

Gravina Access Project

Social Environment Technical Memorandum

Draft



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Prepared for:



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1.0 Introduction

The purpose of this document is to provide a detailed analysis of social issues that are pertinent in evaluating alternatives for the Gravina Access Project.

1.1 Project Area

The alignments of the Gravina Access Project alternatives and locations referred to in this report are shown in Figure 1-1 (Gravina Access Study Area).

1.2 Social Environment Elements

HDR examined the existing social environment of the project area to characterize the following elements of the social environment:

- Population (including possible environmental justice population)
- Growth and development potential
- Subsistence harvesting areas
- Recreational facilities (including possible Section 4[f] lands)
- Neighborhood and community character
- Traffic patterns, accessibility, and travel times
- Public services

This information is used as a basis for determining impacts on the social environment that could result from each of the Gravina Access Project build alternatives. The potential impacts are described by comparison with the current existing conditions.

1.3 Impacts On Social Elements Summary

The social impacts of the different alternatives are summarized below. The impacts are described in more detail in the Impacts on Social Elements section.

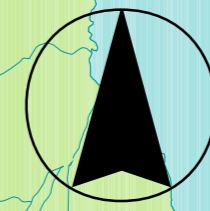
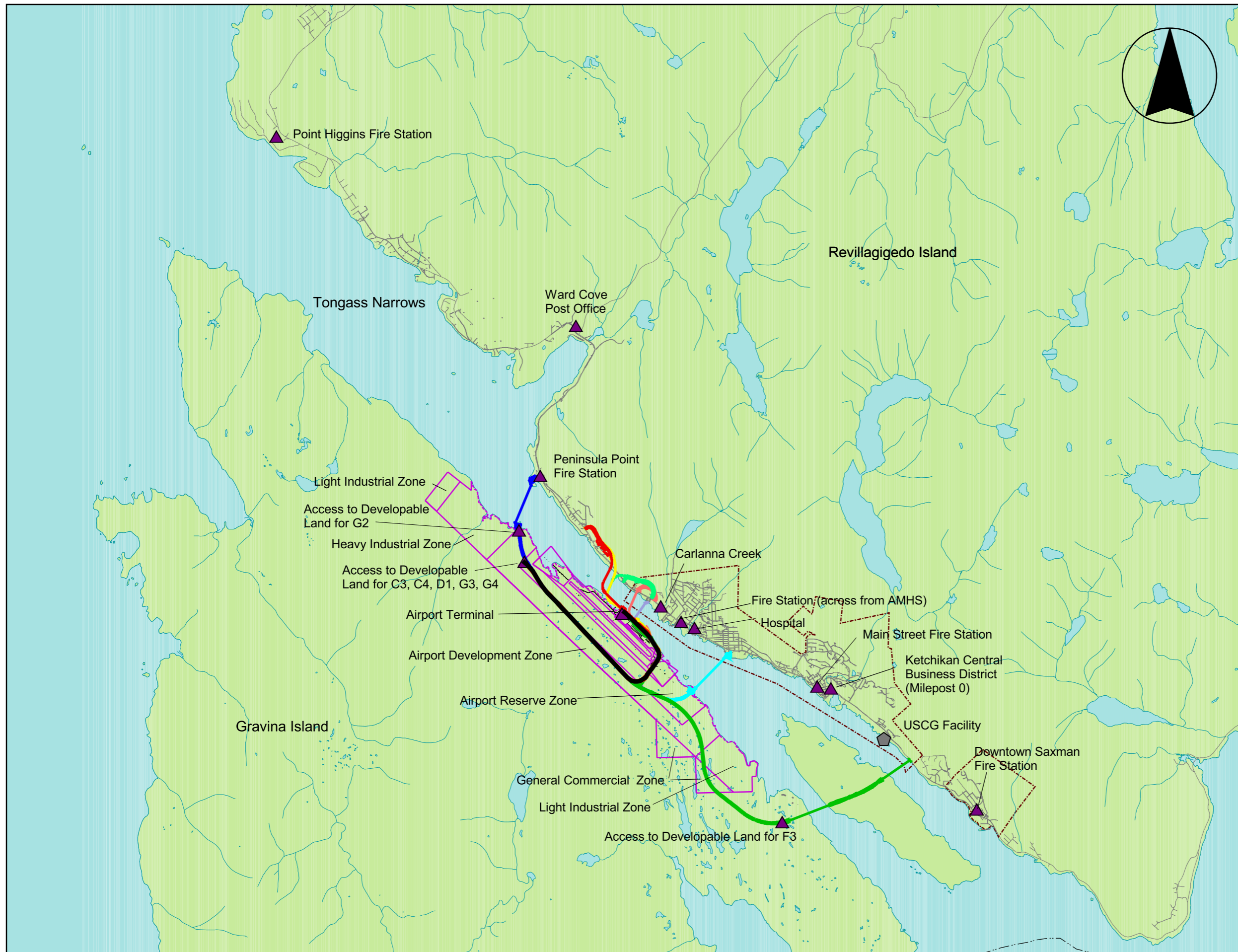
1.3.1 No-Build Alternative Impacts

- It is assumed that if the no-build alternative is chosen, there would be no social impacts and that the social environment would continue in the Ketchikan area as is.









1.3.2 Alternative C3(a) Impacts

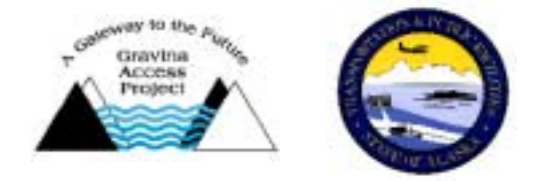
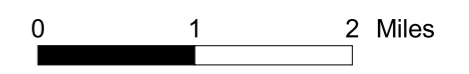
- The current airport ferry service between the islands would no longer be available to residents.
- The Revillagigedo neighborhoods along the hillside between Signal Road and the bridge would be adversely impacted because the alignment would traverse the hillside east of some residential properties in the Baker Street/Bucey Avenue neighborhood
- Along the hillside parallel to Tongass Avenue, the construction right-of-way would require acquisition of small residential properties along Baker Street North and Bucey Avenue North.

