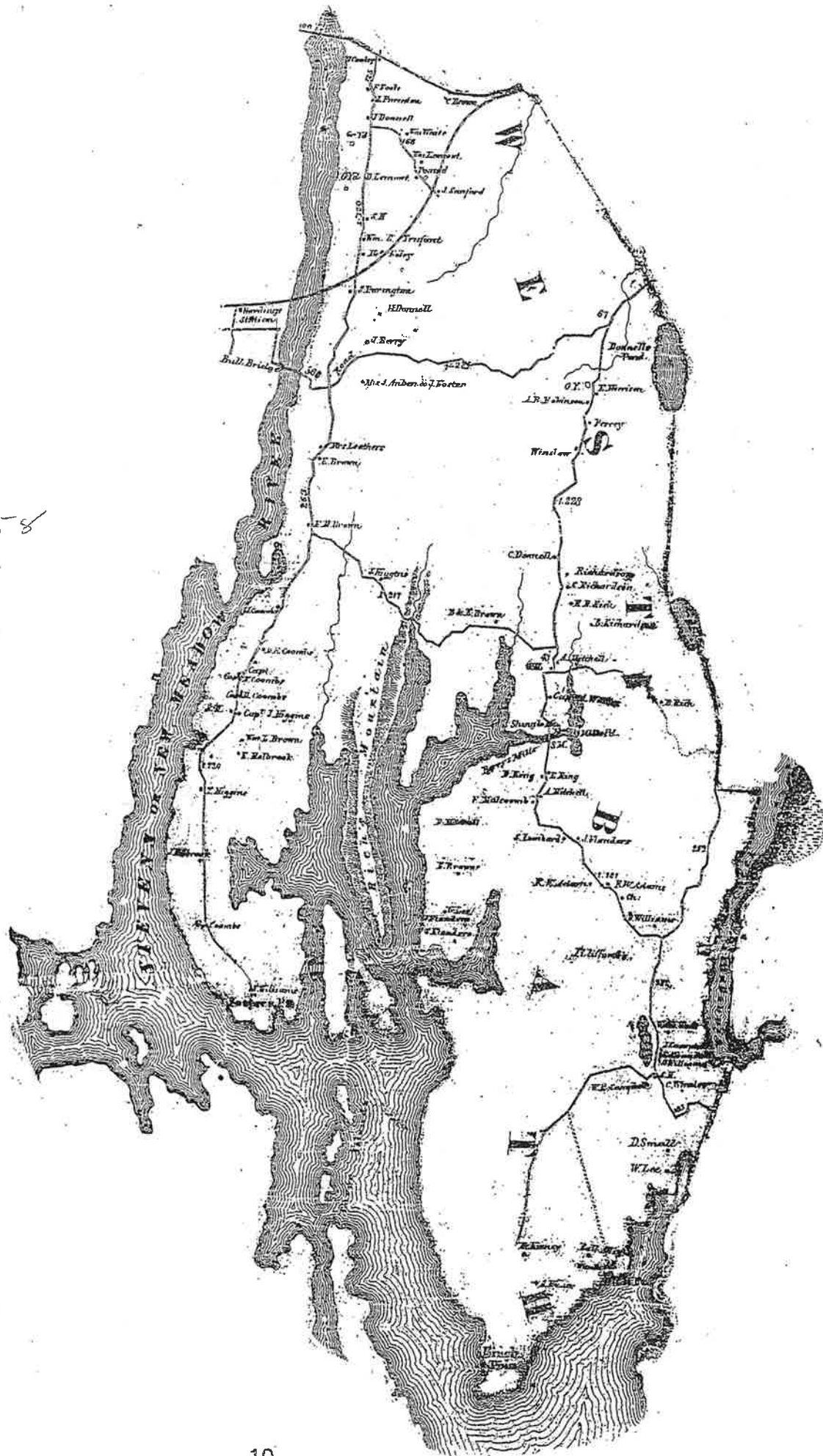
Please contact Mike Johnson of my staff if we can be of further assistance in this matter.

Sincerely,



Earle G. Shettleworth, Jr.
State Historic Preservation Officer

ENC:
EGS/mj





MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

**Prehistoric Archeologists Approved For Review and Compliance Consulting/Contracting:
November, 2001
LEVEL 2 (Approved for All Review and Compliance Projects)**

Dr. Robson Bonnicksen (207/581-2197)
Department of Anthropology
Oregon State University
Corvallis, Oregon
97330

Dr. James B. Petersen (802/656-3884)
Department of Anthropology
University of Vermont
Burlington, Vermont
05405-0168

Dr. William R. Belcher
Department of Anthropology
Social Sciences Building
University of Wisconsin - Madison
Madison, Wisconsin 53706

Dr. Arthur E. Spiess
Maine Historic Preservation Commission
55 Capitol Street, 65 State House Station
Augusta, Maine 04333-0065 (Not Available for
Non-Government Contract Archaeology Work)

Dr. Bruce J. Bourque (207/287-3909)
Maine State Museum
83 State House Station
Augusta, Maine
04333-0083

Dr. David Sanger (207/582-1897)
Department of Anthropology
University of Maine at Orono
Orono, Maine
04469

Dr. Steven L. Cox (207/287-3909)
Maine State Museum
33 State House Station
Augusta, Maine 04333-0065

Mr. Brian Robinson (207/866-0201)
23 Pierce Street
Orono, Maine
04473

Dr. Stuart Eldridge (207/879-9496)
Northern Ecological Associates
451 Presumpscot Street
Portland, Maine 04103

Ms. Patricia Allen
P. O. Box 6000
Fredericton, New Brunswick
CANADA E3B 5H1

Dr. Nathan Hamilton (207/780-5324)
Department of Geography & Anthropology
University of Southern Maine
Gorham, Maine 04038

Dr. Victoria Bunker (603/776-4306)
R. R. 1, Box 195E
Alton, New Hampshire
03809

Dr. Richard Will (207/667-4055)
Archaeological Research Services
71 Oak Street
Ellsworth, Maine 04605

Dr. Jonathan Lothrop (412/856-6400)
GAI Consultants
570 Beatty Road
Monroeville, Pennsylvania
FAX: 207/667-0485

Mr. David Putnam (207/762-6078)
P. O. Box 455
Mapleton, Maine
04755-0455

Ms. Ellen Cowie (207/778-7012)
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938-1507

Robert N. Bartone
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938

Deborah Wilson (633-2013)
P. O. Box 476
Boothbay Harbor, Maine
04538-0476

Dr. R. Michael Gramly
P. O. Box 821
North Andover, Massachusetts
01845-0821

Dr. Leslie Shaw (207/725-3851)
Dept. of Sociology & Anthropology
Bowdoin College
Brunswick, Maine 04011
e-mail: lshaw@bowdoin.edu

Geraldine Baldwin (207/778-7012)
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938

**Prehistoric Archaeologists Approved for Contract Archaeology in Maine
LEVEL 1 (Approved for Phase I, Municipal Planning, and State Survey Projects)**

Jane Kopec, Director (207/288-3519)
The Abbe Museum
P. O. Box 286
Bar Harbor, Maine 04609-0286

Rebecca Cole-Will (207/667-4055)
Archaeological Research Services
71 Oak Street
Ellsworth, Maine 04605

John Mosher (207/287-2132)
14 Somerset Place
Bath, Maine 04530
(Not Available for Non-Government
Contract Archaeology Work)

Ms. Catherine Quinn (207/778-9226)
R. R. 1, Box 1183
Farmington, Maine 04938

Ms. Karen Mack (207/990-1059)
1002A Main Street
Voorhees, Maine 04401
603-353-9240
P.O. Box 204A
ORFORD, NH 03777

Leon Cranmer (207/287-2132)
9 Hemlock Lane
Somerville, Maine 04348
(Not Available for Non-Government
Contract Archaeology Work)

Ms. Edna Feighner (207/879-9496)
Northern Ecological Associates
51 Presumpscot Street
Portland, Maine 04103

Mr. Richard P. Corey (207/778-7012)
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938

Mr. James A. Clark (207/667-4055)
Archaeological Research Services
71 Oak Street
Ellsworth, Maine 04605

Mr. Michael Brigham (207/778-7012)
Archaeology Research Center
University of Maine at Farmington
Farmington, Maine 04938





MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

Historical Archaeologists Approved for Review and Compliance
Consulting/Contracting:

LEVEL 1

Norman Buttrick
168 Clinton Street
Portland, Maine 04103
207/773-4070

Timothy Dinsmore
57 Walpole Meeting House Road
Walpole, Maine 04573
207/563-3473

Peter H. Morrison
33 Sequoia Drive
Freeport, Maine 04032
207/865-4129
cranemorr@prear.com

