APPENDIX L
NOISE TECHNICAL REPORT

JUNEAU ACCESS IMPROVEMENTS
SUPPLEMENTAL DRAFT
ENVIRONMENTAL IMPACT STATEMENT

STATE PROJECT NUMBER: 71100
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Prepared for

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
AMHS	Alaska Marine Highway System
Ambient Noise Level	The prevailing average noise level in an area from all sources, near and far
CFR	Code of Federal Regulations
Decibel	A unit of measurement (dB) on a logarithmic scale which describes the magnitude of a particular quantity of sound pressure with respect to a standard reference pressure value of 20 microPascals.
dBA	Decibels, A-weighted. "A-weighted decibels" represent the sound level of a range of frequencies modified (i.e., "weighted") in a prescribed manner representative of the human hearing response to common sounds.
DOT&PF	(Alaska) Department of Transportation and Public Facilities
EIS	Environmental Impact Statement
FHWA	(U.S. Department of Transportation) Federal Highway Administration
Frequency	The number of times per second that a sine wave of sound repeats itself, or that the sine waves of a vibrating object repeat themselves. Frequency is expressed in Hertz, or cycles per second, and is perceived as pitch.
FVF	fast vehicle ferry
GPS	global positioning system
k-factor	noise prediction model calibration factor
L_{eq}	Energy equivalent sound level -- the equivalent steady-state sound level that, in a stated period of time, contains the same acoustical energy as a time-varying sound during the same period. L_{eq} is computed by summing the noise energy over the stated period using mathematical integration.
$L_{eq}(h)$	Energy equivalent sound level for 1 hour.
L_x	Statistical Descriptor. Sound level equaled or exceeded "x" percent of the time. For example, L_{10} is the level equaled or exceeded 10 percent of the time.
LT	long-term
NEPA	National Environmental Policy Act
Noise	unwanted sound
PNHV	Peak-Noise-Hour [number of] Vehicles
Receiver	A term used for a location potentially affected by noise. Receivers refer to both modeling locations and monitoring locations, and are chosen because of their sensitivity to noise and/or their representative location. Also, "receptor".
ST	short-term
TNM®	Traffic Noise Model®
USEPA	United States Environmental Protection Agency
USFS	United States Department of Agriculture Forest Service

EXECUTIVE SUMMARY

This report presents the results of the noise analysis conducted to assess the potential for noise impacts from motor vehicles and construction-related activities for each of the Juneau Access Improvements Project alternatives. This report also contains the preliminary assessment of the need for traffic and/or construction noise abatement.

The land adjacent to the majority of the new highway alignment in any build alternative is undeveloped, with dispersed recreational uses. As the highway alignments for the alternatives approach Haines, Skagway, and Juneau, the land uses become more diversified and include noise-sensitive receptors such as residences, motels/hotels, recreation areas, parks, schools, places of worship, and hospitals.

A combination of attended short-term (ST) and unattended long-term (LT) sound level measurements were conducted at representative noise-sensitive receptor locations. Short-term measurements (with traffic counts) of less than one-hour duration were conducted at 19 locations, and long-term measurements of approximately 24-hours duration were conducted at 6 locations. Measured noise levels varied substantially, from 35 A-weighted decibels (dBA) energy equivalent sound level (L_{eq}) at the end of Mud Bay Road (ST-1) south of Haines to 70 dBA L_{eq} adjacent to Glacier Highway and Egan Drive near downtown Juneau (ST-14).

The existing and future traffic noise levels were predicted with Federal Highway Administration (FHWA) computer modeling programs. Data from the noise measurements, combined with existing Alaska Department of Transportation and Public Facilities (DOT&PF) data and recent traffic forecasts served as input to the computer models.

Direct Impacts

The only sensitive receptor that would receive direct traffic noise from project build alternatives in the Juneau area would be the campground at Echo Cove. All other sensitive receptors are located south of Echo Cove outside of the limits of any of the project alternatives that include new highway segments (i.e., Alternatives 2 through 2C, 3, 4B, and 4D). Project-related traffic noise would increase noise at the Echo Cove campground by 1 to 2 dBA, which is not perceptible to the average human ear.

None of the project alternatives would create a direct noise impact in the Haines area. Alternatives 2 through 2C and 4A through 4D would not involve any highway construction in the Haines area. Alternative 3 would have highway construction in the vicinity of Haines; however, this would not result in a noise impact because of the low forecasted traffic volumes and the distance between the highway and noise-sensitive land uses.

Modeling indicates that a highway for Alternatives 2, 2A, and 2C descending the slope into Skagway would not result in a noise impact to sensitive receptors in that community. However, assuming that all traffic from the Klondike and East Lynn Canal highways would enter and leave Skagway, peak-noise-hour sound levels from traffic on Alternatives 2, 2A, and 2C in combination with projected local traffic, would impact the exteriors of three houses along Main Street north of 22nd Avenue. Also, the interior peak-noise-hour sound level at the daycare center on the southwest corner of 23rd Avenue and Main Street would increase 3 to 4 dBA over the existing level of 50 dBA L_{eq} and the residence on the southeast corner of 23rd Avenue and Main Street would receive interior peak-noise-hour sound levels from traffic of over 50 dBA L_{eq}. Noise barriers for these receptors would not be feasible or reasonable based on estimated noise level reduction provided by the barriers and barrier cost.

Traffic noise is not the only noise source in the area of these five receptors. Based on long-term noise measures taken on State Street and 22nd Avenue, non-traffic noise (trains and aircraft) is the predominant noise source and is currently at levels approximately equal to predicted 30-year peak-noise-hour sound levels modeled for traffic.

Indirect Impacts

In Juneau along Egan Drive and Glacier Highway, existing traffic generates noise that impacts 103 residential units. Based on past trends in population growth, traffic volumes would increase by approximately 35 percent in Juneau, Skagway, and Haines by 2038. With this increased traffic, an additional 19 residential units would be impacted in the peak-noise-hour in 2038 under the No Action Alternative. In addition, the interior of the Juneau Christian School would have a peak-noise-hour greater than 50 dBA L_{eq}.

In most cases, noise exposure at sensitive receptors along Glacier Highway and Egan Drive with Alternatives 2 through 2C, 3, and 4A through 4D would be the same as estimated for the No Action Alternative. Two additional sensitive receptors would have an exterior peak-noise-hour at or above 65 dBA L_{eq} with Alternatives 2 through 2C relative to the No Action Alternative. The interior peak-noise-hour would be at or above 50 dBA L_{eq} at 10 additional sensitive receptors with Alternative 2 and 7 additional receptors with Alternatives 2A, 2B, and 2C relative to the No Action Alternative. With Alternative 3, one more receptor would have an exterior peak-noise-hour at or above 65 dBA L_{eq} and five more receptors would have an interior peak-noise-hour at or above 50 dBA L_{eq} when compared to the No Action Alternative. With Alternatives 4A, 4B, and 4D, one more receptor would have an exterior peak-noise-hour at or above 65 dBA L_{eq} and five more receptors would have an interior peak-noise-hour at or above 50 dBA L_{eq} relative to the No Action Alternative. For Alternative 4C, the only difference from the No Action Alternative would be that one more receptor would have an interior peak-noise-hour at or above 50 dBA L_{eq}.

Traffic increases projected for Glacier Highway with Alternative 2 would increase noise by 10 dBA during the peak-noise-hour noise at the Aldersheim Wilderness Lodge near Yankee Cove. The current (2002) peak-noise-hour sound level at the lodge is estimated to be 51 dBA L_{eq}. During the peak-noise-hour the sound level in 2038 with Alternative 2 would be 61 dBA L_{eq}.

Revision of the traffic pattern into and out of Skagway with Alternatives 2, 2A, and 2C would result in indirect noise impacts to receptors in the northeast part of the community. The new traffic pattern would result in a reduction in noise at most receptors on State Street north of 21st Avenue since fewer vehicles would use this segment of the street than under existing conditions or the No Action Alternative. Exterior peak-noise-hour sound levels from traffic would increase by 10 to 11 dBA at residences near mid-block on 21st and 22nd avenues between State and Main streets. Residences closer to State Street on 21st and 22nd avenues would have less traffic noise. Residences closer to Main Street on 21st and 22nd avenues would have more traffic noise. Long-term noise measurements in this part of Skagway indicated that non-traffic noise is the predominant noise source, and is currently at levels approximately equal to the predicted 30-year peak-noise-hour sound level for traffic.

1.0 INTRODUCTION AND PROJECT DESCRIPTION

A description of the proposed project alternatives is contained in Chapter 1. Chapter 2 describes the general noise study methodology including site selection, field measurement methodology, the selected noise model, and the noise model calibration procedure. The affected environment and the results of the ambient noise measurements taken in 2003 are provided in Chapter 3 along with federal, state, and local noise policies. Chapter 3 concludes with a description of existing traffic noise impacts.

Chapter 4 describes the direct effects of traffic noise by alternative, examines the potential impacts from construction noise and vibration and discusses noise abatement and mitigation. Chapter 5 is a list of the document's preparers, and Chapter 6 provides a list of references. Attachments A through E provide detailed background information that supports the conclusions presented herein.

1.1 Project Purpose and Need

The purpose of and need for the Juneau Access Improvements Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet the transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel time between Lynn Canal communities
- Reduce state costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

1.2 Project Description

Lynn Canal, located approximately 25 miles north of Juneau, is the waterway that connects Juneau with the cities of Haines and Skagway via the Alaska Marine Highway System (AMHS). At present there is no roadway connecting these three cities. The Glacier Highway originates in Juneau and ends at Echo Cove, approximately 40.5 miles to the northwest.

As required by the National Environmental Policy Act (NEPA), the Supplemental Draft Environmental Impact Statement (SDEIS) for the Juneau Access Improvements Project considers the following reasonable alternatives:

Alternative 1 – No Action Alternative – 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 (Preferred) – East Lynn Canal Highway with Katzehin Ferry 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 ferry service would end at Auke Bay, and the existing Haines/Skagway shuttle service would be discontinued. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2A – East Lynn Canal Highway with Berners Bay Shuttles – 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 ferry service would end at Auke Bay, and the existing Haines/Skagway shuttle service would be discontinued. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2B – East Lynn Canal Highway to Katzehin with 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 Katzehin, construct a ferry terminal at the end of the new highway, and run shuttle ferries to both Skagway and Haines from the Katzehin Ferry Terminal. The Haines to Skagway shuttle service would continue to operate, two new shuttle ferries would be constructed, and the *M/V Aurora* would be part of the three-vessel system. Mainline AMHS service would end at Auke Bay. The *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 2C – East Lynn Canal Highway with Haines/Skagway Shuttle – 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 at Katzehin. Mainline ferry service would end at Auke Bay, and the *M/V Fairweather* would be redeployed on other AMHS routes.

Alternative 3 – West Lynn Canal Highway – This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay. Ferry terminals would be constructed at Sawmill Cove and William Henry Bay on the west shore of Lynn Canal, and shuttle ferries would operate between the two terminals. A 38.9-mile highway would be constructed between William Henry Bay and 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 be redeployed on other AMHS routes.

Alternatives 4A through 4D – Marine Options – 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 – FVF Shuttle Service from Auke Bay – This alternative would construct two FVFs to provide daily summer service from Auke Bay to Haines/Skagway.

Alternative 4B – FVF Shuttle Service from Berners Bay – This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. Two FVFs would be constructed to provide daily service from Sawmill Cove to Haines/Skagway in the summer and from Auke Bay to Haines/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/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 alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay, where a ferry terminal would be constructed. Two conventional monohull vessels would be constructed to provide daily service from Sawmill Cove to Haines/Skagway in the summer and alternating day service from Auke Bay to Haines/Skagway in the winter.

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2.0 STUDIES AND COORDINATION

The *1997 Juneau Access Draft Environmental Impact Statement* utilized a 1994 noise study that included brief noise measurements at six locations (FPE/Roen Engineers, 1994). Comments received on the 1997 Draft EIS identified the need to conduct additional noise analysis. In addition, noise analytical methods have changed since the 1994 noise study. In response to comments and the new analytical tools available, a new noise analysis was conducted for the Supplemental Draft EIS. Baseline ambient noise measurements were conducted at 24 locations in 2003 along the alternative alignments. Sections 2.1 through 2.5 describe the noise measurement methodology. Sections 2.6 and 2.7 discuss the peak-noise-hour adjustment and traffic noise prediction method, respectively.

2.1 Site Selection

Ambient and traffic noise within the project area was measured and modeled for representative noise-sensitive uses that abut or have an unobstructed acoustical "view" of the proposed highway alignments or marine routes. Site selection of receptors to include in the noise analysis was primarily based on highest anticipated noise levels or potential for substantial increase in the existing ambient noise level due to any of the alternatives at sites frequently used by people. Noise abatement is only considered where noise impacts are predicted, where frequent human use occurs, and when a lowered noise level would be of benefit. The noise analysis focused on exterior areas since FHWA regulations state that primary consideration of noise abatement be given to exterior areas with interior noise abatement considered when appropriate. In most situations, if the exterior area can be protected, the interior will also be protected. Interior use applies mostly to hospitals and schools, but also includes residences and other noise-sensitive uses where exterior areas do not receive frequent human use.

The measured and modeled locations used for the noise study are shown on Figures 1 through 14. Existing sound levels were measured at seven locations in the Haines area, seven locations in Skagway, at the USFS cabin in Berners Bay and at nine locations between Juneau and Echo Cove.

2.2 Ambient Sound Survey

The existing sound level field survey was conducted from Wednesday, September 10, 2003, through Tuesday, September 16, 2003. Combinations of attended short-term and unattended long-term sound level measurements were conducted at noise-sensitive receptor locations. Short-term measurements of less than one-hour duration were conducted at 19 locations, and long-term measurements of approximately 24-hours duration were attempted at six locations. Rain created technical problems with some of the long-term monitoring equipment; hence, a full 24 hours of reliable data was not obtained at all long-term locations. All noise measurements were conducted outdoors; measurements of interior noise levels or exterior-to-interior noise reduction were not conducted as part of this study. Instead, FHWA exterior-to-interior noise reduction values were used. Thus, FHWA policy guidance (FHWA, 1995) was used in the analysis. The six long-term monitor locations are listed below.

- LT-1 Side-yard of residence at 1186 Lutak Road, Haines. Location is north of town, south of Lutak ferry terminal, overlooking Chilkoot Inlet.
- LT-2 Near residence at end of Mud Bay Road, Haines. Location is overlooking Chilkoot Inlet and opposite southern end of Katzehin Delta.

- LT-3 Backyard of residence at 420 22nd Avenue, Skagway. Location is at northerly portion of town, adjacent to State Street and near rail yard.
- LT-4 Residence at 12th Avenue and Broadway, Skagway. Midtown location, one block west of railway line.
- LT-5 On observation and "patio" deck of residence at 19051 Glacier Highway, Juneau. The deck is at-grade with highway (north of Lena Cove).
- LT-6 Front porch, play yard and garden area of residence at 10785 Glacier Highway, Auke Bay. Location is east of Fritz Cove Road, west of Mendenhall River.

The short-term locations and the results of the short-term monitoring are described in Chapter 3.

2.3 Field Measurement Equipment and Procedures

The instruments used for both the short-term and long-term sound level measurements were four Larson Davis Model 820 Precision (Type 1) integrating sound level meters. The laboratory calibration of the instruments was verified in the field before and after each measurement period using a Larson Davis CAL200 reference acoustical calibrator. The accuracy of the acoustical calibrator is maintained through a program established by the manufacturer, and is traceable to the National Institute of Standards and Technology. The sound measurement instruments meet the requirements of the American National Standards Institute and the International Electrotechnical Commission Publications 804 and 651.

For the short-term sound level measurements, a sound level meter was mounted on a tripod so that the microphone was five feet above the ground. The microphone was fitted with a windscreen. For the long-term sound level measurements, the sound level meter was locked in a small steel container with the microphone and windscreen protruding at least four inches from the top of the container. The container was attached to a fence or tree or other structure such that the microphone was at least five feet above the ground. The sound level meter was placed above or more than 15 feet from the nearest acoustically reflective surface (e.g., wall) wherever possible.

For all measurements, field personnel completed a field measurement data sheet. For each short-term measurement, the field measurement data sheet lists the site location and description, weather conditions, calibration parameters, noise level data, sound sources and traffic counts (if applicable). Photographs and a Global Positioning System (GPS) measurement were also taken at each location. For the long-term measurements, the field measurement data sheet includes the same information as for the short-term measurements except noise level data and traffic counts. For a long-term measurement, the sound sources and weather conditions listed on the field measurement data sheet are typically the sources and conditions extant during sound level meter installation.

Refer to Attachment A for a complete list of the instruments used in the study to measure weather, traffic, and position.

2.4 Traffic Counts and Vehicle Speeds

Where applicable, field personnel counted traffic by vehicle classification (i.e., the number of automobiles, medium trucks, heavy trucks, buses, and motorcycles) via manual (hand-held) counters. Vehicle speeds were estimated and the posted speed noted.

2.5 Meteorology

Meteorological data was obtained in a distributed manner as opposed to setting up a single central measurement station. Using the hand-held instruments, described in Attachment A, field personnel made objective measurements and subjective observations of weather conditions (e.g., temperature, relative humidity, wind speed and direction and cloud cover were recorded on data sheets for each location) during the measurement periods at each location.

2.6 Peak-Noise-Hour Adjustment

Continuous 24-hour (i.e., long-term) measurements were obtained to show the hour-to-hour changes in traffic noise level occurring during a typical 24-hour daily period or to obtain the diurnal variation in ambient noise level for areas with no existing highway. This information is used to provide a peak-noise-hour adjustment to the computer prediction model, if necessary, for each short-term measurement location near an existing highway.

2.7 Traffic Noise Prediction Method

Traffic noise level predictions were made with Federal Highway Administrations (FHWA) Traffic Noise Model (TNM®) Version 2.1 (FHWA, 2003) Version 2.5 (FHWA, 2004) and TNM® Version 1.0 Lookup Program (FHWA, 1998). TNM® Version 1.0 Lookup Program is a screening-level version of TNM® using the same algorithms as TNM® Version 1.0. TNM® Version 1.0 Lookup Program was utilized to calculate the noise levels at specific distances from the highway centerlines for the existing and proposed highway links. Both models use national Reference Mean Emission Levels for several types of vehicles – automobiles, medium trucks, heavy trucks, buses and motorcycles.

TNM® Versions 2.1 and 2.5 were used for selected receivers with noise levels found to approach or exceed DOT&PF / FHWA Noise Abatement Criteria in Juneau, as well as at several locations in Skagway and south of Haines. The alternative alignments and topography were imported electronically into TNM® Version 2.1. The measured and additional modeled-only receiver locations were identified using the GPS measurements, project design layouts, aerial photographs and field observations. Other input parameters used in this study for modeling traffic noise included traffic volumes, vehicle type percentages, and route speeds. These inputs and the model output are discussed in greater detail in Chapters 3 and 4.

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3.0 AFFECTED NOISE ENVIRONMENT

Because the existing noise environment is heavily dependent on use of the land, land use in the study area is described in Section 3.1. Section 3.2 presents the results of the noise measurements, and Section 3.3 discusses noise model calibration. Noise policies, procedures and guidelines from federal and state sources are presented in Section 3.4. Section 3.5 presents local noise ordinances. Section 3.6 discusses existing noise levels and impacts.

3.1 Land Use

Most of the land on the east and west sides of Lynn Canal adjacent to the highway alignments for Alternatives 2 through 2C, 3, 4B and 4D is undeveloped Tongass National Forest land. On the west side of Lynn Canal, most of the land from just south of Davidson Glacier to the Chilkat River/Inlet that is crossed by the alignment for Alternative 3 is in the Haines State Forest, and these lands are not developed. Generally, as the alternative alignments approach the communities of Haines, Skagway, and Juneau, land uses become more diversified and include noise-sensitive land uses such as residences, motels/hotels, recreation areas, parks, schools, churches and hospitals.

In the Juneau area, from downtown Juneau to Auke Bay the existing Glacier Highway is well traveled with dense development adjacent to the highway. In many locations, residences abut Glacier Highway, or have direct line-of-sight to the highway with no intervening structures. As Glacier Highway continues northerly from Auke Bay towards Echo Cove, development density decreases and sensitive land uses that abut the highway are predominantly scattered residences. There are also recreational uses adjacent to Glacier Highway north of Auke Bay including Eagle Beach State Campground and camping at Echo Cove.

Along the east side of the Lynn Canal, north of Echo Cove to Skagway, the land is undeveloped, with the exception of scattered cabins including a USFS recreational cabin at Berners Bay. This land is used primarily for dispersed recreation. The same is true on the west side of the Lynn Canal from William Henry Bay to the Chilkat River/Inlet.

In Haines, the downtown area is mostly commercial with some residences, motels, the public library, and local schools. Most of the residences are scattered over a wide area from the end of Mud Bay Road, southerly of Haines, to the Lutak Ferry Terminal north of town. Residences abut the existing roadway into downtown Haines from the point where the Alternative 3 alignment intersects with Mud Bay Road.

In Skagway, the town is confined almost entirely to the valley floor due to steep topography, and is bounded by the railroad to the east, the airport to the west, and the docks to the south. The town has many historical structures, some owned by the National Park Service, which are located predominantly in the area bounded by Spring Street and State Street and between First Avenue and Seventh Avenue. Residences abut the proposed alignment for Alternatives 2, 2A, and 2C where it intersects with 23rd Avenue. Further information on land use in the project areas is provided in the *Land Use and Coastal Management Technical Report*.

3.2 Measurement Results

The terms and metrics associated with noise relative to this Supplemental Draft EIS can be complex and are discussed in detail in Attachment B. In general and in this document, noise or sound levels are expressed in terms of A-weighted decibels (dBA).

In conformance with FHWA guidelines and professional practice, traffic noise is primarily evaluated in terms of hourly equivalent sound level (L_{eq}(h)). L_{eq} is a time-average sound level that (logarithmically) averages sound levels at a location during the period of interest. Thus, L_{eq}(h) is the continuous steady-state noise level that would have the same total acoustical energy as the real fluctuating noise measured during the specified hour.

"Raw" long-term and short-term measurement data are contained in Attachments C and D, respectively. The weather conditions during measurements were noted on the field measurement data sheets. Meteorological conditions during most of the short-term measurements were generally favorable for conducting noise measurements and there was no adverse effect on the measurement accuracy due to the weather. During some of the short-term measurements there was light rain that may have very slightly affected the noise characteristics of the vehicular traffic. Meteorological conditions caused some equipment failures during the long-term measurements; however, the measurement data that is provided was carefully evaluated and is believed to be accurate. Attachments C and D contain detailed weather information.

Figure 15 shows the measured L_{eq}(h) at LT-1 and LT-2 in the Haines area from 11:00 on Wednesday, September 10, 2003, until 02:00 on Thursday, September 11, 2003[1]. LT-1 was located approximately 100 feet from Lutak Road but was shielded from the roadway by structures on the property. The sound sources at this location during set-up included traffic, boats, birds, distant aircraft, and rain.

LT-2 was located at the edge of a dirt road extending from the end of Mud Bay Road, near the shoreline. The sound sources noted at this location were the lapping water, occasional vehicles on the gravel road, distant boats, and distant aircraft.

Although not geographically similar, the measured sound levels at LT-1 and LT-2 tracked each other until 17:00, when the sound levels at LT-1 increased, probably due to increased traffic on Lutak Road. The increasing noise levels at LT-1 around 17:00, which then decreased after 19:00, are typical of evening "rush hour" as people return home at the end of the day. At LT-2, which was not influenced by a highway, the noise levels decreased after 17:00 until 22:00. At 22:00 noise levels increased by 10 dBA and increased another 10 dBA to 55 dBA L_{eq}(h) from 00:00 to 01:00 on September 11. These changes at LT-2 could have been caused by the weather (wind or rain), nocturnal insects or wildlife. At both locations, the meters did not collect 24 hours of data because of equipment malfunction due to moisture caused by rain.

Figure 16 shows the measured L_{eq}(h) in Skagway at LT-3 and LT-4 from 11:00 on Friday, September 12, 2003, to 13:00 on Saturday, September 13, 2003. LT-3 was located at a residence on 22nd Avenue and State Street, close to where the proposed alignment for Alternatives 2, 2A, and 2C would connect into the existing roadway system. The sound sources noted during set-up were traffic, railroad activity, aircraft, rustling leaves, distant noise due to lawn maintenance activities, and distant ship's horns.

LT-4, located at a residence at Broadway and 12th Avenue, was representative of sensitive receptors that are not on the main traveled way through town and that would have a view of the proposed highway. The sound sources noted during set-up were traffic, rustling leaves, railroad activity, and aircraft.

[1] This report utilizes 24-hour time format (e.g., midnight is denoted as 00:00 and noon is denoted as 12:00).

The measured sound levels at LT-3 and LT-4 follow the same general trend with decreasing sound levels in the evening, "quiet" sound levels at night, and increased sound levels during the daytime. LT-3 has generally higher sound levels than LT-4 because LT-3 is adjacent to State Street, which is a busier roadway than Broadway, and because LT-3 is closer to the Skagway rail yard. Sound level maximums that occur at both sites simultaneously are probably due to trains with some contribution from aircraft. Localized activity close to each site creates higher sound levels only at the associated site. These increases are typically due to some form of human activity such as lawn maintenance activities, residents arriving and leaving, evening or morning "rush hour" traffic (LT-3) or railroad yard activity (near LT-3) but can occasionally come from barking dogs.

Figure 17 shows the measured L_{eq}(h) at sites LT-5 and LT-6 in the Juneau area from 16:00 on Sunday, September 14, 2003, to 15:00 on Tuesday, September 16, 2003. LT-5 was located north of Auke Bay and Lena Cove at a residence adjacent to Glacier Highway. The sound level meter was located at-grade with the highway, on the observation and "patio" deck of the residence, approximately 110 feet from the edge-of-shoulder of the highway. This location was representative of the scattered residences adjacent to Glacier Highway between Auke Bay and Echo Cove that have significantly lower traffic volumes than between Auke Bay and downtown Juneau. The sound sources observed during set-up were traffic, birds, and rain. The resident commented that there had also been helicopter activity during the measurement period, which is typical at their location.

LT-6 was located south of Auke Bay at a residence adjacent to Glacier Highway. The sound level meter was located at the façade of the house, 86 feet from the edge-of-shoulder of the highway. The dominant noise source was traffic on Glacier Highway. No other sources were noted. The measured noise levels at LT-6 are above the Noise Abatement Criteria thresholds (see Chapter 4 regarding Noise Abatement Criteria); thus, some noise-sensitive uses along Glacier Highway currently are impacted by traffic noise.

The measured sound levels at LT-5 and LT-6 follow the same diurnal trend, which is dominated by the traffic noise. LT-6 has higher noise levels than LT-5 because of the higher traffic volumes between Auke Bay and Juneau and the increased percentage of heavy trucks and buses that generally do not travel north of the ferry terminal. The measured noise levels show that the peak-traffic-noise-hour occurs between 17:00 and 18:00.

Table 1 summarizes the short-term sound level measurements conducted from September 10 to 16, 2003. The seven short-term measurements conducted at six locations in the Haines area varied from 35 dBA L_{eq} at the end of Mud Bay Road (ST-1) to 57 dBA L_{eq} at the Haines School in downtown Haines (ST-6). The duration of short-term samples for the Haines area ranged from 10 minutes to 40 minutes. The 1994 noise study reported instantaneous sound levels ranging from 38 dBA to 40 dBA (FPE/Roen Engineers, 1994) in locations similar to ST-1 (48 dBA $L_{eq,\ 10\text{-}min}$), ST-1A (35 dBA $L_{eq,\ 10\text{-}min}$), and ST-2 (49 dBA $L_{eq,\ 30\text{-}min}$).

A measurement of a Chilkat Express ferry leaving Haines recorded 56 dBA L_{eq} for a 36-second period with the boat approximately 1,800 feet away at the closest point (measured with a laser range finder).

In Skagway, the seven short-term measurements conducted at five locations varied from 44 to 70 dBA, both at location ST-7. The higher level occurred due to dogs barking next to the meter before the measurement could be stopped. The L_{50} (the statistical average) for this measurement was 57 dBA. The second highest short-term L_{eq} measured was 57 dBA at ST-9, which is located mid-block on 22nd Avenue between Main Street and State Street. For the

Skagway Historic District, the 1994 noise study reported 40-45 dBA L_{eq} with little or no activity during the day and up to 51 dBA L_{eq} with vehicle traffic activity (dispersed from the ferry) after 23:00 (FPE/Roen Engineers, 1994). With the exception of ST-7 (barking dog), the 10- to 35-minute L_{eq} measurements from the current noise study ranged from 44 dBA to 57 dBA.

At the USFS cabin in Berners Bay, the L_{eq} measured 49 dBA on the beach and 52 dBA at the cabin. The higher sound level at the cabin was due to the closer proximity of a stream, a small waterfall and the rain in the trees. The 1994 noise study had similar results for 8-minute measurements at the beach of 47 dBA L_{eq} (FPE/Roen Engineers, 1994). From Echo Cove to Juneau, the eight short-term measurements of the current noise study at seven locations varied from 43 dBA L_{eq} at the campground at Echo Cove to 70 dBA L_{eq} at 4150 Glacier Highway, overlooking Egan Drive (ST-14), near downtown Juneau.

3.3 Model Calibration

If necessary, computer models used for the noise analysis of project alternatives may be calibrated. The need for calibration is first determined by comparing measured noise levels with modeled noise levels. Differences obtained between modeled and measured noise levels may be applied to the modeled future noise levels, assuming that the source/receiver conditions would not change substantially. Differences between modeled and measured noise levels of more than 2 dBA are evaluated to determine suitable calibration factors (also known as k-factors). The k-factor additionally compensates for aspects of traffic noise generation and propagation for which the model does not account, such as pavement type and surface wear, predominant tire types, consistent meteorological effects, and topographic anomalies. As stated, model calibration techniques are only valid for cases in which the site characteristics, highway alignment, and profile are not expected to change significantly between the “measured-existing” and “after construction” conditions.

A comparison was made between noise levels measured at representative locations along the proposed highway alignment and TNM® modeling results for selected locations for which model calibration is possible (locations ST-16, LT-6, and ST-14). Agreement between the measured and modeled levels was within several tenths of a decibel; thus, no k-factor adjustments of the model were necessary and none were applied to the predicted results from TNM®.

3.4 Federal and State Policies and Procedures

This report was prepared pursuant to the FHWA and DOT&PF procedures. The FHWA policy (FHWA, 1995) including 23 CFR (Code of Federal Regulations) Part 772, and the DOT&PF Noise Abatement Policy specify Noise Abatement Criteria for noise-sensitive land uses. These criteria are presented in Table 2. In most cases, Activity Categories B and E are applied for exterior and interior environments, respectively. This project study area includes no Category A receptors.

Noise abatement must be considered when the existing or predicted future peak-noise-hour from highway traffic approaches, equals, or exceeds the Noise Abatement Criteria. FHWA allows the states to establish a definition of “approach” that is at least 1 dBA less than the Noise Abatement Criteria. DOT&PF Noise Abatement Policy define “approach” as 2 dBA less than the Noise Abatement Criteria (DOT&PF, 1996). For example, the Noise Abatement Criteria for Activity Category B is 67 dBA L_{eq}(h). Therefore, peak-noise-hour levels of 65 dBA L_{eq} are considered by DOT&PF to approach the Noise Abatement Criteria for Activity Category B. An increase in peak-noise-hour L_{eq} of 10 dBA or more is considered a substantial increase (for any

Activity Category) by DOT&PF. FHWA uses these policies and criteria to determine whether noise abatement should be considered.

In accordance with 23 CFR 772.11(a), primary consideration is given to exterior areas in determining and abating traffic noise impacts. Noise abatement is usually considered only where frequent human use occurs and a lowered noise level would be of benefit to people. Exterior noise levels take precedence in the evaluation and mitigation of traffic noise because protection of exterior areas from noise typically achieves protection of interior spaces as well.

There are cases where exterior areas of Activity Category B land uses, such as residences, that would be affected by traffic noise do not receive "frequent human use" or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents a noise impact on exterior activities. For example, in a home situated close to a roadway (e.g., 20 to 40 feet), the residents may not use the outdoor area adjacent to the road for more than coming into and out of the house, and concentrate their outdoor activities to a back yard shielded from the road by the house. In these cases, 23 CFR 772.11(b) indicates that the interior NAC (Activity Category E criterion) should be used as the basis of determining noise impacts.

In order to assess the potential for noise impact to Category E (interior Category B) receptors, the FHWA provides noise level reduction factors for various types of buildings. A noise level reduction of 10 dBA was applied to the modeled traffic noise levels for most structures with windows that open. FHWA guidance states that windows that open "shall be considered open unless there is firm knowledge that the windows are in fact kept closed almost every day of the year" (FHWA, 1995). The open windows condition correlates to a noise level reduction of 10 dBA. Section 3.6 and Chapter 4 discuss locations at which different noise level reduction values were applied.

Federal participation in noise abatement is considered for a proposed federal or federal-aid highway project for the construction of a new highway or the substantial alteration of an existing highway[2] where:

- A traffic noise impact has been identified (i.e., noise level approaches the NAC)
- The noise abatement measures will reduce the traffic noise impact
- The overall noise abatement benefits are determined to outweigh the overall adverse social, economic, and environmental effects and the costs of the noise abatement measures

The types of noise abatement measures to be considered when there is a traffic noise impact are:

- Traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive land designations)
- Alteration of horizontal and vertical alignments
- Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers

[2] Substantial alteration of an existing highway is defined as significant changes either to the horizontal or vertical alignment or increases in the number of through-traffic lanes (23 CFR 772.5[h]).

- Construction of noise barriers (including landscaping for aesthetic purposes) whether within or outside the highway right-of-way
- Acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise
- Noise insulation of public use or nonprofit institutional structures

In accordance with 23 CFR 772.13(b), federal participation in noise abatement will not normally be approved on an existing highway where activities and land uses came into existence after May 14, 1976. However, noise abatement measures may be approved for activities and land uses which came into existence after this time provided local authorities have taken measures to exercise land use control over the remaining undeveloped lands adjacent to highways in the local jurisdiction to prevent further development of incompatible activities.

In considering noise barriers for noise abatement, the following guidelines contained in the DOT&PF Noise Abatement Policy (DOT&PF, 1996), are used:

- Noise barriers will only be considered where noise impacts have been identified
- Noise abatement (e.g., noise barriers) must provide a minimum of five decibels of noise level reduction to be considered feasible

The American Association of State Highway and Transportation Officials (AASHTO) design principles shall regulate the safety and maintenance requirements for noise barriers. Noise barrier construction is not considered feasible if it creates a safety hazard or presents potential maintenance complications.

A noise barrier may be considered reasonable if the cost is no more than $25,000 per residence. A higher allowance per residence would only be considered reasonable for severely impacted noise-sensitive receptors. A “severe” noise impact is defined as a predicted (design year) sound level that would create an increase of at least 15 dBA over existing sound levels or that the predicted “build” sound levels would exceed predicted “no action” sound levels by at least 5 dBA.

Additional requirements for “reasonableness” are that future build noise levels are at least 5 dBA greater than existing noise levels; and that future build noise levels are at least 3 dBA greater than future no action noise levels.

3.5 Noise Restriction by Local Ordinance

Per local regulations (City and Borough of Juneau Code of Ordinances - 42.20.095 Disturbing the peace), certain activities are regulated to protect the public against discomfort or annoyance due to loud, unnecessary or unusual noise. Section (b) Construction of Buildings and Projects prohibits operation of pile drivers, power shovels, pneumatic hammers, derricks, power hoists, or other similar heavy construction equipment before 07:00 and after 22:00 Monday through Friday, or before 09:00 or after 22:00 Saturday and Sunday. A permit may be issued by the building official to allow construction to continue during these periods if it is determined to be necessary and would not create an unreasonable disturbance to the surrounding residents. Construction is lawful during other than proscribed periods.

3.6 Existing Noise Conditions

Existing (2002) baseline traffic volume data in the form of annual Average Daily Traffic (ADT) was supplied by DOT&PF (DOT&PF, 2002). For the noise analysis, summer ADT was selected as being representative of the highest noise level being produced on a regular basis. Annual ADT was converted to summer ADT by factoring the Annual ADT by 1.3 for the Juneau area, 1.4 for the Haines area, and 2.0 for the Skagway area per DOT&PF guidance. The summer ADT was then converted to summer peak-noise-hour-vehicles (PNHV) by factoring the summer ADT by 0.09, i.e., the PNHV is typically 9 percent of the annual ADT or summer ADT.

The primary traffic data used for the noise modeling of each roadway segment for the existing condition is shown in Table 3. These data include summer PNHV, modeled speed, and distribution of PNHV among five (5) vehicle types. The posted speed limits were used in the analysis[3], if known (DOT&PF, 1999). A speed of 35 mph was assumed for the segments in the Haines area for which speeds were not specified, based on the roadway type. The vehicle distribution was derived from short-term URS traffic counts (during the noise measurements) and counts by DOT&PF (Payne, 2003).

Table 3 lists the predicted distances from the roadway centerline to 65 dBA L_{eq}(h) for each roadway segment. North of the intersection of Otter Way and Glacier Highway, the 65 dBA L_{eq}(h) contour is contained within the highway/right-of-way; i.e., less than 35 feet from the highway centerline. South of the intersection of Otter Way and Glacier Highway, the 65 dBA L_{eq}(h) contour ranges from 40 feet to 140 feet from the highway centerline. In the Juneau area, approximately 103 structures (primarily residences) are predicted to be impacted from traffic noise on Glacier Highway between its intersections with Twin Lakes Drive and Point Stephens/Trails End Roads.

Table 4 lists the receptors in Juneau evaluated for potential impacts from existing traffic noise. Peak hour traffic noise is at or above 65 dBA L_{eq}(h) at the exteriors of 25 residences. To assess the potential for impacts to interior living spaces, a 10 dB noise level reduction was assumed for all receptors except those listed in Table 5. The FHWA prescribes a 25 dBA noise level reduction for wood-framed structures with closed storm-type windows or masonry structures with closed single-glazed windows. A noise level reduction of 25 dBA for closed windows is also consistent with the USEPA's national average value for typical residential structures with closed windows (USEPA, 1974). A noise level reduction of 13 dBA or 14.5 dBA was applied to several structures as they are partially shielded by houses in the first or second row of houses from the highway. See Table 5 for reasons for other noise level reduction values. With the application of the noise level reduction factors, interior noise is at or above 50 dBA L_{eq}(h) at 103 residences.

No sensitive receptors are impacted in the Haines area for the modeled roadway segments (Table 3).

As shown in Figure 18, detailed TNM® modeling was performed for the northerly portion of developed Skagway. As stated in Section 3.2, this area of Skagway is currently exposed to noise from the rail yard and railroad activity, aircraft overflights and to a lesser extent, traffic noise from State Street and 23rd Avenue. Modeled receptors included residences along State Street and 23rd Avenue, residences along Main Street north of 22nd Avenue and the daycare

[3] For posted speeds greater than 25 mph, the modeled speed for Medium Trucks, Heavy Trucks and Buses was posted speed minus five (5) miles per hour. All vehicle categories were modeled identically for posted speeds of 25 mph or less.

center on the southwest corner of 23rd Avenue and Main Street. A noise level reduction for exterior noise levels of 10 dBA was applied to all modeled structures in Skagway in order to estimate interior noise levels.

Table 6 shows the analysis of existing traffic noise conditions for the modeled receptors near the northerly portion of Skagway. None of the modeled receptors have an exterior noise impact due to traffic from State Street and 23rd Avenue. The interiors of three receptors – the ones numbered 2 (the daycare building), 6 and 10 in Figure 18 have interior peak-traffic-noise-hour levels estimated to be equal to or greater than 50 dBA L_{eq}(h). The total number of residential units and non-residential structures impacted are 2 and 1, respectively.

4.0 ENVIRONMENTAL CONSEQUENCES

As described in Section 2.7, computer programs (TNM® Versions 2.1 and 2.5 and TNM® Version 1.0 Lookup Program) were used to predict noise impacts from traffic associated with the existing conditions and with the proposed project alternatives. Section 4.1 describes predicted traffic noise impacts for the No Action Alternative. Section 4.2 describes predicted traffic noise impacts for each build alternative. Section 4.3 discusses noise abatement, feasibility, and reasonableness. Section 4.4 addresses potential construction noise and vibration impacts, and Section 4.5 provides a summary of impacts.

4.1 Traffic Data and Noise Exposure for Alternative 1 – No Action

Noise levels in the project area would continue to be dominated by natural sounds under the No Action Alternative with intermittent man-made noise sources including marine vessels, pleasure craft, airplanes, and helicopters. As indicated in Section 3.2.6, short-term noise measurements were taken at the edge of Berners Bay near the USFS cabin in 1994 and 2003 and at the cabin in 2003. These measurements documented hourly sound levels between 47 and 52 dBA. Noise levels were also measured on the Chilkat Peninsula, south of Haines in 2003. Those measurements documented sound levels of 35 dBA. This wide difference in sound levels is the result of meteorological conditions at the time that measurements were taken and natural water features near noise monitoring sites. These noise levels are expected to continue into the future under the No Action Alternative.

Noise impacts for the No Action Alternative in Juneau, Haines, and Skagway were based on projections of traffic in 2038. Future (2038) traffic volume data for the No Action Alternative was derived by increasing the existing (2002) summer ADT (or PNHV) by a growth rate of one percent per year consistent with DOT&PF projections. The speed and distribution of vehicles was assumed to be identical to existing conditions.

Table 7 lists the primary modeled traffic data and the resultant noise exposure in terms of the distance from the roadway centerline to 65 dBA L_{eq} and the number of impacted residences for each roadway segment. Table 8 details the receptors in the Juneau vicinity potentially impacted by traffic noise with the No Action Alternative. North of the intersection of Point Stephens/Trails End roads and Glacier Highway, the 65 dBA L_{eq} contour (and thus the area of impact) would be contained within the highway right-of-way; i.e., less than 35 feet from the highway centerline. South of this intersection, the 65 dBA L_{eq} contour would range from 40 feet to 160 feet from the highway centerline. In addition to the 103 residential units already impacted by traffic noise in Juneau, the interiors of 19 additional homes and the interior of the Juneau Christian School would be impacted by future traffic noise. Of the 122 impacted structures, the exteriors of 36 receptors would be impacted by traffic noise.

No impacts are predicted for the modeled roadway segments in the Haines area. As indicated in Table 7, traffic noise would increase by 2 dBA L_{eq}(h) for modeled roadway segments in Haines for the No Action Alternative. Existing noise levels in Haines range from 34 to 57 dBA L_{eq} based on short- and long-term measurements in 2003 (Table 1 and Figure 15). An increase of 2 dBA L_{eq} would not cause traffic noise levels to approach the Noise Abatement Criteria for sensitive receptors in the Haines vicinity.

As mentioned in Section 3.6, detailed TNM® modeling was performed for the northerly portion of Skagway. It was assumed that the existing street layout would not change by 2038. Table 9 details the modeled receptors in this area of Skagway potentially impacted by traffic noise with the No Action Alternative. None of the modeled receptors would have an exterior noise impact

due to future traffic on State Street and 23rd Avenue. The interiors of five locations, numbered 2 (daycare center), 6, 8, 10 and 11 (apartment building with 8 residential units) on Figure 18, would be impacted by modeled traffic noise. The total number of residential units and non-residential structures impacted would be 11 and 1, respectively.