**Figure 1-1
Gravina Access Project
Study Area:
Social Impact Analysis**



-  USCG Facility
-  Travel Locations
-  Streams
-  Roads
-  Ketchikan City Limits
-  Airport Zoning Boundaries
-  Proposed Airport Circulation Road
-  Bodies of Water

- Access Alternatives**
-  C3 - 120-foot bridge
 -  C3 - 200-foot bridge
 -  C4 - 200-foot bridge
 -  D1 - 120-foot bridge
 -  F3 - 200-foot bridge
 -  G2 - Additional Ferry
 -  G3 - Additional Ferry
 -  G4 - Additional Ferry



- People coming from downtown would travel farther north of the current airport ferry terminal to get to the bridge crossing. For vehicles, the travel pattern would change only for those living between the ferry terminal and the new bridge. For pedestrians and bicyclists, access to the recreation opportunities available on Gravina Island would be gained by walking or riding over the bridge rather than using the airport ferry.
- Convenience would likely increase for all modes as a result of the more direct, unrestricted access provided by this alternative.
- Accessibility to public services would improve considerably with the 24-hour access provided by a bridge; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island—this is especially important for emergencies that happen after ferry hours or during times of severe weather.

1.3.3 Alternative C3(b) Impacts

- The current airport ferry service between the islands would no longer be available to residents.
- The construction right-of-way would encroach upon residential properties and would potentially require the relocation of two residences on the hillside.
- People coming from downtown would travel just a few miles further north of the current ferry terminal to get to the bridge crossing. For vehicles, the travel pattern would change only for those living between the ferry terminal and the new bridge. For pedestrians and bicyclists, access to the recreational land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across on the ferry.
- This alternative would substantially improve access to Gravina Island because 24-hour bridge access will be more convenient than a ferry.
- Accessibility to public services would improve considerably with the 24-hour access provided by a bridge; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island.

1.3.4 Alternative C4 Impacts

- The current airport ferry service between the islands would no longer be available to residents.
- Some residential areas on Revillagigedo Island would be impacted by this alternative because of increased traffic because it connects to Tongass Avenue north of Cambria Drive. The intersection of C4 and Tongass Avenue would be directly north of a residential property on Tongass Avenue—the right-of-way would be within the residential property and could require relocation of the residence.
- The construction of C4 could also affect the neighborhood's view and visual environment.
- Some businesses and industrial areas on Revillagigedo Island would be impacted and have to be acquired for this alternative.
- Travel patterns would not change much with this alternative. For pedestrians and bicyclists, access to the recreational land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across on the ferry.
- This alternative would substantially improve access to Gravina Island because 24-hour access by bridge will be more convenient than a ferry.

- Accessibility to public services would improve considerably with the 24-hour access provided by a bridge; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island.

1.3.5 Alternative D1 Impacts

- The current airport ferry service between the islands would no longer be available to residents.
- Increased traffic and noise levels would impact some residential areas where the bridge connects to Revillagigedo Island.
- The right-of-way at the intersection of Tongass Avenue and Cambria Drive would be within the two residential properties and could require relocation of one or both of the residences located there.
- Some residences east of Tongass Avenue would be impacted by the new bridge and would have to be acquired.
- Travel patterns would not change much with this alternative because of its proximity to the current ferry terminal. For pedestrians and bicyclists, access to the recreational land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across on the ferry.
- This alternative would substantially improve access to Gravina Island due to decreased travel times and more convenient accessibility.
- Accessibility to public services would improve considerably with the 24-hour access provided by a bridge; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island.

1.3.6 Alternative F3 Impacts

- The existing airport ferry service would no longer be available to residents and private skiffs would no longer be the only means of access for many residents.
- With easier access to Pennock Island and Gravina Island, subsistence issues might develop because more subsistence harvesters would be competing for the existing resources.
- Increased noise and traffic levels would also impact residential areas near the bridges, and subsequently property values might decline.
- Travel patterns and user convenience would be significantly changed by this alternative. People coming from north of the bridge takeoff on Revillagigedo Island would have to travel farther south to access the bridge than to access the existing ferry. For pedestrians and bicyclists who live north of town, the increased travel times to the new bridge would make it difficult for them to access recreational areas on Gravina Island. Pennock Island residents, whose only current access to Gravina and Revillagigedo islands is by private skiff, would benefit because they could bicycle and walk on the new bridges to the other islands.
- This alternative would improve access because of convenience to both Gravina Island and Pennock Island for motorists but would most likely not positively impact pedestrians and bicyclists.

- Accessibility to public services would improve considerably with the 24-hour access provided by a bridge; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island.

1.3.7 Alternative G2 Impacts

- This alternative would be a continuation of the current mode of access, ferry service.
- No residential areas would be directly affected by this alternative.
- Travel patterns would be changed by this alternative. People coming from south of the existing ferry terminal would have to travel farther north to access the new ferry terminal; however the current ferry will still be in operation and available for use. For residents living north of town, this ferry terminal would be closer than the existing ferry. For most pedestrians/bicyclists, access to recreational land on Gravina would be similar to current access.
- Because of the roadway loop on Gravina Island to approach the airport terminal, airport users would probably continue to use the existing ferry service, and the new ferry route would be used mostly to access the development land.
- This alternative would improve access to Gravina Island because the schedule would complement the existing ferry service and a ferry would therefore be available more frequently from one ferry terminal or the other.
- Accessibility to public would improve with the additional ferry service; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island with an additional ferry, but access (as with the existing ferry) would still be unavailable during non-operating hours.

1.3.8 Alternative G3 Impacts

- This alternative would not change the character of the community because it would be a continuation of the current mode of access, ferry service.
- No residential areas would be directly affected by this alternative.
- Travel patterns would change for many because of location of this alternative. People coming from the north would have to travel farther south to access this ferry terminal, but downtown residents would be closer to this ferry. For residents living south of town, this ferry would be closer than the existing ferry. Access would provide pedestrians and bicyclists with access similar to what is available now to the recreational land available on Gravina Island. The longer travel times would be prohibitive for pedestrians and bicyclists who live north of town, but more convenient for those who live south of the current ferry system.
- This alternative would improve access to Gravina Island because the schedule would complement the existing ferry service and a ferry would therefore be available more frequently from one terminal or the other.
- Accessibility to public services would improve with the additional ferry service; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island, but access would still be unavailable during non-operating hours.

