Beals Island Bridge - Benefit Cost Analysis

The Beals Island Bridge is a ten span steel beam bridge which spans Moosabec Reach between Jonesport on the mainland and Beals, Maine. Completed in 1958, the structure carries Bridge Street and provides a navigational channel opening of 75 feet wide and 32 feet high from mean high water. It is 1,050 feet long and 22 feet wide, with uniform span lengths of 105 feet. The bridge replacement will be an eight span prestressed concrete girder structure 1,062 feet long by 28 feet wide with a vertical navigation clearance of 33 feet from mean high water

A benefit cost analysis was conducted on replacing the Beals Island Bridge. The analysis looks at the project from the standpoint of society as a whole, and accounts for the net benefits and net costs based on the criteria described in the TIGER Grant NOFA, February 25, 2014. The analysis presented here addresses benefits from travel time savings, user costs, and emissions reduction. Several benefits of the Beals Island Bridge replacement are difficult to quantify. These unquantified benefits include increased economic competitiveness, livability enhancement, and response time for emergency vehicles (ambulance and fire).

Base Case Assumption

This benefit cost analysis focuses on replacement of Beals Island Bridge, and compares the replacement to the "no build' scenario, which is the base case assumption. This assumes that the existing bridge would be closed to traffic. The spreadsheets and files pertinent to this BCA are referenced in the BCA spreadsheet and are included in the Appendices to this application. The "No Build" scenario assumed in this BCA is that the Beals Island Bridge would be closed. Existing and future traffic crossing the bridge would be replaced with ferry service that carries motor vehicles.

Project Benefits

Travel Costs

The Beals Island Bridge is the only crossing between the Town of Beals, which is comprised of Beals Island and Great Wass Island, and the mainland (specifically Jonesport). If the Bridge were closed and taken out of service, with no other alternative crossings available to motorists, a ferry service carrying vehicles would need to be provided.

Under this condition, the total change in vehicle-miles-traveled (VMT) was estimated at a reduction of 390,550 miles in 2019. This reduction in VMT is the result of vehicles no longer traveling along the ¹/₂ mile span of the existing Beals Island Bridge.

2019 VMT = Annual Traffic x Distance= 2140 vehicles per day x 365 days per year x ¹/₂ mile = 390,550 VMT in 2019

Under this same condition, the total change in vehicle-hours-traveled (VHT) was estimated at an increase of 182,256 hours in 2019. This increase in VHT is the difference between VHT on the ferry and VHT on the bridge.

The net changes in VMT and VHT were then multiplied by the weighted average user costs (\$0.34 and \$15.24 respectively) to get the user cost savings. The total annual user costs are estimated at \$2,644,874 in 2019, and increasing thereafter based on traffic growth. These operating costs are avoided by bridge replacement.

Safety

In comparison to the existing bridge, the Beals Island Bridge replacement will improve safety for all users. Specifically, the existing 22-foot roadway width will be widened to 28 feet (providing 10 foot lanes and 4 foot shoulders), thereby improving safety for both motorists and pedestrians.

As described above, it is critical to point out that the existing bridge is the only vehicular connection between Beals and the mainland. The town of Jonesport provides emergency service aid to the town of Beals as there are no hospitals, medical treatment facilities, fire stations, pumpers, or other emergency response equipment located on the island. Under the "No Build" scenario with the existing bridge closed, emergency vehicles would be required to service the entire town of Beals via the ferry, increasing the emergency response time by 10 to 15 minutes in each direction. Although, this impact cannot be quantified in the BCA, the increased emergency response time could have serious effects on medical health and/or loss of property where response time is paramount.

State of Good Repair

Estimated annualized maintenance costs for the existing bridge are \$4,732. This number was derived from actual costs incurred from 1996 to 2014. If the bridge were closed these costs are avoided. In this BCA the annualized costs are added to user benefits since they are avoided costs to society if a new bridge is constructed.

Sustainability

The avoided air emissions are based on the ferry emissions, the idling vehicles using the ferry, and the reduced VMT from the closure of the bridge. The net emission savings have been calculated for nitrogen oxides, volatile organics, and carbon dioxide. The calculations are based on factors that were applied to the avoided ferry service resulting from closure of the bridge. Data is not available for sulfur dioxide or particulate emissions.

Based on the annual VMT and VHT approximately 6,219 metric tons of CO2, 2.3 metric tons of VOCs, and 63.2 metric tons of NOX, are avoided in the year 2019. These emissions amount to a total of approximately \$775,000 in the year 2019 and \$910,000 in the year 2068. The cost of carbon in CO2 emissions has been calculated in the BCA spreadsheet using the social cost of carbon (SCC) assumptions found in "Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866". The reason being that the SCC increases over time because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change. In conformity with this viewpoint, this analysis escalates the CO2 portion of the air emissions cost increases. The net present value of air emissions costs is \$22 million at 3% discount rate.

Project Costs

Total Construction Costs

The benefit cost analysis uses the replacement construction cost of \$19.4 million. Construction costs also include a minor rehabilitation (\$355,000) after 25 years and full major rehabilitation (\$930,000) after 50 years. Maintenance and operations costs for the replacement structure are considered negligible (estimated at approximately \$1,500 annually), but have been included in the BCA for completeness.

Conclusion

The annual benefits and costs values were discounted at 3% and 7% over a 50 year time horizon. Three percent is the most appropriate rate for the analysis because the bridge has a very long life, and in addition, the alternate use of funds would be a public expenditure as opposed to a private investment. The full analysis can be found in the spreadsheet attachment to this application. A summary of the results of this analysis are as follows.

- Total Benefits of \$ 97.3 million
- Avoided Air Quality Impacts valued at \$21.8 million
- Reduced User Costs estimated at \$75.4 million
- Avoided Maintenance Costs of \$122,000
- Total Costs of \$19.3 million
- Benefit-Cost ratio of 5.1

When discounted at 7%, the benefits and costs are lower. A larger discount rate implies that time preference for future amounts are preferentially discounted more severely. The amounts are shown below.

- Total Benefits of \$ 51.1 million
- Avoided Air Quality Impacts valued at \$11.4 million
- Reduced User Costs estimated at \$ 39.6 million
- Avoided Maintenance Costs of \$65,000
- Total Costs of \$ 18.3 million
- Benefit-Cost ratio of 2.8

The user costs followed by the air quality impacts represent the largest portion of the total annual benefits. These user cost savings are the key drivers of the benefit-cost ratio; the other cost savings, such as maintenance, have a very small influence on the results.

Beals Island Bridge Replacement Benefit Cost Analysis (BCA) - Bridge Replacement compared to Ferry Service without Bridge Replacement

	Be	nefits (Avoided Co	ost Associated with	the Ferry Service)	Total Costs	
Present Value	Carbon Dioxide Emissions Cost	VOC & NOx Emissions Costs	User Cost (Travel Time Savings / Avoided Delay)	Annualized Maintenance Costs	Total Costs	(Beals Island Bridge Replacement)	Benefit Cost Ratios
At 3 Percent	\$8,844,079	\$12,949,249	\$75,394,501	\$121,753	\$97,309,583	\$19,264,944	5.1
At 7 Percent	\$4,466,721	\$6,943,672	\$39,645,236	\$65,305	\$51,120,934	\$18,257,868	2.8

Beals Island Bridge Replacement

Benefit Cost Analysis (BCA) - Bridge Replacement compared to Ferry Service without Bridge Replacement

Conforming to TIGER VI Requirements

Project Description: Replacement of Beals Island Bridge over Moosabec Reach

Estimated Project Timing: 2015 - Existing Year / 2017 - Construction Start / 2019 - Construction Finished (opening year) / 2043 - 25 Year Forecast / 2068 - 50 Year Forecast.