Exterior peak-noise-hour sound levels from traffic at receptors along State Street between 21st and 23rd avenues and 23rd Avenue between State and Main streets was modeled to range from 57 to 62 dBA under the No Action Alternative. These modeled traffic noise levels were lower than measured noise levels in Skagway (see Section 3.2). This modeling indicates that vehicle traffic is not the dominant source of noise in most of the community. Other noise sources such as rail traffic and aircraft are primarily responsible for the high measured peak-noise-hour sound levels in Skagway (60 to 65 dBA). The northeast section of town is close to the railroad tracks which have up to 120 train movements per day in the summer with many passenger trains during the measured peak hour. Airplane and helicopter noise also contributes to the high noise level with up to 130 takeoffs and landings per day in the summer. With existing traffic noise levels of 57 to 62 dBA, these other noise sources likely contribute approximately 62 to 64 dBA in order for the total peak-noise-hour sound level to be 65 dBA.

4.2 Noise Exposure for Build Alternatives

Direct and indirect noise impacts of project alternatives were based on forecast traffic volumes with those alternatives in 2038. Future (2038) incremental traffic volume data for each of the build alternatives in the form of summer ADT and general vehicle distribution was extracted from the Traffic Forecast (McDowell, 2004). The traffic forecast provided summer ADT (generically for Juneau, Haines and Skagway; not by individual roadway segments) in terms of personal vehicles, recreational vehicles, and trucks. This vehicle mix was redistributed into the five vehicle types needed for the noise analysis via DOT&PF data for existing conditions (Payne, 2003), and traffic counts conducted by URS Corporation during the noise measurement survey. TNM® traffic input needs to be in the form of hourly traffic volumes. A standard rate of 9 percent of the summer ADT was used to derive the PNHV. For indirect noise impacts to sensitive receptors along existing roadway segments, the No Action Alternative PNHV was added to the build alternatives' incremental volume to derive the total PNHV for each alternative. This methodology for existing roadway segments yields a "worst-case" indirect impact analysis as it assumes all of the incremental volume of a build alternative would apply to each and every existing roadway segment. For each alternative's proposed roadway segments, the PNHV was derived from the traffic forecast. Vehicle speed assumptions for the noise modeling were derived from field notes and observations of the existing roadways in the area[4].

To account for non-through traffic, the summer ADT for each roadway segment was increased by the following percentages:

- Juneau and Berners Bay area: 30 percent for Alternatives 2, 2B, and 2C
- Haines area: 20 percent for Alternative 3
- Skagway area: 10 percent for Alternatives 2, 2A, and 2C

The segment's vehicle mix was applied to the increase.

[4] For modeled speeds greater than 25 mph, the modeled speed for Medium Trucks, Heavy Trucks and Buses was the modeled speed minus five (5) miles per hour. All vehicle categories were modeled identically for modeled speeds of 25 mph or less.

4.2.1 Noise Impacts for Build Alternatives in Undeveloped Areas

Highway segments for the build alternatives primarily traverse undeveloped areas. Noise modeling indicates that a peak-noise-hour sound level of 65 dBA from traffic on the highway segments of the project alternatives outside of developed areas would be contained within 35 feet of the centerline of the road[5]. Peak-noise-hour traffic volumes are projected to reach almost 200 vehicles in 2038 on Alternative 2, which would have the highest traffic volumes of all the alternatives considered on the east side of Lynn Canal. Peak hour traffic volumes are projected to reach about 100 vehicles on the West Lynn Canal Highway in 2038. The traffic on Alternatives 2 and 3 would average approximately one vehicle every 20 to 35 seconds, respectively. At these volumes, the sound of individual vehicles would be distinct; therefore, an attenuation of about 5 to 6 dBA with every doubling of distance could be expected from traffic noise on Alternatives 2 through 2C, 3, 4B, and 4D. This relationship would mean that vehicle noise associated with these alternatives is likely to decrease to existing levels typical of the undeveloped areas of Lynn Canal within about 100 to 300 yards of the roadway, depending largely on weather conditions (e.g., traffic noise would be masked at shorter distances during rain and wind storms).

4.2.2 Alternatives 2 through 2C

Alternatives 2 through 2C would not have a direct increase in traffic noise at sensitive receptors in Juneau except at the Echo Cove campground. The campground is approximately 600 feet from the alignment of Alternatives 2 through 2C. Traffic noise associated with Alternative 2 at the peak-noise-hour would be approximately 45 dBA at the campground. Existing noise of 43 dBA was measured at the campground in 2003. This noise level could be expected to vary depending on meteorological conditions and campground activity. The noise from a highway on the alignment of Alternatives 2 through 2C would not increase the peak-noise-hour level by more than about 1 to 2 dBA. This increase would not be perceptible to the average human ear.

In Juneau south from Echo Cove, the 65 dBA L_{eq} contour distances would range from 40 feet to 180 feet from the centerline of Glacier Highway with Alternatives 2 through 2C (Tables 10 through 13). The sensitive receptors located on Egan Drive/Glacier Highway between Twin Lakes Drive and Auke Bay Harbor in Juneau that would be impacted by traffic noise under the No Action Alternative would also be impacted by traffic noise under Alternatives 2 through 2C. As shown in Tables 8 and 10 through 13, the 34 impacted receptors on Egan Drive and the 39 impacted receptors on Glacier Highway between Old Glacier Highway and Fritz Cove Road are projected to receive the same level of traffic noise with Alternatives 2 through 2C as with the No Action Alternative. Two additional sensitive receptors would receive exterior traffic noise at the peak-noise-hour at or above 65 dBA with Alternatives 2 through 2C relative to the No Action Alternative (Tables 10 through 13). Interior peak-noise-hour levels would be at or above 50 dBA at 10 additional sensitive receptors with Alternative 2 and 7 additional receptors with Alternatives 2A, 2B, and 2C relative to the No Action Alternative.

Indirect noise impacts to the sensitive receptors in Juneau are a result of the absolute noise level. None of the receptors would be receive a 10 dBA noise increase from existing conditions or the No Action Alternative with Alternative 2.

[5] Based on simple noise attenuation theory, roadway noise generally decreases by 3 to 6 dBA with every doubling of distance from the source. Where traffic is continuous and the sound travels across hard surfaces such as paving and buildings, the decrease is typically 3 dBA. Where traffic is continuous and the sound travels over soil and vegetation, the decrease is on the order of 4.5 dBA. Where traffic is light, and the noise from each vehicle can be distinguished, the decrease is about 6 dBA.

South of Benjamin Island, traffic noise increases on existing Glacier Highway associated with Alternative 2 would be less than 10 dBA relative to existing ambient noise levels or the No Action Alternative. Between the north end of Benjamin Island and Echo Cove, traffic noise on Glacier Highway from Alternative 2 would increase by 10 dBA relative to the ambient condition at the cabins at Aldersheim Lodge (the area represented by noise measurement site ST-18) and the beach area at Sunshine Cove. The Aldersheim Lodge and Sunshine Cove areas would be indirectly impacted by this increased traffic noise as they contain outdoor areas of frequent human use within the criterion distance.

As part of the noise analysis for the Juneau area, TNM® was used to predict indirect noise impacts from the increased traffic associated with Alternative 2 at three representative locations: north of Auke Bay (ST-16), east of Fritz Cove and west of the Mendenhall River (LT-6), and Egan Drive south of Lemon Drive (ST-14). These locations are depicted on Figures 4, 3 and 2, respectively. As shown in Table 14, existing and 2038 noise levels with Alternative 2 exceed DOT&PF / FHWA Noise Abatement Criteria at all three of the modeled locations. This analysis confirms that noise levels at noise-sensitive land uses in the immediate Juneau area currently exceed applicable noise criteria, and that noise level increases of 2 to 3 decibels relative to existing conditions would further exacerbate these exceedances.

The summer peak-noise-hour sound level from traffic at the USFS cabin on Berners Bay was estimated for Alternative 2 using basic noise attenuation theory. The peak-noise-hour sound from traffic was estimated to be approximately 48 dBA at the cabin in 2038. Noise levels at this cabin under the No Action Alternative would range from about 35 to 52 dBA depending on meteorological conditions. Therefore, peak-noise-hour traffic sound levels from Alternatives 2, 2B, and 2C could be perceptible at the cabin. However, this noise would be well below 65 dBA.

No sensitive receptors would be impacted in the Haines area for the modeled roadway segments. As indicated in Tables 10 through 13, Alternatives 2 through 2C would increase the traffic noise in this community by 3-6 dBA relative to existing conditions of 34-57 dBA L_{eq} from Table 1 and Figure 15. These increases would not cause traffic noise levels to approach the NAC for sensitive receptors in the Haines vicinity.

Comments on the 1997 Draft EIS included concerns from Haines residents that noise from the East Lynn Canal Highway (of which Alternative 2 presents the highest traffic noise level among all build alternatives) would result in noise impacts in Haines or on the Chilkat Peninsula in the vicinity of Chilkat State Park. The East Lynn Canal Highway would be approximately 2 to 3.5 miles from the Chilkat Peninsula.

TNM® was used to predict the resultant noise level at the closest location on the Chilkat Peninsula, in the vicinity of Chilkat State Park. The acoustically "hard" path conditions resulting from the intervening Chilkoot Inlet were part of the noise model. The predicted noise level from Alternatives 2 through 2C at the Chilkat Peninsula would be approximately 30 dBA L_{eq}. Based upon the noise measurements conducted in the area (at LT-2 and ST-1), in which the lowest measured noise levels were approximately 35 dBA L_{eq}, the noise from traffic along the alignment for Alternatives 2 through 2C would result in increased noise levels at distant locations on the Chilkat Peninsula of less than one decibel, which would not be audible.

Noise levels from traffic along the Alternative 2 alignment were predicted for the sea lion haulout north of Gran Point. Gran Point is depicted on Figure 1. TNM® was used to predict the traffic noise with input data as described previously. The horizontal and vertical profile of the proposed roadway and the existing contour information were utilized for this modeling effort. No portion of the highway would provide a direct line of sight to the haulout area. According to the *Steller Sea*

Lion Technical Report for the SDEIS, the centerline of the proposed highway alignment would be 320 feet from the designated haulout coordinates with the haulout area having no direct line of sight to the highway due to the design's steep cutbanks, screening structures and forested buffer zone between the highway and the haulout. Based on the assumptions and information outlined above, peak-noise-hour L_{eq} for Alternative 2 at the sea lion haulout area would be less than 30 dBA L_{eq}(h).

Detailed TNM® modeling was performed for the northerly portion of developed Skagway as shown in Figure 19. For build Alternatives 2, 2A and 2C, it was assumed that State Street would end at its intersection with 22nd Avenue and that northbound State Street traffic leaving Skagway would be re-routed onto 22nd Avenue. Vehicles would then turn right on Main Street to get to 23rd Avenue and proceed north. Conversely, it was assumed southbound traffic from the Klondike/Dyea Highway on 23rd Avenue would turn right on Main Street and proceed south to 21st Avenue, turn left to proceed to State Street to go to downtown Skagway. For analysis purposes, all traffic from the Klondike/Dyea Highway and East Lynn Canal Highway was assumed to enter and leave Skagway, and all of this traffic was assumed to use State Street. Travel speeds on local streets were assumed to be 25 mph as they were on State Street and 23rd Avenue.

Modeling also included the proposed East Lynn Canal Highway descending from the hillside east of Skagway and merging with the existing lanes of 23rd Avenue west of Main Street as depicted in Figure 19. The highway would provide at least 22 feet of ground clearance above the railroad. To provide a worst-case estimate of traffic noise, traffic was modeled assuming that deceleration from 50 mph to 25 mph would start over the railroad crossing and conclude near the 23rd Avenue and Main Street connection. Conversely, it was assumed southbound traffic would accelerate from 25 mph to 50 mph in the same road segment. It was also assumed the southbound lane in this segment would be partially shielded by a 3-foot safety-barrier wall, located 11 feet from the southbound lane centerline.

Table 9 details the modeled receptors at the northerly portion of Skagway potentially impacted directly and indirectly by traffic noise for Alternative 2. The new traffic pattern would result in a reduction of noise at most receptors on State Street north of 21st Avenue because fewer vehicles would use this segment of the street than under existing conditions or the No Action Alternative.

The exteriors of three residences would be directly impacted by future traffic noise as the summer peak-noise-hour noise level would be 65-66 dBA L_{eq}(h) at these locations. These receptors, numbered 12, 14 and 17-19 on Figure 19, border Main Street between 22nd and 23rd Avenues. The interiors of these three receptors in addition to the interiors of 3 other modeled receptors would be directly impacted by traffic noise. An additional seven receptors would be indirectly impacted by future traffic noise resulting from the revision of traffic circulation in Skagway with Alternatives 2, 2A, and 2C.

4.2.3 Alternative 3 – West Lynn Canal Highway

Alternative 3 would not have a direct impact on sensitive receptors in Juneau except at the Echo Cove campground. The campground is approximately 600 feet from the alignment of Alternative 3. Traffic noise associated with Alternative 3 at the peak-noise-hour would be approximately 45 dBA at the campground. Existing noise of 43 dBA was measured at the campground in 2003. This noise level could be expected to vary depending on meteorological conditions and campground activity. The noise from a highway on the alignment of Alternative 3

would not increase the peak-noise-hour level by more than about 1 to 2 dBA. This increase would not be perceptible to the average human ear.

With Alternative 3, the 65 dBA L_{eq} on Glacier Highway north of the intersection with Point Stephens/Trails End roads would be less than 35 feet from the centerline of the highway (Table 15). Therefore, this alternative would have no indirect noise impact to sensitive receptors north of this intersection. South of the intersection of Point Stephens/Trails End roads and Glacier Highway, the 65 dBA L_{eq} contour with Alternative 3 would range from 40 feet to 170 feet from the centerline of Glacier Highway (Table 15). South of Echo Cove, the increase in noise level with Alternative 3 relative to existing conditions would range from 2 to 7 dBA L_{eq} for all modeled highway segments. The sensitive receptors located on Egan Drive/Glacier Highway between Twin Lakes Drive and Point Lena Road (south) in Juneau that would be impacted by traffic noise under the No Action Alternative would also be impacted by traffic noise under Alternative 3. Traffic associated with Alternative 3 would indirectly impact interior noise levels at five residences between Point Lena Road (south) and Point Stephens/Trails End Roads relative to the No Action Alternative (Table 8).

Indirect noise impacts to the sensitive receptors in Juneau are a result of the absolute noise level. None of the receptors would be receive a 10 dBA noise increase from existing conditions or the No Action Alternative with Alternative 3.

Northward from Echo Cove to Sawmill Cove, the 65 dBA L_{eq} contour would be contained within the highway/right-of-way (less than 35 feet from centerline) and the increase in level relative to the existing condition at a reference distance of 35 feet from the centerline would be 10 dBA or greater. There would be no noise impact because there are no noise-sensitive receptors within 100 feet of the highway centerline, at which point the noise increase would be less than 10 dBA.

From William Henry Bay to Green Point, the 65 dBA L_{eq} contour would be contained within the West Lynn Canal Highway (less than 35 feet from centerline). Noise levels relative to the existing condition would increase by 27 dBA or less[6]. There would be no noise impact because there are no noise-sensitive receptors within 280 feet of the highway centerline, at which point the noise increase would be less than 10 dBA.

No sensitive receptors would be impacted in the Haines area for the modeled roadway segments. As indicated in Table 15, Alternative 3 would increase the traffic noise in this community from 3-7 dBA relative to existing conditions of 34-57 dBA L_{eq} from Table 1 and Figure 15. These increases would not cause traffic noise levels to approach the NAC for sensitive receptors in the Haines vicinity.

In a manner identical to that described in Section 4.1 for the No Action Alternative, detailed TNM® modeling was performed for the northerly portion of Skagway for Alternative 3 traffic specific to the existing alignment of State Street and 23rd Avenue. The West Lynn Canal Highway would not approach Skagway. Table 9 details the modeled receptors at the northerly portion of Skagway potentially indirectly impacted by traffic noise for Alternative 3. The impacts would be identical to those for the No Action Alternative – interior impacts to five modeled locations (comprising 11 residential units) along State Street and 23rd Avenue and the daycare center.

[6] Due to the low ambient sound levels measured in the area. The ambient noise level measured at ST-1 at the end of Mud Bay Road was 35 dBA L_{eq}. Generally, other segments of the project have higher ambient noise levels yielding differences between the Alternative and the existing conditions less than 27 dBA, in turn, yielding less distance to the point at which the difference in noise levels would be 10 dBA or less.

4.2.4 Alternatives 4A through 4D

Alternatives 4A and 4C would have no direct noise impacts in any community in Lynn Canal since these alternatives would not include new highway construction. Alternatives 4B and 4D would not have a direct impact on sensitive receptors in Juneau except at the Echo Cove campground. The campground is approximately 600 feet from the alignment of Alternatives 4B and 4D. Traffic noise associated with these alternatives at the peak-noise-hour would be approximately 45 dBA at the campground. Existing noise of 43 dBA was measured at the campground in 2003. This noise level could be expected to vary depending on meteorological conditions and campground activity. The noise from a highway on the alignment of Alternative 3 would not increase the peak-noise-hour level by more than about 1 to 2 dBA. This increase would not be perceptible to the average human ear.

With Alternatives 4A through 4D, the 65 dBA L_{eq} on Glacier Highway north of the intersection with Point Stephens/Trails End roads would be less than 35 feet from the centerline of the highway (Tables 16 through 19). Therefore, these alternatives would have no indirect noise impact to sensitive receptors north of this intersection. South of the intersection of Point Stephens/Trails End roads and Glacier Highway, the 65 dBA L_{eq} contour with Alternatives 4A through 4D would range from 40 feet to 170 feet from the centerline of Glacier Highway. The sensitive receptors located on Egan Drive/Glacier Highway between Twin Lakes Drive and Auke Nu Drive that would be impacted by traffic noise under the No Action Alternative would also be impacted by traffic noise under Alternatives 4A through 4D. From Auke Nu Drive to the terminus of Glacier Highway, one more receptor would receive exterior peak-noise-hour sound at or above 65 dBA and five more receptors would receive interior peak-noise-hour sound at or above 50 dBA relative to the No Action Alternative (See Table 8). For Alternative 4C, the only difference from the No Action Alternative would be that one more receptor between Auke Nu Drive and the terminus of Glacier Highway would receive interior peak-noise-hour noise levels at or above 50 dBA.

Indirect noise impacts to sensitive receptors in Juneau would be a result of the absolute noise level. None of the receptors would receive a 10 dBA noise increase from existing conditions or the No Action Alternative with Alternatives 4A through 4D.

No impacts are predicted for the modeled roadway segments in the Haines area. As indicated in Tables 16 through 19, Alternatives 4A through 4D would increase traffic noise in Haines by 2-4 dBA relative to existing conditions of 34-57 dBA L_{eq} from Table 1 and Figure 15. These increases would not cause traffic noise levels to approach the NAC for sensitive receptors in the Haines vicinity.

In a manner identical to that described in Section 4.1 for the No Action Alternative, detailed TNM® modeling was performed for the northerly portion of Skagway for traffic associated with Alternatives 4A through 4D specific to the existing alignment of State Street and 23rd Avenue. Table 9 details the modeled receptors at the northerly portion of Skagway potentially impacted by traffic noise for these alternatives. These indirect impacts would be identical to those for the No Action Alternative.

4.3 Traffic Noise Abatement

As set forth in 23 CFR 772.7, FHWA regulations require consideration of noise abatement where new highway construction or significant alteration of the alignment or number of lanes on an existing highway would result in a traffic noise impact. Consideration of noise abatement is not required where new construction or significant alterations to existing highways are not

proposed. Therefore, the noise abatement analysis focused on sensitive receptors affected by construction of highway segments of build alternatives. The only direct noise impacts were projected for Alternatives 2, 2A, and 2C in Skagway along Main Street north of 22nd Avenue, and 21st, 22nd, and 23rd avenues between State and Main streets.

In accordance with 23 CFR 772.13(c), the following noise abatement measures must be considered for direct noise impacts:

- Traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive land designations)
- Alteration of horizontal and vertical alignments
- Acquisition of property rights (either in fee or lesser interest) for construction of noise barriers
- Construction of noise barriers (including landscaping for aesthetic purposes) whether within or outside the highway right-of-way
- Acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise
- Noise insulation of public use or nonprofit institutional structures

If Alternative 2, 2A, or 2C is the selected alternative for the project, the only routes into and out of Skagway would be via Main Street or Alaska Street. Therefore, traffic management measures to abate noise on Main Street such as traffic control devices and signing for prohibition of certain vehicle types or time-use restrictions for certain vehicle types would not be feasible because they would only move this traffic onto another residential street. In addition, it is projected that most of the traffic associated with an East Lynn Canal highway would be personal vehicles such as automobiles, light duty trucks, and recreation vehicles. Only a small percentage of the traffic is expected to be large trucks.

The speed limit for Main Street and 21st and 22nd avenues is anticipated to be 25 mph. Traffic noise was modeled using that speed. A traffic noise reduction of 3 dBA requires halving the speed. Reducing the speed limit to 20 mph would reduce traffic noise by less than one dBA. Speed limits below 20 mph are not realistic.

The northeastern portion of Skagway that would be impacted by project traffic noise is developed. Therefore, it would not be possible to abate traffic noise through restrictions to development in this area.

Minor horizontal and vertical adjustments that could be made to the proposed highway alignment in the area of Skagway potentially impacted by traffic noise would not reduce noise on Main Street north of 22nd Avenue. Major changes to the alignment would result in relocation of residences, introduction of traffic noise impacts to other areas of Skagway, or additional project costs greater than $25,000 per benefited receptor. Therefore, alignment alteration is not a feasible means of noise abatement in Skagway.

Alternatives 2, 2A, and 2C would impact residences and a for-profit daycare center. Therefore, noise insulation of public use or nonprofit institutional structures is not a feasible noise abatement measure.

As indicated above, the only possible abatement measure for the direct noise impacts projected for Skagway is construction of noise barriers. An analysis of the feasibility and reasonableness of these barriers is provided below.

The two relevant criteria considered in identifying and evaluating noise abatement measures to be incorporated into a project are feasibility and reasonableness. Feasibility deals primarily with engineering considerations on whether or not a substantial noise reduction can be achieved given the conditions of the specific project location. A proposed sound barrier that will not achieve a minimum of five decibels of attenuation under the specific conditions of the project site is generally not considered to be feasible. In addition, feasibility also takes into account the safety and maintenance of noise abatement facilities.

Reasonableness is a more subjective criterion that takes into account an array of factors. According to DOT&PF Noise Abatement Policy (March 1996), a determination of reasonableness for noise abatement shall be based on the following:

- Amount of noise reduction provided
- Number of people protected
- Cost of abatement
- Views of impacted residents
- Future absolute traffic noise levels
- Difference between future traffic noise levels and existing noise levels
- Difference between future traffic noise levels for the build and no-build alternatives
- Amount of development that occurred before and after the initial construction of the highway
- Extent to which zoning or land use is changing
- Effectiveness of land use controls implemented by local officials to prevent incompatible development

In order to be considered reasonable pursuant to DOT&PF policy, noise abatement measures must have a cost of $25,000 or less per benefited receptor unless a severe[7] noise impact is demonstrated. Reasonableness criteria also include a requirement that unmitigated future build noise levels would be at least five dBA greater than existing noise levels.

In Skagway, noise barriers were considered for sensitive receptors along Main Street north of 22nd Avenue and along 23rd Avenue between State and Alaska streets where modeled peak-noise-hour sound levels from Alternatives 2, 2A, and 2C would be at or above the NAC. The following sound barriers, depicted in plan view on Figure 19, were determined to reduce traffic noise below these criteria at the daycare center on the corner of 23rd Avenue and Main (#2), the residence on Main between 22nd and 23rd (#4), and the three residences on Main Street north of 22nd and south of the mid-block alley (#12, 14, 17-19):

[7] A severe noise impact is defined as a predicted (design year) sound level that would create an increase of at least 15 dBA over existing sound levels or that the predicted “build” sound levels would exceed the predicted “no action” sound levels by at least 5 dBA.

1. A six-foot (Alternative 2A) to eight-foot (Alternatives 2 and 2C) high barrier approximately 700 feet long in front of the daycare center on 23rd Avenue (location #2) wrapping around the west side of Main Street to the alley at mid-block.

2. An eight-foot (Alternatives 2 and 2A) to ten-foot (Alternative 2C) high barrier approximately 300 feet long on the west side of Main Street from the alley at mid-block south to 22nd Avenue (locations #12 and 14).

3. A six-foot high barrier approximately 400 feet long on the east side of Main Street from the alley at mid-block between 22nd and 23rd Avenues to 23rd Avenue wrapping around the south side of 23rd Avenue in front of the residence on the corner of 23rd Avenue and Main Street (location #4).

4. A ten-foot high barrier approximately 400 feet long on the east side of Main Street from the alley at mid-block south to 22nd Avenue wrapping around the north side of Main Street to the first driveway (locations #17-19).

Sound barrier #3 would reduce estimated interior peak-hour-noise levels below 50 dBA but would not achieve a five decibel reduction in noise. Therefore, it was not considered feasible. As indicated above, sound barriers must have a cost of $25,000 or less per benefited receptor based on DOT&PF guidelines. Based on typical sound barrier cost of $45 per square foot, this barrier would cost $108,000. Therefore, this sound barrier is not feasible or reasonable.

The other three potential sound barriers evaluated for the project would reduce traffic noise by at least five decibels. Barrier #1 would protect the daycare center at the corner of 23rd Avenue and Main Street at a cost of $190,000 (6 feet high) to $250,000 (8 feet high).

Barrier #2 would provide a reduction of five decibels relative to existing conditions for up to two residences and would cost approximately $108,000 for the 8-feet high barrier. Although these two residences would experience a 'severe' noise impact according to DOT&PF policy, the average cost per residence of $54,000 would be twice the $25,000 policy amount and therefore would not be reasonable.

Barrier #4 would provide a reduction of five decibels relative to existing conditions for up to two residences (location #17-19 and the non-modeled adjoining residence) and would cost approximately $180,000 for the 10-feet high barrier. Although these two residences would experience a 'severe' noise impact according to DOT&PF policy, the average cost per residence of $90,000 would be more than three times the $25,000 policy amount and would not be reasonable.

Traffic noise is not the only noise source in the area of these receptors. Based on long-term noise measurements taken on State Street and 22nd Avenue, non-traffic noise (trains and aircraft) is the predominant noise source and is currently at levels approximately equal to predicted 30-year peak-noise-hour sound levels from traffic. The noise barriers considered in this analysis would not appreciably reduce noise from these sources. Based on this and the feasibility and reasonableness determinations presented above, no noise barriers are proposed.

4.4 Predicted Construction Noise and Vibration Impacts

This section discusses the potential for noise and vibration impacts from construction activities associated with the alternatives based upon the background information on construction noise and vibration provided in Attachment B.

4.4.1 Construction Noise

As discussed in Attachment B, Section B-2.1, construction noise would result in short-term increases in noise levels at locations adjacent to the construction activity. Construction related to all of the alternatives would occur in phases. Noise from construction activity is generated by the broad array of powered, noise-producing mechanical equipment used in the construction process. This equipment ranges from hand-held pneumatic tools to bulldozers, excavators, dump trucks, front loaders, and drilling and blasting equipment. The exact complement of noise-producing equipment that would be in use at a given construction site during any particular period is difficult to predict. Therefore, the noise levels from construction activity during various phases of a typical construction project have been evaluated; their use provides a prediction of a project's potential noise impacts.

The evaluation of construction noise impacts is based on typical noise level emissions from public works projects such as roads and highways, and sewers and trenches, as developed for the United States Environmental Protection Agency (USEPA). Average noise levels associated with various construction phases where all pertinent equipment is present and operating at a reference distance of 50 feet are shown in Table 20. Because of vehicle technology improvements and more strict noise regulations enacted during the last 30 years, the midpoint noise levels shown in the table for the loudest construction phase are used in this analysis.

Based on Table 20, the overall noise level generated on a construction site is estimated to be 88 dBA L_{eq} at a distance of 50 feet. The noise levels presented are average values; typically the magnitude of construction noise emission varies over time because construction activity is intermittent and power demands on construction equipment (and the resulting noise output) are cyclical. Because of the different phases of construction, no single location would experience a long-term period of construction noise. Rather, construction activities and associated noise would move along the right-of-way as construction proceeds.

Noise levels generated by construction equipment (or by any “point source”) decrease at a rate of approximately 6 decibels per doubling of distance away from the source (Diehl, 1973). Therefore, if a particular construction activity generated average noise levels of 88 dBA at 50 feet, the L_{eq} at 100 feet would be 82 dBA, 76 dBA at 200 feet, 70 dBA at 400 feet, and so on. This calculated reduction in noise level is based only on losses resulting from spreading of the sound wave as it leaves the source and travels outward, which is termed geometric spreading. The noise levels would continue to decrease at this rate due to geometric spreading (also referred to as the inverse square law effect). Shielding, such as from buildings or a ridge formed by the highway cut line blocking the line of sight between the noise receptor and the noise source would attain an additional 5 dBA or more reduction. The effects of molecular air absorption and anomalous excess attenuation would reduce the noise level from construction activities at more distant locations at the rates of 0.7 dBA and 1.0 dBA per 1,000 feet, respectively.

Project-related construction would result in short-term increases in noise levels at nearby noise-sensitive land uses. The estimated distance from the highway alignment to the nearest noise-sensitive land uses ranges from approximately 50 feet to 300 feet. Based upon these distances, and assuming no topographical shielding, worst-case construction noise levels while construction activities are in the immediate vicinity would be as high as 88 dBA at a distance of 50 feet, and 72 dBA at a distance of 300 feet.

4.4.2 Construction Noise Mitigation Measures

Construction noise is to some extent unavoidable and could adversely affect nearby noise-sensitive land uses during daytime hours. However, the impact would be temporary and limited to the time of the construction in any one location. The following mitigation measures could be incorporated into contract specifications to minimize construction noise impacts:

- All powered construction equipment should be maintained in good working order and fitted with working mufflers.
- Major construction activities should not take place between the hours of 22:00 and 07:00 Monday through Friday, or between the hours of 22:00 and 09:00 Saturday and Sunday when in the vicinity of noise-sensitive land uses, except by special permit.
- Materials stockpiles and/or vehicle staging areas should be located as far as practicable from dwelling units.
- The noisiest operations should be coordinated to occur together in the construction program to avoid continuing periods of annoyance, to the extent practicable.
- Nearby residents should be notified prior to commencement of high noise-level construction activities such as blasting, drilling or pile driving.
- Idling equipment should be shut off whenever practicable.
- Additional enclosures, shrouds, shields, and portable noise barriers should be utilized as necessary at noise-sensitive locations.

4.4.3 Construction Vibration

As discussed in Attachment B, Section B-2.3, construction-related activities could result in varying degrees of vibration. Typically, ground-borne vibration from construction is not a concern except where vibration-sensitive land uses are very near the vibration source, or where construction activities occur in proximity to highly-sensitive uses, such as (for example), photo-printing processes or magnetic-resonance imaging facilities. Based upon the methodology and vibration criteria (FTA, 1995) outlined in Section B-2.3, the distance at which vibration from typical construction activities would dissipate to levels that are below the threshold of architectural damage for conventional structures is 35 feet. At a distance of 100 feet from the construction activity, vibration levels would be below the threshold of perception. For special construction activities such as pile driving, the distance at which vibration is expected to be below the threshold of architectural damage is 55 feet, assuming typical vibration levels for impact type pile driving. At a distance of 250 feet, vibration levels from pile driving would be below the threshold of perception.

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TABLES

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Table 1
Short-Term Noise Measurement Data

Measurement ID	Measurement Area	Measurement Location	Measurement Period			Noise Sources	Measurement Results, dBA					
			Date	Start Time	Duration (minutes)		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
ST-1	Haines	Past end of Mud Bay Road (near LT-2)	9/10/2003	12:20	10	Lapping wavelets, birds, light rain.	47.7	53.8	42.9	44.8	47.0	49.8
ST-1A			9/11/2003	13:15	10	Lapping wavelets, birds, tree squirrel.	34.9	46.2	29.9	31.3	33.0	37.8
ST-2		Mud Bay Road, at residence near proposed bridge across Chilkat Inlet	9/10/2003	13:00	30	Traffic, rustling leaves, birds, waves in bay.	49.3	66.5	41.6	43.5	45.1	48.6
ST-3		Center of camping area at Portage Cove State Recreation Site	9/10/2003	15:45	40	Traffic, distant aircraft, birds, distant cruise ship and P.A., distant dogs barking, shoreline wavelets.	43.2	61.2	30.6	33.8	37.8	44.3
Fast Ferry		Parking area along Haines Highway, south of Nukdik Point	9/10/2003	17:05	36 secs.	Fast Ferry, 1,800 feet at closest point, automobile traffic.	56.3	60.0	54.5	55.0	55.7	58.5
ST-4			9/10/2003	17:10	30	Traffic, 6 aircraft, birds, wet pavement.	55.1	69.5	31.5	37.0	48.1	59.3
ST-5		Midway along alley between Soap Suds Alley and Portage Street, Fort Seward	9/11/2003	10:30	30	Traffic, 3 aircraft, birds, distant fan at residence, distant back-up alarm.	53.0	71.5	38.0	39.7	42.7	53.0
ST-6		Haines School, on 3rd Avenue adjacent to playground	9/11/2003	11:15	20	Traffic, distant aircraft, distant back-up alarm, children playing (approx. 5 seconds).	56.5	75.0	39.4	43.5	47.8	60.5
ST-7	Skagway	Front yard property line of residence at Spring Street and 10th Avenue	9/12/2003	12:20	29	Dogs barking, rustling leaves, distant traffic, aircraft takeoff, distant industrial, distant back-up alarm *(Measurement stopped because of barking dogs (L_{max})). $^{+}$58 dBA L_{eq} prior to dogs.	69.5* 58^{+}	94.0*	48.9	53.2	56.5	60.6
ST-7A			9/13/2003	15:05	20	Rain, rustling leaves, 2 aircraft takeoffs, distant traffic.	43.9	56.6	38.1	40.1	42.2	46.7
ST-8		Skagway City School, Main Street between 15th Avenue and 17th Avenue	9/12/2003	16:25	35	Traffic, aircraft, leaves rustling, distant trains, distant children playing	52.6	64.4	43.7	47.8	51.5	55.2
ST-9		Mid-block on 22nd Avenue between Main Street and State Street	9/12/2003	17:10	10	Traffic, rail, distant aircraft.	56.9	72.1	43.7	45.6	51.3	59.3

Table 1 (continued)
Short-Term Noise Measurement Data

Measurement ID	Measurement Area	Measurement Location	Measurement Period			Noise Sources	Measurement Results, dBA					
			Date	Start Time	Duration (minutes)		L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
ST-9A	Skagway	Mid-block on 22nd Avenue between Main Street and State Street	9/12/2003	17:20	10	Traffic, aircraft, rail, distant dogs barking.	55.6	75.0	44.1	45.7	47.8	55.2
ST-10		Historic Moore Homestead, 5th Avenue and Spring Street	9/13/2003	10:10	30	Traffic, birds, distant equipment at Alaska Power and Telephone Company.	46.7	64.1	41.2	42.1	43.8	48.7
ST-11		Pullen Creek Shoreline Park, Congress Way	9/13/2003	11:05	30	Traffic, water from creek, rustling leaves, birds.	47.1	61.1	41.5	43.0	44.7	49.7
ST-12	Berners Bay	USDA Forest Service Cabin, Tongass National Forest	9/14/2003	10:30	30	Stream, rain, waterfall, rustling leaves, distant barking dog.	51.5	59.8	50.1	50.7	51.3	52.1
ST-12A			9/14/2003	11:05	30	Stream, rain, waterfall, rustling leaves.	51.5	58.3	50.0	50.7	51.2	52.1
ST-12B		On beach near cabin, Tongass National Forest	9/14/2003	11:55	7	Waterfall, stream.	48.6	54.2	46.6	47.5	48.3	50.2
ST-13	Juneau	Side yard of 4625 Glacier Highway	9/15/2003	11:10	20	Traffic, distant dog barking, birds, distant aircraft.	63.2	68.9	49.1	59.2	62.8	65.6
ST-13A			9/16/2003	15:35	20	Traffic, birds, 3 aircraft, rustling leaves.	63.5	72.6	53.7	58.6	63.0	65.8
ST-14		Side yard of 4150 Glacier Highway	9/15/2003	12:10	15	Traffic, distant helicopters.	69.7	78.8	59.9	65.1	69.6	71.8
ST-15		End of Meadow Lane, east of Mendenhall River	9/15/2003	16:22	20	Traffic, distant helicopters.	64.3	72.9	46.6	58.8	63.8	66.7
ST-16		Side yard of 13660 Glacier Highway, near ferry terminal	9/15/2003	17:20	20	Traffic, distant aircraft.	65.9	88.0	40.6	46.8	59.1	66.8
ST-17		Campground area near boat ramp at Echo Cove	9/16/2003	10:40	30	Leaves rustling, birds, distant aircraft, distant cars at boat ramp.	43.4	50.6	33.5	35.6	42.6	46.2
ST-18		Behind Bear Lair Cabin, Aldersheim Wilderness Lodge, near Yankee Cove	9/16/2003	11:40	10	Two cars on Glacier Hwy, leaves rustling, creek, birds, distant aircraft, distant children playing.	45.1	52.0	42.0	43.1	44.0	46.8
ST-19		100 feet from edge of Glacier Highway	9/16/2003	12:30	30	Traffic on Glacier Hwy, 1 car drove slowly by meter, wind in trees, birds, distant dogs barking, distant aircraft, distant radio.	49.4	66.8	26.8	28.7	34.7	49.1

Notes: dBA – A-weighted decibel

Table 2
Federal And State Traffic Noise Abatement Criteria

Activity Category	Hourly A-Weighted Sound Level (L_{eq}(h), dBA)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Notes: L_{eq}(h) – Energy equivalent noise level for one hour
dBA – A-weighted decibel

Source: Federal Highway Administration, 1995; DOT&PF, 1996.