1.3.9 Alternative G4 Impacts

- This alternative would not change the character of the community because it would be a continuation of the current mode of access, ferry service.
- No residential areas would be directly affected by this alternative.
- Travel patterns would not change at all because this alternative proposes two new ferry terminals adjacent to the existing airport ferry terminals.
- Access to Gravina Island would be more convenient for motorists, pedestrians, and bicyclists because the ferry schedules would be coordinated so that they complement each other—a ferry would therefore be available more frequently throughout the day from one terminal or the other.
- Accessibility to public services would improve with the additional ferry service; it would be easier for residents of Gravina Island to get to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to get to Gravina Island, but access would still be unavailable during non-operating hours.

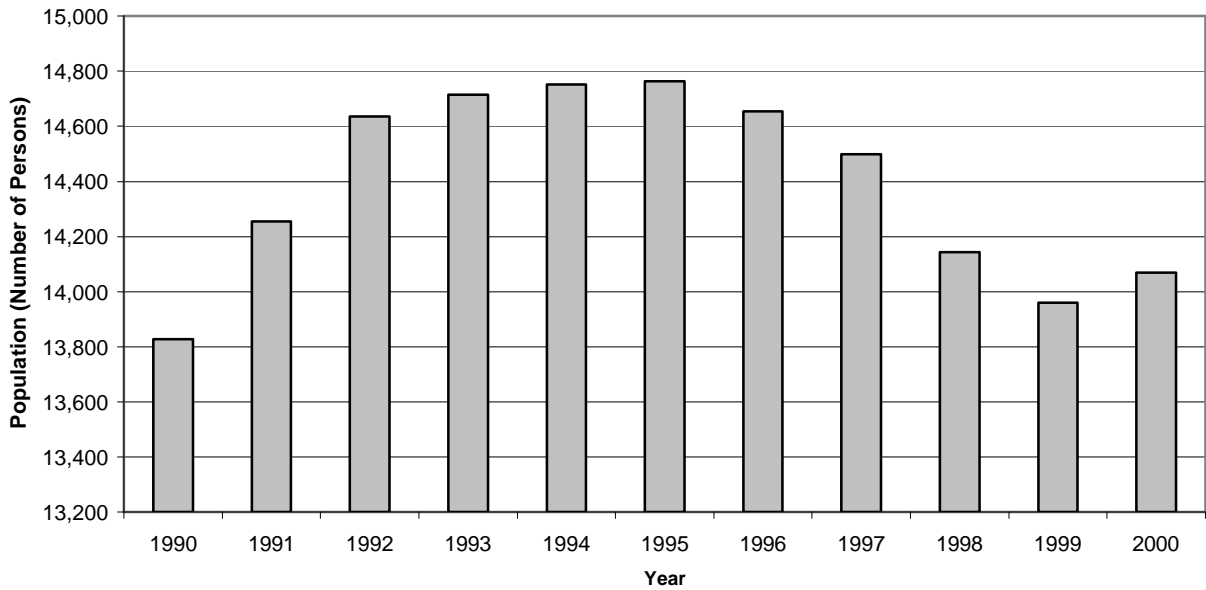
2.0 Existing Social Environment

2.1 Population

2.1.1 General Population

In the past few years, the economy of the Ketchikan Gateway Borough has undergone many changes that have affected growth and population in the community (see *Existing Conditions Demographic and Socioeconomic Analysis*. [HDR Alaska, April 2000] for more information). Figure 2-1 illustrates the population fluctuation from 1990 to 2000. Population increased annually from 1990, reaching a peak of 14,764 in 1995, and then began to decrease until a slight increase occurred between 1999 and 2000. From 1990 to 2000, the overall population increase of the Ketchikan Gateway Borough was only 1.8%—from 13,828 people in 1990 to an estimated 14,070 people in 2000.

FIGURE 2-1. POPULATION OF THE KETCHIKAN GATEWAY BOROUGH, 1990-2000



Source: Alaska Department of Labor and Workforce Development, 2001.

Note: The 2000 data point is a 2000 U.S. Census estimate.

2.1.2 Potential Environmental Justice Population

The February 11, 1994 Executive Order 12898 (Federal Register, 1994) states:

each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations

According to the FHWA Order “FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations:”

[<http://www.fhwa.dot.gov/environment/guidebook/vol2/doc16a.pdf>].

- Low-income means a household income at or below the Department of Health and Human Services (HHS) poverty guidelines, and
- Minority means a person who is:
 - Black (having origins in any of the black racial groups of Africa);
 - Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
 - Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
 - American Indian or Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).
- Disproportionately high and adverse effects on minority and low-income populations means an adverse effect that is predominately borne by a minority population and/or a

low-income population; or will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Complete 2000 Census data are not yet available at the level of detail needed for this analysis. However, based on 1990 U.S. Census estimates, the 2000 U.S. Census data available, and knowledge of the study area, it has been determined that the areas proposed for development of the project alternatives do not contain populations that are considered environmental justice communities. The HHS 2001 poverty guideline for Alaska is \$22,070 for a family of four; 79% of households in the affected area made more than \$25,000 per year in 1989—this is illustrated in Table 2-1. Table 2-2 shows that all of the census tracts in the Ketchikan Gateway Borough are mostly white—the percentages range from 65 to 88% of the population. In addition, borough planners have indicated that the neighborhoods that might be affected by some of the access alternatives would not be considered low-income or minority populations (personal communication with John Hill, 2001).

TABLE 2-1. KETCHIKAN GATEWAY BOROUGH INCOME, 1989

<i>Income in 1989</i>	<i>Number of Households</i>	<i>Percentage of Households (%)</i>
Less than \$5,000	78	1.57
\$5,000 to \$9,999	197	3.96
\$10,000 to \$14,999	233	4.69
\$15,000 to \$24,999	530	10.67
\$25,000 to \$34,999	766	15.42
\$35,000 to \$49,999	998	20.08
\$50,000 to \$74,999	1,230	24.75
\$75,000 to \$99,999	594	11.95
\$100,000 to \$149,999	257	5.17
\$150,000 or more	86	1.73
Total	4,969	100.00

Source: 1990 U.S. Census Bureau

Note: The 2001 HHS poverty guideline for Alaska is \$22,070 for a family of four.

