TABLE OF CONTENTS

Preliminary Design Report
Cobbossee Stream Pedestrian/Bicycle Trail
Gardiner, Maine

1.0 BACKGROUND

The Cobbossee Stream Pedestrian/Bicycle Trail is planned to be an extension of the Kennebec River Rail Trail (KRRT) through downtown Gardiner generally following the Cobbossee Stream. The City of Gardiner (the City) obtained a grant from the Maine Department of Transportation (MDOT) to perform preliminary engineering for the trail that will become an integral part of the Cobbossee Corridor Master Plan for the redevelopment of a section of the City.

Milone & MacBroom, Inc. was engaged by the City to perform the preliminary engineering and produce a preliminary design report (PDR). Two alternative routes for the construction of the trail were explored. Both routes begin at the terminus of the KRRT at the north end of the Hannaford parking lot and ending adjacent to Water Street (Route 126) near the intersection of Maple Street.

2.0 ALTERNATES

The following is a discussion of the alternates presented to the City and MDOT and at a public informational meeting.

2.1 Alternative A

This route begins at the kiosk at the end of the existing trail at Hannaford's parking lot and extends along the parking lot parallel to Maine Avenue (Route 24) and crosses the Cobbossee Stream on a pre-engineered bridge just up stream of the Maine Avenue Bridge over the stream. At this point, the route would turn and parallel the stream near the existing walk to the rear of the Arcade parking lot and traverse under Bridge Street (Route 201) following along the stream and behind the existing building to reach the Winter Street Bridge over the Cobbossee Stream. At this point, the trail would be placed on the bridge as a widened sidewalk and reach the intersection of Summer Street (4,150 feet).

Advantages

- Avoids a busy high traffic intersection and at-grade crossing of Bridge Street.
- Good visibility along the stream.

Disadvantages

- Conflict with traffic entering Hannaford's parking lot.
- Conflict with traffic using Arcade parking lot as bypass of downtown.
- Possible right-of-way issues.

2.2 Alternative B

This route begins at the end of the KRRT just past the underpass and will follow the old railroad right-of-way located behind Hannaford's until it reaches Bridge Street at the intersection of Summer Street. At this point, the trail will have an at-grade crossing of Bridge Street and continue along Summer Street, crossing Winter Street and continuing along Summer Street Extension similar to Alternate A. At this point, the trail will follow Summer Street Extension until it reaches the old railroad trestle crossing over the Cobbossee Stream. The trail will either follow the trestle to its end or provide a ramp system down to the existing grade after crossing the stream. The overall length of the trail under this alternative will be 3,550 feet.

Advantages

- The trail could be built along the existing right-of-way owned by MDOT and the City. No right-of-way acquisition will be required.

Disadvantage

- Very difficult crossing of Bridge Street with poor pedestrian sight lines.

2.3 Trestle Evaluation

An inspection of the existing wooden trestle showed severe loss of the cross section of several of the timber members to the point where 30 percent of the structure would need to be either replaced or rehabilitated. Based on this investigation, we prepared two alternates for completing the crossing of the Cobbossee Stream. One alternate is the full reconditioning of the trestle that will allow all of the structure to be utilized for the trail. The other alternate is a shorter and less expensive version utilizing the steel beam section of the bridge and providing a ramp to meet with existing ground grade.

2.4 Public Informational Meeting

A public informational meeting was held on April 17, 2008 at City Hall in Gardiner where both alternatives were presented and a discussion was held on the pros and cons of each alternative.

A copy of the minutes is shown in the Appendix II of this report.

Based on this discussion and evaluation by City staff of the difficulty of constructing a safe crossing of Bridge Street using Alternative B, it was decided to proceed with Alternative A for the Preliminary Design.

2.5 Public Hearing

A public hearing was held on December 16, 2008 at City Hall to present the Preliminary Design Report (PDR). Comments received were incorporated into the final PDR.

3.0 DISCUSSION OF PRELIMINARY DESIGN

The trail has been designed to AASHTOs recommended requirements and has a width of either 10 feet or eight feet and will be surfaced with either one two-inch coat of hot mixed asphalt over 18 inches of sub-base (ASCC) type D or will be on a concrete walk with a section of five inches of 4000 psi 5-7% air entrained concrete over eight inches of aggregate sub-base gravel type D. This latter condition is proposed at an existing concrete sidewalk to be widened to 10 feet

traversing the existing Winter Street Bridge. The proposed trail is approximately 4,065 feet in length including intersection and bridge crossings.

