

PLANNING & ENVIRONMENTAL LINKAGE DRAFT STUDY REPORT

May 2025

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated April 13, 2023, and executed by FHWA and DOT&PF.

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ACRONYMS & ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ACS	American Community Survey
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
ADF&G	Alaska Department of Fish and Game
AKEPIC	Alaska Exotic Plan Information Clearinghouse
AHRS	Alaska Heritage Resources Survey
ALP	Airport Layout Plan
APDES	Alaska Pollutant Discharge Elimination System
BCA	Benefit Cost Analysis
BIA	Bureau of Indian Affairs
BUILD	Better Utilizing Investments to Leverage Development
CAA	Clean Air Act
CBJ	City and Borough of Juneau
CDS	Congressionally Directed Spending
CE	Categorical Exclusion
CFR	Code of Federal Regulations
CO2	Carbon dioxide
COA	Class of Action
CWA	Clean Water Act
DOT&PF	Department of Transportation and Public Facilities
DOWLD	Alaska Department of Workforce and Labor Development
DPOR	Alaska Division of Parks and Outdoor Recreation
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulation Commission
FHWA	Federal Highway Administration
IHA	Incidental Harassment Authorization
JACC	Juneau Arts and Community Center
JDNC	Juneau Douglas North Crossing
JEDP	Juneau Economic Development Plan

JNU	Juneau International Airport
LMP	Limited Maintenance Plan
LOS	Level of Service
L RTP	Long Range Transportation Plan
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
Mega	National Infrastructure Project Assistance Grant Program
MOU	Memorandum of Understanding
MP	Milepost
MSL	Mean Sea Level
MWSGR	Mendenhall Wetlands State Game Refuge
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHS	National Highway System
NMFS	National Marine Fisheries Act
NRHP	National Register of Historic Places
NTTFI	National Tribal Transportation Facility Inventory
NWI	National Wetland Inventory
O&M	Operations and Maintenance
OE/AAA	Obstruction Evaluation Airport Airspace Analysis Systems
OHA	Office of Highway and Archaeology
P&N	Purpose and Need
PAIP	Public and Agency Involvement Plan
PEL	Planning and Environmental Linkages
PRPA	Paleontological Resources Preservation Act
ROW	Right of Way
RPI	Rural Project Initiative
RURAL	Rural Safe Transportation Grant Program
SCRIP	State Cultural Resource Investigation Permits
Section 4(f)	Section 4(f) of the US Department of Transportation Act of 1966
SEALT	Southeast Alaska Land Trust
SEO	Statewide Environmental Office
SHPO	State Historic Preservation Office
STIP	Statewide Transportation Improvement Program
STAC	Stakeholder Advisory Committee
TMDL	Total Maximum Daily Loads
T&E	Threatened and Endangered
TAC	Technical Advisory Committee
TIFIA	Transportation Infrastructure Finance and Innovation Act

US	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
WDCP	West Douglas Conceptual Plan

ES

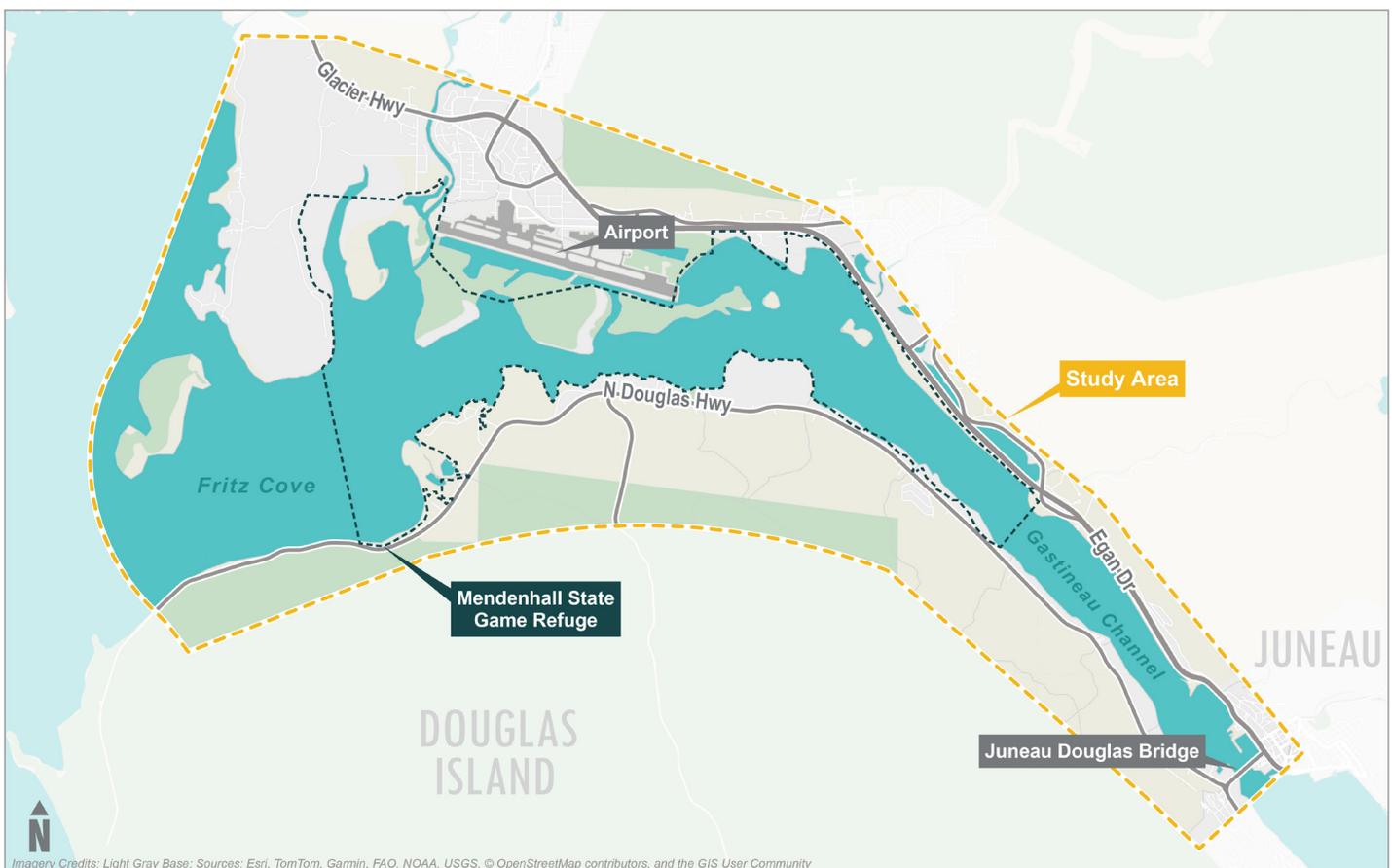
EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

Planning and Environmental Linkages (PEL) is a collaborative approach that incorporates information developed during project planning in the National Environmental Policy Act (NEPA) process. It is intended to reduce duplication between the planning and environmental processes and save time and money. It does this by hastening project decisions that incorporate planning and environmental efforts, enabling transparency from planning through to project delivery, and creating opportunities for stakeholders to work together and be involved in a coordinated manner. The objectives of this PEL study report are to:

- Identify and evaluate a possible transportation corridor connecting Juneau with the northern end of Douglas Island within the study area (ES-Figure 1)
- Conduct preliminary assessment of environmental effects from a proposed transportation corridor
- Involve Tribes, agencies, stakeholders and the public throughout the planning process
- Document the planning process and decisions to support future project-level environmental reviews



ES-Figure 1: PEL Study Area

This project contributes to the Department of Transportation and Public Facilities' (DOT&PF) Mission to "Keep Alaska moving through service and infrastructure" by providing network resiliency and improving the mobility of people and goods. DOT&PF aligns its focus around five strategic investment areas: Safety, State of Good Repair, Economic Vitality, Resiliency, and Energy & Sustainability.

The JDNC would support Juneau's transportation network, which is consistent with DOT&PF's Resiliency focus since Douglas Island is wholly dependent on a single bridge. Additionally, it would provide opportunities to enhance economic development and provide infrastructure to access the Alaskan outdoors, which is consistent with DOT&PF's Economic Vitality focus.

The project followed guidance set out in DOT&PF's PEL Guidebook, including use of the PEL Questionnaire (Appendix 1).

Purpose and Need

Purpose

The purpose of the Juneau Douglas North Crossing PEL study is:



To identify ways to improve the connection between Douglas Island and Juneau.”

The secondary purposes are:

- To identify ways to improve transportation for non-motorized users
- Reduce transportation related energy consumption

Need

An improved connection to Douglas Island should address the following needs:

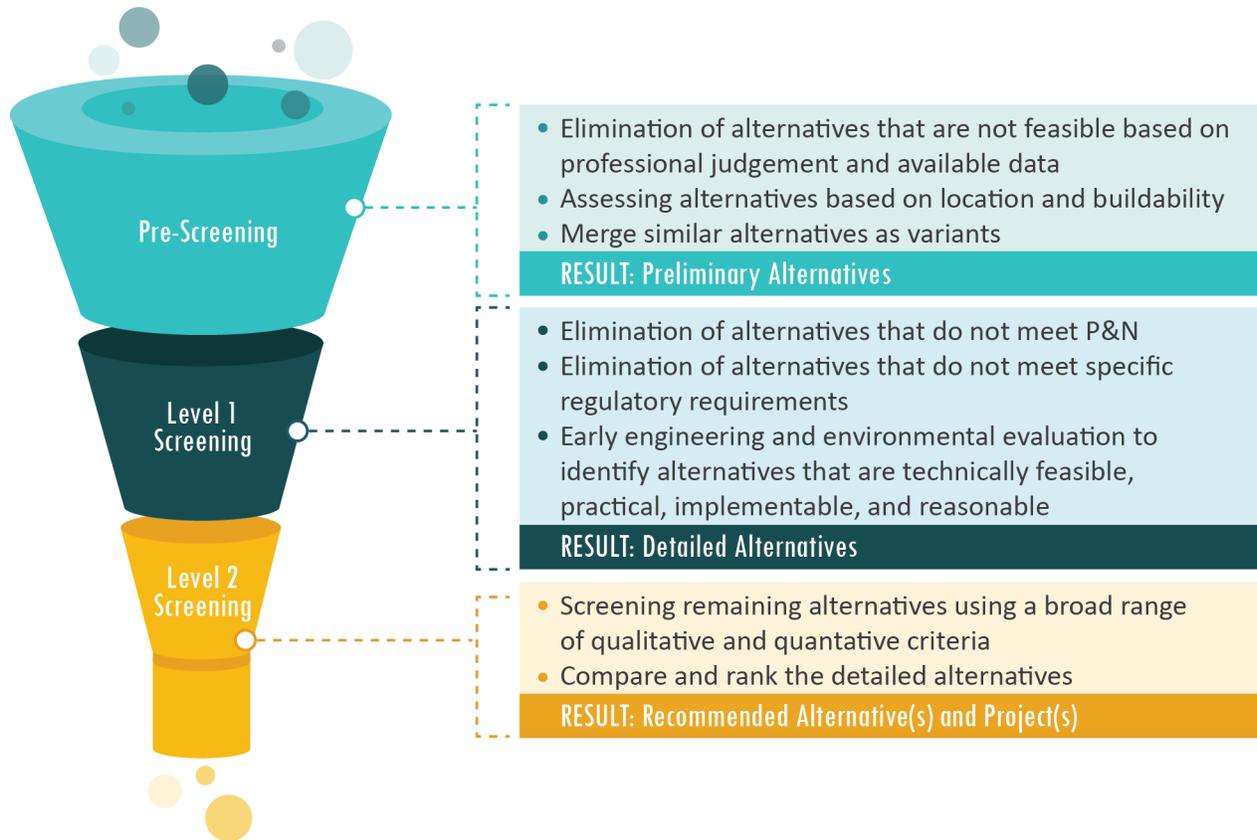
- **Alternate access and transportation infrastructure resilience:** The community has expressed concerns regarding the lack of an alternate access during emergencies and the City and Borough of Juneau has identified the issue in the 2013 Comprehensive Plan. In the event of the Douglas Island Bridge or another single route travel corridor in the area (North Douglas Highway or Egan Drive) being inaccessible or out of service, emergency response would be delayed, and residents cut off from access to workplaces and critical resources.
- **Decrease traffic pressure on Douglas Island Bridge and its intersections:** The traveling public is currently experiencing delays and congestion on the Douglas Island Bridge and its intersections during peak travel times. Analyses indicate the intersections operate at or over capacity during peak travel times and will continue to deteriorate based on estimated future traffic counts.

Additional Goals

- Create additional traffic capacity to support future development of affordable housing and economic development opportunities.
- Protect and enhance health and safety of travelers and communities.
- Avoid, minimize, and mitigate impacts to the environment and to residential areas.
- Maintain the visual, cultural, and scenic identity of Juneau and Douglas Island.

Alternatives

The alternative development and screening process is summarized in ES-Figure 2. A total of 19 draft alternatives were consolidated into nine preliminary alternatives plus a no build alternative, which were then evaluated through Level 1 screening. Following Tribal, agency, stakeholder and public input, six alternatives and a no build alternative were evaluated through Level 2 screening.



ES-Figure 2: Alternative Development and Screening Process

Recommended Alternatives

The alternative screening and evaluation process resulted in five alternatives being recommended to advance for evaluation under a future environmental process (ES-Table 1). In addition, the no build alternative will also be forwarded as a baseline to assist with evaluating the impacts of alternatives.

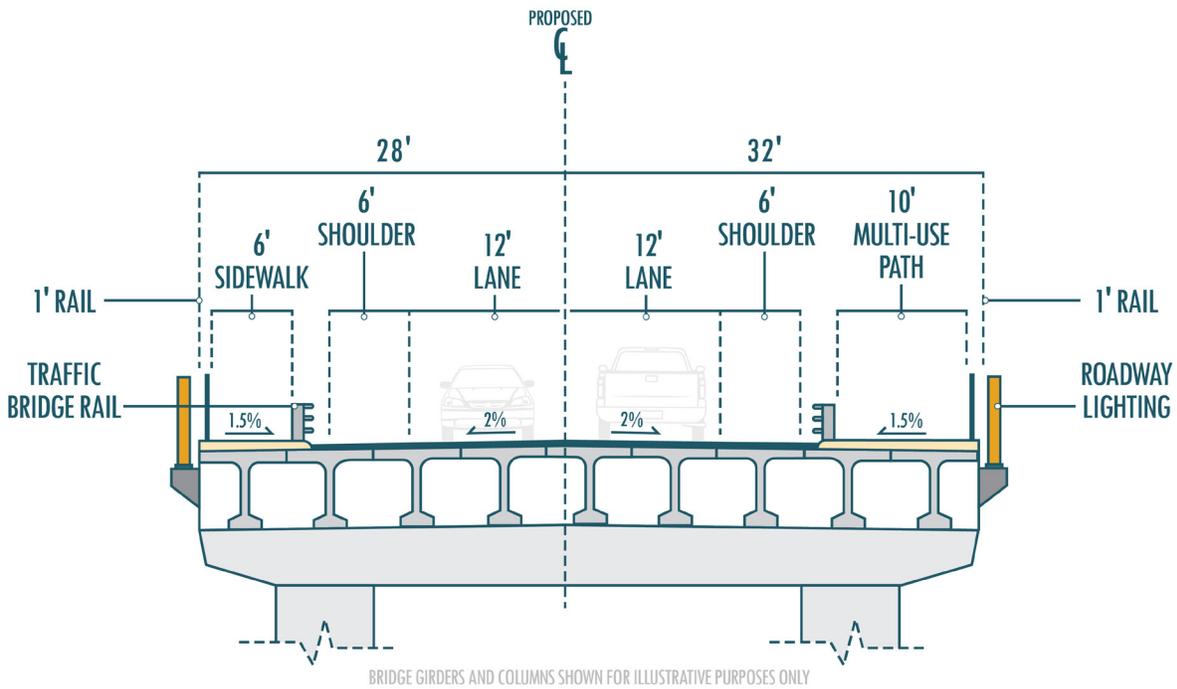
ES-Table 1: Results of Alternative Screening

Alternative	Score	Recommendation
● Salmon Creek	3	Advance to NEPA
● Twin Lakes	-10	Advance to NEPA
● Vanderbilt	-18	Advance to NEPA
● Sunny Point East	-20	Advance to NEPA
● Sunny Point West	-23	Advance to NEPA
● No Build Alternative ^a	-16	Baseline

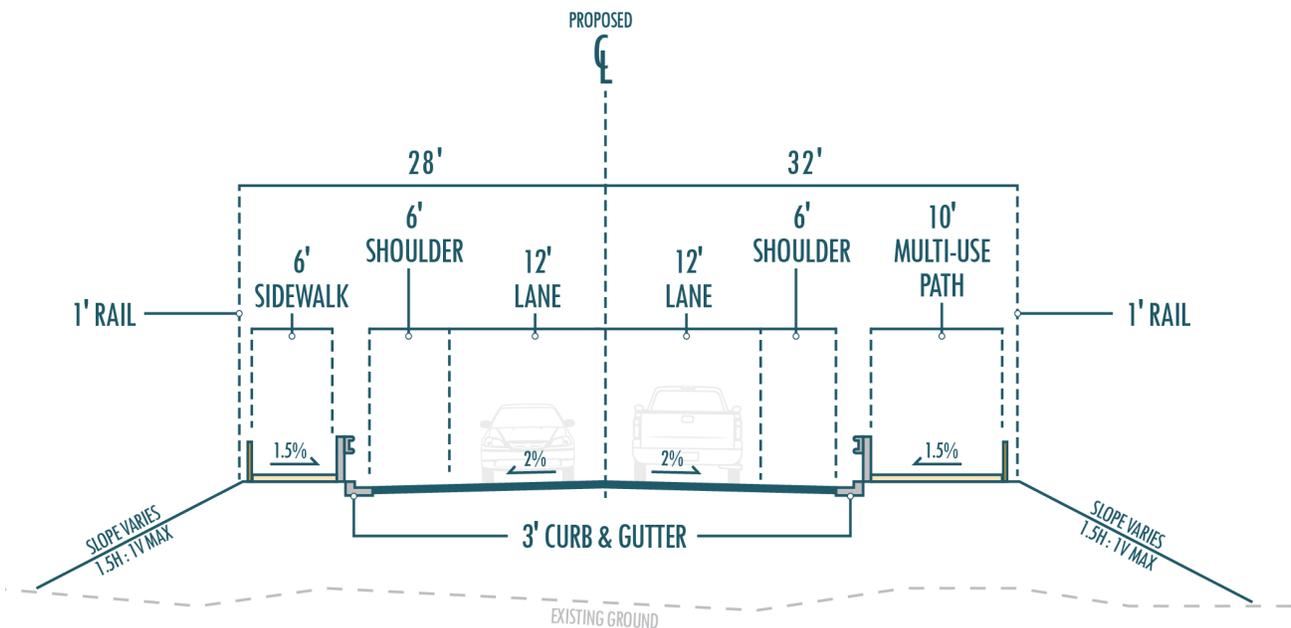
^a Does not meet purpose and need but will be carried forward into future the future NEPA process to provide a baseline against which to evaluate other alternatives.

Each of the recommended alternatives included a typical section, intersection tie-ins, and bridge structural components. The level of engineering completed is sufficient for concept level details to support the development of preliminary estimates of cut and fill, structural impacts, and quantification of these impacts.

Typical sections for the bridge deck and crossing approach are shown in ES-Figure 3 and ES-Figure 4.



ES-Figure 3: Typical Bridge Deck Section



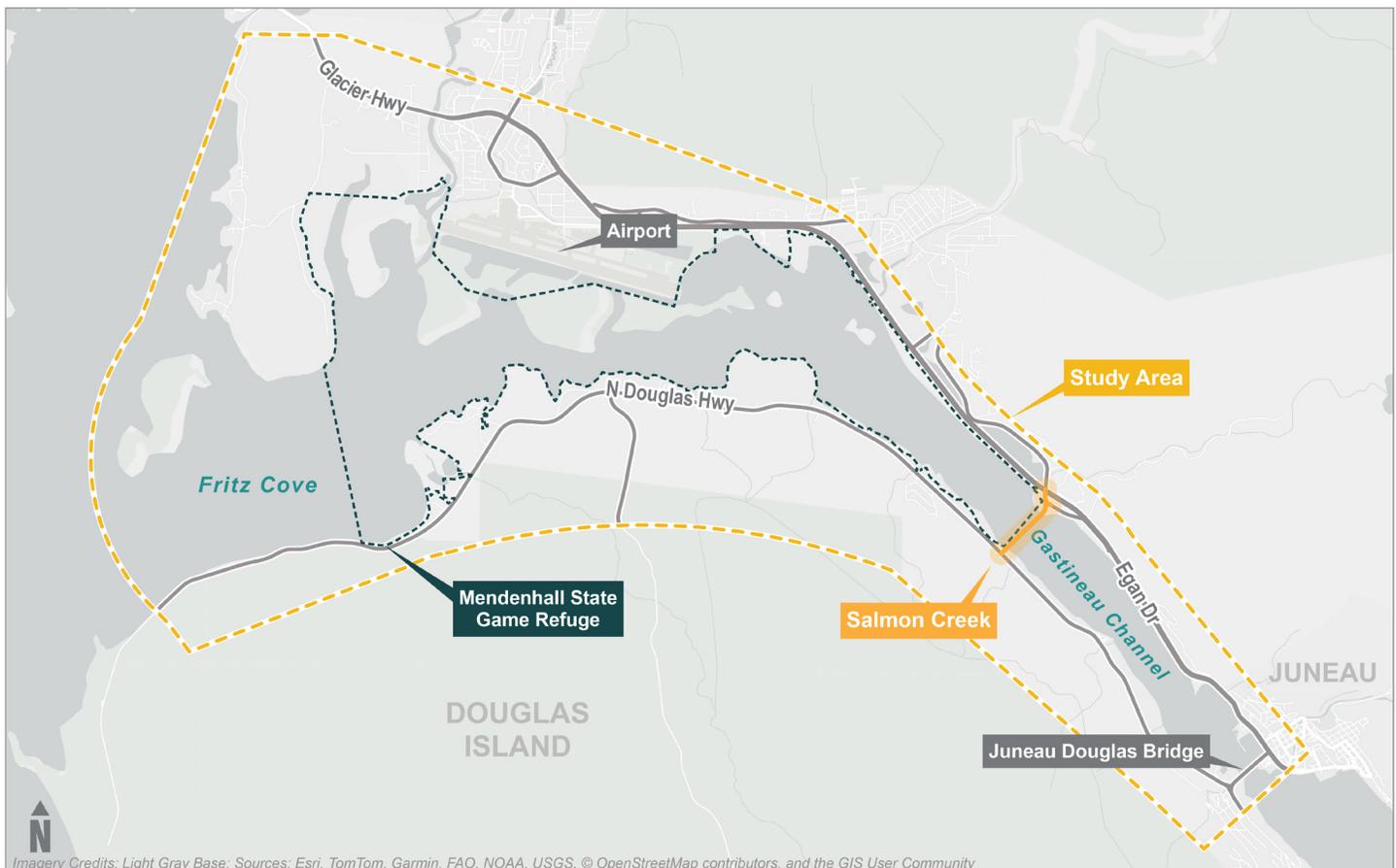
ES-Figure 4: Crossing Approach Typical Section

The project team sought input from the United States Coast Guard to discuss the bridge height and clearance requirements. The guidance received was the existing Douglas Island Bridge should be considered as the starting point for navigable clearance (greater than 50 feet of clearance between mean high tide and the bottom of the existing bridge). This level was used to guide design assumptions about the height of each proposed bridge alternative. An overview of each recommended alternative follows.

Salmon Creek

The Salmon Creek alternative (ES-Figure 5) begins at approximately MP 3.4 of North Douglas Highway just east of Falls Creek before crossing Gastineau Channel and connecting to Channel Drive. This alternative creates a revised western leg of the Egan Drive/Channel Drive intersection that routes over the new bridge alignment. Modifications to Channel Drive will be required to align with the new crossing. The Salmon Creek Alternative as conceptualized herein does not meet the United States Coast Guard (USCG) guidance for a greater than 50-foot clearance criteria. Since the alignment routes through the landside dock area, this alternative assumes that the dock would no longer be able to function as it has historically, and that the project would need to acquire this property. With this acquisition, a 50-foot clearance on this end of the bridge may or may not be needed in the future, but this will be subject to the future NEPA process and USCG consultation. If greater clearance is required, this alternative would also need to consider extending the bridge over Egan Drive and constructing a new grade-separated diamond interchange at the intersection between Egan Drive and Channel Drive. These modifications would increase the impacts evaluated through the screening process.

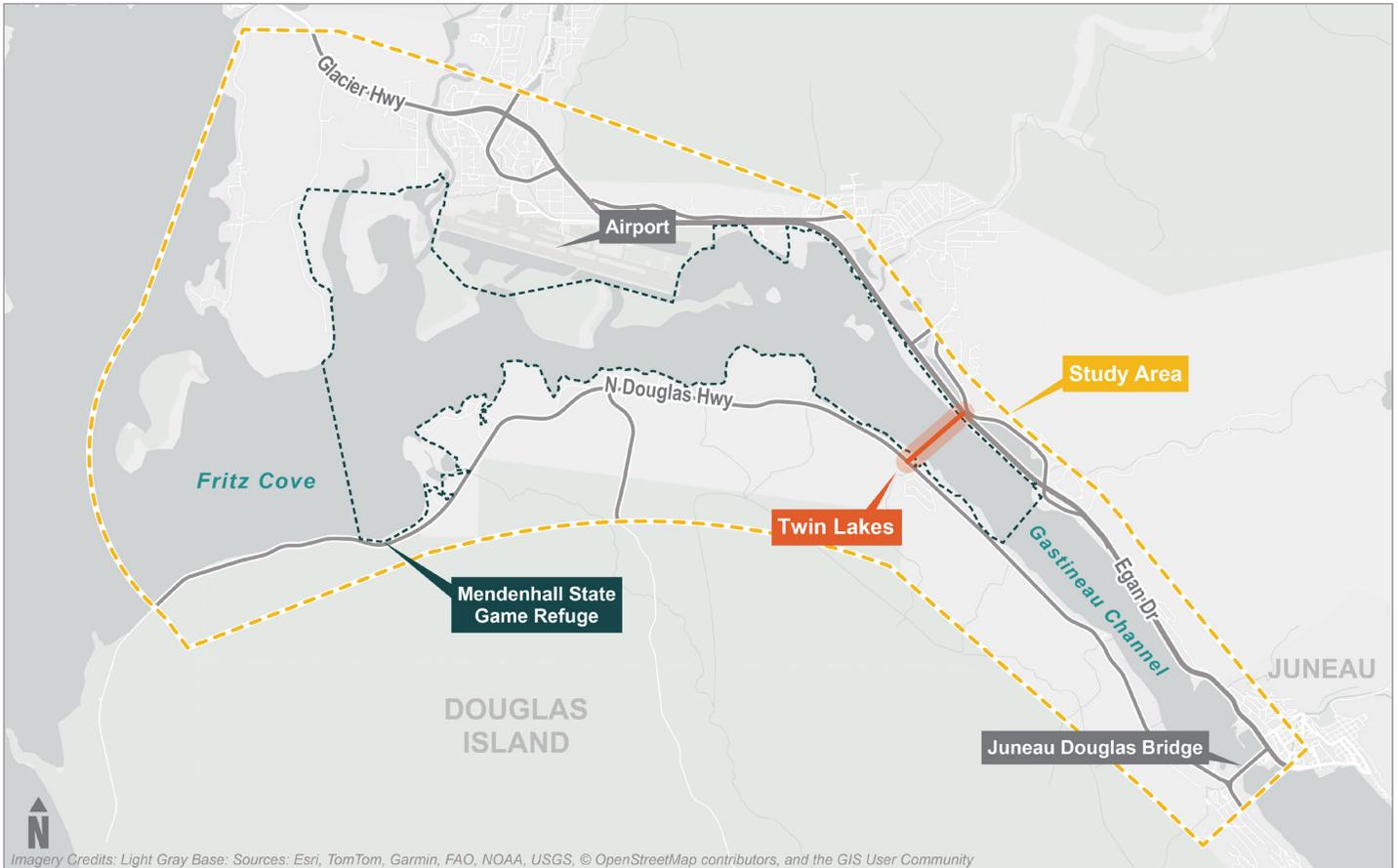
It should be noted that in 2024, the owners of the Salmon Creek Dam, Alaska Electric Light and Power shared information with DOT&PF regarding the Salmon Creek Dam since the new bridge would be located in the failure zone of the dam. The Salmon Creek Dam is a concrete arch dam constructed in 1914 to provide water for hydroelectric power generation. The information shared was a result of separate ongoing evaluations and modeling of the Salmon Creek Dam and did not come to light during the Level 1 screening process. The dam is regulated by the Federal Energy Regulatory Commission (FERC), which has very specific requirements for public safety and dams. The FERC requirements include annual inspections and the development of a Dam Safety Surveillance and Monitoring Plan. A Freedom of Information Act request was made in August 2024 seeking the most recent evaluation of the Salmon Creek Dam to assess the risk of a dam breach event. To date, this information has not been provided and would be reviewed in a future NEPA analysis.



ES-Figure 5: Salmon Creek Alternative Crossing

Twin Lakes

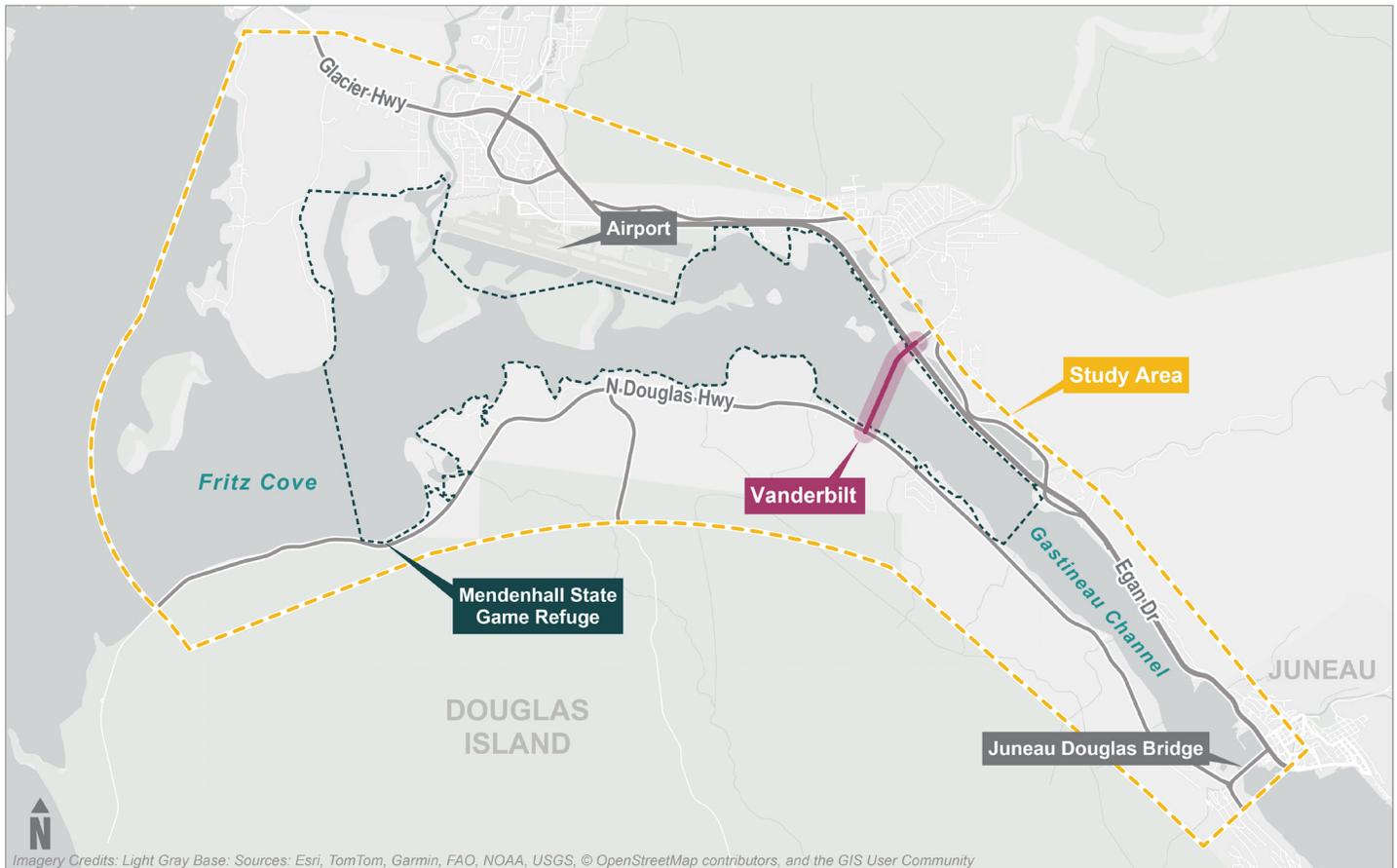
The Twin Lakes alternative (ES-Figure 6) begins with a roundabout on North Douglas Highway at approximately MP 4.5. It then crosses the Mendenhall Wetlands State Game Refuge and connects with Egan Drive at approximately MP 4.5 (between the two lakes). This alternative will provide a new grade-separated diamond interchange with Egan Drive raised above the Twin Lakes intersection. Egan Drive will be slightly realigned to accommodate the raised interchange. This alternative would have 65 pilings. The Twin Lakes Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost.



ES-Figure 6: Twin Lakes Alternative Crossing

Vanderbilt

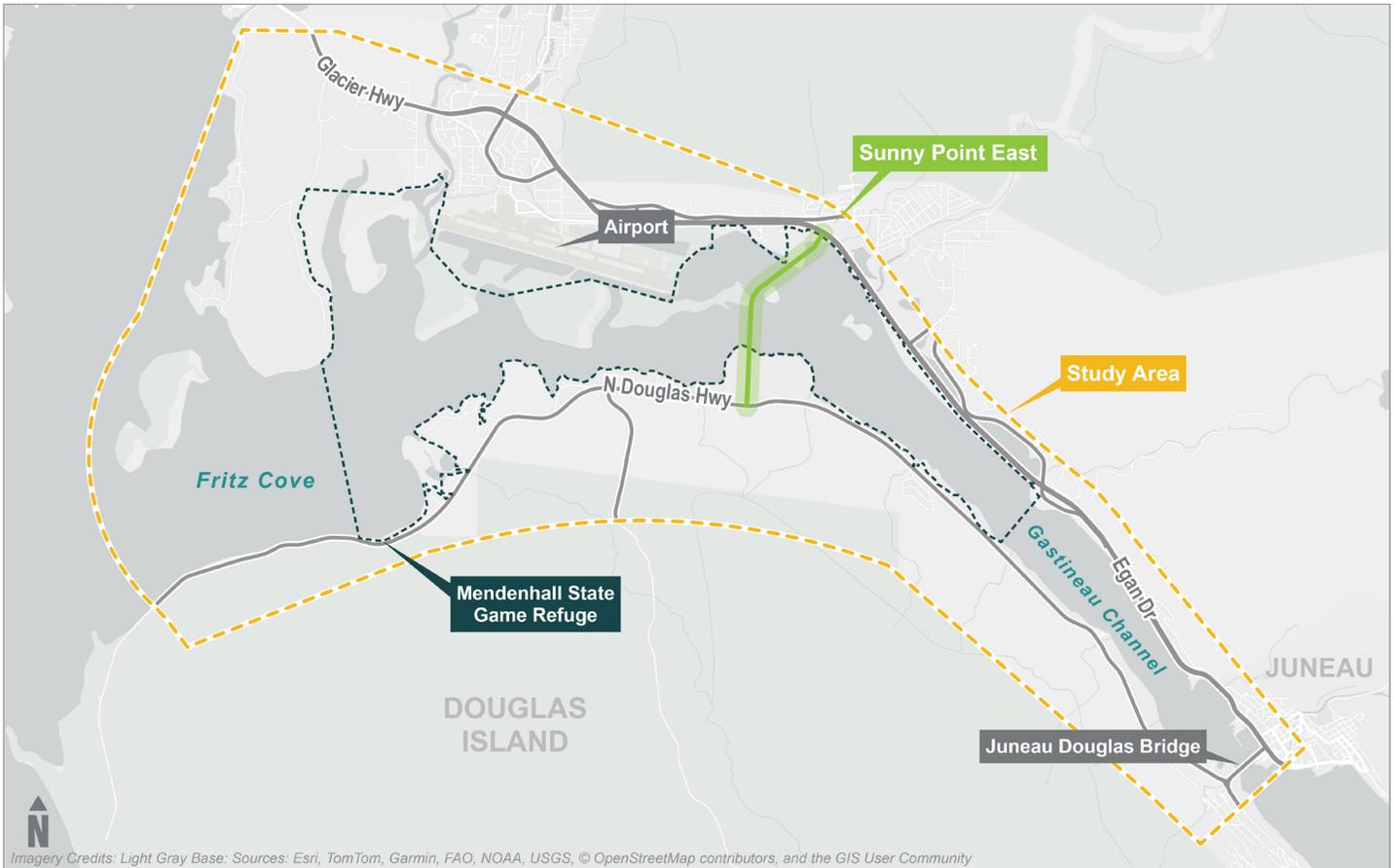
The Vanderbilt alternative (ES-Figure 7) begins with a roundabout on North Douglas Highway at approximately MP 5. It then crosses the Mendenhall Wetlands State Game Refuge and intersects Egan Drive at the Vanderbilt Hill Road intersection at MP 5.3. The Vanderbilt Road intersection has two options with one using a grade-separated diamond interchange with Egan Drive raised above the Vanderbilt Hill Road intersection. The other option would tie into the existing signalized at-grade intersection. The Vanderbilt Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost.



ES-Figure 7: Vanderbilt Alternative Crossing

Sunny Point East

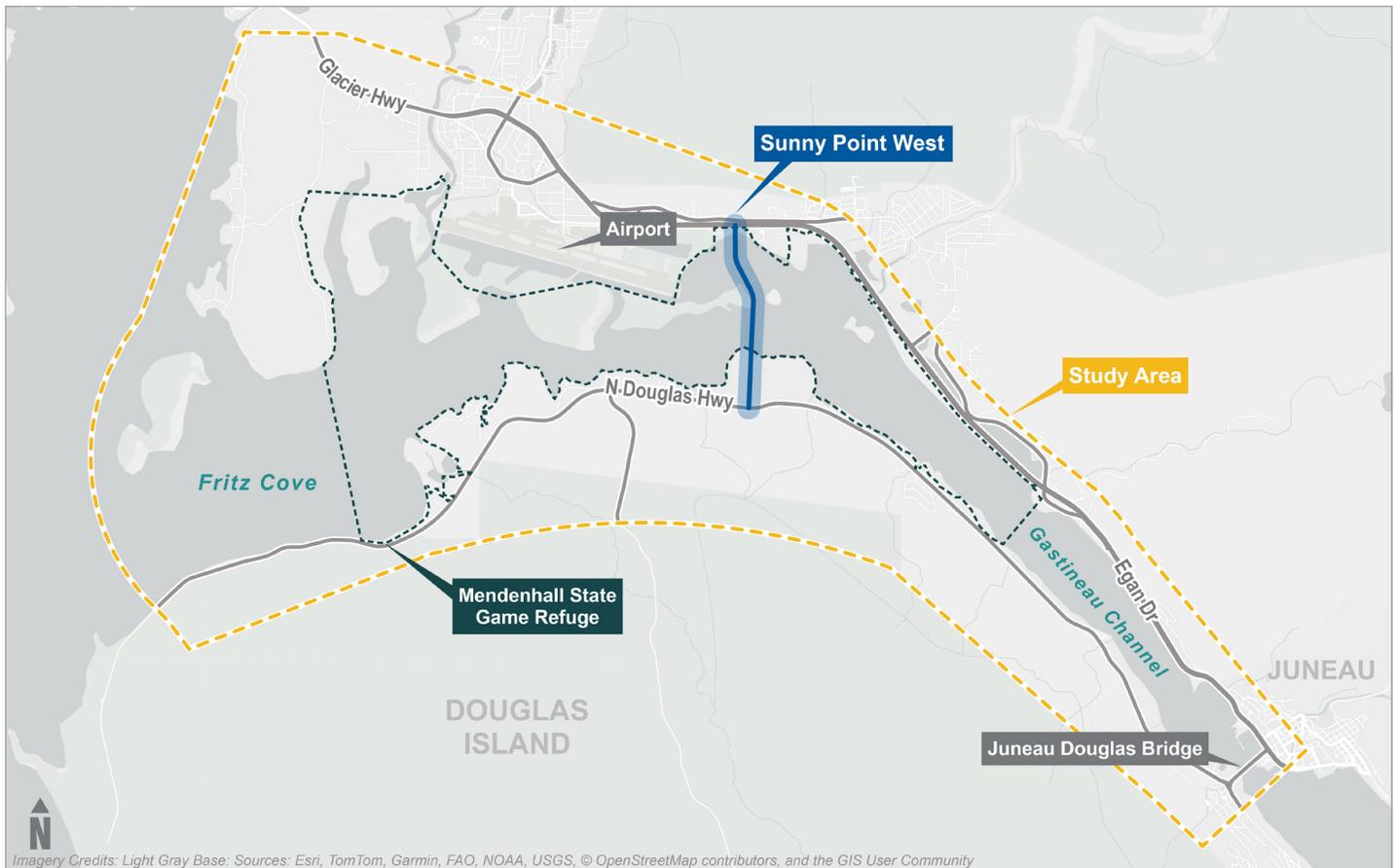
The Sunny Point East alternative (ES-Figure 8) begins with a roundabout on North Douglas Highway at approximately MP 6. It then crosses the Mendenhall Wetlands State Game Refuge and ties into the existing Sunny Point Interchange below Egan Drive. The Sunny Point East Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost.