TABLE 2-2. KETCHIKAN GATEWAY BOROUGH RACE AND HISPANIC ORIGIN BY CENSUS TRACT

Area (Census Tract)	Total Population	White	White (%)	American		Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races
				Black or African American	Indian and Alaska Native				
Tract 1	3,811	3,364	88.3	4	258	28	5	18	134
Tract 2	4,898	3,384	69.1	26	725	441	12	25	285
Tract 3	3,024	1,956	64.7	33	669	102	4	16	244
Tract 4	2,337	1,756	75.1	7	457	32	1	3	81

Source: 2000 U.S. Census Bureau, 2001

2.2 Growth and Development Potential

Revillagiedo Island has a limited amount of developable land, which makes land costs high. Gravina Island has developable land that could be developed if access were improved and costs such as land and infrastructure costs became less prohibitive. The amount and type of future development on Gravina Island depend, to a large degree, on the mode of access that is provided and level of overall economic activity in the area. The consensus opinions of realtors from the Ketchikan area participating in focus groups about the demand for residential land on Gravina Island were:

- Better access to Gravina Island would create more development demand.
- If access is not improved, there would be no additional demand on Gravina.
- There is a variety of land on Gravina that could be developed at a reasonable cost.

The *Land Use Focus Group Summary DRAFT* (HDR Alaska, February, 2001) concludes that:

The consensus of the focus group participants is that demand exists for certain land uses, but there are a number of factors besides access to land that would affect development patterns. Improved access is important, but affordability and the commitment to develop the necessary infrastructure are also pertinent issues.

Development on Gravina Island is expected to be part of the future growth that occurs in the Ketchikan area.

2.3 Subsistence

Subsistence is a major element of cultural and economic life for many southeastern Alaskan residents. Hunting, fishing, trapping, and gathering activities supplement personal income and provide needed food. Resources such as salmon, abalone, clams, berries, cedar bark, and numerous species of birds and mammals found in the area enable residents to maintain a rich and varied diet. Subsistence activities are also important to certain cultural customs and traditions.

Local subsistence use areas in the project area include Pennock Island and the Bostwick Bay area on southeastern Gravina Island, which is an important area for local residents to obtain fish, wildlife, shellfish, and seaweed. Some local subsistence use areas on Revillagiedo Island include Loring, Clover Pass Scenic Area, Upper George Inlet, Salt Lagoon, and Leask Creek and Cove.

Subsistence use of Pennock and Gravina islands is a particularly important issue in Saxman and Metlakatla because a high percentage of their population is Alaska Native. More than 75% of the population of Saxman is Alaska Native and a large segment of Saxman's residents rely on subsistence practices in the surrounding region. Saxman is located on the western side of Revillagigedo Island, 2 miles south of Ketchikan on the South Tongass Highway. In 1987, 96.7% of the Saxman households participated in subsistence, harvesting an estimated 93.5 pounds per capita (www.state.ak.us/local/akpages/FISH.GAME/subsist/subhome.htm). Tongass and Cape Fox Tlingits have lived in the Ketchikan area since 1894 and have used Ketchikan Creek as a fish camp that they called "kitschkhin," meaning creek of the "thundering wings of an eagle" (www.dced.state.ak.us/mra/CF_BLOCK.cfm).

Metlakatla is the only Indian reservation in Alaska. It is a traditional Tsimshian community in the federal Annette Island Reserve located on Annette Island, 15 miles south of Ketchikan. All Metlakatla residents participate in subsistence activities in some way—many rely on salmon, halibut, clams, and waterfowl. According to the Alaska Department of Fish and Game Division of Subsistence (www.state.ak.us/local/akpages/FISH.GAME/subsist/subhome.htm), 100% of the households in the community participated in subsistence in 1987, and harvested an estimated 70.14 pounds per capita (www.dced.state.ak.us/mra/CF_BLOCK.cfm).

2.4 Recreational Facilities

2.4.1 General Recreational Facilities

Gravina Island offers a variety of recreational opportunities, including fishing, hunting, sightseeing, and hiking; on Revillagigedo Island, fishing, hunting, hiking, and bicycling are popular. Tongass Narrows is used for recreational boating and fishing. In addition, the City of Ketchikan has numerous parks, trails, recreation areas, tennis courts, playing fields, and indoor recreation centers. Sportfishing in Ketchikan area lakes, streams, and bays is an extremely popular recreational activity, as are deer and bear hunting. The rise of the tourism and cruise ship industries has presented an increasing demand for recreational opportunities in the Ketchikan area.

2.4.2 Section 4(f) Lands

Section 4(f) of the Department of Transportation Act of 1966 requires that "special effort be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites" (49 USC Section 303). The intent of Section 4(f), as well as the policy of the U.S. Department of Transportation, is to avoid development in public parks, recreation areas, wildlife and waterfowl refuges, and historic sites of national, state, or local significance. There are no Section 4(f) lands in the project area directly affected by the alternatives.

There are some lands within the project area that may have cultural resources of local significance, but it is anticipated that these areas will be avoided and left undisturbed by all proposed project alignments (see *Archeological Reconnaissance Survey (Draft)* by Cultural Resources Consultants, October, 2001 for more information).

2.5 Neighborhood and Community Character

In the Ketchikan Gateway Borough *1996 Comprehensive Plan*, the community design section states that:

The character of a community is a result of both the natural and manufactured environment. The natural setting, because of its vastness and public ownership, will probably not change significantly over time. However, the urban fabric is subject to constant change in response to market demands and public investment decisions.

The 1996 plan indicated a need for preserving neighborhood characteristics—such as neighborhood cohesiveness, aesthetics and appearance, or historical importance—through design review guidelines. Open space and scenic views, pedestrian access and circulation, community art and beautification, and cultural features and historic preservation define community characteristics in Ketchikan.

City of Ketchikan

Residents of the City of Ketchikan value the quality of their community and many especially value the qualities that make their community and neighborhoods unique from others. The area on Revillagigedo Island within the immediate vicinity of the project alternatives includes: a commercial area at Signal Road and a small residential neighborhood along Baker Street North and Bucey Avenue North (Alternatives C3[a] and C3[b]), the Cambria Drive neighborhood (Alternatives C4 and D1), an undeveloped section of Tongass Avenue south of the U.S. Coast Guard (USCG) station (Alternative F3), and commercial/industrial areas along the waterfront (Alternatives G2, G3, and G4).

