

# Beaver Island Transportation Coordination Study Final Report

Submitted to:

**Beaver Island Transportation Authority  
Board of Directors**



Submitted by:

**The Corradino Group, Inc.**

December 2004 (Updated, May 2005)



# Summary

The Beaver Island Transportation Authority (BITA), with support and funding from the Michigan Department of Transportation (MDOT), has conducted a study over the past several months to assess ferry transportation needs for Beaver Island. The study is being conducted by The Corradino Group with input from residents of and visitors to Beaver Island.

The purpose of the Beaver Island Transportation Coordination Study is to assess the existing ferry system serving Beaver Island and the greater Beaver Island area and “explore the impact or necessity of obtaining and operating an additional ferry to provide transportation.”

## Existing Transportation Services

The most common mode of transportation to and from Beaver Island is ferry boat. Different privately-owned ferry boats have provided service between Charlevoix, Mich., and Beaver Island since the late 1800s.

The St. James Township Board created the BITA in 1992 for the purpose of securing government funds for a new ferry boat to serve the island community and the traveling public. Marine capital funding and ferry transportation issues have been overseen by BITA since then. BITA owns the Emerald Isle and the major infrastructure used by the Beaver Island Boat Company (BIBCO). BIBCO owns the Beaver Islander, the terminal building on Beaver Island, and other assets. The State of Michigan provides capital funds to BITA for improvements. The local match for those funds comes from revenues generated on the Emerald Isle. The state provides no operating assistance to the BITA for ferry operations. Other transportation to the Island includes commercial air service provided by Island Airways and private boat and plane.

Table S-1 presents historical passenger data for 1990 and then every year from 1995 through 2000. Table S-2 presents monthly data for 2000 through the middle of 2004. Table S-1 illustrates that passenger activity more than doubled between 1990 and 1998, when the Emerald Isle was placed in service. In 1998, passenger activity increased 34 percent and nearly 30 percent in each of the subsequent two years. This occurred while the population on the island increased by about 35 percent. As can be seen in Table S-2, both passenger and vehicle statistics have trended downward since 2001. This is attributed to several factors, including the September 11, 2001 tragedy, a downturn in the economy, and weather patterns resulting in cool, rainy summers.

**Table S-1  
Beaver Island Boat Company  
Historical Passenger Activity**

Year	Passengers	% Change <sup>1</sup>	Cumulative % Change <sup>2</sup>	Population Beaver Island <sup>3</sup>
1990	12,075			409
1995	23,188	92%	92%	479
1996	23,558	2%	95%	493
1997	26,416	12%	119%	507
1998	35,328	34%	193%	521
1999	39,338	11%	226%	535
2000	46,729	19%	287%	551
2001	47,577	2%	294%	580
2002	45,280	-5%	275%	602
2003	43,501	-3.9%	260%	618

<sup>1</sup>Numbers are rounded.

<sup>2</sup>Cumulative change does not equal addition of changes between individual years.

<sup>3</sup>Population for non-Census years is estimated.

**Table S-2  
Beaver Island Boat Company  
Passenger and Vehicle Statistics**

Month	2000		2001		2002		2003	
	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.
January	0	0	0	0	0	5	0	0
February	0	0	0	0	0	0	0	0
March	127	20	0	0	160	27	0	0
April	847	300	774	226	837	219	407	135
May	3,696	601	4,196	729	2,744	695	3,322	702
June	6,349	1,029	6,967	1,010	6,216	1,100	6,053	1,006
July	13,917	1,669	13,650	1,571	13,307	1,589	12,792	1,590
August	12,133	1,514	12,749	1,585	13,211	1,558	12,950	1,597
September	4,685	750	4,211	666	3,764	587	3,910	615
October	2,792	597	2,670	589	2,784	582	2,359	585
November	1,770	458	1,942	545	1,755	504	1,708	468
December	413	165	418	212	502	223	358	201
Total	46,729	7,103	47,577	7,133	45,280	7,089	43,859	6,899

Source: Beaver Island Boat Company

## Economic Development Trends Resulting from the Emerald Isle

There has been significant growth on Beaver Island in the past 15 years. Since the mid-1990s, a number of major infrastructure and new retail activities have occurred. These include:

- Construction of new docks to accommodate the Emerald Isle
- Opening of Ace Hardware
- Opening of Dalwhinnies Café
- Paving of Roads in St. James Township
- Opening of Emerald Isle Hotel
- Construction and opening of Deerwood Lodge
- Opening of a number of other businesses such as the car wash, laundromat, Laurain Lodge, B.I. Lumber, and Bulk Propane
- Opening of the Beaver Island Rural Health Care Medical Center
- Increased construction of houses, commercial buildings, and garages.
- Increased property tax revenue for St. James and Peaine Townships.

This economic development has several impacts. It allows for nearly 600 people to live on the Island and make a living there. It also has resulted in the increased frequency of construction of new houses on the Island, many of which are used on a seasonal basis. As expressed during the public meeting held for this study and through surveys conducted in this study, there are concerns about the pace of development and whether an additional boat would cause even more development. Nevertheless, the data assembled for this study indicate to the consultant that ferry passenger activity and development on Beaver Island are influenced by a number of factors including availability of ferry transportation.

In addition to the economic impact of the ferry operations on Beaver Island, there is significant impact to the economies of Charlevoix and Charlevoix County. Based on information developed during a survey of passengers on the ferry in the summer of 2004, the direct economic impact of the ferry operations on the Charlevoix area is nearly \$2 million. It is also important to note that the ferry operations have an indirect economic impact in that because of greater access to the island, more people are flying and using personal boats to get there and are spending money in Charlevoix in the process.

## Potential for Coordination/Consolidation/Expansion of Services

The key question addressed by this study is: What is the need for a new ferry between Charlevoix and Beaver Island? Following are conclusions drawn from the study:

- Beaver Island is developing at a fairly rapid rate; some say the growth is too fast. As the resident population grows, ferry activity will increase. Likewise, increased tourist activity can be expected as residents create attractions by which to earn a living.
- The freight hauling capacity of the Emerald Isle was one factor in creation of an economic environment that resulted in acceleration of development on Beaver Island, including the paving of roads in St. James village, the construction of a new health center, and much more.

- The passengers on the Emerald Isle spend millions of dollars on both sides of the Lake benefiting the business owners and residents of the Island as well as the City of Charlevoix. As noted in the onboard survey distributed for this study (refer to Appendix A), more than 70 percent of respondents indicated they had spent money on their last trip and, of these, 35 percent spent more than \$100.
- Ridership on the BIBCO service has increased almost 300 percent since 1990. A significant part of this increase was before the Emerald Isle went into service and prompted the need for a larger vessel.
- More than 60 percent of the respondents to the survey indicated a breakdown of the Emerald Isle would cause some level of personal inconvenience.
- Although the BIBCO estimates the probability of a major breakdown of the Emerald Isle at less than five percent because of Emerald Isle maintenance and method of operations (e.g., not in heavy ice conditions), the probability of a breakdown and possible delays in getting parts will increase as the vessel ages. The Beaver Islander has had many breakdowns in its 40 years of service. Chronic engine trouble caused many of them for 22 years before the engines were rebuilt in 1984. A breakdown of the Emerald Isle would be disastrous for the island if it were out for any length of time.

## Forecasts of Ferry Use

Passenger and vehicle use projections for the BIBCO service through 2010 are summarized graphically in Figure S-2. These forecasts are based on historical population and boat passenger trends. The data indicate that, in the low range, by 2010 approximately 47,500 passengers and 7,500 vehicles annually would use the ferry service. In the high range, the forecast is that about 53,100 passengers and 8,300 vehicles annually would use the ferry service.

Although passenger activity has been relatively flat and, in fact declined since 2001, population growth, construction of houses and commercial structures on the Island, as well as the continued availability of land, indicate that there will be more rather than less growth in the future. This growth will inevitably stimulate more demand for transportation. Given that the economy has been relatively slow since 2000, and that an eventual upturn will occur, the low range forecast is least likely to occur.

## Need for Another Ferry

To evaluate the need for another ferry, a capacity analysis was conducted (Figure S-3). Under the low range forecast of ferry use, capacity (based on current peak service) is exceeded for vehicles in 2008 while in the high range it is exceeded in 2005. On the other hand, passenger capacity for all forecasts falls within the capacity threshold.

These data indicate that planning for additional ferry capacity for vehicles should begin now. The Island's economic vitality is dependent on this capacity. In the near term, operational procedures to address capacity issues should be explored.

Figure S-2  
Beaver Island Boat Company  
Passenger and Vehicle Projections

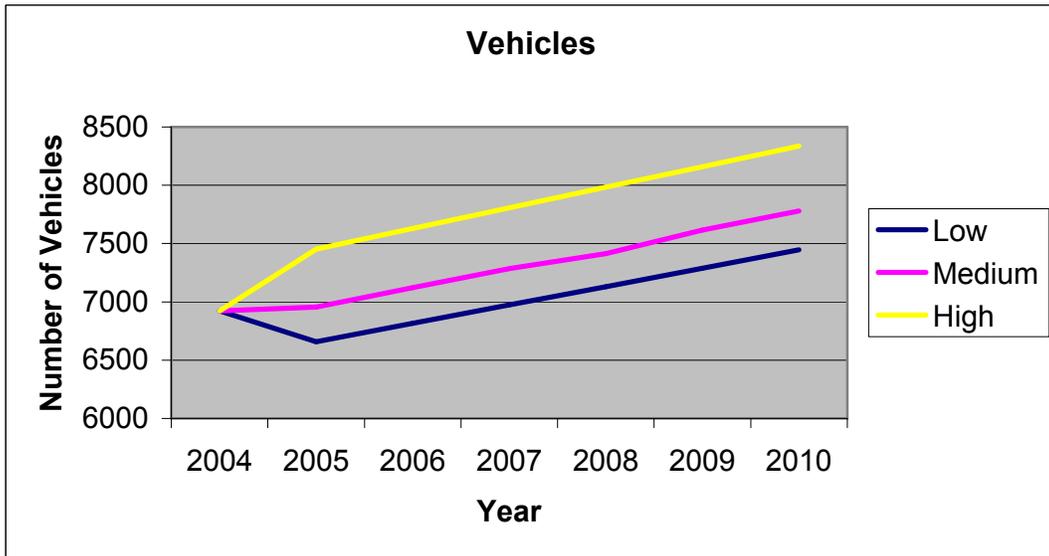
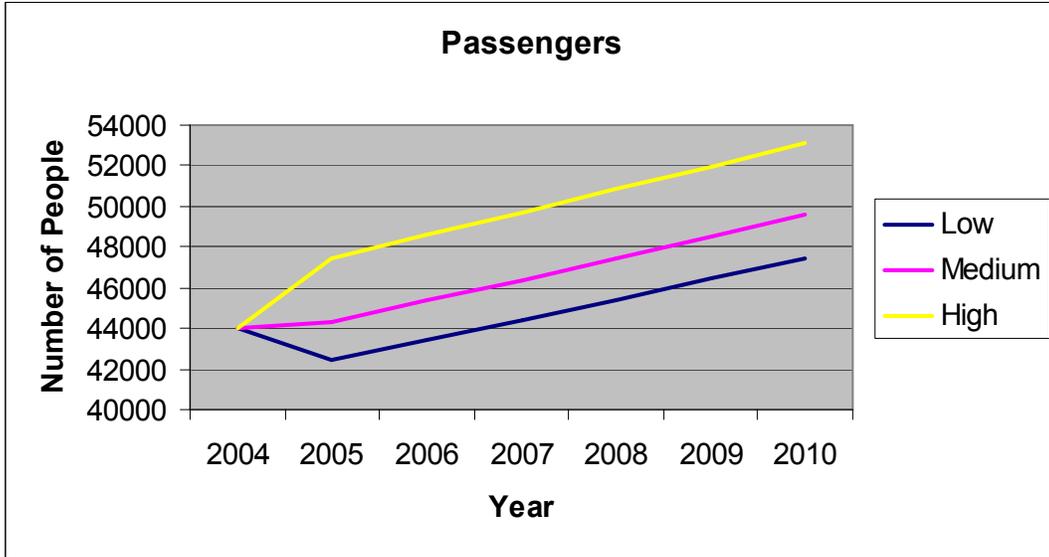
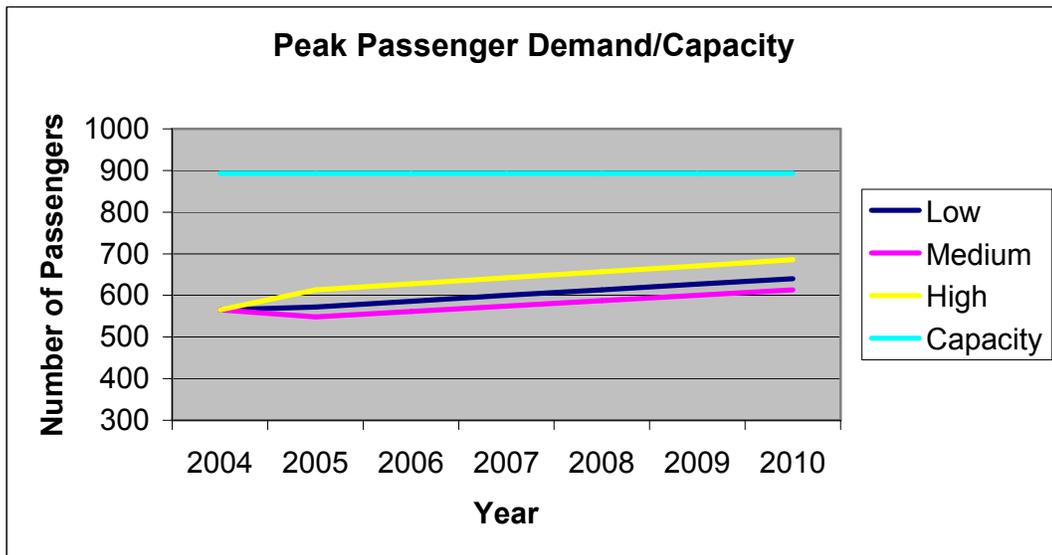
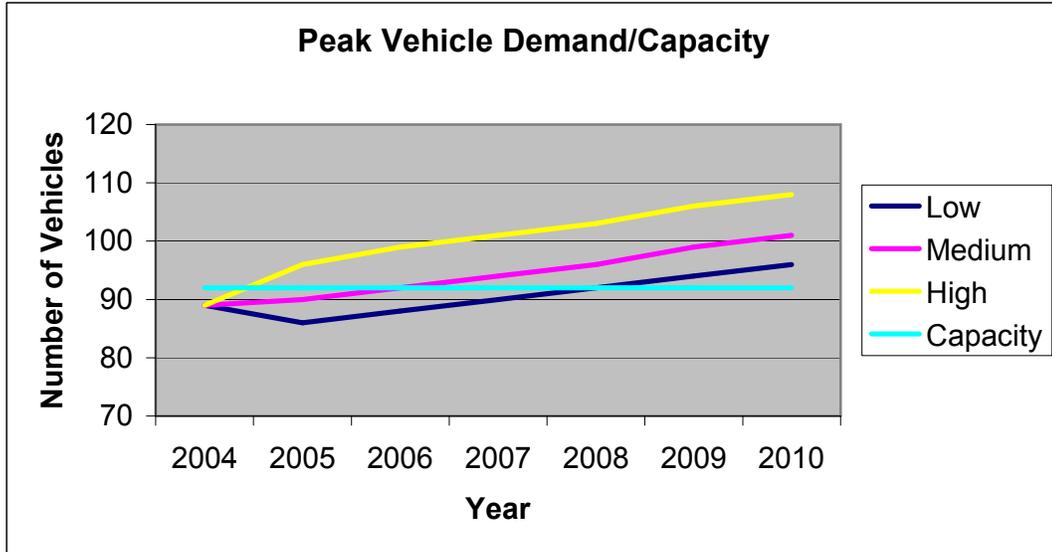