ES-Figure 8: Sunny Point East Alternative

Sunny Point West

The Sunny Point West alternative (ES-Figure 9) begins with a roundabout on North Douglas Highway at approximately MP 6. It then crosses the Mendenhall Wetlands State Game Refuge and ties into Egan Drive near MP 7.3. The intersection would consist of a grade-separated diamond interchange with Egan Drive raised above the Sunny Point West intersection. The northbound on-ramp onto Egan Drive will connect with the existing Sunny Drive frontage road to access the existing Sunny Point Interchange and the on-ramp to Egan Drive from this interchange. The Sunny Point West Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost.



ES-Figure 9: Sunny Point West Alternative

Next Steps

Funds are programmed in the Statewide Transportation Improvement Program (STIP) to advance design and environmental review for the Juneau Douglas North Crossing. The project is described in STIP Amendment 2 as follows:

STIP Identifier:	Location:	DOT&PF Region:	Total Project Estimate for 2024-2027:	Current STIP Funding:
34146	Juneau City and Borough	Southcoast Region	\$23,514,844	\$23,514,844

Project Description: The Juneau Douglas North Crossing project, situated between Juneau and the north end of Douglas Island, aims to construct a crossing to connect these two locations. The initiation of this project is expected to be requested before the conclusion of the Planning and Environmental Linkages (PEL) Study. This is due to various administrative procedures required to finalize the PEL Study and initiate a new project. The Department acknowledges the importance of adhering to discretionary grant timelines and is mindful of their time sensitivity. The Final PEL Study Report will be accessible before any significant (non-administrative) activities commence on this project. Funded through Congressionally Directed Spending (CDS) and a United States Department of Transportation (USDOT) RAISE Grant. The match ratio is not the same for both fund types. The CDS is 9.03%, and the RAISE is 5%. National Highway System (NHS) designation to be pursued. The project PEL study is being completed under STIP ID 31597.

Concurrence Points

The Department of Transportation and Public Facilities has defined four concurrence points that should be met during the completion of a PEL study within the Planning and Environmental Linkages (PEL) Guidebook (April 2021) (ES-Table 2).

ES-Table 2: Statewide Environmental Office Concurrence Points

Concurrence Point	Review	Date of Concurrence
Purpose and Need	<ul style="list-style-type: none"> • Purpose and need statement has rational basis • Uses up-to-date data • Includes analytical methods • Uses modeling techniques that are reliable, defensible, reasonably current, and meet data quality requirements 	November 16, 2022
Alternatives Development and Screening Methodology	<ul style="list-style-type: none"> • Planned range of alternatives and the alternatives development process is reasonable, rational, and logical • Appropriate methodologies are identified • Level of detail planned for alternatives development and evaluation is appropriate • Stakeholder involvement plan is appropriate • Planned screening process, including screening criteria, is rational and logical 	February 23, 2023
Alternatives Screening Results	<ul style="list-style-type: none"> • Results of alternatives development and screening • Conclusions are reasonable and logical • Sufficient documentation is provided to justify eliminating or advancing alternatives • No alternatives were eliminated that are necessary for compliance with future NEPA or for compliance with a permit or approval from another federal agency 	February 19, 2025
Draft PEL Study	<ul style="list-style-type: none"> • Public and agency involvement is adequately documented • The ten conditions identified in 23 U.S.C 168 have been followed • Planning products and analyses are adequate for incorporation into future NEPA • Impacts and mitigation are appropriately documented • The basic description of the environmental setting is adequate • The implementation plan contains reasonable steps for the project to move forward into the NEPA process • The planning products are documented in such a form to be easily identifiable and available for review during the NEPA scoping process and can be appended to or referenced into a NEPA document 	Pending

1

INTRODUCTION



1.0 INTRODUCTION

1.1 Study Objectives

The Alaska Department of Transportation and Public Facilities (DOT&PF) in cooperation with the City and Borough of Juneau (CBJ) has chosen the Planning and Environmental Linkages (PEL) process to identify and evaluate a possible transportation corridor connecting Juneau with the northern end of Douglas Island.

This Juneau Douglas North Crossing (JDNC) PEL study report documents the transportation issues, agency, stakeholder and public involvement efforts, and alternative development and evaluation process. The study area broadly includes the eastern and north-eastern sides of Douglas Island and the western part of Juneau extending into the Mendenhall Valley, from just south of the existing Douglas Island Bridge to the north (Figure 1). The study area encompasses the area where prior studies and environmental analyses and the community have identified potential alternative crossing locations.

A potential connection has been studied since the 1980s but has not progressed to a completed environmental stage. Previous studies identified several reasons for another crossing:

- Traffic congestion during peak travel periods on the existing Douglas Island Bridge
- Concerns about safety and emergency response in the event of a bridge closure
- The potential for residential, commercial, industrial, and port development at west Douglas Island

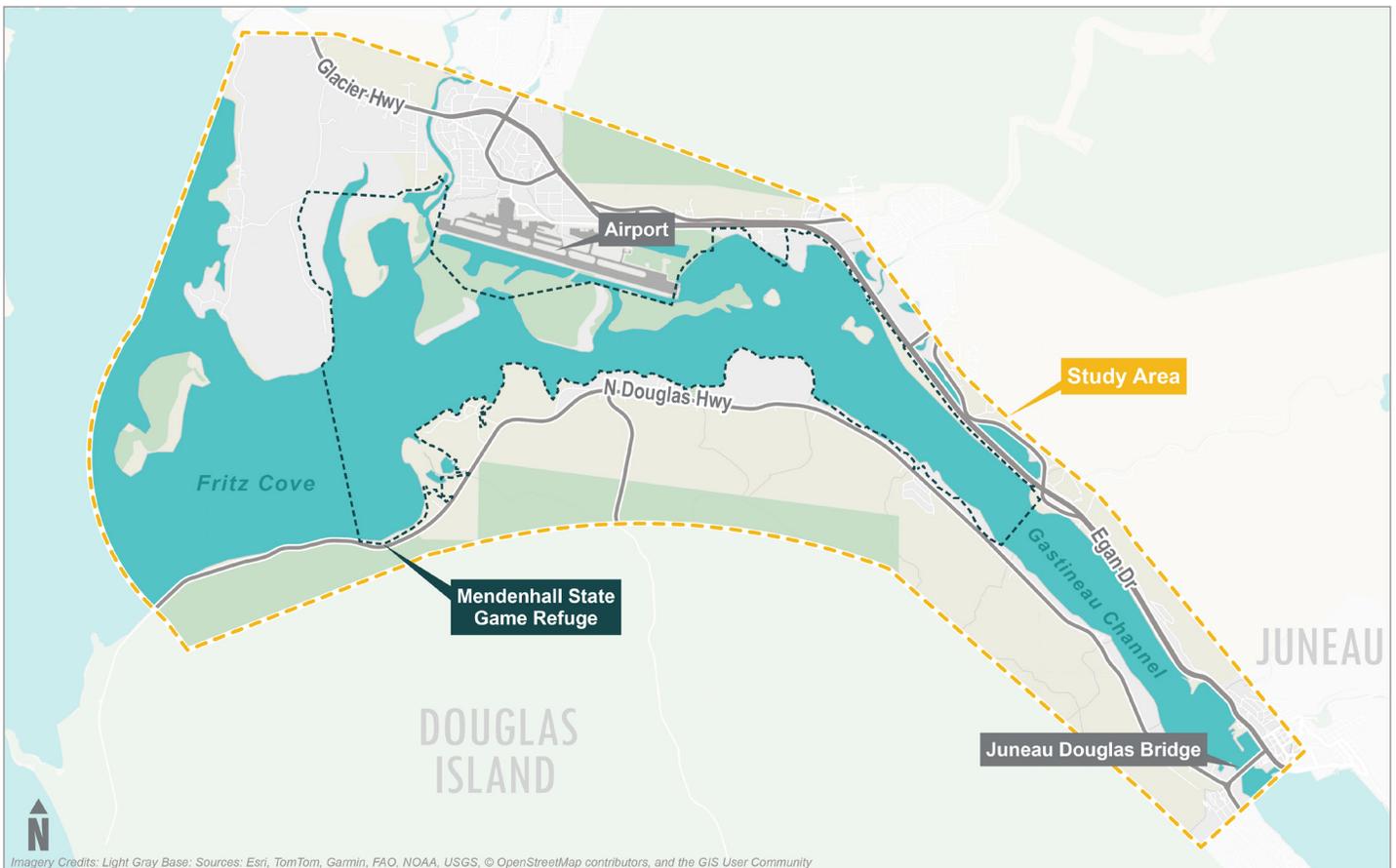


Figure 1: PEL Study Area

This PEL study sought to engage stakeholders and the public to identify and refine potential crossing alternatives and document the analysis so it can be incorporated into a future National Environmental Policy Act (NEPA) process.

This project contributes to DOT&PF’s Mission to “Keep Alaska moving through service and infrastructure” by providing network resiliency and improving the mobility of people and goods. The DOT&PF aligns its focus around five strategic investment areas: Safety, State of Good Repair, Economic Vitality, Resiliency, and Energy & Sustainability. The JDNC would support Juneau’s transportation network, which is consistent with DOT&PF’s Resiliency focus since Douglas Island is wholly dependent on a single bridge. Additionally, it would provide opportunities to enhance economic development and provide infrastructure to access the Alaskan outdoors, which is consistent with DOT&PF’s Economic Vitality focus.

The project followed guidance set out in DOT&PF’s PEL Guidebook, including use of the PEL Questionnaire (Appendix 1).

1.2 PEL Study Process and Intent

The PEL process is a collaborative and integrated approach to transportation planning and project development. The Federal Highway Administration (FHWA) emphasizes the value of the PEL process for creating efficiency in transportation project development and supporting agencies to accelerate project delivery. The flexibility in the PEL process means it can be implemented in a way that meets each project’s individual needs.¹ A summary of PEL benefits is shown in Figure 2.

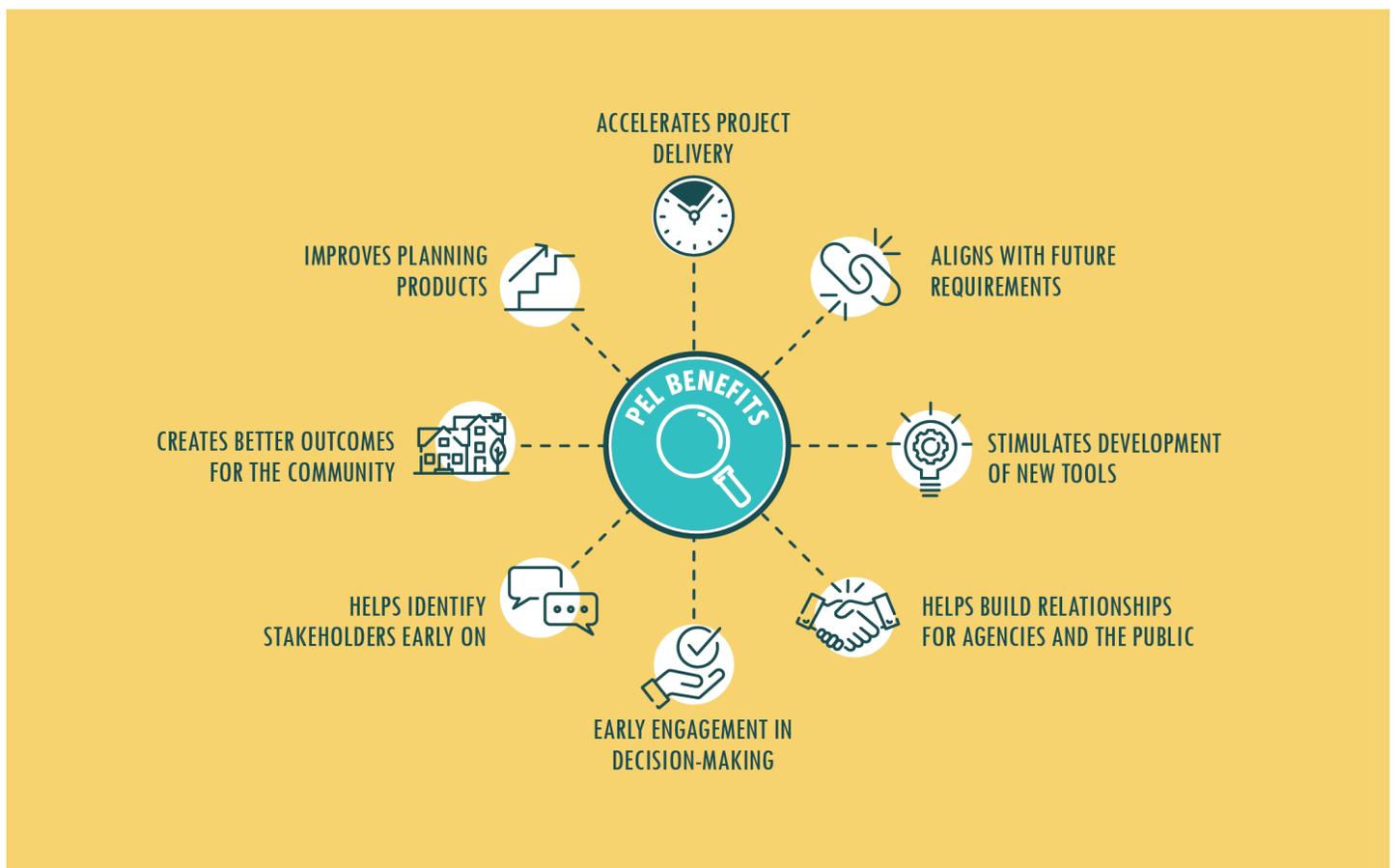


Figure 2: PEL Benefits

¹ https://www.environment.fhwa.dot.gov/env_initiatives/pel/pel_fact_sheet.pdf

The purpose of this PEL study was to improve planning-level and project-level decision making, expand the public outreach to receive and incorporate feedback on PEL study recommendations, minimize duplication of effort during project-level environmental compliance efforts, and streamline project delivery timeframes. The PEL process achieved this by incorporating consideration of the natural and human environment, coordinating with resource agencies, tribes, stakeholders, and the public, and clear documentation of decisions and rationales into the planning process. The planning process will be linked through incorporation of planning information, analysis, and products into future project-level environmental reviews.

The FHWA outlines ten transportation planning factors (23 CFR 450) to be considered in the transportation planning process:

- Support the economic vitality of the United States, the States, nonmetropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency
- Increase the safety of the transportation system for motorized and non-motorized users
- Increase the security of the transportation system for motorized and non-motorized users
- Increase the accessibility and mobility of people and freight
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the state, for people and freight
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system
- Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation
- Enhance travel and tourism

The transportation planning process typically looks at transportation networks at the broader system level and identifies transportation issues and needs to be addressed. Final Rule, 81 FR 34049 updates transportation planning legislation to further clarify and encourage the use of planning products in project development. It notes the FHWA, have long supported the use of planning products and decisions during the environmental review process through PEL, and that federal agencies are able to use and rely on planning analyses, studies, decisions, or other information for the project development and environmental review of transportation projects. The final rule explicitly recognizes a variety of PEL methods that may be used to integrate planning with environmental reviews.

For example, a PEL study evaluates a range of potential improvements that may work independently or in concert to improve transportation in a corridor or study area. Recommendations from the PEL study are then incorporated into the Statewide Transportation Improvement Program (STIP), often as individual projects. As each project moves forward for implementation, it enters the environmental review process required under NEPA. Findings from this study will be used to make preliminary determinations regarding the appropriate level of NEPA documentation required for future projects (i.e., categorical exclusion [CE], environmental assessment [EA], or environmental impact statement [EIS]).

Under a Memorandum of Understanding (MOU) between FHWA and DOT&PF, DOT&PF has assumed FHWA's environmental responsibilities for federal-aid projects in Alaska effective November 3, 2017, and renewed on April 13, 2023. Pursuant to 23 Code of Federal Regulations (CFR) 327(a)(2)(A), FHWA assigned, and DOT&PF assumed all the United States Department of Transportation Secretary's responsibilities for compliance with NEPA, 42 U.S.C 4321, et seq., with respect to highway projects. This included statutory provisions, regulations, policies, and guidance related to the implementation of NEPA for federal-aid highway projects.

In 2016, the USDOT adopted regulations for PEL studies in USC 450.212 and 450.318. These are referred to as the 2016 Final Rule, and they allow for certain planning analyses and products developed in a PEL process to be incorporated into NEPA and project development processes. In 2021, DOT&PF adopted a PEL Guidebook to provide guidance on PEL studies completed in Alaska. The PEL study provides the basis for several NEPA elements as described in Figure 3.

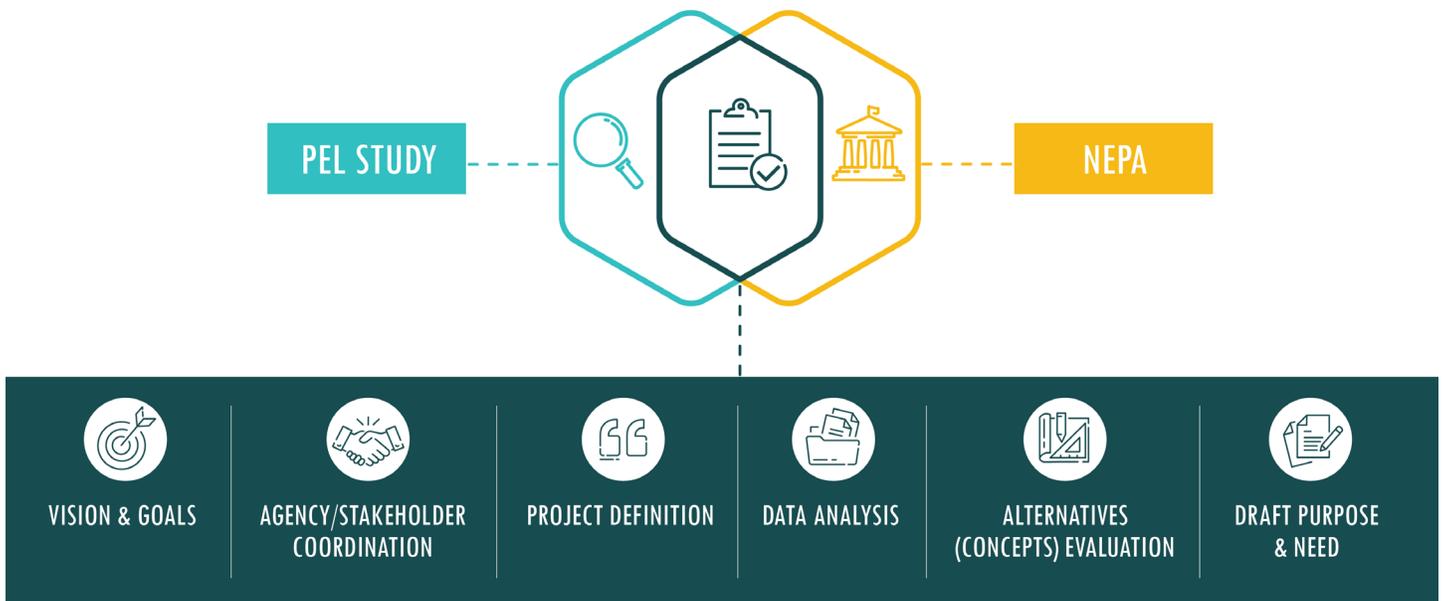


Figure 3: PEL Study and NEPA Elements

This PEL study report identified the purpose and need (P&N) for needed improvements in the study area by analyzing existing conditions (including environmental, transportation, and community issues) and through extensive agency, stakeholder, and public engagement. The study identified potential solutions to address the deficiencies as well as provided a preliminary analysis of their potential environmental effects. Recommendations for specific improvements were developed based on that evaluation. While the planning process evaluated alternatives at a conceptual level, it can provide basic information to support the project-level NEPA review analysis.

Because the planning process included opportunities for tribal, agency, stakeholder and public involvement and clearly documented the process used and rationale for decision making, these elements will be transferable from the planning process into future NEPA processes. Incorporation of these planning products into the project-level NEPA reviews enables project definitions/scopes that avoid issues that will cause delays and provides information that leads to better decisions about the appropriate level of NEPA documentation for each project. This will result in a more efficient and streamlined project-level NEPA review. The PEL study for the JDNC develops and screens preliminary alternatives, thereby potentially simplifying project-level NEPA efforts.

1.3 Study Area

The PEL study area encompasses approximately 16,127 acres with a southern boundary just south of the existing Douglas Island Bridge, north-western boundary spanning Fritz Cove west of Spuhn Island, north and eastern boundaries being Glacier Highway/Egan Drive and western boundary broadly bordered by Douglas Island. The study area encompasses Juneau International Airport, Fritz Cove, the Mendenhall Wetlands State Game Refuge (MWSGR), most of Gastineau Channel, and the communities/neighborhoods of the west Douglas, North Douglas, Fritz Cove, and Sunny Point (Figure 1).

Defining the study area was based on a combination of factors, including providing a broad area to consider connections between Juneau and Douglas Island, and encompassing the area considered in previous analyses of potential second crossings.

The PEL study kicked off with a summary of previous plans, studies, and other data (refer to Appendix 5). These were assessed not only for alternatives development, but also to determine baseline data to be included in the PEL study and understand data that should be updated. This background information informed and provided perspective for the PEL, which takes a renewed look based on current conditions, issues and needs.

1.4 Statewide Environmental Office Concurrence Points

The DOT&PF PEL Guidebook outlines the standard concurrence points during PEL study development. Owing to the flexibility of the PEL process not every PEL study will produce the same products or outcomes and the PEL project team must consult with the Statewide Environmental Office (SEO) at the beginning of the process to determine whether each of the standard SEO PEL concurrence points apply to a particular PEL study. The PEL study team consulted with the SEO at the commencement of this PEL study and throughout the study process, and all concurrence points in Table 1 apply to this PEL study. Documentation of these concurrence points is included in Appendix 2.

Table 1: SEO Written Concurrence Points During PEL Study

Concurrence Point	Review	Date of Concurrence
Purpose and Need	<ul style="list-style-type: none"> • Purpose and need statement has a rational basis • Uses up-to-date data • Includes analytical methods • Uses modeling techniques that are reliable, defensible, reasonably current, and meet data quality requirements 	November 16, 2022
Alternatives Development and Screening Methodology	<ul style="list-style-type: none"> • Planned range of alternatives and the alternatives development process is reasonable, rational, and logical • Appropriate methodologies are identified • Level of detail planned for alternatives development and evaluation is appropriate • Stakeholder involvement plan is appropriate • Planned screening process, including screening criteria, is rational and logical 	February 23, 2023
Alternatives Screening Results	<ul style="list-style-type: none"> • Results of alternatives development and screening • Conclusions are reasonable and logical • Sufficient documentation is provided to justify eliminating or advancing alternatives • No alternatives were eliminated that are necessary for compliance with future NEPA or for compliance with a permit or approval from another federal agency 	February 19, 2025
Draft PEL Study	<ul style="list-style-type: none"> • Public and agency involvement is adequately documented • The ten conditions identified in 23 U.S.C 168 have been followed • Planning products and analyses are adequate for incorporation into future NEPA • Impacts and mitigation are appropriately documented • The basic description of the environmental setting is adequate • The implementation plan contains reasonable steps for the project to move forward into the NEPA process • The planning products are documented in such a form to be easily identifiable and available for review during the NEPA scoping process and can be appended to or referenced into a NEPA document 	Pending

2

AGENCY, STAKEHOLDER, AND PUBLIC INVOLVEMENT



2.0 AGENCY, STAKEHOLDER, AND PUBLIC INVOLVEMENT

The PEL process is a collaborative and integrated approach to transportation decision making that improves outreach and coordination by considering community goals, among others, early in the planning process. By involving regulatory and resource agencies and communities early in project development, working relationships support greater input and more involvement and opportunities.

Public involvement activities for this PEL study are guided by a Public and Agency Involvement Plan (PAIP), including communication strategies and methods, which are assessed for effectiveness and may be revised. The objectives of agency, stakeholder, and public involvement are to provide opportunities for all stakeholders to be informed and participate in the PEL study process, providing the basis for local planning authorities to review and approve the recommendations of the final PEL report as required under AS 35.30.010 Review and Approval by Local Planning Authorities, and to meet relevant Federal, DOT&PF, and local government requirements for public involvement. The public involvement process includes documenting relevant information regarding stakeholder’s interests, involvement, and impact on project success. Refer to Appendix 3 for the Public and Agency Involvement Summary, and Appendix 4 for the Tribal, Agency, Stakeholder, and Public Comment and Response Summary.

2.1 Public Involvement Activities

Public involvement activities for the PEL study include the strategies and methods used by the project team to provide opportunities for stakeholders to be informed, provide meaningful input, and influence and participate in the PEL study’s outcomes, as shown in Figure 4.

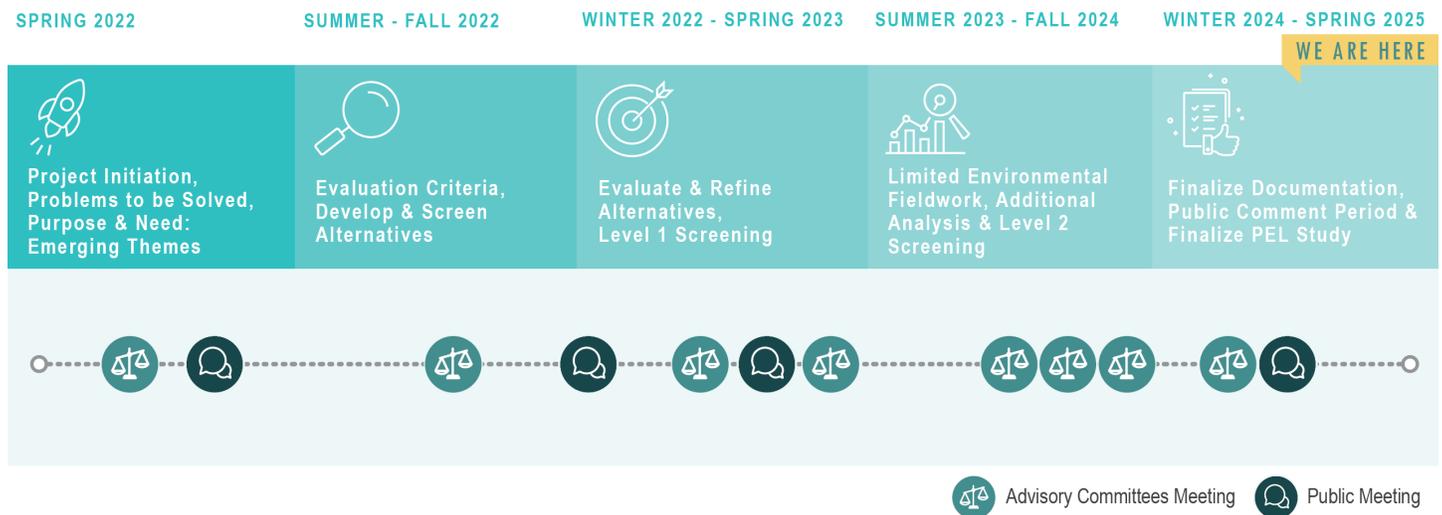


Figure 4: Key Public Involvement Decision Points

2.1.1 Website

A study website, www.JDNorthCrossing.com, was established to both share and collect information using the State of Alaska Look and Feel Standards, which is Americans with Disabilities Act (ADA) compliant. The website is maintained with the study description, map of the study area, meeting information, frequently asked questions, study documents and memoranda, information about public involvement activities, and study team contact information. The website also included mechanisms for stakeholders to sign up to receive updates on the PEL study and share comments.

2.1.2 ArcGIS StoryMap and Survey

To supplement the study website, an ArcGIS StoryMap was used to engage the public through visual representation of the study, area background, purpose and need, preliminary alternatives, screening process, and schedule.

2.1.3 Social Media

The study team worked with DOT&PF and CBJ communication teams to craft and schedule content for the social media sites at key study milestones, such as open house meetings and comment periods.

2.1.4 Informational Materials

To create a consistent look and feel for project documents, the study team created a project logo and templates with color specifications to develop communication materials.

The study team developed and regularly updated a PEL study fact sheet and frequently asked questions documents to share at public meetings and on the website. Newsletters we emailed shared study updates at relevant milestones and public involvement opportunities.

2.2 Agency and Stakeholder Involvement

Stakeholders are individuals and organizations, such as the government agencies, tribal entities, businesses, community groups, environmental organizations, and the public actively involved in the study or whose interests may be positively or negatively affected by the study's execution. Stakeholder information is documented and maintained to manage communications in a relevant, meaningful, and effective way to facilitate high levels of public involvement. As part of the process, the study team complied with relevant regulations (including 23 CFR 450) and guidance.

2.2.1 Public Meetings

The study team hosted public open houses and listening sessions to inform the public about the PEL study and to solicit comments. Open houses were hosted virtually and in-person. Listening sessions were held at a community event and grocery store to allow input from those not usually in attendance at public meetings.

Public meetings were noticed on the State of Alaska Online Public Notice site, DOT&PF Facebook posts, the study website, postcards to residents within 500 feet of the study area and those on the mailing list, radio announcements, newspaper advertisements, flyers at popular locations, and email via Constant Contact to the mailing list. Meeting summaries were created from written and verbal comments received for each public meeting and shared on the study website.

Public Meeting No. 1

The first open house was held May 11, 2022, via Zoom. The virtual public open house meeting included an 11-minute pre-recorded presentation and a facilitated question and answer session, with participants asking questions verbally and via the Zoom chat function. To encourage public participation, the team answered questions during quiet times. More than 70 people participated, including 15 members from the study team.

Listening Sessions

Listening Sessions for the JDNC PEL study were held at Discover Eaglecrest Day on Douglas Island and at Safeway in the Mendenhall Valley area on September 17, 2022 (Figure 5). Study team members set up booths and shared general information about the study, progress to date, and potential crossing locations that were shared with the team. More than 150 participants visited the booth at Eaglecrest and approximately 100 participants visited Safeway, sharing their thoughts on crossing locations, concerns, and benefits of a north crossing.



Figure 5: Listening Session at Eaglecrest Day



Figure 6: Open House Meeting 2

Public Meeting No. 2

The second public open house was hosted on Monday, December 12, 2022, at the Juneau Arts and Culture Center (JACC). A pre-recorded presentation was shared on the project website, and attendees had the opportunity to view project information shared on project boards, including the PEL Study background and progress to date, study schedule, study purpose and need statement, preliminary alternatives, and initial screening criteria. Attendees had the opportunity to provide feedback on the preliminary alternatives and initial screening criteria via an online survey and other preferred communication methods. In addition to ten study team members, over 100 members of the public, elected officials, and media attended (Figure 6).

A subsequent survey to gather public feedback on the preliminary alternatives and initial screening criteria followed the second public meeting. The survey asked six questions and provided opportunities for additional comments. More than 1,000 responses were collected, along with an additional 141 comments received in writing, verbally, and via email. Nearly half of the respondents shared where they live, with most of those living within the CBJ. Over two thirds supported the JDNC at some location and were more likely to support a crossing that:

- Creates alternative access
- Reduces travel time and congestion
- Improves emergency response time
- Improves access to recreation opportunities
- Minimizes environmental impacts
- Minimizes disruptions to existing neighborhoods and residents
- Reduces increased or generated traffic on Douglas Island
- Provides reasonable construction and maintenance costs

Alternatives favored by survey respondents tended to not be within proximity of the existing Douglas Island Bridge. Public comment indicated preference for the alternatives at Sunny Point and Vanderbilt, influenced by their proximity to the hospital and the shorter length of the JDNC resulting in a lower perceived cost to build. Other comments indicated preference for alternatives as far north as possible to provide the easiest access between North Douglas and the Mendenhall Valley to increase development, recreation access, and to mitigate environmental impacts.

Public Meeting No. 3

Placeholder – Information to be updated following meeting.

2.2.2 Advisory Committees

To provide opportunities for key stakeholders to engage with the study team, advisory committees were formed to provide ongoing input as the study advanced: a Technical Advisory Committee (TAC) and a Stakeholder Advisory Committee (STAC). Both advisory committees support the PEL study through participation and feedback at meetings at key milestones, providing guidance and advice to the DOT&PF and funding agencies. These committees had an early review of material being produced and an opportunity to comment on draft products.

The TAC’s purpose was to provide guidance on relevant technical and regulatory issues encountered through the PEL study and augment the public process. Working with a small group of technical advisors enabled a more focused and constructive dialogue, helping to identify and address challenges efficiently and progress toward the identification of preferred alternatives that can effectively transition to NEPA-compliant project development and implementation.

The STAC was created by inviting elected officials, interested economic parties, tribal organizations, local advocacy groups, and community organizations. Working with this group of stakeholders enabled the study team to collect local knowledge, history, and current sentiments of the broader area. As the PEL study progressed the Advisory Committees shared with the project team a preference to work together as a single Advisory Committee. Both Advisory Committees participated together in the Workshop, and after meeting 3 the Advisory Committee meetings were hosted on a joint basis. Meetings were held virtually or in-person, and information was shared with committees and provided opportunities to make comments on the following schedule (Table 2):

Table 2: Advisory Committee Meetings Schedule

Meeting Number	Focus	Dates
1	<ul style="list-style-type: none"> Baseline data and existing conditions Purpose and need 	April 25 & 27 2022
Alternatives Development Workshop	<ul style="list-style-type: none"> Range of alternatives Alternatives screening process Screening criteria 	July 15, 2022
2	<ul style="list-style-type: none"> Alternative screening criteria Preliminary alternatives 	November 17, 2022
3	<ul style="list-style-type: none"> Preliminary alternative screening results 	March 6, 2023
4	<ul style="list-style-type: none"> Detailed alternative screening criteria Additional field studies 	September 14, 2023
5	<ul style="list-style-type: none"> Preliminary detailed alternative screening results Additional field studies 	March 7, 2024
6	<ul style="list-style-type: none"> Preliminary detailed alternative screening results New information 	October 17, 2024
7	<ul style="list-style-type: none"> Detailed alternative screening results Recommended alternatives 	March 4, 2025

2.2.3 City and Borough of Juneau Assembly Public Works & Facilities Committee

The study team presented updates at key milestones to the CBJ Public Works & Facilities Committee. These presentations were coordinated with the CBJ Assembly Committee Listening Sessions, where constituents shared comments with their elected officials and the study team on the PEL study. These presentations occurred:

- January 23, 2023
- May 18, 2023
- March 2, 2023
- March 11, 2024

2.2.4 Additional Stakeholder Meetings

To supplement Advisory Committee meetings and emailed comments, the study team met with agencies, tribal organizations, advocacy groups, neighborhood associations, business interests, and stakeholders to gather additional comments and feedback Table 3.

Table 3: Summary of Stakeholder and Agency Outreach Meetings

Meeting Group/Type	Total Meetings	Dates
Alaska Department of Fish and Game	2	March 19, 2024; July 10, 2024
Neighborhood Associations	4	September 27, 2022; October 26, 2022; June 29, 2023; March 22, 2024
Environmental Protection Agency	1	February 9, 2023
Federal Aviation Administration	1	February 26, 2024
Goldbelt, Inc.	1	February 17, 2023
Juneau Airport	2	April 25, 2023; January 11, 2024
Juneau Audubon Society	1	March 20, 2024
Juneau Chamber of Commerce	1	May 19, 2022
Juneau Innovators Rotary Club	1	February 16, 2023
Senator Jesse Kiehl	2	November 30, 2022; January 19, 2023
Mendenhall Wetlands Study Group	3	November 17, 2022; April 10, 2024; May 23, 2024
National Oceanic and Atmospheric Administration Fisheries	2	February 9, 2023; March 22, 2024
Southeast Alaska Land Trust	1	March 9, 2023
United States Army Corps of Engineers	1	July 9, 2024
United States Fish & Wildlife Service	1	February 3, 2023
United States Forest Service	1	February 24, 2023

2.2.5 Alternatives Development Workshop

The study team hosted an Alternatives Development Workshop to collaborate and develop alignments for a potential JDNC. The Workshop also considered the P&N and the alternative screening criteria process guiding the evaluation and refinement of alternatives. Participants included 42 members of the TAC and STAC, DOT&PF and CBJ staff, and members of the study team (Figure 7).



Figure 7: Alternatives Development Workshop

The study team shared a presentation on the PEL study, schedule, process, existing conditions, population observations, P&N, and alternative screening criteria. Following the presentation, participants were separated into four facilitated break-out groups to explore potential north crossing locations and structures; options for pedestrian, bicycle, and vehicular facilities; and elements to include in the alternative screening criteria.

Following the workshop, a meeting summary and map documenting possible north crossing alignments were posted to the study website.

3

PURPOSE AND NEED AND PLANNING ASSUMPTIONS



3.0 PURPOSE AND NEED AND PLANNING ASSUMPTIONS

3.1 Purpose

The purpose of the Juneau Douglas North Crossing PEL study is:



To identify ways to improve the connection between Douglas Island and Juneau.”

The secondary purposes are:

- To identify ways to improve transportation for non-motorized users
- Reduce transportation related energy consumption

3.2 Need

An improved connection to Douglas Island should address the following needs:

- **Alternate access and transportation infrastructure resilience:** The community has expressed concerns regarding the lack of an alternate access during emergencies and the City and Borough of Juneau has identified the issue in the 2013 Comprehensive Plan. In the event of the Douglas Island Bridge or another single route travel corridor in the area (North Douglas Highway or Egan Drive) being inaccessible or out of service, emergency response would be delayed, and residents cut off from access to workplaces and critical resources.
- **Decrease traffic pressure on Douglas Island Bridge and its intersections:** The traveling public is currently experiencing delays and congestion on the Douglas Island Bridge and its intersections during peak travel times. Analyses indicate the intersections operate at or over capacity during peak travel times and will continue to deteriorate based on estimated future traffic counts.

3.3 Additional Goals

- Create additional traffic capacity to support future development of affordable housing and economic development opportunities.
- Protect and enhance health and safety of travelers and communities.
- Avoid, minimize, and mitigate impacts to the environment and to residential areas.
- Maintain the visual, cultural, and scenic identity of Juneau and Douglas Island.

3.4 Planning Assumptions

The following planning assumptions have guided the PEL study:

- 1 Transportation resilience within Juneau is desired owing to connections between Juneau, Douglas Island, and the Mendenhall Valley being single route only, which will become inaccessible in the event of a closure.
- 2 Resilient access is needed to connect residents to jobs, homes, education, healthcare, and essential services.
- 3 Douglas Island Bridge and its intersections are already operating at, or near capacity. This situation limits the ability of Douglas Island to accommodate future residential and commercial development owing to congestion and delay.
- 4 Since 2010, the CBJ has seen flat and/or declining population trends, yet there continues to be a need for quality affordable and attainable housing in Juneau to serve a range of incomes and households. There is an immediate need for 400 new housing units, even considering declining population.
- 5 Development of land on Douglas Island is a necessary need to solve the housing shortage in Juneau.
- 6 The Juneau Comprehensive Plan identifies locations on Douglas Island as desirable locations for future development of affordable housing and economic development opportunities.
- 7 Additional transportation capacity in the form of a second crossing is a necessary component to open up land on Douglas Island.

4

PLANNING CONTEXT



4.0 PLANNING CONTEXT

The planning context for the study area includes a broad range of transportation and land use plans, resource management plans and economic development plans. Key plans and their relevance are summarized in this chapter. Further details on plans are included in Appendix 5: Previous Studies, Reports and Other Findings Summary Report and Appendix 6: Basic Description of Environmental Setting.

4.1 DOT&PF Plans

4.1.1 Statewide Long Range Transportation Plan

Public Review Draft Plan: Alaska Moves 2050 Draft Long Range Transportation Policy Plan

The Public Review Draft Long Range Transportation Plan (LRTP), Alaska Moves 2050, is yet to be adopted by DOT&PF. The Plan's policies are summarized below:

- **Safety:** Provide for and continuously improve the safety of the transportation system for all users.
- **Mobility and Access:** Enhance the quality of life for all Alaskans by strategically supporting all transportation modes to improve accessibility, safety, personal mobility, and interconnectedness with the intent of moving people and goods efficiently and equitably.
- **Economic Vitality:** Monitor and consider statewide economic trends, such as job creation, access to jobs, and workforce training, and plan for and invest in transportation infrastructure that facilitates and supports economic growth and lowers the cost of goods and services.
- **State of Good Repair:** Plan for full life costs across the transportation system, including planning, construction, operation, and maintenance to improve funding allocation in a consistent and effective manner.
- **Resiliency:** Assess risk and invest in solutions to develop a transportation agency and system that will adapt to and recover from the effects of climate change, natural disasters, and other disruptions.
- **Sustainability:** Promote a sustainable, clean, equitable transportation system to reduce costs to consumers and businesses and provide wider social and environmental benefits.
- **Strategic Partners:** Improve the efficiency and effectiveness of transportation services by expanding coordination and collaboration with other levels of government, industry partners, and the public.
- **Stewardship of the Transportation System:** Address prevailing transportation challenges using the best and most cost-effective modal, intermodal, or multimodal solutions to improve operational efficiencies and safety with careful consideration of life-cycle costs.
- **Transportation Innovation:** Identify and plan for national trends and local innovations that have the potential to impact the provision of transportation services, particularly as they relate to safety, efficient freight movement, and work force trends.
- **Performance-Based Management:** Invest resources to improve access to data science, analytics, and informatics to implement data-driven, evidence-based decision-making. Advocate for and establish stable, diverse, and long-term funding sources for each transportation mode and explore innovative financing.

