A REPORT TO THE
123rd LEGISLATURE
FIRST REGULAR SESSION

Final Report of the COMMISSION TO STUDY HENDERSON BROOK BRIDGE IN THE ALLAGASH WILDERNESS WATERWAY

January 2007

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ERRATA SHEET FOR HENDERSON BROOK BRIDGE STUDY REPORT

January 26, 2007

To: Members, Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

From: Patrick Norton, OPLA Director

Re: Errata sheet for study report

In preparing the final report for the Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway, one recommendation and the text associated with that recommendation were inadvertently left out of the printed and bound report. The text that was omitted is shown below. Please insert this sheet in your copy of the report.

Correction 1. Please insert the following in the Executive Summary on page ii after Recommendation 9.

> **"Recommendation 9-A:** In the event that the existing Henderson Brook Bridge fails prior to a permit being obtained as envisioned in the previous recommendation, the commission recommends that the Maine Department of Conservation, Bureau of Parks and Lands move with alacrity to seek approval from LURC and the Army Corps of Engineers to begin construction under emergency provisions."

Correction 2. Please insert the following on page 13 at the end of **IV. Findings and Recommendation, E. Permitting:**

> "At the January 4th meeting, special provisions for initiating projects and expediting permit processing in emergency situations were reviewed. Commission members present at the meeting agreed that if continuing deterioration or damage by a single ice, flood or other event renders the bridge unusable to commercial traffic then at that point an emergency situation exists. Specifically, if the bridge no longer safely supports trucks loaded with forest products, the bridge has failed and an emergency situation exists. This is consistent with the Legislature's findings regarding the importance of timber harvesting to the regional economy (See **Appendix A-**Sec. 2).
>
> **Recommendation 9-A:** In the event that the existing Henderson Brook Bridge fails prior to a permit being obtained as envisioned in the previous recommendation, the commission recommends that the Maine Department of Conservation, Bureau of Parks and Lands move with alacrity to seek approval from LURC and the Army Corps of Engineers to begin construction under emergency provisions."

Thank you. I apologize for any inconvenience this may have caused. Please feel free to call if you have any questions.

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Executive Summary

The Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway was created by Public Law 2005, Chapter 598, "An Act to Make Adjustments to the Allagash Wilderness Waterway." Chapter 598 designates Henderson Brook Bridge as one of six permanent watercourse crossings in the Waterway. The commission was established for the express purpose of studying and making recommendations on the design of a replacement bridge within the immediate vicinity of the existing Henderson Brook Bridge. The recommendations below focus on the engineering and design of a new bridge and also address related considerations as directed by the Legislature.

Recommendation 1: The commission recommends that the bridge be constructed to the east of the existing bridge, close enough to use the bridge as a staging platform for construction.

Recommendation 2: The commission recommends that the span of the replacement bridge be 220 feet with two center piers and abutments outside the normal high water mark, with a flow area approximately 50 percent greater than the current bridge.

Recommendation 3: The commission recommends that the replacement bridge have the same nominal weight capacity as the existing bridge; that is of 200,000 pounds (or 100 tons) with an overload weight capacity of 25 percent (or 250,000 pounds).

Recommendation 4: The commission proposes options for using natural wood facings or textured and colored advanced engineered composites to improve the aesthetics of the bridge for recreational users of the Waterway. The commission recommends that the Bureau of Parks and Lands (BPL) continue to explore these options and determine the materials to be used in the final design based on economic, structural, and aesthetic considerations.

Recommendation 5: The commission examined the option of using glued laminated ("glulam") timber decking, which is likely to qualify for federal grant money available for innovative materials and design. As the commission concluded its work, concerns regarding the suitability of glulam decking for this bridge project lingered. The Advance Engineered Wood Composites (AEWC) Center at the University of Maine will continue to work on a design that addresses deck maintenance and water drainage. The commission recommends that BPL consult with the AEWC Center prior to finalizing its decision on decking materials. If BPL decides to use traditional decking, the commission strongly recommends that planking cover the deck surface rather than planking used as running boards. The commission advises BPL to be cognizant of the bridge users' concerns regarding overall cost and future maintenance of the bridge deck.

Recommendation 6: The commission recommends that the steel girders, which are above the normal high water mark, be covered with natural, locally-available wood or wood-colored and textured composites.

Recommendation 7: In recognition of the importance of aesthetics to recreational users of the river, the commission recommends that BPL continue to gather information on and carefully consider the options presented in Recommendation 4. Aesthetic improvements to the basic bridge design recommended in this report are encouraged so long as structural integrity and economic feasibility are not compromised.

Recommendation 8: The commission recommends that the dimensions and slope of the existing canoe launch and vehicular access to the launch site be adjusted to accommodate the final design for the new bridge and changes in road alignment at the northern bridge abutment.

Recommendation 9: The commission recommends that the Maine Department of Conservation, Bureau of Parks and Lands apply to the Maine Land Use Regulation Commission (LURC) for a bridge construction permit as soon as the design is finalized and submit a copy of the application along with the final design plans to the Army Corps of Engineers to be processed simultaneously. The commission further recommends that BPL consult with LURC staff immediately to begin the application process.

Recommendation 10: The commission recommends that the State of Maine's BPL initiate a meeting with the principal commercial users of Henderson Brook Bridge at the earliest possible convenience to determine user fees and allocation of costs for bridge construction.

Recommendation 11: The commission recommends pursuing federal grant money that is available for innovative materials and/or design for bridge construction projects. The amount of federal funding will depend on the amount of innovative materials used in the overall bridge design. When making the final design decisions, BPL must take into consideration not only the end cost of using innovative advanced engineered composites, but also the functional advisability of using engineered composites.

Recommendation 12: The commission recommends that BPL take all actions necessary to expedite the permitting and construction of the replacement bridge and begin construction in the spring of 2007.

I. INTRODUCTION

The Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway was created in Public Law 2005, Chapter 598, "An Act to Make Adjustments to the Allagash Wilderness Waterway" (**Appendix A**). Chapter 598 established in statute motor vehicle access points to the watercourse and permanent bridge crossings within the Allagash Wilderness Waterway. Henderson Brook Bridge is designated as one of six permanent watercourse crossings. The Act contains a legislative finding that Henderson Brook Bridge is a vital link to the Town of Allagash and the surrounding areas, providing access for timber harvesting operations, enhancing employment for the residents of the region and providing recreational activities.

The commission was established for the express purpose of studying and making recommendations on the design of a replacement bridge within the immediate vicinity of the existing Henderson Brook Bridge. The commission was also directed to consider the configuration of motor vehicle access to the watercourse at the bridge. This Act was passed during the second regular session of the 122nd Legislature with an effective date of August 23, 2006.

In keeping with its charge, the commission focused on engineering considerations for a new bridge and options for providing safe vehicular access to the watercourse in proximity to the bridge. The commission held four meetings. The first meeting was held September 22, 2006 at the University of Maine at Fort Kent's Violette Wilderness Camp located in Township 13, Range 12 WELS. This meeting included a site visit to the bridge. The commission held its second meeting on October 13th at the Advanced Engineered Wood Composites (AEWC) Center at the University of Maine in Orono. The third and fourth meetings were held in the State House in Augusta on December 7, 2006 and January 4, 2007 respectively.

Although the commission did not revisit decisions already made by the Legislature, this report does provide background to the legislative designation of Henderson Brook Bridge as a location for a permanent crossing. Also in this report, and more pertinent to the commission's charge, are descriptions of the physical characteristics within the bounds of the watercourse, engineering constraints, and permitting requirements that determined the final recommendations of the commission. Agenda and summaries of commission meetings are found in **Appendix C** of this report.

II. BACKGROUND

Henderson Brook Bridge is located in Township13, Range 12 WELS (T13 R12). The bridge spans the Allagash River approximately 250 feet upriver from the point where Henderson Brook enters the Allagash. Ownership of T13 R12 and Henderson Brook Bridge is common and undivided with 143/144 interest belonging to the State of Maine and 1/144 interest belonging to Irving Pulp and Paper Limited. With the exception of the bridge and road traversing the waterway, the land within the restricted zone of the Allagash River is under the jurisdiction of the

Bureau of Parks and Lands and managed by the Parks Division as part of the Allagash Wilderness Waterway. The remaining land in T13 R12 is managed for multiple use purposes as part of the Public Reserved Lands' Round Pond Unit in the Lands Division of the Bureau of Parks and Lands and is subject to the same provisions applicable to privately owned land within one mile of the watercourse.

The original bridge built at the site of the existing Henderson Brook Bridge was built by Blanchet Logging in the 1960s predating the 1970 designation of the Allagash Wilderness Waterway (AWW) under the Wild and Scenic Rivers Act and also predating establishment of the Maine Land Use Regulation Commission (LURC). In 1978 Great Northern Paper Company applied to LURC for a permit to reconstruct a bridge at the same location as the existing bridge. At the time of the application, Great Northern owned the road and bridge within the restricted zone of the AWW as provided in statute (12 MRSA §1881, sub-§2). A permit (BrP 3048) was issued to Great Northern and the bridge was reconstructed by Blanchet as an agent of Great Northern Paper.

In 1984 Great Northern Nekoosa Corporation transferred ownership of T13 R12 to the Bureau of Public Lands within the Maine Department of Conservation. The transfer included the road and bridge and all land outside the restricted zone; that is all land in T13 R12 not conveyed to the Bureau of Parks and Recreation in 1968 for inclusion in the Allagash Wilderness Waterway. Henderson Brook Bridge is one of two state-owned bridges within the Allagash Wilderness Waterway with Churchill Dam/Bridge being the other. The bridge and road as they pass through the restricted zone of the AWW are under the management of the Lands Divisions of the Bureau of Parks and Lands as the successor to the former Bureau of Public Lands.

In 1987 and again in 1994, permits were sought to repair damage caused by heavy rains and ice jams. These permits were issued as amendments to BrP 3048 and identified as BCP 3048-A and BCP 3048-B. In 1997, Blanchet Logging and Lumber Company applied to LURC for approval to remove the existing bridge and construct a replacement bridge. LURC staff approved the request as amendment "C" to BCP 3048 with the condition that activities authorized in amendment C must begin within two years of the date of issue (June 23, 1997) and be completed within three years from the date of issue (see **Appendix D** for a copy of BCP 3048-C). Amendment C lapsed, as well as permit amendments "D" and "E," which extended the dates for beginning and completing construction. **Appendix E** provides basic information on the 1978 permit and subsequent amendments to that permit.

In 2001, Blanchet sought another amendment from LURC to extend approval for bridge construction and applied for a permit from the Army Corps of Engineers. Reconstruction of the bridge in 1978 preceded the implementation of the Clean Water Act, therefore, a federal permit was not required. The bridge proposed to LURC in 1997 and to the Army Corps in 2001 required a permit from the Corps because the design required fill below the ordinary high water level of the river. In 2001, questions were raised concerning ownership of the bridge. Ultimately it was determined that Blanchet was unable to demonstrate sufficient title, right and interest in the bridge to apply for the required permits. Blanchet's application to LURC was returned and the application file to the Army Corps of Engineers was "returned without prejudice."

The Blanchet/Maibec Road leading to the bridge and the bridge itself were constructed for the purpose of hauling wood. As with many private roads transecting several ownerships, landowners commonly have agreements varying in formality that allow use of each other's roads and allocate responsibility or assess fees for road maintenance. The landowner with the largest active harvesting operations during a period of time might assume the lead in maintaining the road for that period of time. Logging and trucking contractors rather than landowners frequently built and maintained the roads in the areas where they were cutting. The "Blanchet/Maibec Road" was built by logging contractors (Blanchet Logging and Lumber Company and Maibec Industries) while working on land owned by Great Northern, International Paper, Seven Islands Land Company, Prentiss and Carlisle, and others. Blanchet and Maibec Industries own mills in St. Pamphile. It is in the logging contractors' and mills' best interest to deliver the wood in a timely and efficient manner. Adequate roads are essential to this purpose. Understanding these practicalities and Blanchet's concentration of logging crews in the townships adjacent to T13 R12 explain Blanchet's interest in repairing and replacing Henderson Brook Bridge and their initiative as the LURC applicant in the 1990s.

Ownership of forestland in Maine has changed dramatically in the last two decades (Hagan et al. 2005, OPLA 2000 and 2006). The State of Maine acquired majority interest in T13 R12 in 1984 as part of a land exchange with Great Northern Nekoosa Corporation. Irving Pulp and Paper Limited acquired its 1/144 interest in 1990. Pelletier and Pelletier Logging and Blanchet Lumber and Logging formed Clayton Lake Woodlands LLC and in 1999 acquired approximately 245,000 acres of land formerly owned by International Paper.

Although the State of Maine has majority interest in the bridge and will be the applicant for any permits required by LURC or the Army Corps of Engineers, membership on the Henderson Brook Bridge Study Commission acknowledges the importance of this bridge to major landowners in the region and the special significance of this bridge to recreational users of the Allagash Wilderness Waterway. Legislation establishing the Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway specified that three major landowners be represented: J.D. Irving Limited, Clayton Lake Woodlands and Seven Islands Land Company. Representatives of the Friends of the Allagash and the Sportsman's Alliance of Maine were also designated to serve as members. The legislation directed the Governor to appoint three persons, each representing a statewide environmental organization, however, these organizations were apparently unwilling to serve and none were appointed. The commission member representing the National Park Service (NPS) has assisted the State in its management of the Allagash Wilderness Waterway under the NPS's Rivers, Trails and Conservation Program. The Commissioner of Conservation designated the Northern Region Lands Manager for the Bureau of Parks and Lands as the department's representative (**Appendix E**).

The commission has relied heavily on the advice of engineers in developing a bridge design. In keeping with its charge the commission has considered each of the following:

- economic, environmental and aesthetic issues associated with the design,
- the specific location of the bridge within the immediate area of the existing bridge,

- approaches to the bridge,
- the configuration of a motor vehicle access site to the watercourse at the bridge, and
- designs that locate the bridge abutments away from the edge of the watercourse to the extent that it is within economic and engineering constraints.

Public input on these elements was solicited at a public hearing held on January 4, 2007 in Augusta. This report provides the commission's findings relating to each of these elements and recommendations for proceeding in the permitting and construction of the bridge.