LEVEL 2

Aileen Button Agnew, Ph.D.
459 Ledge Road
Yarmouth, Maine 04096
207/846-6302

Warren Riess, Ph.D.
Darling Marine Center
Walpole, Maine 04573
207/563-3146 X244

Dr. Faith Harrington
3 Sea Oaks Lane
Kittery Point, Maine 03905
207/439-6613, 207/865-3428

Leon Cranmer, M.A.
9 Hemlock Lane
Somerville, Maine 04348
207/287-2132 (Not Available For
Non-Government Contract
Archaeology)

Peter S. Wells, Ph.D.
Department of Anthropology
215 Ford Hall
University of Minnesota
Minneapolis, Minnesota 55455

Pamela B. Crane, M.A.
33 Sequoia Drive
Freeport, Maine 04032
207/865-4129
cranemorr@prear.com

Stefan Claesson, M.A.
Institute of Maritime History
5 Red Oak Lane
Biddeford, Maine 04005
207/284-9192

Neill DePaoli, M.A.
8 Jacob Lane
Lee, New Hampshire 03824
603/659-0644

Alaric Faulkner, Ph.D.
Department of Anthropology
Stevens Hall South
Orono, Maine 04469
207/581-1900

Thomas Funk, M.A.
George Stevens Academy
Blue Hill, Maine 04614

Stephen R. Pendery, Ph.D.
National Park Service
Cultural Resource Center
400 Foot of John Street
Lowell, Massachusetts
978/970-5150 (Not Available For
Contract Work)

Kathleen Wheeler, Ph.D.
Independent Archaeological
Consulting
97 Morning Street
Portsmouth, New Hampshire
03801
603/431-8397

Mary Beaudry, Ph.D.
Department of Archaeology
Boston University
675 Commonwealth Avenue
Boston, Massachusetts 02215
617/353-3415

Martha E. Pinello, M.A.
318 Smith Road
Antrim, New Hampshire 03440
603/588-3761

Emerson W. Baker, Ph.D.
38 Old East Scituate Road
York, Maine 03909
207/363-0255
ebaker@maine.rr.com

Gretchen F. Faulkner, M.A.
Hudson Museum
University of Maine
Orono, Maine 04469
207/581-1909

Charles E. Rand, M.A.
508 Macy Street
Norman, Oklahoma
73071-5027

James S. Leamon, Ph.D.
Department of History
Bates College
Lewiston, Maine
04240
207/786-6074

Samuel Shogren, M.A.
Penobscot Marine Museum
Box 498
Searsport, Maine 04974
207/548-2529

Jeffrey P. Brain, Ph.D.
Peabody Essex Museum
East India Square
Salem, Massachusetts 01970-
3783
978/740-3624



MAINE HISTORIC PRESERVATION COMMISSION

55 Capitol Street
State House Station 65
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-287-2132

CONTRACT ARCHAEOLOGY GUIDELINES

1992

Introduction

This document is provided as background information to corporations or individuals needing contract archeological services. It is designed to provide an outline scope-of-work for preparation of proposals by contract archaeologists bidding on the project work.

The archaeological work necessary on most projects can be conceived of in three phases, with progression from one phase to the next being dependent upon the findings of field and laboratory work of the preceding phase, and their review by the SHPO (Historic Preservation Commission). Phase I, or Reconnaissance Survey, involves initial search for and location of all archaeological sites within the project impact area, or gathering enough data for statistical assurance that no such sites exist. The process may begin with the study of background information: aerial photographs and maps, pre-existing archaeological survey data, and/or historic documents), but it usually includes a field work component. Archaeological fieldwork in Maine is generally possible only between mid-April and late October because of frozen ground conditions.

Phase II, or Site Eligibility Survey, consists of testing each site, determining its size and contents, developing enough data to decide whether or not the site is eligible for the National Register of Historic Places, and enough data for budgeting and planning full mitigation if the site is significant and if adverse impact to the site cannot be avoided. Phase III, Data Recovery Mitigation, consists of a full-scale archaeological excavation of any threatened significant archeological site.

Excerpts from State Historic Preservation Officer's Standards for Archaeological Work in Maine 27 MRSA S.509

3. CREDENTIALS

The SHPO recognizes that archaeological work can require a range of training and experience from modest levels to advanced levels. Persons meeting the requirements of advanced experience and training shall be eligible for both the Level 1 approved list and the Level 2 approved list. Those persons meeting only the criteria of moderate training and experience shall be eligible for the Level 1 approved list. Persons listed on the Level 1 approved list shall be recommended by the Maine Historic Preservation Commission for Phase I archaeological survey work, archaeological site location, survey and data synthesis work for municipal match provided by state and non-state funds. Persons listed on the Level 2 approved list shall be recommended for all types of work and grants available including Phase II and Phase III cultural resource management jobs, and they will be eligible to direct state and federally-funded survey grants, and state and federally-funded development grants. In addition, the Level 1 and Level 2 approved lists will be sub-divided by specialty either in historic archaeology or prehistoric archaeology. A person may be listed on more than one approved list.

5. ENVIRONMENTAL IMPACT PROJECTS.

When a government agency or private party (contracting party) is required by law to conduct pre-construction archaeological survey or mitigation, the following procedural steps are taken:

- A. The contracting party ascertains from the SHPO that fieldwork is needed.
- B. The SHPO sends the contracting party the applicable approved lists of archaeologists and a generic scope-of-work based upon the nature of the project. These are accompanied by a recommendation that approved archaeologist(s) be hired to direct the project.

- C. The contracting party seeks proposal(s) from any or all of the persons on the supplied approved lists.
- D. The contracting party sends the proposal(s) to the SHPO for comment on the scope-of-work and methodology, omitting any budgetary information, unless the contracting party specifically requests in writing that this be included in the review. Should such a request for SHPO comment on budgetary information be made, the SHPO will consult with the bidder(s) about their proposed budget(s) before commenting to the contracting party.
- E. The SHPO, advised by the relevant Commission staff member(s), comments on the proposals in writing to the contracting party, who then negotiates with the potential contractor(s) for necessary modifications.
- F. An agreement is reached between the SHPO and the contracting party on the scope-of-work and methodology.
- G. Once the fieldwork is completed, a report is prepared by the contractor and submitted to the contracting party.
- H. The contracting party sends the report to the SHPO for comment.
- I. The SHPO sends the contracting party a written statement clearly describing the report's problems, if any, and what measures are necessary to rectify them.
- J. The contracting party passes these comments on to the contractor, who makes changes as necessary, re-submits the report to the contracting party, who re-submits it to the SHPO for final approval.
- K. The SHPO approves the report and so notifies the contracting party.

6. GUIDELINES FOR RESEARCH AND REPORTING.

- A. Phase I (reconnaissance-level) survey involves initial search for and location of all potentially significant archaeological sites within a specified area, or gathering enough data for statistical assurance that no such sites exist. This work includes a search of existing archaeological data for the area, including fieldnotes and reports on file in the Commission offices and other relevant data repositories; communication with local collectors and review of their artifact collections and provenience, where appropriate; field research as appropriate, including walk-over and/or subsurface testing, with suitable sampling strategy; and, for historic archaeological survey, a review of relevant primary documentary sources.
- B. Phase I reports will include, at a minimum, discussion of the items on the attached "Report Form for Small-Scale Survey", although it is not necessary to follow the exact format or order of items. Graphics will be clean and clearly reproducible. Photographs will be black and white, minimum 5"X7" format, and of good quality, unless an alternate format has been approved by this Commission. Either representative examples or complete test unit soils and content records will be appended. All test units must be located on maps, or other such information provided to allow for assessment of testing intensity.
- C. Phase II (intensive-level) survey consists of testing a site, determining its size and contents, developing enough data to decide whether or not the site is eligible for the National Register of Historic Places and to plan full mitigation, if applicable. Phase II survey will often involve research as a continuation of Phase I, but it is focussed on specific site(s) rather than areas. Phase II survey must provide enough data for determination of National Register-eligibility and production of a nomination, if necessary.
- D. Phase II reports will contain, at a minimum, the same types of information noted above for Phase I reports, but will be focussed on specific site(s). Enough test unit information will be included to allow independent assessment of site boundaries. For sites that may be eligible for nomination to the National Register, information necessary for completion of a nomination form will be included. Recommendations concerning National Register-eligibility should refer to federal criteria ("Guidelines for Completing National Register of Historic Places Forms") and any current Commission guidelines.
- E. Phase III (mitigation or development) represents excavation of a site for data recovery either for pure scientific research or in cases where construction cannot be designed to avoid adverse impact to all or part of a National Register-listed or Register-eligible site. Phase III excavation will follow a scientific research proposal designed to maximize data recovery, under the principal that excavation destroys a site. The goal of Phase III data recovery projects is not necessarily to prove a particular theoretical point, or recover data addressing just one category of inquiry. The Principal Investigator must demonstrate awareness of a broad range of research goals and problems that can be addressed by the data preserved in the site. The data recovery techniques proposed must be sufficient to do the best currently possible job recovering as much potential data as possible from the ground for the widest range of research goals. Laboratory analysis and reportage must focus on a wide range of currently standard topics, but the storage of artifacts and samples for the future should be cognizant of the possibility of future analyses. When there is a conflict between the goals of two different data

recovery techniques, a compromise would be best.

