

## 12. NAVIGATION

This chapter examines the potential impact on navigation from bridges that would be constructed over navigable waters as part of the proposed Northern Rail Extension (NRE). This chapter includes descriptions of the applicable regulations and existing conditions for waterways in the project area that the United States Coast Guard (USCG) is likely to consider navigable. The USCG authorizes and permits the construction of bridges across navigable waters. In instances where the Alaska Department of Natural Resources (ADNR) is the landowner of one or both sides of a waterbody, ADNR is also responsible for authorizations required for crossing these waterbodies. This chapter also provides information on Bureau of Land Management (BLM), ADNR, and other Federal agency determinations of navigability.

### 12.1 Applicable Regulations

The USCG authorizes and permits the construction of bridges across navigable waters in accordance with the General Bridge Act of 1946 (33 United States Code [U.S.C.] 525 *et seq.*) and Section 9 of the Rivers and Harbors Act (22 U.S.C. 401). Navigable waters of the United States, as they pertain to the USCG permitting process, are defined in 33 Code of Federal Regulations (CFR), Subpart 2.05-25 as:

- (1) Territorial seas of the United States;
- (2) Internal waters of the United States that are subject to tidal influence; and
- (3) Internal waters of the United States not subject to tidal influence that:
  - (i) Are or have been used, or are or have been susceptible for use, by themselves or in connection with other waters, as highways for substantial interstate or foreign commerce, notwithstanding natural or man-made obstructions that require portage, or
  - (ii) A governmental or non-governmental body, having expertise in waterway improvement, determines to be capable of improvement at a reasonable cost (a favorable balance between cost and need) to provide, by themselves or in connection with other waters, highways for substantial interstate or foreign commerce.

This regulatory definition of navigability has been expanded by legal precedent to include historic and modern use for recreation and tourism (*e.g.*, fishing or sightseeing) or by inflatable rafts (*Alaska v. United States*, 662 F. Supp. 455 [D. Alaska 1986]; *Alaska v. Ahtna, Inc.*, 892 F. 2d 1401 [9th Cir. 1989]).

Bridges over waterways meeting the definition of navigable cannot legally be constructed without prior USCG approval of the plans and location of the proposed bridge. The USCG, a cooperating agency in the preparation of the Environmental Impact Statement, has stated that all the crossings of waterways and their side channels described in Section 12.2, with the possible exception of Piledriver Slough, would require individual bridge permits (USCG, 2008). However, because only a small number of applications for USCG bridge permits have previously been filed in the area surrounding the proposed NRE, little in the way of official USCG navigability determinations have occurred near the project area. Therefore, to adequately describe the affected environment, the Surface Transportation Board Section of Environmental

Analysis (SEA) provides information from other Federal and state agencies regarding navigability determinations and waterway usage. The criteria for waterway navigability determinations used by these other agencies are described below. Federal Aviation Administration requirements might apply to bridge structures (*e.g.*, lighting). For example, under bad weather conditions, some pilots use the Tanana River to navigate back to Fairbanks. In time of severe fog, pilots might fly very low so they can see the river, and lighting could be appropriate.

In addition to the USCG, the United States Army Corps of Engineers (USACE), BLM, and ADNR issue determinations regarding the navigability of waterways. Alaska law (AS 38.05.965) defines navigable water as:

... [A]ny water of the state forming a river, stream, lake, pond, slough, creek, bay, sound, estuary, inlet, strait, passage, canal, sea or ocean, or any other body of water or waterway within the territorial limits of the state or subject to its jurisdiction, that is navigable in fact for any useful public purpose, including but not limited to water suitable for commercial navigation, floating of logs, landing and takeoff of aircraft, and public boating, trapping, hunting waterfowl and aquatic animals, fishing, or other public recreational purposes.

