Juneau Access Improvements Project
Draft Supplemental Environmental Impact Statement

2014 Update to Appendix O
Wetlands Technical Report

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Table of Contents

1. Introduction 1
    1.1 Project Description 3
        1.1.1 Alternative 1 – No Action 3
        1.1.2 Alternative 1B – Enhanced Service with Existing AMHS Assets 3
        1.1.3 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway 4
        1.1.4 Alternative 3 – West Lynn Canal Highway 4
        1.1.5 Alternatives 4A through 4D – Marine Alternatives 5
2. Regulatory Update 7
    2.1 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region 7
    2.2 2008 Mitigation Rule 7
    2.3 Rapanos v. United States and Carabell v. United States 8
    2.4 Consultant-Supplied Jurisdictional Determination Reports 8
3. Affected Environment 10
4. Environmental Consequences 11
    4.1 Alternative 1B – Enhanced Service with Existing AMHS Assets 11
    4.2 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway 11
        4.2.1 East Lynn Canal Sub-Region 1 – Berners Bay 11
        4.2.2 East Lynn Canal Sub-Region 2 – Slate Cove to Sherman Point 13
        4.2.3 East Lynn Canal Sub-Region 3 – Sherman Point to Katzehin River 14
        4.2.4 East Lynn Canal Sub-Region 4 – Katzehin River to Katzehin Ferry Terminal 14
    4.3 Alternative 3: West Lynn Canal Highway 15
    4.4 Alternatives 4A and 4C 15
    4.5 Alternatives 4B and 4D 15
5. Compensatory Mitigation for Impacts to Wetlands and Other Waters of the United States 17
6. References 18

Tables

Table 1-1: Summary of Wetlands and Waters Impacts 2

Attachments

Attachment A: Updated Tables
Attachment B: Updated Figures

Acronyms and Abbreviations

ACF	Alaska Class Ferry
AMHS	Alaska Marine Highway System
AWQS	Alaska Water Quality Standards
BMP	Best Management Practices
c.y.	cubic yards
DOT&PF	Alaska Department of Transportation and Public Facilities
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FVF	Fast Vehicle Ferry
ILF	In-Lieu Fee
JAI	Juneau Access Improvements
NEPA	National Environmental Policy Act
NHS	National Highway System
PJD	Preliminary Jurisdictional Determination
RGL	Regulatory Guidance Letter
ROD	Record of Decision
SEIS	Supplementary Environmental Impact Statement
TNW	traditional navigable waters
USACE	U.S. Army Corps of Engineers

1. Introduction

A *Wetlands Technical Report* prepared in 1994 was used to assess the impacts on wetlands for the alternatives evaluated in the 1997 Juneau Access Improvements (JAI) Project Draft Environmental Impact Statement (EIS). In consultation with federal and state resource agencies, it was decided that the basis for the report would be existing U.S. Fish and Wildlife Service National Wetland Inventory maps and a minimal amount of fieldwork.

After the Draft EIS was issued, the Alaska Department of Transportation and Public Facilities (DOT&PF) modified the project design alternatives to be evaluated, and with the Federal Highway Administration (FHWA), began preparation of a Supplemental Draft EIS. Agency comments on the 1997 Draft EIS and comments received during the scoping process for the Supplemental Draft EIS indicated the need for a wetland function and value assessment. In October 2004, DOT&PF produced a new *Wetlands Technical Report* as Appendix O of the JAI Project Supplemental Draft EIS. That report was based on a substantial amount of new fieldwork. It evaluated wetland functions and values based on a modified version of the Adamus Resource Assessment, Inc., Wetland Evaluation Technique.

During development of the JAI Project 2006 Final EIS, DOT&PF responded to comments on the Supplemental Draft EIS, incorporated new data and further analysis for some resources, and incorporated additional mitigation measures to reduce impacts to wildlife and habitat. DOT&PF also made some changes to Alternative 2B and removed Alternatives 2, 2A, and 2C from the range of reasonable alternatives. These changes required DOT&PF to update supporting technical reports with addenda, including the *Addendum to Appendix O – Wetlands Technical Report*, which was included in Appendix W of the 2006 Final EIS.

Following FHWA's 2006 Record of Decision (ROD) identifying Alternative 2B as the selected alternative, in 2008 DOT&PF obtained permit POA-2006-597-2, Berners Bay/Lynn Canal, from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for anticipated impacts to wetlands and waters of the U.S. During permit negotiations the alignment of Alternative 2B was further modified to avoid and minimize impacts to wetlands, particularly emergent wetlands, and reduce the extent of rock sidecast areas. The USACE Section 404/10 permit authorizing the discharge of 1,735,000 cubic yards (c.y.) of fill into 110.2 acres of Waters of the U.S. was issued June 18, 2008, and expired on June 30, 2013.

DOT&PF design efforts have continued to look for ways to minimize impacts to wetlands and waters. Proposed impacts from the previous environmental documents, the USACE permitting process, and the current status of design are summarized in Table 1-1.

Table 1-1: Summary of Wetlands and Waters Impacts (acres)

Alternatives	2004 Wetlands Technical Report	2005 Addendum to Wetlands Technical Report	2008 USACE Permit	2013 Design
Alternative 1	0	0	-	-
Alternative 2B	118.7*	102.0**	95.2***	92.8
Alternative 3	47.3	38.2	-	-
Alternatives 4A and 4C	0	0	-	-
Alternatives 4B and 4D	12.9	3.8	-	-

* Plus 2.0 million c.y. marine rock disposal.

** Plus 1.4 million c.y. marine rock disposal.

*** Plus 14.8 acres (430,000 c.y.) marine rock disposal.

Seven years have passed since the 2006 Final EIS (FEIS) and ROD were published, during which time DOT&PF has continued to refine the permitted Alternative 2B design and study the new court-mandated Alternative 1B, which would address the transportation problem in Lynn Canal using existing assets. FHWA and DOT&PF need to update the technical reports as part of the current JAI Project 2014 Draft Supplemental Environmental Impact Statement (SEIS) process. Updates are needed to reflect changes in regulations, new information related to the potentially affected environment or conditions, updated analysis, evaluation of the newly added Alternative 1B, and changes in the design or alignment for Alternatives 2B and 3.

Three key components that affected changes to the design and alignment of Alternative 2B since the 2006 ROD are changes during the 2008 USACE permitting process and more recent design process that minimized impacts to wetlands and reduced the extent of rock side cast areas, changes in 2009 based on advanced geotechnical survey information, and changes in 2012 to address updated bald eagle nest survey data. If Alternative 2B is selected following the Draft SEIS process, DOT&PF would apply for a new Section 404/10 permit from the USACE.

This *2014 Update to Appendix O – Wetlands Technical Report* updates the 2004 *Wetlands Technical Report* and replaces the *Addendum to Appendix O – Wetlands Technical Report* with new information regarding wetlands potentially affected by the JAI Project alternatives. This report provides:

- USACE regulatory updates related to wetlands
- Updates to wetland boundaries as a result of USACE permitting efforts for the JAI Project as well as the Glacier Highway Extension project
- Evaluation of wetland impacts associated with a new Alternative 1B and alignment/design revisions to Alternatives 2B, 3,4B, and 4D

1.1 Project Description

As required by the National Environmental Policy Act (NEPA), this technical report considers the following reasonable alternatives.

1.1.1 Alternative 1 – No Action

The No Action Alternative (Alternative 1) includes a continuation of mainline ferry service in Lynn Canal and incorporates two Day Boat Alaska Class Ferries (ACFs). The Alaska Marine Highway System (AMHS) would continue to be the National Highway System (NHS) route from Juneau to Haines and Skagway, and no new roads or ferry terminals would be built. In addition to the Day Boat ACFs, programmed improvements include improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs as well as expansion of the Haines Ferry Terminal to include a new double bow berth to accommodate the Day Boat ACFs. This alternative is based on the most likely AMHS operations in the absence of any capital improvements specific to the JAI Project.

Mainline service would include two round trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. During the summer, one Day Boat ACF would make one round trip between Auke Bay and Haines six days per week, and one would make two round trips per day between Haines and Skagway six days per week. The Day Boat ACFs would not sail on the seventh day because the mainliner is on a similar schedule. In the winter, ferry service in Lynn Canal would be provided primarily by the Day Boat ACFs three times per week. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal.

1.1.2 Alternative 1B – Enhanced Service with Existing AMHS Assets

Alternative 1B includes all of the components of Alternative 1, No Action, but focuses on enhancing service using existing AMHS assets without major initial capital expenditures. Similar to Alternative 1, Alternative 1B includes a continuation of mainline ferry service in Lynn Canal; the AMHS would continue to be the NHS route from Juneau to Haines and Skagway; no new roads or ferry terminals would be built; and in addition to the Day Boat ACFs, programmed improvements include improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs as well as expansion of the Haines Ferry Terminal to include a new double bow berth to accommodate the Day Boat ACFs. Service to other communities would remain the same as with the No Action Alternative. Alternative 1B keeps the *M/V Malaspina* in service after the second Day Boat ACF is brought online to provide additional capacity in Lynn Canal. Enhanced services included as part of Alternative 1B are a 20 percent reduction in fares for trips in Lynn Canal and extended hours of operations for the reservation call center.

Mainline service would include two round trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. During the summer, the *M/V Malaspina* would make one round trip per day seven days per week on a Skagway-Auke Bay-Skagway route, while one Day Boat ACF would make one round trip between Auke Bay and Haines six days per week, and one would make two round trips per day between Haines and Skagway six days per week. The Day Boat ACFs would not sail on the seventh day because the

mainliner would be on a similar schedule. In the winter, ferry service in Lynn Canal would be provided primarily by the Day Boat ACFs three times per week.

1.1.3 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

Alternative 2B would construct the East Lynn Canal Highway (50.8 miles, including 47.9 miles of new highway and widening of 2.9 miles of the existing Glacier Highway) from Echo Cove around Berners Bay to a new ferry terminal 2 miles north of the Katzehin River. Ferry service would connect Katzehin to Haines and Skagway. In addition, this alternative includes modifications to the Skagway Ferry Terminal to include a new end berth and construction of a new conventional monohull ferry to operate between Haines and Skagway. Mainline ferry service would end at Auke Bay. This alternative assumes the following improvements will have been made independent of the JAI Project before Alternative 2B would come on-line: two Day Boat ACFs, improved vehicle and passenger staging areas at the Haines Ferry Terminal to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include two new double bow berths.

During the summer months, one Day Boat ACF would make eight round trips per day between Haines and Katzehin, a second Day Boat ACF would make six round trips per day between Skagway and Katzehin, and the Haines-Skagway shuttle ferry would make two trips per day. During the winter, one Day Boat ACF would make six round trips per day between Haines and Katzehin, and a second Day Boat ACF would make four round trips per day between Skagway and Katzehin. The Haines-Skagway shuttle would not operate; travelers going between Haines and Skagway would travel to Katzehin and transfer ferries.