A new JDNC supports DOT&PF to meet these goals by creating new transportation infrastructure that provides transportation resiliency between Juneau and Douglas Island, easing pressure on the existing Douglas Island Bridge and its intersections and supporting opportunities for CBJ to increase land use supply that is currently constrained by pressure on the transportation network. A new crossing will also improve transportation connectivity for all transportation users, including non-motorized users by creating new facilities and links that have the potential to reduce out-of-direction travel and provide more direct access between origins and destinations.

Approved Plan: Let's Keep Moving 2036 Long Range Transportation Policy Plan

The approved LRTP is Let's Keep Moving 2036, which was adopted in December 2016 and provides future direction for highways, aviation, transit, rail, marine, bicycle and pedestrian transportation. The plan does not list projects for transportation improvements. The LRTP sets out goals under the following policy areas:

- **New Facilities:** Develop new capacity and connections that cost effectively address transportation system performance.
- **Modernization:** Make the existing transportation system better and safer through transportation system improvements that support productivity, improve reliability, and reduce safety risks to improve performance of the system.
- **System Preservation:** Manage the Alaska Transportation System to meet infrastructure condition performance targets and acceptable levels of service for all modes of transportation.
- **System Management and Operations:** Manage and operate the system to improve operational efficiency and safety.
- **Economic Development:** Promote and support economic development by ensuring safe, efficient and reliable access to local, national, and international markets for Alaska's people, goods, and resources, and for freight-related activity critical to the State's economy.
- **Safety and Security:** Improve transportation system safety and security.
- **Livability, Community, and the Environment:** Incorporate livability, community, and environmental considerations in planning, delivering, operating, and maintaining the Alaska Transportation System.
- **Transportation System Performance:** Ensure a broad understanding of the level, source, and use of transportation funds available to DOT&PF; provide and communicate the linkages between this document, area transportation plans, asset management, other plans, program development, and transportation system performance.

A new JDNC supports DOT&PF to improve transportation resiliency by developing new capacity and connection between Juneau and Douglas Island. It would support economic development by creating opportunities for land use on Douglas Island that is currently constrained by the single transportation connection supplied by the Douglas Island Bridge and improve transportation resiliency by creating more than one connection point for all surface modes of transportation.

4.1.2 Southeast Alaska Transportation Plan

The adopted Southeast Alaska Transportation Plan was developed in 2004. It is a regional, multimodal transportation plan that is part of the statewide LRTP. It focuses on area needs, provides general guidance on transportation development, and recommends specific transportation improvements for Southeast Alaska. The Draft 2014 Southeast Alaska Transportation Plan was a 20-year plan for investment in transportation facilities in Southeast Alaska. The plan was never formally adopted by DOT&PF. Neither plan refers to the creation of a second crossing between Juneau and Douglas Island.

4.2 CBJ Plans

4.2.1 City and Borough of Juneau Comprehensive Plan (2013)

The CBJ Comprehensive Plan was intended to provide a logical, consistent, and purposeful approach to managing community growth and development. It was a road map that guided residents and public officials to identify areas suitable for specific types of development and assist with more efficient use of areas that have already been developed. The most recent Comprehensive Plan update was in 2013, and it provided a forecast of housing need, outlook for economic development, mechanisms to plan for energy use and efficiency, an overview of natural resources and hazards, and features associated with growth and built development (transportation, parks and recreation, land use, community features, and services).

The Plan noted that for over 20 years, a North Douglas crossing of Gastineau Channel had been identified as the CBJ's top transportation priority, due to the role this additional access would play in facilitating development of west Douglas Island as well as in providing emergency access in the event the Douglas Island Bridge or another critical travel corridor in the area (North Douglas Highway or Egan Drive) is inaccessible or out-of-service. Identified Implementing Actions include working with DOT&PF to improve North Douglas Highway and other roads, maintaining strong DOT&PF support for the JDNC, and undertaking a planning effort for the North Douglas neighborhood to understand and implement needed multimodal transportation improvements.

4.2.2 CBJ Area Wide Transportation Plan (2001)

The 2001 CBJ Area Wide Transportation Plan defined a framework for transportation projects in the CBJ for the next 20 years. It recommended solutions to transportation problems and concerns throughout the borough, and included recommendations for corridor preservation, transportation demand management, Egan Drive improvements, the JDNC, and land use zoning and development requirements.

The Plan noted the JDNC would provide improved connectivity for all modes of travel and secondary emergency access. It would divert some of the existing vehicle trips from the Douglas Island Bridge but would not eliminate the need for identified capacity and safety improvements to that facility. It noted the Assembly had taken several actions to support the North Crossing, including ranking it as a top transportation priority.

4.2.3 Draft West Douglas Conceptual Plan (1997)

CBJ and Goldbelt, Inc., jointly began conceptual planning of their adjoining properties along approximately eight miles of west Douglas Island through the West Douglas Conceptual Plan (WDCP), which has not been adopted by CBJ and remains in draft form. The area includes 1,740 acres of Goldbelt, Inc. property along the coastal margin and 3,434 acres of CBJ land located immediately interior of the Goldbelt, Inc. property. This area was considered the largest developable block of land accessible to CBJ. The WDCP acknowledged the two parties had different development goals that would need balancing, and that any future development options would require participation from both parties.

The WDCP identified five development areas providing land uses including commercial and institutional development, residential housing with varying densities (approximately 2,050 units), a golf course, marine industrial area, and marine and water access with camping and RV accommodations. At its full build the WDCP provided for a residential population of approximately 7,500 people.

The plan estimated that 70 percent of traffic generated by the development would use the JDNC instead of traveling the North Douglas Highway, which assumed that most trips, after allowing for work trips, would be generally shopping or recreation related. The WDCP proposed a design hourly volume for the JDNC of 961 vehicles.

4.2.4 Juneau Economic Development Plan (2015)

The Juneau Economic Development Plan (JEDP) is a 10-year economic development roadmap for Juneau, to position the community on a path of increasing economic resiliency and prosperity. Eight high-potential economic development initiatives are identified, including enhancing essential infrastructure and promoting housing affordability and availability.

The JEDP recognizes the west Douglas development area and the following infrastructure development opportunities to facilitate the development:

- **Extend North Douglas Highway:** Construct a 2.5-mile pioneer road (one-lane gravel road) with periodic pullouts from the end of North Douglas Highway to support engineering, environmental studies, and planning needed for west Douglas access improvement and development
- **Select Development of a Bench Road:** Use a phased approach to develop a Bench Road as an alternative access that would reduce reliance on a single highway for all North and West Douglas traffic

- **North Douglas/Gastineau Channel Bridge:** A critical access need to fully realize the residential, commercial, industrial, and recreational potential of west Douglas Island. Other important community benefits include providing emergency access in the event the Douglas Island Bridge is inaccessible, improved access for public safety needs, improved travel efficiency between the Juneau mainland and Douglas Island and diverting some traffic from the Douglas Island bridge thereby freeing up some capacity to handle the travel demands of denser development and more people living on west Douglas Island and Douglas.

The plan notes that the JDNC, coupled with a west Douglas Road extension would have a range of important economic benefits for Juneau, including increasing the property tax base and land available for residential development, and creating opportunities to develop a deep-water port facility and moorage at west Douglas.

4.2.5 Fish Creek Estuary Area Plan (2022)

The Fish Creek Estuary Area Plan identifies opportunities for improving habitat and recreation infrastructure in the Fish Creek Estuary. During public outreach activities transportation was identified as one of the barriers that prevent people from participating in recreation activities in the Fish Creek area, and comments also sought the construction of a JDNC.

4.3 Federal Land Management Agency Plans

4.3.1 Mendenhall Wetlands State Game Refuge Management Plan (1990)

The Mendenhall Wetlands State Game Refuge Management Plan provides guidance to Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources (ADNR) and other agencies. The MWSGR is popular for waterfowl hunting, sport fishing, personal use crabbing, boating, wildlife viewing and photography, wetland studies, and hiking.

The management plan states regarding a transportation corridor, that:

“the City and Borough of Juneau may acquire land for a public transportation corridor, including a water corridor, only after the following have been demonstrated: 1) that there is a significant public need for the corridor which cannot reasonably be met off-refuge; 2) that the use of refuge lands are avoided or minimized to the extent feasible including use of subsurface or elevated, no-fill corridor options where feasible; 3) that public access to the refuge is maintained; and 4) that all unavoidable impacts to the refuge and to refuge resources are fully mitigated through restoration, replacement and/or compensation. It is not the intent of this policy to prevent the maintenance of the Gastineau navigation channel. New private, exclusive use transportation corridors will not be authorized within the refuge.”

Activities within the MWSGR must be in accordance with goals related to fish and wildlife populations and their habitat, and to manage the refuge to maintain and enhance public use of fish, wildlife, and refuge lands.

4.3.2 Juneau State Land Plan (1993)

The Juneau State Land Plan is an ADNR Division of Mining Land and Water Plan for state-owned lands and has two main sections: one outlining land management policies that apply throughout the planning area and one describing the management intent for the regions in the planning area, actions that will implement the plan, and how it can be changed. Region 4 contains the MWSGR, and the management intent refers to Alaska Statutes AS 16.20.020 and AS 16.20.034. As required by AS 16.20.034(1), management of the refuge will include provisions for expanding Juneau International Airport, establishing additional transportation corridors, and establishing publicly owned and operated docking facilities. The ADF&G MWSGR Plan contains the policies which guide how CBJ may acquire land for these purposes.

5

TRANSPORTATION CONTEXT



5.0 TRANSPORTATION CONTEXT

5.1 Surface Transportation

All surface traffic analysis is included in the Traffic Safety and Analysis Memoranda (Appendix 7). This section provides a summary of those documents.

5.1.1 Transportation Network

Arterials, collectors, and local roads each comprise one-third of the total 94 miles within the study area. Arterial roads include Egan Drive, Mendenhall Loop Road, and the Glacier Highway. Collector roads are dispersed through Mendenhall Valley to the Mendenhall Peninsula, as well as along Douglas Island and include North Douglas Highway. Local Roads are also interspersed throughout the study area, with most being in the Mendenhall Valley and along the Mendenhall Peninsula.

The DOT&PF manages two-thirds of the roadways within the study area, while CBJ manages the remaining third. Sidewalks are present near downtown Juneau south of Ross Way, and between the Brotherhood Bridge and Old Dairy Road north and south of Egan Drive.

Nearly 90 percent of the 13 miles of sidewalks are regularly or periodically maintained. Separated paths and shoulders are present, and a bicycle lane is present along North Douglas Highway. Bicycles are prohibited along Egan Drive. An on-street bike lane/shoulder exists for much of North Douglas Highway.

There is a shoulder present between the bridge and downtown Juneau. No bicycle or shoulder lanes are present in downtown Juneau. Capital Transit services 64 transit stops with 14 routes, of which five run every weekday between 7:00 in the morning and 7:00 in the evening. One of these routes has 30-minute stop intervals and four have one-hour intervals.

5.1.2 Traffic Operations

Current traffic volumes are shown on Figure 8. An average of 12,500 vehicles cross the Douglas Island Bridge each day, with the majority of the traffic heading south toward Douglas once across the bridge. This is consistent with existing development patterns, where the majority of housing on Douglas is located south of the bridge. Traffic on the North Douglas Highway disperses as the highway travels northward, with average daily traffic counts of approximately 7,900 vehicles at the Douglas Roundabout Northbound Intersection, 3,600 at MP 2 and Eagle Creek, and 2,000 at Fish Creek Road (Eaglecrest intersection). Motorized vehicle traffic accounts for approximately 87 percent of all traffic on Douglas Island. Pedestrians and bicycles account for approximately 12 percent of traffic, and transit accounts for less than one percent of traffic.

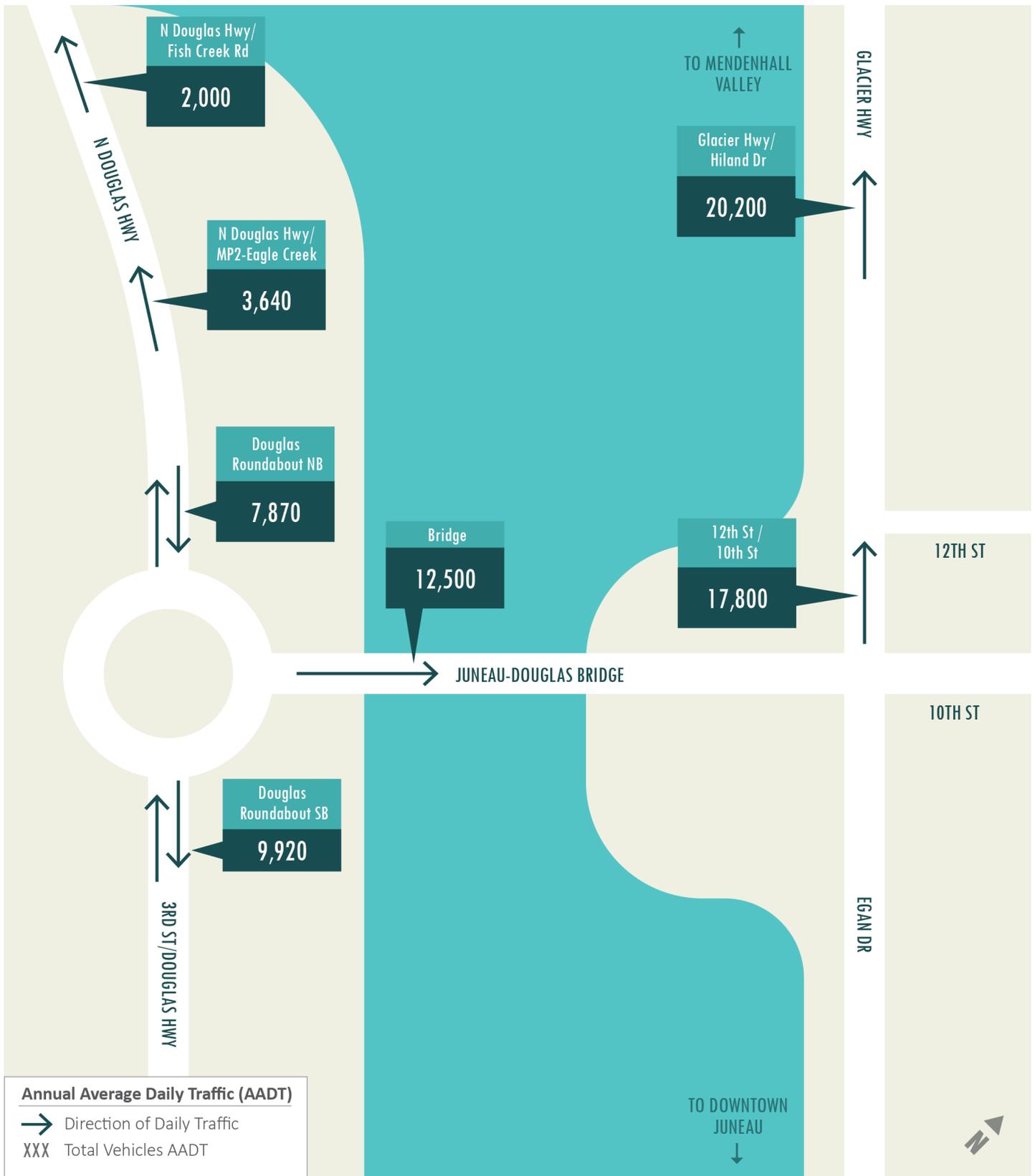


Figure 8: Current (2023) Traffic Volumes

Traffic movements from Juneau to Douglas, and vice versa, rely on the Douglas Island Bridge. A high-level analysis was conducted for motorized traffic on the existing Douglas Island Bridge under existing conditions and in the 2050 design year, assuming a 0.25 percent annual growth rate to consider the segment capacity of the bridge. The analysis also considered operations at the intersections at either end of the bridge (the roundabout on Douglas Highway and the signalized intersection of Egan Drive with 10th Street), as these intersections may limit capacity. The analysis focused on determining if volumes under existing conditions and/or in the 2050 design year suggest the need to construct a second channel crossing.

Intersection Level of Service (LOS) was qualitatively determined² to describe the quality of traffic operations, which uses a letter grade based on average control delay. LOS defines how well vehicle traffic flows along a street or road, and is graded from A to F, with LOS A representing free-flow conditions and LOS F representing severe congestion with stop-and-go flow conditions. The operational analysis for the Douglas Island Bridge indicates the signalized intersection at Egan Drive with 10th Street operates at LOS D during peak hours under existing conditions.

The analysis for the 2050 design year indicates the roundabout at Douglas Highway with the Douglas Island Bridge operates adequately (LOS D or better) during the evening peak under existing conditions. In the morning peak however, under existing conditions there is significant delay experienced by vehicles entering the roundabout from West Juneau/Douglas and continuing onto North Douglas Highway or turning right onto the bridge (towards downtown) (LOS F with queues over 500 feet). The through and right lane is shared and there is a high volume of vehicles wishing to turn right to cross the bridge (more than double the volume of any other movement entering the roundabout), causing congestion. Additionally, vehicles entering the roundabout from North Douglas Highway and continuing onto the Douglas Island Bridge have right-of-way in the roundabout over the vehicles entering from West Juneau/Douglas, exacerbating the congestion.

These conditions indicate that under existing conditions the LOS is failing during the morning peak, with significant congestion being experienced. This situation would only be exacerbated by additional traffic, indicating that improvements to the transportation network are needed to accommodate additional vehicles from natural growth and in a situation where new land uses on Douglas Island add additional traffic volumes.

5.2 Aviation

Juneau International Airport (JNU) is located in the northern portion of the study area in the Mendenhall Valley. The runway at JNU is located entirely within the airport property, but airspace and approach surfaces extend beyond the airport boundaries. These areas exist for the protection of airspace used by aircraft approaching the runway. Aircraft landing or taking off from a runway require an area free of obstructions to operate safely. Part 77 is a series of illustrative surfaces defined as: primary surface, conical surface, approach surface and transitional surface.

The primary surface and other Part 77 surfaces are calculated from the elevation of the related approach end. In this case Juneau Airport's elevation at the approach end of Runway 26 is 23.4 feet above mean sea level (MSL).

The current approach surface for JNU is a 34:1 ratio starting 200 feet from the approach end of Runway 26, while the existing departure surface is a 40:1 ratio starting at the departure end of Runway 08. The 2017 JNU ALP depicts the existing non-precision approach 34:1 slope along with a future precision approach with a 50:1 slope (Figure 9). Due to the permanent nature of the proposed projects, the 50:1 slope was used to determine potential obstruction impacts. Additionally, §14 CFR 77.9 (b) requires filing of construction notification through the Obstruction Evaluation Airport Airspace Analysis Systems (OE/AAA) for any proposed obstruction penetrating a 100:1 slope within 20,000 feet of a runway more than 3,200 feet in length.

² The Florida Department of Transportation 2020 Quality/Level of Service (Q/LOS) Handbook provides guidance for developing and reviewing roadway capacity and Q/LOS at a generalized planning level. Volume tables in the handbook provide generalized annual average daily volumes for roadways by facility type.

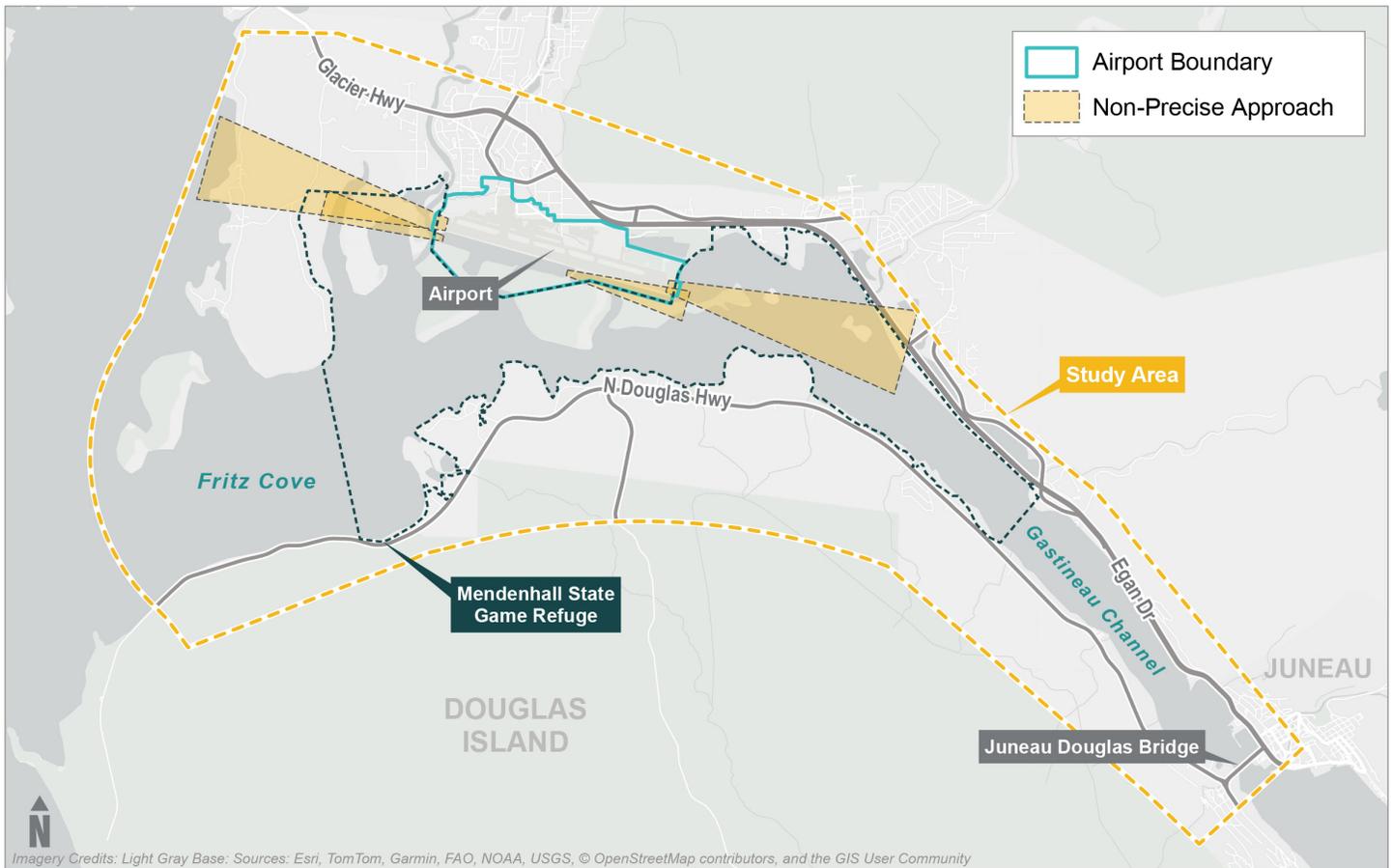


Figure 9: Airport Approaches Within the Study Area

Several of the proposed North Crossing alternatives are located within Juneau International Airport’s Class D airspace, extending from the ground surface to 2,500-feet above MSL. The topography surrounding JNU renders the need for specific navigation routes, including the use of Gastineau Channel as a means of an approach and departure corridor.

The height of each alternative will be measured to assess potential impacts to aviation and air navigation resources such as current and future airspace, airport navigation improvements, and departure requirements and potential penetration of Part 77 surfaces. Additional analyses would also be required to consider the impact of alternatives on airport resources. JNU is currently updating its Airport Master Plan, which should be considered in any future environmental review process.

6

ENVIRONMENTAL SETTING



6.0 ENVIRONMENTAL SETTING

6.1 Overview

This chapter provides a high-level summary of the key elements of the Basic Description of the Environmental Setting (Appendix 6). Resources considered in chapter are consistent with FHWA and DOT&PF environmental review guidelines and include issues raised during the public involvement process. Maintaining a consistent basis of evaluation may facilitate future adoption through incorporation by reference. Resources considered in this chapter were evaluated using a combination of desktop resources and limited field investigations.

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C 327 and a Memorandum of Understanding dated April 13, 2024, and executed by FHWA and DOT&PF.

6.2 Resources Not Present in the Study Area

The following resources are not present within the study area and are therefore not analyzed:

- Coastal barriers and coastal zone management
- Farmlands
- Wild and scenic rivers

6.3 Human Environment

6.3.1 Socioeconomic Conditions

6.3.1.1 Regulatory Framework

Transportation projects have the potential to affect local communities indirectly through changing economic development patterns and land use, or directly through impacts such as real estate acquisition for right-of-way (ROW). Understanding community, social, and economic conditions is critical to determine if proposed transportation improvements affect local populations who live and work in the study area (per Section 109[h] of the Federal Aid Highway Act). Guiding this analysis is the FHWA's Technical Advisory T 6640.8A and Title VI of the Civil Rights Act of 1964.

6.3.1.2 Existing Conditions

Population and Economic Projections

The CBJ is home to approximately 32,300 people (Alaska Department of Workforce and Labor Development [DOWLD], 2022b). Between 1970 and 2020, the city's population more than doubled but nearly all this growth took place in the 1970 and the mid-1980s. In 2005 the city's population was 31,340, and it has grown by less than 1,000 persons or approximately 2.9 percent of the total population since 2005. The CBJ's peak population was an estimated 33,445 in 2015 after a period of strong state revenues and a post-Great Recession rebound in tourism. Since 2015, the state's recession and associated cuts to government employment contributed to a slow drift downward in population (Figure 10).

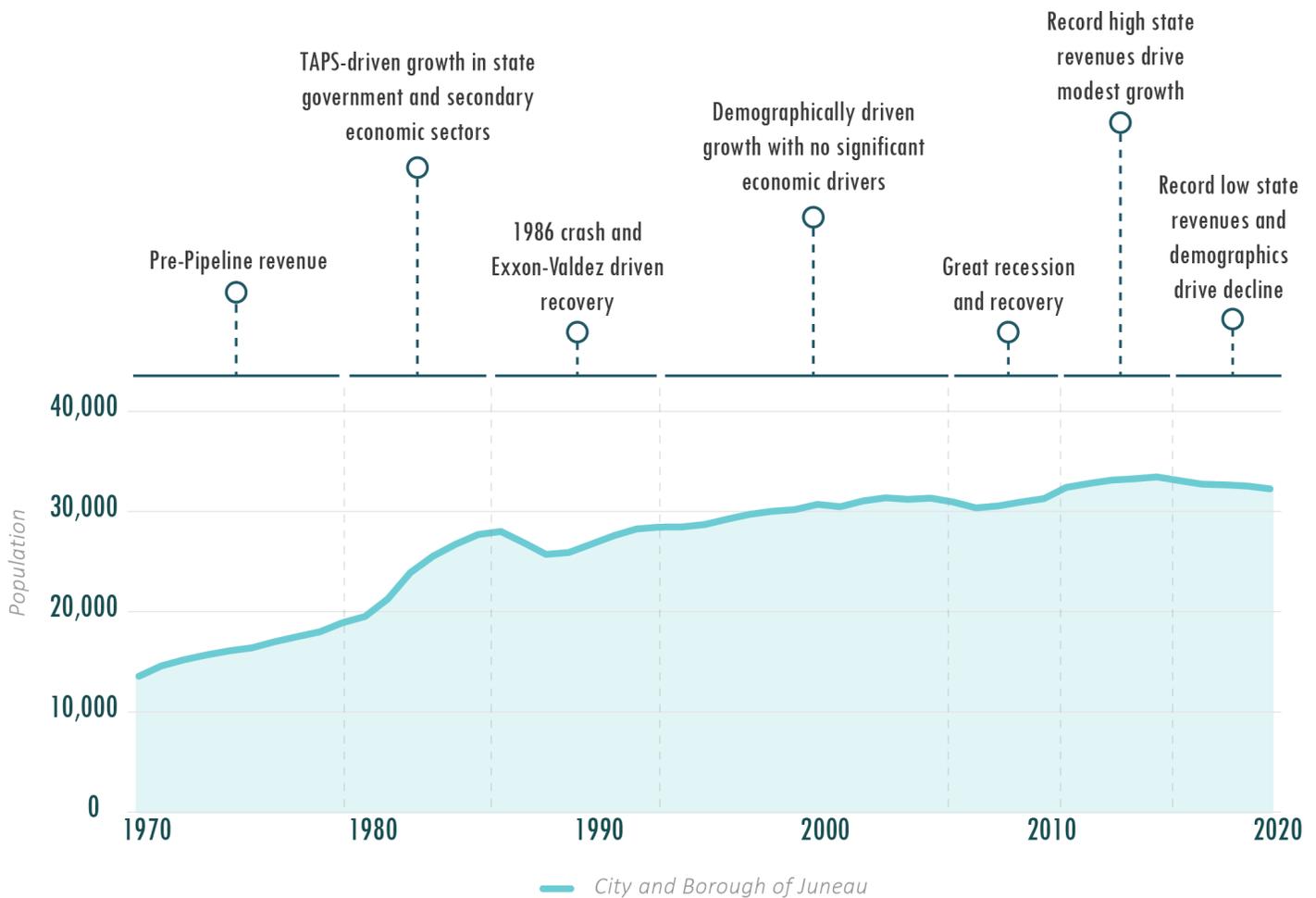


Figure 10: Summary of Population Statistics³

As growth slowed after the turn of this century, the CBJ’s population has aged and continues to age. The senior population (aged over 60 years) more than doubled while the city lost approximately 18 percent of its citizens under the age of 19, three percent of its reproductive age population, and more than eight percent of its middle age population. In twenty years, the median age in Juneau increased from 35.3 to 38.8. Global demographic analyses show that once the average age of a population exceeds roughly 37.5 years of age the population is highly unlikely to be able to sustain itself. Juneau’s median age is well beyond that required for natural growth and moving beyond the level required to sustain a population. The DOWLD estimates that median age by the 2040s will reach 43-44 years of age (Ritchie, 2019) (DOWLD, 2022b).

While CBJ’s population is declining or stagnant, the average size of a household has fallen by more than nine percent in the last 14 years. In 2008, American Community Survey (ACS) data showed that the average CBJ household contained 2.7 persons (Juneau Economic Development Corporation, 2010). The most recent ACS data estimates an average household size of 2.45 persons (U.S. Census Bureau, 2022). Given the same population, smaller household sizes mean there is a need for more housing units. Additional pressure on housing availability is occurring because of the short-term rental market (e.g., Airbnb, VRBO), and new housing development is not keeping up with demand.

³ Johnathan King, *Economic Forecast Discussion*.

Social Groups and Community Cohesion

The top block groups by demographic index⁴ are in downtown Juneau north and south of the Juneau-Douglas Bridge, in the Lemon Creek community south of Lemon Creek, and south of Egan Drive between Old Dairy Road and Mendenhall Loop Road. The lowest demographic indices are present on Douglas Island, in Auke Bay, and south of Glacier Highway west of the Mendenhall River. The percentage of people with low income in the study area is about half that of the national percentage. For the other characteristics including people over the age of 64, people of color, and people with disabilities, the study area has similar percentages to Alaska statewide and nationally.

From 2014 to 2019, the percentage of people over the age of 64 and people of color grew, while the other characteristics stayed approximately the same. While it is uncertain if these trends will continue, percentages of people over the age of 64 and people of color continuing to grow is a possibility.

In analyzing each demographic characteristic separately, downtown Juneau south of the bridge has a percentage of people over 64 that is two-and-a-half times (35 percent) higher than the study area percentage. Additionally, downtown Juneau south of the bridge has the highest percentage per block group of individuals identifying as disabled. North and south of Egan Drive between Vanderbilt Road and Mendenhall Loop Road has a high percentage of people of color (70 percent), doubling the study area percentage. Half of the population near Egan Drive between Switzer Creek and Old Dairy Road are low income.

Transit

Within the study area 14 percent of the population of workers were identified as not working from home and did not take a car, truck, or van to work. While the percentage in the study area is about equal to the statewide percentage (15 percent), both are 1.5 times the national percentage. The percentage in the study area is less than other Alaska coastal communities such as Sitka (25 percent) and Kodiak (18 percent) but nearly double the percentage of larger cities in Alaska such as in the Municipality of Anchorage (eight percent) and Fairbanks (seven percent). Compared to larger cities, commuting patterns in the study area appear to be driven by a higher percentage of people using public transportation and walking. The percentage did not change significantly from 2014 (15 percent).

Traveling to work by walking, biking, motorcycle, or taxicab was not limited to those with short commute times. Most trips by walking were greater than 10 minutes, with three-quarters greater than 10 minutes for people bicycling or using a motorcycle or taxicab. The percentage of travel times greater than 20 minutes remains sizeable for active transportation modes at greater than 20 percent. The highest percentages are in downtown Juneau, and along Radcliffe Road and Berners Avenue just east of the Mendenhall River, and in Lemon Creek west of Alaway Avenue. An average of 50 percent of workers did not take a car, truck, or van to work in downtown Juneau. These generally correspond with where the density of transit routes and stops are highest. The lowest percentages occurred on Douglas Island, near the airport, and east of Mendenhall Loop Road north of Egan Drive. In these areas, an average of six percent of workers did not take a car, truck, or van to work (Figure 11).

⁴ Demographic Index is based on the average of demographic indicators; high indices demonstrate large variability, low indices demonstrate low variability

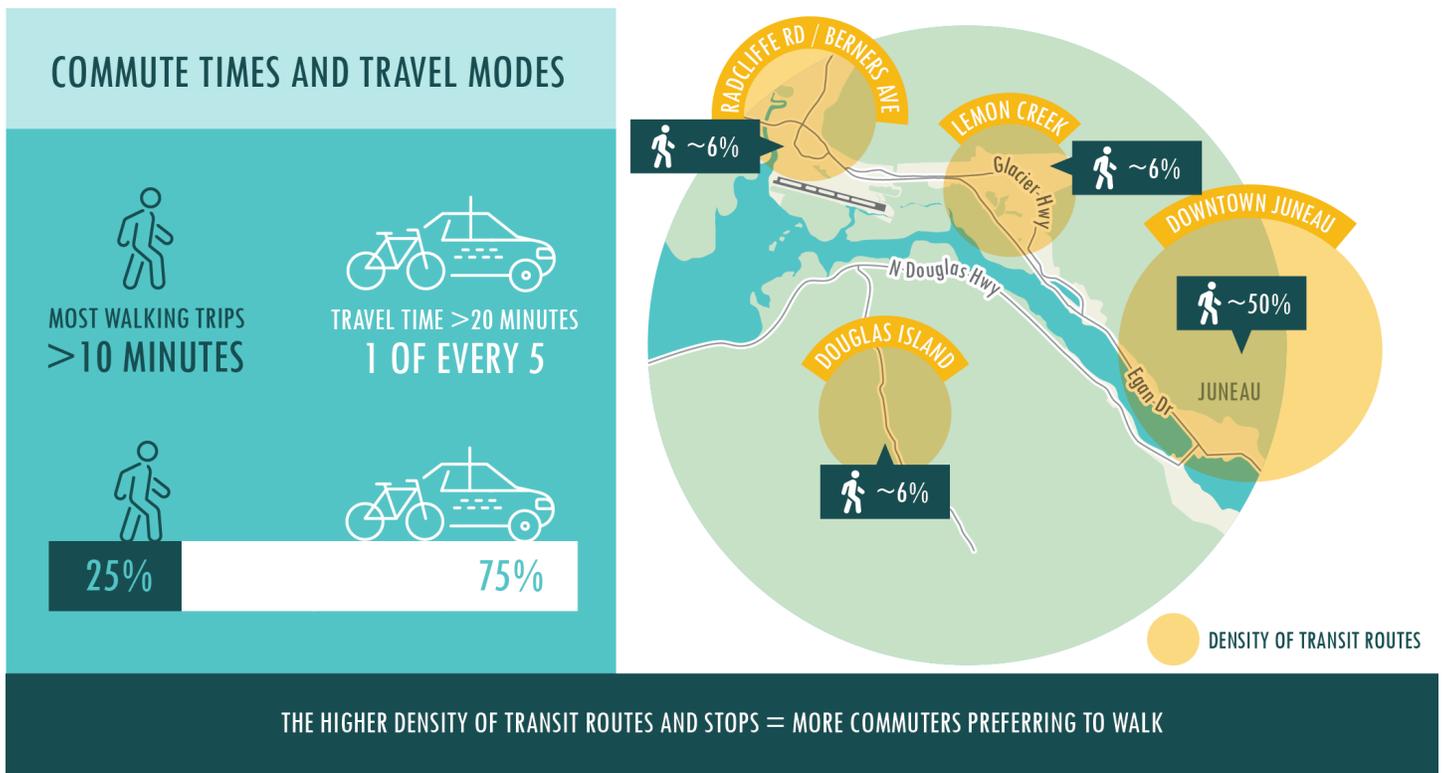


Figure 11: Statistical Summary Related to Transit Modes/Commute Times

Schools

The study area has a lower percentage of school-aged children compared to Alaska and the United States. This, in tandem with the higher percentage of people over the age of 64, demonstrates the older population in the study area. The percentage in 2019 did not vary significantly from the percentage in 2014 (22 percent).

The highest percentages of school-aged children (average of 27 percent) are along Egan Drive between Switzer Creek and Mendenhall Loop Road and along Glacier Highway between the Mendenhall River and Auke Lake. The lowest percentages are in downtown Juneau, Auke Bay, and west of Mendenhall Loop Road north of Egan Drive, with an average of 12 percent. Even though downtown Juneau has a lower percentage of school-aged children, five of the six schools in the study area are located there.

It should be noted that at the commencement of the 2024-2025 school year the Juneau School Board voted to consolidate seventh and eighth grades at Juneau-Douglas High School. Data relating to travel modes has not been updated to account for these changes.

6.3.2 Land Use Designations

6.3.2.1 Regulatory Framework

The list below describes the regulatory framework related to land use.

- **Existing Land Use, Zoning and Ownership:** This chapter summarizes relevant plans and policies related to land use within the study area. This review is intended to facilitate consistency and alignment with adopted/applicable land use plans, existing land uses, zoning, and land ownership data within the study area.
- **Native Allotments:** The Alaska Native Allotment Act of 1906 (34 Stat. 197), amended in 1956, authorized land transfers to individual Alaska Natives and authorized the Secretary of the Interior to convey up to 160 acres of land to individual Alaska Natives. The Bureau of Indian Affairs (BIA) provides land management services to Alaska Native landowners and any rights-of-way request of an allotment would require a lengthy BIA approval, including a NEPA review.

- **Section 4(f):** Section 4(f) of the U.S. Department of Transportation Act of 1966 was enacted to protect publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public and private historic sites of local, state, and national significance. Federally funded transportation projects cannot impact Section 4(f)-protected properties unless there are no feasible and prudent avoidance alternatives and all possible planning to minimize harm has occurred. Prior to approving a project that “uses” a Section 4(f) resource, FHWA must find that there is no prudent or feasible alternative that completely avoids the 4(f) resource. A historic site is considered significant, for Section 4(f) purposes, if it is on or determined eligible for listing on the National Register of Historic Places (NRHP). Unlike the other Section 4(f) property categories—parks, recreation areas, and refuges—historic sites do not require public ownership to qualify for protection under Section 4(f).
- **Section 6(f):** Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities (as well as funding for shared federal land acquisition and conservation strategies). The program is intended to create and maintain a nationwide legacy of high-quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States. Section 6(f)(3) of the LWCF Act requires that no property acquired or developed with these funds be converted to a non-recreational purpose without the approval of the National Park Service. Importantly, Section 6(f) applies to all transportation projects (and others) involving possible conversions of the property, whether or not federal funding is being used for the project.

6.3.2.2 Existing Conditions

Existing Land Use

The study area is approximately 16,127 acres (Figure 12), and it encompasses a broad range of land uses including commercial, residential, recreation, conservation lands and native allotments. Land development within the study area has a linear character due to steep mountainous terrain, except for development centers in the Mendenhall Valley, downtown Juneau, and the Lemon Creek area in the north-eastern portion of the study area. The primary residential and shopping centers in the borough are in downtown Juneau, Douglas, Lemon Creek and Mendenhall Valley.

The MWSGR and the airport are two major unique land use features in the study area. The MWSGR is a large game refuge of approximately 3,800 acres and extending approximately nine miles along the shores of the Gastineau Channel, from Salmon Creek to the eastern side of the Mendenhall Peninsula. The Alaska Legislature established the MWSGR in 1976 (Alaska Statute 16.20.034) to protect natural habitat and game populations, especially waterfowl, and to provide recreational opportunities. ADF&G manages the refuge habitat, wildlife, and human uses, while the Alaska Department of Natural Resources (ADNR) manages the surface and subsurface estate. The MWSGR is closed to hunting, except for waterfowl, snipe, and cranes. No person may use any off-road or all-terrain vehicle, motorcycle, or other motorized vehicle (except a boat) within the refuge. All waterfowl hunters are required to complete ADF&G’s Basic Hunter Education course, and all hunters must register with the ADF&G and carry proof of registration in the field. Hunting season is between September 1 and December 16 in odd-numbered years and between September 16 and December 31 in even-numbered years (2021-2022 Migratory Game Bird Hunting Regulations, ADF&G). The Southeast Alaska Land Trust (SEALT) owns land within the MWSGR that is set aside to be conserved. Some of these properties, including properties on Sunny Point and Hendrickson Point, are mitigation sites.