							Benefits (Avoided Cost Associated with the Ferry Service)				Costs (Beals Island Bridge Replacement)								
Calendar Year	Project Year	Average Annual Daily Traffic AADT ¹	Annual VMT ²	Annual VHT ²	Net Carbon Emissions Savings (tons) ³	Carbon Value (per ton 2007\$) ³	, Carbon Value (per ton 2015\$)	Carbon Dioxide Emissions Costs	VOC & NOx Emissions Costs	User Cost (Travel Time Savings / Avoided Delay) ⁴	Crash Costs⁵	Annualized Maintenance Costs ⁶	Total Annual Benefits	Discounted Benefits - Present Value @ 3%	Discounted Benefits - Present Value @ 7%	Construction Costs	Annual Maintenance Costs	Total Annual Costs	Discounted Costs - Present Value @ 3%
2015	•	2060	-375,950	175,443	6,227	38.0	44.6												
2016		2080	-379,600	177,147	6,225	38.5	42.6												
2017		2100	-383,250	178,850	6,223	39.0	43.2												
2018		2120	-386,900	180,553	6,221	39.5	43.7												
2019	1	2140	-390,550	182,256	6,219	40.0	44.3	\$275,309	\$502,560	\$2,644,874	\$0	\$4,732	\$3,427,474	\$3,327,645	\$3,203,247	\$19,410,000	\$1,500	\$19,411,500	\$18,846,117
2020	2	2160	-394,200	183,959	6,217	40.5	44.8	\$278,660	\$502,539	\$2,669,592	\$0	\$4,732	\$3,455,523	\$3,257,162	\$3,018,188		\$1,500	\$1,500	\$1,414
2021	3	2180	-397,850	185,662	6,215	41.0	45.4	\$282,009	\$502,518	\$2,694,311	\$0	\$4,732	\$3,483,570	\$3,187,960	\$2,843,631		\$1,500	\$1,500	\$1,373
2022	4	2200	-401,500	187,365	6,213	41.6	46.1	\$286,457	\$502,497	\$2,719,029	\$0	\$4,732	\$3,512,715	\$3,121,002	\$2,679,833		\$1,500	\$1,500	\$1,333
2023	5	2220	-405,150	189,068	6,211	42.3	46.8	\$290,901	\$502,477	\$2,743,748	\$0	\$4,732	\$3,541,857	\$3,055,237	\$2,525,295		\$1,500	\$1,500	\$1,294
2024	6	2240	-408,800	190,771	6,209	43.0	47.6	\$295,343	\$502,456	\$2,768,466	\$0	\$4,732	\$3,570,996	\$2,990,653	\$2,379,506		\$1,500	\$1,500	\$1,256
2025	7	2260	-412,450	192,474	6,205	43.6	48.3	\$299,705	\$503,403	\$2,793,184	\$0	\$4,732	\$3,601,025	\$2,927,962	\$2,242,537		\$1,500	\$1,500	\$1,220
2026	8	2280	-416,100	194,177	6,203	44.3	49.0	\$304,139	\$503,390	\$2,817,903	\$0	\$4,732	\$3,630,165	\$2,865,685	\$2,112,789		\$1,500	\$1,500	\$1,184
2027	9	2300	-419,750	195,880	6,201	44.9	49.7	\$308,433	\$503,378	\$2,842,621	\$0	\$4,732	\$3,659,164	\$2,804,445	\$1,990,343		\$1,500	\$1,500	\$1,150
2028	10	2320	-423,400	197,583	6,199	45.6	50.4	\$312,723	\$503,366	\$2,867,340	\$0	\$4,732	\$3,688,161	\$2,744,338	\$1,874,874		\$1,500	\$1,500	\$1,116
2029	11	2340	-427,050	199,286	6,197	46.2	51.2	\$317,011	\$503,354	\$2,892,058	\$0	\$4,732	\$3,717,155	\$2,685,352	\$1,765,993		\$1,500	\$1,500	\$1,084
2030	12	2360	-430,700	200,989	6,195	46.8	51.9	\$321,295	\$503,512	\$2,916,777	\$0	\$4,732	\$3,746,316	\$2,627,591	\$1,663,409		\$1,500	\$1,500	\$1,052
2031	13	2380	-434,350	202,692	6,193	47.5	52.6	\$325,577	\$503,501	\$2,941,495	\$0	\$4,732	\$3,775,306	\$2,570,799	\$1,566,618		\$1,500	\$1,500	\$1,021
2032	14	2400	-438,000	204,395	6,190	48.1	53.3	\$329,856	\$503,491	\$2,966,214	\$0	\$4,732	\$3,804,292	\$2,515,085	\$1,475,370		\$1,500	\$1,500	\$992
2033	15	2420	-441,650	206,098	6,188	48.8	54.0	\$334,132	\$503,480	\$2,990,932	\$0	\$4,732	\$3,833,276	\$2,460,434	\$1,389,356		\$1,500	\$1,500	\$963
2034	16	2440	-445,300	207,801	6,186	49.4	54.7	\$338,405	\$503,469	\$3,015,650	\$0	\$4,732	\$3,862,256	\$2,406,831	\$1,308,280		\$1,500	\$1,500	\$935
2035	17	2460	-448,950	209,504	6,184	50.0	55.4	\$342,675	\$503,506	\$3,040,369	\$0	\$4,732	\$3,891,282	\$2,354,290	\$1,231,880		\$1,500	\$1,500	\$908
2036	18	2460	-448,950	209,504	6,184	50.7	56.1	\$347,058	\$503,507	\$3,040,369	\$0	\$4,732	\$3,895,666	\$2,288,293	\$1,152,587		\$1,500	\$1,500	\$881
2037	19	2460	-448,950	209,504	6,184	51.3	56.8	\$351,441	\$503,507	\$3,040,369	\$0	\$4,732	\$3,900,049	\$2,224,144	\$1,078,396		\$1,500	\$1,500	\$855
2038	20	2460	-448,950	209,504	6,184	52.0	57.5	\$355,824	\$503,508	\$3,040,369	\$0	\$4,732	\$3,904,433	\$2,161,790	\$1,008,980		\$1,500	\$1,500	\$831
2039	21	2460	-448,950	209,504	6,184	52.6	58.2	\$360,207	\$503,508	\$3,040,369	\$0	\$4,732	\$3,908,816	\$2,101,181	\$944,030		\$1,500	\$1,500	\$806
2040	22	2460	-448,950	209,504	6,184	53.2	59.0	\$364,590	\$503,509	\$3,040,369	\$0	\$4,732	\$3,913,200	\$2,042,270	\$883,261		\$1,500	\$1,500	\$783
2041	23	2460	-448,950	209,504	6,184	53.9	59.7	\$368,974	\$503,509	\$3,040,369	\$0	\$4,732	\$3,917,584	\$1,985,007	\$826,402		\$1,500	\$1,500	\$760
2042	24	2460	-448,950	209,504	6,184	54.5	60.3	\$372,946	\$503,510	\$3,040,369	\$0	\$4,732	\$3,921,556	\$1,929,146	\$773,122		\$1,500	\$1,500	\$738
2043	25	2460	-448,950	209,504	6,184	55.0	60.9	\$376,918	\$503,510	\$3,040,369	\$0	\$4,732	\$3,925,529	\$1,874,855	\$723,276	\$355,000	\$1,500	\$356,500	\$170,266
2044	26	2460	-448,950	209,504	6,184	55.6	61.6	\$380,890	\$503,511	\$3,040,369	\$0	\$4,732	\$3,929,502	\$1,822,089	\$676,643		\$1,500	\$1,500	\$696
2045	27	2460	-448,950	209,504	6,184	56.2	62.2	\$384,863	\$503,511	\$3,040,369	\$0	\$4,732	\$3,933,475	\$1,770,807	\$633,016		\$1,500	\$1,500	\$675