Figure S-3  
 Peak Vehicle Demand/Capacity  
 Peak Passenger Demand/Capacity



## Technology Assessment

Ferry service provided by different operators varies significantly and so do the types of vessels used. Some operators provide passenger service with short trip lengths, relatively high frequencies, and a number of stops. Other services accommodate passengers and their autos on trips with only one origin and destination. The Beaver Island service is the latter. There are relatively few trips each day and each trip makes a single stop at the destination end of the trip.

In terms of viable options for the Beaver Island service, a monohulled vessel like the Emerald Isle or an open-deck ferry, a catamaran like the Lake Express, or a hovercraft would be most suited to operate in Lake Michigan over long distances.

As planning for a new vessel begins, the following should be done:

- Review of the performance of the Emerald Isle to identify any operating issues;
- Review of the need or desirability to maintain operations in winter months (the Emerald Isle can operate in modest ice but does not do so<sup>1</sup> and demand for services in winter months is significantly reduced;
- Review of whether higher speeds are desirable or cost effective; and,
- Review of docking requirements.

From the standpoints of cost and operational requirements, for the foreseeable future, a monohull similar to the Emerald Isle or an open-deck ferry is the most logical vessel for Beaver Island ferry service when another vessel is needed.

## Recommendations

The information presented in this study is based on input from the public, a survey of boat passengers and property owners, interviews with the Beaver Island Transportation Authority (BITA) and the Beaver Island Boat Company (BIBCO) representatives, and research by the consultant. Based on that work, the following recommendations are made.

1. The focus of the BITA service area should remain between Beaver Island and Charlevoix. Input from the survey did not reveal a significant demand to service other locations.
2. Capacity to haul vehicles will begin to be exceeded in 2005 in peak periods on a regular basis if the high-range forecast materializes and by 2008 under the mid-range forecast. Planning for an additional vessel with capacities similar to the Emerald Isle should begin now.
3. There does not appear to be justification for the expense of a highly sophisticated vessel such as a hovercraft that may be able to operate year-round or a catamaran which can travel twice as fast as the Emerald Isle. The fact is these boats cost three or more times as much as a vessel comparable to the Emerald Isle and the additional cost does not seem justified based on the

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<sup>1</sup> As stated, the Emerald Isle can operate in modest ice but in fact it is not efficient in this operation and operation in ice of the sort found in Lake Michigan significantly increases the risk of propeller and hull plate damage.

need, particularly because the capacity constraint is vehicle-related rather than passenger-related. An open-deck monohull ferry may be the most logical alternative. Its cost would be less than a fully-covered monohull, such as the Emerald Isle.

4. The issues associated with land-side operations in Charlevoix should be evaluated particularly with the U.S. Coast Guard scheduled to de-commission the USCGC Acacia in 2006 and vacate its dock in Charlevoix, which is located adjacent to the BIBCO office. A study should be conducted in conjunction with the City of Charlevoix to identify a viable long-term scenario for BIBCO wharfage in Charlevoix.

The consultant believes acquiring a new or used vessel with capacity similar to the Emerald Isle is critical to ensuring the integrity of the economic well-being of Beaver Island. The residents and travelers to the island pump millions of dollars annually into the economies of Beaver Island, the City of Charlevoix, Charlevoix County, and the State of Michigan. Ensuring that capacity needs are met in coming years is justified by that expenditure. Equally important is respect for the environment and quality of life on Beaver Island. Adding the Emerald Isle to the fleet in the 1990's did not in and of itself cause the increase in passenger/tourist traffic. So, bringing another vessel into service would not foster such an influx of tourism/passengers as to jeopardize the character of Beaver Island.

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# 1. Introduction

The Beaver Island Transportation Authority (BITA), with support and funding from the Michigan Department of Transportation (MDOT), is assessing ferry transportation needs for Beaver Island. The study is being conducted by The Corradino Group with input from residents of and visitors to Beaver Island.

## Purpose of this Study

The purpose of the Beaver Island Transportation Coordination Study is to assess the existing ferry system serving Beaver Island and the greater Beaver Island area and “explore the impact or necessity of obtaining and operating an additional ferry to provide transportation.” The study considers:

- Passengers of the ferry system;
- Freight being shipped on the ferry system;
- The need for an additional vessel as a primary vessel or back-up;
- The economic impact of the acquisition of the Emerald Isle on Beaver Island as well as the effect an additional vessel would have on the island;
- The economic impact of the passenger traffic on the Beaver Island, the City of Charlevoix, Charlevoix County, and State of Michigan economies; and,
- Other operational and infrastructure issues facing BITA.

This study has involved the development of information to address these issues through four tasks. These are:

- Task 1: Existing Conditions
- Task 2: Potential for Coordination/Consolidation/Expansion of Service
- Task 3: Service Options and Recommendations
- Task 4: Implementation Plan and Final Report

The study has included public involvement and outreach. A widely-advertised community meeting was held on the island on June 30, 2004. The results of this meeting are presented in this report. A survey of boat passengers, island residents, and property owners not living on the island was conducted in July 2004. The study has also included discussions with the staff and Board of BITA, representatives of the Beaver Island Boat Company, and meetings with the MDOT and other ferry boat operations. Following presentation of this report to the Beaver Island Transportation Authority, modifications to the report will be made and the final report will be submitted to BITA in January, 2005.

## History of Ferry Service on Beaver Island

Beaver Island is located in Lake Michigan about 32 miles northwest of the City of Charlevoix, Michigan. The island has been inhabited for centuries and currently has about 600 year-round residents and a significant summer seasonal population. Ferries traveling to the island from Charlevoix date to the late 19th century. Since the 1950's, the Beaver Island Boat Company has provided service. Following is a brief chronology of some of the boats that have been used for transportation to the island:

- Nellie – 1890s
- Erie L. Hackley, 1896 – 1902
- Oval Agitator – Renamed Beaver, 1914 – 1915
- City of Boyne
- Columbia, 1916 – 1917
- Bruce, 1917 – 1920
- James E. Sanford, 1920 – 1930
- Marold II, 1931
- Ossian Bedell, 1932 – 1933
- Marold II, 1934 – 1936
- Mary Margaret, 1937 – 1945
- North Shore, 1945-1954
- Emerald Isle, 1954-1962
- Beaver Islander, 1962 to present
- South Shore, 1973
- Emerald Isle, 1997 to present

Individuals generally owned the early ferries, rather than a “Beaver Island” boat company, and ports other than Charlevoix and Beaver Island were part of the service. The vessel used would often change from year to year, and a considerable array of different vessels was used. Some only operated as the Beaver Island ferry for a single year.

From 1945 to 1954, the ferry was the “North Shore.” It was damaged very late in the season and the Coast Guard would no longer approve it for passengers.

At that point some of the inhabitants of Beaver Island and Charlevoix formed the Beaver Island Boat Company through a stock offering. Thus, a ferry service specifically for the run from Charlevoix to Beaver Island and controlled by persons having a direct connection with the island was started. The first “Emerald Isle,” a 65-foot vessel with a capacity of 115 passengers and eight automobiles was built. It was the first ferry designed and built specifically for the Beaver Island to Charlevoix run.

The success of the Beaver Island Boat Company showed the need for a larger and faster vessel, and in 1962 the “Beaver Islander” was built. It has a 98-foot length with a capacity of 200 passengers and 12 automobiles, and the speed increased to 14 miles per hour. The “South Shore,” an older vessel, was bought in 1974 to be used as a “backup” boat. The South Shore was sold when the Emerald Isle went into service.

In 1981, the ferry operation was taken over by an unrelated entity titled “The Beaver Island Navigation Co.,” a subsidiary of Global Communications Corporation. It operated the ferry service until 1984.

In 1984, the present Beaver Island Boat Company was formed to return control of the ferry service to people who lived or owned property on the island. Stock sales were discouraged to people not directly connected with Beaver Island or Charlevoix, and the ownership of large blocks of stock was also discouraged. Over the years the Boat Company has purchased additional dock space and substantially improved the dock facilities.

In 1992, the St. James Township Board created the Beaver Island Transportation Authority for the purpose of requesting funds from State and Federal sources for a new ferry to serve the island community and the traveling public. The Emerald Isle was purchased and now serves as the primary ferry. It is a 130-foot vessel with a capacity of 295 passengers, 20 vehicles, and one semi tractor-trailer truck (Table 1-1). It was launched in 1997 and was placed in full service in 1998. BITA oversees marine capital funding and ferry transportation services, including regulation of fares, schedules, and capital investments for major improvements. The Beaver Island Boat Company, a private entity, operates the ferries under an operating agreement with the BITA. The Michigan Department of Transportation continues to provide capital assistance to the BITA but no operating funding. Revenues from the Emerald Isle serve as matching funding for capital grants and BITA operations.

**Table 1-1  
Beaver Island Boat Company  
Passenger and Vehicle Statistics**

	<b>Emerald Isle</b>	<b>Beaver Islander</b>
Length	130 feet	98
Passenger Capacity	295	200
Automobile/light truck capacity	20	12
Heavy truck/bus capacity	1	–
Speed	13.5 knots	13 Knots

\* Beaver Islander was launched in June of 1962.  
The Emerald Isle was dedicated in May of 1998.



## 2. Existing Data and Statistics

The chapter provides background information on the existing ferry service and general demographic and development trends.

### Existing Marine Transportation Services

The most common mode of transportation to and from Beaver Island is ferry. Different privately-owned ferry boats have provided service between Charlevoix, Mich., and Beaver Island since the late 1800s. As noted in Chapter 1, in the mid-1980s, a group of residents and property owners purchased the Beaver Island Boat Company (BIBCO); it has been privately held and operated since that time. The BIBCO currently operates the Emerald Isle through an operating agreement with the Beaver Island Transportation Authority (BITA).

The St. James Township Board created the BITA in 1992 for the purpose of securing government funds for a new ferry boat to serve the island community and the traveling public. Marine capital funding and ferry transportation issues have been overseen by BITA since then. The BITA owns the Emerald Isle and the major infrastructure used by BIBCO. BIBCO owns the Beaver Islander, the terminal building on Beaver Island, and other assets. The State of Michigan provides capital funds to BITA for improvements. The local match for those funds comes from revenues generated on the Emerald Isle. The state provides no operating assistance to the BITA for ferry operation. Other transportation to the Island includes commercial air service provided by Island Airways and private boat and plane.

Beaver Island is the largest island in Lake Michigan and is further from the mainland than any other permanently inhabited island in Lake Michigan, or the United States for that matter. Figure 2-1 shows the island in relation to Michigan. The historic port of call for Beaver Island has been Charlevoix. As noted in Chapter 1, a variety of boats have been used to provide ferry boat service over the years. From 1962 to 1997, the primary boat used was the Beaver Islander, with the South Shore as a back up. Increasing demand for service and continuing development on the island led to the request by islanders, through the BITA, for a new vessel. That vessel, the Emerald Isle, was launched in 1997.

Ferry service is operated between Charlevoix and Beaver Island from mid-April until just before Christmas. Most service is provided by the Emerald Isle. The Beaver Islander is scheduled on days when more than two round trips are required. Table 2-1 summarizes the activity for 2004.