- F. Phase III excavation reports will constitute a site report of great detail, including relevant laboratory analyses. Written language, graphics, and photographs will be substantially in publishable form.

STATUTORY AUTHORITY: 27 MRSA S. 509, 16 USC S.470a(b), 36 CFR 61.4(b)

BASIS STATEMENT:

Because of the vulnerability of archaeological sites to unprofessional excavation and because of the need to ensure that surveys to identify and evaluate archaeological sites are conducted properly, this rule establishes minimum credentials requirements for archaeologists seeking Commission grant support or Commission recommendation for projects funded by other parties. This rule also outlines archaeological reporting requirements.

REPORT FORM FOR SMALL-SCALE SURVEY

1. Project Name: _____
2. Location: City/County: _____
USGS Quadrangle: _____
UTM Coordinates: _____
Other Locational References: _____
3. Type of Investigation: _____
4. Principal Investigator: _____
5. Reporter: _____
6. Did survey cover entire area of direct and indirect environmental impact of project? ☐ Yes ☐ No If "no", attach explanation.
7. Dates of Fieldwork and log of landowner contacts to obtain permission for access to land: _____
8. Attach map(s) of area(s) surveyed.
9. Attach list of personnel on survey team.
10. Repository for notes: _____
11. Repository for artifacts: _____
12. Environment:
 - (a) Attach description of contemporary environment (ca. 1 pg.).
 - (b) Attach description of likely relevant prehistoric and/or historic environments, with basis for reconstruction (ca. 1-2 pg.).
13. Research Topics: Attach description of research topics that influenced decision-making about survey design and/or significance of properties.
14. Background Research:
 - (a) Attach list of sources consulted (include informants).
 - (b) Attach brief description of results (prediction of historic property locations, identification of groups using the area, etc.).
15. Field Research:
 - (a) Attach description of surface inspection methods (ca. 1 pg.).
 - (b) Attach description of subsurface testing methods (if used).
 - (c) Attach description of other methods and techniques if used (i.e., remote sensing).
 - (d) Attach description of any constraints on the validity of field observations (i.e., adverse weather conditions, obscured visibility, etc.).
 - (e) Attach description of any methods used to control bias in observation and reporting.
 - (f) Attach description of any adjustments made in field methods during survey.
16. Attach description of analytic procedures used.
17. Historic Properties identified (if any). Attach standard State Inventory Forms.
18. Attach evaluation of work reported (ca. 1 pg.).
19. Attach research-related conclusions, if any.
20. Attach recommendations, if any.



ANGUS S. KING, JR.
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

**Historic Preservation Consultants in Maine
Who Meet 36 CFR 61 for
Architectural History
Approved For Historic Preservation Fund and Match Projects Consulting/Contracting**

Patricia M. Anderson
R.F.D. 1, Box 32
Flying Point Rd.
Freeport, Me. 04032
207/865-6233

Erik Carson
56 Ryder Rd
Yarmouth, Me. 04096
207/846-3536

Janet Roberts
40 Weymouth St.
Brunswick, Me. 04011
207/729-8967

Steven C. Mallory
1504 Shunpike Rd.
Shushan, N.Y. 12873
scmallory@aol.com

Christopher W. Closs & Co.
P. O. Box 293
Candia, N. H. 03034-0293
603/224-3625

Deborah Thompson
117 Norfolk St.
Bangor, Me. 04401
207/947-8016

Deirdre A. Brotherson
16 K. St.
Concord, N. H. 03301
603/225-7204

Robin A. S. Haynes
46 Edwards St.
Bath, Me. 04530
207/442-730

Martha B. Deprez
14 West Street
Portland, Me.
04102
207/772-4312

Rosalind Magnuson
14 Sea Garden Circle
Kennebunk, Me. 04043
207/967-3543

Kari Ann Laprey
5 Groundnut Hill Rd.
Cape Neddick, Me. 03902
207/361-2601

Charlton Hudson
P. O. Box 22
Lincolnton, Me. 04849-0022
207/338-1638

Woodward D. Openo
P. O. Box 618
Somersworth, N. H.
03878-0618

Matthew Kierstead
6 Paine St.
Wellesley, Ma. 01281
617/237-5952

Lynne Emerson Monroe, Pres.
Preservation Company
5 Hobbs Rd.
Kingston, N. H. 03833
603/778-1799

Richard M. Candee
Chase's Pond Rd.
R.R. 2, Box 219
York, Me. 03909
207/363-6635

Theresa Shea Mattor
(Landscape History)
R. R. 2, Box 212-B1
Hollis Center, Me. 04042
207/727-5059

Henry Amick
36 Highland Rd.
Bridgton, Me. 04009
207/332-0523
amick@gwi.net

Frederick Lee Richards
Christopher Chadbourne
& Associates
131 Mt. Auburn St.
Cambridge, Ma. 02138

Bruce Clouette
Hist. Res. Cons., Inc.
55 Van Dyke Ave.
Hartford, Ct. 06106
203/547-0268
FAX 203/522-4363

Roxanne Eflin
Maine Preservation
P. O. Box 1198
Portland, Me. 04104-1198
207/775-3652
FAX 207/775-7737

Roger G. Reed
19 Terrace Ave.
Newton, Ma. 02161
617/739-7542
FAX 617-964-1672

Ann G. Ball
119 Princes Pt. Rd.
Yarmouth, Me. 04096
anneball@maine.rr.com

Pamela Griffin
(Landscape History)
291 Mere Point Rd.
Brunswick, Me. 04011
Work: 207/871-0003
Home: 207/729-3018

Southport Historical &
Architectural Consulting
Henry Wyatt
P. O. Box 312
W. Southport, Me. 04576-0312
207/633-4217
e-mail: southarch@aol. .com

Edward L. Hawes. Ph.D.
Box 787
Brunswick, Me. 04011
207/729-5878
FAX 207/725-3989
e-mail:
ehawes@polar.bowdoin.edu

Wick York
P. O. Box 334
Stonington, Ct. 06378-0334
860/535-1409
e-mail: wyork@portone.com

Turk Tracy & Larry
Architects, L.L.C.
92 Exchange St.
Portland, Me. 04101
207/761-9662
e-mail: ttlarch@aol.com

Barba Architecture &
Preservation
500 Congress St.
Portland, Me. 04101-3403
207/772-2722



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Maine Field Office
1033 South Main Street
Old Town, ME 04468-2023
(207) 827-5938

To: Jean Lallier, Project Assistant
Woodlot Alternatives, Inc.
122 Main Street, No. 3
Topsham, ME 04086

January 29, 2002

Thank you for your letter requesting information or recommendations from the U.S. Fish and Wildlife Service. This form provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location/County: US Route 1 / Yarmouth & Freeport / Cumberland

Date of Receipt of Incoming Letter: January 10, 2002

Log Number: 02-052

Project Name/Location/County: Cooks Corner / Bath / Sagadahoc

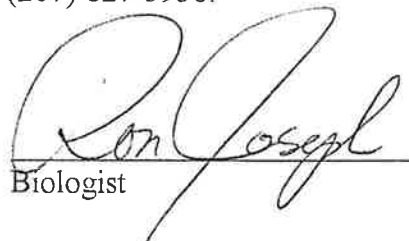
Date of Receipt of Incoming Letter: January 10, 2002

Log Number: 02-060 CCL

Based on the information currently available to us, no federally-listed species under the jurisdiction of the Service are known to occur in the project area, with the exception of occasional, transient bald eagles (*Haliaeetus leucocephalus*). Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

A list of federally-listed species in Maine is enclosed for your information. Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up to date account of state-listed species in the project area.

If you have any questions, please call Ron Joseph at (207) 827-5938.


Biologist

1/29/02
Date



Maine Department of Inland
Fisheries and Wildlife
358 Shaker Road
Gray, Maine 04039



Telephone: 207-657-2345 ext.112
Fax: 207-657-2980
Email: francis.brautigam @state.me.us

Angus S. King, Governor

Lee E. Perry, Commissioner

December 17, 2001

Jean Lallier
Woodlot Alternatives
122 Main Street, No. 3
Topsham, ME 04086

RE: Old Bath Road, Brunswick

Dear Jean:

The location map indicates the project will occur predominantly adjacent to tidal portions of several coastal rivers/streams. MDIFW's review jurisdiction (fisheries only) ordinarily does not extend to salt water. I am not aware of any significant freshwater stream fishery resources within the vicinity of the proposed bike route. Given the nature of the project I do not anticipate any fisheries concerns beyond the use of proper erosion controls.

Please call me at 657-2345 (ext. 112) if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "Francis Brautigam".