2046	28	2460	-448,950	209,504	6,184	56.8	62.9	\$388,835	\$503,512	\$3,040,369	\$0	\$4,732	\$3,937,448	\$1,720,967	\$592,201		\$1,500	\$1,500	\$656
2047	29	2460	-448,950	209,504	6,184	31.8	35.2	\$217,748	\$503,512	\$3,040,369	\$0	\$4,732	\$3,766,361	\$1,598,242	\$529,410		\$1,500	\$1,500	\$637
2048	30	2460	-448,950	209,504	6,184	63.6	70.4	\$435,496	\$503,513	\$3,040,369	\$0	\$4,732	\$3,984,110	\$1,641,400	\$523,381		\$1,500	\$1,500	\$618
2049	31	2460	-448,950	209,504	6,184	58.5	64.7	\$400,341	\$503,513	\$3,040,369	\$0	\$4,732	\$3,948,955	\$1,579,531	\$484,825		\$1,500	\$1,500	\$600
2050	32	2460	-448,950	209,504	6,184	59.0	65.4	\$404,176	\$503,514	\$3,040,369	\$0	\$4,732	\$3,952,791	\$1,535,015	\$453,548		\$1,500	\$1,500	\$583
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2054 36 2460 -448,950 209,504 6,184 59.6 66.0 \$4,03,01 \$503,516 \$3,040,369 \$0 \$4,732 \$3,956,637 \$1,365,166 \$346,346 \$1,500 <th>2053</th> <th>35</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,013</th> <th>\$503,515</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,629</th> <th>\$1,406,120</th> <th>\$370,589</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$533</th>	2053	35	2460	-448,950	209,504	6,184	59.6	66.0	\$408,013	\$503,515	\$3,040,369	\$0	\$4,732	\$3,956,629	\$1,406,120	\$370,589		\$1,500	\$1,500	\$533
2055 37 2460 -448,950 209,504 6,184 59.6 60.0 \$408,013 \$503,516 \$3,040,389 \$0 \$4,732 \$3,956,631 \$1,28,040 \$323,667 \$32,867 \$3,956,631 \$1,28,040 \$322,512 \$1,500	2054	36	2460	-448,950	209,504	6,184	59.6	66.0	\$408,013	\$503,516	\$3,040,369	\$0	\$4,732	\$3,956,630	\$1,365,166	\$346,345		\$1,500	\$1,500	\$518
2056 38 2460 -448,950 209,504 6,184 59.6 640 \$400,14 \$503,517 \$3,040,369 \$0 \$4,720 \$3,956,637 \$1,286,800 \$302,512 \$1,500	2055	37	2460	-448,950	209,504	6,184	59.6	66.0	\$408,013	\$503,516	\$3,040,369	\$0	\$4,732	\$3,956,631	\$1,325,404	\$323,687		\$1,500	\$1,500	\$502
2057 39 2460 -448,950 209,504 6,184 59.6 66.0 \$408,014 \$503,517 \$3,040,369 \$0 \$4,732 \$3,956,632 \$1,249,321 \$282,721 \$1,500 <th>2056</th> <th>38</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,014</th> <th>\$503,517</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,631</th> <th>\$1,286,800</th> <th>\$302,512</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$488</th>	2056	38	2460	-448,950	209,504	6,184	59.6	66.0	\$408,014	\$503,517	\$3,040,369	\$0	\$4,732	\$3,956,631	\$1,286,800	\$302,512		\$1,500	\$1,500	\$488
2058 40 2460 -448,950 209,504 6,184 59.6 66.0 \$408,015 \$503,518 \$3,040,369 \$0 \$4,732 \$3,956,633 \$1,17,605 \$246,940 \$1,500 \$1,500 \$1,600 \$406 2059 41 2460 -448,950 209,504 6,184 59.6 66.0 \$408,015 \$503,518 \$3,040,369 \$0 \$4,732 \$3,956,635 \$1,17,605 \$246,940 \$1,500 \$1,500 \$1,500 \$1,500 \$4,68 2060 42 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,519 \$3,040,369 \$0 \$4,732 \$3,956,635 \$1,11,006 \$215,687 \$1,500 \$1,500 \$4,730 2062 44 2460 -448,950 209,504 6,184 59.6 66.0 \$408,017 \$503,520 \$3,040,369 \$0 \$4,732 \$3,956,637 \$1,07,676 \$201,577 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$3,976 \$201,577 \$1,500 \$1,500 \$1,500	2057	39	2460	-448,950	209,504	6,184	59.6	66.0	\$408,014	\$503,517	\$3,040,369	\$0	\$4,732	\$3,956,632	\$1,249,321	\$282,721		\$1,500	\$1,500	\$474
2059 41 2460 -448,950 209,504 6,184 59.6 66.0 \$408,015 \$503,518 \$3,04,369 \$0 \$4,732 \$3,395,635 \$1,143,306 \$230,785 \$1,500 \$1,500 \$1,500 \$4,33 2060 42 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,519 \$3,04,369 \$0 \$4,732 \$3,395,635 \$1,143,306 \$230,785 \$1,500	2058	40	2460	-448,950	209,504	6,184	59.6	66.0	\$408,015	\$503,518	\$3,040,369	\$0	\$4,732	\$3,956,633	\$1,212,933	\$264,225		\$1,500	\$1,500	\$460
2060 42 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,519 \$3,040,369 \$4,732 \$3,956,635 \$1,14,306 \$230,785 \$1,500 \$1,500 \$1,500 \$433 2061 43 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,519 \$3,040,369 \$4,732 \$3,956,635 \$1,11,006 \$21,5687 \$1,500 \$1,500 \$1,500 \$421 2062 44 2460 -448,950 209,504 6,184 59.6 66.0 \$408,017 \$503,520 \$3,040,369 \$4,732 \$3,956,638 \$1,007,676 \$201,577 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$1,500 \$3,990,638 \$1,014,288 \$1,88,389 \$1,600 \$1,500 \$1,500 \$3,990,638 \$1,015,814 \$17,605 \$1,500 \$1,500 \$1,500 \$3,990,638 \$1,015,814 \$17,605 \$1,500 \$1,500 \$1,500 \$3,990,638 \$1,015,814 \$17,605 \$1,500 \$1,500 \$1,500 \$3,990,638 \$1,015,814 \$17,605 \$1,500 <t< th=""><th>2059</th><th>41</th><th>2460</th><th>-448,950</th><th>209,504</th><th>6,184</th><th>59.6</th><th>66.0</th><th>\$408,015</th><th>\$503,518</th><th>\$3,040,369</th><th>\$0</th><th>\$4,732</th><th>\$3,956,634</th><th>\$1,177,605</th><th>\$246,940</th><th></th><th>\$1,500</th><th>\$1,500</th><th>\$446</th></t<>	2059	41	2460	-448,950	209,504	6,184	59.6	66.0	\$408,015	\$503,518	\$3,040,369	\$0	\$4,732	\$3,956,634	\$1,177,605	\$246,940		\$1,500	\$1,500	\$446
