POA-2024-00092, TONGASS NARROWS
ALTERNATIVES ANALYSIS

SUBMITTED TO THE
U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT, SOUTH SECTION

SUBMITTED BY
ELDEN LOOP DEVELOPMENT, LLC
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Applicant	Elden Loop Development, LLC
KGB	Ketchikan Gateway Borough
Project	Elden Loop Subdivision Development Project
USACE	U.S. Army Corps of Engineers

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1.0 Introduction

The Elden Loop Development, LLC (Applicant) proposes to construct the Elden Loop Subdivision Development Project (Project) along the southern end of the Gravina Highway on Gravina Island, Ketchikan, Alaska (**Figure 1**). The Applicants intend to develop the Project on their 5.4-acre parcel, which will help address a shortage of available residential homes in the Ketchikan area.

Undeveloped land suitable for residential development is limited in southeast Alaska, including the Ketchikan area. Much of the undeveloped land in the region is not suitable for construction due to its ownership or management status (e.g., national forest or other restricted lands), topography (e.g., hemmed in by water or containing steep slopes), or is remote and only accessible by boat.

Developable, available land in Ketchikan, Alaska, is limited in supply, and many of the lots available for new residential construction are further accessibility limited without road-connected access. Remote waterfront lots may be desirable as second properties, to be used as remote cabins, but they do not satisfy the need for year-round housing that is accessible to the community's road system.

1.1 Ketchikan Housing Stock and Housing Needs

The Ketchikan Gateway Borough (KGB) Assembly has been actively working to identify and address housing issues within the community for the past several years. The existing occupied housing stock in Ketchikan (approximately 6,380 units) is comprised of single-family structures (61 percent), multi-family units (36 percent), and other housing (e.g., mobile home, boat) account for the remainder (McDowell Group 2019). Like many southeast Alaska communities, Ketchikan experiences a substantial seasonal fluctuation in rental unit availability driven largely by the visitor and seafood industries that results in a shortage of available rental units (McDowell Group 2019).

As part of this effort, the KGB Assembly has passed a variety of code amendments and executed administrative actions to reduce development barriers and increase the opportunity for residents to obtain housing[1]. These efforts have included developing agreements with State of Alaska and local agencies and nonprofits (e.g., RuRAL CAP, Denali Commission), and even subdividing KGB property to develop a new residential subdivision along the North Tongass Highway. KGB notes that one of the critical avenues to developing new housing is working with developers to help defer or subsidize some of the costs associated with constructing new developments, of which builders have cited the costs of road and utility construction as being impediments to new projects.

The KGB Assembly has ordered multiple housing studies in recent years:

- The Ketchikan Comprehensive Housing Assessment Project, produced by McDowell Group (2019), examined the available housing and demand in the community. This study assessed the available housing stocks and needs within the community, as well as identified and cataloged existing challenges to developing new housing. While some of the challenges are universal across Alaska and other remote communities (e.g., the cost of materials and associated freight), the study also identified community-specific challenges such as "a lack of easily accessible land and costly road construction to access available land; and steep grades and muskeg that make construction challenging in many areas."
- The Ketchikan Housing Survey (McKinley 2021) provides an overview of existing housing stocks and new housing desires in the community. Approximately 86% of self-identified new

[1] See https://www.borough.ketchikan.ak.us/1052/Housing for a detailed summary of KGB Assembly actions from February 3, 2020, to January 13, 2025.

home seekers (or will be future home seekers) as preferring a stand-along single-family house. While the most desired locations are in Ketchikan (North or South Tongass, within city limits), approximately 22 percent of residents would be interested in new housing on Gravina Island.

In its most recent public presentation on housing, the KGB Assembly described its ongoing efforts to improve the available supply of housing in the community. This includes working to develop a new subdivision (Mile 17, Tongass Highway), planning for construction of 8 new units in Saxman, and identifying future expenditures for their Housing Capital Fund.

1.2 Topographical Challenges to Development

The terrain in the Ketchikan area, largely bounded by water and steep slopes, adds additional challenges to identifying land that is suitable for residential development. The steep slopes that abut many southeast Alaska towns have a history of sudden failure, resulting in landslides or avalanches. In recent years, the number of landslides with human fatalities has increased, with four significant slide events occurring since 2015:

- Ketchikan, August 25, 2024: Landslide in downtown Ketchikan kills at least 1 and injures more (https://alaskapublic.org/2024/08/25/1-person-killed-in-ketchikan-landslide-multiple-homes-destroyed/)
- Wrangell, November 20, 2023: Landslide along the Zimovia Highway killed 3 people and destroyed 3 homes (https://alaskapublic.org/2023/11/21/at-least-3-dead-in-wrangell-after-landslide-destroys-homes/)
- Haines, December 2, 202): Dozens of landslides occurred during a rain-on-snow event and 2 people were killed (https://alaskapublic.org/2020/12/02/as-record-rains-drown-southeast-damage-appears-worst-in-haines/)
- Sitka, August 18, 2015: The landslide in Sitka took 2 lives (https://alaskapublic.org/2015/08/26/final-sitka-landslide-victim-recovered/)

Scientists are identifying changes in precipitation as a likely cause of the increased landslides, with all four Alaska communities receiving heavy precipitation prior to the landslide events. While southeast Alaska has historically received significant rainfalls, the increase in heavy rainstorms that release several inches of precipitation in a 24-hour period are occurring more frequently and resulting in slope failures. While an effort is underway to install water, soil, and slope monitoring equipment in southeast communities (Sitka, Yakutat, Klawock, Skagway, Hoonah, Kasaan, and Craig), no such installation is anticipated in Ketchikan. Communities vulnerable to landslides can face additional challenges securing construction loans or insuring developed properties. The recent increase in landslides in southeast complicate efforts to increase the available residential housing stock.

There is currently ongoing discussion in the community about new studies, warning systems, and potential mitigation measures that could reduce impacts from such landslide events. However, future assessments of hazard vulnerability are likely to further reduce the availability of developable land as new hazards and hazard areas are identified, which can preclude those sites from development, make them economically unfeasible to develop, or result in a site being uninsurable.