Figure 2-1  
Location Map

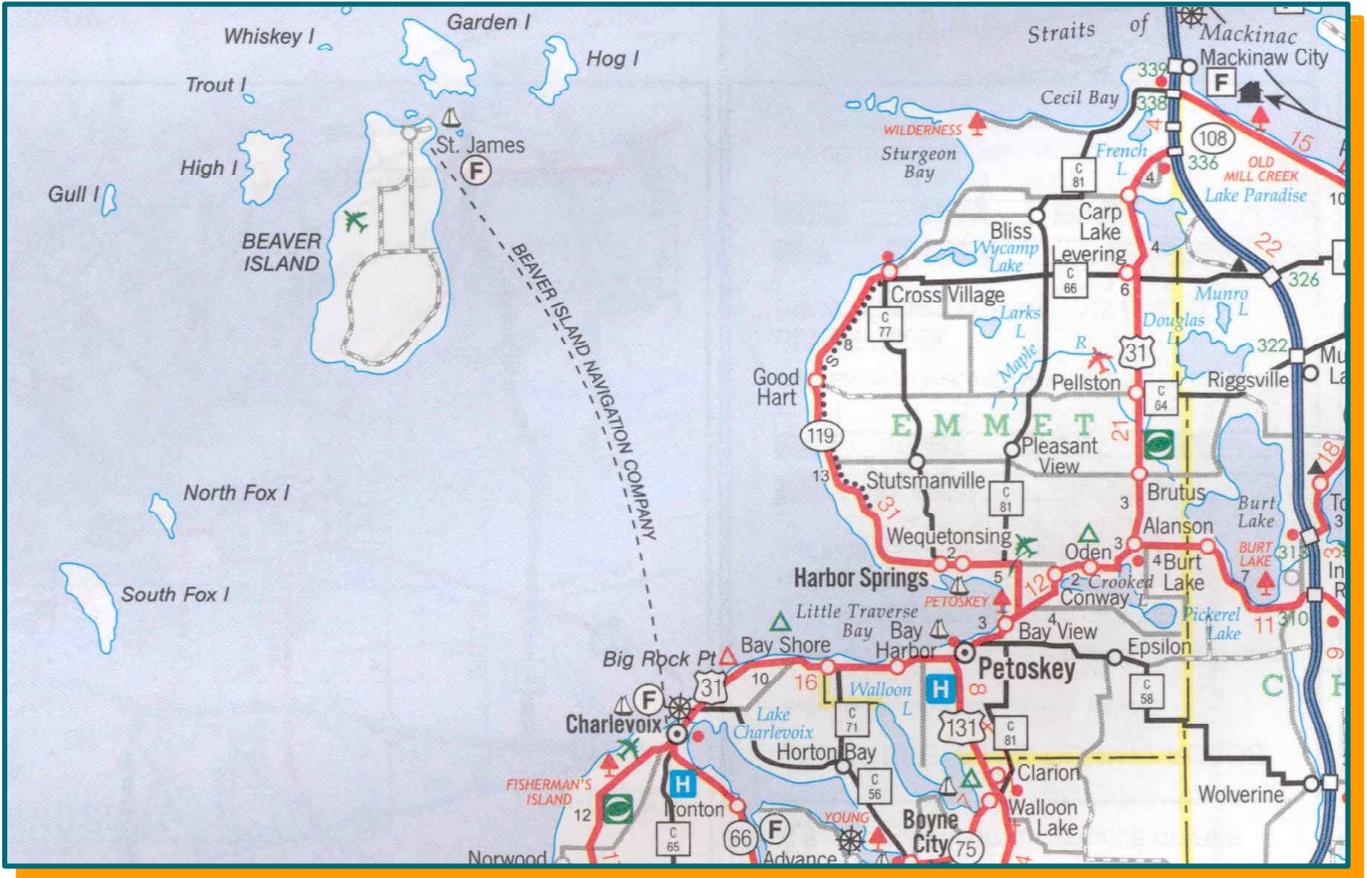


Table 2-1  
Beaver Island 2004 Ferry Schedule

Month	Yellow(1) <sup>1</sup>		Blue(1)		Light Green(1)		Purple(1)		Pink(1)		Gray(2)		Light Blue(2)		Orange(3)		Green(3)		Brown(4)		Total Round Trips	Total 1-way Trips
	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT	Days	Total RT		
April	9	9					1	1													10	20
May	20	20					3	3	5	5											41	82
June			4	4	6	6					16	32									56	112
July											21	42									78	156
August			1	1							21	42									72	144
September	17	17	3	3			3	3	3	3	2	4									36	72
October	19	19					3	3	5	5											27	54
November	28	28							2	2											30	60
December	10	10																			10	20

<sup>1</sup>Colors on the schedule denote number of round trips (\*) per day and times of departures.

Table 2-2 presents historical passenger data for 1990 and then every year from 1995 through 2000. Table 2-3 presents monthly data for 2000 through the middle of 2004. Table 2-2 illustrates that passenger activity more than doubled between 1990 and 1998, when the Emerald Isle was placed in service. In 1998, passenger activity increased 34 percent and nearly 30 percent in each of the subsequent two years. This occurred while the population on the island increased by about 35 percent. As can be seen in Table 2-3, both passenger and vehicle statistics have trended downward since 2001. This is attributed to several factors, including the September 11, 2001 tragedy, a downturn in the economy, and weather patterns resulting in cool, rainy summers.

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<sup>1</sup>Numbers are rounded.

<sup>2</sup>Cumulative change does not equal addition of changes between individual years.

<sup>3</sup>Population for non-Census years is estimated.

**Table 2-3  
Beaver Island Boat Company  
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Month	2000		2001		2002		2003	
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April	847	300	774	226	837	219	407	135
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December	413	165	418	212	502	223	358	201
Total	46,729	7,103	47,577	7,133	45,280	7,089	43,859	6,899

Source: Beaver Island Boat Company

Examination of this historical information led to several questions. What caused the spike in passenger travel before the acquisition of the Emerald Isle? If the recent decline or flattening of passenger activity is due to the economy, will it rebound again? The consultant conclusion is that while many factors influence passenger travel – there will continue to be spikes in passenger activity. In addition, it does not seem likely that activity will decrease much below existing levels.

Two boats provide the BIBCO service: the Emerald Isle and the Beaver Islander. Information about these vessels is provided in Table 2-4. The Beaver Islander was built in 1962. The Emerald Isle was purchased with a grant from the State of Michigan and funded through the federal Intermodal Surface Transportation Efficiency Act (ISTEA). Capital funding to build the docks to accommodate the Emerald Isle and related infrastructure was also obtained through grant funding.



Beaver Islander



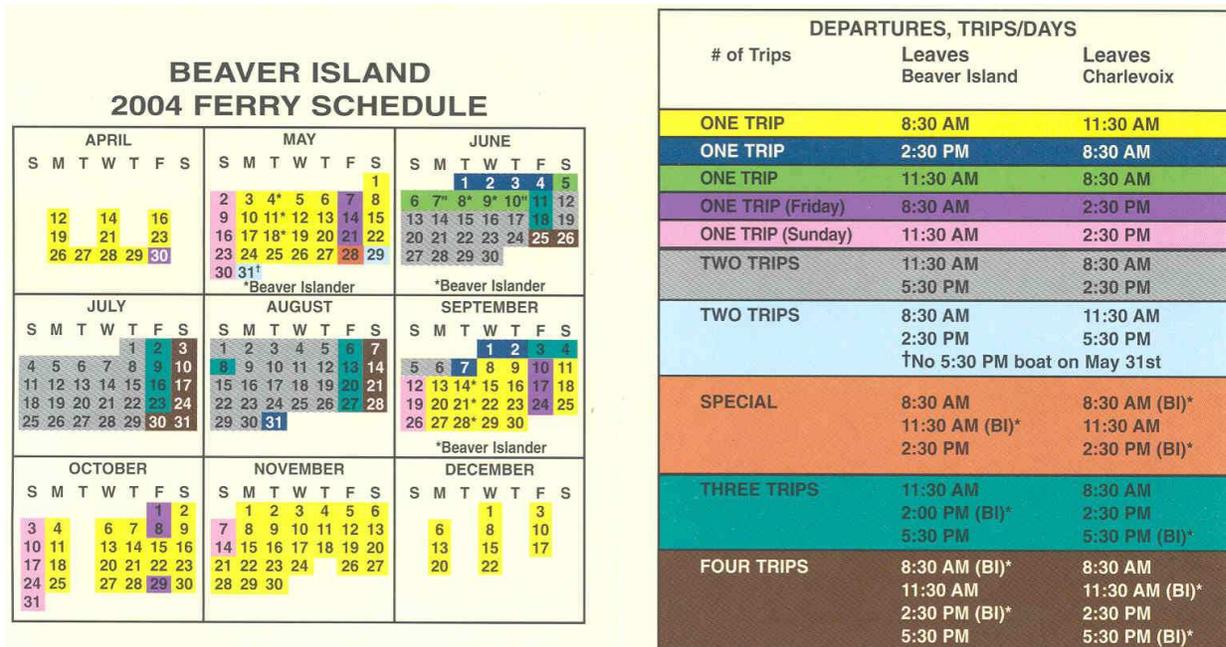
Emerald Isle

Table 2-4  
Vessel Characteristics

	Emerald Isle	Beaver Islander
Capital Cost	3.5 million	n/a
Launched	1997	1962
Capacity		
Passengers	295	200
Cars	20	12
Semitrucks	1 heavy truck	none
Cargo	95 gross tons	
Trailers	max length 46', max height 13'6"	max height 10'
Operating Speed	13.5 knots	13 knots
	by Washburn & Doughty Associates	by Sturgeon Bay Shipbuilders
Size	length 130' beam 39' draft 8'6"	length 96'3" beam 27' draft 7'3"
Size of Crew Needed to Operate	4	4
Rough Water Capability	yes	yes
Ice capability	Rated for modest ice but not used in ice	n/a
Current Operations	Daily trips to Beaver Island and Charlevoix April to Dec. (32 mi.)	Daily trips to and from Charlevoix & Beaver Is. April to Dec. (32 mi.)

The BIBCO operates the ferry service from mid-April to just before Christmas. There is no service during the winter months (Figure 2-2). There are from two to four trips per day during the peak season (June through August) but in April, most of May, November, and December there is only one trip per day.

Figure 2-2  
Beaver Island 2004 Ferry Schedule



Fares for the service in 2004 are as follows:

- Adult passenger (no vehicle) - \$20 one way, \$35 round trip
- Children (5 – 12) - \$10.50 one way, \$17.00 round trip
- Car (passengers not included) - \$61 one way, \$122 round trip
- Other Vehicles - \$61.00 and up (maximum 50 tons GVW allowed and no more than 4,500 pounds per tire) (Note, the rate for a “typical” semi tractor trailer unit is approximately \$400 one-way).

The fares are set by BIBCO and monitored by the BITA under the terms of their management agreement. Any fare increase over 3% of the travel C.P.I. section must be approved by the BITA.

Many people transport personal freight on the ferry. People are allowed to bring two pieces of personal luggage for no charge. There is a charge for food, groceries, fish, ice cream, coolers, dry cleaning and laundry, etc. People can also pay for a cage or wooden box.

There are rate sheets set for construction materials (i.e., doors, drywall, lumber), recreational equipment and machines (i.e., motorcycles, snowmobiles, kayaks) as well as seasonal items such as lawn mowers and bags of deer bait.

A comparison of BIBCO fares prepared by BIBCO in 2003 relative to other operators from around the country found that in terms of \$/minute of trip (i.e., a round trip from Charlevoix to Beaver Island and back is 240 minutes while the average of all the companies surveyed was 142 minutes) indicated that BIBCO’s cost per minute was 14 cents while the average was 25 cents. Because different types of services are offered on different vessels, this is not an “apples to apples” comparison but it indicates the BIBCO fares are reasonable, if not lower than other ferry operations.

## Demographic Characteristics and Trends

Beaver Island has a thriving community of permanent residents. As of the 2000 census, there were 551 permanent residents on Beaver Island. As shown in Table 2-5 the population on Beaver Island has grown by 35 percent as compared to 22 percent in Charlevoix County and seven percent in the State of Michigan. This growth has led St. James and Peaine Townships to join together to conduct a study (not a part of this effort) to develop a vision and strategic growth plan for the island.

**Table 2-5  
Population Characteristics**

	1990	2000	Change
Peaine Township	134	244	82%
St. James Township	275	307	12%
Total Beaver Island	409	551	35%
Charlevoix County	21,468	26,090	22%
Michigan	9,295,297	9,938,444	7%

Source: U.S. Bureau of the Census

There is a major seasonal influx of people to the island in the summer, particularly July and August, when the population on the island can reach 5,000. These include both seasonal residents who own property and a house on the island and tourists.

## Economic Development Trends Resulting from the Emerald Isle

Since the mid-1990s, a number of major infrastructure and new retail activities have occurred. These include:

- Construction of new docks to accommodate the Emerald Isle
- Opening of Ace Hardware
- Opening of Dalwhinnies Café
- Paving of Roads in St. James Village
- Opening of the Emerald Isle Hotel
- Construction and opening of Deerwood Lodge
- Opening of a number of other businesses including the car wash, laundromats, Laurain Lodge, B.I. Lumber and Bulk Propane
- Opening of the new Beaver Island Rural Health Care Medical Center

- Increased construction of houses, commercial buildings, and garages.
- Increased property tax revenue for St. James and Peaine Townships.

This economic development has resulted in the increased frequency of construction of new houses on the Island, many of which are used on a seasonal basis. As expressed during the public meeting and through surveys conducted in this study, there are concerns about the pace of development, and whether the Emerald Isle, in and of itself, is the primary catalyst to development and whether an additional boat would cause even more development. Nevertheless, the data assembled for this study indicate to the consultant that ferry passenger activity and development on Beaver Island are influenced by a number of factors including ferry transportation.