Alaska law (AS 38.05.127) also mandates the circumstances under which navigability would be determined and safeguards public access to navigable waterways:

Before the sale, lease, grant, or other disposal of any interest in state land adjacent to a body of water or waterway, the commissioner [of natural resources] shall... determine if the body of water or waterway is navigable water, public water... Upon finding that the body of water or waterway is navigable or public water, provide for the specific easements or rights-of-way necessary to ensure free access to and along the body of water, unless the commissioner finds that regulating or limiting access is necessary for other beneficial uses or public purposes.

The State of Alaska also plays a key role in the authorization of some structures that impact navigable waterbodies. Specifically, AS 38.05.128 mandates:

A person may not obstruct or interfere with the free passage or use by a person of any navigable water unless the obstruction or interference is: authorized by a federal agency and a state agency; authorized under a federal or state law or permit; exempt under 33 U.S.C. 1344(f) (Clean Water Act); caused by the normal operation of freight barging that is otherwise consistent with law; or authorized by the commissioner after reasonable public notice.

USACE regulations define navigable waters of the United States for the purpose of regulating the discharge of dredge or fill material into these waters. USACE's definition of navigability is similar to that of the USCG, claiming as navigable "waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 CFR Part 329). BLM's administrative navigability determinations, which are made mostly in response to requests by the State of Alaska for the transfer of ownership of submerged lands below these waterways to the State, are based on an understanding of navigability similar to that defined under 33 CFR Part 329 and the consideration of contemporary and historical use of the waterway for commercial transport (ADNR, 2005; BLM, 2008). ADNR's definition of navigability is broader and includes any waterbody "suitable for commercial navigation, floating of logs, landing and takeoff of aircraft, and public boating, trapping, hunting waterfowl and aquatic animals, fishing, or other public recreational purposes" (ADNR, 2005). ADNR is also involved in authorizations required for

crossings navigable waterbodies as described above. The ADNR and the Alaska Department of Fish and Game (ADF&G) are responsible for determining the need for and reviewing the designs of bridges.

## **12.2 Affected Environment**

This section describes the potentially affected environment for waterways stated by the USCG as likely to be navigable and requiring bridge permits. These waterways include the Tanana River, Salcha River, Little Delta River, Delta Creek, Delta River, Piledriver Slough, and the side channels of these waterways (USCG, 2008). This section also includes a brief description of the numerous smaller streams and sloughs within the project area, which the USCG might or might not determine navigable upon detailed examination of the crossings as part of the bridge permitting process. The smaller waterways described here were identified as potentially navigable during surface water field investigations conducted during 2005, 2006, and 2007. For additional information about the methodologies employed during these field investigations, and information concerning channel morphology, water quality, drainage areas, and discharge regimes of all the surface waters in the project area, see Chapter 4 and Appendix E.

### **12.2.1 Tanana River**

The Tanana River is a USACE- and ADNR-determined navigable waterway (USACE, 2006; ADNR, 2008). The types of boats currently used on the Tanana River near the project area include airboats, small fishing vessels, and tourist sternwheelers. Historic usage has included barges, steamboats, and trading vessels (ADNR, 2006c; CSU, 2007). River traffic in the project area largely consists of smaller recreational crafts and small, shallow draft barges due to the glaciated, braided nature of the channel upriver from Fairbanks. In the project area, the Tanana River includes numerous floodplain sloughs and overflow channels. The Parker Highway Bridge in Nenana (approximately 80 miles downriver from the project area) and the Richardson Highway Bridge in Big Delta present limits to the types of vessels that can be used on the Tanana River. The current clearance height at these bridges is set at 40 feet and 13.5 feet, respectively, for ordinary high water conditions in the designated navigation channels (ADOT&PF, 2007b).