1.1.4 Alternative 3 – West Lynn Canal Highway

Alternative 3 would upgrade/extend the Glacier Highway (5.2 miles, including 2.3 miles of new highway and widening of 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay. New ferry terminals would be constructed at Sawmill Cove in Berners Bay and at William Henry Bay on the west shore of Lynn Canal, and the Skagway Ferry Terminal would be modified to include a new end berth. A new 38.9-mile highway would be constructed from the William Henry Bay Ferry Terminal to Haines with a bridge across the Chilkat River/Inlet connecting into Mud Bay Road. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. Mainline ferry service would end at Auke Bay. This alternative assumes the following improvements will have been made independent of the JAI Project before Alternative 3 would come on-line: two Day Boat ACFs, improved vehicle and passenger staging areas at the Haines Ferry Terminal to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include two new double bow berths.

During the summer, two Day Boat ACFs would make six round-trips per day between Sawmill Cove and William Henry Bay (total of 12 trips each direction), and the Haines-Skagway shuttle ferry would make six round-trips per day. During the winter, one Day Boat ACF would make four round-trips per day between Sawmill Cove and William Henry Bay, and the Haines-Skagway shuttle ferry would make four round-trips per day.

1.1.5 Alternatives 4A through 4D – Marine Alternatives

All four marine alternatives would include continued mainline ferry service in Lynn Canal with a minimum of two trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. Each marine alternative includes a new conventional monohull shuttle that would make two round trips per day between Haines and Skagway six days a week in the summer and a minimum of three round trips per week between Haines and Skagway in the winter. The AMHS would continue to be the NHS route from Juneau to Haines and Skagway. These alternatives assume the following improvements will have been made independent of the JAI Project before the alternative comes on-line: improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include new double bow berths.

1.1.5.1 Alternative 4A – Fast Vehicle Ferry Service from Auke Bay

Alternative 4A would construct two new fast vehicle ferries (FVFs). No new roads would be built for this alternative, and the Auke Bay Ferry Terminal would be expanded to include a new double stern berth. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal, and the Day Boat ACFs would no longer operate in Lynn Canal. The FVFs would make two round trips between Auke Bay and Haines and two round trips between Auke Bay and Skagway per day in the summer. During the winter, one FVF would make one round trip between Auke Bay and Haines and one round trip between Auke Bay and Skagway each day.

1.1.5.2 Alternative 4B – Fast Vehicle Ferry Service from Berners Bay

Similar to Alternative 4A, Alternative 4B would construct two new FVFs. This alternative would upgrade/extend Glacier Highway (5.2 miles, including 2.3 miles of new highway and widening of 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal, and the Day Boat ACFs would no longer operate in Lynn Canal. In the summer, the FVFs would make two round trips between Sawmill Cove and Haines and two round trips between Sawmill Cove and Skagway per day. During the winter, one FVF would make one round trip between Auke Bay and Haines and one round trip between Auke Bay and Skagway each day.

1.1.5.3 Alternative 4C – Conventional Monohull Service from Auke Bay

Alternative 4C would use Day Boat ACFs to provide additional ferry service in Lynn Canal. No new roads would be built for this alternative. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth, and the Skagway Ferry Terminal would be expanded to include a new end berth. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. In the summer, one Day Boat ACF would make one round trip per day between Auke Bay and Haines, and one Day Boat ACF would make one round trip per day between Auke Bay and Skagway. During the winter, one Day Boat ACF would alternate between a round trip to Haines one day and a round trip to Skagway the next day.

1.1.5.4 Alternative 4D – Conventional Monohull Service from Berners Bay

Alternative 4D would use Day Boat ACFs to provide additional ferry service in Lynn Canal. This alternative would upgrade/extend Glacier Highway (5.2 miles, including 2.3 miles of new highway and widening of 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth, and the Skagway Ferry Terminal would be expanded to include a new end berth. This alternative includes construction of a new conventional monohull ferry that would operate between Haines and Skagway. In the summer, the Day Boat ACFs would make two trips per day between Sawmill Cove and Haines and two trips per day between Sawmill Cove and Skagway. During the winter, a Day Boat ACF would operate from Auke Bay, alternating between a round trip to Haines one day and to Skagway the next day.

2. Regulatory Update

Four primary changes to wetland regulations have occurred since those described in Section 1.3 of the 2004 *Wetlands Technical Report*:

- The USACE published the *Regional Supplement to Corps of Engineers Wetland Delineation Manual: Alaska Region* (Version 2.0) (September 2007).
- USACE and the U.S. Environmental Protection Agency (EPA) issued revised regulations governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the U.S. under Section 404 of the Clean Water Act (March 2008).
- Court decisions on Rapanos v. United States and Carabell v. United States resulted in clarification of the definition for waters of the U.S. under the Clean Water Act (December 2008).
- The Alaska District of USACE published Special Public Notice 2010-45: Corps of Engineers Regulatory Program Consultant-Supplied Jurisdictional Determination Reports outlining the minimum required information for a Jurisdictional Determination Report (January 2010).

A summary of the regulations is provided below.

2.1 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region

In 2007, the USACE issued a regional manual for delineating wetlands in Alaska. Now all projects seeking USACE authorization in Alaska must follow guidance presented in the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Alaska Region* (USACE, 2007). The definition of a wetland did not change with the new manual; rather, the manual provides clarification and guidance for identifying certain indicators of wetlands in Alaska.

Field data used for the 2006 Preliminary Jurisdictional Determination (PJD) for the JAI Project (approved by the USACE in 2008) were collected using the methods described in the 1987 *Wetlands Delineation Manual* (USACE, 1987). No revisions to the mapping are necessary to comply with the new regional manual. From Cascade Point north, the wetland boundaries delineated in 2006 and permitted in 2008 remain applicable, and additional delineations conducted in 2010 for the Glacier Highway Extension project between Echo Cove and Cascade Point complied with the new manual.

2.2 2008 Mitigation Rule

On April 10, 2008, the EPA and the USACE issued the Federal Rule on Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR Parts 325 and 332). This new rule clarified how to provide compensatory mitigation for unavoidable impacts to wetlands, streams, and other waters of the U.S. under Section 404 of the Clean Water Act.

The new Federal Rule on Compensatory Mitigation preserved the requirement to first avoid and minimize impacts to wetlands and waters before proposing compensatory mitigation to offset

project impacts. It also requires that appropriate and practicable compensatory mitigation be used to replace functional losses to wetlands and aquatic waterbodies.

As well as requiring functional assessments of wetlands and waterbodies, the Federal Rule on Compensatory Mitigation outlines performance standards, sets timeframes for decision-making, and establishes requirements and standards for mitigation banks, in-lieu fee programs, and permittee-responsible mitigation. The Federal Rule on Compensatory Mitigation provides new emphasis on mitigation banking and in-lieu fee programs and direct compensatory mitigation to the same watersheds as the permitted impact.

During 2014 USACE permitting, a functional assessment of wetlands and waterbodies was provided for the JAI Project. The new Section 404/10 permit for the JAI Project would comply with the 2008 Mitigation Rule.

2.3 Rapanos v. United States and Carabell v. United States

In a decision on the consolidated cases Rapanos v. United States and Carabell v. United States (Rapanos), the United States Supreme Court addressed where the Federal government can apply the Clean Water Act, specifically by determining whether a wetland or tributary is a water of the U.S. In December 2008, the EPA and the USACE issued joint guidance to implement the court's decision. The guidance is now being used by EPA and USACE to determine whether aquatic resources such as lakes, streams, and wetlands are waters of the U.S., subject to regulation under the Clean Water Act (EPA and USACE, 2008).

In accordance with the guidance, the USACE would assert jurisdiction, without the need for a significant nexus finding, over all traditional navigable waters (TNW), wetlands adjacent to a TNW, non-navigable tributaries to a TNW that are relatively permanent, and wetlands that directly abut such tributaries. The USACE would assert jurisdiction over non-navigable, non-relatively permanent tributaries and their adjacent wetlands where such tributaries and wetlands have a significant nexus to a TNW. These include: (1) non-navigable tributaries that are not relatively permanent, (2) wetlands adjacent to non-navigable tributaries that are not relatively permanent, and (3) wetlands adjacent to, but not directly abutting, a relatively permanent tributary (e.g., separated from it by uplands or by a berm, dike, or similar feature). The guidance states that the USACE would assess flow characteristics and functions of the tributary itself, together with the functions performed by any wetlands adjacent to that tributary, to determine whether collectively they have a significant nexus with a TNW (EPA and USACE, 2008).

New draft guidance to identify waters protected by the Clean Water Act is currently under consideration. The public comment period ended July 1, 2011. This document would supersede the 2008 guidance; however, it provides only additional clarification and does not make substantive changes to the previous guidance (EPA and USACE, 2011).

No changes to the jurisdictional status of any JAI Project area wetlands or waterbodies were required in order to comply with this new guidance.

2.4 Consultant-Supplied Jurisdictional Determination Reports

In January 2010, the USACE Alaska District issued Special Public Notice 2010-45: Corps of Engineers Regulatory Program Consultant-Supplied Jurisdictional Determination Reports. This guidance outlines the minimum required information for a Jurisdictional Determination Report.

The necessary information includes a cover letter, narrative, location map, delineation map, and verification.

All necessary information was included in the original 2006 PJD for the JAI Project. The PJD was accepted by the USACE for the 2008 permit. In 2010, DOT&PF prepared another PJD for the Glacier Highway Extension project, which overlaps the first three miles of the JAI Project. DOT&PF conducted that PJD in accordance the latest USACE requirements and the permit was issued. No additional work is required to comply with this new guidance.

3. Affected Environment

The affected environment is described in Section 3.0 in the 2004 *Wetlands Technical Report*. There are no changes to the general descriptions of the wetland and waterbody types within the project area.

During the USACE permitting process for the JAI Project following the 2006 ROD, additional field delineation work was completed near the Lace and Antler rivers as part of a road corridor realignment effort to minimize impacts on emergent wetlands. In addition, the Glacier Highway Extension project, constructed in 2012, overlaps the southern end of the project area in Echo Cove in Berners Bay. During USACE permitting for that project, DOT&PF conducted field delineations in 2010 to support the permitting effort. The refinement of wetland boundaries from these two efforts is included in this *2014 Update to Appendix O – Wetlands Technical Report* but does not change the general descriptions and wetland and waterbody types previously described for the project area.

4. Environmental Consequences

This section provides updated information relating to the wetland impacts associated with the JAI Project alternatives that were described in the 2004 *Wetlands Technical Report, Appendix O;* the November 2005 *Addendum to Appendix O, Wetlands Technical Report*; and in the 2008 USACE permit. Updates are presented here only if revisions have been made to the area of wetlands potentially affected by the alternative. Assessment of environmental consequences to wetlands from the new Alternative 1B is also included in this section.

4.1 Alternative 1B – Enhanced Service with Existing AMHS Assets

Alternative 1B would enhance service with existing AMHS assets, and would not result in the construction of any new highways or ferry terminals. Therefore, there are no effects to wetlands identified for this alternative.