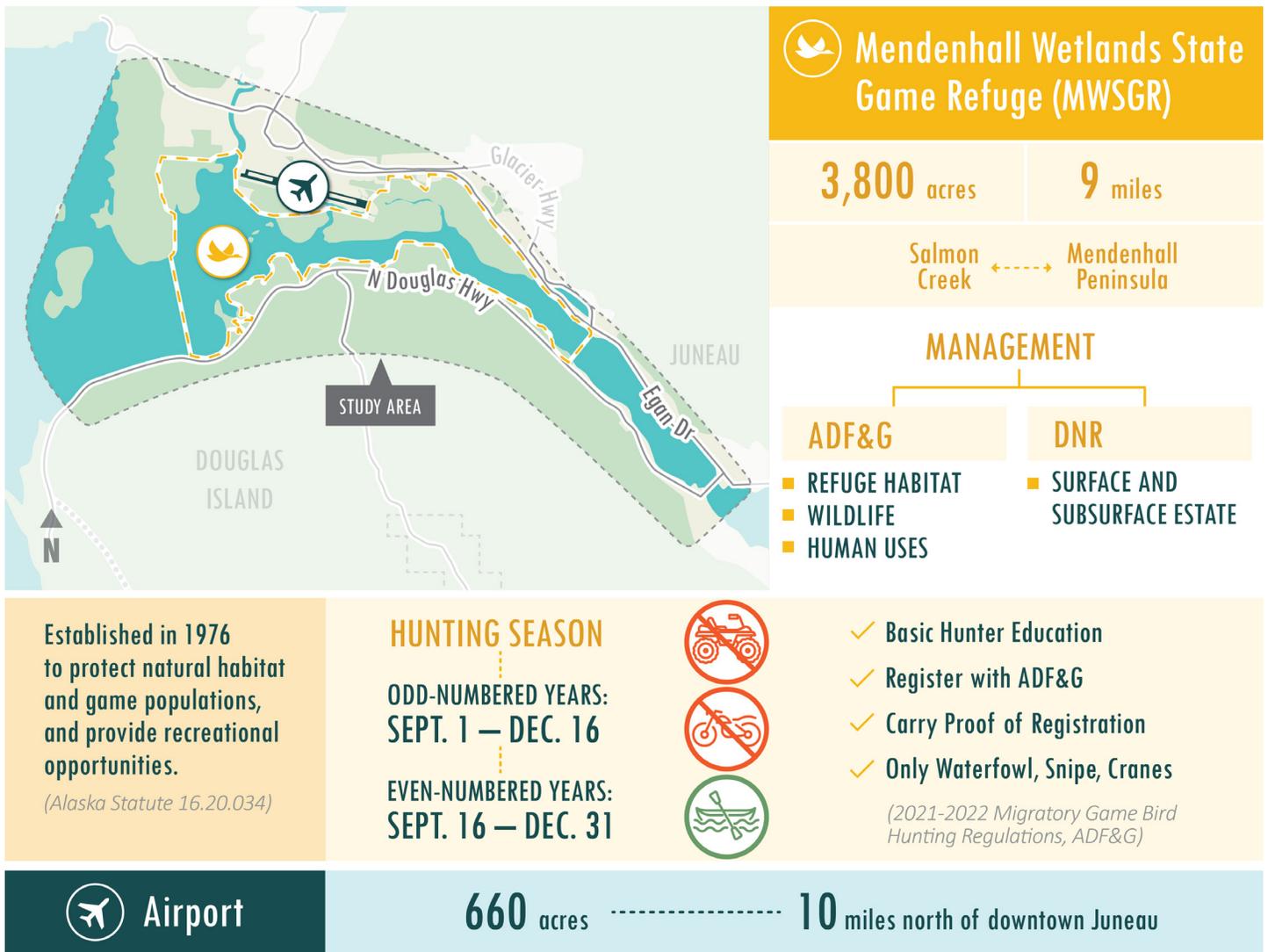
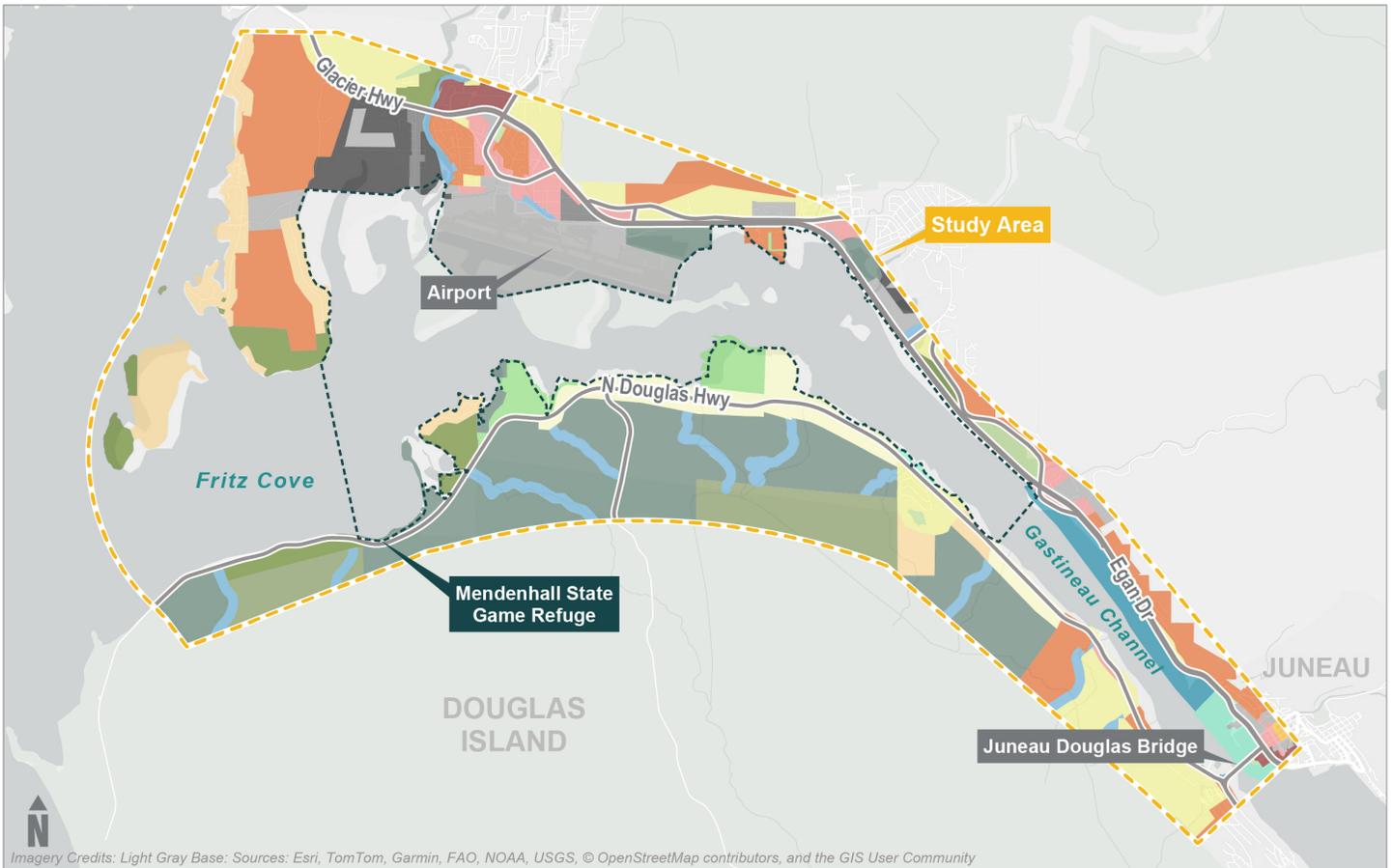


Figure 12: Land Uses in Study Area

The airport covers approximately 660 acres and is bounded by the MWSGR on three sides and by private property and public highways to the north. It is located approximately 10 miles north of downtown Juneau.

Figure 13 shows the location of the identified land uses in the study area using land use designations from the CBJ Comprehensive Plan, and Table 4 provides the approximate acres of each type of land use within the study area. Descriptions of the 17 types of land use present in the study area are in the Basic Description of Environmental Setting (Appendix 6).



Land Use Designations

Natural Resource

- Recreational Resource
- Resource Development
- Natural Park Area
- Recreational Service Park
- Conservation Area
- Stream Protection Corridor

Commercial / Industrial

- Commercial
- Marine Commercial
- Waterfront Commercial/ Industrial
- Light Industrial
- Heavy Industrial

Public

- Institutional & Public Use

Residential

- Rural Dispersed Residential
- Rural/ Low Density Residential
- Urban/ Low Density Residential
- Medium Density Residential - Single Family Detached
- Medium Density Residential
- Traditional Town Center

Figure 13: Land Use Designations

Table 4: Land Uses in Study Area by Area

Land Use Designation	Acres
Commercial (C)	270.25
Conservation Area (CA)	217.60
Heavy Industrial (HI)	290.53
Institutional and Public Use (IPU)	947.79
Light Industrial (LI)	72.93
Marine Commercial (MC)	119.88
Medium Density Residential (MDR)	1,048.74
Medium Density Residential – Single Family Detached (MDR-SF)	8.97
Natural Park Area (NP)	432.78
Resource Development (RD)	2,066.29
Rural Dispersed Residential (RDR)	444.77
Recreational Resource (REC)	601.34
Rural/Low Density Residential (RLDR)	600.49
Recreational Service Park (RS)	94.34
Stream Protection Corridor (SC)	367.14
Traditional Town Center (TTC)	98.92
Urban/Low Density Residential (ULDR)	1,456.01
Area Without Land Use Designation	6988.23
Total Study Area	16,127.00

Zoning

Zoning indicates where elected officials, planning professionals, and the community believe various types of land use should be located. It is a type of land use regulation adopted by the CBJ that divides the community into zones and imposes land development requirements within each zone. Zoning typically regulates allowable land uses, site and building requirements, and the allowable density of each use. Zoning designations adopted by the CBJ within the study area consist of residential (various densities), commercial (general, light and waterfront), industrial, waterfront industrial, mixed use, and rural reserve. Regulatory requirements for each specific zoning designation are addressed in the Juneau, Alaska Code of Ordinances, Title 49 Land Use. Table 5 provides the approximate acres of each zoning designation within the study area.

Table 5: Area of Zoning Designation in Study Area

Land Use Designation	Acres
(D1) Single Family	914.86
(D3) Single Family/Duplex	642.57
(D5) Single Family/Duplex	909.73
(D10) Single Family	47.77
(D15) Multifamily	168.38
(D18) Multifamily	204.53
(GC) General Commercial	194.81
(I) Industrial	1,100.70
(LC) Light Commercial	269.11
(MU) Mixed Use	4.72
(MU) Mixed Use 2 (Willoughby)	5.90
(RR) Rural Reserve	4,243.48
(WC) Waterfront Commercial	170.47
(WI) Waterfront Industrial	52.04
D1(T)D3	421.72
D1(T)D5	14.81
D3	1.35
D3(T)D5	18.87
D5(T)D18	20.98
Area Without Zoning Designation	6,720.20
Total Study Area	16,127.00

Land Ownership

Approximately 4,995 acres of the land in the study area is publicly owned by either a municipality, the state or the federal government, while approximately 2,999 acres is owned by private individuals, of which 54 acres are under multiple ownership and 10 acres are comprised in three Native Allotments.

Table 6 summarizes the categories of municipal, state, federal, multiple, and private ownership and acreage of each within the study area.

Table 6: Summary of Land Ownership Categories in Study Area

Land Use Designation	Acres
Municipal	4,777.88
State	118.79
Federal	98.48
Multiple	54.44
Private*	3,009.17
No Data	8,068.24
Total Study Area	16,127.00

Native Allotments

Three patented native allotments and one native allotment application in process were found within the preliminary study area (Figure 14), and Table 7 provides details of each allotment.

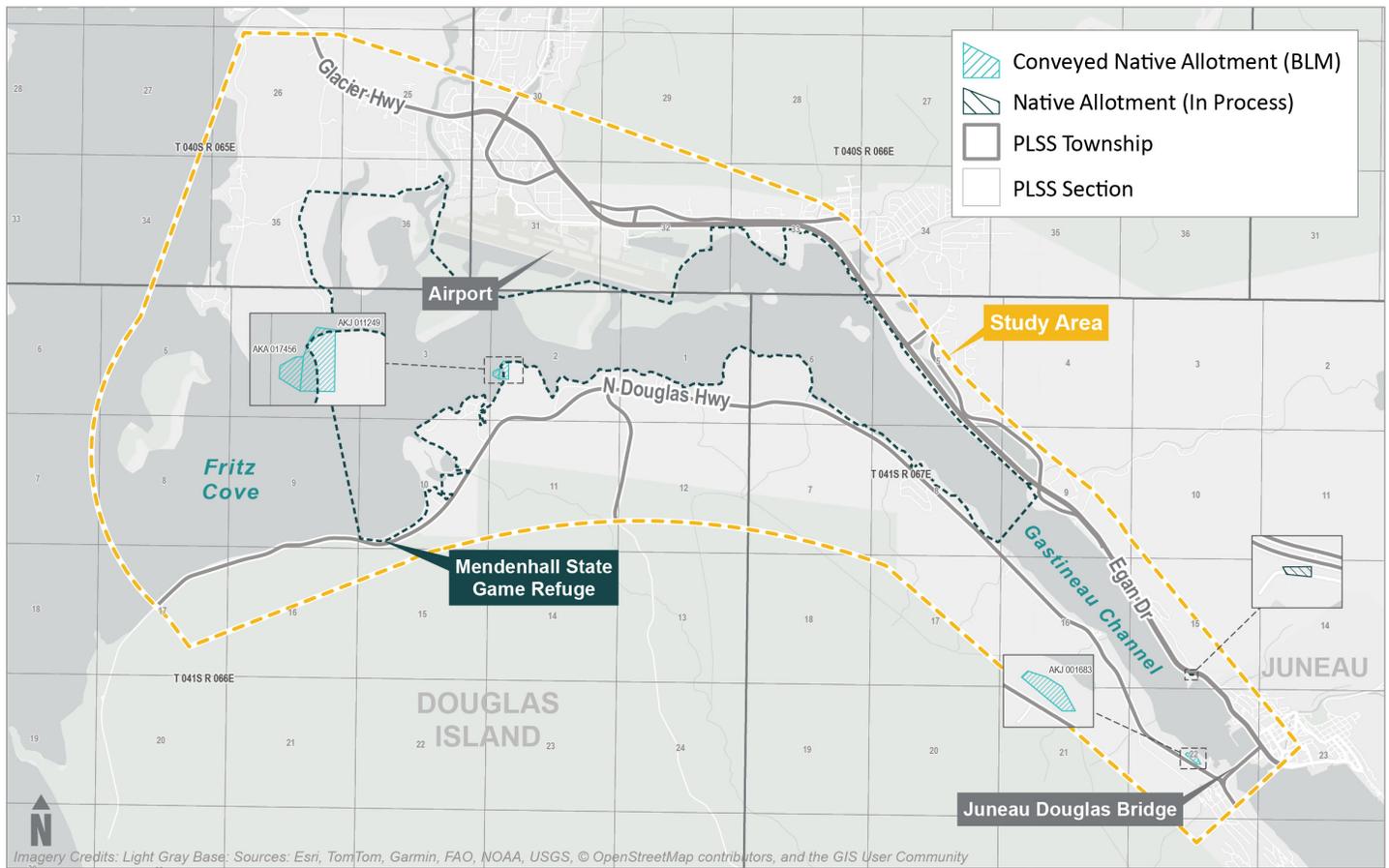


Figure 14: Native Allotments

Table 7: Native Allotments within Study Area

Township	Case Study	Case Number	Acres	Document Number	Document Date	Owner	Status
C041S066E							
Section 2	256100	AKA 017456	1.7	NA0019551004	8/31/1955	Gamble, Jack (Deceased)	Patented
Section 2	256100	AKJ 011249	5.81	NA0019630621	6/21/1963	Kunz, Edward N. SR.	Patented
C041S067E							
Section 22	256100	AKA 001683 & AKJ 001683	2.61	NA0019200428	4/28/1920	Nakatak, Jim (Deceased)	Patented
Sections 16, 21, 21	256100	AKA 002902	160	Denied	N/A	Joseph, Daniel	Denied
Section 15	256100	AKJ 002907	0.5	In Process	N/A	Shown as: LANDOWNER PRIVATE	In Process – Appears to be contested as MTP shows conveyed via Patent 1051162

Section 4(f) and Section 6(f)

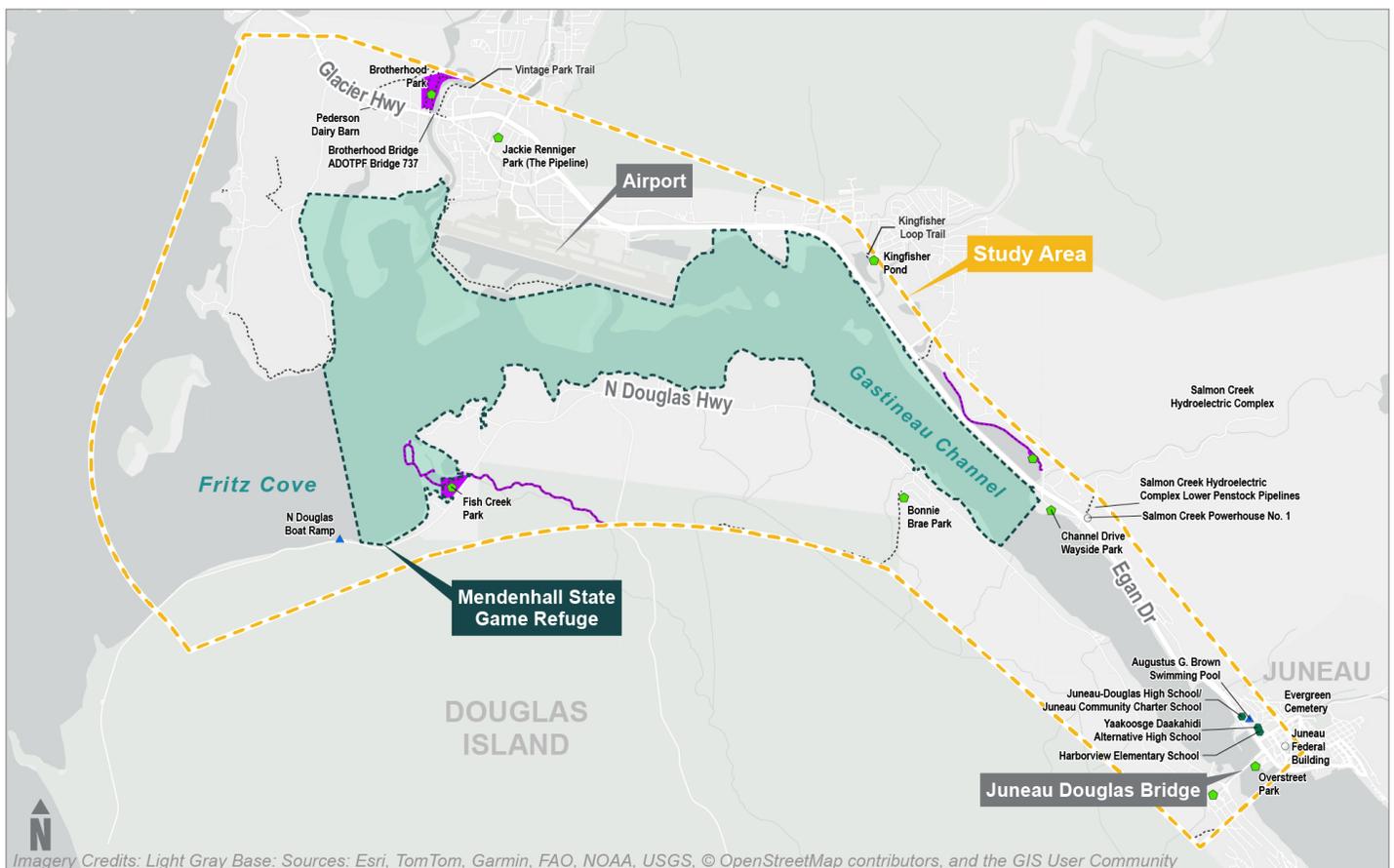
Section 4(f) Historic Resources

Section 4(f) historic resource data was derived from the Alaska Heritage Resources Survey (AHRs) database maintained by the ADNR, Office of History and Archaeology (OHA). The AHRs database was queried on March 14, 2022, to identify known and recorded cultural resource locations using the study area extent. The AHRs is a restricted online database of cultural resources within the State of Alaska. It contains a mapping module that allows authorized users to upload shapefiles in point, line, or polygon geometries and run extract operations to identify previously recorded cultural resource sites within any given area. AHRs data also includes property type and eligibility status for listing in the NRHP.

Eight properties within the study area are eligible for listing on the NRHP, although no properties are listed.

Public/Recreational Section 4(f) and Section 6(f) Properties

The study area contains 37 potential 4(f) properties, six of which are also 6(f) resources. Twenty 4(f) properties function as recreational resources including trails, a swimming pool, a state recreation area, and a pond. The study area also contains eight parks, eight known historic properties, and one wildlife refuge with 4(f) protections, as illustrated in Table 8 and Figure 15.



Imagery Credits: Light Gray Base: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Section 4(f) Property Type

- ◆ Park
- ▲ Recreation
- Playground
- Trail
- Mendenhall Wetlands State Game Refuge

Section 6(f) Property Type

- Trail
- Park

*Confidential Historic Sites Not Shown

Figure 15: Section 4(f)/Section 6(f) Properties in Study Area

Table 8: Section 4(f)/Section 6(f) Properties in Study Area

Property Name	Management Agency	Property Type	Section 6(F)	Function
Airport Dike Trail	City and Borough of Juneau Airport	Trail	No	Recreation
Anne Coleman Beach Access Trail	City and Borough of Juneau	Trail	No	Recreation
Augustus G Brown Swimming Pool	City and Borough of Juneau	Recreation	No	Recreation
Blueberry Hill Trail	City and Borough of Juneau	Trail	No	Recreation
Bonnie Brae Park	City and Borough of Juneau	Mini Park	No	Park
Bonnie Brae Trail	City and Borough of Juneau	Trail	No	Recreation
Brotherhood Bridge ADOTPF Bridge 737	SHPO and landowners	Structure	No	Historic Site
Brotherhood Park	City and Borough of Juneau	Semi-Primitive Areas	Yes	Park
Cedar Park	Alaska Housing Finance Corporation	Mini Park	Yes	Park
Channel Wayside Park	City and Borough of Juneau	Special Use Areas	No	Park
Cheex Equestrian Trail	City and Borough of Juneau	Trail	No	Recreation
Dan Moller Trail	U.S. Forest Service	Trail	No	Recreation
Evergreen Cemetery	SHPO and landowners	Site	No	Historic Site
Fish Creek Park	City and Borough of Juneau	Semi-Primitive Areas	Yes	Park
Fish Creek Trail	City and Borough of Juneau	Trail	Yes	Recreation
Heintzelman Ridge Trail	City and Borough of Juneau	Trail	No	Recreation
Jackie Renniger Park (The Pipeline)	City and Borough of Juneau	Special Use Areas	No	Park
Johnson Creek State Recreation Site	Department of Natural Resources	Recreation Site	No	Recreation
Juneau Federal Building (Hurff A. Saunders Federal Building and Robert Boochever U.S. Courthouse)	SHPO and landowners	Building	No	Historic Site
Kaxdigoowu Heen Dei Trail ¹⁰	City and Borough of Juneau	Trail	No	Recreation
Kingfisher Loop Trail	City and Borough of Juneau	Trail	No	Recreation
Kingfisher Pond	City and Borough of Juneau	Semi-Primitive Areas	No	Recreation

¹⁰ Consists of hiking, paved, and equestrian trails near Mendenhall River

Property Name	Management Agency	Property Type	Section 6(F)	Function
Lemon Creek Trail	City and Borough of Juneau	Trail	No	Recreation
Mendenhall Peninsula Trail	City and Borough of Juneau	Trail	No	Recreation
Mendenhall Wetlands State Game Refuge and access points	Department of Fish and Game	State Game Refuge	No	Refuge
North Douglas Boat Launch Ramp	City and Borough of Juneau	Recreation	No	Recreation
Overstreet Park	City and Borough of Juneau	Special Use Areas	No	Park
Pederson Dairy Barn	SHPO and landowners	Building	No	Historic Site
Salmon Creek Dam Trail	City and Borough of Juneau	Neighborhood Park	No	Recreation
Salmon Creek Hydroelectric Complex	SHPO and landowners	District	No	Historic Site
Salmon Creek Hydroelectric Complex Lower Penstock Pipelines	SHPO and landowners	Structure	No	Historic Site
Salmon Creek Powerhouse No. 1	SHPO and landowners	Site	No	Historic Site
Treadwell Ditch and Maintenance Trail, Main Branch	SHPO and landowners	Structure	No	Historic Site
Treadwell Ditch Trail	City and Borough of Juneau, U.S. Forest Service	Trail	No	Recreation
Twin Lakes Park	City and Borough of Juneau	Neighborhood Park	Yes	Park
Twin Lakes Trail	City and Borough of Juneau	Trail	Yes	Recreation
Vintage Park Trail	City and Borough of Juneau	Trail	No	Recreation

6.3.3 Historic and Cultural Resources

6.3.3.1 Regulatory Framework

Historic Properties are cultural resources that are listed or may be eligible for inclusion on the NRHP. Cultural resources may include buildings, structures, sites, objects, or districts more than 45 years old. Historic Properties are afforded special consideration by Section 106 of the National Historic Preservation Act of 1966, as amended. The Section 106 process seeks to accommodate historic preservation concerns with the needs of Federal undertakings through consultation among the agency official and other parties with an interest in the effects of the undertaking on historic properties, commencing at the early stages of project planning. The goal of consultation is to identify historic properties potentially affected by the undertaking, assess the project’s potential effects and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

6.3.3.2 Existing Conditions

The AHRS is a restricted online database of cultural resources within the State of Alaska that is limited to known and documented cultural resources and is not a conclusive inventory. In total, 147 AHRS properties are recorded within or intersecting the extent of the study area. Of these 147 properties, eight have been determined ELIGIBLE for listing on the NRHP, 32 have been determined NOT ELIGIBLE for listing on the NRHP, and 107 have not been evaluated for their eligibility for listing in the NRHP. Table 9 summarizes AHRS sites and their NRHP Eligibility Status.

Table 9: AHRS Property Types and NRHP Eligibility Status in the Study Area

National Register Eligibility Status					
Property Type	Number of Properties	Listed or Determined Eligible	Not Eligible or Needs Re-Evaluation	Not Evaluated	Status Pending / Closed
Building	115	2	19	94	0
District	2	1	0	1	0
Site	16	2	8	5	1
Structure	14	3	5	5	1
Totals:	147	8	32	105	2

6.4 Natural Environment

6.4.1 Geologic Hazards and Geotechnical Considerations

6.4.1.1 Regulatory Framework

The use and extraction of soil and groundwater is regulated through ADNR. The provisions for general land use are contained in 11 AAC 96 and apply to any state-owned land along existing and proposed corridors. The use of large amounts of water (more than 30,000 gallons per day) is regulated by 11 AAC 93 and temporary groundwater use for large construction dewatering projects is governed by 18 AAC 72.

The Alaska Historic Preservation Act, AS 41.35.200, prohibits the appropriation, excavation, removal, injury, or destruction of any state-owned paleontological site without written approval from the ADNR Commissioner. The Paleontological Resources Preservation Act (PRPA), codified as 16 U.S.C. 470aaa et seq., protects paleontological resources on federal lands, requiring permits for collection and allowing casual collecting of common invertebrate and plant fossils without a permit in certain areas.

6.4.1.2 Existing Conditions

The study area spans the northwest side of mainland Juneau across Gastineau Channel/ Mendenhall Wetlands to the northwest end of Douglas Island. The bedrock of the Juneau area consists of layered greenstone, graywacke, slate, greenschist, and metavolcanic flow breccia that were formed mainly during the Mesozoic age. Unconsolidated material deposits were placed over the bedrock during the Quaternary age as a result of glacial advances and retreats. The unconsolidated material consists of mass-wasting deposits, glacial deposits, alluvial deposits, marine deposits, and glaciomarine deposits. Due to the proximity of the active tectonic boundary between the Pacific Ocean and North American plates, the study area has experienced affects from strong earthquakes. Historically, earthquake epicenters have been west of the study area along active plate boundary, however the Juneau area has been repeatedly shaken by earthquakes. Within this study area the Gastineau Channel Fault, an inactive splay of the plate boundary, is mapped along Gastineau Channel then trends onshore north of the Juneau International Airport.

Geotechnical Considerations

Developed areas of Juneau are covered with a surficial layer of manmade fill consisting of poorly graded gravel with sand and silt to sand with gravel and silt; the thickness of fill varies, but is expected to be deeper near shorelines, drainages, and areas of peat/muskeg. Underlying the fill material, and occasionally exposed at the surface, native material ranges from colluvium and talus near the base of steep slopes, dense glacial till, soft glaciomarine deposits, deltaic sands and silts, or exposed bedrock. Materials within Gastineau Channel and Mendenhall Wetlands are mapped as marine intertidal deposits of sandy silt, silty gravel with sand and sandy gravel. Surface material onshore Douglas Island ranges from areas of peat to glaciomarine deposits silty sand over bedrock and areas of exposed surface bedrock. Groundwater is anticipated to be variable with location. Within Gastineau Channel and Mendenhall Wetlands surface and groundwater is anticipated to be tidally influenced.

Geological Hazards

The most considerable geological hazard within the study area is earthquake induced liquefaction, specifically within Gastineau Channel and Mendenhall Wetlands areas. Marine intertidal deposits within these low lying areas are anticipated to be saturated with low densities, having the potential for liquefaction. Glacial outburst flooding has occurred in the Mendenhall Valley almost every year since 2011 (Kienholz, et al. 2020). Outburst floods occur when water dammed by the glacier suddenly releases and floods downstream areas causing inundations, erosion, and scour that must be considered in the bridge design for routes crossing the Mendenhall River. Isostatic rebound (the upward movement of land mass after the weight of ice sheets or glaciers has been removed) from the Mendenhall Glacier retreating produces a risk of differential displacement along roadways and bridges. Flooding as a result of Salmon Creek dam failure has also been identified as a potential hazard to Egan Drive and any associated alternative. Additionally, avalanches, landslides, and rock fall present hazards along the base of steep slopes; the northeastern portion of the study area along mainland Juneau contains steep slopes with the potential to release snow, surficial material, and/or rock that could impact selected routes that are below these slopes.

Paleontological Resources

There are no paleontological resources documented in the study area. The nearest identified paleontological resource area is Glacier Bay National Park and Preserve which the National Park Service describes as one of 232 fossil bearing national parks.

6.4.2 Hydrology, Water Quality, and Floodplains

6.4.2.1 Regulatory Framework

The list below describes the regulatory framework related to Hydrology, Water Quality and Floodplains.

- **Water Quality:** Section 303, subsection (d) of the Clean Water Act requires the State of Alaska to develop a list, subject to Environmental Protection Agency (EPA) approval, of waterbodies that do not meet water quality standards. When water quality fails to meet state water quality standards, the Alaska Department of Environmental Conservation (ADEC) determines the causes and sources of pollutants in a sub-basin assessment and sets maximum pollutant levels, called total maximum daily loads (TMDL). The TMDLs set by ADEC become the basis for implementation plans to restore water quality to a level that supports state designated beneficial water uses. The implementation plans identify and describe pollutant controls and management measures to be undertaken (such as best management practices), the mechanisms by which the selected measures would be put into action, and the individuals and entities responsible for implementation projects.
- **Floodplains:** Floodplains generally encompass lowlands which adjoin the channel of a river, stream, or watercourse, ocean, lake, or other body of standing water, which have been or may be inundated by flood water (USACE 2024). Floodplains are important physical features that may affect structures within their extent and can be affected by construction activities. Executive Order 11988, Floodplain Management, requires federal agencies to avoid to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities” for the following actions:
 - acquiring, managing, and disposing of federal lands and facilities
 - providing federally-undertaken, financed, or assisted construction and improvements
 - conducting federal activities and programs affecting land use, including but not limited to, water and related land resources planning, regulation, and licensing activities

- **Federal-aid Policy Guide, 23 CFR 650, Bridges, Structures, and Hydraulics:** provides “policies and procedures for the location and hydraulic design of highway encroachments on flood plains, including direct Federal highway projects administered by the FHWA.” This document defines “base flood” as the “flood or tide having a 1-percent chance of being exceeded in any given year” and “base flood plain” as the “area subject to flooding by the base flood.”
- **Navigable Waters:** Federal and state definitions of navigable waters differ as federal jurisdiction applies to waters subject to the ebb and flow of the tide, and/or are used or have been used for interstate or foreign commerce and state jurisdiction applies to tidally influenced areas and rivers/streams used for commerce or travel. The United States Army Corps of Engineers (USACE) has jurisdiction for structures constructed in or over navigable waters of the United States (US). Navigable waters of the US are areas below the mean high water (tidal areas).

6.4.2.2 Existing Conditions

Hydrology and Water Quality

This chapter describes the hydrologic characteristics of the study area, including waterbody types, watershed boundaries, floodplains and impaired waterbodies. There are 25 named creeks in the study area and eight drainage Basins that intersect with the study area at the hydrologic unit codes 14 watershed level (Figure 16). Five waterbodies identified as ‘impaired’ within, or 1,000 feet from the study area include Vanderbilt Creek, Lemon Creek, Duck Creek, Jordan Creek, and Peterson Hill Creek. All have approved TMDLs.

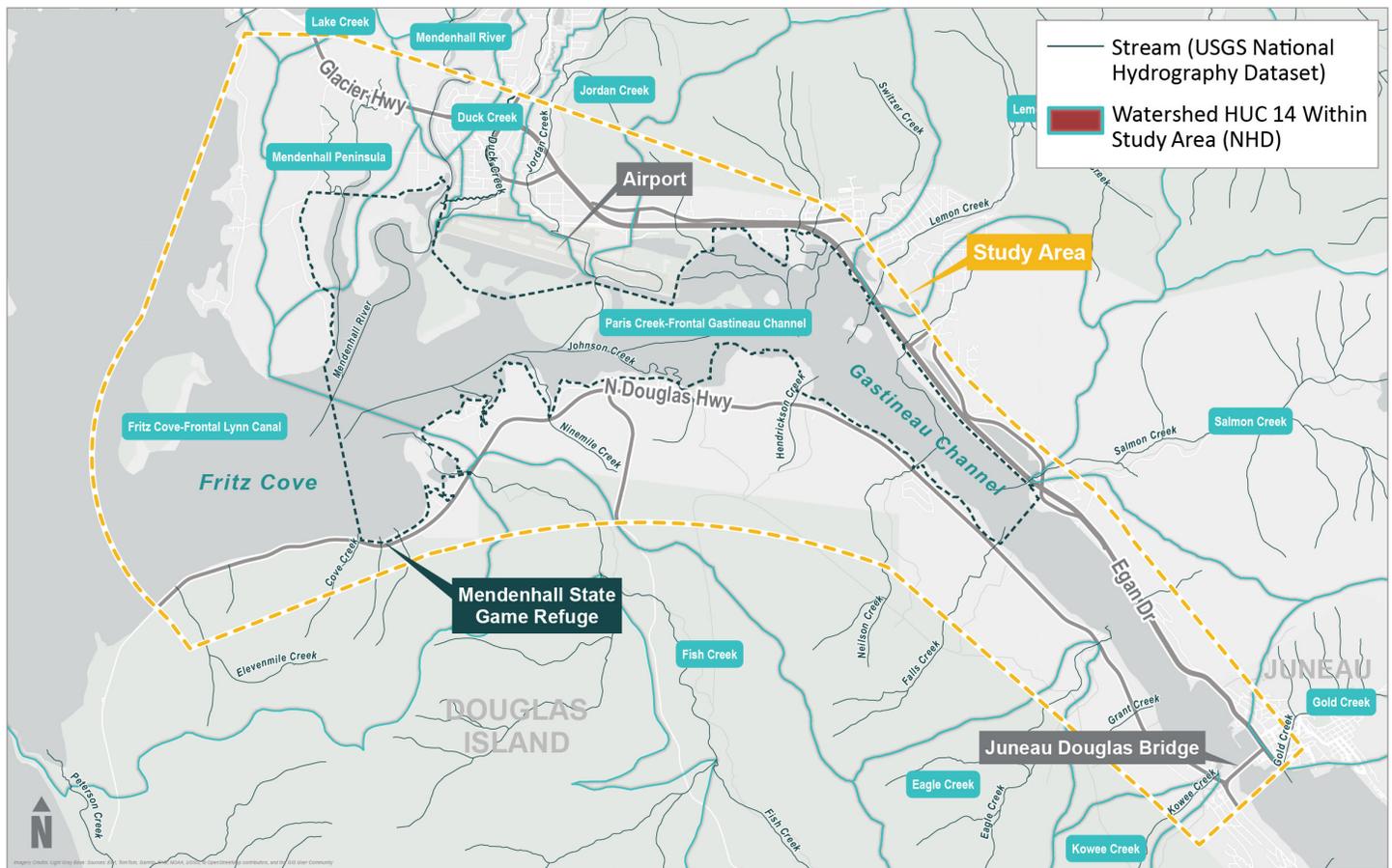
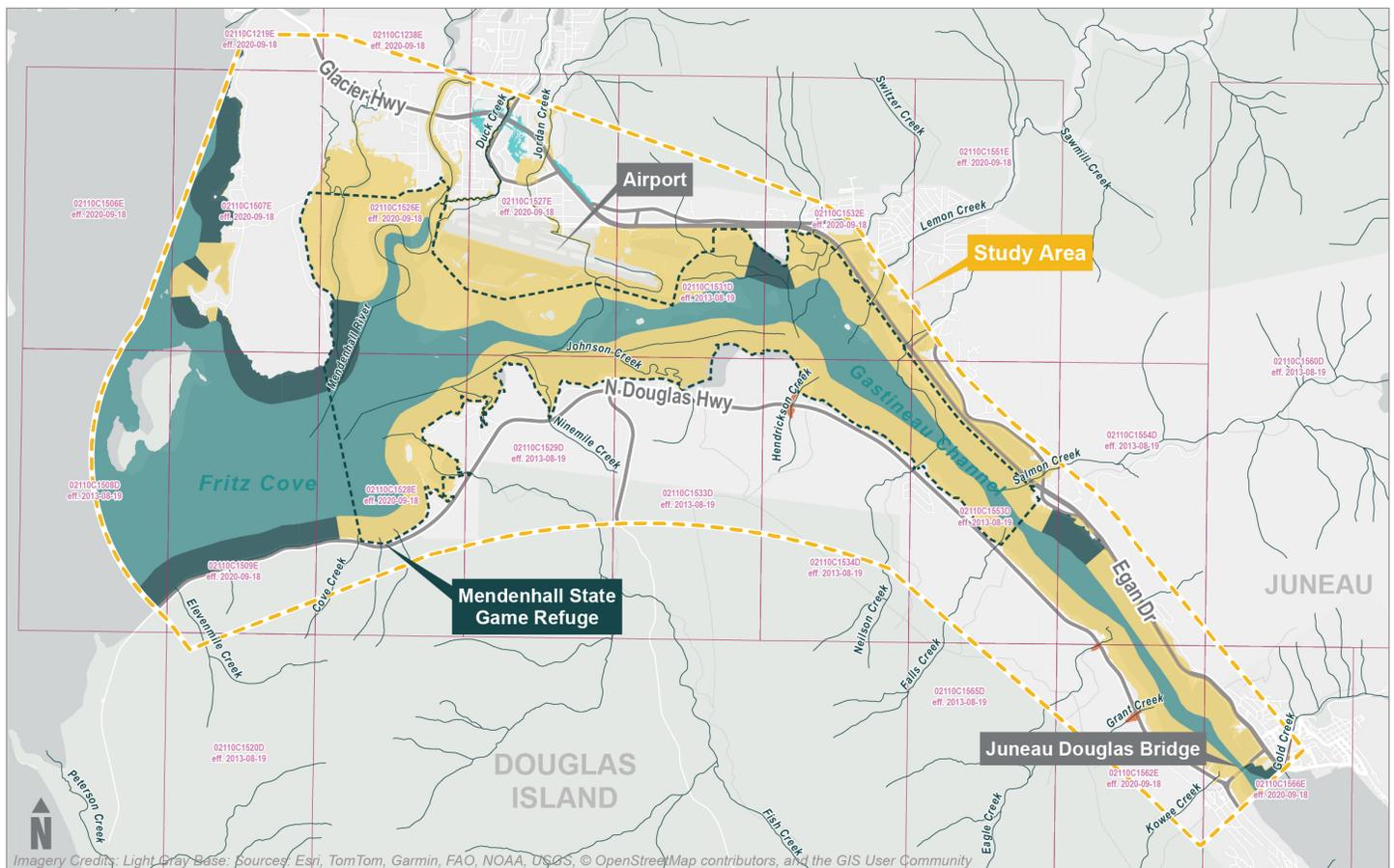


Figure 16: Waterbodies in Study Area

Floodplains

The majority of the study area adjacent to Gastineau Channel, Fritz Cove, and Auke Bay has been determined to be within flood hazard zone (A, V, AE, VE, or AH), which are areas subject to inundation by a 100-year flood event. The “A” designations indicate Special Flood Hazard Areas of high risk, and the “V” designations indicate Coastal High Hazard Areas. Flood hazard zones are shown on Figure 17.

Areas within flood hazard Zone A do not have detailed hydraulic analyses and subsequently no base flood elevation. These include creeks on Douglas Island (Hendrickson Creek, Eagle Creek, Grant Creek, and Gold Creek). Areas within flood hazard Zone V do not have detailed hydraulic analyses and subsequently no base flood elevation. These include Gastineau Channel and Fritz Cove. Areas within flood hazard Zone AE have detailed hydraulic analyses and a base flood elevation is known. These include tidal flats and Lemon Creek with Base Flood Elevations ranging from 20 to 23 feet. Areas located within flood hazard Zone VE have detailed hydraulic analyses and a base flood elevation is known. These include Gastineau Channel and Fritz Cove with Base Depth Elevations of 24 to 27 feet. Areas located within flood hazard AH have detailed hydraulic analyses and a base flood elevation is known. These include Duck Creek and wetlands associated with Duck Creek with Base Flood Elevations ranging from 28 to 30 feet.