Francis Brautigam
Fishery Biologist
MDIFW
FCB



Region A, (207) 667-2345

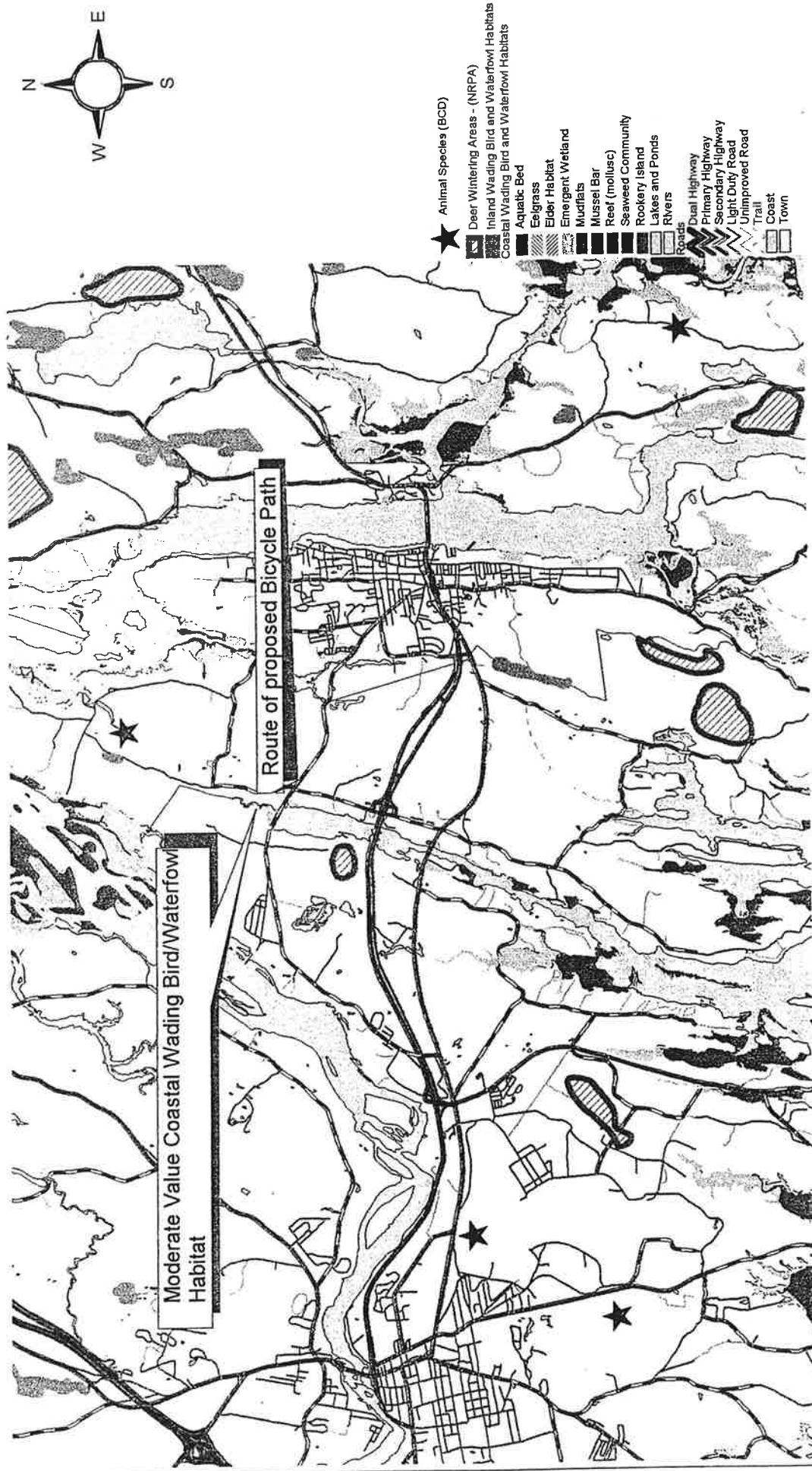
Biologist Notes

No identified wildlife habitats associated with this project

IF&W Report - Bike Path - Brunswick to Bath

Request for Information - Eugenie Moore

12/13/2001



Department of Inland Fisheries and Wildlife

Biologist Notes

1 0 1 2 Miles

(207) 547-5318

See map



STATE OF MAINE
DEPARTMENT OF
MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

ANGUS S. KING, JR.
GOVERNOR

GEORGE D. LAPOINTE
COMMISSIONER

December 13, 2001

Jean Lallier
Woodlot Alternatives, Inc
122 Main Street
Topsham, Maine 04250

RE: Significant Marine Resources associated with the Old Bath Road in Brunswick and Bath, Maine; Fogg Point in Freeport, Maine; U.S Route One corridor in Yarmouth, Maine

Dear Ms. Lallier,

Old Bath Road – Several species of anadromous fish are found in the Androscoggin River. Shortnose sturgeon, currently on the Federal Endangered Species list, live and reproduce in the Androscoggin River and are found upstream as far as the Brunswick Hydropower Station. Young of the year striped bass currently use the Androscoggin River as nursery habitat based on results of biweekly sampling conducted on the lower Androscoggin. Spawning habitat for alewife, blueback herring and smelt is located at the crossing of the New Meadow River. MDMR currently stocks prespawn alewives and blueback herring into Whiskeag Creek to enhance the annual spawning run into this series of ponds.

Fogg Point – This location supports limited use by smelt throughout the year, mainly as a feeding location.

Yarmouth, Route One – The Royal River supports alewife, blueback herring, sea-run brook trout, brown trout and smelt. During the spring, alewife and blueback herring migrate up the Royal River to reach spawning habitats upstream. During the fall sea-run trout conduct annual upstream spawning migration. Smelt inhabit the lower estuary and are limited to below the falls at Route One.

MDMR advises that no work be conducted during the alewife/blueback spawning period if upstream migration of these species would be compromised during construction. Alewife/blueback spawning generally occurs mid May to mid June.

Sincerely,

A handwritten signature in dark ink, appearing to read "Michael E. Brown". The signature is fluid and cursive, with the first name being the most prominent.

Michael E. Brown
Marine Resource Scientist I
Androscoggin River Restoration Program



STATE OF MAINE
DEPARTMENT OF CONSERVATION
159 HOSPITAL STREET
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0093

ANGUS S. KING, JR.
GOVERNOR

RONALD B. LOVAGLIO
COMMISSIONER

December 14, 2001

Jean Lallier
Woodlot Alternatives, Inc.
122 Main Street No. 3
Topsham, ME 04086

Re: Rare and exemplary botanical features, proposed bike path, Old Bath Road,
Bath and Brunswick

Dear Ms. Lallier:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request of December 10, 2001 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in the towns of Brunswick and Bath, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been



documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$75.00 for our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael Auger', with a long horizontal line extending to the right.

Michael Auger
Assistant Ecologist

Enclosures

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed bike path, Old Bath Road, Bath and Brunswick

<u>Scientific Name</u> Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
AGALINIS MARITIMA SALTMARSH FALSE-FOXGLOVE	1996	S3	G5	SC		Saltmarshes.
ALDER SHRUB THICKET ALDER THICKET	1995	S5				Tall, often dense shrubs on the borders of water bodies or open wetlands, in mineral soil or muck. Seasonally flooded, usually remaining saturated.
BIDENS EATONII EATON'S BUR-MARIGOLD	2000	S2	G2	T		Tidal shores.
BIDENS HYPERBOREA ESTUARY BUR-MARIGOLD	1998	S3	G4	SC		Localized in fresh to brackish estuaries.
BOLBOSCHOENUS X NOVAE-ANGLIAE MARSH BULRUSH	1999	SH	G5	PE		Brackish transitional zones of tidal rivers; intertidal
BRACKISH TIDAL MARSH BRACKISH TIDAL MARSH	2000	S3				Intertidal reaches in coastal impoundments, or between saltmarshes and freshwater marshes in larger tidal rivers. The downstream limit of this community is usually marked by the dominance of Spartina alternifolia along tidal creek riverbanks.
CARDAMINE LONGII LONG'S BITTER-CRESS	2000	S2	G3	T		Tidal estuary.
CAREX VESTITA CLOTHED SEDGE	1999	S1	G5	E		Dry sandy woods and clearings

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed bike path, Old Bath Road, Bath and Brunswick

Scientific Name Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
CHENOPODIUM BERLANDIERI BOSC'S GOOSEFOOT	1912	S1?	G5T3T5	SC		Open soil or dry open woods, saltmarshes, and agricultural areas.
CRASSULA AQUATICA PYGMYWEED	1992	S2	G5	SC		Margins of pools and on fresh to tidal shores.
ELÉOCHARIS ROSTELLATA BEAKED SPIKERUSH	1921	SH	G5	PE		Saline, limy or brackish marshes.
ERIOCAULON PARKERI PARKER'S PIPEWORT	2000	S3	G3	SC		Fresh to brackish tidal mud and estuaries.
FRESHWATER TIDAL MARSH FRESHWATER TIDAL MARSH	1998	S2				Intertidal areas where inflow of freshwater creates lower salinity than in brackish marshes. Often near the head of tide. Substrate mud or gravelly mud.
JUNCUS ALPINOARTICULATUS ALPINE RUSH	1916	S2	G5T5?	T		Wet shores, marshes.
LILAEOPSIS CHINENSIS LILAEOPSIS	1999	S2	G5	T		In mud of brackish marshes and tidal shores along the coast.
LIMOSELLA AUSTRALIS MUDWORT	2000	S3	G4G5	SC		Fresh to brackish shores and wet sands.

