APPENDIX B

MARINE SEGMENTS TECHNICAL REPORT

JUNEAU ACCESS IMPROVEMENTS
SUPPLEMENTAL DRAFT
ENVIRONMENTAL IMPACT STATEMENT

STATE PROJECT NUMBER: 71100
FEDERAL PROJECT NUMBER: STP-000S (131)

Prepared for

Alaska Department of Transportation and Public Facilities
6860 Glacier Highway
Juneau, Alaska 99801-7999

Prepared by

Coastwise Corporation
Naval Architects Marine Engineers
Juneau, Alaska

SEPTEMBER 2004

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This Juneau Access Marine Segments Technical Report was prepared as an appendix to the Supplemental Draft Environmental Impact Statement (SDEIS) for the Juneau Access Improvements (JAI) project. This report is an update to "The Marine Segments of the Juneau Access Study," October 1996 referred to as the 1996 Marine Segments Report.

The purpose of this 2004 Marine Segments Technical Report is twofold: 1) establish the optimum size of the vessels that would operate in each JAI Alternative, based on vessel characteristics in the reasonable alternatives descriptions and optimized crew schedules; and 2) determine the cost to obtain and operate these vessels.

Establishing the optimum vessel size was an iterative process between the marine segments analysis and traffic forecast. Based on the alternative descriptions and locations of terminals, the length and operational limitations (such as maneuvering distances) were calculated for each marine route. Using speeds of 15 knots for displacement vessels and 30 knots for high-speed vessels combined with crew operating hours the number of round trips possible in a day was calculated. The number of round trips was furnished to the traffic forecasters, who were then able to forecast the traffic (both vehicles and passengers) for each route. The traffic forecast and the number of round trips was used to size the optimum vessel.

DOT & PF management, the traffic consultants, and the marine consultant determined that, for the purpose of vessel sizing, the 30-year summer average daily traffic (SADT) and 30 year winter average daily traffic (WADT) would be used. This is based on a combination of factors: vessel service life (64 years for displacement vessels and 32 years for high-speed vessels); the wide range between average annual daily traffic (AADT) and peak week average daily traffic (PWADT); and the need for balance between being oversized in early years of service and undersized in future years of service.

Vessel acquisition cost estimates were based on Alaska Marine Highway System (AMHS) history of vessel acquisition costs plus recent costs of vessels constructed in the United States for public transportation. Periodic Capital Improvement projects necessary to keep a vessel certified were estimated based on AMHS historical data. The annual operation and maintenance costs were based on AMHS historical data.

The following table summarizes the vessel characteristics and costs for all JAI Alternatives.

Vessel Summary

Alt	Route	Vessels			Round Trips	Annual M&O Cost	Acquisition Cost
		#	Type	ASV			
1	HNS-SGY-HNS	1	Displ	Aurora (34)	3	$ 1,898,806	$ -
					Total	**$ 1,898,806**	**$ -**
2	HNS-KTZ-HNS	1	Displ	Aurora (34)	9	$ 2,879,527	$ -
					Total	**$ 2,879,527**	**$ -**
2A	SAW-SLC-SAW	2	Displ	33	20	$ 4,096,134	$ 45,923,874
	HNS-KTZ-HNS	1	Displ	Aurora (34)	8	$ 2,789,673	$ -
					Total	**$ 6,885,807**	**$ 45,923,874**
2B	HNS-SGY-HNS	1	Displ	16	6	$ 977,753	$ 10,638,207
	HNS-KTZ-HNS	1	Displ	Aurora (34)	8	$ 2,789,673	$ -
	SGY-KTZ-HNS	1	Displ	53	6	$ 3,942,841	$ 37,405,219
					Total	**$ 7,710,267**	**$ 48,043,426**
2C	HNS-SGY-HNS	1	Displ	Aurora (34)	6	$ 2,938,468	$ -
					Total	**$ 2,938,468**	**$ -**
3	HNS-SGY-HNS	1	Displ	Aurora (34)	6	$ 2,938,468	$ -
	SAW-WHB-SAW	2	Displ	42	12	$ 5,053,847	$ 58,937,604
					Total	**$ 7,992,315**	**$ 58,937,604**
4A	HNS-SGY-HNS	1	Displ	Aurora (34)	3	$ 1,898,806	$ -
	AUK-HNS-AUK AUK-SGY-AUK	2	Fast	50	2	$ 11,228,776	$ 111,200,000
					Total	**$ 13,127,582**	**$ 111,200,000**
4B	HNS-SGY-HNS	1	Displ	Aurora (34)	3	$ 1,898,806	$ -
	SAW-HNS-SAW	1	Fast	32	4	$ 3,483,385	$ 46,384,000
	SAW-SGY-SAW	1	Fast	51	2	$ 2,745,010	$ 56,112,000
					Total	**$ 8,127,201**	**$ 102,496,000**
4C	HNS-SGY-HNS	1	Displ	Aurora (34)	3	$ 1,898,806	$ -
	AUK-HNS-AUK	1	Displ	63	1	$ 1,907,860	$ 44,604,471
	AUK-SGY-AUK	1	Displ	63	1	$ 1,977,777	$ 44,604,471
					Total	**$ 5,784,443**	**$ 89,208,942**
4D	HNS-SGY-HNS	1	Displ	Aurora (34)	3	$ 1,898,806	$ -
	SAW-HNS-SAW	1	Displ	45	1	$ 1,947,672	$ 31,635,070
	SAW-SGY-SAW	1	Displ	45	2	$ 2,022,356	$ 31,635,070
					Total	**$ 5,868,834**	**$ 63,270,140**

For alternatives comparison purposes the vessels selected optimize the service while minimizing the operational costs.

Introduction

The *Juneau Access Marine Segments Technical Report* was prepared as a technical appendix to the Supplemental Draft Environmental Impact Statement (SDEIS) for the Juneau Access Improvement (JAI) project. The purpose of this marine transportation study is twofold;

1) establish the size of the vessels operating in each Juneau Access Improvements Alternative, based on vessel characteristics in the reasonable alternative descriptions and optimized crew schedules; and

2) determine the amount of money required to obtain and operate these vessels including vessel acquisition and capital improvements and annual vessel operating, maintenance and management costs.

Juneau Access Improvements (JAI) Reasonable Alternatives

A brief description of each alternative is provided below.

Alternative 1 – No Action. The No Action Alternative includes a continuation of mainline AMHS service in Lynn Canal as well as the operation of the fast vehicle ferry (FVF) *M/V Fairweather* between Auke Bay and Haines and Auke Bay and Skagway. The *M/V Aurora* would provide shuttle service between Haines and Skagway, beginning as early as 2005.

Alternative 2 – East Lynn Canal Highway with Katzehin Terminal. This alternative would construct a 68.5-mile-long highway from the end of Glacier Highway at the Echo Cove boat launch area around Berners Bay to Skagway. A ferry terminal would be constructed north of the Katzehin River delta, and operation of the *M/V Aurora* would change to shuttle service between Katzehin and the Lutak Ferry Terminal in Haines. Mainline AMHS service would end at Auke Bay, and the Haines to Skagway shuttle service would be discontinued. The M/V Fairweather would no longer operate in Lynn Canal.

Alternative 2A – East Lynn Canal Highway with Berners Bay Shuttle. This alternative would construct a 5.2-mile highway from the end of Glacier Highway at Echo Cove to Sawmill Cove in Berners Bay. Ferry terminals would be constructed at both Sawmill Cove and Slate Cove, and shuttle ferries would operate between the two terminals. A 52.9-mile highway would be constructed between Slate Cove and Skagway. A ferry terminal would be constructed north of the Katzehin River delta, and the *M/V Aurora* would operate between the Katzehin and the Lutak Ferry Terminals. Mainline AMHS service would end at Auke Bay, and the Haines to Skagway shuttle service would be discontinued. The M/V Fairweather would no longer operate in Lynn Canal.

Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway. This alternative would construct a 50.5-mile highway from the end of Glacier Highway at Echo Cove around Berners Bay to a point north of the Katzehin River delta. Shuttle ferry service to both Skagway and Haines would be provided from a new terminal at Katzehin. The Haines to Skagway shuttle service would continue to operate, with two new shuttle ferries and the *M/V Aurora* forming a three-vessel system. Mainline AMHS service would end at Auke Bay and the M/V Fairweather would no longer operate in Lynn Canal.

Alternative 2C – East Lynn Canal Highway with Shuttle to Haines from Skagway. This alternative would construct a 68.5-mile highway from the end of Glacier Highway at Echo Cove around Berners Bay to Skagway with the same design features as Alternative 2. The M/V Aurora would continue to provide service to Haines. No ferry terminal would be constructed north of the Katzehin River delta. Mainline ferry service would end at Auke Bay, and the M/V Fairweather would no longer operate in Lynn Canal.

Alternative 3 – West Lynn Canal Highway. This alternative would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove. Ferry terminals would be constructed at Sawmill Cove and William Henry Bay, and shuttle ferries would operate between the two terminals. A 38.9-mile highway would be constructed from William Henry Bay to Haines with a bridge across the Chilkat River/Inlet connecting to Mud Bay Road. The *M/V Aurora* would continue to operate as a shuttle between Haines and Skagway. Mainline ferry service would end at Auke Bay, and the M/V Fairweather would no longer operate in Lynn Canal.

Alternative 4 – Marine Alternatives. The four marine alternatives would construct new shuttle ferries to operate in addition to continued mainline service in Lynn Canal. All of the alternatives would include a minimum of two mainline vessel round trips per week, year-round, and continuation of the Haines/Skagway shuttle service provided by the *M/V Aurora*. The M/V Fairweather would no longer operate in Lynn Canal. All of these alternatives would require construction of a new double stern berth at Auke Bay.

Alternative 4A – HSF Shuttle Service from Auke Bay. This alternative would construct two High Speed Ferry (HSF) vessels to provide daily service from Auke Bay to Haines and to Skagway.

Alternative 4B – HSF Shuttle Service from Berners Bay. This alternative would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove where a new ferry terminal would be constructed. Two HSFs would be constructed to provide daily service from Sawmill Cove to Haines and to Skagway in the summer and from Auke Bay to Haines and to Skagway in the winter.

Alternative 4C – Conventional Monohull Shuttle Service from Auke Bay. This alternative would construct two conventional monohull vessels to provide daily summer service from Auke Bay to Haines and to Skagway. In winter, shuttle service to Haines and Skagway would be provided on alternate days.

Alternative 4D – Conventional Monohull Shuttle Service from Berners Bay. This option would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove where a ferry terminal would be constructed. Two conventional monohull vessels would be constructed to provide daily service from Sawmill Cove to Haines and to Skagway in the summer and alternating day service from Auke Bay to Haines and to Skagway in the winter.

The goal of the Marine Segments Technical Report is to determine vessel size and costs for the JAI Alternatives. An overview of the methodology used in this study is described in the following sections.

Terminology

There are many assumptions and calculations used for this analysis, which require terminology specific to this project. These terms are listed below.

Alternatives. Alternatives are defined as the most reasonable combination of highways and/or vessels necessary to improve Juneau Access, as identified in the Alternative Screening Report. The alternatives are summarized in the *Introduction* section of this report. Some alternatives specify vessel routes and specific vessel types (like a high speed ferry) and some alternatives specify only routes.

AMHS. Alaska Marine Highway System.

ASV. Alaska Standard Vehicle. A unit of measurement of car deck area on a vessel equal to ten feet by twenty feet, used by the AMHS.

Configurations. A configuration is an optimal way to implement an alternative. Configurations must have specific definitions of routes, schedules and vessel types and more than one configuration may exist for each alternative. For example, the same alternative could have two configurations, one with high speed vessels and one with displacement vessels. A total cost will be calculated for each configuration.

Dayboat. Dayboat is a term used to describe the scheduling of a vessel. A dayboat is scheduled so that it returns to its home port at night and the crew does not sleep on the vessel at night. A dayboat does not generally have crew quarters or a galley.

Displacement Vessel (Displ.). A displacement vessel means a steel hulled vessel with relatively slow speed (15 knots). Displacement vessels are like the existing AMHS fleet, except the displacement vessels for this study are dayboats.

High Speed Ferry (HSF). A high speed ferry (HSF) is an aluminum hull catamaran capable of making at least 30 knots of speed loaded. HSF vessels do not have galleys or crew quarters and are very similar to the AMHS vessel M/V Fairweather.

Routes. Routes are specific transportation links within configurations. A configuration may have several routes and routes may be different depending on the season. Routes are always considered round trips in this study, because dayboats need to return to home port at night. Routes are sometimes called “links” in other JAI studies.

Sister ship. A sister ship is a vessel that is very similar to another vessel. Usually a sister ship is created from the same plans and has the same type of machinery, accommodations, and outfitting as the original vessel.

Configuration Definition

Alternatives do not fully identify routes and vessel types required for the size calculations. A separate configuration category was created to capture this information. The first major process of this study was to render the marine segments of the alternatives into viable ferry systems, or configurations.

Vessel Size

The basic determination of vessel size is made by taking the amount of average daily traffic on a route and dividing it by the number of vessel trips per day.

Traffic

Traffic information is from the Juneau Access Traffic Forecast.

- Traffic calculations are based on estimated Summer Average Daily Traffic (SADT), or Winter Average Daily Traffic (WADT), in the year 2038, based on an approximate 30 year forecast period.
- The SADT and WADT traffic numbers in the traffic report indicate the sum of traffic in both directions between two points. The traffic data required for the Marine Segments analysis is one-way traffic.

Round Trips

The number of round trips is determined by route length, vessel speed, and operating schedule.

- Route Length is established by vessel course.
- Vessel Speed is determined by optimized proven speed of similar vessel types.
- Operating schedules. There are many parameters and details involved in the optimization of vessel schedules that are further defined in this report.

Costs

Fiscal information for all vessels is determined by the use of different cost models for each cost component. The cost components are listed below. In most cases the cost models are indexed by the size and type of the vessel in question.

Annual Costs

- Crew cost
- Fuel consumption costs
- Vessel lay-up costs
- Annual and hourly maintenance costs
- Annual management costs

Capital Costs

- Vessel acquisition costs (construction plus program cost)
- Vessel capital improvement costs based on lifespan.

M/V Aurora

The Marine Segments analysis originally assumed that all required vessels would be purchased new. However, after a review of preliminary results and a change in the AMHS vessel deployment plan, the M/V Aurora was identified as an existing vessel that would be both viable and available for use as a Haines/Skagway (or Haines/Katzehin) shuttle vessel.

A separate analysis was made using the M/V Aurora in the same configurations as defined for the “Optimum” vessels and a second set of results, titled the “Aurora” results was generated.

Detailed Methodology

The specific methodology employed in each step of these analyses is described in detail in the following chapters of this report.

This Page Left Intentionally Blank

The marine segments for each alternative are defined in the reasonable alternatives description in the *Introduction* section. The alternatives serve as basic definitions of a specific transportation solution, but are not defined in enough detail to provide the description of routes, schedules, and vessel types that are required for the size and cost analysis. A separate category referred to as a "configuration" was created to capture this more detailed information. Defining these configurations was the first major process of this study.

Assumptions

A significant amount of analysis and public input on the JAI Marine Segments occurred prior to this study. Also, new priorities for the vessel systems were established by the State. This historical information and the new parameters were used to provide the ground rules for the creation of configurations.

General

- Configurations must provide adequate service while minimizing operational costs.
- Proven technology is required with systems and vessels suitable for reliable year-round service in Southeast Alaska.
- Vessels and systems should be compatible to AMHS.
- Vessels and systems should be sized for optimum capacity in 30 years, using Summer Average Daily Traffic and Winter Average Daily Traffic.

Schedule

- All JAI Marine Segments vessels are "dayboats." Dayboats are defined as vessels whose crew work only one shift and leave the vessel at night. Dayboats usually require that the vessel start and end each shift at the same port.
- All marine routes to be analyzed are circular. The vessel returns at the end of its operational day to the same port from which it started.
- Vessels are to be "liners." Liners are defined as vessels that sail on a fixed daily schedule that does not change. In cases that require multiple port sailings on different days, schedules may be established for every two days.
- Schedules must maximize the amount of time the systems are in operation. Ideally schedules will provide for 16-18 hours per day service in the summer and 10-12 hours per day service in the winter. 24 hour per day service is not planned to allow for the necessary daily supply and maintenance of vessels.
- Vessel Schedules should reflect crew schedules that are viable under current AMHS union contracts. Overtime costs should be minimized.
- Crew schedules for a single crew must be no more than 12 hours. This will prevent the need for operation of any vessel with back-up crew on board. Per

USCG regulations, no crewmember can be on duty for more than 12 consecutive hours.

Vessel Type

- Vessel type must be based on existing successful vessels used in public transit.
- Vessel speeds should be as efficient as possible and based on realistic and or historical vessel speeds in Southeast Alaska. Where necessary, speed will be adjusted slightly to provide for an optimum schedule.
- Vessels must be suitable for the existing environmental conditions. Primarily this goal will be achieved by selecting vessel types that already have a successful operating history in Southeast Alaska.

Route Arrangement

- Each route must have a back-up vessel or an alternate transportation route to provide service in the event of a breakdown.
- If two vessels are identified for improving service on a single route, these vessels will be sister ships.
- In the event of a road closure, one vessel in each system must be able to provide service down the length of Lynn Canal.

Miscellaneous

- Shore side support personnel is not planned for most alternatives. Because of high sailing frequency, berths and vessels must be designed for rapid docking and loading, without complicated mooring line and transfer systems.
- Vessel terminal information and costs are provided separately in the Technical Alignment Report by DOT&PF Marine Engineering Design Group.
- For alternatives where AMHS ferry service continues to operate, traffic capacity for Marine Segments vessels was reduced by a value equal to the existing AMHS vessel capacity on that alternative.
- Reservation system costs were included in all Alt. 4 configurations because sailing frequency on these alternatives is too low to successfully accommodate a first come – first served basis.

Configurations

Configurations were defined by an iterative process using the assumptions described above and by analyzing the possible vessel and route combinations within each alternative. Those configurations that appeared to be strong solutions for each alternative were selected for further analysis and are presented in the following tables.

In many cases, an alternative has just one configuration, which provides a more detailed description of the alternative. This usually occurs when an alternative is well defined or has only one good solution. In a few instances, an alternative has several configurations. This occurs when there is more than one good solution, usually through the selection of different type of vessel or different routes.

For each configuration, the type of vessel, the number of vessels, crew schedules and route operating hours required for each season for each route is specified. Additionally, a back-up solution is described. Table 1 shows the configurations developed for Alt. 1 and Alts. 2 through 2C.

Table 1

Configuration Definitions for Alt. 1 and Alts. 2 through 2C

Alt	Config	Route	Season	# Vessels	Type	Crew Hrs		Op Sch	Link
						Vessel 1	Vessel 2	hrs/day	Back-up
1. No Action									
Alt 1 - No build									
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
2 East Lynn Canal									
Alt 2 - Road to SGY, ferry KTZ - HNS									
	I	HNS-KTZ-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
Alt. 2A - Road to SGY, ferry KTZ - HNS, ferry across Berners						Mainline service to terminate at Auke Bay			
	I	SAW-SLC-SAW	summer	2	Displ	8 + 8	8 + 8	16	2nd boat
			winter	1	Displ	12		12	
		HNS-KTZ-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
Alt. 2B - Road to KTZ, ferry to SGY and HNS						Mainline service to terminate at Auke Bay			
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	other KTZ boat
		HNS-KTZ-HNS	summer	1	Displ	8 + 8		16	other KTZ boat
			winter	1	Displ	12		12	other KTZ boat
		SGY-KTZ-SGY	summer	1	Displ	8 + 8		16	other KTZ boat
			winter	1	Displ	12		12	
Alt. 2C - Road to SGY, ferry SGY - HNS						Mainline service to terminate at Auke Bay			
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		min 12	

Table 2 below, shows two configurations for Alt. 3.

Table 2

Configuration Definitions for Alt. 3

Alt	Config	Route	Season	# Vessels	Type	Crew Hrs		Op Sch	Link
Alt 3 - West Lynn Canal									
Alt. 3 - Road to HNS, ferry SAW-WHB, ferry HNS - SGY						Mainline service to terminate at Auke Bay			
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		SAW-WHB-SAW	summer	2	Displ	8 + 8	8 + 8	16	2nd boat
			winter	1	Displ	12		12	
	II	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		SAW-WHB-SAW	summer	2	HSF	8 + 8	8 + 8	16	2nd boat
			winter	1	HSF	12		12	

Table 3 below shows the configurations for the all marine alternatives, Alts. 4A – 4D.

Table 3

Configuration Definitions for the All-Marine Alternatives – Alts. 4A – 4D

Alt	Config	Route	Season	# Vessels	Type	Crew Hrs		Op Sch	Link
Alt 4 - All Marine									
Alt. 4A - Fast from AUK				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	HSF	8 + 8	8 + 8	16	2nd boat
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	HSF	8+8		1 circuit	2nd boat
Alt. 4B - Fast from SAW in summer, AUK in winter				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		SAW-HNS-SAW	summer	1	HSF	8 + 8		16	other SAW boat
		SAW-SGY-SAW	summer	1	HSF	8 + 8		16	other SAW boat
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	HSF	8 + 8		1 circuit	2nd boat
Alt. 4C - Displ from AUK				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	Displ	8 + 8	8 + 8	16	2nd boat
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ	12		1/2 circuit per day	2nd boat
Alt. 4D - Displ from SAW in summer, AUK in winter				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	8 + 8		16	Road/AMHS
			winter	1	Displ	12		12	
		SAW-HNS-SAW SAW-SGY-SAW	summer	2	Displ	8 + 8	8 + 8	16	2nd boat
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ	12		1/2 circuit per day	2nd boat

The basic determination of vessel size is made by taking the amount of daily traffic on a route and dividing it by the number of vessel trips per day.

Vessel size may be measured in units of Alaska Standard Vehicles (ASV), the number of passengers, and/or vessel payload measured in long tons.

Traffic data was provided specific to each of the marine segment routes and the calculated sailing frequencies.

Number of vessel round trips is based on route length, vessel speed, and vessel operating schedule.

These calculations are described in the following sections.

Size Calculation

To be considered an acceptable Marine Segments ferry, each vessel must be sized so it can carry the maximum required traffic for each route. For a passenger ferry, this traffic can be any of three possible categories: 1) vehicles, 2) passengers, or 3) payload weight.

Vehicle Capacity

Vessel vehicle capacity is measured in units of Alaska Standard Vehicles (ASV). This is the standard unit by which the car capacity of an AMHS vessel is measured. To calculate vehicle capacity, the required total lane length is calculated and divided by twenty feet (the length of an ASV) to calculate the vessel capacity in ASV.

Required lane length is calculated by identifying the maximum vehicle count required for each vehicle type on each route. Multiplying the count and length for each vehicle type and summing the results yields the total required lane length. The results for each vehicle type are again rounded up to the nearest whole number of vehicles.

Each vehicle type has a specified length as shown in Table 4. PAX-ASV is a passenger vehicle.

Table 4

Vehicle Type Length

PAX-ASV	RV	Van
(feet)	(feet)	(feet)
20	24	40

Payload Capacity

Payload capacity is the total weight a vessel must carry measured in long tons. Payload is calculated in a manner similar to lane length above, by multiplying the count and weight for each vehicle type and summing the results. Vehicle type weights used in calculating Payload Requirements are shown in Table 5.

Table 5

Vehicle Type Weight

PAX-ASV	RV	Van
(lbs)	(lbs)	(lbs)
6,000	12,000	40,000

Passenger Capacity

Passenger capacity calculations are straightforward and passenger capacity is calculated directly from traffic numbers.

Traffic Data

In order to calculate vessel capacity requirements for each route, traffic projections specific to the marine segments are needed. These projections were developed from overall traffic projections as described in the Juneau Access Traffic Forecast and the Haines/Skagway traffic report. The traffic data used in the Marine Segments Technical Report is provided in Appendix D. Table 6 illustrates Summer Average Daily Traffic (SADT) forecasts for 2038.

Table 6

Marine Segment Traffic Forecast

	2038 Ferry Traffic SADT (Summary)						
Alternative	**HNS-SGY**	**KTZ-HNS**	**KTZ-SGY**	**JNU-HNS**	**JNU-SGY**	**SAW-WHB**	**SAW-SLC**
1 – No Build	98						
2 – East Lynn Highway		861					
2A – East Lynn Highway		664					1194
2B – East Lynn Highway	138	594	594				
2C – East Lynn Highway	527						
3 – West Lynn Highway	420					938	
4A – HSF Auke Bay	98			216	177		
4B – HSF Sawmill Cove	98			260	213		
4C – Displ Auke Bay	98			145	118		
4D – Displ Sawmill Cove	98			193	158		

The SADT traffic data shown in Table 6 represents projected round trip traffic as an average daily traffic for the summer months. It does not reflect peak week or peak daily traffic, that might occur for a special event. (See traffic report for further information.) 2038 Summer and Winter average daily traffic was selected for this analysis to account for reasonable traffic growth without having to replace vessels at frequent intervals. If an attempt was made to size vessels for peak traffic 30 years in the future, the result would be gross overcapacity and inefficiency in the ferry system.

The traffic data also included traffic breakdowns by category of cargo: passenger, passenger automobile (PAX-ASV), recreational vehicle (RV), and commercial truck (Van) so that vessel capacity would correctly account for the type of traffic traveling a route.

For Alts. 4A – 4D, AMHS ferry service would continue to operate at the rate of two AMHS mainline vessels per week (up Lynn Canal). Traffic capacity for marine segments vessels was reduced by the capacity of these AMHS vessels. DOT&PF provided these traffic reductions, based on two trips per week, using a historic 60/40 percent Haines/Skagway split. Table 7 shows the values of the daily reduction made to Marine Segments traffic for this purpose.

Table 7

2038 AMHS Daily Mainline Ferry Traffic Forecast for Alts. 4A – 4D

Route	Mainline Ferry Traffic	
Segment	Summer	Winter
AUK-HNS-AUK	29	29
AUK-SGY-AUK	23	23

Number of Round Trips

Route Length

The physical characteristics of each route must be defined in order to calculate the time required for a vessel to travel the full length of the route from terminus to terminus. Full definition includes maneuvering distance at each terminal and cruising distance between terminals. Maneuvering distance is defined as the distance at each terminal with a no-wake limitation. Actual vessel courses were established on marine charts and the information in Table 8 generated to show the characteristics of the nine unique routes in this analysis.

Table 8

Proposed Route Sailing Distances

Route	Terminal		Cruise	Terminal		Total
	Name	Manuv Dist	Distance	Name	Manuv Dist	Distance
		(NM)	(NM)		(NM)	(NM)
Auke Bay to Haines	AUK	2.30	69.56	HNS	0.50	72.36
Auke Bay to Skagway	AUK	2.30	76.98	SGY	0.40	79.68
Haines to Katzehin	HNS	0.50	6.15	KTZ	0.30	6.95
Haines to Skagway	HNS	0.50	12.23	SGY	0.40	13.13
Skagway to Katzehin	SGY	0.30	13.51	KTZ	0.40	14.21
Sawmill Cove to Slate Cove	SAW	0.30	4.15	SLC	0.50	4.95
Sawmill Cove to Wm Henry Bay	SAW	0.30	11.29	WHB	0.40	11.99
Sawmill Cove to Haines	SAW	0.30	45.74	HNS	0.50	46.54
Sawmill Cove to Skagway	SAW	0.30	53.16	SGY	0.40	53.86

Vessel Speed

Vessel scheduling speed for the two vessel types is based on realistic and historic vessel speeds for passenger/vehicle ferries in Southeast Alaska. For displacement vessels this speed is 15 knots and for HSF vessels the speed chosen was 30 knots. Where necessary, speed was increased slightly to provide for an optimum schedule.

Operating Schedules

Finally, basic assumptions about vessel startup, shutdown, load and unload characteristics were made as shown in Table 9. Startup and shutdown times are based on typical times required for engine startup and shutdown for similar sized vessels.

Assumed load and unload times are also shown. These times are short and were selected in order to ensure the best possible level of service for each route. Vessels for selected routes can be designed to assure minimal load and unload times. Slight delays were built into the baseline schedule calculations to allow vessel departure times to be on the nearest five minute.

Table 9

Notional Vessel Characteristics

Vessel Type	Nominal Speed	Manuv Speed	Startup Time	Load Time	Unload Time	Shutdown Time
Displacement	15 kts	7 kts	30 mins	10 mins	10 mins	30 mins
High Speed Ferry	30 kts	8 kts	30 mins	15 mins	15 mins	30 mins

Schedule Calculations

Route Transit Time

Route transit times are calculated using route distances and vessel operating characteristics. Total route times include both Time Underway and Total Transit Time. Time Underway represents the time required to travel from terminal to terminal, taking into account maneuvering times and distances and time and distance cruising at speed. Total Transit Time represents the total time a passenger can expect to spend aboard the vessel. Total Transit Time is the sum of Time Underway, Load Time and Unload Time.

Model Schedules

Following the calculation of Route Transit Time, it is possible to develop a set of Model Schedules for each route. These schedules are developed and shown in detail in Appendices A-C of this report. Each schedule is calculated with the goal of optimizing the maximum number of round trips against crew availability, for each season, given the number of vessels and scheduled crew shifts.

These model schedules are developed for illustration only. To develop these schedules, first sailing departure times were assumed and slight adjustments were made to subsequent departures in order to schedule vessel departures on five-minute divisions of the hour. Total Crew Time is calculated from the first load time through the last unload time for completed circuits. Each model schedule shows the number of circuits that can be completed within the prescribed crew availability.

Sailing Frequency

As described above, the model schedule calculations were used to identify the maximum number of circuits that can be completed within a given crew schedule. Sailing frequencies are shown both for the number of round trips, or circuits, that can be completed in a day and for the number of departures from any terminal on that route. This frequency, or number of round trips, was used to support vessel size calculations.

Additional Considerations

Following the determination of vessel capacity requirements for a specific route, additional factors were considered before a vessel was selected for a route. In addition to vessel capacity, other vessel and ferry system factors examined were: whether the selected vessel would be a sister ship, how many vessels would be required for efficient winter service, if winter vessel demands would exceed capacity of summer service, if vessels would meet reliability considerations (substitute for other vessels), etc.

Ultimately, vessels were sized to provide the best, most reliable, and most efficient service for each configuration. Both required and selected vessel characteristics are shown in detail in Appendices A-C.

Selected vessel characteristics were used to determine annual operating costs per route and alternative, as well as vessel acquisition and vessel capital improvement costs as described in the following sections.

This Page Left Intentionally Blank

In order to generate fiscal information for any vessel in any given configuration, cost models were created. These models estimate annual vessel costs including: crew costs, fuel cost, maintenance cost, vessel lay-up, and administrative overhead costs.

Separate models had to be created for displacement and high speed vessels due to the significant operational differences between the two vessel types.

However, within each type of vessel there is a lot of operational and equipment similarity. Since the vessel sizes being studied did not vary greatly, it was possible to develop a single cost model (for each cost component) that would predict costs for any of the different size vessels in the Marine Segments analysis. Since vessel size was being calculated predominately in units of ASVs, this was the measure of vessel size that was used to index all of the vessel cost models.

The sections below describe the methodology for developing each of the annual vessel cost model components.

Crew Cost

Total crew costs are based on hourly rates of each crew position, the vessel size and its required crew complement and the total time on duty. To determine crew position hourly rates, AHMS data from 2002 were used. To supplement these data for positions not identified in the 2002 data, 1993 crew position rate data from the 1997 DEIS were used. For each position, the base hourly rate was combined with paid leave, benefits and cost of living differentials to calculate a fully burdened hourly rate for 2002. This rate was then multiplied by the inflation rate from FY2002 to FY2003 to calculate an estimated hourly rate for each crew position.

Following this calculation, Code of Federal Regulations (CFR) and U.S. Coast Guard policy were consulted to identify rules for minimum crew complements for a range of vessel sizes based on ASV for both displacement vessels and high speed ferries. In some cases, crew positions in addition to those required by regulatory agencies were identified, based on AMHS operational requirements such as ticket sales. A total hourly rate for a vessel size was then calculated. These rates were then plotted against ASV to allow hourly crew cost calculations for any size vessel. These plots are shown in Figure 1 and Figure 2 below.

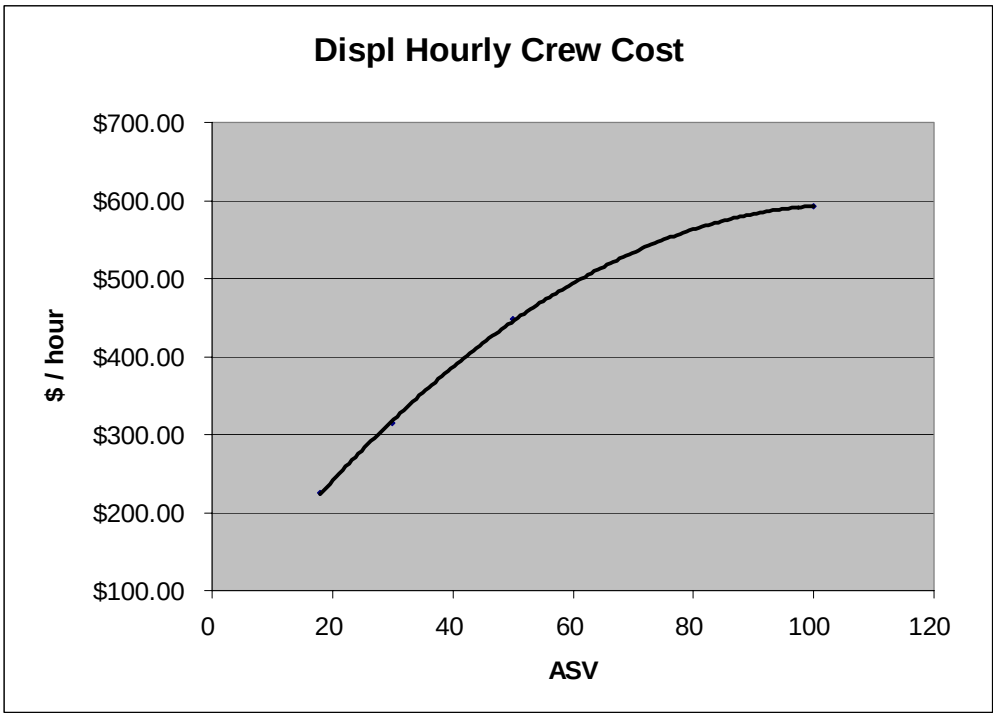


Figure 1
Displacement Hourly Crew Cost Model

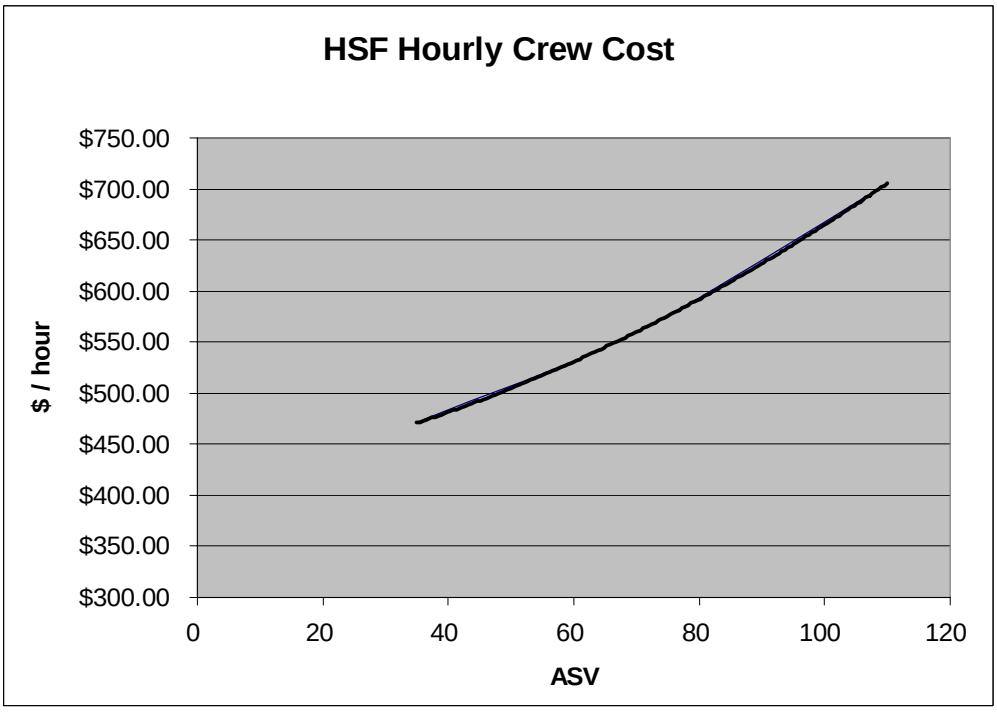


Figure 2
High Speed Ferry Hourly Crew Cost Model

Total crew cost for each route within an alternative was then calculated by multiplying the hourly crew cost for the appropriate vessel size by the seasonal crew shift per day, the seasonal number of vessels, the number of crews required for each vessel and the number of days for each season. These results by season are then summed for a total annual crew cost.

Fuel Cost

The basis for calculating fuel cost differed between displacement vessels and high speed ferries. However for both types of vessels, a specific consumption rate of 0.0451 gal / hp-hr was calculated based on a weight-based specific consumption rate of 0.320 lbs / hp-hr and a specific weight of diesel fuel of 7.10 lbs / gal. Fuel consumption rates in gallons per hour for representative vessels were then calculated as described below. To determine total annual fuel cost, consumption rates for the appropriate vessel type and size were multiplied by total time underway (hours) and the cost of fuel at 1.02 dollars per gallon. Fuel costs were not calculated for warm-up or idle time.

Displacement Vessels

Fuel consumption calculations for displacement vessels are based on installed main engine horsepower (not counting generators and boilers) and the specific consumption rate. To develop the curve shown in Figure 3, the specific consumption rate is simply multiplied by the installed horsepower of our representative displacement vessels. Although a vessel's main engines do not normally run at full installed horse power, the full installed horse power fuel consumption rate was used to account for the additional fuel being used to generate electricity and heat on the vessel. The results are then plotted against representative vessel ASV capacities to develop approximate fuel consumption rates for a range of displacement vessel sizes.

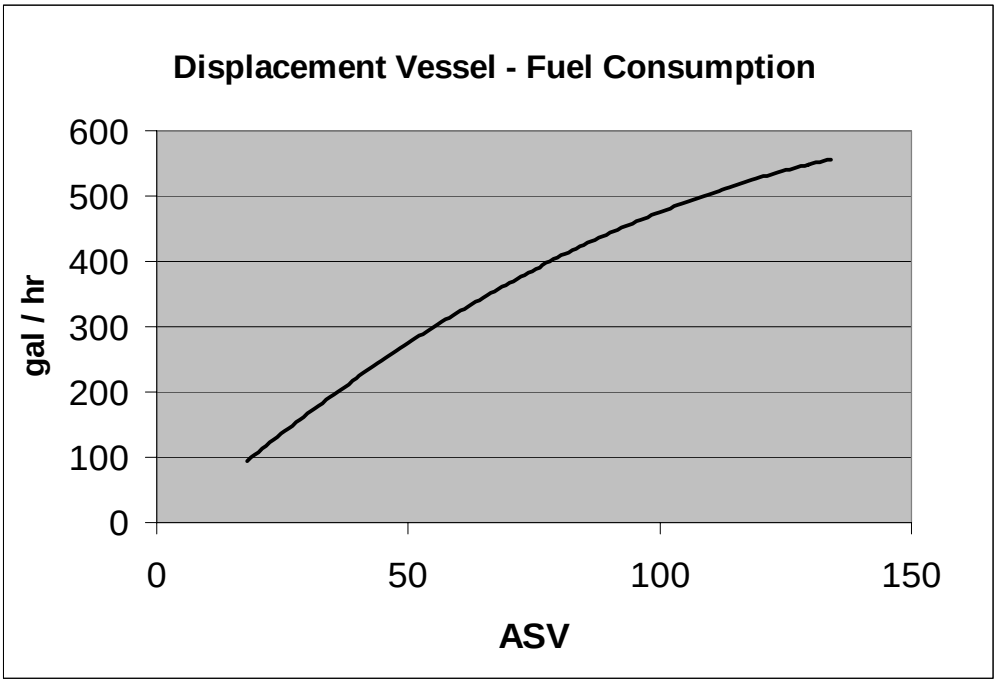


Figure 3
Displacement Vessel Fuel Consumption Model

High Speed Ferries

Power ratings for the representative set of high speed ferries were available in kilowatts and were converted to horsepower. In the case of the high speed vessel, separate main engine and electrical generation fuel consumption rates had to be determined due to the large size discrepancy between installed main engine and auxiliary power. Further, due to a lack of good historical information on possible operational speed reductions, which might be caused by hull fouling etc., HSF fuel consumption rates were calculated at a

power consistent with a speed two knots greater than the required service speed of 30 knots. Fuel consumption was then calculated by multiplying the specific fuel consumption by the calculated power required at 32 knots. These values were then plotted against vessel capacity as shown in Figure 4 below.