There has been steady growth in building permits issued on Beaver Island since 1998. As shown in Table 2-6, 387 new residential permits (including single family homes, additions, garages, and structures) have been issued since then. These have resulted in 71 new single-family homes. In addition, there have been 38 commercial building permits issued. If these trends continue, it is clear there will be substantial growth on Beaver Island.



Part of the emphasis of this study is to determine the impact a new boat would have on the island. There is certainly sentiment on the island to protect the island from over development. Through the course of this study, it is the consultant’s observation that most people, including those involved in development, recognize a certain amount of growth is going to occur and must be supported by infrastructure, including ferry service. Nevertheless, there is an almost universal sentiment to protect the unique features of the island.

**Table 2-6  
Beaver Island Building Permits**

Year	St. James Township				Peaine Township				Island Total	
	Residential		Commercial	New Structures/ Additions	Residential		Commercial	New Structures/ Additions	Residential	Commercial
New Single Family	Additions	Garages/ Pole Barns	New Single Family		Additions	Garages/ Pole Barns				
2004 (year to date)	4	3	3	2	5	3	9	3	27	5
2003	11	3	4	3	16	9	21	4	64	7
2002	10	3	8	1	14	12	24	3	71	4
2001	20	6	6	2	11	6	13	3	62	5
2000	13	2	5	3	15	6	14	2	55	5
1999	8	3	2	2	21	4	21	4	59	6
1998	5	10	7	3	14	7	6	3	49	6

Source: Charlevoix County, Department of Building Safety/Inspections, June 25, 2004.

## Economic Impact of the Ferry Operations on Charlevoix and Charlevoix County

In the 1990's there was a significant increase in passenger activity on the Beaver Island Boat Company (BIBCO) ferries. Between 1990, when there were 12,075 passengers, and 2000, when there were 46,729 passengers, the cumulative percent increase in passenger activity was 287%. This can be attributed to a number of factors, including the relative economic boom of the 1990's, the maturing of the baby boom population and subsequent exploration of recreational and vacation opportunities, and to the fact that in 1997 the BITA brought into service the Emerald Isle, which was one factor in continued growth and development on Beaver Island. This growth has included paving of the streets in the village area of St. James Township, the opening of new businesses, and continuing construction of new housing.

As part of the transportation coordination study, the consultant team conducted a survey of passengers and property owners. The complete results are presented in Attachment A. The passenger survey was done by distributing survey forms to passengers on the boat. The property owner survey was conducted by mailing the survey to all verifiable addresses on the island and also to a sample of property owners with non-Beaver Island addresses. The total number of responses to the survey was 511. Of these, 253 were from questionnaires distributed and collected on the boat and 258 were from surveys distributed to property owners.

The responses to the survey are included in Attachment A. The following discussion focuses on questions that dealt with the economic impact of ferry service on Charlevoix.

There were two sets of questions focused on the purchasing habits of those using the ferry. One set was related to expenditures in Charlevoix and the second set related to expenditures on Beaver Island.

Relative to Charlevoix, the first question asked was whether the respondent spent money in Charlevoix prior to traveling to the island on either this trip (for the boat passengers) or their last trip (for the property owners). The second question focused on how much did they spend.

The responses were, when referring to boat passengers and property owners combined (page 14 in the attachment), that 77 percent spent money the last time they were Charlevoix. Of these, 35 percent spent over \$100; 26% spent between \$51 and \$100, and 38 percent spent between \$10 and \$50.

To translate these figures into an estimate of how much money in Charlevoix is being generated by riders on the ferry, an "effective annual passenger factor" was calculated. This process is presented in Table 2-7. This factor is an estimate of the number of trips departing Charlevoix annually that resulted in a purchase(s) of goods in Charlevoix. Assuming an annual one-way passenger count of 45,184 (an average of one-way passenger trips from 2000 through 2004) and assuming that most people make a round trip, the number of one-way passenger trips departing Charlevoix would be 22,592. Then, to account for the fact that many people travel in groups (some of whom will not spend money) an adjustment factor for 1.5 for permanent residents and 2.6 for seasonal

residents/visitors was made<sup>2</sup>. Taking 77% of this number yields an effective annual passenger factor of 10,091. Taking this number, and distributing the percentages of dollars spent by passenger category (using the middle of the range to be conservative and \$150 for the “over \$100), it is estimated that over \$950,000 is spent over the course of the season in Charlevoix proper. Given that this money has a multiplier of two<sup>3</sup> (a multiplier estimates the overall impact of a dollar spent on the economy), the economic impact of the BITA operations on incidental spending in Charlevoix is estimated to be nearly \$2 million.

**Table 2-7**  
**Estimate of the Economic Impact**  
**of Ferry Passengers on Charlevoix**

<b>Passenger Data</b>	
Average Annual Person Trips	45,184
Round Trips	22,592
<b>Survey Data</b>	
Permanent Resident	34%
Seasonal Resident	29%
Visitor/Here on Business	37%
Spent \$30	
Permanent Resident	22%
Seasonal Resident	40%
Visitor/Here on Business	55%
Spent \$76	
Permanent Resident	24%
Seasonal Resident	29%
Visitor/Here on Business	25%
Spent \$150	
Permanent Resident	53%
Seasonal Resident	30%
Visitor/Here on Business	19%
<b>Party Size Assumptions</b>	
Permanent Resident	1.5
Seasonal Resident	2.6
Visitor/Here on Business	2.6
<b>Effective Passenger Factor</b>	
Permanent Resident	5,181
Seasonal Resident	2,520
Visitor/Here on Business	3,180
<b>Total</b>	<b>10,881</b>
<b>Dollars Spent</b>	
Spent \$30	\$117,896
Spent \$76	\$212,967
Spent \$150	\$622,377
<b>Total Annual Expenditures</b>	<b>\$953,239</b>
<b>Total Direct Economic Impact</b>	<b>\$1,906,479</b>

Source: The Corradino Group

<sup>2</sup> The 1.5 party size number is an assumption based on discussion with permanent residents. The 2.6 party size number is the number used by the Department of Park, Recreation and Tourism Resources, Michigan State University.

<sup>3</sup> RIMS Two Multiplier for the Louisville MSA, Bureau of Economic Analysis

It is very likely the BITA operations also are a significant element in overall tourism spending in the County. It should also be noted that this analysis does not reflect the impact of those using air and private travel to and from the island through Charlevoix year round. For example, Island Airways has over 10,000 deplanements each year in Charlevoix, many of them carrying island residents and visitors who would not be there without the ferry (and who spend money in Charlevoix). This economic impact, while not directly attributable to the ferry, results in part from the resources on Beaver Island developed because of the ferry.

### Indirect Economic Impact of Ferry Operations

Review of information from a Michigan State University report indicates that Charlevoix County, Michigan is ranked 21<sup>st</sup> out of 83 counties in terms of tourism county by spending with total spending in 2000 of \$90.1 million. Forty-six million dollars of this total was generated by motels, \$1.7 million by camping, \$22.1 million by seasonal home, \$6.6 million by visitors staying with relatives, and \$13.1 million by day trips.<sup>4</sup> The expenditures include estimates for lodging costs as well as incidental costs such as groceries, restaurant, and entertainment activities.

Certainly, a significant portion of this \$46 million spent in Charlevoix County is generated by people traveling to and staying on Beaver Island. It is also certain that an efficient ferry operation contributes to the sustainability of this economic dynamic.

It is also important to recognize this analysis does not reflect the amount of money spent by both BITA and BIBCO in Charlevoix and Charlevoix County in terms of salaries, purchase of fuel and other supplies, and related activities.

### Charlevoix Passenger Loading Issues

An important issue that arose during the transportation coordination study was the suitability, or lack thereof, the BIBCO operations facilities in the downtown, particularly the need to park boat riders off site and get them back and forth to the boat with their luggage. When asked whether they thought it was “inconvenient to board or get off the boat and to and from your car in Charlevoix,” 51 percent said it was not inconvenient, but 29.89 percent said it was somewhat inconvenient and 18.4 percent said it was very inconvenient. When asked whether an off-site office away from the downtown where they would park, buy a ticket, check luggage and freight and then be taken to the boat, 27 percent stated that it was not a good idea, 34 percent stated that it did not matter, and 39 percent said it was a good idea. As noted in the study report, in 2006 the U.S. Coast Guard is going to de-commission the USGC Acacia and possibly vacate its dock in Charlevoix, which is located adjacent to the BIBCO office. This could free up space for freight and temporary parking that could be used by patrons of the ferry. There could be an economic benefit to businesses in downtown Charlevoix as well as an operational benefit to the landside ferry operation. Freed from the time-consuming activity of parking their cars off site (either at the middle school or the airport), people would have more time to frequent and shop in downtown shops and stores.

<sup>4</sup> The MSU Tourism Spending Model classifies five lodging segments: MOTEL (parties staying overnight in hotels, motels, cabins, B&B’s, and related lodging); CAMP (parties staying overnight in campgrounds (public or private); SEAS HOME (parties staying overnight in seasonal homes); VISIT F&R, parties staying overnight with friends and relatives); and DAY TRIPS (Day visitors from outside the immediate area (50 miles or more)).

## Conclusion

Charlevoix has a short tourist season and the success of many local businesses is dependent on the tourist traffic. An important component of this traffic is the visitors and seasonal residents who go to Beaver Island for vacation and recreation. As shown above, they spend a significant amount of money in Charlevoix, which has a “ripple” effect on the economy.

## Greater Beaver Island Ferry Transportation Needs Survey

In July and August 2004, the consultant administered a survey to passengers on the Emerald Isle, residents, and non-resident property owners. A total of 511 responses were analyzed. Of these, 258 were from surveys mailed to property owners and 253 are from surveys distributed to boat passengers. The following discussion summarizes the distribution methodology and some conclusions of the results. The detailed survey results are presented in Appendix A. The data were aggregated the data as follows:

- All surveys
- Property owner surveys
- Boat passenger surveys

The survey results tables also include all comments that were received on the survey forms.

## Distribution Methodology

Survey questionnaires were distributed by two means. They were distributed on the ferry as well as mailed to property owners. The following is a brief description of the collection methodologies.

### Mailed Property Owner Surveys

An address list was developed using a property owner database purchased from the Charlevoix County Equalization Department. The database contained a list of all parcels along with the property owner and tax assessment mailing address. This list was first sorted by mailing address, pulling out all addresses that were Beaver Island. It was assumed that for the most part these represented permanent residents. The list was then reviewed to remove duplicates given that the list was by parcel, many people own more than one parcel. This resulted in 325 valid mailing addresses. The property owners with non-Beaver Island addresses were then reviewed. There were approximately 1,400 useable non-Beaver Island addresses, after the list was reviewed and edited for duplicates. Of the 1,400 non-Beaver Island addresses, 175 were randomly selected. Combining the 325 Beaver Island address with the 175 non-Beaver Island addresses formed a manageable survey mailing list of 500 individuals/families. An additional 14 people that attended a public meeting related to the project were added to the list, resulting in a questionnaire mailing of 514.

The questionnaires, complete with a postage-paid envelope, were mailed out the first week of August 2004. Of the 514 questionnaires sent out, 258 were returned and tabulated.

## Boat Survey

Surveys were distributed on trips of the Emerald Isle and Beaver Islander. Passengers were asked to complete the survey during their trip and the completed questionnaires were collected before the boat docked. Approximately 300 questionnaires were distributed and 253 completed questionnaires were collected.

## Survey Results

Several issues stand out. Two-thirds of all respondents use the ferry as their predominant form of transportation. More than 60 percent of the property owner respondents indicated that they use the ferry. When asked whether transportation services to the Island are adequate, more than 80 percent of the combined response, 76 percent of the property owners, and more than 90 percent of the boat passengers indicated that services were adequate.

About 57 percent of the combined response, 59 percent of the boat rider response, and 54 percent of the property owner response indicated a faster ferry with a travel time of about an hour would cause increased travel. About 80 percent of all respondents (with slight variations between ferry rider and property owner) indicated a new or faster boat will cause additional development. Approximately 45 percent of all respondents stated the Island is developing “just enough” and 50 percent indicated it is developing “somewhat too fast” or “too fast.”

When asked about spending patterns in Charlevoix on their last trip, 77 percent of all respondents indicated they spent money and about a third of these spent more than \$100. The percentages for money being spent on Beaver Island were similar although not as many people reported spending money (because many live on the island, they wouldn’t consider spending money as a prelude to their trip).

About 36 percent of all respondents indicated they would appreciate ferry service to other locations. But, only two locations had more than five percent of the respondents citing them as a destination – Manistique and Cross Village.

More than 60 percent of all respondents indicated a breakdown of the Emerald Isle would result in some level of personal inconvenience.

Two questions were asked about the issue of boarding the ferry in Charlevoix – particularly concerning the need to park their cars off-site and then shuttle to and from the parking lot. Approximately 60 percent stated it was “somewhat inconvenient or very inconvenient.” Dissatisfaction was higher among property owner respondents. When asked about the possibility of an off site office (where people would park, get their ticket, and be taken to the boat), 41 percent of all respondents had a positive reaction.

The comments make for interesting reading. In summary, they offer a mix of perspectives and thoughts about the island and the boat company service. The themes seem generally to be as follows:

- Be careful about developing too fast;
- The service on the boats is good but there are concerns about how it is managed;
- The boat is perceived as fun;
- The Charlevoix situation is not good – in fact another docking location should be found; and,
- Costs of both travel and freight are an issue.

## Review of Other Marine Transportation Systems

Ferry boat transportation is a vital element of the transportation network in parts of the United States and around the world. Alaska, Washington State, New Jersey and North Carolina have significant ferry programs. Table 2-8 presents some of the ferry boat services operated in the upper Midwest and other locations in the United States.