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed bike path, Old Bath Road, Bath and Brunswick

<u>Scientific Name</u>	<u>Common Name</u>	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
LIPOCARPHA MICRANTHA DWARF BULRUSH		1995	S1	G4	T		Sandy borders of ponds and streams.
LOBELIA SIPHILITICA GREAT BLUE LOBELIA		1900	SX	G5	PE		Rich low woods and swamps
LONICERA DIOICA MOUNTAIN HONEYSUCKLE		2000	S1	G5	E		Rocky banks, dry woods and thickets.
MIMULUS RINGENS VAR COLPOPHILUS ESTUARY MONKEYFLOWER		1991	S2	G5T2Q	SC		Shores, meadows, and wet places
MINUARTIA GLABRA SMOOTH SANDWORT		18	S2	G4	SC		Open granitic ledges of mountains less than 1000 m tall.
NORTHERN WHITE CEDAR SWAMP NORTHERN WHITE CEDAR SWAMP		1995	S4				Forests dominated by northern white cedar in poorly drained basins, often along streams or around the perimeter of small ponds. Substrate is usually shallow peat over mineral soils. Typically occurs in alkaline settings.
PITCH PINE - HEATH BARREN PITCH PINE - HEATH BARREN		1986	S1				Semi-open pitch pine community on well-drained sandy soils of glacial outwash plains or moraines. Scrub oak absent. Heath shrubs form understory.
PODOSTEMUM CERATOPHYLLUM THREADFOOT		1991	S2	G5	SC		On rocks and ledges in streams.

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed bike path, Old Bath Road, Bath and Brunswick

Scientific Name Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
SAGITTARIA CALYCINA SPONGY ARROW-HEAD	2000	S3	G5T4	SC		Tidewater marshes and streams.
SAGITTARIA RIGIDA STIFF ARROW-HEAD	2000	S1S2	G5	T		Calcareous or brackish mud or water.
SAMOLUS VALERANDI WATER PIMPERNEL	2000	S2	G5T5	SC		Shallow water and wet soils.
SILVER MAPLE FLOODPLAIN FOREST SILVER MAPLE FLOODPLAIN FOREST	1998	S3				Forests of floodplains of larger streams and river. Silver maple dominant. Soils alluvial and mineral. Soil surface may be dry during much of growing season. Variants: berms along the river.
SISYRINCHIUM MUCRONATUM MICHAX'S BLUE-EYED-GRASS	1962	S2	G5	SC		Meadows, fields, sandy places, woods.
SUAEDA CALCEOLIFORMIS AMERICAN SEA-BLITE	1899	S1	G5	T		Rocky or gravelly saltmarshes and sea-strands.
SUAEDA MARITIMA SSP RICHII RICH'S SEA-BLITE	1892	S1	G5T3	SC		Salt-marshes and sea-strands.
WHITE OAK - RED OAK FOREST WHITE OAK - RED OAK FOREST	2000	S3				Deciduous to mixed forests dominated by red oak and white oak. White pine is occasional. Low heath shrubs and woodland sedge are characteristic flora of the forest floor.

Rare or Exemplary Botanical Features in the Project Vicinity

Documented within a four mile radius of the proposed bike path, Old Bath Road, Bath and Brunswick

Scientific Name Common Name	Last Seen	State Rarity	Global Rarity	State Legal Status	Federal Legal Status	Habitat Description
ZANNICHELLIA PALUSTRIS HORNED PONDWEED	1999	S2	G5	SC		Fresh, brackish or alkaline waters, and stream edges.

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (on the order of 20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SH** Occurred historically in Maine, and could be rediscovered; not known to have been extirpated.
- SU** Possibly in peril in Maine, but status uncertain; need more information.
- SX** Apparently extirpated in Maine (historically occurring species for which habitat no longer exists in Maine).

Note: State Ranks determined by the Maine Natural Areas Program.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (on the order of 20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.

Note: Global Ranks are determined by The Nature Conservancy.

T indicates subspecies rank, Q indicates questionable rank, HYB indicates hybrid species.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's endangered and threatened plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.
- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** POSSIBLY EXTIRPATED; Not known to currently exist in Maine; not field-verified (or documented) in Maine over the past 20 years.

FEDERAL STATUS

- LE** Listed as Endangered at the national level.
- LT** Listed as Threatened at the national level.

Please note that species names follow Flora of Maine: A Manual for Identification of Native and Naturalized Vascular Plants of Maine, Arthur Haines and Thomas F. Vining, 1998, V.F. Thomas Co., P.O. Box 281, Bar Harbor, Maine 04069-0281.

Where entries appear as binomials, all representatives (subspecies and varieties) of the species are rare in Maine; where names appear as trinomials, only that particular variety or subspecies is rare in Maine, not the species as a whole.



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

December 20, 2001

Jean Lallier
Woodlot Alternatives, Inc.
122 Main Street, No. 3
Topsham, Maine 04086

Project: MHPC #3000 - Old Bath Road, Androscoggin River
Location: Bath and Brunswick, Maine

Dear Ms. Lallier:

In response to your recent request, I have reviewed the information received December 11, 2001 to initiate consultation on the above referenced project. We are reviewing this project pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

Based upon the proposed scope of work for this project and the project location, the Commission find that the following additional information will be needed for prehistoric and historic archaeological resources, as well as for architectural resources:

- Some portions of this proposed bicycle route along the Old Bath Road are known to be sensitive for prehistoric archaeological sites. There are three known sites adjacent to the road. Site 15.53 is located west of the Old Bath Road near the intersection with the access road to the Brunswick N. A. S. facility (square box on the topo). This site is Archaic in age, 5000 years plus, and poorly known. Sites 15.48A and 15.48B are on sandy, flat terrain on the north side of the road west of the hills that border the west edge of the New Meadows River trough. Basically, all the flat, sandy soils west of the hills on the west side of the New Meadows trough, from the Route 1 intersection (about 3 km distance) are archaeologically sensitive and will have to be tested. There are no known prehistoric sites on the New Meadows or Whiskeag crossings, and both have been looked at by professional archaeologists.
- There is only one known historic archaeological site in the vicinity of the proposed bicycle route along the Old Bath Road. This is the 17th-century fur trading post of Thomas Stevens (ME064-004) located near the New Meadows River. However, the Old Bath Road is an old route which may contain several more historic archaeological sites. The 1871 map of Brunswick and 1858 maps of Bath and West Bath show several farmsteads along the road



MAINE HISTORIC PRESERVATION COMMISSION

55 Capitol Street
State House Station 65
Augusta, Maine 04333

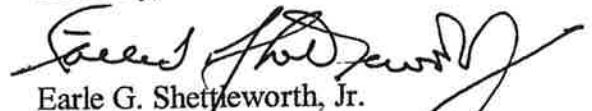


and at least one mill complex and one school. Documentary research will be required and at least some archaeological testing, certainly in the vicinity of the 17th-century trading post.

- There are currently no properties listed on the National Register of Historic Places within the immediate vicinity of the proposed project location. Although there are currently no listed properties within the vicinity of the project site, this portion of the town has not been comprehensively surveyed. Therefore, as yet unidentified aboveground properties that are eligible for nomination to the National Register of Historic Places may also be located in the vicinity of the project site and subject to audible and visual effects from this undertaking. An architectural survey of the corridor will be needed.

If you have any questions relating to this matter, please do not hesitate to contact Kirk Mohnney of my staff.

Sincerely,



Earle G. Shettleworth, Jr.
State Historic Preservation Officer



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

MARTHA KIRKPATRICK
COMMISSIONER

11 January 2002

Jean Lallier
Woodlot Alternatives, Inc.
122 Main St. #3
Topsham, ME 04086

Dear Jean,

This letter is in answer to the two letters sent to me last month regarding significant waters associated with two projects proposed along the Old Bath Road (Brunswick, Bath), and U.S. Route 1 (Yarmouth, Freeport). The only waterbody of concern within these two segments is the New Meadows River. The river, above US Route 1, does not presently attain standards for dissolved oxygen and is listed as a nonattainment segment by this department. Any activity that would further contribute to that condition should be avoided.

In the future, I would like to ask you to send these requests to Thom Danielson of my staff for review. Thank you.