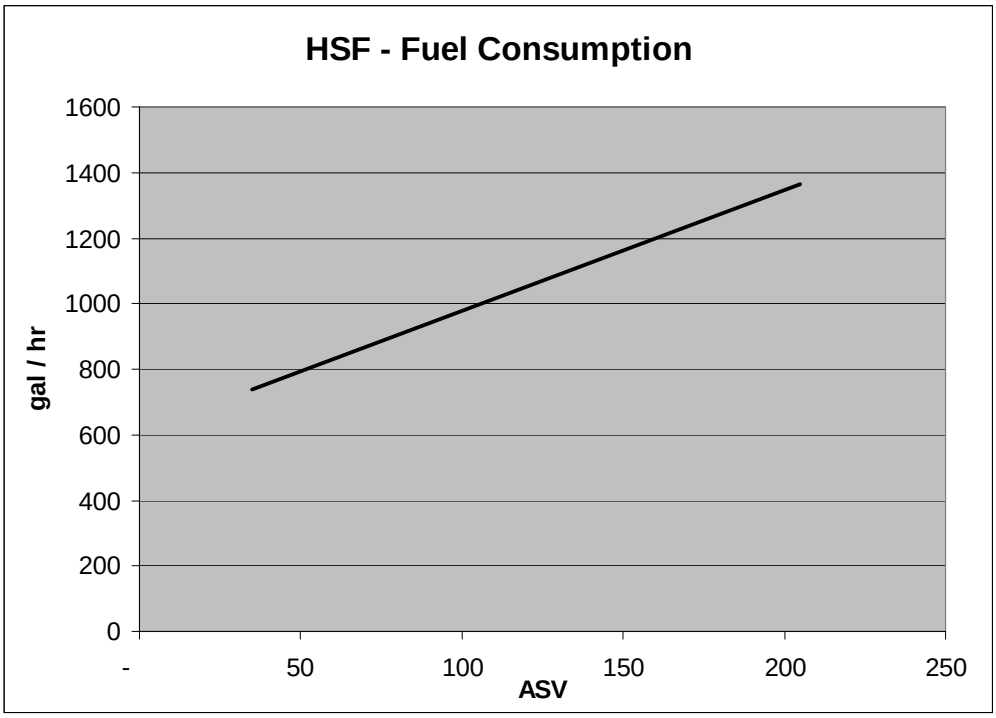


Figure 4
High Speed Ferry Fuel Consumption Model

Vessel Lay-up

A vessel lay-up is defined as the period of time that the vessel sits idle for many days in a non-operational status. For this analysis, a lay-up period occurs over the winter period when one vessel is taken off line due to lower seasonal traffic demands.

Since the DOT&PF usually owns the vessel terminal, calculation of moorage costs are not included in lay-up cost. Additional crew costs are also not included in lay-up costs, assuming that there would be no crew on watch. Annual maintenance costs (calculated in another section) do include maintenance costs for lay-up periods.

Displacement Vessels

To calculate lay-up costs for displacement vessels, values for vessel heating and hotel upkeep costs were estimated for representative AMHS vessels. These costs were modified to reflect a dayboat type vessel, and then plotted against vessel capacity in units of ASV. A curve was fit to these points, as shown in Figure 5, and used to calculate lay-up costs for different size displacement vessels.

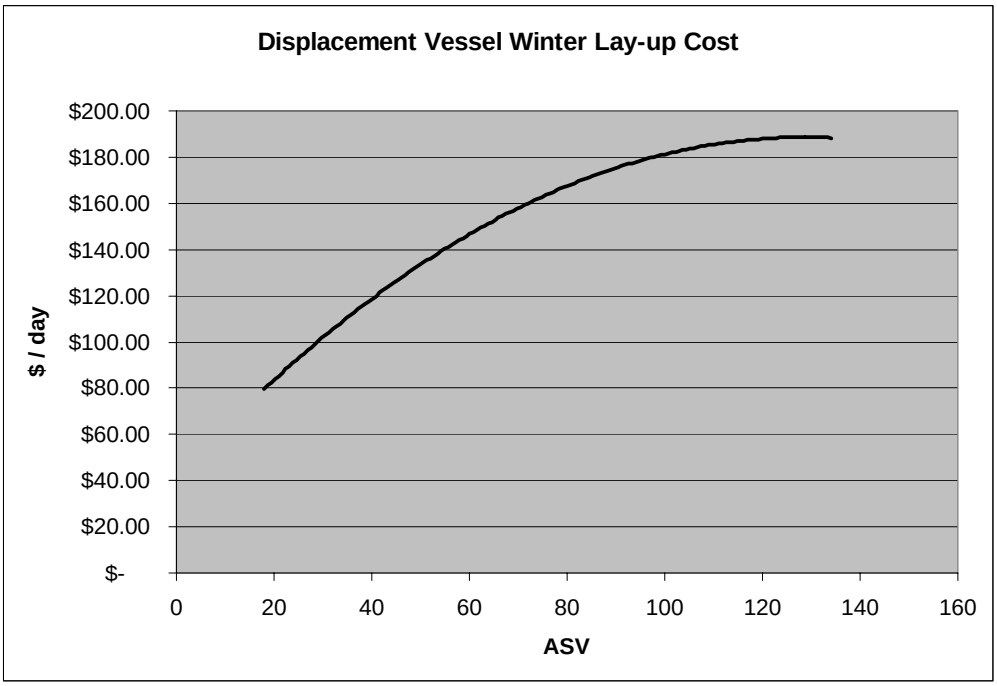


Figure 5
Displacement Vessel Winter Lay-up Cost Model

High Speed Ferries

High speed ferry lay-up costs were calculated with a slightly different model because these vessels are weight sensitive and are usually heated with only electric heat. Recent data from the M/V Fairweather was used to determine electrical power consumption necessary to maintain minimal hotel and equipment temperatures. Assuming $0.07 per kilowatt hour and 440 volt service requirements, heating costs were calculated on a cost per foot per day basis. For a representative set of high speed ferries these costs were plotted against the ASV capacity of these vessels, as shown in Figure 6.

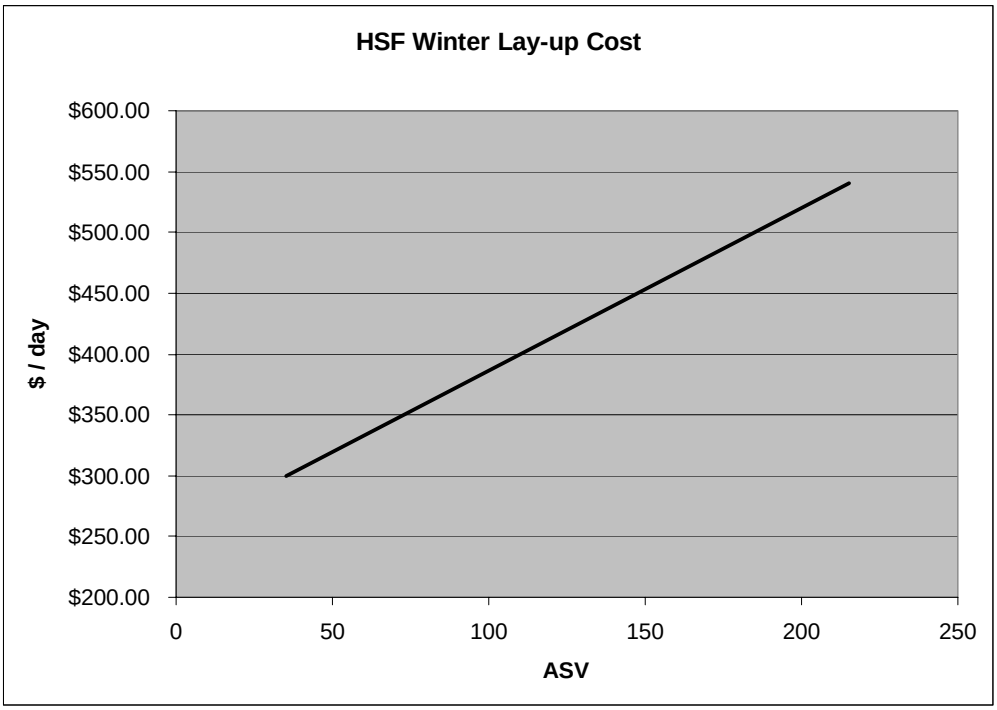


Figure 6
High Speed Ferry Winter Lay-up Cost Model

Maintenance

Maintenance costs are subdivided into two components. The first is operational maintenance, which is based on operating hours and captures the costs required for day-to-day vessel operation. Examples of this cost would be the labor to change engine oil, the cost to purchase lubricants, filters, etc. The second component is annual overhaul costs, which accounts for major maintenance done as part of regularly scheduled overhauls. Annual overhaul costs include required regulatory inspections and other work that cannot be accomplished as a portion of daily vessel maintenance. Maintenance costs do not include the refurbishment costs defined in the capital improvement program. The derivation of the cost of each of these components is described below.

Operational Maintenance

To calculate a cost per operating hour, installed horsepower was multiplied by a cost factor of dollars per horsepower hour ($ / hp-hr). This cost factor was derived from existing AMHS operational and maintenance cost data, modified by differences between the sample vessels and a typical dayboat. This approach was taken for both vessel types and the results were plotted against vessel capacity. The curves for each vessel type are shown below in Figure 7 and Figure 8.

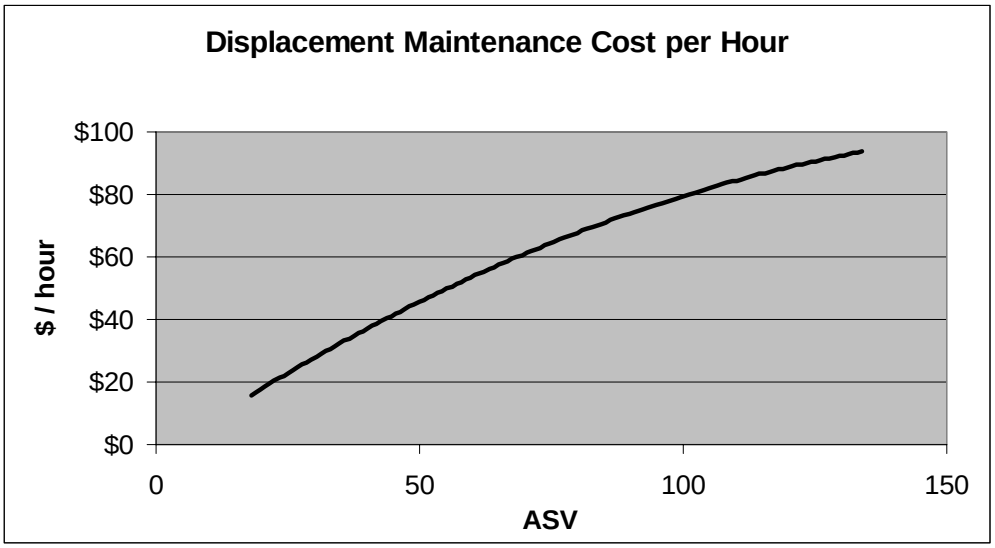


Figure 7
Displacement Vessel Hourly Operational Cost Model

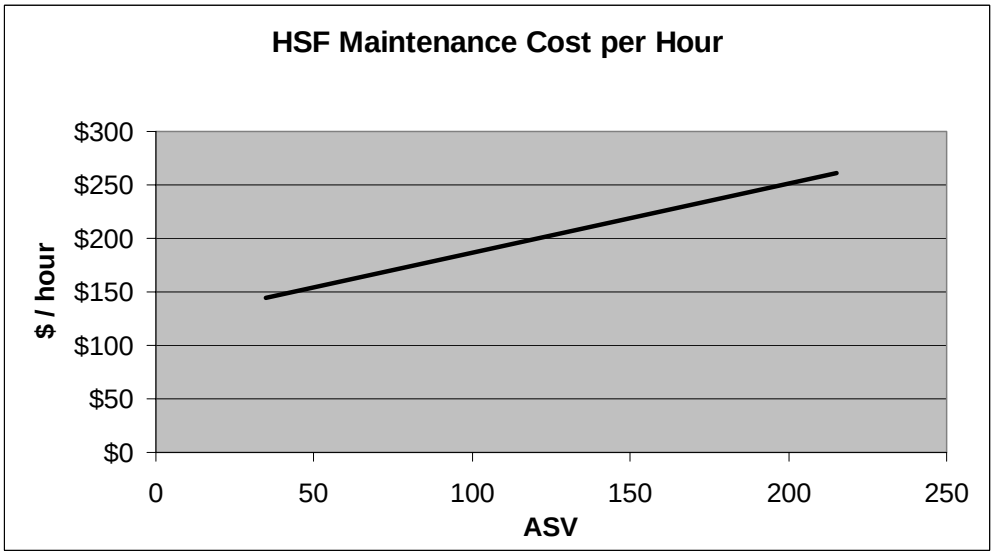


Figure 8
High Speed Ferry Hourly Operational Cost Model

Annual Overhaul Cost

Displacement Vessels:

To model annual overhaul costs, current and historic annual overhaul costs for existing AMHS vessels were examined then modified by specific cost components to reflect the overhaul cost of a dayboat of the same size. Cost components were developed for differences in: a) crew accommodation and galley space, b) passenger accommodation space, and c) age of vessel.

Further modification of the AMHS data was required because the standard AMHS vessel overhaul period is one year. A review of USCG rules indicated that most of the dayboat vessels selected in this study would require overhauls every two years. Assuming that overhauls will occur in conjunction with USCG requirements, the AMHS cost data was

modified to include a modest cost savings gained by contracting for and conducting all required overhaul work in one interval as opposed to doing the same amount of work in two separate phases.

Annual overhaul costs for displacement vessels (for a two year overhaul cycle) plotted against vessel capacity are shown in Figure 9.

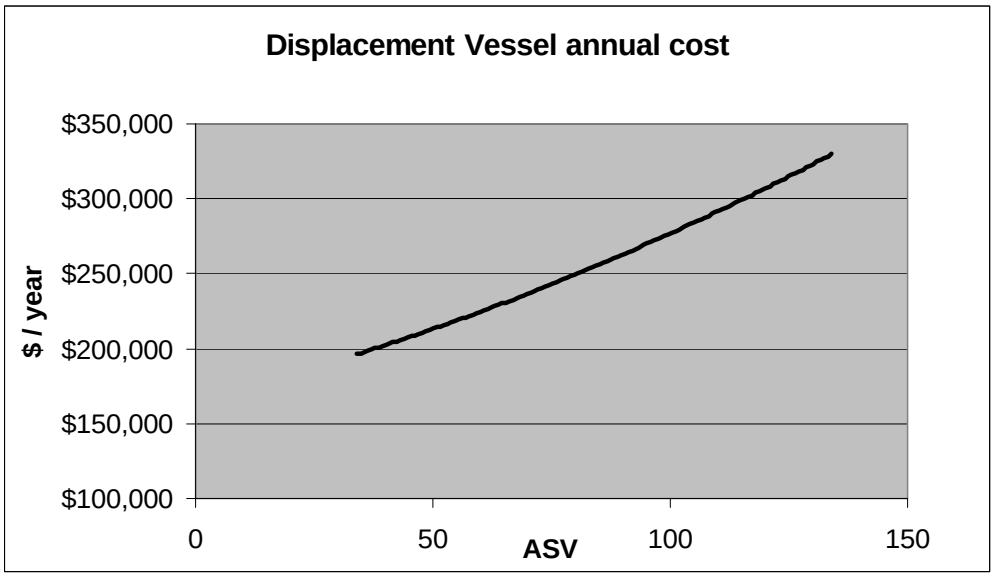


Figure 9
Displacement Vessel Annual Overhaul Cost Model

High Speed Ferries

Historic overhaul cost data for existing high speed ferries in the U.S. is very limited, therefore the cost model for calculating overhaul cost for new HSFs as a function of ASV is simpler than that described above for displacement vessels. Previous AMHS analysis estimated overhaul costs of this vessel type to be approximately one percent of construction costs. This estimate and other HSF estimates were used to generate anticipated annual overhaul costs of HSFs.

Current plans for M/V Fairweather call for a bi-annual overhaul schedule, so the HSF overhaul cost model was adjusted for a two year overhaul cycle.

The curve representing the HSF annual overhaul cost (for a two year overhaul cycle) plotted against ASV capacity is shown in Figure 10.

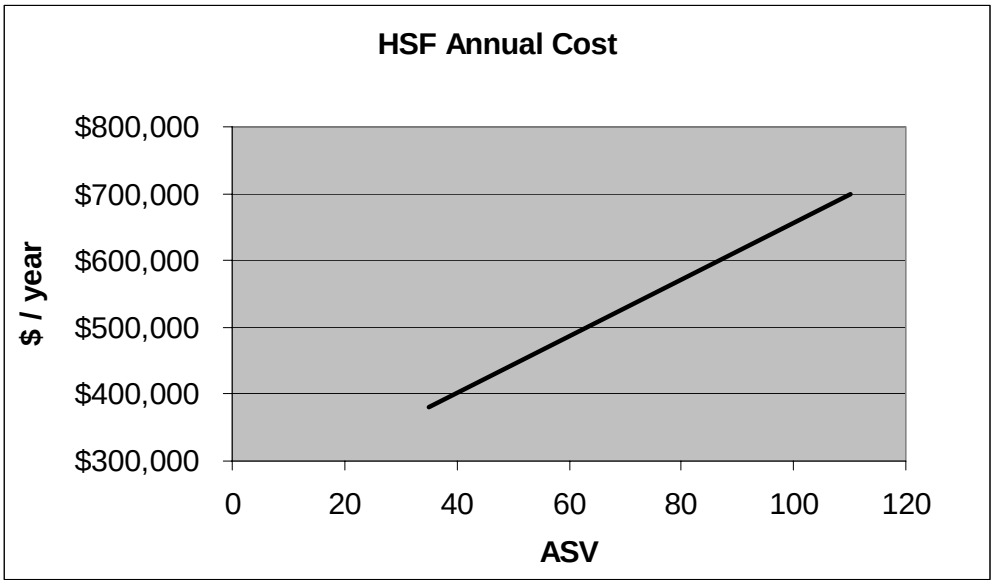


Figure 10
High Speed Ferry Annual Overhaul Cost Model

Management

Management (or overhead) costs are all of those costs necessary to operate a marine ferry system that are not previously accounted for by separate cost categories. An example would be the costs associated with accounting and operational support personnel.

Unlike the other annual cost models, the Management/overhead cost model is not indexed by vessel size. A primary assumption for this analysis is that overhead costs are reasonably constant between different sized vessels, so long as the vessels are dayboats with minimum services as described for this study.

This analysis assumes that any new vessels would be incorporated into the existing administrative and support infrastructure of the AMHS. The benefit of this plan is that existing overhead cost information is available for analysis. The challenge of using the existing AMHS information is twofold:

a) Not all existing AMHS overhead costs would apply to the new vessels because they are dayboats specially designed to have minimum overhead costs. Included in these non-applicable categories are Overhaul Costs (modeled separately above), Shore Operations and for all but Alts. 4A – 4D, Reservations and Marketing.

b) The incremental change of an overhead cost is not proportional to the number of vessels added to a mature system. For example, headquarters finance/personnel processes are generally automated. Therefore, the addition of 6-12 paychecks (that would represent the crew of an additional vessel) would not require an increase of $1/9^{th}$ or 11% of the current budget, but rather some small fraction of that amount to cover additional paper and mailing expenses. Separate discount factors have been created for each applicable overhead category to estimate the incremental change that would be required for Marine Segments vessels.

Overhead Discount Rates

Southeast Support Services:

These are land-based services provided to the Southeast Region operation for food service and similar operations. The discount applied to this category is 75%. The reason for this is that no galleys will be aboard new vessels, but there will be some supplies that will require limited support services.

Headquarters Financial / Personnel :

Financial management and personnel services are largely automated and well understood. Addition of a single vessel will have little impact on this cost category. Therefore a 90% discount has been applied.

Engineering Management:

This function is the support provided by AMHS in managing its engineering contractors and oversight of overhaul and vessel construction. The impact of a new vessel on this category will be significant as additional assistance will be necessary, but some responsibilities will likely be absorbed by current staff. The discount applied is 50%.

Fleet Operation Discounts Applied

Vessel Operations Management:

This function involves scheduling crew and other miscellaneous operations management. Since new vessels would be operating as liners with small crews on regular fixed schedules, the requirement for operations management is not as great as vessels in the existing AMHS fleet. The discount applied to this category is 50%.

Overhaul (excluding Personnel Support):

This category is previously accounted for in the Maintenance cost model.

Southeast Shore Operations:

This category is not applicable to our analysis because terminal operators and line handlers are not planned for the new terminals.

Statewide Shore Operations:

This category is not applicable to our analysis.

Reservations and Marketing:

This category applies to all configurations for Alts. 4A – 4D. Because these routes and schedules would be fixed, reservations would not be as complex as they are for the remainder of the AMHS fleet. Also, the marketing required for these new routes would be minimal. The overall discount applied to this category is 75%.

Overhead Cost Calculation

Final overhead costs are calculated per vessel operational day. To begin the final overhead calculation, an inflation adjusted average for each overhead category over the period FY01-FY03 was calculated. These values were then divided by the number of AMHS vessel operational days to determine an AMHS fleet overhead cost per vessel day for each category. Then the discount rate is applied to calculate the appropriate incremental cost of each category. Finally, all categories are summarized into a total overhead cost per operational day.

Table 10 shows the results of the overhead cost calculations.

Table 10
Overhead Costs per Vessel Day

AMHS Overhead / Operating Data				
System-Wide Overhead Costs	**Ave Eq FY03**	**Flt Ovhd / V Day**	**Discount**	**Impact / V Day**
SE Support Services	$ 1,402,686	$ 662	75%	$ 165
Headquarters Finance / Personnel	$ 1,043,390	$ 492	90%	$ 49
Engineering Management	$ 729,100	$ 344	50%	$ 172
Total System-Wide Overhead	**$ 3,175,176**	**$ 1,498**		**$ 387**
Vessel Operations Costs				
Vessel Operations Management	$ 1,339,630	$ 632	50%	$ 316
Overhaul (excluding PS)	$ 1,776,466	$ 838	100%	-
SE Shore Operations	$ 2,996,532	$ 1,414	100%	-
SW Shore Operations	$ 1,099,085	$ 518	100%	-
Reservations and Marketing	$ 1,907,390	$ 900	75%	$ 225
Total Vessel Operations Overhead	**$ 9,119,102**	**$ 4,302**		**$ 541**
Total Overhead Cost Basis	**$12,294,278**	**$ 5,799**		**$ 927**
Total Existing Fleet Operating Days	2,120			
Overhead Cost / Vessel Day (w/o reservations)		**$ 4,900**		**$ 703**
Overhead Cost / Vessel Day (with reservations)		**$ 5,799**		**$ 927**

This Page Left Intentionally Blank

The sections below describe the methodology for developing the acquisition and Capital Improvement Plan (CIP) cost for each of the vessels in the Marine Segments study.

Vessel Acquisition

Acquisition costs have two primary components: 1) the construction cost to design, fabricate, and deliver the vessel; and 2) the "program" costs necessary for the State to conduct pre-construction design and manage the construction of the vessel.

Construction Cost

Since the vessels in the Marine Segments analysis are of two primary types, separate cost models were created for displacement and high speed vessels. Within each group of vessels, there is enough functional commonality between vessel sizes to allow cost to be accurately indexed by vessel size (in ASV).

Recent construction costs of similar public transportation vessels were gathered and used as data points for estimating construction cost. If necessary, some vessel construction costs were modified to reflect the fact that dayboats would have very limited passenger accommodations and no crew accommodations and galley.

In general, the confidence of cost data for displacement vessels is fairly high. However, little information is available for construction of very large high speed catamarans in the U.S. Available cost information has to be interpreted from foreign construction, which may not be a good indicator of true cost for fabrication in the U.S. There is a good data point for a M/V Fairweather size vessel (35 ASV) but there is a lot of uncertainty about data points for much larger high speed vessels.

Program Cost

Vessel program costs are somewhat variable depending on how much design is undertaken prior to construction and if the vessel is very large and requires a lot of construction time. Actual program costs were estimated based on recent AMHS experience building the M/V Lituya and M/V Fairweather. In both the displacement and high speed vessel programs a figure of twenty percent of construction cost was the estimate of program cost and was applied to both acquisition cost models.

Cost Models

The curves for the acquisition cost models are shown below in Figure 11 and Figure 12 and in Appendix D.

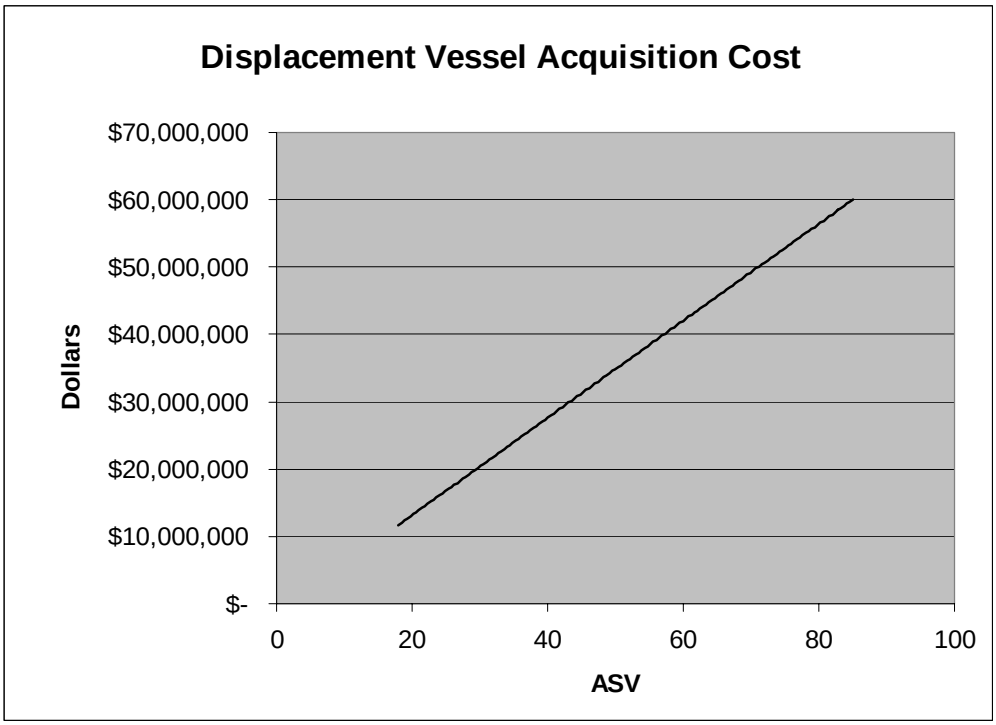


Figure 11
Displacement Vessel Acquisition Cost Model

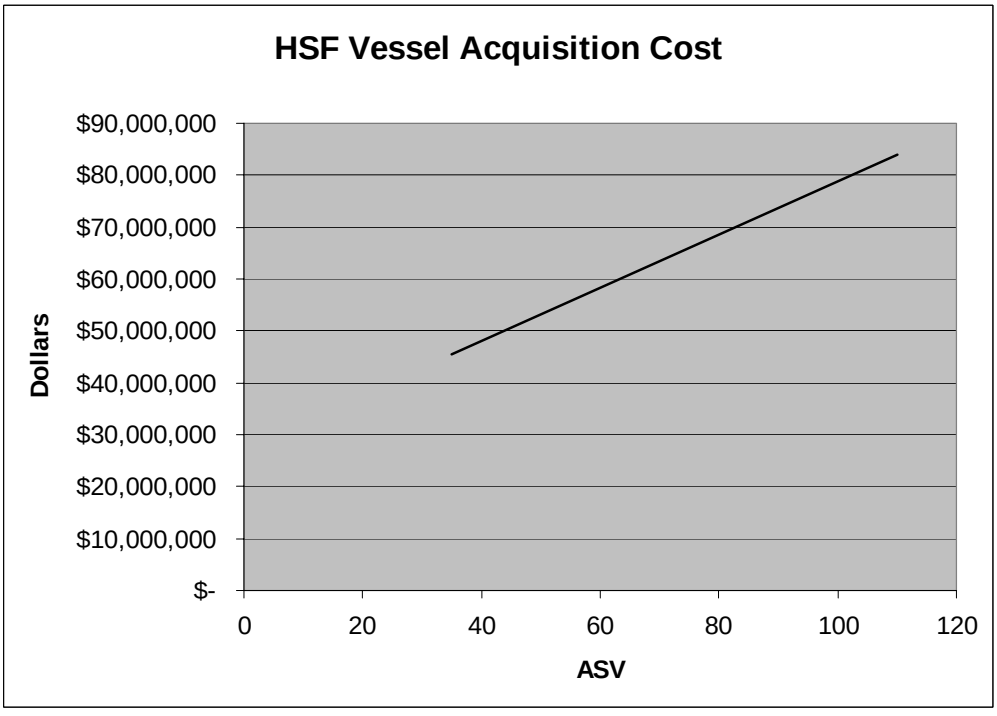


Figure 12
High Speed Vessel Acquisition Cost Model

Capital Improvement Plan

The expected lifespan of a ferry vessel in this study is estimated at 64 years for displacement vessels and 32 years for a high speed vessel. The lifespan for displacement vessels is based on existing AMHS and Washington State Ferry experience. The lifespan for high speed vessels is approximate and is based on AMHS estimates.

In order for a vessel to continue to operate for the length of its estimated life span, it must receive adequate annual maintenance and periodic refurbishment. The plan of periodic refurbishment is called a Capital Improvement Plan (CIP).

The AMHS has conducted a lot of CIP planning. CIP plans are specific to vessel type, vessel use, and vessel condition. However, some general trends are obvious from the AMHS effort and were used to generate a typical CIP plan for each type of vessel. Typical CIP plans are based on the type of vessel, the vessel's life span, and the type of refurbishment to be undertaken. High speed CIP was estimated in the same manner, but with less confidence due to the lack of historical information.

The refurbishment costs are shown in Tables 11 and 12 - at the time when the refurbishment would be required. Refurbishment costs are shown as a percentage of vessel acquisition cost and times are given as a percentage of vessel life span. Samples of these calculations and approximate CIP totals, equal to the sum of all the projects for each vessel without a discount rate, are provided in Appendix E.

Table 11

Displacement Vessel CIP

Displacement Vessel Steel

Table of CIP Project Cost - as a percentage of acquisition cost

	Year of project - Percent of lifespan						
Project	*0%*	*5%*	*25%*	*33%*	*50%*	*67%*	*75%*
Mechanical Upgrade					25%		
Hotel Upgrade				20%		25%	
Safety Upgrade				10%		15%	
Functional Upgrade		10%			15%		

This analysis assumes a dayboat, no passenger cabins or galley, and that adequate maintenance dollars are provided to keep paint coating systems intact.

Table 12

High Speed Vessel CIP

Fast Vessel Aluminum

Table of CIP Project Cost - as a percentage of acquisition cost

	Year of project - Percent of lifespan						
Project	*0%*	*5%*	*25%*	*33%*	*50%*	*67%*	*75%*
Mechanical Upgrade				15%		15%	
Hotel Upgrade			15%		15%		15%
Safety Upgrade				10%		15%	
Functional Upgrade		10%			15%		

This analysis assumes a dayboat, no passenger cabins or galley, and that adequate maintenance dollars are provided to keep paint coating systems intact.

This Page Left Intentionally Blank

After preliminary Marine Segments results were examined, it was determined that the Haines/Skagway shuttle vessel had a large range in required vessel capacity between the various alternatives. When a change in the AMHS Southeast plan occurred, the M/V Aurora was identified by the DOT&PF as a vessel of opportunity for use on selected dayboat routes (with some modification). Since the M/V Aurora is similar to those displacement vessels considered in the optimum Marine Segments Analysis, it is a viable vessel selection and its annual costs can be calculated using the existing cost models. A new set of configurations, named the "Aurora Configurations," was developed with the Aurora inserted in the most optimum route and new annual costs re-calculated for comparison.

The primary concerns with using the M/V Aurora as a JAI Marine Segment vessel are that it does not meet the size requirement for all configurations based on a 30 year traffic forecast and it will require some refurbishment to make an acceptable dayboat from a regulatory, manning, and loading time standpoint.

This section describes the methodology for selecting the routes in each alternative that best fit the characteristics of the M/V Aurora. It also describes the methodology for calculating years in which projected vessel capacity requirements will outgrow that of the M/V Aurora.

M/V Aurora Characteristics

Table 13 below shows some of the key vessel characteristics of the M/V Aurora. Key to the analysis for determining appropriate routes for use of the M/V Aurora is Vehicle Capacity, which is shown to be 34 ASV.

Table 13

M/V Aurora Vessel Characteristics

Characteristic	M/V Aurora
Date Constructed	1977
Length (feet)	235
Beam (feet)	57
Displacement (ltons)	2132
Horsepower	4300
Service Speed (knots)	14.5
Passenger Capacity	300
Vehicle Capacity (ASV)	34
Max # of Vans	8

M/V Aurora Route Selection Analysis

Based on its availability and its identification in the SATP as a potential Haines/Skagway shuttle, the M/V Aurora was analyzed as a JAI Marine Segment vessel for all applicable alternatives.

Since the JAI Marine Segments optimum results were available, it was possible to compare the capacity of the M/V Aurora to the required optimum capacity for each route on each JAI configuration. This comparison revealed that the Haines/Skagway route

was not always the best use of the M/V Aurora. Using the optimum configuration data, the Aurora was placed in the route that best fit its capacity for the longest period of time. Table 14 shows the selected routes for M/V Aurora.

Table 14

M/V Aurora Selected Routes and Replacement Year

Alternative	Route	Required Vessel ASV		Growth Rate		M/V Aurora	
		2008	2038	Traffic	Vessel ASV	ASV	Replacement
1- No Action	HNS-SGY-HNS	15	20	1.1	0.1	34	N/A
2- East Lynn Canal	HNS-KTZ-HNS	30	51	2.0	1.8	34	2016
2A- East Lynn Canal	HNS-KTZ-HNS	28	45	1.9	1.6	34	2021
2B- East Lynn Canal	HNS-KTZ-HNS	25	40	1.9	1.6	34	2028
2C- East Lynn Canal	HNS-SGY-HNS	29	48	1.9	1.7	34	2018
3- West Lynn Canal	HNS-SGY-HNS	25	38	1.8	1.4	34	2030
4A - HSF Auke Bay	HNS-SGY-HNS	15	20	1.5	0.1	34	N/A
4B - HSF Sawmill Cove	HNS-SGY-HNS	15	20	1.6	0.1	34	N/A
4C - Displ Auke Bay	HNS-SGY-HNS	15	20	1.2	0.1	34	N/A
4D- Displ Sawmill Cove	HNS-SGY-HNS	15	20	1.4	0.1	34	N/A

Projected traffic requirements for 2008 and 2038 were used to calculate the year in which the M/V Aurora would be required to be replaced. The year of replacement was determined using growth rates based on required ASV capacities for both 2008 and 2038.

Based on the projected traffic growth rates and 18 hours maximum daily operation (similar to optimum analysis), the M/V Aurora ASV capacity will be exceeded on five of the selected routes. Figure 13 below shows the projected per trip ASV capacity for these routes and the year in which the required ASV surpasses the capacity of the M/V Aurora. When the replacement year is reached AMHS could extend the vessel's operating hours, supplement service with a smaller vessel, or purchase a new, larger, optimum vessel.

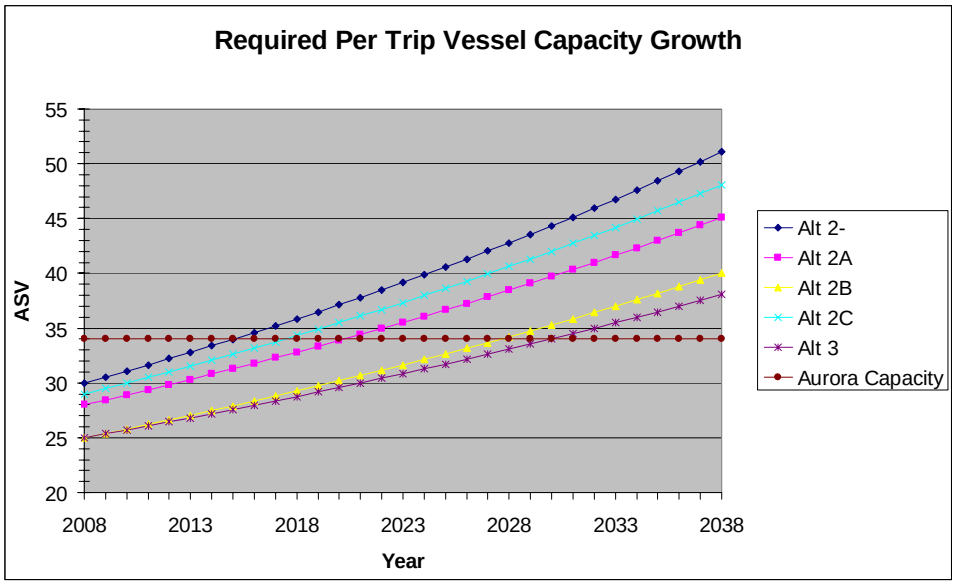


Figure 13
M/V Aurora Replacement Year

This Page Left Intentionally Blank

Summary

The results of the Marine Segments analysis for both the "Optimum" and "Aurora" configurations are summarized below. Full documentation of each configuration is presented in the appendices.

The results of the "**Optimum**" vessel analysis for Alternatives 1 – 3 are shown in Table 15.

Table 15

Optimum Vessel Analysis Results, Alts. 1 - 3

Alt	Config	Route	Season	Vessels			Crew Hrs		Op.	Round	Annual	Acquisition
				#	Type	ASV	Vessel 1	Vessel 2	Hours	Trips	Cost	Cost*
1. No Action												
Alt 1 - No Action												
	I	HNS-SGY-HNS	summer	1	Displ	15	15.97		14.63	6	$ 1,723,979	$ 9,911,939
			winter	1	Displ		10.97		9.63	4		
										Total	**$ 1,723,979**	**$ 9,911,939**
2 East Lynn Canal												
Alt 2 - (tack) Road to SGY, ferry KTZ - HNS												
	I	HNS-KTZ-HNS	summer	1	Displ	57	15.55		14.22	8	$ 3,861,867	$ 40,286,711
			winter	1	Displ		11.88		10.55	6		
										Total	**$ 3,861,867**	**$ 40,286,711**
Alt. 2A - Road to SGY, ferry KTZ - HNS, ferry across Berners							Mainline service to terminate at Auke Bay					
	I	SAW-SLC-SAW	summer	2	Displ	33	15.82	15.82	16.82	20	$ 4,096,134	$ 45,923,874
			winter	1	Displ		11.65		10.32	8		
		HNS-KTZ-HNS	summer	1	Displ	45	15.55		14.22	8	$ 3,342,074	$ 31,635,070
			winter	1	Displ		11.88		10.55	6		
										Total	**$ 7,438,208**	**$ 77,558,945**
Alt. 2B - Road to KTZ, ferry to SGY and HNS							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	16	15.97		14.63	6	$ 977,753	$ 10,638,207
		HNS-KTZ-HNS	summer	1	Displ	40	15.55		14.22	8	$ 3,099,985	$ 28,023,877
			winter	1	Displ		11.88		10.55	6		
		SGY-KTZ-SGY	summer	1	Displ	53	15.98		14.65	6	$ 3,942,841	$ 37,405,219
			winter	1	Displ		10.98		9.65	4		
										Total	**$ 8,020,579**	**$ 76,067,303**
Alt. 2C - Road to SGY, ferry SGY - HNS							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	48	15.97		14.63	6	$ 3,687,599	$ 33,799,995
			winter	1	Displ		10.97		9.63	4		
										Total	**$ 3,687,599**	**$ 33,799,995**
Alt 3 - West Lynn Canal												
Alt. 3 - Road to HNS, ferry SAW-WHB, ferry HNS - SGY							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	38	15.97		14.63	6	$ 3,165,125	$ 26,578,355
			winter	1	Displ		10.97		9.63	4		
		SAW-WHB-SAW	summer	2	Displ	42	14.97	14.97	17.13	12	$ 5,053,847	$ 58,937,604
			winter	1	Displ		10.30		8.97	4		
										Total	**$ 8,218,973**	**$ 85,515,959**
	II	HNS-SGY-HNS	summer	1	Displ	38	15.97		14.63	6	$ 3,165,125	$ 26,578,355
			winter	1	Displ		10.97		9.63	4		
		SAW-WHB-SAW	summer	2	Fast	33	15.67	15.67	16.92	16	$ 8,000,999	$ 93,792,000
			winter	1	Fast		12.00		10.50	6		
										Total	**$ 11,166,124**	**$ 120,370,355**

*** Capital Improvement Plan costs are calculated seperately, See Appendix E**

The results of the "**Optimum**" vessel analysis for Alternatives 4 A-D are shown in the following table.