### **12.2.2 Salcha River**

The Salcha River has been determined navigable by the BLM and ADNR (BLM, 2005; ADNR, 2008). Most contemporary use on the river near the project area is by small, jet-powered boats, primarily used for fishing and transportation to cabins and hunting areas adjacent to the river. Historic use of this section of the Salcha River has included commercial navigation by hunters and trappers, logging interests, and prospectors (BLM, 2005). Alaska operates a public-use boat launch approximately 2 miles upriver from the proposed river crossing along Salcha Alternative Segment 2. The Richardson Highway Bridge, which is adjacent to the boat launch, sets the current clearance height (12.9 feet for ordinary high water conditions) for vessels entering the Salcha River from the Tanana River (ADOT&PF, 2007b). This bridge is upriver from the project area.

### **12.2.3 Little Delta River**

The Little Delta River has not been determined navigable by the BLM, USACE, or ADNR. The river is heavily braided and glaciated near the areas of the potential river crossings along

Donnelly Alternative Segments 1 and 2. There is some recreational boating, transportation for hunting and other activities, and fishing on the river, though the type and draft of vessels capable of accessing the area is limited due to channel morphology.

#### **12.2.4 Delta Creek**

Delta Creek has not been determined navigable by the BLM, USACE, or ADNR. The creek's channel is braided near the potential creek crossings along Donnelly Alternative Segments 1 and 2. There is some recreational boating, transportation for hunting and other activities, and fishing on the river, though the type and draft of vessels capable of accessing the area is limited due to channel morphology.

#### **12.2.5 Delta River**

The portions of the Delta River that fall within the NRE project area have not been determined navigable by the BLM, USACE, or ADNR. The river is heavily braided and glaciated near the areas of the potential river crossings along Delta Alternative Segments 1 and 2. There is some recreational boating, transportation for hunting and other activities, and fishing on the river, though the type and draft of vessels capable of accessing the area is limited due to channel morphology.

#### **12.2.6 Piledriver Slough**

Piledriver Slough has not been determined navigable by the BLM, USACE, or ADNR. This small stream runs from the Tanana River to an area south of Eielson Air Force Base (ADF&G, 2007d). The shallowness of this waterbody generally limits accessibility to only small recreational craft (*e.g.*, canoes and inflatable boats). There are several existing culvert and bridge road crossings in the project area (ADF&G, 2007d).

#### **12.2.7 Other Smaller Waterbodies**

There are numerous small sloughs, streams, and side channels of larger rivers and creeks in the project area. Because of size, channel morphology, and other limiting features, these waterbodies receive only very limited small vessel traffic. None of these waterways have been determined navigable by the USCG, BLM, USACE, or ADNR, though side channels of USCG-navigable waterways would also require bridge permits (USCG, 2008). The need for bridge permits for other small waterways would be determined in coordination with the USCG and ADNR prior to the start of construction. If the Fivemile Clearwater River were crossed, the crossings would consist of small bridges. These bridges would facilitate the movement of small jet boats. Chapter 4 provides additional information about the characteristics of these waterways.

### **12.3 Environmental Consequences**

This section describes potential impacts to navigation resulting from the proposed NRE project.

#### **12.3.1 Methodology**

SEA examined the location, waterway characteristics, and general use characteristics for potentially navigable waterways (as defined in Section 12.1.2) to determine potential impacts from the proposed action and alternatives.

## 12.3.2 Common Impacts

### Construction Impacts

As required by the General Bridge Act of 1946, Alaska Railroad Corporation (ARRC) would need to submit final designs for all crossing structures and crossing locations to the USCG for review prior to the start of construction. Based on this information, the USCG would determine whether ARRC's proposed construction required a permit for particular crossings. No bridge construction could begin prior to permit determination.

The proposed construction of bridges and culverts over navigable waters could result in temporary effects to navigability. Temporary construction bridges would be needed in some areas and could result in temporary obstructions to the navigability of some waterways. In addition, normal bridge construction activities (*e.g.*, setting piers and construction equipment operation) have the potential to temporarily affect navigation.

### Operations Impacts

Proposed NRE operations would not impact navigation.

## 12.3.3 Impacts by Alternative Segment

This section describes potential impacts specific to each alternative segment.