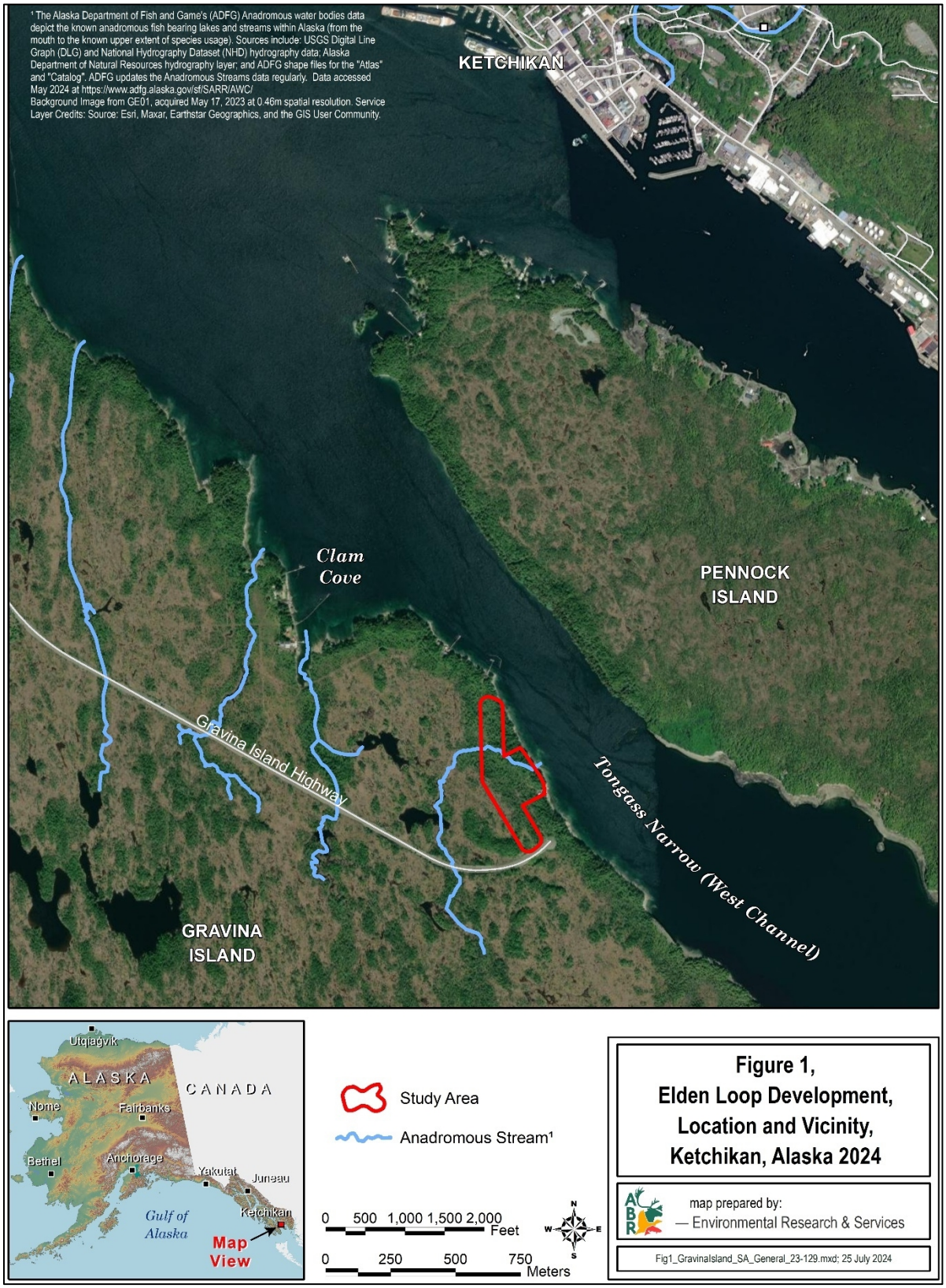

Figure 1. Project Location and Vicinity

2.0 Alternative Analysis

2.1 Property Requirements

The Applicant's goal of providing new year-round homes in the Ketchikan area to provide increased housing opportunities requires that any development be connected by an all-season road to existing infrastructure and have access to utility-provided electric power. These features are deemed necessary to attract residents who are not interested in living full time at remote site properties (i.e., cabins). While individual potable water sources and sanitary sewer systems can be constructed on site, power generation and non-traditional access (e.g., boat) would not provide the type of housing that is currently under supplied in the area.

The Applicant's determined early in their concept development phase that a multi-home subdivision would be required to develop an economically viable project. A subdivision development would provide for economies of scale and reduce the offering costs once homes were made available to the market. Development of individual home sites would involve acquiring individual lots located throughout the Ketchikan area, and then site-specific engineering, home design, and construction, adding significant costs and time to complete construction; whereas as subdivision design would allow for reduced site engineering, material costs, and construction costs, and provide for an accelerated construction schedule.

The Applicant identified the proposed project's property as the best suited for development due to the preexisting site clearing and development that had been completed by prior property owners. In the uplands parcel, a home site has already been cleared and construction of a new home was partially completed. In the tidelands, the prior owner installed six steel pilings as part of a planned dock installation project. The Applicant determined that to minimize environmental impact and cost, it was optimal to use the partially developed property rather than acquiring undisturbed land and beginning anew.

2.2 Local Zoning and Development Requirements

The KGB maintains a land use planning code and zoning that guides residential home construction[2]. The Elden Loop subdivision property is zoned RR and requires:

- Minimum lot dimensions: 50,000 square feet and 160-foot width
- Minimum yard dimensions: 25 feet (front), 30 feet (sides), and 60 feet (rear)

The proposed subdivision design meets the KGB zoning requirements while minimizing impacts to wetlands and Waters of the U.S. through the siting and minimizing of the proposed residential lot building pads.

2.3 Applicant's Proposed Project

The Applicant's initial evaluation for developing new housing in Ketchikan resulted in the acquisition of the parcel included in the Applicant's proposed Project. The Project would include the development of the Stensland Avenue right-of-way, which KGB would like to ultimately see extended further north to reach areas of existing residential development, as well as providing access to additional future development. The Stensland Avenue corridor construction would also facilitate electric utility extension further south on Gravina Island to reach the Elden Loop Subdivision.

[2] See Titles 16, 17, and 18 of the KGB Code at https://ketchikangateway.borough.codes/KGBC.

The proposed project would meet the project's feasibility requirements of providing a subdivision with year-round road access (via the Gravina Highway) and electric utility service. Water and sanitary sewer service requirements would be satisfied by using wells, rainwater collection, and individual septic systems. The subdivision's planned 11 new home sites would provide for a development with a scale large enough to be economically viable to construct.

The proposed boat launch and dock will provide a much-needed additional access point at south Gravina Island via boat and will provide moorage availability to the subdivision residents. The prior property owners had an approved pier and floating dock installation that was not completed. The Applicant proposes to complete it with some modifications to the previous design to reduce the extent of development and environmental impact by reducing to the total floating dock square footage and ultimately reducing the required number of steel pilings to be installed.

The Applicant proposes installing environmentally friendly riprap wave attenuation boulders on the beach, rather than installing additional steel pilings or full-length rock breakwater. The boulders would be placed on the beach and are effective at breaking up large wave action and would protect the proposed boat launch and docks. Additionally, one floating dual-tube wave attenuator would be installed parallel to the boat launch ramp and two floating single-tube wave attenuators would be installed parallel to the boat dock. The floating tube wave attenuators would reduce wave action on the floating structures without requiring construction of a full breakwater.