FEMA Flood Hazard Zone

- A = 100-year floodplain
 - AE = 100-year floodplain where base flood elevations are provided
 - AH = Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet
 - V = Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding
 - VE = Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves
- Stream (USGS National Hydrography Dataset)
 - FEMA Firm Panel Within Study Area

Figure 17: Flood Hazard Zone in Study Area

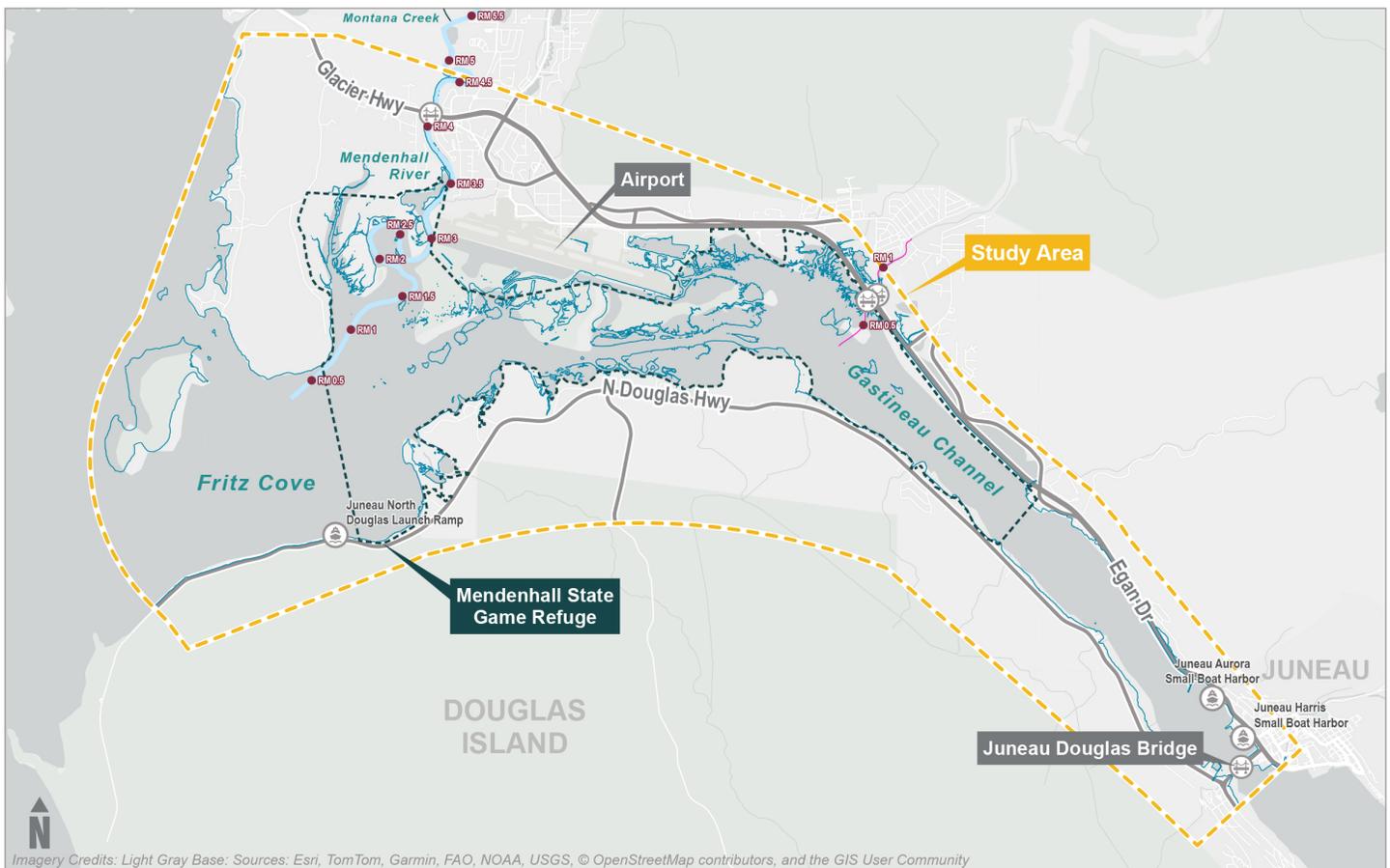
Navigable Waters

The following waterbodies are navigable below the mean high water (see Figure 18):

- Gastineau Channel (limitations on vessel size north of the Juneau Douglas Bridge)
- Fritz Cove
- Mendenhall Bar (small vessels are cautioned to only attempt passage during high water and with local knowledge):
 - Gastineau Channel and Fritz Cove are separated by Mendenhall Bar
- Mendenhall River is considered navigable by:
 - The United States Coast Guard (USCG) from the mouth to Montana Creek
 - The ADNR from the mouth to river mile 5.71
- Lemon Creek has undetermined navigability by the ADNR from the mouth to river mile 1.32

Navigable waters require the following permits based on the following conditions:

- Bridges spanning navigable waters per 33 CFR 329.4 would require a bridge permit from the USCG
- Section 10 permit from the USACE for work in, over or under mean high water



DNR Navigable Stream Status

- Tidal Influence
- Unknown
- River Mile (0.5-Mile Increment)
- Mean High Water (15.3 ft) (Extents of Navigable Waters)
- ⚓ Existing Bridge (DOT&PF)
- ⚓ Harbor (DOT&PF)

Figure 18: Navigable Waters in Study Area

Obstructions to navigable waters include bridges spanning Gastineau Channel, Mendenhall River, and Lemon Creek. Physical limitations to vessel size due to vertical clearance (i.e., mean high water to bottom of bridge), horizontal navigable channel width (i.e., distance between piers), and water depths (varies tidally and seasonally). The Juneau Douglas Bridge limits access to the upper reaches of Gastineau Channel with the following dimensions:

- Horizontal clearance of 490 feet
- Vertical clearance:
 - Minimum clearance of 49.9 feet (outer 240 feet of horizontal clearance)
 - Maximum clearance of 51 feet (middle 250 feet of horizontal clearance)

Egan Drive/Glacier Highway Bridge elevation over the Mendenhall River and the river flow regime limits the size of vessel which can access the navigable portions of the Mendenhall River. The bridge has the following dimensions:

- Horizontal clearance is 122 feet
- Vertical clearance of 18.5 feet

Egan Drive/Glacier Highway Bridge elevation over Lemon Creek and the stream flow regime limits the size of vessel which can access the navigable portions of Lemon Creek. The bridge has the following dimensions:

- Horizontal clearance is 181 feet
- Vertical clearance of 17.9 feet

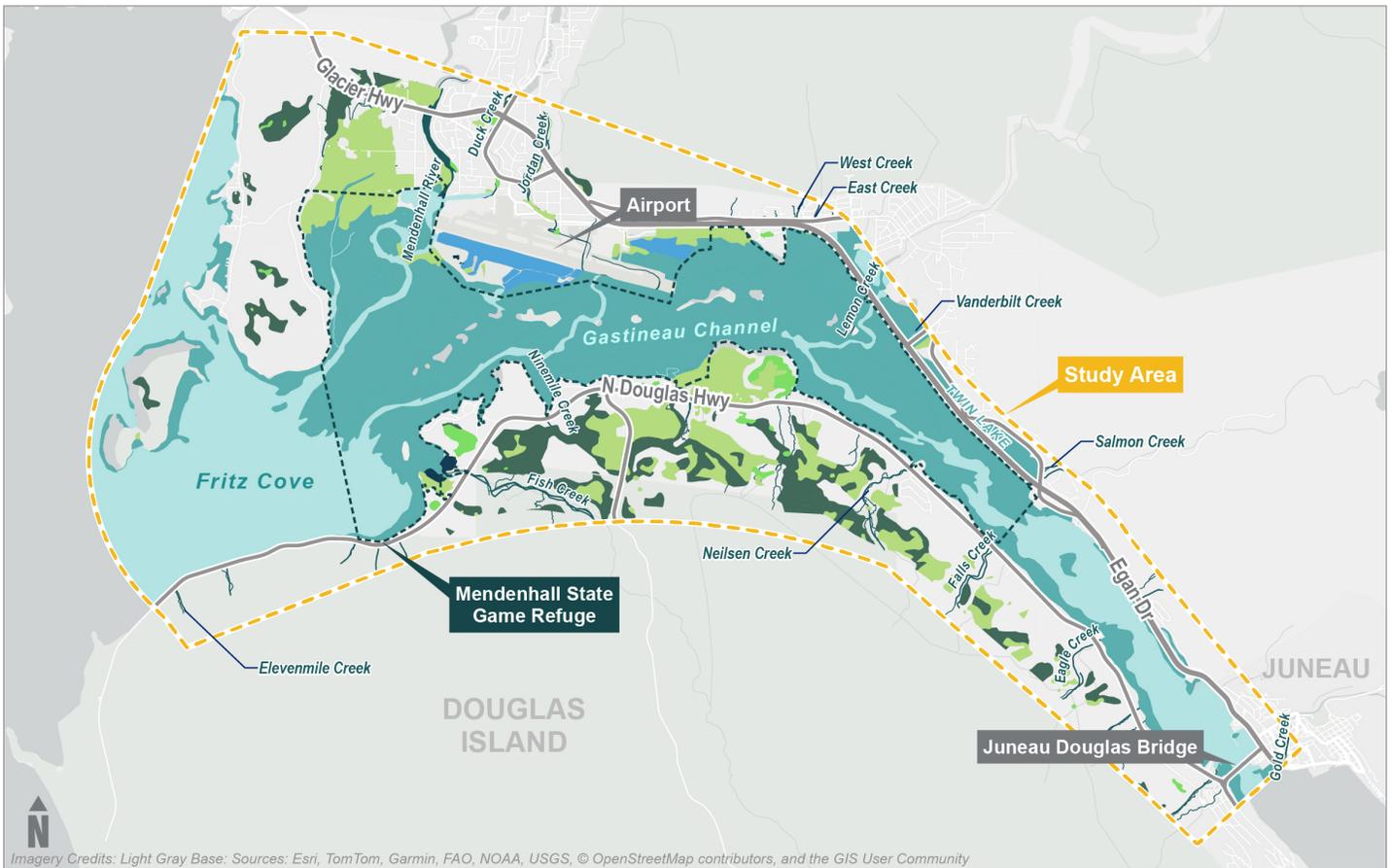
6.4.3 Wetlands

6.4.3.1 Regulatory Framework

Projects that could affect wetlands or other waterbodies require investigation to identify areas that may fall under the USACE jurisdiction per Section 404 of the Clean Water Act. The USACE defines wetlands as those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Unavoidable impacts to wetlands must be compensated through mitigation in accordance with the USACE regulatory requirements and/or requirements of Executive Order 11990.

6.4.3.2 Existing Conditions

Wetlands occur consistently throughout the study area. Areas with relatively less wetland coverage include Mendenhall Peninsula, west Douglas Island, Spuhn Island, and areas with built environment. Figure 19 and Table 10 describes the location of wetlands within the study area as identified by the USFWS National Wetland Inventory (NWI).



Wetlands

-  Palustrine Emergent
-  Estuarine Intertidal
-  Palustrine Waterbody
-  Palustrine Forested
-  Estuarine Subtidal
-  Lacustrine Waterbody
-  Palustrine Scrub-Shrub
-  Stream

Figure 19: NWI Wetlands in Study Area

Table 10: Uplands and Wetlands in Study Area by Type and Area based on NWI

Type	Acres	% of Study Area
Uplands	6,089	41
Wetlands	8,863	12
Palustrine Forested	714	5
Palustrine Scrub-Shrub	89	>1
Palustrine Emergent	1,026	7
Palustrine Waterbodies	17	>1
Estuarine Intertidal	3,789	25
Estuarine Subtidal	3,025	20
Lacustrine	142	1
Streams*	61	>1

* Streams consist of 283,222 linear feet (54 miles)

The Study Team also conducted a wetland delineation for a portion of the study area in September 2023, which encompassed a 150-foot buffer for the six potential crossing alignments, totaling 695.5 acres. The wetland delineation identified approximately 375.7 acres (54 percent of the study area) of wetlands and 319.8 acres of uplands (46 percent of the study area). NWI mapping within the wetland delineation area identified 355.9 acres of wetlands, leading to an increase of wetlands identified by the field team. Please see Appendix 12 for additional details on the 2023 wetland delineation, including wetlands identified for each alignment.

6.4.4 Threatened or Endangered Species

6.4.4.1 Regulatory Framework

Section 7 of the Endangered Species Act (ESA) requires federal agencies to ensure their activities are not likely to jeopardize the continued existence of federally listed species or destroy or adversely modify designated critical habitat. The lead agencies for implementing the ESA are the U.S. Fish and Wildlife Service (USFWS) and the U.S. National Oceanic and Atmospheric Administration Fisheries Service.

6.4.4.2 Existing Conditions

The USFWS Information for Planning and Consultation website indicates that one ESA listed wildlife species under the jurisdiction of USFWS may use habitats in the study area. That species is the short-tailed albatross, which is listed as endangered. Although the USFWS website indicates that the short-tailed albatrosses may use the study area as habitat, short-tailed albatrosses are generally associated with shelf break and slope regions of the northwestern Pacific Ocean and the Bering Sea which are not qualities of the study area, as such they are not expected to use the inland waters of the study area.

Two ESA-listed species under the jurisdiction of National Marine Fisheries Service (NMFS) may use habitats in the study area. These are humpback whales and Steller sea lions. Two distinct population segments (DPSs) of humpback whales occur in southeast Alaska—Mexico and Hawaii. The Hawaii DPS is not listed under the ESA; however, the Mexico DPS is threatened. Two percent of all humpback whales in southeast Alaska are members of the Mexico DPS and all others are from the Hawaii DPS. Humpback whales are regularly observed foraging in Fritz Cove. They are also occasionally sighted in the southern portion of Gastineau Channel but are unlikely to venture into the shallow waters north of the existing Douglas Island Bridge.

Populations of Steller sea lions are divided into two DPSs—eastern and western. Most Steller sea lions that enter the study area are from the eastern DPS. In 2013, citing population recovery and other factors, NMFS removed the eastern DPS from the list of endangered and threatened species (78 FR 66139, November 4, 2013). The western DPS, which is ESA-listed as endangered, includes all Steller sea lions originating from rookeries west of Cape Suckling (144° west longitude). Cape Suckling is more than 300 miles from the study area. However, Steller sea lions are a wide-ranging species, and animals from this DPS may wander into the waters of the study area. The proportion of western DPS Stellar sea lion in the Lynn Canal region (the larger geographical region in which the study area is located) is approximately 18 percent. Steller sea lions from the western DPS have occasionally been observed near Statter Harbor (83 FR 52394, October 17, 2018). It is possible, therefore, that some ESA-listed Steller sea lions. No areas that have been designated as critical habitat for any ESA-listed species are present in the study area.

In addition to being ESA-listed, short-tailed albatrosses, humpback whales, and Steller sea lions are also on the State of Alaska's list of endangered species.

In 2023, the sunflower sea star (*Pycnopodia helianthoides*) was proposed for listing because sea star wasting syndrome killed an estimated 90 percent of the population between 2013 and 2017. NMFS has not proposed to designate critical habitat for sunflower sea stars at this time.

To identify threatened and endangered species that may be present in the study area, analysts reviewed information at the websites of the federal agencies responsible for implementing the ESA (USFWS and NMFS). Published information about the distribution and habitat associations of these species was used to identify species with a reasonable likelihood of using habitats in the study area. Two key sources of information were the incidental harassment authorization (IHA) issued by NMFS to the City of Juneau for in water demolition and construction activities associated with a harbor improvement project in Statter Harbor (83 Federal Register 52394, October 17, 2018) and an IHA issued by NMFS to DOT&PF for a ferry terminal project (84 Federal Register 56768, October 23, 2019).

Based on those reviews, two ESA-listed species are known or expected to use habitats in the study area. These are humpback whales and individuals from the western distinct population segment of Steller sea lions, both of which are listed as endangered and are under the jurisdiction of NMFS. Both species are also on the State of Alaska's list of endangered species. A third ESA-listed endangered species, the short-tailed albatross (which is under the jurisdiction of USFWS), could potentially enter the study area. However, short-tailed albatrosses are associated with shelf break and slope regions of the northwestern Pacific Ocean and Bering Sea and are not expected to use the inland waters of the study area. No areas that have been designated as critical habitat for any ESA-listed species are present in the study area.

Humpback whales are occasionally sighted in the southern portion of Gastineau Channel but are unlikely to venture into the shallow waters north of the existing Douglas Island Bridge. Nevertheless, it is possible that individual humpback whales could enter the study area. Steller sea lions have occasionally been observed near Statter Harbor and could venture into the study area. Placement of fill or other structures into marine waters was used as a parameter to determine potential impact.

6.4.5 Fish and Wildlife

6.4.5.1 Regulatory Framework

NEPA requires that all major actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that environmental considerations such as effects related to fish and wildlife are given due weight in decision making. This chapter addresses several distinctly managed natural resources; therefore, each subsection's regulatory framework is listed below in the order described in this chapter.

- **Aquatic Species:** This includes fish and micro invertebrates present in either freshwater or marine environments and protected by the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (Magnuson-Stevens Act). Under this act, the NMFS has authority to regulate the fisheries of the U.S. In 1996, this Act was amended to emphasize the sustainability of the nation's fisheries and create a new habitat conservation approach called Essential Fish Habitat (EFH). Agencies must consult with the NMFS on all activities which may have an adverse effect to EFH. All anadromous fish habitat is considered EFH. In Alaska, NMFS oversees EFH in marine waters and the State of Alaska oversees EFH in streams.
- **Marine Mammals:** These are marine mammals protected by the Marine Mammal Protection Act, which aims to prevent marine mammal species and population stocks from decline by prohibiting 'take' of marine mammals.
- **Land mammals:** Unless otherwise listed as a protected species under the Endangered Species Act, are generally regulated through ADFG as game species.
- **Amphibians:** Unless otherwise listed as a protected species under the Endangered Species Act, are not protected or regulated by any existing state or federal laws and would be managed specifically under management plans.
- **Birds:** These include species protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (Eagle Act), which prohibits actions resulting in a "take" of migratory birds and eagles, their parts, nests, and eggs. Destruction of active bird nests, eggs, or nestlings that can result from spring and summer vegetation clearing, grubbing and other site preparation and construction activities would violate the MBTA and the Eagle Act.

- **Invasive Species:** Invasive species are subject to Federal Executive Order 13112 Safeguarding the Nation from the Impacts of Invasive Species. As amended on December 5, 2016, federal agencies are required to prevent and control the introduction of invasive species to minimize the economic, ecological, and human health effects that invasive species may cause. Per this EO, Federal agencies cannot authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the U.S., unless all reasonable measures to minimize risk of harm have been analyzed and considered. FHWA's Guidance on Invasive Species (FHWA, 1999) was used to determine the likelihood the proposed project would introduce or spread invasive species.

6.4.5.2 Existing Conditions

Aquatic Species

Designated EFH/Anadromous Species

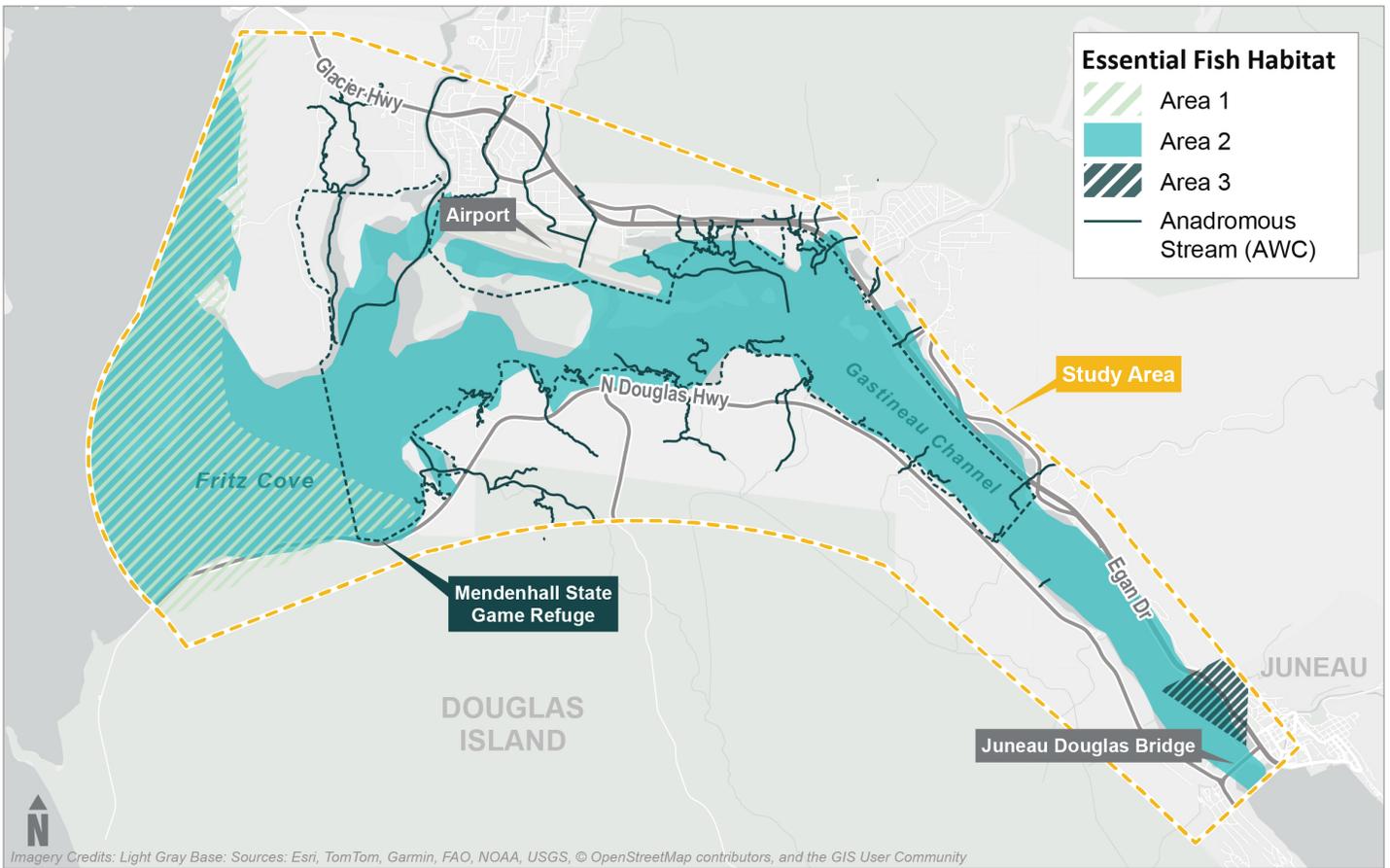
The study area includes habitat for fish and other aquatic species, including EFH and anadromous habitat. Species spawn, rear, and overwinter in the Mendenhall Flats, Mendenhall River, Fritz Cove, Gastineau Channel, and associated streams, especially the lower reaches of moderate to large streams. Marine habitats at the eastern end of Fritz Cove and in Gastineau Channel extending from Entrance Point to Salmon Creek lie within the Mendenhall Wetlands State Game Refuge. The refuge has been identified as an important nursery rearing area for juvenile salmon and other marine fisheries. Areas that are important habitat for Pacific herring, Tanner crab, Shrimp, King crab, Dungeness crab and Eulachon (species valued for commercial and/or subsistence use) include Fritz Cove, Auke Bay, Gastineau Channel, along the western shore of Mendenhall Peninsula and the Mendenhall River estuary. NMFS has not designated any Habitat Areas of Particular Concern or other areas protected from fishing in the study area.

Several stream networks in the study area provide spawning and/or rearing habitat for Sockeye, Chinook, Chum, Coho and Pink salmon, Cutthroat trout, Dolly Varden and Steelhead.

As shown in Figure 20, the study area includes three generalized areas of designated EFH. Area 1 extends along the eastern shore of Auke Bay and into the southern portion of Fritz Cove.

Marine habitats in Area 1 include EFH for the following groundfish species from the Gulf of Alaska fishery: Alaska plaice, Arrowtooth flounder, Dover sole, Flathead sole, Northern rock sole, Pacific cod, Pacific Ocean perch, Rex sole, Sablefish, Southern rock, sole, Walleye pollock, Yellowfin sole. Area 1 includes marine waters designated as EFH for larvae of all these species except yellowfin sole. It also includes areas designated as EFH for eggs of Alaska plaice, Dover sole, flathead sole, rex sole, walleye pollock, and yellowfin sole.

Area 2 encompasses Area 1 as well as the entirety of Fritz Cove and Gastineau Channel. Marine habitats in Area 2 have been designated as EFH for mature adults of all five Pacific salmon species in Alaska (Chinook salmon, chum salmon, coho salmon, pink salmon, and sockeye salmon). These habitats are also designated as EFH for juveniles of all these species except Chinook salmon, as well as EFH for immature adults of Chinook, chum, and sockeye salmon. Area 3 consists of a small area along the northeastern shore of Gastineau Channel immediately north of the existing crossing. Marine habitats in Area 3 have been designated as EFH for eggs of yellowfin sole.



Imagery Credits: Light Gray Base: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Area 1			
Site Name	Site Location	Egg (summer)	Larvae (summer)
Alaska Plaice	Gulf of Alaska	✓	✓
Arrowtooth Flounder		✓	✓
Dover Sole		✓	✓
Flathead Sole		✓	✓
Norther Rock Sole		✓	✓
Pacific Cod		✓	✓
Pacific Ocean Perch		✓	✓
Rex Sole		✓	✓
Sablefish		✓	✓
Southern Rock Sole		✓	✓
Walleye Pollock		✓	✓
Yellowfin Sole		✓	✓

Area 2			
Site Name	Marine Juvenile	Egg (summer)	Larvae (summer)
Chinook Salmon		✓	✓
Chum Salmon	✓	✓	✓
Coho Salmon	✓	✓	✓
Pink Salmon	✓	✓	✓
Sockeye Salmon	✓	✓	✓

Area 3		
Site Name	Site Location	Egg (summer)
Chinook Salmon	Gulf of Alaska	✓

Source: NOAA FISHERIES. Essential Fish Habitat area geometrics have been generalized for display into three core areas.

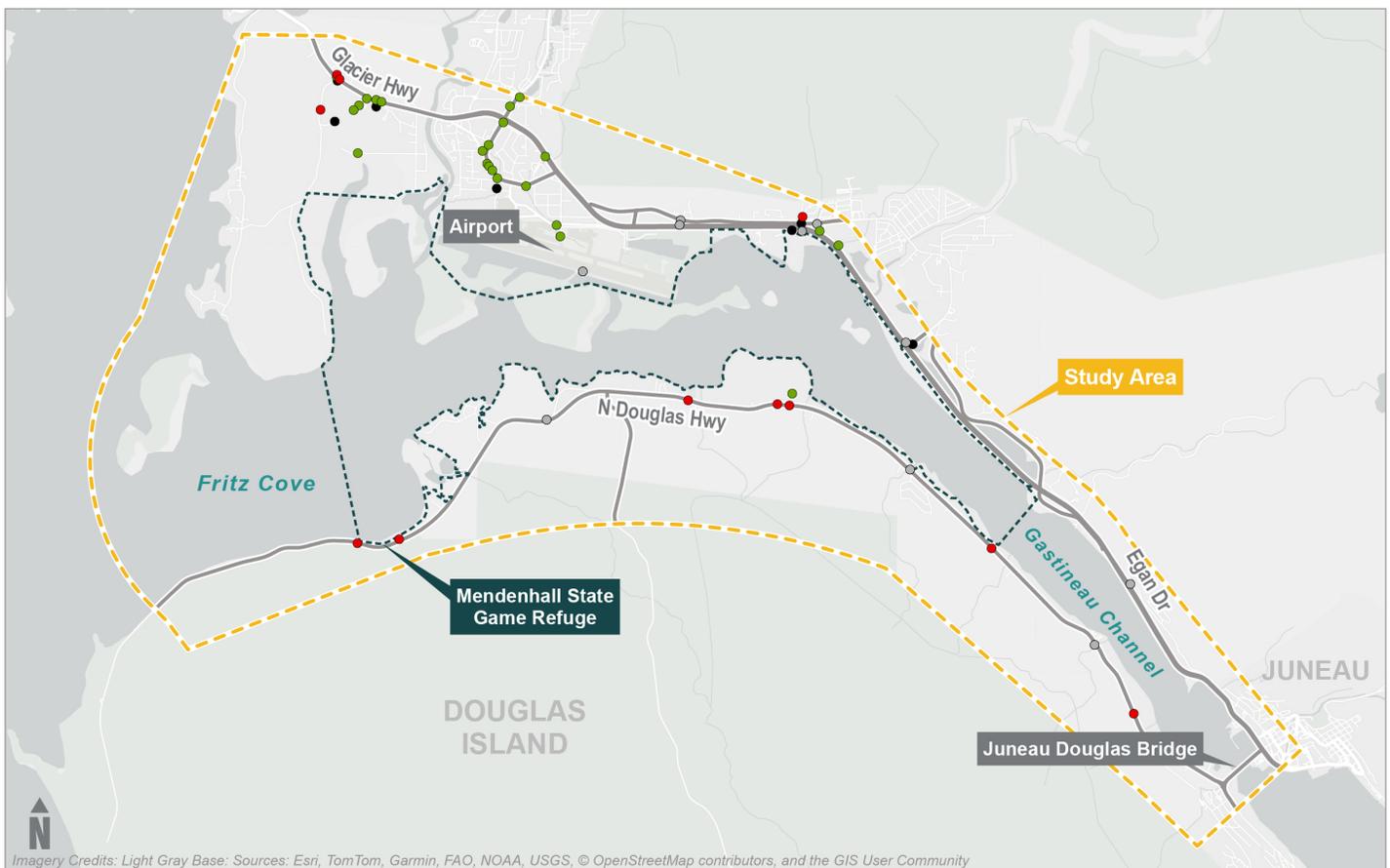
Figure 20: Generalized EFH in Study Area

Fish Passage

ADFG maintains a database of stream crossings that have been assessed for fish passage. The Fish Passage Inventory Database includes assessments of 51 culverts at road-stream crossings in the study area. Based on evaluations of gradient, outfall height, and constriction ratio (calculated as culvert width divided by stream channel width), each culvert was assigned to one of the following categories (Figure 21):

- **Red:** Assumed to be a barrier to passage for juvenile salmonids or weak-swimming fish
- **Gray:** Likely to be a barrier to passage for juvenile salmonids or weak-swimming fish
- **Green:** Assumed to be adequate for passage for juvenile salmonids or weak-swimming fish
- **Black:** Status unknown

Twelve of the 51 culverts are rated as red, indicating a high likelihood that they impede fish passage for one or more species. Seven of these are along North Douglas Highway on Douglas Island. Three are near the intersection of Glacier Highway and Engineer’s Cutoff Road in the northwestern portion of the study area. One is in a residential area Page 98 north of Glacier Highway near Sunny Point, and one is on a private driveway north of North Douglas Highway.



ADF&G Fish Passage Culvert

- **Black:** unable to rate or culvert has been replaced and not reassessed
- **Gray:** crossing may be inadequate for juvenile salmonid/ weak swimming fish passage
- **Green:** crossing assumed to be adequate for juvenile salmonid/ weak swimming fish passage
- **Red:** crossing assumed to be inadequate for juvenile salmonid/ weak swimming fish passage

Figure 21: Culvert Conditions in Study Area

Eleven culverts are rated as gray (barrier status likely). Five of these are on Glacier Highway or Egan Drive east of the airport. The others are evenly divided between Douglas Island and mainland Juneau. Of the remaining culverts, 22 are rated green (no barrier) and six are rated black (status unknown).

Eisenman and O’Doherty (2020) evaluated fish passage at road crossings in and around Juneau, assigning prioritization scores based on the potential ecological benefits of reconfiguring or replacing the existing culvert with a structure that does not impede fish passage. Prioritization scores are based on the amount of habitat available upstream of the crossing, the number of fish species present in the stream, and the severity of the barrier. Higher scores indicate a higher degree of impact on fisheries resources.

Of 59 Juneau-area culverts evaluated by Eisenman and O’Doherty (2020), 24 are in the study area. Seven of the ten culverts with the highest prioritization scores in the study area are along North Douglas Highway (at the crossings of Neilson, Johnson, Hendrickson, Falls, Grant, Eagle, and Ninemile Creeks, in descending order of prioritization score). The crossing with the highest prioritization score is Jordan Creek at the airport.

Marine Mammals

NMFS recently issued an IHA to CBJ for construction activities associated with a harbor improvement project in Statter Harbor and to DOT&PF for modifications to the Auke Bay Ferry Terminal. Statter Harbor is in Auke Bay immediately north of the study area; marine mammals present at that site are also likely to use habitats in the study area. According to both IHAs, seven species of marine mammals under the jurisdiction of NMFS have been documented in the waters of Southeast Alaska near the study area. These species are harbor seal, harbor porpoise, Dall’s porpoise, killer whale, humpback whale, minke whale, and Steller sea lion. Only three of these (harbor seal, Steller sea lion, and humpback whale) are known to be present in Statter Harbor and are expected to use marine habitats in the study area. Two of the other four species (Dall’s porpoise and minke whale) have been observed only in open-ocean waters west of the study area and are not expected to enter the study area. Killer whales have been sighted infrequently and irregularly in the outer portions of Auke Bay and in the Gastineau Channel south of the Douglas Bridge as well as the North Douglas Launch ramp; killer whales may enter the study area from the south. Harbor porpoises might use waters in or near the study area, but they are an inconspicuous species and difficult to detect (83 FR 52394, October 17, 2018). A protected species final report documenting monitoring observations for the Statter Harbor improvements confirmed the presence of the species in Auke Bay. The other marine mammal species that may be present in the study area is the northern sea otter, which is under the jurisdiction of USFWS. Sea otters are not commonly seen.

Land Mammals and Wildlife

Land mammals in the Juneau region include brown bear, black bear, Sitka black-tailed deer, moose, wolf, and mountain goat (Kautz, et al 2004). The Sitka black-tailed deer and black bear the two largest users of the MWSGR, with common small furbearers including muskrat, otter, mink, and short-tailed weasel (ADFG 1990). Other terrestrial mammals known to occur in the area include the snowshoe hare, red squirrel, deer mouse, porcupine, hoary marmot, little brown bat, long-tailed vole, and masked shrew. The ADFG habitat management guide for black bears identifies spring concentration areas on Mendenhall Peninsula and along lower reaches of Jordan Creek in the study area. Additionally, the study area was evaluated for overall wildlife using vegetation classification identify habitats for upland species (i.e., wildlife species that are not restricted to aquatic habitats—in other words, amphibians, birds, and mammals other than marine mammals) (Figure 22) shows its distribution.

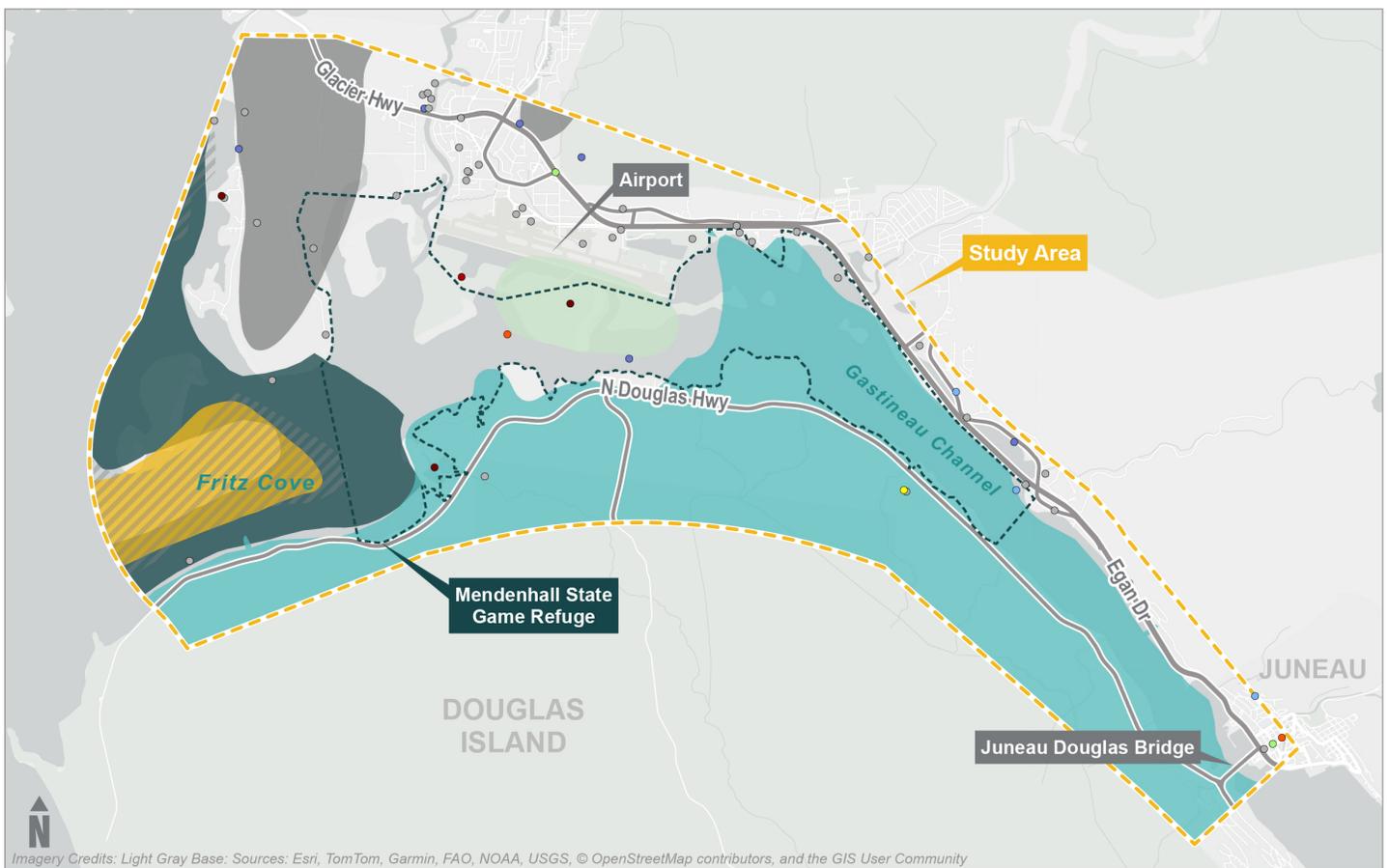


Figure 22: Distribution of Wildlife Species by Land Cover in Study Area

Amphibians

Six species of amphibians are native to Southeast Alaska, including the wood frog (*Rana sylvatica*), western toad (*Bufo boreas*), Columbia spotted frog (*Rana luteiventris*), roughskinned newt (*Taricha granulosa*), long-toed salamander (*Ambystoma macrodactylum*), and northwestern salamander (*Ambystoma gracile*) (Carstensen et al. 2003). All species require ponds or other still-water for breeding. Data documenting local abundance of amphibians within the study area is sparse and not comprehensive. However, freshwater ponds in the larger Juneau area support breeding populations of western toads, wood frogs, and rough-skinned newts. ADF&G confirmed the east pond adjacent the mouth of Fish Creek is one documented breeding area for western toads (personal communication, 10/28/22). Documented wood frog distribution in Southeast Alaska is restricted to the Stikine, Taku, and Chilkat drainages, Glacier Bay and near Yakutat. A localized population found on Douglas Island were likely transplants (MacDonald 2007). Western toads are widely distributed but may be rapidly declining (MacDonald 2007); they are the only amphibian documented within the boundaries of the MWSGR (ADFG 1990). The Columbia spotted frog (*Rana luteiventris*) has been documented in southeast, but not near Juneau. Rough skinned newts (*Taricha granulosa*) are the most common tailed amphibian in Southeast Alaska and populations may be highest in mature and old-growth forests (MacDonald 2007). Long-toed salamanders have an unknown population status in Alaska, but it is considered small; the closest reported sighting to Juneau is the Taku River (ACCS 2018). The northwestern salamander has only been collected at two locations in Southeast Alaska; neither near Juneau (MacDonald 2007).

An emerging concern is the spread of chytridiomycosis, an infectious disease of amphibians caused by the fungus *Batrachochytrium dendrobatidis*. The disease has caused the decline or complete extinction of more than 200 species of frogs and other amphibians worldwide. Reports of chytridiomycosis have been recorded from the Kenai Peninsula to Prince of Wales Island. The disease has not yet been reported in the study area, however.

Birds

The study area supports large and diverse assemblages of birds, including:

- Airport Dike Trail, Mendenhall Wetlands State Game Refuge—233 different species, including shorebirds and waterfowl numbering in the thousands
- East of River Mouth, Mendenhall Wetlands State Game Refuge—199 different species, including waterfowl, shorebirds, and gulls numbering in the thousands
- Fish Creek Delta, Mendenhall Wetlands State Game Refuge—180 different species, including waterfowl, gulls, and occasionally migratory songbirds (pine siskins) numbering in the thousands
- West of River, Mendenhall Wetlands State Game Refuge—177 different species, including waterfowl, shorebirds, and gulls numbering in the thousands

The MWSGR is widely acknowledged to be one of the key migratory waterfowl and shorebird stopover locations of coastal Alaska and was designated as an Important Bird Area by the National Audubon Society. (Audubon 2025).

The study team verified and updated bird habitat mapping in September 2023. During the surveys, biologists made pertinent alterations to mapped habitat types based on field observations. The alterations consisted of boundary adjustments and habitat type reclassification, reflecting differences between remote sensing data and on-the-ground conditions. Figure 36 shows the results of migratory bird habitat mapping.