III. ECONOMIC IMPACT

A. Transport of wood products

Wood has traveled across the Allagash River in both directions for generations. Long after the river drives ended on the Allagash, ice bridges continued to link roads to the east and west of the river for winter hauling. Each spring the bridges disappeared with the spring thaw leaving vestiges of the ramps leading from the roads onto the ice. Ice bridges were cheap and easily relocated. Unfortunately their demise each spring deposited dirt and debris into the river. Environmental regulation and a more costly road system have demanded that reliable bridges span the Allagash. The location of and distances between the bridges are integral to a much larger road system. The network of roads has evolved over time based on land topography, physical characteristics of the watercourse, wood inventory and mill locations.

Given the importance of bridges to the movement of forest products throughout the northern Maine woods, the commission was interested in quantifying the economic impact of Henderson Brook Bridge. Although the commission was not charged with considering other sites for a bridge, they formed a subcommittee to look into not only bridge design, but also the economic impact of two scenarios: a) removing Henderson Brook Bridge completely, and b) building an alternate bridge over Twin Brooks in Allagash Plantation, including the cost of building a new road through Twin Brooks. For both scenarios, the subcommittee was asked to calculate the cost of hauling wood additional miles to get to mills for processing (in dollars per ton).

Commission member Anthony Hourihan of J.D. Irving served as chair of the subcommittee. Other members included: commission member Vern Labbe of the Department of Conservation, and the following interested parties: Robert Albert of Blanchet Logging and Lumber Company, Charles Tardif of Maibec Industries, and Eric Cassidy of the Advanced Engineered Wood Composites (AEWC) Center at the University of Maine.

A summary of the subcommittee's cost estimates is included as **Appendix F.**

1. Impact of Replacing Henderson Brook Bridge with New Crossing at Twin Brooks

According to the subcommittee, approximately 100,000 tons of wood annually flow from Township 13, Range 12 and surrounding townships to Canadian markets. The additional cost

for rerouting west-bound products to Twin Brooks is calculated as $4.62 per ton or $462,000 per year. In addition, roughly 50,000 tons of wood annually travel from the west of the Allagash River to the east, mainly Portage. The additional cost for rerouting east-bound products to Twin Brooks is estimated as $2.00 per ton or $100,000 per year. Therefore, the total additional annual cost of hauling wood products from the area is $562,000.

The bridge subcommittee also estimated the cost of constructing a bridge over Twin Brooks in the Town of Allagash instead of building a replacement bridge at the current Henderson Brook Bridge site. The estimated total one-time cost to build a bridge at the Twin Brooks site is $1,780,000. Included in this estimate is the following:

- the cost required to construct a new main road to incorporate a crossing at Twin Brooks – an estimated $120,000 ($40,000 per mile multiplied by 3 miles);
- the construction of a new bridge at Twin Brooks – approximately $1.5 million; and
- the upgrading of existing roads to become main roads – an estimated $100,000.

The cost of construction of the bridge itself at Twin Brooks ($1,500,000) exceeds the estimated cost of a replacement bridge at Henderson Brook ($500,000 to $1,000,000) primarily because the river is wider at the Twin Brooks site. Therefore, the bridge would need to be approximately 130 feet longer than the current Henderson Brook Bridge. In addition, since there is currently no bridge at Twin Brooks to act as staging for construction equipment to work from, the cost of a temporary work trestle was factored into the cost of construction. According to Roger Gagnon of Gagnon Engineering, the firm hired by Blanchet Logging and Lumber in the 1990s to design a replacement bridge at the Henderson Brook site, the cost of a work trestle for heavy cranes at the Twin Brooks site would be approximately $1,000 per linear foot. Mr. Gagnon anticipated that the Twin Brooks site would require work trestles totaling 200 to 250 linear feet, for an estimated cost of $200,000 to $250,000.

Furthermore, the bridge subcommittee's estimate does not include increased annual fees to maintain more roads. The bridge subcommittee felt it should be noted that additional hours required to haul the same volume of wood would result in the need to purchase more trucks at an average cost of approximately $125,000 per unit. This additional cost would impact primarily landowners and logging contractors.

2. Impact of Removing Henderson Brook Bridge

The bridge subcommittee was asked to estimate the economic impact of removing and not replacing the bridge at Henderson Brook.

According to calculations by the subcommittee, the current average trip to transport forest products either east or west using Henderson Brook Bridge on major logging roads is 90 miles round-trip. Based on this average trip, the approximate cost of transporting products

using Henderson Brook Bridge is $5.20 per ton. With an estimated 150,000 tons of forest products being trucked per year, the total annual trucking cost equals $780,000 per year. If there were no Henderson Brook Bridge, logging trucks might use one of two routes depending on the destination: either the Saint Francis and Escourt Roads to the north or the Umsaskis Lake Thoroughfare and Blanchet/ Maibec Roads to the south.

According to the subcommittee, the average trip using the Saint Francis and Escourt Roads is 216 miles. Therefore, the approximate cost of transporting forest products using this route is $20.13 per ton. With about 75,000 tons of forest products traveling this route, the total annual trucking cost is over 1.5 million dollars ($1,509,750).

The average trip using the Umsaskis Lake Thoroughfare and the Blanchet and Maibec Roads is 105 miles. The estimated cost of transporting products using this route is $6.07 per ton. With approximately 75,000 tons of forest products being transported via this route, the total annual trucking cost is almost half a million dollars ($455,250).

In summary, without Henderson Brook Bridge, the total cost for transporting 150,000 tons of forest products annually is almost two million dollars ($1,965,000), which represents roughly a 152 percent increase.

Furthermore, without access to the Henderson Brook Bridge crossing, the number of trucks required to move forest products would likely increase. Currently, it takes nine trucks to move 150,000 tons over 40 weeks (with approximately 12 weeks of mud season taken into consideration). Without the current Henderson Brook Bridge, it would require 15 trucks to move the same of amount (150,000 tons) of product over the same time period (40 weeks).

B. Recreation

The commission also explored the recreational economic impact of Henderson Brook Bridge. The commission asked:

- How many people use the current Henderson Brook Bridge to access or exit the Allagash Wilderness Waterway (AWW)?
- What is the economic impact of those visitors?

North Maine Woods (NMW), an organization of landowners who own and manage more than 3.5 million acres of forestland, maintains checkpoints throughout the region and along the Canadian border. According to Al Cowperthwaite, executive director of NMW, when visitors arrive at checkpoints, their specific destination within the NMW region is recorded. At these checkpoints, day use and camping fees are collected.

NMW provided summary information for the 2005 operating season, which is the most recent information available. NMW's operating season runs from May 1st through November 30th of

each year.[1] Summary information for Henderson Brook Bridge and Jalbert's Sporting Camps has been included in **Appendix G.** Jalbert's Sporting Camps is included because at least 90 percent of Jalbert's visitors use Henderson Brook Bridge. The summary includes the number of visitors and the amount of fees paid.

Likewise, the commission inquired about the number of people who cross Henderson Brook Bridge for other recreational purposes. NMW could not provide an exact count; however, it is the only river crossing between the Umsaskis Thoroughfare and the Town of Allagash. Transporting businesses use the bridge to shuffle passengers and vehicles of parties canoeing the Allagash River system. Henderson Brook Bridge is also used by guides and hunters of various game. According to NMW, an estimated 20,000 recreational visitors cross the bridge annually. NMW fees collected from recreational visitors who utilize this river crossing approach $80,000 to $100,000 annually. This does not include AWW fees collected from visitors, which are separate from NMW user fees. Although NMW does collect fees for use of the Waterway on behalf of the AWW, NMW does not analyze the information on AWW permits the same way they do for NMW permits.

In 2005, the ratio of visitors to the NMW was approximately 76 percent Maine residents and 24 percent non-residents. The ratio of total NMW fees paid is 66 percent by Maine residents and 34 percent by non-residents.

The AWW, under the State of Maine Bureau of Parks and Lands (BPL), collects fees for use of campsites within the boundaries of the AWW. BPL did not provide corresponding AWW fees collected for the 2005 operating season. According to Tim Hall, Regional Manager with BPL, in 2006, 248 visitors in 50 separate parties accessed the AWW at Henderson Brook Bridge, which represents approximately 4.3 percent of AWW's total parties and 5.2 percent of AWW's registered visitors. The Bureau did not provide the corresponding fees collected in 2006.

Mr. Hall added that access to the Waterway at Henderson Brook Bridge is not necessarily tied to the existence of the bridge. "If the bridge were removed, it would still remain likely that access points could be retained on one or both sides of the river at this point, especially if roads to the water's edge could possibly remain." The current canoe launch at Henderson Brook Bridge is located on the northern side of the Allagash River.

A copy of the BPL's memo regarding access at Henderson Brook Bridge is included as **Appendix H.**

C. Forest fire protection

The Maine Forest Service (MFS) was asked to provide a cost estimate for forest fire protection under two scenarios, as described above: a) removal of Henderson Brook Bridge, and b) construction of an alternative bridge at Twin Brooks in the Town of Allagash. In summary,

[1] Although NMW's operating season runs from May 1st through November 30th of each year, people cross Henderson Brook Bridge from the beginning of December through the end of April. However, NMW does not have a record of these crossings because NMW checkpoints are closed December through April.

according to Bill Williams, Division Director of the Forest Protection Division at MFS: "Although Henderson Brook Bridge provides access for forest fire suppression, and allows greater access under some scenarios, the division's goal of having ground resources on a fire in one hour or less would not be significantly impacted."
In addition to ground resources, MFS uses helicopters to provide quick response to significant forest fires. However, if ground access is reduced or restricted, the need for aviation resources may become greater.

A summary of MFS comments regarding the cost of forest fire protection is included as **Appendix I**.

IV. FINDINGS AND RECOMMENDATIONS

As stated in the introduction to this report, the designation of Henderson Brook Bridge as one of six permanent watercourse crossings in the Allagash Wilderness Waterway was supported by a legislative finding that the bridge is a vital economic link to the Town of Allagash and surrounding areas (**Appendix A**). The commission's field visit to the bridge site in September corroborated previous observations, including:

- evidence of riverbank overflow during high water and ice jams resulting in sediment deposition, and ice damage to trees on the north bank;
- constriction of the river by the placement of the abutments and size of the piers;
- significant shifting of the log material in the piers; and
- decay of the log materials in the piers and abutments.

Since the bridge was rebuilt in 1978, ice and high water have periodically caused significant damage to the bridge and required the replacement of stringers, installation of ice shields on the piers and frequent repair to bridge components. A new bridge is needed. Rehabilitation of the existing bridge would perpetuate the need for continual repair and the possibility that the bridge will fail or be taken out by ice.

The basic challenge is to design a bridge that alleviates problems caused by channel constriction and safely accommodates the traffic moving over it. In this section of its report, the commission presents its recommendations for each aspect of the bridge design it was tasked with considering. A summary of the commission's findings during the course of its study precede each recommendation.

A. Location

The commission was charged with considering the "specific location of the bridge within the immediate area of the existing bridge." At its September 22nd visit to the bridge site, commission members considered building to the west (upriver side) of the existing bridge as the most likely location. On November 3, 2006, Jay Clement of the Army Corps of Engineers visited the site. Mr. Clement suggested that building to the east (downriver side) of the existing bridge would

minimize the impact on wetlands and allow a safer road alignment by slightly straightening curves on both ends of the bridge.

Mr. Clement assessed the southeast bank as a better location for the southern bridge abutment, avoiding wetlands filling and the possible stream relocation that would occur on the southwest bank. On the northern end of the bridge, the bank to the east of the bridge is the site of the existing canoe launch. Locating the new bridge to the east would not necessitate a new cut in vegetation as it would to the west.

Recommendation 1: The commission recommends that the bridge be constructed to the east of the existing bridge, close enough to use the bridge as a staging platform for construction.

B. Design

The current Henderson Brook Bridge is 160 feet in length from shore to shore. One of the commission's primary concerns is that the spring season's ice and water flow will damage the current Henderson Brook Bridge to the point where it is not safe and not viable, particularly for commercial use. The commission agreed that the flow area proposed for a replacement bridge should be significantly greater than that of the current bridge. Gagnon Engineering, the firm hired by Blanchet Logging and Lumber to complete bridge design work for the Henderson Brook site in the 1990s, shared the commission's concern about the effect of ice and water, namely ice jams and washouts, on the structural integrity of a replacement bridge.

Recommendation 2: The commission recommends that the span of the replacement bridge be 220 feet. In addition, the commission recommends the following basic elements regarding the replacement bridge:

- three spans,
- two center piers,
- abutments outside the normal high water mark,
- an increased flow area (approximately 50 percent greater compared to the current bridge), and
- no arches.

With the proposed increased bridge span and abutments outside the normal high water mark, the replacement bridge would be over three feet higher in elevation than the current bridge with the intent of widening the river channel flow enough to allow for seasonal high water and ice flows to pass underneath without affecting the bridge structure. The flow area proposed for the replacement bridge is approximately 50 percent greater than the current bridge.

The current Henderson Brook Bridge is designed for 200,000 pounds with a safety factor of 25 percent (or 250,000 pounds).

Recommendation 3: The commission recommends that the replacement bridge have the same nominal weight capacity of 200,000 pounds (or 100 tons) with an overload weight capacity of 25 percent (or 250,000 pounds) as the current bridge.

The current Henderson Brook Bridge has two timber-cribbing piers that are approximately 12 to 14 feet wide each. The commission recommends using one of the following two options for the design of the two center piers and the abutments:

1) "Option 1" is to use a composite material engineered at the University of Maine's Advanced Engineered Wood Composites (AEWC) Center as a form for the concrete abutments and piers. The composite form would remain in place after the concrete has cured and would serve to protect the concrete. According to the AEWC Center, the composite is stronger than steel and abrasion resistant. The composite, which would be the external surface of the piers, would be colored and textured to simulate natural wood. The commission would like to use this innovative design, if possible, to support the University's research and development projects and to take advantage of federal grant money available for innovative materials and design. With this design option, steel plates would not be needed on the upriver side to serve as ice breakers.

2) "Option 2" is to have concrete abutments and piers clad in natural locally-available wood. Steel plates would be attached to the piers on the upstream side to protect the concrete from ice damage. Wood cladding would not be necessary under the area where the steel plates obscure the pier itself.

With either option, the width of the piers would be approximately four to five feet wide. This substantially smaller pier width coupled with the proposed increased span length will increase the flow area for the replacement bridge considerably – as stated earlier, approximately 50 percent.