The Project would require four crossings of an unnamed anadromous stream: Stensland Avenue, Elden Loop at Lot 1, Elden Loop at Lots 2/4, and the Lot 4 driveway. Each of these stream crossing locations would use a prefabricated bridge to span the crossing. Bridge headwalls would be placed outside of the stream's channel and above the ordinary high water mark, resulting in no in-water work to construct the crossings. Construction of bridges to span crossings of the anadromous stream would reduce impacts to the stream and fish habitat.

2.4 Real Estate Search

A search of available parcels for sale in the Ketchikan area, including Gravina Island, was conducted on August 26, 2024. Many of available parcels are remote (i.e., no road access) and not suitable for developing a residential subdivision. Other available properties include lands suitable for commercial or industrial development, and small residential lots suitable for a single-family home. None of the available parcels would allow for the economic development of multiple single-family residences.

Table 1 summarizes the results of the search for available vacant land in the Ketchikan area.

The available parcels do not meet the Project's primary considerations for feasibility: connection to year-round road access, electric power service availability, and being large enough to support construction of a multi-home subdivision. Only one of the properties would potentially be large enough to construct multiple homes (**Table 1**, No. 3), but it is a remote property that would only be accessible by boat. All other properties identified for sale would not meet the minimum size requirements.

The Applicant's parcel has unique advantages that include proximity to an existing all-season road and permitted platted road extension to provide future residents with road access to their homes. Proximity to the existing Ketchikan Public Utilities electric distribution network that would provide electrical service to the proposed development, and substantial preexisting development activities in the tidelands and the uplands parcel 'Block 1 Lot 1' home site that reduces additional incremental environmental impact.

2.5 Alternative Home and Lot Design

The existing, partially constructed home (Block 1, Lot 6) was constructed in an upland area on a pile foundation. Construction of this home in an upland area allowed for the pile construction, as utilities (e.g., sanitary sewer, water collection) and parking and storage areas can be readily constructed on the existing lot.

The homesites proposed in wetlands locations will require driveway access and space to provide for storage and utilities. The proposed fill areas and volumes have been minimized to accommodate a 1,600 square foot base footprint (40-foot by 40-foot single-family structure) without placing fill across the entirety of each lot, leaving a substantial portion of the existing wetlands intact. Additionally, placing the structures on piles over wetlands would not maintain the existing wetlands (or their overall functions) due to these areas being completely shaded. Constructing homes on gravel pads provides structure stability and the additional fill area immediately surrounding each structure will accommodate needed utilities, access, and basic storage for each home.

The proposed lot layout meets the KGB's minimum lot size requirement (50,000 square feet for areas zoned RR) and takes advantage of the uplands that bound the southern portion of the subdivision. Proposed homesite pads on Block 1, Lots 2, 3, 4, and 5 are designed to take advantage of these existing uplands. The remaining proposed homesite pads are located within a large wetland (Palustrine Seasonally Saturated Needle-leaved Evergreen Forest, PFO4B) that cannot be avoided while still meeting the project's purpose and need.

Table 1. Summary Results of Available Land Search, Ketchikan, Alaska (August 26, 2024)