2061 43 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,519 \$3,040,369 \$0 \$4,732 \$3,956,636 \$1,10,006 \$215,667 \$1,500 <th>2060</th> <th>42</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,016</th> <th>\$503,519</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,635</th> <th>\$1,143,306</th> <th>\$230,785</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$433</th>	2060	42	2460	-448,950	209,504	6,184	59.6	66.0	\$408,016	\$503,519	\$3,040,369	\$0	\$4,732	\$3,956,635	\$1,143,306	\$230,785		\$1,500	\$1,500	\$433
2062 44 2460 -448,950 209,504 6,184 59.6 66.0 \$408,016 \$503,520 \$3,040,369 \$0 \$4,732 \$3,956,637 \$1,077,676 \$201,577 \$1,500 <th>2061</th> <th>43</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,016</th> <th>\$503,519</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,636</th> <th>\$1,110,006</th> <th>\$215,687</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$421</th>	2061	43	2460	-448,950	209,504	6,184	59.6	66.0	\$408,016	\$503,519	\$3,040,369	\$0	\$4,732	\$3,956,636	\$1,110,006	\$215,687		\$1,500	\$1,500	\$421
2063 45 2460 -448,950 209,504 6,184 59.6 66.0 \$408,017 \$503,520 \$3,040,369 \$0 \$4,732 \$3,956,638 \$1,046,288 \$188,389 \$1,500 <th>2062</th> <th>44</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,016</th> <th>\$503,520</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,637</th> <th>\$1,077,676</th> <th>\$201,577</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$409</th>	2062	44	2460	-448,950	209,504	6,184	59.6	66.0	\$408,016	\$503,520	\$3,040,369	\$0	\$4,732	\$3,956,637	\$1,077,676	\$201,577		\$1,500	\$1,500	\$409
2064 46 2460 -448,950 209,504 6,185 59.6 66.0 \$408,017 \$503,521 \$3,040,369 \$0 \$4,732 \$3,956,639 \$1,015,814 \$176,065 \$1,500 <th>2063</th> <th>45</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,184</th> <th>59.6</th> <th>66.0</th> <th>\$408,017</th> <th>\$503,520</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,638</th> <th>\$1,046,288</th> <th>\$188,389</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$397</th>	2063	45	2460	-448,950	209,504	6,184	59.6	66.0	\$408,017	\$503,520	\$3,040,369	\$0	\$4,732	\$3,956,638	\$1,046,288	\$188,389		\$1,500	\$1,500	\$397
2065472460-448,950209,5046,18559.666.0\$408,018\$503,521\$3,040,369\$0\$4,732\$3,956,640\$164,547\$164,547\$1,500\$1,500\$1,500\$1,500\$1,500\$3,7402066482460-448,950209,5046,18559.666.0\$408,018\$503,522\$3,040,369\$0\$4,732\$3,956,641\$929,614\$143,721\$1,500\$1,500\$1,500\$3,040\$3,0402067492460-448,950209,5046,18559.666.0\$408,018\$503,522\$3,040,369\$0\$4,732\$3,956,642\$929,614\$143,721\$1,500\$1,500\$1,500\$3,020\$3,020\$3,040,369\$0\$4,732\$3,956,643\$902,538\$134,319\$930,000\$1,500\$931,500\$212,4822068502460-448,950209,5046,18559.666.0\$408,019\$503,523\$3,040,369\$0\$4,732\$3,956,643\$902,538\$134,319\$930,000\$1,500\$931,500\$212,4822068502460-448,950209,5046,18559.666.0\$408,019\$503,523\$3,040,369\$0\$4,732\$3,956,643\$902,538\$134,319\$930,000\$1,500\$931,500\$212,482206850506.00\$408,019\$503,523\$3,040,369\$0\$4,732\$3,956,643\$902,538\$134,319\$930,000\$1,500\$931,500\$212,482 </th <th>2064</th> <th>46</th> <th>2460</th> <th>-448,950</th> <th>209,504</th> <th>6,185</th> <th>59.6</th> <th>66.0</th> <th>\$408,017</th> <th>\$503,521</th> <th>\$3,040,369</th> <th>\$0</th> <th>\$4,732</th> <th>\$3,956,639</th> <th>\$1,015,814</th> <th>\$176,065</th> <th></th> <th>\$1,500</th> <th>\$1,500</th> <th>\$385</th>	2064	46	2460	-448,950	209,504	6,185	59.6	66.0	\$408,017	\$503,521	\$3,040,369	\$0	\$4,732	\$3,956,639	\$1,015,814	\$176,065		\$1,500	\$1,500	\$385
2066 48 2460 -448,950 209,504 6,185 59.6 66.0 \$408,018 \$503,522 \$3,040,369 \$4,732 \$3,956,641 \$957,502 \$153,782 \$1,500 \$212,482 \$1,500 \$1,50	2065	47	2460	-448,950	209,504	6,185	59.6	66.0	\$408,018	\$503,521	\$3,040,369	\$0	\$4,732	\$3,956,640	\$986,227	\$164,547		\$1,500	\$1,500	\$374
2067 49 2460 -448,950 209,504 6,185 59.6 66.0 \$408,018 \$503,522 \$3,040,369 \$0 \$4,732 \$929,614 \$143,721 \$1,500 \$212,482 2068 50 -448,950 209,504 6,185 59.6 66.0 \$408,019 \$503,523 \$3,040,369 \$4,732 \$3,956,643 \$1902,538 \$134,319 \$930,000 \$1,500 \$931,500 \$212,482	2066	48	2460	-448,950	209,504	6,185	59.6	66.0	\$408,018	\$503,522	\$3,040,369	\$0	\$4,732	\$3,956,641	\$957,502	\$153,782		\$1,500	\$1,500	\$363
2068 50 2460 -448,950 209,504 6,185 59.6 66.0 \$408,019 \$503,523 \$3,040,369 \$0 \$4,732 \$3,956,643 \$902,538 \$134,319 \$930,000 \$1,500 \$931,500 \$212,482	2067	49	2460	-448,950	209,504	6,185	59.6	66.0	\$408,018	\$503,522	\$3,040,369	\$0	\$4,732	\$3,956,642	\$929,614	\$143,721		\$1,500	\$1,500	\$352
	2068	50	2460	-448,950	209,504	6,185	59.6	66.0	\$408,019	\$503,523	\$3,040,369	\$0	\$4,732	\$3,956,643	\$902,538	\$134,319	\$930,000	\$1,500	\$931,500	\$212,482