**Table 2-8  
Ferry Service Review**

Lake Michigan Ferry Services		
Provider	Frequency	Round Trip Fare
<b>Shepler’s Mackinac Island Ferry:</b> Provides passenger and freight service between Mackinaw City, Mackinac Island and St. Ignace	Departures every half hour between 8:00 am and 11:00 pm daily during peak season.	Adults: \$17, Children: \$8
<b>Star Line Mackinac Island Hydro-Jet Ferry:</b> Provides passenger service between Mackinaw City, Mackinac Island and St. Ignace	Departures every half hour between 7:30 am and 7:30 pm during peak season.	Adults: \$17, Children: \$8
<b>Arnold Mackinac Island Ferry:</b> Provides passenger and freight service between Mackinaw City, Mackinac Island and St. Ignace	Departures every half hour between 7:30 am and 9:00 pm during peak season.	Adults: \$17, Children: \$8
<b>Lake Express:</b> Provides passenger, car and freight service between Muskegon and Milwaukee.	Provides three round trips per day between 6:30 am and 10:30 pm.	Adults: \$85, Children: \$40, Cars: \$118
<b>Lake Michigan Car Ferry:</b> Provides Passenger, freight and car ferry service between Ludington and Manitowoc, Wisconsin.	Provides three round trips per day during peak season.	Adults: \$78, Children \$36, Cars: \$98
<b>Manitou Island Transit:</b> Provides passenger service between Leland and Manitou Islands.	Provides two round trips to South Manitou Island and one round trip to North Manitou Island.	Adults: \$25, Children: \$14.
State Sponsored Ferry Services		
Provider	Frequency	Round Trip Fare
<b>Washington State Department of Transportation:</b> Provides passenger and car ferry service in the Puget Sound area and between Washington State and British Columbia.	Provides service on approximately 16 routes with 2 to 5 round trips daily.	Fares vary by route from free for passengers to Adults: \$27.60, Children: \$22.20, Cars: \$19.50 to \$93.50
<b>State of North Carolina, Department of Transportation, Ferry Division:</b> Provides passenger and car ferry service in the coastal areas of North Carolina	Service varies by route from hourly service between 5:00 am and Midnight to 3 round trips per day.	Passengers: \$2.00, Cars: \$30.00

Most of these services are operated as private companies. In Michigan, only the Beaver Island Transportation Authority and the Eastern Upper Peninsula Transportation Authority (EUPTA) receive state and/or federal support for capital or operating funding. Most of the ferry boat operations reported on in Table 2-7 have significant differences in the type of vessels used, the length of the trip, the trip purpose and destination, etc. For example, EUPTA provides short trips from Sault St. Marie to Sugar Island and from Bar Beau to Neebish Island and uses relatively small vessels. On the other hand, the Beaver Island trip is 32+ miles and requires a significantly larger vessel.

## Public Information Meeting

A public information meeting was held in the St. James Township Hall on June 30, 2004, at 7:00 p.m. The meeting minutes, attendance list, and some of the comments received are presented in Appendix B. In summary, the meeting was very well attended. It was advertised in the local papers and information posters were displayed in prominent locations around the island. In general, the attitude was one that recognized some growth of the island was inevitable, and with it an eventual expansion of the boat service fleet. There was considerable discussion about: type of technology, for example a Hovercraft could provide year-round service; impact on the island, Beaver Island is growing too fast; unfair charges by the BIBCO; the need for economic development and jobs on the island; and others. The general consensus was that the responsible entities should plan for the future with caution and concern for preserving the heritage and character of the island.



## 3. Potential for Coordination/Consolidation/ Expansion of Services

### Opportunities and Constraints

The key question addressed by this study is: What is the need for a new ferry between Charlevoix and Beaver Island? Later in this section a series of alternatives are developed and explored, but first the following conclusions are presented:

- Beaver Island is developing at a fairly rapid rate; some say the growth is too fast. As the resident population grows, ferry activity will increase. Likewise, increased tourist activity can be expected as residents create attractions by which to earn a living.
- The freight hauling capacity of the Emerald Isle was one factor in creation of an economic environment that resulted in acceleration of development on Beaver Island, including the paving of roads in St. James Village, construction of a new health center, and much more.
- The passengers on the Emerald Isle spend millions of dollars on both sides of the Lake benefiting the business owners and residents of the Island as well as the City of Charlevoix. As noted in the on-board survey distributed for this study (refer to Appendix A), more than 70 percent of respondents indicated they had spent money on their last trip and, of these, 35 percent spent more than \$100.
- Ridership on the BIBCO service has increased almost 300 percent since 1990 (refer to Table 2-1). A significant part of this increase was before the Emerald Isle went into service and prompted the need for the ferry.
- More than 60 percent of the respondents to the survey indicated a breakdown of the Emerald Isle would cause some level of personal inconvenience.
- Although the BIBCO estimates the probability of a major breakdown as relatively small because of the emphasis placed on maintenance of the Emerald Isle and method of operations (e.g., not in heavy ice conditions), the probability of a breakdown and possible delays in getting parts will increase as the vessel ages. The Beaver Islander has had many breakdowns in its 40 years of service. Chronic engine trouble caused many of these for 22 years before new engines were installed in 1989.

### Forecasts of Ferry Use

Passenger and vehicle use projections for the BIBCO service through 2010 are presented in Tables 3-1 through 3-3 and summarized in Figure 3-1. These forecasts are based on historical population and boat passenger trends. The data indicate that, in the low range, by 2010 approximately 47,500 passengers and 7,500 vehicles annually would use the ferry service. In the high range, the forecast is that about 53,100 passengers and 8,300 vehicles annually would use the ferry service.

**Table 3-1  
Beaver Island Boat Company  
Passenger and Vehicle Projections  
(Low Range)**

Month	2004 Est.		2005		2006		2007		2008		2009		2010	
	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	66	10	68	11	69	11	71	11	73	11	74	12
April	674	106	659	104	674	106	690	108	706	111	721	113	737	116
May	3,079	484	3,217	506	3,293	518	3,369	530	3,445	542	3,522	554	3,598	566
June	6,053	952	5,907	929	6,047	951	6,187	973	6,327	995	6,467	1,017	6,607	1,039
July	12,792	2,011	12,398	1,949	12,692	1,996	12,986	2,042	13,279	2,088	13,573	2,134	13,867	2,180
August	12,950	2,036	11,808	1,857	12,088	1,901	12,368	1,945	12,648	1,989	12,927	2,033	13,207	2,077
September	3,910	615	3,825	601	3,916	616	4,006	630	4,097	644	4,188	658	4,278	673
October	2,359	371	2,449	385	2,507	394	2,565	403	2,623	412	2,681	422	2,739	431
November	1,708	269	1,657	261	1,696	267	1,735	273	1,775	279	1,814	285	1,853	291
December	502	79	425	67	435	68	445	70	455	72	465	73	475	75
Total	44,027	6,922	42,411	6,658	43,416	6,816	44,421	6,974	45,426	7,131	46,431	7,289	47,436	7,447

Source: The Corradino Group

Notes and Assumptions:

1. Passenger data for 2004 is actual data through May and then 2003 data for June through November and from 2002 for December.
2. Forecast data was based on an analysis using population growth and passengers per capita and vehicles per passenger. Population growth was generated using an annual average population increase of 15 (average of the average annual population growth between 1980 and 1990; 1990 and 2000; and 2000 and 2003). Passengers per capita were calculated for low, mid, and high ranges. The low range was calculated by averaging the passengers per capita from 1995 to 2003 less the highest and lowest (67). The high range was calculated by averaging the rates from 1998 to 2003 less the highest and lowest, reflecting activity since the Emerald Isle was placed into service (75). The mid range forecast is based on 2003 data, which is 70, or approximately in the middle. Vehicle estimates were based on the average of vehicles per passenger from 2000 through 2003.

**Table 3-2  
Beaver Island Boat Company  
Passenger and Vehicle Projections  
(Medium Range)**

Month	2004 Est.		2005		2006		2007		2008		2009		2010	
	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.	Pass.	Veh.
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	69	11	71	11	73	11	74	12	76	12	77	12
April	674	106	688	108	705	111	721	113	737	116	753	118	770	121
May	3,079	484	3,361	528	3,440	541	3,520	553	3,600	566	3,679	579	3,759	591
June	6,053	952	6,172	970	6,318	993	6,464	1,016	6,611	1,039	6,757	1,062	6,903	1,085
July	12,792	2,011	12,953	2,037	13,260	2,085	13,567	2,133	13,874	2,181	14,181	2,230	14,488	2,278
August	12,950	2,036	12,337	1,940	12,629	1,986	12,922	2,032	13,214	2,078	13,506	2,124	13,799	2,170
September	3,910	615	3,996	628	4,091	643	4,186	658	4,280	673	4,375	688	4,470	703
October	2,359	371	2,559	402	2,619	412	2,680	421	2,740	431	2,801	440	2,862	450
November	1,708	269	1,731	272	1,772	279	1,813	285	1,854	292	1,895	298	1,936	304
December	502	79	444	70	454	71	465	73	475	75	486	76	497	78
Total	44,027	6,922	44,310	6,956	45,360	7,121	46,410	7,286	47,460	7,451	48,510	7,615	49,560	7,780

Source: The Corradino Group

Notes and Assumptions:

1. Passenger data for 2004 is actual data through May and then 2003 data for June through November and from 2002 for December.
2. Forecast data was based on an analysis using population growth and passengers per capita and vehicles per passenger. Population growth was generated using an annual average population increase of 15 (average of the average annual population growth between 1980 and 1990; 1990 and 2000; and 2000 and 2003). Passengers per capita were calculated for low, mid, and high ranges. The low range was calculated by averaging the passengers per capita from 1995 to 2003 less the highest and lowest (67). The high range was calculated by averaging the rates from 1998 to 2003 less the highest and lowest, reflecting activity since the Emerald Isle was placed into service (75). The mid range forecast is based on 2003 data, which is 70, or approximately in the middle. Vehicle estimates were based on the average of vehicles per passenger from 2000 through 2003.

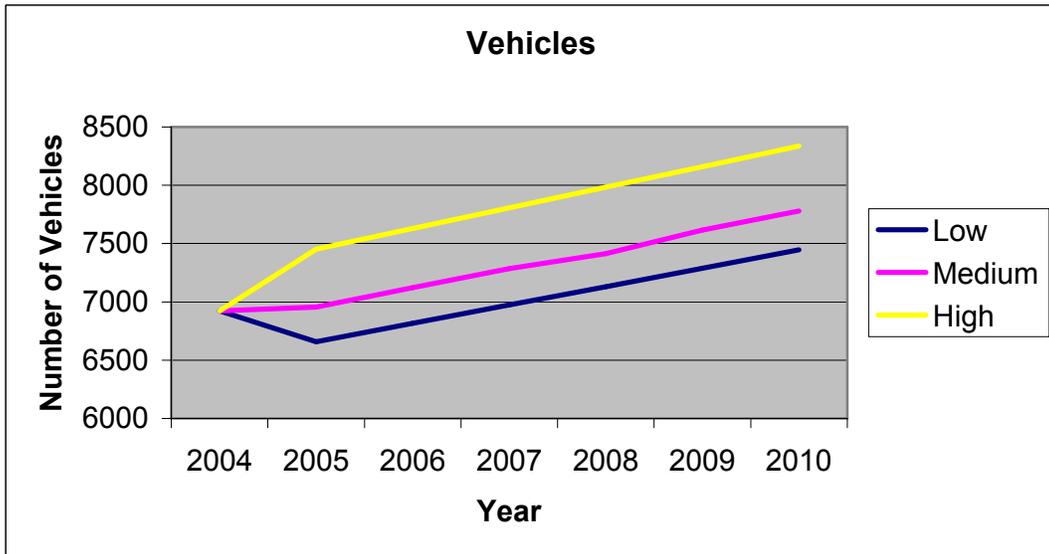
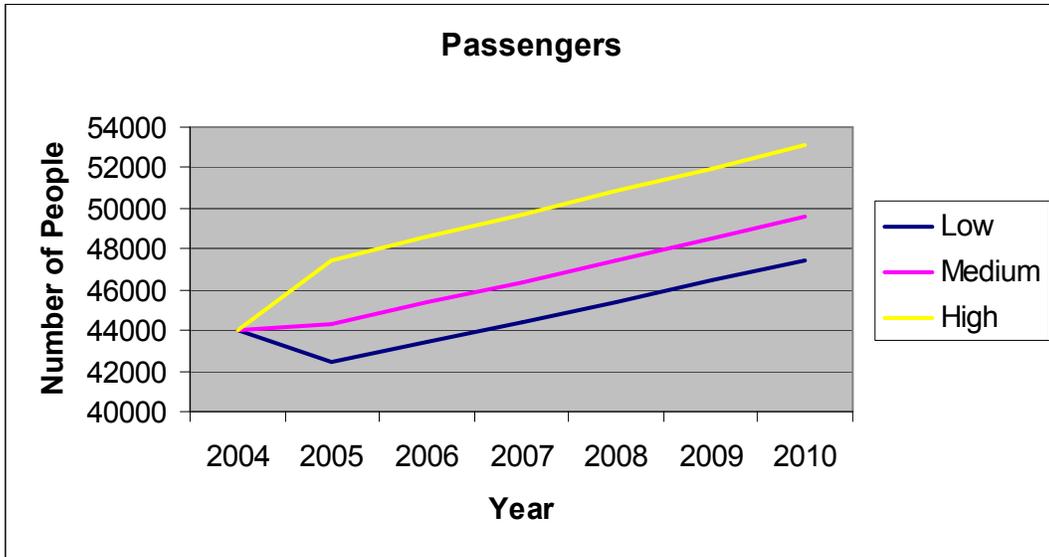
**Table 3-3  
Beaver Island Boat Company  
Passenger and Vehicle Projections  
(High Range)**