The existing grade of the trail varies from relatively flat (0.5%) as it crosses an existing shopping plaza parking area to relatively steep (±7%) as it follows the Cobbossee Streambed. The proposed trail maintains under 5% grade in most areas in order not to exceed AASHTOs requirements. Where a 5% grade is exceeded, a flat resting area has been provided for at intervals of less than 200 feet.

Grading is held to the property being crossed or state-owned right-of-way in which the proposed trail is located. The proposed horizontal alignment takes several issues into consideration including stream crossings, right-of-way widths, existing features and utilities, slopes, user volumes, and street crossings.

3.1 Intersections

The trail crosses three commercial driveways entering Maine Avenue (Route 24) at grade. The first crossing is at 60° in order to align with a proposed pedestrian bridge over the Cobbossee Stream. The second and third crossings are at 90°. The AASHTO guide allows a minimum intersection skew of 45° at an intersection crossing, and we are well above the minimum design standard. The one at grade road crossing is located at Winter Street and this is a 90° crossing.

Winter Street

The trail approaches Winter Street as an eight-foot wide bike lane running along the east side of Summer Street separated from Summer Street by a bituminous concrete curb. The crossing will be striped and meet ADA compliance.

The trail will enter a sidewalk condition on the north side of Winter Street. A sidewalk ramp with cast iron truncated domes will be provided per MDOT specifications. The trail will have appropriate signage and pavement markings informing trail users of the upcoming crossing. Signs will be in accordance with MUTCD standards for trail users and street traffic. Trail users

will be alerted to dismount bicycles for the Winter Street crossing and the following sidewalk section of the trail. Tactile warning strips will be provided per MDOT specifications.

Driveway Access near the Key Bank ATM

The trail crossing at the ATM is at a skewed angle of approximately 60°. The skew crossing is required to align trail users with the proposed pedestrian bridge across the Cobbossee Stream. The proposed trail will have appropriate signage and pavement markings informing trail users of the upcoming intersection. The driveway crossing will be striped. Signage will be in accordance with MUTCD standards. The trail on either side of the driveway will be lined with timber guide rail to prevent vehicles from accessing the trail. The crossing is approximately 42 feet in width and includes both an entrance and an exit lane. Tactile warning strips per MDOT specifications will be provided.

Driveway Access at N/F Cottle Realty

The trail crossing at the Cottle Realty property is at a preferred 90°. The proposed trail will have appropriate signage and pavement markings to call trail users' attention to the driveway intersection. An eight-foot wide refuge area is located in the middle of this crossing. The refuge area of the island is at grade. The curbed areas of the island contain low plantings. The entrance lane and exit lanes located on either side of the island are approximately 29 feet wide. There will be tactile warning strips per MDOT specifications at either side of the trail. The trail on either side of the driveway will be lined with timber guide rail to prevent vehicles from accessing the trail.

Driveway Access at N/F Hanbro

The trail crossing at the Hanbro property driveway is at approximately 90°. The crossing is approximately 42-feet wide and crosses both an entrance and an exit lane. The curb will be removed to allow the trail to cross at grade. There will be appropriate signage warning both the trail users and the driveway traffic of the crossing. Signs will be in accordance with MUTCD standards. The crossing will be stripped with paint, and there will be cast iron tactile warning

per MDOT specifications. There will be timber guide rail on either side of the driveway to keep vehicles from entering the trail.

3.2 Sediment and Erosion Controls

Sedimentation and erosion controls will be installed and maintained during construction. The measures will conform to Maine Department of Transportation 2008 Best Management Practices for Erosion and Sedimentation Control.

3.3 Traffic Issues

Detours are not expected to be required for work within Winter Street. At times travel may be limited to one lane. There are no other street crossings. However, the construction of the trail under Bridge Street will require travel by vehicles to be one-way as shown on the plans.