Table 16

Optimum Vessel Analysis Results, Alts. 4A-D

Alt	Config	Route	Season	Vessels			Crew Hrs		Op. Hours	Round Trips	Annual Cost	Acquisition Cost*
				#	Type	ASV	Vessel 1	Vessel 2				
Alt 4 - All Marine												
Alt. 4A - Fast from AUK							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	15	15.97		14.63	6	$ 1,723,979	$ 9,911,939
			winter	1	Displ		10.97		9.63	4		
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	Fast	50	13.82	13.82	12.82	2	$ 11,228,776	$ 111,200,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast		13.82		12.32	1		
										Total	**$ 12,952,754**	**$ 121,111,939**
Alt. 4B - Fast from SAW in summer, AUK in winter							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	15	15.97		14.63	6	$ 1,723,979	$ 9,911,939
			winter	1	Displ		10.97		9.63	4		
		SAW-HNS-SAW	summer	1	Fast	32	17.00		15.50	4	$ 3,483,385	$ 46,384,000
		SAW-SGY-SAW	summer	1	Fast	51	10.33		8.83	2	$ 2,745,010	$ 56,112,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast	32	13.82		12.32	1	$ 3,880,231	$ -
										Total	**$ 11,832,605**	**$ 112,407,939**
Alt. 4C - Displ from AUK							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	15	15.97		14.63	6	$ 1,723,979	$ 9,911,939
			winter	1	Displ		10.97		9.63	4		
		AUK-HNS-AUK	summer	1	Displ	63	11.43		10.10	1	$ 1,907,860	$ 44,604,471
		AUK-SGY-AUK	summer	1	Displ		12.00		10.67	1	$ 1,977,777	$ 44,604,471
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ		11.43		10.38	0.5	$ 2,346,482	$ -
										Total	**$ 7,956,098**	**$ 99,120,882**
Alt. 4D - Displ from SAW in summer, AUK in winter							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	15	15.97		14.63	6	$ 1,723,979	$ 9,911,939
			winter	1	Displ		10.97		9.63	4		
		SAW-HNS-SAW	summer	1	Displ	45	14.93		13.60	2	$ 1,947,672	$ 31,635,070
		SAW-SGY-SAW	summer	1	Displ		15.95		14.62	2	$ 2,022,356	$ 31,635,070
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ		12.00		10.38	0.5	$ 1,895,078	$ -
										Total	**$ 7,589,085**	**$ 73,182,080**

*** Capital Improvement Plan costs are calculated seperately, See Appendix E**

The results of the "**Aurora**" vessel analysis for Alternatives 1 – 3 are shown in the following table.

Table 17

Aurora Vessel Analysis Results, Alts. 1 - 3

Alt	Config	Route	Season	Vessels			Crew Hrs		Op. Hours	Round Trips	Annual Cost	Acquisition Cost*
				#	Type	ASV	Vessel 1	Vessel 2				
1. No Action												
Alt 1 - No Action												
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	8.47		7.13	3	$ 1,898,806	$ -
			winter	1	Displ	34	7.97		6.63	2		
										Total	**$ 1,898,806**	**$ -**
2 East Lynn Canal												
Alt 2 - (tack) Road to SGY, ferry KTZ - HNS												
	I	HNS-KTZ-HNS	summer	1	Displ	Aurora	15.97		14.63	9	$ 2,879,527	$ -
			winter	1	Displ	34	10.97		9.63	6		
										Total	**$ 2,879,527**	**$ -**
Alt. 2A - Road to SGY, ferry KTZ - HNS, ferry across Berners							Mainline service to terminate at Auke Bay					
	I	SAW-SLC-SAW	summer	2	Displ	33	15.82	15.82	16.82	20	$ 4,096,134	$ 45,923,874
			winter	1	Displ		11.65		10.32	8		
		HNS-KTZ-HNS	summer	1	Displ	Aurora	15.55		14.22	8	$ 2,789,673	$ -
			winter	1	Displ	34	11.88		10.55	6		
										Total	**$ 6,885,807**	**$ 45,923,874**
Alt. 2B - Road to KTZ, ferry to SGY and HNS							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	16	15.97		14.63	6	$ 977,753	$ 10,638,207
		HNS-KTZ-HNS	summer	1	Displ	Aurora	15.55		14.22	8	$ 2,789,673	$ -
			winter	1	Displ	34	11.88		10.55	6		
		SGY-KTZ-SGY	summer	1	Displ	53	15.98		14.65	6	$ 3,942,841	$ 37,405,219
			winter	1	Displ		10.98		9.65	4		
										Total	**$ 7,710,266**	**$ 48,043,426**
Alt. 2C - Road to SGY, ferry SGY - HNS							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	15.97		14.63	6	$ 2,938,468	$ -
			winter	1	Displ	34	10.97		9.63	4		
										Total	**$ 2,938,468**	**$ -**
Alt 3 - West Lynn Canal												
Alt. 3 - Road to HNS, ferry SAW-WHB, ferry HNS - SGY							Mainline service to terminate at Auke Bay					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	15.97		14.63	6	$ 2,938,468	$ -
			winter	1	Displ	34	10.97		9.63	4		
		SAW-WHB-SAW	summer	2	Displ	42	14.97	14.97	17.13	12	$ 5,053,847	$ 58,937,604
			winter	1	Displ		10.30		8.97	4		
										Total	**$ 7,992,316**	**$ 58,937,604**
	II	HNS-SGY-HNS	summer	1	Displ	Aurora	15.97		14.63	6	$ 2,938,468	$ -
			winter	1	Displ	34	10.97		9.63	4		
		SAW-WHB-SAW	summer	2	Fast	33	15.67	15.67	16.92	16	$ 8,000,999	$ 93,792,000
			winter	1	Fast		12.00		10.50	6		
										Total	**$ 10,939,467**	**$ 93,792,000**

*** Capital Improvement Plan costs are calculated seperately, See Appendix E**

The results of the "**Aurora**" vessel analysis for Alternatives 4 A-D are shown in the following table.

Table 18

Aurora Vessel Analysis Results, Alts. 4 A–D

Alt	Config	Route	Season	Vessels #	Vessels Type	Vessels ASV	Crew Hrs Vessel 1	Crew Hrs Vessel 2	Op. Hours	Round Trips	Annual Cost	Acquisition Cost*
Alt 4 - All Marine												
Alt. 4A - Fast from AUK							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	8.47		7.13	3	$ 1,898,806	$ -
			winter	1	Displ	34	7.97		6.63	2		
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	Fast	50	13.82	13.82	12.82	2	$ 11,228,776	$ 111,200,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast		13.82		12.32	1		
										Total	**$ 13,127,582**	**$ 111,200,000**
Alt. 4B - Fast from SAW in summer, AUK in winter							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	8.47		7.13	3	$ 1,898,806	$ -
			winter	1	Displ	34	7.97		6.63	2		
		SAW-HNS-SAW	summer	1	Fast	32	17.00		15.50	4	$ 3,483,385	$ 46,384,000
		SAW-SGY-SAW	summer	1	Fast	51	10.33		8.83	2	$ 2,745,010	$ 56,112,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast	32	13.82		12.32	1	$ 3,880,231	$ -
										Total	**$ 12,007,432**	**$ 102,496,000**
Alt. 4C - Displ from AUK							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	8.47		7.13	3	$ 1,898,806	$ -
			winter	1	Displ	34	7.97		6.63	2		
		AUK-HNS-AUK	summer	1	Displ	63	11.43		10.10	1	$ 1,907,860	$ 44,604,471
		AUK-SGY-AUK	summer	1	Displ		12.00		10.67	1	$ 1,977,777	$ 44,604,471
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ		12.00		10.38	0.5	$ 2,346,482	$ -
										Total	**$ 8,130,926**	**$ 89,208,943**
Alt. 4D - Displ from SAW in summer, AUK in winter							2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora	8.47		7.13	3	$ 1,898,806	$ -
			winter	1	Displ	34	7.97		6.63	2		
		SAW-HNS-SAW	summer	1	Displ	45	14.93		13.60	1	$ 1,947,672	$ 31,635,070
		SAW-SGY-SAW	summer	1	Displ		15.95		14.62	2	$ 2,022,356	$ 31,635,070
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ		12.00		10.38	0.5	$ 1,895,078	$ -
										Total	**$ 7,763,913**	**$ 63,270,141**

*** Capital Improvement Plan costs are calculated seperately, See Appendix E**

Discussion

Detailed Results

The complete definition of each configuration and the detailed results of each calculation are shown in Appendices A and B.

Configurations Not Selected

Many configurations were examined and not selected for final analysis. Some of the configurations not selected are shown in Appendix C. Some minor changes to configurations, such as a schedule change, did not merit a new and separate configuration number and were handled as a revision to an existing configuration. This process occurred frequently towards the end of the analysis.

Passenger Capacity Requirements

The table of results indicate required vessel size by ASV, which is a measure of car deck capacity. Required passenger capacity was also calculated and is shown in the Appendices. In all cases, required passenger capacity did not determine the size of the

vessel required. Proportionally, the passenger capacity required was much less than is currently provided by existing AMHS vessels.

Payload Capacity Requirements

Although the table of results shows required vessel size in ASV, required payload capacity in long tons was also calculated and is shown in the Appendices. In all cases, required payload capacity did not determine the size of the vessel required. Proportionally, the payload capacity needed was much less than is currently provided by AMHS displacement vessels. However, in some cases delivered payload capacity for HSFs did not have a high margin. Payload could potentially become an HSF issue depending on the route selected and the amount of commercial traffic required to be carried. No attempt was made to coordinate HSF payload with the limitation of HSF car deck area for commercial traffic.

Price of Fuel

The price of fuel used in this analysis is 1.02 dollars per gallon, based on the price AMHS was paying in early 2004. If the price of fuel increases, not all configurations will be affected the same. HSF operating costs are more affected by a fuel cost increase because they use a significantly greater amount of fuel than displacement vessels. Because each configuration has a different sensitivity to the cost of fuel, the impact of a fuel cost increase should be considered when examining and comparing cost results. A graph of total configuration cost vs fuel price is included below in Figure 14.

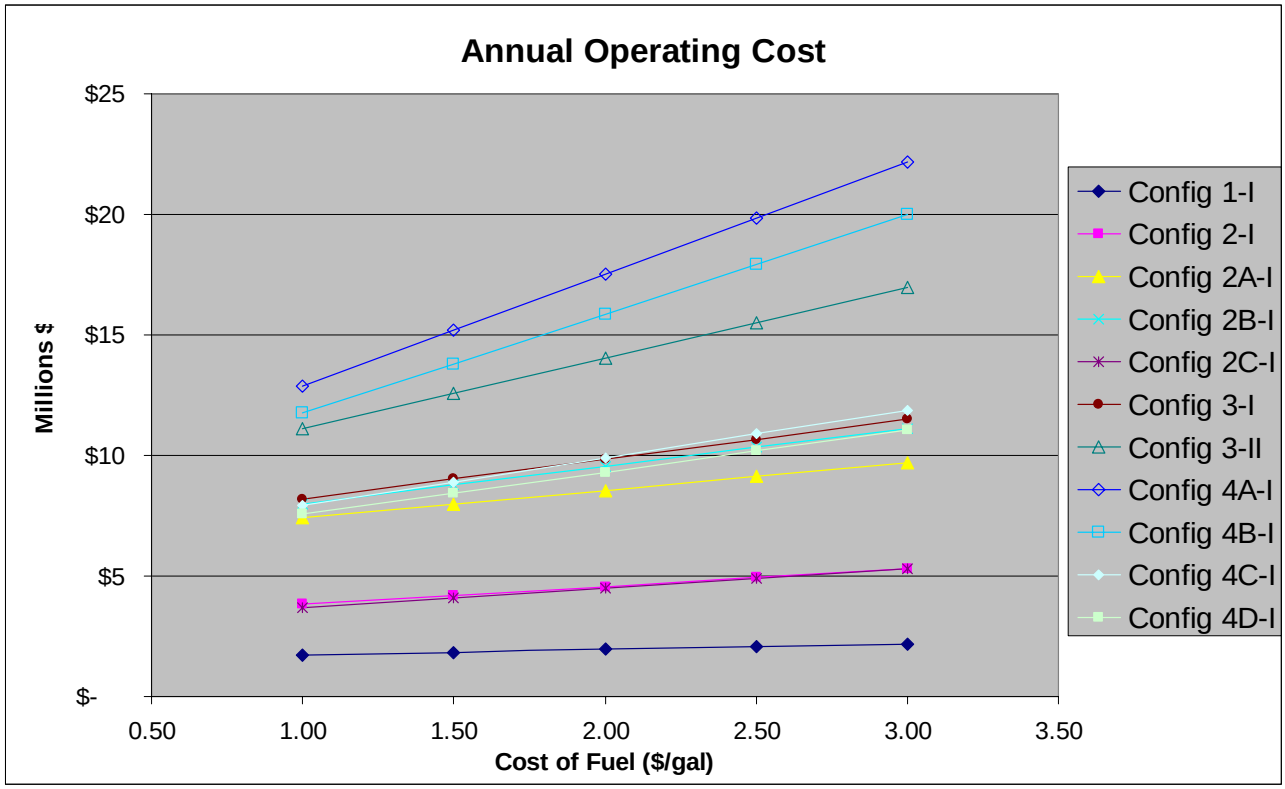


Figure 14
Total Annual Configuration Cost per Price of Fuel

Load/Unload Time

For most routes, the load and unload times in this analysis are aggressive and will require special consideration when vessels and terminals are designed. This would be a change compared to current AMHS practice and would be required due to the high sailing frequency of most of the vessels. Fast turn around times are critical to the success of high frequency ferry systems.

Comparison with 1996 Marine Segments Report

The approach used in this analysis differs from previous reports, in that there was no attempt made to identify specific vessel designs. Instead, two basic types of dayboat vessels were chosen, based on speed differences and proven technology, and a significant amount of effort was spent identifying practical and optimum operating schedules, with the goal of maximizing operating hours and minimizing crew costs. Then vessels were sized based on the number of round trips allowed by vessel speed and optimum schedule. This report also has an increased level of detail in the operating cost models.

Some differences between the 1996 Marine Segments Report and this report are:

For Alternative 2, the 1996 Marine Segments Report proposed an 11 Knot double end ferry from Katzehin to Lutak Inlet. During the 1997 DEIS public comment period the suitability of the proposed ferry was questioned. This report identifies the M/V Aurora as the Haines/Skagway or Haines/Katzehin ferry for all alternatives. Since this vessel currently operates in Lynn Canal, its suitability is not in question.

For Alternative 3, the 1996 Marine Segments Report proposed using three 23 Knot SWATH vessels. This 2004 Report analyzed both displacement and HSF vessels. The analysis shows that the displacement vessel is the least cost option for Alternative 3 between Sawmill Cove and William Henry Bay.

The 1996 Report recommended, for purposes of redundancy, that the Haines/Skagway vessel be identical to the two vessels used from Sawmill Cove/William Henry Bay. For the 2004 analysis DOT&PF determined this is an unnecessary expense. The two Sawmill Cove/William Henry Bay vessels can fill in for each other as well as the Haines/Skagway vessel when needed. The Haines/Skagway vessel would not need to fill in for the Sawmill Cove/William Henry Bay vessels.

For Alternatives 4A - 4D the 1996 Marine Segments Report proposed a 25 Knot, 105 vehicle, wavepiercing catamaran for all service. The only differences between the alternatives were homeports at either Auke Bay or Berners Bay and supplemental or replacement service to existing AMHS mainline service. The choice of the wavepiercing catamaran was based on similar vessels in service in other countries. Since the 1996 Marine Segments Report, AMHS has successfully designed and constructed a 32 Knot, 35 vehicle fast vehicle ferry, the M/V Fairweather, for service in Southeast Alaska.

Based on the 2004 Traffic Forecast Report the 105 vehicle wavepiercing catamaran would be too large for Lynn Canal service, particularly in the winter when it would be oversized for the traffic demand and expensive to operate. The 2004 report indicates that the resulting optimum size vessels for Alternatives 4A - 4D are significantly smaller; about 50 ASV depending on route and season.

During the 1997 DEIS public comment period concern was raised about discontinuing mainline service in Lynn Canal. In response to the public comments and recent AMHS experience, the 2004 analysis for Alternatives 4A - 4D includes 2 mainline round trips per week.

Finally, the 1996 Marine Segments Report showed the 105 vehicle wavepiercing catamarans stopping at Haines and Skagway on each trip with only a 20-minute port call. DOT&PF has determined that this is not sufficient time to transfer vehicles, especially when vehicles for more than one port of call are on board. This 2004 analysis uses smaller optimized vessels to one port of call to ensure that schedules can be accomplished.

Notes and Limitations

Actual Implementation of new Ferry systems

This study intends to provide equal comparisons between separate marine ferry systems. Specific implementation of any JAI alternative will require further study to verify the assumptions made in this study and to integrate existing AMHS assets. The final selection of new vessels and the identification of the vessel (and terminal) characteristics necessary to meet the identified system requirements will also need to be determined.

This Page Left Intentionally Blank

Data Sources

A variety of data sources were used to analyze the marine segments described by the Juneau Access Improvements Alternatives. They include:

- Alaska Marine Highway System 2000 Annual Financial Report
- Alaska Marine Highway System 2001 Annual Financial Report
- Office of Management and Budget State of Alaska, Comparative Compensation Analysis, Report 25-61, October 1994
- AMHS – Draft Operating Plans for FY 2001, 2002 and 2003. Included final actual expenditures for each fiscal year.
- AMHS FY04 Fuel Projection Summary (Revision 04.07)
- AMHS FY03 Fuel Projection Summary (Revision 03.13), Final.
- *Juneau Access Traffic Forecast,* Draft February 2004, McDowell Group Inc.
- Haines Skagway Reconnaissance Traffic Report, Draft February 2004, McDowell Group Inc.
- Code of Federal Regulations, Title 46 – SHIPPING, CHAPTER I--COAST GUARD, DEPARTMENT OF HOMELAND SECURITY, PART 15--MANNING REQUIREMENTS.
- Code of Federal Regulations, Title 46 – SHIPPING, CHAPTER I--COAST GUARD, DEPARTMENT OF HOMELAND SECURITY, PART 71—Inspection and Certification
- U.S. Department Of Labor, Bureau of Labor Statistics, Consumer Price Index, All Urban Consumers - (CPI-U), 2000 – 2003.

Various other data sources, both published and unpublished were used in this analysis as well. These include conversations with appropriate AMHS staff, vessel data sheets for comparative vessels, power systems technical data, etc.

Appendices

The following appendices are provided for the Marine Segments Report.

This page left intentionally blank.

Index

This page left intentionally blank.

Route Operation and Schedule Model - Definitions

Route Service Requirements. The service requirements required for each route as defined in the Management Plan Appendix A.

Analysis Plan. A list of all marine segment alternates, routes, season, legs, and required operating schedule.

Operating schedule (required). The proposed number of hours per day that a marine transportation route is available for use. This measure of route time is not a definition of crew schedule or vessel availability, since there may be multiple crews and multiple vessels working, and overlapping, on the same route.

Crew Shift. The number of hours per day that crew person is available to work on a vessel. All personnel are assumed to be "day crew", meaning that they return home after their shift.

Vessel Availability. The number of hours per day that a vessel is available to work on a marine route. This period does not include vessel start up and shut down time, but does include load and unload times. Vessel availability is not equal to the operating schedule, because more than one vessel may be working on a route, with staggered start times.

Time Underway. The time underway for each round trip calculated as the outbound maneuvering time, time cruising at speed and inbound maneuvering time.

Total Transit Time. The total time to complete a leg including Time underway plus time required to load and unload the vessel.

Operating schedule (proposed). The actual number of hours per day that a marine transportation route is available for use, measured from time of first departure to time of last arrival. Start-up, first load, last unload, and shutdown times are not included in this measure.

Vessel Usage. The actual umber of hours per day that a vessel is working on a marine route. This period does not include vessel start up and shut down time and does include load and unload times. Vessel usage is not equal to the operating schedule, because more than one vessel may be working on a route, with staggered start times. The ratio of vessel usage to vessel availability is a measure of vessel usage efficiency.

Crew Time (in schedule). The total number of hours required for one crew to accomplish the indicated number of circuits. For two crew schedules, these times includes startup time for crew 1 and shutdown time for crew 2.

Route Vessel Size and Cost Model - Definitions

PAX-ASV. Passenger Vehicle. This vehicle is of the same size and weight of an Alaska Standard Vehicle (see below). Passenger vehicles are one of the three types of vehicles explicitly identified in traffic projection data.

RV. Recreational Vehicle. This type of vehicle is common on AMHS routes and is explicitly identified in traffic projection data. The dimensions of an RV are 24 feet long by 10 feet wide.

VAN. Inter-modal cargo van. This vehicle is a standard vehicle used in traffic data projections. Its dimensions are 40 feet long by 10 feet wide.

ASV. Alaska standard vehicle. A standardized measure of vehicle area that is used to calculate the average car carrying capacity of an AMHS ferry equal to 10 feet wide by 20 feet long. Using traffic projection data, the required ASV capacity would be the calculated length required for PAX-ASV plus the calculated length required for RV plus the calculated length for VAN divided by 20. The ASV capacity on a ferry is equal to the total length of all 10 foot wide car deck lanes, divided by 20.

PAX. Passenger.

Payload. The total weight of all cargo to be carried on the vessel.

Deadweight. The available cargo carrying weight of the vessel.

Season. The operating year has been divided into two season – summer and winter. Summer season is from May through September (153 days) and Winter is from October through April (212 days).

Crew Cost. The hourly cost of the total crew complement required for the selected vessel.

Total Time Underway. The total time underway for each round trip calculated as the outbound maneuvering time, time cruising at speed and inbound maneuvering time, multiplied by the daily roundtrips, multiplied by the operating days.

Annual Operating Hours. The total number of vessel operating hours for each route, per year, calculated as start-up, vessel usage see below), and shutdown time.

Engine Operating Hours. Equal to the Annual Operating Hours.

Winter Lay-up. The time a vessel is out of service. Winter lay-up is calculated for routes with multiple vessels in operation during the summer season and one vessel in operation in the winter season.

Annual Operating Days. The number of days a vessel is in operation per year. This is the sum of days in operation in summer and in operation in winter. A vessel in winter lay-up is considered to not be in operation during winter season.

Configuration Summary

Configuration 1-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	15	30	45

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1.0	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1.0	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 987,183	$ 241,447	$ -	$ 238,754	$ 256,595	**$ 1,723,979**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 9,911,939
Total Capital Cost	$ 9,911,939

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
0	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-SGY-HNS	$ 1,467,384	$ 256,595	$ 1,723,979	$ 9,911,939	
	$ -	$ -	$ -	$ -	
Configuration Total	**$ 1,467,384**	**$ 256,595**	**$ 1,723,979**	**$ 9,911,939**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E

Configuration 1- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 1- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 1- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	47	2	1	177
2	SGY-HNS	6	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		8	1	1	30	
Lane Length	(ft)	160	24	40	N/A	224
Payload	(lbs)	48,000	12,000	40,000	N/A	100,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	12	30	45

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	15		
Selected Characteristics		30	45

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 197.75	$ 484,099
Winter	212		1.0	1	12.00	$ 197.75	$ 503,084
Total	**365**						**$ 987,183**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	75.87	$ 125,509
Winter	212	4	1.77	1,498.13	$ 1.02	75.87	$ 115,938
Total	**365**			**3,119.93**			**$ 241,447**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 73.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 13			$ 60,477
Overhaul			1	$ 178,277	$ 178,277
Total Vessel Maintenance Costs					**$ 238,754**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,228,630
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 238,754
Total Annual Costs	**$ 1,723,979**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 9,911,939	1	9,911,939
Total Vessel Capital Costs			**9,911,939**

Configuration Summary

Configuration 2-I

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	57	124	168

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	8	14.22	14.55	8.00	2.00	-	-	-
Winter	1	6	10.55	10.88	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,399,522	$ 733,117	$ -	$ 472,634	$ 256,595	**$ 3,861,867**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 40,286,711
	$ -
Total Capital Cost	**$ 40,286,711**

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
0	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-KTZ-HNS	$ 3,605,272	$ 256,595	$ 3,861,867	$ 40,286,711	
	$ -	$ -	$ -	$ -	
Configuration Total	**$ 3,605,272**	**$ 256,595**	**$ 3,861,867**	**$ 40,286,711**	

*Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2-I
Operation and Schedule

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	8	14.22	14.55	97.0%	-	N/A
Winter	6	10.55	10.88	98.9%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	8	12.83	8	12.83				
Winter	6	9.17	6	9.17				

Configuration 2-I
Operation and Schedule

HNS-KTZ-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.22		1	6:00 AM	6:28 AM	6:55 AM	7:23 AM
4.05		2	7:50 AM	8:18 AM	8:45 AM	9:13 AM
5.88		3	9:40 AM	10:08 AM	10:35 AM	11:03 AM
7.72		4	11:30 AM	11:58 AM	12:25 PM	12:53 PM
	2.33	5	1:20 PM	1:48 PM	2:15 PM	2:43 PM
	4.17	6	3:10 PM	3:38 PM	4:05 PM	4:33 PM
	6.00	7	5:00 PM	5:28 PM	5:55 PM	6:23 PM
	7.83	8	6:50 PM	7:18 PM	7:45 PM	8:13 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.72		1	8:00 AM	8:28 AM	8:55 AM	9:23 AM
4.55		2	9:50 AM	10:18 AM	10:45 AM	11:13 AM
6.38		3	11:40 AM	12:08 PM	12:35 PM	1:03 PM
8.22		4	1:30 PM	1:58 PM	2:25 PM	2:53 PM
10.05		5	3:20 PM	3:48 PM	4:15 PM	4:43 PM
11.88		6	5:10 PM	5:38 PM	6:05 PM	6:33 PM

Configuration 2-I
Vessel Size and Cost

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	8	413	11	8	992
2	KTZ-HNS	8	413	11	8	992
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**8**	**413**	**11**	**8**	**992**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		52	2	1	124	
Lane Length	(ft)	1,040	48	40	N/A	1,128
Payload	(lbs)	312,000	24,000	40,000	N/A	376,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	57	124	168

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	57		
Selected Characteristics		124	168

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 480.67	$ 1,176,688
Winter	212		1.0	1	12.00	$ 480.67	$ 1,222,833
Total	**365**						**$ 2,399,522**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	8	0.93	1,142.40	$ 1.02	308.53	$ 359,509
Winter	212	6	0.93	1,187.20	$ 1.02	308.53	$ 373,607
Total	**365**			**2,329.60**			**$ 733,117**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 142.87	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.55	-	15.55	2,379
Winter	212	11.88		11.88	2,519
Total	**365**				**4,898**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,898	$ 51.35			$ 251,531
Overhaul			1.0	$ 221,103	$ 221,103
Total Vessel Maintenance Costs					**$ 472,634**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,132,638
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 472,634
Total Annual Costs	**$ 3,861,867**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 40,286,711	1	40,286,711
Total Vessel Capital Costs			**40,286,711**

Configuration Summary

Configuration 2A-I

Route Summary - SAW-SLC-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	33	69	101

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2.0	20	16.82	14.90	8.00	2	14.90	8.00	2
Winter	1.0	8	10.32	10.65	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,528,956	$ 565,463	$ 22,716	$ 614,846	$ 364,154	**$ 4,096,134**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 45,923,874
	$ -
Total Capital Cost	**$ 45,923,874**

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	96	136

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1.0	8	14.22	14.55	8.00	2	-	-	-
Winter	1.0	6	10.55	10.88	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,082,977	$ 591,931	$ -	$ 410,571	$ 256,595	**$ 3,342,074**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 31,635,070
	$ -
Total Capital Cost	$ 31,635,070

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
SAW-SLC-SAW	$ 3,731,980	$ 364,154	$ 4,096,134		$ 45,923,874	
HNS-KTZ-HNS	$ 3,085,479	$ 256,595	$ 3,342,074		$ 31,635,070	
Configuration Total	**$ 6,817,459**	**$ 620,749**	**$ 7,438,208**		**$ 77,558,945**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2A-I
Operation and Schedule

SAW-SLC-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
Summer	Vessel 2	8.00	8.00	30	10	10	30	15.00
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SLC	4.15	15.0	7.0	Sawmill Cove	0.30	Slate Cove	0.50	-
2	SLC-SAW	4.15	15.0	7.0	Slate Cove	0.50	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	0.22	0.07	0.17	-	19	-	39
2	15.00	0.17	0.07	0.22	0.04	0.17	-	19	-	39
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.44**	**0.11**	**0.33**	-	38	1	18

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	20	16.82	14.90	99.3%	14.90	99.3%
Winter	8	10.32	10.65	96.8%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SLC	Leg 2	SLC-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	20	15.75	20	15.75				
Winter	8	9.33	8	9.33				

Configuration 2A-I
Operation and Schedule

SAW-SLC-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
1.90		1	6:00 AM	6:19 AM	6:45 AM	7:04 AM
3.40		2	7:30 AM	7:49 AM	8:15 AM	8:34 AM
4.90		3	9:00 AM	9:19 AM	9:45 AM	10:04 AM
6.40		4	10:30 AM	10:49 AM	11:15 AM	11:34 AM
7.90		5	12:00 PM	12:19 PM	12:45 PM	1:04 PM
	1.92	6	1:30 PM	1:49 PM	2:15 PM	2:34 PM
	3.42	7	3:00 PM	3:19 PM	3:45 PM	4:04 PM
	4.92	8	4:30 PM	4:49 PM	5:15 PM	5:34 PM
	6.42	9	6:00 PM	6:19 PM	6:45 PM	7:04 PM
	7.92	10	7:30 PM	7:49 PM	8:15 PM	8:34 PM

		Vessel 2	1st Dep	8:15 AM	1st Load	8:05 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
1.90		1	8:15 AM	8:34 AM	9:00 AM	9:19 AM
3.40		2	9:45 AM	10:04 AM	10:30 AM	10:49 AM
4.90		3	11:15 AM	11:34 AM	12:00 PM	12:19 PM
6.40		4	12:45 PM	1:04 PM	1:30 PM	1:49 PM
7.90		5	2:15 PM	2:34 PM	3:00 PM	3:19 PM
	1.92	6	3:45 PM	4:04 PM	4:30 PM	4:49 PM
	3.42	7	5:15 PM	5:34 PM	6:00 PM	6:19 PM
	4.92	8	6:45 PM	7:04 PM	7:30 PM	7:49 PM
	6.42	9	8:15 PM	8:34 PM	9:00 PM	9:19 PM
	7.92	10	9:45 PM	10:04 PM	10:30 PM	10:49 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
2.32		1	8:00 AM	8:19 AM	8:40 AM	8:59 AM
3.65		2	9:20 AM	9:39 AM	10:00 AM	10:19 AM
4.98		3	10:40 AM	10:59 AM	11:20 AM	11:39 AM
6.32		4	12:00 PM	12:19 PM	12:40 PM	12:59 PM
7.65		5	1:20 PM	1:39 PM	2:00 PM	2:19 PM
8.98		6	2:40 PM	2:59 PM	3:20 PM	3:39 PM
10.32		7	4:00 PM	4:19 PM	4:40 PM	4:59 PM
11.65		8	5:20 PM	5:39 PM	6:00 PM	6:19 PM

Configuration 2A-I
Vessel Size and Cost

SAW-SLC-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SLC	20	572	15	11	1,374
2	SLC-SAW	20	572	15	11	1,374
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**20**	**572**	**15**	**11**	**1,374**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		29	1	1	69	
Lane Length	(ft)	580	24	40	N/A	644
Payload	(lbs)	174,000	12,000	40,000	N/A	226,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	33	69	101

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	33		
Selected Characteristics		69	101

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 339.91	$ 1,664,216
Winter	212		1.0	1	12.00	$ 339.91	$ 864,740
Total	**365**						**$ 2,528,956**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	20	0.63	1,938.00	$ 1.02	184.05	$ 363,818
Winter	212	8	0.63	1,074.13	$ 1.02	184.05	$ 201,645
Total	**365**			**3,012.13**			**$ 565,463**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 107.15	**$ 22,716**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.90	15.90	31.80	4,865
Winter	212	11.65		11.65	2,470
Total	**365**				**7,335**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,335	$ 31			$ 224,415
Overhaul			2	$ 195,215	$ 390,431
Total Vessel Maintenance Costs					**$ 614,846**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,117,134
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 614,846
Total Annual Costs	**$ 4,096,134**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 22,961,937	2	45,923,874
Total Vessel Capital Costs			**45,923,874**

Configuration 2A-I
Operation and Schedule

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	8	14.22	14.55	97.0%	-	N/A
Winter	6	10.55	10.88	98.9%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	8	12.83	8	12.83				
Winter	6	9.17	6	9.17				

Configuration 2A-I
Operation and Schedule

HNS-KTZ-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.22		1	6:00 AM	6:28 AM	6:55 AM	7:23 AM
4.05		2	7:50 AM	8:18 AM	8:45 AM	9:13 AM
5.88		3	9:40 AM	10:08 AM	10:35 AM	11:03 AM
7.72		4	11:30 AM	11:58 AM	12:25 PM	12:53 PM
	2.33	5	1:20 PM	1:48 PM	2:15 PM	2:43 PM
	4.17	6	3:10 PM	3:38 PM	4:05 PM	4:33 PM
	6.00	7	5:00 PM	5:28 PM	5:55 PM	6:23 PM
	7.83	8	6:50 PM	7:18 PM	7:45 PM	8:13 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.72		1	8:00 AM	8:28 AM	8:55 AM	9:23 AM
4.55		2	9:50 AM	10:18 AM	10:45 AM	11:13 AM
6.38		3	11:40 AM	12:08 PM	12:35 PM	1:03 PM
8.22		4	1:30 PM	1:58 PM	2:25 PM	2:53 PM
10.05		5	3:20 PM	3:48 PM	4:15 PM	4:43 PM
11.88		6	5:10 PM	5:38 PM	6:05 PM	6:33 PM

Configuration 2A-I
Vessel Size and Cost

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	8	318	9	6	764
2	KTZ-HNS	8	318	9	6	764
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**8**	**318**	**9**	**6**	**764**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		40	2	1	96	
Lane Length	(ft)	800	48	40	N/A	888
Payload	(lbs)	240,000	24,000	40,000	N/A	304,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	45	96	136

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		96	136

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 417.26	$ 1,021,460
Winter	212		1.0	1	12.00	$ 417.26	$ 1,061,517
Total	**365**						**$ 2,082,977**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	8	0.93	1,142.40	$ 1.02	249.11	$ 290,274
Winter	212	6	0.93	1,187.20	$ 1.02	249.11	$ 301,657
Total	**365**			**2,329.60**			**$ 591,931**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 126.29	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.55	-	15.55	2,379
Winter	212	11.88		11.88	2,519
Total	**365**				**4,898**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,898	$ 41			$ 202,884
Overhaul			1	$ 207,687	$ 207,687
Total Vessel Maintenance Costs					**$ 410,571**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,674,908
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 410,571
Total Annual Costs	**$ 3,342,074**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	1	31,635,070
Total Vessel Capital Costs			**31,635,070**

This page left intentionally blank.

Juneau Access - Marine Segments Analysis Report
Configuration Summary

Configuration 2B-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	16	27	56

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 505,447	$ 136,001	$ 16,036	$ 212,709	$ 107,559	**$ 977,753**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 10,638,207
Total Capital Cost	**$ 10,638,207**

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	40	86	120

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	8	14.22	14.55	8.00	2.00	-	-	-
Winter	1	6	10.55	10.88	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,930,546	$ 529,145	$ -	$ 383,700	$ 256,595	**$ 3,099,985**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 28,023,877
Total Capital Cost	$ 28,023,877

Juneau Access - Marine Segments Analysis Report
Configuration Summary

Configuration 2B-I

Route Summary - SGY-KTZ-SGY

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	53	114	158

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.65	14.98	8.00	2.00	-	-	-
Winter	1	4	9.65	9.98	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,301,738	$ 938,173	$ -	$ 446,334	$ 256,595	**$ 3,942,841**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 37,405,219
Total Capital Cost	$ 37,405,219

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
HNS-SGY-HNS	$ 870,194	$ 107,559	$ 977,753		$ 10,638,207	
HNS-KTZ-HNS	$ 2,843,390	$ 256,595	$ 3,099,985		$ 28,023,877	
SGY-KTZ-SGY	$ 3,686,246	$ 256,595	$ 3,942,841		$ 37,405,219	
Configuration Total	**$ 7,399,830**	**$ 620,749**	**$ 8,020,579**		**$ 76,067,303**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	-	-	-	-	-	-	-	-

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

HNS-SGY-HNS

Model Schedule

		Summer				
		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97		1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47		2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97		3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
	3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
	5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
	8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Juneau Access - Marine Segments Analysis Report
Route Vessel Size and Cost Model

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	67	2	2	159
2	SGY-HNS	6	67	2	2	159
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**67**	**2**	**2**	**159**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		12	1	1	27	
Lane Length	(ft)	240	24	40	N/A	304
Payload	(lbs)	72,000	12,000	40,000	N/A	124,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	16	27	56

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	16		
Selected Characteristics		27	56

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 206.47	$ 505,447
Winter	212		-	0	-	$ 206.47	$ -
Total	**365**						**$ 505,447**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	82.21	$ 136,001
Winter	212	0	1.77	-	$ 1.02	82.21	$ -
Total	**365**			**1,621.80**			**$ 136,001**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 75.64	**$ 16,036**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	-	-	-	$ 703	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 107,559**	**$ -**	**$ 107,559**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	-		-	-
Total	**365**				**2,443**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,443	$ 13.73			$ 33,546
Overhaul			1.0	$ 179,163	$ 179,163
Total Vessel Maintenance Costs					**$ 212,709**

Total Annual Route Costs

Total Annual Operational Costs	$ 657,485
Total Annual Management Costs	$ 107,559
Total Annual Maintenance Costs	$ 212,709
Total Annual Costs	**$ 977,753**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 10,638,207	1	10,638,207
Total Vessel Capital Costs			**10,638,207**

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	8	14.22	14.55	97.0%	-	N/A
Winter	6	10.55	10.88	98.9%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	8	12.83	8	12.83	-	-	-	-
Winter	6	9.17	6	9.17	-	-	-	-

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

HNS-KTZ-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.22		1	6:00 AM	6:28 AM	6:55 AM	7:23 AM
4.05		2	7:50 AM	8:18 AM	8:45 AM	9:13 AM
5.88		3	9:40 AM	10:08 AM	10:35 AM	11:03 AM
7.72		4	11:30 AM	11:58 AM	12:25 PM	12:53 PM
	2.33	5	1:20 PM	1:48 PM	2:15 PM	2:43 PM
	4.17	6	3:10 PM	3:38 PM	4:05 PM	4:33 PM
	6.00	7	5:00 PM	5:28 PM	5:55 PM	6:23 PM
	7.83	8	6:50 PM	7:18 PM	7:45 PM	8:13 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.72		1	8:00 AM	8:28 AM	8:55 AM	9:23 AM
4.55		2	9:50 AM	10:18 AM	10:45 AM	11:13 AM
6.38		3	11:40 AM	12:08 PM	12:35 PM	1:03 PM
8.22		4	1:30 PM	1:58 PM	2:25 PM	2:53 PM
10.05		5	3:20 PM	3:48 PM	4:15 PM	4:43 PM
11.88		6	5:10 PM	5:38 PM	6:05 PM	6:33 PM

Juneau Access - Marine Segments Analysis Report
Route Vessel Size and Cost Model

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	8	285	8	6	684
2	KTZ-HNS	8	285	8	6	684
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**8**	**285**	**8**	**6**	**684**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		36	1	1	86	
Lane Length	(ft)	720	24	40	N/A	784
Payload	(lbs)	216,000	12,000	40,000	N/A	268,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	40	86	120

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	40		
Selected Characteristics		86	120

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 386.73	$ 946,710
Winter	212		1.0	1	12.00	$ 386.73	$ 983,836
Total	**365**						**$ 1,930,546**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	8	0.93	1,142.40	$ 1.02	222.69	$ 259,484
Winter	212	6	0.93	1,187.20	$ 1.02	222.69	$ 269,660
Total	**365**			**2,329.60**			**$ 529,145**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 118.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.55	-	15.55	2,379
Winter	212	11.88		11.88	2,519
Total	**365**				**4,898**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,898	$ 37.02			$ 181,324
Overhaul			1.0	$ 202,376	$ 202,376
Total Vessel Maintenance Costs					**$ 383,700**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,459,691
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 383,700
Total Annual Costs	**$ 3,099,985**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 28,023,877	1	28,023,877
Total Vessel Capital Costs			**28,023,877**

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

SGY-KTZ-SGY

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SGY-KTZ	13.51	15.0	7.0	Skagway	0.40	Katzehin	0.30	1.0
2	KTZ-SGY	13.51	15.0	7.0	Katzehin	0.30	Skagway	0.40	1.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	16.00	0.17	0.06	0.80	0.04	0.17	-	54	1	14
2	16.00	0.17	0.04	0.80	0.06	0.17	-	54	1	14
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**1.60**	**0.10**	**0.33**	1	48	2	28

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.65	14.98	99.9%	-	N/A
Winter	4	9.65	9.98	90.8%		

Route Leg Sailing Frequency

Season	Leg 1	SGY-KTZ	Leg 2	KTZ-SGY	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50	-	-	-	-
Winter	4	7.50	4	7.50	-	-	-	-

Juneau Access - Marine Segments Analysis Report
Route Operation and Schedule Model

SGY-KTZ-SGY

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Skagway**	**Katzehin**	**Katzehin**	**Skagway**
2.98	1	6:00 AM	6:54 AM	7:15 AM	8:09 AM
5.48	2	8:30 AM	9:24 AM	9:45 AM	10:39 AM
7.98	3	11:00 AM	11:54 AM	12:15 PM	1:09 PM
3.00	4	1:30 PM	2:24 PM	2:45 PM	3:39 PM
5.50	5	4:00 PM	4:54 PM	5:15 PM	6:09 PM
8.00	6	6:30 PM	7:24 PM	7:45 PM	8:39 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Skagway**	**Katzehin**	**Katzehin**	**Skagway**
3.48	1	8:00 AM	8:54 AM	9:15 AM	10:09 AM
5.98	2	10:30 AM	11:24 AM	11:45 AM	12:39 PM
8.48	3	1:00 PM	1:54 PM	2:15 PM	3:09 PM
10.98	4	3:30 PM	4:24 PM	4:45 PM	5:39 PM

Juneau Access - Marine Segments Analysis Report
Route Vessel Size and Cost Model

SGY-KTZ-SGY

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SGY-KTZ	6	285	8	6	684
2	KTZ-SGY	6	285	8	6	684
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**285**	**8**	**6**	**684**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		48	2	1	114	
Lane Length	(ft)	960	48	40	N/A	1,048
Payload	(lbs)	288,000	24,000	40,000	N/A	352,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	53	114	158

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	53		
Selected Characteristics		114	158

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 461.09	$ 1,128,737
Winter	212		1.0	1	12.00	$ 461.09	$ 1,173,001
Total	**365**						**$ 2,301,738**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.80	1,652.40	$ 1.02	289.35	$ 487,680
Winter	212	4	1.80	1,526.40	$ 1.02	289.35	$ 450,493
Total	**365**			**3,178.80**			**$ 938,173**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 137.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.98	-	15.98	2,445
Winter	212	10.98		10.98	2,328
Total	**365**				**4,774**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,774	$ 48.14			$ 229,808
Overhaul			1.0	$ 216,526	$ 216,526
Total Vessel Maintenance Costs					**$ 446,334**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,239,911
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 446,334
Total Annual Costs	**$ 3,942,841**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 37,405,219	1	37,405,219
Vessel Capital Imp Costs			
Total Vessel Capital Costs			**37,405,219**

This page left intentionally blank.