4.2 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

Consistent with a commitment made in the 2006 FHWA ROD, further design development has resulted in repeated adjustments to the Alternative 2B alignment, and led to reductions in the number of acres of wetlands and marine areas affected by this alternative. Construction under the current design for Alternative 2B would require fill and excavation of 92.8 acres of wetlands and marine areas within the footprint of the proposed highway and the ferry terminal at Katzehin. This total includes 60.7 acres of palustrine wetlands, primarily forested, and 32.1 acres of non-vegetated marine areas, consisting primarily of rocky shores.

The current design of Alternative 2B has minimized impacts to wetlands and waters of the U.S. from what was proposed in 2004 and 2006, and permitted in 2008. No fills would be required in palustrine or estuarine emergent wetlands, deepwater rock disposal has been eliminated, and impacts to palustrine forested and shrub wetlands and estuarine areas have been further minimized.

The following subsections update Section 4.3 of the 2004 *Wetlands Technical Report, Appendix O* and the November 2005 *Addendum to Appendix O, Wetland Technical Report*, and incorporate information developed during the USACE permit process. These subsections provide footprint acreage information and impacts to wetland functions and values for the current Alternative 2B alignment.

4.2.1 East Lynn Canal Sub-Region 1 – Berners Bay

4.2.1.1 Footprint Acreage

Alternative 2B would extend the Glacier Highway north from the end of Glacier Highway at Cascade Point. Improvements to the existing Glacier Highway would impact 0.6 acre of wetlands. Between the end of the existing Glacier Highway footprint and the Antler River, the alignment would affect two individual wetlands totaling 4.7 acres of impact (4.0 acres of forested wetlands and 0.7 acre of scrub-shrub/forested wetlands). After crossing the Antler, Berners, and Lace rivers, the alignment traverses the edge of a forested wetland, filling 0.4 acre of the wetland's edge. Total wetlands impacts in the Berners Bay drainage have continued to decrease

as the highway design has been refined since 2004, when 23.2 acres were required. The 2006 FEIS design required 8.1 acres, the 2008 USACE permit allowed 6.5 acres, and the current design requires 5.7 acres. Compared with the 2004 *Wetlands Technical Report,* the total wetland impact of the modified Alternative 2B represents a 17.4-acre (75 percent) decrease in wetland impacts.

The bridges at the Antler, Berners, and Lace rivers have been designed to avoid fill in wetlands and waterbodies. The alignment has been moved to avoid important eulachon spawning habitat in the Antler River and to place a greater distance between the highway and estuarine emergent habitat at the Berners and Lace rivers (Table 4-1 and Table 4-3, Attachment A; Figures 1-6, Attachment B).

4.2.1.2 Impacts to Wetland Functions and Values

Impacts to functions and values for each individual wetland on the east side of Lynn Canal are presented in Tables 4-4 and B1 in Attachment A. The proposed highway would act as a partial barrier to the flow of shallow groundwater and surface water. Shallow groundwater blocked by the highway bed would eventually flow to the surface and be diverted by ditches to culverts under the roadbed. This diversion would adequately maintain water's natural down-gradient flow. Culvert end sections or rock dissipaters would be used to disperse high volume/velocity outfall to protect soils and vegetation below culvert outfalls from erosion of adjacent wetlands. The diversion of water into culverts and roadside ditches could disrupt water flow to some downslope wetlands and alter wetland hydrology; however, the high volume of annual rainfall in this region could reduce the magnitude of any impacts to wetland hydrology. Alteration of hydrology because of the roadbed could result in corresponding changes to the vegetation and, over time, affect wetland functions. The extent of this direct effect would depend on the location, but could potentially extend beyond the right-of-way. These effects could be minimized by adequate design of cross-drainage structures and ditching.

The loss of forested wetlands from fill for the highway would modify the groundwater recharge functions, the groundwater discharge/lateral flow functions, and the surface hydrologic control functions of these wetlands. The remaining portions of these forested wetlands, and the wetlands in unaffected areas outside the highway corridor, would continue to provide these functions. Proper ditches and drainage structures under the highway would minimize effects on the hydrologic functions of these wetlands.

The salt marshes at the head of Berners Bay adjacent to the Antler, Lace, and Berners rivers and at the head of Slate Cove provide a wildlife habitat function. The Alternative 2B alignment does not directly impact the salt marsh wetlands; however, the highway alignment has the potential to impact terrestrial wildlife movement between the salt marsh areas and adjacent uplands. Further discussion of potential wildlife corridor impacts is included in the 2004 *Wildlife Technical Report,* the 2005 *Addendum to the Wildlife Technical Report,* and the *2014 Update to Appendix Q – Wildlife Technical Report*.

The marine intertidal area adjacent to the shoreline from Sawmill Cove to south of the Antler River area is herring spawning habitat. There are no direct marine intertidal impacts occurring

along this segment of the shoreline for Alternative 2B. A discussion of potential impacts to herring spawning habitat is presented in the 2004 *Essential Fish Habitat Assessment*.

Contaminants, including oils, fuels, sediment, and debris can be introduced to the ecosystem during construction activities. These pollutants often settle in wetlands, but can move downstream when re-suspended. The introduction of contaminants and excess sediment loading can be avoided with implementation of Best Management Practices (BMPs). Contaminant concentrations in runoff from the proposed highway would not be expected to exceed Alaska Water Quality Standards (AWQS) or adversely impact the water quality of receiving waters for the long term. Invasive plant species can also be introduced during construction activities. DOT&PF and FHWA regulations require construction contractors to utilize specific techniques and procedures to minimize the accidental introduction of foreign plant species carried on construction equipment and to use native or non-invasive plant species for hydro-seeding of exposed embankments. Compliance with these BMPs should minimize the risk of introducing foreign plant species to the highway corridor and thus minimize the chance of causing wildlife habitat loss though this mechanism related to construction activities.

The use of salt-treated abrasives (sand and 3–5 percent salt) to improve road conditions could potentially affect roadside vegetation. High rainfall in this region would minimize any impact from road salt. Most soil and vegetation damage from sand or salt is localized to within 60 feet of the road, with the greatest impacts right next to the pavement. Salt-treated abrasives would be used minimally along the highway route; thus, negligible impacts on adjacent vegetation would be expected.

4.2.2 East Lynn Canal Sub-Region 2 – Slate Cove to Sherman Point

4.2.2.1 Footprint Acreage

The current Alternative 2B alignment includes further adjustments to minimize impacts to palustrine forested wetlands between Slate Cove and Sherman Point. These adjustments result in a total of 53.4 acres of forested wetland impacts, a 9.0-acre decrease (14 percent) in wetland impacts compared with the 2004 *Wetlands Technical Report*, and a 7.1-acre decrease (12 percent) from the *2005 Addendum to the Wetland Technical Report* (Table 4-1 and Table 4-3, Attachment A; Figures 6-8, Attachment B).

4.2.2.2 Impacts to Wetland Functions and Values

Excavation or fill of wetlands for construction of the highway would intersect the drainage patterns of most of the wetlands in this sub-region. Impacts would include modifying the groundwater recharge functions, the discharge/lateral flow functions, the surface hydrologic control functions, and the sediment retention functions of these wetlands. Expanses of similar habitat in the surrounding areas, and adequate ditching and drainage structures, would moderate losses of any of these functions.

Wildlife habitat for four wetlands in this subsection is rated as a moderate-high value (wetlands 910-2, 955-2, 1185-1, and 1220-1, Tables 4-4 and B-1, Attachment A). The approximate total acreage of these wetlands is 1,343 acres, of which 45.8 acres (3.4 percent) would be impacted. These wetlands have a moderate-high value because permanent standing fresh or brackish water or permanently flooded emergent marsh is present (emergent wetlands) and the wetlands are

adjacent to spruce/hemlock forest or deciduous scrub-shrub (forested and scrub-shrub wetlands), which provides food and water with nearby cover for terrestrial animals such as bear. All other wetlands impacted by Alternative 2B in this sub-region have a moderate-low to low wildlife habitat value (Table B-1, Attachment A). Further discussion on wildlife habitat impacts is included in the 2004 *Wildlife Technical Report,* the *2005 Addendum to the Wildlife Technical Report,* and the *2014 Update to Appendix Q – Wildlife Technical Report*.

Regional ecological diversity would not be substantially affected by the loss of wetlands in this sub-region since these wetlands are very common and widespread throughout the surrounding area. The highway alignment avoids the seasonally flooded emergent/scrub-shrub wetland along this area. Replacement cost is considered high for the forested wetlands.

4.2.3 East Lynn Canal Sub-Region 3 – Sherman Point to Katzehin River

4.2.3.1 Footprint Acreage

The current Alternative 2B alignment has been adjusted upslope in this sub-region to reduce the impact to estuarine rocky shores. Construction of this segment would affect 1.6 acres of palustrine forested wetlands, 21.7 acres of estuarine rocky shores, and 3.2 acres of estuarine unconsolidated bottom at the Katzehin River (Table 4-1 and Table 4-3, Attachment A; Figures 9-14, Attachment B).

4.2.3.2 Impacts to Functions and Values

The loss of 1.6 acres of forested wetlands (1360-1 and 1375-1) near Independence Lake would have a minimal effect on wetland functions. The highway would pass through the downslope portion of the wetland areas at the wetland/upland boundary. The highway would not disrupt a surface water connection to downslope waters or wetlands. Also, the impact to these two wetlands would be small relative to the size of the wetlands (92.5 acres).

The intertidal marine areas in this sub-region are rated high for fish habitat (2620-1, 1380-1 and 1480-1; Tables 4-4 and B-1, Attachment A). Approximately 3.2 acres of 2620-1, 2.9 acres of 1380-1, and 18.8 acres of 1480-1 would be filled. Impacts to fish habitat as a result of this fill are discussed in the *2014 Update to Appendix N – Essential Fish Habitat Assessment.*

4.2.4 East Lynn Canal Sub-Region 4 – Katzehin River to Katzehin Ferry Terminal

4.2.4.1 Footprint Acreage

Within this sub-region, no palustrine wetlands occur within the corridor surveyed for the proposed highway (Tables 4-4 and B-1, Attachment A; Figure 15, Attachment B). Rocky shore and beach bar fill areas along this portion of the highway are relatively small; the total affected area would comprise approximately 0.6 acre. Additionally, fill for the Katzehin Ferry Terminal would require approximately 6.6 acres of rocky shoreline habitat for breakwaters and terminal facilities. The terminal site has been reconfigured to eliminate the need to fill 0.2 acre of estuarine emergent wetlands. Approximately 4.4 acres of subtidal habitat would have to be dredged, but this area is not included in the wetland impact assessment.

4.2.4.2 Impacts to Functions and Values

The salt marsh wetland habitats north of the Katzehin River and adjacent to the Katzehin Ferry Terminal provide a wildlife habitat function. Alternative 2B has the potential to impact terrestrial wildlife movement between the salt marsh areas and adjacent uplands. Further discussion of potential wildlife corridor impacts is included in the 2004 *Wildlife Technical Report* and the *2014 Update to Appendix Q – Wildlife Technical Report*.

The Katzehin Ferry Terminal would require fill in approximately 6.6 acres of marine intertidal areas with high fish habitat values (2750-1; Tables 4-4 and B-1, Attachment A). Impacts to fish habitat associated with this fill and the 4.4 acres of subtidal dredging are discussed in the 2004 *Essential Fish Habitat Assessment*.