Recommendation 4: The commission recommends that Bureau of Parks and Lands (BPL) use "Option 1" if it is feasible – economically, structurally, and aesthetically. If AEWC Center testing and/or research does not verify the abrasion resistance of the composite or if the National Park Service (NPS) strongly prefers the aesthetics of natural wood attached to concrete in lieu of the composite simulated-wood exterior, then the commission recommends "Option 2." Ultimately, BPL will make the determination in proposing a final design for permitting.

Regarding the design of the bridge decking, again the commission would like use one of two options, which are as follows:

1) "Option 1" is to use glued laminated ("glulam") timber decking, which is likely to qualify for federal grant money available for innovative materials and design. Because logging trucks with tire chains literally eat away at bridge deck planks in the wintertime, the planking is usually removed and replaced every three to five years. The commission and interested parties were concerned about the effect replacing damaged planking would have on the structural integrity of the panels and the glulam materials. The AEWC Center will continue to work with Gagnon Engineering on the bridge deck design. The commission's primary concern was maintenance of the bridge deck. However, the commission agreed that the wear decking of the bridge should be total cover and not simply two tracks. This safety feature

adds stability to vehicles traveling over the bridge and is now standard practice for similar bridges used by commercial logging trucks. If the deck wearing surface is asphalt and subsequently impervious, the surface of the bridge would need to be crowned or designed to allow water run-off longitudinally.

2) "Option 2" is to use traditional decking with planking covering the deck surface not just the running planks. Spacing between panels is desirable to facilitate snow-melt and water run-off.

Recommendation 5: Again, the commission recommends that BPL decide between these two options. The commission advises BPL to be cognizant of the bridge users' concerns regarding overall cost and future maintenance of the bridge deck.

Recommendation 6: The commission recommends that the steel girders, which are above the normal high water mark, be covered with natural, locally-available wood or wood-colored and textured composites.

C. Aesthetics

The commission was charged with considering environmental and aesthetic issues associated with the design of the bridge. Environmental considerations are evident in the commission's recommendations under location, design and permitting. Obtaining a permit for bridge construction from LURC and the Army Corps of Engineers will demand that the design minimize filling or degradation of wetlands and meet standards for environmental protection. Primary concerns in designing the bridge were the placement of the abutments outside the normal high water mark and reducing the size of the piers. Increasing the flow area under the bridge will reduce overflow, scouring and impact on the natural river channel.

At the December 7th meeting of the commission, Jamie Fosburgh, the member representing the National Park Service, inquired about the feasibility of using timber cribbing for aesthetic reasons without detracting from the bridge's structural integrity. Discussions at the previous commissions meeting had repeatedly returned to the need to increase flowage under the bridge which cannot be done with timber cribwork piers. To structurally equate with piers comprised of steel and concrete or composites and concrete, the dimensions of timber cribwork piers need to be much larger, significantly reducing the water flow area.

The commission discussed options to improve the aesthetics of non-wood bridge components by attaching wood facings, using concrete that has been dyed and formed with a simulated wood texture, or using a textured and colored composite form that would remain in place after the concrete is poured. More detail on these options is presented in the preceding section on design. At the public hearing on January 4, 2007, the commission received no testimony, and therefore, did not have the benefit of public input in finalizing its recommendation on aesthetics.

Recommendation 7: In recognition of the importance of aesthetics to recreational users of the river, the commission recommends that the Bureau of Parks and Lands continue to gather

information on and carefully consider the options presented in Recommendation 4. Aesthetic improvements to the basic bridge design recommended in this report are encouraged so long as structural integrity and economic feasibility are not compromised.

D. Configuration of a motor vehicle access site to the watercourse at the bridge

At the September 22nd meeting, commission members walked from the bridge to the bogan north of the bridge and to the east of the road. A "bogan" is a term used for a narrow backwater along a stream or river. There are several bogans along the Allagash River. The bogan just east of Henderson Brook Bridge has been proposed in public forums as a location suitable for vehicular access to the watercourse.

Motor vehicle access to the watercourse at Henderson Brook Bridge was authorized in rule prior to being codified in statute (12 MRSA §1882, sub-§1). The commission considers appropriate vehicular access to the watercourse at Henderson Brook Bridge to be a point to which vehicles can drive to unload canoes and heavy provisions which would then be hand-carried to the river's edge. To establish a motor vehicle access site on the bogan would require building a spur road, necessitating opening the canopy within the restricted zone. To avoid disturbing wetlands and minimize clearing within the restricted zone a canoe launch on the east side of the bogan would be preferable to the west.

Locating a canoe launch within a Recreation Protection Subdistrict (P-RR) requires a special exceptions permit under Land Use Regulation Commission (LURC) rule.[2] The purpose of the P-RR subdistrict is to provide protection from development and intensive recreational uses to areas that support or have opportunities for unusually significant primitive recreational activities. In addition to meeting the standards in rules, an applicant for a permit under the special exceptions provision must show "by substantial evidence that:

a) there is no alternative site which is both suitable to the proposed use and reasonably available to the applicant;
b) the use can be buffered from those other uses and resources within the subdistrict with which it is incompatible; and
c) such other conditions are met that the Commission may reasonably impose in accordance with the policies of the Comprehensive Land Use Plan."

Over the course of its meetings, the commission discussed possibilities for retaining a canoe launch within the footprint of the existing bridge and launch site. This would result in no additional vegetation disturbance along the watercourse. The specifics on width of the launch and the vehicle approach configuration will need to be finalized as the design for the bridge and the road layout are finalized.

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[2] *Citation: LURC rules and standards: Chapter 10, Subchapter 2, 10.23, I (3d).*

Recommendation 7: The commission recommends that the dimensions and slope of the existing canoe launch and vehicular access to the launch site be adjusted to accommodate the final design for the new bridge and changes in road alignment at the northern bridge abutment.

E. Permitting

A permit from the Land Use Regulation Commission (LURC) will be needed prior to construction of the bridge. Five LURC Protection Subdistricts overlay the Henderson Brook Bridge site. Water crossings over a major flowing are allowed in each of the five, however, a permit is required in three of the subdistricts. They are:

1. the Fish and Wildlife Subdistrict (P-FW);
2. the Recreation Subdistrict (P-RR); and
3. the Unusual Area Subdistrict (P-UA)

The criteria under which a bridge construction application will be reviewed by LURC are the basic criteria established in 12 MRSA §685-B sub-§4 (See **Appendix J**).

A permit from the Army Corps of Engineers (ACE) will also be needed since some filling of wetlands is likely to occur in placing the abutments and straightening the road approaches. Submission of a copy of the LURC application for a bridge construction permit and the design plans to ACE will suffice as an application for an ACE permit. ACE processes permits for similar projects under their Programmatic General Permit. In the case of a bridge proposed within the Allagash Wilderness Waterway, ACE will solicit input from the National Park Service. The National Park Service is responsible for ensuring compatibility with the Wild and Scenic Rivers Act.

Recommendation 8: The commission recommends that the Maine Department of Conservation, Bureau of Parks and Lands apply to the Maine Land Use Regulation Commission for a bridge construction permit as soon as the design is finalized and submit a copy of the application along with the final design plans to the Army Corps of Engineers to be processed simultaneously.

The commission further recommends that the Bureau of Parks and Lands consult with LURC staff immediately to begin the application process.

F. Cost, sources of funding and timeline

Based on the average cost of bridge construction in 2005, the AEWC Center, in consultation with Maine's Department of Transportation, estimated the cost of building a replacement bridge to be between $500,000 and $1,000,000. The rough breakdown of costs is illustrated below:

- Average cost of bridge construction (2005): $173 per square foot
- Current inflation rate: approximately 15 percent per year

- Cost of bridge construction in 2007: \$173 x $(1.15)^2$ = \$229 per square foot
- Proposed size of replacement Henderson Brook Bridge = 16 feet x 220 feet
- Total cost = \$229 x (16 feet x 220 feet) = \$806,080

It is anticipated that the cost of construction will be borne by the principal users of the bridge, namely the forest landowners who haul forest products across the bridge. The user fees will be determined by this group of principal landowners in conjunction with BPL. The State of Maine will retain majority ownership interest of the replacement Henderson Brook Bridge.

Recommendation 9: The commission recommends that the State of Maine's BPL initiate a meeting with the principal commercial users of the Henderson Brook Bridge at the earliest possible convenience to determine user fees and allocation of costs for bridge construction.

The commission held its second meeting at the University of Maine's AEWC Center on October 13, 2006. At this meeting, Habib Dagher – director of the AEWC Center, told the commission that federal grant money is available through the federal "Innovative Bridge Research and Development" program. At the time, Mr. Dagher estimated that the bridge project might qualify for up to \$500,000 in federal funding. However, the deadline for the grant proposal is in August of each year. Given that the commission would like bridge construction to begin in the spring of 2007, the grant proposal deadline had passed. A more feasible option at this point in time is to approach Maine's congressional delegation directly to secure federal funding under the "Innovative Bridge Research and Development" program. The key to the federal funding proposal is to demonstrate that the bridge project is innovative in its materials and/or design.

Recommendation 10: The commission recommends pursuing federal grant money that is available for innovative materials and/or design for bridge construction projects. The amount of federal funding will depend on the amount of innovative materials used in the overall bridge design. When making the final design decisions, BPL must take into consideration not only the end cost of using innovative advanced engineered composites, but also the functional advisability of using engineered composites.

Given the deteriorating condition of the current Henderson Brook Bridge, the commission is concerned about the safety and viability of the current bridge.

Recommendation 11: The commission recommends that BPL take all actions necessary to expedite the permitting and construction of the replacement bridge and begin construction in the spring of 2007.

V. REFERENCES

1. Hagan, J.M., L.C. Irland, and A. A. Whitman. 2005. Changing timberland ownership in the Northern Forest and implications for biodiversity. Manomet Center for Conservation Sciences, Report # MCCS-FCP-2005-1, Brunswick, Maine, 25 pp.

2. Nadeau, K. S. 2000. Forestland ownership in Maine: recent trends and issues. Office of Policy and Legal Analysis, Augusta, Maine and the University of Maine, Orono, Maine, 27 pp.

3. Nadeau-Drillen, K. S. and J. Ippoliti. 2006. Maine forestland ownership: trends and issues. Office of Policy and Legal Analysis, Augusta, Maine, 26 pp.

APPENDIX A

Authorizing Legislation: Public Law 2005, chapter 598

This Act was presented to the Governor by the Senate on APR 13 2006 and has become law without his signature. (Constitution, Article IV, Part Third)

STATE OF MAINE

APR 26 '06

CHAPTER

598

PUBLIC LAW

IN THE YEAR OF OUR LORD

TWO THOUSAND AND SIX

S.P. 811 - L.D. 2077

An Act To Make Adjustments to the Allagash Wilderness Waterway

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 12 MRSA §1882, as enacted by PL 1997, c. 678, §13, is repealed and the following enacted in its place:

§1882. Access points and control stations

Except as provided in this section, the bureau may determine the location of access points, control stations and watercourse crossings within the waterway.

1. Spring, summer and fall motor vehicle access to watercourse. Spring, summer and fall access by motor vehicle to the edge of the watercourse must be maintained at:

A. Chamberlain Thoroughfare Bridge;

B. Churchill Dam;

C. Umsaskis Lake Thoroughfare;

D. Henderson Brook Bridge;

E. Michaud Farm; and

F. Twin Brooks.

2. Spring, summer and fall access by motor vehicle to existing short trails. Spring, summer and fall access by motor vehicle to short trails existing on the effective date of this subsection and leading to the watercourse must be maintained at:

A. John's Bridge, limited to:

(1) Unloading and access during the months of May and September;

(2) Day use only with a permit from the bureau;

(3) Parking outside the restricted zone; and

(4) No vehicle access to the water's edge;

B. Bissonette Bridge road, over the road existing on the effective date of this paragraph to the trail existing on the effective date of this paragraph to the water's edge;

C. Finley Bogan, from the Inn Road to the top of the high bank;

D. Ramsey Ledge Campsite, limited to the motor vehicle parking area behind vegetative screening. Self-contained motor vehicle camping is allowed and canoe access is allowed; and

E. Indian Stream, by the trail existing on the effective date of this paragraph.

3. Snowmobile access to watercourse. The bureau shall maintain 19 snowmobile access points to the watercourse. Snowmobiles are prohibited on Allagash Lake and Allagash Stream.

4. Permanent watercourse crossings. Notwithstanding section 1876, subsection 1, only the following six bridges within the waterway are permanent watercourse crossings:

A. Henderson Brook Bridge;

B. Reality Bridge, also known as Umsaskis Bridge;

C. Churchill Dam Bridge;

D. John's Bridge;

E. Chamberlain Thoroughfare Bridge; and

F. Allagash Stream Bridge.

Watercourse crossings may not be constructed at the locations of the former Schedule Brook Bridge or the former Bissonette Bridge. Any right or interest granted to any person by the State to construct or maintain a bridge at those sites is extinguished.

NOTE

Sec. 2. Findings of fact. The Legislature finds that the Henderson Brook Bridge in the Allagash Wilderness Waterway, which is designated as a wild river pursuant to the federal Wild and Scenic Rivers Act, 16 United States Code, Section 1273(a)(ii), is a vital economic link to the Town of Allagash and the surrounding areas, providing access:

1. Timber harvesting. For approved timber harvesting operations of approximately 150,000 tons of timber annually, with an economic value to the region of over $6,500,000 per year;

2. Employment. To enhanced employment for the residents of the region; and

3. Recreation. To recreational activities in the Allagash region.

Sec. 3. Private rights to "ghost bridges" to be extinguished. The Department of Conservation, Bureau of Parks and Lands shall identify any private right, title or interest held by any person to construct or maintain a bridge at the locations of the former Schedule Brook Bridge or the former Bissonette Bridge, or at any other point within the Allagash Wilderness Waterway, and shall make every effort to enter into agreements with those persons to convey all such rights to the bureau on behalf of the State. Upon conveyance to the State of those rights, all such rights are extinguished. Nothing in this section may be construed to interfere with any person's right to lawfully cross the watercourse as defined in the Maine Revised Statutes, Title 12, section 1872. The department shall report to the joint standing committee of the Legislature having jurisdiction over agriculture, conservation and forestry matters on the progress of these

discussions at the time it submits its proposed amendments to the 1999 Allagash Wilderness Waterway management plan under section 4.