						_	Present Val	ue Benefits
Present Value @ 3%	\$8,844,079	\$12,949,249	\$75,394,501	\$0	\$121,753		@ 3%	@ 7%
Present Value @ 7%	\$4,466,721	\$6,943,672	\$39,645,236	\$0	\$65,305		\$97,309,583	\$51,120,934

Assumptions:

Discount Rates:

7%

&

1. AADT - Average Annual Daily Traffic. Source MaineDOT.

3%

2. See spreadsheet "J-B User Costs.xls", tab "User cost time line".

3. Air emission factors were applied to VMT and estimated speeds to derive tons of emissions. Costs per ton based on TIGER guidance and EPA Social Cost of Carbon Guidance. http://www.dot.gov/TIGER. See "Emissions Reduction - Jonesport Beals Bridge w-TOTAL.xls".

4. VMT and VHT valued at \$0.35 per VMT and \$15.51 per VHT, based on ratio of heavy trucks to automobile traffic. See spreadsheet "J-N User Cost.sxls", tab "User cost time line".

5. Crash costs were not calculated as there is no vehicular detour to Beals.

6. Historic maintenance costs used to estimate annual average M&O. See spreadsheet "maintenance cost info.xls.xlsx".

7. Minor rehabilitation (year 25) and major rehabilitation (year 50) are based upon the life-cycle cost analysis. See spreadshe et "Future Rehabilitation Cost Esimate.xlsx". XX - Input value from supporting spreadsheet.

Present Va	alı
@ 3%	
\$19,264,944	

Benefit Cost Ratios							
@ 3%	@ 7%						
5.1	2.8						



Jonesport	-Beals Cro	ssing	Annual VM	IT, VHT, an	d User Cos	sts
Vehicles pe	er year		751900	vehicles	Use	er Costs (\$)
Bridge						
Distance			0.5	mile		
Speed			30	mph		
Travel time	per vehicle	;	1	minute		
VMT per ye	ear (0.5 mile	e per veh)	375950	vehicle-mile	es	127823
VHT per ye	ear (1 minut	e per veh)	12532	vehicle-hou	ırs	190983
Ferry						
Wait time p	er vehicle		5	minutes		
Idling time	per vehicle		2	minutes		
Travel time	per vehicle)	10	minutes		
Total travel	time per ve	ehicle	15	minutes		
VMT per ye	ear		0	vehicle-mile	es	0
VHT per ye	ear		187975	vehicle-hou	ırs	2864739
Idling VHT	per year		25063	vehicle-hou	ırs	
Change fro	m Bridge to	Ferry				
Change in	VMT per y	ear	-375950	vehicle mile	es	-127823
Change in	VHT per y	ear	175443	vehicle mile	es	2673756
		Vehicle bre	eakdown		Unit costs ((\$)
					per VMT	per VHT
		passenger	vehicle	88.0%	0.25	12
		Truck		12.0%	1.00	39
		10.5% sing	le unit			
		1.5% comb	oination			
		Weighted	vehicle ave	erage	0.34	15.24

User cost time line

Highway User (Costs of	Jonespo	ort-Beals B	ridge Clos	ure (assum	ing a ferry	service sub	ostitute)										
		basa				noning Vo	 											
Vaar		Dase	2010	2017			<u>ar</u>	2024	2022	2022	2024	2025	2020	0007	2020	2020	2020	2024
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
AADT		2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260	2280	2300	2320	2340	2360	2380
Highway Vehic	le Use of	f Ferry Se	ervice															
Added VMT (mil	llion) -	-375950	-379600	-383250	-386900	-390550	-394200	-397850	-401500	-405150	-408800	-412450	-416100	-419750	-423400	-427050	-430700	-434350
Added VHT		175443	177147	178850	180553	182256	183959	185662	187365	189068	190771	192474	194177	195880	197583	199286	200989	202692
Idling Vehicle T	Time (for	^r air quali	ty purpose	s)														
Subset of Addec	THV b	25063	25084	25105	25126	25147	25168	25189	25210	25231	25252	25273	25294	25315	25336	25357	25378	25399
Combined Use	r Cost (¢	Million)																
		(0 128)	\$ (0.120)	\$ (0.130)	\$ (0.132)	\$ (0 122)	¢ (0 134)	¢ (0 135)	\$ (0.137)	¢ (0.138)	\$ (0.130)	\$ (0.140)	\$ (0.142)	\$ (0.143)	\$ (0 144)	\$ (0.145)	¢ (0 147)	¢ (0 1/8)
	ψ \$	\$ 2674	\$ 2700	\$ 2726	\$ 2752	\$ (0.133)	\$ 2.804	\$ 2830	\$ (0.157)	\$ 2882	\$ (0.139)	\$ 2031	\$ 2,060	\$ 2986	\$ (0.144)	\$ 3 037	\$ 3,063	\$ 3 080
Combined	\$	\$ 2.546	\$ 2.700	\$ 2,595	\$ 2.732	\$ 2.645	\$ 2.004	\$ 2.694	\$ 2,000	\$ 2,744	\$ 2,300	\$ 2,793	\$ 2.300	\$ 2.843	\$ 2867	\$ 2.892	\$ 2.003	\$ 2.941
		2.0.0	φ 2.07 .	¢ 2.000	¢ 2.020	+ <u>-</u>			¢ 2.1.10	Ψ		¢ 2.100		¢ 2.010	¢ 2.007	¢ 2.002	φ <u>2</u> .011	φ 2.011
Added VMT		-375950	-379600	-383250	-386900	-390550	-394200	-397850	-401500	-405150	-408800	-412450	-416100	-419750	-423400	-427050	-430700	-434350
Added VHT		175443	177147	178850	180553	182256	183959	185662	187365	189068	190771	192474	194177	195880	197583	199286	200989	202692
-			• • • • • • • •	•		• • • • • • • • • •	•	• • • • • • • • • •	•	• • • • • • • • •	•	• · · · ·	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • •	• • • • • • • • •	•	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • •
Combined (\$)	\$	2,546,000	\$ 2,570,718	\$ 2,595,437	\$ 2,620,155	\$ 2,644,874	\$ 2,669,592	\$ 2,694,311	\$ 2,719,029	\$ 2,743,748	\$ 2,768,466	\$ 2,793,184	\$ 2,817,903	\$ 2,842,621	\$ 2,867,340	\$ 2,892,058	\$ 2,916,777	\$ 2,941,495
User Time Costs	s Pa	ass. Car	\$ 12	/veh-hour														
	He	eavy Veh	\$ 39	/veh-hour	Pct. of vol.	13.0%												
	Av	vg. Veh.	\$ 15.51	/veh-hour														
User Mileage Co	osts Pa	ass. Car	\$0.25	/veh-mile														
(excluding	He	eavy Veh	\$1.00	/veh-mile														
crash costs)	Av	vg. Veh.	\$ 0.35	/veh-mile														
User Crash Cos	ts Av	vg. Veh.	\$0.07	/veh-mile														
Avg. Cost per C	rash Av	vg. Veh.	\$36,000	/crash														
VMT speed		30	mph															