Table 3
Noise Exposure for Existing (2002) Vehicular Traffic

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Posted Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures
						Auto	MT	HT	Bus	M		
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	3,113	50	2,913	34	53	103	10	130	9[5]
		Lemon Dr	Sunny Dr	2,354	50	2,192	28	46	81	7	120	0
		Sunny Dr	Yandukin Dr	2,949	50	2,746	35	57	102	9	130	12
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	3,124	50	2,909	37	61	108	9	140	0
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	3,137	50	2,974	52	34	54	23	130	2
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	1,837	50	1,742	30	20	31	14	100	0
		Riverside Dr	Engineer's Cut-Off Rd[6]	1,677	50	1,590	28	18	29	12	100	21
		Engineers Cut-Off Rd	Fritz Cove Rd	1,326	50	1,257	22	14	23	10	90	16
		Fritz Cove Rd	Auke Bay Harbor	888	40	841	15	10	15	7	50	15
		Auke Bay Harbor	Auke Nu Dr	628	35	595	10	7	11	5	40	23
		Auke Nu Dr	Auke Bay Ferry Terminal	485	35	460	8	5	8	4	Less than 35	0
		Auke Bay Ferry Terminal	Otter Way	544	50	531	1	4	7	1	50	3
		Otter Way	Auke Rec Rd	236	50	231	-	2	3	-	Less than 35	0
		Auke Rec Rd	Pt Lena Rd (south)	202	50	198	-	1	3	-	Less than 35	0
		Pt Lena Rd (south)	Point Stephens/Trails End RDS	202	50	198	-	1	3	-	Less than 35	2
		Point Stephens/Trails End Rds	Shrine	92	50	88	3	-	1	-	Less than 35	0
		Shrine	Dotsons Landing Rd (ST-19)	55	50	53	2	-	-	-	Less than 35	0
		Dotsons Landing Rd (ST-19)	Herbert River	49	50	47	-	-	1	1	Less than 35	0
		Herbert River	South end of Benjamin Island	39	50	37	-	-	1	1	Less than 35	0
		South end of Benjamin Island	North end of Benjamin Island	27	50	25	-	-	1	1	Less than 35	0
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	25	50	23	-	-	1	1	Less than 35	0

Table 3 (continued)
Noise Exposure for Existing (2002) Vehicular Traffic

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Posted Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (feet) from roadway centerline [4]	Number of Impacted Structures
						Auto	MT	HT	Bus	M		
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	55	35	50	3	1	1	0	Less than 35	0
		Small Tract Rd (northern intersection)	FAA Rd	133	25	120	8	2	2	1	Less than 35	0
	Bay Rd	FAA Rd	Beach Rd/Front St	86	35**	79	5	1	1	0	Less than 35	0
	Front Street	Beach Rd/Front St/Bay Rd	Main St	105	25	95	7	1	2	0	Less than 35	0
		Main St	Haines Hwy	35	45	32	2	0	1	0	Less than 35	0
	Haines Hwy	Front St	Nukdik Point	132	40	119	8	2	2	1	Less than 35	0
		Nukdik Point	(Lutak) Ferry Terminal Rd	111	40	101	7	1	2	0	Less than 35	0
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	137	25	123	9	2	2	1	Less than 35	0
Skagway	Broadway St	terminus	1st Ave	156	20	124	15	8	7	2	Less than 35	0
		1st Ave	6th Ave	273	20	216	27	13	13	4	Less than 35	0
		6th Ave	21st Ave	283	20	224	28	14	13	4	Less than 35	0
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	271	25	214	27	13	13	4	Less than 35	3

Notes: [1] Peak noise hour vehicles is 9% of summer ADT; For Juneau locale, summer ADT is 130% of Annual ADT (per DOT&PF). For Haines locale, summer ADT is 140% of Annual ADT (per DOT&PF); For Skagway locale, summer ADT is 200% of Annual ADT (per DOT&PF).
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per DOT&PF and brief URS counts; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
[5] Includes 9 units of Pioneer's Home
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
- indicates data not available
$L_{eq}(h)$ – Energy equivalent noise level for one hour
dBA – A-weighted decibel
mph – miles per hour

Table 4
Analysis of Existing Noise Conditions In The Juneau Area

Segment	From	To	Location / Address	Number of Structures or Housing Units	Consider Both exterior & interior or interior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
							Exterior (if applicable)		Interior		Number of Impacted Structures or Housing Units
							$L_{eq}(h)$ (dBA)	Impact?	$L_{eq}(h)$ (dBA)	Impact?	
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')	1	interior only				49	no	0
			4121 Blackerby St. (elevated 50')	1	interior only				49	no	0
			4150 Old Glacier Hwy (ST-14)	1	interior only				49	no	0
			Pioneer's Home (near ST-13)	9	both		61	no	51	YES	9
	Lemon Dr	Sunny Dr									
	Sunny Dr	Yandukin Dr	6903 Sunny Dr	1	interior only				54	YES	1
			6907 Sunny Dr	1	interior only				52	YES	1
			6911 Sunny Dr	1	interior only				51	YES	1
			6915 Sunny Dr	1	interior only				53	YES	1
			7094 Hendrickson Rd	1	both		64	no	54	YES	1
			1098 Hendrickson Rd	1	interior only				53	YES	1
			7098 Sunny Dr	1	interior only				54	YES	1
			7100 Sunny Dr	1	both		64	no	54	YES	1
			1800 Branta Rd	1	both		68	YES	53	YES	1
			7210 Old Glacier Hwy (elevated 10')	1	interior only			no	48	no	0
			7220 Old Glacier Hwy (elevated 10')	1	interior only			no	49	no	0
			7250 Old Glacier Hwy (elevated 15')	1	interior only			no	50	YES	1
			7260 Old Glacier Hwy (elevated 15')	1	interior only			no	50	YES	1
			7320 Old Glacier Hwy (elevated 20')	1	interior only			no	49	no	0
			7340 Old Glacier Hwy (elevated 20')	1	interior only			no	49	no	0
			7520 Old Glacier Hwy (elevated 20')	1	interior only			no	48	no	0
			7671 Old Glacier Hwy (upstairs living only; historic)	1	interior only			no	51	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)	1	interior only	25		no	49	no	0
	Yandukin Dr	Old Glacier Hwy (eastern intersection)									
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)	39	interior only	25		no	38	no	0
			2504 Teslin	1	interior only			no	56	YES	1
			2508/10 Teslin	2	interior only	13		no	49	no	0
			2512 Teslin	1	interior only	14.5		no	44.5	no	0
			2517 Teslin (JW Kingdom Hall Church)	1	interior only	25		no	33	no	0
			9077 Hurlock	1	interior only			no	50	YES	1
			9055 Atlin Dr (St. Paul Church)	1	interior only	25		no	37	no	0

Table 4 (continued)
Analysis of Existing Noise Conditions In The Juneau Area

Segment	From	To	Location / Address	Number of Structures or Housing Units	Consider Both exterior & interior or interior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
							Exterior (if applicable)		Interior		Number of Impacted Structures or Housing Units
							L_{eq}(h) (dBA)	Impact?	L_{eq}(h) (dBA)	Impact?	
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr									
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	1	both		66	YES	54	YES	1
			9516 Glacier Hwy Spruce Corner Condo	1	both		59	no	49	no	0
			9524/26 Glacier Hwy, Spruce Corner Condos	2	both		68	YES	56	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	2	both		60	no	50	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	8	both		68	YES	56	YES	8
			2524 Alder Circle	1	interior only			no	50	YES	1
			9621/23 Glacier Hwy	2	both		61	no	50	YES	2
			2528 Scott Dr	1	both		63	no	52	YES	1
			2526 Scott Dr	1	both	15	60	no	47	no	0
			2577 Meadow Ln (ST-15)	1	both		66	YES	56	YES	1
			10004 Glacier Hwy (upstairs apt.)	1	interior only			no	54	YES	1
			10002 Glacier Hwy (upstairs apt.)	1	interior only			no	54	YES	1
			1st house S of Swampy Acres	1	both		64	no	54	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	1	exterior		64	no	54	YES	1
			3021 Hamilton St	1	interior only	13		no	47	no	0
			3010 Hamilton St	1	both	15	68	YES	53	YES	1
			Red log cabin	1	both		70	YES	60	YES	1
			10615 Glacier Hwy	1	both		71	YES	57	YES	1
			10635 Glacier Hwy	1	both		67	YES	55	YES	1
			3144 Wilma Ave	1	interior only	13		no	50	YES	1
			10650 Glacier Hwy	1	both		66	YES	56	YES	1
			10665 Glacier Hwy	1	both		69	YES	59	YES	1
			10785 Glacier Hwy (LT-6)	1	both		67	YES	55	YES	1
			10651 Glacier Hwy	1	interior only			no	49	no	0
			10680 Glacier Hwy (elevated 15')	1	both		66	YES	54	YES	1
			10695 Glacier Hwy	2	interior only			no	52	YES	2
			10845 Glacier Hwy	1	interior only			no	55	YES	1
			10885 Glacier Hwy	1	both		67	YES	55	YES	1
			10945 Glacier Hwy (upslope!)	1	both		64	no	54	YES	1
			10965 Glacier Hwy (elevated!)	1	both		67	YES	54	YES	1
			Auke Lake Recreational Area	1	exterior	0		no	0	no	0

Table 4 (continued)
Analysis of Existing Noise Conditions In The Juneau Area

Segment	From	To	Location / Address	Number of Structures or Housing Units	Consider Both exterior & interior or interior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
							Exterior (if applicable		Interior		Number of Impacted Structures or Housing Units
							L_{eq}(h) (dBA)	Impact?	L_{eq}(h) (dBA)	Impact?	
Glacier Hwy	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	1	both		60	no	50	YES	1
			11385 Glacier Hwy (depressed 15')	1	both		64	no	53	YES	1
			11390 Glacier Hwy	1	interior only			no	55	YES	1
			11420 Glacier Hwy	1	interior only			no	48	no	0
			11450 Glacier Hwy	1	interior only	25		no	38	no	0
			11450 Glacier Hwy (setback)	1	interior only			no	50	YES	1
			11480 Glacier Hwy	1	interior only			no	50	YES	1
			11445 Glacier Hwy	1	interior only			no	59	YES	1
			11540 Glacier Hwy	1	interior only			no	49	no	0
			11550 Glacier Hwy	1	interior only			no	54	YES	1
			101 Harbor Dr (apts depressed 20-30')	4	interior only			no	51	YES	4
			11600 Glacier Hwy	1	interior only			no	51	YES	1
			11624? Glacier Hwy	1	both		61	no	50	YES	1
			11648 Glacier Hwy	2	both		60	no	50	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor	1	interior only			no	53	YES	1
			11765 Glacier Hwy (new construction)	1	both		60	no	50	YES	1
			Squire's Rest Bldg	8	interior only			no	54	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)	1	interior only	13		no	44	no	0
			11981? Glacier Hwy (depressed 20')	1	interior only	15		no	42	no	0
			11981.5? Glacier Hwy (new construction)	1	both		63	no	53	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)	1	interior only	25		no	35	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	1	both		71	YES	57	YES	1
			11899 Glacier Hwy, (apts over post office)	4	interior only			no	45	no	0
			11899 Glacier Hwy, (apt #5 over post office)	1	interior only			no	47	no	0
			12020 Bayview Rd	1	both		59	no	48	no	0
			Apartments between Bayview and Seaview Rds (1st floor)	4	both		61	no	50	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	4	both		61	no	50	YES	4
			3855 Seaview Rd	1	interior only			no	50	YES	1
			12005 Glacier Hwy (depressed 35')	1	interior only			no	48	no	0
			12075 Glacier Hwy	1	both		69	YES	59	YES	1
			12085 Glacier Hwy	1	both		64	no	54	YES	1
			12175 Glacier Hwy, Unit D	1	both		59	no	49	no	0
			12280 Glacier Hwy	1	interior only				47	no	0

Table 4 (continued)
Analysis of Existing Noise Conditions In The Juneau Area

Segment	From	To	Location / Address	Number of Structures or Housing Units	Consider Both exterior & interior or interior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
							Exterior (if applicable		Interior		
							$L_{eq}(h)$ (dBA)	Impact?	$L_{eq}(h)$ (dBA)	Impact?	Number of Impacted Structures or Housing Units
Glacier Hwy	Auke Nu Dr	Auke Bay Ferry Terminal									
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	1	both		64	no	54	YES	1
			13580 Glacier Hwy (elevated 20')	1	both	25	61	no	36	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	1	both		64	no	54	YES	1
			13660 Glacier Hwy (apt)	1	interior only			no	54	YES	1
	Otter Way	Auke Rec Rd									
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park	1	exterior						
			Lena Loop Park	1	exterior						
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	1	both		57	no	47	no	0
			16911? Glacier Hwy	1	both		62	no	52	YES	1
			16912? Glacier Hwy (apts)	2	interior only			no	47	no	0
			17000 Glacier Hwy	1	both		57	no	46	no	0
			17050 Glacier Hwy (elevated)	1	both		61	no	50	YES	1
			17205 Glacier Hwy	1	interior only			no	48	no	0
			17265 Glacier Hwy	1	interior only			no	47	no	0
			17445 Glacier Hwy	1	interior only	15		no	43	no	0
			17465 Glacier Hwy	1	interior only			no	47	no	0
			17525 Glacier Hwy	1	interior only			no	46	no	0
			17575 Glacier Hwy	1	interior only			no	48	no	0
	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy	1	interior only				45	no	0
			19051 Glacier Hwy (LT-5)	1	interior only				44	no	0
	Shrine	Dotsons Landing Rd (ST-19)		0							
	Dotsons Landing Rd	Herbert River		0							
	Herbert River	Benjamin Island south		0							
	Benjamin Island south	Benjamin Island north		0							
	Benjamin Island north	terminus (Echo Cove) (ST-17)	Yankee Cove lodge & cabins (ST-18) - slope shielding	1	both	20	51	no	44	no	0
			Sunshine Cove (beach & camping) - slope shielding	1	exterior		51	no			0

Table 4 (continued)
Analysis of Existing Noise Conditions In The Juneau Area

Notes: [1] difference between Alternative's noise exposure and existing conditions
[2] noise levels are based on flat terrain; traffic noise levels would be likely reduced below significance due to terrain shielding
* the motel has no outdoor habitable living spaces (e.g., balconies)

Table 5
Locations at Which an NLR Other Than 10 Dba NLR Was Assumed

Location	NLR (dBA)	Reason
2295 Trout St (the Super 8 Motel)	25	windows are likely to stay closed year round
2508/10 Teslin	13	10 dBA NLR plus 3.0 dB for being in 2nd row of housing from highway
2512 Teslin	14.5	10 dBA NLR plus 4.5 dB for being in 3rd row of housing from highway
2517 Teslin (JW Kingdom Hall Church)	25	no operable windows assumed; windows likely to stay closed year round
9055 Atlin Dr (St. Paul Church)	25	no operable windows on wall facing Glacier Hwy; windows likely to stay closed year round
2526 Scott Dr.	15	no operable windows face highway; operable windows at 90 degrees to Glacier Hwy
3021 Hamilton St	13	10 dBA NLR plus 3.0 dB for being in 2nd row of housing from highway
3010 Hamilton St	15	garage obstructs sound path from highway to interior living space (1)
3144 Wilma Ave	13	10 dBA NLR plus 3.0 dB for being in 2nd row of housing from highway
11450 Glacier Hwy (point of closest approach)	25	non-operable windows (2)
11957 Glacier Hwy	13	10 dBA NLR plus 3.0 dB for being in 2nd row of housing from highway
11981? Glacier Hwy	15	terrain shielding
11970 (Auke Bay Bible Church)	25	windows are likely to stay closed year round
13580 Glacier Hwy	25	no operable windows face highway.
17445 Glacier Hwy	15	garage obstructs sound path from highway to interior living space (1)

Notes: [1] 5 dBA was added an open-windows NLR of 10 dBA to account for the garage obstruction
[2] the main part of the house (with operable windows) with setback from the roadway was evaluated separately

Table 6
Analysis of Existing Noise Conditions in North Skagway

Segment	From	To	Location / Address	Figure 18 Location ID		Number of Structures or Housing Units	Consider Both exterior & interior or interior only or exterior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
									Exterior (if applicable)		Interior		
				Exterior	Interior				L_{eq}(h) (dBA)	Impact?	L_{eq}(h) (dBA)	Impact?	Number of Impacted Structures or Housing Units
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	1	both		60	no	50	YES	1
			Residence southeast corner 23rd and Main	3	4	1	both		60	no	47	no	0
			Residence on State and 23rd	5	6	1	both		62	no	51	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	1	both		61	no	48	no	0
			LT-3	9		1	exterior only		59	no	n/a	n/a	0
			Residence southwest corner of State and 22nd		10	1	interior only		n/a	n/a	50	YES	1
			Apartment northwest corner of State and 21st		11	8	interior only		n/a	n/a	48	no	0
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	1	both		51	no	41	no	0
			Residence northwest corner Main and 22nd	14	15	1	both		50	no	39	no	0
			Residence northeast corner Main and 22nd facing Main	17		1	exterior only	n/a	50	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	1	both		50	no	40	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	1	both		47	no	37	no	0
			Residence southeast corner Main & 22nd	20		1	exterior only	n/a	48	no	n/a	n/a	0
			Residence northwest corner Main and 21st	21	22	1	both		46	no	37	no	0

Table 6 (continued)
Analysis of Existing Noise Conditions in North Skagway

Segment	From	To	Location / Address	Figure 18 Location ID		Number of Structures or Housing Units	Consider Both exterior & interior or interior only or exterior only?	Assumed Noise Level Reduction (dB, if not 10 dB)	Modeled Existing				
									Exterior (if applicable)		Interior		
				Exterior	Interior				$L_{eq}(h)$ (dBA)	Impact?	$L_{eq}(h)$ (dBA)	Impact?	Number of Impacted Structures or Housing Units
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	1	both		51	no	41	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24		1	exterior only		51	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	1	both		53	no	43	no	0
			420 22nd Ave	26	27	1	both		56	no	46	no	0
			3rd Residence west of State, southside of 22nd	28	28	1	both		49	no	39	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	1	both		52	no	41	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31		1	exterior only		48	no	n/a	n/a	0
			Apartment northwest corner of State and 21st		32	8	interior only		n/a	n/a	43	no	0

Table 7
Noise Exposure for Alternative 1 (Future No action, Year 2038) Vehicular Traffic

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)
						Auto	MT	HT	Bus	M			
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,453	50	4,168	49	76	147	13	160	12 [5]	2
		Lemon Dr	Sunny Dr	3,368	50	3,136	40	66	116	10	140	0	2
		Sunny Dr	Yandukin Dr	4,221	50	3,930	51	82	146	12	160	18[5a]	2
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,470	50	4,162	54	87	154	13	160	0	2
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,489	50	4,256	74	49	77	33	160	4	2
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,631	50	2,493	44	29	45	20	120	0	2
		Riverside Dr	Engineers Cut-Off Rd[6]	2,400	50	2,275	40	26	41	18	110	22	2
		Engineers Cut-Off Rd	Fritz Cove Rd	1,897	50	1,799	31	21	32	14	100	17	2
		Fritz Cove Rd	Auke Bay Harbor	1,269	40	1,203	21	14	22	9	60	17	2
		Auke Bay Harbor	Auke Nu Dr	898	35	851	15	10	15	7	40	26	2
		Auke Nu Dr	Auke Bay Ferry Terminal	696	35	659	12	8	12	5	40	0	2
		Auke Bay Ferry Terminal	Otter Way	780	50	760	2	6	11	1	60	3	2
		Otter Way	Auke Rec Rd	339	50	330	1	2	5	1	40	0	2
		Auke Rec Rd	Pt Lena Rd (south)	291	50	283	1	2	4	1	40	0	2
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	291	50	283	1	2	4	1	40	4	2
		Point Stephens/Trails End Rds	Shrine	130	50	125	4	-	1	-	Less than 35	0	2
		Shrine	Dotsons Landing Rd (ST-19)	80	50	76	3	-	1	-	Less than 35	0	2
		Dotsons Landing Rd (ST-19)	Herbert River	73	50	67	1	1	2	2	Less than 35	0	2
		Herbert River	South end of Benjamin Island	55	50	53	-	-	1	1	Less than 35	0	1
		South end of Benjamin Island	North end of Benjamin Island	38	50	36	-	-	1	1	Less than 35	0	1
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	35	50	33	-	-	1	1	Less than 35	0	1
		Echo Cove	Sawmill Cove	**N/A**									
		Sawmill Cove	Slate Cove	**N/A**									
		Slate Cove	Katzehin Delta	**N/A**									

Table 7 (continued)
Noise Exposure for Alternative 1 (Future No action, Year 2038) Vehicular Traffic

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)
						Auto	MT	HT	Bus	M			
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	79	35	72	5	1	1	-	Less than 35	0	2
		Small Tract Rd (northern intersection)	FAA Rd	190	25	172	12	2	3	1	Less than 35	0	2
	Bay Rd	FAA Rd	Beach Rd/Front St	126	35**	113	8	2	2	1	Less than 35	0	2
	Front Street	Beach Rd/Front St/Bay Rd	Main St	150	25	136	9	2	2	1	Less than 35	0	2
		Main St	Haines Hwy	51	45	46	3	1	1	-	Less than 35	0	2
	Haines Hwy	Front St	Nukdik Point	189	40	171	12	2	3	1	Less than 35	0	2
		Nukdik Point	(Lutak) Ferry Terminal Rd	160	40	145	10	2	2	1	Less than 35	0	2
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	194	25	176	12	2	3	1	Less than 35	0	2
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A									
Skagway	Broadway St	terminus	1st Ave	223	20	177	22	11	10	3	Less than 35	0	2
		1st Ave	6th Ave	389	20	309	38	19	18	5	Less than 35	0	2
		6th Ave	21st Ave	406	20	321	40	20	19	6	Less than 35	0	2
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	387	25	307	38	19	18	5	Less than 35	12	2
	Glacier Hwy (extended)	Katzehin Delta	Skagway	N/A									

Notes:
[1] Peak noise hour vehicles is 9% of summer ADT based on DOT&PF growth rate of 1% per year from 2002 to 2038.
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per DOT&PF and brief URS counts; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
[5] includes 9 units of Pioneer's Home
[5a] includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
$L_{eq}(h)$ – Energy equivalent noise level for one hour
dBA – A-weighted decibel
mph – miles per hour

Table 8
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 1 (No Action)

Segment	From	To	Location / Address	Alternative 1 (No Action)				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0
			2517 Teslin (JW Kingdom Hall Church)			35	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 1 (No Action) (continued)

Segment	From	To	Location / Address	Alternative 1 (No Action)				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1
			10695 Glacier Hwy			54	YES	2

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 1 (No Action) (continued)

Segment	From	To	Location / Address	Alternative 1 (No Action)				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0
			12020 Bayview Rd	61	no	50	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 1 (No Action) (continued)

Segment	From	To	Location / Address	Alternative 1 (No Action)				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	0
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	59	no	49	no	0
			16911? Glacier Hwy	64	no	54	YES	1
			16912? Glacier Hwy (apts)			49	no	0
			17000 Glacier Hwy	59	no	48	no	0
			17050 Glacier Hwy (elevated)	63	no	52	YES	1
			17205 Glacier Hwy			50	YES	1
			17265 Glacier Hwy			49	no	0
			17445 Glacier Hwy			45	no	0
			17465 Glacier Hwy			49	no	0
			17525 Glacier Hwy			48	no	0
			17575 Glacier Hwy			50	YES	1
	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	47	no	0
			19051 Glacier Hwy (LT-5)		no	46	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 1 (No Action) (continued)

Segment	From	To	Location / Address	Alternative 1 (No Action)				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	52	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	52	no	2	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Alternative 2				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Alternative 2				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Alternative 2				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			56	YES	1
			11765 Glacier Hwy (new construction)	63	no	53	YES	1
			Squire's Rest Bldg			57	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			47	no	0
			11981? Glacier Hwy (depressed 20')			45	no	0
			11981.5? Glacier Hwy (new construction)	66	YES	56	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			38	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	74	YES	60	YES	1
			11899 Glacier Hwy, (apts over post office)			48	no	0
			11899 Glacier Hwy, (apt #5 over post office)			50	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Alternative 2				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	62	no	51	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	64	no	53	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	64	no	53	YES	4
			3855 Seaview Rd			53	YES	1
			12005 Glacier Hwy (depressed 35')			51	YES	1
			12075 Glacier Hwy	72	YES	62	YES	1
			12085 Glacier Hwy	67	YES	57	YES	1
			12175 Glacier Hwy, Unit D	62	no	52	YES	1
			12280 Glacier Hwy			50	YES	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	67	YES	57	YES	1
			13580 Glacier Hwy (elevated 20')	64	no	39	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	67	YES	57	YES	1
			13660 Glacier Hwy (apt)			57	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	61	no	51	YES	1
			16911? Glacier Hwy	66	YES	56	YES	1
			16912? Glacier Hwy (apts)			51	YES	2
			17000 Glacier Hwy	61	no	50	YES	1
			17050 Glacier Hwy (elevated)	65	YES	54	YES	1
			17205 Glacier Hwy			52	YES	1
			17265 Glacier Hwy			51	YES	1
			17445 Glacier Hwy			47	no	0
			17465 Glacier Hwy			51	YES	1
			17525 Glacier Hwy			50	YES	1
			17575 Glacier Hwy			52	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Alternative 2				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	51	YES	1
			19051 Glacier Hwy (LT-5)		no	50	YES	1
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	61	YES(1)	47	no	0
			Sunshine Cove (beach & camping) - slope shielding	61	YES(1)			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Alternative 2A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Alternative 2A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Alternative 2A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Alternative 2A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	61	no	51	YES	1
			16911? Glacier Hwy	66	YES	56	YES	1
			16912? Glacier Hwy (apts)			51	YES	2
			17000 Glacier Hwy	61	no	50	YES	1
			17050 Glacier Hwy (elevated)	65	YES	54	YES	1
			17205 Glacier Hwy			52	YES	1
			17265 Glacier Hwy			51	YES	1
			17445 Glacier Hwy			47	no	0
			17465 Glacier Hwy			51	YES	1
			17525 Glacier Hwy			50	YES	1
			17575 Glacier Hwy			52	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Alternative 2A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	50	YES	1
			19051 Glacier Hwy (LT-5)		no	49	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	59	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	59	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Alternative 2B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr		no	56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Alternative 2B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Alternative 2B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Alternative 2B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	0
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	67	YES	57	YES	1
			13580 Glacier Hwy (elevated 20')	64	no	39	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	67	YES	57	YES	1
			13660 Glacier Hwy (apt)			57	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	61	no	51	YES	1
			16911? Glacier Hwy	66	YES	56	YES	1
			16912? Glacier Hwy (apts)			51	YES	2
			17000 Glacier Hwy	61	no	50	YES	1
			17050 Glacier Hwy (elevated)	65	YES	54	YES	1
			17205 Glacier Hwy			52	YES	1
			17265 Glacier Hwy			51	YES	1
			17445 Glacier Hwy			47	no	0
			17465 Glacier Hwy			51	YES	1
			17525 Glacier Hwy			50	YES	1
			17575 Glacier Hwy			52	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Alternative 2B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	50	YES	1
			19051 Glacier Hwy (LT-5)		no	49	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	60	no	47	no	0
			Sunshine Cove (beach & camping) - slope shielding	60	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Alternative 2C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Alternative 2C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Alternative 2C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Alternative 2C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	67	YES	57	YES	1
			13580 Glacier Hwy (elevated 20')	64	no	39	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	67	YES	57	YES	1
			13660 Glacier Hwy (apt)			57	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	61	no	51	YES	1
			16911? Glacier Hwy	66	YES	56	YES	1
			16912? Glacier Hwy (apts)			51	YES	2
			17000 Glacier Hwy	61	no	50	YES	1
			17050 Glacier Hwy (elevated)	65	YES	54	YES	1
			17205 Glacier Hwy			52	YES	1
			17265 Glacier Hwy			51	YES	1
			17445 Glacier Hwy			47	no	0
			17465 Glacier Hwy			51	YES	1
			17525 Glacier Hwy			50	YES	1
			17575 Glacier Hwy			52	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Alternative 2C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	51	YES	1
			19051 Glacier Hwy (LT-5)		no	50	YES	1
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	60	no	47	no	0
			Sunshine Cove (beach & camping) - slope shielding	60	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Alternative 3				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Alternative 3				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Alternative 3				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Alternative 3				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	60	no	50	YES	1
			16911? Glacier Hwy	65	YES	55	YES	1
			16912? Glacier Hwy (apts)			50	YES	2
			17000 Glacier Hwy	60	no	49	no	0
			17050 Glacier Hwy (elevated)	64	no	53	YES	1
			17205 Glacier Hwy			51	YES	1
			17265 Glacier Hwy			50	YES	1
			17445 Glacier Hwy			46	no	0
			17465 Glacier Hwy			50	YES	1
			17525 Glacier Hwy			49	no	0
			17575 Glacier Hwy			51	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Alternative 3				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	49	no	0
			19051 Glacier Hwy (LT-5)		no	48	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	58	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	58	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Alternative 4A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Alternative 4A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Alternative 4A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Alternative 4A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	0
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	60	no	50	YES	1
			16911? Glacier Hwy	65	YES	55	YES	1
			16912? Glacier Hwy (apts)			50	YES	2
			17000 Glacier Hwy	60	no	49	no	0
			17050 Glacier Hwy (elevated)	64	no	53	YES	1
			17205 Glacier Hwy			51	YES	1
			17265 Glacier Hwy			50	YES	1
			17445 Glacier Hwy			46	no	0
			17465 Glacier Hwy			50	YES	1
			17525 Glacier Hwy			49	no	0
			17575 Glacier Hwy			51	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Alternative 4A				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	48	no	0
			19051 Glacier Hwy (LT-5)		no	47	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	56	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	56	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Alternative 4B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Alternative 4B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Alternative 4B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Alternative 4B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	60	no	50	YES	1
			16911? Glacier Hwy	65	YES	55	YES	1
			16912? Glacier Hwy (apts)			50	YES	2
			17000 Glacier Hwy	60	no	49	no	0
			17050 Glacier Hwy (elevated)	64	no	53	YES	1
			17205 Glacier Hwy			51	YES	1
			17265 Glacier Hwy			50	YES	1
			17445 Glacier Hwy			46	no	0
			17465 Glacier Hwy			50	YES	1
			17525 Glacier Hwy			49	no	0
			17575 Glacier Hwy			51	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Alternative 4B				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	48	no	0
			19051 Glacier Hwy (LT-5)		no	47	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	56	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	56	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Alternative 4C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Alternative 4C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Alternative 4C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Alternative 4C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				$L_{eq}(h)$ (dBA)		$L_{eq}(h)$ (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	59	no	49	no	0
			16911? Glacier Hwy	64	no	54	YES	1
			16912? Glacier Hwy (apts)			49	no	0
			17000 Glacier Hwy	59	no	48	no	0
			17050 Glacier Hwy (elevated)	63	no	52	YES	1
			17205 Glacier Hwy			50	YES	1
			17265 Glacier Hwy			49	no	0
			17445 Glacier Hwy			45	no	0
			17465 Glacier Hwy			49	no	0
			17525 Glacier Hwy			48	no	0
			17575 Glacier Hwy			50	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Alternative 4C				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	48	no	0
			19051 Glacier Hwy (LT-5)		no	47	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	55	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	55	no			0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Alternative 4D				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Twin Lakes Dr*	Lemon Dr*	4112 Blackerby St. (elevated 35')			51	YES	1
			4121 Blackerby St. (elevated 50')			51	YES	1
			4150 Old Glacier Hwy (ST-14)			51	YES	1
			Pioneer's Home	63	no	53	YES	9
	Lemon Dr	Sunny Dr						
	Sunny Dr	Yandukin Dr	6903 Sunny Dr			56	YES	1
			6907 Sunny Dr			54	YES	1
			6911 Sunny Dr			53	YES	1
			6915 Sunny Dr			55	YES	1
			7094 Hendrickson Rd	66	YES	56	YES	1
			1098 Hendrickson Rd			55	YES	1
			7098 Sunny Dr			56	YES	1
			7100 Sunny Dr	66	YES	56	YES	1
			1800 Branta Rd	70	YES	55	YES	1
			7210 Old Glacier Hwy (elevated 10')			50	YES	1
			7220 Old Glacier Hwy (elevated 10')			51	YES	1
			7250 Old Glacier Hwy (elevated 15')			52	YES	1
			7260 Old Glacier Hwy (elevated 15')			52	YES	1
			7320 Old Glacier Hwy (elevated 20')			51	YES	1
			7340 Old Glacier Hwy (elevated 20')			51	YES	1
			7520 Old Glacier Hwy (elevated 20')			50	YES	1
			7671 Old Glacier Hwy (upstairs living only; historic)			53	YES	1
			8001 Old Glacier Hwy (Juneau Christian School)			51	YES	1
	Yandukin Dr	Old Glacier Hwy (eastern intersection)						
	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2295 Trout St (Super 8 Motel, no balconies)			40	no	0
			2504 Teslin			58	YES	1
			2508/10 Teslin			51	YES	2
			2512 Teslin			46.5	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Alternative 4D				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Egan Drive	Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	2517 Teslin (JW Kingdom Hall Church)			35	no	0
			9077 Hurlock			52	YES	1
			9055 Atlin Dr (St. Paul Church)			39	no	0
Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr						
	Riverside Dr	Engineers Cut-Off Rd	2523 Sunset	68	YES	56	YES	1
			9516 Glacier Hwy Spruce Corner Condo	61	no	51	YES	1
			9524/26 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	2
			9520/22 Glacier Hwy, Spruce Corner Condos	62	no	52	YES	2
			9530-9542 Glacier Hwy, Spruce Corner Condos	70	YES	58	YES	8
			2524 Alder Circle			52	YES	1
			9621/23 Glacier Hwy	63	no	52	YES	2
			2528 Scott Dr	65	YES	54	YES	1
			2526 Scott Dr	62	no	49	no	0
			2577 Meadow Ln	68	YES	58	YES	1
			10004 Glacier Hwy (upstairs apt.)			56	YES	1
			10002 Glacier Hwy (upstairs apt.)			56	YES	1
			1st house S of Swampy Acres	66	YES	56	YES	1
	Engineers Cut-Off Rd	Fritz Cove Rd	3011 Hamilton St	66	YES	56	YES	1
			3021 Hamilton St			49	no	0
			3010 Hamilton St	70	YES	55	YES	1
			Red log cabin	72	YES	62	YES	1
			10615 Glacier Hwy	73	YES	59	YES	1
			10635 Glacier Hwy	69	YES	57	YES	1
			3144 Wilma Ave			52	YES	1
			10650 Glacier Hwy	68	YES	58	YES	1
			10665 Glacier Hwy	71	YES	61	YES	1
			10785 Glacier Hwy (LT-6)	69	YES	57	YES	1
			10651 Glacier Hwy			51	YES	1
			10680 Glacier Hwy (elevated 15')	68	YES	56	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Alternative 4D				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Engineers Cut-Off Rd	Fritz Cove Rd	10695 Glacier Hwy			54	YES	2
			10845 Glacier Hwy			57	YES	1
			10885 Glacier Hwy	69	YES	57	YES	1
			10945 Glacier Hwy (upslope!)	66	YES	56	YES	1
			10965 Glacier Hwy (elevated!)	69	YES	56	YES	1
			Auke Lake Recreational Area					0
	Fritz Cove Rd	Auke Bay Harbor	11370 Glacier Hwy	62	no	52	YES	1
			11385 Glacier Hwy (depressed 15')	66	YES	55	YES	1
			11390 Glacier Hwy			57	YES	1
			11420 Glacier Hwy			50	YES	1
			11450 Glacier Hwy			40	no	0
			11450 Glacier Hwy (setback)			52	YES	1
			11480 Glacier Hwy			52	YES	1
			11445 Glacier Hwy			61	YES	1
			11540 Glacier Hwy			51	YES	1
			11550 Glacier Hwy			56	YES	1
			101 Harbor Dr (apts depressed 20-30')			53	YES	4
			11600 Glacier Hwy			53	YES	1
			11624? Glacier Hwy	63	no	52	YES	1
			11648 Glacier Hwy	62	no	52	YES	2
	Auke Bay Harbor	Auke Nu Dr	DeHart's upper floor			55	YES	1
			11765 Glacier Hwy (new construction)	62	no	52	YES	1
			Squire's Rest Bldg			56	YES	8
			11957 Glacier Hwy (apt behind Fishermen's Bend Store)			46	no	0
			11981? Glacier Hwy (depressed 20')			44	no	0
			11981.5? Glacier Hwy (new construction)	65	YES	55	YES	1
			11970 Glacier Hwy (Auke Bay Bible Church)			37	no	0
			11930 Glacier Hwy (Auke Bay RV Park)	73	YES	59	YES	1
			11899 Glacier Hwy, (apts over post office)			47	no	0
			11899 Glacier Hwy, (apt #5 over post office)			49	no	0

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Alternative 4D				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Auke Bay Harbor	Auke Nu Dr	12020 Bayview Rd	61	no	50	YES	1
			Apartments between Bayview and Seaview Rds (1st floor)	63	no	52	YES	4
			Apartments between Bayview and Seaview Rds (2nd floor)	63	no	52	YES	4
			3855 Seaview Rd			52	YES	1
			12005 Glacier Hwy (depressed 35')			50	YES	1
			12075 Glacier Hwy	71	YES	61	YES	1
			12085 Glacier Hwy	66	YES	56	YES	1
			12175 Glacier Hwy, Unit D	61	no	51	YES	1
			12280 Glacier Hwy			49	no	1
	Auke Nu Dr	Auke Bay Ferry Terminal						
	Auke Bay Ferry Terminal	Otter Way	13500 Glacier Hwy	66	YES	56	YES	1
			13580 Glacier Hwy (elevated 20')	63	no	38	no	0
			13660 Glacier Hwy (slope shielding) (ST-16)	66	YES	56	YES	1
			13660 Glacier Hwy (apt)			56	YES	1
	Otter Way	Auke Rec Rd						
	Auke Rec Rd	Pt Lena Rd (south)	Aant'lyeik Park					
			Lena Loop Park					
	Pt Lena Rd (south)	Point Stephens/Trails End Rds	16810 Glacier Hwy	60	no	50	YES	1
			16911? Glacier Hwy	65	YES	55	YES	1
			16912? Glacier Hwy (apts)			50	YES	2
			17000 Glacier Hwy	60	no	49	no	0
			17050 Glacier Hwy (elevated)	64	no	53	YES	1
			17205 Glacier Hwy			51	YES	1
			17265 Glacier Hwy			50	YES	1
			17445 Glacier Hwy			46	no	0
			17465 Glacier Hwy			50	YES	1
			17525 Glacier Hwy			49	no	0
			17575 Glacier Hwy			51	YES	1

Table 8 (continued)
Analysis of Potentially Impacted Land Use (Juneau Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Alternative 4D				
				Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Glacier Hwy	Point Stephens/Trails End Rds	Shrine	19049? Glacier Hwy		no	48	no	0
			19051 Glacier Hwy (LT-5)		no	47	no	0
	Shrine	Dotsons Landing Rd						
	Dotsons Landing Rd	Herbert River						
	Herbert River	Benjamin Island south						
	Benjamin Island south	Benjamin Island north						
	Benjamin Island north	terminus (Echo Cove)	Yankee Cove lodge & cabins (ST-18) - slope shielding	55	no	46	no	0
			Sunshine Cove (beach & camping) - slope shielding	55	no			0

Table 9
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 1 (No Action)

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 1 (No Action)				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	52	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0
			Residence northwest corner Main and 21st	21	22	48	no	38	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 1 (No Action)

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 1 (No Action)				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	52	no	42	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	47	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	42	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	63	no	54	YES	1
			Residence southeast corner 23rd and Main	3	4	63	no	52	YES	1
			Residence on State and 23rd	5	6	56	no	46	no	0
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	56	no	46	no	0
			LT-3	9	0	56	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	49	no	0
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	66	YES	54	YES	1
			Residence northwest corner Main and 22nd	14	15	66	YES	53	YES	1
			Residence northeast corner Main and 22nd facing Main	17	0	66	YES	n/a	n/a	1
			Residence northeast corner Main and 22nd facing 22nd	18	19	65	YES	55	YES	1
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	61	no	51	YES	1
			Residence southeast corner Main & 22nd	20	0	64	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	62	no	50	YES	1
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	62	no	52	YES	1
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	63	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	60	no	50	YES	1
			420 22nd Ave	26	27	63	no	51	YES	1
			3rd Residence west of State, southside of 22nd	28	28	61	no	51	YES	1
			Residence on 22nd between State and Main (ST-9)	29	30	62	no	51	YES	1
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	61	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	48	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2A				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	63	no	53	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	52	YES	1
			Residence on State and 23rd	5	6	56	no	46	no	0
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	55	no	46	no	0
			LT-3	9	0	55	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	51	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	48	no	0
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	65	YES	53	YES	1
			Residence northwest corner Main and 22nd	14	15	66	YES	53	YES	1
			Residence northeast corner Main and 22nd facing Main	17	0	66	YES	n/a	n/a	1
			Residence northeast corner Main and 22nd facing 22nd	18	19	65	YES	55	YES	1
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	61	no	51	YES	1
			Residence southeast corner Main & 22nd	20	0	64	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2A

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2A				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	62	no	49	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	61	no	51	YES	1
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	62	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	60	no	50	YES	1
			420 22nd Ave	26	27	62	no	50	YES	1
			3rd Residence west of State, southside of 22nd	28	28	60	no	50	YES	1
			Residence on 22nd between State and Main (ST-9)	29	30	62	no	51	YES	1
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	60	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	47	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2B				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	52	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	49	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	53	no	43	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	42	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	49	no	39	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2B

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2B				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	39	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	58	no	48	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	50	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2C				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	64	no	54	YES	1
			Residence southeast corner 23rd and Main	3	4	63	no	53	YES	1
			Residence on State and 23rd	5	6	57	no	47	no	0
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	56	no	47	no	0
			LT-3	9	0	56	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	49	no	0
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	66	YES	54	YES	1
			Residence northwest corner Main and 22nd	14	15	66	YES	53	YES	1
			Residence northeast corner Main and 22nd facing Main	17	0	66	YES	n/a	n/a	1
			Residence northeast corner Main and 22nd facing 22nd	18	19	66	YES	55	YES	1
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	61	no	51	YES	1
			Residence southeast corner Main & 22nd	20	0	64	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 2C

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 2C				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	62	no	50	YES	1
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	62	no	52	YES	1
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	63	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	61	no	51	YES	1
			420 22nd Ave	26	27	63	no	51	YES	1
			3rd Residence west of State, southside of 22nd	28	28	61	no	51	YES	1
			Residence on 22nd between State and Main (ST-9)	29	30	63	no	51	YES	1
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	61	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	48	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 3				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	53	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 3

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 3				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	38	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	48	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4A				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	52	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4A

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4A				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	38	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	47	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4B				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	52	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4B

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4B				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	38	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	47	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4C				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	52	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4C

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4C				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	38	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	47	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4D				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
State St./ 23rd Ave.	21st Ave	Skagway Dyea Hwy	Daycare southwest corner 23rd and Main	1	2	62	no	51	YES	1
			Residence southeast corner 23rd and Main	3	4	62	no	48	no	0
			Residence on State and 23rd	5	6	64	no	53	YES	1
			Residence northwest corner of State and 22nd (420 22nd Ave) near LT-3	7	8	62	no	50	YES	1
			LT-3	9	0	61	no	n/a	n/a	0
			Residence southwest corner of State and 22nd	0	10	n/a	n/a	52	YES	1
			Apartment northwest corner of State and 21st	0	11	n/a	n/a	50	YES	8
Main St	23rd Ave	22nd Ave	Residence on Main between 22nd & 23rd	12	13	52	no	42	no	0
			Residence northwest corner Main and 22nd	14	15	51	no	41	no	0
			Residence northeast corner Main and 22nd facing Main	17	0	52	no	n/a	n/a	0
			Residence northeast corner Main and 22nd facing 22nd	18	19	51	no	41	no	0
	22nd Ave	21st Ave	Residence southwest corner of Main and 22nd	16	16	48	no	38	no	0
			Residence southeast corner Main & 22nd	20	0	50	no	n/a	n/a	0

Table 9 (continued)
Analysis of Potentially Impacted Land Use (North Skagway Vicinity) For All Alternatives

Alternative 4D

Segment	From	To	Location / Address	Figure 18 Location ID		Alternative 4D				
						Exterior (if applicable)	Impact?	Interior	Impact?	Number of Impacted Structures or Housing Units
				Exterior	Interior	L_{eq}(h) (dBA)		L_{eq}(h) (dBA)		
Main St	22nd Ave	21st Ave	Residence northwest corner Main and 21st	21	22	48	no	38	no	0
22nd Ave	Main St	State St	3rd Residence west of State, northside of 22nd	23	23	53	no	43	no	0
			Between 2nd and 3rd residence west of State, northside of 22nd	24	0	53	no	n/a	n/a	0
			2nd Residence west of State, northside of 22nd	25	25	54	no	44	no	0
			420 22nd Ave	26	27	57	no	47	no	0
			3rd Residence west of State, southside of 22nd	28	28	51	no	41	no	0
			Residence on 22nd between State and Main (ST-9)	29	30	53	no	43	no	0
21st Ave	Main St	State St	Residence, 2nd building west of State	31	0	49	no	n/a	n/a	0
			Apartment northwest corner of State and 21st	0	32	n/a	n/a	45	no	0

Table 10
Noise Exposure for Alternative 2 Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer (1)	Modeled Speed (mph) (2)	Peak Noise Hour Traffic Distribution (3)					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline (4)	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,839	50	4,522	65	84	153	15	180	12 (5)	2		0	
		Lemon Dr	Sunny Dr	3,561	50	3,313	48	70	119	11	160	0	2		0	
		Sunny Dr	Yandukin Dr	4,414	50	4,107	59	86	149	13	170	18(5a)	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,663	50	4,339	62	91	157	14	180	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,682	50	4,4333	82	53	80	34	170	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,824	50	2,670	52	33	48	21	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd(6)	2,593	50	2,452	48	30	44	19	120	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	2,090	50	1,976	39	25	35	15	110	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,462	40	1,380	29	18	25	10	70	17	2		1	
		Auke Bay Harbor	Auke Nu Dr	1,091	35	1,028	23	14	18	8	50	28	3		1	
		Auke Nu Dr	Auke Bay Ferry Terminal	889	35	836	20	12	15	6	40	0	3		1	
		Auke Bay Ferry Terminal	Otter Way	973	50	937	10	10	14	2	70	3	3		1	
		Otter Way	Auke Rec Rd	532	50	507	9	6	8	2	50	0	4		2	
		Auke Rec Rd	Pt Lena Rd (south)	484	50	460	9	6	7	2	50	0	4		3	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	484	50	460	9	6	7	2	50	11	4		3	
		Point Stephens/Trails End Rds	Shrine	323	50	302	12	4	4	1	40	2	6		5	
		Shrine	Dotsons Landing Rd (ST-19)	273	50	253	11	4	4	1	40	0	8		6	
		Dotsons Landing Rd (ST-19)	Herbert River	266	50	244	9	5	5	3	40	0	8		6	
		Herbert River	South end of Benjamin Island	248	50	230	8	4	4	2	40	0	8		7	
		South end of Benjamin Island	North end of Benjamin Island	231	50	213	8	4	4	2	40	0	9		8	
		North end of Benjamin Island	Terminus (Echo Cove) (ST-17)	228	50	210	8	4	4	2	40	0(8)	10	(7)	8	
	East Lynn Canal Hgwy	Echo Cove	Sawmill Cove	193	50	177	8	4	3	1	Less than 35	0	22	(7)	22	(7)
		Sawmill Cove	Slate Cove	193	50	177	8	4	3	1	Less than 35	0	22	(7)	22	(7)
		Slate Cove	Katzehin Delta	193	50	177	8	4	3	1	Less than 35	0	22	(7)	22	(7)

Table 10 (continued)
Noise Exposure for Alternative 2 Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	144	35	129	11	2	2	-	Less than 35	0	4		3	
		Small Tract Rd (northern intersection)	FAA Rd	255	25	229	18	3	4	1	Less than 35	0	3		2	
	Bay Rd	FAA Rd	Beach Rd/Front St	191	35**	170	14	3	3	1	Less than 35	0	4		2	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	215	25	193	15	3	3	1	Less than 35	0	4		2	
		Main St	Haines Hwy	116	45	103	9	2	2	-	Less than 35	0	6		4	
	Haines Hwy	Front St	Nukdik Point	254	40	228	18	3	4	1	Less than 35	0	3		1	
		Nukdik Point	(Lutak) Ferry Terminal Rd	225	40	202	16	3	3	1	Less than 35	0	3		2	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	259	25	233	18	3	4	1	Less than 35	0	3		1	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	314	20	250	33	13	14	4	Less than 35	0	4		3	
		1st Ave	6th Ave	480	20	382	49	21	22	6	40	0	3		2	
		6th Ave	21st Ave	497	20	394	51	22	23	7	40	0	3		2	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	478	25	380	49	21	22	6	40	13	3	(9)	2	(9)
	East Lynn Canal Hwy	Katzehin Delta	Skagway	91	50	73	11	2	4	1	Less than 35					

Notes: [1] Peak noise hour vehicles is 9% of Summer ADT (summer ADT) for this alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004;
Juneau locale data reflects addition of 30% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.
Skagway locale data reflects addition of 10% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] includes 9 units of Pioneer's Home
[5a] includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road

Table 10 (continued)
Noise Exposure for Alternative 2 Vehicular Traffic in 2038

Notes: [7] Increase relative to existing noise levels for new highway area based upon the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 160 feet from the highway centerline to avoid impact.