4.3 Alternative 3: West Lynn Canal Highway

4.3.1.1 Footprint Acreage

The 2013 alignment changes to Alternative 3 along West Lynn Canal do not result in changes to wetland impacts, as the alignment shifts do not occur in wetland areas. Alternative 3 would impact 0.6 acre of wetlands along the segment where the Juneau Access Improvements Project would upgrade the existing Glacier Highway along Echo Cove. The road would be extended from Cascade Point to Sawmill Cove in Berners Bay. Fill of wetlands and marine areas from Cascade Point to the Sawmill Cove Ferry Terminal would include 0.9 acre of scrub-shrub/forested wetlands and 1.9 acres of rocky shore intertidal habitat. Additionally, 1.2 acres of subtidal dredging for the ferry terminal would be required.

The 2013 alignment under Alternative 3 would necessitate a total of 37.8 acres of wetland and marine fill. This total would include 26.0 acres of wetlands and 11.6 acres of marine areas. A small amount (0.2 acre) of vegetated shallows associated with small ponds would also be filled (Table 4-2 and Table 4-3, Attachment A).

4.3.1.2 Impacts to Functions and Values

The wetlands functions and values presented in the 2004 *Wetlands Technical Report* for Alternative 3 remain valid.

4.4 Alternatives 4A and 4C

The wetlands impacts and functions and values presented in the 2004 *Wetlands Technical Report* for Alternatives 4A and 4C remain valid (Tables 4-2B, Table 4-3, Table B-1, Attachment A)

4.5 Alternatives 4B and 4D

4.5.1.1 Footprint Acreage

These build alternatives would upgrade the existing Glacier Highway along Echo Cove to Cascade Point and extend the highway to Sawmill Cove in Berners Bay. The upgrade would impact 0.6 acre of wetlands and extension of the highway from Cascade Point to Sawmill Cove would require the filling of approximately 0.9 acre of scrub-shrub/forested wetlands and 1.9 acres of marine fill at the Sawmill Cove Ferry Terminal site; 1.2 acres of subtidal dredging

would be required for the ferry terminal. In addition, there would be 0.7 acre of intertidal/subtidal fill for terminal modification at Auke Bay to accommodate a stern berth. (Table 4-2B, Table 4-3, and Table B-1, Attachment A).

4.5.1.2 Impacts to Functions and Values

The wetlands functions and values presented in the 2004 *Wetlands Technical Report* for Alternatives 4B and 4D remain valid.

5. Compensatory Mitigation for Impacts to Wetlands and Other Waters of the United States

During previous EIS development, no wetland restoration, enhancement, or creation opportunities were identified in the watersheds that would be impacted, as there are many similar wetlands in the project area and few have been affected by development. For this reason, DOT&PF proposed a combination of avoidance and minimization, on-site out-of-kind mitigation, and in-lieu fee compensation for USACE permitting of the 2006 FEIS preferred Alternative 2B. These measures included:

- Avoiding of all palustrine emergent wetlands and all but 0.2 acre of estuarine emergent wetlands, and striving to further minimize wetland and waters impacts in final design;
- Construction of a 100-foot-wide wildlife underpass at the location of an identified bear travel corridor near the east bank of the Lace River as on-site out-of-kind compensatory mitigation for impacts to forested and scrub/shrub wetlands; and
- Providing in-lieu fee compensation for emergent wetland and beach and subtidal habitat impacts.

The measures developed for the 2006 FEIS preferred Alternative 2B and incorporated into the 2008 USACE permit would be applied to the 2014 Draft SEIS preferred alternative as applicable. As part of the Section 404/10 permitting process, DOT&PF would coordinate with the USACE to develop a compensatory mitigation plan to offset impacts to waters of the U.S. in compliance with the 2008 Mitigation Rule.

6. References

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Attachment A
Updated Tables

The section includes updated versions of the following tables that were presented in the 2004 *Wetlands Technical Report.*

Table 4-1	East Lynn Canal –Alternative 2B Total Impacted Areas (Acres) by Wetland Type and Sub-Region, December 2013 Alignment
Table 4-2	West Lynn Canal – Alternative 3 Total Impacted Areas (Acres) by Wetland Type and Sub-Region
Table 4-2B	West Lynn Canal – Alternatives 4A and 4C, 4B and 4D Total Impacted Areas (Acres) by Wetland Type and Sub-Region
Table 4-3	Total Area Wetlands (Acres) and other Waters of the United States Affected by Project Alternatives, December 2013 Alignment
Table 4-4	Impacts to Functions and Values for Individual Wetlands and Estuarine Sites, East Lynn Canal Alignment, 2013 Alternative 2B (Preferred Alignment)
Table (formerly Attachment) B-1	Wetland Functions and Values

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Table 4-1
East Lynn Canal – Preferred Alternative 2B
Total Impacted Area (Acres) by Wetland Type and Sub-Region, December 2013 Alignment

Subregions	Classification	Area of Fill
		Alternative 2B
East Sub-Region 1	**Wetlands**	
	Palustrine Forested	5.0
	Palustrine Scrub-Shrub	0.7
	Sub Total	5.7
East Sub-Region 2	**Wetlands**	
	Palustrine Forested	53.4
	Sub Total	53.4
East Sub-Region 3	**Wetlands**	
	Palustrine Forested	1.6
	Sub Total	1.6
	Intertidal and Subtidal Areas	
	Rocky Shores	21.7
	Unconsolidated Bottom	3.2
	Sub Total	24.9
East Sub-Region 4	**Wetlands**	
	Estuarine Emergent	0.0
	Sub Total	0.0
	Intertidal and Subtidal Areas	
	Rocky Shores	7.2
	Sub Total	7.2
All East Lynn Canal Sub-Regions	**Wetlands**	
	Palustrine Forested	60.0
	Palustrine Scrub-Shrub	0.7
	Estuarine Emergent	0.0
	Sub Total	60.7
	Intertidal and Subtidal Areas	
	Rocky Shores	28.9
	Unconsolidated Bottom	3.2
	Sub Total	32.1
	Sub-Regions Totals	
	Total Wetlands	60.7
	Total Intertidal and Subtidal Areas	32.1
	Total Acres	92.8

Note: Acreages do not include riverine areas intersected by the proposed alignments

Table 4-2
West Lynn Canal – Alternative 3
Total Impacted Areas (Acres) by Wetland Type and Sub-Region, December 2013 Alignment

Sub-Region	Classification	Area of Fill (Acres)
West Sub-Region 1	**Wetlands**	
	Palustrine Emergent	1.9
	Palustrine Forested	18.7
	Estuarine Emergent	0.4
	Sub Total	21.0
	Intertidal and Subtidal Areas	
	Beach Bars	0.09
	Rocky Shores	4.8
	Sub Total	4.9
West Sub-Region 2	**Wetlands**	
	Palustrine Emergent	0.4
	Palustrine Forested	1.1
	Sub Total	1.5
	Fresh Water Aquatic Areas	
	Palustrine Aquatic Beds	0.2
	Sub Total	0.2
West Sub-Region 3	**Wetlands**	
	Palustrine Forested	0.9
	Estuarine Emergent	1.1
	Sub Total	2.0
	Intertidal and Subtidal Areas	
	Beach Bars	4.8
	Sub Total	4.8
East Sub-Region 1	**Wetlands**	
	Palustrine Forested	0.6
	Palustrine Scrub-Shrub	0.9
	Sub Total	1.5
	Marine Areas	
	Rocky Shores	1.9
	Sub Total	1.9
All West Lynn Canal Sub-Regions (plus East Sub-Region 1)	**Wetlands**	
	Palustrine Emergent	2.3
	Palustrine Forested	21.3
	Palustrine Scrub-Shrub	0.9
	Estuarine Emergent	1.5
	Sub Total	26.0
	Fresh Water Aquatic Areas	
	Palustrine Aquatic Beds	0.2
	Sub Total	0.2
	Intertidal and Subtidal Areas	
	Beach Bars	4.9
	Rocky Shores	6.7
	Sub Total	11.6
All Sub-Regions (plus East Sub-Region 1)	**Sub-Regions Total**	
	Total Wetlands	26.0
	Total Fresh Water Aquatic Areas	0.2
	Total Intertidal and Subtidal Areas	11.6
	Total Acres	37.8

Note: Acreages do not include riverine areas intersected by the proposed alignments.

Table 4-2B
West Lynn Canal – Alternatives 4A and 4C, 4B and 4D
Total Impacted Areas (Acres) by Wetland Type and Sub-Region, 2013 Alignment

Sub-Region	Classification	Area of Fill (Acres)	
		Alternatives 4A and 4C	Alternatives 4B and 4D
West Sub-Region 1	**Wetlands**		
	Palustrine Emergent	0	0
	Palustrine Forested	0	0
	Estuarine Emergent	0	0
	Sub Total	0	0
	Intertidal and Subtidal Areas		
	Beach Bars	0	0
	Rocky Shores	0	0
	Sub Total	0	0
West Sub-Region 2	**Wetlands**		
	Palustrine Emergent	0	0
	Palustrine Forested	0	0
	Sub Total	0	0
	Fresh Water Aquatic Areas		
	Palustrine Aquatic Beds	0	0
	Sub Total	0	0
West Sub-Region 3	**Wetlands**		
	Palustrine Forested	0	0
	Estuarine Emergent	0	0
	Sub Total	0	0
	Intertidal and Subtidal Areas		
	Beach Bars	0	0
	Sub Total	0	0
East Sub-Region 1	**Wetlands**		
	Palustrine Forested	0	0.6
	Palustrine Scrub-Shrub	0	0.9
	Sub Total	0	1.5
	Intertidal and Subtidal Areas		
	Rocky Shores	0.7	2.6
	Sub Total	0.7	2.6
All West Lynn Canal Sub-Regions (plus East Sub-Region 1)	**Wetlands**		
	Palustrine Emergent	0	0
	Palustrine Forested	0	0.6
	Palustrine Scrub-Shrub	0	0.9
	Estuarine Emergent	0	0
	Sub Total	0	1.5
	Fresh Water Aquatic Areas		
	Palustrine Aquatic Beds	0	0
	Sub Total	0	0
	Intertidal and Subtidal Areas		
	Beach Bars	0	0
	Rocky Shores	0.7	2.6
	Sub Total	0.7	2.6
All Sub-Regions (plus East Sub-Region 1)	**Sub-Regions Total**		
	Total Wetlands	0	1.5
	Total Fresh Water Aquatic Areas	0	0
	Total Intertidal and Subtidal Areas	0.7	2.6
	Total Acres	0.7	4.1

Note: Acreages do not include riverine areas intersected by the proposed alignments.