Sincerely,

David Courtemanch Ph.D.
Director, Division of Environmental Assessment
Maine Department of Environmental Protection
Augusta, Maine 04333
207-287-7789

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507



REPLY TO
ATTENTION OF
Regulatory Division
CENAE-R-51

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

Eugenie Moore
Woodlot Alternatives, Inc.
30 Park Drive
Topsham, Maine 04086

Dear Ms. Moore:

This concerns your clients, the Towns of Yarmouth & Freeport, and their proposal to develop a recreational pathway adjacent to Route 1 from Yarmouth to Freeport

It appears that this project may involve activities that require a permit from the Corps of Engineers. The following is an explanation of Corps jurisdiction as defined by Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

A permit is required under Section 10 for all work seaward of mean high water in navigable waters of the United States. In Maine, for purposes of Section 10, navigable waters of the United States are those subject to the ebb and flow of the tide and a few of the major waterways used to transport interstate or foreign commerce, specifically the Penobscot River to Medway, the Kennebec River to Moosehead Lake, and the portion of Lake Umbagog in Maine.

Permits are also required under Section 404 for discharges of dredged or fill material into all waters of the United States, including navigable waters, inland rivers, lakes, streams, and wetlands, as well as the excavation/grading within these waters/wetlands. On the coastline, our jurisdiction extends landward to the high tide line (i.e., the highest predictable tide) or to the landward limit of any wetlands, whichever is more extensive. In interior waters, our jurisdiction extends landward to the ordinary high water mark or to the landward limit of any wetlands, whichever is more extensive.

The term "wetlands" is defined by Federal regulations as "...those 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..." (Federal Register, November 13, 1986 33 CFR Part 328.3(b)). Wetlands generally include swamps, marshes, and bogs; however, forests and

meadows that lack surface waters can also be wetlands.

Waterways and wetlands are considered a valuable public resource, the unnecessary alteration of which is strongly discouraged by the Corps. During our January 18, 2002 site meeting we discussed several options to avoid impacting aquatic resources. The pathway must be placed on the existing shoulder fill to the maximum extent possible and must be the minimum width necessary to meet the basic project purpose – establishing a bike/pedestrian (not vehicular) accessway. The use of vertical walls at the toe of slope/edge of wetland would facilitate this. Where this cannot be achieved due to safety or other considerations, the walkway should be constructed on pilings to avoid the permanent impact of filling. Decking should be sufficiently high enough to prevent secondary impacts from shading and should be open (grating) or spaced to improve sunlight penetration.


We understand that the applicant continues to look at alternative routes and designs. The project undoubtedly faces a number of constraints, including environmental, socio-economic, and traffic/safety. Coastal wetlands are particularly important resources to Federal and State resource agencies even in this case if they're located adjacent to Route 1 and its businesses. If wetland fill cannot be avoided after considering all possible route and design alternatives, it is likely that compensatory mitigation will be required. The applicant should consider the cost of mitigation before completely dismissing the no-fill alternatives. Mitigation would likely mean restoring, enhancing, or creating coastal wetland habitat elsewhere as compensation for any unavoidable losses. As you know, the cost of property acquisition, mitigation design, implementation, and then monitoring can often be very high.

Should the applicant proceed with the project, he must submit a copy of any DEP applicant along with an application on Corps of Engineers ENG form 4345. The form and samples of the necessary plans are enclosed. When preparing the 8.5" x 11" plans, please ensure that all pertinent features and labeling are legible. As we discussed during the site visit, the crossing of the Cousins River will also require a permit from the US Coast Guard. For further information, please contact 212-668-7021.

Please note that the authorizations referred to above must be obtained before any work or filling is done in areas subject to Corps jurisdiction. Performing such work or filling without first obtaining Corps authorization could result in substantial penalties.

If you have any questions regarding this letter, please contact me at 207-623-8367 at our Manchester, Maine Project Office.

Sincerely,


Jay L. Clement
Senior Project Manager
Regulatory Division

Enclosure

The Public burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
--------------------	----------------------	------------------	-------------------------------

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NOS. W/AREA CODE a. Residence b. Business	10. AGENT'S PHONE NOS. W/AREA CODE a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE

DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)	
13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
15. LOCATION OF PROJECT COUNTY _____ STATE _____	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN, (see instructions)	

DIRECTIONS TO THE SITE

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

23. Is Any Portion of the Work Already Complete? Yes ☐ No ☐ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

25. List of Other Certifications or Approvals/Denials Received from other Federal, State or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
--------	----------------	-----------------------	--------------	---------------	-------------

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

APPENDIX E - PUBLIC MEETING MINUTES

- January 14, 2002 - First Public Meeting
- November 7, 2002 - Public Workshop

Subject: Androscoggin-to-the-Kennebec Trail Feasibility Study
Public Scoping Meeting

Date: January 14, 2002

Place: Bath Middle School
Old Brunswick Road
Bath, Maine

Attendees: Phil Carey and Tom Farrell (Town of Brunswick), Jim Upham and Denis Hebert (City of Bath), John Balicki (Maine Department of Transportation), Terry DeWan and Tom Farmer (Terrence J. DeWan and Associates), Darin Bryant (T.Y. Lin International)
See Attached List for other attendees

By: Darin Bryant

Copy: Attendees, File

MEETING NOTES

This Public Scoping Meeting was held to discuss a proposal to extend Brunswick's Androscoggin River Bike Path to the new Sagadahoc Bridge in Bath. The two municipalities have commissioned a team of civil engineers, landscape architects and environmental specialists to explore the idea of extending the Bike Path along the Old Bath Road, the Old Brunswick Road and other streets in Bath to the new bridge. The purpose of the meeting was to have the consultants present the work they have done to date and take questions and comments from the public on the alignment, on whether or not the project is a good idea, and on the obstacles and opportunities that exist. Not including the consultant team and public officials, 63 members of the public signed the attendance sheet.

Jim Upham, Bath City Planner, introduced the project, the public officials from Bath, Brunswick and the Maine Department of Transportation who were in attendance, and the consultant team. John Balicki, Maine Department of Transportation's Bicycle and Pedestrian Coordinator, explained the project funding and the state's view on the project. Darin Bryant and Terry DeWan, members of the consultant team, then began the presentation which included an overview of the following: introduction of the consultant team, history of the project, outline of the scope of work for this study, overview of the project corridor including mapping, photographs and drawings showing opportunities and constraints, a discussion on scenic vistas, signing, lighting, landscaping and amenities (benches, fountains, etc.), a discussion of construction phasing and an explanation of upcoming steps.

The meeting was then opened up to receive public comment. The following comments were recorded:

1. Mary Morgan Alexander, Bath – Expressed concern over the potential loss of parking in the downtown Bath area. She indicated that parking is a real commodity right now and that losing any current parking would be a problem.
2. Tom Webster, Brunswick – Thought that the large ledge outcrop on the south side of Old Brunswick Road (on the inside of the sharp curve just west of the Whiskeag Creek) would not be a problem to remove. He thought that cost of removing this ledge would be less than the necessary construction on the other side of the road to allow the path to parallel the railroad line. He also noted that it would be better to have fewer crossings of Old Brunswick/Old Bath Road. One response was that even if the ledge was removed and the trail was able to be located on the south side of Old Brunswick Road in this location, there are still other problems further to the west prior to the railroad trestle that would not allow the trail to remain on this side of the roadway. This additional problem is a home located near the road on top of another ledge outcrop. Removal of the ledge in this location without impact to the home is probably not possible.
3. Bob Bruce, Wiscasset – Was concerned with safety along this corridor. He noted that many bike riders currently do not use the appropriate safety equipment. Therefore, the fewest crossings of the road would be best. He noted that he felt that the amount of money necessary to construct a safe facility for the kids is not a factor. There are many kids that would use the path to ride to school and the elderly could use it as well. If there was one death after the project was completed it would ruin the entire project.
4. Fulton Oakes, Brunswick – He was concerned that homes and survey pins would be disrupted. He asked if there would be negotiations with property owners. He noted that removal of snow would be very difficult (especially where there are retaining walls). He felt that using the Route 1 corridor would be a better option and would still be able to provide some connections to Old Bath/Old Brunswick Road. Phil Carey responded that there could be legal concerns with use of the Route 1 corridor and also indicated that three groups have already completed studies determining which corridor to use and the Old Brunswick/Old Bath Road corridor was selected each time. There was then more discussion about the use of Route 1 and the fact that it would be safer (no at-grade road or drive crossings) and would have less property owner impact.
5. Bruce London, West Bath – Mentioned that the state has ownership between the southbound and northbound Route 1 roadways. This would require no private property impacts. In Bath the path could cross near the swale at the Industrial Park. Darin indicated that a path of this type could be constructed, however there would not be the ability to connect to as many of the residential areas as with the Old Bath Road/Old Brunswick Road path, and there would be a significant amount of noise if the path were in the median and vehicles were passing on both sides.
6. Ted Crooker, Brunswick – Had a plan showing his concept for the path which would use the north side of Route 1 and the median of Route 1. The trail would start on the south side of Route 1 near Cook's Corner and then pass over the Old Bath Road Bridge to the north side of Route 1. After this point there could be feeder trails into the mobile home

parks and some of the other residential developments along the southeast side of Old Bath Road. The existing bridges over Route 1 have no safe crossings and this trail could fix some of those problems. At the New Meadows River his idea was to go under the bridge. He also noted that the area within the median nearer to Bath is well forested and beautiful. The path would be "policed" by the general public driving on Route 1 since it is very visible. He indicated that this plan would work with the future 209 connection. As for Old Bath Road, every driveway and intersection would be a place for a potential accident. Drainage would be extremely expensive and potentially a large problem. Ownership of the land on his proposal is all one entity, which would make the process easier. One of his major concerns for the Old Bath Road corridor is the high cost.