[8] Yankee Cove and beach at Sunshine Cove would be impacted by the increase in traffic noise relative to existing conditions (see note 7)

$_{eq}$(h) – Energy equivalent noise level for one hour; dBA – A-weighted decibel ; mph – miles per hour

[9] Increase of 19 dBA relative to existing noise levels for new highway area in remote area only; this increase is based on the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 100 feet from the highway centerline to avoid impact.

Table 11
Noise Exposure for Alternative 2A Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA Leq(h) (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in L_{eq}(h) Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in L_{eq}(h) Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,669	50	4,366	57	80	151	15	170	12[5]	2		0	
		Lemon Dr	Sunny Dr	3,476	50	3,235	44	68	118	11	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,329	50	4,029	55	84	148	13	170	18[5a]	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,578	50	4,261	58	89	156	14	180	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,597	50	4,355	78	51	79	34	170	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,739	50	2,592	48	31	47	21	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd[6]	2,508	50	2,374	44	28	43	19	120	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	2,005	50	1,898	35	23	34	15	100	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,377	40	1,302	25	16	24	10	70	17	2		0	
		Auke Bay Harbor	Auke Nu Dr	1,006	35	950	19	12	17	8	50	26	2		1	
		Auke Nu Dr	Auke Bay Ferry Terminal	804	35	758	16	10	14	6	40	0	3		1	
		Auke Bay Ferry Terminal	Otter Way	888	50	859	6	8	13	2	70	3	2		1	
		Otter Way	Auke Rec Rd	447	50	429	5	4	7	2	50	0	3		2	
		Auke Rec Rd	Pt Lena Rd (south)	399	50	382	5	4	6	2	40	0	4		2	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	399	50	382	5	4	6	2	40	11	4		2	
		Point Stephens/Trails End Rds	Shrine	238	50	224	8	2	3	1	Less than 35	1	5		3	
		Shrine	Dotsons Landing Rd (ST-19)	188	50	175	7	2	3	1	Less than 35	0	6		5	
		Dotsons Landing Rd (ST-19)	Herbert River	181	50	166	5	3	4	3	Less than 35	0	6		5	
		Herbert River	South end of Benjamin Island	163	50	152	4	2	3	2	Less than 35	0	7		5	
		South end of Benjamin Island	North end of Benjamin Island	146	50	135	4	2	3	2	Less than 35	0	7		6	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	143	50	132	4	2	3	2	Less than 35	0	8		6	
	East Lynn Canal Hwy	Echo Cove	Sawmill Cove	108	50	99	4	2	2	1	Less than 35	0	19	(7)	19	(7)
		Sawmill Cove	Slate Cove	N/A												
		Slate Cove	Katzehin Delta	108	50	99	4	2	2	1	Less than 35	0	19	(7)	19	(7)

Table 11 (continued)
Noise Exposure for Alternative 2A Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer (1)	Modeled Speed (mph) (2)	Peak Noise Hour Traffic Distribution (3)					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline (4)	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	126	35	113	9	2	2	-	Less than 35	0	4		2	
		Small Tract Rd (northern intersection)	FAA Rd	237	25	213	16	3	4	1	Less than 35	0	3		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	173	35**	154	12	3	3	1	Less than 35	0	4		2	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	197	25	177	13	3	3	1	Less than 35	0	3		2	
		Main St	Haines Hwy	98	45	87	7	2	2	-	Less than 35	0	5		4	
	Haines Hwy	Front St	Nukdik Point	236	40	212	16	3	4	1	Less than 35	0	3		1	
		Nukdik Point	(Lutak) Ferry Terminal Rd	207	40	186	14	3	3	1	Less than 35	0	3		2	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	241	25	217	16	3	4	1	Less than 35	0	3		1	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	289	20	230	30	12	13	4	Less than 35	0	4		2	
		1st Ave	6th Ave	455	20	362	46	20	21	6	40	0	3		2	
		6th Ave	21st Ave	472	20	374	48	21	22	7	40	0	3		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	453	25	360	46	20	21	6	40	12	3	(7)	2	(7)
	East Lynn Canal Highway	Katzehin Delta	Skagway	66	50	53	8	1	3	1	Less than 35					

Notes: [1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004 Skagway locale data reflects addition of 10% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
[7] Increase of 18 dBA relative to existing noise levels for new highway area in remote areas only; this increase is based on the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 100 to 110 feet from the highway centerline to avoid impact.
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 12
Noise Exposure for Alternative 2B Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,731	50	4,422	59	82	153	15	180	12[5]	2		0	
		Lemon Dr	Sunny Dr	3,507	50	3,263	45	69	119	11	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,360	50	4,057	56	85	149	13	170	18[5a]	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,609	50	4,289	59	90	157	14	180	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,628	50	4,383	79	52	80	34	170	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,770	50	2,620	49	32	48	21	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd[6]	2,539	50	2,402	45	29	44	19	120	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	2,036	50	1,926	36	24	35	15	110	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,408	40	1,330	26	17	25	10	70	17	2		1	
		Auke Bay Harbor	Auke Nu Dr	1,037	35	978	20	13	18	8	50	26	2		1	
		Auke Nu Dr	Auke Bay Ferry Terminal	835	35	786	17	11	15	6	40	0	3		1	
		Auke Bay Ferry Terminal	Otter Way	919	50	887	7	9	14	2	70	4	3		1	
		Otter Way	Auke Rec Rd	478	50	457	6	5	8	2	50	0	3		2	
		Auke Rec Rd	Pt Lena Rd (south)	430	50	410	6	5	7	2	50	0	4		2	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	430	50	410	6	5	7	2	50	11	4		2	
		Point Stephens/Trails End Rds	Shrine	269	50	252	9	3	4	1	40	1	5		4	
		Shrine	Dotsons Landing Rd (ST-19)	219	50	203	8	3	4	1	Less than 35	0	7		5	
		Dotsons Landing Rd (ST-19)	Herbert River	212	50	194	6	4	5	3	Less than 35	0	7		5	
		Herbert River	South end of Benjamin Island	194	50	180	5	3	4	2	Less than 35	0	7		6	
		South end of Benjamin Island	North end of Benjamin Island	177	50	163	5	3	4	2	Less than 35	0	8		7	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	174	50	160	5	3	4	2	Less than 35	0	9		7	
	East Lynn Canal Hwy	Echo Cove	Sawmill Cove	139	50	127	5	3	3	1	Less than 35	0	20	(7)	20	(7)
		Sawmill Cove	Slate Cove	139	50	127	5	3	3	1	Less than 35	0	20	(7)	20	(7)
		Slate Cove	Katzehin Delta	139	50	127	5	3	3	1	Less than 35	0	20	(7)	20	(7)

Table 12 (continued)
Noise Exposure for Alternative 2B Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	133	35	119	10	2	2	-	Less than 35	0	4		2	
		Small Tract Rd (northern intersection)	FAA Rd	244	25	219	17	3	4	1	Less than 35	0	3		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	180	35**	160	13	3	3	1	Less than 35	0	4		2	
	Beach Rd	Beach Rd/Front St/Bay Rd	terminus	172	45	154	12	2	3	1	Less than 35	0	4		2	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	204	25	183	14	3	3	1	Less than 35	0	3		2	
		Main St	Haines Hwy	105	45	93	8	2	2	-	Less than 35	0	6		4	
	Haines Hwy	Front St	Nukdik Point	243	40	218	17	3	4	1	Less than 35	0	3		1	
		Nukdik Point	(Lutak) Ferry Terminal Rd	214	40	192	15	3	3	1	Less than 35	0	3		2	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	248	25	223	17	3	4	1	Less than 35	0	3		1	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	278	20	220	29	12	13	4	Less than 35	0	4		2	
		1st Ave	6th Ave	444	20	352	45	20	21	6	40	0	3		1	
		6th Ave	21st Ave	461	20	364	47	21	22	7	40	0	3		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	442	25	350	45	20	21	6	40	12	3		1	
	East Lynn Canal Hwy	Katzehin Delta	Skagway	N/A												

Notes: [1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004
Juneau locale data reflects addition of 30% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.
[2] also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
* includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[4] rounded to the nearest 10 feet
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
[7] Increase relative to existing noise levels for new highway area based upon the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 120 feet from the highway centerline to avoid impact.
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 13
Noise Exposure For Alternative 2c Vehicular Traffic In 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,759	50	4,446	63	82	153	15	180	12[5]	2		0	
		Lemon Dr	Sunny Dr	3,521	50	3,275	47	69	119	11	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,374	50	4,069	58	85	149	13	170	18[5a]	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,623	50	4,301	61	90	157	14	180	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,642	50	4,395	81	52	80	34	170	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,784	50	2,632	51	32	48	21	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd[6]	2,553	50	2,414	47	29	44	19	120	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	2,050	50	1,938	38	24	35	15	110	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,422	40	1,342	28	17	25	10	70	17	2		1	
		Auke Bay Harbor	Auke Nu Dr	1,051	35	990	22	13	18	8	50	26	2		1	
		Auke Nu Dr	Auke Bay Ferry Terminal	849	35	798	19	11	15	6	40	0	3		1	
		Auke Bay Ferry Terminal	Otter Way	933	50	899	9	9	14	2	70	3	3		1	
		Otter Way	Auke Rec Rd	492	50	469	8	5	8	2	50	0	4		2	
		Auke Rec Rd	Pt Lena Rd (south)	444	50	422	8	5	7	2	50	0	4		2	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	444	50	422	8	5	7	2	50	11	4		2	
		Point Stephens/Trails End Rds	Shrine	283	50	264	11	3	4	1	40	2	6		4	
		Shrine	Dotsons Landing Rd (ST-19)	233	50	215	10	3	4	1	40	0	7		5	
		Dotsons Landing Rd (ST-19)	Herbert River	226	50	206	8	4	5	3	40	0	7		6	
		Herbert River	South end of Benjamin Island	208	50	192	7	3	4	2	Less than 35	0	8		6	
		South end of Benjamin Island	North end of Benjamin Island	191	50	175	7	3	4	2	Less than 35	0	9		7	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	188	50	172	7	3	4	2	Less than 35	0	9		7	
	East Lynn Canal Hwy	Echo Cove	Sawmill Cove	153	50	139	7	3	3	1	Less than 35	0	18	(7)	18	(7)
		Sawmill Cove	Slate Cove	153	50	139	7	3	3	1	Less than 35	0	18	(7)	18	(7)
		Slate Cove	Katzehin Delta	153	50	139	7	3	3	1	Less than 35	0	18	(7)	18	(7)

Table 13 (continued)
Noise Exposure for Alternative 2C Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	115	35	103	8	2	2	-	Less than 35	0	3		2	
		Small Tract Rd (northern intersection)	FAA Rd	226	25	203	15	3	4	1	Less than 35	0	3		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	162	35**	144	11	3	3	1	Less than 35	0	3		2	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	186	25	167	12	3	3	1	Less than 35	0	3		2	
		Main St	Haines Hwy	87	45	77	6	2	2	-	Less than 35	0	5		3	
	Haines Hwy	Front St	Nukdik Point	225	40	202	15	3	4	1	Less than 35	0	2		1	
		Nukdik Point	(Lutak) Ferry Terminal Rd	196	40	176	13	3	3	1	Less than 35	0	3		1	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	230	25	207	15	3	4	1	Less than 35	0	2		1	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	350	20	279	37	13	16	5	Less than 35	0	3		1	
		1st Ave	6th Ave	516	20	411	53	21	24	7	Less than 35	0	3		1	
		6th Ave	21st Ave	533	20	423	55	22	25	8	Less than 35	0	3		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	514	25	409	53	21	24	7	40	13	3	(7)	1	(7)
	East Lynn Canal Hwy	Katzehin Delta	Skagway	127	50	102	15	2	6	2	Less than 35					

Notes: [1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004 Juneau locale data reflects addition of 30% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption. Skagway locale data reflects addition of 10% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.

[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed

[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles

[4] Rounded to the nearest 10 feet

* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive

[5] Includes 9 units of Pioneer's Home

[5a] Includes Juneau Christian School (interior)

[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road

[7] Increase of 21 dBA relative to existing noise levels for new highway area in remote areas only; this increase is based on the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 130 feet from the highway centerline to avoid impact.

$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 14
TNM® Results for Selected Noise-Sensitive Receptors, Juneau

Receiver	Modeled Peak-Noise-Hour Noise Level (dBA L_{eq}(h))		
	Existing	Future (Year 2038) Alternative 2 (Worst-Case)	Increase
North of Auke Bay (ST-16)	67	70	3
East of Fritz Cove & West of the Mendenhall River (LT-6)	67	69	2
Egan Drive south of Lemon Drive (ST-14)	71	73	2

Notes: L_{eq}(h) – Energy equivalent noise level for one hour; dBA – A-weighted decibel

Table 15
Noise Exposure for Alternative 3 Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer (1)	Modeled Speed (mph) (2)	Peak Noise Hour Traffic Distribution (3)					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline (4)	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,621	50	4,322	55	80	149	15	170	12(5)	2		0	
		Lemon Dr	Sunny Dr	3,452	50	3,213	43	68	117	11	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,305	50	4,007	54	84	147	13	170	18(5a)	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,554	50	4,239	57	89	155	14	170	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,573	50	4,333	77	51	78	34	160	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,715	50	2,570	47	31	46	21	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd(6)	2,484	50	2,352	43	28	42	19	120	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	1,981	50	1,876	34	23	33	15	100	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,353	40	1,280	24	16	23	10	70	17	2		0	
		Auke Bay Harbor	Auke Nu Dr	982	35	928	18	12	16	8	50	26	2		0	
		Auke Nu Dr	Auke Bay Ferry Terminal	780	35	736	15	10	13	6	40	0	2		1	
		Auke Bay Ferry Terminal	Otter Way	864	50	837	5	8	12	2	70	3	2		1	
		Otter Way	Auke Rec Rd	423	50	407	4	4	6	2	50	0	3		1	
		Auke Rec Rd	Pt Lena Rd (south)	375	50	360	4	4	5	2	40	0	3		2	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	375	50	360	4	4	5	2	40	9	3		2	
		Point Stephens/Trails End Rds	Shrine	214	50	202	7	2	2	1	Less than 35	0	4		3	
		Shrine	Dotsons Landing Rd (ST-19)	164	50	153	6	2	2	1	Less than 35	0	6		4	
		Dotsons Landing Rd (ST-19)	Herbert River	157	50	144	4	3	3	3	Less than 35	0	6		4	
		Herbert River	South end of Benjamin Island	139	50	130	3	2	2	2	Less than 35	0	6		4	
		South end of Benjamin Island	North end of Benjamin Island	122	50	113	3	2	2	2	Less than 35	0	7		5	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	119	50	110	3	2	2	2	Less than 35	0	7		5	
	West Lynn Canal Hwy	Echo Cove	Sawmill Cove	84	50	77	3	2	1	1	Less than 35	0	18	(7)	18	(7)
		Sawmill Cove	Slate Cove	**N/A**												
		Slate Cove	Katzehin Delta	**N/A**												

Table 15 (continued)
Noise Exposure for Alternative 3 Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer (1)	Modeled Speed (mph) (2)	Peak Noise Hour Traffic Distribution (3)					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline (4)	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	179	35	161	13	3	2	-	Less than 35	0	5		4	
		Small Tract Rd (northern intersection)	FAA Rd	290	25	261	20	4	4	1	Less than 35	0	4		2	
	Bay Rd	FAA Rd	Beach Rd/Front St	226	35**	202	16	4	3	1	Less than 35	0	5		3	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	250	25	225	17	4	3	1	Less than 35	0	4		3	
		Main St	Haines Hwy	151	45	135	11	3	2	-	Less than 35	0	7		6	
	Haines Hwy	Front St	Nukdik Point	289	40	260	20	4	4	1	Less than 35	0	3		2	
		Nukdik Point	(Lutak) Ferry Terminal Rd	260	40	234	18	4	3	1	Less than 35	0	4		3	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	294	25	265	20	4	4	1	Less than 35	0	3		2	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	100	50	89	8	2	1	-	Less than 35	0	27	(8)	27	(8)
Skagway	Broadway St	terminus	1st Ave	247	20	197	25	11	11	3	Less than 35	0	3		1	
		1st Ave	6th Ave	413	20	329	41	19	19	5	Less than 35	0	3		1	
		6th Ave	21st Ave	430	20	341	43	20	20	6	Less than 35	0	3		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	411	25	327	41	19	19	5	40	12	3		1	
	West Lynn Canal Hwy	Katzehin Delta	Skagway	N/A												

Notes: [1] Peak noise hour vehicles is 9% of Summer ADT (summer ADT) for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004 Haines locale data reflects addition of 20% of the alternative's (incremental) summer ADT to account for non-through traffic with same distribution of vehicle types -- conservative assumption.
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
[7] Increase relative to existing noise levels for new highway area based upon the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 100 feet from the highway centerline to avoid impact.
[8] Increases relative to existing noise levels for new highway areas based upon the existing ambient noise levels of 35 dBA L_{eq} measured at ST-1. The receiver should be more than 280 feet from the roadway centerline to avoid impact
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 16
Noise Exposure for Alternative 4A Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,523	50	4,232	51	78	149	13	170	12[5]	2		0	
		Lemon Dr	Sunny Dr	3,403	50	3,168	41	67	117	10	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,256	50	3,962	52	83	147	12	170	18[5a]	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,505	50	4,194	55	88	155	13	170	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,524	50	4,288	75	50	78	33	160	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,666	50	2,525	45	30	46	20	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd[6]	2,435	50	2,307	41	27	42	18	110	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	1,932	50	1,831	32	22	33	14	100	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,304	40	1,235	22	15	23	9	60	17	2		0	
		Auke Bay Harbor	Auke Nu Dr	933	35	883	16	11	16	7	50	26	2		0	
		Auke Nu Dr	Auke Bay Ferry Terminal	731	35	691	13	9	13	5	40	0	2		1	
		Auke Bay Ferry Terminal	Otter Way	815	50	792	3	7	12	1	70	3	2		0	
		Otter Way	Auke Rec Rd	374	50	362	2	3	6	1	40	0	2		1	
		Auke Rec Rd	Pt Lena Rd (south)	326	50	315	2	3	5	1	40	0	3		1	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	326	50	315	2	3	5	1	40	9	3		1	
		Point Stephens/Trails End Rds	Shrine	165	50	157	5	1	2	-	Less than 35	0	3		2	
		Shrine	Dotsons Landing Rd (ST-19)	115	50	108	4	1	2	-	Less than 35	0	4		2	
		Dotsons Landing Rd (ST-19)	Herbert River	108	50	99	2	2	3	2	Less than 35	0	4		2	
		Herbert River	South end of Benjamin Island	90	50	85	1	1	2	1	Less than 35	0	4		3	
		South end of Benjamin Island	North end of Benjamin Island	73	50	68	1	1	2	1	Less than 35	0	4		3	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	70	50	65	1	1	2	1	Less than 35	0	5		3	
		Echo Cove	Sawmill Cove	**N/A**												
		Sawmill Cove	Slate Cove	**N/A**												
		Slate Cove	Katzehin Delta	**N/A**												

Table 16 (continued)
Noise Exposure for Alternative 4A Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	98	35	89	7	1	1	-	Less than 35	0	3		1	
		Small Tract Rd (northern intersection)	FAA Rd	209	25	189	14	2	3	1	Less than 35	0	2		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	145	35**	130	10	2	2	1	Less than 35	0	3		1	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	169	25	153	11	2	2	1	Less than 35	0	3		1	
		Main St	Haines Hwy	70	45	63	5	1	1	-	Less than 35	0	4		2	
	Haines Hwy	Front St	Nukdik Point	208	40	188	14	2	3	1	Less than 35	0	2		0	
		Nukdik Point	(Lutak) Ferry Terminal Rd	179	40	162	12	2	2	1	Less than 35	0	3		1	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	213	25	193	14	2	3	1	Less than 35	0	2		0	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	239	20	190	24	11	11	3	Less than 35	0	3		1	
		1st Ave	6th Ave	405	20	322	40	19	19	5	Less than 35	0	3		1	
		6th Ave	21st Ave	422	20	334	42	20	20	6	Less than 35	0	2		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	403	25	320	40	19	19	5	40	12	3		1	
	Lynn Canal Highway	Katzehin Delta	Skagway	N/A												

Notes: [1] Peak noise hour vehicles is 9% of summer ADT (summer ADT) for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[4] Rounded to the nearest 10 feet
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 17
Noise Exposure for Alternative 4B Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer (1)	Modeled Speed (mph) (2)	Peak Noise Hour Traffic Distribution (3)					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline (4)	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,539	50	4,246	53	78	149	13	170	12(5)	2		0	
		Lemon Dr	Sunny Dr	3,411	50	3,175	42	67	117	10	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,264	50	3,969	53	83	147	12	170	18(5a)	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,513	50	4,201	56	88	155	13	170	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,532	50	4,295	76	50	78	33	160	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,674	50	2,532	46	30	46	20	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd(6)	2,443	50	2,314	42	27	42	18	110	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	1,940	50	1,838	33	22	33	14	100	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,312	40	1,242	23	15	23	9	60	17	2		0	
		Auke Bay Harbor	Auke Nu Dr	941	35	890	17	11	16	7	50	26	2		0	
		Auke Nu Dr	Auke Bay Ferry Terminal	739	35	698	14	9	13	5	40	0	2		1	
		Auke Bay Ferry Terminal	Otter Way	823	50	799	4	7	12	1	70	3	2		0	
		Otter Way	Auke Rec Rd	382	50	369	3	3	6	1	40	0	2		1	
		Auke Rec Rd	Pt Lena Rd (south)	334	50	322	3	3	5	1	40	0	3		1	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	334	50	322	3	3	5	1	40	9	3		1	
		Point Stephens/Trails End Rds	Shrine	173	50	164	6	1	2	-	Less than 35	0	3		2	
		Shrine	Dotsons Landing Rd (ST-19)	123	50	115	5	1	2	-	Less than 35	0	4		3	
		Dotsons Landing Rd (ST-19)	Herbert River	116	50	106	3	2	3	2	Less than 35	0	5		3	
		Herbert River	South end of Benjamin Island	98	50	92	2	1	2	1	Less than 35	0	4		3	
		South end of Benjamin Island	North end of Benjamin Island	81	50	75	2	1	2	1	Less than 35	0	5		3	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	78	50	72	2	1	2	1	Less than 35	0	5		4	
		Echo Cove	Sawmill Cove	43	50	39	2	1	1	-	Less than 35	0	15	(7)	15	(7)
		Sawmill Cove	Slate Cove	N/A												
		Slate Cove	Katzehin Delta	N/A												

Table 17 (continued)
Noise Exposure for Alternative 4B Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	102	35	93	7	1	1	-	Less than 35	0	3		1	
		Small Tract Rd (northern intersection)	FAA Rd	213	25	193	14	2	3	1	Less than 35	0	2		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	149	35**	134	10	2	2	1	Less than 35	0	3		1	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	173	25	157	11	2	2	1	Less than 35	0	3		1	
		Main St	Haines Hwy	74	45	67	5	1	1	-	Less than 35	0	4		2	
	Haines Hwy	Front St	Nukdik Point	212	40	192	14	2	3	1	Less than 35	0	2		1	
		Nukdik Point	(Lutak) Ferry Terminal Rd	183	40	166	12	2	2	1	Less than 35	0	3		1	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	217	25	197	14	2	3	1	Less than 35	0	2		1	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	**N/A**												
Skagway	Broadway St	terminus	1st Ave	241	20	192	24	11	11	3	Less than 35	0	3		1	
		1st Ave	6th Ave	407	20	324	40	19	19	5	Less than 35	0	3		1	
		6th Ave	21st Ave	424	20	336	42	20	20	6	Less than 35	0	2		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	405	25	322	40	19	19	5	40	12	3		1	
	Lynn Canal Highway	Katzehin Delta	Skagway	**N/A**												

Notes: [1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
[7] Increase relative to existing noise levels for new highway area based upon the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 70 feet from the highway centerline to avoid impact.
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 18
Noise Exposure for Alternative 4C Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,499	50	4,212	51	76	147	13	170	12[5]	2		0	
		Lemon Dr	Sunny Dr	3,391	50	3,158	41	66	116	10	150	0	2		0	
		Sunny Dr	Yandukin Dr	4,244	50	3,952	52	82	146	12	170	18[5a]	2		0	
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,493	50	4,184	55	87	154	13	170	0	2		0	
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,512	50	4,278	75	49	77	33	160	4	2		0	
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,654	50	2,515	45	29	45	20	120	0	2		0	
		Riverside Dr	Engineers Cut-Off Rd[6]	2,423	50	2,297	41	26	41	18	110	22	2		0	
		Engineers Cut-Off Rd	Fritz Cove Rd	1,920	50	1,821	32	21	32	14	100	17	2		0	
		Fritz Cove Rd	Auke Bay Harbor	1,292	40	1,225	22	14	22	9	60	17	2		0	
		Auke Bay Harbor	Auke Nu Dr	921	35	873	16	10	15	7	50	26	2		0	
		Auke Nu Dr	Auke Bay Ferry Terminal	719	35	681	13	8	12	5	40	0	2		0	
		Auke Bay Ferry Terminal	Otter Way	803	50	782	3	6	11	1	70	3	2		0	
		Otter Way	Auke Rec Rd	362	50	352	2	2	5	1	40	0	2		1	
		Auke Rec Rd	Pt Lena Rd (south)	314	50	305	2	2	4	1	40	0	2		1	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	314	50	305	2	2	4	1	40	4	2		1	
		Point Stephens/Trails End Rds	Shrine	153	50	147	5	-	1	-	Less than 35	0	3		1	
		Shrine	Dotsons Landing Rd (ST-19)	103	50	98	4	-	1	-	Less than 35	0	4		2	
		Dotsons Landing Rd (ST-19)	Herbert River	96	50	89	2	1	2	2	Less than 35	0	4		2	
		Herbert River	South end of Benjamin Island	78	50	75	1	-	1	1	Less than 35	0	3		2	
		South end of Benjamin Island	North end of Benjamin Island	61	50	58	1	-	1	1	Less than 35	0	4		2	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	58	50	55	1	-	1	1	Less than 35	0	4		2	
		Echo Cove	Sawmill Cove	**N/A**												
		Sawmill Cove	Slate Cove	**N/A**												
		Slate Cove	Katzehin Delta	**N/A**												

Table 18 (continued)
Noise Exposure for Alternative 4C Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	91	35	83	6	1	1	-	Less than 35	0	2		1	
		Small Tract Rd (northern intersection)	FAA Rd	202	25	183	13	2	3	1	Less than 35	0	2		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	138	35**	124	9	2	2	1	Less than 35	0	3		1	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	162	25	147	10	2	2	1	Less than 35	0	2		1	
		Main St	Haines Hwy	63	45	57	4	1	1	-	Less than 35	0	3		2	
	Haines Hwy	Front St	Nukdik Point	201	40	182	13	2	3	1	Less than 35	0	2		0	
		Nukdik Point	(Lutak) Ferry Terminal Rd	172	40	156	11	2	2	1	Less than 35	0	2		1	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	206	25	187	13	2	3	1	Less than 35	0	2		0	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	233	20	185	23	11	11	3	Less than 35	0	3		1	
		1st Ave	6th Ave	399	20	317	39	19	19	5	Less than 35	0	2		1	
		6th Ave	21st Ave	416	20	329	41	20	20	6	Less than 35	0	2		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	397	25	315	39	19	19	5	40	12	2		1	
	Lynn Canal Highway	Katzehin Delta	Skagway	N/A												

Notes:
[1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 19
Noise Exposure for Alternative 4D Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Juneau	Egan Drive	Twin Lakes Dr*	Lemon Dr*	4,515	50	4,226	51	78	147	13	170	12[5]	2			
		Lemon Dr	Sunny Dr	3,399	50	3,165	41	67	116	10	150	0	2			
		Sunny Dr	Yandukin Dr	4,252	50	3,959	52	83	146	12	170	18[5a]	2			
		Yandukin Dr	Old Glacier Hwy (eastern intersection)	4,501	50	4,191	55	88	154	13	170	0	2			
		Old Glacier Hwy (eastern intersection)	Old Glacier Hwy (northern intersection)	4,520	50	4,285	75	50	77	33	160	4	2			
	Glacier Hwy	Old Glacier Hwy (northern intersection)	Riverside Dr	2,662	50	2,522	45	30	45	20	120	0	2			
		Riverside Dr	Engineers Cut-Off Rd[6]	2,431	50	2,304	41	27	41	18	110	22	2			
		Engineers Cut-Off Rd	Fritz Cove Rd	1,928	50	1,828	32	22	32	14	100	17	2			
		Fritz Cove Rd	Auke Bay Harbor	1,300	40	1,232	22	15	22	9	60	17	2			
		Auke Bay Harbor	Auke Nu Dr	929	35	880	16	11	15	7	50	26	2			
		Auke Nu Dr	Auke Bay Ferry Terminal	727	35	688	13	9	12	5	40	0	2		1	
		Auke Bay Ferry Terminal	Otter Way	811	50	789	3	7	11	1	70	3	2			
		Otter Way	Auke Rec Rd	370	50	359	2	3	5	1	40	0	2		1	
		Auke Rec Rd	Pt Lena Rd (south)	322	50	312	2	3	4	1	40	0	3		1	
		Pt Lena Rd (south)	Point Stephens/Trails End Rds	322	50	312	2	3	4	1	40	9	3		1	
		Point Stephens/Trails End Rds	Shrine	161	50	154	5	1	1	-	Less than 35	0	3		1	
		Shrine	Dotsons Landing Rd (ST-19)	111	50	105	4	1	1	-	Less than 35	0	4		2	
		Dotsons Landing Rd (ST-19)	Herbert River	104	50	96	2	2	2	2	Less than 35	0	4		2	
		Herbert River	South end of Benjamin Island	86	50	82	1	1	1	1	Less than 35	0	4		2	
		South end of Benjamin Island	North end of Benjamin Island	69	50	65	1	1	1	1	Less than 35	0	4		3	
		North end of Benjamin Island	terminus (Echo Cove) (ST-17)	66	50	62	1	1	1	1	Less than 35	0	4		3	
		Echo Cove	Sawmill Cove	31	50	29	1	1	-	-	Less than 35	0	14	(7)	14	(7)
		Sawmill Cove	Slate Cove	N/A												
		Slate Cove	Katzehin Delta	N/A												

Table 19 (Continued)
Noise Exposure for Alternative 4D Vehicular Traffic in 2038

Locale	Segment	From	To	Peak Noise Hour Vehicles, Summer [1]	Modeled Speed (mph) [2]	Peak Noise Hour Traffic Distribution [3]					Distance to 65 dBA $L_{eq}(h)$ (ft) from roadway centerline [4]	Number of Impacted Structures	Increase in $L_{eq}(h)$ Relative to Existing (dBA)	Notes re: Increase from Existing	Increase in $L_{eq}(h)$ Relative to No Action (dBA)	Notes re: Increase from No Action
						Auto	MT	HT	Bus	M						
Haines	Mud Bay Rd	Letnikof Cove	Small Tract Rd (northern intersection)	96	35	87	7	1	1	-	Less than 35	0	3		1	
		Small Tract Rd (northern intersection)	FAA Rd	207	25	187	14	2	3	1	Less than 35	0	2		1	
	Bay Rd	FAA Rd	Beach Rd/Front St	143	35**	128	10	2	2	1	Less than 35	0	3		1	
	Front Street	Beach Rd/Front St/Bay Rd	Main St	167	25	151	11	2	2	1	Less than 35	0	3		1	
		Main St	Haines Hwy	68	45	61	5	1	1	-	Less than 35	0	4		2	
	Haines Hwy	Front St	Nukdik Point	206	40	186	14	2	3	1	Less than 35	0	2		0	
		Nukdik Point	(Lutak) Ferry Terminal Rd	177	40	160	12	2	2	1	Less than 35	0	2		1	
	3rd Avenue	Haines Hwy (southern)	Haines Hwy (northern)	211	25	191	14	2	3	1	Less than 35	0	2		0	
	West Lynn Canal Highway	William Henry Bay	Mud Bay Rd	N/A												
Skagway	Broadway St	terminus	1st Ave	237	20	188	24	11	11	3	Less than 35	0	3		1	
		1st Ave	6th Ave	403	20	320	40	19	19	5	Less than 35	0	2		1	
		6th Ave	21st Ave	420	20	332	42	20	20	6	Less than 35	0	2		1	
	State St/23rd Ave	21st Ave	Skagway Dyea Hwy	401	25	318	40	19	19	5	40	12	2		1	
	Lynn Canal Highway	Katzehin Delta	Skagway	N/A												

Notes:
[1] Peak noise hour vehicles is 9% of summer ADT for the alternative and No Action summer ADT; Alternative's (incremental) summer ADT per McDowell, 2004
[2] Also modeled speed for autos and motorcycles; modeled speed for trucks and buses was posted speed minus 5 mph; "**" denotes assumed speed
[3] Per McDowell, 2004 and DOT&PF for alternative (incremental) traffic; MT=Medium Truck; HT=Heavy Truck; M=Motorcycles
[4] Rounded to the nearest 10 feet
* Includes traffic on Twin Lakes Drive from Blackerby Street to vicinity of Lemon Drive
[5] Includes 9 units of Pioneer's Home
[5a] Includes Juneau Christian School (interior)
[6] Greatest of (a) Riverside Drive to Old Glacier Hwy North and (b) Old Glacier Hwy North to Engineers Cut-Off Road
[7] Increase relative to existing noise levels for new highway area based upon the existing ambient noise level of 43 dBA L_{eq} as measured at ST-7 and ST-18. The receiver should be more than 60 feet from the highway centerline to avoid impact.
$L_{eq}(h)$ – Energy equivalent noise level for one hour; dBA – A-weighted decibel; mph – miles per hour

Table 20
Average Noise Levels from Construction Activities

Phase	L_{eq} at 50 feet (dBA)
Ground Clearing	84 ± 8
Excavations	88 ± 7
Foundations	88 ± 8
Erection of Structures	79 ± 9
Finishing (i.e., Paving)	84 ± 7

Notes: Leq – Energy equivalent noise level
dBA – A-weighted decibel

Source: USEPA, 1971

FIGURES

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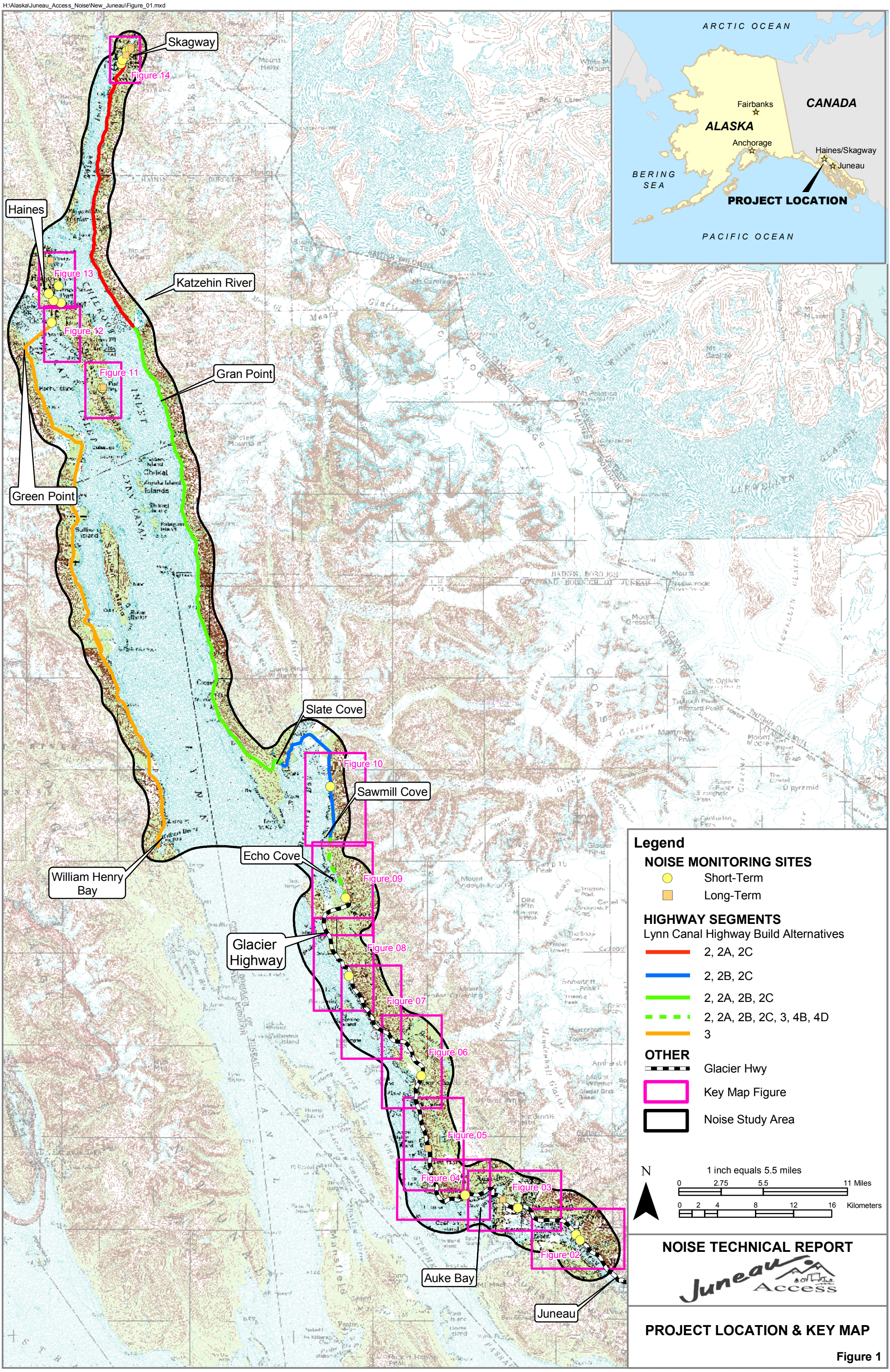