Configuration Summary

Configuration 2C-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	48	102	144

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,168,637	$ 841,703	$ -	$ 420,665	$ 256,595	**$ 3,687,599**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 33,799,995
	$ -
Total Capital Cost	**$ 33,799,995**

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
0	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
HNS-SGY-HNS	$ 3,431,004	$ 256,595	$ 3,687,599		$ 33,799,995	
	$ -	$ -	$ -		$ -	
Configuration Total	**$ 3,431,004**	**$ 256,595**	**$ 3,687,599**		**$ 33,799,995**	

* Capital improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2C-I Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 2C-I Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 2C-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	253	7	5	608
2	SGY-HNS	6	253	7	5	608
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**253**	**7**	**5**	**608**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		43	2	1	102	
Lane Length	(ft)	860	48	40	N/A	948
Payload	(lbs)	258,000	24,000	40,000	N/A	322,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	48	102	144

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	48		
Selected Characteristics		102	144

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 434.42	$ 1,063,466
Winter	212		1.0	1	12.00	$ 434.42	$ 1,105,171
Total	**365**						**$ 2,168,637**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	264.49	$ 437,533
Winter	212	4	1.77	1,498.13	$ 1.02	264.49	$ 404,170
Total	**365**			**3,119.93**			**$ 841,703**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 130.68	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 43.98			$ 209,712
Overhaul			1.0	$ 210,953	$ 210,953
Total Vessel Maintenance Costs					**$ 420,665**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,010,339
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 420,665
Total Annual Costs	**$ 3,687,599**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 33,799,995	1	33,799,995
Total Vessel Capital Costs			**33,799,995**

Configuration Summary

Configuration 3-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	38	81	115

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2	-	-	-
Winter	1	4	9.63	9.97	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,866,191	$ 674,153	$ -	$ 368,186	$ 256,595	**$ 3,165,125**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 26,578,355
Total Capital Cost	**$ 26,578,355**

Route Summary - SAW-WHB-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	42	90	125

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	12	17.13	13.97	8.00	2	13.97	8.00	2
Winter	1	4	8.97	9.30	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,970,289	$ 1,022,240	$ 25,810	$ 671,354	$ 364,154	**$ 5,053,847**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 58,937,604
Total Capital Cost	$ 58,937,604

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-SGY-HNS	$ 2,908,530	$ 256,595	$ 3,165,125	$ 26,578,355	
SAW-WHB-SAW	$ 4,689,693	$ 364,154	$ 5,053,847	$ 58,937,604	
Configuration Total	**$ 7,598,224**	**$ 620,749**	**$ 8,218,973**	**$ 85,515,959**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E

Configuration 3-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 3-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 3-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	201	6	4	483
2	SGY-HNS	6	201	6	4	483
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**201**	**6**	**4**	**483**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		34	1	1	81	
Lane Length	(ft)	680	24	40	N/A	744
Payload	(lbs)	204,000	12,000	40,000	N/A	256,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	38	81	115

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	38		
Selected Characteristics		81	115

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 373.84	$ 915,152
Winter	212		1.0	1	12.00	$ 373.84	$ 951,040
Total	**365**						**$ 1,866,191**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	211.84	$ 350,437
Winter	212	4	1.77	1,498.13	$ 1.02	211.84	$ 323,716
Total	**365**			**3,119.93**			**$ 674,153**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 115.44	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 35.21			$ 167,889
Overhaul			1.0	$ 200,297	$ 200,297
Total Vessel Maintenance Costs					**$ 368,186**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,540,344
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 368,186
Total Annual Costs	**$ 3,165,125**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 26,578,355	1	26,578,355
Total Vessel Capital Costs			**26,578,355**

Configuration 3-I
Operation and Schedule

SAW-WHB-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
Summer	Vessel 2	8.00	8.00	30	10	10	30	15.00
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-WHB	11.29	15.0	7.0	Sawmill Cove	0.30	Wm Henry Bay	0.40	-
2	WHB-SAW	11.29	15.0	7.0	Wm Henry Bay	0.40	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	0.71	0.06	0.17	-	48	1	8
2	15.00	0.17	0.06	0.71	0.04	0.17	-	48	1	8
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**1.42**	**0.10**	**0.33**	1	36	2	16

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	12	17.13	13.97	93.1%	13.97	93.1%
Winter	4	8.97	9.30	84.5%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-WHB	Leg 2	WHB-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	12	15.17	12	15.17				
Winter	4	7.00	4	7.00				

Configuration 3-I
Operation and Schedule

SAW-WHB-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.80		1	6:00 AM	6:48 AM	7:10 AM	7:58 AM
5.13		2	8:20 AM	9:08 AM	9:30 AM	10:18 AM
7.47		3	10:40 AM	11:28 AM	11:50 AM	12:38 PM
	2.83	4	1:00 PM	1:48 PM	2:10 PM	2:58 PM
	5.17	5	3:20 PM	4:08 PM	4:30 PM	5:18 PM
	7.50	6	5:40 PM	6:28 PM	6:50 PM	7:38 PM

		Vessel 2	1st Dep	9:30 AM	1st Load	9:20 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.80		1	9:30 AM	10:18 AM	10:40 AM	11:28 AM
5.13		2	11:50 AM	12:38 PM	1:00 PM	1:48 PM
7.47		3	2:10 PM	2:58 PM	3:20 PM	4:08 PM
	2.83	4	4:30 PM	5:18 PM	5:40 PM	6:28 PM
	5.17	5	6:50 PM	7:38 PM	8:00 PM	8:48 PM
	7.50	6	9:10 PM	9:58 PM	10:20 PM	11:08 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
3.30		1	8:00 AM	8:48 AM	9:10 AM	9:58 AM
5.63		2	10:20 AM	11:08 AM	11:30 AM	12:18 PM
7.97		3	12:40 PM	1:28 PM	1:50 PM	2:38 PM
10.30		4	3:00 PM	3:48 PM	4:10 PM	4:58 PM

Configuration 3-I
Vessel Size and Cost

SAW-WHB-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-WHB	12	449	12	9	1,079
2	WHB-SAW	12	449	12	9	1,079
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**12**	**449**	**12**	**9**	**1,079**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		38	1	1	90	
Lane Length	(ft)	760	24	40	N/A	824
Payload	(lbs)	228,000	12,000	40,000	N/A	280,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	42	90	125

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	42		
Selected Characteristics		90	125

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 399.23	$ 1,954,642
Winter	212		1.0	1	12.00	$ 399.23	$ 1,015,647
Total	**365**						**$ 2,970,289**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	12	1.60	2,937.60	$ 1.02	233.37	$ 699,267
Winter	212	4	1.60	1,356.80	$ 1.02	233.37	$ 322,973
Total	**365**			**4,294.40**			**$ 1,022,240**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 121.75	**$ 25,810**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	14.97	14.97	29.93	4,580
Winter	212	10.30		10.30	2,184
Total	**365**				**6,763**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	6,763	$ 38.80			$ 262,393
Overhaul			2.0	$ 204,481	$ 408,961
Total Vessel Maintenance Costs					**$ 671,354**

Total Annual Route Costs

Total Annual Operational Costs	$ 4,018,339
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 671,354
Total Annual Costs	**$ 5,053,847**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 29,468,802	2	58,937,604
Total Vessel Capital Costs			**58,937,604**

This page left intentionally blank.

Configuration Summary

Configuration 4A-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	15	30	45

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 987,183	$ 241,447	$ -	$ 238,754	$ 256,595	**$ 1,723,979**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 9,911,939
Total Capital Cost	**$ 9,911,939**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	50	170	150

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	2	12.82	12.82	8.00	2	12.82	8	2
Winter	1	1	12.32	12.82	8.00	2			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 4,183,327	$ 4,504,180	$ 67,783	$ 1,993,300	$ 480,186	**$ 11,228,776**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 111,200,000
Total Capital Cost	**$ 111,200,000**

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,467,384	$ 256,595	$ 1,723,979		$ 9,911,939
AUK-HNS-AUK-SGY-AUK	$ 10,748,590	$ 480,186	$ 11,228,776		$111,200,000
Configuration Total	**$ 12,215,973**	**$ 736,781**	**$ 12,952,754**		**$121,111,939**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4A-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 4A-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97		1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47		2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97		3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
	3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
	5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
	8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47		1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97		2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47		3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97		4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 4A-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	47	2	1	177
2	SGY-HNS	6	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		8	1	1	30	
Lane Length	(ft)	160	24	40	N/A	224
Payload	(lbs)	48,000	12,000	40,000	N/A	100,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	12	30	45

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	15		
Selected Characteristics		30	45

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 197.75	$ 484,099
Winter	212		1.0	1	12.00	$ 197.75	$ 503,084
Total	**365**						**$ 987,183**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	75.87	$ 125,509
Winter	212	4	1.77	1,498.13	$ 1.02	75.87	$ 115,938
Total	**365**			**3,119.93**			**$ 241,447**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 73.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 12.68			$ 60,477
Overhaul			1.0	$ 178,277	$ 178,277
Total Vessel Maintenance Costs					**$ 238,754**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,228,630
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 238,754
Total Annual Costs	**$ 1,723,979**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 9,911,939	1	9,911,939
Total Vessel Capital Costs			**9,911,939**

Configuration 4A-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	HSF	HSF-A
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
Summer	Vessel 2	8.00	8.00	30	15	15	30	15.00
Winter	Vessel 1	8.00	8.00	30	15	15	30	15.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	30.0	8.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	30.0	8.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	30.0	8.0	Auke Bay	2.30	Skagway	0.40	-
4	SGY-AUK	76.98	30.0	8.0	Skagway	0.40	Auke Bay	2.30	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.29	2.23	0.06	0.25	2	34	3	4
2	30.00	0.25	0.06	2.23	0.29	0.25	2	34	3	4
3	30.00	0.25	0.29	2.48	0.05	0.25	2	49	3	19
4	30.00	0.25	0.05	2.48	0.29	0.25	2	49	3	19
Total Route Time		**1.00**	**0.69**	**9.42**	**0.69**	**1.00**	10	46	12	46

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	12.82	12.82	85.4%	12.82	85.4%
Winter	1	12.32	12.82	85.4%		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.17	2	7.17	2	5.67	2	5.67
Winter	1	-	1	-	1	-	1	-

Configuration 4A-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
6.65	7.17	1	6:00 AM	8:34 AM	9:05 AM	11:39 AM	12:10 PM	2:59 PM	3:30 PM	6:19 PM

Note 1: Vessel 1 Morning Departure Auke Bay bound for Haines daily
Note 2: Crew 1 sails AUK-HNS-AUK. Crew 2 sails AUK-SGY-HNS. Crews alternate destinations daily

		Vessel 2	1st Dep	6:30 AM	1st Load	6:15 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**
7.15	6.67	1	6:30 AM	9:19 AM	9:50 AM	12:39 PM	1:10 PM	3:44 PM	4:15 PM	6:49 PM

Note 1: Vessel 2 Morning Departure Auke Bay bound for Skagway daily
Note 2: Crew 1 sails AUK-SGY-HNS. Crew 2 sails AUK-HNS-AUK. Crews alternate destinations daily

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
6.65	7.17	1	8:00 AM	10:34 AM	11:05 AM	1:39 PM	2:10 PM	4:59 PM	5:30 PM	8:19 PM

Note 1: 2 Crews required to prevent any single crew from working longer than 12 hour shift to complete full circuit.

Configuration 4A-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	2	90	3	2	339
2	HNS-AUK	2	90	3	2	339
3	AUK-SGY	2	74	2	2	278
4	SGY-AUK	2	74	2	2	278
Maximum One Way Traffic		**2**	**90**	**3**	**2**	**339**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		45	2	1	170	
Lane Length	(ft)	900	48	40	N/A	988
Payload	(lbs)	270,000	24,000	40,000	N/A	334,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	50	170	150

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	50		
Selected Characteristics		170	150

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 504.75	$ 2,471,232
Winter	212		1.0	2	8.00	$ 504.75	$ 1,712,095
Total	**365**						**$ 4,183,327**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	10.77	3,294.60	$ 1.02	791.78	$ 2,660,770
Winter	212	1	10.77	2,282.53	$ 1.02	791.78	$ 1,843,410
Total	**365**			**5,577.13**			**$ 4,504,180**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 319.73	**$ 67,783**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 927	$ 141,831	$ 141,831	$ 283,662
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**365**	**153**	**518**		**$ 338,355**	**$ 141,831**	**$ 480,186**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	13.82	13.82	27.63	4,228
Winter	212	13.82		13.82	2,929
Total	**365**				**7,157**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,157	$ 154.44			$ 1,105,296
Overhaul			2.0	$ 444,002	$ 888,004
Total Vessel Maintenance Costs					**$ 1,993,300**

Total Annual Route Costs

Total Annual Operational Costs	$ 8,755,289
Total Annual Management Costs	$ 480,186
Total Annual Maintenance Costs	$ 1,993,300
Total Annual Costs	**$ 11,228,776**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 55,600,000	2	111,200,000
Total Vessel Capital Costs			**111,200,000**

This page left intentionally blank.

Configuration Summary

Configuration 4B-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	15	30	45

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 987,183	$ 241,447	$ -	$ 238,754	$ 256,595	**$ 1,723,979**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 9,911,939
Total Capital Cost	**$ 9,911,939**

Route Summary - SAW-HNS-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	32	105	99

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	4	15.50	16.00	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,244,804	$ 1,358,187	$ -	$ 738,563	$ 141,831	**$ 3,483,385**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 46,384,000
Total Capital Cost	**$ 46,384,000**

Configuration Summary

Configuration 4B-I

Route Summary - SAW-SGY-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	51	171	152

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	8.83	9.33	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,284	$ 910,375	$ 68,066	$ 693,454	$ 141,831	**$ 2,745,010**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 56,112,000
Total Capital Cost	**$ 56,112,000**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	32	72	87

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1	1	12.32	12.82	8.00	2			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,576,984	$ 1,688,512	$ -	$ 418,211	$ 196,524	**$ 3,880,231**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4B-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,467,384	$ 256,595	$ 1,723,979		$ 9,911,939
SAW-HNS-SAW	$ 3,341,554	$ 141,831	$ 3,483,385		$ 46,384,000
SAW-SGY-SAW	$ 2,603,179	$ 141,831	$ 2,745,010		$ 56,112,000
AUK-HNS-AUK-SGY-AUK	$ 3,683,707	$ 196,524	$ 3,880,231		$ -
Configuration Total	**$ 11,095,824**	**$ 736,781**	**$ 11,832,605**		**$112,407,939**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4B-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 4B-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 4B-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	47	2	1	177
2	SGY-HNS	6	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		8	1	1	30	
Lane Length	(ft)	160	24	40	N/A	224
Payload	(lbs)	48,000	12,000	40,000	N/A	100,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	12	30	45

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	15		
Selected Characteristics		30	45

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 197.75	$ 484,099
Winter	212		1.0	1	12.00	$ 197.75	$ 503,084
Total	**365**						**$ 987,183**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	75.87	$ 125,509
Winter	212	4	1.77	1,498.13	$ 1.02	75.87	$ 115,938
Total	**365**			**3,119.93**			**$ 241,447**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 73.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 12.68			$ 60,477
Overhaul			1.0	$ 178,277	$ 178,277
Total Vessel Maintenance Costs					**$ 238,754**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,228,630
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 238,754
Total Annual Costs	**$ 1,723,979**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 9,911,939	1	9,911,939
Total Vessel Capital Costs			**9,911,939**

Configuration 4B-I
Operation and Schedule

SAW-HNS-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	HSF	HSF-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-HNS	45.74	30.0	8.0	Sawmill Cove	0.30	Haines	0.50	2.0
2	HNS-SAW	45.74	30.0	8.0	Haines	0.50	Sawmill Cove	0.30	2.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**32.00**	0.25	0.04	1.40	0.06	0.25	1	30	2	-
2	**32.00**	0.25	0.06	1.40	0.04	0.25	1	30	2	-
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.10**	**2.80**	**0.10**	**0.50**	3	-	4	-

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	4	15.50	16.00	106.7%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-HNS	Leg 2	HNS-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	4	4.00	4	4.00				
Winter	-	-	-	-	-	-	-	-

Configuration 4B-I
Operation and Schedule

SAW-HNS-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Haines**	**Haines**	**Sawmill Cove**
4.50		1	6:00 AM	7:30 AM	8:00 AM	9:30 AM
8.50		2	10:00 AM	11:30 AM	12:00 PM	1:30 PM
	4.50	3	2:00 PM	3:30 PM	4:00 PM	5:30 PM
	8.50	4	6:00 PM	7:30 PM	8:00 PM	9:30 PM

Configuration 4B-I
Vessel Size and Cost

SAW-HNS-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-HNS	4	112	3	3	418
2	HNS-SAW	4	112	3	3	418
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**4**	**112**	**3**	**3**	**418**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		28	1	1	105	
Lane Length	(ft)	560	24	40	N/A	624
Payload	(lbs)	168,000	12,000	40,000	N/A	220,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	32	105	99

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	32		
Selected Characteristics		105	99

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost
Note (2) - This vessel will be moved to AUK-HNS-AUK-SGY-AUK in winter

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	2	8.50	$ 464.91	$ 1,244,804
Winter	212		-	0	-	$ 464.91	$ -
Total	**365**						**$ 1,244,804**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	4	3.00	1,836.00	$ 1.02	725.25	$ 1,358,187
Winter	212	0	3.00	-	$ 1.02	725.25	$ -
Total	**365**			**1,836.00**			**$ 1,358,187**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (2)	$ 295.70	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	17.00	-	17.00	2,601
Winter	212	-		-	-
Total	**365**				**2,601**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,601	$ 142.78			$ 371,361
Overhaul			1.0	$ 367,201	$ 367,201
Total Vessel Maintenance Costs					**$ 738,563**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,602,991
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 738,563
Total Annual Costs	**$ 3,483,385**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,384,000	1	46,384,000
Total Vessel Capital Costs			**46,384,000**

Configuration 4B-I
Operation and Schedule

SAW-SGY-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	HSF	HSF-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	15	15	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SGY	53.16	30.0	8.0	Sawmill Cove	0.30	Skagway	0.40	-
2	SGY-SAW	53.16	30.0	8.0	Skagway	0.40	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.04	1.75	0.05	0.25	1	50	2	20
2	30.00	0.25	0.05	1.75	0.04	0.25	1	50	2	20
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.09**	**3.50**	**0.09**	**0.50**	3	40	4	40

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	8.83	9.33	84.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SGY	Leg 2	SGY-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	4.67	2	4.67				
Winter	-	-	-	-				

Configuration 4B-I
Operation and Schedule

SAW-SGY-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Skagway**	**Skagway**	**Sawmill Cove**
5.67		1	6:00 AM	7:50 AM	8:20 AM	10:10 AM
10.33		2	10:40 AM	12:30 PM	1:00 PM	2:50 PM

Configuration 4B-I
Vessel Size and Cost

SAW-SGY-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SGY	2	91	3	2	342
2	SGY-SAW	2	91	3	2	342
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**91**	**3**	**2**	**342**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		46	2	1	171	
Lane Length	(ft)	920	48	40	N/A	1,008
Payload	(lbs)	276,000	24,000	40,000	N/A	340,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	51	171	152

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	51		
Selected Characteristics		171	152

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.24	$ 931,284
Winter	212		-	0	-	$ 507.24	$ -
Total	**365**						**$ 931,284**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	3.67	1,122.00	$ 1.02	795.48	$ 910,375
Winter	212	0	3.67	-	$ 1.02	795.48	$ -
Total	**365**			**1,122.00**			**$ 910,375**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 321.07	**$ 68,066**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	10.33	-	10.33	1,581
Winter	212	-		-	-
Total	**365**				**1,581**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,581	$ 155.08			$ 245,186
Overhaul			1.0	$ 448,269	$ 448,269
Total Vessel Maintenance Costs					**$ 693,454**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,909,725
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 693,454
Total Annual Costs	**$ 2,745,010**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 56,112,000	1	56,112,000
Total Vessel Capital Costs			**56,112,000**

Configuration 4B-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	8.00	30	15	15	30	15.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	30.0	8.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	30.0	8.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	30.0	8.0	Auke Bay	2.30	Skagway	0.40	-
4	SGY-AUK	76.98	30.0	8.0	Skagway	0.40	Auke Bay	2.30	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.29	2.23	0.06	0.25	2	34	3	4
2	30.00	0.25	0.06	2.23	0.29	0.25	2	34	3	4
3	30.00	0.25	0.29	2.48	0.05	0.25	2	49	3	19
4	30.00	0.25	0.05	2.48	0.29	0.25	2	49	3	19
Total Route Time		**1.00**	**0.69**	**9.42**	**0.69**	**1.00**	10	46	12	46

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	1	12.32	12.82	85.4%		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	1	-	1	-	1	-	1	-

Configuration 4B-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM		

Total Crew Time		Circuit	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive
Crew 1	Crew 2	No.	Auke Bay	Haines	Haines	Auke Bay	Auke Bay	Skagway	Skagway	Auke Bay
6.65	7.17	1	8:00 AM	10:34 AM	11:05 AM	1:39 PM	2:10 PM	4:59 PM	5:30 PM	8:19 PM

Configuration 4B-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	1	19	-	2	72
2	HNS-AUK	1	19	-	2	72
3	AUK-SGY	1	16	-	2	62
4	SGY-AUK	1	16	-	2	62
Maximum One Way Traffic		**1**	**19**	**-**	**2**	**72**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		19	-	2	72	
Lane Length	(ft)	380	-	80	N/A	460
Payload	(lbs)	114,000	-	80,000	N/A	194,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	23	72	87

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	32		
Selected Characteristics		72	87

* Vessel to be used for winter route will be SAW-HNS-SAW vessel

Note (1) - No vessel lay-up. Vessel operates on SAY-HNS-SAW route in summer.
Note (2) - Vessel overhaul costs accounted for in SAW-HNS-SAW cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 464.91	$ -
Winter	212		1.0	2	8.00	$ 464.91	$ 1,576,984
Total	**365**						**$ 1,576,984**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	0	10.77	-	$ 1.02	725.25	$ -
Winter	212	1	10.77	2,282.53	$ 1.02	725.25	$ 1,688,512
Total	**365**			**2,282.53**			**$ 1,688,512**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (1)	$ 295.70	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	13.82		13.82	2,929
Total	**365**				**2,929**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,929	$ 142.78			$ 418,211
Overhaul			Note (2)	$ 367,201	$ -
Total Vessel Maintenance Costs					**$ 418,211**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,265,496
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 418,211
Total Annual Costs	**$ 3,880,231**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,384,000	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Configuration Summary

Configuration 4C-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	15	30	45

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 987,183	$ 241,447	$ -	$ 238,754	$ 256,595	**$ 1,723,979**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 9,911,939
Total Capital Cost	**$ 9,911,939**

Route Summary - AUK-HNS-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	209	197

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	1	10.10	10.43	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,130	$ 508,808	$ -	$ 326,091	$ 141,831	**$ 1,907,860**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 44,604,471
Total Capital Cost	**$ 44,604,471**

Configuration Summary

Configuration 4C-I

Route Summary - AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	173	152

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	1	10.67	11.00	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,130	$ 542,030	$ 31,842	$ 330,944	$ 141,831	**$ 1,977,777**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 44,604,471
Total Capital Cost	**$ 44,604,471**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	36	63

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1.0	0.5	10.38	10.10	12.00	1.0			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,290,193	$ 728,032	$ -	$ 131,733	$ 196,524	**$ 2,346,482**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4C-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,467,384	$ 256,595	$ 1,723,979		$ 9,911,939
AUK-HNS-AUK	$ 1,766,029	$ 141,831	$ 1,907,860		$ 44,604,471
AUK-SGY-AUK	$ 1,835,946	$ 141,831	$ 1,977,777		$ 44,604,471
AUK-HNS-AUK-SGY-AUK	$ 2,149,958	$ 196,524	$ 2,346,482		$ -
Configuration Total	**$ 7,219,317**	**$ 736,781**	**$ 7,956,098**		**$ 99,120,882**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4C-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 4C-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 4C-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	47	2	1	177
2	SGY-HNS	6	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		8	1	1	30	
Lane Length	(ft)	160	24	40	N/A	224
Payload	(lbs)	48,000	12,000	40,000	N/A	100,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	12	30	45

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	15		
Selected Characteristics		30	45

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 197.75	$ 484,099
Winter	212		1.0	1	12.00	$ 197.75	$ 503,084
Total	**365**						**$ 987,183**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	75.87	$ 125,509
Winter	212	4	1.77	1,498.13	$ 1.02	75.87	$ 115,938
Total	**365**			**3,119.93**			**$ 241,447**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 73.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 12.68			$ 60,477
Overhaul			1.0	$ 178,277	$ 178,277
Total Vessel Maintenance Costs					**$ 238,754**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,228,630
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 238,754
Total Annual Costs	**$ 1,723,979**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 9,911,939	1	9,911,939
Total Vessel Capital Costs			**9,911,939**

AUK-HNS-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	10	10	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.40**	**8.90**	**0.40**	**0.33**	9	42	10	22

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	1	10.10	10.43	94.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	1	-	1	-				
Winter	-	-	-	-	-	-	-	-

AUK-HNS-AUK

Model Schedule

		Summer				
		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**
11.43		1	6:00 AM	10:51 AM	11:15 AM	4:06 PM

Configuration 4C-I
Vessel Size and Cost

AUK-HNS-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	1	56	2	2	209
2	HNS-AUK	1	56	2	2	209
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**1**	**56**	**2**	**2**	**209**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		56	2	2	209	
Lane Length	(ft)	1,120	48	80	N/A	1,248
Payload	(lbs)	336,000	24,000	80,000	N/A	440,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	63	209	197

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		209	197

* Selected vessel will be sister ship to AUK-SGY-AUK

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.15	$ 931,130
Winter	212		-	0	-	$ 507.15	$ -
Total	**365**						**$ 931,130**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	1	9.70	1,484.10	$ 1.02	336.12	$ 508,808
Winter	212	0	9.70	-	$ 1.02	336.12	$ -
Total	**365**			**1,484.10**			**$ 508,808**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 150.20	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	11.43	-	11.43	1,749
Winter	212	-		-	-
Total	**365**				**1,749**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,749	$ 55.98			$ 97,926
Overhaul			1.0	$ 228,165	$ 228,165
Total Vessel Maintenance Costs					**$ 326,091**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,439,938
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 326,091
Total Annual Costs	**$ 1,907,860**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	1	44,604,471
Total Vessel Capital Costs			**44,604,471**

Configuration 4C-I
Operation and Schedule

AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	Displ	Displ-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	10	10	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
2	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**15.50**	0.17	0.33	4.79	0.06	0.17	5	10	5	30
2	**15.50**	0.17	0.06	4.79	0.33	0.17	5	10	5	30
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.39**	**9.58**	**0.39**	**0.33**	10	20	11	-

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	1	10.67	11.00	100.0%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	AUK-SGY	Leg 2	SGY-AUK	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	1	-	1	-				
Winter	-	-	-	-				

Configuration 4C-I
Operation and Schedule

AUK-SGY-AUK

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
12.00		1	6:00 AM	11:10 AM	11:30 AM	4:40 PM

Configuration 4C-I
Vessel Size and Cost

AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-SGY	1	46	2	1	173
2	SGY-AUK	1	46	2	1	173
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**1**	**46**	**2**	**1**	**173**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		46	2	1	173	
Lane Length	(ft)	920	48	40	N/A	1,008
Payload	(lbs)	276,000	24,000	40,000	N/A	340,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	51	173	152

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		173	152

* Selected vessel will be sister ship to AUK-HNS-AUK

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.15	$ 931,130
Winter	212		-	0	-	$ 507.15	$ -
Total	**365**						**$ 931,130**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	1	10.33	1,581.00	$ 1.02	336.12	$ 542,030
Winter	212	0	10.33	-	$ 1.02	336.12	$ -
Total	**365**			**1,581.00**			**$ 542,030**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 150.20	**$ 31,842**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	12.00	-	12.00	1,836
Winter	212	-		-	-
Total	**365**				**1,836**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,836	$ 55.98			$ 102,780
Overhaul			1.0	$ 228,165	$ 228,165
Total Vessel Maintenance Costs					**$ 330,944**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,505,002
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 330,944
Total Annual Costs	**$ 1,977,777**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	1	44,604,471
Total Vessel Capital Costs			**44,604,471**

Configuration 4C-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
4	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
3	15.50	0.17	0.33	4.79	0.06	0.17	5	10	5	30
4	15.50	0.17	0.06	4.79	0.33	0.17	5	10	5	30
Total Route Time		**0.67**	**0.79**	**18.48**	**0.79**	**0.67**	20	2	21	22

Proposed Route Service

Season	Route Operation *		Vessel Usage			
	Round Trips	Op Sched *	Vessel 1 (Day 1)		Vessel 1 (Day 2)	
	(# / day)*	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	0.5	10.38	10.10	91.8%	10.67	97.0%

* - 1 Full AUK-HNS-AUK-SGY-AUK Circuit can be made in 2 days. RT /day = 0.5
- Winter Op Sched is average between Op Sched for AUK-HNS and AUK-SGY.

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	0.5	N/A	0.5	N/A	0.5	N/A	0.5	N/A

Configuration 4C-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Day	**Crew 1**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
Day1	11.43	1	8:00 AM	12:51 PM	1:15 PM	6:06 PM				
Day2	12.00	1					8:00 AM	1:10 PM	1:30 PM	6:40 PM

Configuration 4C-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	0.5	5	-	1	18
2	HNS-AUK	0.5	5	-	1	18
3	AUK-SGY	0.5	4	-	1	15
4	SGY-AUK	0.5	4	-	1	15
Maximum One Way Traffic		**1**	**5**	**-**	**1**	**18**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		10	-	2	36	
Lane Length	(ft)	200	-	80	N/A	280
Payload	(lbs)	60,000	-	80,000	N/A	140,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	14	36	63

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		36	63

***** Vessel to be used for winter route will be AUK-HNS-AUK vessel

Note (1) - Vessel completes 1 "RT" daily - either AUK-HNS-AUK or AUK-SGY-SGY.
Note (2) - Total Time Underway (hrs / RT) & Operating Time (hrs / day) are averages between AUK-HNS & AUK-SGY routes. Operation on each route is every other day.
Note (3) - No vessel lay-up. Vessel operates on AUK-HNS-AUK route in summer.
Note (4) - Vessel overhaul costs accounted for in AUK-HNS-AUK cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 507.15	$ -
Winter	212		1.0	1	12.00	$ 507.15	$ 1,290,193
Total	**365**						**$ 1,290,193**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	-	-	-	$ 1.02	336.12	$ -
Winter	212	1.0	10.02	2,123.53	$ 1.02	336.12	$ 728,032
Total	**365**	Note (1)	Note (2)	**2,123.53**			**$ 728,032**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (3)	$ 150.20	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours (Note (2))			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	11.10		11.10	2,353
Total	**365**				**2,353**

	Vessel Operation		Vessel Overhaul		Total
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	Cost
Operating	2,353	$ 55.98			$ 131,733
Overhaul			Note (4)	$ 228,165	$ -
Total Vessel Maintenance Costs					**$ 131,733**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,018,225
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 131,733
Total Annual Costs	**$ 2,346,482**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Configuration Summary

Configuration 4D-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	15	30	45

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 987,183	$ 241,447	$ -	$ 238,754	$ 256,595	**$ 1,723,979**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 9,911,939
Total Capital Cost	**$ 9,911,939**

Route Summary - SAW-HNS-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	148	136

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	13.60	13.93	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,021,460	$ 482,062	$ -	$ 302,320	$ 141,831	**$ 1,947,672**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 31,635,070
Total Capital Cost	**$ 31,635,070**

Configuration Summary

Configuration 4D-I

Route Summary - SAW-SGY-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	123	112

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	14.62	14.95	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,021,460	$ 523,529	$ 26,774	$ 308,762	$ 141,831	**$ 2,022,356**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 31,635,070
Total Capital Cost	**$ 31,635,070**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	80	95

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1	0.5	10.38	10.10	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,061,517	$ 539,571	$ -	$ 97,466	$ 196,524	**$ 1,895,078**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4D-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,467,384	$ 256,595	$ 1,723,979		$ 9,911,939
SAW-HNS-SAW	$ 1,805,841	$ 141,831	$ 1,947,672		$ 31,635,070
SAW-SGY-SAW	$ 1,880,525	$ 141,831	$ 2,022,356		$ 31,635,070
AUK-HNS-AUK-SGY-AUK	$ 1,698,554	$ 196,524	$ 1,895,078		$ -
Configuration Total	**$ 6,852,304**	**$ 736,781**	**$ 7,589,085**		**$ 73,182,080**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4D-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 4D-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 4D-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	47	2	1	177
2	SGY-HNS	6	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		8	1	1	30	
Lane Length	(ft)	160	24	40	N/A	224
Payload	(lbs)	48,000	12,000	40,000	N/A	100,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	12	30	45

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	15		
Selected Characteristics		30	45

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 197.75	$ 484,099
Winter	212		1.0	1	12.00	$ 197.75	$ 503,084
Total	**365**						**$ 987,183**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	75.87	$ 125,509
Winter	212	4	1.77	1,498.13	$ 1.02	75.87	$ 115,938
Total	**365**			**3,119.93**			**$ 241,447**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 73.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 12.68			$ 60,477
Overhaul			1.0	$ 178,277	$ 178,277
Total Vessel Maintenance Costs					**$ 238,754**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,228,630
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 238,754
Total Annual Costs	**$ 1,723,979**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 9,911,939	1	9,911,939
Total Vessel Capital Costs			**9,911,939**

SAW-HNS-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-HNS	45.74	15.0	7.0	Sawmill Cove	0.30	Haines	0.50	-
2	HNS-SAW	45.74	15.0	7.0	Haines	0.50	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	3.00	0.07	0.17	3	6	3	26
2	15.00	0.17	0.07	3.00	0.04	0.17	3	6	3	26
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**6.00**	**0.11**	**0.33**	6	12	6	52

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	13.60	13.93	92.9%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-HNS	Leg 2	HNS-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.00	2	7.00				
Winter	-	-	-	-	-	-	-	-

Configuration 4D-I Operation and Schedule

SAW-HNS-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Haines**	**Haines**	**Sawmill Cove**
7.43		1	6:00 AM	9:06 AM	9:30 AM	12:36 PM
	7.50	2	1:00 PM	4:06 PM	4:30 PM	7:36 PM

Configuration 4D-I
Vessel Size and Cost

SAW-HNS-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-HNS	2	79	3	2	296
2	HNS-SAW	2	79	3	2	296
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**79**	**3**	**2**	**296**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		40	2	1	148	
Lane Length	(ft)	800	48	40	N/A	888
Payload	(lbs)	240,000	24,000	40,000	N/A	304,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	45	148	136

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		148	136

* Selected vessel will be sister ship to SAW-SGY-SAW
Selected ASV size based on winter route

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 417.26	$ 1,021,460
Winter	212		-	0	-	$ 417.26	$ -
Total	**365**						**$ 1,021,460**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	6.20	1,897.20	$ 1.02	249.11	$ 482,062
Winter	212	0	6.20	-	$ 1.02	249.11	$ -
Total	**365**			**1,897.20**			**$ 482,062**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 126.29	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	14.93	-	14.93	2,285
Winter	212	-		-	-
Total	**365**				**2,285**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,285	$ 41.42			$ 94,633
Overhaul			1.0	$ 207,687	$ 207,687
Total Vessel Maintenance Costs					**$ 302,320**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,503,522
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 302,320
Total Annual Costs	**$ 1,947,672**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	1	31,635,070
Total Vessel Capital Costs			**31,635,070**

Configuration 4D-I
Operation and Schedule

SAW-SGY-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SGY	53.16	15.0	7.0	Sawmill Cove	0.30	Skagway	0.40	1.0
2	SGY-SAW	53.16	15.0	7.0	Skagway	0.40	Sawmill Cove	0.30	1.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**16.00**	0.17	0.04	3.28	0.06	0.17	3	22	3	42
2	**16.00**	0.17	0.06	3.28	0.04	0.17	3	22	3	42
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**6.56**	**0.10**	**0.33**	6	44	7	24

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	14.62	14.95	99.7%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SGY	Leg 2	SGY-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.50	2	7.50				
Winter	-	-	-	-				

Configuration 4D-I
Operation and Schedule

SAW-SGY-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Skagway**	**Skagway**	**Sawmill Cove**
7.95		1	6:00 AM	9:22 AM	9:45 AM	1:07 PM
	8.00	2	1:30 PM	4:52 PM	5:15 PM	8:37 PM

Configuration 4D-I
Vessel Size and Cost

SAW-SGY-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SGY	2	66	2	2	245
2	SGY-SAW	2	66	2	2	245
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**66**	**2**	**2**	**245**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		33	1	1	123	
Lane Length	(ft)	660	24	40	N/A	724
Payload	(lbs)	198,000	12,000	40,000	N/A	250,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	37	123	112

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		123	112

* Selected vessel will be sister ship to SAW-HNS-SAW
Selected ASV size based on winter route

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 417.26	$ 1,021,460
Winter	212		-	0	-	$ 417.26	$ -
Total	**365**						**$ 1,021,460**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	6.73	2,060.40	$ 1.02	249.11	$ 523,529
Winter	212	0	6.73	-	$ 1.02	249.11	$ -
Total	**365**			**2,060.40**			**$ 523,529**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 126.29	**$ 26,774**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.95	-	15.95	2,440
Winter	212	-		-	-
Total	**365**				**2,440**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,440	$ 41.42			$ 101,075
Overhaul			1.0	$ 207,687	$ 207,687
Total Vessel Maintenance Costs					**$ 308,762**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,571,763
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 308,762
Total Annual Costs	**$ 2,022,356**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	1	31,635,070
Total Vessel Capital Costs			**31,635,070**

Cofiguration 4D-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
4	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
3	15.50	0.17	0.33	4.79	0.06	0.17	5	10	5	30
4	15.50	0.17	0.06	4.79	0.33	0.17	5	10	5	30
Total Route Time		**0.67**	**0.79**	**18.48**	**0.79**	**0.67**	20	2	21	22

Proposed Route Service

Season	Route Operation *		Vessel Usage			
	Round Trips	Op Sched *	Vessel 1 (Day 1)		Vessel 1 (Day 2)	
	(# / day)*	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	0.5	10.38	10.10	91.8%	10.67	97.0%

* - 1 Full AUK-HNS-AUK-SGY-AUK Circuit can be made in 2 days. RT /day = 0.5
- Winter Op Sched is average between Op Sched for AUK-HNS and AUK-SGY.