7. Curt Stretcher – Asked how many crossings were currently proposed for the path. Darin re-stated that we have not yet selected an alignment for the path, but the one used in this presentation for discussion purposes shows three crossings.
8. Fred Hahn, Brunswick – Indicated that he was a member of the Merrymeeting Wheelers cycling group. He has ridden the Old Bath Road numerous times. He indicated that the vehicles travel at a high rate of speed on this roadway and that providing crossings of the roadway would be asking for a major accident. The potential for accidents would be increased after use of the roadway increases.
9. Unknown speaker – Asked how we knew what the Right-of-Way width was and whether the roadway was centered in the Right-of-Way. Darin indicated that we coordinated with the Town and the Department of Transportation to find the legal listings of Right-of-Way width. We also recorded the distance from the center of the roadway to most of the property pins we found along the roadway. There was some variation, but the roadway appears to be fairly well centered within the Right-of-Way (give or take 2 or 3 feet).
10. Tony Barrett, Harpswell – Also voiced his concerns regarding the number of roadway crossings and asked if any consideration had been given to crossing the New Meadows River further to the north. Darin indicated that a path and bridge, or perhaps a boardwalk, would be nice in this area where the channel itself is narrower, but our team's experience with the environmental permitting agencies indicates that they would not permit a path in this sensitive area as long as there is a viable alternative. In this case, the path as we showed along the causeway is a viable alternative. Terry DeWan also indicated that there are some steep slopes from Bridge Road down to the river on the west side of the wet area that would make the path construction difficult.
11. Cal Stilphen, Bath – Was wondering about homeowners' rights. He indicated that the trail as proposed would be close to his living room. Asked how we would deal with this situation. Jim Upham indicated that we would like to stay within the existing Right-of-Way and that we would have to look at the impacts to each parcel.
12. Unknown speaker – Asked about the cost to taxpayers and whether or not they could simply lower the speed limit on the roadway and pave the shoulders for a bikelane. John Balicki answered that lowering the speeds would not work unless the roadway was

physically changed. History indicates that people drive at the speed indicated by the construction of the roadway and will remain at the current speed as long as the roadway looks the same regardless of the speed limit signs. It was also mentioned that such things as curves and plantings closer to the roadway would reduce speeds and that paved shoulders may increase speeds due to a wider expanse of pavement.

13. Chris Gutschem, Brunswick – Is a member of the Merrymeeting Wheelers bicycle club and thought that paved shoulders would be safer than a mixed-use path as long as users are following the safe bicycling rules.
14. Unknown speaker – Indicated that the area from the New Meadows River to Cook's Corner is home to many kids. She thought that the path would not be safe but we would be enticing a lot of these kids to use it anyway.
15. Unknown speaker – Thought that the Route 1 Corridor worked well for the Brunswick and Cook's Corner area.
16. Unknown speaker – Indicated that bicyclists would like the paved shoulder, but there are many different types of users and all of their needs have to be taken into account.
17. Fred Hahn, Brunswick – Asked about the cost and the funding for this project and the existing bike path. Phil Carey indicated that the proposed path would be paid for in the same way as the existing path, which is that the Federal grant pays for 80% of the costs while the Town pays for 20%.
18. Unknown speaker – Was concerned that the typical sections for the on-road sections in Bath showed the bikelane between the travel lanes and the parked cars. Thought that this would be dangerous when people are opening doors of parked cars. Darin indicated that these typical sections were based on the Federal Guidelines for bikepath construction, which indicate that this is the proper place for the bikelanes when removal of parking is not possible.
19. Unknown speaker – Noted that cyclists along Old Bath Road are mostly adults right now and that he would like to see paved shoulders for their needs. However, this does not satisfy other users groups such as children, which is one of the groups this project was targeting.
20. Ted Crooker, Brunswick – Once again noted that the Route 1 corridor would be a better alternative. Noted that there were only about a dozen landowners along that corridor while there are over a hundred along Old Bath/Old Brunswick Road. He noted that there is also a lot of wildlife along the edges of Route 1 and that people would be more willing to give up 50 feet along the back of their property rather than 10' off their front yard. He thinks safety is the key issue and that snow removal off the Old Bath Road would be very difficult, but easy along Route 1. There would be the ability to have safe connections to the path for residential areas. There are some areas along his concept that would require fill, but that is cheap compared to the blasting required along Old Bath Road. He also thought that the trail could pass beneath the snowplow turnarounds and that the clear-

cutting that is presently being completed would open up views. Once again, he noted that the visibility of the path from drivers on Route 1 would lead to increased safety. In addition, the crossing of the New Meadows River would be shorter and less expensive with this option.

21. Unknown speaker – Wanted to make sure that changes in elevation were considered during the construction of the path. She was involved in the existing path design and thinks that the variation in elevations between the path and the roadway/surrounding ground make it more interesting.

After the meeting there were some other comments addressed to the public officials and consultant team including the fact that paved shoulders on Old Bath Road would disrupt current equestrian usage of the gravel shoulders and others that were concerned with the path being very close to their homes. The consultant team and the Brunswick/Bath officials will take the information obtained from the attendees tonight and determine which options to study further. The consultant team will then develop more detail for the selected alignment and present those recommendations at the next public meeting. The next meeting is currently anticipated to be held in late February or early March. The completion of the Final Report and final public meeting is expected to occur during April or May.

If there are any significant errors or omissions to these minutes of meeting, or if there are any additional comments regarding this meeting, they can be submitted to Phil Carey, Planning Department, Brunswick, Maine. A videotaped version of the meeting can be viewed on Bath and Brunswick's local government access cable channels in the near future (Bath Channel 14 and Brunswick Channel 7).

Respectfully Submitted,



Darin W. Bryant, P.E.
Consultant Project Manager

Androscoggin-to-the-Kennebec Trail Feasibility Study

Public Meeting - January 14, 2002

Attendance

Name	Address	Representing *
Anne Brookes	52 Arrowhead Dr. Brunswick	N/A
Gerry Brookes		N/A
Rob Knopp	106 Harpswell Road, Brunswick	Brunswick Bike Path Comm. Hec
Jim + Sally Nyejan	425 Old Brunswick Rd. Bath	
FRED HAHN	104 GREENWOOD RD BRUNSWICK	MEETING WHEELERS
Andrew Gady Manker	470 Old Bath Rd., Brunswick	
R. Norton	197 Old Bath Rd	
Frances Potter	307 Old Bath Rd Brunswick	
David Fuller	PO Box 2, BOWDOIN, 04287	BRUNSWICK ROTARY
Chris Cousins	Turner Record 84 Front St.	
CHRIS GUTSCHEN	26 STRAW HILL RD, BATH	SELF
CAPTAIN M MORRIS-ALEXANDER	167 OLD BRUNSWICK RD	SELF
Tim Diment	462 Old Bath Rd. Brunswick	Self
MATT KILBOUGH	945 HIGH ST, BATH	
THOMAS HOERTZ	692 MIDDLE ST. BATH	BATH RESIDENT + CITY ANGST.
Ronald Swanson	808 MERR PT. RD. BRUNSWICK	Brunswick Bike Path Committee
TOM Webster	6 Hawthorne St	BBPAC
Jeanne Goodrich	108 Bedford St	
RICH	108 Bedford St	
Shirley Reeder	8 Grove Ln, Brunswick	

* Town/City official, Cycling Group, Bath/Brunswick Resident, School Board Member, etc.