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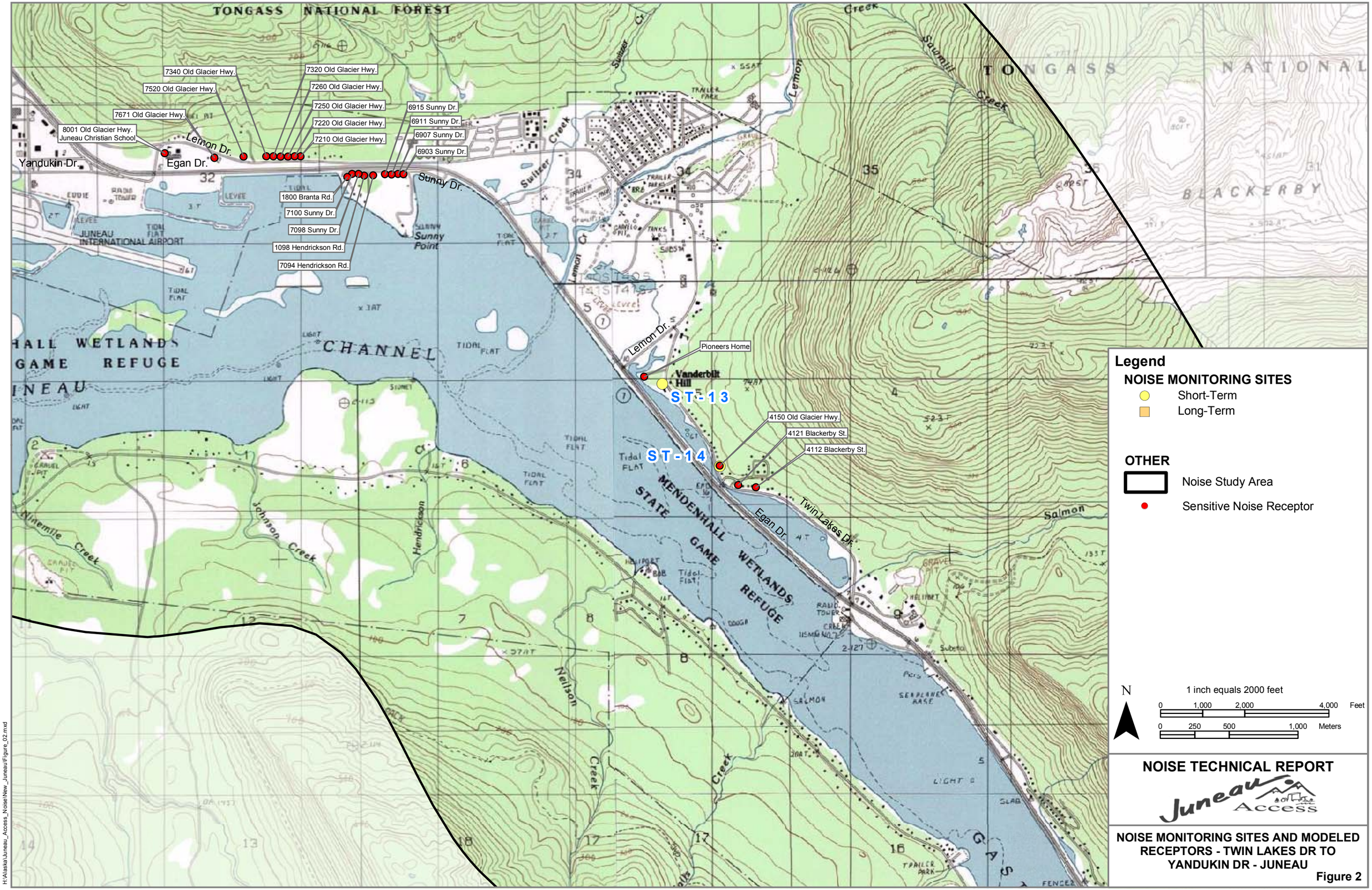
TONGASS NATIONAL FOREST
7340 Old Glacier Hwy.
7320 Old Glacier Hwy.
7520 Old Glacier Hwy.
7260 Old Glacier Hwy.
7250 Old Glacier Hwy.
7671 Old Glacier Hwy.
6915 Sunny Dr.
7220 Old Glacier Hwy.
6911 Sunny Dr.
8001 Old Glacier Hwy.
Juneau Christian School
7210 Old Glacier Hwy.
6907 Sunny Dr.
Lemon Dr.
6903 Sunny Dr.
Yandukin Dr.
Egan Dr.
Sunny Dr.
1800 Branta Rd.
7100 Sunny Dr.
7098 Sunny Dr.
1098 Hendrickson Rd.
7094 Hendrickson Rd.
JUNEAU INTERNATIONAL AIRPORT
Sunny Point
Switzer Creek
Lemon Creek
Sawmill Creek
TONGASS NATIONAL
BLACKERBY
HALL WETLANDS
GAME REFUGE
CHANNEL
Pioneers Home
Vanderbilt Hill
ST-13
4150 Old Glacier Hwy.
4121 Blackerby St.
4112 Blackerby St.
ST-14
STATE MENDENHALL WETLANDS GAME REFUGE
Twin Lakes Dr.
Salmon
Ninemile Creek
Johnson Creek
Hendrickson
Nelson Creek
Gavin Creek
Legend
NOISE MONITORING SITES
Short-Term
Long-Term
OTHER
Noise Study Area
Sensitive Noise Receptor
N
1 inch equals 2000 feet
0 1,000 2,000 4,000 Feet
0 250 500 1,000 Meters
NOISE TECHNICAL REPORT
Juneau Access
NOISE MONITORING SITES AND MODELED RECEPTORS - TWIN LAKES DR TO YANDUKIN DR - JUNEAU
Figure 2
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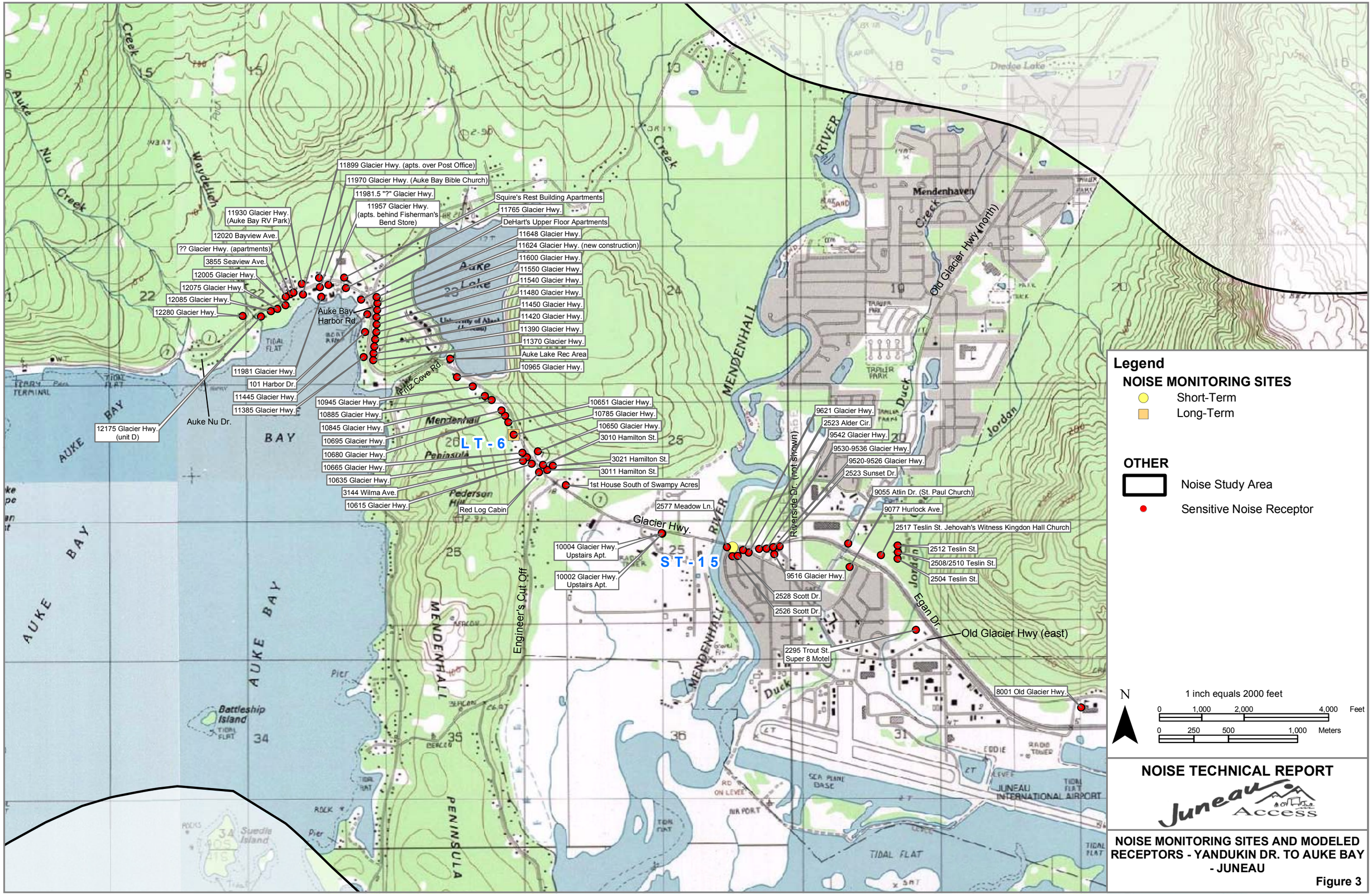
11899 Glacier Hwy. (apts. over Post Office)
11970 Glacier Hwy. (Auke Bay Bible Church)
11981.5 "?" Glacier Hwy.
11957 Glacier Hwy. (apts. behind Fisherman's Bend Store)
Squire's Rest Building Apartments
11765 Glacier Hwy.
DeHart's Upper Floor Apartments
11648 Glacier Hwy.
11624 Glacier Hwy. (new construction)
11600 Glacier Hwy.
11550 Glacier Hwy.
11540 Glacier Hwy.
11480 Glacier Hwy.
11450 Glacier Hwy.
11420 Glacier Hwy.
11390 Glacier Hwy.
11370 Glacier Hwy.
Auke Lake Rec Area
10965 Glacier Hwy.
11930 Glacier Hwy. (Auke Bay RV Park)
12020 Bayview Ave.
?? Glacier Hwy. (apartments)
3855 Seaview Ave.
12005 Glacier Hwy.
12075 Glacier Hwy.
12085 Glacier Hwy.
12280 Glacier Hwy.
Auke Bay Harbor Rd.
11981 Glacier Hwy.
101 Harbor Dr.
11445 Glacier Hwy.
11385 Glacier Hwy.
12175 Glacier Hwy. (unit D)
Auke Nu Dr.
Fritz Cove Rd.
10945 Glacier Hwy.
10885 Glacier Hwy.
10845 Glacier Hwy.
10695 Glacier Hwy.
10680 Glacier Hwy.
10665 Glacier Hwy.
10635 Glacier Hwy.
3144 Wilma Ave.
10615 Glacier Hwy.
Red Log Cabin
10651 Glacier Hwy.
10785 Glacier Hwy.
10650 Glacier Hwy.
3010 Hamilton St.
3021 Hamilton St.
3011 Hamilton St.
1st House South of Swampy Acres
2577 Meadow Ln.
LT - 6
ST - 15
Glacier Hwy.
10004 Glacier Hwy. Upstairs Apt.
10002 Glacier Hwy. Upstairs Apt.
9621 Glacier Hwy.
2523 Alder Cir.
9542 Glacier Hwy.
9530-9536 Glacier Hwy.
9520-9526 Glacier Hwy.
2523 Sunset Dr.
9055 Atlin Dr. (St. Paul Church)
9077 Hurlock Ave.
2517 Teslin St. Jehovah's Witness Kingdon Hall Church
2512 Teslin St.
2508/2510 Teslin St.
2504 Teslin St.
9516 Glacier Hwy.
2528 Scott Dr.
2526 Scott Dr.
2295 Trout St. Super 8 Motel
Old Glacier Hwy (east)
8001 Old Glacier Hwy.
Riverside Dr. (not shown)
Egan Dr.
Old Glacier Hwy (north)
Engineer's Cut Off
Mendenhall Peninsula
Mendenhaven
Dredge Lake
Auke Lake
Auke Bay
Auke Nu Creek
Waydelich Creek
Duck Creek
Jordan Creek
Mendenhall River
Battleship Island
Suedie Island
Pederson Hill
Tidal Flat
Ferry Terminal
Trailer Park
Eddie
Sea Plane Base
Radio Tower
Levee
Rd. on Levee
Airport
Juneau International Airport
Legend
NOISE MONITORING SITES
Short-Term
Long-Term
OTHER
Noise Study Area
Sensitive Noise Receptor
N
1 inch equals 2000 feet
0 1,000 2,000 4,000 Feet
0 250 500 1,000 Meters
NOISE TECHNICAL REPORT
Juneau Access
NOISE MONITORING SITES AND MODELED RECEPTORS - YANDUKIN DR. TO AUKE BAY - JUNEAU
Figure 3
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Pt. Stephens
Trails End Rds.
Tee Harbor
17575 Glacier Hwy.
17525 Glacier Hwy.
17465 Glacier Hwy.
17445 Glacier Hwy.
17265 Glacier Hwy.
17205 Glacier Hwy.
17050 Glacier Hwy.
17000 Glacier Hwy.
16912 "?" Glacier Hwy.
16911 "?" Glacier Hwy.
16810 Glacier Hwy.
Lena Cove
Point Lena
Lena Beach Recreation Area
Lena Creek
Auke Mountain
Auke Nu Creek
Waydelich Creek
Glacier Hwy.
Pt. Lena Rd.
Lena Loop Park
Aant'iyeik Park
Glacier Hwy. (dashed line)
Auke Recreation Area
Auke Rec. Rd.
Otter Way
13660 Glacier Hwy.
13580 Glacier Hwy.
13500 Glacier Hwy.
ST-16
Fairhaven
Auke Nu Cove
Auke Cape
Indian Cove
Indian Point
Indian Island
Point Louisa
Strauss Rock
AUKE
Legend
NOISE MONITORING SITES
Short-Term
Long-Term
OTHER
Noise Study Area
Sensitive Noise Receptor
N
1 inch equals 2000 feet
0 1,000 2,000 4,000 Feet
0 250 500 1,000 Meters
NOISE TECHNICAL REPORT
Juneau Access
NOISE MONITORING SITES AND MODELED RECEPTORS - AUKE BAY TO POINT STEPHENS - JUNEAU
Figure 4
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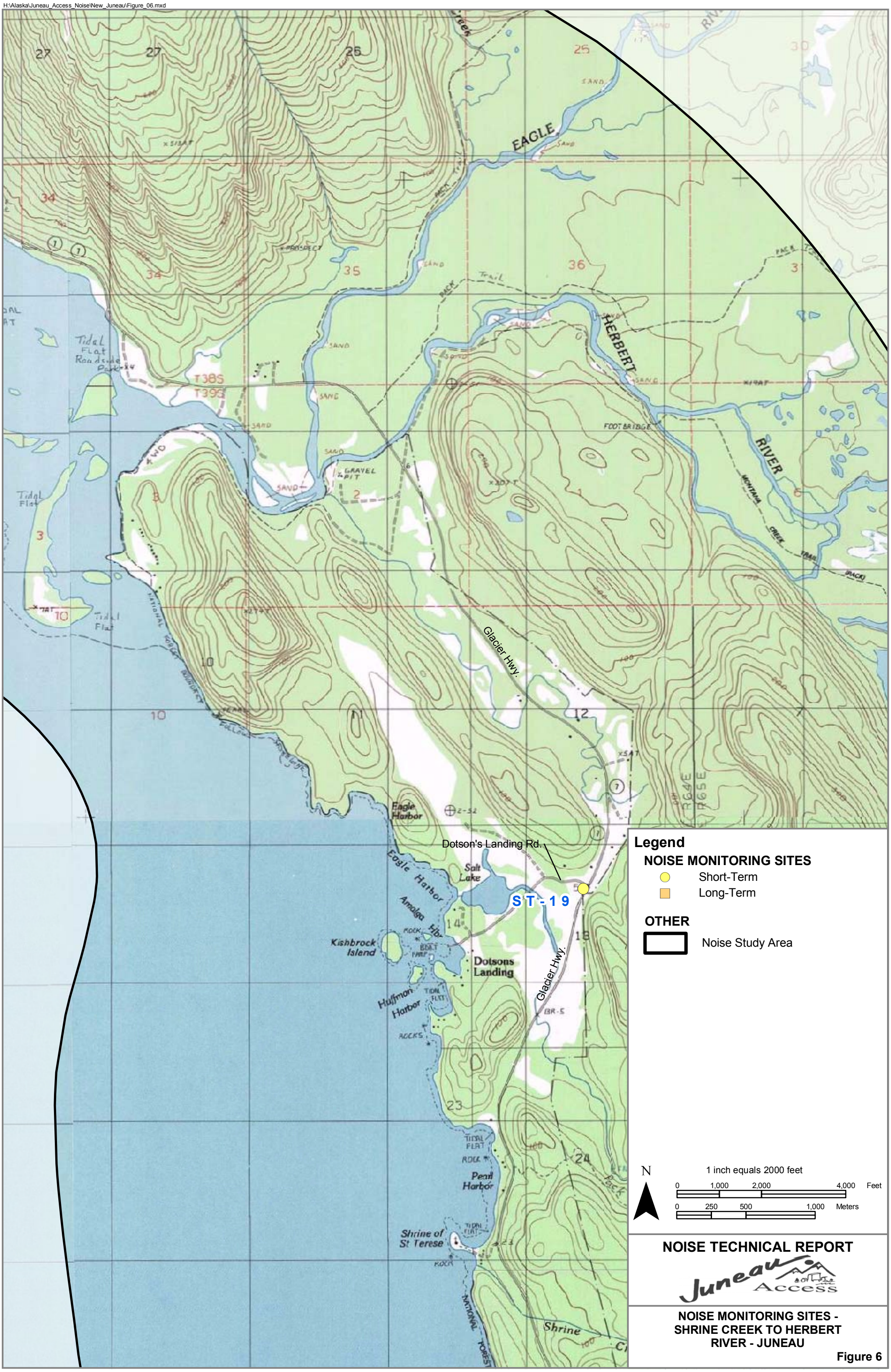

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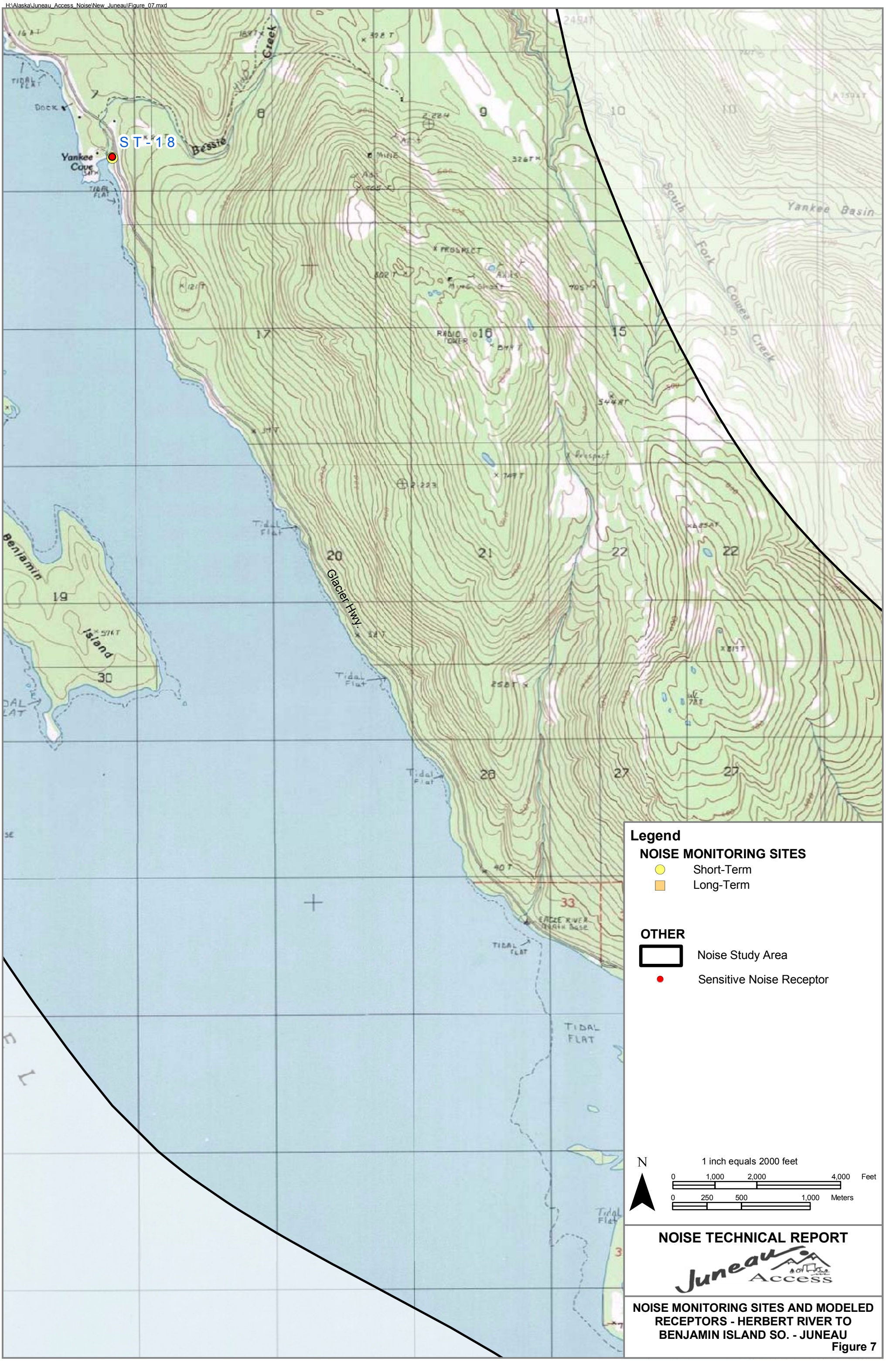

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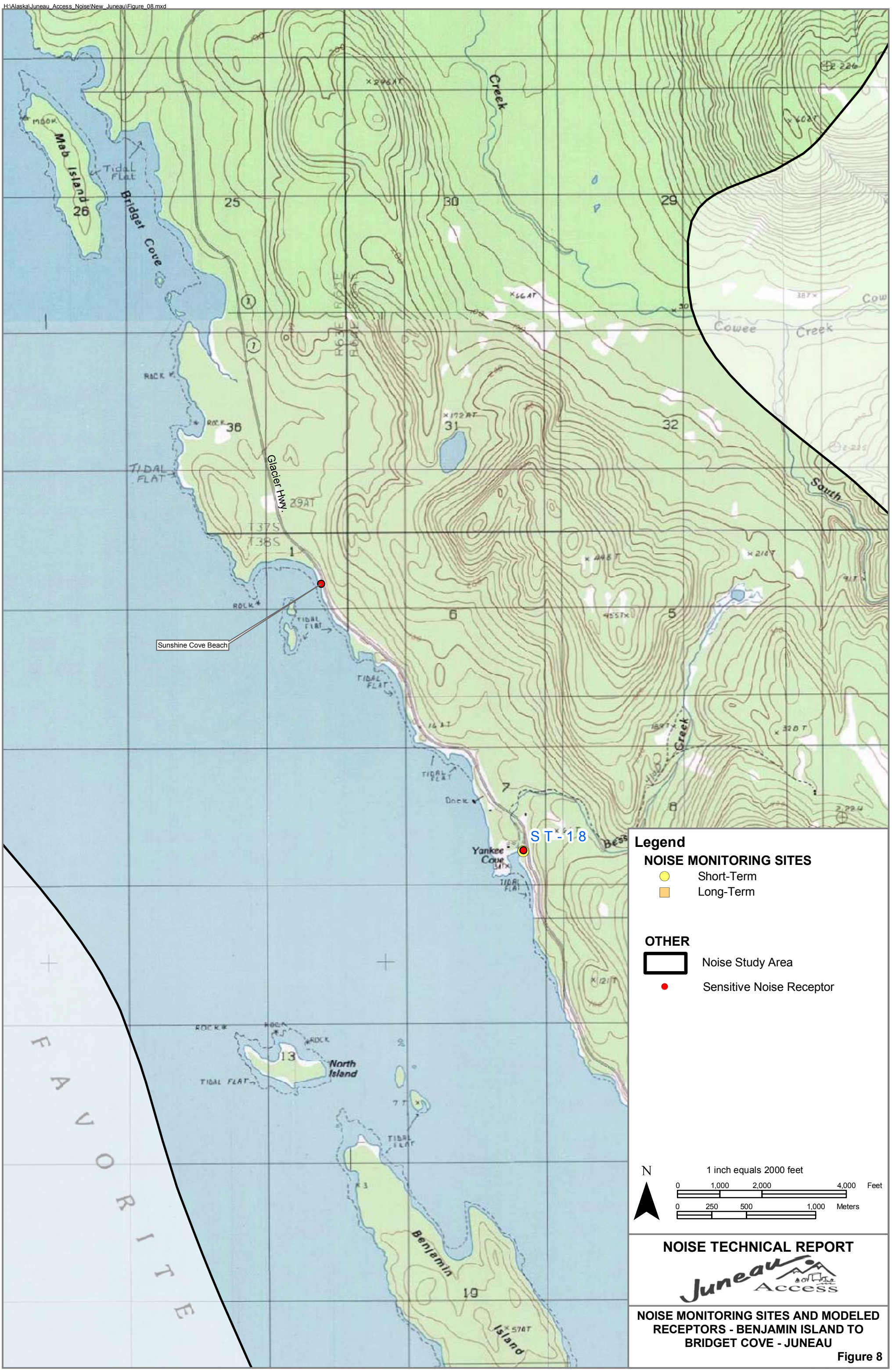

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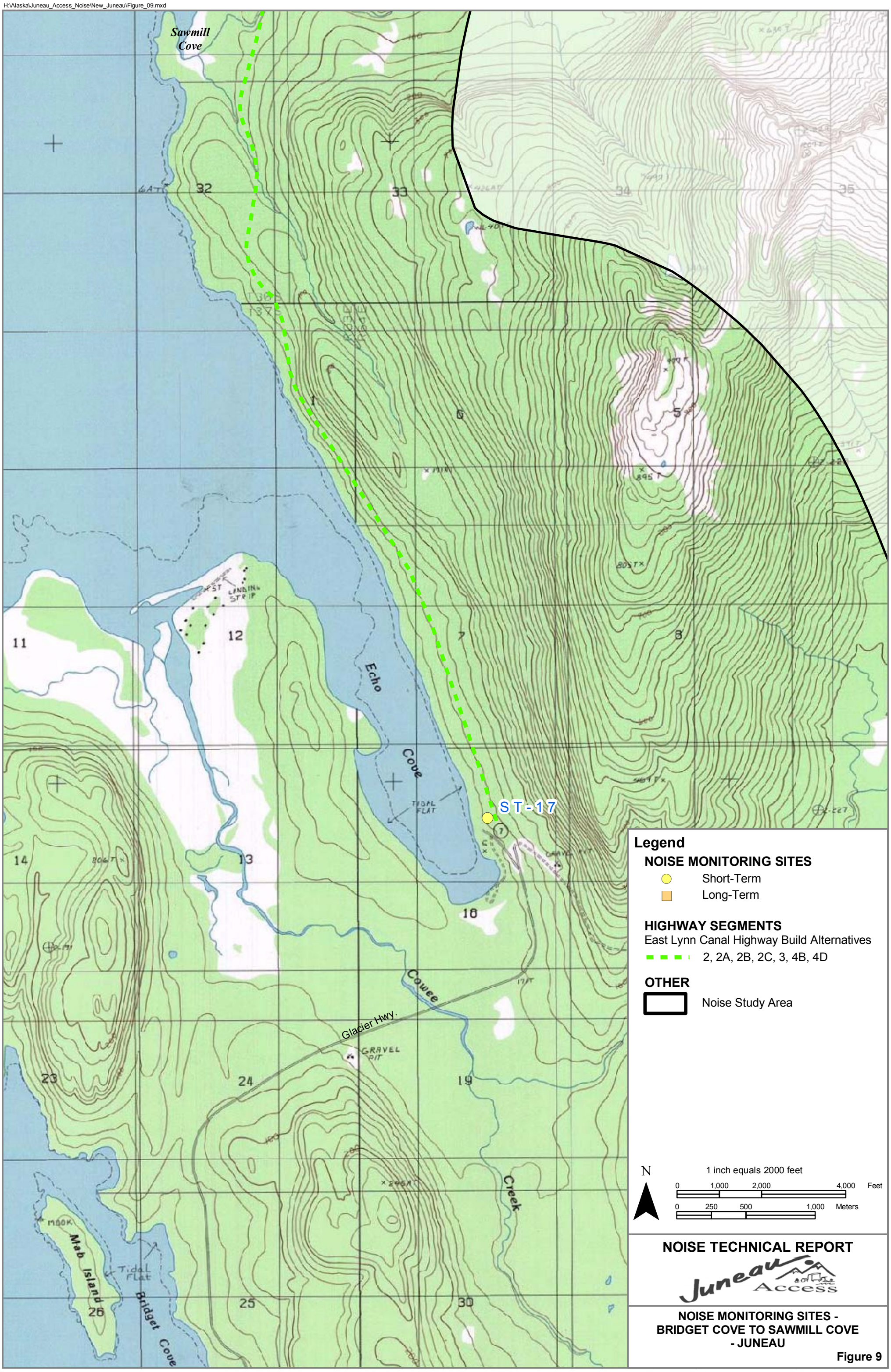

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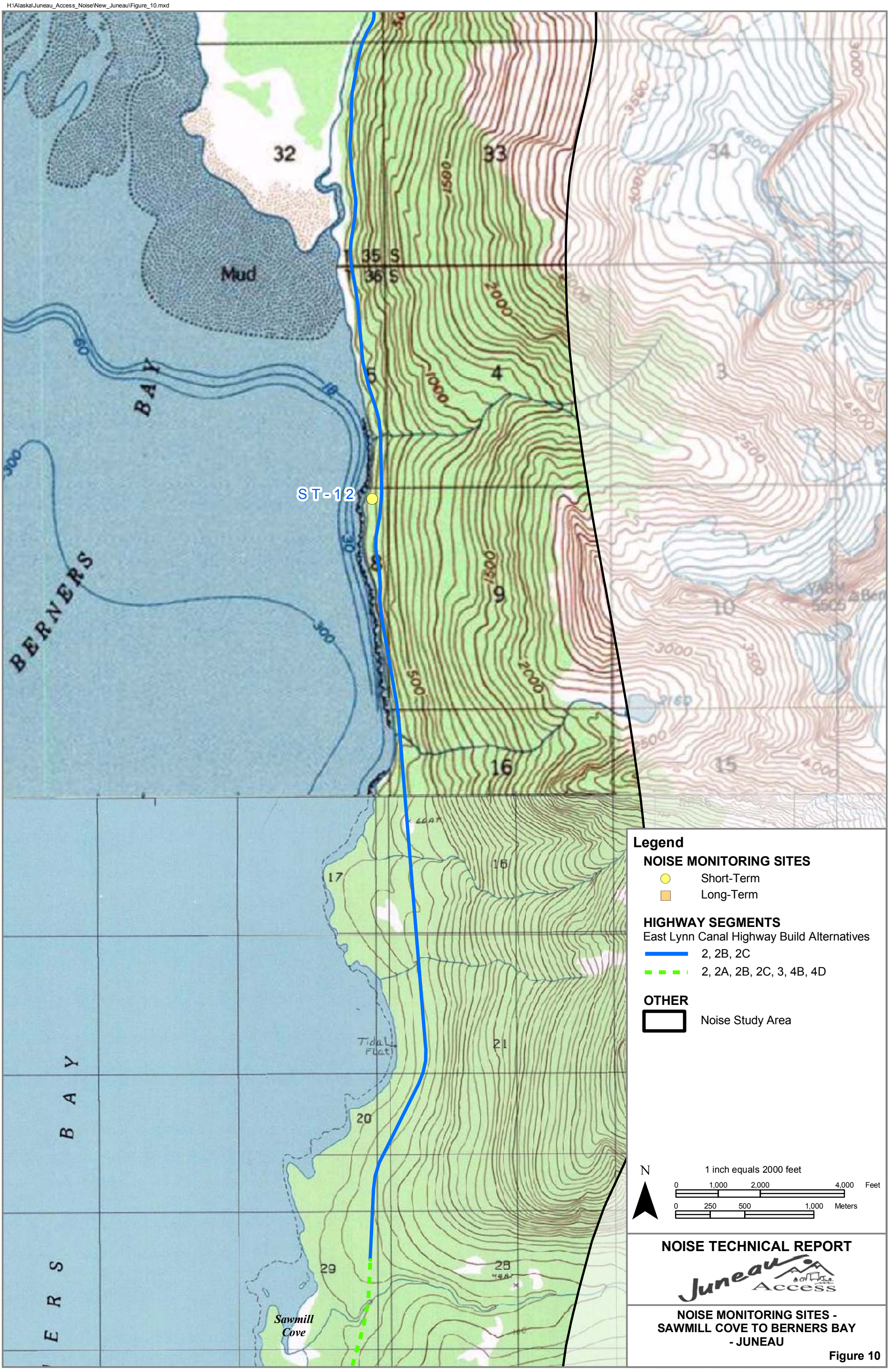

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NOISE TECHNICAL REPORT

Juneau Access

NOISE MONITORING SITES - MUD BAY - HAINES

Figure 11

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NOISE TECHNICAL REPORT

Juneau Access

NOISE MONITORING SITES - CHILKAT - HAINES

Figure 12

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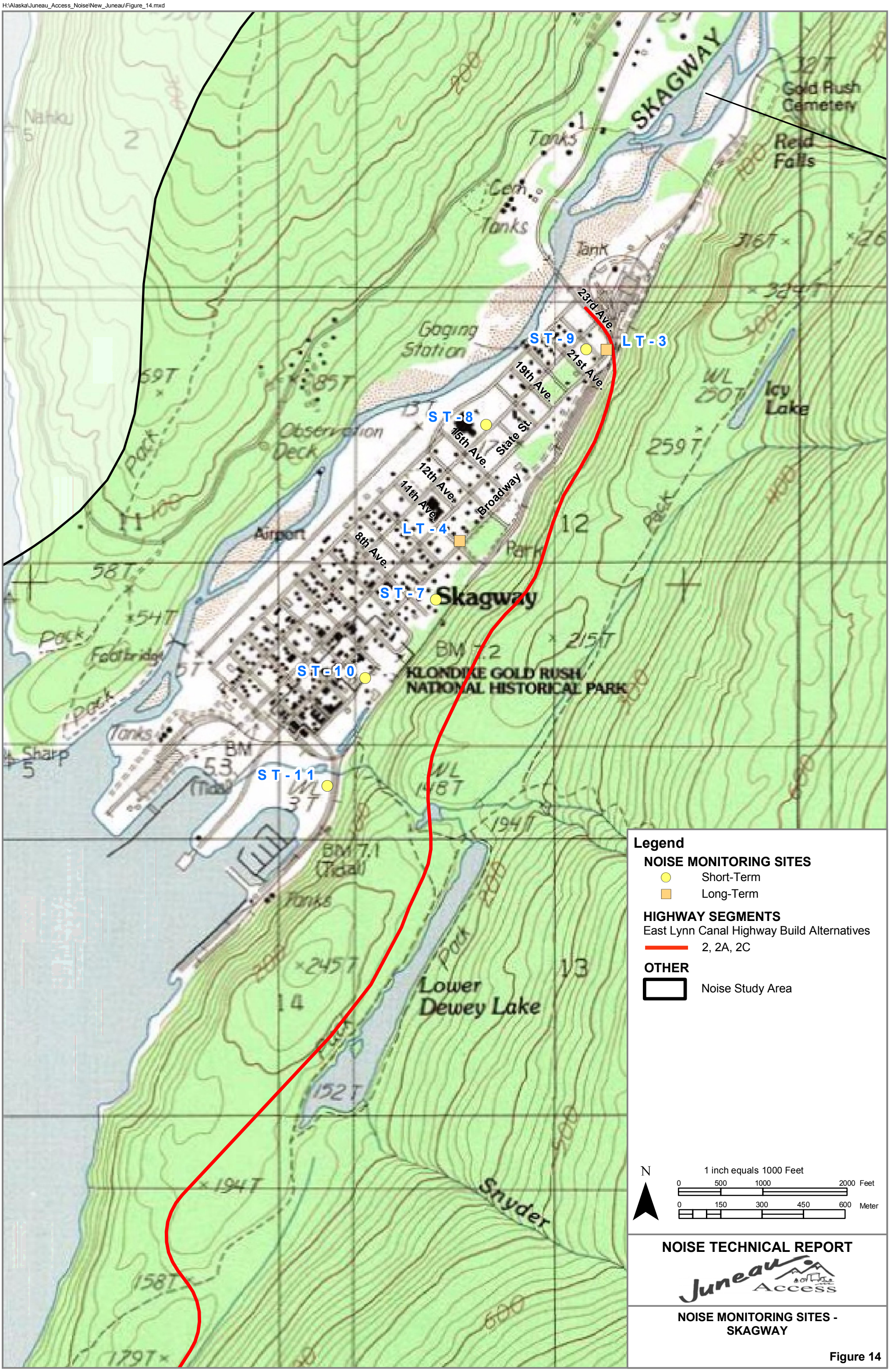

NOISE TECHNICAL REPORT

Juneau Access

NOISE MONITORING SITES - SKAGWAY

Figure 14

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Figure 15 -- Haines Long-Term Unattended Measurements, September 10 - 11, 2003

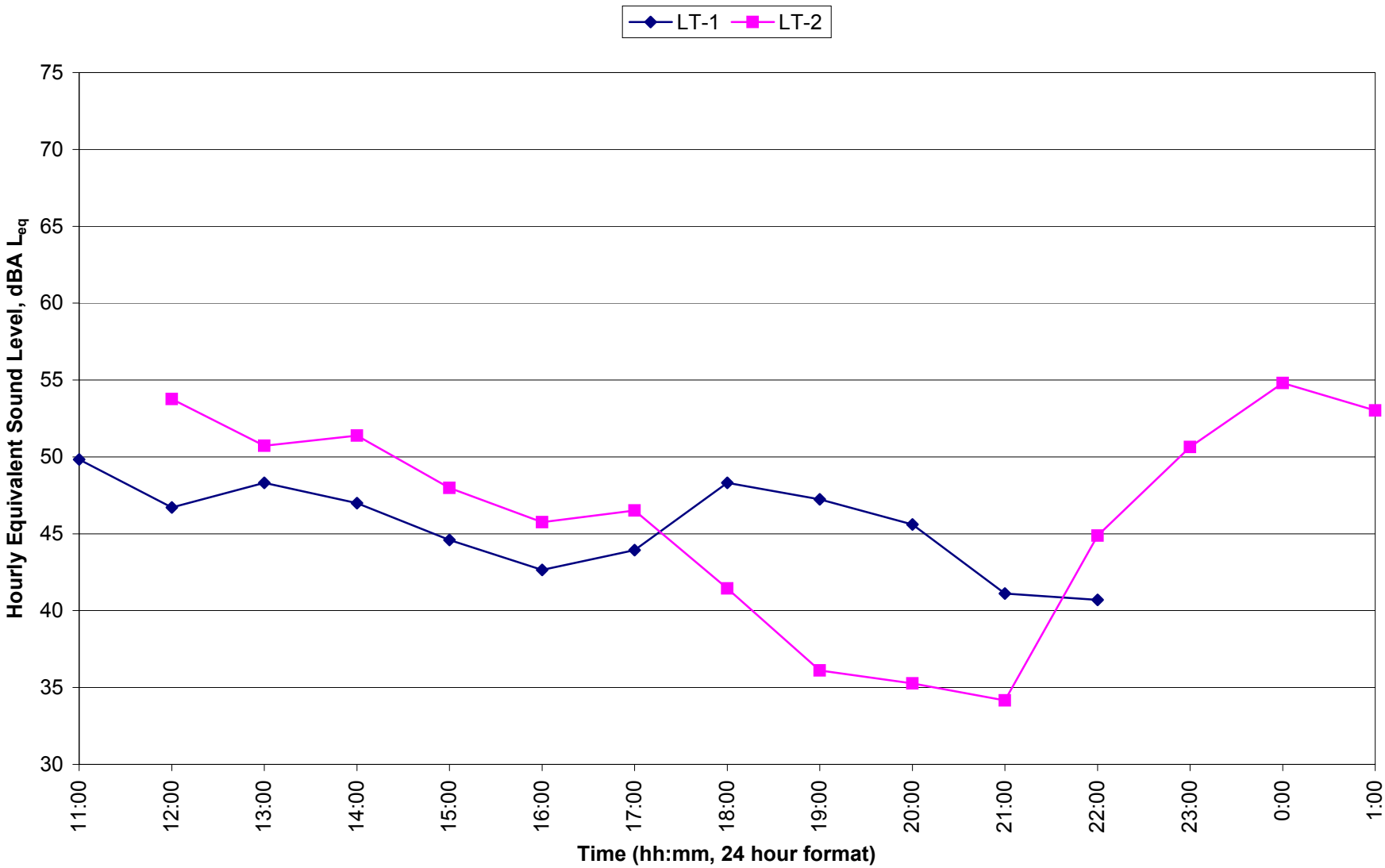


Figure 16 -- Skagway Long-Term Unattended Measurements, September 12 - 13, 2003

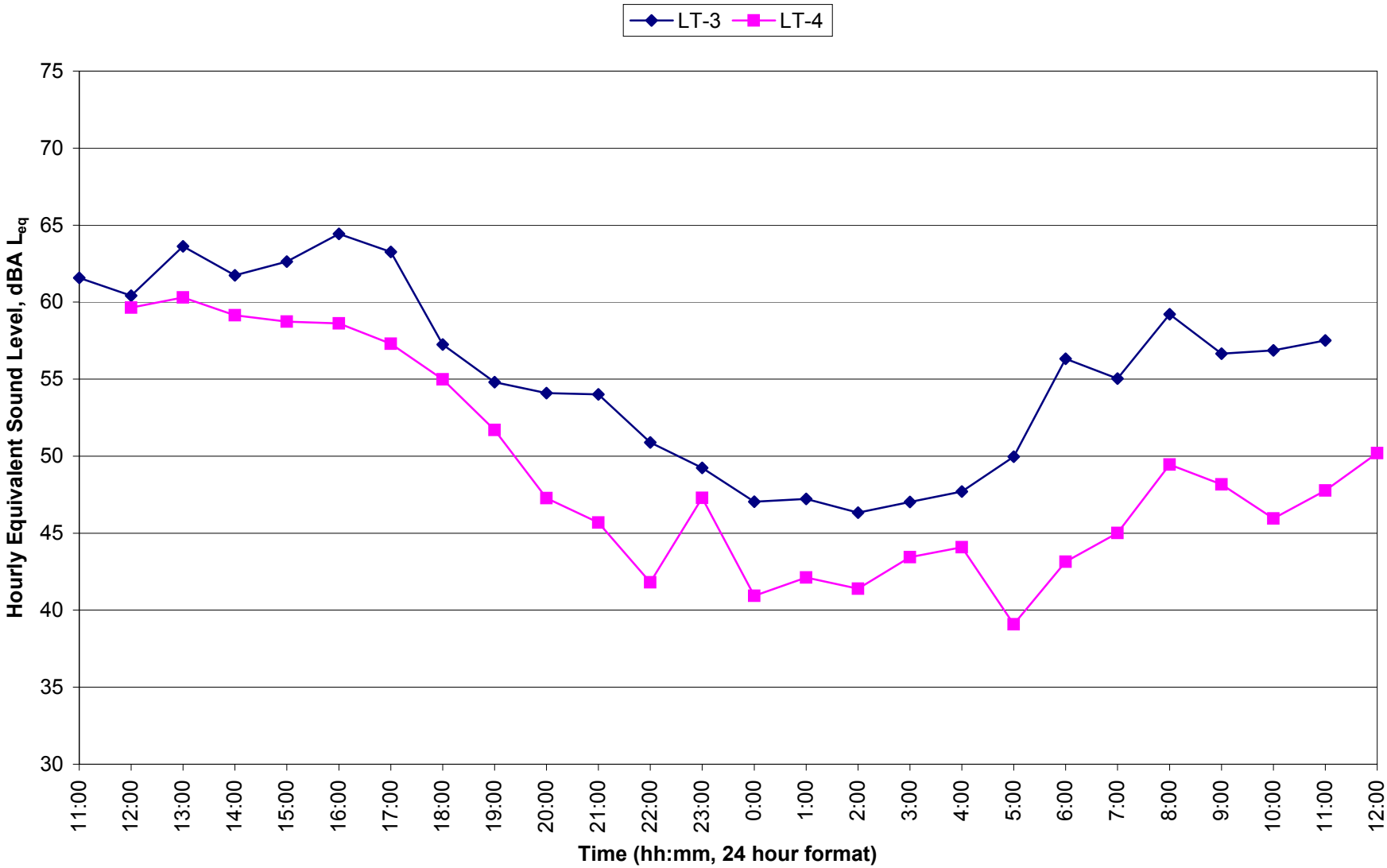
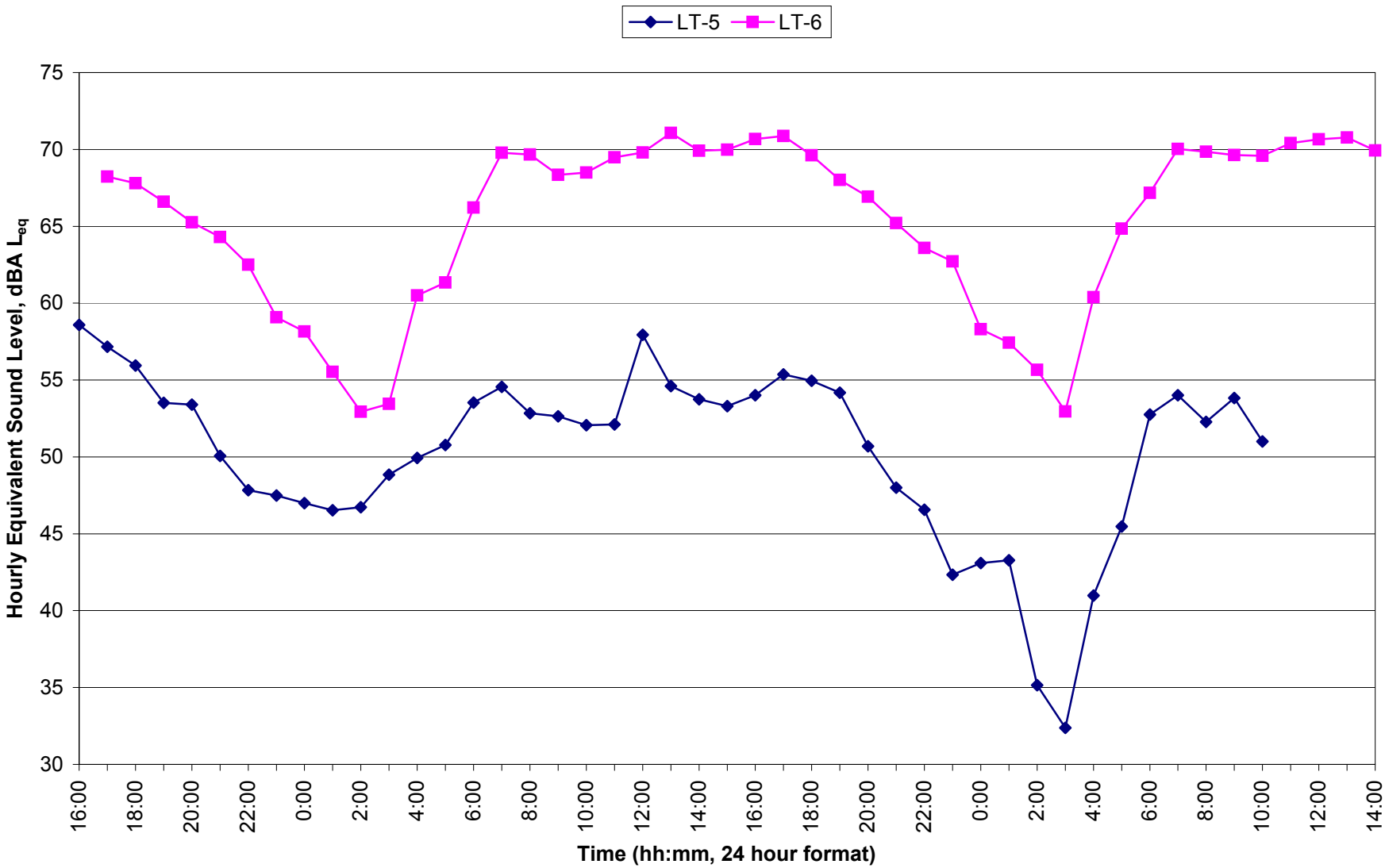