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	0.5	N/A	0.5	N/A	0.5	N/A	0.5	N/A

Cofiguration 4D-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Day	**Crew 1**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
Day1	11.43	1	8:00 AM	12:51 PM	1:15 PM	6:06 PM				
Day2	12.00	1					8:00 AM	1:10 PM	1:30 PM	6:40 PM

Configuration 4D-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	0.5	11	-	1	40
2	HNS-AUK	0.5	11	-	1	40
3	AUK-SGY	0.5	9	-	1	33
4	SGY-AUK	0.5	9	-	1	33
Maximum One Way Traffic		**1**	**11**	**-**	**1**	**40**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		22	-	2	80	
Lane Length	(ft)	440	-	80	N/A	520
Payload	(lbs)	132,000	-	80,000	N/A	212,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	26	80	95

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		80	95

***** Vessel to be used for winter route will be SAW-HNS-SAW vessel

Note (1) - Vessel completes 1 "RT" daily - either AUK-HNS-AUK or AUK-SGY-AUK.
Note (2) - Total Time Underway (hrs / RT) & Operating Time (hrs / day) are averages between AUK-HNS & AUK-SGY routes. Operation on each route is every other day.
Note (3) - No vessel lay-up. Vessel operates on SAW-HNS-SAW route in summer.
Note (4) - Vessel overhaul costs accounted for in SAW-HNS-SAW cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 417.26	$ -
Winter	212		1.0	1	12.00	$ 417.26	$ 1,061,517
Total	**365**						**$ 1,061,517**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	-	-	-	$ 1.02	249.11	$ -
Winter	212	1.0	10.02	2,123.53	$ 1.02	249.11	$ 539,571
Total	**365**	Note (1)	Note (2)	**2,123.53**			**$ 539,571**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (3)	$ 126.29	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours (Note (2))			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	11.10		11.10	2,353
Total	**365**				**2,353**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,353	$ 41.42			$ 97,466
Overhaul			Note (4)	$ 207,687	$ -
Total Vessel Maintenance Costs					**$ 97,466**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,601,088
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 97,466
Total Annual Costs	**$ 1,895,078**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Index

This page left intentionally blank.

Route Operation and Schedule Model - Definitions

Route Service Requirements. The service requirements required for each route as defined in the Management Plan Appendix A.

Analysis Plan. A list of all marine segment alternates, routes, season, legs, and required operating schedule.

Operating schedule (required). The proposed number of hours per day that a marine transportation route is available for use. This measure of route time is not a definition of crew schedule or vessel availability, since there may be multiple crews and multiple vessels working, and overlapping, on the same route.

Crew Shift. The number of hours per day that crew person is available to work on a vessel. All personnel are assumed to be "day crew", meaning that they return home after their shift.

Vessel Availability. The number of hours per day that a vessel is available to work on a marine route. This period does not include vessel start up and shut down time, but does include load and unload times. Vessel availability is not equal to the operating schedule, because more than one vessel may be working on a route, with staggered start times.

Time Underway. The time underway for each round trip calculated as the outbound maneuvering time, time cruising at speed and inbound maneuvering time.

Total Transit Time. The total time to complete a leg including Time underway plus time required to load and unload the vessel.

Operating schedule (proposed). The actual number of hours per day that a marine transportation route is available for use, measured from time of first departure to time of last arrival. Start-up, first load, last unload, and shutdown times are not included in this measure.

Vessel Usage. The actual umber of hours per day that a vessel is working on a marine route. This period does not include vessel start up and shut down time and does include load and unload times. Vessel usage is not equal to the operating schedule, because more than one vessel may be working on a route, with staggered start times. The ratio of vessel usage to vessel availability is a measure of vessel usage efficiency.

Crew Time (in schedule). The total number of hours required for one crew to accomplish the indicated number of circuits. For two crew schedules, these times includes startup time for crew 1 and shutdown time for crew 2.

Route Vessel Size and Cost Model - Definitions

PAX-ASV. Passenger Vehicle. This vehicle is of the same size and weight of an Alaska Standard Vehicle (see below). Passenger vehicles are one of the three types of vehicles explicitly identified in traffic projection data.

RV. Recreational Vehicle. This type of vehicle is common on AMHS routes and is explicitly identified in traffic projection data. The dimensions of an RV are 24 feet long by 10 feet wide.

VAN. Inter-modal cargo van. This vehicle is a standard vehicle used in traffic data projections. Its dimensions are 40 feet long by 10 feet wide.

ASV. Alaska standard vehicle. A standardized measure of vehicle area that is used to calculate the average car carrying capacity of an AMHS ferry equal to 10 feet wide by 20 feet long. Using traffic projection data, the required ASV capacity would be the calculated length required for PAX-ASV plus the calculated length required for RV plus the calculated length for VAN divided by 20. The ASV capacity on a ferry is equal to the total length of all 10 foot wide car deck lanes, divided by 20.

PAX. Passenger.

Payload. The total weight of all cargo to be carried on the vessel.

Deadweight. The available cargo carrying weight of the vessel.

Season. The operating year has been divided into two season – summer and winter. Summer season is from May through September (153 days) and Winter is from October through April (212 days).

Crew Cost. The hourly cost of the total crew complement required for the selected vessel.

Total Time Underway. The total time underway for each round trip calculated as the outbound maneuvering time, time cruising at speed and inbound maneuvering time, multiplied by the daily roundtrips, multiplied by the operating days.

Annual Operating Hours. The total number of vessel operating hours for each route, per year, calculated as start-up, vessel usage see below), and shutdown time.

Engine Operating Hours. Equal to the Annual Operating Hours.

Winter Lay-up. The time a vessel is out of service. Winter lay-up is calculated for routes with multiple vessels in operation during the summer season and one vessel in operation in the winter season.

Annual Operating Days. The number of days a vessel is in operation per year. This is the sum of days in operation in summer and in operation in winter. A vessel in winter lay-up is considered to not be in operation during winter season.

Configuration Summary

Configuration 1-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	59	67

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1.0	3	7.13	7.47	8.00	1.00	-	-	-
Winter	1.0	2	6.63	6.97	8.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,050,076	$ 301,820	$ -	$ 290,316	$ 256,595	**$ 1,898,806**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
0	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-SGY-HNS	$ 1,642,211	$ 256,595	$ 1,898,806	$ -	
	$ -	$ -	$ -	$ -	
Configuration Total	**$ 1,642,211**	**$ 256,595**	**$ 1,898,806**	**$ -**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 1- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	8.00	1	Displ	Displ-A
Winter	8.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	-	30	10	10	30	7.00
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	-	30	10	10	30	7.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	3	7.13	7.47	106.7%	-	N/A
Winter	2	6.63	6.97	99.5%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	3	5.00	3	5.00				
Winter	2	3.83	2	3.83				

Configuration 1- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
4.13	1	8:00 AM	8:53 AM	9:55 AM	10:48 AM
7.97	2	11:50 AM	12:43 PM	1:45 PM	2:38 PM

Configuration 1- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	3	47	2	1	177
2	SGY-HNS	3	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**3**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		16	1	1	59	
Lane Length	(ft)	320	24	40	N/A	384
Payload	(lbs)	96,000	12,000	40,000	N/A	148,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	20	59	67

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		59	67

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	1	8.47	$ 346.89	$ 461,747
Winter	212		1.0	1	8.00	$ 346.89	$ 588,328
Total	**365**						**$ 1,050,076**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	3	1.77	810.90	$ 1.02	189.68	$ 156,892
Winter	212	2	1.77	749.07	$ 1.02	189.68	$ 144,928
Total	**365**			**1,559.97**			**$ 301,820**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	8.47	-	8.47	1,295
Winter	212	7.97		7.97	1,689
Total	**365**				**2,984**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,984	$ 31.53			$ 94,097
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 290,316**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,351,896
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 290,316
Total Annual Costs	**$ 1,898,806**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration Summary

Configuration 2-I

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	111	152

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	9	14.63	14.97	8.00	2.00	-	-	-
Winter	1	6	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,798,026	$ 478,356	$ -	$ 346,550	$ 256,595	**$ 2,879,527**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
0	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
HNS-KTZ-HNS	$ 2,622,932	$ 256,595	$ 2,879,527		$ -	
	$ -	$ -	$ -		$ -	
Configuration Total	**$ 2,622,932**	**$ 256,595**	**$ 2,879,527**		**$ -**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2-I
Operation and Schedule

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	9.00	30	10	10	30	16.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	9	14.63	14.97	93.5%	-	N/A
Winter	6	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	9	13.33	9	13.33				
Winter	6	8.33	6	8.33				

Configuration 2-I
Operation and Schedule

HNS-KTZ-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.13	1	6:00 AM	6:28 AM	6:50 AM	7:18 AM
3.80	2	7:40 AM	8:08 AM	8:30 AM	8:58 AM
5.47	3	9:20 AM	9:48 AM	10:10 AM	10:38 AM
7.13	4	11:00 AM	11:28 AM	11:50 AM	12:18 PM
2.17	5	12:40 PM	1:08 PM	1:30 PM	1:58 PM
3.83	6	2:20 PM	2:48 PM	3:10 PM	3:38 PM
5.50	7	4:00 PM	4:28 PM	4:50 PM	5:18 PM
7.17	8	5:40 PM	6:08 PM	6:30 PM	6:58 PM
8.83	9	7:20 PM	7:48 PM	8:10 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.63	1	8:00 AM	8:28 AM	8:50 AM	9:18 AM
4.30	2	9:40 AM	10:08 AM	10:30 AM	10:58 AM
5.97	3	11:20 AM	11:48 AM	12:10 PM	12:38 PM
7.63	4	1:00 PM	1:28 PM	1:50 PM	2:18 PM
9.30	5	2:40 PM	3:08 PM	3:30 PM	3:58 PM
10.97	6	4:20 PM	4:48 PM	5:10 PM	5:38 PM

Configuration 2-I
Vessel Size and Cost

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	9	413	11	8	992
2	KTZ-HNS	9	413	11	8	992
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**9**	**413**	**11**	**8**	**992**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		46	2	1	111	
Lane Length	(ft)	920	48	40	N/A	1,008
Payload	(lbs)	276,000	24,000	40,000	N/A	340,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	51	111	152

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		111	152

Note (1) - Total crew time includes 8-hour shift for Crew1 and 8.83-hour shift for Crew2. Total crew cost includes overtime for Crew2 at 1.5x hourly crew cost.

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	2	8.00	$ 346.89	$ 915,534
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,798,026**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	9	0.93	1,285.20	$ 1.02	189.68	$ 248,659
Winter	212	6	0.93	1,187.20	$ 1.02	189.68	$ 229,698
Total	**365**			**2,472.40**			**$ 478,356**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 31.53			$ 150,332
Overhaul			1.0	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 346,550**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,276,382
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 346,550
Total Annual Costs	**$ 2,879,527**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration Summary

Configuration 2A-I

Route Summary - SAW-SLC-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	33	69	101

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2.0	20	16.82	14.90	8.00	2	14.90	8.00	2
Winter	1.0	8	10.32	10.65	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,528,956	$ 565,463	$ 22,716	$ 614,846	$ 364,154	**$ 4,096,134**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 45,923,874
Total Capital Cost	**$ 45,923,874**

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	96	136

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1.0	8	14.22	14.55	8.00	2	-	-	-
Winter	1.0	6	10.55	10.88	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,731,683	$ 450,728	$ -	$ 350,668	$ 256,595	**$ 2,789,673**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
SAW-SLC-SAW	$ 3,731,980	$ 364,154	$ 4,096,134		$ 45,923,874	
HNS-KTZ-HNS	$ 2,533,078	$ 256,595	$ 2,789,673		$ -	
Configuration Total	**$ 6,265,058**	**$ 620,749**	**$ 6,885,807**		**$ 45,923,874**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2A-I
Operation and Schedule

SAW-SLC-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
Summer	Vessel 2	8.00	8.00	30	10	10	30	15.00
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SLC	4.15	15.0	7.0	Sawmill Cove	0.30	Slate Cove	0.50	-
2	SLC-SAW	4.15	15.0	7.0	Slate Cove	0.50	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	0.22	0.07	0.17	-	19	-	39
2	15.00	0.17	0.07	0.22	0.04	0.17	-	19	-	39
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.44**	**0.11**	**0.33**	-	38	1	18

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	20	16.82	14.90	99.3%	14.90	99.3%
Winter	8	10.32	10.65	96.8%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SLC	Leg 2	SLC-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	20	15.75	20	15.75				
Winter	8	9.33	8	9.33				

Configuration 2A-I
Operation and Schedule

SAW-SLC-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
1.90		1	6:00 AM	6:19 AM	6:45 AM	7:04 AM
3.40		2	7:30 AM	7:49 AM	8:15 AM	8:34 AM
4.90		3	9:00 AM	9:19 AM	9:45 AM	10:04 AM
6.40		4	10:30 AM	10:49 AM	11:15 AM	11:34 AM
7.90		5	12:00 PM	12:19 PM	12:45 PM	1:04 PM
	1.92	6	1:30 PM	1:49 PM	2:15 PM	2:34 PM
	3.42	7	3:00 PM	3:19 PM	3:45 PM	4:04 PM
	4.92	8	4:30 PM	4:49 PM	5:15 PM	5:34 PM
	6.42	9	6:00 PM	6:19 PM	6:45 PM	7:04 PM
	7.92	10	7:30 PM	7:49 PM	8:15 PM	8:34 PM

		Vessel 2	1st Dep	8:15 AM	1st Load	8:05 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
1.90		1	8:15 AM	8:34 AM	9:00 AM	9:19 AM
3.40		2	9:45 AM	10:04 AM	10:30 AM	10:49 AM
4.90		3	11:15 AM	11:34 AM	12:00 PM	12:19 PM
6.40		4	12:45 PM	1:04 PM	1:30 PM	1:49 PM
7.90		5	2:15 PM	2:34 PM	3:00 PM	3:19 PM
	1.92	6	3:45 PM	4:04 PM	4:30 PM	4:49 PM
	3.42	7	5:15 PM	5:34 PM	6:00 PM	6:19 PM
	4.92	8	6:45 PM	7:04 PM	7:30 PM	7:49 PM
	6.42	9	8:15 PM	8:34 PM	9:00 PM	9:19 PM
	7.92	10	9:45 PM	10:04 PM	10:30 PM	10:49 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Sawmill Cove**	**Slate Cove**	**Slate Cove**	**Sawmill Cove**
2.32		1	8:00 AM	8:19 AM	8:40 AM	8:59 AM
3.65		2	9:20 AM	9:39 AM	10:00 AM	10:19 AM
4.98		3	10:40 AM	10:59 AM	11:20 AM	11:39 AM
6.32		4	12:00 PM	12:19 PM	12:40 PM	12:59 PM
7.65		5	1:20 PM	1:39 PM	2:00 PM	2:19 PM
8.98		6	2:40 PM	2:59 PM	3:20 PM	3:39 PM
10.32		7	4:00 PM	4:19 PM	4:40 PM	4:59 PM
11.65		8	5:20 PM	5:39 PM	6:00 PM	6:19 PM

Configuration 2A-I
Vessel Size and Cost

SAW-SLC-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SLC	20	572	15	11	1,374
2	SLC-SAW	20	572	15	11	1,374
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**20**	**572**	**15**	**11**	**1,374**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		29	1	1	69	
Lane Length	(ft)	580	24	40	N/A	644
Payload	(lbs)	174,000	12,000	40,000	N/A	226,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	33	69	101

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	33		
Selected Characteristics		69	101

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 339.91	$ 1,664,216
Winter	212		1.0	1	12.00	$ 339.91	$ 864,740
Total	**365**						**$ 2,528,956**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	20	0.63	1,938.00	$ 1.02	184.05	$ 363,818
Winter	212	8	0.63	1,074.13	$ 1.02	184.05	$ 201,645
Total	**365**			**3,012.13**			**$ 565,463**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 107.15	**$ 22,716**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.90	15.90	31.80	4,865
Winter	212	11.65		11.65	2,470
Total	**365**				**7,335**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,335	$ 31			$ 224,415
Overhaul			2	$ 195,215	$ 390,431
Total Vessel Maintenance Costs					**$ 614,846**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,117,134
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 614,846
Total Annual Costs	**$ 4,096,134**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 22,961,937	2	45,923,874
Total Vessel Capital Costs			**45,923,874**

Configuration 2A-I
Operation and Schedule

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel No.	Crew Shift		Vessel Preparation Times				Vessel Availability
		Crew 1 (hrs)	Crew 2 (hrs)	Startup (mins)	Load (mins)	Unload (mins)	Shutdown (mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	8	14.22	14.55	97.0%	-	N/A
Winter	6	10.55	10.88	98.9%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	8	12.83	8	12.83				
Winter	6	9.17	6	9.17				

Configuration 2A-I
Operation and Schedule

HNS-KTZ-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.22	1	6:00 AM	6:28 AM	6:55 AM	7:23 AM
4.05	2	7:50 AM	8:18 AM	8:45 AM	9:13 AM
5.88	3	9:40 AM	10:08 AM	10:35 AM	11:03 AM
7.72	4	11:30 AM	11:58 AM	12:25 PM	12:53 PM
2.33	5	1:20 PM	1:48 PM	2:15 PM	2:43 PM
4.17	6	3:10 PM	3:38 PM	4:05 PM	4:33 PM
6.00	7	5:00 PM	5:28 PM	5:55 PM	6:23 PM
7.83	8	6:50 PM	7:18 PM	7:45 PM	8:13 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.72	1	8:00 AM	8:28 AM	8:55 AM	9:23 AM
4.55	2	9:50 AM	10:18 AM	10:45 AM	11:13 AM
6.38	3	11:40 AM	12:08 PM	12:35 PM	1:03 PM
8.22	4	1:30 PM	1:58 PM	2:25 PM	2:53 PM
10.05	5	3:20 PM	3:48 PM	4:15 PM	4:43 PM
11.88	6	5:10 PM	5:38 PM	6:05 PM	6:33 PM

Configuration 2A-I
Vessel Size and Cost

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	8	318	9	6	764
2	KTZ-HNS	8	318	9	6	764
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**8**	**318**	**9**	**6**	**764**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		40	2	1	96	
Lane Length	(ft)	800	48	40	N/A	888
Payload	(lbs)	240,000	24,000	40,000	N/A	304,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	45	96	136

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		96	136

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 346.89	$ 849,191
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,731,683**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	8	0.93	1,142.40	$ 1.02	189.68	$ 221,030
Winter	212	6	0.93	1,187.20	$ 1.02	189.68	$ 229,698
Total	**365**			**2,329.60**			**$ 450,728**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.55	-	15.55	2,379
Winter	212	11.88		11.88	2,519
Total	**365**				**4,898**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,898	$ 31.53			$ 154,449
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 350,668**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,182,410
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 350,668
Total Annual Costs	**$ 2,789,673**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	1	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Configuration Summary

Configuration 2B-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	16	27	56

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 505,447	$ 136,001	$ 16,036	$ 212,709	$ 107,559	**$ 977,753**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 10,638,207
Total Capital Cost	**$ 10,638,207**

Route Summary - HNS-KTZ-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	86	120

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	8	14.22	14.55	8.00	2.00	-	-	-
Winter	1	6	10.55	10.88	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,731,683	$ 450,728	$ -	$ 350,668	$ 256,595	**$ 2,789,673**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Summary

Configuration 2B-I

Route Summary - SGY-KTZ-SGY

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	53	114	158

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.65	14.98	8.00	2.00	-	-	-
Winter	1	4	9.65	9.98	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,301,738	$ 938,173	$ -	$ 446,334	$ 256,595	**$ 3,942,841**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 37,405,219
Total Capital Cost	$ 37,405,219

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 870,194	$ 107,559	$ 977,753		$ 10,638,207
HNS-KTZ-HNS	$ 2,533,078	$ 256,595	$ 2,789,673		$ -
SGY-KTZ-SGY	$ 3,686,246	$ 256,595	$ 3,942,841		$ 37,405,219
Configuration Total	**$ 7,089,517**	**$ 620,749**	**$ 7,710,266**		**$ 48,043,426**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2B-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	-	-	-	-	-	-	-	-

Configuration 2B-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97		1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47		2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97		3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
	3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
	5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
	8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Configuration 2B-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	67	2	2	159
2	SGY-HNS	6	67	2	2	159
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**67**	**2**	**2**	**159**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		12	1	1	27	
Lane Length	(ft)	240	24	40	N/A	304
Payload	(lbs)	72,000	12,000	40,000	N/A	124,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	16	27	56

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	16		
Selected Characteristics		27	56

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 206.47	$ 505,447
Winter	212		-	0	-	$ 206.47	$ -
Total	**365**						**$ 505,447**

2. Fuel Consumption Costs

Season	# Days	Round	Time	Total	Fuel	Fuel	Total
		Trips	Underway	Underway	Cost	Consumption	Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	82.21	$ 136,001
Winter	212	0	1.77	-	$ 1.02	82.21	$ -
Total	**365**			**1,621.80**			**$ 136,001**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 75.64	**$ 16,036**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	-	-	-	$ 703	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 107,559**	**$ -**	**$ 107,559**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	-		-	-
Total	**365**				**2,443**

	Vessel Operation		Vessel Overhaul		Total
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	Cost
Operating	2,443	$ 13.73			$ 33,546
Overhaul			1.0	$ 179,163	$ 179,163
Total Vessel Maintenance Costs					**$ 212,709**

Total Annual Route Costs

Total Annual Operational Costs	$ 657,485
Total Annual Management Costs	$ 107,559
Total Annual Maintenance Costs	$ 212,709
Total Annual Costs	**$ 977,753**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 10,638,207	1	10,638,207
Total Vessel Capital Costs			**10,638,207**

Configuration 2B-I
Operation and Schedule

HNS-KTZ-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-KTZ	6.15	15.0	7.0	Haines	0.50	Katzehin	0.30	-
2	KTZ-HNS	6.15	15.0	7.0	Katzehin	0.30	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.36	0.04	0.17	-	28	-	48
2	15.00	0.17	0.04	0.36	0.07	0.17	-	28	-	48
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**0.72**	**0.11**	**0.33**	-	56	1	36

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	8	14.22	14.55	97.0%	-	N/A
Winter	6	10.55	10.88	98.9%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-KTZ	Leg 2	KTZ-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	8	12.83	8	12.83	-	-	-	-
Winter	6	9.17	6	9.17	-	-	-	-

Configuration 2B-I
Operation and Schedule

HNS-KTZ-HNS

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.22		1	6:00 AM	6:28 AM	6:55 AM	7:23 AM
4.05		2	7:50 AM	8:18 AM	8:45 AM	9:13 AM
5.88		3	9:40 AM	10:08 AM	10:35 AM	11:03 AM
7.72		4	11:30 AM	11:58 AM	12:25 PM	12:53 PM
	2.33	5	1:20 PM	1:48 PM	2:15 PM	2:43 PM
	4.17	6	3:10 PM	3:38 PM	4:05 PM	4:33 PM
	6.00	7	5:00 PM	5:28 PM	5:55 PM	6:23 PM
	7.83	8	6:50 PM	7:18 PM	7:45 PM	8:13 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Katzehin**	**Katzehin**	**Haines**
2.72		1	8:00 AM	8:28 AM	8:55 AM	9:23 AM
4.55		2	9:50 AM	10:18 AM	10:45 AM	11:13 AM
6.38		3	11:40 AM	12:08 PM	12:35 PM	1:03 PM
8.22		4	1:30 PM	1:58 PM	2:25 PM	2:53 PM
10.05		5	3:20 PM	3:48 PM	4:15 PM	4:43 PM
11.88		6	5:10 PM	5:38 PM	6:05 PM	6:33 PM

Configuration 2B-I
Vessel Size and Cost

HNS-KTZ-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-KTZ	8	285	8	6	684
2	KTZ-HNS	8	285	8	6	684
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**8**	**285**	**8**	**6**	**684**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		36	1	1	86	
Lane Length	(ft)	720	24	40	N/A	784
Payload	(lbs)	216,000	12,000	40,000	N/A	268,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	40	86	120

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		86	120

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 346.89	$ 849,191
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,731,683**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	8	0.93	1,142.40	$ 1.02	189.68	$ 221,030
Winter	212	6	0.93	1,187.20	$ 1.02	189.68	$ 229,698
Total	**365**			**2,329.60**			**$ 450,728**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.55	-	15.55	2,379
Winter	212	11.88		11.88	2,519
Total	**365**				**4,898**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,898	$ 31.53			$ 154,449
Overhaul			1.0	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 350,668**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,182,410
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 350,668
Total Annual Costs	**$ 2,789,673**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 2B-I
Operation and Schedule

SGY-KTZ-SGY

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SGY-KTZ	13.51	15.0	7.0	Skagway	0.40	Katzehin	0.30	1.0
2	KTZ-SGY	13.51	15.0	7.0	Katzehin	0.30	Skagway	0.40	1.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	16.00	0.17	0.06	0.80	0.04	0.17	-	54	1	14
2	16.00	0.17	0.04	0.80	0.06	0.17	-	54	1	14
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**1.60**	**0.10**	**0.33**	1	48	2	28

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.65	14.98	99.9%	-	N/A
Winter	4	9.65	9.98	90.8%		

Route Leg Sailing Frequency

Season	Leg 1	SGY-KTZ	Leg 2	KTZ-SGY	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50	-	-	-	-
Winter	4	7.50	4	7.50	-	-	-	-

Configuration 2B-I
Operation and Schedule

SGY-KTZ-SGY

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Skagway**	**Katzehin**	**Katzehin**	**Skagway**
2.98	1	6:00 AM	6:54 AM	7:15 AM	8:09 AM
5.48	2	8:30 AM	9:24 AM	9:45 AM	10:39 AM
7.98	3	11:00 AM	11:54 AM	12:15 PM	1:09 PM
3.00	4	1:30 PM	2:24 PM	2:45 PM	3:39 PM
5.50	5	4:00 PM	4:54 PM	5:15 PM	6:09 PM
8.00	6	6:30 PM	7:24 PM	7:45 PM	8:39 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Skagway**	**Katzehin**	**Katzehin**	**Skagway**
3.48	1	8:00 AM	8:54 AM	9:15 AM	10:09 AM
5.98	2	10:30 AM	11:24 AM	11:45 AM	12:39 PM
8.48	3	1:00 PM	1:54 PM	2:15 PM	3:09 PM
10.98	4	3:30 PM	4:24 PM	4:45 PM	5:39 PM

Configuration 2B-I
Vessel Size and Cost

SGY-KTZ-SGY

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SGY-KTZ	6	285	8	6	684
2	KTZ-SGY	6	285	8	6	684
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**285**	**8**	**6**	**684**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		48	2	1	114	
Lane Length	(ft)	960	48	40	N/A	1,048
Payload	(lbs)	288,000	24,000	40,000	N/A	352,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	53	114	158

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	53		
Selected Characteristics		114	158

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 461.09	$ 1,128,737
Winter	212		1.0	1	12.00	$ 461.09	$ 1,173,001
Total	**365**						**$ 2,301,738**

2. Fuel Consumption Costs

Season	# Days	Round	Time	Total	Fuel	Fuel	Total
		Trips	Underway	Underway	Cost	Consumption	Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.80	1,652.40	$ 1.02	289.35	$ 487,680
Winter	212	4	1.80	1,526.40	$ 1.02	289.35	$ 450,493
Total	**365**			**3,178.80**			**$ 938,173**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 137.63	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.98	-	15.98	2,445
Winter	212	10.98		10.98	2,328
Total	**365**				**4,774**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,774	$ 48.14			$ 229,808
Overhaul			1.0	$ 216,526	$ 216,526
Total Vessel Maintenance Costs					**$ 446,334**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,239,911
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 446,334
Total Annual Costs	**$ 3,942,841**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 37,405,219	1	37,405,219
Total Vessel Capital Costs			**37,405,219**

This page left intentionally blank.

Configuration Summary

Configuration 2C-I

Route Summary - Configuration 2C-I

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	102	144

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2.00	-	-	-
Winter	1	4	9.63	9.97	12.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,731,683	$ 603,640	$ -	$ 346,550	$ 256,595	**$ 2,938,468**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary -

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
	-	-	-

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ -	$ -	$ -	$ -	$ -	**$ -**

Vessel Capital Cost Summary

(Total Vessels = 0)

Vessel Acquisition Cost	$ -
Total Capital Cost	$ -

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
Configuration 2C-I	$ 2,681,873	$ 256,595	$ 2,938,468		$ -	
	$ -	$ -	$ -		$ -	
Configuration Total	**$ 2,681,873**	**$ 256,595**	**$ 2,938,468**		**$ -**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 2C-I

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 2C-I
Operation and Schedule

Configuration 2C-I

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97		1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47		2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97		3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
	3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
	5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
	8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47		1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97		2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47		3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97		4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 2C-I
Vessel Size and Cost

Configuration 2C-I

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	253	7	5	608
2	SGY-HNS	6	253	7	5	608
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**253**	**7**	**5**	**608**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		43	2	1	102	
Lane Length	(ft)	860	48	40	N/A	948
Payload	(lbs)	258,000	24,000	40,000	N/A	322,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	48	102	144

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		102	144

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 346.89	$ 849,191
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,731,683**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	189.68	$ 313,783
Winter	212	4	1.77	1,498.13	$ 1.02	189.68	$ 289,857
Total	**365**			**3,119.93**			**$ 603,640**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 31.53			$ 150,332
Overhaul			1.0	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 346,550**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,335,323
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 346,550
Total Annual Costs	**$ 2,938,468**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration Summary

Configuration 3-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	81	115

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2	-	-	-
Winter	1	4	9.63	9.97	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,731,683	$ 603,640	$ -	$ 346,550	$ 256,595	**$ 2,938,468**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - SAW-WHB-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	42	90	125

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	12	17.13	13.97	8.00	2	13.97	8.00	2
Winter	1	4	8.97	9.30	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 2,970,289	$ 1,022,240	$ 25,810	$ 671,354	$ 364,154	**$ 5,053,847**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 58,937,604
Total Capital Cost	$ 58,937,604

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*		
	O&M	Mgmt	Total		Acquisition	
HNS-SGY-HNS	$ 2,681,873	$ 256,595	$ 2,938,468		$ -	
SAW-WHB-SAW	$ 4,689,693	$ 364,154	$ 5,053,847		$ 58,937,604	
Configuration Total	**$ 7,371,567**	**$ 620,749**	**$ 7,992,316**		**$ 58,937,604**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 3-I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 3-I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 3-I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	201	6	4	483
2	SGY-HNS	6	201	6	4	483
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**201**	**6**	**4**	**483**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		34	1	1	81	
Lane Length	(ft)	680	24	40	N/A	744
Payload	(lbs)	204,000	12,000	40,000	N/A	256,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	38	81	115

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		81	115

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 346.89	$ 849,191
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,731,683**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	189.68	$ 313,783
Winter	212	4	1.77	1,498.13	$ 1.02	189.68	$ 289,857
Total	**365**			**3,119.93**			**$ 603,640**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 31.53			$ 150,332
Overhaul			1.0	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 346,550**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,335,323
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 346,550
Total Annual Costs	**$ 2,938,468**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 3-I
Operation and Schedule

SAW-WHB-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
Summer	Vessel 2	8.00	8.00	30	10	10	30	15.00
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-WHB	11.29	15.0	7.0	Sawmill Cove	0.30	Wm Henry Bay	0.40	-
2	WHB-SAW	11.29	15.0	7.0	Wm Henry Bay	0.40	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	0.71	0.06	0.17	-	48	1	8
2	15.00	0.17	0.06	0.71	0.04	0.17	-	48	1	8
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**1.42**	**0.10**	**0.33**	1	36	2	16

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	12	17.13	13.97	93.1%	13.97	93.1%
Winter	4	8.97	9.30	84.5%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-WHB	Leg 2	WHB-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	12	15.17	12	15.17				
Winter	4	7.00	4	7.00				

Configuration 3-I
Operation and Schedule

SAW-WHB-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.80		1	6:00 AM	6:48 AM	7:10 AM	7:58 AM
5.13		2	8:20 AM	9:08 AM	9:30 AM	10:18 AM
7.47		3	10:40 AM	11:28 AM	11:50 AM	12:38 PM
	2.83	4	1:00 PM	1:48 PM	2:10 PM	2:58 PM
	5.17	5	3:20 PM	4:08 PM	4:30 PM	5:18 PM
	7.50	6	5:40 PM	6:28 PM	6:50 PM	7:38 PM

		Vessel 2	1st Dep	9:30 AM	1st Load	9:20 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.80		1	9:30 AM	10:18 AM	10:40 AM	11:28 AM
5.13		2	11:50 AM	12:38 PM	1:00 PM	1:48 PM
7.47		3	2:10 PM	2:58 PM	3:20 PM	4:08 PM
	2.83	4	4:30 PM	5:18 PM	5:40 PM	6:28 PM
	5.17	5	6:50 PM	7:38 PM	8:00 PM	8:48 PM
	7.50	6	9:10 PM	9:58 PM	10:20 PM	11:08 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
3.30		1	8:00 AM	8:48 AM	9:10 AM	9:58 AM
5.63		2	10:20 AM	11:08 AM	11:30 AM	12:18 PM
7.97		3	12:40 PM	1:28 PM	1:50 PM	2:38 PM
10.30		4	3:00 PM	3:48 PM	4:10 PM	4:58 PM

Configuration 3-I
Vessel Size and Cost

SAW-WHB-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-WHB	12	449	12	9	1,079
2	WHB-SAW	12	449	12	9	1,079
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**12**	**449**	**12**	**9**	**1,079**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		38	1	1	90	
Lane Length	(ft)	760	24	40	N/A	824
Payload	(lbs)	228,000	12,000	40,000	N/A	280,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	42	90	125

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	42		
Selected Characteristics		90	125

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 399.23	$ 1,954,642
Winter	212		1.0	1	12.00	$ 399.23	$ 1,015,647
Total	**365**						**$ 2,970,289**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	12	1.60	2,937.60	$ 1.02	233.37	$ 699,267
Winter	212	4	1.60	1,356.80	$ 1.02	233.37	$ 322,973
Total	**365**			**4,294.40**			**$ 1,022,240**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 121.75	**$ 25,810**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	14.97	14.97	29.93	4,580
Winter	212	10.30		10.30	2,184
Total	**365**				**6,763**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	6,763	$ 38.80			$ 262,393
Overhaul			2.0	$ 204,481	$ 408,961
Total Vessel Maintenance Costs					**$ 671,354**

Total Annual Route Costs

Total Annual Operational Costs	$ 4,018,339
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 671,354
Total Annual Costs	**$ 5,053,847**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 29,468,802	2	58,937,604
Total Vessel Capital Costs			**58,937,604**

This page left intentionally blank.

Configuration Summary

Configuration 4A-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	59	67

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	3	7.13	7.47	8.00	1.00	-	-	-
Winter	1	2	6.63	6.97	8.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,050,076	$ 301,820	$ -	$ 290,316	$ 256,595	**$ 1,898,806**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	50	170	150

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	2	12.82	12.82	8.00	2	12.82	8	2
Winter	1	1	12.32	12.82	8.00	2			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 4,183,327	$ 4,504,180	$ 67,783	$ 1,993,300	$ 480,186	**$ 11,228,776**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 111,200,000
Total Capital Cost	**$ 111,200,000**

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,642,211	$ 256,595	$ 1,898,806		$ -
AUK-HNS-AUK-SGY-AUK	$ 10,748,590	$ 480,186	$ 11,228,776		$111,200,000
Configuration Total	**$ 12,390,801**	**$ 736,781**	**$ 13,127,582**		**$111,200,000**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4A- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	8.00	1	Displ	Displ-A
Winter	8.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	-	30	10	10	30	7.00
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	-	30	10	10	30	7.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	3	7.13	7.47	106.7%	-	N/A
Winter	2	6.63	6.97	99.5%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	3	5.00	3	5.00				
Winter	2	3.83	2	3.83				

Configuration 4A- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
4.13	1	8:00 AM	8:53 AM	9:55 AM	10:48 AM
7.97	2	11:50 AM	12:43 PM	1:45 PM	2:38 PM

Configuration 4A- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	3	47	2	1	177
2	SGY-HNS	3	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**3**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		16	1	1	59	
Lane Length	(ft)	320	24	40	N/A	384
Payload	(lbs)	96,000	12,000	40,000	N/A	148,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	20	59	67

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		59	67

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	1	8.47	$ 346.89	$ 461,747
Winter	212		1.0	1	8.00	$ 346.89	$ 588,328
Total	**365**						**$ 1,050,076**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	3	1.77	810.90	$ 1.02	189.68	$ 156,892
Winter	212	2	1.77	749.07	$ 1.02	189.68	$ 144,928
Total	**365**			**1,559.97**			**$ 301,820**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	8.47	-	8.47	1,295
Winter	212	7.97		7.97	1,689
Total	**365**				**2,984**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,984	$ 31.53			$ 94,097
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 290,316**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,351,896
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 290,316
Total Annual Costs	**$ 1,898,806**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 4A-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	HSF	HSF-A
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
Summer	Vessel 2	8.00	8.00	30	15	15	30	15.00
Winter	Vessel 1	8.00	8.00	30	15	15	30	15.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	30.0	8.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	30.0	8.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	30.0	8.0	Auke Bay	2.30	Skagway	0.40	-
4	SGY-AUK	76.98	30.0	8.0	Skagway	0.40	Auke Bay	2.30	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.29	2.23	0.06	0.25	2	34	3	4
2	30.00	0.25	0.06	2.23	0.29	0.25	2	34	3	4
3	30.00	0.25	0.29	2.48	0.05	0.25	2	49	3	19
4	30.00	0.25	0.05	2.48	0.29	0.25	2	49	3	19
Total Route Time		**1.00**	**0.69**	**9.42**	**0.69**	**1.00**	10	46	12	46

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	12.82	12.82	85.4%	12.82	85.4%
Winter	1	12.32	12.82	85.4%		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.17	2	7.17	2	5.67	2	5.67
Winter	1	-	1	-	1	-	1	-

Configuration 4A-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
6.65	7.17	1	6:00 AM	8:34 AM	9:05 AM	11:39 AM	12:10 PM	2:59 PM	3:30 PM	6:19 PM

Note 1: Vessel 1 Morning Departure Auke Bay bound for Haines daily
Note 2: Crew 1 sails AUK-HNS-AUK. Crew 2 sails AUK-SGY-HNS. Crews alternate destinations daily

		Vessel 2	1st Dep	6:30 AM	1st Load	6:15 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**
7.15	6.67	1	6:30 AM	9:19 AM	9:50 AM	12:39 PM	1:10 PM	3:44 PM	4:15 PM	6:49 PM

Note 1: Vessel 2 Morning Departure Auke Bay bound for Skagway daily
Note 2: Crew 1 sails AUK-SGY-HNS. Crew 2 sails AUK-HNS-AUK. Crews alternate destinations daily

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
6.65	7.17	1	8:00 AM	10:34 AM	11:05 AM	1:39 PM	2:10 PM	4:59 PM	5:30 PM	8:19 PM

Note 1: 2 Crews required to prevent any single crew from working longer than 12 hour shift to complete full circuit.

Configuration 4A-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	2	90	3	2	339
2	HNS-AUK	2	90	3	2	339
3	AUK-SGY	2	74	2	2	278
4	SGY-AUK	2	74	2	2	278
Maximum One Way Traffic		**2**	**90**	**3**	**2**	**339**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		45	2	1	170	
Lane Length	(ft)	900	48	40	N/A	988
Payload	(lbs)	270,000	24,000	40,000	N/A	334,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	50	170	150

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	50		
Selected Characteristics		170	150

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 504.75	$2,471,232
Winter	212		1.0	2	8.00	$ 504.75	$1,712,095
Total	**365**						**$4,183,327**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	10.77	3,294.60	$ 1.02	791.78	$2,660,770
Winter	212	1	10.77	2,282.53	$ 1.02	791.78	$1,843,410
Total	**365**			**5,577.13**			**$4,504,180**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 319.73	**$ 67,783**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 927	$ 141,831	$ 141,831	$ 283,662
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**365**	**153**	**518**		**$ 338,355**	**$ 141,831**	**$ 480,186**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	13.82	13.82	27.63	4,228
Winter	212	13.82		13.82	2,929
Total	**365**				**7,157**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,157	$ 154.44			$ 1,105,296
Overhaul			2.0	$ 444,002	$ 888,004
Total Vessel Maintenance Costs					**$ 1,993,300**

Total Annual Route Costs

Total Annual Operational Costs	$ 8,755,289
Total Annual Management Costs	$ 480,186
Total Annual Maintenance Costs	$ 1,993,300
Total Annual Costs	**$11,228,776**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$55,600,000	2	111,200,000
Total Vessel Capital Costs			**111,200,000**

This page left intentionally blank.