Month	2004 Est.		2005		2006		2007		2008		2009		2010	
	Pass.	Veh.												
January	-	-	-	-	-	-	-	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-	-	-	-	-	-	-	-
March	-	-	74	12	76	12	78	12	79	12	81	13	83	13
April	674	106	737	116	755	119	772	121	790	124	807	127	825	130
May	3,079	484	3,601	566	3,686	580	3,771	593	3,857	606	3,942	620	4,027	633
June	6,053	952	6,613	1,040	6,769	1,064	6,926	1,089	7,083	1,114	7,239	1,138	7,396	1,163
July	12,792	2,011	13,878	2,182	14,207	2,234	14,536	2,286	14,865	2,337	15,194	2,389	15,523	2,441
August	12,950	2,036	13,218	2,078	13,531	2,128	13,845	2,177	14,158	2,226	14,471	2,275	14,784	2,325
September	3,910	615	4,282	673	4,383	689	4,485	705	4,586	721	4,688	737	4,789	753
October	2,359	371	2,741	431	2,806	441	2,871	451	2,936	462	3,001	472	3,066	482
November	1,708	269	1,855	292	1,899	299	1,943	305	1,987	312	2,031	319	2,075	326
December	502	79	476	75	487	77	498	78	509	80	521	82	532	84
<b>Total</b>	<b>44,027</b>	<b>6,922</b>	<b>47,475</b>	<b>7,453</b>	<b>48,600</b>	<b>7,630</b>	<b>49,725</b>	<b>7,806</b>	<b>50,850</b>	<b>7,983</b>	<b>51,975</b>	<b>8,159</b>	<b>53,100</b>	<b>8,336</b>

Source: The Corradino Group  
Notes and Assumptions:

1. Passenger data for 2004 is actual data through May and then 2003 data for June through November and from 2002 for December.
2. Forecast data was based on an analysis using population growth and passengers per capita and vehicles per passenger. Population growth was generated using an annual average population increase of 15 (average of the average annual population growth between 1980 and 1990; 1990 and 2000; and 2000 and 2003). Passengers per capita were calculated for low, mid, and high ranges. The low range was calculated by averaging the passengers per capita from 1995 to 2003 less the highest and lowest 67). The high range was calculated by averaging the rates from 1998 to 2003 less the highest and lowest, reflecting activity since the Emerald Isle was placed into service (75). The mid range forecast is based on 2003 data, which is 70, or approximately in the middle. Vehicle estimates were based on the average of vehicles per passenger from 2000 through 2003.

Figure 3-1  
Beaver Island Boat Company  
Passenger and Vehicle Projections



Although passenger activity has been relatively flat and, in fact declined slightly, population growth, construction of houses and commercial structures on the Island, as well as the continued availability of developable land, indicate that there will be more, rather than less, growth in the future. This growth will inevitably stimulate more demand for transportation. Given that the economy has been relatively slow since 2000, and that an eventual upturn will occur, the low-range forecast is least likely to occur.

## Technology Assessment

Ferry service provided by different operators varies significantly and so do the types of vessels used. Some operators provide passenger service with short trip lengths, relatively high frequencies, and a number of stops. Other services accommodate passengers and their autos on trips with only one origin and destination. The Beaver Island service is the latter. There are relatively few trips each day and each trip makes a single stop at the destination end of the trip. Vessels that may qualify for the Beaver Island service are reviewed here. Following are descriptions of the most common vessel type as prepared by the Society of Naval Architects and Marine Engineers and reported in the Transit Capacity and Quality of Service Manual – 2nd Edition:<sup>5</sup>

- Monohulls are commonly used in the United States, especially where speeds greater than 30 knots in high sea conditions are not required. The semi-planing monohull represents a low capital cost, low maintenance option for relatively protected waters. Open deck ferries are monohull boats that have less passenger coverage than boats such as the Emerald Isle.
- Catamarans have steadily eclipsed other hull forms as the choice of most ferry operators for all but very high-speed (greater than 40 knots) service. The catamaran offers a more stable platform than the monohull, greater maneuverability (owing to widely spaced propellers), low draft requirements at a given hull displacement, and reasonable economy of operation. Compared with monohulls of similar size, however, capital costs are higher and wider vessel berths are required. At low speeds, operating inefficiency increases, which also increases fuel consumption and fuel costs. Water jet propulsion combines relatively good fuel economy with speed and passenger comfort.
- Hovercraft travel above water and are propelled through the air. This hull form is attractive for shallow areas (since the vessel travels above the water and not through it) and is faster than other vessels (since it has little contact with, and hence little friction from, the surface water). For short distances, these vessels can also operate across land to sites. Negative considerations include high capital and maintenance costs, bumpy rides, and high levels of exterior noise.

A vessel's capital and operating costs will ultimately affect the fare and therefore passenger demand. Generally, the power required to propel a vessel increases at a more rapid rate than does its speed and it is common for fuel consumption to double as speeds increase from 25 to 30 knots. This fuel consumption can easily increase operating costs by \$100 per hour – requiring fare revenues from additional passengers or a higher fare. Table 3-4 presents a review of the technologies that may be suitable for the Beaver Island service.

<sup>5</sup> Transit Capacity and Quality of Service Manual – 2<sup>nd</sup> Edition

**Table 3-4  
Technology Assessment**

	Monohull Emerald Isle	Monohull Beaver Islander	Open deck Ferry	High Speed Catamaran	Hovercraft
Capacity					
Passengers	295	200	150	250	300
Cars	20	12	20	46	30
Semitrucks	1 heavy truck	none	2 trucks or buses	none	1
Cargo	95 gross tons		<100 gross tons	>100 gross tons	
Trailers	max length 46', max height 13'6"	max height 6'4"		Max. length 18' height 8'6", width 8'	
Operating Speed	13.5 knots	13 knots	10-12 knots	34 knots	75 knots
Time to build	by Washburn & Doughty Associates	by Sturgeon Bay Shipbuilders	9 months By Conrad Shipyards	11 months By Austal USA	
Typical Size	length 130' beam 39' draft 8'6"	length 96'3" beam 27' draft 7'3"	length 180' beam 50' draft 10'	length 192' beam 57' draft 8'	
Operating Cost	\$25-30 per seat	\$25-30 per seat	\$25-30 per seat	\$25-30 per seat	\$45-65 per seat
Size of Crew needed to operate	4	4	6		
Rough water capability	yes	yes	stand up to 3.6 wave height, wave modal 3.8-5.2 sec.	yes but it does depend on the type of weather	yes
Ice capability	rated for modest ice but never used in ice	n/a	none	none	yes
Examples of Current Operations	Beaver Island	Beaver Island	Service between Metlakatla and Ketchikan, Alaska	Muskegon/ Milwaukee, Wis.	None were identified to be operating in the continental U.S. of the size required for Beaver Island
How was example procured and paid for?	Federally funded grants 3.5 million	Paid for with private funds	Federally funded project	14.5 million federal guarantee loan, state funding, also private funding	
How is example operated?					
What is the operating entity?	Beaver Island Transportation Authority/ Beaver Island Boat Company	Beaver Island Boat Company	Alaska Marion Highway System	Lake Express LLC	
Boat Name	Emerald Isle	Beaver Islander	M/V Lituya	Lake Express	

In terms of viable options for the Beaver Island service, a monohulled vessel like the Emerald Isle or an open-deck ferry, a catamaran like the Lake Express, or a hovercraft would be most suited to operate in Lake Michigan over long distances.

In evaluating the vessels for suitability to Beaver Island, the catamaran and hovercraft offer advantages in speed. The hovercraft has the advantage over both vessels in stability although it is a noisier ride because of the use of propellers. According to information available, the hovercraft can operate over ice so it would provide a year-round opportunity for service. All technologies are proven. The monohull vessel has the clear advantage in cost, both capital and operating. Table 3-5 summarizes these characteristics.

**Table 3-5  
Technology Evaluation**

Criteria	Monohull	Monohull Open Deck Ferry	Catamaran	Hovercraft
Speed	13.5 knots	10-12 knots	34 knots	75 knots
Capital Cost	\$8 to \$10 million <sup>1</sup>	\$6 to \$8 million	\$20 million	\$25 million
Operating Cost	\$25-\$30 per seat	\$25-\$30 per seat	\$25-\$30 per seat	\$45 - \$65 per seat
Car/Freight Capacity	Yes	Yes	Yes	Yes
Passenger Comfort	Good in good weather	Good in good weather	Good in good weather	Good in all weather; more noise

<sup>1</sup>All costs are dependent on the vessel specifications and are estimated.

As planning for a new vessel begins, the following should be done:

- Review of the performance of the Emerald Isle to identify any operating issues;
- Review of the need or desirability to maintain operations in winter months (the Emerald Isle can operate in ice but does not do so and demand for services in winter months is significantly reduced);
- Review of whether higher speeds are desirable or cost effective; and,
- Review of docking requirements that would accompany having a third vessel to dock.

The most recent new ferry service to begin operation in the United States is the Lake Express between Muskegon and Milwaukee. This privately-operated service was funded through private funds with tax incentives. The vehicle is a high-speed catamaran that makes the Muskegon-to-Milwaukee trip in about 2.5 hours. The vessel has passenger and auto capacity similar to the Emerald Isle but has more elaborate interior seating. It cost about two to three times what it would cost to replace the Emerald Isle in today's dollars. However, such a vehicle could cut the travel time to the Island to an hour or less as it operates more than twice as fast.

In examining the hovercraft operations, there appear to be no vessels that match the operational parameters of the Emerald Isle built by a U.S. manufacturer. This is important to note because of the Jones Act, which mandates that any vessel docking at only U.S. ports must be built in the United States and owned by U.S. citizens. So, for the foreseeable future, from the standpoints of both cost and operational feasibility, a monohull similar to the Emerald Isle or an open-deck ferry appear to be the most logical vessel for Beaver Island ferry service when another vessel is needed.

## 4. Capital and Service Options

The key question facing the Beaver Island Transportation Authority is if and when to pursue a new ferry to augment the existing fleet. This vessel could serve as a back-up to the Emerald Isle in the near term and eventually replace the Beaver Islander as the second vessel in the fleet. The situation facing the BITA is that with the large growth in passenger activity in the 1990s and the continuing growth on the island, the economic viability of the island is highly dependent on the capacity of the Emerald Isle. If the Emerald Isle, were to break down, the Beaver Islander would not be able to provide adequate or comparable service. Such a situation could have a significant negative impact on the economy and residents of Beaver Island.

### Need for Another Ferry

Using the information provided in Tables 3-1 through 3-3 and capacity assumptions based on the current peak service (4 round trips per day) provided by BIBCO, a capacity analysis was conducted (Table 4-1) and is summarized in Figure 4-1. Under the low range forecast of ferry use, capacity (based on current peak service) is exceeded for vehicles in 2008 while in the high range it is exceeded in 2005. On the other hand, passenger capacity for all forecasts falls within the capacity threshold.

These data indicate that planning for additional ferry capacity for vehicles should begin now. The Island's economic vitality is dependent on this capacity. In the near term, operational procedures to address capacity issues should be explored.

### Capital Development Alternatives

Several capital development alternatives were identified that could address the BITA/BIBCO vessel needs. These are:

- Alternative 1: Do Nothing
- Alternative 2: Purchase New Vessel
- Alternative 3: Purchase Used Vessel
- Alternative 4: Enlarge Emerald Isle
- Alternative 5: Enlarge Beaver Islander
- Alternative 6: Share a vessel as a backup with other operations

**Table 4-1  
System Capacity Analysis<sup>1</sup>**

Vehicle Capacity Analysis (Low Range)				
Year	Vehicles	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	2,011	65	89	3.86
2005	1,949	63	86	3.74
2006	1,996	64	88	3.84
2007	2,042	66	90	3.92
2008	2,088	67	92	4.01
2009	2,134	69	94	4.10
2010	2,180	70	96	4.19

Passenger Capacity Analysis (Low Range)				
Year	Passengers	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	12,792	413	565	2.28
2005	12,398	418	572	2.31
2006	12,692	428	586	2.37
2007	12,986	438	600	2.42
2008	13,279	448	613	2.48
2009	13,573	457	627	2.53
2010	13,867	467	640	2.59

Vehicle Capacity Analysis (Medium Range)				
Year	Vehicles	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	2,011	65	89	3.86
2005	2,037	66	90	3.91
2006	2,085	67	92	4.01
2007	2,133	69	94	4.10
2008	2,181	70	96	4.19
2009	2,230	72	99	4.28
2010	2,278	73	101	4.38