Figure 17 -- Auke Bay Area Long-Term Unattended Measurements, September 14 - 16, 2003



Legend
NOISE MONITORING SITES
Short-Term
Long-Term
Modeled Noise Receptor
ROADWAY SEGMENTS
State St./23rd Avenue
N
1 inch equals 100 feet
50 25 0 50 100 Feet
0 20 40 Meters
NOISE TECHNICAL REPORT
Juneau Access
Traffic Noise Modeling for Scenarios Excluding the East Lynn Canal Highway to Skagway
Figure 18
23rd Ave.
22nd Ave.
21st Ave.
Main St.
State St.
Southbound
Northbound
LT-3
ST-9
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
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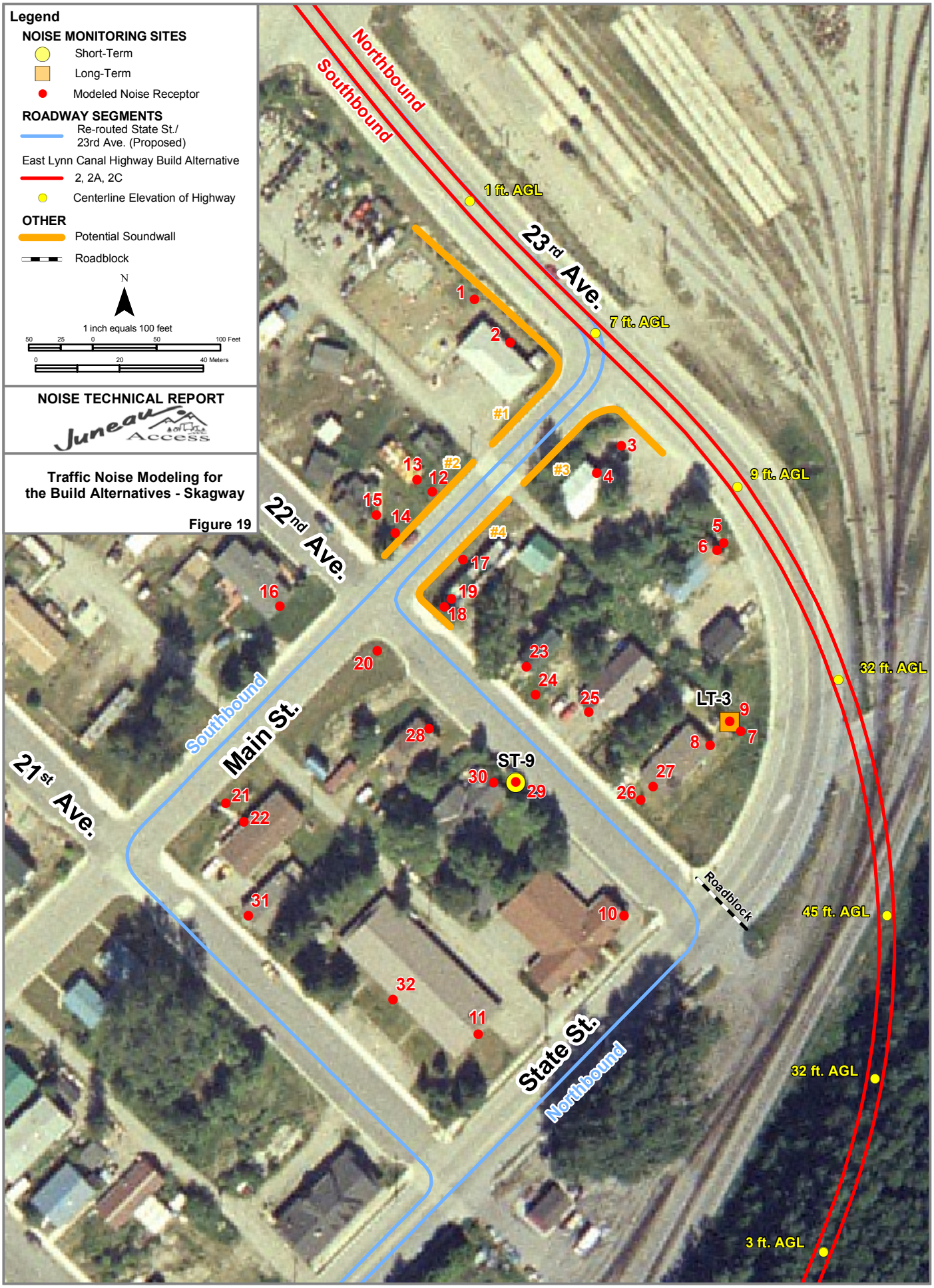
29
30
31
32


Legend
NOISE MONITORING SITES
Short-Term
Long-Term
Modeled Noise Receptor
ROADWAY SEGMENTS
Re-routed State St./
23rd Ave. (Proposed)
East Lynn Canal Highway Build Alternative
2, 2A, 2C
Centerline Elevation of Highway
OTHER
Potential Soundwall
Roadblock
N
1 inch equals 100 feet
50 25 0 50 100 Feet
0 20 40 Meters
NOISE TECHNICAL REPORT
Juneau Access
Traffic Noise Modeling for
the Build Alternatives - Skagway
Figure 19
Northbound
Southbound
23rd Ave.
22nd Ave.
21st Ave.
Main St.
State St.
Southbound
Northbound
1 ft. AGL
7 ft. AGL
9 ft. AGL
32 ft. AGL
45 ft. AGL
32 ft. AGL
3 ft. AGL
#1
#2
#3
#4
LT-3
ST-9
Roadblock
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
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21
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ATTACHMENT A

LIST OF FIELD INSTRUMENTATION AND CALIBRATION RECORDS

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Attachment A

List of Field Instrumentation and Calibration Records

Sound Level Meters

- Larson-Davis Laboratories Model 820 Digital Integrating Type 1 Sound Level Meter, Serial Number 0775
- Larson-Davis Laboratories Model 820 Digital Integrating Type 1 Sound Level Meter, Serial Number 1276
- Larson-Davis Laboratories Model 820 Digital Integrating Type 1 Sound Level Meter, Serial Number 1272
- Larson-Davis Laboratories Model 820 Digital Integrating Type 1 Sound Level Meter, Serial Number 1386

Acoustical Calibrator

- Larson-Davis Laboratories Model CAL200 Sound Level Calibrator, Serial Number 2374

Meteorology Instrumentation

- Mannix Model CMM 880 Digital Hygrometer/Thermometer, Serial Number 8821784
- Sims Digital Anemometer Model DIC, Serial Number 95022

Location Equipment

- Garmin Model GPSmap76, Am WASS enhanced satellite receiver, Serial Number 80420663
- Magellan Model GPS 2000 XL satellite receiver,
- Nikon Laser Rangefinder Model 880
- Surveyor tape measures

Other Instrumentation

- Sportline Hand-Held Traffic Counters
- Laptop Computer

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Certificate of Calibration and Conformance

Certificate Number 2002-45201

Instrument Model 820, Serial Number 0775, was calibrated on 11-04-2002. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: NO
Date Calibrated: 11-04-2002
Calibration due: 11-04-2004

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	12/04/2002	2001-38363

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 21 ° Centigrade

Relative Humidity: 18 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

Due to state-of-the-art limitations, 4:1 calibration ratios are not possible on pressure measurement standards, microphones and acoustic calibrators. Calibration ratios for these types of devices are limited to 1:1.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

See "AS RECEIVED" data.

Technician: Keith Driskill
Service Center: Larson Davis Laboratories, Utah

Signed: Keith Driskill

LARSON DAVIS LABORATORIES
1681 West 820 North · Provo, Utah · 84601 · Phone (801) 375-0177

Certificate of Calibration and Conformance

Certificate Number 2003-49733

Instrument Model 820, Serial Number 1386, was calibrated on 05-14-2003. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

New Instrument
Date Calibrated: 05-14-2003
Calibration due: 05-14-2004

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0612 / 0102	12 Months	01/09/2004	2003-46956

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 22 ° Centigrade

Relative Humidity: 30 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

Due to state-of-the-art limitations, 4:1 calibration ratios are not possible on pressure measurement standards, microphones and acoustic calibrators. Calibration ratios for these types of devices are limited to 1:1.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

Technician: Keith Driskill
Service Center: Larson Davis Laboratories, Utah

Signed: Keith Driskill

LARSON DAVIS LABORATORIES
1681 West 820 North · Provo, Utah · 84601 · Phone (801) 375-0177

Certificate of Calibration and Conformance

Certificate Number 2002-46370

Instrument Model 820, Serial Number 1276, was calibrated on 12-12-2002. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 12-12-2002
Calibration due: 12-12-2003

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	12/05/2003	2002-46192

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

Due to state-of-the-art limitations, 4:1 calibration ratios are not possible on pressure measurement standards, microphones and acoustic calibrators. Calibration ratios for these types of devices are limited to 1:1.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data same as shipped data.

Technician: Keith Driskill
Service Center: Larson Davis Laboratories, Utah

Signed: Keith Driskill

LARSON DAVIS LABORATORIES
1681 West 820 North · Provo, Utah · 84601 · Phone (801) 375-0177

Certificate of Calibration and Conformance

Instrument Model **820**, Serial Number **1272**, was calibrated on May 12, 2003. The instrument meets factory specifications according to The Modal Shop Production Test Procedure PRD-P222, ISO 10012, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: May 12, 2003
Calibration due: May 12, 2004

Calibration Standards Used

Manufacturer	Model	Serial Number	Interval	Cal Due	Traceability No.
Larson Davis	LDSigGn/2209	0760 / 0101	12 Months	01/29/2004	LD 2003-47468

Certified Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Ambient Temperature:: 22°C Relative Humidity: 28%

Notes

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with ISO 10012. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

Due to state-of-the-art limitations, 4:1 calibration ratios are not possible on pressure measurement standards, microphones and acoustic calibrators. Calibration ratios for these types of devices are limited to 1:1.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Bruce Lachey
Service Center: The Modal Shop, Inc.

Signature: Bruce Lachey

THE MODAL SHOP INC.
A PCB GROUP CO.

The Modal Shop, Inc.
3149 East Kemper Rd.
Cincinnati, OH 45241
Ph (513) 351-9919
FAX (513) 458-2172

THE MODAL SHOP INC.
A PCB GROUP CO.

The Modal Shop, Inc.
3149 East Kemper Road
Cincinnati, OH 45241-1516
Phone: 1-800-860-4TMS / (513) 351-9919
FAX: (513) 458-2172

Certificate of Calibration

Description: **Larson Davis Acoustic Calibrator**

Model: **CAL200**

Serial Number: **2374**

Asset Number:

Customer: **TMS Rental**

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through **NIST TN 822/263410-00**

Calibration Results: **Measured SPL: 93.91 dB re. 20μPa**
Measured Frequency: 1000.41 Hz

The calibration was performed under operating procedures intended to implement the requirements of ISO 9000 and the former MIL-STD-45662A. Unless otherwise noted, the reported value is both "as found" and "as left" data.

Upon receipt for calibration, the instrument was found to be:
☑ Within ☐ Outside the stated tolerance of the manufacturer's specification.

Note: As found/ As left

Test Conditions:

Ambient Temperature:	**73°F**	Calibration Date:	**11-27-2002**
Ambient Humidity:	**33%**	Calibration Due:	**11-27-2003**
Ambient Pressure:	**1009.0mbar**	Calibrated by:	**DCS**

Signature: _____

THE MODAL SHOP INC.
A PCB GROUP CO.

The Modal Shop, Inc.
3149 East Kemper Road
Cincinnati, OH 45241-1516
Phone: 1-800-860-4TMS / (513) 351-9919
FAX: (513) 458-2172

Certificate of Calibration

Description: **Larson Davis Acoustic Calibrator**

Model: **CAL200**

Serial Number: **2374**

Asset Number:

Customer: **TMS Rental**

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the customer.

This calibration is traceable through **NIST TN 822/263410-00**

Calibration Results: **Measured SPL: 113.90 dB re. 20μPa**
Measured Frequency: 1000.28 Hz

The calibration was performed under operating procedures intended to implement the requirements of ISO 9000 and the former MIL-STD-45662A. Unless otherwise noted, the reported value is both "as found" and "as left" data.

Upon receipt for calibration, the instrument was found to be:
☑ Within ☐ Outside the stated tolerance of the manufacturer's specification.

Note: As found/ As left

Test Conditions:

Ambient Temperature:	**73°F**	Calibration Date:	**11-27-2002**
Ambient Humidity:	**33%**	Calibration Due:	**11-27-2003**
Ambient Pressure:	**1009.0mbar**	Calibrated by:	**DCS**

Signature: _____

ATTACHMENT B

INTRODUCTION TO TRAFFIC NOISE, CONSTRUCTION NOISE, AND CONSTRUCTION VIBRATION

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Attachment B

Introduction to Traffic Noise, Construction Noise, and Construction Vibration

In two primary sections, this appendix provides general information regarding the fundamentals of traffic noise and construction noise and vibration. Section B-3 presents the references for this appendix.

B-1 FUNDAMENTALS OF TRAFFIC NOISE

B-1.1 A-Weighted Sound Level

The unit of sound pressure level measurement is the decibel (dB). It is a unit describing the amplitude of sound pressure compared to a reference pressure. Commonly encountered sound levels range from slightly above the threshold of hearing and very quiet around 20 dBA to very loud sounds at 130 dBA. The sound pressure level is mathematically equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals.

The most common descriptor of sound and noise associated with community noise measurements is the A-weighted sound pressure level, which is abbreviated as dBA. It is defined as the sound pressure level in decibels as measured on a sound meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of sound in a manner similar to the frequency response of human hearing, and correlates well with people's group reactions to sound and environmental noise. All sound levels in this report are A-weighted.

A-weighted sound pressure levels of typical sources of noise are shown in Table B-1.

B-1.2 Equivalent Sound Level

The A-weighted sound level of traffic noise and other long-term noise-producing activities within and around a community vary with time. Measurements of this varying level are accomplished by recording the energy values of the noise for a specified period. For purposes of this study, the equivalent sound level (abbreviated as L_{eq}) has been used. L_{eq} is defined as the continuous steady-state noise level that would have the same total acoustical energy as the real fluctuating noise measured during the same period. The L_{eq} of the peak-noise-hour of traffic noise is most representative of the long-term annoyance potential of traffic noise.

B-1.3 Insertion Loss

The insertion loss (abbreviated I.L.) is a measure of the effectiveness of a sound barrier. It is the noise level reduction at a specific receiver due to construction of a noise barrier between the noise source (such as traffic) and the receiver. Generally, it is the net effect of the (noise) barrier attenuation and the loss of ground effects.

Table B-1
Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
Military Jet Take-off with After-burner (50 ft) Civil Defense Siren (100 ft)	140 130	Carrier Flight Deck	
Commercial Jet Take-off (200 ft)	120		Threshold of Pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft)	100		Very Loud *8 times as loud
Motorcycle (25 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck, 40 mph (50 ft)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft) Vacuum Cleaner (10 ft)	70		Moderately Loud *70 decibels (Reference Loudness)
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	10		
	0		Threshold of Hearing

Source: Compiled by URS Corporation

B-1.4 Perception of Noise

Evaluating differences between the existing and total predicted future noise environments assesses potential responses of persons to changes in their noise environment. The following relationships of perception and response to quantifiable increases in long-term sound level are used as a basis for assessing potential effects of traffic noise:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a 3 dBA change is considered perceptible.
- An increase of 5 dBA is considered readily perceptible and would generally result in a change in community response.
- A 10 dBA increase is perceived as a doubling in loudness and would likely result in a widespread community response.

B-1.5 Noise Source Characteristics (Vehicles and Roadways)

Roadway noise is dependent on many factors:

- Vehicle type and speed;
- Number of vehicles;
- Roadway surface and gradient;
- Distance from the roadway to the receiver;
- Relative location of a receptor to noise source;
- Intervening ground surface characteristics (whether acoustically reflective or absorptive, “pavement” or “vegetation”);
- Meteorological factors such as wind and temperature gradients; and
- Shielding due to structures, soundwalls, earthen berms, hills, and the edge of a roadway.

Generally, if vehicle speed and/or traffic volume increases, so does the noise level. However, heavy trucks typically operate at a more constant noise output than automobiles regardless of speed, because they operate at nearly constant engine revolutions per minute (rpm).

Another difference between automobiles and trucks is the location of their noise sources. The noisiest components on most trucks and buses are the exhaust stack and engine, while tires typically generate the greatest noise from cars, sport-utility vehicles and pick-up trucks. The location of the noise source affects the noise reduction provided by a barrier because both the height and proximity of the source and receiver with respect to the barrier's location and height are important in determining the effectiveness of the barrier. The shape and surface of the barrier will also affect the attenuation provided by the barrier. For example, an absorptive earthen berm or a hill may provide up to 3 dBA greater attenuation compared to a reflective thin ”screen” barrier of the same height and location.

Roadway surface and gradient also affect the resultant noise emission from motor vehicles. Surfaces vary from rough and potholed to smooth and seal-coated, and this can lead to an approximate difference of 3 to 4 dBA in generated noise levels among different types of surfaces (Bolt, Beranek and Newman, Inc., 1973). Primarily, the roadway gradient influences noise levels for heavy truck traffic; the greatest effect is from an uphill grade, which increases noise levels.

B-2 CONSTRUCTION NOISE AND VIBRATION

Conventional and specialized construction noise is addressed in Sections B-2.1 and B-2.2, respectively. Section B-2.3 discusses construction vibration impacts.

B-2.1 Conventional Construction Noise

The “conventional construction” activities for this project would require the use of vehicles and heavy equipment whose noise characteristics are known. Table B-2 provides construction noise levels typical of various types of conventional construction equipment. The equipment ranges from concrete mixers producing noise levels of 80 to 86 dBA at a distance of 15 meters (49.2 feet) to jackhammers producing 90 to 95 dBA at a distance of 15 meters (49.2 feet).

Table B-2
Noise Level Ranges of Typical Construction Equipment

Equipment	Levels in dBA at 50 feet[a]
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Cranes (derrick)	86-89
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammer	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Back Hoe	73-95
Pile Driving (peaks)	95-107
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88

Note: [a] Machinery equipped with noise control devices or other noise-reducing design features generate a lower level of emissions as that shown in this table.

Source: USEPA, 1971.

To reduce potential effects of construction noise, the project's contracting agency should apply DOT&PF Noise Abatement Policy guidelines, which point out the importance of ensuring that all powered construction equipment are kept in good working order and fitted with working mufflers. Other measures considered good construction practice are as follows:

- Limit hours of operation for such activities as drilling, blasting, grinding and pile driving when in the vicinity of noise-sensitive land uses.
- Locate materials stockpiles and/or vehicle staging areas as far as practicable from dwelling units. Arrange noisiest operations together in the construction program to avoid continuing periods of annoyance.
- Notify nearby residents prior to commencement of high-noise-level construction activities.
- Shut off idling equipment when practicable.
- Use additional enclosures, shrouds, shields, and portable noise barriers if necessary at noise-sensitive locations.

B-2.2 Specialized Construction Noise

Pile driving and blasting are the subject of the following two subsections, respectively.

B-2.2.1 Pile driving

Noise from pile-driving activity is different in character from the typical "construction phase" noise and its potential noise impact is, therefore, analyzed separately. Pile driving, if necessary during construction, would generate noise that is unique to pile driving activity in terms of noise level, audible characteristics, and time pattern. Also, because the primary noise source location from pile drivers is elevated aboveground, it does not typically benefit from attenuation due to intervening buildings and structures.

Two common methods are typically used to drive piles: impact pile drivers and vibratory pile drivers. Depending on the type of pile being driven, one or the other of these two methods may result in lower radiated noise levels during pile driving. For soldier piles, the vibratory method is typically somewhat quieter. The vibratory method requires certain soil conditions to be a viable alternative to impact driving. Another consideration regarding selection of a driving method is the increased duration of the pile-driving period when vibratory drivers are used. Slightly quieter pile driving over an extended period may not be an environmentally preferred trade-off compared to the somewhat louder but faster impact pile driving. The ability to maintain the project schedule without having to conduct pile driving during evening or nighttime hours is also an important consideration. Airborne noise emission from pile driving varies considerably based on the local soil conditions; the diameter, length, and material of the pile; and the type and size of the driving machinery. Pre-stressed concrete piles are generally slightly quieter during emplacement than typical steel piles.

Noise levels produced by impact pile driving (maximum levels, L_{max}, of approximately 105 dBA at a distance of 50 feet) consist of very short duration impact sounds (a “bang” or “clang” noise) concentrated during a 10 to 30-minute period while an individual pile is being driven. The noise levels from pile driving attenuate with distance in the same manner as regular construction noise, such that the L_{max} would be 99 dBA at 100 feet, 93 dBA at 200 feet and 87 dBA at 400 feet. Vibratory pile driving produces a steady noise that sounds like drilling. Vibratory pile driving can be quieter than impact pile driving but this depends on pile type. Support machinery associated with pile driving activity would produce the lower noise levels that correspond to the regular construction activity described above.

Pile driving activities and associated noise would be limited to small portions of the project, typically in the vicinity of bridges. In general, no single residence or noise-sensitive area would be subject to continuous, constant noise levels for the duration of the project. Additionally, pile-driving activity should be restricted to daytime hours during weekday periods. In severe instances, temporary relocation of “day-sleepers” and other hardship cases may be necessary.

B-2.2.2 Blasting

If subsurface rock conditions are encountered during construction of the project that is too hard to be extracted using excavators, construction blasting may be necessary. In this eventuality, it is professional practice to have blasting activities supervised by a blasting engineer. In a typical blasting operation, a mobile rock drill is used to drill a series of small diameter holes into the rock. After drilling, the holes are packed with explosives, sealed, and detonated. The detonations are typically performed sequentially, with a very short interval between detonations. This technique reduces the amount of airborne noise and ground-borne vibration. Following blasting, the fractured rock is then removed using conventional earthmoving equipment. The amount of blasting will depend upon the degree to which rock is encountered and the hardness of the rock.

Blasting noise is considered an impulse noise because of its rapid onset and decay. It can cause temporary and permanent shifts in the threshold of hearing depending on the decibel level. Occupational Safety and Health Administration (OSHA) standards do not allow employees to be exposed to an impulse noise that exceeds 140 dB (unweighted sound pressure level) (OSHA, 1980). Studies conducted by the U.S. Army also indicate that no hearing protection is required for single blasts with peak levels below 140 dB (Aberdeen Proving Ground, 1996).

Blast charges would typically be sized so as to produce peak acoustical overpressures below 122 dBC (C-weighted sound pressure level) – the threshold of annoyance for blasts as recommended by the U.S. Army at any sensitive land uses. Common mitigation measures used to reduce potential impacts from blasting include:

- Avoiding blasting during weather conditions that could exacerbate the noise effects at nearby sensitive receptors (temperature inversions, etc.),
- Reduction of the explosives per delay;
- Use of a quiet initiation system or bottom hole initiation;
- Coordinating the timing of the blasting activities with local agencies and/or residents as needed; and
- Alerting nearby sensitive receptors of the impending blast noise by means of a warning horn or similar device.

B-2.3 Construction Vibration

Construction activities can also produce varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and decrease with distance. Ground vibrations from construction activities very rarely reach levels high enough to cause damage to structures, although special consideration must be made for fragile historical buildings. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving.

Ground vibration levels from construction activities vary considerably depending on soil conditions. Table B-3 presents average peak particle velocity (PPV) levels at a distance of 25 feet from measured data of various types of construction equipment (Federal Railroad Administration (FRA), 1998).

Vibration from construction should be evaluated on an individual project basis where there is significant potential for impact. Such activities include demolition, pile driving and drilling or excavation in close proximity to structures. Vibration propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV_{equip} = PPV_{ref}\left(\frac{25}{D}\right)^{1.5}$$

where:
PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for distance,
PPV_{ref} = the reference vibration level in in/sec at 25 feet from Table B-3 and
D = the distance from the equipment to the receiver.

Table B-3
Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft (in/sec)
Pile driver (impact)	Upper range	1.518
	Typical	0.644
Pile driver (vibratory)	Upper range	0.734
	Typical	0.170
Clam shovel drop (slurry wall)		0.202
Hydromill (slurry wall)	In soil	0.008
	In rock	0.017
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003

The Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA) have published guidelines for assessing the impacts of ground-borne vibration associated with construction of highway projects, which have been applied by other jurisdictions to other types of projects (FTA, 1995; FRA, 1998). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV. The threshold of perception of vibration is 0.01 in/sec PPV.

Mitigation measures, if potential construction vibration impacts are identified, are listed for use as they may be needed:

- Limit ground-borne vibration due to construction activities to not exceed 0.2 in/sec velocity in the vertical direction at sensitive receptors.
- Route heavily loaded trucks away from residential streets or streets with the fewest homes.
- Operate earthmoving equipment on the construction site as far away from vibration-sensitive receptors as possible.
- Phase construction activities that create high vibration levels so as not to occur at the same time.
- Avoid nighttime activities.
- Avoid impact pile driving where possible in vibration-sensitive areas. Consider the use of alternative methods that create less vibration such as drilled piles or a vibratory pile driver.
- Select demolition methods not involving impact, where necessary and feasible.

B-2.3.1 References

Aberdeen Proving Ground, March 1996. "Methods to Predict Noise Levels Resulting from Subgrade Detonation of Explosive Charges". Environmental Noise Program, U.S. Army Center for Health Promotion and Preventive Medicine. APG, Maryland.

United States Department of Labor, Occupational Safety and Health Administration, Office of Information. 1980. *Noise Control*. Washington, DC.

United States Department of Transportation, Federal Railroad Administration, December 1998. High-Speed Ground Transportation Noise and Vibration Impact Assessment, FINAL DRAFT.

United States Department of Transportation, Federal Transit Administration. 1995. DOT-T-95-16. Transit Noise and Vibration Impact Assessment. (Prepared under contract by Harris, Miller, Miller and Hanson). Burlington, MA. April.

United States Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, Building Equipment and Home Appliances. (Prepared under contract by Bolt, et. al., Bolt, Beranek & Newman, Boston, MA). Washington, DC.

ATTACHMENT C

FIELD MEASUREMENT DATA SHEETS FOR LONG-TERM NOISE MEASUREMENTS

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: LT - 1 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9-10-03, 10:15 **END DATE & TIME:** 1240 9/11/03
ADDRESS: Residence of Margaret Mock
1186 Lutak Road
Haines, AK GPS 59° 15.924N 135° 26.684W

ID

TEMP: 65 °F HUMIDITY: 49 % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)
WINDSPEED 0-1 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (OVRCST) PARTLY CLOUDY CLEAR SUNNY FOG (RAIN) Light spitting Other:

Weather

INSTRUMENT: L.D 820 **TYPE:** (1) 2 **SERIAL #:** 1276
CALIBRATOR: Cal **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 65.5 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) ANSI OTHER:

10:50 9/10 : L_{eq} 46.1, L_{max} 73.5, L_{min} 19.5, L_{90} 20.3, L_{50} 37.0, L_{10} 49.2,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: 1210, 9/11/03 arrived to retrieve meter

Acoustic Measurements

SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER: boats, birds
ROADWAY TYPE:

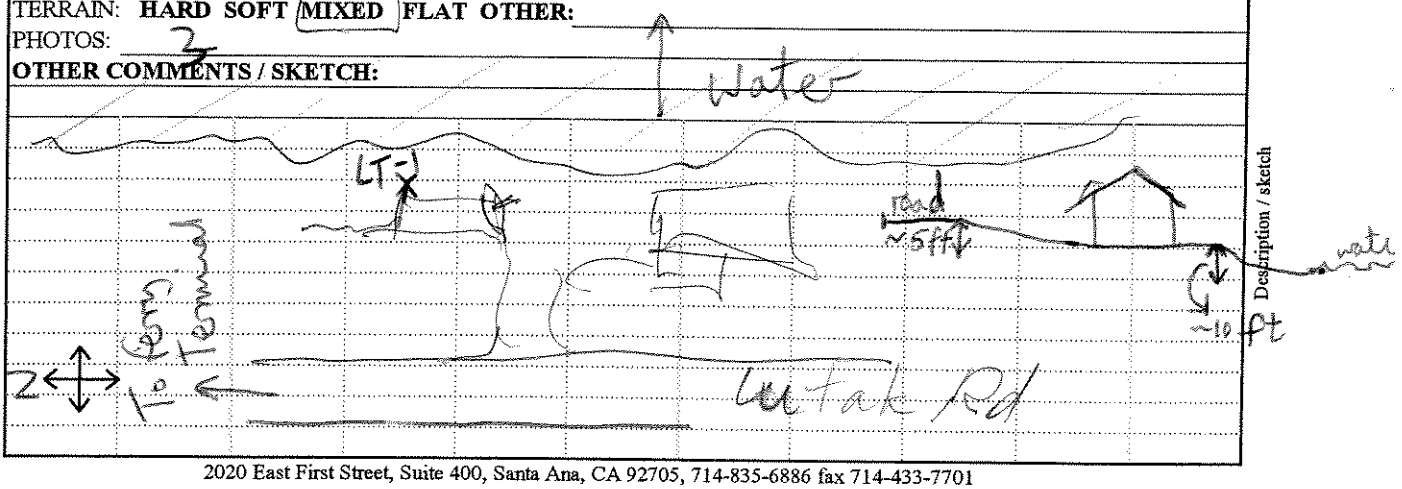
COUNT DURATION: ____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**

OTHER NOISE SOURCES: (distant AIRCRAFT overhead) / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: Rain

Source Info and Traffic Counts

TERRAIN: **HARD SOFT** (MIXED) **FLAT OTHER:**
PHOTOS: 3
OTHER COMMENTS / SKETCH:



Description / sketch

measform4.xls

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: LT-2 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9-10-03 11:40 **END DATE & TIME:** 9/11/03, 1330
ADDRESS: Mud Bay Road (end)
Rob's GPS 59°08.736'N 135°20.823'W (8 ft elev)
GPS 59°08.753'N 135°20.821'W (3 ft elev.)

Weather

TEMP: 56 °F HUMIDITY: 69 % R.H. WIND: **CALM** LIGHT MODERATE VARIABLE
WINDSPEED 0 MPH DIR: N NE E SE S SW W NW light STEADY GUSTY
SKY: **OVRCST** PARTLY CLOUDY CLEAR SUNNY FOG **RAIN** Other:

Acoustic Measurements

INSTRUMENT: L·D 820 **TYPE:** 1 2 **SERIAL #:** 1386
CALIBRATOR: CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** ~60 not stable **dBA SPL WINDSCREEN** ✓
SETTINGS: **A-WEIGHTED** **SLOW** FAST FRONTAL **RANDOM** ANSI OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
12:00 9/10	85.9	110.6	16.8	23.4	36.0	62.9
- 1307, 9/11						

COMMENTS: 12:21 smell flat bed truck passed by
12:37 ws driving by in F150 truck + jeep
and F250 in opposite direction

Source Info and Traffic Counts

SOURCE: **TRAFFIC** **AIRCRAFT** **RAIL** **INDUSTRIAL** **OTHER:** Lapping water
ROADWAY TYPE:

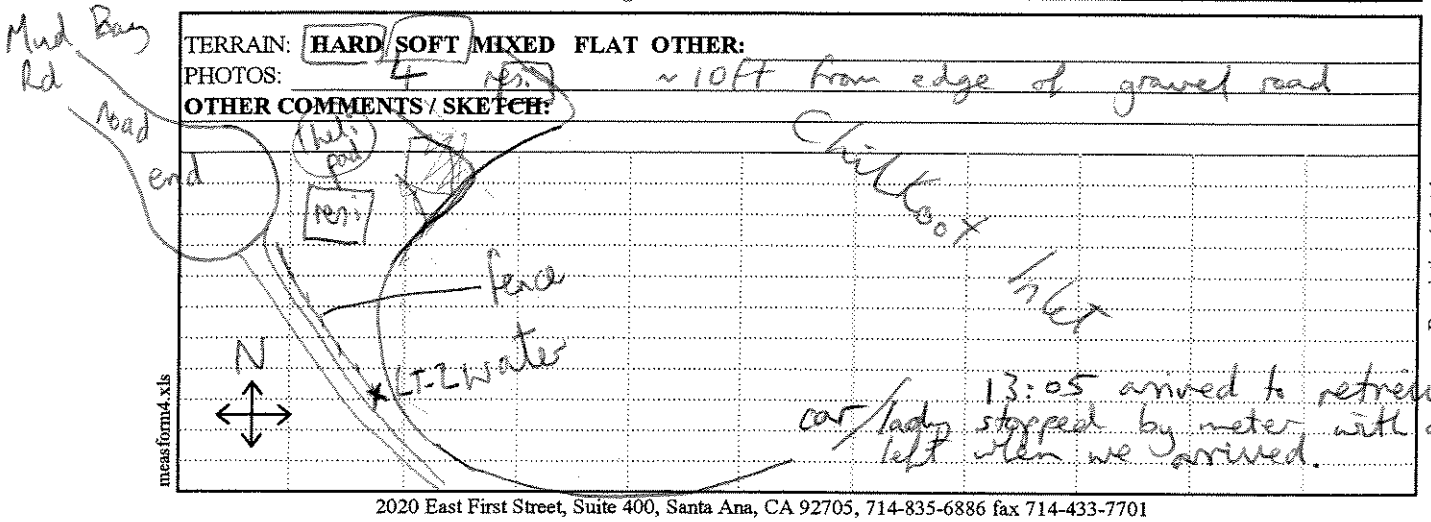
COUNT DURATION: ____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: **RADAR** / **DRIVING** / **OBSERVER**

OTHER NOISE SOURCES: **distant AIRCRAFT overhead** / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS**
distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER: traffic on gravel road., distant boats

Description / sketch

TERRAIN: **HARD** **SOFT** **MIXED** **FLAT** **OTHER:**
PHOTOS: 4 res. ~10ft from edge of gravel road
OTHER COMMENTS / SKETCH:



13:05 arrived to retrieve note
car/lady stopped by meter with dogs,
left when we arrived.

measform4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: LT-3 Skagway **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9-12-03 11:00 **END DATE & TIME:** 9-13-03
ADDRESS: 420 22nd Avenue Diane Nore residence on P/L fence adjacent to State Street st at near of property 59° 27.949 N 135° 17.923 W magell 59°27.947N 135°17.921W garmin

Weather

TEMP: 61 °F HUMIDITY: 57 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 5-10 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: L-D 820 **TYPE:** 1 2 **SERIAL #:** 1272 #3
CALIBRATOR: L-D Cal 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 93.9 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** X
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1100 - 9/12/03: L_{eq} 59.2, L_{max} 90.8, L_{min} 37.1, L_{90} 40.5, L_{50} 47.3, L_{10} 62.0,
- 1216 9/13: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: Ignore 10:50 - 11:00, 9/12/03 due to setup.

Source Info and Traffic Counts

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: 2-lane asphalt

COUNT DURATION: ____ -MINUTE

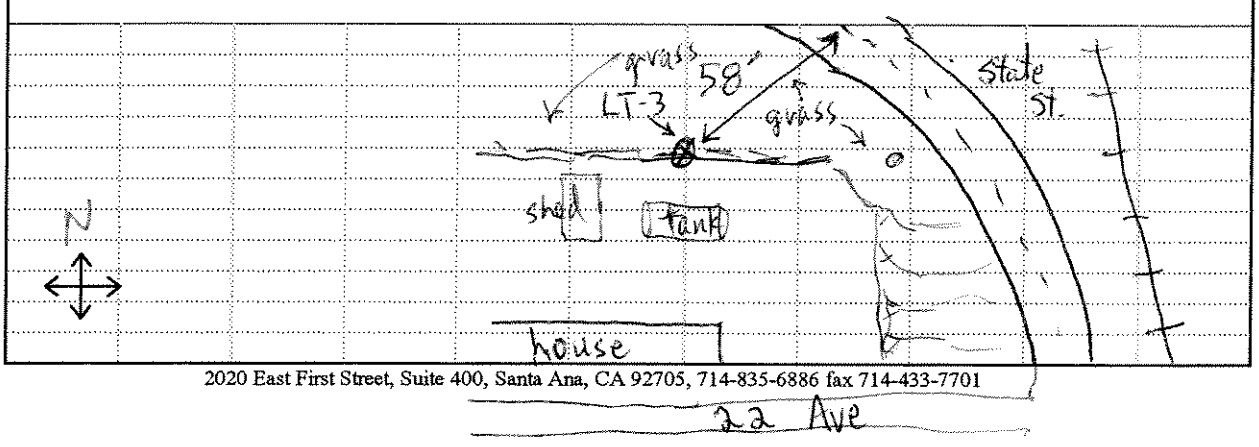
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: distant ship's horns

Description / sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER: Arrived 12:15 to retrieve
PHOTOS: 3
OTHER COMMENTS / SKETCH:



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: LT-4 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 12:00 9/12/03 **END DATE & TIME:** 9/13/03 1300
ADDRESS: Buddy True, 12th and Broadway
59° 27.573' N 135° 18.479' W (4 ft elev.)