Configuration Summary

Configuration 4B-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	59	67

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	3	7.13	7.47	8.00	1.00	-	-	-
Winter	1	2	6.63	6.97	8.00	1.00			

Annual Cost (2) Summary

Operating and Maintenance Cost (2)s				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,050,076	$ 301,820	$ -	$ 290,316	$ 256,595	**$ 1,898,806**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - SAW-HNS-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	32	105	99

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	4	15.50	16.00	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,244,804	$ 1,358,187	$ -	$ 738,563	$ 141,831	**$ 3,483,385**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 46,384,000
Total Capital Cost	**$ 46,384,000**

Configuration Summary

Configuration 4B-I

Route Summary - SAW-SGY-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	51	171	152

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	8.83	9.33	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,284	$ 910,375	$ 68,066	$ 693,454	$ 141,831	**$ 2,745,010**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 56,112,000
Total Capital Cost	**$ 56,112,000**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	32	72	87

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1	1	12.32	12.82	8.00	2			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,576,984	$ 1,688,512	$ -	$ 418,211	$ 196,524	**$ 3,880,231**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4B-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,642,211	$ 256,595	$ 1,898,806		$ -
SAW-HNS-SAW	$ 3,341,554	$ 141,831	$ 3,483,385		$ 46,384,000
SAW-SGY-SAW	$ 2,603,179	$ 141,831	$ 2,745,010		$ 56,112,000
AUK-HNS-AUK-SGY-AUK	$ 3,683,707	$ 196,524	$ 3,880,231		$ -
Configuration Total	**$ 11,270,651**	**$ 736,781**	**$ 12,007,432**		**$102,496,000**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4B- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	8.00	1	Displ	Displ-A
Winter	8.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	-	30	10	10	30	7.00
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	-	30	10	10	30	7.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	3	7.13	7.47	106.7%	-	N/A
Winter	2	6.63	6.97	99.5%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	3	5.00	3	5.00				
Winter	2	3.83	2	3.83				

Configuration 4B- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
4.13	1	8:00 AM	8:53 AM	9:55 AM	10:48 AM
7.97	2	11:50 AM	12:43 PM	1:45 PM	2:38 PM

Configuration 4B- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	3	47	2	1	177
2	SGY-HNS	3	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**3**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		16	1	1	59	
Lane Length	(ft)	320	24	40	N/A	384
Payload	(lbs)	96,000	12,000	40,000	N/A	148,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	20	59	67

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		59	67

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	1	8.47	$ 346.89	$ 461,747
Winter	212		1.0	1	8.00	$ 346.89	$ 588,328
Total	**365**						**$ 1,050,076**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	3	1.77	810.90	$ 1.02	189.68	$ 156,892
Winter	212	2	1.77	749.07	$ 1.02	189.68	$ 144,928
Total	**365**			**1,559.97**			**$ 301,820**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	8.47	-	8.47	1,295
Winter	212	7.97		7.97	1,689
Total	**365**				**2,984**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,984	$ 31.53			$ 94,097
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 290,316**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,351,896
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 290,316
Total Annual Costs	**$ 1,898,806**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 4B-I
Operation and Schedule

SAW-HNS-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	HSF	HSF-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-HNS	45.74	30.0	8.0	Sawmill Cove	0.30	Haines	0.50	2.0
2	HNS-SAW	45.74	30.0	8.0	Haines	0.50	Sawmill Cove	0.30	2.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**32.00**	0.25	0.04	1.40	0.06	0.25	1	30	2	-
2	**32.00**	0.25	0.06	1.40	0.04	0.25	1	30	2	-
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.10**	**2.80**	**0.10**	**0.50**	3	-	4	-

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	4	15.50	16.00	106.7%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-HNS	Leg 2	HNS-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	4	12.00	4	12.00				
Winter	-	-	-	-	-	-	-	-

Configuration 4B-I
Operation and Schedule

SAW-HNS-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Haines**	**Haines**	**Sawmill Cove**
4.50		1	6:00 AM	7:30 AM	8:00 AM	9:30 AM
8.50		2	10:00 AM	11:30 AM	12:00 PM	1:30 PM
	4.50	3	2:00 PM	3:30 PM	4:00 PM	5:30 PM
	8.50	4	6:00 PM	7:30 PM	8:00 PM	9:30 PM

Configuration 4B-I
Vessel Size and Cost

SAW-HNS-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-HNS	4	112	3	3	418
2	HNS-SAW	4	112	3	3	418
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**4**	**112**	**3**	**3**	**418**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		28	1	1	105	
Lane Length	(ft)	560	24	40	N/A	624
Payload	(lbs)	168,000	12,000	40,000	N/A	220,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	32	105	99

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	32		
Selected Characteristics		105	99

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost
Note (2) - This vessel will be moved to AUK-HNS-AUK-SGY-AUK in winter

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	2	8.50	$ 464.91	$ 1,244,804
Winter	212		-	0	-	$ 464.91	$ -
Total	**365**						**$ 1,244,804**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	4	3.00	1,836.00	$ 1.02	725.25	$ 1,358,187
Winter	212	0	3.00	-	$ 1.02	725.25	$ -
Total	**365**			**1,836.00**			**$ 1,358,187**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (2)	$ 295.70	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	17.00	-	17.00	2,601
Winter	212	-		-	-
Total	**365**				**2,601**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,601	$ 142.78			$ 371,361
Overhaul			1.0	$ 367,201	$ 367,201
Total Vessel Maintenance Costs					**$ 738,563**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,602,991
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 738,563
Total Annual Costs	**$ 3,483,385**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,384,000	1	46,384,000
Total Vessel Capital Costs			**46,384,000**

Configuration 4B-I
Operation and Schedule

SAW-SGY-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	HSF	HSF-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	15	15	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SGY	53.16	30.0	8.0	Sawmill Cove	0.30	Skagway	0.40	-
2	SGY-SAW	53.16	30.0	8.0	Skagway	0.40	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.04	1.75	0.05	0.25	1	50	2	20
2	30.00	0.25	0.05	1.75	0.04	0.25	1	50	2	20
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.09**	**3.50**	**0.09**	**0.50**	3	40	4	40

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	8.83	9.33	84.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SGY	Leg 2	SGY-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	4.67	2	4.67				
Winter	-	-	-	-				

Configuration 4B-I
Operation and Schedule

SAW-SGY-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Skagway**	**Skagway**	**Sawmill Cove**
5.67		1	6:00 AM	7:50 AM	8:20 AM	10:10 AM
10.33		2	10:40 AM	12:30 PM	1:00 PM	2:50 PM

Configuration 4B-I
Vessel Size and Cost

SAW-SGY-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SGY	2	91	3	2	342
2	SGY-SAW	2	91	3	2	342
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**91**	**3**	**2**	**342**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		46	2	1	171	
Lane Length	(ft)	920	48	40	N/A	1,008
Payload	(lbs)	276,000	24,000	40,000	N/A	340,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	51	171	152

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	51		
Selected Characteristics		171	152

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.24	$ 931,284
Winter	212		-	0	-	$ 507.24	$ -
Total	**365**						**$ 931,284**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	3.67	1,122.00	$ 1.02	795.48	$ 910,375
Winter	212	0	3.67	-	$ 1.02	795.48	$ -
Total	**365**			**1,122.00**			**$ 910,375**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 321.07	**$ 68,066**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	10.33	-	10.33	1,581
Winter	212	-		-	-
Total	**365**				**1,581**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,581	$ 155.08			$ 245,186
Overhaul			1.0	$ 448,269	$ 448,269
Total Vessel Maintenance Costs					**$ 693,454**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,909,725
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 693,454
Total Annual Costs	**$ 2,745,010**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 56,112,000	1	56,112,000
Total Vessel Capital Costs			**56,112,000**

Configuration 4B-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	8.00	30	15	15	30	15.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	30.0	8.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	30.0	8.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	30.0	8.0	Auke Bay	2.30	Skagway	0.40	-
4	SGY-AUK	76.98	30.0	8.0	Skagway	0.40	Auke Bay	2.30	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	30.00	0.25	0.29	2.23	0.06	0.25	2	34	3	4
2	30.00	0.25	0.06	2.23	0.29	0.25	2	34	3	4
3	30.00	0.25	0.29	2.48	0.05	0.25	2	49	3	19
4	30.00	0.25	0.05	2.48	0.29	0.25	2	49	3	19
Total Route Time		**1.00**	**0.69**	**9.42**	**0.69**	**1.00**	10	46	12	46

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	1	12.32	12.82	85.4%		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	1	-	1	-	1	-	1	-

Configuration 4B-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM		

Total Crew Time		Circuit	Depart	Arrive	Depart	Arrive	Depart	Arrive	Depart	Arrive
Crew 1	Crew 2	No.	Auke Bay	Haines	Haines	Auke Bay	Auke Bay	Skagway	Skagway	Auke Bay
6.65	7.17	1	8:00 AM	10:34 AM	11:05 AM	1:39 PM	2:10 PM	4:59 PM	5:30 PM	8:19 PM

Configuration 4B-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	1	19	-	2	72
2	HNS-AUK	1	19	-	2	72
3	AUK-SGY	1	16	-	2	62
4	SGY-AUK	1	16	-	2	62
Maximum One Way Traffic		**1**	**19**	**-**	**2**	**72**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		19	-	2	72	
Lane Length	(ft)	380	-	80	N/A	460
Payload	(lbs)	114,000	-	80,000	N/A	194,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	23	72	87

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	32		
Selected Characteristics		72	87

* Vessel to be used for winter route will be SAW-HNS-SAW vessel

Note (1) - No vessel lay-up. Vessel operates on SAY-HNS-SAW route in summer.
Note (2) - Vessel overhaul costs accounted for in SAW-HNS-SAW cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 464.91	$ -
Winter	212		1.0	2	8.00	$ 464.91	$ 1,576,984
Total	**365**						**$ 1,576,984**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	0	10.77	-	$ 1.02	725.25	$ -
Winter	212	1	10.77	2,282.53	$ 1.02	725.25	$ 1,688,512
Total	**365**			**2,282.53**			**$ 1,688,512**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (1)	$ 295.70	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	13.82		13.82	2,929
Total	**365**				**2,929**

	Vessel Operation		Vessel Overhaul		Total
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	Cost
Operating	2,929	$ 142.78			$ 418,211
Overhaul			Note (2)	$ 367,201	$ -
Total Vessel Maintenance Costs					**$ 418,211**

Total Annual Route Costs

Total Annual Operational Costs	$ 3,265,496
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 418,211
Total Annual Costs	**$ 3,880,231**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,384,000	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Configuration Summary

Configuration 4C-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	59	67

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	3	7.13	7.47	8.00	1.00	-	-	-
Winter	1	2	6.63	6.97	8.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,050,076	$ 301,820	$ -	$ 290,316	$ 256,595	**$ 1,898,806**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - AUK-HNS-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	209	197

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	1	10.10	10.43	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,130	$ 508,808	$ -	$ 326,091	$ 141,831	**$ 1,907,860**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 44,604,471
Total Capital Cost	**$ 44,604,471**

Configuration Summary

Configuration 4C-I

Route Summary - AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	173	152

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	1	10.67	11.00	12.00	1.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 931,130	$ 542,030	$ 31,842	$ 330,944	$ 141,831	**$ 1,977,777**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 44,604,471
Total Capital Cost	**$ 44,604,471**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	63	36	63

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1.0	0.5	10.38	10.10	12.00	1.0			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,290,193	$ 728,032	$ -	$ 131,733	$ 196,524	**$ 2,346,482**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4C-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,642,211	$ 256,595	$ 1,898,806		$ -
AUK-HNS-AUK	$ 1,766,029	$ 141,831	$ 1,907,860		$ 44,604,471
AUK-SGY-AUK	$ 1,835,946	$ 141,831	$ 1,977,777		$ 44,604,471
AUK-HNS-AUK-SGY-AUK	$ 2,149,958	$ 196,524	$ 2,346,482		$ -
Configuration Total	**$ 7,394,145**	**$ 736,781**	**$ 8,130,926**		**$ 89,208,943**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4C- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	8.00	1	Displ	Displ-A
Winter	8.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	-	30	10	10	30	7.00
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	-	30	10	10	30	7.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	3	7.13	7.47	106.7%	-	N/A
Winter	2	6.63	6.97	99.5%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	3	5.00	3	5.00				
Winter	2	3.83	2	3.83				

Configuration 4C- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
4.13	1	8:00 AM	8:53 AM	9:55 AM	10:48 AM
7.97	2	11:50 AM	12:43 PM	1:45 PM	2:38 PM

Configuration 4C- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	3	47	2	1	177
2	SGY-HNS	3	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**3**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		16	1	1	59	
Lane Length	(ft)	320	24	40	N/A	384
Payload	(lbs)	96,000	12,000	40,000	N/A	148,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	20	59	67

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		59	67

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	1	8.47	$ 346.89	$ 461,747
Winter	212		1.0	1	8.00	$ 346.89	$ 588,328
Total	**365**						**$ 1,050,076**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	3	1.77	810.90	$ 1.02	189.68	$ 156,892
Winter	212	2	1.77	749.07	$ 1.02	189.68	$ 144,928
Total	**365**			**1,559.97**			**$ 301,820**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	8.47	-	8.47	1,295
Winter	212	7.97		7.97	1,689
Total	**365**				**2,984**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,984	$ 31.53			$ 94,097
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 290,316**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,351,896
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 290,316
Total Annual Costs	**$ 1,898,806**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

AUK-HNS-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	10	10	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.40**	**8.90**	**0.40**	**0.33**	9	42	10	22

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	1	10.10	10.43	94.8%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	1	-	1	-				
Winter	-	-	-	-	-	-	-	-

Configuration 4C-I Operation and Schedule

AUK-HNS-AUK

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**
11.43		1	6:00 AM	10:51 AM	11:15 AM	4:06 PM

Configuration 4C-I
Vessel Size and Cost

AUK-HNS-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	1	56	2	2	209
2	HNS-AUK	1	56	2	2	209
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**1**	**56**	**2**	**2**	**209**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		56	2	2	209	
Lane Length	(ft)	1,120	48	80	N/A	1,248
Payload	(lbs)	336,000	24,000	80,000	N/A	440,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	63	209	197

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		209	197

* Selected vessel will be sister ship to AUK-SGY-AUK

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.15	$ 931,130
Winter	212		-	0	-	$ 507.15	$ -
Total	**365**						**$ 931,130**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	1	9.70	1,484.10	$ 1.02	336.12	$ 508,808
Winter	212	0	9.70	-	$ 1.02	336.12	$ -
Total	**365**			**1,484.10**			**$ 508,808**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 150.20	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	11.43	-	11.43	1,749
Winter	212	-		-	-
Total	**365**				**1,749**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,749	$ 55.98			$ 97,926
Overhaul			1.0	$ 228,165	$ 228,165
Total Vessel Maintenance Costs					**$ 326,091**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,439,938
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 326,091
Total Annual Costs	**$ 1,907,860**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	1	44,604,471
Total Vessel Capital Costs			**44,604,471**

Configuration 4C-I
Operation and Schedule

AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	12.00	1	Displ	Displ-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	12.00	-	30	10	10	30	11.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
2	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**15.50**	0.17	0.33	4.79	0.06	0.17	5	10	5	30
2	**15.50**	0.17	0.06	4.79	0.33	0.17	5	10	5	30
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.39**	**9.58**	**0.39**	**0.33**	10	20	11	-

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	1	10.67	11.00	100.0%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	AUK-SGY	Leg 2	SGY-AUK	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	1	-	1	-				
Winter	-	-	-	-				

Configuration 4C-I
Operation and Schedule

AUK-SGY-AUK

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
12.00		1	6:00 AM	11:10 AM	11:30 AM	4:40 PM

Configuration 4C-I
Vessel Size and Cost

AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-SGY	1	46	2	1	173
2	SGY-AUK	1	46	2	1	173
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**1**	**46**	**2**	**1**	**173**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		46	2	1	173	
Lane Length	(ft)	920	48	40	N/A	1,008
Payload	(lbs)	276,000	24,000	40,000	N/A	340,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	51	173	152

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		173	152

* Selected vessel will be sister ship to AUK-HNS-AUK

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	1	12.00	$ 507.15	$ 931,130
Winter	212		-	0	-	$ 507.15	$ -
Total	**365**						**$ 931,130**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	1	10.33	1,581.00	$ 1.02	336.12	$ 542,030
Winter	212	0	10.33	-	$ 1.02	336.12	$ -
Total	**365**			**1,581.00**			**$ 542,030**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 150.20	**$ 31,842**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	12.00	-	12.00	1,836
Winter	212	-		-	-
Total	**365**				**1,836**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	1,836	$ 55.98			$ 102,780
Overhaul			1.0	$ 228,165	$ 228,165
Total Vessel Maintenance Costs					**$ 330,944**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,505,002
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 330,944
Total Annual Costs	**$ 1,977,777**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	1	44,604,471
Total Vessel Capital Costs			**44,604,471**

Configuration 4C-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
4	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
3	15.50	0.17	0.33	4.79	0.06	0.17	5	10	5	30
4	15.50	0.17	0.06	4.79	0.33	0.17	5	10	5	30
Total Route Time		**0.67**	**0.79**	**18.48**	**0.79**	**0.67**	20	2	21	22

Proposed Route Service

Season	Route Operation *		Vessel Usage			
	Round Trips	Op Sched *	Vessel 1 (Day 1)		Vessel 1 (Day 2)	
	(# / day)*	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	0.5	10.38	10.10	91.8%	10.67	97.0%

* - 1 Full AUK-HNS-AUK-SGY-AUK Circuit can be made in 2 days. RT /day = 0.5
- Winter Op Sched is average between Op Sched for AUK-HNS and AUK-SGY.

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	0.5	N/A	0.5	N/A	0.5	N/A	0.5	N/A

Configuration 4C-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Day	**Crew 1**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
Day1	11.43	1	8:00 AM	12:51 PM	1:15 PM	6:06 PM				
Day2	12.00	1					8:00 AM	1:10 PM	1:30 PM	6:40 PM

Configuration 4C-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	0.5	5	-	1	18
2	HNS-AUK	0.5	5	-	1	18
3	AUK-SGY	0.5	4	-	1	15
4	SGY-AUK	0.5	4	-	1	15
Maximum One Way Traffic		**0.5**	**5**	**-**	**1**	**18**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		10	-	2	36	
Lane Length	(ft)	200	-	80	N/A	280
Payload	(lbs)	60,000	-	80,000	N/A	140,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	14	36	63

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	63		
Selected Characteristics		36	63

***** Vessel to be used for winter route will be AUK-HNS-AUK vessel

Note (1) - Vessel completes 1 "RT" daily - either AUK-HNS-AUK or AUK-SGY-SGY.
Note (2) - Total Time Underway (hrs / RT) & Operating Time (hrs / day) are averages between AUK-HNS & AUK-SGY routes. Operation on each route is every other day.
Note (3) - No vessel lay-up. Vessel operates on AUK-HNS-AUK route in summer.
Note (4) - Vessel overhaul costs accounted for in AUK-HNS-AUK cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 507.15	$ -
Winter	212		1.0	1	12.00	$ 507.15	$ 1,290,193
Total	**365**						**$ 1,290,193**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	-	-	-	$ 1.02	336.12	$ -
Winter	212	1.0	10.02	2,123.53	$ 1.02	336.12	$ 728,032
Total	**365**	Note (1)	Note (2)	**2,123.53**			**$ 728,032**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (3)	$ 150.20	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours (Note (2))			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	11.10		11.10	2,353
Total	**365**				**2,353**

	Vessel Operation		Vessel Overhaul		Total
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	Cost
Operating	2,353	$ 55.98			$ 131,733
Overhaul			Note (4)	$ 228,165	$ -
Total Vessel Maintenance Costs					**$ 131,733**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,018,225
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 131,733
Total Annual Costs	**$ 2,346,482**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 44,604,471	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Configuration Summary

Configuration 4D-I

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	59	67

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	3	7.13	7.47	8.00	1.00	-	-	-
Winter	1	2	6.63	6.97	8.00	1.00			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,050,076	$ 301,820	$ -	$ 290,316	$ 256,595	**$ 1,898,806**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - SAW-HNS-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	148	136

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	13.60	13.93	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,021,460	$ 482,062	$ -	$ 302,320	$ 141,831	**$ 1,947,672**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 31,635,070
Total Capital Cost	**$ 31,635,070**

Configuration Summary

Configuration 4D-I

Route Summary - SAW-SGY-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	123	112

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	2	14.62	14.95	8.00	2.00	-	-	-
Winter	-	-	-	-	-	-			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,021,460	$ 523,529	$ 26,774	$ 308,762	$ 141,831	**$ 2,022,356**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 31,635,070
Total Capital Cost	**$ 31,635,070**

Route Summary - AUK-HNS-AUK-SGY-AUK

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	45	80	95

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	-	-	-	-	-	-	-	-	-
Winter	1	0.5	10.38	10.10	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,061,517	$ 539,571	$ -	$ 97,466	$ 196,524	**$ 1,895,078**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Configuration Summary

Configuration 4D-I

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total		Acquisition
HNS-SGY-HNS	$ 1,642,211	$ 256,595	$ 1,898,806		$ -
SAW-HNS-SAW	$ 1,805,841	$ 141,831	$ 1,947,672		$ 31,635,070
SAW-SGY-SAW	$ 1,880,525	$ 141,831	$ 2,022,356		$ 31,635,070
AUK-HNS-AUK-SGY-AUK	$ 1,698,554	$ 196,524	$ 1,895,078		$ -
Configuration Total	**$ 7,027,132**	**$ 736,781**	**$ 7,763,913**		**$ 63,270,141**

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

Configuration 4D- I
Operation and Schedule

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	8.00	1	Displ	Displ-A
Winter	8.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	-	30	10	10	30	7.00
		-	-	-	-	-	-	-
Winter	Vessel 1	8.00	-	30	10	10	30	7.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	3	7.13	7.47	106.7%	-	N/A
Winter	2	6.63	6.97	99.5%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	3	5.00	3	5.00				
Winter	2	3.83	2	3.83				

Configuration 4D- I
Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
4.13	1	8:00 AM	8:53 AM	9:55 AM	10:48 AM
7.97	2	11:50 AM	12:43 PM	1:45 PM	2:38 PM

Configuration 4D- I
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	3	47	2	1	177
2	SGY-HNS	3	47	2	1	177
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**3**	**47**	**2**	**1**	**177**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		16	1	1	59	
Lane Length	(ft)	320	24	40	N/A	384
Payload	(lbs)	96,000	12,000	40,000	N/A	148,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	20	59	67

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		59	67

Note (1) - Total Crew Cost includes overtime at 1.5x Crew Cost

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	Note (1)
Summer	153		1.0	1	8.47	$ 346.89	$ 461,747
Winter	212		1.0	1	8.00	$ 346.89	$ 588,328
Total	**365**						**$ 1,050,076**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	3	1.77	810.90	$ 1.02	189.68	$ 156,892
Winter	212	2	1.77	749.07	$ 1.02	189.68	$ 144,928
Total	**365**			**1,559.97**			**$ 301,820**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	8.47	-	8.47	1,295
Winter	212	7.97		7.97	1,689
Total	**365**				**2,984**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,984	$ 31.53			$ 94,097
Overhaul			1	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 290,316**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,351,896
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 290,316
Total Annual Costs	**$ 1,898,806**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 4D-I
Operation and Schedule

SAW-HNS-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	-	-		

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-HNS	45.74	15.0	7.0	Sawmill Cove	0.30	Haines	0.50	-
2	HNS-SAW	45.74	15.0	7.0	Haines	0.50	Sawmill Cove	0.30	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.04	3.00	0.07	0.17	3	6	3	26
2	15.00	0.17	0.07	3.00	0.04	0.17	3	6	3	26
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.11**	**6.00**	**0.11**	**0.33**	6	12	6	52

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	13.60	13.93	92.9%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-HNS	Leg 2	HNS-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.00	2	7.00				
Winter	-	-	-	-	-	-	-	-

Configuration 4D-I
Operation and Schedule

SAW-HNS-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Haines**	**Haines**	**Sawmill Cove**
7.43		1	6:00 AM	9:06 AM	9:30 AM	12:36 PM
	7.50	2	1:00 PM	4:06 PM	4:30 PM	7:36 PM

Configuration 4D-I
Vessel Size and Cost

SAW-HNS-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-HNS	2	79	3	2	296
2	HNS-SAW	2	79	3	2	296
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**79**	**3**	**2**	**296**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		40	2	1	148	
Lane Length	(ft)	800	48	40	N/A	888
Payload	(lbs)	240,000	24,000	40,000	N/A	304,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	45	148	136

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		148	136

* Selected vessel will be sister ship to SAW-SGY-SAW
Selected ASV size based on winter route

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 417.26	$ 1,021,460
Winter	212		-	0	-	$ 417.26	$ -
Total	**365**						**$ 1,021,460**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	6.20	1,897.20	$ 1.02	249.11	$ 482,062
Winter	212	0	6.20	-	$ 1.02	249.11	$ -
Total	**365**			**1,897.20**			**$ 482,062**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 126.29	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	14.93	-	14.93	2,285
Winter	212	-		-	-
Total	**365**				**2,285**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,285	$ 41.42			$ 94,633
Overhaul			1.0	$ 207,687	$ 207,687
Total Vessel Maintenance Costs					**$ 302,320**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,503,522
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 302,320
Total Annual Costs	**$ 1,947,672**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	1	31,635,070
Total Vessel Capital Costs			**31,635,070**

Configuration 4D-I
Operation and Schedule

SAW-SGY-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter				

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-SGY	53.16	15.0	7.0	Sawmill Cove	0.30	Skagway	0.40	1.0
2	SGY-SAW	53.16	15.0	7.0	Skagway	0.40	Sawmill Cove	0.30	1.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	**16.00**	0.17	0.04	3.28	0.06	0.17	3	22	3	42
2	**16.00**	0.17	0.06	3.28	0.04	0.17	3	22	3	42
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.10**	**6.56**	**0.10**	**0.33**	6	44	7	24

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	2	14.62	14.95	99.7%	-	N/A
Winter	-	-	-	N/A		

Route Leg Sailing Frequency

Season	Leg 1	SAW-SGY	Leg 2	SGY-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	2	7.50	2	7.50				
Winter	-	-	-	-				

Configuration 4D-I
Operation and Schedule

SAW-SGY-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Skagway**	**Skagway**	**Sawmill Cove**
7.95		1	6:00 AM	9:22 AM	9:45 AM	1:07 PM
	8.00	2	1:30 PM	4:52 PM	5:15 PM	8:37 PM

Configuration 4D-I
Vessel Size and Cost

SAW-SGY-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-SGY	2	66	2	2	245
2	SGY-SAW	2	66	2	2	245
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**2**	**66**	**2**	**2**	**245**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		33	1	1	123	
Lane Length	(ft)	660	24	40	N/A	724
Payload	(lbs)	198,000	12,000	40,000	N/A	250,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	37	123	112

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		123	112

* Selected vessel will be sister ship to SAW-HNS-SAW
Selected ASV size based on winter route

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 417.26	$ 1,021,460
Winter	212		-	0	-	$ 417.26	$ -
Total	**365**						**$ 1,021,460**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	2	6.73	2,060.40	$ 1.02	249.11	$ 523,529
Winter	212	0	6.73	-	$ 1.02	249.11	$ -
Total	**365**			**2,060.40**			**$ 523,529**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 126.29	**$ 26,774**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 927	$ 141,831	$ -	$ 141,831
Winter	-	-	-	$ 927	$ -	$ -	$ -
Total	**153**	**-**	**153**		**$ 141,831**	**$ -**	**$ 141,831**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.95	-	15.95	2,440
Winter	212	-		-	-
Total	**365**				**2,440**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,440	$ 41.42			$ 101,075
Overhaul			1.0	$ 207,687	$ 207,687
Total Vessel Maintenance Costs					**$ 308,762**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,571,763
Total Annual Management Costs	$ 141,831
Total Annual Maintenance Costs	$ 308,762
Total Annual Costs	**$ 2,022,356**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	1	31,635,070
Total Vessel Capital Costs			**31,635,070**

Cofiguration 4D-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	-	-		
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
		-	-	-	-	-	-	-
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	AUK-HNS	69.56	15.0	7.0	Auke Bay	2.30	Haines	0.50	-
2	HNS-AUK	69.56	15.0	7.0	Haines	0.50	Auke Bay	2.30	-
3	AUK-SGY	76.98	15.0	7.0	Auke Bay	2.30	Skagway	0.40	0.5
4	SGY-AUK	76.98	15.0	7.0	Skagway	0.40	Auke Bay	2.30	0.5

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.33	4.45	0.07	0.17	4	51	5	11
2	15.00	0.17	0.07	4.45	0.33	0.17	4	51	5	11
3	15.50	0.17	0.33	4.79	0.06	0.17	5	10	5	30
4	15.50	0.17	0.06	4.79	0.33	0.17	5	10	5	30
Total Route Time		**0.67**	**0.79**	**18.48**	**0.79**	**0.67**	20	2	21	22

Proposed Route Service

Season	Route Operation *		Vessel Usage			
	Round Trips	Op Sched *	Vessel 1 (Day 1)		Vessel 1 (Day 2)	
	(# / day)*	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	-	-	-	N/A	-	N/A
Winter	0.5	10.38	10.10	91.8%	10.67	97.0%

* - 1 Full AUK-HNS-AUK-SGY-AUK Circuit can be made in 2 days. RT /day = 0.5
- Winter Op Sched is average between Op Sched for AUK-HNS and AUK-SGY.

Route Leg Sailing Frequency

Season	Leg 1	AUK-HNS	Leg 2	HNS-AUK	Leg 3	AUK-SGY	Leg 4	SGY-AUK
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	-	-	-	-	-	-	-	-
Winter	0.5	N/A	0.5	N/A	0.5	N/A	0.5	N/A

Cofiguration 4D-I
Operation and Schedule

AUK-HNS-AUK-SGY-AUK

Model Schedule

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM				
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**	**Depart**	**Arrive**
Day	**Crew 1**	**No.**	**Auke Bay**	**Haines**	**Haines**	**Auke Bay**	**Auke Bay**	**Skagway**	**Skagway**	**Auke Bay**
Day1	11.43	1	8:00 AM	12:51 PM	1:15 PM	6:06 PM				
Day2	12.00	1					8:00 AM	1:10 PM	1:30 PM	6:40 PM

Configuration 4D-I
Vessel Size and Cost

AUK-HNS-AUK-SGY-AUK

Vessel Size and Selection

1. Traffic Data

Route Leg		Winter	2038 Winter Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	AUK-HNS	0.5	11	-	1	40
2	HNS-AUK	0.5	11	-	1	40
3	AUK-SGY	0.5	9	-	1	33
4	SGY-AUK	0.5	9	-	1	33
Maximum One Way Traffic		**1**	**11**	**-**	**1**	**40**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		22	-	2	80	
Lane Length	(ft)	440	-	80	N/A	520
Payload	(lbs)	132,000	-	80,000	N/A	212,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	26	80	95

4. Selected Vessel Characteristics

	ASV *	PAX	Deadweight
Selection Basis	45		
Selected Characteristics		80	95

***** Vessel to be used for winter route will be SAW-HNS-SAW vessel

Note (1) - Vessel completes 1 "RT" daily - either AUK-HNS-AUK or AUK-SGY-AUK.
Note (2) - Total Time Underway (hrs / RT) & Operating Time (hrs / day) are averages between AUK-HNS & AUK-SGY routes. Operation on each route is every other day.
Note (3) - No vessel lay-up. Vessel operates on SAW-HNS-SAW route in summer.
Note (4) - Vessel overhaul costs accounted for in SAW-HNS-SAW cost calculations

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		-	0	-	$ 417.26	$ -
Winter	212		1.0	1	12.00	$ 417.26	$ 1,061,517
Total	**365**						**$ 1,061,517**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	-	-	-	$ 1.02	249.11	$ -
Winter	212	1.0	10.02	2,123.53	$ 1.02	249.11	$ 539,571
Total	**365**	Note (1)	Note (2)	**2,123.53**			**$ 539,571**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	Note (3)	$ 126.29	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	-	-	-	$ 927	$ -	$ -	$ -
Winter	212	-	212	$ 927	$ 196,524	$ -	$ 196,524
Total	**212**	**-**	**212**		**$ 196,524**	**$ -**	**$ 196,524**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours (Note (2))			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	-	-	-	-
Winter	212	11.10		11.10	2,353
Total	**365**				**2,353**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	2,353	$ 41.42			$ 97,466
Overhaul			Note (4)	$ 207,687	$ -
Total Vessel Maintenance Costs					**$ 97,466**

Total Annual Route Costs

Total Annual Operational Costs	$ 1,601,088
Total Annual Management Costs	$ 196,524
Total Annual Maintenance Costs	$ 97,466
Total Annual Costs	**$ 1,895,078**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 31,635,070	-	-
Total Vessel Capital Costs			**-**

This page left intentionally blank.

Appendix C ..... Configuration 3-II

This page left intentionally blank.

Configuration Summary

Configuration 3-II

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	34	81	115

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2	-	-	-
Winter	1	4	9.63	9.97	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,731,683	$ 603,640	$ -	$ 346,550	$ 256,595	**$ 2,938,468**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ -
Total Capital Cost	**$ -**

Route Summary - SAW-WHB-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	33	68	101

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	16	16.92	14.67	8.00	2	14.67	8.00	2
Winter	1	6	10.50	11.00	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 3,473,569	$ 2,304,923	$ 62,971	$ 1,795,382	$ 364,154	**$ 8,000,999**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 93,792,000
Total Capital Cost	**$ 93,792,000**

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-SGY-HNS	$ 2,681,873	$ 256,595	$ 2,938,468	$ -	
SAW-WHB-SAW	$ 7,636,845	$ 364,154	$ 8,000,999	$ 93,792,000	
Configuration Total	**$ 10,318,718**	**$ 620,749**	**$ 10,939,467**	**$ 93,792,000**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

Configuration 3-II Operation and Schedule

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 3-II
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	201	6	4	483
2	SGY-HNS	6	201	6	4	483
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**201**	**6**	**4**	**483**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		34	1	1	81	
Lane Length	(ft)	680	24	40	N/A	744
Payload	(lbs)	204,000	12,000	40,000	N/A	256,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	38	81	115

4. M/V Aurora Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	34		
Selected Characteristics		81	115

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 346.89	$ 849,191
Winter	212		1.0	1	12.00	$ 346.89	$ 882,492
Total	**365**						**$ 1,731,683**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	189.68	$ 313,783
Winter	212	4	1.77	1,498.13	$ 1.02	189.68	$ 289,857
Total	**365**			**3,119.93**			**$ 603,640**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 108.84	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 31.53			$ 150,332
Overhaul			1.0	$ 196,219	$ 196,219
Total Vessel Maintenance Costs					**$ 346,550**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,335,323
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 346,550
Total Annual Costs	**$ 2,938,468**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ -	-	-
Total Vessel Capital Costs			**-**

Configuration 3-II
Operation and Schedule

SAW-WHB-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	HSF	HSF-A
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
Summer	Vessel 2	8.00	8.00	30	15	15	30	15.00
Winter	Vessel 1	12.00	-	30	15	15	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-WHB	11.29	30.0	8.0	Sawmill Cove	0.30	Wm Henry Bay	0.40	2.0
2	WHB-SAW	11.29	30.0	8.0	Wm Henry Bay	0.40	Sawmill Cove	0.30	2.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	32.00	0.25	0.04	0.33	0.05	0.25	-	25	-	55
2	32.00	0.25	0.05	0.33	0.04	0.25	-	25	-	55
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.09**	**0.66**	**0.09**	**0.50**	-	50	1	50

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	16	16.92	14.67	97.8%	14.67	97.8%
Winter	6	10.50	11.00	100.0%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-WHB	Leg 2	WHB-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	16	15.58	16	15.58				
Winter	6	9.17	6	9.17				

Configuration 3-II
Operation and Schedule

SAW-WHB-SAW

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.33	1	6:00 AM	6:25 AM	6:55 AM	7:20 AM
4.17	2	7:50 AM	8:15 AM	8:45 AM	9:10 AM
6.00	3	9:40 AM	10:05 AM	10:35 AM	11:00 AM
7.83	4	11:30 AM	11:55 AM	12:25 PM	12:50 PM
2.33	5	1:20 PM	1:45 PM	2:15 PM	2:40 PM
4.17	6	3:10 PM	3:35 PM	4:05 PM	4:30 PM
6.00	7	5:00 PM	5:25 PM	5:55 PM	6:20 PM
7.83	8	6:50 PM	7:15 PM	7:45 PM	8:10 PM

	Vessel 2	1st Dep	8:45 AM	1st Load	8:30 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.33	1	8:45 AM	9:10 AM	9:40 AM	10:05 AM
4.17	2	10:35 AM	11:00 AM	11:30 AM	11:55 AM
6.00	3	12:25 PM	12:50 PM	1:20 PM	1:45 PM
7.83	4	2:15 PM	2:40 PM	3:10 PM	3:35 PM
2.33	5	4:05 PM	4:30 PM	5:00 PM	5:25 PM
4.17	6	5:55 PM	6:20 PM	6:50 PM	7:15 PM
6.00	7	7:45 PM	8:10 PM	8:40 PM	9:05 PM
7.83	8	9:35 PM	10:00 PM	10:30 PM	10:55 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.83	1	8:00 AM	8:25 AM	8:55 AM	9:20 AM
4.67	2	9:50 AM	10:15 AM	10:45 AM	11:10 AM
6.50	3	11:40 AM	12:05 PM	12:35 PM	1:00 PM
8.33	4	1:30 PM	1:55 PM	2:25 PM	2:50 PM
10.17	5	3:20 PM	3:45 PM	4:15 PM	4:40 PM
12.00	6	5:10 PM	5:35 PM	6:05 PM	6:30 PM

Configuration 3-II
Vessel Size and Cost

SAW-WHB-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-WHB	16	449	12	9	1,079
2	WHB-SAW	16	449	12	9	1,079
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**16**	**449**	**12**	**9**	**1,079**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		29	1	1	68	
Lane Length	(ft)	580	24	40	N/A	644
Payload	(lbs)	174,000	12,000	40,000	N/A	226,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	33	68	101

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	33		
Selected Characteristics		68	101

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 466.88	$ 2,285,832
Winter	212		1.0	1	12.00	$ 466.88	$ 1,187,736
Total	**365**						**$ 3,473,569**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	16	0.83	2,040.00	$ 1.02	728.94	$ 1,516,788
Winter	212	6	0.83	1,060.00	$ 1.02	728.94	$ 788,135
Total	**365**			**3,100.00**			**$ 2,304,923**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 297.04	**$ 62,971**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.67	15.67	31.33	4,794
Winter	212	12.00		12.00	2,544
Total	**365**				**7,338**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,338	$ 143.42			$ 1,052,446
Overhaul			2.0	$ 371,468	$ 742,936
Total Vessel Maintenance Costs					**$ 1,795,382**

Total Annual Route Costs

Total Annual Operational Costs	$ 5,841,463
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 1,795,382
Total Annual Costs	**$ 8,000,999**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,896,000	2	93,792,000
Total Vessel Capital Costs			**93,792,000**

Configuration Summary

Configuration 3-II

Route Summary - HNS-SGY-HNS

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
Displ	38	81	115

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Hours	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	1	6	14.63	14.97	8.00	2	-	-	-
Winter	1	4	9.63	9.97	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 1,866,191	$ 674,153	$ -	$ 368,186	$ 256,595	**$ 3,165,125**

Vessel Capital Cost Summary

(Total Vessels = 1)

Vessel Acquisition Cost	$ 26,578,355
Total Capital Cost	**$ 26,578,355**

Route Summary - SAW-WHB-SAW

Selected Vessel

Type	ASV	PAX	Deadweight
	(#)	(#)	(lton)
HSF	33	68	101

Annual Operation Summary

Season	# Vessels	Route Operation		Vessel Usage					
		Round Trips	Op Sched	Vessel 1	Crew Shift	# Crews	Vessel 2	Crew Shift	# Crews
		(# / day)	(hrs / day)	(hrs / day)	(hrs / day)		(hrs / day)	(hrs / day)	
Summer	2	16	16.92	14.67	8.00	2	14.67	8.00	2
Winter	1	6	10.50	11.00	12.00	1			

Annual Cost Summary

Operating and Maintenance Costs				Route	Annual
Crew	Fuel	Lay-up	Maintenance	Management	Total
$ 3,473,569	$ 2,304,923	$ 62,971	$ 1,795,382	$ 364,154	**$ 8,000,999**

Vessel Capital Cost Summary

(Total Vessels = 2)

Vessel Acquisition Cost	$ 93,792,000
Total Capital Cost	**$ 93,792,000**

Configuration Cost Summary

Route Name	Annual Costs			Capital Costs*	
	O&M	Mgmt	Total	Acquisition	
HNS-SGY-HNS	$ 2,908,530	$ 256,595	$ 3,165,125	$ 26,578,355	
SAW-WHB-SAW	$ 7,636,845	$ 364,154	$ 8,000,999	$ 93,792,000	
Configuration Total	**$ 10,545,375**	**$ 620,749**	**$ 11,166,124**	**$120,370,355**	

* Capital Improvement Plan (CIP) costs are calculated separately. See Appendix E.