Pennock and Gravina Islands

The *Pennock and Gravina Island Neighborhood Plan* (Ketchikan Gateway Borough, 1985) illustrates that neighborhood residents value their sense of community and their existing way of life. Many residents of these islands are former residents of the City of Ketchikan, and were attracted to the islands by their rural and more self-sufficient lifestyle. Alternative F3 (bridge crossing at Pennock Island) would affect remote residential neighborhoods that, in the past, have placed a high value on their isolation (such as Clam Cove and Pennock Island). It is likely that road connections to the F3 alignment would bring these communities onto the road network and change the current isolated character (Gravina Access Project Pennock Island and Clam Cove Meetings, May 23 and 24, 2001).

2.6 Accessibility

Natural features and limited infrastructure are constraints to the accessibility and means of travel to various locations on Gravina Island within the project area. Currently, access to developable land is not possible with the existing ferry service. The ferry—purchased with Federal Aviation Administration funds—was not intended to be used to access land on Gravina Island other than the airport.

A stated need for the Gravina Access Project is to improve access to Ketchikan International Airport and to other lands on Gravina Island. One measure of accessibility is the amount of time it takes to travel from one point to another. Existing travel times were calculated for travel between 9 origin points on Revillagigedo Island and 2 destination points on Gravina Island (the airport terminal and developable lands); i.e., 18 routes total. All of the routes were analyzed for

vehicular travel times and three of these routes were analyzed for trips taken by pedestrians and bicycles¹. Table 2-3 presents the travel times calculated for these 18 routes for the no-build alternative (existing conditions).

**TABLE 2-3
CALCULATED TRAVEL TIMES FOR THE NO-BUILD ALTERNATIVE**

From (Location on Revillagigedo Island)	Travel Mode	Time (minutes)	
		To Airport Terminal	To Developable Land
Downtown Saxman (Fire Station)	Vehicles and Emergency Vehicles	32	37
Hospital	Vehicles and Emergency Vehicles	21	24
Peninsula Point Fire Station	Vehicles and Emergency Vehicles	22	25
Alaska Marine Highway Fire Station	Vehicles and Emergency Vehicles	20	23
Main Street Fire Station	Vehicles and Emergency Vehicles	25	28
Point Higgins	Vehicles	32	37
Ketchikan Central Business District (Mile Post 0)	Vehicles	30	32
	Pedestrian	76	138
	Bicycle	37	56
Ward Cove (Post Office)	Vehicles	25	30
	Pedestrian	111	173
	Bicycle	47	66
Carlanna Creek	Vehicles	19	24
	Pedestrian	21	83
	Bicycle	20	39

Average travel times are from various locations on Revillagigedo Island to the airport terminal and to the developable lands on Gravina Island, under the No-Build Alternative. See Figure 1-1 (Gravina Access Project Area) for locations of trip origins and destinations.

2.7 Public Services

The Ketchikan Gateway Borough and the City of Ketchikan provide an array of community services to the public, including educational facilities and libraries; a police department; fire protection and emergency services; and hospitals and health clinics.

The City of Ketchikan operates a police department in downtown Ketchikan. Alaska State Troopers provide law enforcement outside the City of Ketchikan from a base located approximately 2 miles north of the airport ferry terminal. Staff and volunteers of the City of Ketchikan, along with local volunteer fire departments run by the borough service areas, provide

¹ The calculation of travel times is based on the length of the roadway that would be traveled and the average speed of the vehicles, pedestrians, and bicycles on that roadway. The average speed for vehicles was assumed to be 5 miles per hour (mph) slower than the posted speed limit, except in the case of ambulances, fire trucks, and other emergency response vehicles, for which the average speed was assumed to be the posted speed limit.

fire protection and emergency response services to businesses and residents living on the roaded portion of Revillagigedo Island. Seven fire stations are located throughout the borough; all are staffed by volunteers except the fire station on Main Street in downtown Ketchikan. The average response time (for all service areas) by the city fire station and emergency medical service is approximately 4 minutes. The volunteer squads are used as needed. Emergency services are not provided to residents living beyond the road system or on Pennock and Gravina islands as they are outside the designated service areas. Aircraft rescue and firefighting personnel provide emergency fire response service at the Ketchikan International Airport.

Local hospitals or health clinics include Ketchikan General Hospital, Southeast Alaska Regional Health Consortium Clinic, Gateway Center for Human Services, and the USCG Ketchikan Dispensary. The hospital is a qualified acute care facility and Medevac facility. The USCG facility provides emergency support only and is a qualified emergency care center.

These public services for the Ketchikan Gateway Borough are summarized in Table 2-4.

**TABLE 2-4
COMMUNITY FACILITIES AND SERVICES**

Health Care Facilities	Local hospitals or health clinics include: Ketchikan General Hospital, Southeast Alaska Regional Health Consortium Clinic, Gateway Center for Human Services, and the USCG Ketchikan Dispensary.
Police Service	Provided by the City of Ketchikan within city limits; provided by the Alaska State Troopers outside the city limits.
Fire Protection and Rescue Service	Provided by the City of Ketchikan within city limits; provided privately by residents in some other service areas.
Libraries	There are 9 libraries in Ketchikan: 1 public library; 6 school libraries; 1 college library and 1 law library (for reference only)
Schools	There are 10 schools located in the borough, attended by 2,511 students.

Source: Alaska Department of Community and Economic Development Community Information Database Online (www.dced.state.ak.us/mra/CF_COMDB.htm), 2001.

3.0 Impacts on Social Elements

Building a bridge or adding ferry service would require construction of new facilities that would change the landscape and social environment of the project area to varying degrees. It is assumed that if the no-build alternative is chosen, there would be no social impacts and that the social environment would continue as it is in the Ketchikan area. The potential impacts of the proposed alternatives on the social environment are described in the following sections.

3.1 All Alternatives (No Impacts or Similar Impacts)

The potential project impacts are either nonexistent or very similar for four topics relating to the social environment: environmental justice, growth and development potential, subsistence, and Section 4(f) lands. These impacts are described in the following sections. To facilitate discussion and comparisons of the alternatives, information may be repeated for the representative alternatives presented below.

3.1.1 Environmental Justice

There are no minority or low-income populations in the study area for which environmental justice issues are a concern. None of the Gravina Access Project alternatives would affect environmental justice communities.