Sec. 4. Submission of management plan for review. No later than January 15, 2007, the Department of Conservation, Bureau of Parks and Lands shall submit all changes proposed to the 1999 Allagash Wilderness Waterway management plan to the joint standing committee of the Legislature having jurisdiction over agriculture, conservation and forestry matters for review. The department may proceed with improvements proposed in the plan that were begun prior to the effective date of this Act, but may not begin any other improvements proposed in the plan until the committee completes its review. Following completion of its review, the committee may report out a bill to the First Regular Session of the 123rd Legislature on any matter pertaining to the management of the Allagash Wilderness Waterway.

NOTE

Sec. 5. Study. The Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway, referred to in this section as "the commission," is established.

1. Commission membership. The commission consists of 15 members, appointed as follows:

A. Two members of the Senate, appointed by the President of the Senate;

B. Three members of the House of Representatives, appointed by the Speaker of the House;

C. Seven members appointed by the Governor, as follows:

(1) Three persons, each representing a statewide environmental organization;

(2) One person representing the interests of the Friends of the Allagash;

(3) One person representing the interests of J.D. Irving, Limited;

(4) One person representing the interests of Clayton Lake Woodlands; and

(5) One person representing the interests of Seven Islands Land Company;

D. The Commissioner of Conservation, or the commissioner's designee;

E. The Executive Director of the Sportsman's Alliance of Maine, or the executive director's designee; and

F. The representative of the National Park Service, Boston Support Office having responsibility for assistance to the State on matters pertaining to the Allagash Wilderness Waterway under the National Park Service's Rivers, Trails and Conservation Program, or that person's designee.

In appointing legislative members, the Speaker of the House and the President of the Senate shall ensure that not more than 3 of the 5 appointed Legislators are members of the same political party. The Governor shall make his appointments from names recommended to the Governor by the organizations referenced in paragraph C.

2. Chairs. The first-named Senate member is the Senate chair of the commission and the first-named House of Representatives member is the House chair of the commission.

3. Appointments. All appointments must be made no later than 30 days following the effective date of this Act. The appointing authorities shall notify the Executive Director of the Legislative Council once all appointments have been completed. Within 15 days after appointment of all members, the chairs shall call and convene the first meeting of the commission.

4. Duty. The duty of the commission is to make recommendations on the design of a bridge to replace the existing Henderson Brook Bridge within the Allagash Wilderness Waterway. In performing this duty, the commission shall consider the economic, environmental and aesthetic issues associated with the design, the specific location of the bridge within the immediate area of the existing bridge, approaches to the bridge and the configuration of a motor vehicle access site to the watercourse at the bridge. The commission shall consider designs that locate the bridge abutments away from the edge of the watercourse to the extent that is within economic and engineering constraints. In conducting its study, the commission shall consult with engineering professionals experienced in bridge design and construction, including, but not limited to, design professionals affiliated with the Advanced Engineered Wood Composites Center at the University of Maine.

5. Staff assistance. The Legislative Council shall provide necessary staffing services to the commission.

6. Compensation. Legislative members of the commission are entitled to receive the legislative per diem, as defined in the Maine Revised Statutes, Title 3, section 2, and reimbursement for travel and other necessary expenses related to their attendance at authorized meetings of the commission. Public members not otherwise compensated by their employers or other entities that they represent are entitled to receive reimbursement of necessary expenses and, upon a demonstration of financial hardship, a per diem equal to the legislative per diem for their attendance at authorized meetings of the commission.

7. Report. The commission shall submit a preliminary report to the Joint Standing Committee on Agriculture, Conservation and Forestry no later than November 1, 2006 and shall submit a final report including its findings and recommendations to the joint standing committee of the Legislature having jurisdiction over agriculture, conservation and forestry matters no later than January 15, 2007. The commission is authorized to introduce legislation related to its report to the First Regular Session of the 123rd Legislature at the time of submission of its final report.

8. Extension. Upon request by the commission, the Legislative Council may grant a limited extension of time for the commission to complete its study and make its final report.

9. Commission budget. The Department of Conservation, Bureau of Parks and Lands shall, no later than 15 days following the effective date of this Act, transfer to the Executive Director of the Legislative Council sufficient funds to fund all per diem and expense costs for legislative members of the commission. All other costs of the commission, including per diem and expenses for other members, must be funded by the bureau from within existing resources. The commission shall hold at least 6 meetings. The Executive Director of the Legislative Council shall administer any funds received by the commission. The executive director shall notify the chairs of the commission when sufficient funding has been received. Within 10 days after its first meeting, the

commission shall present a work plan and proposed budget to the Legislative Council for its approval. The commission may not incur expenses that would result in the commission's exceeding its approved budget.

Sec. 6. Appropriations and allocations. The following appropriations and allocations are made.

LEGISLATURE

Study Commissions - Funding 0444

Initiative: Allocates funds for the per diem and expenses of legislative members of the Commission To Study the Henderson Brook Bridge in the Allagash Wilderness Waterway. Funds are provided through a transfer from the Department of Conservation to the Legislature.

OTHER SPECIAL REVENUE FUNDS	**2005-06**	**2006-07**
Personal Services	$0	$1,650
All Other	$0	$3,000
OTHER SPECIAL REVENUE FUNDS TOTAL	$0	$4,650

APPENDIX B

Commission Membership and Affiliations

Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

Public Law 2005, Chapter 598

Wednesday, January 10, 2007

Appointment(s) by the Governor

Anthony Hourihan
P.O. Box 240
Ft. Kent, ME 04743
Representing Interests of J.D. Irving, Limited

Gary Pelletier
2873 Caribou Road
Cross Lake, ME 04779
Representing Interests of the Friends of the Allagash

James Pelletier
161 East Main Street
Ft. Kent, ME 04743
Representing Interests of Clayton Lake Woodlands

Robert Vigue
Seven Islands Land Co.
P.O. Box 677
Ashland, ME 04732
Representing Interests of Seven Island Land Company

Appointment(s) by the President

Sen. Dana L. Dow
30 Kalers Pond Road
Waldoboro, ME 04572
207 832-4658
Senate Member

Sen. John L. Martin
P.O. Box 250
Eagle Lake, ME 04739
207 444-5556
Senate Member

Appointment(s) by the Speaker

Rep. Troy D. Jackson - Chair
P.O. Box 221
Fort Kent, ME 04743
207 398-4081
House Member

Rep. Henry L. Joy
P.O. Box 103
Island Falls, ME 04747
207 463-2507
House Members

Rep. Theodore Koffman
168 Mill Brook Road
Bar Harbor, ME 04609
207 288-8930
House Member

Commissioner, Department of Conservation

Vern Labbe
No. Region Lands Manager
Dept. of Conservation 45 Radar Road
Ashland, ME 04732-9732
207 435-7963

Commissioner's Designee

Director, Sportsman's Alliance of Maine

Frederick Denico
324 Oak Grove Road
Vassalboro, ME 04989
207 872-9032

Director's Designee

National Park Service

Jamie Fosburgh
Rivers Program Manager
NPS Northeast Region - Boston 15 State Street
Boston, MA 02109
617 223-5191

Representative from Rivers, Trails & Conservation Program

Staff:

Jill Ippoliti 287-1670
OPLA

Karen Nadeau-Drillen 287-1670
Office of Policy and Legal Analysis

APPENDIX C

Agendas and Meeting Summaries

Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

September 22, 2006, 10:00 a.m. to 2:30 p.m.
University of Maine at Fort Kent Violette Wilderness Camp
Located at Round Pond, T13, R12

AGENDA

10:00 a.m.	Welcome and Introductions
	Overview of Commission Study Legislation, Duties and Requirements
	Develop Work Plan and Schedule
	Lunch
	Henderson Bridge Site Visit
2:30 p.m.	Adjournment

Staff:
Jill Ippoliti, Office of Policy and Legal Analysis, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, Office of Policy and Legal Analysis, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study Henderson Brook Bridge in the Allagash Wilderness Waterway September 22, 2006

MEETING SUMMARY

Members in attendance: Senator John Martin (co-chair), Representative Troy Jackson (co-chair), Representative Henry Joy, Gary Pelletier, John Cashwell (for Robert Vigue), Rick Denico, Anthony Hourihan, James Pelletier, Marc Deschene (for Vern Labbe).
Members absent: Senator Dana Dow, Representative Ted Koffman, Jamie Fosburgh.

1. Welcome and Introductions

- Co-chairs Senator John Martin and Representative Troy Jackson welcomed Commission members

- Members, staff and interested parties introduced themselves

2. Review of Public Law 2005, Chapter 598, duties of the Commission

- The duty of the commission is to make recommendations on the design of a bridge to replace the existing Henderson Brook Bridge within the Allagash Wilderness Waterway.

- The commission shall consider:
  - economic, environmental and aesthetic issues associated with the design,
  - the specific location of the bridge within the immediate area of the existing bridge,
  - approaches to the bridge,
  - the configuration of a motor vehicle access site to the watercourse at the bridge, and
  - designs that locate the bridge abutments away from the edge of the watercourse to the extent that is within economic and engineering constraints.

3. General discussion

- Ownership of Henderson Brook Bridge: The State of Maine holds majority interest in the bridge, while Irving (Irving Pulp & Paper) holds minority interest. It was estimated Irving holds approximately one percent interest. *According to Department of Conservation (DOC) documents, ownership of T13, R12 including Henderson Brook Bridge is common and undivided interest with 143/144 ownership -State of Maine and 1/144 ownership – Irving Pulp & Paper.*

- In 1997, the Land Use Regulation Commission (LURC) granted a permit to Blanchet Logging and Lumber Company to construct a replacement bridge. LURC has approved subsequent amendments to this permit.

- Would requesting a permit extension from LURC be easier than applying for a new permit?
    - Could Blanchet's permit be transferred to the State of Maine and/or Irving?
    - Would have to keep Blanchet's bridge design.
    - Based on language in enabling legislation, the approaches/location of abutments may be different than Blanchet's design.
      "The commission shall consider designs that locate the bridge abutments away from the edge of the watercourse to the extent that is within economic and engineering constraints."

- Who should be the applicant for a new permit and ultimate owner of the bridge – the State of Maine, Irving, or some other private landowner?

- Is legislative approval needed to transfer the State's ownership interest in the bridge? The Commission asked for a legal opinion from the Attorney General's Office on this issue.

- The Commission would like input from the Army Corps of Engineers on the permitting process.

- The current Henderson Brook Bridge:
    - Allowed weights on bridge – 200,000 lbs. with a safety factor of 250,000 lbs.
    - Span is 160 feet from shore to shore with two piers.

- The replacement Henderson Brook Bridge:
    - Proposed span: 200 feet from shore to shore.
    - Some questions as to whether new bridge should be designed to 250,000 lbs. with a safety factor of 300,000 lbs.
    - Should be as high as possible to avoid damage from ice jams and water flow.
    - Need to consider not only initial costs of building a new bridge, but also continuing maintenance costs.

- Possible boat launch relocation
    - The Commission discussed the possibility of relocating a motor vehicle accessible canoe launch and parking lot to the north of the bogan (backwater) on the northeast side of the current Henderson Brook Bridge.
    - What would the LURC permitting process entail?

4. Advanced Engineered Wood Composites Center (AEWC)

According to P.L. 2005, chapter 598:

"In conducting its study, the commission shall consult with engineering professionals experienced in bridge design and construction, including, but not limited to, design professionals affiliated with the Advanced Engineered Wood Composites Center at the University of Maine."

Eric Cassidy, a structural engineer from AEWC Center was present at the meeting and answered questions about the Center's current technology. He will also participate in the Commission's bridge subcommittee (see below).

5. Bridge Subcommittee

A bridge subcommittee was formed to work with the AEWC Center on bridge design.

The subcommittee was also charged with estimating the economic impact of:

a) Twin Brooks as an alternative site for the bridge, including the cost of building a new road through Twin Brooks; and

b) Removal of Henderson Brook Bridge (with no replacement).

For both scenarios, the subcommittee was asked to calculate the cost of hauling wood additional miles to get to the mills (in per dollars per ton).

Anthony Hourihan of J.D. Irving will serve as chair of the subcommittee. Other members include: Vern Labbe of Department of Conservation, Robert Albert of Blanchet Logging and Lumber Company, Charles Tardiff of Maibec, and Eric Cassidy of the AEWC Center.

6. Information requests for next meeting

Commission chairs and members had several information gathering requests regarding current bridge ownership, the permitting process and bridge design. These will be discussed at the Commission's next meeting on October 13, 2006.