Androscoggin-to-the-Kennebec Trail Feasibility Study

Public Meeting – January 14, 2002

Attendance

Name	Address	Representing *
Dave Bagla	21 Clifton St., Bath	
Irene Bailey	310 Old Bath Rd Brunswick	
Hollis Bailey	310 Old Bath Rd Brunswick	
Larry Tondreau	451 Old Bath Road, Brunswick	
Phil Shannon	894 High St, Bath	
Donna Lamm	8 Veterans Dr. Brunswick	
Charles Lamm	" " "	
Robert Bue	31 Page Ave Wiscasset	
Ed Vedejs Blumner	307 Old Brunswick Rd, Bath	
Sharon & Derek Williamson	127 Whiskey Rd Bath	
Al & Maggie Stillman	333 Old Brunswick Rd Bath	
Bruce & Carol Landon	23 OAK LEDGE W. BATH.	
Fulton Oakes	4 PO. BOX 14 DRESDEN 04342 220 OLD BATH RD BRUNSWICK MAIL 5	
Elanor Haining	452 Old Bath Rd., Brunsw.	
Clark Pratt	307 Old Bath Rd Brunsw	
Phyllis Wolfe	59 Lemont St. Bath 04530	
Steve Mallett	19 Tedford Rd., Topsham, Me.	
Terl Cooke	414 Storer Rd Brunswick, Me.	
Douglas Soucik	167 Old Brunswick Rd. Bath.	
William Babbin	459 Old Bath Rd Brunswick	
Richard Jack	34 PINWOOD DR TOPSHAM	

* Town/City official, Cycling Group, Bath/Brunswick Resident, School Board Member, etc.

Subject: Androscoggin to the Kennebec Trail Feasibility Study
Public Workshop (Meeting #2)

Date: November 7, 2002

Place: Brunswick Council Chambers – McKeen St, Brunswick

Attendees: Approx. 63 members of the public, consultants and town officials

By: Darin Bryant

Copy: File

MEETING NOTES

The workshop was held to discuss the status of the project and to solicit recommendations for either the Route 1 or Old Bath Road corridor. A short presentation was completed prior to a 45-minute workshop. Attached are the agenda, instructions, and results of the first two exercises. While I was not able to record everything that was mentioned at the meeting, following are some of the comments mentioned during the report-back portion of the meeting and after the meeting:

- 1) Table #1: Were split between the Old Bath/Old Brunswick Road (OB/BR) and Rte 1 alternatives. OB/BR has too many drives and there are many property issues. Rte 1 should add parking lots so OB/BR residents can drive to the path. They would like a larger buffer from Rte 1 (maybe 40')
- 2) Table #2: Rte 1 provides a new alignment that is not there now for people to use, which is a plus. There are some parking lots already available along Rte 1 and it could provide some loops. It also has a wider pavement area and was seen as safer. OB/BR doesn't have as many advantages. It might get more total use, but more from neighborhoods than from others. It is not as hilly and is less noisy.

They thought that E3 was better than E4 and E5. It is cheaper and more aesthetically pleasing.

- 3) Table #3: Preferred the Rte 1 corridor. We should consider Bath Road as well. Yet Rte 1 has less potential for commercial development. Problems with OB/BR include too many homes and drives. We should remember that it is multipurpose, so has to be designed so many different types of people can use it.
- 4) Table #4: Preferred Rte 1. There are fewer drives and roads to cross. There could be loops developed. A bike interchange on Peterson and Deerfield Roads with parking could be created. There are fewer issues with land acquisition. However, it is noisier and less scenic. Yet if we move it away from the highway as much as possible it may be OK. We could use plantings to help this issue. It would mostly be for recreational use so there should be the fewest number of constraints. Safety was their biggest issue.

In Bath they liked the E3 connector since it would do the same as E4 and E5 but is nicer. They could build E4 and E5 in the future as well.

- 5) Table #5: Preferred the Rte 1 corridor. It is less costly with land acquisition. They would rather have the noise than the 150 drives. Safety is a big concern. If we come closer to Rte 1 in the ledge areas we can avoid some of the cost. At Cooks Corner B1 and B2 are on different sides of the Old Bath Road. It should be on the east side since that is the best side for the crossing at Bath Road. We should avoid crossing Old Bath Road near the intersection of Grover Lane since it is at a bad spot. Thought that West Bath should be more connected since we are only serving the northerly side of Route 1 and not fixing the connections that were lost when Rte 1 was built. Thinks we should look at the median option again on Route 1. There is room to avoid the ledge and to zig-zag to create acceptable grades.

They were concerned on a regional basis and thought that connecting Phippsburg and West Bath were important too. If the Railroad comes out that would be a good option to look at. Wing Farm option is best if we do stay on the northerly side of Route 1. Thought that connecting Sanford Crossing Rd is important. If using the north side of Rte 1 then we should connect over the New Meadows Road bridge.

- 6) Table #6: Preferred Route 1. Safety was their biggest concern. Thought that the numerous drive crossings on OB/BR were bad. Liked the E3 alternative in Bath. It would still allow access to Congress Ave. for those who need to go there. Parking might be possible at the District Court. They thought the connectors between Deerfield and Peterson were good ideas, but we should not provide any other upgrades to those roadways. Cooks Corner was a concern and it was thought that we should definitely go under the Old Bath Road bridge instead of connecting at grade with Old Bath Road. It would also place you on the better side of the bridge for the connection with Bath Road and would set us up better for future connections to Harpswell Islands Road.
- 7) Table #7: Nothing different from the other groups.
- 8) Table #8: Thought that Route 1 was the best. Liked the Wing Farm alternative and thought that we might be able to use their parking, at least on the weekends. They were big on safety as well and thought that Route 1 provided an alternative that is not there today instead of upgrading on that people can already use. There are too many drives on OB/BR to be safe. We should develop the small link between Peterson and Route 1. Privacy is an issue for them, and we would impact fewer people on Rte 1. Security was also an issue, but they think most of Rte 1 will be OK. There is the thin spot near Maplewood that will have to be addressed. They wondered if we could peel off and actually go through Maplewood.
- 9) After the reporting, Phil mentioned that we will review this information over the next couple of months and work toward a report with the selected corridor. There was a show of hands requested and it appeared that most (about 60%) were from Brunswick, about

30% were from Bath and the rest were from West Bath or other places. Almost everyone indicated that they would use a path of this sort.

He also said that there will be one more Public Meeting after the alignment is selected and more work is done on that alignment.

- 10) Jim Upham thanked everyone for coming and mentioned that Brunswick and Bath will be putting applications together for MDOT in the future based on the results of this study. There will be a 20% match required by the Towns. The next MDOT deadline is a year from next summer. The project may be broken up into smaller funding segments.
- 11) John Balicki said that the process was good and was what MDOT was looking for. He thinks we will end up with a good feasibility study based on this process. Bath and Brunswick will have to make some decisions on the corridor. He encouraged everyone to contact local officials and voice their preferences and concerns. He also encouraged the towns to start thinking about fund raising.
- 12) A quick show of hands indicated that about 80% thought the first exercise was worthwhile, and almost everyone thought the second and third exercises were worth it.

bmtg11-07-02.doc / db

November 7, 2002
Androscoggin-to-the-Kennebec Trail Workshop
Exercise #1 Results

Users	Table							
	1	2	3	4	5	6	7	8
Families	2	1		x		x	3	
Tourists	x	x					5	
Older People	2			x		x		x
Commuters	x	x	x	x		x	2	x
Pet Walkers	x			x				x
Walkers	1	1	x		x	1	1	1
Rollerbladers	1	1	x	x	x	x	3	x
Bicyclists	1		x	x	x			1
Fitness/Athletes	1	1	x	x	x	x	4	1
Bird Watchers	x						5	
Skateboarders	x							
Retail Business	x							
Disabled people	x							
Fund Raisers	1						4	
Kids		1		x				x
Bike Tours			x	x			5	
Serious Bikers							3	x
Educational				x		x		
Wheelchairs							4	x
Recreation							2	

November 7, 2002
Androscoggin-to-the-Kennebec Trail Workshop
Exercise #2 Results

Priorities	Table								Total	Rank
	1	2	3	4	5	6	7	8		
Access to Neighborhoods	3	1	0	1	4	1	1	0	11	9
Aesthetics	6	5	3	7	4	2	5	1	33	2
Avoid Environmental impacts	2	1	4	1	0	1	2	1	12	8
Budget/costs	4	3	3	2	0	2	2	0	16	6
Connectivity	2	0	3	3	2	0	5	0	15	7
Connections to existing paths	0	3	4	6	2	0	4	0	19	5
Connections to school/playing fields	4	0	2	1	1	2	1	0	11	9
Directness	0	4	1	0	0	0	0	0	5	10
Lighting	1	0	1	1	0	1	0	0	4	11
Privacy	5	0	0	5	2	3	5	1	21	4
Safety	7	7	4	5	5	5	5	1	39	1
Security	4	1	3	4	5	3	4	0	24	3
Amenities	0	0	0	0	0	0	0	0	0	
Telephones	0	0	0	0	0	0	0	0	0	
Maintenance	0	0	0	0	0	0	0	0	0	
Accessibility	0	0	0	0	0	0	0	1	1	12
Impact to Rural Character	0	0	1	0	0	0	0	0	1	12
Safe Alt. Transportation	0	0	0	5	0	0	0	0	5	10
Economic Development	0	0	0	0	0	0	1	0	1	12