Table 4-3
Total Area Wetlands (Acres) and other Waters of the United States Affected by Project Alternatives, August 2012 Alignment

Wetlands and Other Waters of the U.S	Alternative 2B	Alternative 3	Alternatives 4A and 4C	Alternatives 4B and 4D
	East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway	West Lynn Canal Highway and Glacier Highway to Sawmill Cove	Glacier Highway to Sawmill Cove	Glacier Highway to Sawmill Cove
Wetlands				
Palustrine Emergent	0.0	2.3	0	0.0
Palustrine Forested	60.0	21.3	0	0.6
Palustrine Scrub-Shrub	0.7	0.9	0	0.9
Estuarine Emergent	0.0	1.5	0	0.0
Sub Total	60.7	26.0	0	1.5
Fresh Water Aquatic Areas				
Aquatic Beds	0.0	0.2	0	0.0
Sub Total	0.0	0.2	0	0.0
Intertidal and Subtidal Areas				
Beach Bar	0.0	4.9	0	0.0
Rocky Shore Beaches	28.9	6.7	0.7	2.6
Unconsolidated Bottom	3.2	0.0	0.0	0.0
Sub Total	32.1	11.6	0.7	2.6
Total Acres	92.8	37.8	0.7	4.1

Table 4-4
Impacts to Functions and Values for Individual Wetlands and Estuarine Sites, East Lynn Canal Alignment, 2013 Alternative 2B

Habitat Type	Cowardin Class	Wetland Type	Wetland ID	Total Area (Acres)	Impacted Area (Acres)	Impacts to Functions and Values Description (Fill for highway construction unless otherwise noted)
Sub-Region 1 – Echo Cove to Slate Cove						
Wetlands	PFO4B	Forested	75+08	2.53	0.03	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	79+41	0.07	0.04	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	107+39	10.12	0.11	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	116+94	59.57	0.29	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	165+92	0.03	0.001	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	167+41	5.12	0.05	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	172+39	0.04	0.01	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	178+91	0.02	0.001	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	185+40	0.03	0.0004	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	191+50	0.02	0.0004	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.

	PFO4B	Forested	194+00	2.03	0.01	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	202+00	0.04	0.0003	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	205+26	1.44	0.04	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PSS1B/PFO4B	Scrub-Shrub/Forested	340-1	4.51	0.74	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	415-1	67.91	4.01	Modification of groundwater recharge, groundwater discharge/lateral flow and surface hydrologic control.
	PFO4B	Forested	800-1	26.48	0.43	Modification of groundwater recharge/discharge functions and riparian support.
Sub-Region 2 – Slate Cove to Sherman Point						
Wetlands	PFO4B	Forested	895-1	88.06	4.91	Modification of groundwater recharge/discharge functions, riparian support, and wildlife habitat.
	PFO4B	Forested	910-2	6.44	0.88	Modification of groundwater recharge/discharge functions, riparian support, and wildlife habitat.
	PFO4B	Forested	955-2	1103.85	33.22	Modification of surface hydrologic control and groundwater recharge functions. Some loss of wildlife habitat functions.
	PFO4B/PSS1B	Forested/ Scrub- Shrub	1185-1	205.49	9.86	Modification of groundwater recharge/discharge functions, nutrient transport, riparian support, and wildlife habitat.
	PFO4B/PSS1B	Forested/ Scrub- shrub	1220-1	27.40	1.81	Modification of groundwater recharge/discharge functions and wildlife habitat.
	PFO4B	Forested	1260-1	30.07	1.62	Modification of groundwater discharge/recharge functions.
	PFO4B	Forested	1275-1	23.41	1.07	Modification of groundwater discharge/recharge functions.

Sub-Region 3 – Sherman Point to Katzehin River						
Wetlands	PFO4B	Forested	1360-1	33.74	0.96	Modification of groundwater discharge/recharge functions.
	PFO4B	Forested	1375-1	58.76	0.60	Functions not substantially impacted due to small fill area.
Marine Areas	E2RS2N/ E2US1N	Rocky Shore/ Unconsol. Shore	1380-1	NA	2.92	Modification of fish habitat.
	E2RS2N	Rocky Shore	1480-1	NA	18.78	Modification of fish habitat.
	E1UBL	Unconsolidated Bottom	2620-1	NA	3.15	Modification of fish habitat
Sub-Region 4 – Katzehin River						
Marine Areas	E2RS2N	Rocky Shore	2765-1	NA	7.19	Modification of fish/wildlife habitat.

Notes: The total acreage of a given marine intertidal area is a function of the beach slope and beach length. Because of the continuous nature of these marine types (i.e., rocky shores, beach bars, and unconsolidated shores), and the variability of seaward slope distances, delineation of these marine intertidal boundaries was only conducted in the vicinity of potential impacts.

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Table (formerly Attachment) B-1
Wetland Function and Values

Sub-Regions	Wetland ID	Field Date	Cowardin Class	Estimated Total Wetland Acreage	Impact Area	Groundwater Recharge	Groundwater Discharge/Flow and Lateral Flow	Surface Hydrologic Control	Sediment/ Toxicant Retention	Nutrient Transformation/ Export	Riparian Support	Fish Habitat	Wildlife	Regional Ecological Diversity	Ecological Replacement	Erosion Sensitivity	Notes	Downstream/ Coastal Beneficiary Sites
WETLANDS																		
Sub-Region 1	75+08	GHE permit	PFO4B	2.53	0.03	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	79+41	GHE permit	PFO4B	0.07	0.04	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	93+59	GHE permit	PFO4B	2.38	0.00	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	107+39	GHE permit	PFO4B	10.12	0.11	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	116+94	GHE permit	PFO4B	59.57	0.29	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	165+92	GHE permit	PFO4B	0.03	<0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	167+41	GHE permit	PFO4B	5.12	0.05	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	172+39	GHE permit	PFO4B	0.04	0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	178+91	GHE permit	PFO4B	0.02	<0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	185+40	GHE permit	PFO4B	0.03	<0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	191+50	GHE permit	PFO4B	0.02	<0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	194+00	GHE permit	PFO4B	2.03	0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	202+00	GHE permit	PFO4B	0.04	<0.01	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	205+26	GHE permit	PFO4B	1.44	0.04	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	340-1	7/22/2003	PSS1B/PFO4B	4.51	0.74	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Moderate-High	Moderate-High	Low		Low
	330-1	7/22/2003	PFO4B/PSS1B	1.74	0.00	High to Moderate	High to Moderate	High	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Moderate-High	Moderate-High	Moderate-Low		Low
	415-1	7/31/2003	PFO4B	67.91	4.01	High to Moderate	High to Moderate	High	Low	Moderate	Moderate-Low	Very Low	Low	Moderate-High	High	Moderate-Low		Low
	800-1	7/28/2003	PFO4B	26.48	0.43	High to Moderate	Low	Moderate-High	High	Low	Low	Very Low	Low	Moderate-High	High	Moderate-Low		Low
	800-3	7/28/2003	PFO4B	12.13	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	830-1	7/28/2003	PFO4B	17.03	0.00	High to Moderate	Low	Moderate-High	High	Low	Low	Very Low	Low	Moderate-High	High	Moderate-Low		Low
	735-4	7/28/2003	PFO1A/PSS1A	57.01	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-High	Very Low	Moderate-Low	Moderate-High	High	Low		Low
	680-2	7/28/2003	PFO1A	80.99	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-High	Very Low	Moderate-Low	Moderate-High	High	Low		Low
	735-2	7/28/2003	PEM1S	31.19	0.00	Low	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-High	Very Low	High	High	Low	Low		Low
	420-1	7/31/2003	PEM1B/PSS4B	13.38	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Moderate-Low	Moderate	Low		Low
	440-1	7/31/2003	PEM1B/PSS4B	6.63	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Moderate-Low	Moderate	Low		Low
	320-1	7/22/2003	PEM1B/PSS1B	2.16	0.00	High to Moderate	High to Moderate	Low	Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-High	Moderate	Moderate-High		Low
	330-2	7/22/2003	PEM1B/PFO4B	3.47	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Moderate-High	Moderate-High	Low		Low
	270-1	aerial	PEM1B	0.62	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Low	Moderate	Low		Low
	275-1	aerial	PEM1B	1.39	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Low	Moderate	Low		Low
	800-2	7/28/2003	PEM1B	7.40	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	800-4	7/28/2003	PEM1B	1.13	0.00	High to Moderate	Low	High	High	Low	Low	Very Low	Low	Low	Moderate	Low		Low
	830-2	7/28/2003	PEM1B	2.54	0.00	High to Moderate	Low	High	High	Low	Low	Very Low	Low	Low	Moderate	Low		Low
	680-3	aerial	PSS1S/PFL1S	23.64	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-High	Very Low	Moderate-Low	Moderate-High	Low	Moderate-High		Low
	690-2	aerial	PSS1R	2.61	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-High	Very Low	Moderate-Low	Moderate-High	Low	Moderate-High		Low
	735-1	7/28/2003	E2EM1P	52.31	0.00	High to Moderate	High to Moderate	Low	Moderate-High	Moderate	High	Moderate-Low	High	High	High	Low		Low
MARINE AREAS																		
	370-T	7/31/2003	E2RS2N	2.78	See Notes	Low	Low	Low	Low	NA	NA	High	High	High	Low	Low	Sawmill Cove Ferry Terminal	Low

Table (formerly Attachment) B-1 (continued)
Wetland Function and Values

Sub-Regions	Wetland ID	Field Date	Cowardin Class	Estimated Total Wetland Acreage	Impact Area	Groundwater Recharge	Groundwater Discharge/Flow and Lateral Flow	Surface Hydrologic Control	Sediment/ Toxicant Retention	Nutrient Transformation/ Export	Riparian Support	Fish Habitat	Wildlife	Regional Ecological Diversity	Ecological Replacement	Erosion Sensitivity	Notes	Downstream/ Coastal Beneficiary Sites
WETLANDS																		
Sub-Region 2	990-1	aerial	PSS4B/PEM1B	39.04	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	High	Moderate-High	Moderate	Low		Low
	1015-1	aerial	PFO4B/PEM1B	2.80	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate-High	Moderate-Low		Low
	1020-1	aerial	PFO4B/PEM1B	6.04	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate-High	Moderate-Low		Low
	895-1	7/31/2003	PFO4B	88.06	4.91	High to Moderate	High to Moderate	Low	Low	Moderate	Moderate-High	Very Low	Moderate-Low	Moderate-High	High	Moderate-Low		Low
	910-2	7/30/2003	PFO4B	6.44	0.88	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	High	Very Low	Moderate-High	Moderate-High	High	Moderate-Low		Low
	955-2	7/30/2003	PFO4B	1103.85	33.22	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	High	High	Very Low	Moderate-High	Moderate-High	High	Moderate-Low		Low
	920-1	aerial	PEM1B/PSS4B	0.58	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	950-1	7/30/2003	PEM1B/PSS4B	161.23	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	High	Moderate-High	Moderate	Low		Low
	955-1	7/30/2003	PEM1B/PSS4B	42.84	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	High	Moderate-High	Moderate	Low		Low
	975-1	aerial	PEM1B/PSS4B	1.83	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	1010-1	aerial	PEM1B/PSS4B	1.13	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	1040-1	aerial	PEM1B/PSS4B	16.55	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Moderate-High		Low
	1185-1	7/30/2003	PFO4B/PSS1B	205.49	9.86	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	High	High	Very Low	Moderate-High	Moderate-High	High	Moderate-Low		Low
	1220-1	aerial	PFO4B/PSS1B	27.40	1.81	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Moderate-Low	Moderate-High	Low		Low
	1070-1	aerial	PFO4B/PEM1B	8.45	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Moderate-Low	Moderate-High	Low		Low
	1260-1	7/26/2003	PFO4B	30.07	1.62	High to Moderate	High to Moderate	Low	Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-Low	High	Moderate-Low		Low
	1275-1	aerial	PFO4B	23.41	1.07	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-Low	High	Low		Low
	1110-1	aerial	PEM1B/PSS4B	2.30	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	1135-1	aerial	PEM1B/PSS4B	1.02	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate	Low		Low
	1150-1	aerial	PEM1B/PSS4B	4.63	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Moderate-High	Low	Moderate	Low		Low
	1260-2	aerial	PEM1B/PSS4B	1.35	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate	Moderate-High		Low
	1125-1	aerial	PEM1B	0.43	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate	Low		Low
	1185-2	aerial	PEM1B	1.49	0.00	High to Moderate	High to Moderate	Moderate-Low	Moderate-Low	Moderate	Moderate-Low	Very Low	Low	Low	Moderate	Low		Low
	900-1	7/30/2003	E2EM1P	18.05	0.00	High to Moderate	High to Moderate	Low	Moderate-High	High	High	Moderate-Low	High	High	High	Moderate-Low		Low
	MARINE AREAS																	
	900-T	7/30/2003	E2BB1N	3.19	0.00	High to Moderate	High to Moderate	Low	Moderate-High	Moderate	Moderate-High	High	High	High	Low	Low	Slate Creek Ferry Terminal	Low