Permitting:

- State of Maine/Irving ownership of T13, R12: State of Maine = 143/144; Irving = 1/144; common and undivided interest; implications for permit applications. Who files for permits? Do both entities need to sign application?
  LURC, Army Corps of Engineers

- LURC permit: If the recommendation is to construct a bridge designed in accordance with the 1997 permit granted to Blanchet Logging and Lumber (which was amended in 2001), can the permit be transferred from Blanchet to either the State of Maine or Irving?
  LURC – Catherine Carroll

- Army Corps of Engineers' permit: Is a permit needed from the Army Corps of Engineers if the abutments are outside the normal high water mark?
  Army Corps of Engineers – Jay Clement

- What is the extent of the environmental impact statement needed for permitting?
  LURC, Army Corps of Engineers

- If the Commission recommends relocating a motor vehicle accessible canoe launch and parking lot to the north of the bogan (backwater) on the northeast side of the bridge, what would the LURC permitting process entail? Would an Army Corps of Engineers' permit be needed?
  LURC, Army Corps of Engineers

Legislative approval:

- If the State of Maine negotiates an agreement whereby Irving relinquishes their approximately 1% ownership in T13, R12 in exchange for 100% ownership of the bridge, would the transaction need to have legislative approval?
  AG, OPLA staff attorney

- Does the State of Maine need legislative approval to contract with a company to build the bridge outside of the state bidding process?
  OPLA staff –find in statute

Economic Impact:

- Estimate the economic impact of Twin Brooks as an alternative site for the bridge. Calculate the cost of hauling wood extra miles to get to mills (express in dollars per ton) and the cost of building a new road through Twin Brooks.
  Commission bridge subcommittee, Anthony Hourihan (chair), OPLA

- Estimate the economic impact of not having a bridge in T13, R12. Calculate the cost of hauling wood extra miles to get to mills (express in dollars per ton).
  Commission bridge subcommittee, Anthony Hourihan (chair), OPLA

- Request from North Maine Woods the number of people using the Henderson Brook Bridge to access or exit the river and the number of people who cross the bridge for other recreational purposes.
  North Maine Woods – Al Copperthwaite

Future Meeting Dates

Friday, October 13, 2006, 9:00 AM to 2:00 PM, Advanced Engineered Wood Composites Center, University of Maine, Orono

Friday, November 17, 2006, State House Complex, Augusta (exact time and location TBD)

Staff:
Jill Ippoliti, OPLA, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, OPLA, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

October 13, 2006
9:00 a.m. to 2:00 p.m.
Advanced Engineered Wood Composites (AEWC) Center
Room 214
University of Maine, Orono

AGENDA

9:00 a.m.	Tour of AEWC Center with Habib Dagher, Director of the AEWC Center
	Discussion of Bridge Materials and Design
11:00 a.m.	Information Requests:
	• Economic Impact (Bridge Subcommittee) • Permitting (LURC, Army Corps of Engineers) • Legislative Approval (Attorney General, OPLA staff attorney)
12:00 noon	Lunch
1:00 p.m.	Conference Call with Jay Clement, Army Corps of Engineers
1:30 p.m.	Planning for Next Meeting
2:00 p.m.	Adjournment

Staff:
Jill Ippoliti, Office of Policy and Legal Analysis, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, Office of Policy and Legal Analysis, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study Henderson Brook Bridge in the Allagash Wilderness Waterway
October 13, 2006

MEETING SUMMARY

Members in attendance: Senator John Martin (co-chair), Representative Troy Jackson (co-chair), Senator Dana Dow, Representative Henry Joy, Gary Pelletier, Robert Vigue, Rick Denico, Anthony Hourihan, James Pelletier, and Vern Labbe.
Members absent: Representative Ted Koffman and Jamie Fosburgh.

1. Advanced Engineered Wood Composites (AEWC) Center – Bridge Design
The director of the AEWC Center, Habib Dagher, led the commission on a tour of the Center.

Rigidified inflatable arches, a technology developed at the AEWC Center, for bridges and other structures may be applicable to the construction of the new Henderson Brook Bridge (HBB). If the bridge is designed using arches, the design needs to maintain a certain height to span ratio. According to Mr. Dagher, rigidified inflatable arches are stronger than steel and composite materials don't rust like steel. However, according to Roger Gagnon of Gagnon Engineering, even steel pilings will not rust if they are buried in the ground. The arches would be armored underneath to protect the bridge from hydraulic pressure from ice.

The question was posed: Is one pier possible? Not really, the cost of steel is prohibitive. A two-pier design is more logical.

According to Mr. Dagher, federal grant money is available through the federal "Innovative Bridge Research and Development" program. The commission could apply for research and development funding to go towards the cost of bridge construction. Mr. Dagher estimated that the bridge project might qualify for up to $500,000 in federal funding. The deadline for the grant proposal is August 2007. Bridge construction could begin in spring 2008. However, the commission would like to begin bridge construction next spring – in 2007. Given that timeline, a more feasible and timely option may be to approach Maine's congressional delegation to secure federal funding. The key to the federal funding proposal is to demonstrate that the bridge project is innovative in its materials and/or design.

The AEWC Center consulted with Maine's Department of Transportation to estimate the cost of building a replacement bridge:

Average cost of bridge construction (2005): $173 per square foot
Current inflation rate: approximately 15 percent per year
Cost of bridge construction in 2008: $173 x $(1.15)^3$ = $263 per square foot
Proposed size of replacement Henderson Brook Bridge = 16 feet x 205 feet
Total cost = $263 x (16 feet x 205 feet) = $863,000

Therefore, according to AEWC Center's cost estimate, the total cost of a replacement bridge would be $850,000 to $1,000,000. With $500,000 in research and development federal funding possibilities, the out-of-pocket cost is approximately $500,000.

Eric Cassidy and Habib Dagher discussed some of the Center's bridge demonstration projects. The AEWC Center has designed, constructed and monitored numerous demonstration structures. Many of the projects involved the use of Fiber-Reinforced-Polymer (FRP) wood composites. West Seboeis Stream Bridge in West Seboeis, Maine is one example. Built in 1997, the West Seboeis Stream Bridge is a 44-foot structure made with Maine red pine. Another example, which was briefly discussed, is the Crowley Island Bridge in Addison, Maine. It is a glulam-girder/glulam-deck project, which consists of four 48-foot spans.

Mr. Dagher was asked if there is a guarantee on the design life of the wood composites. Laminated beams, like the ones used in these two bridge projects, are guaranteed for 60 to 70 years.

2. Gagnon Engineering – Bridge Design

Roger Gagnon of Gagnon Engineering spoke briefly about his bridge design work for Blanchet Logging and Lumber Company. The Land Use Regulation Commission permit process, with Blanchet as the applicant, began in 1994 with "Amendment B" to "Bridge Construction Permit BCP 3048." In 1997, "Amendment C" to BCP 3048 sought approval to remove and replace Henderson Brook Bridge. Gagnon Engineering designed the proposed replacement bridge.

According to Gagnon Engineering in 1997, the proposed replacement bridge would:

- Have nominal design capacity of 100 tons, plus a 25% overload design capacity.
- Be constructed approximately 35 feet upstream from the existing bridge.
- Consist of a 200-foot long, 15-foot wide, three-span bridge with two 48-foot-wide concrete wing wall gravel-filled abutments, and two three-foot-six-inch-wide concrete support piers.

The replacement bridge would be approximately three feet higher in elevation than the current bridge with the intent of widening the river channel flow enough to allow for seasonal high water and ice flows to pass underneath without affecting the bridge structure. The flow area proposed for the replacement bridge is 50 percent greater than the current bridge. ***The commission asked staff to include in the commission's final report a discussion of ice flow and flooding problems at Churchill Dam Bridge to highlight the importance of increasing the flow area of the replacement bridge.***

Mr. Gagnon advised the AEWC Center to avoid ice at all possible costs. Mr. Gagnon's cost estimate for a replacement bridge was similar to the AEWC Center's -- $500,000 to $1,000,000. Mr. Gagnon also agreed with the Center's assessment on the durability of laminated beams – approximately 60 to 70 years.

Mr. Gagnon expressed concern about the impact of ice (namely jams and washouts) on the south abutment of the replacement bridge. The abutment on the north side of the bridge was not a concern. ***The commission asked Mr. Gagnon to provide them with a cost estimate for***

development of a location design for the replacement bridge. The estimate would include the cost of the testing necessary (soils work, for example) to move the south abutment to a slightly different location (different than the design location that Gagnon Engineering completed for Blanchet Lumber).

3. Bridge Design – Points of Consensus

The commission agreed to several basic components of the replacement bridge design. The commission proposes:

- Three-spans
- Two center piers
- Abutments outside the normal high water mark
- Increase flow area by approximately 50 percent (compared to current bridge)
- Consider wood or steel or a combination of both
- Avoid arches

4. Economic Analysis

- The bridge subcommittee provided the full commission an analysis of the economic impact (costs) of Twin Brooks as an alternative site for the bridge. ***The estimate of costs associated with construction of a new bridge needs to be updated based on the Department of Transportations current (2005) average cost of bridge construction.***

  The commission also asked Mr. Gagnon of Gagnon Engineering to provide the bridge subcommittee with a cost estimate for a construction platform for the Twin Brooks location. This amount would be added to the Twin Brooks bridge construction cost estimate.

- ***The bridge subcommittee will also provide at the next meeting an estimate of the economic impact of not having a bridge in T13, R12.***

- Based on data from North Maine Woods, commission staff provided preliminary information on the number of recreational visitors using the Henderson Brook Bridge to access the river and the number of people who cross the bridge for other recreational purposes. ***Similar information from the Allagash Wilderness Waterway is also forthcoming.***

Additional information requests:

- ***Estimate the cost to the Maine Forest Service for forest fire protection under two scenarios: a) no Henderson Brook Bridge, and b) a replacement bridge at Twin Brooks.***

- ***Estimate the additional cost to visitors who are detoured under the two scenarios: a) no Henderson Brook Bridge, and b) a replacement bridge at Twin Brooks.***

5. Permitting

Commission staff contacted Catherine Carroll, Director of the Land Use Regulation Commission (LURC) regarding questions raised at the commission's first meeting.

- The State of Maine has 143/144 interest in T13, R12 and in Henderson Brook Bridge. Irving has 1/144 interest. Would both need to be applicants for a LURC permit?
    - Yes, it is likely that both the State of Maine and Irving would need to co-apply for a LURC permit and both would be subject to the terms and conditions of the permitted activity.

- If the recommendation is to construct a bridge designed in accordance with the 1997 LURC permit granted to Blanchet Logging and Lumber (BCP 3048 and subsequent amendments), can the permit be transferred from Blanchet to either the State of Maine or Irving?
    - No, BCP and subsequent amendments have expired. A new permit would need to be issued to construct a bridge.

Additional information request:
Blanchet Lumber has indicated that the permit issued by LURC in 1997 (with subsequent amendments) was transferred to the State of Maine.

a. ***Need proof of transfer.***
b. ***If such a transfer took place, could the expired permit be reinstated?***
c. ***Have there been any changes in statute or rule that would require changes in the application packet for a LURC permit?***

The commission requested that Catherine Carroll, director of LURC, be present at the commission's next meeting to answer questions.

Commission staff also contacted Jay Clement at the Army Corps of Engineers regarding questions raised at the commission's last meeting.

- If ownership of the Henderson Brook Bridge continues to be the State of Maine 143/144 interest and Irving Woodlands 1/144th interest, would both need to be listed as applicants for an ACE permit?
    - Mr. Clement would consider the State of Maine the owner/applicant.

- The study commission is discussing the possibility of the State retaining ownership of the bridge with the Bureau of Parks and Lands and entering into a long-term lease arrangement with a private entity. That entity (possibly Irving Woodlands or a group of interested landowners) would then assume responsibility to oversee bridge construction, pay all construction costs, and collect tolls from commercial haulers to recover costs of construction and maintenance. Would such a lease suffice to demonstrate property interest allowing the lessee to be the applicant for any necessary permits from the Army Corps of Engineers?
    - No, the Army Corps would be more inclined to make the State the permit holder.

6. Legislative Approval

- If the State of Maine negotiates an agreement whereby Irving relinquishes their approximately 1% ownership in T13, R12 in exchange for 100% ownership of the bridge, would the transaction need to have legislative approval?

- Jeff Pidot, Deputy Attorney General, has indicated that he believes legislative approval would be required.

- The commission also had questions relating to the State's ability to contract for bridge construction outside of the competitive bidding process administered through the Bureau of General Services. It may be possible for the State to enter into an agreement with a private entity to construct the bridge without going through the State bidding process if the private entity is responsible for construction costs. Another option may be for the Department of Conservation to apply to construct the bridge using the "design-build" or the "construction-manager-at-risk" method for public improvement construction contracts. The "Alternative Delivery System Review Panel" makes recommendations on such proposals using criteria established in statute (5 MRSA §1743).
  - ***The commission asked the Bureau of Parks and Lands member, Vern Labbe, to look into applying for bridge construction using the "design-build" method for public improvement contracts.***

7. Possible Boat Launch relocation

The commission also considered locating a parking area and canoe launch site north of the "bogan" on the northeast side of the bridge. According to the Army Corps of Engineers (ACE), if the proposed area is a wetland then a permit would be required. If it is not a wetland, then ACE does not have jurisdiction over the parking area. According to LURC, it is likely that the proposed locations for the parking area and canoe launch are within a Recreation Protection Subdistrict (P-RR); therefore, a LURC permit would be required.

The commission agreed not to pursue relocation of the canoe launch. Because the proposed replacement bridge would be built upstream (west) of the current bridge, the distance between the current launch and the replacement bridge would increase.

8. Bridge Subcommittee

In addition to the bridge economic impact analysis, the bridge subcommittee will continue to work with the AEWC Center and Gagnon Engineering on bridge design.

6. Information requests for next meeting

Commission chairs and members had several information gathering requests regarding the permitting process and bridge design. They are highlighted in bold italics above. These will be discussed at the Commission's next meeting on November 17, 2006.

Future Meeting Date

Friday, November 17, 2006, 10 AM – 3 PM, Room 126, State House, Augusta

Staff:
Jill Ippoliti, OPLA, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, OPLA, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

December 7, 2006
10:00 a.m.
Room 126, State House, Augusta

AGENDA

10:00 a.m.	Update on bridge design (Including location design cost estimate provided by Gagnon Engineering) - Bridge Subcommittee
11:00 a.m.	LURC permitting process - Catherine Carroll, Director of LURC
12:00 noon	Economic analysis update a) Twin Brooks alternative i) Cost of new bridge based on current DOT average cost for bridge construction ii) Cost estimate for Twin Brooks work trestle b) No Henderson Brook Bridge impact - Bridge Subcommittee c) Estimate of cost to the Maine Forest Service for forest fire protection - Commission Staff d) Churchill Dam water releases - Commission Staff
1:00 p.m.	Next Steps

Staff:
Jill Ippoliti, Office of Policy and Legal Analysis, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, Office of Policy and Legal Analysis, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study Henderson Brook Bridge in the Allagash Wilderness Waterway
December 7, 2006

MEETING SUMMARY

Members in attendance: Senator John Martin (co-chair), Representative Troy Jackson (co-chair), Senator Dana Dow, Representative Henry Joy, Gary Pelletier, Robert Vigue, Rick Denico, James Pelletier and Jamie Fosburgh.
Members absent: Representative Ted Koffman, Vern Labbe and Anthony Hourihan.

1. **Meeting Summary Approved**
   The commission unanimously approved the October 13th meeting summary.

2. **Army Corps of Engineers' Visit to Henderson Brook Bridge**
   On November 3, 2006, Jay Clement from the Army Corps of Engineers visited the current Henderson Brook Bridge site with the following: Senator John Martin, Vern Labbe of the Bureau of Parks and Lands, and Robert Albert of Blanchet Logging and Lumber.