### North Common Segment

North Common Segment would cross Piledriver Slough, which is the only potentially navigable waterway along this segment. The proposed bridge crossing would be approximately 100 feet long and would clear span the channel. ARRC would design this bridge to comply with applicable USCG permit conditions regarding navigation. SEA believes this crossing would have a negligible effect on navigation in the waterway, because the proposed crossing structures would be designed to allow the passage of the types of small vessels currently capable of using the slough (see Section 12.2.6).

### Eielson Alternative Segment 1

Eielson Alternative Segment 1 would cross Twentythreemile Slough. The proposed bridge crossing would be approximately 100 feet across and would likely be a single-span bridge. This crossing would have negligible effects on navigation in this waterway, because the proposed crossing structures would be designed to allow the passage of small vessels currently capable of navigating the waterway (see Section 12.2.7).

### Eielson Alternative Segment 2

Eielson Alternative Segment 2 would cross three potentially navigable waterways. These crossings would include an approximately 330-foot-long, multi-pier bridge over Piledriver Slough, and a shorter, 60-foot-long bridge over an unnamed slough (a common crossing with Eielson Alternative Segment 3). The third crossing would be a crossing of Twentythreemile Slough in common with Eielson Alternative Segment 1, as described above. SEA believes these crossings would have negligible effects on navigation in the waterways, because the proposed crossing structures would be designed to allow the passage of small vessels currently capable of navigating the waterway (see Section 12.2.6).

### **Eielson Alternative Segment 3**

Eielson Alternative Segment 3 would cross two potentially navigable waterways. These crossings would include an approximately 300-foot-long, multi-pier bridge over Piledriver Slough, and a shorter, 60-foot-long bridge over an unnamed slough (a common crossing with Eielson Alternative Segment 2). SEA believes these crossings would have negligible effects on navigation in the waterways, because the proposed crossing structures would be designed to allow the passage of the types of small vessels currently capable of navigating the waterway (see Section 12.2.6).

### **Salcha Alternative Segment 1**

Salcha Alternative Segment 1 would cross the Tanana River immediately after splitting from Eielson Alternative Segments 1, 2, or 3. The span for the proposed Salcha Alternative Segment 1 conveyance would be 3,600 feet. The Tanana River would not be clear spanned, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for additional information on bridge design). The potential for effects on commercial or personal navigation are limited by the types of crafts using this waterway and the existing crossing structures up and down river from the proposed crossing location. In addition, ARRC would need to design these bridges to comply with applicable USCG permit conditions regarding the maintenance of navigation.

### **Connector Segment B**

Connector Segment B would cross the Fivemile Clearwater River, which is navigated by private property owners to reach their land parcels upstream. The proposed bridge would clear span the channel and would be approximately 160 feet long. ARRC would design this bridge to comply with USCG permit conditions regarding navigation. SEA believes the crossing would have a negligible effect on navigation in the waterway, because the proposed crossing structure would be designed to allow the passage of the types of small vessels currently capable of navigating the waterway (see Section 12.2.7).

### **Salcha Alternative Segment 2**

Salcha Alternative Segment 2 would cross the Tanana River near its confluence with the Salcha River, and would cross the Salcha River west of the Richardson Highway Bridge. The span of the Tanana River conveyance would be 4,000 feet. The Salcha River crossing distance is still to be determined, but would be at least 2,500 feet, the minimum distance needed to clear the 100-year floodplains for the waterway. Neither of the river crossings would clear span the waterway, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for additional information on bridge design). ARRC would design these bridges to comply with USCG permit conditions regarding navigation. The potential for effects on commercial or personal navigation would be limited by the types of crafts using this waterway and the existing crossing structures up and down river from the proposed crossing locations, such as the Richardson Highway Bridge over the Salcha River (see Section 12.2.1).