No.	Parcel Address or Location Description	Lot Size	Costs (U.S. Dollars)	MLS No.	Notes
1	NHN legal address only block, LOT 4, Ketchikan, 99901	1.5 acres	$35,000	24603	Remote property located on the NW side of Coon Island in George Inlet.
2	NHN legal address only block, LOT 8-2, Ketchikan, 99901	1.5 acres	$30,000	24009	Remote property located just south of Gem Cove in George Inlet, a 15-minute boat ride from the Mountain Point Boat launch
3	NHN no street given, LOTS 5 & 6, BLOCK 3, Ketchikan, 99901	2.96 acres and 2.66 acres (5.6 acres total)	$224,000	24092	Remote property located on Bull Island inside of George Inlet.
4	NSA Carroll Inlet, Ketchikan, 99901	1.5 acres	$65,000	24-9942	Remote property located in Carroll Inlet, a short boat ride from the Mountain Point boat launch.
5	5619 N Tongass Highway, Ketchikan, 99901	2.5 acres	$3,500,000	24-4587	Patented tidelands property constructed with gravel fill. Property is well suited for industrial or commercial development.
6	LOT 1, Long Arm Subdivision, Moser Bay	1.6 acres	$31,500	24259	Remote property located approximately 25 minutes from the Knudson Cove marina by boat.
7	USS 3829, BLOCK 1, LOTS 6, 7, and 8, Ketchikan, 99901	2.3 acres	$24,500	23796	Remote property located on the west side of Pennock Island.
8	Vallenar Bay Subdivision, BLOCK 3, LOT 10, Ketchikan, 99901	1.7 acres	$20,000	24-5490 24336	Located on Gravina Island, this property has no current road access (road access has been platted) and would require hundreds of feet of new road construction to access this single lot.
9	Lot 11, Lark Circle, Mud Bight Subdivision, Ketchikan, 99901	0.6 acres	$35,000	24-10445	Property has no current road access, but Lark Circle has been platted; developer would need to construct hundreds of feet of new road to access this single lot.
10	16 Street Given, Long Arm Subdivision Moser Bay, Ketchikan, 99901	2.0 acres	$45,000	24263	Remote property located in Moser Bay that is accessible by boat with a 25-minute rid from Knudson cove Marina.
11	14 Street Given, Long Arm Subdivision, Moser Bay, Ketchikan, 99901	1.6 acres	$42,100	24262	Remote property located in Moser Bay that is accessible by boat with a 25-minute rid from Knudson cove Marina.
12	Stonebrook Way, Ketchikan, 99901	0.4 acres	$44,000	24-1865	Single family residential lot with no waterfront access.
13	13 Only, Ketchikan, 99901	4,356 square feet	$175,000	24-4212	Commercially zoned building site near Thomas Basin Harbor.
14	9700 Mud Bay Road, Ketchikan, 99901	10,020 square feet	$225,000	23-11426	Heavy industrial zoned lot.
15	3158 Tongass Avenue, Ketchikan, 99901	0.3 acres	$295,000	24-1421	Commercial lot adjacent to Ketchikan’s hospital.
16	Pond Reef Road, Ketchikan, 99901	0.7 acres	$210,000	21-12470	Road accessible lot with waterfront.
17	Water Street, Ketchikan, 99901	7,000 square feet	$60,000	24-7542	Undeveloped residential lot with road access.

No.	Parcel Address or Location Description	Lot Size	Costs (U.S. Dollars)	MLS No.	Notes
18	North Yorktown Dr, Lots 7-11b	1.7 total acres	$475,000	22-12166	Five residential lots with initial site work completed and located within the Ketchikan city limits.
19	USS 3840 Lots 1A, 1B, and 1C, Ketchikan, 99901	2.3 acres	$175,000	24539	Three contiguous parcels located in an undeveloped Gravina Island subdivision that is accessible by boat.
20	Gravina Island, Vallenar Bay, Ketchikan, 99901	2.1 acres	$25,000	24-3577	Gravina Island in Vallenar Bay and located near an active logging road along northwest Gravina Island.
21	Gravina Island, Vallenar Bay, Ketchikan, 99901	2.1 acres	$25,000	24216	Gravina Island in Vallenar Bay and located near an active logging road along northwest Gravina Island.

Notes: MLS (Multiple Listing Service); No. (number)

3.0 Conclusion

The Applicant's intent to develop new housing stock in Ketchikan is greatly hampered by the existing terrain limitations (e.g., steepness), access to the community's existing road system, and the need to construct multiple homes to meet economic constraints. While the strongest housing demand is found in downtown Ketchikan and areas immediately adjacent, demand throughout the community for new homes is strong and the Elden Loop Subdivision on Gravina Island would provide additional units in an area ripe for future development. Downtown Ketchikan is readily accessible via the Airport Ferry, which departs every half hour, making the Elden Loop Subdivision a viable alternative to living in Ketchikan on Revillagigedo Island.

While the Elden Loop Subdivision would impact wetlands and waters of the U.S., most any subdivision development in Ketchikan would face similar impacts to these resources due to their overall prevalence in coastal southeast Alaska. The subdivision, as proposed, has been designed to avoid wetland impacts to the greatest extent practicable, while still meeting KGB planning codes and providing sufficient footprints to build homes within typically desired size. The review of available properties for sale (Section 2.4, *Real Estate Search*) demonstrates the extreme lack of practicably developable subdivision land (i.e., most lots for sale are extremely remote and infrastructure costs make development of these properties economically unviable).

As McDowell Group (2019) identified, "the Borough [KGB] should consider any new housing development good for the economy and quality of life for the community. Every new housing unit constructed – whether single-family, multi-family, or accessory unit – will, either in the near-term or long-term, help alleviate Ketchikan's constrained housing options." The Elden Loop Subdivision would be one step of many in addressing Ketchikan's long-term housing shortage.

4.0 References

McDowell Group. 2019. Ketchikan Comprehensive Housing Assessment Project (CHAP). Prepared for the Ketchikan Gateway Borough.

McKinley (McKinley Research Group, LLC). 2021. Ketchikan Housing Survey 2021. Prepared for the Ketchikan Gateway Borough.