   According to Mr. Clement, if the new bridge is built on the west side of the existing bridge, the road curvature will be tight and will require some straightening and associated wetland filling. However, placing the new bridge on the east side of the current bridge will probably diminish the amount of wetland filling. Mr. Clement believes the southeast bank is a better location for the abutment. This location avoids the filling and potential stream relocation that would be required on the southwest bank. In addition, the northeast bank is the site of the boat launch and is already open. Senator Martin recalled the group's on-site assessment that locating the new bridge to the east of the current bridge would result in no additional wetlands disturbance and, therefore, no problems in the location of the bridge from the Army Corps of Engineers' perspective.

   Mr. Clement sent an email to commission members (November 8, 2006) describing his visit and thoughts on the Henderson Brook Bridge project. Commission staff included a summary of Mr. Clement's email correspondence in the packet of meeting materials.

3. **Bridge Design - Pilings and Piers**
   Eric Cassidy of the Advanced Engineered Wood Composites (AEWC) Center presented some proposals for innovative materials for the replacement Henderson Brook Bridge (HBB). Mr. Cassidy said that overall the replacement bridge design already created by Gagnon Engineering for Blanchet Lumber in the 1990s would remain the same. AEWC is proposing some substitute materials.

   First, Mr. Cassidy presented the idea of using composite pilings for the HBB project. This product, called "HarborPile" was developed by the AEWC Center and HarborTechnologies, Inc.

Mr. Cassidy outlined some advantages of the composite piling:

- Light weight and high strength.
- Environmentally safe – will not rot, rust or leach chemicals into the natural environment. (Wooden pilings tend to decay over time in a marine environment.)
- Corrosion resistance.
- Can be installed in the same fashion as traditional piles.

After the pilings are driven into the ground, the piling tube is filled with concrete for additional strength.

AEWC proposes using five pilings at each pier - the same number of pilings as the Gagnon design. At the last meeting (October 13, 2006), the commission had agreed to a two-pier, three-span design. The replacement bridge piers would be approximately four (4) feet wide in the direction of water flow. The current bridge's piers (cribs) are approximately 12 feet wide. At the last meeting, the commission also agreed the replacement bridge design should increase the water flow area by 50 percent (under each span).

Roger Gagnon of Gagnon Engineering described the process of installing pilings:

1. Drive pilings into ground.
2. Wood and steel (combination) forms are placed around the pier. A steel cage of reinforcing is installed around the forms.
3. Water is pumped out of the forms as the "box" is filled with concrete.
4. The box stays on as the concrete cures/hardens. This usually takes a couple of weeks.
5. The forms are then stripped.

These pilings are very stable in the direction of water flow. The bridge is bolted down to the tops of the piers. The bridge itself acts as a brace in the direction of traffic. The piers are pointed and serve as ice cutters.

Commission members and others were concerned about how composite pilings would withstand being driven into a particularly hard soil. Mr. Cassidy said that shoes/bottom coverings have been developed for the composite pilings. **He also said he could get more information on strength testing that has been done on composite pilings.**

Jamie Fosburg of the National Park Service asked the engineers, Mr. Cassidy and Mr. Gagnon, whether either of them had looked into timber cribbing for aesthetic reasons that would not detract from the structural integrity. Mr. Gagnon responded that he has avoided cribbing because it cuts into the water flow area considerably. Mr. Gagnon explained that the forms of the piers could be faced with timber; however, the timber facing would get ripped off by the ice eventually – no matter how well designed. Mr. Gagnon added that the issue is securing the wood to the concrete and that it is difficult to secure wood against the forces of the water and ice flow. Mr. Cassidy added that concrete and wood don't necessarily mix, because concrete releases moisture which will eventually rot the wood. Bob Vigue of Seven Islands suggested that coloring the concrete would be a better solution. **Mr. Cassidy said research has been done on dyeing concrete and will provide the commission with some research findings at the next meeting.**

Senator Martin suggested that the engineers come back to the next meeting with an analysis of the strength value and economic cost of both the composite tube piling and the traditional concrete piling. The cost of concrete for tube pilings and for form pilings should be part of the analysis. Also, questions were raised about buying Canadian concrete for a State-of-Maine-owned bridge.

Jill will try to arrange a time for Chip Gavin of the Bureau of General Services and Vern Labbe of the Bureau of Parks and Lands to meet with a commission staff person and any available members to discuss concrete purchasing issues and contracting for services before the full commission's fourth and final meeting in January.

Jamie Fosburg reiterated that options regarding aesthetics are worth looking into and that timber is worth exploring for both aesthetics and structure. **Roger Gagnon said he will look into the feasibility of something more aesthetically pleasing – form-facing materials, for example. Senator Martin asked Mr. Gagnon to bring examples/pictures of form-facing materials to the next meeting.**

4. **Bridge Design – Decking**

Eric Cassidy of the AEWC Center presented his recommendation for bridge decking materials. Mr. Cassidy suggested replacing the 8x8-inch timbers in the Gagnon design with glu-laminated deck panels. The panels are attached together by a tongue-and-groove connection. Some advantages of this decking system are:

- Can be installed from the top of the bridge, rather than underneath to attach the panels to the girders. This can save a considerable amount of money for labor and equipment and time for installation.
- The decking is prefabricated and light-weight (approximately 1/3 the weight of concrete panels).
- Easy and cost-effective to transport.
- Designed for rapid construction – requires only a small crane or backhoe for installation.
- Panel-to-panel-connection design increases the overall strength of the panels and reduces the amount of differential movement between adjacent panels.

The commission agreed that the wear decking of the bridge should be a total cover and not just two tracks. This safety feature adds stability to vehicles traveling over the bridge. Bob Vigue stated that total cover wear decking is now standard practice for all Seven Islands bridges.

Bob Vigue raised concerns about the AEWC bridge deck proposal on two fronts:

1. The design proposes a solid bridge deck. Spacing between panels of decking (as is currently the case) is desirable for snow melt and water run-off.
2. Because logging trucks with tire chains "eat up" bridge deck planks in the wintertime, the planking is removed and replaced every three (3) to five (5) years. An excavator is used to remove the planks. What is effect of punching holes into glulam panels?

In answer to the first concern, Roger Gagnon indicated that a pitch or crown could be added to the deck of the bridge. Regarding the second question, Mr. Gagnon said a floating deck floor could be created to withstand the periodic removal of planks.

Jamie Fosburg inquired about the finish on the steel I-beam girders. Mr. Gagnon indicated that the finish is paint. He suggested installing a wood facing inside the beam to hide the steel if aesthetics is a concern.

There was also some discussion about the load to be used in bridge design. Irving is apparently experimenting with flail chipping trucks that might require more weight capacity. Apparently, the payload alone is 85,000 to 100,000 tons. ***Commission staff spoke with Anthony Hourihan of J.D. Irving to confirm whether the bridge should be designed to 300,000 pounds. Mr. Hourihan indicated that the bridge did not need to be designed for a 300,000-pound load. He said that whatever the commission decides is most likely acceptable. However as I look through the meeting minutes of the commission's previous meeting, I am not sure whether the commission has come to a point of consensus on the design load.***

According to the September 22 meeting minutes, the current HBB allows 200,000 lbs. with a safety factor of 250,000 lbs. (or 25 percent). According to the meeting summary, there was some discussion about whether the new bridge should be designed to 250,000 lbs. with a safety factor of 300,000 lbs. (approximately 16 percent). In 1997, Gagnon Engineering's proposed replacement bridge had a nominal design capacity of 200,000 pounds with a 25 percent overload design capacity (or 250,000 pounds).

In summary, it appears that the engineers (Mr. Gagnon and Mr. Cassidy) do not have to come up with a new design for a 300,000-pound bridge load. However, it is unclear to me whether the commission has come to an agreement whether the replacement bridge should be designed to 200,000 pounds or 250,000 pounds.

5. Permitting Process – Land Use Regulation Commission (LURC)

Catherine Carroll, director of LURC, talked briefly about the permitting process. At the Henderson Brook Bridge site, there are five (5) overlaying protection zones: fishery and wildlife, wetlands, shore land, unusual, and recreation. A water crossing is an allowed use in all of those protection zones.

Ms. Carroll also outlined the broad applicable review criteria from LURC shore land zone rules (Chapter10). For example, among other things, the project must have no undue adverse impact on the scenic character of the area. Furthermore, the applicant must avoid unreasonable soil erosion. Also, the applicant(s) need to demonstrate rights, title and interest. The application should include a site plan; soils mapping; drainage, stabilization, and erosion control measures; and wetland delineation.

Ms. Carroll encourages all permit applicants to work with LURC staff before submitting an application. LURC then sends copies to the appropriate review agencies. In this case, the list of reviewing agencies would include: the Department of Inland Fisheries and Wildlife

(IF&W), the Maine State Soil Scientist, the Department of Environmental Protection (DEP), the Army Corps of Engineers (ACE) and the National Park Service (NPS). LURC staff then prepares a recommendation.

However, if LURC receives a large amount of public interest, they might hold a public hearing. At this point, the decision is made by the Land Use Regulation Commission, not LURC staff.

Ms. Carroll inquired about the location of a boat launch. Senator Martin indicated that the boat launch would be relocated to the footprint of the current Henderson Brook Bridge – where the gravel surface of the approach would need to be re-graded. Ms. Carroll thought that a permit would be required for the relocation of the boat launch, and indicated that for a public vehicle-access boat launch, the special exception criteria (in Chapter 10 LURC shore land zone rules) would apply. However, a special exception permit is not required for removing the water crossing structure. Senator Martin suggested that both the bridge and boat launch projects could be in one permit application.

Senator Martin also pointed to an emergency provision in law that allows filing a permit after the fact if the current Henderson Brook Bridge washes out and poses a threat to public safety. Priestly Bridge on the St. John River is an example where this provision of law was used.

Ms. Carroll will work with HBB commission staff to provide copies of the following for the commission's next meeting: permit application, LURC Chapter 10 applicable review criteria (for bridge) and special exception criteria (for boat launch), and the emergency provision in the event of a bridge wash-out.

6. **Economic Analysis Update**
   The commission asked the bridge subcommittee to provide an update regarding the cost of constructing a replacement bridge at Twin Brooks. The estimate of costs associated with construction of a new bridge needs to be updated based on the Department of Transportation's current (2005) average cost of bridge construction.

   The bridge subcommittee was also charged with providing an estimate of the economic impact of not having a bridge in T13, R12.

   Anthony Hourihan, chair of the bridge subcommittee, was unable to attend this meeting and will provide these numbers at the next meeting in January.

   The commission also asked Roger Gagnon of Gagnon Engineering to provide a cost estimate for a construction platform for the Twin Brooks location. Mr. Gagnon estimated that the cost of a temporary work trestle for heavy cranes would be approximately $1,000 per linear foot, and anticipates that the Twin Brooks site would require work trestles totaling 200 to 250 linear feet in length, for an estimated cost of $200,000 to $250,000.

   The commission also inquired about the cost to the Maine Forest Service (MFS) for forest fire protection in two scenarios: a) no Henderson Brook Bridge, and b) a replacement bridge

at Twin Brooks. Bill Williams, division director of the Forest Protection Division at MFS, responded to the commission's request. In summary, "although Henderson Brook Bridge provides access for forest fire suppression and allows greater access under some scenarios, the division's goal of having ground resources on a fire in one hour or less would not be significantly impacted." MFS uses helicopters to provide quick response to significant forest fires. However, if ground access is reduced or restricted, the need for aviation resources may become greater.

7. Possible Boat Launch Relocation

Based on an email from commission member Jamie Fosburg (representative from the National Park Service), the rest of the commission was concerned that the meeting minutes did not describe in enough detail the deliberations as to why the commission chose not to relocate the boat launch to the northeast side of the bridge. Mr. Fosburg was not able to attend the first two commission meetings. In his email dated November 27, Mr. Fosburg said:

> *I do want to make sure that the study commission intends to address the relevant "wild" river standards of the Wild and Scenic Rivers Act as it considers design, location, materials and access issues. At issue here are the "essentially primitive" and "generally inaccessible except by trail" standards of the wild classification. NPS must consider these issues very carefully in the context of reviewing the anticipated Army Corps permit for this project, and will be specifically asking how the State has analyzed compatibility with the "wild" river classification language.*

Mr. Fosburg said that the NPS signed on to the River Drivers Agreement (RDA) and stands by this agreement. It is not clear to the Park Service whether the agreement is obsolete or not and has been unable to get a definite answer from Maine's Department of Conservation. In any event, the NPS anticipates controversy regarding the boat launch, and is adhering to the RDA as much as possible to avoid controversy. Mr. Fosburg said that he certainly wants to make sure that the bogan is explored as a possible boat launch.

Gary Pelletier of the Friends of the Allagash said that according to his interpretation of the RDA, the bogan was to be taken into consideration only if there was no other alternative. Mr. Pelletier further explained that at previous commission meetings the bogan was considered. However, at the last meeting (October 13), the bogan boat launch was not pursued for the following reasons, including but not limited to:

- Environmental impact to the wetland/bogan area – the forest canopy would need to be removed.
- A new road would need to be built (negative environmental impact and increased cost).
- A handicap area would need to be created (increased cost).

Rick Denico added that the bogan would be difficult to use in dry weather without dredging, and that use of the bogan would probably cause siltation to be introduced into the river during low water.

8. Water Releases from Churchill Dam

A memo from Marilyn Tourtelotte, manager of the Allagash Wilderness Waterway, was briefly discussed. The deep gate on the dam is once again operable as of September 2006. This increases the ability to draw down the lake level and begin the winter season at the target level of 927.3 inches. The goal is to have no water releases during the winter. Major factors determining the need for winter releases are:

- Lake level at freeze-up.
- Timing of major rain events and the amount of rainfall.
- Amount of snowfall and timing of snowmelts.

9. Umsaskis Overflow System

The commission discussed the new overflow concrete system at the Umsaskis Lake Thoroughfare on the Allagash River. Rick Denico provided pictures of the construction and completion of the new overflow system at Umsaskis. If the overflow design works well next spring at Umsaskis, many members expressed interested in using the system at the Henderson Brook Bridge site in lieu of culverts.

10. Information Requests for Next Meeting

Commission chairs and members had several information gathering requests regarding the permitting process and bridge design. They are highlighted in bold above. These will be discussed at the Commission's next meeting in January, 2007.