3.4 Railroad Trestle Rehabilitation

The objective of the structural assessment was to evaluate the structural integrity of the existing railroad trestle in order to determine the feasibility of its inclusion in the Cobbossee Corridor Pedestrian/Bicycle Network. This section of the report provides a description of the existing trestle structures, the methods used for evaluating the trestle, and alternative recommendations for renovation/repair/reuse of the existing railroad structure. The potential costs associated with any upgrades or renovations that may be required have also been included for each alternative.

3.5 Description of Existing Structure

The Railroad trestle crossing Cobbossee Stream was most likely constructed in the early 1900's. A visual inspection and non-destructive (sound testing with use of a hammer) testing of the trestle was conducted in August 2007 by MMI and the findings are presented below.

The overall length of the multi-span trestle is approximately 700' with a total of 610' timber construction and 90' timber/steel construction. Typical spans of the timber sections ranged from 10'-4" to 13'-6". The built-up steel girder section built in 1917 which directly spans the Cobbossee Stream does so in two spans of 45'-6" and 42'-8". The timber superstructure consists

of between four and six timber girders, two to three each side with dimensions of approximately 8" wide by 16" high. The 8" by 6" timber railroad ties are supported by the girders. 3" by 8" timber "curbs" are located along the edges of the ties for the full length of the trestle. The railroad tracks are still present and intact. The substructure consists of a timber cap on timber piles supported by timber sills with timber cross-bracing. The steel girder section directly supports the railroad ties and is seated on timber bents and concrete pedestal footings. See Appendix A for the typical timber cross section.

3.6 Summary of Inspection

Through the use of visual inspection and non-destructive (sound testing with use of a hammer) testing, the inspection of the trestle was conducted in order to determine the gross percentage of members that would require replacement in order to update the current structure. Replacement was deemed necessary for members found to be missing or exhibiting large amounts of cracking, deterioration due to weathering or insect penetration, and water damage (for members within the watercourse). Once identified, alternative options for repair were considered, and an overall cost of repair could be determined.

3.7 Findings, Costs and Recommendations

Based on the findings documented in Appendix B (Existing Conditions – Trestle Girder Inventory) and Appendix C (Existing Conditions – Trestle Bent Inventory), it was determined that in order to bring the trestle to a safe and operational state, upwards of 25% of all girders would need to be replaced as well as up to 50% of all bents. Considering this, two repair alternatives were considered:

- Reconstruction to the full length of the structure.
- Reconstruction of the main portion of the trestle spanning Cobbossee Stream and installation of a new concrete pedestrian walkway ramp.

The limits of these alternatives can be seen in Appendix D (Full Length Reconstruction) and Appendix E (Partial Reconstruction with Ramp System). See Appendix F for the Proposed Pedestrian Walkway section.

Full Length Reconstruction

This alternative would require the replacement of all members deemed unsatisfactory throughout the entire length of the existing structure. Additionally, minor repairs would have to be made, including:

1. Removal of all railroad ties.
2. Repair to the North and South Backwalls.
3. Removal of debris and vegetation growth from girder and timber caps.
4. Replacement of all wood shims under girders.
5. Armoring of all bent timber sills within the watercourse with riprap.

The approximate cost for reconstruction and installation of the proposed walkway for the entire length of the bridge is $350,000.

Partial Reconstruction

This alternative requires the abandonment of the existing structure through bent 41 and the replacement of all members deemed unsatisfactory between bent 42 and the end of the trestle. In order to access the structure, a concrete pedestrian walkway ramp is proposed as seen in Appendix E. Additional improvements would include:

1. All minor repairs indicated for full length reconstruction.
2. Removal of bents 40 and 41 to prevent access from the updated trestle to the existing structure left in place.

The approximate cost for reconstruction and installation of the proposed walkway and concrete pedestrian ramp system for partial length of the trestle is $160,000.

3.8 Proposed Manufactured Pedestrian Bridge

The proposed prefabricated pedestrian bridge over Cobbossee Stream is approximately 80’ in length and 10’ in width. The bridge is located approximately 50’ west of Maine Avenue (Route 24) Bridge over Cobbossee Stream. The prefabricated pedestrian bridge will be set on cast-in-

place concrete abutments installed on the north and south of the Cobbossee stream. The bridge will be designed for a pedestrian live load of 85 PSF or a emergency vehicle live load of H10 whichever governs and dead load. The railings will be code compliant and the decking will be ironwood for durability and low maintenance. A painted bridge with abutments will cost approximately $185,000. A weathering steel bridge with abutments will cost approximately $155,000.