3.1.2 Growth and Development Potential

By providing better access to Gravina Island, all build alternatives would promote growth and development. This is consistent with regional planning goals and zoning, and meets one of the stated project needs—development on Gravina Island—which is supported by local development plans. The amount and type of future development on Gravina Island depends on the type of access that is provided and the level of overall economic activity in the area. Some will view increased growth and development as beneficial while others may find it to be detrimental; many impacts of growth and development resulting from the alternatives will be secondary and cumulative. These will be discussed in a future technical memorandum.

3.1.3 Subsistence

By providing better access to Gravina Island, all build alternatives would likely impact subsistence harvesting by increasing the number of residents competing for subsistence resources, which could adversely affect those who are currently dependent on subsistence as a way of life. Alternative F3 would have additional impacts to subsistence harvesting on Pennock Island. Subsistence impacts would be a secondary effect of the proposed alternatives. Direct social impacts are addressed in this document; secondary impacts will be addressed in a future technical memorandum.

3.1.4 Section 4(f) Lands

There are no Section 4(f) lands that would be directly affected by the project alternatives. Therefore, the need for a full Section 4(f) evaluation is not anticipated and is not part of this technical memorandum.

**TABLE 3-1
ESTIMATED TRAVEL TIMES BY ALTERNATIVE**

		Travel Time (minutes)																	
		No-Build		Alt. C3(a)		Alt. C3(b)		Alt. C4		Alt. D1		Alt. F3		Alt. G2		Alt. G3		Alt. G4	
From (Location on Revillagigedo Island)	Via (Travel Mode)	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land	To Air. Term.	To Dev. Land
Downtown Saxman (Fire Station)	Vehicle	32	37	19	22	17	22	16	20	16	19	11	6	45	39	38	34	30	34
Hospital	Vehicle	21	24	6	9	5	9	5	7	3	6	14	10	32	28	27	25	18	21
Peninsula Point Fire Station	Vehicle	22	25	4	7	3	7	6	8	5	8	19	15	27	23	32	30	19	22
Alaska Marine Highway Fire Station	Vehicle	20	23	5	8	4	8	4	6	3	6	15	11	31	27	28	26	18	20
Main Street Fire Station	Vehicle	25	28	10	13	9	13	9	11	8	11	10	6	36	32	29	27	22	25
Point Higgins	Vehicle	32	37	16	19	14	19	16	20	14	17	33	28	40	34	45	41	47	34
Ketchikan Central Business District (Mile Post 0)	Vehicle	30	32	14	17	12	17	11	15	11	14	12	7	40	34	33	29	25	29
	Pedestrian	76	138	124	174	111	174	95	145	82	132	139	70	198	123	95	54	75	133
Ward Cove (Post Office)	Bicycle	37	56	38	52	34	52	29	43	25	40	42	21	75	53	45	33	34	52
	Vehicle	25	30	8	11	6	11	9	13	7	10	26	21	32	26	38	34	31	27
Carlanna Creek	Pedestrian	111	173	109	159	96	159	132	182	90	140	284	215	148	73	180	139	110	168
	Bicycle	47	66	34	48	30	48	40	54	27	42	86	65	59	37	70	58	44	62
	Vehicle	19	24	6	9	4	9	3	7	3	6	20	15	32	26	32	28	17	21
	Pedestrian	21	83	69	119	56	119	42	92	31	81	194	125	143	68	90	49	20	78
	Bicycle	20	39	21	35	17	35	13	27	9	24	59	38	58	36	43	31	17	35

Estimated travel times are from various locations on Revillagigedo Island to two locations on Gravina Island: the airport terminal and the developable lands.

Project Alternatives:

- No-Build: Continuation of Existing Ferry Service Only
- C3(a): 200-foot Bridge from Signal Road
- C3(b): 120-foot Bridge from Signal Road
- C4: 200-foot Bridge from Cambria Drive Area

- D1: 120-foot Bridge from Tongass Avenue
- F3: 200-foot and 60-foot Bridges Across Pennock Island
- G2: (Northern) Ferry from Peninsula Point
- G3: (Southern) Ferry from Downtown Ketchikan
- G4: New Ferry Adjacent to Existing Ferry

3.2 Alternative C3(a) Impacts

Alternative C3(a) is a bridge 200 feet high from Signal Road to Gravina Island that would replace the existing ferry service.

3.2.1 Neighborhood and Community Character Impacts

If Alternative C3(a) is built between Revillagigedo and Gravina islands, the current airport ferry service between the islands would no longer be available to residents, and the area would lose some of its uniqueness. The Revillagigedo neighborhoods along the hillside between Signal Road and the bridge would be adversely impacted because the alignment would traverse the hillside east of some residential properties in the Baker Street/Bucey Avenue neighborhood—this neighborhood could lose some of its open areas and sidewalks and, therefore, some of the neighborhood cohesiveness. Along the hillside parallel to Tongass Avenue, the construction right-of-way would require acquisition of small residential properties along Baker Street North and Bucey Avenue North, but no relocation of residences. There is one residence where the alignment crosses Tongass Avenue that would likely have to be relocated.

3.2.2 Changes in Travel Patterns and Accessibility

People coming from downtown would travel approximately 1.5 miles further north of the current airport ferry terminal to reach the bridge crossing. For vehicles, the travel pattern would change only for those living between the ferry terminal and the new bridge. For pedestrians and bicyclists, access to the recreation opportunities and new developable land available on Gravina Island would be gained by walking or riding over the bridge rather than using the airport ferry. Depending on the starting location, this alternative might be more convenient for pedestrians and bicyclists than the existing ferry. Bicyclists and pedestrians would be impacted by the longer travel distance using the bridge rather than walking onto and riding the ferry across the Tongass Narrows—pedestrians would be affected more than bicyclists because of the longer travel time. Convenience would likely increase for all modes of travel as a result of the more direct, unrestricted access provided by this alternative.

3.2.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve considerably with the 24-hour access provided by a bridge. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island—this is especially important for emergencies that occur after ferry operating hours or during times of severe weather.

3.3 Alternative C3(b) Impacts

Alternative C3(b) is a bridge 120 feet high from Signal Road to Gravina Island that would replace the existing ferry service.

3.3.1 Neighborhood and Community Character Impacts

If Alternative C3(b) is built between Revillagigedo and Gravina islands, the current airport ferry service between the islands would no longer be available to residents, and the area would lose some of its uniqueness. The construction right-of-way would encroach upon residential properties and would potentially require the relocation of two residences on the hillside. The proposed alignment of Alternative C3(b) would not require the relocation of any other residences.