Staff:
Jill Ippoliti, OPLA, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, OPLA, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

Commission to Study the Henderson Brook Bridge in the Allagash Wilderness Waterway

January 4, 2007
10:00 a.m.
Room 126, State House, Augusta

AGENDA

10:00 a.m. Public Hearing

12:00 noon Bridge Design Considerations

- Composite pilings vs. steel pilings
- Bridge deck
- Aesthetics – colored concrete vs. wood facing
- Water flow capacity comparison: current bridge and Gagnon/AEWC design

1:00 p.m. Finalize findings and recommendations

- Location
- Bridge design
- Boat launch
- Cost and sources of funding
- Proposed timeline

2:00 p.m. Permit Application:

- Criteria for approving a LURC permit application for a bridge
- Criteria for approving a LURC permit application for public trailered boat launch
- Federal and LURC provisions for emergency replacement of bridge
- Actions needed to expedite permitting and construction

2:30 p.m. Next Steps:

- Presentation of final report to the Joint Standing Committee on Agriculture, Conservation and Forestry
- Tentatively scheduled for Monday, January 29

Staff:
Jill Ippoliti, Office of Policy and Legal Analysis, 287-1670, email: jill.ippoliti@legislature.maine.gov
Karen Nadeau-Drillen, Office of Policy and Legal Analysis, 287-1670, email: karen.nadeaudrillen@legislature.maine.gov

APPENDIX D

LURC Bridge Construction Permit BCP 3048-Amendment C

STATE OF MAINE
DEPARTMENT OF CONSERVATION
22 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0022

ANGUS S. KING, JR.
GOVERNOR

RONALD B. LOVAGLIO
COMMISSIONER

PERMIT

AMENDMENT C TO
BRIDGE CONSTRUCTION PERMIT BCP 3048

The staff of the Maine Land Use Regulation Commission, after reviewing the application and supporting documents submitted by Blanchet Logging & Lumber Company for Amendment C to Bridge Construction Permit BCP 3048, finds the following facts:

1. Applicant: Blanchet Logging & Lumber Company
   Attn: Robert Albert
   P.O. Box 107
   Fort Kent, Maine 04743

2. Date of Completed Application: May 27, 1997

3. Location: T13 R12 WELS, Aroostook County
   Part of Lot #1.2 on Plan 01, Map AR071

4. Zoning: (P-FW) Fish and Wildlife Protection Subdistrict
   (P-RR) Recreation Protection Subdistrict
   (P-SL) Shoreland Protection Subdistrict
   (P-WL) Wetland Protection Subdistrict
   (P-UA) Unusual Area Protection Subdistrict

5. Affected Waterbody: Allagash River

6. Bridge Construction Permit BCP 3048 was issued to Great Northern Paper Company in August of 1978, authorizing the reconstruction of a pre-Commission bridge across the Allagash River. The bridge structure consisted of two log crib abutments, two rock filled timber-cribbed piers and a wooden superstructure. Great Northern Paper Company was the owner of the road right-of-way but the surrounding land was owned by the State of Maine as part of the Allagash Wilderness Waterway. The bridge was reconstructed pursuant to this permit.

7. In 1984, the State of Maine, acting through the Department of Conservation, formerly Bureau of Public Lands, now, Bureau of Parks and Lands, acquired ownership of the road right-of-way.

8. Amendment A, issued to the Bureau of Public Lands in June of 1987, authorized repair of one of the piers which was damaged due to an ice jam and high water flows. Amendment A to Bridge Construction Permit BCP 3048 also authorized the installation of two steel ice bumpers on the upstream edge of the piers.

9. In 1989, the applicant acquired ownership of the road right-of-way (aka. Blanchet Road) and bridge (aka. Henderson Brook Bridge) from the Bureau of Public Lands.

10. In 1990, the applicant states that the old wood stringer, wood deck, and superstructure of the bridge were replaced with a new steel stringer, and wood deck superstructure. This work was done without prior permit approval from the Commission.

11. Amendment B issued to the applicant in June of 1994, authorized repairs to the bridge which was once again damaged by ice jams and high water flows. The proposed repairs consisted of lifting the spans and placing them back onto the abutments and piers, repairing/replacing the steel stringers and wood decking, and repairing the damage done to the ice bumpers. As a result of these repeated bridge failures over the years, the applicant subsequently conducted a study of detailed options for the permanent solution to the crossing.

12. The applicant now seeks amendment approval to remove the existing, dilapidated bridge and construct a replacement bridge. The replacement bridge would have a nominal design capacity of 100 tons, plus a 25% overload design capacity. The load limit would be posted on the bridge, as well as a "25 mph" approach speed limit sign. All loaded trucks would be weighed to enforce load limits. The replacement bridge would be constructed approximately 35 feet upstream from the existing bridge. The replacement bridge would consist of a 200 foot long, 15 foot wide, three span bridge with two 48 foot wide concrete wing wall gravel filled abutments, and two three foot-six inch wide concrete support piers. The north end span would be approximately 55 feet long, the center span 85 feet long and the south end span 60 feet in length. The superstructure of the replacement bridge would consist of steel I-beam girders, eight inch by eight inch wooden cross members and a four inch by eight inch wooden plank travel surface with eight inch by eight inch curbs on both sides. The face of each abutment would be located at the normal high water mark of the river. The piers would each extend approximately 15 feet in height above the river bottom, and would be anchored two feet below the river bottom and supported by large riprap stones. The bridge approaches would be 24 feet wide tapering down to 17 feet wide at the bridge. The bridge approaches would be filled and graded as necessary to meet the elevation of the replacement bridge. The applicant also proposes a six vehicle public parking area adjacent to the bridge's north abutment to allow easier access for canoeists to the river.

13. There would be approximately 11 feet of clearance between the lower portion of the bridge and the river at normal high water levels. The design modifications would effectively raise this replacement bridge approximately three feet in elevation above the existing

bridge, and widen the channel flow enough to allow the seasonal high water and ice flows to pass underneath without affecting the structural integrity. Clearing would be required within an existing deer wintering area, due to the relocated bridge approach on the south end of the bridge. The applicant has entered into a plan agreement with the Maine Department of Inland Fisheries and Wildlife to revegetate the discontinued bridge approach with herbaceous plantings. [Reference: P-FW Notification 97-012]

14. Work on the replacement bridge would be conducted via a work crane from the existing bridge, and during low water flow periods. The applicant proposes to install sand bag coffer dams between the proposed abutments and river, and sealed concrete forms surrounding the proposed piers. At the toe of the abutments, the applicant proposes to install filter fabric, overlaid by 135 cubic yards of clean gravel fill, overlaid by 50 cubic yards of riprap at a grade of 2:1. The existing (old) abutment fill material would be dredged back to the normal high water mark of the river, and the dredged fill material would be used to build up the north and south approaches. The old riprap material would also be re-used where possible. The old bridge materials would be salvaged to the extent possible, for re-use elsewhere. The applicant proposes to burn timber cribwork from the old bridge abutments in a nearby gravel pit, beyond the Allagash Wilderness Waterway. Staked hay bales and/or siltation fence would be installed around the perimeter of the entire work area to prevent siltation of the river. All effective measures would be employed to avoid siltation of the nearby unnamed brook flowing into the river. All areas of disturbed mineral soil would be reseeded and mulched.

15. Water crossings of major flowing waters are an allowed use by permit in a (P-RR) Recreation Protection Subdistrict, (P-SL) Shoreland Protection Subdistrict, (P-WL) Wetland Protection Subdistrict, and (P-UA) Unusual Area Protection Subdistrict under the provisions of Section 10.16,G,3,b(6); Section 10.16,I,3,b(2); Section 10.16,K,3,b(2); and Section 10.16,J,3,b(5) of the Commission's Land Use Districts and Standards. Clearing and relocation of the bridge approaches are an allowed use by notification in a (P-FW) Fish and Wildlife Protection Subdistrict.

16. The Maine Department of Inland Fisheries and Wildlife has reviewed the applicant's proposal and expressed no objections.

17. The Bureau of Parks and Lands has reviewed the applicant's proposal and expressed no objections.

18. The Maine State Soil Scientist has reviewed the applicant's proposal and expressed no objections.

19. The Allagash Wilderness Waterway has reviewed the applicant's proposal and expressed no objections.

20. The Maine Historic Preservation Commission has no objections to the applicant's proposal. A Phase I archeological survey of the proposed bridge site was conducted and no significant artifacts were discovered in the area.

21. The facts are otherwise as represented in Bridge Construction Permit Application BCP 3048, subsequent amendments and supporting documents.

Based upon the above Findings, the staff concludes that if carried out in compliance with the Conditions below, the proposal will meet the Criteria for Approval, Section 685-B(4) of the Commission's Statutes, 12 M.R.S.A.

Therefore, the staff approves the amendment request of Blanchet Logging & Lumber Company with the following conditions:

1. The Standard Conditions (ver. 10/84), a copy of which is attached.

2. The Standard Conditions of Approval for all Shoreland Alteration Permits (ver. 4/91), a copy of which is attached.

3. The Standards for the Installation of Riprap (ver. 4/91), a copy of which is attached.

4. During construction, the permittee shall take reasonable precautions to avoid siltation of the river including, but not limited to, the use of mulch to temporarily stabilize exposed soil, cessation of construction activities during inclement weather, and any other measures which may prove necessary.

5. If water control measures beyond those specified herein prove to be necessary in order to reasonably avoid accelerated erosion or sedimentation of surface waters, such additional measures must be employed.

6. All operations must be stopped where the continuation of such operations will cause or contribute to the occurrence of accelerated erosion or the sedimentation of surface waters, whether such occurrence is precipitated by wet weather, the failure of water control measures, or other factors. Adequate steps must immediately be taken to stop any accelerated erosion or sedimentation of surface waters and to correct the situation which led to such occurrence.

7. All work to be carried out below the high water mark must be conducted during periods of low water flows.

8. All work involving fresh concrete must be conducted such that the fresh concrete does not come in contact with river water. No tools used to prepare or work the fresh concrete are to be washed in the river or where runoff water from such washing operations can drain directly into the river.

9. Upon completion of the replacement bridge within the terms of this permit, the existing bridge must be removed from the river and all solid waste and other debris disposed of in a proper manner, in compliance with applicable state and federal solid waste laws and rules. Wood debris may be burned provided a fire permit is obtained from the Maine Forest Service and provided that all remaining ash is promptly disposed of as special waste in accordance with state law. The ash must be transported to a licensed special waste facility by a transporter licensed by the Maine Department of Environmental Protection to handle such wastes.

10. All areas of disturbed soil must be promptly reseeded and mulched to prevent soil erosion.

11. Upon completion of the bridge, the permittee shall submit to the Commission a Professional Engineer's Inspection report certifying that the bridge was constructed to design specifications.

12. Activities permitted in this permit must be begun within two (2) years of the date of issue and completed within three (3) years from the date of issue of this permit. If such activities are not begun and completed within this time limitation, this permit shall lapse and no activities shall then occur unless and until a new permit has been granted by the Commission.

13. All conditions of Bridge Construction Permit BCP 3048 and subsequent amendments shall be superseded by conditions of this amendment.

This permit is approved only upon the above stated conditions and remains valid only if the permittee complies with all of these conditions. In addition, any person aggrieved by this decision of the staff may, within 30 days, request that the Commission review the decision.

DONE AND DATED AT AUGUSTA, MAINE, THIS 23rd DAY OF JUNE, 1997.

By: Cynthia S. Bertocci
for/ John S. Williams, Director

APPENDIX E

History of LURC Action on Bridge Construction Permit BrP 3048 and Amendments BCP A through E

HISTORY OF LURC ACTION ON
BRIDGE CONSTRUCTION PERMIT #BrP 3048
Henderson Brook Bridge in T13, R12 WELS

Permit - Amendment	Applicant	Date of Approval	Description of Activity Approved
BrP 3048	Great Northern Paper Co.	8-1-78	Reconstruction of existing bridge over the Allagash River at the same location as and identical to the existing structure.
BCP 3048-A	Bureau of Public Lands (State of Maine acquired bridge from GNP in 1984)	6-25-87	Removing existing deckwork, adding timber cribbing to level off the pier, placement of more rock in new crib area, and re-installing existing deck. Also installing steel ice-bumpers on upstream edge of pier. Work was necessitated by heavy rains and ice damage causing the south pier to settle.
BCP 3048-B	Blanchet Logging & Lumber Co. [1.]	6-14-94	Lifting the spans and placing them back on the abutments and piers. Needed repair work on stringers, decking and abutments. Repairing ice-bumpers. The bridge was damaged by ice and heavy water in spring of 1994. Applicant required to conduct a study. [2.]
BCP 3048-C	Blanchet Logging & Lumber Co.[3.]	6-23-97	Removing the existing bridge and construction of a replacement bridge approximately 35 feet upstream. [4.] Constructing a six vehicle public parking area and a canoe launch path adjacent to the bridge.
BCP 3048-D	Blanchet Logging & Lumber Co.	10-19-98[5.]	Same bridge replacement proposal as in Amendment C. Amendment D eliminates the proposed vehicle parking area and narrows the width of the canoe launch pad.[6.]
BCP 3048-E	Blanchet Logging & Lumber Co.	6-15-99	Extending time allowed for construction. Revised expiration date of 6-15-2001 for beginning construction.

1. Amendment B states "The applicant also owns a road right-of-way across to this roadway and is now the actual owner of the bridge." (Finding # 9)
2. Amendment B included the condition that "the permittee shall conduct a study to develop detailed options of the permanent solution to the crossing and must submit the study results to the Commission prior to August 1, 1995." (Condition #8)
3. Amendment C states "In 1989, the applicant required ownership of the road-right-of-way (aka. Blanchet Road) and bridge (aka Henderson Brook Bridge) from the Bureau of Public Lands." (Finding #9)
4. Condition #12 of Amendment C specifies that the permitted activities must begin within 2 years of the permit issue date and be completed within 3 years. "If such activities are not

begun and completed within this time limitation, this permit shall lapse and no activities shall then occur unless and until a new permit has been granted by the Commission."

5. The date of completed application for amendment D was 5/12/98. The date that the permit was issued was 10-19-98.
6. Amendment D retained the conditions of Amendment C, thus extending the date for beginning the project to October 19, 2000 and for completing the project to October 19, 2001.