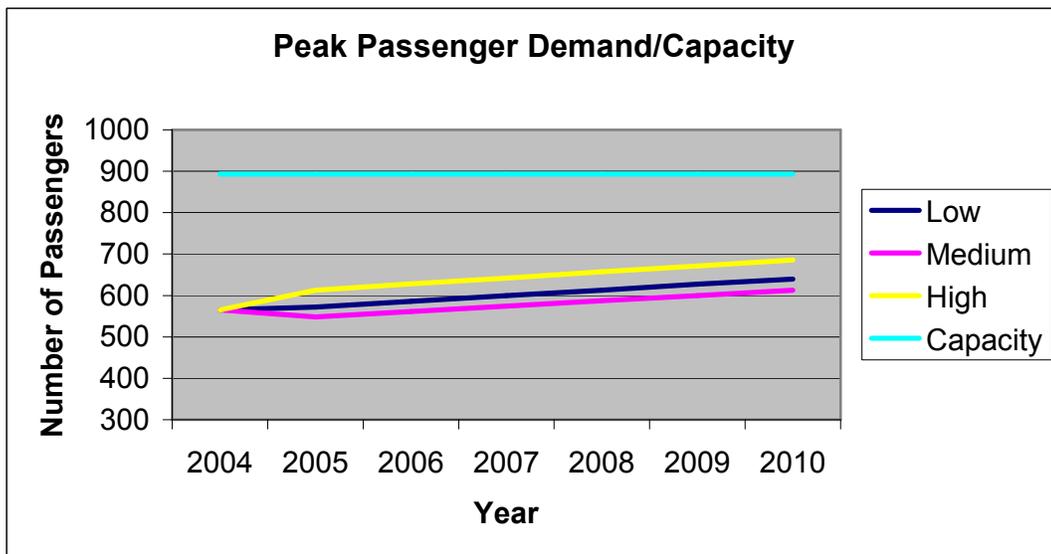
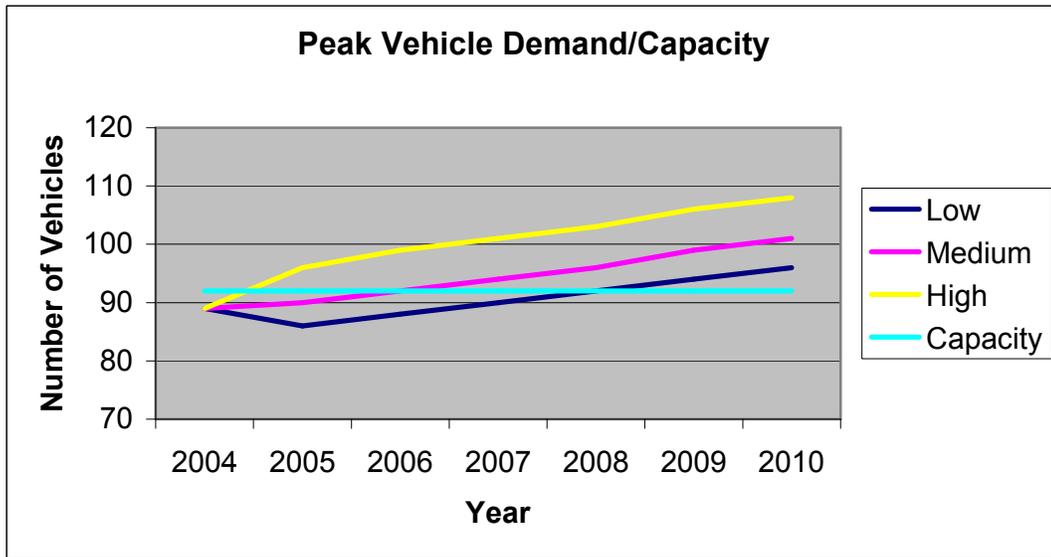
Passenger Capacity Analysis (Medium Range)				
Year	Passengers	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	12,792	413	565	2.28
2005	12,953	400	548	2.21
2006	13,260	409	561	2.27
2007	13,567	419	574	2.32
2008	13,874	428	587	2.37
2009	14,181	438	600	2.42
2010	14,488	447	613	2.48

Vehicle Capacity Analysis (High Range)				
Year	Vehicles	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	2,011	65	89	3.86
2005	2,182	70	96	4.19
2006	2,234	72	99	4.29
2007	2,286	74	101	4.39
2008	2,337	75	103	4.49
2009	2,389	77	106	4.59
2010	2,441	79	108	4.69

Passenger Capacity Analysis (High Range)				
Year	Passengers	Avg/July Day (31)	Peak Day	Round Trips Needed to Meet Capacity
2004	12,792	413	565	2.28
2005	13,878	448	613	2.48
2006	14,207	458	628	2.54
2007	14,536	469	642	2.60
2008	14,865	480	657	2.65
2009	15,194	490	671	2.71
2010	15,523	501	686	2.77

<sup>1</sup>A peak day factor of 1.37 was used to forecast peak vehicle loads in subsequent years based on the vehicle forecasts in Tables 3-1 through 3-3. The auto vehicle capacity of both boats (maximum) 32, was reduced to an effective capacity of 23 for a round trip, which represents the number of autos that can be stored when considering personal freight storage. For passengers, an effective capacity of the average of the capacities of the Beaver Islander and the Emerald Isle, with a 10% adjustment factor) was used.

Figure 4-1  
 Peak Vehicle Demand/Capacity  
 Peak Passenger Demand/Capacity



## Service Alternative

There is also a service alternative that could be explored to satisfy future transportation needs:

- Alternative 7: Operate trips at night during peak periods

## Evaluation of Alternatives

Table 4-2 presents an analysis of the alternatives defined above. The alternatives identified above were reviewed with the BITA and BIBCO staff. Based on that review, the following conclusions are evident. Options 5 and 6 are not feasible. The Beaver Islander is over 40 years old and the extent of the required modification would make the cost prohibitive. Sharing a vessel with another authority, such as the Eastern Upper Peninsula Transportation Authority (EUPTA) is also not considered a possibility because the systems use different type and size vessels and serve different needs.

Option 7 may be feasible operationally but is not considered desirable. It is unlikely that many passengers are going to want to travel at night so the cost of the extra trip would be difficult to recover. Also, there are issues of safety both on the water and during the embarkment and disembarkment phases of the trip.

The remaining alternatives could address the capacity needs of the BITA and BIBCO. Enlarging the Emerald Isle would address capacity needs but not the need for a back-up. Based on the information developed in this study, the clear dependence of the island economy on a vessel with the capacity of the Emerald Isle, and the fact that by 2010 if not before, there will be a need for additional capacity, that if the decision is made to expand capacity beyond operational improvements, procuring a new vessel, either new or used, is preferable to enlarging the Emerald Isle.

## Landside Issues

The landside dock facilities used by the BIBCO are generally adequate for the boat operations. The BIBCO is currently implementing a number of improvements to improve security mandated by the U.S. Coast Guard and the Maritime Safety Act of 2002. In the event a new (or used) additional vessel was procured, the existing docks could accommodate the vessel, although there may be a desire or need for improved docks depending on the rate of growth experienced over the next several years and the type of vessel procured if that occurs.

A more pressing issue is the landside passenger-loading situation in Charlevoix. Currently, people wishing to travel from Charlevoix to Beaver Island have to drive down to the Charlevoix landside docks. If they are going to take their vehicle with them on the trip they park in a queue line and get their tickets. If they are not going to take their vehicle on the boat, they have to drop off their passengers and luggage, buy their ticket(s) and then take their car back to a parking lot at the old Charlevoix High School or the Charlevoix Airport, where they are then taken by van to the dock. The situation occurs in reverse when the boat comes in from Beaver Island. People often have problems finding a place to park at the dock and the “back and forth” nature of the operation is not positive.

**Table 4-2  
Evaluation of Alternatives**

Alternative	Cost	Feasibility	Impact to Island	Comment
1. Do Nothing	NA	NA	Eventually, doing nothing will impact the economic well being of the island, particularly if the Emerald Isle has an extended breakdown or maintenance issue.	This would not address the situation for a back-up boat and may not properly position BITA to address future needs.
2. Purchase New Vessel	\$6,000,000 to \$25,000,000 <sup>1</sup>	Yes	There would be increased passenger and economic activity.	This alternative would provide capacity and address the need for a back-up vessel.
3. Purchase Used Vessel	\$4,000,000 <sup>1</sup>	Yes	There would be some increased passenger and economic activity.	This alternative could address both the capacity needs and the need for a back-up. The BITA may not be able to use federal/state funds for used vessel.
4. Enlarge Emerald Isle	\$3,000,000 <sup>1</sup>	Yes	Would have minimal impact on the island unless the vessel had a breakdown.	Enlarging the Emerald Isle would not provide support in a back-up situation.
5. Enlarge Beaver Islander	Not Applicable	No	Not Applicable	Not feasible due to cost and the fact that boat is over 40 years old.
6. Share a vessel as back-up	Not Applicable	No	Not Applicable	Not viewed as feasible because the only other entity supported by MDOT is EUPTA and they use different vessels.
7. Operate night trips during peak travel periods	Would probably not generate enough revenue to cover costs	Yes	Would not have significant impact on island.	May be possible for freight and good for passengers. Would not provide an adequate back-up.

<sup>1</sup>Costs are estimated and would be dependent on vessel specifications.

In 2006, the U.S. Coast Guard is going to de-commission the USCGC Acacia and vacate its dock in Charlevoix, which is located adjacent to the BIBCO office. This will free up space for parking that could be used by patrons of the Emerald Isle. If people could park their autos at the site, the total trip time of people not taking autos to the island would be reduced, thus making the ferry a more attractive travel option. In addition, removing the need to shuttle passengers to and from their cars would make the on-dock experience more efficient and safer for passengers. An economic benefit for downtown may also result as people will have more time to frequent local shops as they wait for the ferry. An alternative solution to landside transportation issues faced by BITA and BIBCO could be to relocate the ticket and/or baggage handling operations to a remote site and have passengers and bags shuttled to the ferry.



## 5. Recommendations

The information presented in this report is based on input from the public, a survey of boat passengers and property owners, interviews with the Beaver Island Transportation Authority (BITA) and the Beaver Island Boat Company (BIBCO) representatives, and research by the consultant. Based on that work, the following recommendations are made.

1. The focus of the BITA service area should remain between Beaver Island and Charlevoix. Input from the survey did not reveal a significant demand to service other locations.
2. Capacity to haul vehicles will begin to be exceeded in 2005 in peak periods on a regular basis if the high-range forecast materializes and by 2008 under the mid-range forecast. Planning for an additional vessel with capacities similar to the Emerald Isle should begin now.
3. There does not appear to be justification for the expense of a vessel such as catamaran or hovercraft. From the standpoint of both cost and operational feasibility a monohull like the Emerald Isle or an open-deck monohull ferry are the most logical alternatives.
4. The issues associated with land-side operations in Charlevoix should be evaluated particularly with the U.S. Coast Guard scheduled to de-commission the USCGC Acacia and vacate the dock adjacent to the BIBCO offices in 2006. A study should be conducted in conjunction with the City of Charlevoix to identify a viable long-term scenario for BIBCO wharfage in Charlevoix.

The consultant believes acquiring a new or used vessel with capacity similar to the Emerald Isle is critical to ensuring the integrity of the economic well-being of Beaver Island. The residents and travelers to the island pump millions of dollars annually into the economies of Beaver Island, the City of Charlevoix, Charlevoix County, and the State of Michigan. Ensuring that capacity needs are met in coming years is justified by that expenditure. Equally important is respect for the environment and quality of life on Beaver Island. Experience with adding the Emerald Isle to the fleet indicates passenger/tourist traffic increased by 10 to 20 percent. So, bringing another vessel into service would not foster such an influx of tourism/passengers as to jeopardize the character of Beaver Island.



# Appendix A

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## Greater Beaver Island Ferry Transportation Needs Survey



Beaver Island Transportation Survey  
 Questionnaires Mailed to Property Owners  
 (258 Responses)

Are you a...?

Response	Number	Percent
Seasonal Resident	82	32.0
Permanent Resident	153	59.8
Visitor	20	7.8
Here on Business	1	0.4
Total	256	100.0

How do you typically get to and from the Island?

Response	Number	Percent
Ferry	164	64.3
Air Service	76	29.8
Ferry or Air Service	9	
Personal Boat	1	0.4
Personal Plane	5	2.0
Total	255	96.5

How do you typically get your personal freight to and from the Island?

Response	Number	Percent
Ferry	221	87.0
Air Service	22	8.7
Ferry or Air Service	8	
Personal Boat	2	0.8
Personal Plane	1	0.4
Total	254	96.9

Do you think current transportation services to the island are adequate?

Response	Number	Percent
Yes	187	76.0
No	59	24.0
Total	246	100.0

If a faster ferry was in service that could cut the travel time to an hour, would you use the ferry more frequently?

Response	Number	Percent
Yes	133	54.5
No	111	45.5
Total	244	100.0

Do you think getting a new or faster boat would cause additional development on the island?

Response	Number	Percent
Yes	201	81.0
No	47	19.0
Total	248	100.0

If you are traveling to the island (or the last time you traveled to the island), did you spend money in Charlevoix?

Response	Number	Percent
Yes	205	80.1
No	33	12.9
Does not apply	18	7.0
Total	256	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	59	28.9
\$51 - \$100	53	26.0
Over \$100	92	45.1
Total	204	100.0

If you are traveling to Charlevoix (or the last time you traveled to Charlevoix), did you spend money on Beaver Island?

Response	Frequency	Percent
Yes	117	47.4
No	10	4.0
Does not apply	120	48.6
Total	247	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	9	7.8
\$51 - \$100	11	9.5
Over \$100	96	82.8
Total	116	100.0

Would you like to see additional ferry service to other locations in the area such as Manistique, or Cross Village?

Response	Number	Percent
Yes	89	37.4
No	149	62.6
Total	238	100.0

If yes, please list the location(s)

Response	Number	Percent*
Cross Village	23	8.9
Ironton	1	0.4
Northport	1	0.4
Mackinac Island	2	0.8
Manistique	33	12.8
Petoskey	4	1.6
Traverse City	7	2.7
Upper Peninsula	2	0.8

\*Percent of total survey respondents.

If the Emerald Isle were to break down and be out of service for an extended period of time, would it be a hardship for you?

Response	Number	Percent
Not at all	73	28.6
Somewhat of a hardship	100	39.2
A major inconvenience	58	22.7
Very difficult	24	9.4
Total	255	100.0

Do you think Beaver Island is developing...