HNS-SGY-HNS

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	1	Displ	Displ-A
Winter	12.00	1	Displ	Displ-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	10	10	30	15.00
		-	-	-	-	-	-	-
Winter	Vessel 1	12.00	-	30	10	10	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	HNS-SGY	12.23	15.0	7.0	Haines	0.50	Skagway	0.40	-
2	SGY-HNS	12.23	15.0	7.0	Skagway	0.40	Haines	0.50	-
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	15.00	0.17	0.07	0.76	0.06	0.17	-	53	1	13
2	15.00	0.17	0.06	0.76	0.07	0.17	-	53	1	13
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.33**	**0.13**	**1.52**	**0.13**	**0.33**	1	46	2	26

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	6	14.63	14.97	99.8%	-	N/A
Winter	4	9.63	9.97	90.6%		

Route Leg Sailing Frequency

Season	Leg 1	HNS-SGY	Leg 2	SGY-HNS	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	6	12.50	6	12.50				
Winter	4	7.50	4	7.50				

HNS-SGY-HNS

Model Schedule

Summer

	Vessel 1	1st Dep	6:00 AM	1st Load	5:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1 / **Crew 2**	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
2.97	1	6:00 AM	6:53 AM	7:15 AM	8:08 AM
5.47	2	8:30 AM	9:23 AM	9:45 AM	10:38 AM
7.97	3	11:00 AM	11:53 AM	12:15 PM	1:08 PM
3.00	4	1:30 PM	2:23 PM	2:45 PM	3:38 PM
5.50	5	4:00 PM	4:53 PM	5:15 PM	6:08 PM
8.00	6	6:30 PM	7:23 PM	7:45 PM	8:38 PM

Winter

	Vessel 1	1st Dep	8:00 AM	1st Load	7:50 AM
Total Crew Time	**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**No.**	**Haines**	**Skagway**	**Skagway**	**Haines**
3.47	1	8:00 AM	8:53 AM	9:15 AM	10:08 AM
5.97	2	10:30 AM	11:23 AM	11:45 AM	12:38 PM
8.47	3	1:00 PM	1:53 PM	2:15 PM	3:08 PM
10.97	4	3:30 PM	4:23 PM	4:45 PM	5:38 PM

Configuration 3-II
Vessel Size and Cost

HNS-SGY-HNS

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	HNS-SGY	6	201	6	4	483
2	SGY-HNS	6	201	6	4	483
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**6**	**201**	**6**	**4**	**483**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		34	1	1	81	
Lane Length	(ft)	680	24	40	N/A	744
Payload	(lbs)	204,000	12,000	40,000	N/A	256,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
Displ	38	81	115

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	38		
Selected Characteristics		81	115

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		1.0	2	8.00	$ 373.84	$ 915,152
Winter	212		1.0	1	12.00	$ 373.84	$ 951,040
Total	**365**						**$ 1,866,191**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	6	1.77	1,621.80	$ 1.02	211.84	$ 350,437
Winter	212	4	1.77	1,498.13	$ 1.02	211.84	$ 323,716
Total	**365**			**3,119.93**			**$ 674,153**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	-	$ 115.44	**$ -**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	-	153	$ 703	$ 107,559	$ -	$ 107,559
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**-**	**365**		**$ 256,595**	**$ -**	**$ 256,595**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.97	-	15.97	2,443
Winter	212	10.97		10.97	2,325
Total	**365**				**4,768**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	4,768	$ 35.21			$ 167,889
Overhaul			1.0	$ 200,297	$ 200,297
Total Vessel Maintenance Costs					**$ 368,186**

Total Annual Route Costs

Total Annual Operational Costs	$ 2,540,344
Total Annual Management Costs	$ 256,595
Total Annual Maintenance Costs	$ 368,186
Total Annual Costs	**$ 3,165,125**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 26,578,355	1	26,578,355
Total Vessel Capital Costs			**26,578,355**

Configuration 3-II
Operation and Schedule

SAW-WHB-SAW

Route Service Requirements (Management Plan Appendix A)

Season	Op Sched	Vessel Description		
	(hrs / day)	Quantity	Type	Designation
Summer	16.00	2	HSF	HSF-A
Winter	12.00	1	HSF	HSF-A

Crew / Vessel Availability

Season	Vessel	Crew Shift		Vessel Preparation Times				Vessel
	No.	Crew 1	Crew 2	Startup	Load	Unload	Shutdown	Availability
		(hrs)	(hrs)	(mins)	(mins)	(mins)	(mins)	(hrs)
Summer	Vessel 1	8.00	8.00	30	15	15	30	15.00
Summer	Vessel 2	8.00	8.00	30	15	15	30	15.00
Winter	Vessel 1	12.00	-	30	15	15	30	11.00

Route / Vessel Characteristics

Leg No.	Leg Name	Route Length	Vessel		Terminal 1		Terminal 2		Vessel
			Speed	Manuv Sp	Name	Manuv Dist	Name	Manuv Dist	Sp Adjust
		(NM)	(knots)	(knots)		(NM)		(NM)	(knots)
1	SAW-WHB	11.29	30.0	8.0	Sawmill Cove	0.30	Wm Henry Bay	0.40	2.0
2	WHB-SAW	11.29	30.0	8.0	Wm Henry Bay	0.40	Sawmill Cove	0.30	2.0
		-	-	-		-		-	-
		-	-	-		-		-	-

Route Transit Time

Leg No.	Speed	Outbound		Cruise	Inbound		Time Underway		Total Transit Time	
		Load	Manuv	At Speed	Manuv	Unload				
	(knots)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(mins)	(hrs)	(mins)
1	32.00	0.25	0.04	0.33	0.05	0.25	-	25	-	55
2	32.00	0.25	0.05	0.33	0.04	0.25	-	25	-	55
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
Total Route Time		**0.50**	**0.09**	**0.66**	**0.09**	**0.50**	-	50	1	50

Proposed Route Service

Season	Route Operation		Vessel Usage			
	Round Trips	Op Sched	Vessel 1		Vessel 2	
	(# / day)	(hrs / day)	(hrs / day)	%	(hrs / day)	%
Summer	16	16.92	14.67	97.8%	14.67	97.8%
Winter	6	10.50	11.00	100.0%		

Route Leg Sailing Frequency

Season	Leg 1	SAW-WHB	Leg 2	WHB-SAW	Leg 3	N/A	Leg 4	N/A
	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final	Sailings	1st to Final
	(# / day)	Sailing (hrs)	(# / day)	Sailing (hrs)	#	Sailing (hrs)	#	Sailing (hrs)
Summer	16	15.58	16	15.58				
Winter	6	9.17	6	9.17				

Configuration 3-II
Operation and Schedule

SAW-WHB-SAW

Model Schedule

Summer

		Vessel 1	1st Dep	6:00 AM	1st Load	5:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.33		1	6:00 AM	6:25 AM	6:55 AM	7:20 AM
4.17		2	7:50 AM	8:15 AM	8:45 AM	9:10 AM
6.00		3	9:40 AM	10:05 AM	10:35 AM	11:00 AM
7.83		4	11:30 AM	11:55 AM	12:25 PM	12:50 PM
	2.33	5	1:20 PM	1:45 PM	2:15 PM	2:40 PM
	4.17	6	3:10 PM	3:35 PM	4:05 PM	4:30 PM
	6.00	7	5:00 PM	5:25 PM	5:55 PM	6:20 PM
	7.83	8	6:50 PM	7:15 PM	7:45 PM	8:10 PM

		Vessel 2	1st Dep	8:45 AM	1st Load	8:30 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1	**Crew 2**	**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.33		1	8:45 AM	9:10 AM	9:40 AM	10:05 AM
4.17		2	10:35 AM	11:00 AM	11:30 AM	11:55 AM
6.00		3	12:25 PM	12:50 PM	1:20 PM	1:45 PM
7.83		4	2:15 PM	2:40 PM	3:10 PM	3:35 PM
	2.33	5	4:05 PM	4:30 PM	5:00 PM	5:25 PM
	4.17	6	5:55 PM	6:20 PM	6:50 PM	7:15 PM
	6.00	7	7:45 PM	8:10 PM	8:40 PM	9:05 PM
	7.83	8	9:35 PM	10:00 PM	10:30 PM	10:55 PM

Winter

		Vessel 1	1st Dep	8:00 AM	1st Load	7:45 AM
Total Crew Time		**Circuit**	**Depart**	**Arrive**	**Depart**	**Arrive**
Crew 1		**No.**	**Sawmill Cove**	**Wm Henry Bay**	**Wm Henry Ba**	**Sawmill Cove**
2.83		1	8:00 AM	8:25 AM	8:55 AM	9:20 AM
4.67		2	9:50 AM	10:15 AM	10:45 AM	11:10 AM
6.50		3	11:40 AM	12:05 PM	12:35 PM	1:00 PM
8.33		4	1:30 PM	1:55 PM	2:25 PM	2:50 PM
10.17		5	3:20 PM	3:45 PM	4:15 PM	4:40 PM
12.00		6	5:10 PM	5:35 PM	6:05 PM	6:30 PM

Configuration 3-II
Vessel Size and Cost

SAW-WHB-SAW

Vessel Size and Selection

1. Traffic Data

Route Leg		Summer	2038 Summer Average Daily Traffic - One Way			
No.	Name	Sailings	PAX-ASV	RV	VAN	PAX
1	SAW-WHB	16	449	12	9	1,079
2	WHB-SAW	16	449	12	9	1,079
		-	-	-	-	-
		-	-	-	-	-
Maximum One Way Traffic		**16**	**449**	**12**	**9**	**1,079**

2. Required Vessel Capacity per Sailing

		PAX-ASV	RV	VAN	PAX	Total
Capacity		29	1	1	68	
Lane Length	(ft)	580	24	40	N/A	644
Payload	(lbs)	174,000	12,000	40,000	N/A	226,000

3. Required Vessel Characteristics

Type	ASV	PAX	Payload
	(#)	(#)	(lton)
HSF	33	68	101

4. Selected Vessel Characteristics

	ASV	PAX	Deadweight
Selection Basis	33		
Selected Characteristics		68	101

Annual Operational Costs

1. Crew Costs

Season	# Days		# Vessels	# Crews	Crew Shift	Crew Cost	Total Cost
				(crew / vessel)	(hrs / day)	($ / hr)	
Summer	153		2.0	2	8.00	$ 466.88	$ 2,285,832
Winter	212		1.0	1	12.00	$ 466.88	$ 1,187,736
Total	**365**						**$ 3,473,569**

2. Fuel Consumption Costs

Season	# Days	Round Trips	Time Underway	Total Underway	Fuel Cost	Fuel Consumption	Total Cost
		(RT / day)	(hrs / RT)	(hrs / season)	($ / gal)	(gal / hr)	($ / season)
Summer	153	16	0.83	2,040.00	$ 1.02	728.94	$ 1,516,788
Winter	212	6	0.83	1,060.00	$ 1.02	728.94	$ 788,135
Total	**365**			**3,100.00**			**$ 2,304,923**

3. Winter Lay-up Cost

Season	# Days	# Vessels	Cost / Day	Total
winter	212	1.0	$ 297.04	**$ 62,971**

Annual Management Costs

	Annual Operating Days			Route Management Costs			
	Vessel #1	Vessel #2	Total	($ / day)	Vessel #1	Vessel #2	Total
Summer	153	153	306	$ 703	$ 107,559	$ 107,559	$ 215,118
Winter	212	-	212	$ 703	$ 149,036	$ -	$ 149,036
Total	**365**	**153**	**518**		**$ 256,595**	**$ 107,559**	**$ 364,154**

Annual Maintenance Costs

Season	# Days	Annual Operating Hours			
		Vessel #1	Vessel #2	Total	Total
		(hrs / day)	(hrs / day)	(hrs / day)	(hrs / season)
Summer	153	15.67	15.67	31.33	4,794
Winter	212	12.00		12.00	2,544
Total	**365**				**7,338**
	Vessel Operation		**Vessel Overhaul**		**Total**
	(eng op hrs)	($ / hr)	(# Vessels)	($ / Vessel)	**Cost**
Operating	7,338	$ 143.42			$ 1,052,446
Overhaul			2.0	$ 371,468	$ 742,936
Total Vessel Maintenance Costs					**$ 1,795,382**

Total Annual Route Costs

Total Annual Operational Costs	$ 5,841,463
Total Annual Management Costs	$ 364,154
Total Annual Maintenance Costs	$ 1,795,382
Total Annual Costs	**$ 8,000,999**

Vessel Capital Cost

	$ / Vessel	# Vessels	Total
Vessel Acquisition Cost	$ 46,896,000	2	93,792,000
Total Vessel Capital Costs			**93,792,000**

Appendix D ..... Route Simulation Data

This page left intentionally blank.

Route Simulation DATA

Revisions

Symbol	Work Sheet	Description	By	Date	Issued
-	All	Initial Workbook - This work book contains all data for modeling route schedules and costs. All Config Calc workbook draw on the data in these worksheets	MW	02/05/04	N/A
-	30 Year Traffic	Updated traffic numbers from 6 Feb emails from McDowell Group.	MW	02/06/04	N/A
-	Acquisition Data	Modified data - (1) Chnged Kennicott to day version and lowered estimated acquisition cost to 50M. (backed up by Glosten data. (2) Changed PAC CAT to 110 ASV to model a single car deck vessel.	PE/MW	02/06/04	N/A
-	Crew Cost Data	Used input from Gary Smith to alter HSF crew sizes. 35 ASV vessel changed to crew size of 10. 70 ASV to crew size of 12 and 110 ASV to crew size of 15.	PE/MW	02/06/04	N/A
A	30 Year Traffic	Updated traffic numbers using updated data from McDowell Group as shown in "JA Ferry volumes211.xls"	MW	02/17/04	
A	Crew Cost Data	Modified crew cost data using 1993 OMB and 2002 MEBA and MMP cost provided by AMHS.	MW	02/17/04	
A	Fuel Cons Data				
A	General Data	Modified approach to calulation of Overhead Costs. Calculated Overhead costs based on data provided by AMHS and used percentage discounts for system-wide and vessel operations to account for addition of vessel operations to existing mature system.	MW		
A	Winter Lay-up	Removed winter lay-up cost models from General Data worksheet to Winter Lay-up worksheet	MW		
A	Route Cost Model	Updated Route Cost Model to reflect changes caused by modifications to data tables.	MW		
A	All	Format for Printing, header, footers.	PTE	03/06/04	
A	All	Reformat for printing to match the new appendix letters	JT	06/15/04	

Load/Unload Data

Vessel No.	Designation	Vessel Type	Nominal ASV	ASV	PAX	Speed	Manuv Sp	Startup	Load	Unload	Shutdown
1	Displ-A	Displacement	18	18	150	15	7	30	10	10	30
2	Displ-B	Displacement	30	30	150	15	7	35	15	15	35
3	Displ-C	Displacement	80	80	300	15	7	40	20	20	40
4	HSF-A	Fast Veh Ferry	18	18	150	30	8	30	15	15	30
5	HSF-B	Fast Veh Ferry	30	30	150	30	8	35	20	20	35
6	HSF-C	Fast Veh Ferry	80	80	300	30	8	40	25	25	40

Nominal ASV	Nominal amount of Alaska Standard Vehicle capacity for notional vessel
Speed	Vessel cruising speed
Manuv Sp	Vessel Maneuvering speed
Startup	Time required to startup vessel at beginning of operating day prior to leaving port on first sailing.
Shutdown	Time required to shutdown vessel at end of operating day after arrival at port on last sailing. (Same as prep tir
Load	Average time required to load a vessel.
Unload	Average time required to unload a vessel. Assume vessel can be fully unloaded without traffic control interrup

Route Leg Characteristics Table

			Route	Terminal 1		Terminal 2	
Departure Terminal	**Index No.**	**Leg Name**	**Length**	**Name 1**	**Manuv Dist 1**	**Name 2**	**Manuv Dist 2**
Skagway	1	SGY-HNS	12.23	Skagway	0.40	Haines	0.50
Skagway	2	SGY-KTZ	13.51	Skagway	0.40	Katzehin	0.30
Skagway	3	SGY-SAW	53.16	Skagway	0.40	Sawmill Cove	0.30
Skagway	4	SGY-AUK	76.98	Skagway	0.40	Auke Bay	2.30
Haines	5	HNS-SGY	12.23	Haines	0.50	Skagway	0.40
Haines	6	HNS-KTZ	6.15	Haines	0.50	Katzehin	0.30
Haines	7	HNS-SAW	45.74	Haines	0.50	Sawmill Cove	0.30
Haines	8	HNS-AUK	69.56	Haines	0.50	Auke Bay	2.30
Katzehin	9	KTZ-SGY	13.51	Katzehin	0.30	Skagway	0.40
Katzehin	10	KTZ-HNS	6.15	Katzehin	0.30	Haines	0.50
Slate Cove	11	SLC-SAW	4.15	Slate Cove	0.50	Sawmill Cove	0.30
Sawmill Cove	12	SAW-SLC	4.15	Sawmill Cove	0.30	Slate Cove	0.50
Sawmill Cove	13	SAW-SGY	53.16	Sawmill Cove	0.30	Skagway	0.40
Sawmill Cove	14	SAW-HNS	45.74	Sawmill Cove	0.30	Haines	0.50
Sawmill Cove	15	SAW-WHB	11.29	Sawmill Cove	0.30	Wm Henry Bay	0.40
Wm Henry Bay	16	WHB-SAW	11.29	Wm Henry Bay	0.40	Sawmill Cove	0.30
Auke Bay	17	AUK-HNS	69.56	Auke Bay	2.30	Haines	0.50
Auke Bay	18	AUK-SGY	76.98	Auke Bay	2.30	Skagway	0.40

30 Year Traffic Projections
Average Daily Traffic (Seasonal Averages per da

							Round Trip Traffic (++)		One-Way Route Requirements (**, ***, ****)				
Alt	**Config**	**Route**	**Leg**	**Designator**	**Service**	**Season**	Daily Ave	Analysis % *	Vehicles	PAX-ASV	RV	Van	PAX
							SADT		100%	95.70%	2.50%	1.80%	3.6
1	I	HNS-SGY-HNS	HNS-SGY	1-I-A-1	Displ	Summer	98	100%	49	47	2	1	177
1	I	HNS-SGY-HNS	SGY-HNS	1-I-A-2	Displ	Summer	98	100%	49	47	2	1	177
							SADT		100%	95.70%	2.50%	1.80%	2.3
2-	I	HNS-KTZ-HNS	HNS-KTZ	2-I-A-1	Displ	Summer	861	100%	431	413	11	8	992
2-	I	HNS-KTZ-HNS	KTZ-HNS	2-I-A-2	Displ	Summer	861	100%	431	413	11	8	992
2A	I	SAW-SLC-SAW	SAW-SLC	2A-I-A-1	Displ	Summer	1194	100%	597	572	15	11	1374
2A	I	SAW-SLC-SAW	SLC-SAW	2A-I-A-2	Displ	Summer	1194	100%	597	572	15	11	1374
2A	I	HNS-KTZ-HNS	HNS-KTZ	2A-I-B-1	Displ	Summer	664	100%	332	318	9	6	764
2A	I	HNS-KTZ-HNS	KTZ-HNS	2A-I-B-2	Displ	Summer	664	100%	332	318	9	6	764
2B	I	HNS-SGY-HNS	HNS-SGY	2B-I-A-1	Displ	Summer	138	100%	69	67	2	2	159
2B	I	HNS-SGY-HNS	SGY-HNS	2B-I-A-2	Displ	Summer		100%	0	0	0	0	0
2B	I	HNS-KTZ-HNS	HNS-KTZ	2B-I-B-1	Displ	Summer	594	100%	297	285	8	6	684
2B	I	HNS-KTZ-HNS	KTZ-HNS	2B-I-B-2	Displ	Summer	594	100%	297	285	8	6	684
2B	I	SGY-KTZ-SGY	SGY-KTZ	2B-I-C-1	Displ	Summer	594	100%	297	285	8	6	684
2B	I	SGY-KTZ-SGY	KTZ-SGY	2B-I-C-2	Displ	Summer	594	100%	297	285	8	6	684
							AADT	WADT %	100%	92.20%	0.00%	7.80%	2.3
2B	I	HNS-KTZ-SGY-HNS	HNS-KTZ	2B-I-D-1	Displ	Winter	335	46%	78	72	0	6	180
2B	I	HNS-KTZ-SGY-HNS	KTZ-SGY	2B-I-D-2	Displ	Winter	335	46%	78	72	0	6	180
2B	I	HNS-KTZ-SGY-HNS	SGY-HNS	2B-I-D-3	Displ	Winter	78	46%	18	17	0	2	42
							SADT		100%	95.70%	2.50%	1.80%	2.3
2C	I	HNS-SGY-HNS	HNS-SGY	2C-I-A-1	Displ	Summer	527	100%	264	253	7	5	608
2C	I	HNS-SGY-HNS	SGY-HNS	2C-I-A-2	Displ	Summer	527	100%	264	253	7	5	608
3	I	HNS-SGY-HNS	HNS-SGY	3-I-A-1	Displ	Summer	420	100%	210	201	6	4	483
3	I	HNS-SGY-HNS	SGY-HNS	3-I-A-2	Displ	Summer	420	100%	210	201	6	4	483
3	I	SAW-WHB-SAW	SAW-WHB	3-I-B-1	Displ	Summer	938	100%	469	449	12	9	1079
3	I	SAW-WHB-SAW	WHB-SAW	3-I-B-2	Displ	Summer	938	100%	469	449	12	9	1079
3	II	HNS-SGY-HNS	HNS-SGY	3-II-A-1	Displ	Summer	420	100%	210	201	6	4	483
3	II	HNS-SGY-HNS	SGY-HNS	3-II-A-2	Displ	Summer	420	100%	210	201	6	4	483
3	II	SAW-WHB-SAW	SAW-WHB	3-II-B-1	HSF	Summer	938	100%	469	449	12	9	1079
3	II	SAW-WHB-SAW	WHB-SAW	3-II-B-2	HSF	Summer	938	100%	469	449	12	9	1079
							SADT		100%	95.70%	2.50%	1.80%	3.6
4A	I	HNS-SGY-HNS	HNS-SGY	4A-I-A-1	Displ	Summer	98	100%	49	47	2	1	177
4A	I	HNS-SGY-HNS	SGY-HNS	4A-I-A-2	Displ	Summer	98	100%	49	47	2	1	177
4A	I^{+}	AUK-HNS-AUK-SGY-HNS	AUK-HNS	4A-I-B-1	HSF	Summer	187	100%	94	90	3	2	339
4A	I^{+}	AUK-HNS-AUK-SGY-HNS	HNS-AUK	4A-I-B-2	HSF	Summer	187	100%	94	90	3	2	339
4A	I^{+}	AUK-HNS-AUK-SGY-HNS	AUK-SGY	4A-I-B-3	HSF	Summer	154	100%	77	74	2	2	278
4A	I^{-}	AUK-HNS-AUK-SGY-HNS	SGY-AUK	4A-I-B-4	HSF	Summer	154	100%	77	74	2	2	278
4B	I	HNS-SGY-HNS	HNS-SGY	4B-I-A-1	Displ	Summer	98	100%	49	47	2	1	177
4B	I	HNS-SGY-HNS	SGY-HNS	4B-I-A-2	Displ	Summer	98	100%	49	47	2	1	177

30 Year Traffic Projections
Average Daily Traffic (Seasonal Averages per da

							Round Trip Traffic (++)		One-Way Route Requirements (**, ***, ****)				
Alt	**Config**	**Route**	**Leg**	**Designator**	**Service**	**Season**	Daily Ave	Analysis % *	Vehicles	PAX-ASV	RV	Van	PAX
4B	I +	SAW-HNS-SAW	SAW-HNS	4B-I-B-1	HSF	Summer	231	100%	116	112	3	3	418
4B	I +	SAW-HNS-SAW	HNS-SAW	4B-I-B-2	HSF	Summer	231	100%	116	112	3	3	418
4B	I +	SAW-SGY-SAW	SAW-SGY	4B-I-C-1	HSF	Summer	190	100%	95	91	3	2	342
4B	I +	SAW-SGY-SAW	SGY-SAW	4B-I-C-2	HSF	Summer	190	100%	95	91	3	2	342
							AADT	WADT	100%	92.20%	0.00%	7.80%	3.6
4B	I ++	AUK-HNS-AUK-SGY-HNS	AUK-HNS	4B-I-D-1	HSF	Winter	147	39	20	19	0	2	72
4B	I ++	AUK-HNS-AUK-SGY-HNS	HNS-AUK	4B-I-D-2	HSF	Winter	147	39	20	19	0	2	72
4B	I ++	AUK-HNS-AUK-SGY-HNS	AUK-SGY	4B-I-D-3	HSF	Winter	120	33	17	16	0	2	62
4B	I ++	AUK-HNS-AUK-SGY-HNS	SGY-AUK	4B-I-D-4	HSF	Winter	120	33	17	16	0	2	62
							SADT		100%	95.70%	2.50%	1.80%	3.6
4C	I	HNS-SGY-HNS	HNS-SGY	4C-I-A-1	Displ	Summer	98	100%	49	47	2	1	177
4C	I	HNS-SGY-HNS	SGY-HNS	4C-I-A-2	Displ	Summer	98	100%	49	47	2	1	177
4C	I +	AUK-HNS-AUK	AUK-HNS	4C-I-B-1	Displ	Summer	116	100%	58	56	2	2	209
4C	I +	AUK-HNS-AUK	HNS-AUK	4C-I-B-2	Displ	Summer	116	100%	58	56	2	2	209
4C	I +	AUK-SGY-AUK	AUK-SGY	4C-I-C-1	Displ	Summer	95	100%	48	46	2	1	173
4C	I +	AUK-SGY-AUK	SGY-AUK	4C-I-C-2	Displ	Summer	95	100%	48	46	2	1	173
							AADT	WADT	100%	92.20%	0.00%	7.80%	3.6
4C	I ++	AUK-HNS-AUK-SGY-HNS	AUK-HNS	4C-I-D-1	Displ	Winter	82	9	5	5	0	1	18
4C	I ++	AUK-HNS-AUK-SGY-HNS	HNS-AUK	4C-I-D-2	Displ	Winter	82	9	5	5	0	1	18
4C	I ++	AUK-HNS-AUK-SGY-HNS	AUK-SGY	4C-I-D-3	Displ	Winter	67	8	4	4	0	1	15
4C	I ++	AUK-HNS-AUK-SGY-HNS	SGY-AUK	4C-I-D-4	Displ	Winter	67	8	4	4	0	1	15
							SADT		100%	95.70%	2.50%	1.80%	3.6
4D	I	HNS-SGY-HNS	HNS-SGY	4D-I-A-1	Displ	Summer	98	100%	49	47	2	1	177
4D	I	HNS-SGY-HNS	SGY-HNS	4D-I-A-2	Displ	Summer	98	100%	49	47	2	1	177
4D	I +	SAW-HNS-SAW	SAW-HNS	4D-I-B-1	Displ	Summer	164	100%	82	79	3	2	296
4D	I +	SAW-HNS-SAW	HNS-SAW	4D-I-B-2	Displ	Summer	164	100%	82	79	3	2	296
4D	I +	SAW-SGY-SAW	SAW-SGY	4D-I-C-1	Displ	Summer	135	100%	68	66	2	2	245
4D	I +	SAW-SGY-SAW	SGY-SAW	4D-I-C-2	Displ	Summer	135	100%	68	66	2	2	245
							AADT	WADT	100%	92.20%	0.00%	7.80%	3.6
4D	I ++	AUK-HNS-AUK-SGY-HNS	AUK-HNS	4D-I-D-1	Displ	Winter	109	22	11	11	0	1	40
4D	I ++	AUK-HNS-AUK-SGY-HNS	HNS-AUK	4D-I-D-2	Displ	Winter	109	22	11	11	0	1	40
4D	I ++	AUK-HNS-AUK-SGY-HNS	AUK-SGY	4D-I-D-3	Displ	Winter	89	18	9	9	0	1	33
4D	I ++	AUK-HNS-AUK-SGY-HNS	SGY-AUK	4D-I-D-4	Displ	Winter	89	18	9	9	0	1	33

* Traffic analyses are based on Summer Average Daily Traffic (SADT) figures for routes analyzed during Summer Season. Winter ADT (WADT) is 46% of Annual ADT (AADT) and is used for routes running only in winter season. See Juneau Access Traffic Forecast, McDowell Group, Inc., 02/2004.

** One way Vehicles = (Round Trip ADT * Analysis %) / 2.

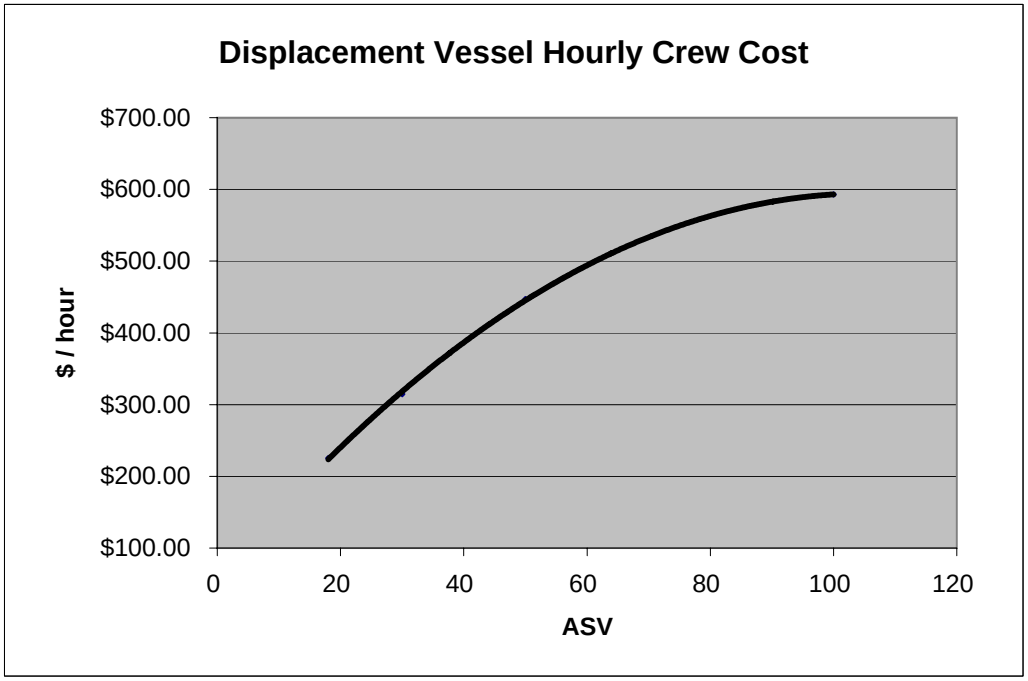
*** PAX-ASV, RV and Van values are calculated by multiplying Vehicles * % Vehicle type and rounding up to the nearest whole number.

**** PAX values are calculated by multiplying Vehicles by PAX factor and rounding up to nearest whole number

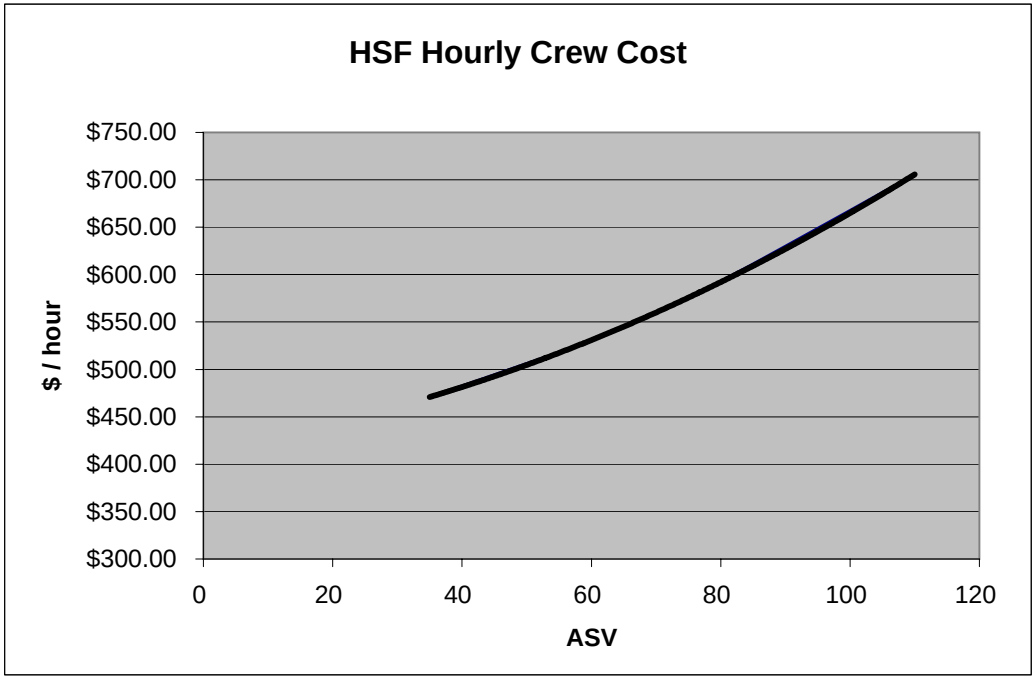
\+ Alternatives 4A, 4B, 4C & 4D add to existing mainline service. Total projected summer average daily traffic (SADT) has been reduced by mainline traffic volumes accordingly. AUK or SAW to HNS has been reduced by 29 ASV and AUK or SAW to SGY has been reduced by 23 ASV.

++ Alternatives 4A, 4B, 4C & 4D add to existing mainline service. Winter average daily traffic (WADT) has been reduced by mainline traffic volumes accordingly. WADT for these alternatives is calculated by multiplying total projected AADT by 46% and subtracting 29 ASV or 23 ASV from AUK to HNS or AUK to SGY respectively.

Single Vessel Crew - Cost per Hour		
ASV	Displ	HSF
#	($ / hr)	($ / hr)
15	$ 197.75	$ 435.98
16	$ 206.47	$ 437.45
17	$ 215.10	$ 438.95
18	$ 223.62	$ 440.47
19	$ 232.05	$ 442.03
20	$ 240.39	$ 443.61
21	$ 248.62	$ 445.23
22	$ 256.76	$ 446.87
23	$ 264.81	$ 448.54
24	$ 272.75	$ 450.25
25	$ 280.60	$ 451.98
26	$ 288.36	$ 453.74
27	$ 296.01	$ 455.53
28	$ 303.57	$ 457.35
29	$ 311.03	$ 459.19
30	$ 318.40	$ 461.07
31	$ 325.67	$ 462.98
32	$ 332.84	$ 464.91
33	$ 339.91	$ 466.88
34	$ 346.89	$ 468.87
35	$ 353.77	$ 470.89
36	$ 360.56	$ 472.95
37	$ 367.25	$ 475.03
38	$ 373.84	$ 477.14
39	$ 380.33	$ 479.28
40	$ 386.73	$ 481.45
41	$ 393.03	$ 483.65
42	$ 399.23	$ 485.87
43	$ 405.34	$ 488.13
44	$ 411.35	$ 490.42
45	$ 417.26	$ 492.73
46	$ 423.08	$ 495.08
47	$ 428.80	$ 497.45
48	$ 434.42	$ 499.85
49	$ 439.95	$ 502.28
50	$ 445.38	$ 504.75
51	$ 450.71	$ 507.24
52	$ 455.95	$ 509.75
53	$ 461.09	$ 512.30
54	$ 466.13	$ 514.88
55	$ 471.07	$ 517.49
56	$ 475.92	$ 520.12
57	$ 480.67	$ 522.79
58	$ 485.33	$ 525.49

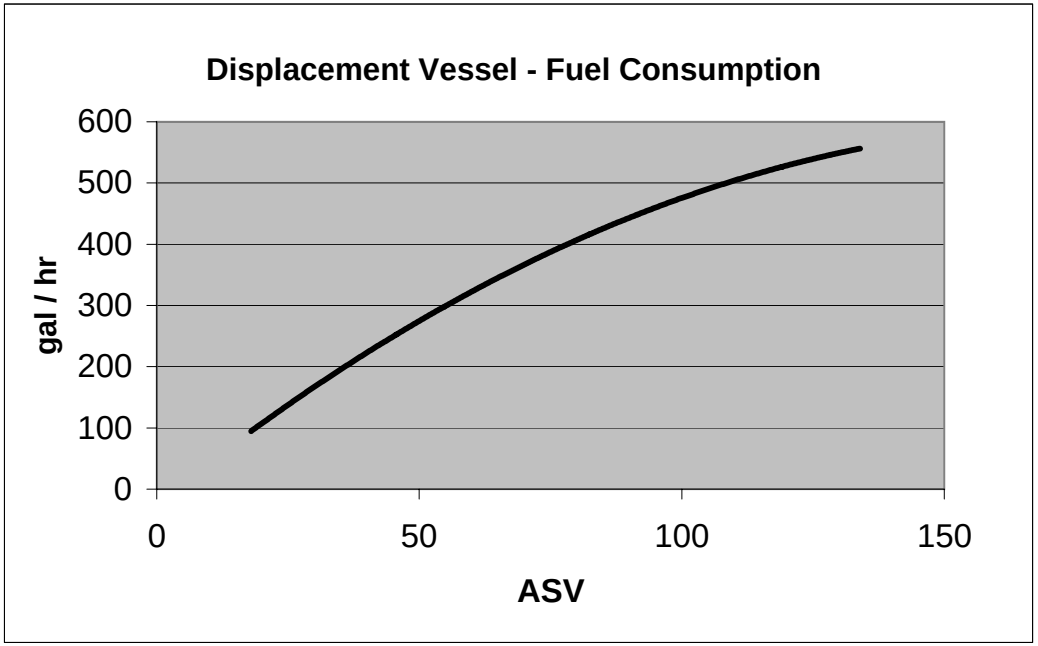


Single Vessel Crew - Cost per Hour		
ASV	Displ	HSF
#	($ / hr)	($ / hr)
59	$ 489.89	$ 528.21
60	$ 494.35	$ 530.96
61	$ 498.71	$ 533.74
62	$ 502.98	$ 536.56
63	$ 507.15	$ 539.40
64	$ 511.23	$ 542.27
65	$ 515.20	$ 545.17
66	$ 519.08	$ 548.09
67	$ 522.87	$ 551.05
68	$ 526.55	$ 554.04
69	$ 530.14	$ 557.05
70	$ 533.64	$ 560.10
71	$ 537.03	$ 563.17
72	$ 540.33	$ 566.28
73	$ 543.54	$ 569.41
74	$ 546.64	$ 572.57
75	$ 549.65	$ 575.76
76	$ 552.57	$ 578.98
77	$ 555.38	$ 582.23
78	$ 558.10	$ 585.51
79	$ 560.72	$ 588.82
80	$ 563.25	$ 592.16
81	$ 565.68	$ 595.52
82	$ 568.01	$ 598.92
83	$ 570.24	$ 602.34
84	$ 572.38	$ 605.80
85	$ 574.42	$ 609.28
86	$ 576.37	$ 612.79
87	$ 578.22	$ 616.33
88	$ 579.97	$ 619.90
89	$ 581.62	$ 623.50
90	$ 583.18	$ 627.13
91	$ 584.64	$ 630.79
92	$ 586.00	$ 634.48
93	$ 587.27	$ 638.20
94	$ 588.44	$ 641.94
95	$ 589.51	$ 645.72
96	$ 590.49	$ 649.52
97	$ 591.37	$ 653.35
98	$ 592.15	$ 657.22
99	$ 592.84	$ 661.11
100	$ 593.43	$ 665.03



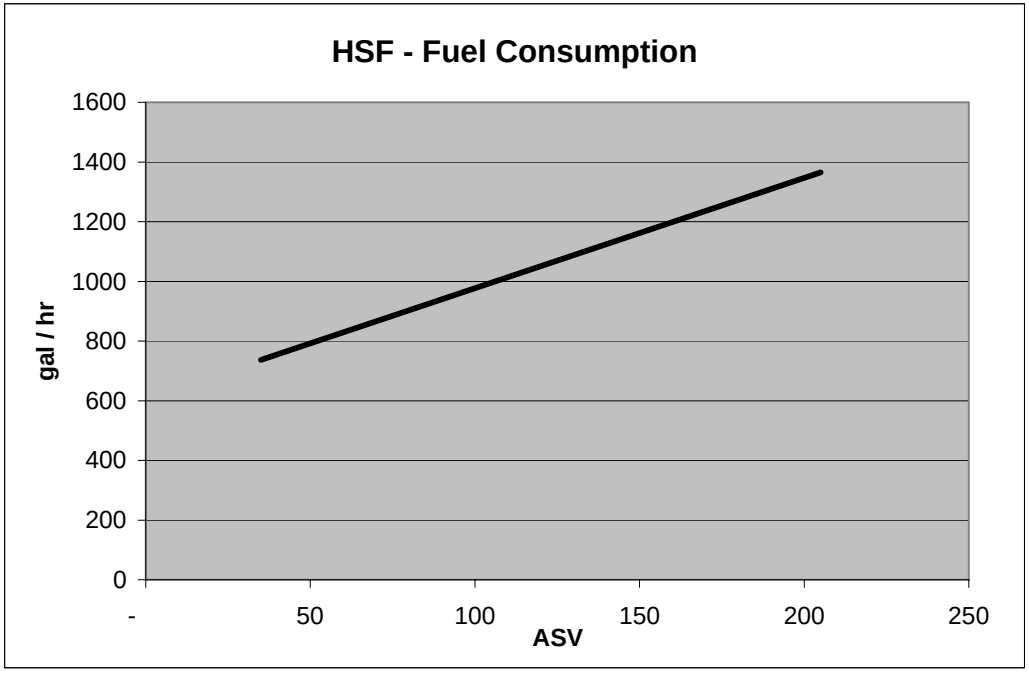
Fuel Consumption Data Table

ASV	Displ	HSF
#	(gal / hr)	(gal / hr)
15	75.87	662.41
16	82.21	666.11
17	88.52	669.81
18	94.78	673.50
19	101.01	677.20
20	107.19	680.89
21	113.34	684.59
22	119.45	688.29
23	125.52	691.98
24	131.55	695.68
25	137.54	699.38
26	143.49	703.07
27	149.40	706.77
28	155.27	710.46
29	161.11	714.16
30	166.90	717.86
31	172.66	721.55
32	178.37	725.25
33	184.05	728.94
34	189.68	732.64
35	195.28	736.34
36	200.84	740.03
37	206.36	743.73
38	211.84	747.43
39	217.28	751.12
40	222.69	754.82
41	228.05	758.51
42	233.37	762.21
43	238.66	765.91
44	243.90	769.60
45	249.11	773.30
46	254.28	777.00
47	259.40	780.69
48	264.49	784.39
49	269.54	788.08
50	274.55	791.78
51	279.52	795.48
52	284.45	799.17
53	289.35	802.87
54	294.20	806.56
55	299.02	810.26
56	303.79	813.96
57	308.53	817.65
58	313.22	821.35
59	317.88	825.05