ID

TEMP: 60 °F HUMIDITY: 60 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 2-10 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: overnight

Weather

INSTRUMENT: LD 820 **TYPE:** 1 2 **SERIAL #:** 1276
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 91.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

12:00, 9/12: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____

COMMENTS: post cal unstable ± 0.3 114 → 110.8

Acoustic Measurements

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: Rustling leaves
ROADWAY TYPE:

COUNT DURATION: ____-MINUTE

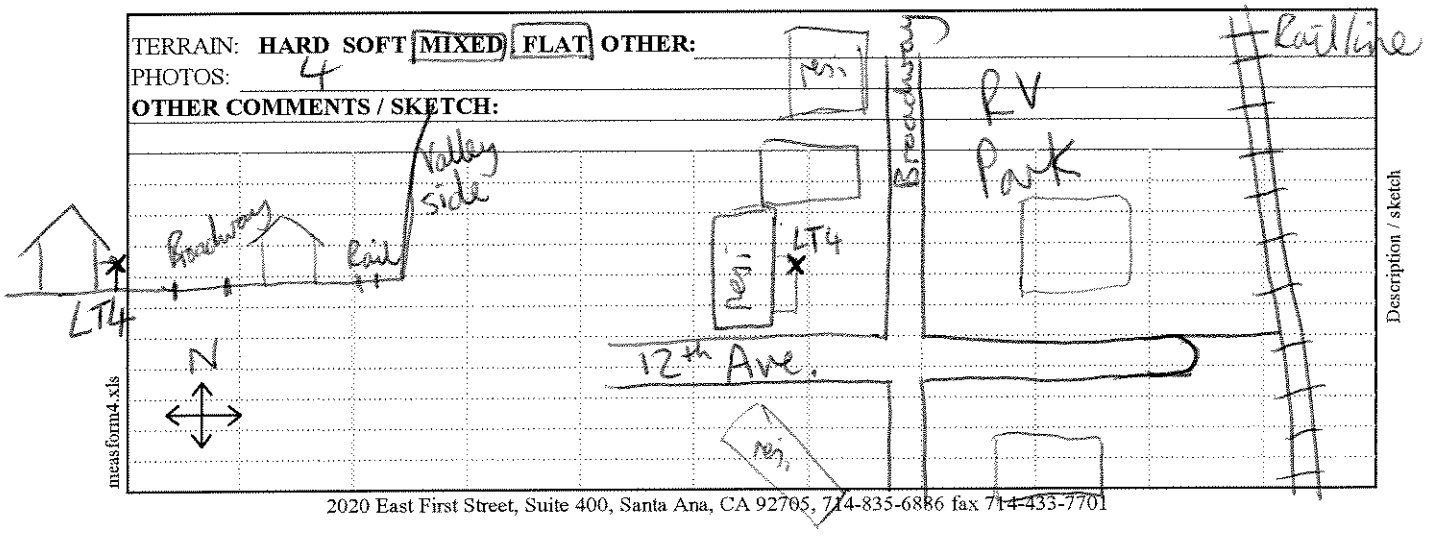
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	____ / ____	____ / ____	____ / ____	____ / ____
MED. TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
HVY TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
BUSES:	____ / ____	____ / ____	____ / ____	____ / ____
MOTORCYCLES:	____ / ____	____ / ____	____ / ____	____ / ____

SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**

OTHER NOISE SOURCES: distant **AIRCRAFT** overhead / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS** distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER:

Source Info and Traffic Counts

TERRAIN: **HARD SOFT** MIXED FLAT **OTHER:**
PHOTOS: 4
OTHER COMMENTS / SKETCH:



Description / sketch

meas form4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: LT-5 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1600 9/14/03 **END DATE & TIME:** 1330 9/16/03
ADDRESS: 19051 Glacier Hwy, on deck at grade with roadway
58°25.615'N 134°45.550' W

Weather

TEMP: 47 °F HUMIDITY: ____ % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: ____

Acoustic Measurements

INSTRUMENT: LD820 **TYPE:** 1 2 **SERIAL #:** 1276 3
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 93.4 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER: ____

1600 9/14: L_{eq} 52.6, L_{max} 81.0, L_{min} 27.9, L_{90} 33.6, L_{50} 44.6, L_{10} 52.6, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____, ____

COMMENTS: Ignore 1600 – 1610: setup
Arrived 1315 9/16/03 to retrieve meter
Stopped after 42 hrs 30 mins 25 secs

Source Info and Traffic Counts

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: rain
ROADWAY TYPE: ____

COUNT DURATION: ____ -MINUTE

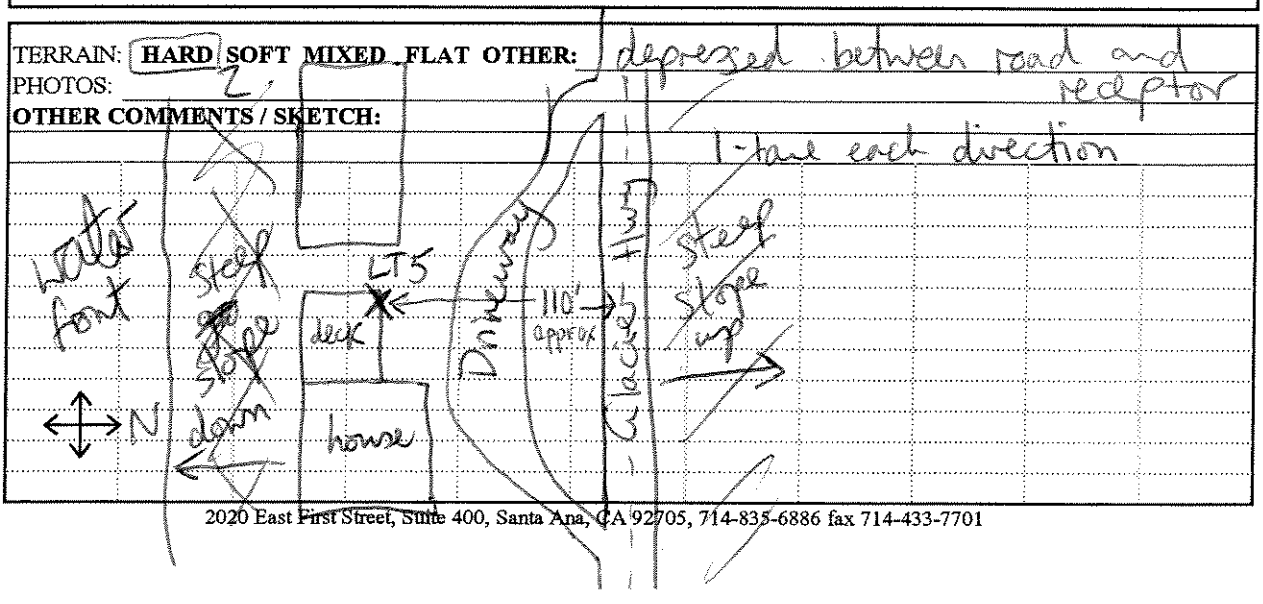
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	____ / ____	____ / ____	____ / ____	____ / ____
MED. TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
HVY TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
BUSES:	____ / ____	____ / ____	____ / ____	____ / ____
MOTORCYCLES:	____ / ____	____ / ____	____ / ____	____ / ____

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES (helicopters/planes) distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: ____

Description / sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER: depressed between road and receptor
PHOTOS: 2
OTHER COMMENTS / SKETCH: 1-lane each direction



measform4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: LT-6 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1650 9/14/03 **END DATE & TIME:** 1505 9/16/03
ADDRESS: 10785 Glacier Hwy, Juneau, AK
58° 22.795' N 134° 37.762' W

ID

TEMP: 49 °F HUMIDITY: 82 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (OVRCST) PARTLY CLOUDY CLEAR SUNNY FOG [RAIN] Other:

Weather

INSTRUMENT: LD820 **TYPE:** (1) 2 **SERIAL #:** 1272
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) ANSI OTHER:

1650 9/14: L_{eq} 68.3, L_{max} 95.5, L_{min} 29.0, L_{90} 32.8, L_{50} 62.7, L_{10} 72.0, (includes post-cal)
– 1450 9/16: L_{eq} , L_{max} , L_{min} , L_{90} , L_{50} , L_{10} ,
: L_{eq} , L_{max} , L_{min} , L_{90} , L_{50} , L_{10} ,
: L_{eq} , L_{max} , L_{min} , L_{90} , L_{50} , L_{10} ,

COMMENTS: Wet pavement @ setup 46 hrs 1 min 30 secs includes post-cal.
ignore first 10 minute interval (1650–1700)

Acoustic Measurements

SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: two-lane secondary w/ shoulders
COUNT DURATION: -MINUTE 40-45 SPEED (mph) #2 COUNT: SPEED (mph)

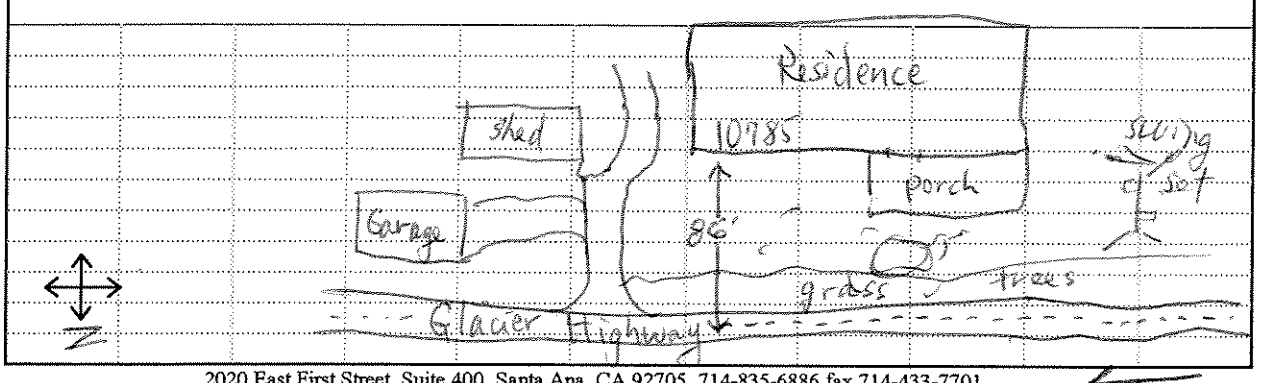
	NB / EB	SB / WB	NB EB	SB WB	NB / EB	SB / WB	NB EB	SB WB
AUTOS:	✓		50	speed limit				
MED. TRUCKS:	✓							
HVY TRUCKS:	✓							
BUSES:	✓							
MOTORCYCLES:	✓							

SPEED ESTIMATED BY: RADAR / DRIVING / (OBSERVER)

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD [SOFT] MIXED FLAT OTHER:
PHOTOS: 3
OTHER COMMENTS / SKETCH:



Description / sketch

measform4.xls

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increasing up-slope

ATTACHMENT D

FIELD MEASUREMENT DATA SHEETS FOR SHORT-TERM NOISE MEASUREMENTS

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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST-1 #1A **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9/10/03 1215 **END DATE & TIME:** 9/10/03 1235
ADDRESS: on Mud Road past "End" by LT-2 (50' South)

ID

TEMP: 56 °F HUMIDITY: 69 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0-4 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: light

Weather

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: Cal 200 **SERIAL #:** 2374

URS

CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓

SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
1230 – 1230	47.7	53.8	42.9	44.8	47.0	49.8
9/11/03						
1A 1315 – 1375	34.9	46.2	29.9	31.3	33.0	37.8

COMMENTS:
1A - 58°F 58% rh overcast, no rain calm
1A - lapping wavelets, bird chirps, free squirrel

Acoustic Measurements

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: lapping wavelets
ROADWAY TYPE: gravel one lane

COUNT DURATION: ____ -MINUTE

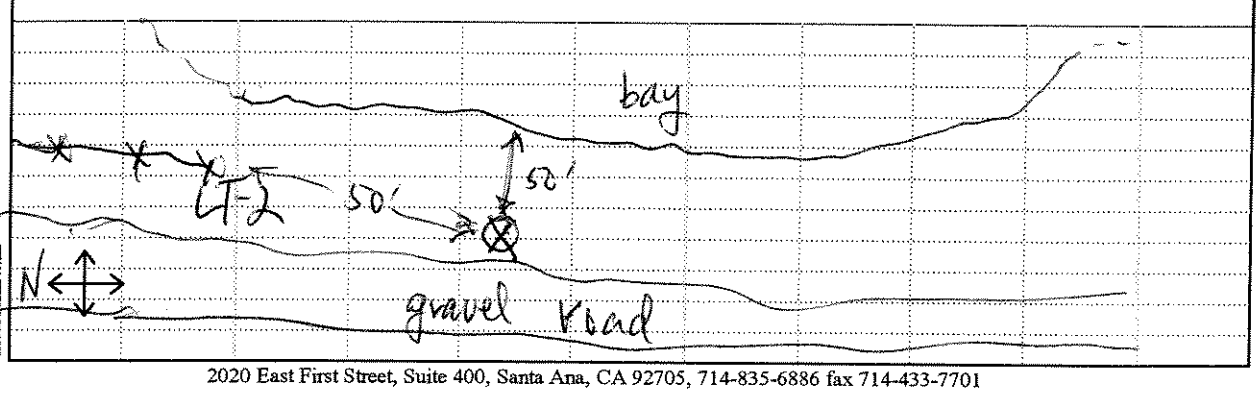
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: 2
OTHER COMMENTS / SKETCH:



Description / sketch

measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-2 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1255 9/10/03 **END DATE & TIME:** 1345 9/10/03
ADDRESS: Mud Bay Rd
Near NE end of proposed bridge across Chilkat Inlet (31 ft elev.) GPS 59°12.422'N 135°26.593'W

Weather

TEMP: 56 °F HUMIDITY: 69 % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)
WINDSPEED 2-5 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (OVRCST) PARTLY CLOUDY CLEAR SUNNY FOG [RAIN] Other: light

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
13:00-1330	49.3	66.5	41.6	43.5	45.1	48.6

COMMENTS:

Source Info and Traffic Counts

SOURCE: [TRAFFIC] AIRCRAFT RAIL INDUSTRIAL OTHER: Rustling leaves / water @ shoreline
ROADWAY TYPE: 2-lane undivided
COUNT DURATION: 30 -MINUTE

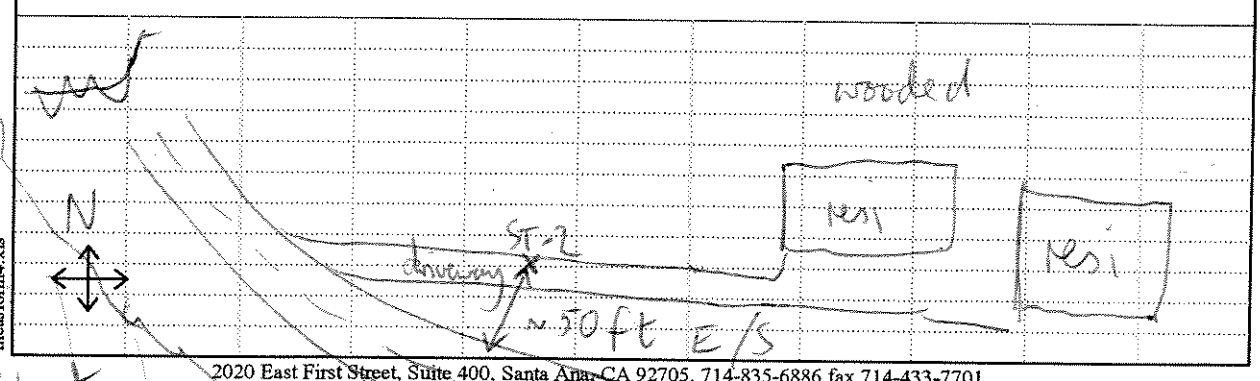
	NB / EB	SB / WB	SPEED (mph) NB EB	SPEED (mph) SB WB	#2 COUNT: NB / EB	#2 COUNT: SB / WB	SPEED (mph) NB EB	SPEED (mph) SB WB
AUTOS:	111							
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:	11							
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / [BIRDS]
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: water @ shoreline / waves in bay

Description / sketch

TERRAIN: HARD SOFT [MIXED] FLAT OTHER: Residences elevated ~30 ft above roadway
PHOTOS: 2
OTHER COMMENTS / SKETCH: ST-2 elevated ~ 15 ft



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-3 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1530 9/10/03 **END DATE & TIME:** 9/10 1635
ADDRESS: Portage Cove State Recreation Site
Alaska State Parks, center of camping area.
GPS 59° 13.552'N 135° 25.509' W

Weather

TEMP: 57 °F HUMIDITY: 67 % R.H. WIND: CALM [LIGHT] MODERATE [VARIABLE]
WINDSPEED 0-1 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: [OVRCST] PARTLY CLOUDY CLEAR SUNNY FOG [RAIN] Other: light

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.1 **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
1545-1625	43.2	61.2	30.6	33.8	37.8	44.3

COMMENTS:

Source Info and Traffic Counts

SOURCE: [TRAFFIC] AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: 2-lane asphalt
COUNT DURATION: 40 -MINUTE

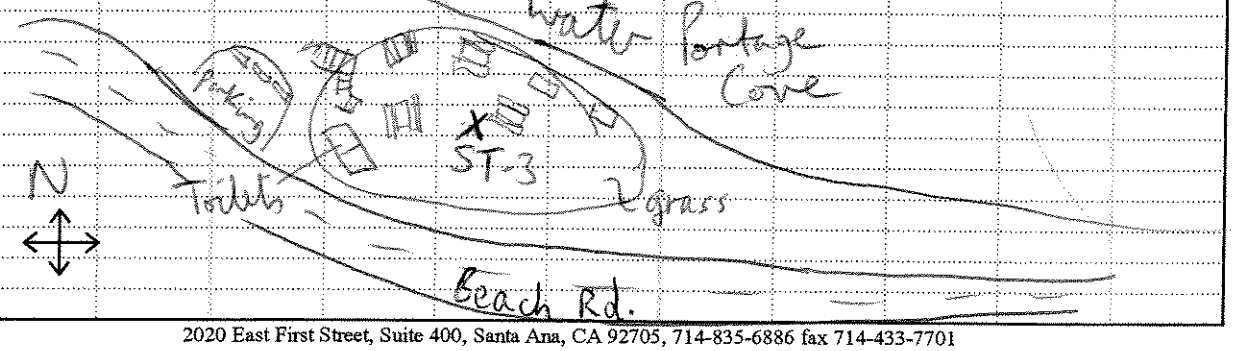
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	~~IIII~~ IIII /	/	/	/
MED. TRUCKS:	1 /	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	1 /	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: [distant AIRCRAFT overhead] / RUSTLING LEAVES / [distant BARKING DOGS] / [BIRDS]
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: distant boat (cruise ship) distant ship's P.A. shoreline wavelets

Description / sketch

TERRAIN: [HARD] [SOFT] MIXED FLAT OTHER:
PHOTOS: 3
OTHER COMMENTS / SKETCH: Tent cyclist camping only + picnic area



measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-4 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 17:00 9/10/03 **END DATE & TIME:** 1750 9/10/03
ADDRESS: Haines Hwy just south of Nukdik Pt.
GPS 59° 14.505'N 135° 25.809'W

Weather

TEMP: 55 °F HUMIDITY: 81 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0-2 MPH DIR: N NE E SE S SW W NW (light) STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** 1 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
*1705-1705	56.3	60.0	54.5	55.0	55.7	58.5	36 sec
1710-1740	55.1	69.5	31.5	37.0	48.1	59.3	

COMMENTS: *"Fast Ferry" 1800 feet at closest point N/B toward Skagway

Source Info and Traffic Counts

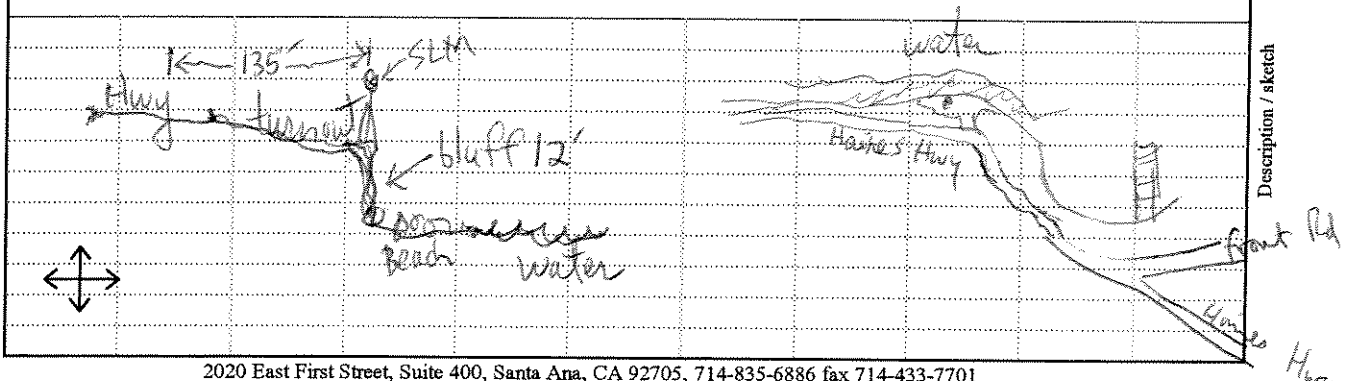
SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: Haines Hwy 1 lane each dir.
COUNT DURATION: 30 -MINUTE SPEED (mph) 35 #2 COUNT: SPEED (mph)

	NB / EB	SB / WB	NB EB / SB WB	NB / EB	SB / WB	NB EB / SB WB
AUTOS:	IIII IIII IIII	IIII IIII IIII	/		/	/
MED. TRUCKS:	/	/	/		/	/
HVY TRUCKS:	/	/	/		/	/
BUSES:	/	/	/		/	/
MOTORCYCLES:	/	/	/		/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER NOISE SOURCES: ~~distant~~ AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: ~~Distant~~ ~~Fast~~ ~~Ferry~~ damp/wet pavement

Description / sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: 5
OTHER COMMENTS / SKETCH:



measform4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-5 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 10:15 9/11/03 **END DATE & TIME:** 1110 9/11/03
ADDRESS: Midway along alley between Soap Suds Alley and Portage St. Fort Seward.
GPS 59° 13.654' N / 135° 26.380' W (63 ft elev.)

Weather

TEMP: 55 °F HUMIDITY: 76 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED 0-3 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (OVRCST) PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: No rain

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}	
1030 - 1100:	53.0	71.5	38.0	39.7	47.7	53.0	
:							
:							
:							

COMMENTS: 1 car passby meter
Damp pavement

Source Info and Traffic Counts

SOURCE: [TRAFFIC] AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE:

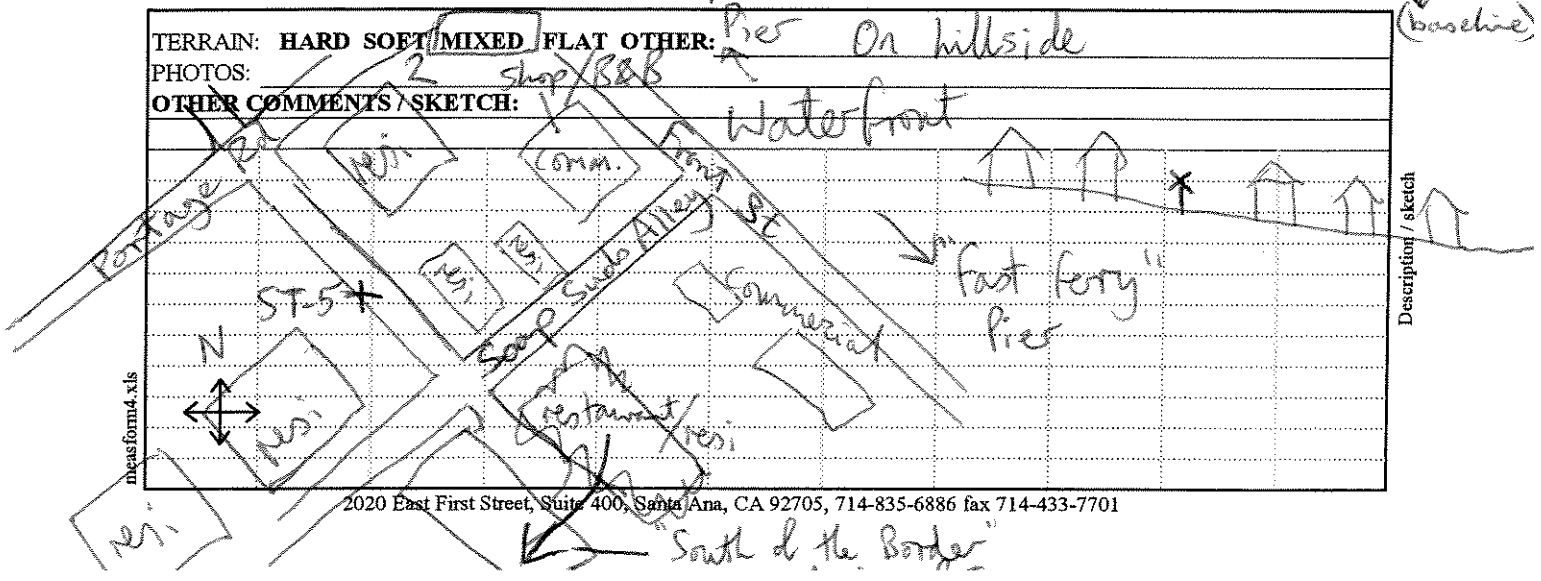
COUNT DURATION: ____-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	✓ /	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	1 /	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant [AIRCRAFT overhead] / RUSTLING LEAVES / distant BARKING DOGS / [BIRDS]
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: distant back-up alarm, fan motor @ South of the Border. (baseline)

Description / sketch

TERRAIN: HARD SOFT [MIXED] FLAT OTHER: Pier On hillside
PHOTOS:
OTHER COMMENTS / SKETCH:



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-6 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1110 9/11/03 **END DATE & TIME:** 1140 9/11/03
ADDRESS: P/L of school on 3rd Ave south of Main St. north of public library (By playground)
Middle/Elem. Haines School - 315 Main St. GPS 59° 14.069' N 135° 26.869' W

Weather

TEMP: 55 °F HUMIDITY: 76 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED 0 - 2 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (OVRCST) PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: No rain

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 93.9 **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
1115 - 1135	56.5	75.0	39.4	43.5	47.8	60.5

COMMENTS: Damp pavement

Source Info and Traffic Counts

SOURCE: [TRAFFIC] AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: 1 lane each direction
COUNT DURATION: 20 -MINUTE

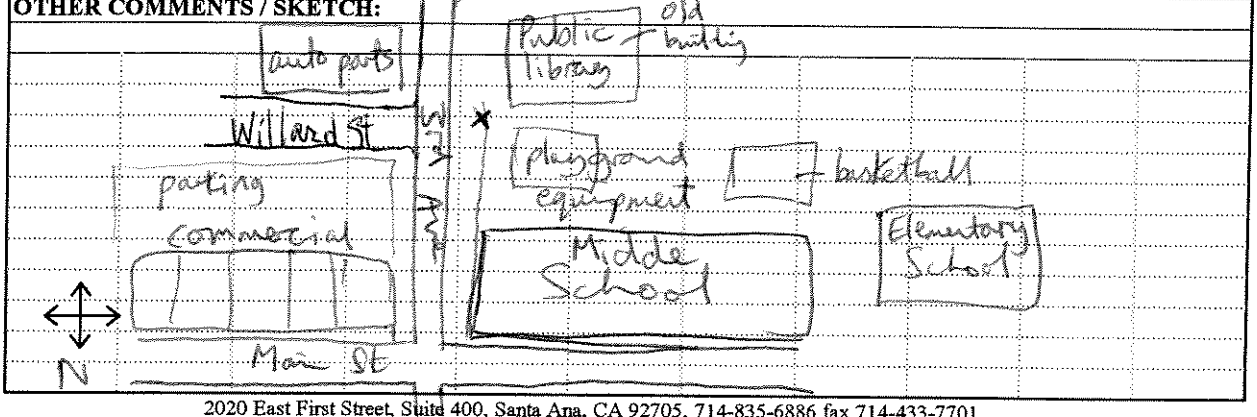
3rd Ave	~~NB / EB / SB / WB~~	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	~~IIII IIII IIII IIII IIII IIII IIII~~	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: [distant AIRCRAFT overhead] / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS (5 secs)
OTHER: distant backup alarm [Public library] new building Kids let out → stopped meter

Description / sketch

TERRAIN: [HARD] SOFT MIXED FLAT OTHER:
PHOTOS: 4
OTHER COMMENTS / SKETCH:



measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-7 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9/12/03 1215 **END DATE & TIME:** 1255 9/12/03
ADDRESS: Front yard of "For Sale" residence at Spring & 10th Ave
59° 27.449N 135° 18.535W (44 elev) ea

Weather

TEMP: 58 °F HUMIDITY: 58 % R.H. WIND: CALM LIGHT [MODERATE] [VARIABLE]
WINDSPEED 0-10 MPH DIR: N NE E SE S SW W NW STEADY [GUSTY]
SKY: OVRCST [PARTLY CLOUDY] CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD Cal 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 93.9 **dBA SPL** **POST-TEST** _____ **dBA SPL WINDSCREEN** X
SETTINGS [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] **OTHER:**

1220-1249: L_{eq} 69.5, L_{max} 94.0, L_{min} 48.9, L_{90} 53.2, L_{50} 56.5, L_{10} 60.6,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,

COMMENTS: Leq 58 dBA before dogs started barking
Lmax @ 1243 from dogs by meter.

Source Info and Traffic Counts

SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:** Rustling leaves
ROADWAY TYPE: residential asphalt | aircraft takeoff

COUNT DURATION: _____ **-MINUTE**

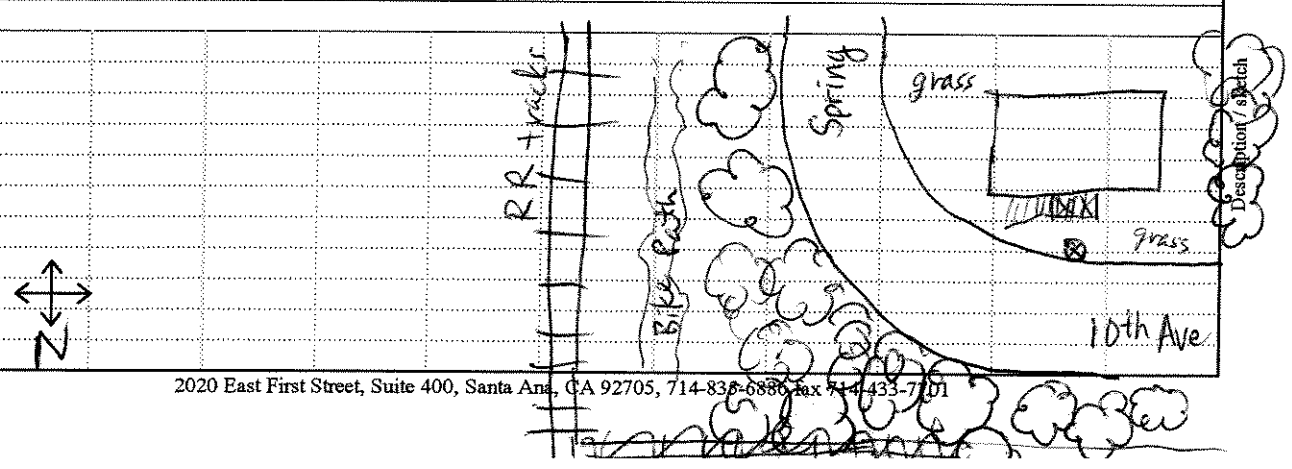
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	____ / ____	____ / ____	____ / ____	____ / ____
MED. TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
HVY TRUCKS:	____ / ____	____ / ____	____ / ____	____ / ____
BUSES:	____ / ____	____ / ____	____ / ____	____ / ____
MOTORCYCLES:	____ / ____	____ / ____	____ / ____	____ / ____

SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**

OTHER NOISE SOURCES: [distant AIRCRAFT] overhead / [RUSTLING LEAVES] / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / [distant TRAFFIC] / distant LANDSCAPING / distant TRAINS
OTHER: distant industrial/construction? distant backup alarm

Description / Sketch

TERRAIN: **HARD SOFT** [MIXED] [FLAT] **OTHER:**
PHOTOS: 3
OTHER COMMENTS / SKETCH:



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST-7A **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1500 9/13/03 **END DATE & TIME:** 1530 9/13/03
ADDRESS: Corner of 10th Ave and Spring St. (As before)

ID

TEMP: 55 °F HUMIDITY: 71 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Weather

INSTRUMENT: LD 820 **TYPE:** 1 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:**

1505-1525: L_{eq} 43.9, L_{max} 56.6, L_{min} 38.1, L_{90} 40.1, L_{50} 42.2, L_{10} 46.7,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: Saturday - no cruise ships in town → v. quiet

Acoustic Measurements

SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:** Rain/Rustling leaves
ROADWAY TYPE:

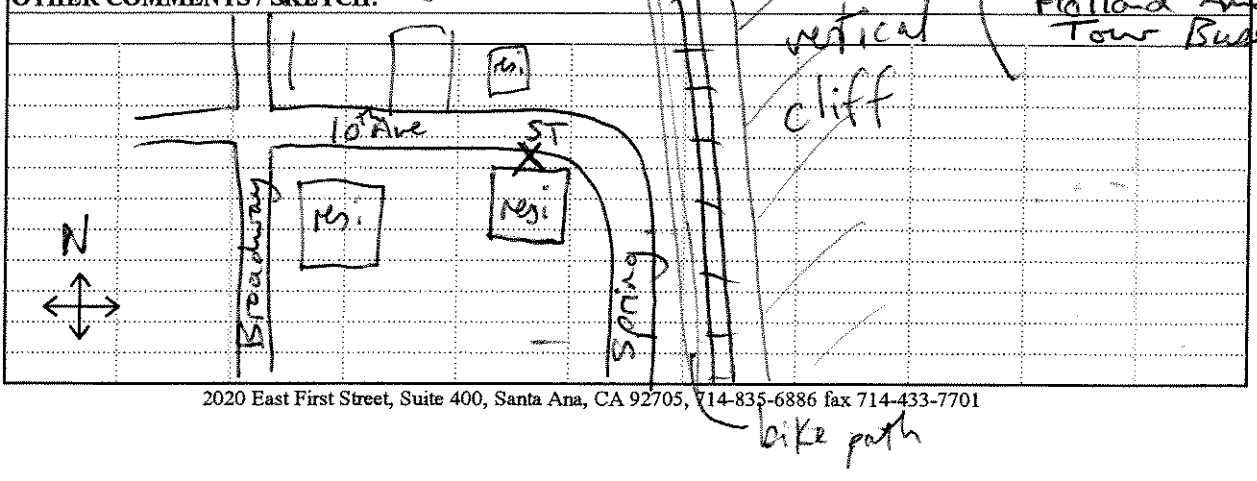
COUNT DURATION: ___-MINUTE	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

2 takeoffs SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**
OTHER NOISE SOURCES: distant **AIRCRAFT** overhead / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS**
distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER:

Source Info and Traffic Counts

TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS: Taken previously.
OTHER COMMENTS / SKETCH:

(Between 9th Ave and 7th/8th Ave Holland America Tour Buses)



Description / sketch

measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST-8 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9/12/03 1615 **END DATE & TIME:** 9/12/03 1705
ADDRESS: Skagway City School Main Street between 17th Ave and 15th Avenue
59°27.796' N 135°18.370' W (51 ft elev.) 21 ft accuracy

ID

TEMP: 57 °F HUMIDITY: 67 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 1-10 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Weather

INSTRUMENT: LD 820 **TYPE:** 1 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 93.9 **dBA SPL POST-TEST** _____ **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1625-1700: L_{eq} 52.6, L_{max} 64.4, L_{min} 43.7, L_{90} 47.8, L_{50} 51.5, L_{10} 55.2,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
_____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,

COMMENTS:
1625 - Train

Acoustic Measurements

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: wind in trees
ROADWAY TYPE: two-lane local asphalt
COUNT DURATION: _____-MINUTE

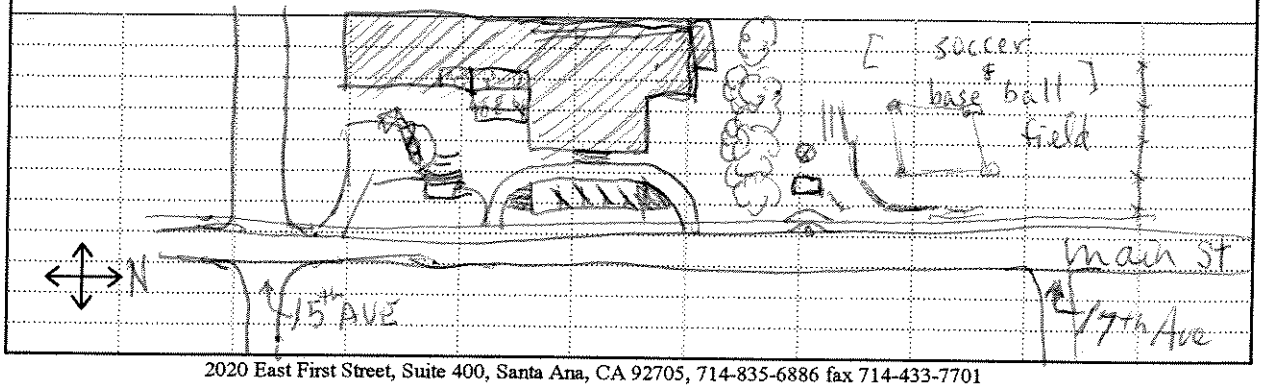
	NB / EB	SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	✓					
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:	✓					
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: 3
OTHER COMMENTS / SKETCH:



Description / sketch

measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST-9 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1710 9/12/03 **END DATE & TIME:** 1735 9/12/03
ADDRESS: Opposite yellow policeman's house on 22nd Ave South-side, Mid-block between Main St and State St.
59° 27.948' N 135° 17.983' W

ID

TEMP: 59 °F HUMIDITY: 61 % R.H. WIND: CALM [LIGHT] MODERATE [VARIABLE]
WINDSPEED 0-4 MPH DIR: N NE E SE (S) SW W NW STEADY GUSTY
SKY: [OVRCST] PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: _____

Weather

INSTRUMENT: LD820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 93.9 **dBA SPL** **POST-TEST** _____ **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER: _____

#1 1710-1720: L_{eq} 56.9, L_{max} 72.1, L_{min} 43.7, L_{90} 45.6, L_{50} 51.3, L_{10} 59.3,
#2 1720-1730: L_{eq} 55.6, L_{max} 75.0, L_{min} 44.1, L_{90} 45.7, L_{50} 47.8, L_{10} 55.2,
_____: L_{eq} _____, L_{max} _____, L_{min} _____, L_{90} _____, L_{50} _____, L_{10} _____,
_____: L_{eq} _____, L_{max} _____, L_{min} _____, L_{90} _____, L_{50} _____, L_{10} _____,

Acoustic Measurements

COMMENTS:
1 - landing from N
#2: 1 - takeoff to N

SOURCE: [TRAFFIC] [AIRCRAFT] [RAIL] INDUSTRIAL OTHER: _____
ROADWAY TYPE: _____

COUNT DURATION: _____-MINUTE

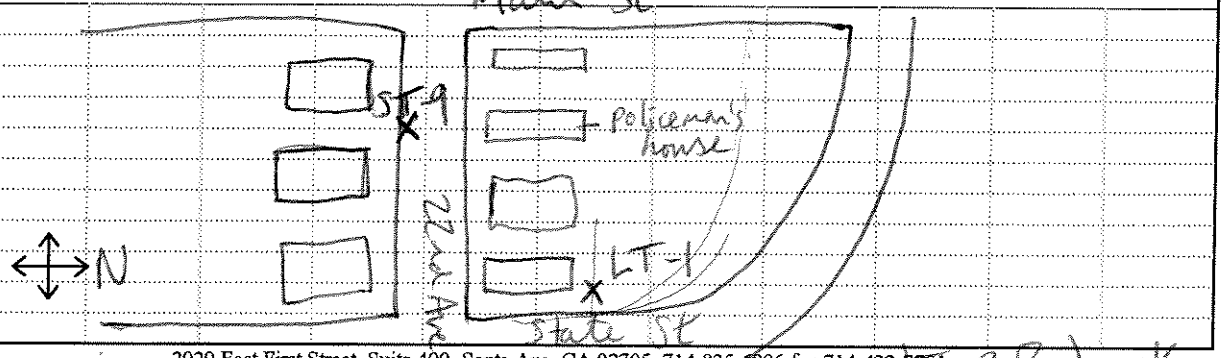
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: [distant AIRCRAFT] overhead / RUSTLING LEAVES / [distant BARKING DOGS] #2 / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: _____

Source Info and Traffic Counts

TERRAIN: [HARD] SOFT MIXED [FLAT] OTHER: _____
PHOTOS: 3
OTHER COMMENTS / SKETCH: At edge of pavement



Description / sketch

measform4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST-10 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1000 9/13/03 **END DATE & TIME:** 1045 9/13/03
ADDRESS: Historic Moore Homestead on grass between cabin and information boards on 5th Ave. (National Park Service)
N 59° 27.307' W135° 18.861'

ID

Weather

TEMP: 51 °F HUMIDITY: 82 % R.H. WIND: [CALM] LIGHT MODERATE VARIABLE
WINDSPEED 0 MPH DIR: N NE E SE S SW W NW light STEADY GUSTY
SKY: [OVRCST] PARTLY CLOUDY CLEAR SUNNY FOG [RAIN] Other:

Acoustic Measurements

INSTRUMENT: LD820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: [A-WEIGHTED] [SLOW] FAST FRONTAL [RANDOM] [ANSI] OTHER:

1010-1040: L_{eq} 46.7, L_{max} 64.1, L_{min} 41.2, L_{90} 42.1, L_{50} 43.8, L_{10} 48.7,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: Wet pavement

Source Info and Traffic Counts

SOURCE: [TRAFFIC] AIRCRAFT RAIL INDUSTRIAL OTHER: Birds
ROADWAY TYPE: 5th Ave

COUNT DURATION: -MINUTE

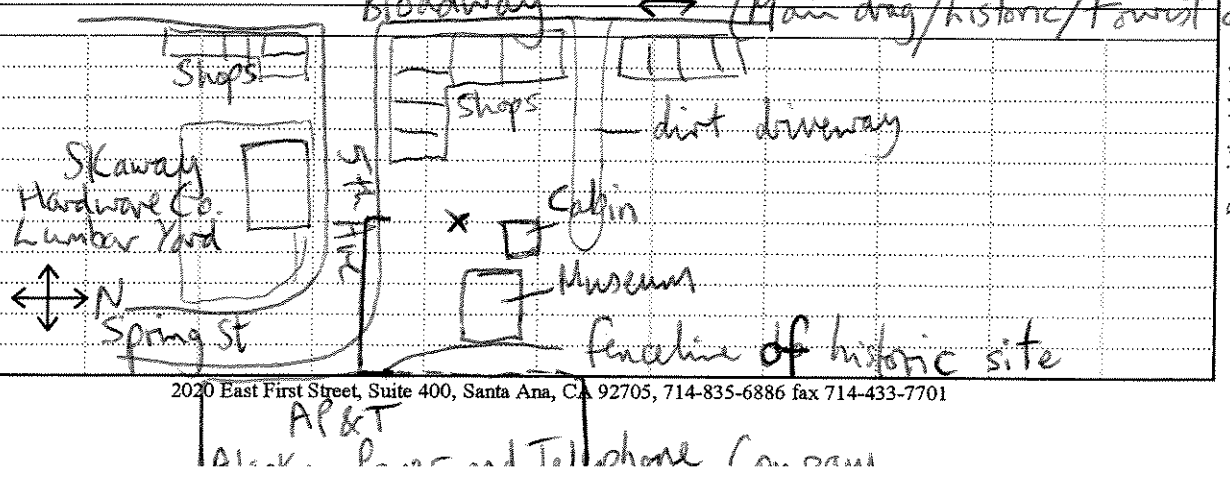
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	✓ /	15 mph	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / [distant TRAFFIC] distant LANDSCAPING / distant TRAINS
OTHER: Distant fans/generator @ AP&T

Description / sketch

TERRAIN: HARD SOFT [MIXED] [FLAT] OTHER:
PHOTOS: 4
OTHER COMMENTS / SKETCH: Broadway ⟷ (Main drag/historic/tourist area)



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-11 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1100 9/13/03 **END DATE & TIME:** 1145 9/13/03
ADDRESS: On grass ~50 ft from E/S of side street at Pullen Creek Shoreline Park (~100 ft from Congress Way)
59°27.095' N 135°19.005' W (4 ft elev) 24.0 ft accuracy

Weather

TEMP: 55 °F HUMIDITY: 73 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 2-4 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other: No rain

Acoustic Measurements

INSTRUMENT: LD820 **TYPE:** 1 2 **SERIAL #:** 0775
CALIBRATOR: LDCAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1105-1135: L_{eq} 47.1, L_{max} 61.1, L_{min} 41.5, L_{90} 43.0, L_{50} 44.7, L_{10} 49.7,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: Wet pavement

Source Info and Traffic Counts

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: Water from Creek into pond
ROADWAY TYPE: 1 lane each direction

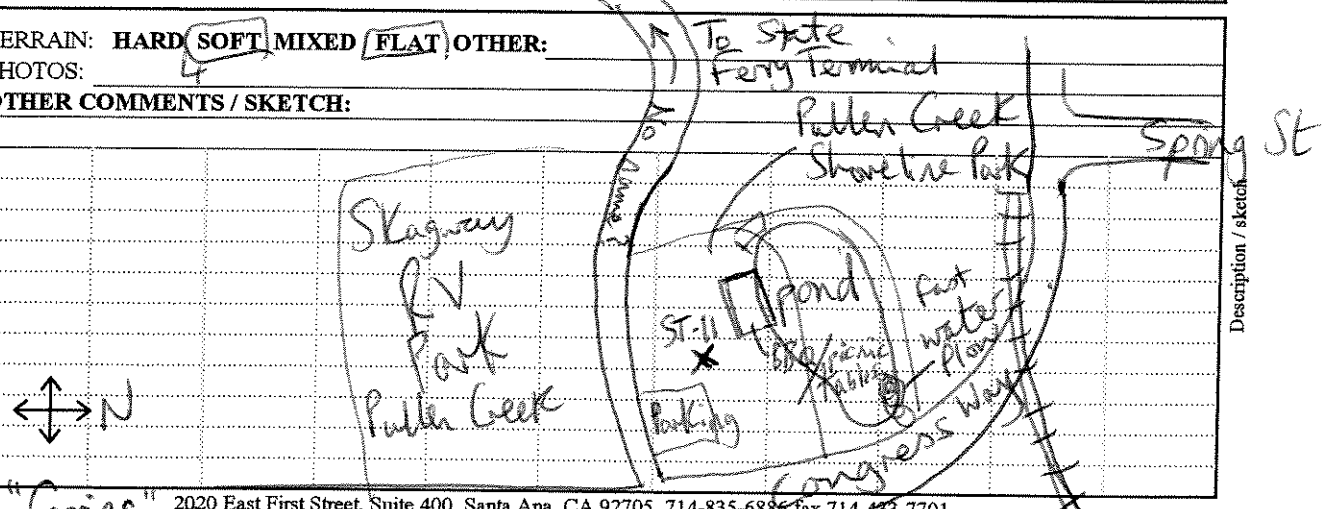
COUNT DURATION: ___-MINUTE	NB / EB	SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	✓		~10 mph			
MED. TRUCKS:			~15 mph on Congress Way			
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES distant BARKING DOGS / BIRDS - DUCKS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: Ferries