Response	Number	Percent
Not enough	18	7.1
Just enough	97	38.5
Somewhat too fast	77	30.6
Too fast	60	23.8
Total	252	100.0

Do you find that it is inconvenient to board or get off the boat and to and from your car in Charlevoix?

Response	Number	Percent
Not inconvenient	80	31.4
Somewhat inconvenient	107	42.0
Very inconvenient	61	23.9
I don't use the boat	7	2.7
Total	255	100.0

What do you think about an off-site office in Charlevoix where you would park, buy your ticket, check your luggage and freight, and then be taken to the boat on a shuttle?

Response	Number	Percent
Not a good idea, I like having the office by the boat.	100	39.7
It does not matter	43	17.1
It sounds like a good idea	109	43.3
System	252	100.0

What is your age?

Response	Number	Percent
Under 18	1	0.4
19 to 55	104	40.6
56 to 65	74	28.9
Over 65	77	30.1
Total	256	100.0

Beaver Island Transportation Survey  
 Questionnaires Distributed on the Boat  
 (253 Responses)

Are you a...?

Response	Number	Percent
Seasonal Resident	65	26.0
Permanent Resident	21	8.4
Visitor	158	63.2
Here on Business	6	2.4
Total	250	100.0

How do you typically get to and from the Island?

Response	Number	Percent
Ferry	197	79.8
Air Service	25	10.1
Ferry or Air Service	20	
Personal Boat	2	0.8
Personal Plane	3	1.2
Total	247	91.9

How do you typically get your personal freight to and from the Island?

Response	Number	Percent
Ferry	207	87.3
Air Service	10	4.2
Ferry or Air Service	15	
Personal Boat	4	1.7
Personal Plane	1	0.4
Total	237	93.7

Do you think current transportation services to the island are adequate?

Response	Number	Percent
Yes	220	92.1
No	19	7.9
Total	239	100.0

If a faster ferry was in service that could cut the travel time to an hour, would you use the ferry more frequently?

Response	Number	Percent
Yes	143	59.1
No	99	40.9
Total	242	100.0

Do you think getting a new or faster boat would cause additional development on the island?

Response	Number	Percent
Yes	185	77.1
No	55	22.9
Total	240	100.0

If you are traveling to the island (or the last time you traveled to the island), did you spend money in Charlevoix?

Response	Number	Percent
Yes	183	73.8
No	49	19.8
Does not apply	16	6.5
Total	248	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	92	49.7
\$51 - \$100	48	25.9
Over \$100	45	24.3
Total	185	100.0

If you are traveling to Charlevoix (or the last time you traveled to Charlevoix), did you spend money on Beaver Island?

Response	Frequency	Percent
Yes	171	70.4
No	12	4.9
Does not apply	60	24.7
Total	243	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	22	12.8
\$51 - \$100	23	13.4
Over \$100	127	73.8
Total	172	100.0

Would you like to see additional ferry service to other locations in the area such as Manistique, or Cross Village?

Response	Number	Percent
Yes	76	34.9
No	142	65.1
Total	218	100.0

If yes, please list the location(s)

Response	Number	Percent*
Canada	1	0.4
Cross Village	22	8.7
High Island	3	1.2
Garden Island	3	1.2
Upper Peninsula	2	0.8
Leland	1	0.4
Ludington	1	0.4
Mackinac Island	3	1.2
Manistique	15	5.9
Escanaba	1	0.4
Mastique	1	0.4
Muskegon	2	0.8
Petosky	3	1.2

\*Percent of total survey respondents.

If the Emerald Isle were to break down and be out of service for an extended period of time, would it be a hardship for you?

Response	Number	Percent
Not at all	104	43.7
Somewhat of a hardship	83	34.9
A major inconvenience	38	16.0
Very difficult	13	5.5
Total	238	100.0

Do you think Beaver Island is developing...

Response	Number	Percent
Not enough	11	4.8
Just enough	109	47.4
Somewhat too fast	62	27.0
Too fast	48	20.9
Total	230	100.0

Do you find that it is inconvenient to board or get off the boat and to and from your car in Charlevoix?

Response	Number	Percent
Not inconvenient	126	51.6
Somewhat inconvenient	73	29.9
Very inconvenient	45	18.4
I don't use the boat	0	0.0
Total	244	100.0

What do you think about an off-site office in Charlevoix where you would park, buy your ticket, check your luggage and freight, and then be taken to the boat on a shuttle?

Response	Number	Percent
Not a good idea, I like having the office by the boat.	66	27.0
It does not matter	83	34.0
It sounds like a good idea	95	38.9
System	244	100.0

What is your age?

Response	Number	Percent
Under 18	13	5.3
19 to 55	142	58.0
56 to 65	54	22.0
Over 65	36	14.7
Total	245	100.0

**Beaver Island Transportation Survey  
Questionnaires Distributed on the Boat and Mailed to Property Owners  
(511 Responses)**

**Are you a...?**

Response	Number	Percent
Seasonal Resident	147	29.1
Permanent Resident	174	34.4
Visitor	178	35.2
Here on Business	7	1.4
Total	506	100.0

**How do you typically get to and from the Island?**

Response	Number	Percent
Ferry	361	71.9
Air Service	101	20.1
Ferry or Air Service	29	
Personal Boat	3	0.6
Personal Plane	8	1.6
Total	502	94.2

**How do you typically get your personal freight to and from the Island?**

Response	Number	Percent
Ferry	428	87.2
Air Service	32	6.5
Ferry or Air Service	23	
Personal Boat	6	1.2
Personal Plane	2	0.4
Total	491	95.3

**Do you think current transportation services to the island are adequate?**

Response	Number	Percent
Yes	407	83.9
No	78	16.1
Total	485	100.0

If a faster ferry was in service that could cut the travel time to an hour, would you use the ferry more frequently?

Response	Number	Percent
Yes	276	56.8
No	210	43.2
Total	486	100.0

Do you think getting a new or faster boat would cause additional development on the island?

Response	Number	Percent
Yes	386	79.1
No	102	20.9
Total	488	100.0

If you are traveling to the island (or the last time you traveled to the island), did you spend money in Charlevoix?

Response	Number	Percent
Yes	388	77.0
No	82	16.3
Does not apply	34	6.7
Total	504	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	151	38.8
\$51 - \$100	101	26.0
Over \$100	137	35.2
Total	389	100.0

If you are traveling to Charlevoix (or the last time you traveled to Charlevoix), did you spend money on Beaver Island?

Response	Frequency	Percent
Yes	288	58.8
No	22	4.5
Does not apply	180	36.7
Total	490	100.0

If yes, approximately how much did you spend?

Response	Number	Percent
\$10 - \$50	31	10.8
\$51 - \$100	34	11.8
Over \$100	223	77.4
Total	288	100.0

Would you like to see additional ferry service to other locations in the area such as Manistique, or Cross Village?

Response	Number	Percent
Yes	165	36.2
No	291	63.8
Total	456	100.0

If yes, please list the location(s)

Response	Number	Percent*
Manistique	49	9.6
Cross Village	45	8.8
Petoskey	7	1.4
Traverse City	7	1.4
Mackinac Island	4	0.8
Upper Peninsula	4	0.8
Garden Island	3	0.6
High Island	3	0.6
Muskegon	2	0.4
Canada	1	0.2
Escanaba	1	0.2
High Garden	1	0.2
Ironton	1	0.2
Leland	1	0.2
Ludington	1	0.2
Northport	1	0.2

\*Percent of total survey respondents.

If the Emerald Isle were to break down and be out of service for an extended period of time, would it be a hardship for you?

Response	Number	Percent
Not at all	177	35.9
Somewhat of a hardship	183	37.1
A major inconvenience	96	19.5
Very difficult	37	7.5
Total	493	100.0

Do you think Beaver Island is developing...

Response	Number	Percent
Not enough	29	6.0
Just enough	206	42.7
Somewhat too fast	139	28.8
Too fast	108	22.4
Total	482	100.0

Do you find that it is inconvenient to board or get off the boat and to and from your car in Charlevoix?

Response	Number	Percent
Not inconvenient	206	41.3
Somewhat inconvenient	180	36.1
Very inconvenient	106	21.2
I don't use the boat	7	1.4
Total	499	100.0

What do you think about an off-site office in Charlevoix where you would park, buy your ticket, check your luggage and freight, and then be taken to the boat on a shuttle?

Response	Number	Percent
Not a good idea, I like having the office by the boat.	166	33.5
It does not matter	126	25.4
It sounds like a good idea	204	41.1
System	496	100.0

What is your age?

Response	Number	Percent
Under 18	14	2.8
19 to 55	246	49.1
56 to 65	128	25.5
Over 65	113	22.6
Total	501	100.0

# **Appendix B**

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**Comments Received from  
June 30, 2004, Public Meeting**



Beaver Island Transportation Coordination Study  
Public Meeting  
Notes  
July 1, 2004

**Meeting Information:** The meeting was held June 30, 2004 at 7:00 p.m. at the Saint James Township Hall.

**Purpose:** To introduce the Beaver Island Transportation Coordination Study to the Beaver Island community.

**Attendees:** The attendance list is attached.

**Discussion:**

Following introduction by Barb Schwartzfisher, Larry Strange made a PowerPoint presentation covering the study's purpose, schedule and analysis steps. A copy of the presentation was distributed to those in attendance. Questions and comments followed the presentation.

Q: *What type models will you be using?*

R: An examination will be made of various trends in ferry use. Information will also be examined for Beaver Island building permits and tax receipts over the last 10 years. Additionally, the planning process for Beaver Island, including results of the visioning session scheduled for July 15<sup>th</sup>, will be used to develop the forecast of future use, passengers and vehicles, including freight vehicles.

Q: *Who is on the Steering Committee?*

R: Barb responded that the Steering Committee would include representatives of the BITA and the BITA Board.

Q: *Is the study about the better use of assets or new assets?*

R: Both. Based on the forecast, existing assets will be reviewed to determine if they are adequate. If so, a No Action strategy will be recommended. If the forecasts indicate the need for more than the current assets can accommodate, modifying the existing ferry or if purchasing new equipment will also be reviewed.

Q: *The cost to ship freight is expensive. Will the pricing of transportation be the subject of your analysis?*

R: The study is not intended to deal with the operation of the ferry or recommendations on its pricing structure. But, the ferry fare structure as it compares to other similar situations will be reviewed.

C: *In order to accommodate more demand for use, it is important to have more lodging on the island at which visitors can stay.*

Q: *Will various modes of watercraft be examined?*

R: Yes. The study will cover available technology including review of equipment being used in other places. Hovercraft will be included in the analysis.

C: *In order to get more people to use the ferry, pricing is a key factor.*

C: *The key variable in this analysis seems to be the degree to which tourism can be stimulated. Will a marketing study be done?*

R: A marketing study will not be done. Nevertheless, an examination will be made of the market of travelers now being accommodated, not only by the ferry but also by Island Airways. A survey will be conducted in this effort.

C: *The schools that travel to the island for sports are under financial pressure. They find the ferry too high under current conditions. Will the operators of the ferry make it free for use by schools on the mainland?*

R: The operators of the ferry and the BITA will address Fare issues such as these.

Q: *Will the use of hovercraft be examined? Travel time is a critical factor in stimulating demand?*

R: The use of hovercraft will be part of the analysis.

- C: *In response to a question posed by Joe Corradino, Mr. Gallagher indicated that he does not want change. He discussed the impact change has brought to the island and is unhappy with that. Further improvement of ferry service would only stimulate continued change. Another gentleman in the audience concurred with Mr. Gallagher's position.*
- C: *Many of us on the island are dependent upon the movement of freight for our livelihoods. It is important that there be some accounting of the cost to move freight.*
- R: *The study will make available all information that is public. However, as explained by Barb Schwartzfisher, the ferry is operated by a private enterprise and, as most closely-held private companies, its financial matters are not public record.*
- C: *It is important to note that the ferry crew is extremely cooperative and accommodating.*
- Q: *There is a small group of people at this meeting. Will an outreach effort be made through mailing of the comment form to other residents of the island?*
- R: *This will likely occur in conjunction with the surveys that will be taken of ferry users as well as inhabitants of the island.*
- Q: *If another ferry is the recommended approach from the study, will it cost more to use?*
- R: *An additional ferry will likely be purchased through government funding. In that case, typically less than 50 percent of the ferry's purchase costs is borne by the public. That should lessen the cost to operate the ferry, as depreciation/amortization will be little or nothing.*
- C: *The reason we are here tonight is that growth is occurring and is going to continue. Controlling growth is key. In order to encourage participation and build credibility for the study, whatever is done in addressing this growth and related issues must be transparent.*
- C: *The Island is losing its identity.*
- C: *The concept of ferry service should extend to other locations. Beaver Island can be in the middle of a ferry run including service between the Upper to the Lower Peninsulas.*

At the conclusion of the meeting, Bill McDonough of the Beaver Island Boat Company (the private company that operates the Emerald Isle) made the following points:

- The cost of the ferry service is directly related to the investments by the boat operating company. This includes the cost of various construction items to maintain the port facilities.
- Use of the ferry is a function of the time it takes to travel from the mainland to the island. A high-speed vehicle could better compete with plane service.
- Fares must be established to account for not only operating and maintenance costs but also the construction costs mentioned above. Additionally, the company is to make a reasonable profit.
- Discounts for various groups are available.
- Some key upcoming costs that will be borne by the ferry operating company are those that are imposed by the federal government for “homeland security.” For example, eventually, the terminal area will need to be fenced. Other security measures may be needed. These are the kinds of costs that affect the fare that is charged.
- Growth is inevitable.

With that, the meeting concluded with an indication that additional public contact will be made and the group was encouraged to reach out to the Authority as well as the consultant through the use of the comment form and participation in the survey.