											25-Year							
2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
2400	2420	2440	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460
-438000	-441650	-445300	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950
204395	206098	207801	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504
	0	0 = 400	0= 100	0.5.400	0.5.400	0.5.400	0= 100	0=400		0= 400		0.5.400	0.5.400	0.5.400	0.5.400	0.5.400	0.5.400	0.7.100
25420	25441	25462	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483
¢ (0,140)	¢ (0.150)	¢ (0.450)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.152)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.152)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.452)	¢ (0.152)
\$ (0.149) \$ 2.115	\$ (0.150)	\$ (0.152) \$ 2.167	\$ (0.153) ¢ 2.102	\$ (0.153) \$ 2.102	\$ (0.153)	\$ (0.153) ¢ 2.102	\$ (0.153) \$ 2.102	\$ (0.100) \$ 2.100	\$ (0.153)	\$ (0.100) \$ 2.100	\$ (0.100) \$ 2.100	\$ (0.153) \$ 2.102	\$ (0.153) \$ 2.102	\$ (0.153) \$ 2.102				
\$ 3.115	\$ 3.141 \$ 2.001	\$ 3.107							5 3.193	3 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193
			~ 211/111	V 2 11/11	~ 211/111	V 211/11	V 211/11		V 211/11	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	C 2 N/N	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	<u><u>v</u> 2 1 / 1 / 1</u>	<u>v</u> 20/0	C 2 0 10	¢ 2040	<u>v</u> 2 11/111
φ 2.900	J 2.991	\$ 3.010	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040
φ 2.900	φ 2.991	\$ 3.010	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040
-438000	-441650	-445300	\$ 3.040 -448950	\$ 3.040	\$ 3.040 -448950	\$ 3.040 -448950	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040 -448950	\$ 3.040 -448950	\$ 3.040 -448950					
-438000 204395	• 2.991 -441650 206098	-445300 207801	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504						
-438000 204395	-441650 206098	-445300 207801	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504	\$ 3.040 -448950 209504						
 438000 204395 \$ 2,966,214 	• 2.991 -441650 206098 \$ 2,990,932	-445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3.040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3.040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369				
 2.900 -438000 204395 \$ 2,966,214 	 2.991 -441650 206098 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
 438000 204395 \$ 2,966,214 	• 2.991 -441650 206098 \$ 2,990,932	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
• 2.900 • 438000 204395 \$ 2,966,214 •	• 2.991 -441650 206098 \$ 2,990,932	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
\$ 2,966,214	• 2.991 -441650 206098 \$ 2,990,932	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 	\$ 3.010 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 }	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369						
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 }	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 }	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369					
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	 3.040 -448950 209504 3,040,369 4,040,000 4,040,000	\$ 3.040 -448950 209504 \$ 3,040,369	 3.040 -448950 209504 3,040,369 4,040,369 4,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369					
\$ 2,966,214	 2.991 -441650 206098 \$ 2,990,932 \$ 2,990,932 	\$ 3.016 -445300 207801 \$ 3,015,650	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 }	\$ 3.040 -448950 209504 \$ 3,040,369 	 3.040 -448950 209504 3,040,369 4,040,369 4,040,369	\$ 3.040 -448950 209504 \$ 3,040,369 	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369	\$ 3.040 -448950 209504 \$ 3,040,369					

User cost time line

																	50-Year
2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068
2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460
-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950
209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504
25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483	25483
\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)	\$ (0.153)
\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193	\$ 3.193
\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040	\$ 3.040
-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950	-448950
209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504	209504
\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369	\$ 3,040,369

Air Quality Analysis: Jonesport Beals Proposed Ferry Crossing

Ferry Fuel Usage

Annual Diesel	kWh ²	Emis	sion Factors (g/	kWh) ³	Emissions I	ncrease (Metric	Tons / Year)
Fuel		VOC	NOx	CO2	VOC	NOx	CO2
228,800	9,312,160	0.270	6.800	690.00	3	63	6425

Increase in delay VHT through idling at Jonesport and Beals Terminals

Annual VHT	Emis	sion Factors (g/I	nour)⁴	Emissio	ns Increase (Tor	ns / Year)
	VOC	NOx	CO2	VOC	NOx	CO2
25,063	9.996	2.867	1402.75	0	0	35

Emission Analysis

Annual	Total Emission	n Increase (Metr	ic Tons / Year)	Value of E	missions (\$ / Me	etric Ton) ⁵	Value of Emissions (\$ / Year)			
Emissions	VOC	NOx	CO2	VOC	NOx	CO2	VOC	NOx	CO2	
	3	63	6461	\$1,999	\$7,877	\$43	\$5,527	\$499,359	\$277,804	

NOTES

¹Based on annual fuel usage of the Margaret Chase Smith Ferry. It is assumed that the Jonesport-Beals crossing would require two vessels comparable to the Smith. ²40.7 kWh in 1 gallon [U.S.] of diesel oil

³Emission factors for Category 1, Teir 2 Marine Engies from U.S. EPA, *Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories: Final Report*, April 2009

Idling

	Increase in delay VHT through idling at Jonesport and Beals Terminals								
Year		Emissi	on Factors (g	/hour) ⁴	Emissions Increase (Tons / Year)				
		VOC	NOx	CO2	VOC	NOx	CO2		
2015	25063	9.996	2.867	1402.75	0.251	0.072	35		
2016	25084	9.996	2.867	1402.75	0.251	0.072	35		
2017	25105	9.996	2.867	1402.75	0.251	0.072	35		
2018	25126	9.996	2.867	1402.75	0.251	0.072	35		
2019	25147	9.996	2.867	1402.75	0.251	0.072	35		
2020	25168	9.996	2.867	1402.75	0.252	0.072	35		
2021	25189	9.996	2.867	1402.75	0.252	0.072	35		
2022	25210	9.996	2.867	1402.75	0.252	0.072	35		
2023	25231	9.996	2.867	1402.75	0.252	0.072	35		
2024	25252	9.996	2.867	1402.75	0.252	0.072	35		
2025	25273	9.996	2.867	1402.75	0.253	0.072	35		
2026	25294	9.996	2.867	1402.75	0.253	0.073	35		
2027	25315	9.996	2.867	1402.75	0.253	0.073	36		
2028	25336	9.996	2.867	1402.75	0.253	0.073	36		
2029	25357	9.996	2.867	1402.75	0.253	0.073	36		
2030	25378	9.996	2.867	1402.75	0.254	0.073	36		
2031	25399	9.996	2.867	1402.75	0.254	0.073	36		
2032	25420	9.996	2.867	1402.75	0.254	0.073	36		
2033	25441	9.996	2.867	1402.75	0.254	0.073	36		
2034	25462	9.996	2.867	1402.75	0.255	0.073	36		
2035	25483	9.996	2.867	1402.75	0.255	0.073	36		
2036	25483	9.996	2.867	1402.75	0.255	0.073	36		
2037	25483	9.996	2.867	1402.75	0.255	0.073	36		
2038	25483	9.996	2.867	1402.75	0.255	0.073	36		
2039	25483	9.996	2.867	1402.75	0.255	0.073	36		
2040	25483	9.996	2.867	1402.75	0.255	0.073	36		
2041	25483	9.996	2.867	1402.75	0.255	0.073	36		
2042	25483	9.996	2.867	1402.75	0.255	0.073	36		
2043	25483	9.996	2.867	1402.75	0.255	0.073	36		
2044	25483	9.996	2.867	1402.75	0.255	0.073	36		
2045	25483	9.996	2.867	1402.75	0.255	0.073	36		
2046	25483	9.996	2.867	1402.75	0.255	0.073	36		
2047	25483	9.996	2.867	1402.75	0.255	0.073	36		
2048	25483	9.996	2.867	1402.75	0.255	0.073	36		
2049	25483	9.996	2.867	1402.75	0.255	0.073	36		
2050	25483	9.996	2.867	1402.75	0.255	0.073	36		
2051	25483	9.996	2.867	1402.75	0.255	0.073	36		
2052	25483	9.996	2.867	1402.75	0.255	0.073	36		
2053	25483	9.996	2.867	1402.75	0.255	0.073	36		
2054	25483	9.996	2.867	1402.75	0.255	0.073	36		
2000	20400	9.996	2.867	1402.75	0.255	0.073	36		
2000	20400	9.996	2.867	1402.75	0.255	0.073	36		
2057	20400	9.996	2.867	1402.75	0.255	0.073	36		
2050	20400	9.996	2.867	1402.75	0.255	0.073	36		
2009	20400	9.996	2.807	1402.75	0.255	0.073	36		
2000	25403	9.990	2.00/	1402.75	0.200	0.073	30 26		
2001	25483	9.990	2.007	1402.73	0.200	0.073	36		
2002	25483	9.990	2.007	1402.73	0.200	0.073	36		
2000	25483	0.006	2.007	1402.75	0.255	0.073	36		
2065	25483	0.006	2.007	1402.75	0.255	0.073	36		
2066	25483	9,996	2.867	1402.75	0.255	0.073	36		
2067	25483	9,996	2.867	1402.75	0.255	0.073	36		
2068	25483	9.996	2.867	1402.75	0.255	0.073	36		