Table (formerly Attachment) B-1 (continued)
Wetland Functions and Values

Sub-Regions	Wetland ID	Field Date	Cowardin Class	Estimated Total Wetland Acreage	Impact Area	Groundwater Recharge	Groundwater Discharge/Flow and Lateral Flow	Surface Hydrologic Control	Sediment/ Toxicant Retention	Nutrient Transformation/ Export	Riparian Support	Fish Habitat	Wildlife	Regional Ecological Diversity	Ecological Replacement	Erosion Sensitivity	Notes	Downstream/ Coastal Beneficiary Sites
Sub-Region 3	**WETLANDS**																	
	1360-1	aerial	PFO4B	33.74	0.96	High to Moderate	High to Moderate	Low	Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-Low	High	High		Low
	1375-1	aerial	PFO4B	58.76	0.60	High to Moderate	High to Moderate	Low	Low	Moderate	Moderate-Low	Very Low	Moderate-Low	Moderate-Low	High	High		Low
	2590-1	aerial	E2EM1N	16.25	0.00	High to Moderate	High to Moderate	Low	Moderate-High	Moderate	High	High	High	High	High	Low		Low
	MARINE AREAS																	
	1300-1	aerial	E2RS2N/E2US	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	1380-1	aerial	E2RS2N/E2US	NA	2.92	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	1480-1	aerial	E2RS2N	NA	18.78	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	2620-1	aerial	E1UBL	NA	3.15	Low	Low	Low	Low	NA	Moderate-Low	High	Moderate-Low	High	Low	Low		Low
	WETLANDS																	
Sub-Region 4	3565-1	aerial	PSS4B	0.15	0.00	High to Moderate	Low	High	High	Low	Low	Very Low	Low	Low	Moderate	Low		Low
	3560-1	aerial	PEM1B	0.17	0.00	High to Moderate	Low	High	High	Low	Low	Very Low	Low	Low	Moderate	Low		Low
	2670-1	aerial	E2EM1P	46.11	0.00	High to Moderate	High to Moderate	Low	Moderate-High	High	High	Moderate-Low	High	High	High	Low		Low
	2690-1	aerial	E2EM1P	14.37	0.00	High to Moderate	High to Moderate	Low	Moderate-High	High	High	Moderate-Low	High	High	High	Low		Low
	2630-1	7/27/2003	E2EM1N	39.04	0.00	High to Moderate	High to Moderate	Low	Moderate-High	High	High	High	High	High	High	Low		Low
	2735-1	7/27/2003	E2EM1N	135.04	0.00	High to Moderate	High to Moderate	Low	Moderate-High	Moderate	High	High	High	High	High	Low		Low
	2750-1	aerial	E2EM1N	0.17	0.00	High to Moderate	High to Moderate	Low	Moderate-High	Moderate	High	High	High	High	High	Low		Low
	MARINE AREAS																	
	2745-T	aerial	E2RS2N	NA	0.0	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	2765-1	aerial	E2RS2N	NA	7.19	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	2800-1	aerial	E2RS2N	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	2985-1	aerial	E2RS2N	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	3000-1	aerial	E2RS2N	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	3300-1	aerial	E2RS2N	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		Low
	3580-1	aerial	E2RS2N	NA	0.00	Low	Low	Low	Low	NA	NA	High	Moderate-Low	High	Low	Low		High
	AQUATIC BEDS (VEGETATED SHALLOWS)/ OPEN WATER																	
	3615-1	7/27/2003	POWH	2.22	0.00	High to Moderate	High to Moderate	Low	Moderate-High	High	Moderate-High	Moderate-Low	High	Moderate-Low	Low	Low		High
	3615-2	7/27/2003	POWH	0.42	0.00	Low	High to Moderate	Low	Moderate-High	High	Moderate-High	Moderate-High	Low	Low	Low	Low		Low
	3615-3	aerial	POWH	0.03	0.00	Low	High to Moderate	Low	Moderate-High	High	Moderate-High	Moderate-High	Low	Low	Low	Low		Low

Notes: Wetlands boundaries along the Glacier Highway delineated for the Glacier Highway Extension (GHE) Section 404 Permit Application - 12/13/2010.
E2RS2N, E2US1N, and E2BB1N/P provide minimal hydrologic functions.
Impacts to Wetland ID 2765-1 include 0.62 acres of marine fill for the road, 6.57 acres of marine fill for the Katzehin Ferry Terminal and associated breakwaters, and 4.40 acres of marine dredging for the ferry terminal.
See Section 3.0 of the 2004 Wetland Technical Report for a description of Cowardin Classification and the NWI coding system
NA - The total acreage of a given marine intertidal area is a function of the beach slope and beach length. Because of the continuous nature of these marine types (i.e., rocky shores, beach bars, and unconsolidated shores), and the variability of seaward slope distances, delineation of these marine intertidal boundaries was only conducted in the vicinity of potential impacts

Very High, High, or High to Moderate
Moderate-High
Moderate
Moderate-Low
Low or Very Low

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Attachment B
Updated Figures

This section provides the following updated versions of figures that were originally presented in the 2004 *Wetlands Technical Report* and Figures 1 through 11 in the *2005 Addendum to Appendix O, Wetlands Technical Report*.

Figure 1 Wetlands – East Lynn Canal Sub-Region 1
Figure 2 Wetlands – East Lynn Canal Sub-Region 1
Figure 3 Wetlands – East Lynn Canal Sub-Region 1
Figure 4 Wetlands – East Lynn Canal Sub-Region 1
Figure 5 Wetlands – East Lynn Canal Sub-Region 1
Figure 6 Wetlands – East Lynn Canal Sub-Regions 1 and 2
Figure 7 Wetlands – East Lynn Canal Sub-Region 2
Figure 8 Wetlands – East Lynn Canal Sub-Region 2
Figure 9 Wetlands – East Lynn Canal Sub-Region 3
Figure 10 Wetlands – East Lynn Canal Sub-Region 3
Figure 11 Wetlands – East Lynn Canal Sub-Region 3
Figure 12 Wetlands – East Lynn Canal Sub-Region 3
Figure 13 Wetlands – East Lynn Canal Sub-Region 3
Figure 14 Wetlands – East Lynn Canal Sub-Region 3
Figure 15 Wetlands – East Lynn Canal Sub-Region 4

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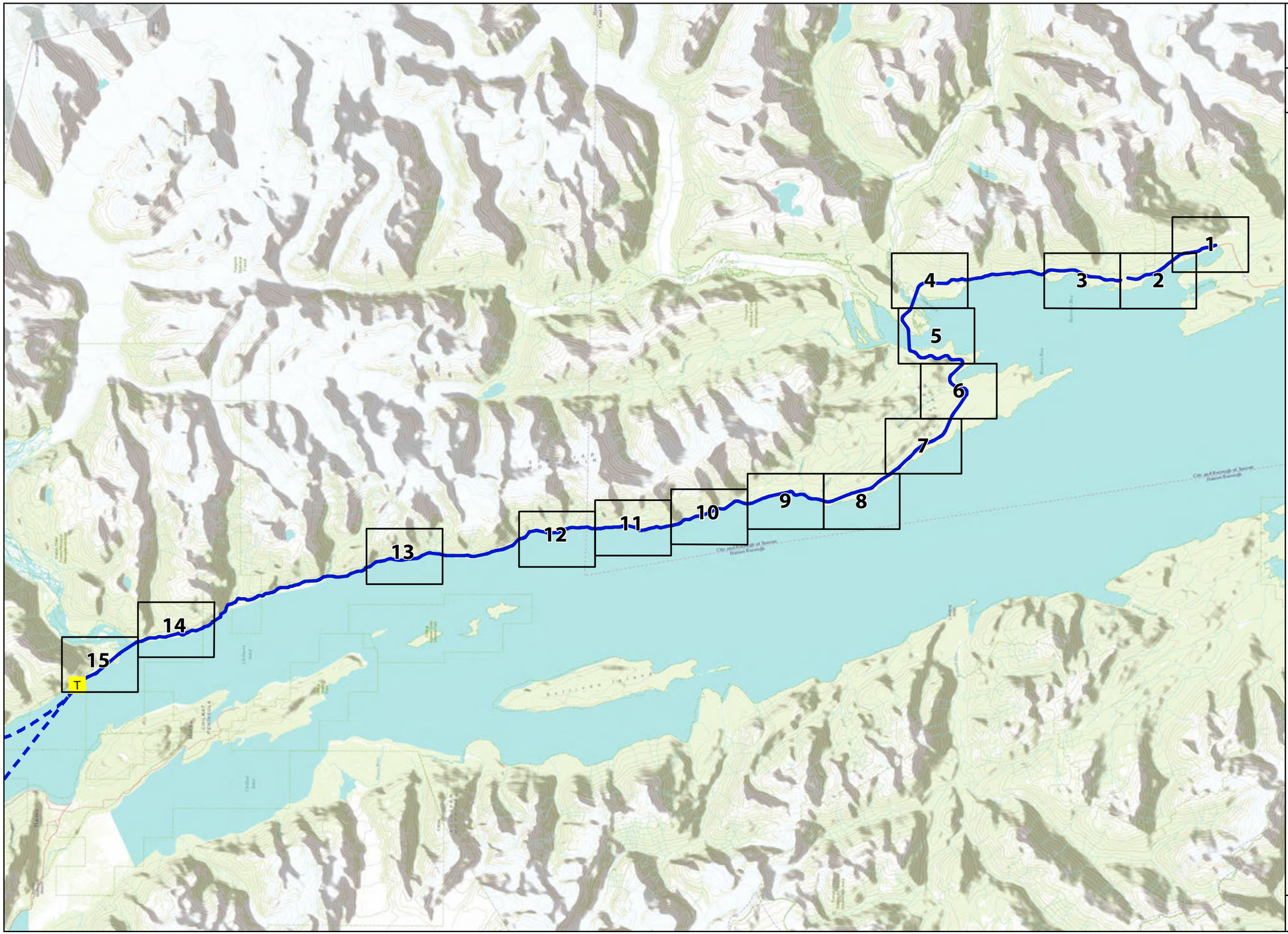