The alternative segment would also cross the Little Salcha River, and three smaller, potentially navigable, sloughs. The proposed span of the Little Salcha River conveyance would be 160 feet. Two of the unnamed sloughs are near the Tanana River and would be spanned by the same 4,000-foot-long conveyance proposed for the Tanana River crossing. The span of the third unnamed slough conveyance would be 390 feet. All bridges would clear span the waterways at each location. ARRC would design these bridges to comply with applicable USCG permit

conditions regarding navigation. SEA believes these crossings would have negligible effects on navigation in the waterways, because the proposed crossing structures would be designed to allow the passage of the types of small vessels currently capable of navigating the waterway (see Section 12.2.7).

### **Connector Segment C**

Connector segment C would cross the Fivemile Clearwater River, which is navigated by private property owners to reach their land parcels upstream. The proposed bridge would be approximately 135 feet long. ARRC would design this bridge to comply with USCG permit conditions regarding navigation. SEA believes the crossing would have a negligible effect on navigation in the waterway, because the proposed crossing structure would be designed to allow the passage of the types of small vessels currently capable of navigating the waterway (see Section 12.2.7).

### **Donnelly Alternative Segment 1**

Donnelly Alternative Segment 1 would cross the Little Delta River south of its confluence with the Tanana River, and would cross Delta Creek south of its confluence with the Tanana River. Depending on engineering and other considerations, the span for the Little Delta River crossing would be 800 to 1,100 feet and the span of the Delta Creek crossing would be at least 700 feet; these are the minimum distances needed to clear the 100-year floodplains for these waterways. Neither of the crossings would clear span the waterway, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for information on bridge design). ARRC would need to design these bridges to comply with USCG permit conditions regarding navigation. The types of watercraft that can use the Little Delta River are limited by the waterways' channel morphologies near the crossing locations (see Section 12.2.3).

### **Donnelly Alternative Segment 2**

Donnelly Alternative Segment 2 would cross the Little Delta River south of its confluence with the Tanana River and would cross Delta Creek east of the Little Delta River and south of its confluence with the Tanana River. Depending on engineering and other considerations, the span for the Little Delta River crossing would be at least 900 feet and the span of the Delta Creek crossing would be at least 700 feet; these are the minimum distances needed to clear the 100-year floodplains for these waterways. Neither of the bridges would clear span the waterway, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for information on bridge design). ARRC would design these bridges to comply with USCG permit conditions regarding navigation. The types of watercraft that can use the Little Delta River are limited by the waterways' channel morphologies near the crossing locations (see Section 12.2.3).

### **Connector Segment E**

Connector Segment E would also cross the Fivemile Clearwater River, which is navigated by private property owners to reach their land parcels upstream. The bridge over Fivemile Clearwater River would be a full-span bridge approximately 115 feet long. ARRC would design this bridge to comply with applicable USCG permit conditions regarding navigation. SEA believes the crossing would have a negligible effect on navigation in the waterway, because the proposed crossing structure would be designed to allow the passage of the types of small vessels currently capable of navigating the waterway (see Section 12.2.7).

### **Delta Alternative Segment 1**

Delta Alternative Segment 1 would cross the Delta River west of the Town of Delta Junction. Depending on engineering and other considerations, the span of the bridge would be at least 2,000 feet, the minimum distance needed to clear the 100-year floodplain. The bridge would not clear span the waterway, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for information on bridge design). ARRC would design this bridge to comply with applicable USCG permit conditions regarding navigation. The types of watercraft that can use the Delta River are limited by the river's braided and glaciated channel at the crossing location.

### **Delta Alternative Segment 2**

Delta Alternative Segment 2 would cross the Delta River north of Delta Junction. Depending on engineering and other considerations, the spans for the bridge would be at least 2,000 feet, the minimum distance needed to clear the 100-year floodplain. The bridge would not clear span the waterway, and abutments would be placed at appropriate locations in the channel based on design considerations, including navigation (see Chapter 2 for information on bridge design). ARRC would design this bridge to comply with USCG permit conditions regarding navigation. The types of watercraft that can use the Delta River are limited by the river's braided and glaciated channel at the crossing locations.