3.3.2 Changes in Travel Patterns and Accessibility

People coming from downtown would travel a few miles further north of the current ferry terminal to reach the bridge crossing. For vehicles, the travel pattern would change only for those living between the ferry terminal and the new bridge. The residential neighborhoods along the hillside would be impacted because the bridge would traverse the hillside. For pedestrians and bicyclists, access to the recreational and new developable land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across Tongass Narrows on the ferry. Depending on the starting location, this alternative might be more convenient for pedestrians and bicyclists than the existing ferry. Bicyclists and pedestrians would be impacted by the longer travel distance using the bridge rather than walking onto and riding across on the ferry—pedestrians would be affected more than bicyclists because of the longer travel time. This alternative would substantially improve access to Gravina Island because a 24-hour bridge access will be more convenient than a ferry.

3.3.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve considerably with the 24-hour access provided by a bridge. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island.

3.4 Alternative C4 Impacts

Alternative C4 is a bridge 200 feet high from the Cambria Drive area to Gravina Island that replaces the existing ferry service.

3.4.1 Neighborhood and Community Character Impacts

If Alternative C4 is built between Revillagigedo and Gravina islands, the current airport ferry service between the islands would no longer be available to residents, and the area would lose some of its uniqueness. Some residential areas on Revillagigedo Island would be impacted by this alternative because the connection to Tongass Avenue north of Cambria Drive would increase traffic. The intersection of C4 and Tongass Avenue would be directly north of a residential property on Tongass Avenue—the right-of-way would be within the residential property and could require relocation of the residence. The construction of C4 could also affect the view and visual environment enjoyed by the neighborhood.

3.4.2 Changes in Travel Patterns and Accessibility

Some businesses and industrial areas on Revillagigedo Island would be impacted because land would need to be acquired for this alternative (see *Land Use Impacts Technical Memorandum DRAFT*, HDR Alaska, October, 2001 for more information). Travel patterns would only be altered slightly under this alternative. For pedestrians and bicyclists, access to the recreational and new developable land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across on the ferry. Depending on the starting location, this alternative might be more convenient for pedestrians and bicyclists than the existing ferry. Bicyclists and pedestrians would be impacted by the longer travel distance using the bridge rather than walking onto the ferry and riding across Tongass Narrows—pedestrians would be affected more than bicyclists because of the longer travel time. This alternative would substantially improve access to Gravina Island because a 24-hour bridge access will be more convenient than a ferry.

3.4.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve considerably with the 24-hour access provided by a bridge. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island.

3.5 Alternative D1 Impacts

Alternative D1 is a bridge 120 feet high from Tongass Avenue to Gravina Island that would replace the existing ferry service.

3.5.1 Neighborhood and Community Character Impacts

If Alternative D1 is built between Revillagigedo and Gravina islands, the current airport ferry service between the islands would no longer be available to residents, and the area would lose some of its uniqueness. Increased traffic and noise levels would impact some residential areas where the bridge connects to Revillagigedo Island. The right-of-way at the intersection of Tongass Avenue and Cambria Drive would be within the two residential properties and could require relocation of one or both of the residences. The new Cambria neighborhood could also be negatively affected.

3.5.2 Changes in Travel Patterns and Accessibility

Some residences east of Tongass Avenue would be impacted by the new bridge and would have to be acquired (see *Land Use Impacts Technical Memorandum DRAFT*, HDR Alaska, October, 2001 for more information). Travel patterns would only be altered slightly under this alternative because of its proximity to the current ferry terminal. For pedestrians and bicyclists, access to the recreational and new developable land available on Gravina Island would be gained by walking or riding over the bridge rather than riding across Tongass Narrows on the ferry. Depending on the starting location, this alternative might be more convenient for pedestrians and bicyclists than the existing ferry. Bicyclists and pedestrians would be impacted by the longer travel distance

using the bridge rather than walking onto and riding across on the ferry—pedestrians would be affected more than bicyclists because of the longer travel time. This alternative would substantially improve access to Gravina Island due to decreased travel times and more convenient accessibility.

3.5.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve considerably with the 24-hour access provided by a bridge. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island.

3.6 Alternative F3 Impacts

Alternative F3 would build 2 bridges: one bridge 60 feet high from Revillagigedo Island to Pennock Island, and another bridge, 200 feet high, from Pennock Island to Gravina Island. These bridges would replace the existing ferry access to Gravina Island.

3.6.1 Neighborhood and Community Character Impacts

If Alternative F3 is built between Revillagigedo, Gravina, and Pennock islands, the existing airport ferry service would no longer be available to residents. Also, private skiffs would no longer be the only means of access for many, so the area would lose some of its uniqueness. Many of the Pennock Island and Gravina Island (Clam Cove) residents are former residents of the City of Ketchikan, and were attracted to the islands by their rural and more self-sufficient lifestyle. With easier access to Pennock Island and Gravina Island, subsistence issues might develop because more subsistence harvesters would be competing for the existing resources. Extensive efforts were made to obtain input from Pennock and Gravina Island neighborhood residents to determine public opinion on the impacts of this alternative—comments were offered both in opposition and support of Alternative F3 (Gravina Access Project Pennock Island and Clam Cove Meetings, May 23 and 24, 2001). Increased noise and traffic levels would also impact residential areas near the bridges, and, as a result, property values might decline.

3.6.2 Changes in Travel Patterns and Accessibility

Travel patterns and user convenience would be significantly changed by this alternative. People coming from north of the bridge takeoff on Revillagigedo Island would have to travel much farther south to access the bridge than to access the existing ferry service. For pedestrians and bicyclists who live north of town (i.e., Ward Cove), the increased travel times to the new bridge would make it more difficult for them to access the recreational areas on Gravina Island. Pennock Island residents, whose only current access to Gravina and Revillagigedo islands is by private skiff, would benefit significantly because they could bicycle or walk over the new bridges to the other islands. This alternative would improve access to both Gravina Island and Pennock Island for motorists, but would most likely negatively impact pedestrians and bicyclists because of the location of the alternative—pedestrians would be affected more than bicyclists because of the longer travel time.