Juneau Access Improvements

Wetlands Map Book

Alternative 2B
East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

T New Ferry Terminal

Current Alignment

Ferry Shuttle

Date: August, 2013

Source: AK DOT&PF

0 1.5 3 Miles

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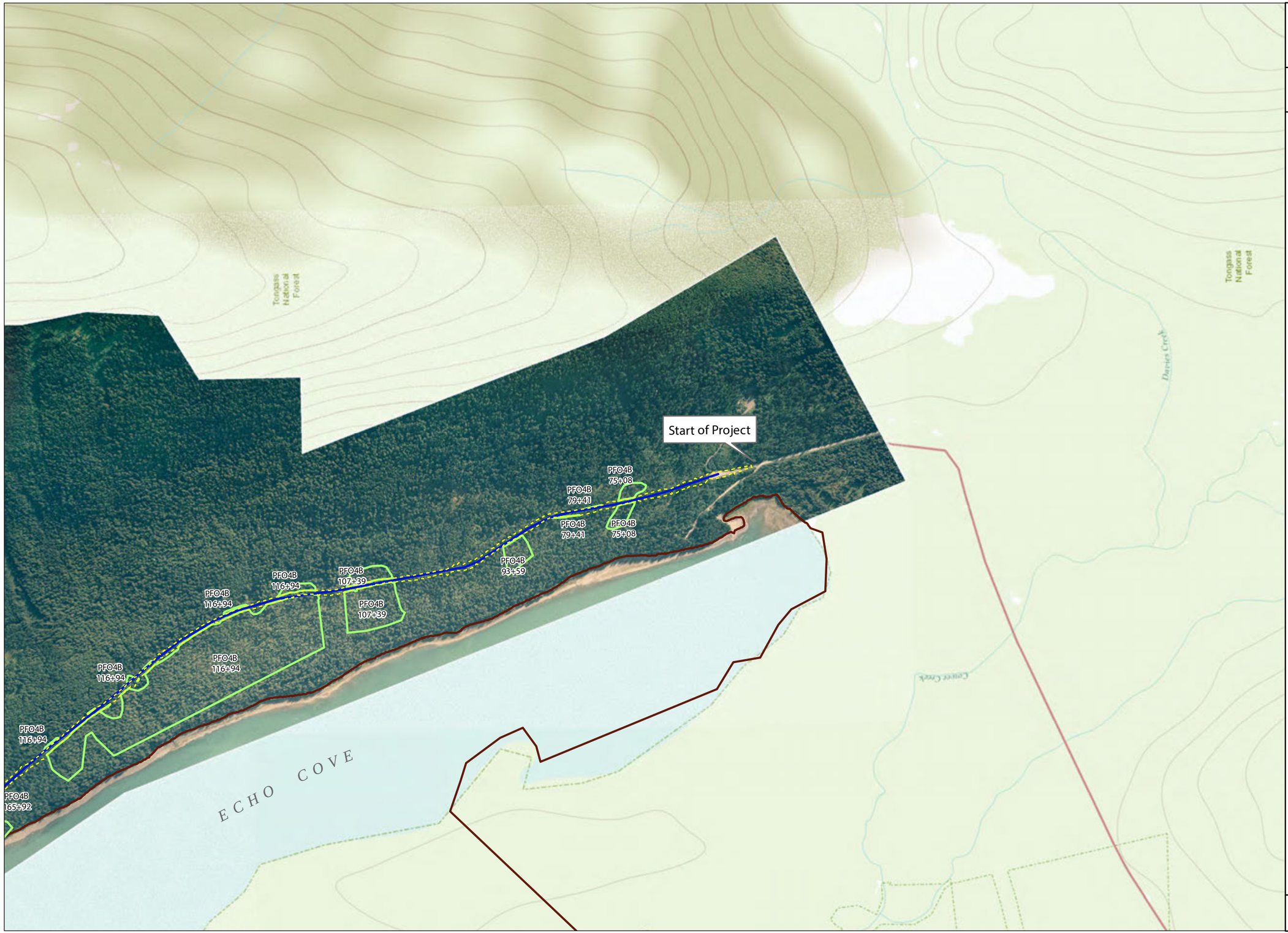


Juneau Access Improvements

Figure 1 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

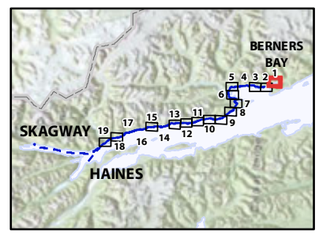
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1

Locator Map



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Source: AK DOT&PF

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Juneau Access Improvements

Figure 2 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

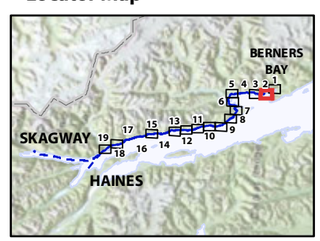
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1

Locator Map



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Source: AK DOT&PF

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Juneau Access Improvements

Figure 3 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

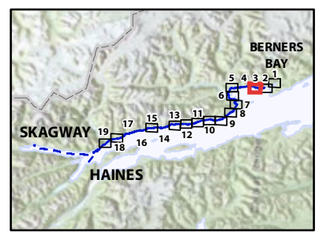
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1

Locator Map



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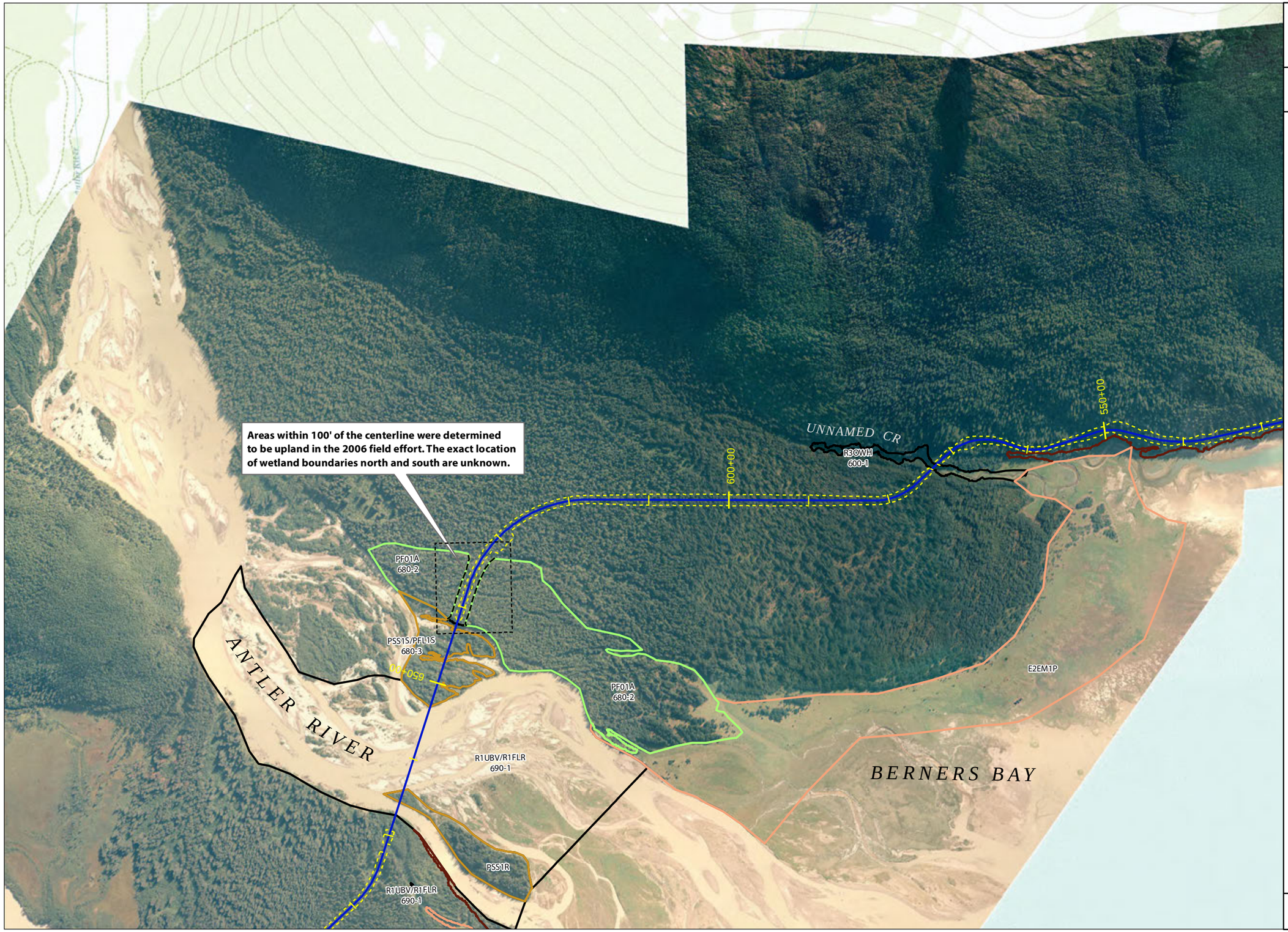


Juneau Access Improvements

Figure 4 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

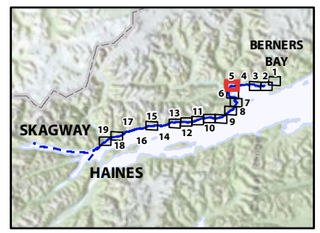
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1