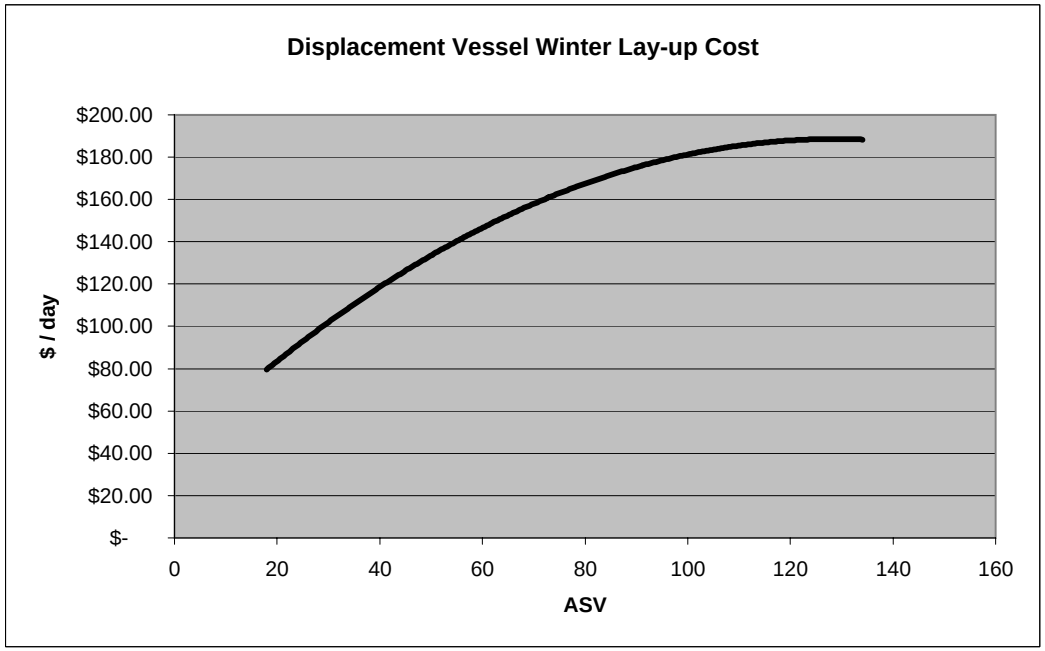
Fuel Consumption Data Table

ASV	Displ	HSF
#	(gal / hr)	(gal / hr)
60	322.50	828.74
61	327.08	832.44
62	331.62	836.13
63	336.12	839.83
64	340.58	843.53
65	345.00	847.22
66	349.38	850.92
67	353.73	854.62
68	358.03	858.31
69	362.30	862.01
70	366.52	865.70
71	370.71	869.40
72	374.86	873.10
73	378.97	876.79
74	383.04	880.49
75	387.07	884.19
76	391.06	887.88
77	395.01	891.58
78	398.92	895.27
79	402.80	898.97
80	406.63	902.67
81	410.43	906.36
82	414.18	910.06
83	417.90	913.75
84	421.57	917.45
85	425.21	921.15
86	428.81	924.84
87	432.37	928.54
88	435.89	932.24
89	439.37	935.93
90	442.82	939.63
91	446.22	943.32
92	449.58	947.02
93	452.91	950.72
94	456.19	954.41
95	459.44	958.11
96	462.65	961.81
97	465.81	965.50
98	468.94	969.20
99	472.03	972.89
100	475.08	976.59



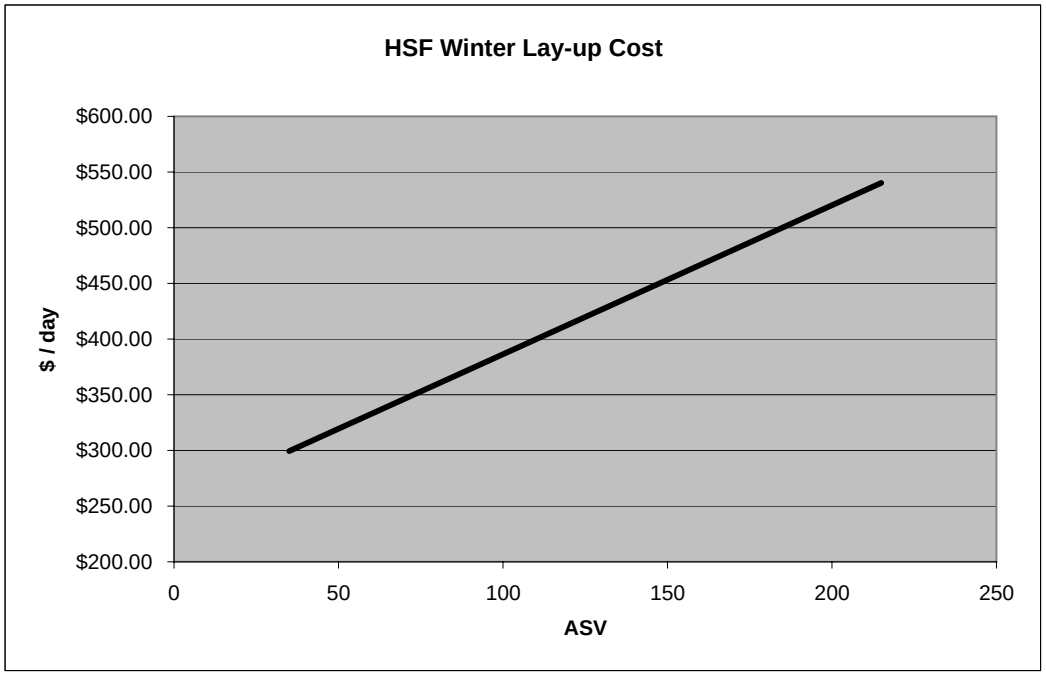
Winter Lay-up Data Table

ASV #	Displ ($ / day)	HSF ($ / day)
15	73.63	273.01
16	75.64	274.34
17	77.64	275.68
18	79.62	277.01
19	81.58	278.35
20	83.52	279.68
21	85.44	281.02
22	87.35	282.35
23	89.24	283.69
24	91.11	285.02
25	92.96	286.36
26	94.80	287.69
27	96.62	289.03
28	98.42	290.36
29	100.20	291.70
30	101.96	293.03
31	103.71	294.37
32	105.44	295.70
33	107.15	297.04
34	108.84	298.37
35	110.52	299.71
36	112.18	301.04
37	113.81	302.38
38	115.44	303.71
39	117.04	305.05
40	118.63	306.38
41	120.20	307.72
42	121.75	309.05
43	123.28	310.39
44	124.79	311.72
45	126.29	313.06
46	127.77	314.39
47	129.23	315.73
48	130.68	317.06
49	132.10	318.40
50	133.51	319.73
51	134.90	321.07
52	136.27	322.40
53	137.63	323.74
54	138.97	325.07
55	140.29	326.41
56	141.59	327.74
57	142.87	329.08
58	144.14	330.41
59	145.38	331.75



Winter Lay-up Data Table

ASV #	Displ ($ / day)	HSF ($ / day)
60	146.62	333.08
61	147.83	334.42
62	149.02	335.75
63	150.20	337.09
64	151.36	338.42
65	152.50	339.76
66	153.62	341.09
67	154.73	342.43
68	155.82	343.76
69	156.89	345.10
70	157.94	346.43
71	158.97	347.77
72	159.99	349.10
73	160.99	350.44
74	161.97	351.77
75	162.93	353.11
76	163.88	354.44
77	164.81	355.78
78	165.72	357.11
79	166.61	358.45
80	167.48	359.78
81	168.34	361.12
82	169.18	362.45
83	170.00	363.79
84	170.80	365.12
85	171.59	366.46
86	172.36	367.79
87	173.10	369.13
88	173.84	370.46
89	174.55	371.80
90	175.25	373.13
91	175.93	374.47
92	176.59	375.80
93	177.23	377.14
94	177.85	378.47
95	178.46	379.81
96	179.05	381.14
97	179.62	382.48
98	180.18	383.81
99	180.71	385.15
100	181.23	386.48



General Overhaul Data

Allowed Vessel Types

Type	Abbreviation
Displacement	Displ
High-Speed Ferry	HSF

Payload Length & Weight

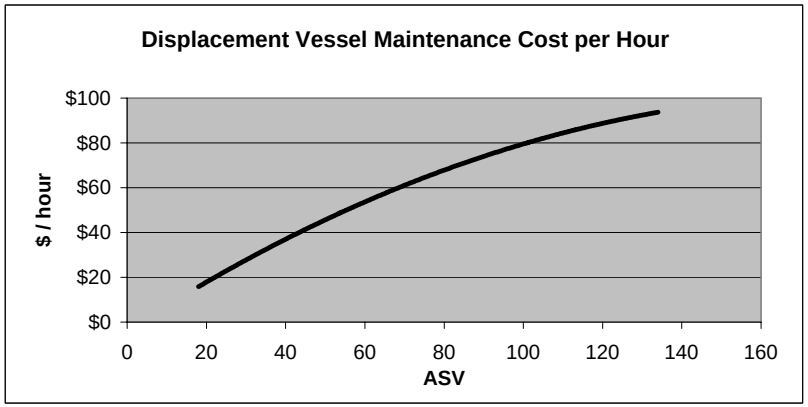
ASV Length (feet)	ASV Weight (lbs)	RV Length (feet)	RV Weight (lbs)	Van Length (feet)	Van Weight (lbs)
20	6,000	24	12,000	40	40,000

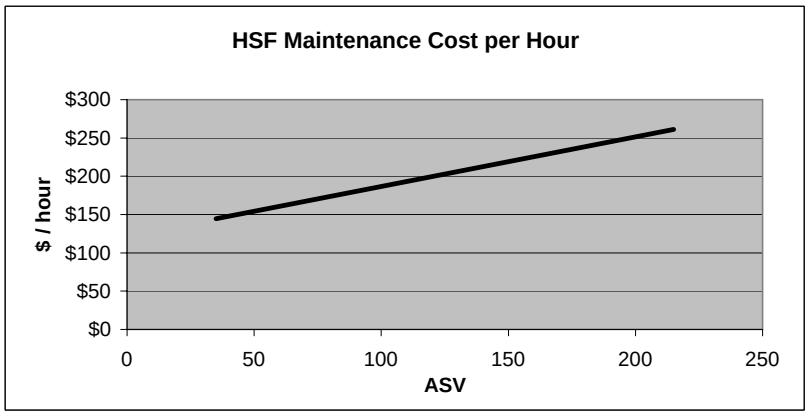
AMHS Overhead / Operating Data

System-Wide Overhead Costs	Impact / V Day	Discount	Flt Ovhd / V Da	Ave Eq FY03	FY 2003	eq FY 2003	FY 2002
SE Support Services	$ 165	75%	$ 662	$ 1,402,686	$ 1,392,000	$ 1,392,000	$ 1,360,100
Headquarters Finance / Personnel	$ 49	90%	$ 492	$ 1,043,390	$ 1,039,700	$ 1,039,700	$ 992,200
Engineering Management	$ 168	50%	$ 337	$ 713,486	$ 760,329		$ 682,211
Total System-Wide Overhead	**$ 383**		**$ 1,490**	**$ 3,159,562**			
Vessel Operations Costs							
Vessel Operations Management	$ 316	50%	$ 632	$ 1,339,630	$ 1,487,751	$ 1,487,751	$ 1,271,943
Overhaul (excluding PS)	$ -	100%	$ 838	$ 1,776,466	$ 1,687,897	$ 1,687,897	$ 1,698,225
SE Shore Operations	$ -	100%	$ 1,414	$ 2,996,532	$ 2,931,847	$ 2,931,847	$ 2,894,289
SW Shore Oerations	$ -	100%	$ 518	$ 1,099,085	$ 1,069,589	$ 1,069,589	$ 1,035,047
Reservations and Marketing	$ 225	75%	$ 900	$ 1,907,390	$ 1,816,689	$ 1,816,689	$ 1,864,743
Total Vessel Operations Overhead	**$ 541**		**$ 4,302**	**$ 9,119,102**			
Total Overhead Cost Basis	**$ 924**		**$ 5,792**	**$ 12,278,664**			
Cumulative Exst Fleet Operating Weeks (Vessel Weeks)				303	323.1		293.7
Total Exst Fleet Operating Days				**2,120**	2262		2,056
Ovhd Cost / Vessel Day (w/o reservati	**$ 699**		**$ 4,892**				
Ovhd Cost / Vessel Day (with reservat	**$ 924**		**$ 5,792**				

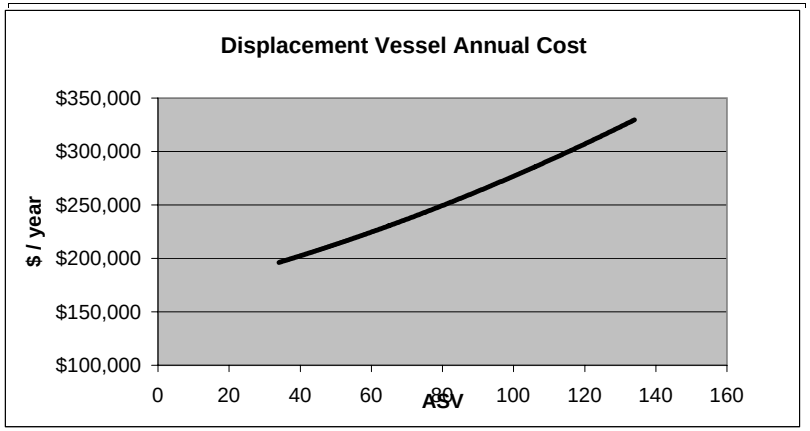
Maintenance Cost Data Table

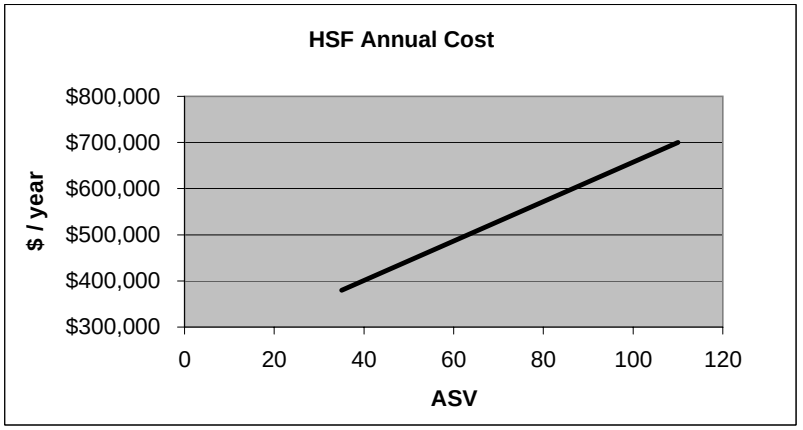
Operational Maintenance			Overhaul Maintenance		
ASV #	Displ ($ / hr)	HSF ($ / hr)	ASV #	Displ ($ / yr)	HSF ($ / yr)
15	$ 12.68	$ 131.77	15	$ 178,277	$ 294,668
16	$ 13.73	$ 132.41	16	$ 179,163	$ 298,934
17	$ 14.77	$ 133.06	17	$ 180,055	$ 303,201
18	$ 15.81	$ 133.71	18	$ 180,953	$ 307,468
19	$ 16.84	$ 134.36	19	$ 181,858	$ 311,734
20	$ 17.86	$ 135.00	20	$ 182,769	$ 316,001
21	$ 18.88	$ 135.65	21	$ 183,687	$ 320,268
22	$ 19.89	$ 136.30	22	$ 184,612	$ 324,534
23	$ 20.89	$ 136.95	23	$ 185,543	$ 328,801
24	$ 21.89	$ 137.59	24	$ 186,481	$ 333,068
25	$ 22.88	$ 138.24	25	$ 187,425	$ 337,335
26	$ 23.87	$ 138.89	26	$ 188,376	$ 341,601
27	$ 24.85	$ 139.54	27	$ 189,333	$ 345,868
28	$ 25.82	$ 140.19	28	$ 190,297	$ 350,135
29	$ 26.79	$ 140.83	29	$ 191,268	$ 354,401
30	$ 27.75	$ 141.48	30	$ 192,245	$ 358,668
31	$ 28.70	$ 142.13	31	$ 193,228	$ 362,935
32	$ 29.65	$ 142.78	32	$ 194,219	$ 367,201
33	$ 30.59	$ 143.42	33	$ 195,215	$ 371,468
34	$ 31.53	$ 144.07	34	$ 196,219	$ 375,735
35	$ 32.46	$ 144.72	35	$ 197,228	$ 380,002
36	$ 33.38	$ 145.37	36	$ 198,245	$ 384,268
37	$ 34.30	$ 146.01	37	$ 199,268	$ 388,535
38	$ 35.21	$ 146.66	38	$ 200,297	$ 392,802
39	$ 36.12	$ 147.31	39	$ 201,333	$ 397,068
40	$ 37.02	$ 147.96	40	$ 202,376	$ 401,335
41	$ 37.91	$ 148.61	41	$ 203,425	$ 405,602
42	$ 38.80	$ 149.25	42	$ 204,481	$ 409,868
43	$ 39.68	$ 149.90	43	$ 205,543	$ 414,135
44	$ 40.55	$ 150.55	44	$ 206,612	$ 418,402
45	$ 41.42	$ 151.20	45	$ 207,687	$ 422,669
46	$ 42.28	$ 151.84	46	$ 208,769	$ 426,935
47	$ 43.14	$ 152.49	47	$ 209,857	$ 431,202
48	$ 43.98	$ 153.14	48	$ 210,953	$ 435,469
49	$ 44.83	$ 153.79	49	$ 212,054	$ 439,735
50	$ 45.66	$ 154.44	50	$ 213,162	$ 444,002
51	$ 46.50	$ 155.08	51	$ 214,277	$ 448,269
52	$ 47.32	$ 155.73	52	$ 215,398	$ 452,535
53	$ 48.14	$ 156.38	53	$ 216,526	$ 456,802
54	$ 48.95	$ 157.03	54	$ 217,660	$ 461,069
55	$ 49.76	$ 157.67	55	$ 218,801	$ 465,336
56	$ 50.56	$ 158.32	56	$ 219,949	$ 469,602
57	$ 51.35	$ 158.97	57	$ 221,103	$ 473,869
58	$ 52.14	$ 159.62	58	$ 222,263	$ 478,136
59	$ 52.92	$ 160.26	59	$ 223,431	$ 482,402
60	$ 53.69	$ 160.91	60	$ 224,604	$ 486,669
61	$ 54.46	$ 161.56	61	$ 225,784	$ 490,936
62	$ 55.22	$ 162.21	62	$ 226,971	$ 495,202





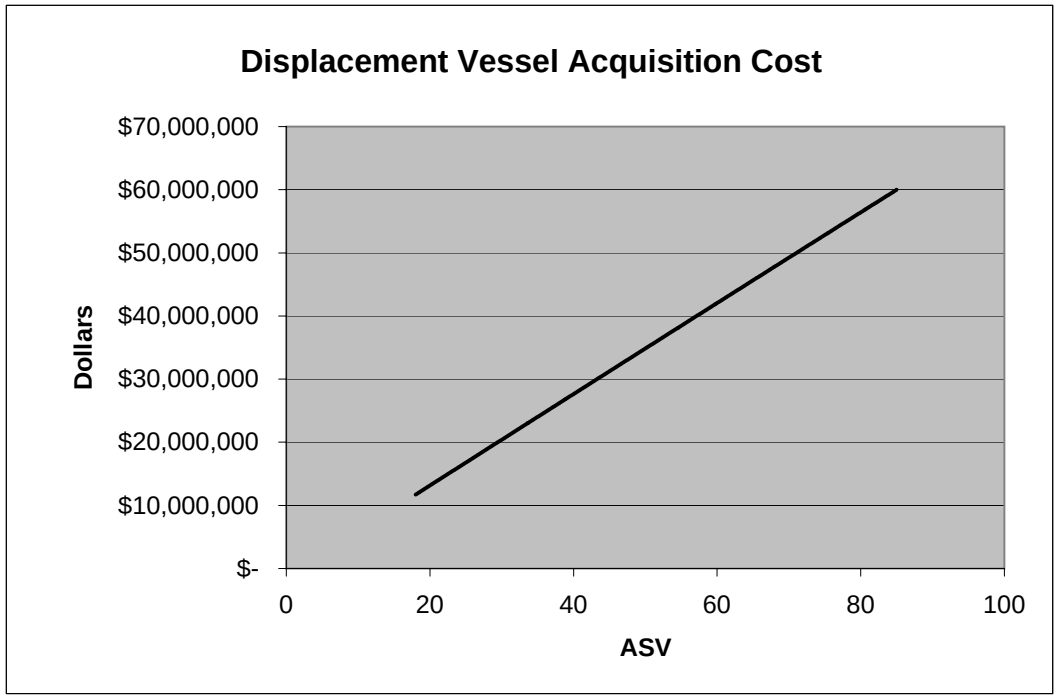
Operational Maintenance			Overhaul Maintenance		
ASV	Displ	HSF	ASV	Displ	HSF
#	($ / hr)	($ / hr)	#	($ / yr)	($ / yr)
63	$ 55.98	$ 162.86	63	$ 228,165	$ 499,469
64	$ 56.73	$ 163.50	64	$ 229,365	$ 503,736
65	$ 57.47	$ 164.15	65	$ 230,571	$ 508,003
66	$ 58.21	$ 164.80	66	$ 231,784	$ 512,269
67	$ 58.94	$ 165.45	67	$ 233,004	$ 516,536
68	$ 59.67	$ 166.09	68	$ 234,230	$ 520,803
69	$ 60.39	$ 166.74	69	$ 235,462	$ 525,069
70	$ 61.10	$ 167.39	70	$ 236,702	$ 529,336
71	$ 61.81	$ 168.04	71	$ 237,947	$ 533,603
72	$ 62.51	$ 168.68	72	$ 239,200	$ 537,869
73	$ 63.20	$ 169.33	73	$ 240,459	$ 542,136
74	$ 63.89	$ 169.98	74	$ 241,724	$ 546,403
75	$ 64.57	$ 170.63	75	$ 242,996	$ 550,670
76	$ 65.25	$ 171.28	76	$ 244,275	$ 554,936
77	$ 65.92	$ 171.92	77	$ 245,560	$ 559,203
78	$ 66.58	$ 172.57	78	$ 246,852	$ 563,470
79	$ 67.24	$ 173.22	79	$ 248,150	$ 567,736
80	$ 67.89	$ 173.87	80	$ 249,455	$ 572,003
81	$ 68.53	$ 174.51	81	$ 250,766	$ 576,270
82	$ 69.17	$ 175.16	82	$ 252,084	$ 580,536
83	$ 69.80	$ 175.81	83	$ 253,408	$ 584,803
84	$ 70.43	$ 176.46	84	$ 254,739	$ 589,070
85	$ 71.05	$ 177.10	85	$ 256,077	$ 593,337
86	$ 71.66	$ 177.75	86	$ 257,421	$ 597,603
87	$ 72.27	$ 178.40	87	$ 258,772	$ 601,870
88	$ 72.87	$ 179.05	88	$ 260,129	$ 606,137
89	$ 73.47	$ 179.70	89	$ 261,493	$ 610,403
90	$ 74.06	$ 180.34	90	$ 262,863	$ 614,670
91	$ 74.64	$ 180.99	91	$ 264,240	$ 618,937
92	$ 75.22	$ 181.64	92	$ 265,623	$ 623,203
93	$ 75.79	$ 182.29	93	$ 267,013	$ 627,470
94	$ 76.35	$ 182.93	94	$ 268,410	$ 631,737
95	$ 76.91	$ 183.58	95	$ 269,813	$ 636,004
96	$ 77.46	$ 184.23	96	$ 271,223	$ 640,270
97	$ 78.01	$ 184.88	97	$ 272,639	$ 644,537
98	$ 78.54	$ 185.52	98	$ 274,062	$ 648,804
99	$ 79.08	$ 186.17	99	$ 275,491	$ 653,070
100	$ 79.60	$ 186.82	100	$ 276,927	$ 657,337



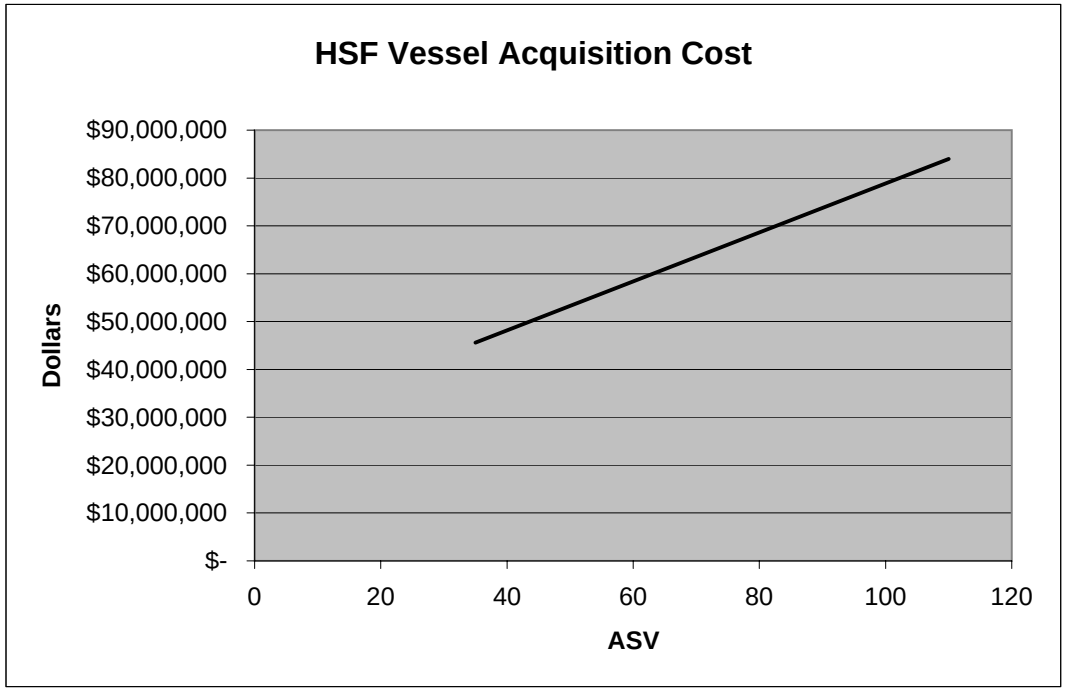


Vessel Acquisition Cost Data Table

ASV	Displ	HSF
#	($ / vessel)	($ / vessel)
15	$ 9,911,939	$ 37,680,000
16	$ 10,638,207	$ 38,192,000
17	$ 11,364,327	$ 38,704,000
18	$ 12,090,297	$ 39,216,000
19	$ 12,816,118	$ 39,728,000
20	$ 13,541,789	$ 40,240,000
21	$ 14,267,311	$ 40,752,000
22	$ 14,992,685	$ 41,264,000
23	$ 15,717,908	$ 41,776,000
24	$ 16,442,983	$ 42,288,000
25	$ 17,167,908	$ 42,800,000
26	$ 17,892,684	$ 43,312,000
27	$ 18,617,311	$ 43,824,000
28	$ 19,341,788	$ 44,336,000
29	$ 20,066,117	$ 44,848,000
30	$ 20,790,296	$ 45,360,000
31	$ 21,514,325	$ 45,872,000
32	$ 22,238,206	$ 46,384,000
33	$ 22,961,937	$ 46,896,000
34	$ 23,685,519	$ 47,408,000
35	$ 24,408,952	$ 47,920,000
36	$ 25,132,235	$ 48,432,000
37	$ 25,855,370	$ 48,944,000
38	$ 26,578,355	$ 49,456,000
39	$ 27,301,190	$ 49,968,000
40	$ 28,023,877	$ 50,480,000
41	$ 28,746,414	$ 50,992,000
42	$ 29,468,802	$ 51,504,000
43	$ 30,191,041	$ 52,016,000
44	$ 30,913,130	$ 52,528,000
45	$ 31,635,070	$ 53,040,000
46	$ 32,356,861	$ 53,552,000
47	$ 33,078,503	$ 54,064,000
48	$ 33,799,995	$ 54,576,000
49	$ 34,521,339	$ 55,088,000
50	$ 35,242,533	$ 55,600,000
51	$ 35,963,577	$ 56,112,000
52	$ 36,684,473	$ 56,624,000
53	$ 37,405,219	$ 57,136,000
54	$ 38,125,816	$ 57,648,000
55	$ 38,846,263	$ 58,160,000
56	$ 39,566,562	$ 58,672,000
57	$ 40,286,711	$ 59,184,000
58	$ 41,006,711	$ 59,696,000



ASV	Displ	HSF
#	($ / vessel)	($ / vessel)
59	$ 41,726,561	$ 60,208,000
60	$ 42,446,263	$ 60,720,000
61	$ 43,165,815	$ 61,232,000
62	$ 43,885,218	$ 61,744,000
63	$ 44,604,471	$ 62,256,000
64	$ 45,323,576	$ 62,768,000
65	$ 46,042,531	$ 63,280,000
66	$ 46,761,337	$ 63,792,000
67	$ 47,479,993	$ 64,304,000
68	$ 48,198,501	$ 64,816,000
69	$ 48,916,859	$ 65,328,000
70	$ 49,635,068	$ 65,840,000
71	$ 50,353,127	$ 66,352,000
72	$ 51,071,038	$ 66,864,000
73	$ 51,788,799	$ 67,376,000
74	$ 52,506,411	$ 67,888,000
75	$ 53,223,873	$ 68,400,000
76	$ 53,941,186	$ 68,912,000
77	$ 54,658,351	$ 69,424,000
78	$ 55,375,365	$ 69,936,000
79	$ 56,092,231	$ 70,448,000
80	$ 56,808,947	$ 70,960,000
81	$ 57,525,514	$ 71,472,000
82	$ 58,241,932	$ 71,984,000
83	$ 58,958,201	$ 72,496,000
84	$ 59,674,320	$ 73,008,000
85	$ 60,390,290	$ 73,520,000
86	$ 61,106,111	$ 74,032,000
87	$ 61,821,782	$ 74,544,000
88	$ 62,537,305	$ 75,056,000
89	$ 63,252,678	$ 75,568,000
90	$ 63,967,901	$ 76,080,000
91	$ 64,682,976	$ 76,592,000
92	$ 65,397,901	$ 77,104,000
93	$ 66,112,677	$ 77,616,000
94	$ 66,827,304	$ 78,128,000
95	$ 67,541,781	$ 78,640,000
96	$ 68,256,110	$ 79,152,000
97	$ 68,970,289	$ 79,664,000
98	$ 69,684,318	$ 80,176,000
99	$ 70,398,199	$ 80,688,000
100	$ 71,111,930	$ 81,200,000



Appendix E ..... Capital Improvement Plan Model

This page left intentionally blank.

Displacement Vessel Steel

64	year lifespan
30	acquisition cost (millions $)

Displacement Vessel Steel

Table of CIP Project Cost - as a percentage of acquisition cost

	Year of project - Percent of lifespan						
Project	*0%*	*5%*	*25%*	*33%*	*50%*	*67%*	*75%*
Mechanical Upgrade					25%		
Hotel Upgrade				20%		25%	
Safety Upgrade				10%		15%	
Functional Upgrade		10%			15%		

This analysis assumes a day boat, no passenger cabins or galley, and that adequate maintenance dollars are provided to keep paint coating systems intact.

Displacement Vessel Steel

Example CIP Project List - Cost in millions

	Year of project						
Project	*0*	*3*	*16*	*21*	*32*	*43*	*48*
Mechanical Upgrade	$ -	$ -	$ -	$ -	$ 7.50	$ -	$ -
Hotel Upgrade	$ -	$ -	$ -	$ 6.00	$ -	$ 7.50	$ -
Safety Upgrade	$ -	$ -	$ -	$ 3.00	$ -	$ 4.50	$ -
Functional Upgrade	$ -	$ 3.00	$ -	$ -	$ 4.50	$ -	$ -
Total per year	$ -	$ 3.00	$ -	$ 9.00	$ 12.00	$ 12.00	$ -

Total over lifespan $ 36.00 (million $)

Fast Vessel Aluminum

32	year lifespan
40	acquisition cost (millions $)

Fast Vessel Aluminum

Table of CIP Project Cost - as a percentage of acquisition cost

	Year of project - Percent of lifespan						
Project	*0%*	*5%*	*25%*	*33%*	*50%*	*67%*	*75%*
Mechanical Upgrade				15%		15%	
Hotel Upgrade			15%		15%		15%
Safety Upgrade				10%		15%	
Functional Upgrade		10%			15%		

This analysis assumes a day boat, no passenger cabins or galley, and that adequate maintenance dollars are provided to keep paint coating systems intact.

Fast Vessel Aluminum

Example CIP Project List - Cost in millions

	Year of project						
Project	*0*	*2*	*8*	*11*	*16*	*21*	*24*
Mechanical Upgrade	$ -	$ -	$ -	$ 6.00	$ -	$ 6.00	$ -
Hotel Upgrade	$ -	$ -	$ 6.00	$ -	$ 6.00	$ -	$ 6.00
Safety Upgrade	$ -	$ -	$ -	$ 4.00	$ -	$ 6.00	$ -
Functional Upgrade	$ -	$ 4.00	$ -	$ -	$ 6.00	$ -	$ -
Total per year	$ -	$ 4.00	$ 6.00	$ 10.00	$ 12.00	$ 12.00	$ 6.00

Total over lifespan $ 50.00 (million $)

Capital Improvement Plan Data
Optimum Analysis

Alt	Config	Route	Season	Vessels			Expected Life in Years	Acquisition Cost	CIP Cost Over Lifespan
				#	Type	ASV			
1. No Build									
Alt 1 - No build									
	I	HNS-SGY-HNS	summer	1	Displ	15	64	$ 9,911,939	$ 11,894,327
			winter	1	Displ				
								$ 9,911,939	**$ 11,894,327**
2 East Lynn Canal									
Alt 2 - (tack) Road to SGY, ferry KTZ - HNS									
	I	HNS-KTZ-HNS	summer	1	Displ	57	64	$ 40,286,711	$ 48,344,053
			winter	1	Displ				
								$ 40,286,711	**$ 48,344,053**
Alt. 2A - Road to SGY, ferry KTZ - HNS, ferry across Berners									
	I	SAW-SLC-SAW	summer	2	Displ	33	64	$ 45,923,874	$ 55,108,649
			winter	1	Displ				
		HNS-KTZ-HNS	summer	1	Displ	45	64	$ 31,635,070	$ 37,962,084
			winter	1	Displ				
								$ 77,558,945	**$ 93,070,734**
Alt. 2B - Road to KTZ, ferry to SGY and HNS									
	I	HNS-SGY-HNS	summer	1	Displ	16	64	$ 10,638,207	$ 12,765,849
		HNS-KTZ-HNS	summer	1	Displ	40	64	$ 28,023,877	$ 33,628,652
			winter	1	Displ				
		SGY-KTZ-SGY	summer	1	Displ	53	64	$ 37,405,219	$ 44,886,263
			winter	1	Displ				
								$ 76,067,303	**$ 91,280,764**
Alt. 2C - Road to SGY, ferry SGY - HNS									
	I	HNS-SGY-HNS	summer	1	Displ	48	64	$ 33,799,995	$ 40,559,994
			winter	1	Displ				
								$ 33,799,995	**$ 40,559,994**
Alt 3 - West Lynn Canal									
Alt. 3 - Road to HNS, ferry SAW-WHB, ferry HNS - SGY									
	I	HNS-SGY-HNS	summer	1	Displ	38	64	$ 26,578,355	$ 31,894,026
			winter	1	Displ				
		SAW-WHB-SAW	summer	2	Displ	42	64	$ 58,937,604	$ 70,725,125
			winter	1	Displ				
								$ 85,515,959	**$ 102,619,150**
	II	HNS-SGY-HNS	summer	1	Displ	38	64	$ 26,578,355	$ 31,894,026
			winter	1	Displ				
		SAW-WHB-SAW	summer	2	Fast	33	32	$ 93,792,000	$ 117,240,000
			winter	1	Fast				
								$ 120,370,355	**$ 149,134,026**

Alt 4 - All Marine										
Alt. 4A - Fast from AUK				2 Mainlines to SGY						
	I	HNS-SGY-HNS	summer	1	Displ	15	64	$ 9,911,939	$ 11,894,327
			winter	1	Displ				
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	Fast	50	32	$ 111,200,000	$ 139,000,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast				
								$ 121,111,939	**$ 150,894,327**
Alt. 4B - Fast from SAW in summer				2 Mainlines to SGY						
	I	HNS-SGY-HNS	summer	1	Displ	15	64	$ 9,911,939	$ 11,894,327
			winter	1	Displ				
		SAW-HNS-SAW	summer	1	Fast	32	32	$ 46,384,000	$ 57,980,000
		SAW-SGY-SAW	summer	1	Fast	51		$ 56,112,000	$ 70,140,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast	32		$ -	
								$ 112,407,939	**$ 140,014,327**
Alt. 4C - Displ from AUK				2 Mainlines to SGY						
	I	HNS-SGY-HNS	summer	1	Displ	15	64	$ 9,911,939	$ 11,894,327
			winter	1	Displ				
		AUK-HNS-AUK	summer	1	Displ	63	64	$ 44,604,471	$ 53,525,366
		AUK-SGY-AUK	summer	1	Displ			$ 44,604,471	$ 53,525,366
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ			$ -	$ -
								$ 99,120,882	**$ 118,945,058**
Alt. 4D - Displ from SAW in summer, AUK in winter				2 Mainlines to SGY						
	I	HNS-SGY-HNS	summer	1	Displ	15	64	$ 9,911,939	$ 11,894,327
			winter	1	Displ				
		SAW-HNS-SAW	summer	1	Displ	45	64	$ 31,635,070	$ 37,962,084
		SAW-SGY-SAW	summer	1	Displ			$ 31,635,070	$ 37,962,084
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ			$ -	$ -
								$ 73,182,080	**$ 87,818,495**

Capital Improvement Plan Data
Aurora Analysis

Alt	Config	Route	Season	Vessels			Expected Life in Years	Acquisition Cost	CIP Cost Over Lifespan
				#	Type	ASV			
1. No Build									
Alt 1 - No build									
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
								$ -	**$ 28,422,623**
2 East Lynn Canal									
Alt 2 - (tack) Road to SGY, ferry KTZ - HNS									
	I	HNS-KTZ-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
								$ -	**$ 28,422,623**
Alt. 2A - Road to SGY, ferry KTZ - HNS, ferry across Berners									
	I	SAW-SLC-SAW	summer	2	Displ	33	64	$ 45,923,874	$ 55,108,649
			winter	1	Displ				
		HNS-KTZ-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
								$ 45,923,874	**$ 83,531,272**
Alt. 2B - Road to KTZ, ferry to SGY and HNS									
	I	HNS-SGY-HNS	summer	1	Displ	16	64	$ 10,638,207	$ 12,765,849
		HNS-KTZ-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		SGY-KTZ-SGY	summer	1	Displ	53	64	$ 37,405,219	$ 44,886,263
			winter	1	Displ				
								$ 48,043,426	**$ 86,074,734**
Alt. 2C - Road to SGY, ferry SGY - HNS									
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
								$ -	**$ 28,422,623**
Alt 3 - West Lynn Canal									
Alt. 3 - Road to HNS, ferry SAW-WHB, ferry HNS - SGY									
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		SAW-WHB-SAW	summer	2	Displ	42	64	$ 58,937,604	$ 70,725,125
			winter	1	Displ				
								$ 58,937,604	**$ 99,147,748**
	II	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		SAW-WHB-SAW	summer	2	Fast	33	32	$ 93,792,000	$ 117,240,000
			winter	1	Fast				
								$ 93,792,000	**$ 145,662,623**

Capital Improvement Plan Data
Aurora Analysis

Alt 4 - All Marine									
Alt. 4A - Fast from AUK				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		AUK-HNS-AUK AUK-SGY-AUK	summer	2	Fast	50	32	$ 111,200,000	$ 139,000,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast				
								$ 111,200,000	**$ 167,422,623**
Alt. 4B - Fast from SAW in summer				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		SAW-HNS-SAW	summer	1	Fast	32	32	$ 46,384,000	$ 57,980,000
		SAW-SGY-SAW	summer	1	Fast	51		$ 56,112,000	$ 70,140,000
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Fast	32		$ -	
								$ 102,496,000	**$ 156,542,623**
Alt. 4C - Displ from AUK				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		AUK-HNS-AUK	summer	1	Displ	63	64	$ 44,604,471	$ 53,525,366
		AUK-SGY-AUK	summer	1	Displ			$ 44,604,471	$ 53,525,366
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ			$ -	$ -
								$ 89,208,943	**$ 135,473,354**
Alt. 4D - Displ from SAW in summer, AUK in winter				2 Mainlines to SGY					
	I	HNS-SGY-HNS	summer	1	Displ	Aurora 34	64	$ -	$ 28,422,623
			winter	1	Displ				
		SAW-HNS-SAW	summer	1	Displ	45	64	$ 31,635,070	$ 37,962,084
		SAW-SGY-SAW	summer	1	Displ			$ 31,635,070	$ 37,962,084
		AUK-HNS-AUK AUK-SGY-AUK	winter	1	Displ			$ -	$ -
								$ 63,270,141	**$ 104,346,792**