4.0 RIGHT-OF-WAY ISSUES

The trail partially lies within a former railroad right-of-way now owned by the Maine Department of Transportation. Other portions of the trail lie on property owned by the City of Gardiner while still other portions lie on private properties. Acquisitions or easements will need to be acquired for these portions of the trail on private property. The property lines and the abutter information were taken from City of Gardiner mapping. The first 1,650 feet of trail lies within the former railroad right-of-way. The next 300 feet of trail lies within the Winter Street right-of-way. The next 450 feet of trail passes over property N/F owned by Area Leasing and Development. From this point, the trail enters city of Gardiner property for the next 1,000 feet before crossing the Cobbossee Stream to enter property N/F owned by Cottle Realty The trail lies on the Cottle property for 350 feet. The final 200 feet of trail lies on property N/F owned by Hanbro. After crossing property owned by Hanbro, the trail connects to the existing Kennebec River Rail Trail system.

A list of all trail abutters is included in the Appendix III of this report and shown on the plans.

5.0 UTILITIES

The following utilities have facilities in the vicinity of the proposed trail:

CMP
83 Edison Drive
Augusta, ME 04330
Contact: Eric Wilkens - 207-626-9465

Fair Point Communications
139 State Street
Augusta ME 04330
Contact: Glen Fournier - 207-626-2007

Time Warner Cable
83 Anthony Avenue
Augusta, ME 04330
Contact: Steve Woodcock - 1-877-253-7321

Gardiner Water District
P.O. Box 536
246 Water Street
Gardiner, ME 04345
Contact: Paul Gray - 207-582-5500

Gardiner Wastewater District
Gardiner City Hall
6 Church Street
Gardiner, ME 04345
Contact: Chuck Applebee - 207-582-1351

Construction impacts on the utilities is limited to the relocation of CMP poles 701 thru 704 on Summer Street and relocation of poles 12-22, 12-22.2 and 1_5 on private property near the Bridge Street overpass. Copies of the preliminary plans have been sent to all of the above-noted utilities.

6.0 ENVIRONMENTAL ISSUES AND PERMITS

The majority of the work planned is within 75 feet of the Cobbossee Stream which will require a NRPA permit. The construction of footings for the trestle ramps will require a full permit while other restorative work would qualify for a PBR. A companion permit will be sent to ACOE.

The lower section of the Cobbossee is located in the flood plain and will require a flood management permit from the City of Gardiner.

7.0 COST ESTIMATES AND SCHEDULE

The cost estimates have been divided into 5 sections which would allow construction to be scheduled in phases depending on allowable funding. These phases are:

		COSTS	R/W Costs	PERMIT
I.	Water Street to Summer Street – Sta 0+0 to 12+0	$321,400	$ 3,000	NRPA
II.	Summer Street and Winter Street – Sta 12+0 to 19+50	$136,400	$ 5,000	PBR
III.	Section along the Cobbossee from Winter Street to the Proposed Pedestrian Bridge – Sta 19+50 to 35+40	$291,800	$12,000	NRPA
IV.	Pedestrian Bridge over the Cobbossee – Sta 35+40 to 36+25	$223,300	$ 2,000	PBR
V.	Trail along Maine Avenue to the KRRT – Sta 36+25 to 41+61	$ 64,200	$ 8,000	---
	TOTAL	**$1,037,100**	**$30,000**	

Detailed quantity and cost estimates are included in the Appendix IV.

PROGRAM FUNDING LEVEL –

	Program Amount
Preliminary Engineering =	$ 150,000
Right-of-Way =	$ 30,000
Construction =	$ 1,040,000
Construction Engineering =	$ 130,000
PROGRAM TOTAL =	**$ 1,350,000**

Funding for the project is predicated on a 20% match by the City of Gardiner and an 80% grant from state and federal funds.

As part of the City match, the city may opt to reconfigure the Arcade Parking Lot to provide additional parking to compensate for the loss of spaces along the Cobbossee Stream for the construction of the trail.