	Ferry		Idling		Reductions from VMT		Total Emissions		Emissions Costs						
Year	Emissions In	missions Increase (Metric Tons / Year)		Emission	s Increase (To	ns / Year)		Tons / Year		Tons / Year					
	VOC	NOx	CO2	VOC	NOx	CO2	VOC	NOx	CO2	VOC	NOx	CO2	VOC	NOx	Total
2015	3	63	6425	0.005	0.128	13	-0.197	-0.228	-211.397	2.32	63.2	6227	\$4,642	\$498,000	\$502,643
2016	3	63	6425	0.005	0.128	13	-0.199	-0.230	-213.449	2.32	63.2	6225	\$4,639	\$497,983	\$502,622
2017	3	63	6425	0.005	0.128	13	-0.201	-0.233	-215.501	2.32	63.2	6223	\$4,635	\$497,966	\$502,601
2018	3	63	6425	0.005	0.128	13	-0.203	-0.235	-217.554	2.32	63.2	6221	\$4,631	\$497,949	\$502,580
2019	3	63	6425	0.005	0.128	13	-0.205	-0.237	-219.606	2.31	63.2	6219	\$4,627	\$497,933	\$502,560
2020	3	63	6425	0.005	0.128	13	-0.207	-0.239	-221.659	2.31	63.2	6217	\$4,623	\$497,916	\$502,539
2021	3	63	6425	0.005	0.128	13	-0.208	-0.241	-223./11	2.31	63.2	6215	\$4,619	\$497,899	\$502,518
2022	3	63	6425	0.005	0.128	13	-0.210	-0.244	-225.763	2.31	63.Z	6213	\$4,616	\$497,882	\$502,497
2023	3	63	6425	0.005	0.128	13	-0.212	-0.246	-227.810	2.31	63.Z	6200	\$4,612	\$497,865	\$502,477 \$502,456
2024	3	63	6425	0.005	0.128	13	-0.214	-0.240	-229.000	2.31	63.2	6209	\$4,000 \$4,730	\$497,040 \$408,672	\$502,430
2025	3	63	6425	0.005	0.120	13	-0.153	-0.144	-235 554	2.37	63.3	6203	\$4,730 \$4,728	\$498,672	\$503,403
2020	3	63	6425	0.005	0.120	13	-0 156	-0 146	-237 620	2.36	63.3	6201	\$4 725	\$498 653	\$503,378
2028	3	63	6425	0.005	0.128	13	-0.157	-0.147	-239.687	2.36	63.3	6199	\$4,722	\$498.644	\$503,366
2029	3	63	6425	0.005	0.128	13	-0.158	-0.149	-241.753	2.36	63.3	6197	\$4.720	\$498.634	\$503.354
2030	3	63	6425	0.005	0.129	13	-0.154	-0.130	-243.819	2.37	63.3	6195	\$4,728	\$498,784	\$503,512
2031	3	63	6425	0.005	0.129	13	-0.155	-0.131	-245.886	2.36	63.3	6193	\$4,725	\$498,776	\$503,501
2032	3	63	6425	0.005	0.129	13	-0.157	-0.132	-247.952	2.36	63.3	6190	\$4,723	\$498,768	\$503,491
2033	3	63	6425	0.005	0.129	13	-0.158	-0.133	-250.018	2.36	63.3	6188	\$4,720	\$498,760	\$503,480
2034	3	63	6425	0.005	0.129	13	-0.159	-0.134	-252.084	2.36	63.3	6186	\$4,718	\$498,752	\$503,469
2035	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,789	\$503,506
2036	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,790	\$503,507
2037	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,790	\$503,507
2038	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,791	\$503,508
2039	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,791	\$503,508
2040	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,792	\$503,509
2041	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,792	\$503,509
2042	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,793	\$503,510
2043	3	63	6425	0.005	0.129	13	-0.160	-0.129	-254.151	2.30	63.3	6184	\$4,717	\$498,793	\$503,510
2044	3	63	6425	0.005	0.129	13	-0.160	-0.129	-204.101	2.30	62.2	6194	\$4,717 \$4,717	\$490,794 \$408,704	\$503,511 \$502,511
2045	3	63	6425	0.005	0.129	13	-0.100	-0.129	-254.151	2.30	63.3	6184	\$4,717 \$4,717	\$498,794	\$503,517
2040	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254 151	2.30	63.3	6184	\$4 717	\$498 795	\$503,512
2048	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254 151	2.36	63.3	6184	\$4 717	\$498 796	\$503 513
2049	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4.717	\$498.796	\$503.513
2050	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,797	\$503,514
2051	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,797	\$503,514
2052	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,798	\$503,515
2053	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,798	\$503,515
2054	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,799	\$503,516
2055	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,799	\$503,516
2056	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,800	\$503,517
2057	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,800	\$503,517
2058	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,717	\$498,801	\$503,518
2059	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6184	\$4,/17	\$498,801	\$503,518
2060	3	63	6425	0.005	0.130	13	-0.160	-0.129	-254.151	2.36	63.3	6104	\$4,/1/ ¢4.747	\$498,802	\$503,519 \$502,540
2001	3	63	6425	0.005	0.131	13	-0.160	-0.129	-204.101	2.30	03.3 62.2	6104	₽4,/1/ ¢1 717	\$490,802 \$409,902	\$503,519 \$503,500
2002	3	63	0425 6425	0.005	0.131	13	-0.100	-0.129	-204.101	2.30	00.0 63.2	6194	φ4,/ / \$/ 717	9490,003 \$108 202	\$503,020 \$503,520
2003	3 2	63	6425	0.005	0.131	13	-0.160	-0.129	-254 151	2.30	63.3	6185	\$ <u>4</u> 717	\$498 804	\$503,520
2065	3	63	6425	0.005	0.131	13	-0 160	-0 129	-254 151	2.36	63.3	6185	\$4 717	\$498 804	\$503 521
2066	3	63	6425	0.005	0.131	13	-0.160	-0.129	-254,151	2.36	63.3	6185	\$4,717	\$498.805	\$503.522
2067	3	63	6425	0.005	0.131	13	-0.160	-0.129	-254.151	2.36	63.3	6185	\$4,717	\$498.805	\$503,522
2068	3	63	6425	0.005	0.131	13	-0.160	-0.129	-254.151	2.36	63.3	6185	\$4,717	\$498,806	\$503,523

	CPI (Annual)	% Change
2007	207.342	
2008	215.303	3.84%
2009	214.537	-0.36%
2010	218.056	1.64%
2011	224.939	3.16%
2012	229.594	2.07%
2013	233.049	1.50%
2014	236.29	1.39%
2015		1.39%