Locator Map



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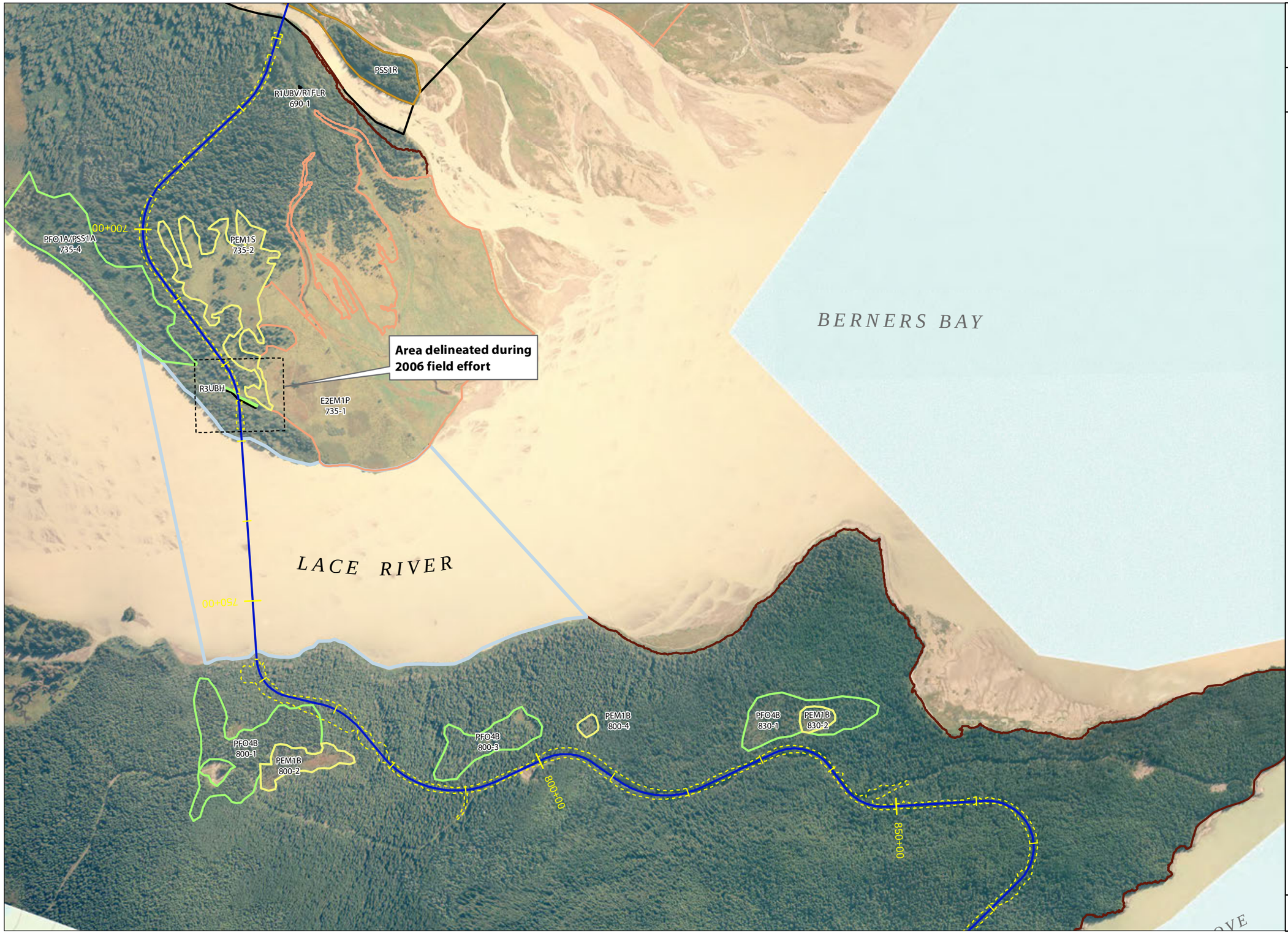


Juneau Access Improvements

Figure 5 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

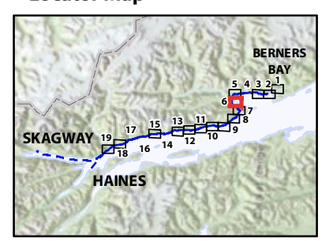
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1

Locator Map



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Source: AK DOT&PF

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Juneau Access Improvements

Figure 6 of 15

Wetlands
- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas
- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

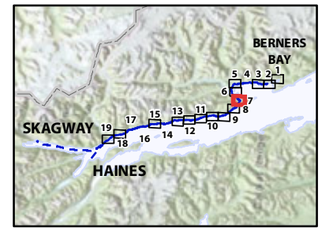
Other Waters of the U.S.
- Riverine

Alternative 2B
East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 1 and 2

Locator Map



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Source: AK DOT&PF

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Juneau Access Improvements

Figure 7 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

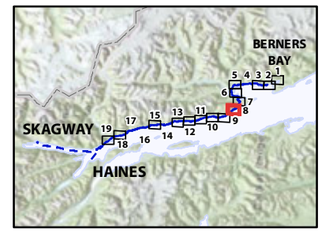
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 2

Locator Map



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Juneau Access Improvements

Figure 8 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

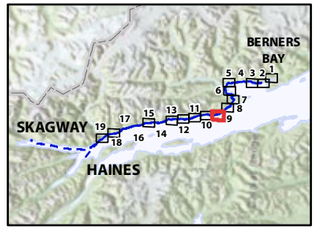
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 2

Locator Map



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Juneau Access Improvements

Figure 9 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

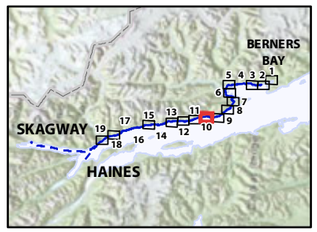
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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Juneau Access Improvements

Figure 10 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

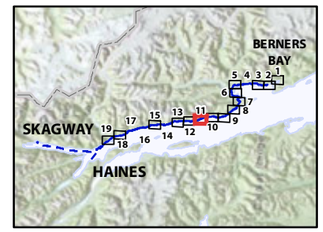
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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Juneau Access Improvements

Figure 11 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

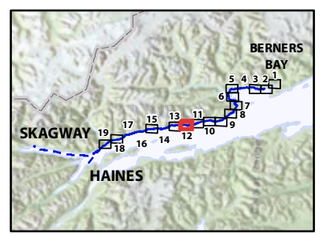
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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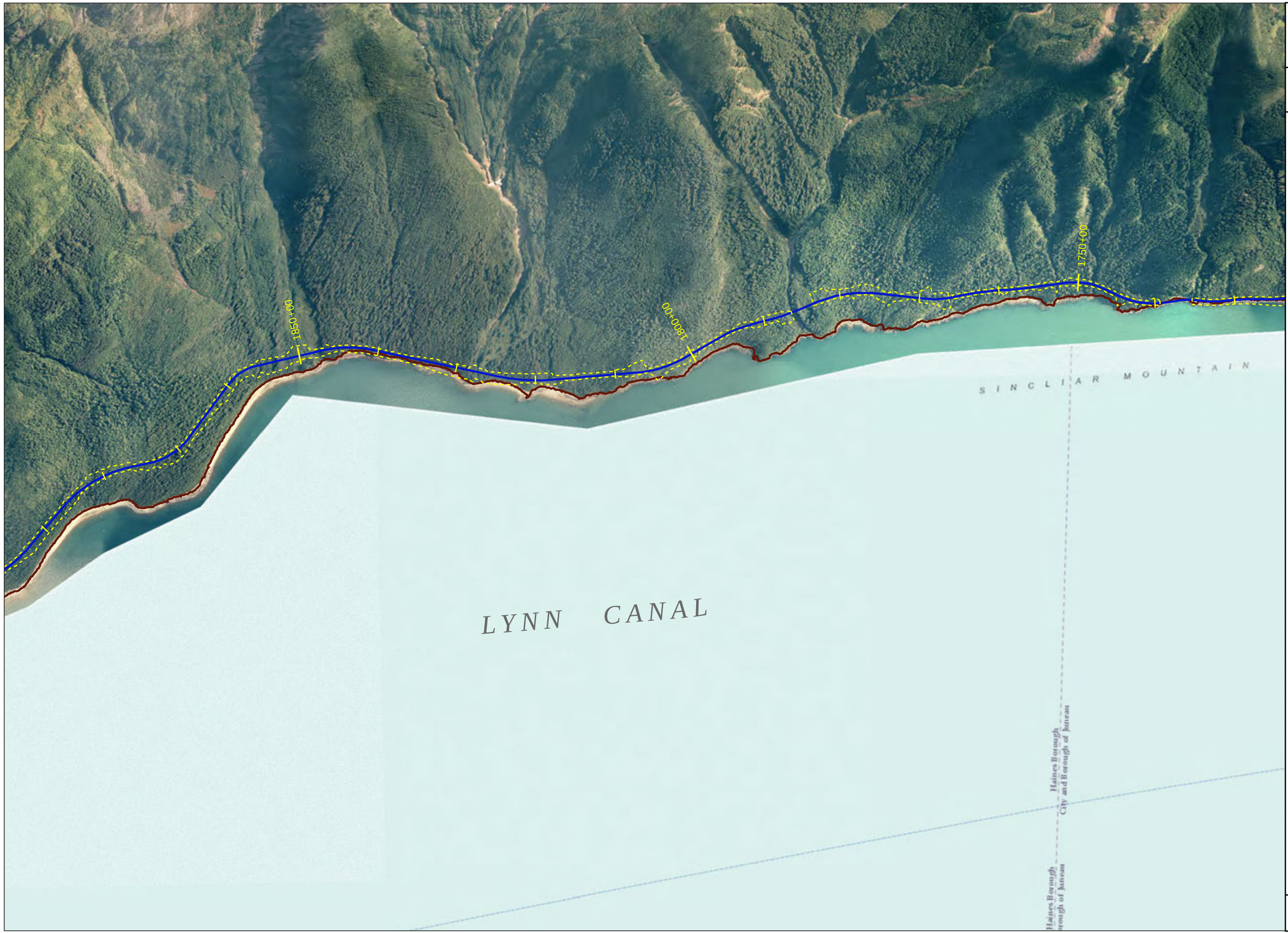


Juneau Access Improvements

Figure 12 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

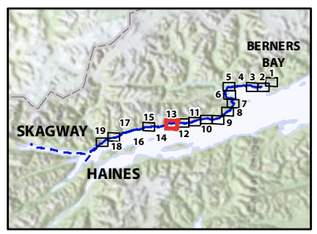
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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Juneau Access Improvements

Figure 13 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

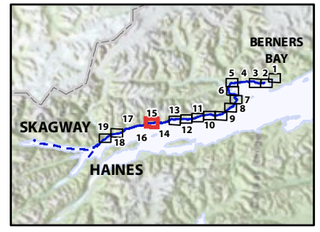
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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Juneau Access Improvements

Figure 14 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

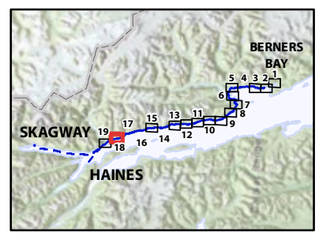
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 3

Locator Map



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Juneau Access Improvements

Figure 15 of 15

Wetlands

- Palustrine Scrub-Shrub
- Palustrine Emergent
- Palustrine Forested
- Estuarine Emergent

Marine Areas

- Estuarine Rocky and Unconsolidated Shores
- Estuarine Subtidal

Other Waters of the U.S.

- Riverine

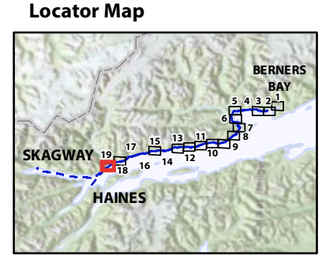
Alternative 2B

East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

- T New Ferry Terminal
- Cut/Fill/Dredge Footprint
- Current Alignment
- Ferry Shuttle

Sub-Region 4

Locator Map



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