The ADFG habitat management guides indicate the presence of a comparatively small (fewer than 1,000 birds) nesting colony of seabirds in the marshlands immediately south of the airport. That source also identifies Gastineau Channel between Entrance Point and Salmon Creek as a spring and fall concentration area for waterfowl and shorebirds. The May 2005 PDSR indicated bald eagles congregate in the Mendenhall wetlands and the Mendenhall River area in the spring, the mouth of the Mendenhall River throughout the year, and the confluence of the Chilkat and Tsirku rivers (north of Haines) in the fall. Habitat for bald eagle nesting and perching in southeast Alaska is identified as large spruce trees along the coast and rivers. The May 2005 PDSR included a figure showing the locations of known eagle nests. An unknown number of those nests are likely to have been abandoned since then, and other nests have likely been established at new locations. Congregation areas and patterns of habitat use in the study area are expected to be similar to what was described in the May 2005 PDSR.

Invasive Species

The Alaska Exotic Plant Information Clearinghouse (AKEPIC) database was searched to identify any invasive terrestrial or aquatic plant species in the study area. The clearinghouse has ranked non-native species in terms of invasiveness. More than 300 instances of species classified by AKEPIC as extremely or highly invasive have been mapped in the study area representing 12 species. This includes plants considered to be extremely invasive (purple loosestrife, white sweetclover, reed canarygrass, bohemian knotweed) and highly invasive (bigleaf lupine, Canada thistle, creeping buttercup, field and moist sowthistle, orange hawkweed, rugosa rose).

6.5 Built Environment

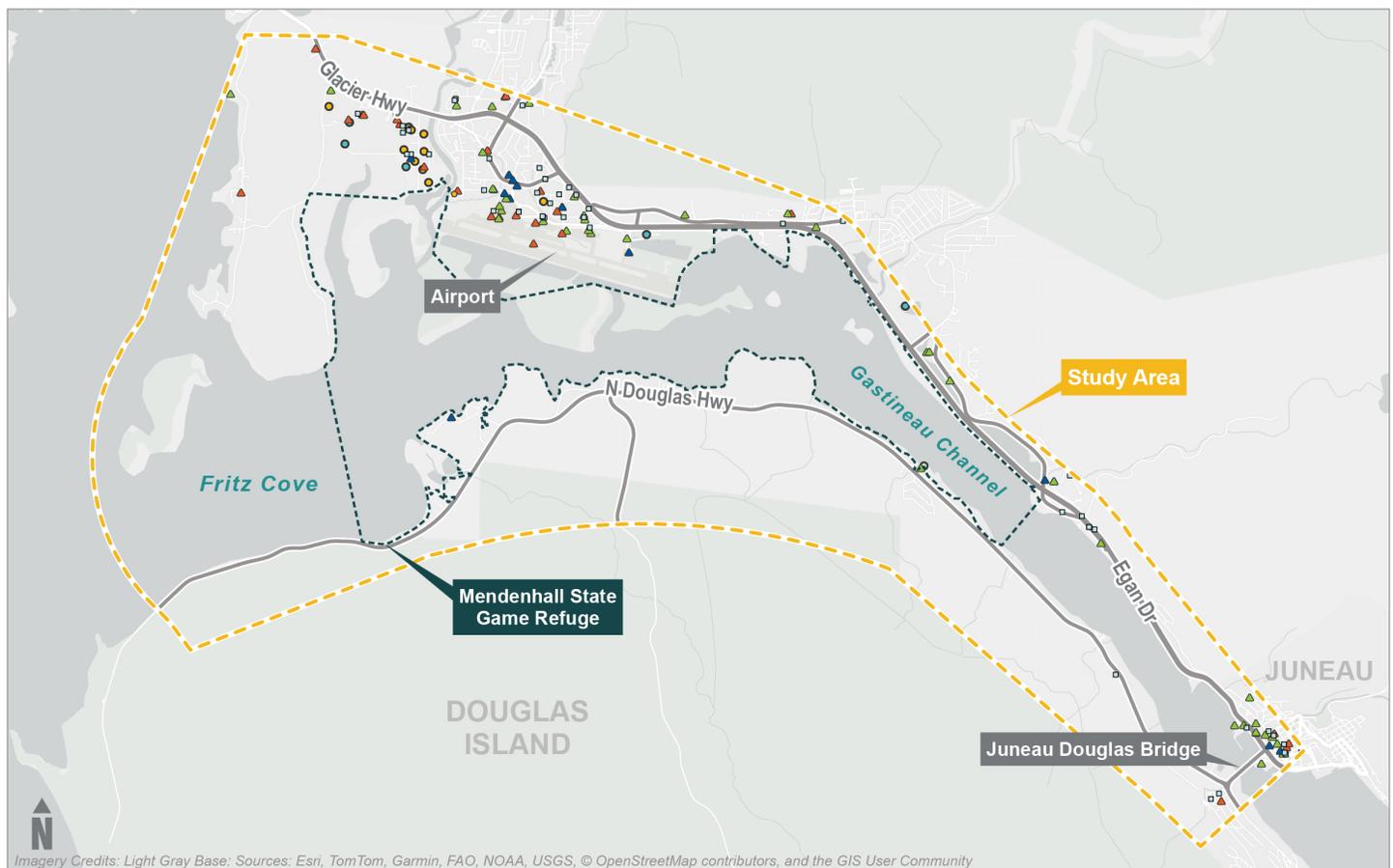
6.5.1 Contaminated Sites

6.5.1.1 Regulatory Framework

Prior to any construction project, a due diligence effort is needed to identify the risk of encountering hazardous materials to avoid soil excavation within prohibited areas and to avoid unknowingly subjecting a contractor to hazardous materials. To estimate these risks, established databases that track spills, contaminated soils and groundwater and other pollutants are used to understand and characterize the types of hazardous materials within the study area. Contaminated sites can threaten public health or the environment and can cause economic hardship to people and communities (ADEC 2025). The regulatory framework for the management of hazardous materials, hazardous wastes, and contamination is complex, with both federal and state components.

Existing Conditions

There are no brownfield or superfund sites within the study area but 38 regulated contaminated sites (25 active, 13 institutional controls) containing petroleum, waste oil, and/or chemical waste, and one permitted solid waste holder (disposal facility) are within the study area (Figure 23).



Non-Regulated Waste Site

- Automobile Salvage/ Recovery
- Construction
- Helicopter Service
- Recycling

DEC Contaminated Site Status

- ▲ Active
- ▲ Cleanup Complete
- ▲ Cleanup Complete - Institutional Controls

EPA Hazardous Waste Site

- Resource Conservation and Recovery Act Site

DEC SWIMS Permit Status

- ◆ Current

Figure 23: Known Contaminated Sites in Study Area

Other non-regulated waste sites include 16 businesses associated with automobile salvage and recovery operations within the study area. The largest concentration of sites occurs in the study area near downtown Juneau, near the airport, and along Industrial Boulevard west of the Mendenhall River. Few sites occur on Douglas Island.

6.5.2 Noise

6.5.2.1 Regulatory Framework

FHWA’s regulations “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (23 CFR 772) provides procedures for noise studies and noise abatement measures to help protect the public health and welfare, supplies noise abatement criteria, and establishes requirements for information to be given to local officials for use in the planning and design of highways. All highway projects developed in conformance with these regulations are deemed to be in conformance with the FHWA noise standards. State highway agencies are required to adopt written highway traffic noise policies approved by FHWA. DOT&PF’s Noise Policy (DOT&PF, 2018) is the primary document used to implement FHWA’s regulations. Noise receptors and receivers are the discrete units or modeling locations, respectively, used to measure noise impacts.

6.5.2.2 Existing Conditions

Receptors are the units that receive noise impacts and the most sensitive noise receivers (Category A and B) include residential areas and other lands on which serenity and quiet are of extraordinary significance. Category A and B are the most sensitive noise activity categories for which changes in noise can be the most impactful. Category A areas are primarily on the northern portion of Douglas Island set back from the Douglas Highway, throughout Mendenhall Peninsula, and all of Spuhn Island. Category B areas are also throughout the study area, primarily along Egan Drive, Douglas Highway, and along the east and west of Mendenhall Peninsula (Figure 24).

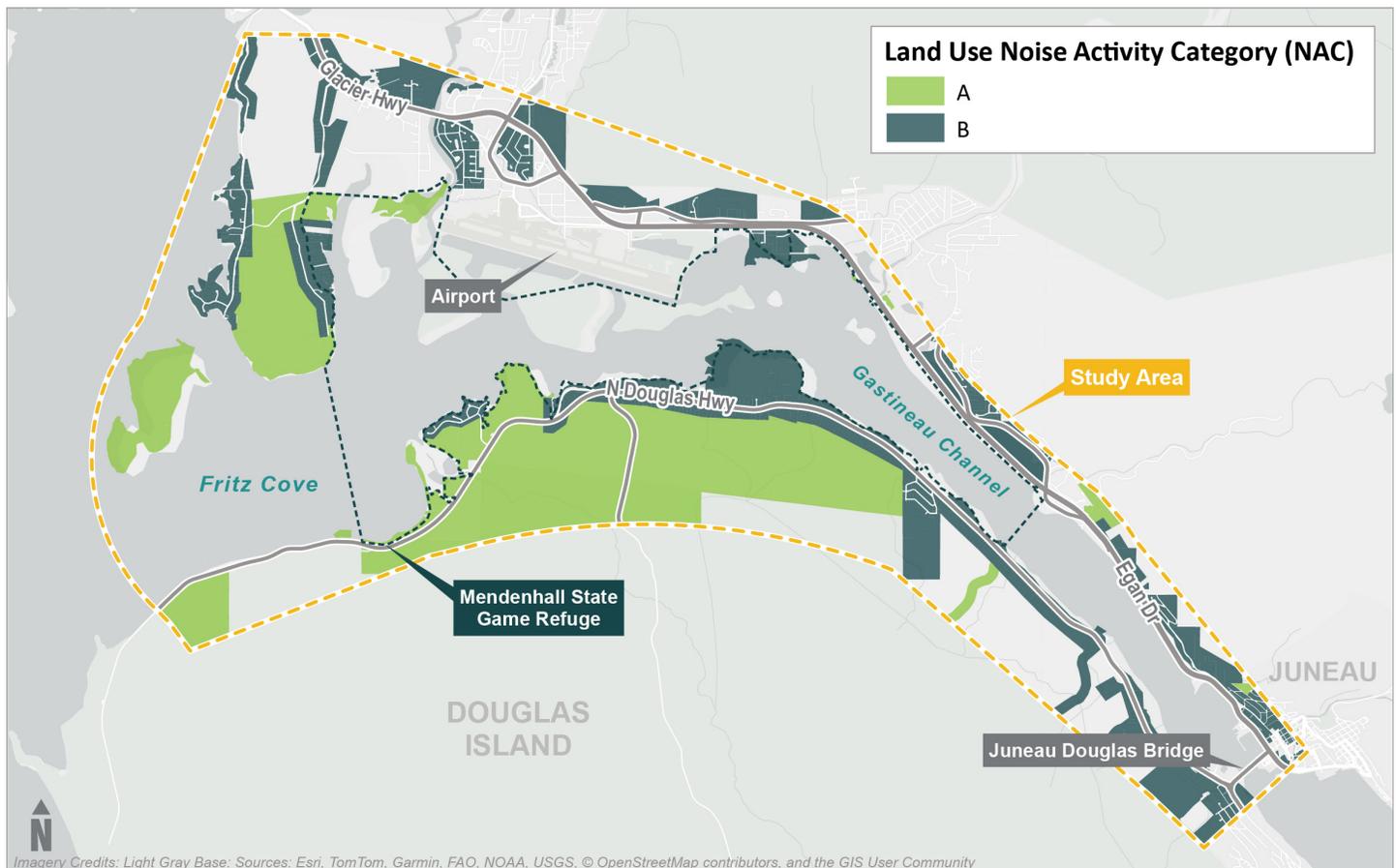


Figure 24: Sensitive Receptors in Study Area

6.5.3 Air Quality and Climate Change

6.5.3.1 Regulatory Framework

Transportation conformity is required by the Clean Air Act (CAA) (42 U.S.C. 7506(c)) to ensure that federal funding and approval are given to highway and transit projects that are consistent with air quality goals established by a state air quality implementation plan. Conformity means that transportation activities will not cause or contribute to new violations of air quality standards or delay the attainment of national ambient air quality standards. NEPA guidelines issued by the U.S. Department of Transportation (USDOT) outline federal requirements for air quality analyses for transportation projects. Where applicable, other requirements derive from the federal transportation conformity rule (40 CFR Parts 50 and 93). NEPA guidance for air quality analyses for transportation projects is found on the FHWA Office of Planning, Environment, and Realty website. Per the CAA, National Ambient Air Quality Standards (NAAQS) have been established for six criteria pollutants by the EPA and communities that do not meet NAAQS are listed as “non-attainment areas.” States are required to develop a plan to control source emissions and ensure future attainment of NAAQS. Additionally, greenhouse gas emissions such as carbon dioxide (CO₂), are primary drivers of global climate change. There is no threshold associated with significant emissions of greenhouse gasses.

6.5.3.2 Existing Conditions

Juneau has been designated as an area where the region meets the NAAQS for each pollutant or there are insufficient data to make a determination. In 1991, the Mendenhall Valley area was identified as a moderate nonattainment area for the NAAQS particulate matter 10 standard based on violations in the 1980s. In 2013, the EPA approved the first 10-year Limited Maintenance Plan (LMP) and concurrently re-designated the area to attainment for the PM₁₀ NAAQS, effective July 8, 2013 (Federal register 78 FR 27071: May 9, 2013). Mendenhall Valley currently meets and will continue to meet the 1987 NAAQS for PM₁₀ through 2033. EPA approved the second 10-year LMP, effective November 25, 2021 (Federal Register 86 FR 58807: October 25, 2021). According to a 2007 report by the CBJ on climate change (Kelly et. al., 2007) temperatures in Juneau have increased as much as 3.6°F during the 20th century, with the largest increase occurring during the winter months. Rates of warming appear to be increasing over time. Climate models predict that CBJ will see overall warmer and wetter weather, particularly in Fall and Winter. The Juneau Icefield is expected to continue to retreat over time. Sea level is rising as a result of the melting of glaciers and ice sheets and the warming of ocean waters. However, the land surface in CBJ is also rising as a result of the loss of glacial ice (isostatic rebound). The rate of isostatic rebound is expected to exceed the rate of the rising sea level.

6.5.4 Visual Effects

6.5.4.1 Regulatory Framework

FHWA’s Guidelines for Visual Impact Assessment (January 2015) respond to NEPA, and other federal requirements outlined in subsequent transportation funding authorization bills, several Presidential Executive Orders related to the visual character of federal lands and projects, and FHWA programs and initiatives such as Context Sensitive Solutions, and Complete Streets.

6.5.4.2 Existing Conditions

An Area of Visual Effect would be determined once a preferred alternative is selected. Visual resources vary widely throughout the study area. Important visual resources that the CBJ is regarded for include Mendenhall Glacier, steep mountainous terrain, and abundant rainforest. Localized visual resources and potential impacts would be evaluated in future projects as impacts are best characterized in relation to the specific project under consideration.

6.5.5 Utilities

6.5.5.1 Regulatory Framework

The study area contains multiple public and private entities which route telecommunications, water, wastewater, and electrical services. Identifying utilities and their locations are important to avoid costly conflicts where possible, and to minimize potential encroachment and right-of-way acquisition for utility relocations.

6.5.5.2 Existing Conditions

Electrical transmission lines are present along Douglas Highway south of Bonnie Doon Drive, Glacier Highway between Egan Drive and Vanderbilt Road, Glacier Highway between the former Wal-Mart site and Fred Meyer, along Fritz Cove Road, and along Engineer's Cutoff Road. There are 249 light poles in the study area. Of these, 118 (47 percent) are in downtown Juneau, 68 (27 percent) are in Mendenhall Valley between Juneau International Airport and Egan Drive, 17 (seven percent) are on Douglas Island near the Douglas Island bridge, 14 (six percent) are in the Bayview Subdivision on Douglas Island, and 13 (five percent) are near Bartlett Regional Hospital. Although mapping data was unavailable, CBJ has a water network consisting of 180 miles of pipes, six reservoirs and three contact tanks, nine pump stations, 37 pressure reducing valves, 1,450 fire hydrants, and 9,705 water connections. Water distribution lines convey roughly 1.2 billion gallons of drinking water annually from one of the two water sources (Last Chance Basin or Salmon Creek Water Filtration Plant). The Salmon Creek Dam is located approximately 2.5 miles from Egan Drive and a failure zone of the dam has been identified that includes Egan Drive.

7

ALTERNATIVES



7.0 ALTERNATIVES

7.1 Alternative Development and Screening Overview

The alternative development and screening process is a decision-making framework to determine how well each alternative meets the P&N and the additional goals. NEPA requires that a reasonable range of alternatives be considered and reviewed objectively, and the selection process and alternatives eliminated be well documented. The process used for the PEL study met these documentation requirements including supporting the elimination of alternatives from further consideration during a future NEPA process and the identification of reasonable alternatives that would be evaluated during future development under NEPA. The alternative development and screening process methodology is one of the DOT&PF SEO Concurrence Points (Appendix 2), and the Memo documenting the screening steps and process is in Appendix 8.

Under NEPA, reasonable alternatives are those that are practical and feasible from a technical, engineering, environmental, and social standpoint, and which meet the P&N for the project. The screening process compares the advantages and disadvantages of a broad range of alternatives for advancement through the stages of development into more refined alternatives and, ultimately, the recommended reasonable alternative(s).

An iterative step alternative selection process was used for the PEL study, which steps through a pre-screening process as well as two discreet levels of screening (Figure 25).

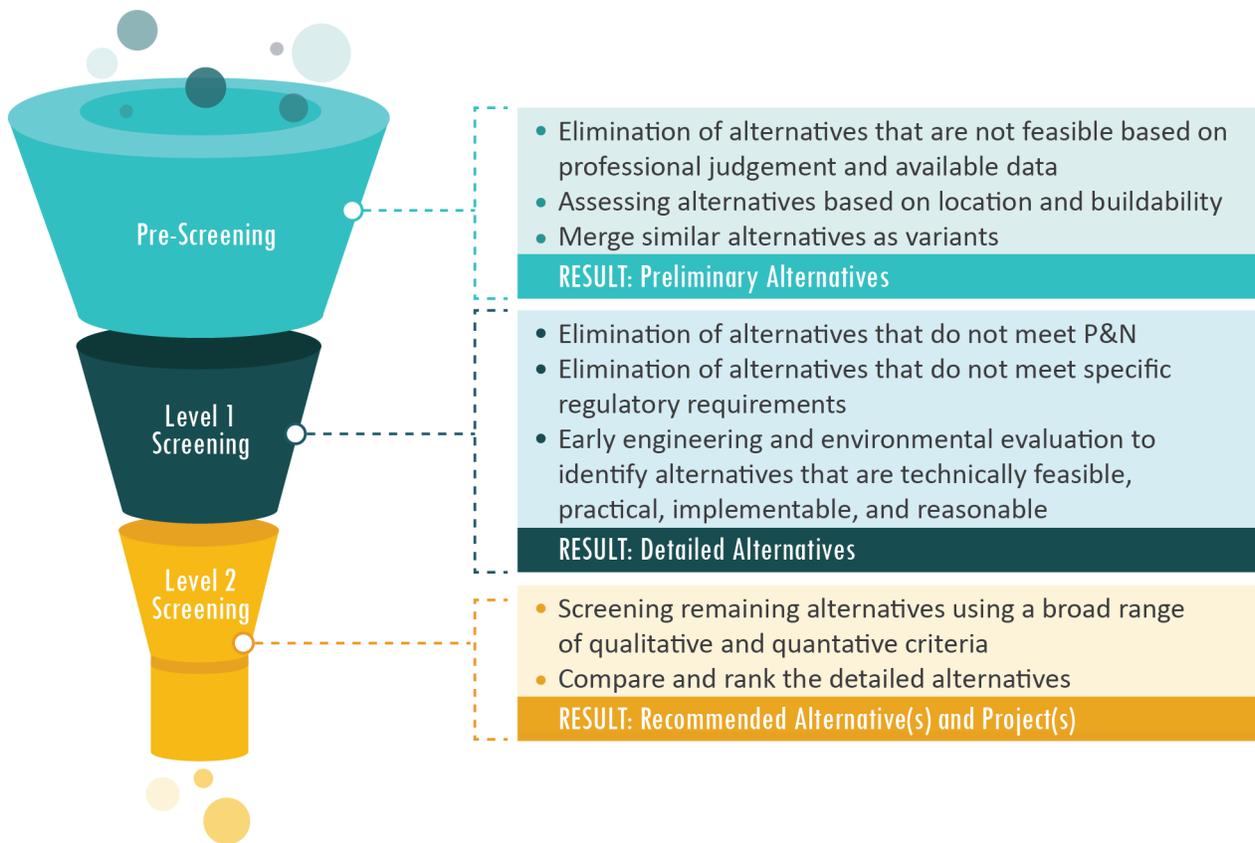


Figure 25: Iterative Step Alternative Selection Process

1

Step 1: Develop P&N statement. The P&N statement states why the project is being proposed (the purpose) and describes the key problems to be addressed and underlying causes (the need). The P&N statement guides the development of the alternatives and is the primary focus of the alternative screening criteria.

2

Step 2: Compile Possible alternatives. Alternatives are based on the P&N statement and relevant information from baseline studies, public and agency input, and local and regional land use and transportation plans. An Alternatives Development Workshop with participants from the TAC and STAC was held on July 19, 2022.

3

Step 3: Pre-Screening. Early evaluation based on available data and professional judgement to eliminate alternatives that are not feasible based on location and buildability. Possible alternatives that have similar characteristics will be grouped as variants of a single alternative during this step. Alternatives remaining after the pre-screening will be considered “preliminary alternatives.”

4

Step 4: Apply Level 1 Screening. Two-step screening of the preliminary alternatives based on the P&N, additional goals, and other considerations. Alternatives that do not pass Level 1 screening will not advance for further alternative development or evaluation. Alternatives remaining after the Level 1 screening will be considered “detailed alternatives.”

5

Step 5: Refine and conduct preliminary engineering. The detailed alternatives would be refined, and preliminary engineering performed to increase the level of detail including modifications to respond to environmental constraints or improve constructability.

6

Step 6: Apply Level 2 screening. Screening of the detailed alternatives using a broad range of qualitative and quantitative criteria including the cost of the alternatives, wetland impacts, ROW impacts, impacts to important habitat, conservation lands, historic and cultural resources. The goal is to compare and rank the detailed alternatives and to identify recommended alternative(s).

7

Step 7: Further refine the recommended alternatives. Refinements include avoiding and minimizing impacts and designing to a higher level of detail to resolve technical issues and prepare cost estimates.

8

Step 8: Documentation. The screening results would be documented in the PEL study and questionnaire.

The alternative development and screening process is described in further detail below, using the steps outlined.

7.2 Design Criteria Assumptions

The following design criteria assumptions guided alternative development:

- The new crossing would create additional access between Douglas Island and Juneau (mainland).
- Access would be provided at an intersection either along North Douglas Highway or an adjoining side street, and a location on the Juneau mainland to be identified as part of the alternative development and refinement process.
- The crossing would be designed with a 30 to 45 mph design speed.
- The crossing would include two 12-foot-wide travel lanes, six-foot wide shoulders, and sidewalks or a shared use pathway on both sides of the bridge.
- The crossing would be designed with a 75-year design life.

All crossing alignments include these key features, which were further refined as part of the alternative development process detailed in the steps below.

7.3 Step 1: Develop Purpose and Need Statement

The P&N statement is provided in Chapter 3 of this report. It guided the development of alternatives and was the primary focus of the alternative screening criteria. The DOT&PF SEO concurred with the P&N statement on November 16, 2022.

7.4 Step 2: Compile Possible Alternatives

Alternatives were captured based on the P&N statement and relevant information from baseline studies, public and agency input, and local and regional land use and transportation plans. The report that included descriptions of historic alternatives is in Appendix 5, which included alternatives previously considered through a 1984 EIS and 2007 Supplemental EIS.

In addition, an Alternatives Development Workshop was held with participants from the TAC and STAC on July 19, 2022, where alternatives were drawn and discussed. Further alternatives were captured based on public input, including pop-up open house meetings at Eaglecrest Day and a local grocery store. Figure 26 shows the possible alternatives identified through Step 2.

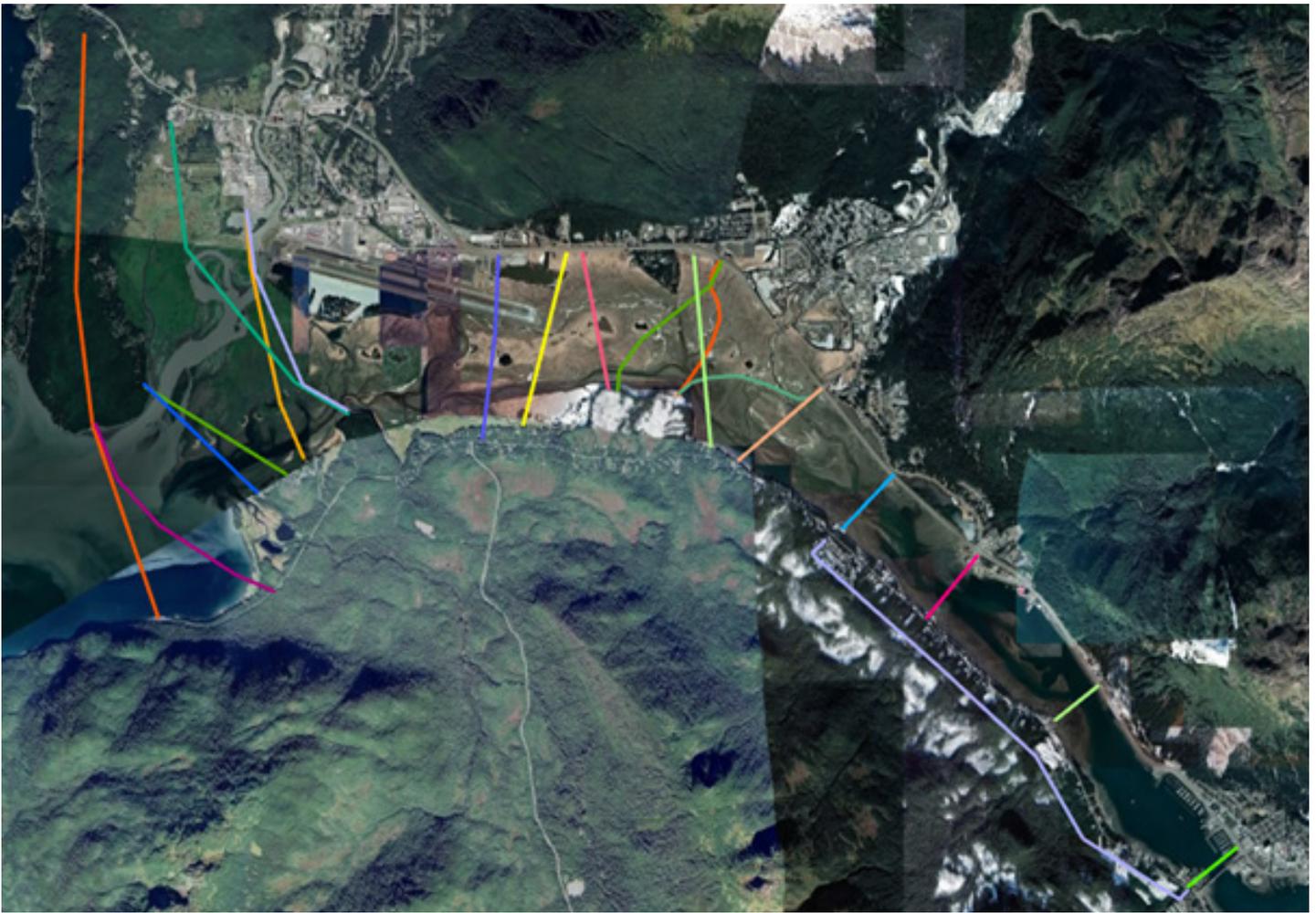
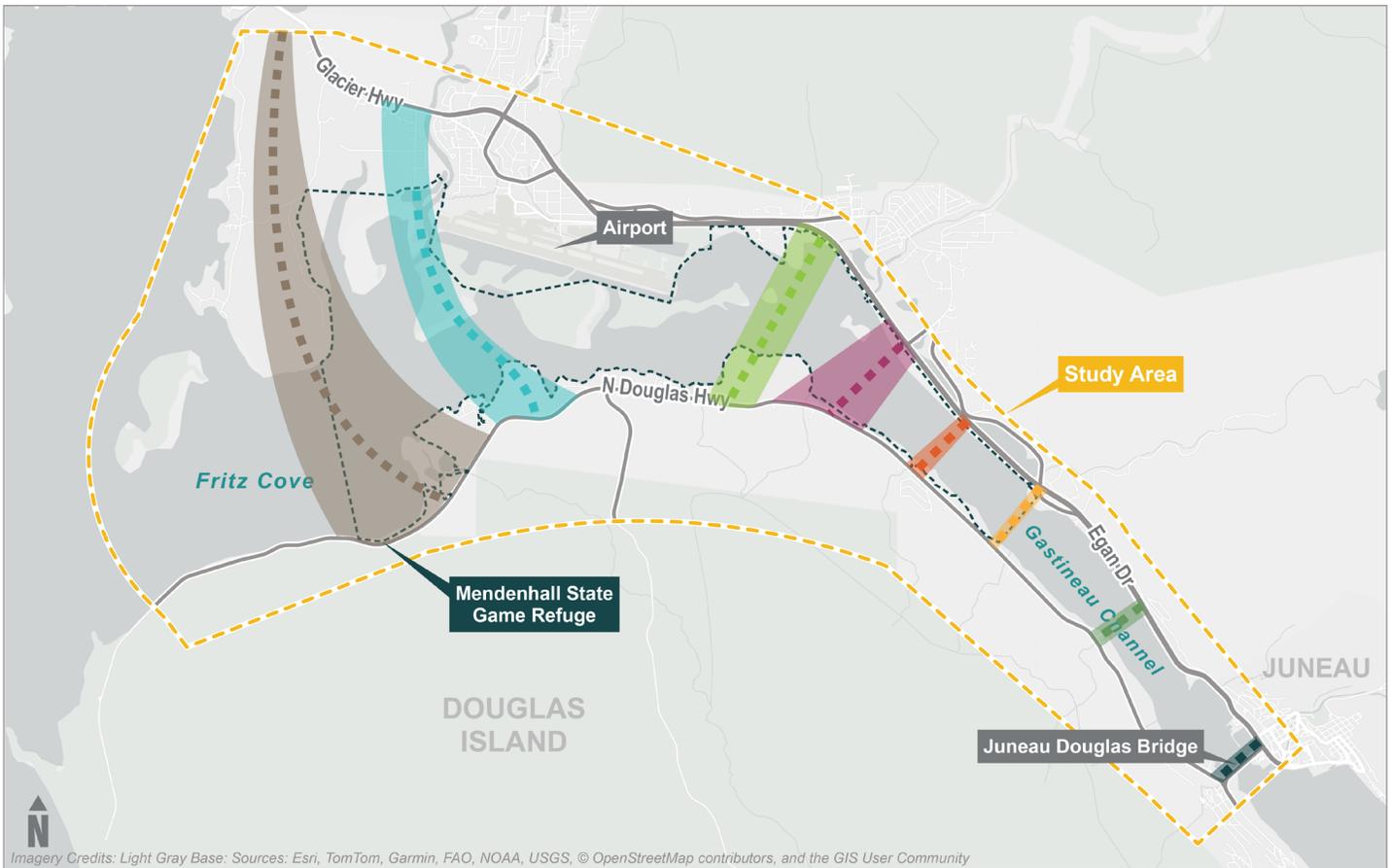


Figure 26: Public Suggestions for Alternatives

7.5 Step 3: Pre-Screening

The pre-screening step considered whether alternatives should be eliminated that are not feasible based on location and the ability for them to be built. Possible alternatives that had similar characteristics, including having similar launch and landing points were grouped as variants of a single alternative during this step (Figure 27). The remaining alternatives were considered “Preliminary Alternatives”.



Preliminary Alternatives

- Mendenhall Peninsula
- North Airport
- Sunny Point Area
- Vanderbilt
- Twin Lakes
- Salmon Creek
- Eagle Creek
- Downtown

Figure 27: Preliminary Alternatives Following Pre-Screening

The Bench Road was captured as a potential additional project to consider together with the north crossing but was not moved forward as a preliminary alternative as part of the PEL process.

7.6 Step 4: Apply Level 1 Screening

7.6.1 Methodology

The goal of Level 1 screening is to evaluate whether preliminary alternatives meet the P&N and specific regulatory requirements. Early engineering and analysis were performed to confirm whether the alternatives were technically feasible, practical, implementable, and reasonable. A “no build” alternative was carried forward through the screening process.

Level 1 screening was completed with minimal additional data collection. In Step One, pass/fail criteria were used to determine whether an alternative met the P&N. Any alternative that failed to meet the P&N was not an implementable solution and was removed from further consideration. During Step Two, criteria were used to evaluate the extent to which the remaining alternatives met the additional goals (Table 11). Other considerations were also evaluated grouped into screening themes: Natural Environment, Social, Housing, Economic, Safety, and Public Support.

Table 11: Level 1 Screening Criteria

Step One: Purpose and Need			
Category	Criteria	Description	Measure
Purpose and Need	Provide alternate access and transportation infrastructure resilience	The alternative provides alternate access between Juneau and Douglas Island and improves the transportation infrastructure resilience	Yes/No
	Improves transportation for non-motorized users	The alternative includes improvements for non-motorized users	Yes/No
	Improve transportation related energy consumption	Reduces travel times based on the Origin-Destination Study	Yes/No
	Decrease traffic pressure on Douglas Island Bridge and its intersections	Improves LOS during AM and PM peaks at existing bridge and alternative	Yes/No
	Improve emergency response times	Reduces estimated travel time between the hospital/fire department and Douglas Island properties	Yes/No
	Improve access to critical healthcare and emergency services	Provides access during bridge or another single route closure	Yes/No
	Improve access to workplaces and critical resources	Provides access during bridge or another single route closure.	Yes/No
Step Two: Additional Goals			
Additional Goals	Improve connection to North and West Douglas Island by creating additional traffic capacity to support the future development of affordable housing and economic development opportunities	<ul style="list-style-type: none"> • High: significant improvement • Medium: some improvement • Low: no discernible improvement 	H/M/L
	Enhance and protect the public health and safety of travelers and the communities that transportation facilities traverse and serve	<ul style="list-style-type: none"> • High: significant likelihood • Medium: some likelihood • Low: no discernible likelihood 	H/M/L
	Avoid, minimize, and mitigate impacts on the environment	<ul style="list-style-type: none"> • High: potential to avoid impacts • Medium: potential to minimize or mitigate impacts • Low: not likely to avoid, minimize or mitigate impacts 	H/M/L
	Avoid, minimize, and mitigate impacts on residential areas	<ul style="list-style-type: none"> • High: potential to avoid impacts • Medium: potential to minimize or mitigate impacts • Low: not likely to avoid, minimize or mitigate impacts 	H/M/L
	Maintain the visual cultural, and scenic identity of Juneau and Douglas Island	<ul style="list-style-type: none"> • High: significant improvement • Medium: some improvement • Low: no discernible improvement 	H/M/L

Other Considerations

Category	Criteria	Potential Benefit, Issue, or Impact	Description	Measure
Natural Environment	Waterbody, wetland, riparian, or flood hazards directly impacted	Mitigation, Permitting	Area impacted	Yes/No
	Hydrologic connectivity impacted		Connectivity affected	Yes/No
	Important migratory bird habitat impacted		Habitat impacted	Yes/No
	EFH or threatened and endangered habitats impacted	Consultation	Habitat impacted	Yes/No
	Contaminated sites directly affected	Permitting, Clean-up	Contaminants	Yes/No
	Impervious surfaces added		New surface constructed	Yes/No
	Protected (conserved lands, refuge) lands directly affected	Mitigation, Permitting	Area affected	Yes/No
	Use of Section 4(f)/6(f) protected lands	Mitigation, Permitting	Land used	Yes/No
Social	Within 100-foot of an Environmental Justice (EJ) community, school, or community gathering space	Noise/air/viewshed impact	Distance to EJ community, school, or community gathering space	Yes/No
	A neighborhood is divided or otherwise disrupted		Neighborhood name	Yes/No
	Consistent with plan policies and development code		Local plan/policies	Yes/No
Housing	Residential uses directly affected	Loss of property, relocation	ROW needed	Yes/No
	Within 100-foot of residential properties	Noise/air/viewshed impact	Distance to residential properties	Yes/No
	Potential to improve access to developable land	Opens up land for development	Access provided	Yes/No

Other Considerations				
Category	Criteria	Potential Benefit, Issue, or Impact	Description	Measure
Economic	Commercial uses directly affected	Loss of property, relocation, commercial use access	ROW needed	Yes/No
	Within 100-foot of commercial uses	Noise/air impact	Distance to commercial uses	Yes/No
	Potential to improve access to developable land	Opens up land for development	Access provided	Yes/No
Safety	Improve safety for all users		Safety improved	Yes/No
Constructability	A crossing can be built in this location based on construction knowledge and experience in planning and design		Professional judgement on whether an alternative can be built	Yes/No
Cost	Estimated construction cost		Professional judgement on expected construction cost	H/M/L
	Estimated maintenance cost/effort		Professional judgement on expected maintenance cost/effort	H/M/L
Public Support	Level of public support		Comments in support of a preliminary alternative	H/M/L

The alternatives were evaluated based on how well they met the criteria, with the most promising advancing to detailed alternative development, based on professional judgement. The Level 1 Screening Results and Memo are in Appendix 9.

7.6.2 Results (Level 1, Step 1) – Purpose and Need

Two alternatives did not meet the P&N, and therefore were not carried forward to Level 1 Step 2 of the screening process:

- 1. Eagle Creek Alternative:** This alternative provides alternate access between Juneau and Douglas Island but does not improve transportation infrastructure resilience as a single route closure along Egan Drive or Glacier Highway caused by vehicle collisions, fallen trees or power lines, landslides or avalanches would cut off access between Juneau and the Mendenhall Valley, disrupting access to this crossing location. Because this location is near the existing Douglas Island Bridge, the utility of a second crossing to create secondary access in the event of a single route closure between Juneau and the Mendenhall Valley is limited such that it is not meaningful to meet the P&N for infrastructure resilience. This location is also unlikely to improve access to workplaces and critical resources during a single route closure because of its location near the existing crossing. This alternative is not evaluated further.
- 2. Downtown Alternative:** This alternative does not meet the P&N for the same reasons as the Eagle Creek alternative. In addition, emergency response times and transportation-related energy consumption would not be improved as the alternative is located next to the existing Douglas Island Bridge.

The remaining seven alternatives did meet the P&N. The “no build” alternative also did not meet the P&N but was carried forward as a baseline. Alternatives that did not meet Level 1 Step 1 did not advance to further screening and were removed from further analysis in the PEL study.

7.6.3 Results (Level 1, Step 2) – Additional Goals and Topic-Based Criteria

The preliminary alternatives that passed Step 1 were screened against criteria based on the additional goals and specific topic-based criteria. One alternative was eliminated based on observations during this screening step.

- **North Airport:** Although this alternative meets the P&N, it is potentially “fatally flawed” from a constructability perspective. This is because the alternative is considered feasible but not reasonable because of the potential for geotechnical conditions including isostatic rebound, soil conditions in the area being susceptible to liquefaction in a seismic event, construction and maintenance costs associated with a tunnel, and the potential for any surface alternatives to impact approach operations at JNU.

The remaining six alternatives were recommended to advance as “Detailed Alternatives.” (Table 12).

Table 12: Detailed Alternatives

Alternative	Reasons for Advancing
<p> Mendenhall Peninsula</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: location, proximity to developable land, access to recreational areas • Alternative may not be reasonable from a constructability and cost perspective
<p> Sunny Point Area (West Variant)</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: avoids Southeast Alaska Land Trust conservation land, reduces travel times for the largest number of users, creates additional transportation capacity for all travel modes, potential to enhance public health and safety in locations where delay is currently experienced, particularly around Douglas Island Bridge
<p> Sunny Point Area (East Variant)</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: South terminus could use property owned by CBJ, reducing impacts to private property, Douglas Island terminus can use peninsula reducing bridge length, can terminate at Sunny Point interchange, creates additional transportation capacity for all travel modes, potential to enhance public health and safety in locations where delay is currently experienced, particularly around Douglas Island Bridge
<p> Vanderbilt</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: north terminus at existing intersection on Egan Drive, south terminus on CBJ-owned land, potential to improve connection between Juneau and Douglas owing to location between centers of population in downtown Juneau and Mendenhall Valley, potential to enhance public health and safety in locations where delay is currently experienced, particularly around Douglas Island Bridge
<p> Twin Lakes</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: one of the shorter crossing distances potentially reducing cost, potential to improve connection between Juneau and Douglas owing to location between centers of population in downtown Juneau and Mendenhall Valley, potential to enhance public health and safety in locations where delay is currently experienced, particularly around Douglas Island Bridge, potentially lower impact on visual, cultural and scenic identity but further and more detailed evaluation needed
<p> Salmon Creek</p>	<ul style="list-style-type: none"> • Meets P&N • Has several potential advantages: crossing is outside MWSGR, Juneau terminus is close to an intersection with Egan Drive, close to Bartlett Regional Hospital, creates additional transportation capacity between Juneau and the Mendenhall Valley, potential to enhance public health and safety in locations where delay is currently experienced, particularly around Douglas Island Bridge, potentially lower impact on visual, cultural and scenic identity but further and more detailed evaluation needed

7.7 Step 5: Refine and Conduct Preliminary Engineering

The remaining detailed alternatives were refined, and preliminary engineering was performed to include the level of detail including changes to respond to environmental constraints, minimize impacts, improve constructability, and create a construction cost estimate for each alternative. Engineering detail for the six Detailed Alternatives included developing typical sections, intersection tie-ins, and bridge structural components. The level of engineering completed is sufficient for concept level details to support the development of preliminary estimates of cut and fill, structural impacts, and quantification of these impacts. Typical sections for the bridge deck and crossing approach are shown in Figure 28 and Figure 29.