Value of Carbon taken from:

Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 Interagency, May 2013

Discount Rate Vear	5.0%	3.0%	2.5%	3.0% 95th
2010	11	33	52	90
2015	12	38	58	109
2020	12	43	65	129
2025	14	48	70	144
2030	16	52	76	159
2035	19	57	81	176
2040	21	62	87	192
2045	24	66	92	206
2050	27	71	98	221

Revised Social Cost of CO₂, 2010 – 2050 (in 2007 dollars per metric ton of CO₂)

FERRY SERVICE ANALYSIS FROM JONESPORT TO BEALS

BCA

PROJECT DATA

Distance:	1/2 mile	Trips per day	69 average
AADT(2012):	2060	Trips per year	25,063
Peak Traffic Count:	228	Vehicles per year	751,900
Peak Traffic Time:	2:00pm-3:00pm		
Peak Traffic Minutes:	60 minutes		
Estimated Actual Travel Time (10 k	t: 3 minutes		
Estimated Trip Time:	10 minutes	(including loading and unloading, may be 15 minutes)	
Water Depth:	???? looks lik	ke 8'-20'	
Estimated Operating Trip Cost	\$325		

MAINE'S LARGEST VESSEL DATA

Margaret Chase Smith	
Port to Port: Lincolnville to Islesboro	
Maximum Vehicles:	30
Passengers:	221
Max Deck Wt (tonnage):	161
Operating Speed (kts):	14
Maximum Vertical Clearance:	15'
Clearance:	10'
Length:	166.5'
Yearly Fuel Consumption (2014)	108,806
Estimate Life	40 years

LOGISTICS

Estimated Possible Trips per hour (2 Vessels in opposing directions)

Estimated Possible Trips per hour at 228 vehicles (September 2012 weekday traffic count)

ESTIMATED CAPITAL COSTS

1 Vessel:	\$15 mil
2 Transfer Bridges:	\$10-15
Facility	\$1 milli
ROW:	?
Parking:	?
Estimated Total Costs	

llion million ion

Maximum Trips	Maximum
per Hour	Vehicles per
12	360

228/30=7.6 trips needed to carry 228 vehicles 7.6=>8 one-way trips or 4 round trips per hour (departures every 15 minutes)

\$30,000,000
\$12,500,000
\$1,000,000

\$43,500,000

ESTIMATED OPERATING COSTS

Cost per trip:

Yearly Trips Cost

Questions:

Will we need to dredge?

How many vessels? Do we need a backup vessel? Restrictions with Vessel traffic: eg. Propane Emergency traffic/ Other Factors: Closest Shipyard Maintenance? Do we need to look at bigger vessels? Depth? Cost?

J-B Ferry Worksheet.xlsx

Sheet1

Existing Bridge							
Year	Annual Totals						
1996	\$	1,852					
1997	\$	3,373					
1998	\$	1,726					
1999	\$	20,764					
2000	\$	489					
2001	\$	474					
2002	\$	1,183					
2003	\$	1,591					
2004	\$	3,277					
2005	\$	1,236					
2006	\$	11,052					
2007	\$	895					
2008	\$	1,659					
2009	\$	5,221					
2010	\$	6,069					
2011	\$	4,157					
2012	\$	8,656					
2013	\$	12,203					
2014	\$	4,028					

AVG = \$ 4,732 PER YEAR (not including wearing surface replacements)

PROJECT: Beals-Jonesport, Beals Island Bridge #	<u> </u>			WIN: <u>22626.00</u>		
Bridge Replacement Option 1						
8 spans with 4-1800 NEBT's on stub abutm	ents and ty	NO				
column piers. Deck Area: 1060' x 31.33' = 3	33,220 SF	<u></u>		ESTIMATED BY:	<u>J/</u>	<u>AW & IJC</u>
				REVIEWED BY:	RS	Blunt & SMH
SUPERSTRUCTURE:	33,220	SF	x	\$110	=	\$3,655,000
ABUTMENTS:	2	EA	x	\$90,000	=	\$180,000
PIERS:	7	EA	x	\$1,030,000	=	\$7,210,000
COFFERDAMS:	7	EA	x	\$125,000	=	<u>\$875,000</u>
STRUCTURAL EXCAVATION & BORROW:		CY	x		=	<u>\$0</u>
1) RIPRAP:	<u>21,000</u>	CY	x	<u>\$75</u>	=	<u>\$1,575,000</u>
EXISTING BRIDGE REMOVAL:	<u>1</u>	LS	x	<u>\$1,340,000</u>	=	<u>\$1,340,000</u>
2) DETOUR AND/OR TEMPORARY BRIDGE:	<u>1</u>	LS	x	<u>\$55,000</u>	=	<u>\$55,000</u>
REHABILITATION CONTINGENCIES:			-	<u>N/A</u>	=	<u>\$0</u>
4) MISCELLANEOUS (TCP'S, FIELD OFFICE, ETC.)	MISCELLANEOUS (TCP'S, FIELD OFFICE, ETC.):			<u>10%</u>	=	<u>\$1,489,000</u>
) MOBILIZATION:						<u>\$1,489,000</u>
	S	RUG	сті	JRE SUBTOTAL	=	\$17,875,000
3) APPROACHES:	3000	LF	x	\$437	=	\$1,311,000
4) MISCELLANEOUS:		ļ	Į	7%	=	\$92,000
4) MOBILIZATION:				<u>10%</u>	=	<u>\$132,000</u>
	APF	PRO/	ACI	HES SUBTOTAL	=	\$1,535,000
ТО		JST	RI		_	\$19,410,000
					-	φ13, 4 10,000
				<u>6%</u>	=	<u>\$1,170,000</u>
5) RIGHT OF WAY:					=	<u>\$250,000</u>
CONSTRUCTION ENGINEERING:				<u>6%</u>	=	<u>\$1,170,000</u>
OTHER:					=	<u>\$0</u>
	TOTAL					
	IUIAL	PR	Ö		=	\$22,000,000

Revision 5-15-15

(1) Includes stone fill for causeway widening

(2) TCP and MOT Cost

(3) Includes \$472,000 for mitigation, \$36,000 in special waste disposal, and \$200,000 for retaining walls.

(4) Estimated values

(5) Assumed value of \$250,000

BEALS-JONESPORT Beals Island Bridge	
Future Rehabilitation Work Estimates	 Cost
Year 25	
Replace wearing surface and waterproofing membrane	\$ 150,000
Replace expansion joint troughs at each abutment	\$ 20,000
Mill & Overlay approach pavement (1000 feet)	\$ 50,000
Traffic Control	\$ 25,000
Miscellaneous Items and Minor Repairs	\$ 35,000
Preliminary Engineering and Construction Engineering	\$ 75,000
Year 25 TOTAL =	\$ 355,000
Year 50	
Replace wearing surface and waterproofing membrane	\$ 150,000
Replace expansion joint troughs at each abutment	\$ 20,000
Mill & Overlay approach pavement (1000 feet)	\$ 50,000
Replace expansion joints and concrete headers at deck ends	\$ 100,000
Abutment Concrete Rehabilitation	\$ 40,000
Deck and Curb Rehabilitation	\$ 200,000
Pier Rehabilitation	\$ 100,000
Traffic Control	\$ 50,000
Miscellaneous Items and Minor Repairs	\$ 70,000
Preliminary Engineering and Construction Engineering	\$ 150,000
Year 50 TOTAL =	\$ 930,000