3.6.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve considerably with the 24-hour access provided by a bridge. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island.

3.7 Alternative G2 Impacts

Alternative G2 would implement new ferry service from Peninsula Point (the “northern” ferry), and the existing ferry service to the airport would continue.

3.7.1 Neighborhood and Community Character Impacts

Alternative G2 would not change the character of the community because it would be a continuation of the current ferry service access to Gravina Island. No residential areas would be directly affected by this alternative.

3.7.2 Changes in Travel Patterns and Accessibility

Travel patterns would be changed by the location of this alternative. People coming from south of the existing ferry terminal would have to travel much farther north to access the new ferry terminal; however, the current ferry will still be in operation and available for use. For residents living north of town, the new ferry terminal would be closer than the existing ferry and access to Gravina Island would be more convenient. For most pedestrians and bicyclists, access to the recreational land on Gravina Island would be similar to current access. For pedestrians and bicyclists who live south of town, however, the longer travel times would make this alternative more difficult—with pedestrians being more negatively affected than bicyclists. Because of the roadway loop on Gravina Island to approach the airport terminal with this alternative, airport users would probably continue to use the existing ferry service, and the new ferry route would be used to access the developable land. This alternative would improve access to Gravina Island because the schedule would complement the existing ferry service—a ferry would be available more frequently from one ferry terminal or the other.

3.7.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve with the additional ferry service. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island with an additional ferry, but access (as with the existing ferry) would still be unavailable during non-operating hours or severe weather.

3.8 Alternative G3 Impacts

Alternative G3 would implement new ferry service from the downtown Ketchikan area (the “southern” ferry) as well as continuing the existing ferry service.

3.8.1 Neighborhood and Community Character Impacts

Alternative G3 would not change the character of the community because it would be a continuation of the current ferry service access. No residential areas would be directly affected by this alternative.

3.8.2 Changes in Travel Patterns and Accessibility

Travel patterns would change for many users because of the location of this alternative, especially for those who live between the current ferry terminal and the proposed terminal to the south. People coming from the north would have to travel farther south to access the new ferry terminal, but downtown residents would be closer. For residents living south of town, this ferry would be closer than the existing ferry for access to Gravina Island and the airport. Access to recreational land available on Gravina Island would be similar to what is available now. The longer travel times would make the trip more difficult for pedestrians and bicyclists who live north of town, but travel times would be shorter for those who live south of the current ferry system—pedestrians would be more negatively affected than bicyclists. This alternative would improve access to Gravina Island because the schedule would complement the existing ferry service—a ferry would be available more frequently from one terminal or the other.

3.8.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island is the increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve with the additional ferry service. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island, but access (as with the existing ferry) would still be unavailable during non-operating hours.

3.9 Alternative G4 Impacts

Alternative G4 is an expansion of the current ferry service, with new ferry terminals adjacent to the existing terminals and a pair of new ferry vessels.

3.9.1 Neighborhood and Community Character Impacts

Alternative G4 would not change the character of the community because it would be a continuation of the current ferry service access. No residential areas would be directly affected by this alternative.

3.9.2 Changes in Travel Patterns and Accessibility

Travel patterns would not change at all because this alternative proposes two new ferry terminals adjacent to the existing airport ferry terminals. Pedestrians and bicyclists would not be impacted

by the location of the alternative, and the mode of travel across the Tongass Narrows would not change. Access to recreational land available on Gravina Island would be similar to what is available now. Access to Gravina Island would be more convenient for motorists, pedestrians, and bicyclists because the ferry schedules would be coordinated to complement each other—a ferry would therefore be available more frequently throughout the day from one terminal or the other.

3.9.3 Impacts on Public Services

A likely social impact of improved access to Gravina Island would be increased demand for public services such as fire and police protection. As development occurs and the residential population grows, so would the need for these important services. Accessibility to public services such as fire, police, and hospitals would improve with the additional ferry service. It would be easier for residents of Gravina Island to travel to Revillagigedo Island for necessary medical services, and it would be easier for emergency personnel to travel to Gravina Island, but access (as with the existing ferry) would still be unavailable during non-operating hours. The schedule of the new ferry would be coordinated to complement the schedule of the existing ferry, so that ferry service would be available more frequently throughout the day.

4.0 References

- Alaska Department of Community and Economic Development. 2001. Community Information Database Online. http://www.dced.state.ak.us/mra/CF_BLOCK.htm.
- Alaska Department of Community and Economic Development. 2001. Community Information Database Online. http://www.dced.state.ak.us/mra/CF_COMDB.htm.
- Alaska Department of Fish and Game Division of Subsistence. 2001. www.state.ak.us/local/pages/FISH.GAME/subsist/subhome.htm.
- Alaska Department of Labor and Workforce Development Research Analysis Section. 2001. <http://www.labor.state.ak.us/research/research.htm>.
- FHWA Order "FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations:" [<http://www.fhwa.dot.gov/environment/guidebook/vol2/doc16a.pdf>].
- Federal Register, February 16, 1994. Executive Order 12898 (February 11, 1994), *Federal Action to Address Environmental Justice in Minority Populations and Low Income Populations*. Vol. 59, No. 32.
- Cultural Resources Consultants. October 2001. *Archeological Reconnaissance Survey (Draft)*.
- HDR Alaska. October, 2001. *Land Use Impacts Technical Memorandum DRAFT*.
- HDR Alaska. May 23 and 24, 2001. Gravina Access Project Pennock Island and Clam Cove Public Meetings.
- HDR Alaska. February, 2001. *The Land Use Focus Group Summary DRAFT*.
- HDR Alaska. April 2000. *Existing Conditions Demographic and Socioeconomic Analysis*.
- Ketchikan Gateway Borough. 2001. *1996 Comprehensive Plan*.
- Ketchikan Gateway Borough. May 6, 1985. *The Pennock and Gravina Island Neighborhood Plan*.
- Personal Communication. October 23, 2001. Telephone conversation between Kristen Maines, HDR, and John Hill, Ketchikan Gateway Borough planner.
- U.S. Census Bureau. 2001. Topologically Integrated Geographic Encoding and Referencing System. Estimated data for 1990 and 2000. <http://www.census.gov/geo/www/tiger/>.
- U.S. Environmental Protection Agency (EPA). April 1988. *National Environmental Policy Act (NEPA) Compliance Analysis*.