Description / sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: 4
OTHER COMMENTS / SKETCH:



To "ferries"
Fast ferry, small boat dock and cruise ships

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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-12 OBSERVER(s): Rob Greene, Rachel Pirie
START DATE & TIME: 1020 9/14/03 END DATE & TIME: 1145 9/14/03
ADDRESS: Cabin, Benes's Bay, On north corner of deck. Tongass National Forest
58° 46.126 N 134° 56.029 W Cabin

Weather

TEMP: 47 °F HUMIDITY: 76 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0-1 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 TYPE: 1 2 SERIAL #: 0775
CALIBRATOR: LD CAL 200 SERIAL #: 2374
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 93.9 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1030-1100: L_{eq} 51.5, L_{max} 59.8, L_{min} 50.1, L_{90} 50.7, L_{50} 51.3, L_{10} 52.1,
: L_{eq} , L_{max} , L_{min} , L_{90} , L_{50} , L_{10} ,
ST-12A 1105-1135: L_{eq} 51.5, L_{max} 58.3, L_{min} 50.0, L_{90} 50.7, L_{50} 51.2, L_{10} 52.1,
ST12B 1155-1202: L_{eq} 48.6, L_{max} 54.2, L_{min} 46.6, L_{90} 47.5, L_{50} 48.3, L_{10} 50.2,

COMMENTS: Wind starting to pick up during meas after 18 min gusts to 8 mph.
Second measurement wind 0-4 mph 45°F 74% rh overcast no rain

Source Info and Traffic Counts

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: Rain / Waterfall / Stream
ROADWAY TYPE:

COUNT DURATION: -MINUTE

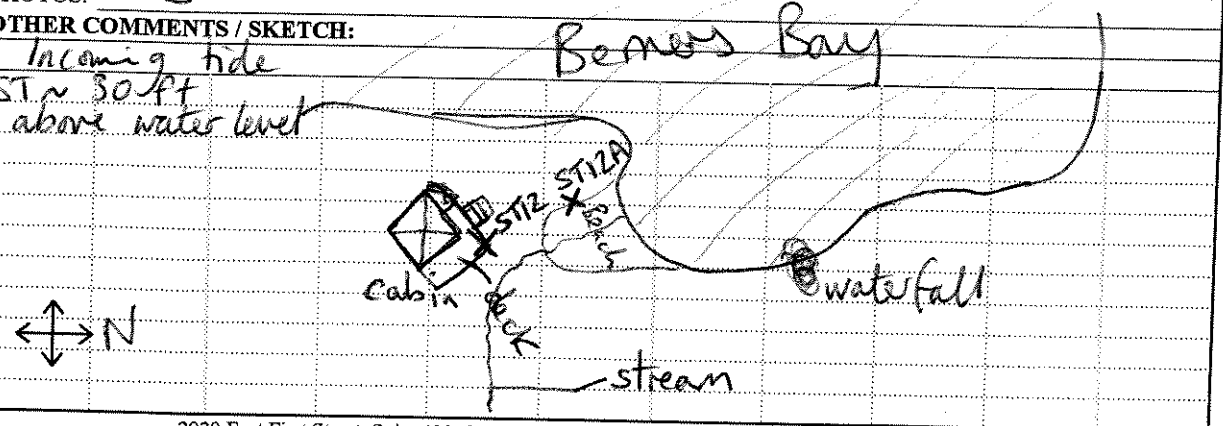
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS #1 2 (3 barks during 30 sec)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Description / sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER: ST12B - Waterfall, stream
PHOTOS: 3
OTHER COMMENTS / SKETCH:
Incoming tide
ST ~ 30 ft above water level



measform4.xls

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

SITE IDENTIFICATION: ~~LT 7~~ / ST13 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1030 9/15/03 **END DATE & TIME:**
ADDRESS: 4625 Glacier Hwy in yard overlooking Egan Drive.
58° 20.625'N 134° 29.795'W (50ft accuracy)

ID

TEMP: 55 °F HUMIDITY: 50 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0-1 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Weather

INSTRUMENT: LD820 **TYPE:** 1 2 **SERIAL #:** 1386
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** LT 94.1 **dBA SPL** **POST-TEST** ~~___~~ **dBA SPL WINDSCREEN** ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:** ST13

1050 9/15 : L_{eq} No data - programming lost meter not stable. L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
ST13 1110 - 1130 : L_{eq} 63.2, L_{max} 68.9, L_{min} 49.1, L_{90} 59.2, L_{50} 62.8, L_{10} 65.6,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: ST - traffic, dog barking, birds
LD820 SN0775ST cal: 94.0, post-cal 94.0
Arrived 1515, 9/16/03 to retrieve meter

Acoustic Measurements

SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:**
ROADWAY TYPE: Egan Dr 4-lane divided hwy.
COUNT DURATION: 20 **-MINUTE**

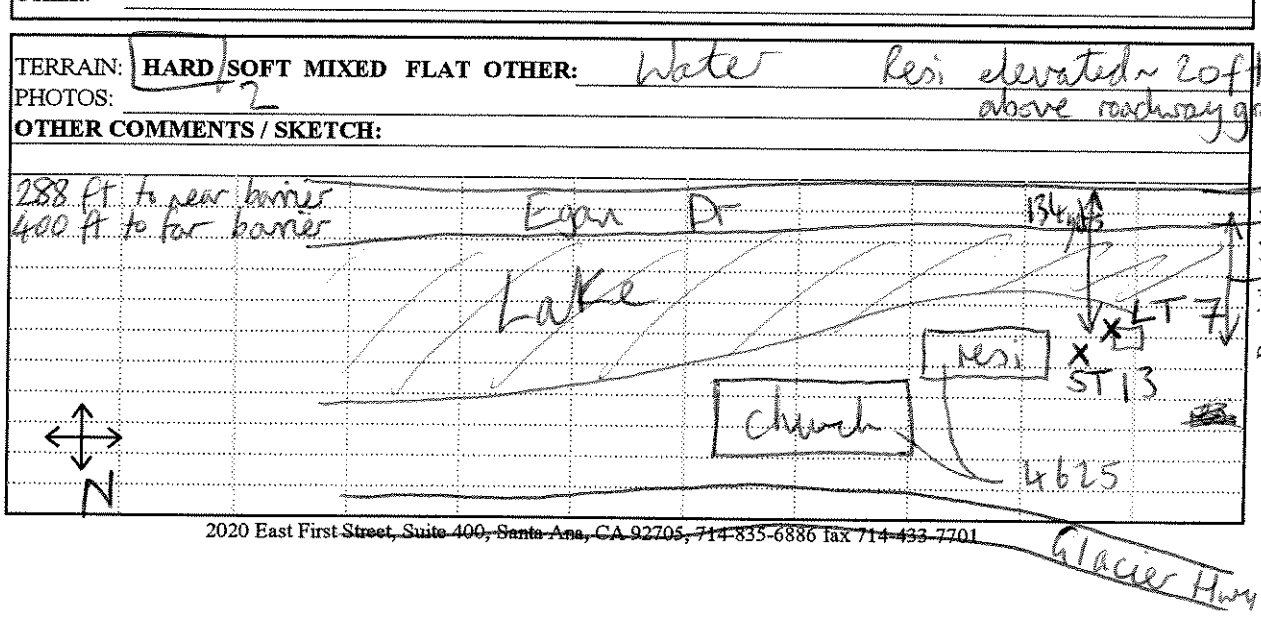
	NB EB / SB WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB EB / SB WB	SPEED (mph) NB EB / SB WB
AUTOS:	211 / 241	50 / speed limit	/	/
MED. TRUCKS:	3 / 6	/	/	/
HVY TRUCKS:	7 / 8	/	/	/
BUSES:	10 / 2	/	/	/
MOTORCYCLES:	0 / 0	/	/	/

SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**

OTHER NOISE SOURCES: distant **AIRCRAFT** overhead / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS**
distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER:

Source Info and Traffic Counts

TERRAIN: **HARD SOFT MIXED FLAT OTHER:** Water Resi elevated ~ 20ft above roadway grade.
PHOTOS: 2
OTHER COMMENTS / SKETCH:



Description / sketch

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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST13A **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1530 9/16/03 **END DATE & TIME:** 1610 9/16/03
ADDRESS: 4625 Glacier Hwy

ID

TEMP: ____ °F HUMIDITY: ____ % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)
WINDSPEED 0-4 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other: ____

Weather

INSTRUMENT: LD820 **TYPE** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LDCAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER: ____

1535-1555: L_{eq} 63.5, L_{max} 72.6, L_{min} 53.7, L_{90} 58.6, L_{50} 63.0, L_{10} 65.8,
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,
____: L_{eq} ____, L_{max} ____, L_{min} ____, L_{90} ____, L_{50} ____, L_{10} ____,

COMMENTS:
1 float plane ~~landing~~ overhead toward airport
11 float plane takeoff

Acoustic Measurements

SOURCE: (TRAFFIC) (AIRCRAFT) RAIL INDUSTRIAL OTHER: ____
ROADWAY TYPE: ____
COUNT DURATION: 20 -MINUTE

	NB / (EB) / SB / (WB)	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	274 / 390	/	/	/
MED. TRUCKS:	2 / 2	/	/	/
HVY TRUCKS:	2 / 4	/	/	/
BUSES:	10 / 22	/	/	/
MOTORCYCLES:	2 / 2	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / (RUSTLING LEAVES) / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: ____

Source Info and Traffic Counts

TERRAIN: HARD SOFT (MIXED) FLAT OTHER: Elevated ~ 15ft
PHOTOS: ____
OTHER COMMENTS / SKETCH: As before.

Description / sketch

measforma4.xls

2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST 14 OBSERVER(s): Rob Greene, Rachel Pirie
START DATE & TIME: 1155 9/15/03 END DATE & TIME: 1240 9/15/03
ADDRESS: 4150 Glacier Hwy. In-line with façade of house.
58° 20.295' N 134° 29.319' W (14ft accuracy)

Weather

TEMP: 55 °F HUMIDITY: 49 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED 0-1 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST (PARTLY CLOUDY) CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD 820 TYPE: (1) 2 SERIAL #: 0775
CALIBRATOR: LD CAL 200 SERIAL #: 2374
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL RANDOM (ANSI) OTHER:

1210 - 1225: L_{eq} 69.7, L_{max} 78.8, L_{min} 59.9, L_{90} 65.1, L_{50} 69.6, L_{10} 71.8,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS: 290 ft to centerline of Egan Dr.

Source Info and Traffic Counts

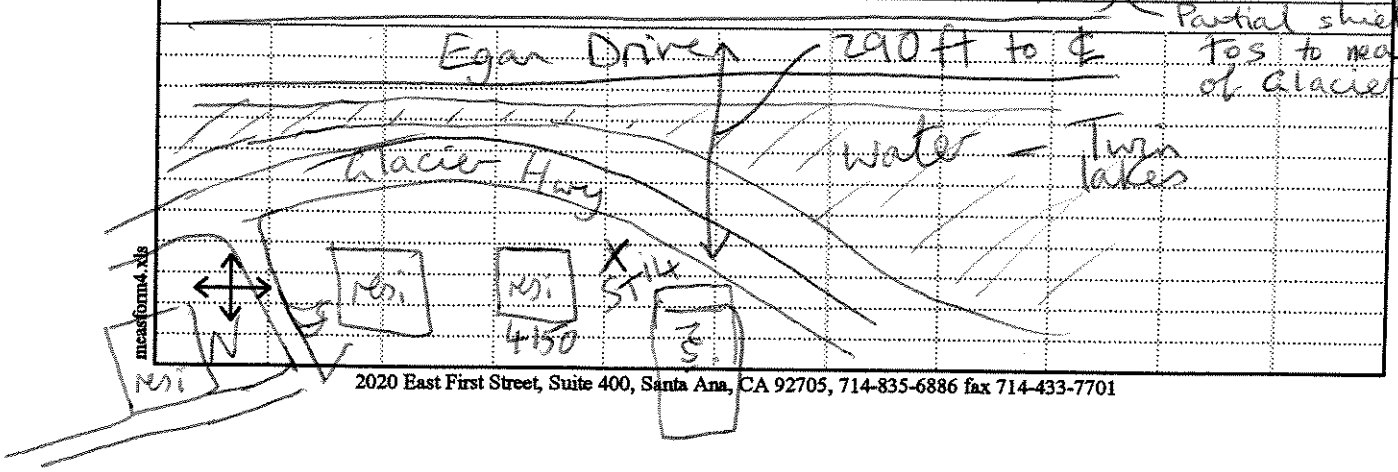
SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER: Glacier Hwy - 2 lane w/shoulder
ROADWAY TYPE: 4 lane divided Hwy - Egan Dr.
COUNT DURATION: 15 -MINUTE

	Egan Dr. NB / (EB)	/ SB / (WB)	SPEED (mph) NB EB / SB WB	#2 COUNT: Glacier Hwy NB / (EB)	/ SB / (WB)	SPEED (mph) NB EB / SB WB
AUTOS:	209	/ 265	~50 avg	14	/ 43	~35 avg
MED. TRUCKS:	3	/ 1	/	1	/ 0	/
HVY TRUCKS:	5	/ 1	/	0	/ 2	/
BUSES:	11	/ 4	/	0	/ 0	/
MOTORCYCLES:	0	/ 1	/	0	/ 0	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER NOISE SOURCES: distant (AIRCRAFT overhead) / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: helicopter 4-5 distant takeoffs

Description / sketch

TERRAIN: HARD SOFT [MIXED] FLAT OTHER: Elevated ~ 25-30 ft above Egan Dr.
PHOTOS: 2 Elevated ~ 15 ft above Glacier Hwy.
OTHER COMMENTS / SKETCH:



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FIELD NOISE MEASUREMENT DATA

URS

Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST15 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1610 9/15/03 **END DATE & TIME:** 1650 9/15/03
ADDRESS: ~~Stikine~~ End of Meadow Lane.
At center of cul-de-sac 75 ft from top-of-slope / E/S
58° 22.199' N 134° 36.023' W (12ft accuracy, 17ft. elev)

ID

TEMP: 59 °F HUMIDITY: 32 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Weather

INSTRUMENT: LD 820 **TYPE:** 1 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1622-1642: L_{eq} 64.3, L_{max} 72.9, L_{min} 46.6, L_{90} 58.8, L_{50} 63.8, L_{10} 66.7,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS:
~8 helicopters

Acoustic Measurements

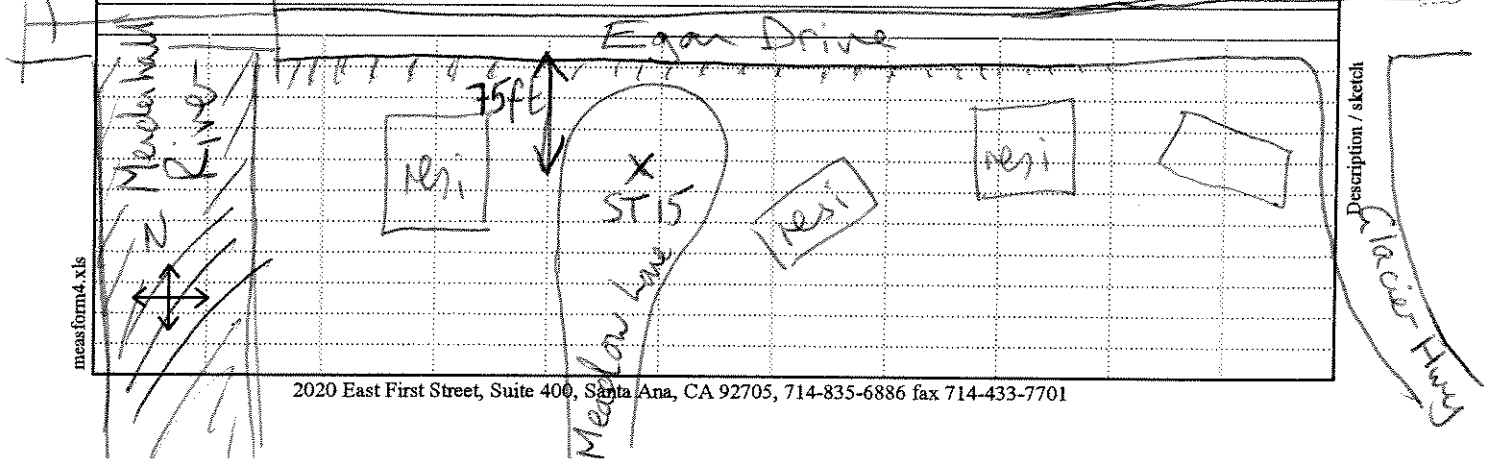
SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: Egan Dr 2 lane roadway (1 each dir.) + center turn lane + shoulder
COUNT DURATION: 20 -MINUTE

	NB / EB	SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	247	263	~35 mph			
MED. TRUCKS:	3	6	~40 mph			
HVY TRUCKS:	1	5				
BUSES:	7	2				
MOTORCYCLES:	2	2				

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER NOISE SOURCES: distant AIRCRAFT overhead / helicopters RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER: Road elevated 10' → 5' W → E
PHOTOS: 3
OTHER COMMENTS / SKETCH:



Description / sketch

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST 16 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1710 9/15/03 **END DATE & TIME:** 9-15-03 1750
ADDRESS: 13660 Glacier Highway 1000 ft west of Auke Bay Ferry Terminal
58° 22.952' N 134° 41.571' W (elev 43)

Weather

TEMP: 56 °F HUMIDITY: 35 % R.H. WIND: [CALM] LIGHT MODERATE VARIABLE
WINDSPEED 0-4 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST [PARTLY CLOUDY] CLEAR SUNNY FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.0 **dBA SPL** **POST-TEST** 93.9 **dBA SPL WINDSCREEN** ✓
SETTINGS: **A-WEIGHTED** **SLOW** **FAST** **FRONTAL** **RANDOM** **ANSI** **OTHER:**

1720-1740 : L_{eq} 65.9, L_{max} 88.0, L_{min} 40.6, L_{90} 46.8, L_{50} 59.1, L_{10} 66.8,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS:
motorcycles loudest (also resident complaint)

Source Info and Traffic Counts

SOURCE: [TRAFFIC] **AIRCRAFT** **RAIL** **INDUSTRIAL** **OTHER:**
ROADWAY TYPE: Two-lane w/shoulders asphalt
COUNT DURATION: 20 **-MINUTE**

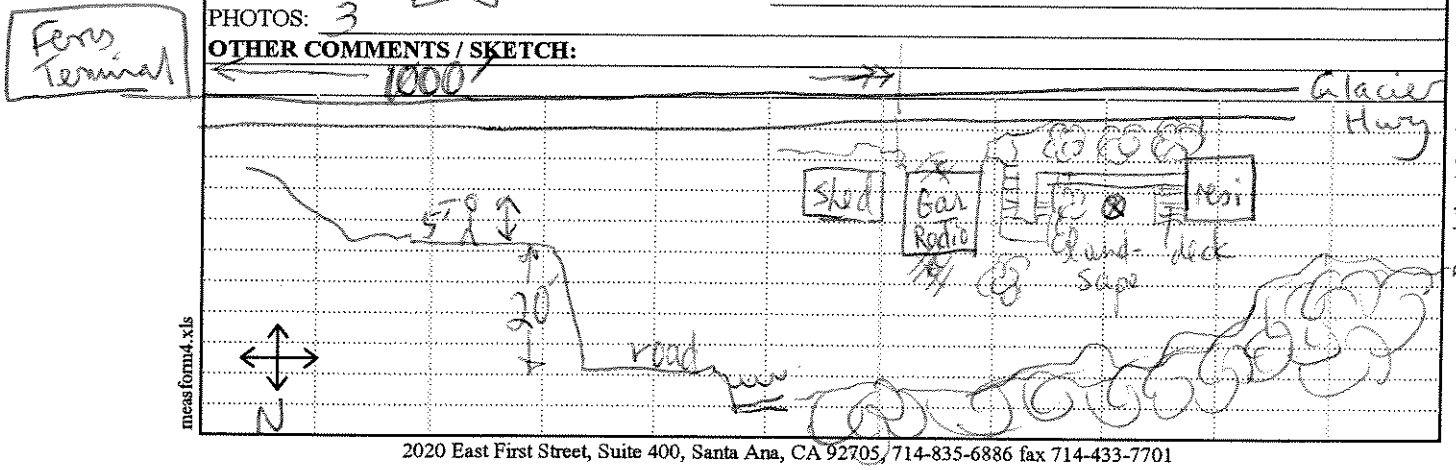
	NB / EB	SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB	SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	49	84				
MED. TRUCKS:	0	0				
HVY TRUCKS:	0	0				
BUSES:	0	0				
MOTORCYCLES:	0	3				

SPEED ESTIMATED BY: **RADAR** / **DRIVING** / **OBSERVER**

OTHER NOISE SOURCES: [distant AIRCRAFT] overhead / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS** distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER:

Description / sketch

TERRAIN: **HARD** [SOFT] **MIXED** **FLAT** **OTHER:**
PHOTOS: 3
OTHER COMMENTS / SKETCH:



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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST17 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1030 9/16/03 **END DATE & TIME:** 1125 9/16/03
ADDRESS: Campground area at boat ramp at Echo Cove
58° 39.795' N 134° 54.455' W magellan

Weather

TEMP: 46 °F HUMIDITY: 64 % R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED 0-2 MPH DIR: N NE E SE S SW W NW STEADY GUSTY Wind in trees
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

1040-1110: L_{eq} 43.4, L_{max} 50.6, L_{min} 33.5, L_{90} 35.6, L_{50} 42.6 L_{10} 46.2
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS:
Leq after 5 minutes (calm wind) 36.4 dBA

Source Info and Traffic Counts

SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:** ~~Water~~ / leaves Rustling Wind in trees
ROADWAY TYPE:

COUNT DURATION: -MINUTE

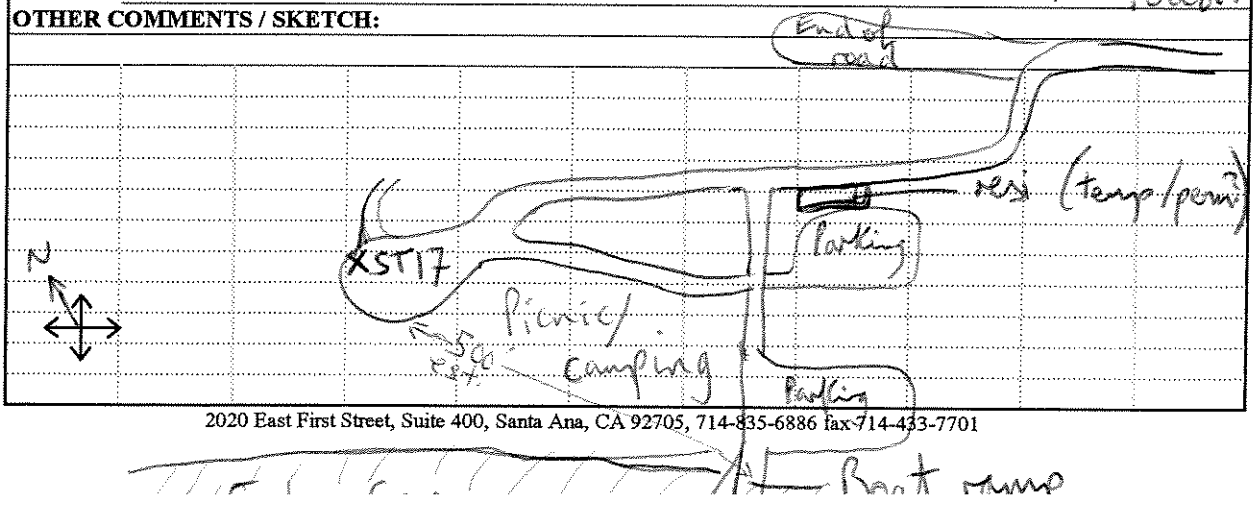
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: **RADAR / DRIVING / OBSERVER**

OTHER NOISE SOURCES: (distant AIRCRAFT) overhead / (RUSTLING LEAVES) distant BARKING DOGS / (BIRDS) / Squirrels
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: v. distant car idling (1 min) 2 cars into boat parking (v. quiet)

Description / sketch

TERRAIN: **HARD** (**SOFT**) **MIXED FLAT OTHER:** Below elevation of proposed road.
PHOTOS: 2
OTHER COMMENTS / SKETCH:



measform4.xls

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FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

SITE IDENTIFICATION: ST18 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 1135 9/16/03 **END DATE & TIME:** 1200 9/16/03
ADDRESS: Aldershein Wilderness Lodge Behind Bear Lair Cabin
58°35.390'N 134°54.097'W

ID

TEMP: 48 °F HUMIDITY: 40 % R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED 0 - 2 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: OVRCST PARTLY CLOUDY CLEAR SUNNY FOG RAIN Other:

Weather

INSTRUMENT: LD820 **TYPE** 1 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

1140 - 1150: L_{eq} 45.1, L_{max} 52.0, L_{min} 42.0, L_{90} 43.1, L_{50} 44.0, L_{10} 46.8,
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},
: L_{eq}, L_{max}, L_{min}, L_{90}, L_{50}, L_{10},

COMMENTS:

Acoustic Measurements

SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER: leaves rustling, birds
ROADWAY TYPE: 2 cars on Glacier Hwy / Water in river/creek

COUNT DURATION: -MINUTE

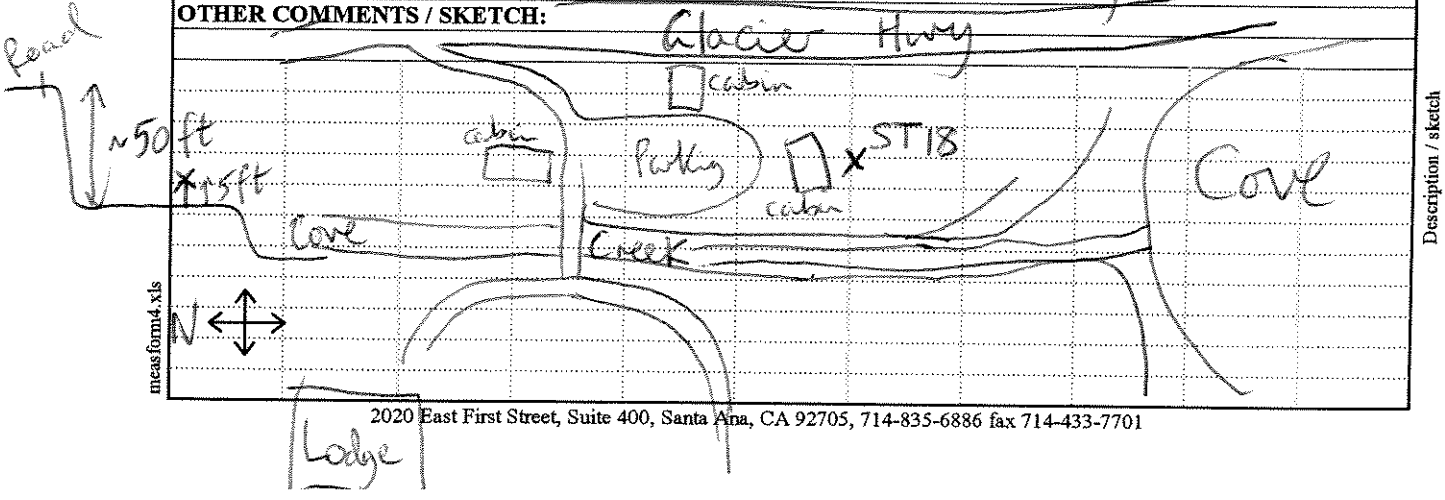
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER:

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER: 2-lane, no shoulder
PHOTOS: 3 Pe
OTHER COMMENTS / SKETCH:



Description / sketch

measform4.xls

FIELD NOISE MEASUREMENT DATA

URS Project: Juneau Access, Alaska

ID

SITE IDENTIFICATION: ST-19 **OBSERVER(s):** Rob Greene, Rachel Pirie
START DATE & TIME: 9-16-03 1225 **END DATE & TIME:** 1310 9/16/03
ADDRESS: 100 ft from E/S Glacier Hwy (S/B side) at intersection with Saga Center Rd.
58° 29.723' N 134° 46.295' W

Weather

TEMP: 50 °F HUMIDITY: 30 % R.H. WIND: CALM (LIGHT) MODERATE (VARIABLE)
WINDSPEED 0-9 MPH DIR: N NE (E) SE S SW (W) NW STEADY (GUSTY)
SKY: OVRCST PARTLY CLOUDY (CLEAR) (SUNNY) FOG RAIN Other:

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** (1) 2 **SERIAL #:** 0775
CALIBRATOR: LD CAL 200 **SERIAL #:** 2374
CALIBRATION CHECK: **PRE-TEST** 94.1 **dBA SPL** **POST-TEST** 94.0 **dBA SPL WINDSCREEN** ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

	L_{eq}	L_{max}	L_{min}	L_{90}	L_{50}	L_{10}
1230-1300	49.4	66.8	26.8	28.7	34.7	49.1

COMMENTS:

Source Info and Traffic Counts

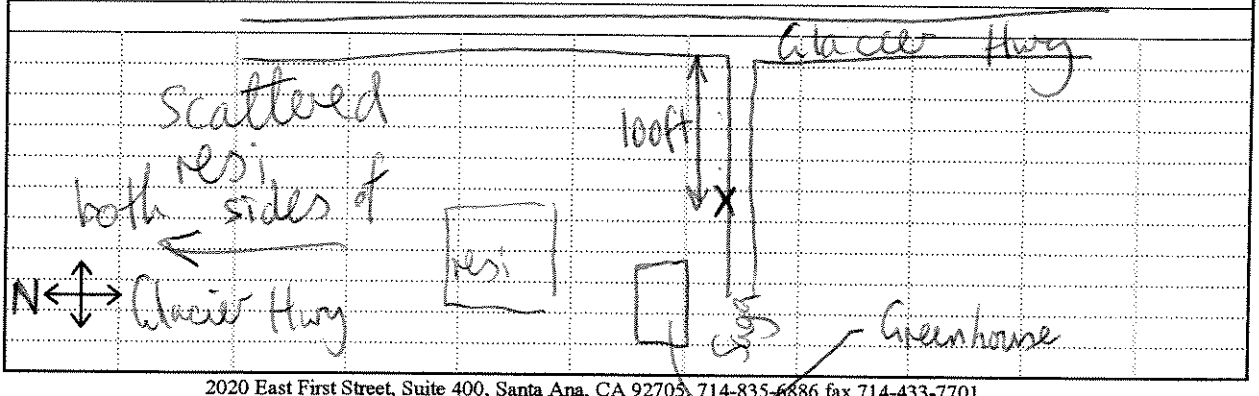
SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER: wind in trees
ROADWAY TYPE: Glacier Hwy 2-lane no shoulder
COUNT DURATION: 30 -MINUTE 45 **SPEED (mph)** **#2 COUNT:** **SPEED (mph)**

	NB / EB	SB / WB	NB EB / SB WB	NB / EB	SB / WB	NB EB / SB WB
AUTOS:	12	10	~45 / ~50 mph			
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / (OBSERVER)
OTHER NOISE SOURCES: (distant AIRCRAFT) overhead / RUSTLING LEAVES / (distant BARKING DOGS) / (BIRDS)
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: 1-car drove by meter (both directions), distant radio

Description / sketch

TERRAIN: (HARD) SOFT MIXED (FLAT) OTHER:
PHOTOS: 2
OTHER COMMENTS / SKETCH:



2020 East First Street, Suite 400, Santa Ana, CA 92705, 714-835-6886 fax 714-433-7701

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ATTACHMENT E

NOISE-SENSITIVE RECEPTOR LOCATIONS PHOTO LOG

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4112 Blackerby Street, back of house

4112 Blackerby Street, looking towards highway

4121 Blackerby Street, north corner of Old Glacier Highway & Blackerby Street

4150 Old Glacier Hwy (site of ST-14)

Pioneer's Home (9 units)

6903 Sunny Drive

6907 Sunny Drive

6911 Sunny Drive

6915 Sunny Drive

7094 Hendrickson Road from Sunny Drive

7094 Hendrickson Road

1098 Hendrickson Road (from Sunny Drive)

7098 Sunny Drive

7100 Sunny Drive

1800 Branta Road (from Branta Road)

7210 Old Glacier Highway

7220 Old Glacier Highway

7250 Old Glacier Highway

7260 Old Glacier Highway

7320 Old Glacier Highway

7340 Old Glacier Highway

7520 Old Glacier Highway

7671 Old Glacier Highway (historic building)

8001 Old Glacier Highway (Juneau Christian School)

Super 8 Motel (2295 Trout Street)

2504 Teslin Street

2508/2510 Teslin Duplex

2512 Teslin

2512 Teslin (background); 2504 Teslin (foreground); 2508 Teslin is between 2504 and 2512 (roof is visible)

2517 Teslin, Jehovah's Witnesses Kingdom Hall Church

9077 Hurlock, home business in garage at front of house

9055 Atlin Drive, Saint Paul Church

Red roof of 2523 Sunset Drive

9526-9520 (left to right) Glacier Highway, Spruce Corner condos

9530-36 and 9542 Glacier Highway

9530-36 and 9542 Glacier Highway (2)

2524 Alder Circle

9621/9623 Glacier Highway, duplex

2528 Scott Drive

2526 Scott Drive

ST-15, Cul-de-sac of Meadow Lane

2577 Meadow Lane

10004 Glacier Highway, apartment upstairs

10002 Glacier Highway, apartment upstairs

First house south of Swampy Acres

3011 Hamilton Street

3021 Hamilton

3010 Hamilton Street

Red log cabin, Glacier Highway

10615 Glacier Highway

10635 Glacier Highway

3144 Wilma Avenue

10650 Glacier Highway

10665 Glacier Highway

LT-6, Front yard of 10785 Glacier Hwy, Juneau

LT-6, Front yard of 10785 Glacier Hwy, Juneau

10785 Glacier Highway

10651 Glacier Highway

10680 Glacier Highway

10680 Glacier Highway

10695 Glacier Highway (house)

10695 Glacier Highway (trailer)

10845 Glacier Highway

10885 Glacier Highway

10945 Glacier Highway

10965 Glacier Highway

11370 Glacier Highway

11385 Glacier Highway

11390 Glacier Highway

11420 Glacier Highway

11450 Glacier Highway

11480 Glacier Highway

11445 Glacier Highway, apartments

11540 Glacier Highway

11550 Glacier Highway

101 Harbor, back

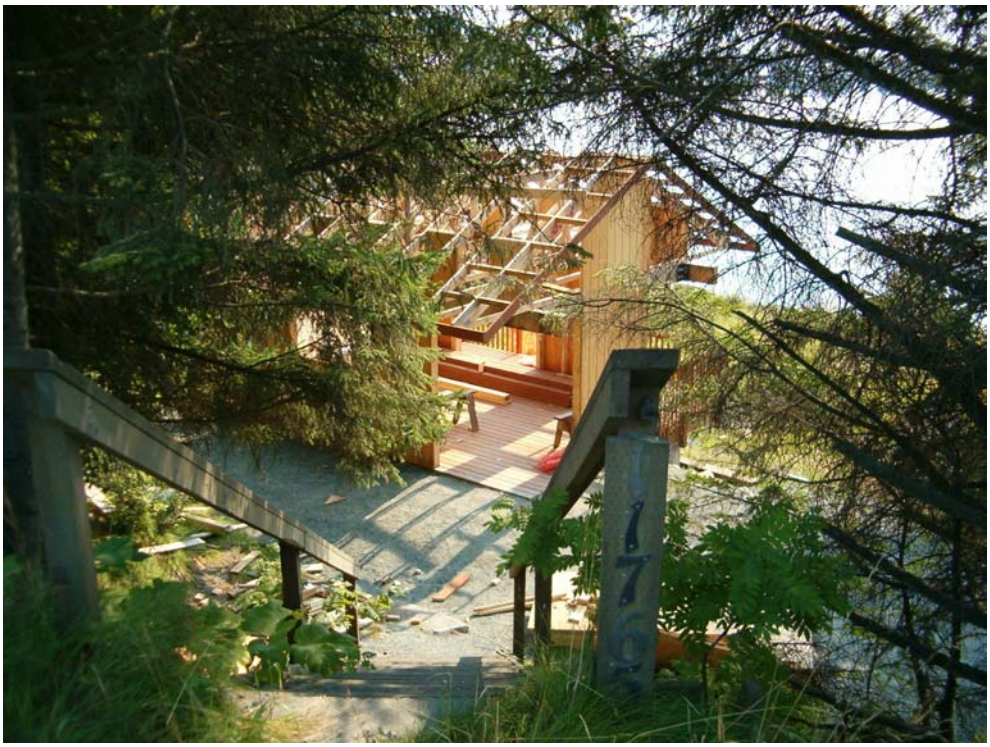
101 Harbor, front

11600 Glacier Highway

House between 11600 and 11648 Glacier Highway (11624?)

11648 Glacier Highway, duplex

DeHart's upper floor apartment



11765 GH, new construction

Squire's Rest Building Apartments

11957 Glacier Highway, apartment behind Fishermen's Bend store

Roof of house between new construction and the bay, below new construction (11981?)

House between new construction and the bay, below new construction (11981?)

New construction between 12005 Glacier Highway and Fishermen's Bend 11957 Glacier Highway (11981.5?)

11970 Glacier Highway, Auke Bay Bible Church

11930 Glacier Highway, Auke Bay RV Park

11899 Glacier Highway, Apartment #5 over the Auke Bay Post Office

12020 Bayview Road

12020 Bayview Road (2)

Apartments between Bayview Road and Seaview Road

3855 Seaview

12005 Glacier Highway

12075 Glacier Highway

12085 Glacier Highway, apartment

12175 Glacier Highway, Unit D

12280 Glacier Highway

13500 Glacier Highway

13580 Glacier Highway

13660 Glacier Highway, house

ST-16, Yard of 13660 Glacier Hwy, Juneau

13660 Glacier Highway, apartment

Aant'lyeik Park

Lena Loop Park

Lena Loop Reshoot

16810 Glacier Highway

Apartments between 16945 and 16875 Glacier Highway (16911?)

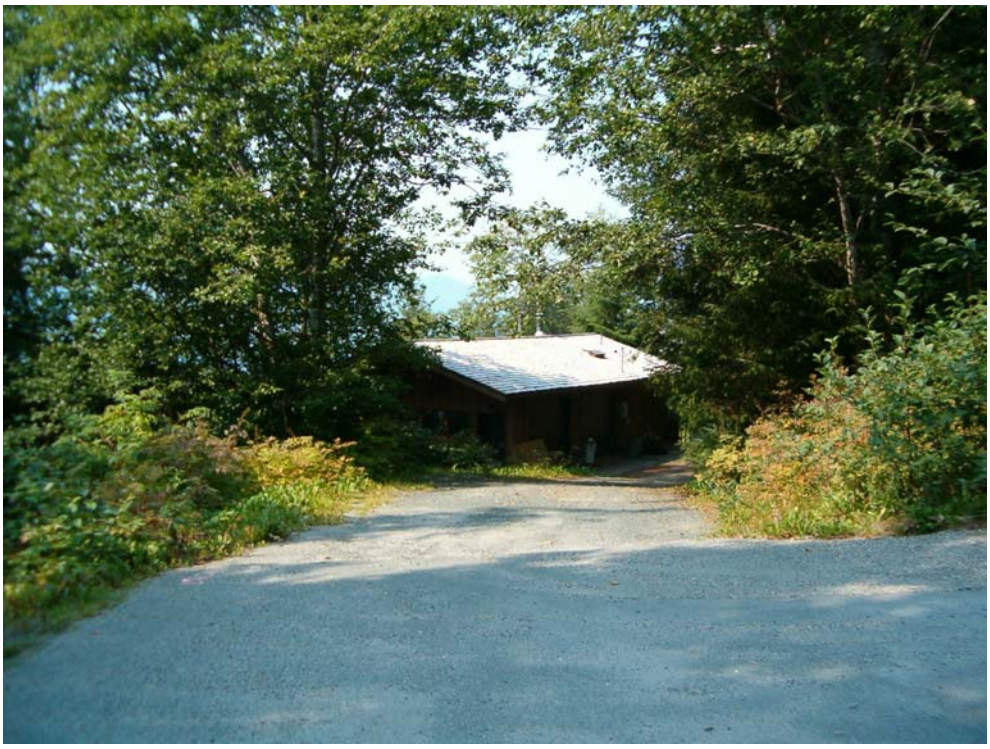
Across the highway from above apartments (16912?)

17000 Glacier Highway

17050 Glacier Highway

17205 Glacier Highway

17265 Glacier Highway, house behind garage



17445 Glacier Highway

17465 Glacier Highway

17525 Glacier Highway

17575 Glacier Highway

Between 19051 and 19013 Glacier Highway (19049)

19051 Glacier Highway

LT-5, Patio deck of 19051 Glacier Highway

ST-19, Saga Center Road at Glacier Highway

ST-19, Saga Center Road at Glacier Highway

ST-18, Aldersheim Wilderness Lodge, Yankee Cove

Sunshine Cove 1

Sunshine Cove 2

Sunshine Cove 3

Sunshine Cove 4

ST-17, Echo Cove campground

ST-12, Forest Service cabin, Berners Bay

ST-12, Forest Service cabin, Berners Bay

ST-1, LT-2, Southerly of south terminus of Mud Bay Road

LT-2, Southerly of south terminus of Mud Bay Road, Haines

ST-2, Mud Bay Road near proposed bridge landing, Haines

ST-3, Portage Cove camping area

ST-3a, Portage Cove camping area

ST-5, Soap Suds Alley and Portage Road by Fort Seward

ST-5, Soap Suds Alley and Portage Road by Fort Seward

ST-6, Haines Middle/Elementary School, 315 Main Street

ST-6, Haines Middle/Elementary School, 315 Main Street

ST-4, Haines Highway south of Nukdik Point

ST-4, Haines Highway south of Nukdik Point

LT-1, Yard of 1186 Lutak Road

ST-11, Pullen Creek, R.V. Park (across from Shoreline Park)

ST–11, Pullen Creek Shoreline Park (across from R.V. Park)

ST-10, Historic Moore Homestead Park

ST-10, Historic Moore Homestead Park

ST-10, Historic Moore Homestead Park, Skagway

ST-7, Spring Street and 10th Avenue

ST-7, Noise Interruption!

ST-7A, Redo Spring Street and 10th Avenue

LT-4, Front yard of 12th Avenue and Broadway

LT-4, Front yard of 12th Avenue and Broadway

ST-8, Skagway City School, Main Street between 17th and 15th Avenues

ST-8, Skagway City School, Main Street between 17th and 15th Avenues

ST-9, 22nd Avenue between Main Street and State Street

ST-9, 22nd Avenue between Main Street and State Street

LT-3, Rear yard of 420 22nd Avenue

LT-3, Rear yard of 420 22nd Avenue