In addition to the typical sections below, plan and profile sheets were developed for each of the preliminary alternatives to assist with quantifying impacts, identifying locations where the alternatives would tie in with the existing transportation network and creating planning level cost estimates (Appendix 10).

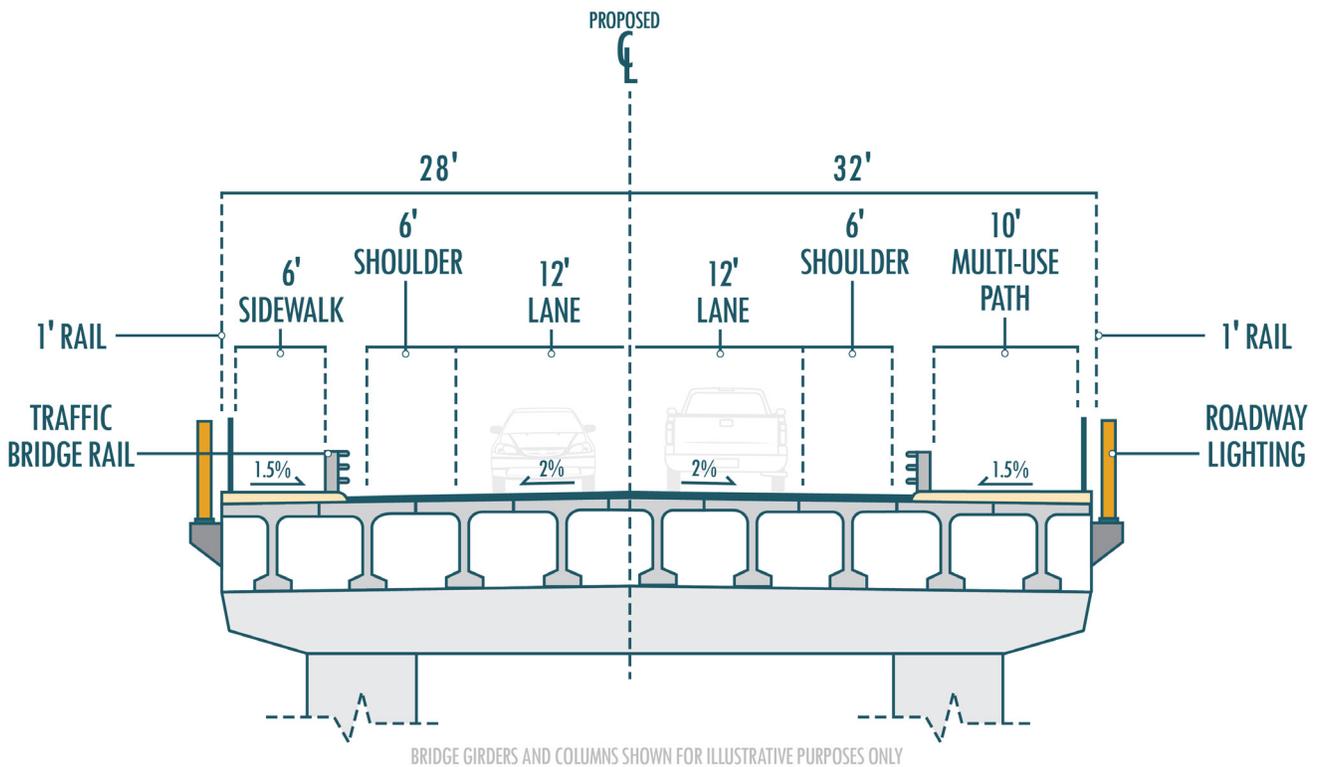


Figure 28: Bridge Deck Typical Section

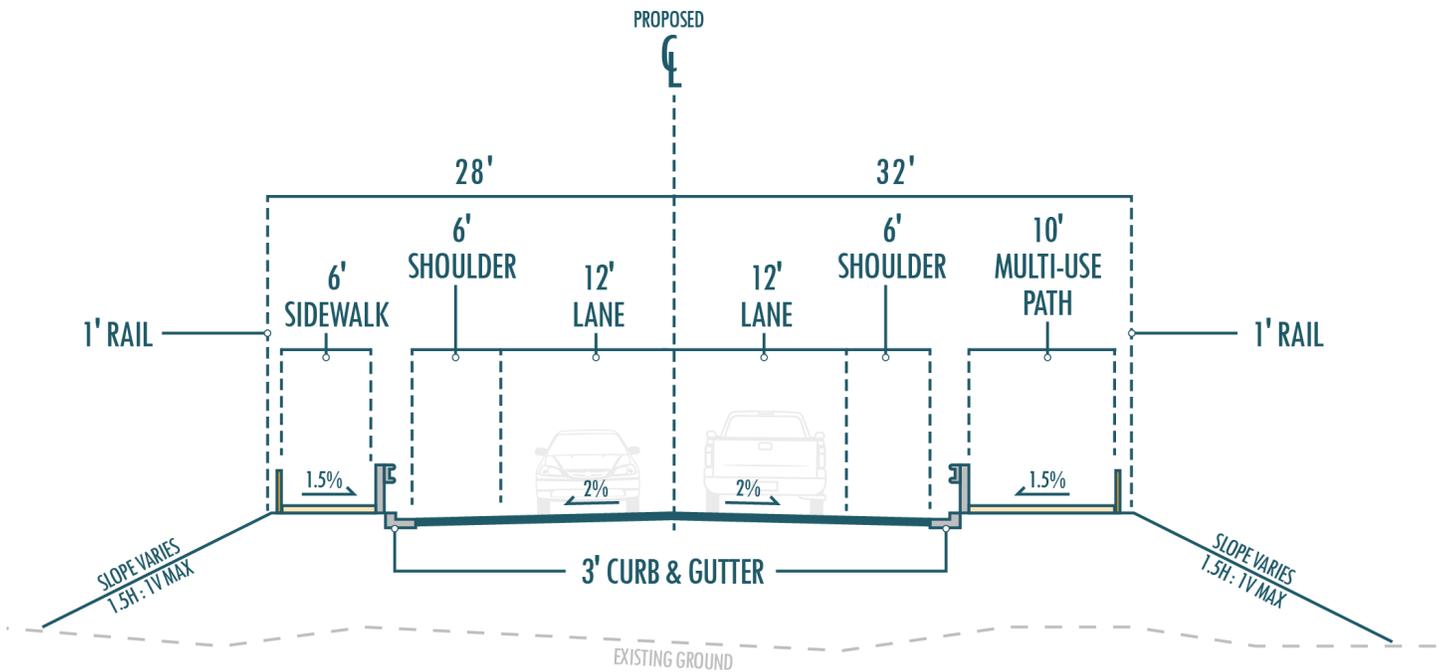


Figure 29: Crossing Approach Typical Section

The project team sought input from the USCG to discuss the bridge height and clearance requirements. The guidance received was the existing Douglas Island Bridge should be considered as the starting point for navigable clearance (greater than 50 feet of clearance between mean high tide and the bottom of the existing bridge). This level was used to guide design assumptions about the height of each proposed bridge alternative.

An overview of the key features of each of the Detailed Alternatives, including the approximate location, intersection termini and planning level cost estimate follows. These descriptions have further detail based on the detailed engineering analysis conducted to better understand the potential impacts of the alternatives, identify where and how they would connect to the existing transportation network, and to create planning level cost estimates for both construction and maintenance.

7.7.1 Salmon Creek Alternative

The Salmon Creek Alternative (Figure 30) would begin at approximately MP 3.4 of North Douglas Highway just east of Falls Creek before crossing Gastineau Channel. This alternative creates a revised western leg of the Egan Drive/Channel Drive intersection that routes over the new bridge alignment. Modifications to Channel Drive would be required to align with the new crossing. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 10 minutes, depending on the origin or destination of a trip. The Salmon Creek Alternative as conceptualized herein does not meet the USCG guidance for a greater than 50-foot clearance criteria.

Since the alignment routes through the landside dock area, this alternative assumes that the commercial use of these properties and the corresponding navigability is obsolete in the after condition, thereby rendering the need for a 50-foot high clearance unnecessary. This issue will be subject to the future NEPA process and USCG consultation.

If greater clearance is required, this alternative would also need to consider extending the bridge over Egan Drive and constructing a new grade-separated diamond interchange at the intersection between Egan Drive and Channel Drive. These modifications would increase the impacts shown in the Level 2 Screening. The 2024 planning level cost estimate is \$390 Million for construction and an annual maintenance cost of \$70,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 10 minutes, depending on the origin or destination of a trip.



Figure 30: Salmon Creek Alternative

It should be noted that in 2024, the owners of the Salmon Creek Dam, Alaska Electric Light and Power, shared information with DOT&PF regarding the Salmon Creek Dam since the new bridge would be located in the failure zone of the dam. The Salmon Creek Dam is a concrete arch dam constructed in 1914 to provide water for hydroelectric power generation. The information shared was a result of separate ongoing evaluations and modeling of the Salmon Creek Dam and did not come to light during the Level 1 screening process. The dam is regulated by the Federal Energy Regulatory Commission (FERC), which has very specific requirements for public safety and dams. The FERC requirements include annual inspections and the development of a Dam Safety Surveillance and Monitoring Plan. A Freedom of Information Act request was made in August 2024 seeking the most recent evaluation of the Salmon Creek Dam to assess the risk of a dam breach event. To date, this information has not been provided and would be reviewed in a future NEPA analysis.

7.7.2 Twin Lakes Alternative

The Twin Lakes Alternative (Figure 31) would begin with a roundabout on North Douglas Highway at approximately MP 4.5. It then crosses the MWSGR and connects with Egan Drive at approximately MP 4.5 (between the two lakes). This alternative would provide a new grade-separated diamond interchange with Egan Drive raised above the Twin Lakes intersection. Egan Drive would be slightly realigned to accommodate the raised interchange. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 10 minutes, depending on the origin or destination of a trip. The Twin Lakes Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost. The 2024 planning level cost estimate is \$360 Million for construction and an annual maintenance cost of \$65,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 10 minutes, depending on the origin or destination of a trip.

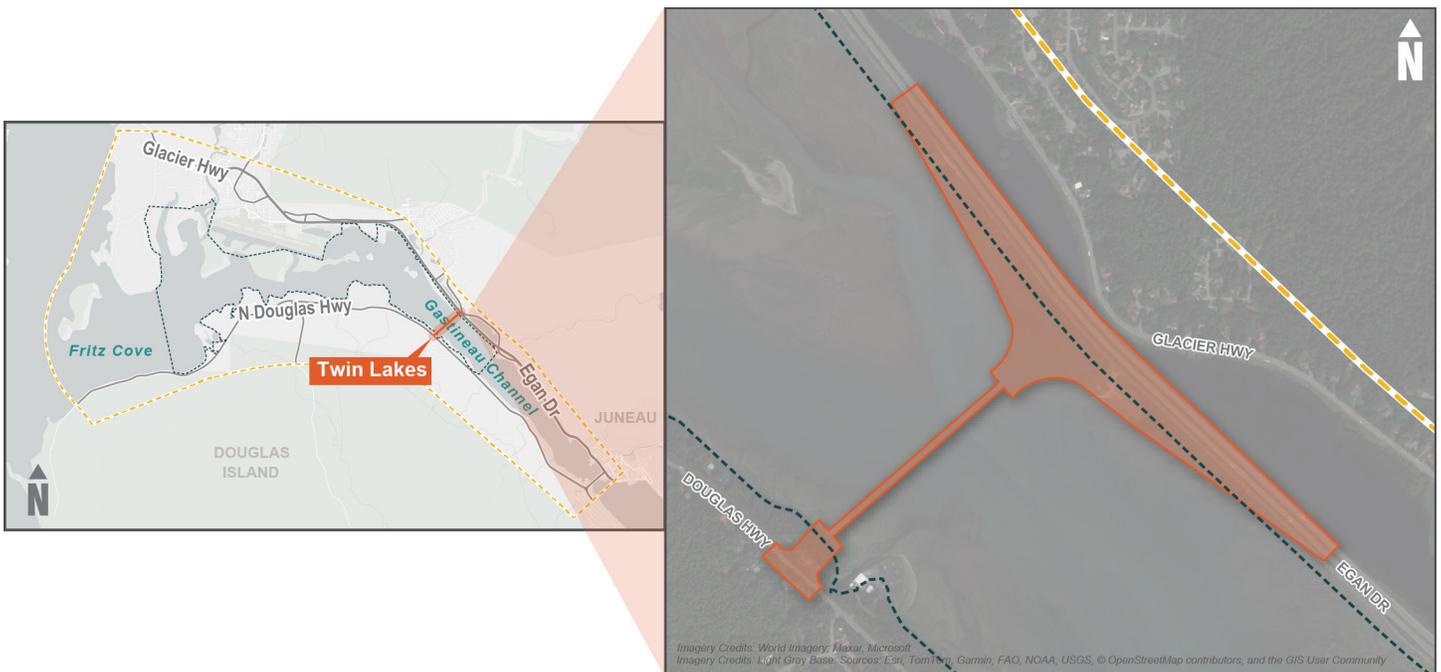


Figure 31: Twin Lakes Alternative

7.7.3 Mendenhall Peninsula Alternative

The Mendenhall Peninsula Alternative (Figure 32) would begin with a roundabout on North Douglas Highway at approximately MP 8.8. It then crosses the MWSGR and provides a new roadway over the top of the peninsula starting at an approximate elevation of 80 feet at the seaward end of the peninsula and exceeds the clearance guidance from USCG. It creates a new intersection with Engineers Cutoff Road and continues until it connects with Fritz Cove Road which intersects with Glacier Highway near MP 11.5. The Glacier Highway intersection would be an at-grade, signal-controlled intersection. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 15 minutes, depending on the origin or destination of a trip. A cost estimate for this large and complex crossing is highly dependent on the types of soils/foundations that would be required for the bridge. This information is not available at sufficient detail to narrow in on a specific cost estimate. For this reason, the 2024 planning level cost estimate is presented as a range of \$1.1 Billion (optimistic view of soil conditions) to \$1.7 Billion (pessimistic view of soil conditions) for construction and an annual maintenance cost of \$365,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 15 minutes, depending on the origin or destination of a trip.

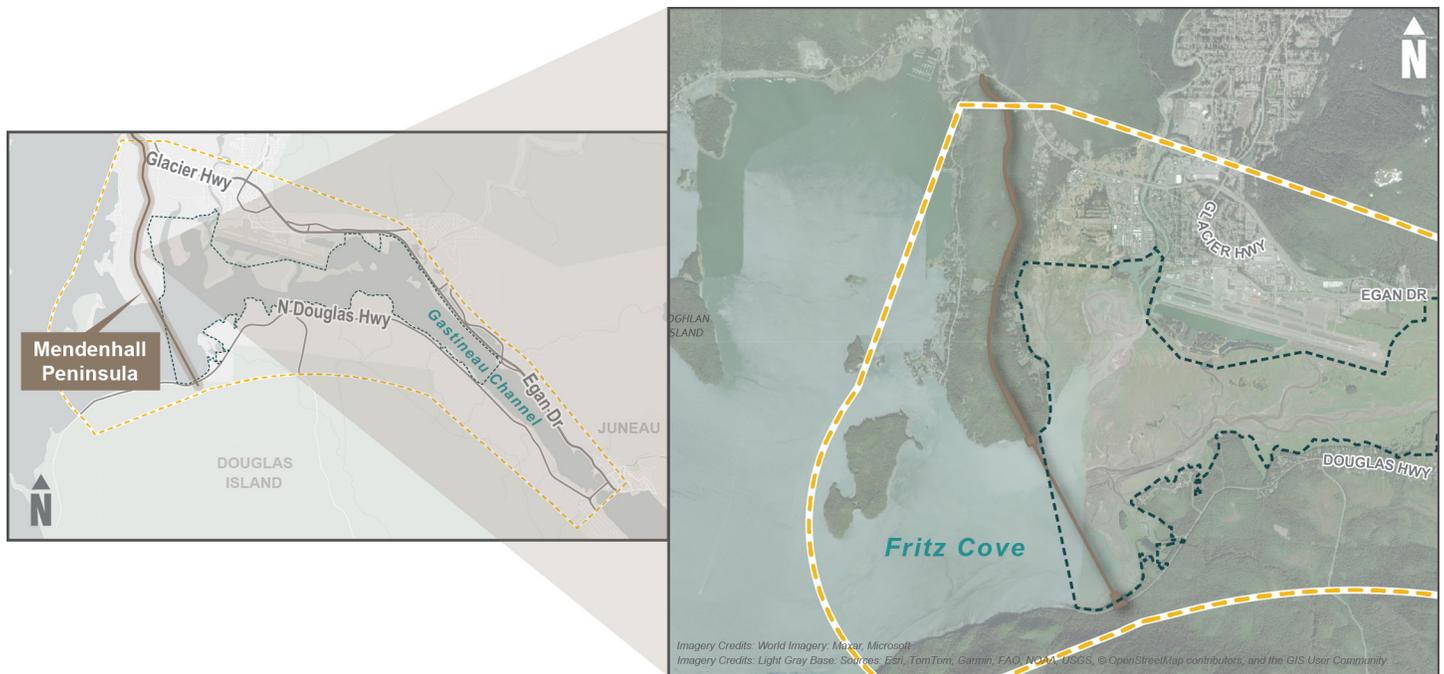


Figure 32: Mendenhall Peninsula Alternative

7.7.4 Vanderbilt Alternative

The Vanderbilt Alternative (Figure 33) would begin with a roundabout on North Douglas Highway at approximately MP 5. It then crosses the MWSGR and intersects Egan Drive at the Vanderbilt Hill Road intersection at MP 5.3. The Vanderbilt Hill Road intersection would need to be revised using either a grade-separated diamond interchange with Egan Drive raised above the Vanderbilt Hill Road intersection or by tying into the existing signalized at-grade intersection. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip. The Vanderbilt Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost. The 2024 planning level cost estimate is \$340 Million for construction (assuming tying into the existing signalized intersection) and an annual maintenance cost of \$90,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip.

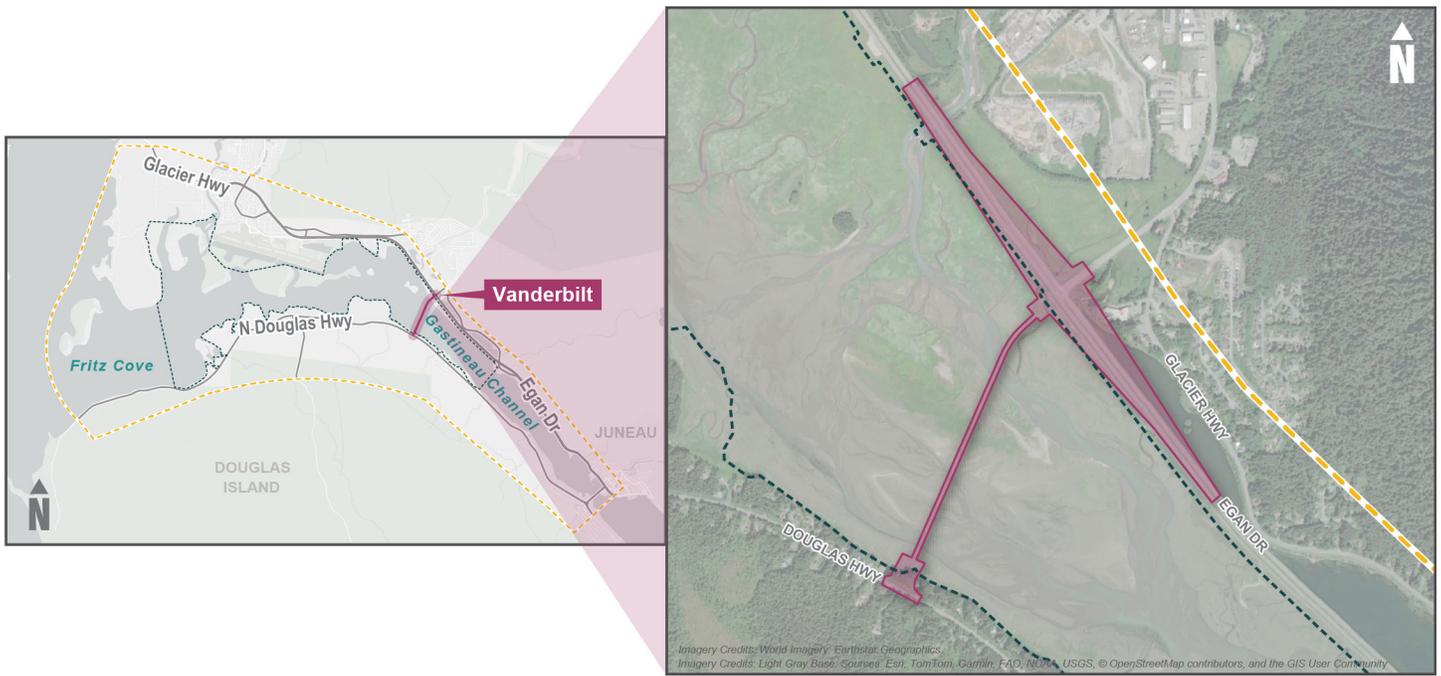


Figure 33: Vanderbilt Alternative

7.7.5 Sunny Point East Alternative

The Sunny Point East Alternative (Figure 34) would begin with a roundabout on North Douglas Highway at approximately MP 6. It then crosses the MWSGR and ties into the existing Sunny Point Interchange below Egan Drive. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip. The Sunny Point East Alternative was designed with about 25-foot of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost. The 2024 planning level cost estimate is \$530 Million for construction and an annual maintenance cost of \$175,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip.

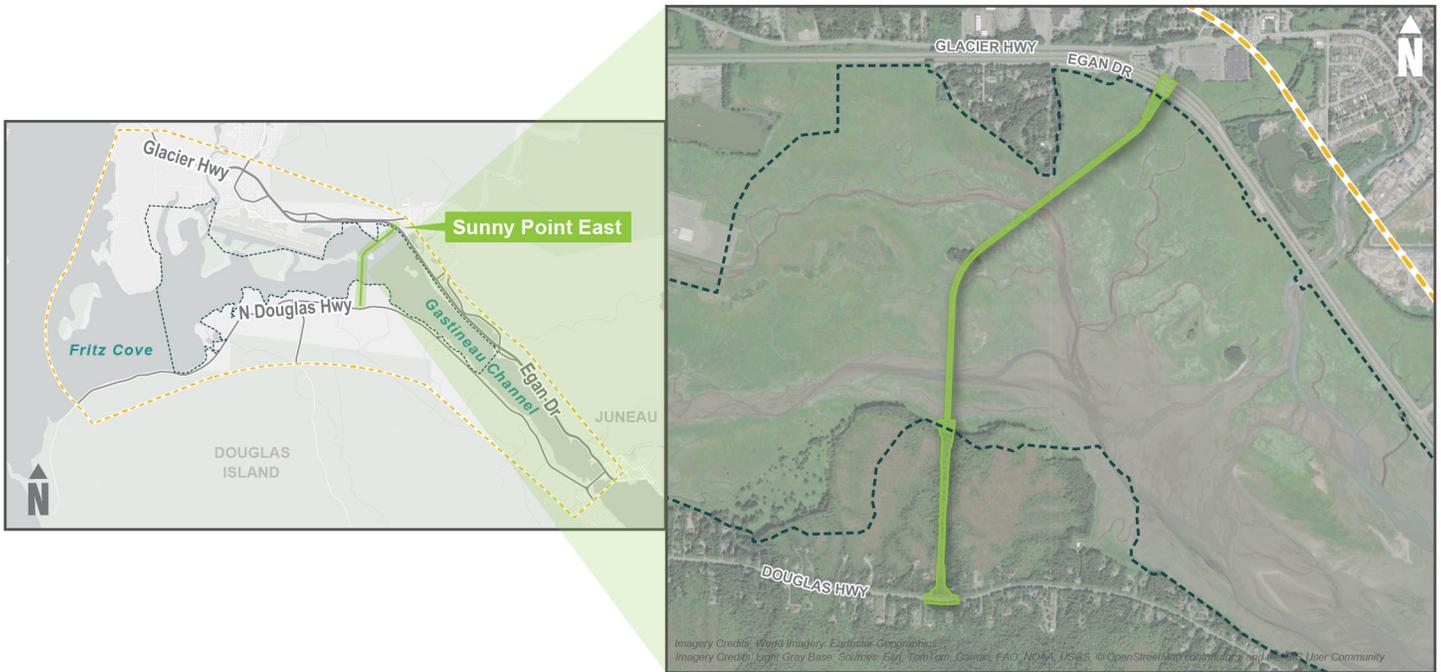


Figure 34: Sunny Point East Alternative

7.7.6 Sunny Point West Alternative

The Sunny Point West Alternative (Figure 35) would begin with a roundabout on North Douglas Highway at approximately MP 6. It then crosses the MWSGR and ties into Egan Drive near MP 7.3. The intersection would consist of a grade-separated diamond interchange with Egan Drive raised above the Sunny Point West intersection. The northbound on-ramp onto Egan Drive would connect with the existing Sunny Drive frontage road to access the existing Sunny Point Interchange and the on-ramp to Egan Drive from this interchange. As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip. Sunny Point West Alternative was designed with about 25' of vertical clearance but can be modified to meet the USCG clearance requirements with minimal additional impacts, other than the proportionate increase in cost. The 2024 planning level cost estimate is \$490 Million for construction and an annual maintenance cost of \$150,000.

As noted in the Traffic and Safety Analysis Memo (Appendix 7), this alternative has the potential to result in travel time savings of up to 13 minutes, depending on the origin or destination of a trip.

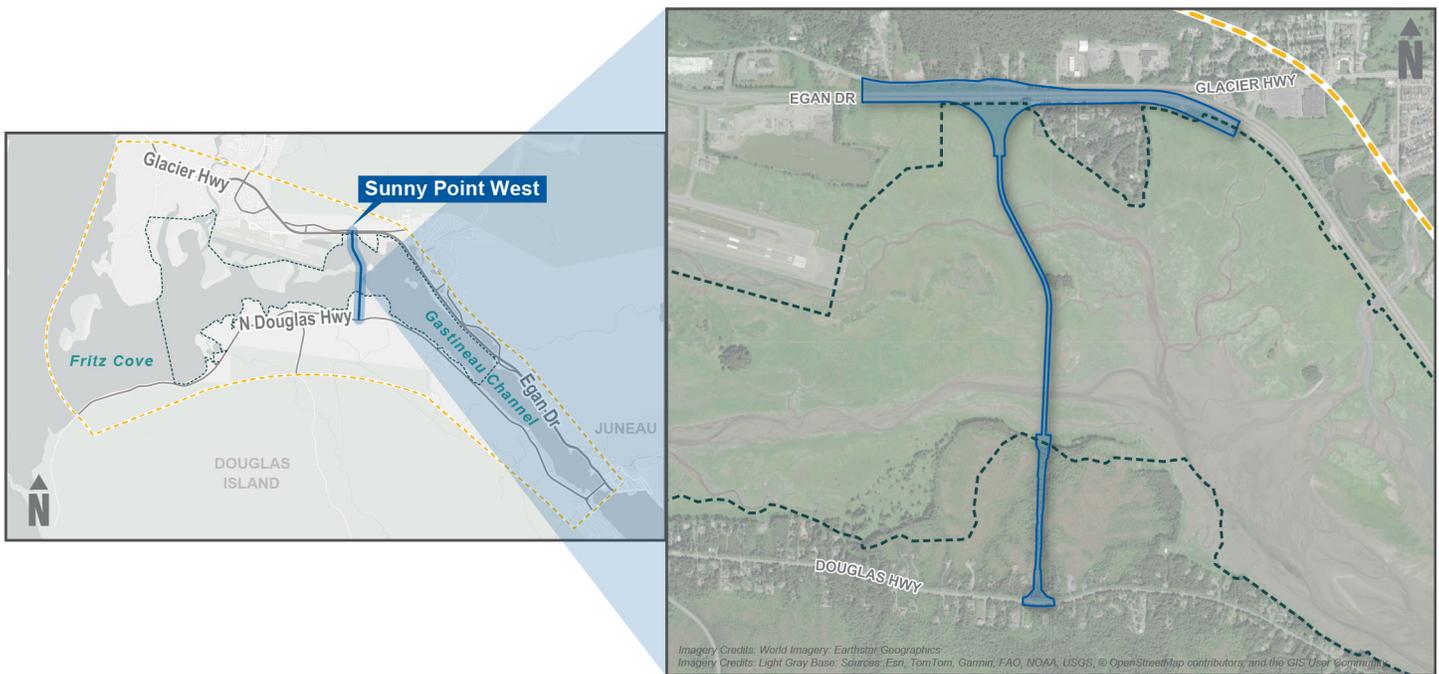


Figure 35: Sunny Point West Alternative

7.8 Step 6: Apply Level 2 Screening

7.8.1 Methodology

Level 2 screening was applied to identify which alternatives are recommended to move forward into a future NEPA analysis. Definition and application of the criteria was a collaborative effort with the TAC and STAC. The Level 2 Screening Results and Memo are in Appendix 11.

Level 2 screening applied a broad range of qualitative and quantitative criteria (Table 13). The results provided an overview of the costs and impacts to enable a comparison of each of the screened alternatives.

Table 13: Level 2 Screening Criteria

Purpose and Need, Additional Goals			
Category	Criteria	Measurement	Method
Purpose and Need	Improve transportation for non-motorized users	Planned pedestrian and bicycle lanes tie into the existing network and improve access and safety for non-motorized users	Scale
	Reduce transportation-related energy consumption	Scale from 2 (significant improvement) to -2 (no discernible improvement) of the estimated change in travel times based on travel origins and destinations	Scale
	Decrease existing and future traffic congestion on Douglas Island Bridge and its intersections	Scale from 2 (significant improvement) to -2 (no discernible improvement) of estimated LOS during AM and PM peaks at the existing bridge and alternative	Scale
	Improve emergency response times	Scale from 2 (significant improvement) to -2 (no discernible improvement) of minutes of estimated travel time reduction between the hospital/ fire department and Douglas Island residents	Scale
	Improve access to critical healthcare and emergency services	Provides access during the bridge or another single route closure	Scale
	Improve travel times to workplaces and critical resources	Scale from 2 (significant improvement) to -2 (no discernible improvement) of minutes of estimated travel time reduction	Scale

Purpose and Need, Additional Goals

Category	Criteria	Measurement	Method
Additional Goals	Improve connection to North and West Douglas Island by creating additional traffic capacity to support the future development of affordable housing and economic development opportunities	Scale from 2 (significant improvement) to -2 (no discernible improvement) of the connection to North and West Douglas Island	Scale
	Enhance and protect the public health and safety of travelers and the communities that transportation facilities traverse and serve	Scale from 2 (significant improvement) to -2 (no discernible improvement) to enhance and protect the public health and safety	Scale
	Avoid, minimize, and mitigate impacts on residential areas	Scale from 2 (significant potential to avoid impacts) to -2 (not likely to avoid, minimize, or mitigate impacts)	Scale
	Maintain the visual, cultural, and scenic identity of Juneau and Douglas Island	Scale from 2 (significant potential to avoid impacts) to -2 (not likely to avoid, minimize, or mitigate impacts)	Scale

Other Considerations

Category	Criteria	Measurement	Method
Natural Environment	Wetlands directly affected	Scale from 2 (no impacts) to -2 (high number of acres impacted)	Scale
	Intertidal zone directly affected	Scale from 2 (no impacts) to -2 (high number of acres intertidal zone impacted)	Scale
	Stream and riparian habitats (including buffer) directly affected	Scale from 2 (no impacts) to -2 (high number of acres of stream and riparian habitats including buffer impacted)	Scale
	EFH (including buffer) directly affected (including noise)	Scale from 2 (no impacts) to -2 (high number of acres of EFH including buffer impacted)	Scale
	Wildlife habitat directly affected	Scale from 2 (no impacts) to -2 (high number of acres of wildlife habitat impacted)	Scale
	Anadromous streams impacted	Scale from 2 (no impacts) to -2 (high number of anadromous streams impacted)	Scale
	Threatened and endangered (T&E) habitat directly affected	Scale from 2 (no impacts) to -2 (high number of acres impacted)	Scale
	Important migratory bird habitat impacted	Scale from 2 (no impacts) to -2 (high number of acres important migratory bird habitat impacted)	Scale

Category	Criteria	Measurement	Method
Natural Environment	Eagle nesting trees directly affected	Scale from 2 (no impacts) to -2 (high number of trees impacted)	Scale
	Contaminated sites directly affected	Scale from 2 (no impacts) to -2 (high number of contaminated sites impacted)	Scale
	Section 4(f)/6(f) resources affected	Scale from 2 (no impacts) to -2 (high number of Section 4(f)/6(f) resources impacted)	Scale
	Protected lands directly affected	Scale from 2 (no impacts) to -2 (high number of acres of protected lands impacted)	Scale
	Impervious surfaces added	Scale from 2 (no impacts) to -2 (high number of impervious surfaces impacted)	Scale
	Impacts on user groups as defined by Guidelines for the Visual Assessment of Highway Projects (USDOT, January 2015).	Scale from 2 (no impacts) to -2 (high number of user groups impacted)	Scale
Social	EJ community, school, or community gathering space directly affected	Scale from 2 (no impacts) to -2 (high number of properties impacted)	Scale
	Neighborhood divided or otherwise disrupted	Scale from 2 (no impacts) to -2 (high number of neighborhoods impacted)	Scale
	Distance to native allotment	Scale from 2 (not within 50 foot) to -2 (within 50 foot) of a native allotment	Scale
Housing	Residential uses directly affected	Scale from 2 (no impacts) to -2 (high number of residential uses impacted)	Scale
	Within 100-foot of residential property	Scale from 2 (not within 100 foot) to -2 (within 100 foot) of a residential property	Scale
	Acres of vacant residential land directly affected	Scale from 2 (no impacts) to -2 (high number of acres of developable land impacted)	Scale
Economic	Commercial uses directly affected	Scale from 2 (no impacts) to -2 (high number of commercial uses impacted)	Scale
	Within 100-foot of commercial uses	Scale from 2 (not within 100 foot) to -2 (within 100 foot) of a commercial property	Scale
	Acres of vacant commercial land directly affected	Scale from 2 (no impacts) to -2 (high number of acres of developable land impacted)	Scale

Category	Criteria	Measurement	Method
Safety	Improves safety for all users	Scale from 2 (reduces conflict/friction on network) to -2 (higher risk of conflict/friction on network)	Scale
Cost	Estimated total construction cost	Scale from 0 (low construction cost) to -2 (high construction cost)	Scale
	Estimated annual maintenance cost	Scale from 0 (low maintenance cost) to -2 (high maintenance cost)	Scale
ROW	Total ROW needed	Scale from 0 (no impacts) to -2 (high number of full and partial parcels impacted) and scale from 0 (no impacts) to -2 (high number of acres impacted)	Scale
	Residential property acquisition	Scale from 0 (no impacts) to -2 (high number of full and partial parcels impacted)	Scale
	Commercial property acquisition	Scale from 0 (no impacts) to -2 (high number of full and partial parcels impacted)	Scale
Public Support	Level of public support	Scale from 2 (high level of support) to -2 (low level of support)	Scale

The criteria were “scored” using the following scale to determine how the alternatives compare:

2	1	0	-1	-2
Alternative demonstrates strong performance against and/or positive effects regarding criteria	Alternative demonstrates slightly strong performance against and/or positive effects regarding criteria	Alternative demonstrates neutral performance against and/or positive effects regarding criteria	Alternative demonstrates slightly weak performance against and/or positive effects regarding criteria	Alternative demonstrates weak performance against and/or positive effects regarding criteria

A comment field was used to document why a criterion was evaluated in the way it was, or to note specific items such as community features, resources, etc., that would be affected by the alternative. Stronger performance, or a higher numeric ranking, denotes a greater level of success for an alternative.

The Level 2 screening step evaluated alternatives on how well they met the P&N and the additional goals. Alternatives were also evaluated using criteria to consider performance in the areas of Natural environment, Social, Housing, Economic, Safety, Cost, ROW, and Public Support. The alternatives were scored using quantitative measures (acreage, cost, amounts) where possible, and otherwise using qualitative evaluation. The evaluation helped to identify the recommended alternatives.

Each of the six Detailed Alternatives was screened using available data and professional judgement. A No Build alternative was also screened to provide a baseline against which to evaluate impacts. Focus was placed on the following factors:

- Connection termini (start and end locations)
- Significant impacts (including proximity to Juneau airport and impacts to airport operations; ROW impacts; and other major land use impacts)
- Feasibility of alignment geometry (including consideration of elevation and the ability to meet design standards)
- Environmental impacts (including proximity to avalanche zones, anadromous streams, wetlands, the MWSGR, lands conserved by Southeast Alaska Land Trust)
- Similarity to other alternatives and ability to combine alternatives based on shared characteristics and location

Draft Level 2 screening results were shared with the Advisory Committees (including agencies as participants in the advisory committees) and DOT&PF SEO. Comments and feedback obtained on the draft screening suggested that greater weight should be applied to resources that are within the Section 4(f) properties. Consequently, weight was applied to resources to reflect the concern with impacts to the MWSGR. The weight applied means impacts within the refuge were scored more negatively than impacts outside of the refuge.

The scoring sheets with rationale and impact quantity tables can be found in Appendix 11.

7.8.2 Results

Table 14 summarizes the results of the Level 2 Screening with the alternatives listed from the highest scoring to lowest scoring. The Level 2 Screening did not identify substantial impacts or constraints that were sufficiently outlying from the other alternatives to justify dismissal of any of the alternatives, except for the Mendenhall Peninsula Alternative which has been eliminated as it is not financially feasible.

Table 14: Results of Level 2 Screening

Alternative	Score	Recommendation
● Salmon Creek	3	Advance to NEPA
● Twin Lakes	-10	Advance to NEPA
● Mendenhall Peninsula ^b	-11	Dismiss Alternative
● Vanderbilt	-18	Advance to NEPA
● Sunny Point East	-20	Advance to NEPA
● Sunny Point West	-23	Advance to NEPA
● No Build Alternative ^a	-16	Baseline

^a Does not meet purpose and need but would be carried forward into future the future NEPA process to provide a baseline against which to evaluate other alternatives.

^b While the Mendenhall Peninsula Alternative scored relatively strongly in relation to the other alternatives, the total cost of the alternative is two to three times more than other alternatives and is above a level that can be considered financially feasible.

Each alternative would potentially result in impacts to the following resources:

- Waterbody, wetland, riparian, or special flood hazard area impacts
- Hydrologic connectivity impacts
- Migratory bird habitat impacts
- Wildlife, fish, EFH, or T&E species impacts
- Impervious surfaces added
- Protected (conserved lands, refuge) lands directly affected
- Direct impacts to Section 4(f)/6(f) protected lands

Preliminary environmental effects are summarized in Chapter 8 of this PEL Study report. Additional details on the quantification of impacts are included in the Level 2 Screening Results and Memo in Appendix 11.

7.9 Step 7: Further Refine Alternatives

This step provided for the further refinement of alternatives to avoid or minimize impacts and complete designs to a higher level of detail to resolve technical issues and prepare cost estimates. With the additional field work that was obtained following completion of the initial draft of the Level 2 screening, this step was completed in parallel with Steps 5 and 6 to incorporate the new information.

7.10 Step 8: Documentation

This step provides for the screening results to be documented in the PEL study and questionnaire (refer to Appendix 1: PEL Questionnaire, Appendix 8: PEL Screening Criteria and Process, Appendix 9: Level 1 Screening Results and Memo, and Appendix 11: Level 2 Screening Results and Memo).

8

PRELIMINARY ENVIRONMENTAL EFFECTS



8.0 PRELIMINARY ENVIRONMENTAL EFFECTS

This chapter summarizes the potential effects from the Recommended Alternatives on resources not directly assessed in Level 2 Screening. As the Recommended Alternatives are only at a preliminary level of design, a future NEPA process would consider environmental effects in greater detail. Some potential effects (i.e. air quality and noise) are described only briefly, due to limited information at this early stage of design. For a review of impact quantities to resources for which the Level 2 Screening was focused (e.g., intertidal habitat, high value wetlands, etc.) please see Appendix 11. It should be noted that some additional field studies were completed to assist with environmental screening and understanding preliminary environmental impacts. These include a wetland delineation and functional assessment, migratory birds, intertidal habitat, eelgrass delineation, geophysics investigation, and a visual assessment. The additional field study reports are in Appendix 12.

Approaches to evaluating resource effects are described below and discussion includes likely studies, design mitigation options and likely permits for all alternatives. An approximation of impacts at this early state are summarized in a table at the end of the chapter.

8.1 Human Environment

8.1.1 Socioeconomic Conditions

All Recommended Alternatives have the same potential to affect demographic and economic shifts. A socioeconomic study would be completed to develop a comprehensive understanding of the project's effects on demographics and economics, environmental justice and community cohesion.

8.1.2 Land Use Designations

Section 4(f)/6(f)

The Salmon Creek Alternative has the potential to avoid Section 4(f) resources. However, depending on the alignment and clearance requirements for the alternative and land requirements for intersection improvements at either end of the alternative, consideration may be needed of whether the alternative results in a potential use of the MWSGR as well as other CBJ park properties along Channel Drive, Glacier Highway and North Douglas Highway.