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APPENDIX F

Summary of Bridge Design Subcommittee's Cost Estimates for Twin Brooks Alternative and Henderson Brook Bridge Removal

Impact of Replacing Henderson Bridge with New Crossing at Twin Brooks

Annual Impact of Rerouting Traffic to Twin Brooks	$562,000
One Time Cost of Developing New Site	$ 1,780,000

Impact 1

100,000 tons of wood Flowing South to Canadian Markets
Additional Mileage of 80 Miles per roundtrip
Assume with Upgrades average Travel Speed of 25 Mph
Assume average Rate per Hour for Truck at $65/hr

80 Miles / 25 mph = 3.2 hrs added per load
3.2 hrs x $65 = $208/load
$208/ld / 45 tons per load = $4.62/ton
100 000 tons x $4.62/Ton
=$462,000 annual additional cost for West Bound products

Impact 2

50,000 tons of wood Flowing from North of Allagash to Portage
Additional Mileage of 35 miles per roundtrip
Average travel speed of 25 mph
Rate per hour of $65/hr

35 miles / 25 mph= 1.4 hrs added per trip
1.4 hrs x $65/hr = $91/load or $2.00/ton
50,000 tons x $2.00 = $100,000 year additional costs

Impact 3

Cost required to construct new main road to incorporate a crossing at twin brroks

3 miles x $40,000/ mile =$120,000

Construction of new Bridge at Twin Brooks, River is wider requires approximately 130' more length then Henderson — Estimate cost to construct $1,500,000

Upgrading of Existing roads to Become Main Roads $100,000

One Time Costs to Replace Henderson Access **$1,780,000**

* Have not taken in to account increased annual fees to maintain more main roads

** It should also be noted that additional hours required to haul the same volume of wood will result in the need to purchase more trucks at an average cost of approximately $125,000 per unit, large impact for landowners and contractors.

Impact of Removing Henderson Bridge and Not Replacing

Currently:

Current Average Trip to Move forest products either East or West using Henderson Brook Bridge on Major logging roads is 90 miles roundtrip.

90 miles /25 mph = 3.6 hrs per trip travel
3.6 hrs x $65/hr = $234/ Load
$234 per load at 45 tons per load **=$5.20/ton**

Total Freight — 150 000 tons per year x $5.20/ton **=$780,000** annually

No Henderson Replacement:

Without Henderson Bridge
Via Saint Francis/ Escourt Road
216 miles / 25 mph = 8.64 hrs
32 miles / 35 mph = .91 hrs
9.6 hrs x $65/hr = $624/load

$624 per load at 31 tons per load = **=$20.13/ton**

Total Freight — 75 000 tons per year x $20.13 = **=$1,509,750** annually

Via Umsaskis and Blanchet/ Maibec Road
105 miles / 25 mph = 4.2 hrs
4.2 hrs x $65/hr = $273/load

$273 per load at 45 tons per load = **=$6.07/ton**

Total Freight — 75 000 tons per year x $6.07/ton **=$455,250** annually

Total Freight Cost: **$1,965,000** annually

No Henderson Replacement	$1,965,000	annually
Current Henderson Brook Bridge	$780,000	annually
Cost Difference:	**$1,185,000**	annually

152% cost increase

Truck Requirements

Current:
150,000 Tons over 40 weeks = 3,750 tons per week
45 tons per load = 83 loads per week
Average turn time 5.6 hrs or 2 load per day

Requires : 9 trucks

No Henderson
150,000 Tons over 40 weeks = 3,750 tons per week
38 tons per load = 99 loads per week
Average turn time 8.9 hrs or 1.3 load per day

Requires : 15 trucks

APPENDIX G

Economic Impact – Recreation – North Maine Woods Summary

Henderson Brook Bridge – Economic Impact – Recreation

The number of people using the current Henderson Brook Bridge to access or exit the Allagash Wilderness Waterway (AWW):

According to the North Maine Woods (NMW) organization, when visitors arrive at NMW checkpoints, their specific destination within the NMW region is recorded. There are over 900 specific destinations listed in the NMW summary report. Summary information for Henderson Brook Bridge and Jalbert's Sporting Camps has been included. According to NMW, at least 90 percent of Jalbert's visitors use Henderson Brook Bridge.

For the North Maine Woods 2005 operating season (May 1 to November 30):

Destination/Activity	Parties	Party Days[1]	Visitors	Visitor Days[2]	NMW Fees Pd	AWW Fees Pd
Henderson Bridge						
Camping	10	24	34	93	$220	?
Fishing	4	4	13	13	$77	?
Canoeing	30	77	131	296	$543	?
Visiting Lease	1	1	2	2		?
Riding	2	2	4	4	$15	?
Subtotal	**47**	**108**	**184**	**408**	**$855**	**?**
Jalbert's Camps						
Camping	12	20	33	48	$40	?
Hunting	1	1	3	3	$5	?
Canoeing	23	30	59	79	$205	?
Visiting Lease	52	174	142	501	$716	?
Other	1	2	2	4	$10	?
Subtotal	**89**	**227**	**239**	**635**	**$976**	**?**
TOTALS	**136**	**335**	**423**	**1043**	**$1,831**	**?**

The number of people who cross Henderson Brook Bridge for other recreational purposes:

NMW could not provide an exact count; however, this is the only river crossing between Umsaskis and the Town of Allagash. Transporting businesses use this crossing to shuffle passengers and vehicles of parties canoeing the Allagash River system. It is used by guides and bear-, deer-, grouse- and moose-hunting parties. According to NMW, an estimated 20,000 recreational visitors cross Henderson Brook Bridge annually. NMW fees collected from recreational visitors who utilize this river crossing may approach $80,000 to $100,000 annually. This does not include AWW fees collected from visitors to the Allagash Wilderness Waterway.

In 2005, the ratio of visitors to NMW was about 76 percent Maine residents and 24 percent non-residents. NMW does not have that same data for visitors to the AWW. The ratio of total NMW fees paid is 66 percent by residents and 34 percent by non-residents.

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[1] Regardless of how many visitors are in a group, one party is referred to as one "party day." One vehicle may be considered one party, regardless of the number of people in the vehicle. One party day is similar to one 'overnight stay' in a motel. The motel room is occupied, but the number of people in the room is not indicated.

[2] The term "visitor days" equals the number of people in a party multiplied by the days in the area. For example, 20 people in one motel room would equal one party day or 20 visitor nights.

Prepared by the Office of Policy and Legal Analysis 1/12/2007
Data Source: North Maine Woods

APPENDIX H

Memo Regarding Access at Henderson Brook Bridge – Bureau of Parks and Lands, Department of Conservation

State of Maine
Bureau of Parks & Lands
106 Hogan Road
Bangor, Maine 04401
telephone: (207) 941-4014
fax: (207) 941-4222

To: **Jill Ippoliti, Maine State Legislature**
From: **Tim Hall, Regional Manager, Maine Bureau of Parks and Lands**
Date: **January 12, 2007**
Subject: **Access to the Allagash Wilderness Waterway – Henderson Brook Bridge**

Jill, we've finally overcome our technical limitations, and have successfully queried the AWW Public Use Database. In 2006, 248 visitors, in 50 separate parties accessed the Waterway at Henderson Brook Bridge. This represents about 4.3% if our total parties and 5.2% of our registered visitors.

As I report this public use information, I have to state that access to the Waterway at this location is not tied specifically to the existence of the bridge. If the bridge were removed, it would still remain likely that access points could be retained on one or both sides of the river at this point, especially if roads to the water's edge could possibly remain. Presently, the access point at Henderson Brook Bridge is located on the Northern side of the river.

Please let me know if we can provide additional information. I must offer special thanks to Mackenzi Keliher, Administrative Secretary to Bureau Director Dave Soucy, who was able to create and execute the proper queries in our database.

cc. D. Soucy, Director, Maine Bureau of Parks and Lands

APPENDIX I

Summary of the Maine Forest Service's Comments Regarding the Cost of Forest Fire Protection

Maine State Legislature

OFFICE OF POLICY AND LEGAL ANALYSIS

13 State House Station, Augusta, Maine 04333-0013
Telephone: (207) 287-1670
Fax: (207) 287-1275

To: Commission Members
Commission to Study Henderson Brook Bridge in the Allagash Wilderness Waterway

From: Karen Nadeau-Drillen, Legislative Analyst

Date: October 31, 2006

Re: Maine Forest Service Forest Fire Protection

At the October 13th meeting, the commission asked for a cost estimate from the Maine Forest Service for forest fire protection under two scenarios: a) no Henderson Brook Bridge, and b) a replacement bridge at Twin Brooks. The answers below were provided by Bill Williams, Division Director of the Forest Protection Division at the Maine Forest Service.

Introduction

This response is designed to discuss the impact on wild land fire suppression in the event the Henderson Brook Bridge in T13 R12 WELS was closed. Included are three scenarios including fire response as it exists with the bridge, fire response without the bridge, and fire response without the current bridge and a new bridge constructed at Twin Brooks in the Town of Allagash. This response does not consider Forest Ranger work schedules. It also makes the assumption that all Forest Protection Division facilities are manned each day and that the current road system and access other than that provided by Henderson remains unchanged.

Current fire response

The Forest Protection Division Northern Region includes three Districts, two of which may provide a fire suppression response to northwestern Maine near Henderson Bridge. The Division's goal is to have a one hour response or less to any report of fire. The goal for aircraft is 30 minutes. As there would be no impact relative to aircraft, the scenarios provided reference only the movement of manpower and equipment. Locations of facilities which may provide response to this area include St. Pamphile, Clayton Lake, Allagash, Daaquam, and Portage Lake. Forest Rangers are stationed at each of these facilities with a varying amount of fire fighting equipment and engines available at each. Facilities within the one hour initial attack response include St Pamphile, Clayton Lake, and Allagash. Daaquam and Portage Lake can provide additional support for an extended attack should it be required. Currently, all these facilities except Portage Lake would access the Henderson bridge area from the west side of the Allagash

Waterway with Portage Lake from the east. The approximate travel distance from each facility to Henderson Bridge is; St. Pamphile-30 miles, Clayton Lake-35 miles, Allagash-35 miles, Portage Lake-45 miles, and Daaquam-55 miles.

Fire response without Henderson Bridge

In the event that Henderson Bridge was removed, initial attack response on the west side of the Allagash waterway would remain the same. Travel time from St. Pamphile, Clayton Lake, and Allagash will not change. Should an extended attack take place west of the Allagash Waterway, additional resources may need to be rerouted with little impact on fire spread or increased costs. Initial attack response taking place east of Henderson Bridge would require an additional travel distance of 5 miles from Clayton Lake for a total of approximately 40 miles but would remain within the one hour response guideline. Travel from Portage Lake would remain the same and Allagash would increase to more than 55 miles. Resources from St. Pamphile would need to be rerouted through the Clayton Lake area.

Fire response without Henderson Bridge and a new bridge at Twin Brooks

In the event that Henderson Bridge was removed and a new bridge constructed near Twin Brooks, initial attack on the west side of the Allagash Waterway would remain the same, within the one hour guideline. Travel time from St. Pamphile, Clayton Lake, and Allagash would not change. During an extended attack, additional resources may need to be rerouted with little impact anticipated.

Initial attack taking place east of Henderson Bridge would require additional travel from Clayton Lake to approximately 40 miles but would remain within the one hour response guideline. Travel from Allagash would be 40 to 45 miles depending on the actual location of the new bridge and connecting roads but would be close to the one hour response time. Resources from St. Pamphile would need to be rerouted through Clayton Lake. Extended attack response times from Portage Lake would not be impacted.

Summary

Although Henderson provides good access for forest fire suppression, and allows greater access under some scenarios, the Division's goal of having ground resources on a fire in 1 hour or less would not be significantly impacted. In addition to ground resources, the Maine Forest Service also utilizes helicopters to provide quick initial attack on significant fires reported. The need for aviation resources such as the federally owned and state operated Huey helicopters is only further demonstrated with the challenges faced relative to reduced or restricted ground access.

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APPENDIX J

LURC Permit Application Review Criteria

TITLE 12
CONSERVATION
CHAPTER 206-A
USE REGULATION
SUBCHAPTER 2
MAINE LAND USE REGULATION COMMISSION
Subsections 4 only

12 § 685-B. Development review and approval

4. Criteria for approval. In approving applications submitted to it pursuant to this section, the commission may impose such reasonable terms and conditions as the commission may deem appropriate.

The commission shall approve no application, unless:

A. Adequate technical and financial provision has been made for complying with the requirements of the State's air and water pollution control and other environmental laws, and those standards and regulations adopted with respect thereto, including without limitation the minimum lot size laws, sections 4807 to 4807-G, the site location of development laws, Title 38, sections 481 to 490, and the natural resource protection laws, Title 38, sections 480-A to 480-Z, and adequate provision has been made for solid waste and sewage disposal, for controlling of offensive odors and for the securing and maintenance of sufficient healthful water supplies;

B. Adequate provision has been made for loading, parking and circulation of land, air and water traffic, in, on and from the site, and for assurance that the proposal will not cause congestion or unsafe conditions with respect to existing or proposed transportation arteries or methods, and

C. Adequate provision has been made for fitting the proposal harmoniously into the existing natural environment in order to assure there will be no undue adverse effect on existing uses, scenic character and natural and historic resources in the area likely to be affected by the proposal. In making a determination under this paragraph regarding development to facilitate withdrawal of groundwater, the commission shall consider the effects of the proposed withdrawal on waters of the State, as defined by Title 38, section 361-A, subsection 7; water-related natural resources; and existing uses, including, but not limited to, public or private wells, within the anticipated zone of contribution to the withdrawal. In making findings under this paragraph, the commission shall consider both the direct effects of the proposed withdrawal and its effects in combination with existing water withdrawals;

D. The proposal will not cause unreasonable soil erosion or reduction in the capacity of the land to absorb and hold water and suitable soils are available for a sewage disposal system if sewage is to be disposed on-site;

E. The proposal is otherwise in conformance with this chapter and the regulations, standards and plans adopted pursuant thereto.

F. In the case of an application for a structure upon any lot in a subdivision, that the subdivision has received the approval of the commission.

The burden is upon the applicant to demonstrate by substantial evidence that the criteria for approval are satisfied, and that the public's health, safety and general welfare will be adequately protected. The commission shall permit the applicant to provide evidence on the economic benefits of the proposal as well as the impact of the proposal on energy resources.