All other Recommended Alternatives would require coordination with the DOT&PF SEO and consultation with ADF&G and ADNR for potential use of the MWSGR. The DOT&PF SEO would confirm if and what level (i.e., de minimis, programmatic, or individual) of Section 4(f) evaluation applies. All alternatives would require a Special Use Permit from ADF&G for construction within MWSGR.

Additionally, the Twins Lakes Alternative would require consultation under Section 6(f) with NPS, CBJ, and ADNR due to LWCF funded projects in the study area.

Once the level of evaluation is determined for each Recommended Alternative, a Section 4(f) evaluation would be completed through either a de minimis impact finding, programmatic evaluation, or individual evaluation. All three options require public notification of the use of the Section 4(f) property. A de minimis impact involves a use of a Section 4(f) resources that results in "no adverse effect" to the property following all mitigation considerations and does not require further analysis of other feasible avoidance alternatives.

Under a programmatic or individual level of review, DOT&PF must determine there is no other feasible or prudent alternative to avoid impacts to the 4(f) resource(s) and that the proposed project analysis has included all possible alternatives to minimize harm. If the analysis determines that there is no feasible and prudent avoidance alternative, then the alternative representing the least overall harm must be selected. Documentation of the Section 4(f) process should be a part of the final NEPA document as an appendix.

Final documentation and approval of using a Section 4(f) resource must be signed off by DOT&PF SEO and ADF&G.

When land is proposed for a conversion, a separate and simultaneous consultation process between the NPS and the Alaska Division of Parks and Outdoor Recreation (DPOR) is required to evaluate Section 6(f) properties. Coordination must occur with the DPOR Grants Administrator to determine if any Section 6(f) resources exist within the Study Area. Section 6(f) applies if LWCA funds were used within any portion of the property, regardless of if funds were used to conserve a discrete area. Similar to the Section 4(f) process, the conversion of a Section 6(f) property most consider all feasible and prudent alternatives. Replacement property of equal value, location, and usefulness is determined through an approved plan from the coordination with the Grants Administrator. Section 6(f) documentation is typically a part of the Section 4(f) final approval.

All alternatives would require identification of the features and characteristics of what qualifies the MWSGR as a Section 4(f) and how the project could affect those features and its importance. For the Twin Lakes Alternative, verification of the Section 6(f) resource boundary is needed first, followed by identification of another parcel with equivalent value or use.

The potential for a transportation corridor within the Mendenhall Refuge was envisioned by the establishing language in Alaska Statute 16.30.34. In February 2025, CBJ provided comments that reasserted their rights to this transportation corridor, see Appendix 4.

8.1.3 Historic Properties and Cultural Resources

Compliance with Section 106 of the National Historic Preservation Act (NHPA) would require consultation between the lead federal agency, the State Historic Preservation Officer (SHPO), Tribes (primarily the Central Council of Tlingit and Haida Indian Tribes of Alaska), and other interested stakeholders such as the Juneau Historic Resources Advisory Committee. All action alternatives would require developing an area of potential effects based on final project alignment(s) and determined through consultation with SHPO and other appropriate consulting parties in accordance with 36 CFR 800.

Compliance with Section 106 requires inventory and identification of historic properties and cultural resources within the area of potential effects for the selected alternative, the evaluation of identified properties and/or resources for eligibility for listing on the National Register of Historic Places (NRHP), and assessment of effects to historic properties.

Identification and inventory would require, at minimum, desktop review of known sites, literature review, and identification of areas with potential to contain archaeological or other cultural resources. Although there are no documented cultural resources within the study area, all of the Recommended Alternatives are within territory historically controlled by the Auk Kwaan and settled by Euroamericans circa 1900. Tlingit subsistence activities (such as salmon fishing, hunting, and trapping), and seasonal camps and smokehouses have been reported between Lemon Creek and Jordan Creek, and along the coast of Douglas Island from Fritz Cove into Gastineau Channel (Goldschmidt and Haas 1998). Additionally, there were reportedly Euroamerican farms in this area (Goldschmidt and Haas 1998). This history, and the presence of nearby archaeological sites outside of the Study Area addressed here (such as JUN-00235), indicate that as yet unidentified archaeological sites may exist within the study area. The relative dearth of archaeological survey, especially on Douglas Island, would likely require field survey of areas with high potential to contain cultural resources.

Inventory would also include identification of above ground resources with potential to be adversely impacted. Review of parcel data indicates that each Recommended Alternative is within an area that contain parcels with buildings older than 40 years of age. For these parcels, documentation, evaluation, and assessment of potential adverse impacts to these buildings would be required as part of Section 106 compliance. Additional buildings older than 40 years outside of the cultural resources analysis areas could experience viewshed impacts during or upon completion of construction of the project. Visual impacts are discussed in Chapter 8.3.4. If analysis suggests that the project would result in visual impacts to properties older than 40 years outside of the cultural resources analysis areas addressed here, those impacts would be assessed through compliance with the Section 106 process.

Either an historic building and/or archaeological survey would require rights-of entry to private parcels and application for and compliance with the terms of applicable state and/or federal permits. On lands owned or controlled by the State (including tidelands and submerged lands out to three miles or within channels of navigable water bodies) a State Cultural Resource Investigation Permit (SCRIP) would be required.

Should identified cultural resources be determined eligible for listing on the NRHP, assessment of project effects on those historic properties would be completed through consultation with SHPO and other relevant consulting parties.

8.2 Natural Environment

8.2.1 Geologic Hazards

While each Recommended Alternative would require design-specific geotechnical investigations, there are general geotechnical necessities that apply to all proposed alternatives. All Recommended Alternatives are located outside previously mapped avalanche, landslide, or other slide zones. The American Association of State Highway and Transportation Officials (AASHTO) and DOT&PF have outlined design specifications and geotechnical procedures for data collection to support the design of all foundation structures of a bridge. Methods, impacts, and any permits necessary to complete a geotechnical investigation are generally the same for all alternatives.

Geotechnical borings would be required at all proposed bridge pier locations. Design concepts indicate that all or most of the bridge piers would be located within either Gastineau Channel or Mendenhall Wetlands, which consists of marine intertidal deposits of sandy silt, silty gravel with sand, and sandy gravel. Access across the wetland areas would have the largest impact by disturbing the surficial material and vegetation, however these impacts can be reduced by using appropriate equipment such as an amphibious or barge platforms for areas crossing water.

8.2.2 Hydrology, Water Quality, and Floodplains

Hydrology

Piers in Gastineau Channel would potentially impact hydrologic flow patterns and changes to unnamed streams could occur during low tide when stream dynamics are dominant and may increase bank erosion, sediment deposition, and channel morphology downstream of the piers. Streams may need to be realigned or culverted around the piers to maintain flow paths. Any new roadway on Douglas Island would require the installation of culverts to maintain natural flow paths in wetland areas and potentially unmapped stream corridors.

Water Quality

Development of any alternative would require implementation of stormwater runoff quality control measures. DOT&PF would need to acquire permits to minimize or mitigate potential impacts to water quality from storm water runoff. Permits include:

1. Section 402, Alaska Pollutant Discharge Elimination System (APDES) permit to avoid and minimize erosion from construction activities and sedimentation/transport to waters of the US (i.e., Vanderbilt/Lemon Creek, Gastineau Channel)
2. Section 401 Water Quality Certification

During construction DOT&PF would implement best management practices to control erosion and sediment transport in storm water runoff to minimize water quality impacts to waters of the US.

For all alternatives, hydrologic and hydraulic analysis would be needed to understand Gastineau Channel, Mendenhall Bar and stream bed compositions and flow characteristics. This analysis would be used analyze scour around piers and model erosion and deposition changes. This analysis would also identify culvert locations for Douglas Island roadway. Additionally, stream channels would need to be mapped.

Floodplains

All alternatives would require a Floodplain Development Permit from the CBJ for development within a Special Flood Hazard Area. A no-rise certification would be required, if applicable. The Floodplain Development Permit must be accompanied by a City of Juneau Development Permit Application. Additionally, consultation with the Regional Hydraulic Engineer would also occur.

Navigable Waters

A Section 10 permit would be required from USACE for structures in Gastineau Channel. Consultation would be required with USACE beginning with a pre-application meeting. A USCG bridge permit would be required for crossing Gastineau Channel. Under the Section 10 and USCG bridge permit, a Section 401 water quality certificate would be required from the ADEC. Boat traffic studies would determine bridge suitability for USCG navigability. A bathymetry survey would determine elevations considered navigable for Gastineau Channel.

8.2.3 Wetlands

For all alternatives, a Section 404 permit would be required from the USACE for impacts to waters of the US. due to fill material placed in freshwater wetlands. During NEPA analysis, new wetland delineation efforts may occur to either update data collected in 2023, or to include new areas. A Section 10 permit would be required from USACE for structures in Section 10 waters of the US including estuarine wetlands. A Section 401 water quality certification would be required from the ADEC for the Section 404/10 permits. Consultation would be required with USACE and ADEC during a pre-filing/pre-application meeting. Compensatory mitigation may be required by USACE for impacts to waters of the US.

8.2.4 Threatened and Endangered Species

Any alternative resulting in placement of fill and pilings in Gastineau Channel would potentially have an effect on listed species. Any animals present while construction is underway could be exposed to elevated noise levels from in-water work. Activities that generate extremely high sound pressure levels (e.g., in-water pile driving) would have the greatest potential to disturb or even harm these species. The potential for such exposure to result in adverse effects would be evaluated through the consultation process with NMFS.

The presence of open-water habitats in the area spanned by bridges suggests a slightly higher potential that humpback whales may be present in waters near construction areas.

Under Section 7(a) of the ESA, any action with a federal nexus (e.g., funding, authorization) must undergo consultation with USFWS and/or NMFS if that action may affect an ESA-listed species or designated critical habitat for such as species. Typically, the federal action agency prepares a biological assessment that evaluates project-related impacts and determines whether the project is or is not likely to adversely affect ESA-listed species or critical habitat. Projects with determinations of “not likely to adversely affect” are submitted for informal consultation, with a request for concurrence. Projects with determinations of “likely to adversely affect” must undergo formal consultation, which culminates in the issuance of a biological opinion. A biological opinion includes an incidental take statement and may also specify measures for minimizing the risk that the proposed action would jeopardize the continued existence of ESA-listed species.

Based on the expectation that the only ESA-listed species potentially affected by project construction fall under the jurisdiction of NMFS, ESA Section 7 consultation would likely be with that agency only. If it is determined that project construction would have the potential to affect short-tailed albatrosses, consultation with USFWS may also be necessary.

ESA Section 7 analyses commonly rely on the best available science. Additionally, site-specific surveys are unlikely to be required.

8.2.5 Fish and Wildlife

All Recommended Alternatives would likely impact EFH, intersect with waterfowl and shorebird habitat, and result in fill in intertidal areas and wetlands.

EFH

All alternatives require work within or near marine or fresh waters and have the potential to adversely affect EFH for Pacific salmon and would therefore be subject to the consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Such consultations are commonly conducted in conjunction with ESA Section 7

consultations (see Chapter 8.2.4). Examples of conservation recommendations that may arise from the EFH consultation process include the implementation of best management practices to protect water quality, use of materials that allow light transmission through overwater structures (where practicable), and avoidance or minimization of impacts to submerged aquatic vegetation.

The potential for project to interfere with commercial and/or subsistence uses under this alternative would need to be evaluated in coordination with ADF&G, as would the potential for adverse effects on the use of these areas by waterfowl and shorebirds.

Marine Mammals

In-water work for project construction would have the potential to disturb or harm these species, triggering requirements for review and authorization by NMFS. Activities that generate extremely high sound pressure levels (e.g., in-water impact pile driving) would have the greatest potential for harassment or harm of marine mammals.

All alternatives would likely require permitting with NMFS under the Marine Mammal Protection Act. The project would likely require either an IHA (if work would take place only during a single year and impacts would be minimal) or a Letter of Authorization (if work would take place over multiple years and/or result in serious injury to marine mammals). Examples of potential mitigation measures include the use of noise abatement measures during in-water pile driving, as well as requirements for monitoring and reporting. Restrictions on work activities could be required if authorized take levels are exceeded.

NMFS recently issued two IHAs to CBJ for construction activities – one associated with a harbor improvement project in Statter Harbor and the other a ferry terminal in Auke Bay. Statter Harbor is in Auke Bay immediately north of the study area, and marine mammals present at that site are also likely to use habitats in the study area.

According to the IHA, seven species of marine mammals under the jurisdiction of NMFS have been documented in the waters of Southeast Alaska near the study area. These species are harbor seal, harbor porpoise, Dall's porpoise, killer whale, humpback whale, minke whale, and Steller sea lion. Only three of these (harbor seal, Steller sea lion, and humpback whale) are known to be present in Statter Harbor and are expected to use marine habitats in the study area. Two of the other four species (Dall's porpoise and minke whale) have been observed only in open-ocean waters west of the study area and are not expected to enter the study area. Killer whales have been sighted infrequently and irregularly in the outer portions of Auke Bay and in the Gastineau Channel south of the Douglas Bridge; killer whales may enter the study area from the south. Harbor porpoises might use waters in or near the study area, but they are an inconspicuous species and difficult to detect (83 FR 52394, October 17, 2018). A protected species final report documenting monitoring observations for the Statter Harbor improvements confirmed the presence of the species in Auke Bay.

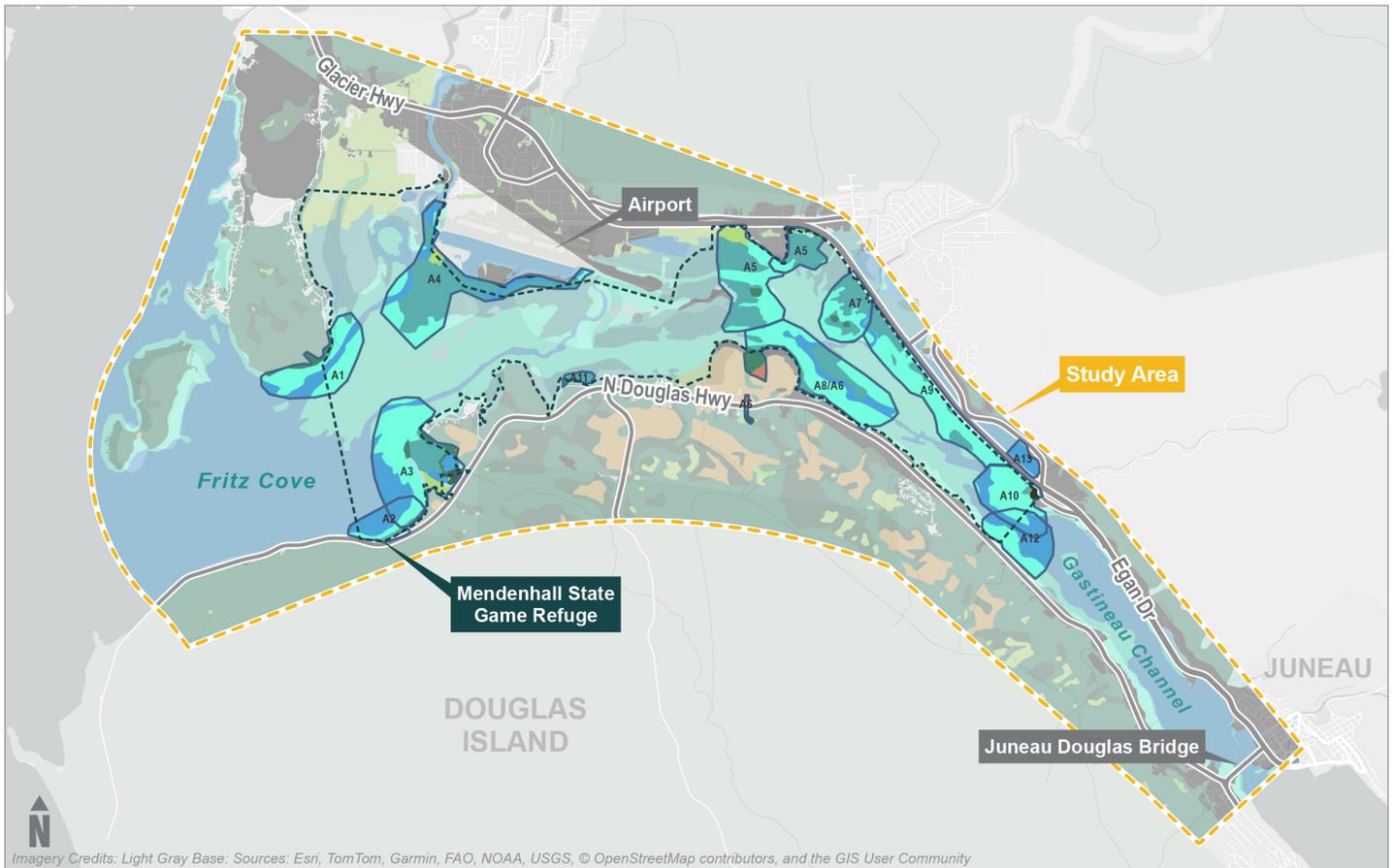
The other marine mammal species that may be present in the study area is the northern sea otter, which is under the jurisdiction of USFWS. Sea otters are not commonly seen in inland waters such as Fritz Cove and Gastineau Channel, but they may enter the study area on occasion.

Humpback whales and Steller sea lions are discussed further above in Chapter 8.2.4, Threatened and Endangered Species.

Migratory Birds/Eagles

Potential impacts and mitigation measures would be identified through the application process for an Incidental Take Permit under the Bald and Golden Eagle Protection Act. Construction activities that involve ground-disturbing work or vegetation clearing could result in take of birds protected under the Migratory Bird Treaty Act. Rulemaking is underway to develop regulations and procedures that would allow the incidental take of migratory birds. The outcome of the rulemaking process cannot be predicted. Possible measures that might be required for a permit include seasonal restrictions on some activities and the completion of bird nest surveys in advance of ground-disturbing work or vegetation clearing. Surveys to identify and map areas of submerged aquatic vegetation could support impact analyses and facilitate environmental reviews for some consultations and permitting processes. Identification and monitoring of bald eagle nests near the alternative alignment would likely be required for permitting with USFWS.

Potential impacts to migratory bird habitat was considered more detrimental when it occurred within the MWSGR. Impacts to migratory bird habitat within the refuge would need to abide by stipulations and mitigations outlined by the refuge manager, ADF&G (Figure 36).



Imagery Credits: Light Gray Base: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Habitat Type¹

- | | | |
|---|---|--|
|  Bogs and Fens (muskeg) |  Forested Wetland |  Survey Area |
|  Unvegetated Intertidal |  Coastal Meadow | ¹Sources: Habitat type mapping drawn from USFWS National Wetland Inventory and USFWS Tongass National Forest cover type mapping revised based on field observations in September 2023. |
|  Intertidal Marsh |  Coniferous Forest | |
|  Freshwater Emergent Wetland |  Open Water | |
|  Scrub-Shrub Wetland |  Disturbed | |

Figure 36: Migratory Bird Habitat

8.3 Built Environment

8.3.1 Contaminated Sites

Although no alternative directly intersects with an active contaminated site, coordination with ADEC is required for any new construction as ADEC manages contaminated site land use decisions and may impose conditions such as notification requirements for certain actions, and further remediation in the future. Instructional controls can be established at any time by the ADEC and may affect proposed activities present at sites classified as cleanup complete.

An ADEC Excavation Dewatering General Permit is required for dewatering activities conducted within 1,500 feet of a ADEC recognized contaminated site or for excavation dewatering discharge into waters of the U.S. as defined under Section 301 of the Clean Water Act (CWA). Each permit consists of special conditions and limitations. No permit is required if excavation dewatering is discharged to land or if dewatering occurs further than 1,500 feet from a contaminated site.

For all Recommended Alternatives, a Hazardous Materials Control Plan would be used to identify procedures for responding to accidental spills. In the event that contaminated soil, or groundwater is encountered during construction, the contractor shall immediately notify the Project Engineer, and all work shall stop until coordination with the ADEC in accordance with 18 Alaska Administrative Code 75.300. If leaks or spills should occur, all contaminated material and soils would be contained and disposed of off-site in an approved location. All contamination would be handled and disposed of in accordance with an ADEC-approved corrective action plan. All construction waste would be managed and disposed of in accordance with all state and federal solid-waste-management laws and regulations. Desktop research using ADEC records would be recommended as design advances to thoroughly assess the potential risk of encountering hazardous materials.

8.3.2 Noise

All action alternatives have Activity Categories B and C within their Noise analysis area. A noise traffic study and analysis are recommended (including collection of field noise measurements) to model traffic noise generated by the project and to determine if a noise impact occurs. Land use facilities identified as Activity Category C may be impacted by noise on the interior of the facility (i.e., auditorium, library, medical facility). Analysis of Category D interiors would only be done after exhausting all outdoor analysis options or exterior abatement measures are not feasible and reasonable. If noise impacts occur to sensitive receivers, then abatement measures would be evaluated to determine if abatement measures are feasible and reasonable for reducing traffic noise impacts. Noise permits are needed if construction activities occur before 7:00 am or after 10:00 pm Monday through Friday or before 9:00 am or after 10:00 pm Saturday and Sunday. Mitigation for noise impacts would be evaluated after impacts to sensitive receivers are identified. Noise abatement measures (i.e., noise wall, berm) may be implemented if the abatement measures are determined to be reasonable and feasible.

8.3.3 Air Quality and Climate Change

Changing regulations related to climate change analysis and NAAQS make it difficult to predict how Air Quality and Climate Change would be addressed when design has sufficiently progressed during the NEPA process. However, potential effects on air quality from the project would originate from vehicle emissions, which may decrease if traffic congestion is relieved. An air quality conformity analysis would be completed to determine which type of analysis would be needed when design is confirmed during the NEPA process. At that time the current LRTP would be evaluated to determine if any alternatives are included, which may indicate what type of air quality analysis is required.

8.3.4 Visual

An Area of Visual Effect would be determined once a preferred alternative is selected. Visual resources vary widely throughout the study area. Important visual resources within CBJ include Mendenhall Glacier, steep mountainous terrain, and abundant rainforest. Localized visual resources and potential impacts would be evaluated in future projects as impacts are best characterized in relation to the specific project under consideration. Analysis of impacts to visual resources could use the following sources:

- CBJ Comprehensive Plan to identify scenic corridors
- FHWA Visual Impact Assessment Guidelines to determine areas of visual effect.
The area of visual effect for each alternative was based on:
 - Physical constraints of the environment (i.e., ridgelines, structures)
 - Limits of visual effect are based on distance (from specific location) and light conditions (i.e., fog, rain, clear day)
- Foreground is 0 to 0.5 mile—objects are visible to the observer and object details (i.e., shapes, texture) are perceptible, and colors are vibrant (stand out from the background)
- Middle ground is 0.5 to 5 miles—objects are visible or perceivable to the observer but details are muted and colors tend to blend into the background with increased distance
 - Type of viewshed (i.e., static, dynamic, restricted)
- Static viewsheds consist of locations where the proposed project would be visible from stationary locations such as: parks and MWSGR access points. The proposed bridge or road features would be located within the foreground and middle ground of each static location
- Dynamic viewsheds consist of viewsheds for roadways (may be marine routes) within the area of visual effect

Using the FHWA procedure, the area of visual effect for each alternative would be identified for both static and dynamic viewshed locations. From static and dynamic viewshed locations the distance to the proposed alternatives determine if the proposed project would be in the foreground or middle ground of the viewshed. Alternatives would subsequently be evaluated by determining if the project would change visual quality and character within the area of visual effect. There are no scenic corridors in the CBJ Comprehensive Plan. No permits are needed for visual impacts. Mitigation under the NEPA process may include modification to bridge components and façade to blend into the surrounding environment by using complementary colors, shapes/lines, or textures. A Landscape Architect would need to perform FHWA’s Visual Impact Assessment to evaluate visual components, analyze visual impacts, and propose mitigation measures to minimize impacts. Graphic visualization models may be used to show how the bridge would look from prominent static viewshed locations and how changes to colors, façade, shapes/lines, or texture reduce the contrast of the bridge with the surrounding environment. It is anticipated that restricted viewsheds would be evaluated, which are static viewsheds with constraints from obstacles such as trees, structures, topography, and climate.

8.3.5 Utilities

All action alternatives would impact water main, power transmission, and telecommunication lines within existing ROW and may require relocation, ROW take or a permanent easement. Overhead utilities would be required to relocate however subsurface utilities could remain in place depending on the depth of bury. All action alternatives would also potentially impact power, telecommunication, and water utility service lines for properties along North Douglas Highway. For all alternatives, relocation of any utility within the DOT&PF ROW would require each utility to proceed with application for and obtaining of a Major Utility Permit from DOT&PF. Updated and specific infrastructure maps, utility as-built drawings, and any geographical information system of utility assets should be obtained from the CBJ Engineering Department, Alaska Electric Light & Power, Alaska Communications, and GCI.

9

BENEFIT-COST ANALYSIS



9.0 BENEFIT-COST ANALYSIS

This Benefit-Cost Analysis (BCA) aims to quantify and monetize the expected benefits and costs of each Recommended Alternative compared to the No-Build Alternative. The BCA was conducted in accordance with the USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs (December 2023) and the accompanying spreadsheet.

9.1 Methods

Costs include:

- Capital construction costs including:
 - Environmental/ wetland mitigation costs
 - Right-of-way costs
 - Construction engineering
 - Annual operations and maintenance (O&M) costs

Benefits include:

- Travel time savings (reduction of travel time for users)
- Vehicle operating costs savings (reduced operating costs due to reduced miles travelled)
- Emission reduction benefits (reduced emissions due to reduced miles travelled)
- Pedestrian comfort benefit (due to reduced vehicles on the existing road)
- Other benefits per reduced vehicle-mile travelled (congestion reduction, noise reduction, safety costs)
- Residual value (benefits continued for the life of the project, after the 30-year analysis period)

Future monetized values were adjusted for either inflation or discounting, as applicable, to make sure comparisons were conducted in common terms.

The No-Build Alternative provides for no action: no new bridge between Juneau and Douglas Island would be constructed. This provides a basis for comparison. For this BCA, the No-Build Alternative does not include any improvements to the existing bridge and was therefore not analyzed.

Table 15 shows the assumptions common to all Recommended Alternatives that were used in the calculations. Individual parameter values (e.g., for emissions reduction for vehicles) were taken directly from the BCA guidance and accompanying spreadsheet and can be found in Appendix 13.

Table 15: Parameters and Assumptions of Cost-Benefit Analysis

Variable/Item	Value	Comments
Base year	2022	Recommended in the BCA guidance
First year of construction	2027	
Length of construction	2 years	
Operational period	30 years	Maximum value per BCA guidance
Project useful life	75 years	
Annual inflation	2.6%	Average annual inflation over previous 10 years
Discounting rate	3.1%	Recommended in the BCA guidance

9.2 Results

The key elements of the BCA for the Recommended Alternatives and resulting BCA Ratio are shown in Table 16. Based on this analysis, Twin Lakes is the most beneficial alternative.

Table 16: Cost-Benefit Analysis Evaluation of Proposed Alternatives

Item	Salmon Creek	Twin Lakes	Vanderbilt	Sunny Point East	Sunny Point West
BCA Ratio	2.16	2.90	2.65	2.19	2.62
Distance from Existing Bridge	2.7 Miles	3.5 Miles	4.2 Miles	5.3 Miles	6.0 Miles
Annual O&M costs	\$70,000	\$65,000	\$90,000	\$175,000	\$150,000
Construction Cost	\$390 Million	\$360 Million	\$340 Million ^a	\$490 Million	\$490 Million
User volume (AADT for base year) ^a	4,150	4,150	2,800	2,800	2,800
User volume (AADT 2060) ^b	6,100	6,100	4,600	4,600	4,600
Travel time savings (seconds) ^b	62.5	62.5	60.0	60.0	60.0

^a assumes signalized intersection

^b from Bridge Volume Forecast Memo

10

RECOMMENDATIONS



10.0 RECOMMENDATIONS

The PEL process evaluated and refined alternative north crossing through an iterative, stepped alternative development and evaluation process. The process resulted in five alternatives being recommended to advance to a future design and environmental review process (Table 17).

Table 17: Recommended Alternatives

Alternative	Recommendation
● Salmon Creek	Advance to NEPA
● Twin Lakes	Advance to NEPA
● Vanderbilt	Advance to NEPA
● Sunny Point East	Advance to NEPA
● Sunny Point West	Advance to NEPA
● No Build Alternative ^a	Baseline

^a Does not meet purpose and need but would be carried forward into future the future NEPA process to provide a baseline against which to evaluate other alternatives.

11

NEXT STEPS



11.0 NEXT STEPS

11.1 Conditions for Incorporation of Planning Analyses or Products into NEPA

23 USC 168 allows a lead federal agency or cooperating agency with responsibility under federal law to adopt or incorporate by reference planning analyses or planning products developed during a planning study into a subsequent environmental review process (NEPA or other environmental permit, approval, review, or study required for a project under any federal law other than NEPA). The law specifies that it applies to the following planning decisions or products relevant to this particular PEL study:

- Purpose and need
- Preliminary screening of alternatives and elimination of unreasonable alternatives
- Basic description of the environmental setting
- Decision with regard to the methodologies for analysis

Planning analyses that may be incorporated include regional development and growth analyses, local land use growth management and development, population and employment, potential effects, and mitigation needs.

Ten conditions must be met for the relevant agency to adopt or incorporate planning products and analyses into an environmental review process (including NEPA, review, or approval) (Table 18):

Table 18: Relevant Agency Conditions

Conditions to be Met	Evidence
<p>1. The planning product was developed through a planning process conducted pursuant to applicable federal law.</p>	<p>The planning product was developed in accordance with the PEL process in accordance with 23 USC 168 and 23 USC 139(f)(4)(E).</p>
<p>2. The planning product was developed in consultation with appropriate federal and state resource agencies and Indian tribes.</p>	<p>An Advisory Committee comprising representatives of federal and state resource agencies and tribes was involved in and consulted with throughout the PEL process.</p>
<p>3. The planning process included broad multidisciplinary consideration of systems-level or corridor-wide transportation needs and potential effects, including effects on the human and natural environment.</p>	<p>The PEL process was conducted using a system-wide approach with focus on a study area and influences beyond to enable a comprehensive consideration of the human and natural environment.</p>
<p>4. During the planning process, public notice was provided that the planning products produced may be adopted during a subsequent environmental review process.</p>	<p>Public notice was provided during all engagement activities throughout the PEL process that products may be adopted during a subsequent review process.</p>
<p>5. After initiation of an environmental review process, prior to determining whether to use planning products, the lead agency must have made documentation and the intent to adopt this documentation available for review by the general public, agencies, and tribal governments, and considered any comments.</p>	<p>This evidence would occur at the time an environmental review process is initiated.</p>
<p>6. There is no significant new information or new circumstances that have a reasonable likelihood of affecting the continued validity or appropriateness of the planning product.</p>	<p>This evidence would occur at the time an environmental review process is initiated.</p>
<p>7. The planning product has a rational basis and is based on reliable and reasonably current data and reasonable and scientifically acceptable methodologies.</p>	<p>The PEL process was conducted based on best professional judgement of a rational basis and relied on reasonably current data and reasonable and scientifically acceptable methodologies.</p>
<p>8. The planning product is documented in sufficient detail to support the decision or results of the analysis and to meet requirements for use in the environmental review process.</p>	<p>This PEL study report and associated memoranda, included as appendices, serve as documentation of the planning process.</p>
<p>9. The planning product is appropriate for adoption or incorporation by reference and use in the environmental review process.</p>	<p>This PEL study was conducted in alignment with the PEL Guidebook and sought SEO Concurrence points to assist with assuring its appropriateness for incorporation by reference in an environmental review process.</p>
<p>10. The study was approved no later than five years prior to the date on which information is adopted in the NEPA review.</p>	<p>This evidence would occur at the time an environmental review process is initiated.</p>

11.2 NEPA Preliminary Class of Action

The environmental review process for every federally funded transportation project begins with determination of the class of action (COA), or level of NEPA documentation required for the project. The COA is based upon the scale of the project, the level of public controversy, and the anticipated level of effects on social and environmental resources. Projects which are minor or routine, such as road resurfacing, and not anticipated to have significant effects may be addressed through a Categorical Exclusion provided there are no unusual circumstances including:

- Significant environmental impacts
- Substantial controversy on environmental grounds
- Significant impact on properties protected by Section 4(f) of the USDOT Act or Section 106 of the NHPA
- Inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action.

Projects that have unknown impacts, may or are likely to have significant effects, like new highway corridors, require a more detailed Environmental Assessment (EA) or Environmental Impact Statement (EIS) to document and publicly disclose the environmental effects. FHWA describes the following projects as those normally requiring an EIS level of review:

1. A new controlled access freeway.
2. A highway project of four or more lanes on a new location.
3. Construction or extension of a fixed transit facility (e.g., rapid rail, light rail, commuter rail, bus rapid transit) that would not be located primarily within an existing transportation right-of-way.
4. New construction or extension of a separate roadway for buses or high occupancy vehicles not located within an existing transportation right-of-way.
5. New construction or extension of a separate roadway for buses not located primarily within an existing transportation right-of-way.
6. New construction of major railroad lines or facilities (e.g., terminal passenger stations, freight transfer yards, or railroad equipment maintenance facilities) that would not be located within an existing transportation right-of-way.

As of November 2017, DOT&PF has assumed NEPA responsibilities for environmental review, consultation, or other actions required under any Federal environmental law with respect to one or more Federal Highway projects within Alaska.

This PEL Study can be used as a basis for the DOT&PF SEO to confirm the class of action for a future NEPA review of a proposed JDNC. The basis for evaluation of whether a JDNC may, or is likely, to have significant effects⁵ would be determined by the context and intensity of effects disclosed. Although none of the JDNC alternatives precisely fit the description of projects normally requiring an EIS, based on the project controversy and the evaluation of effects under this PEL study, the likely COA would be an EA or an EIS. However, further design refinement and impact investigations may change the COA during the NEPA process.

⁵ Under NEPA, "significant" refers to the potential for a federal action to have substantial impacts on the environment, considering both the context (location, affected interests, and timeframes) and intensity (severity of impacts).

11.3 Funding

11.3.1 Programmed Funds

Funds are programmed in the STIP to advance design and environmental review for the Juneau Douglas North Crossing. The project is described in STIP Amendment 1 as follows:

STIP Identifier:	Location:	DOT&PF Region:	Total Project Estimate for 2024-2027:	Current STIP Funding:
34146	Juneau City and Borough	Southcoast Region	\$23,514,844	\$23,514,844

Project Description: The Juneau Douglas North Crossing project, situated between Juneau and the north end of Douglas Island, aims to construct a crossing to connect these two locations. The initiation of this project is expected to be requested before the conclusion of the Planning and Environmental Linkages (PEL) Study. This is due to various administrative procedures required to finalize the PEL Study and initiate a new project. The Department acknowledges the importance of adhering to discretionary grant timelines and is mindful of their time sensitivity. The Final PEL Study Report would be accessible before any significant (non-administrative) activities commence on this project. Funded through a CDS and a USDOT RAISE Grant. The match ratio is not the same for both fund types. The CDS is 9.03%, and the RAISE is 5 percent. NHS designation to be pursued. The project PEL is being completed under STIP ID 31597.

11.3.2 Potential Future Funds

A range of potential funding sources could be sought to advance the project beyond design and environmental review. The availability and applicability of funding sources would depend on apportionments available, funding programs available, and whether the project meets the criteria of the specific program being considered. It should be noted that this PEL study has been completed during a time that the status of many federal funding programs is uncertain. The study team has put together as comprehensive of a list of funding opportunities as possible, but these opportunities would likely be impacted by recently issued Executive Orders and upcoming reauthorization of transportation funding under the Infrastructure Investment and Jobs Act or other new legislation.

It should also be noted that there is very high demand for funds programmed through apportionment or allocation, and these funds are generally directed toward projects that have the highest need or serve a large population.

Table 19: Potential Funding Sources – Apportioned or Allocated Funds

Fund	Purpose	Eligible Recipients
Alaska Federal Lands Access Program	Program supports improving facilities and access to, through, or within federal or tribal lands. To use these funds, the project would need to demonstrate the benefits of it to access federal lands. Funds are generally limited and would likely need to be matched with other funding opportunities. A select amount of funding is apportioned to States and then distributed after review and ranking of projects.	Apportioned to States
Bridge Formula Program	Supports bridge replacement, rehabilitation, preservation, protection, and construction.	Apportioned to States
Highway Safety Improvement Program (HSIP)	Supports projects to reduce traffic fatalities and serious injuries on public roads.	Apportioned to States
National Highway Freight Program	Supports the efficient movement of freight.	Apportioned to States
Surface Transportation Block Grant (STBG)	Supports projects that preserve and improve conditions and performance on Federal-aid highways and bridges.	Apportioned to States
Tribal Transportation Program	Supports safe and adequate transportation and public road access. Project area infrastructure must be listed in the Tribal Transportation Infrastructure Improvement Program.	Apportioned to tribes – would only be available if a tribal partner was to participate in the advancement of the project and it was identified in an approved Tribal Transportation Plan

Potential Funding Sources – Competitive Grants

Competitive transportation grants are awards given to projects that improve transportation systems. Many of these grants are available through the United States Department of Transportation, and others may be available through tribal or state transportation programs. Grant opportunities available as of 2025 are summarized below. Grants from private organizations are marked with an asterisk (*).

Table 20: Potential Funding Sources – Competitive Grants

Fund	Purpose	Eligible Recipients
National Infrastructure Project Assistance Grant Program (Mega)	Invests in surface transportation infrastructure projects of national or regional significance as well as supports projects that are consistent with the Department of Transportation’s strategic goals: improve safety, economic strength and competitiveness, and climate and sustainability.	States, metropolitan planning organizations or regional planning organizations, a unit of local government
Denali Commission – Transportation Program Grants*	Supports basic road improvement projects that connect rural communities and the state highway system as well as provide enhancements to rural economic development.	Non-profits, local and state governments, tribes, tribal organizations
Rasmussen Foundation*	Offers Community Support Grants ranging from \$35,000 to \$250,000 and Legacy Grants which are over \$250,000.	Non-profits, local and state governments, tribes, tribal organizations
Nationally Significant Federal Lands and Tribal Projects Program	Projects shall be strategically important and innovative solutions to issues of community or statewide significance.	Tribes, states, local governments
Better Utilizing Investments to Leverage Development (BUILD) Grants	Supports construction-related funding for projects within, adjacent to, or accessing Federal and Tribal lands.	Tribes, states, local governments
RURAL	Supports capital improvements for surface transportation that has a significant local or regional impact.	Tribes, states, local governments
Tribal High Priority Projects Program	Supports projects to improve and expand surface infrastructure to increase connectivity and improve the safety and reliability of moving people and freight.	Federally recognized tribes or governmental subdivision. Using this program would depend on a tribal partnership and the project being included in the NTTFI
Tribal Transportation Safety Fund	Supports completion of highest priority projects for facilities listed on the National Tribal Transportation Facility Inventory (NTTFI) list.	Federally recognized tribes. Using this program would depend on a tribal partnership
U.S. Economic Development Administration Public Works Program	Addresses transportation safety issues identified by Tribes.	Non-profits, local governments, tribes, tribal organizations, State

Fund	Purpose	Eligible Recipients
Department of Defense Innovative Readiness Training	<p>A military training opportunity exclusive to the US and its territories. This opportunity offers joint training opportunities to increase military deployment readiness by partnering with communities to complete health care, construction, transportation, or cybersecurity assistance.</p> <ul style="list-style-type: none"> • Community match is required • Military provides training, personnel, supplies, and equipment • Community is responsible for services and support through volunteers, materials, and venue. • Projects must result in at least 100 hours of training • Must not compete with the private sector, non-competition clause • Must not include commercial development • Military members cannot provide law enforcement during IRT missions • IRT authorities cannot be used to respond to natural or man-made disasters 	<p>Communities in the US and its territories. Can not be an individual. There are plans to dock a USCG vessel in Juneau.</p>
Alaska Mental Health Trust*	<p>Partnership grants are a onetime grant with a one year term and provides funds up to \$50,000.</p>	<p>Foundations, government agencies, tribal entities, non-profits, and corporations that serve Trust beneficiaries.</p>

Potential Funding Sources Using State of Alaska Funds

Additional funding opportunities may be available using State-allocated funds, as summarized in the table below. It should be noted that these funds are very limited in both availability and size.

Table 21: Potential Funding Sources – State of Alaska Funds

Fund	Purpose	Eligible Recipients
Community Development Block Grants	<p>Provided through the Department of Commerce, Community, and Economic Development. Supports planning and project grants to address issues detrimental to health and safety of community residents and reduce costs of services.</p>	<p>Local governments</p>
State of Alaska Capital and Operating Budgets	<p>Supports DOT&PF operations and special projects</p>	<p>State agencies</p>
Transportation Alternative Program	<p>Supports smaller-scale transportation projects including bike and pedestrian facilities, turnouts and viewing areas, environmental mitigation related to habitat connectivity, and recreational trails</p>	<p>Set aside under STBG Program</p>

11.4 Implementation

The next steps in implementation of the proposed study improvements are listed below:

- Coordinate with DOT&PF SEO on COA
- Secure funding for design and NEPA environmental process
- Complete design and NEPA review/permitting
- Complete field surveys
- Acquire ROW if needed
- Complete final design
- Construct improvements

DOT&PF's SEO has developed a PEL Questionnaire to support the SEO's review of the PEL study. This questionnaire has been used as guide throughout the planning process. The DOT&PF PEL Questionnaire is attached to this report as Appendix 1.

12

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12.0 REFERENCES

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