

19. MITIGATION

This chapter describes mitigation measures that, if imposed in any Surface Transportation Board's (STB or the Board) decision granting the Alaska Railroad Corporation (ARRC or the Applicant) the authority to construct and operate the proposed rail line, would avoid, minimize, or compensate for potential adverse environmental impacts. For each resource area, ARRC has proposed voluntary mitigation measures, which include regulatory-related requirements and associated best management practices. In addition, the STB's Section of Environmental Analysis (SEA) has recommended additional preliminary mitigation measures.

19.1 Overview of SEA's Approach to Recommended Mitigation

In conducting the environmental review process, SEA has taken the "hard look" at the environmental consequences of the proposed Port MacKenzie Rail Extension, as required by the National Environmental Policy Act (NEPA). SEA's review included both construction of the proposed rail line and associated facilities, and rail line operations over the proposed rail extension. In its environmental review, SEA conducted a thorough and comprehensive analysis of the potential environmental effects associated with the proposed action alternatives. Chapter 1 and Appendices A and B provide information on SEA's agency consultation activities.

19.1.1 Limits of the Board's Conditioning Power

The Board has authority to impose conditions to mitigate potential environmental impacts. Any conditions the Board imposes must relate directly to the transaction before it, must be reasonable, and must be supported by the record before the Board. Thus, the Board's practice consistently has been to mitigate only those impacts that result directly from the proposed action. The Board typically does not require mitigation for pre-existing environmental conditions, such as the effects of existing rail operations.

SEA notes, however, that the Council on Environmental Quality (CEQ), which oversees the implementation of NEPA, has stated in *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (46 *Federal Register* [FR] 18026, March 23, 1981) that:

All relevant, reasonable mitigation measures that could improve the project are to be identified, even if they are outside the jurisdiction of the lead agency or the cooperating agencies, and thus would not be committed as part of the RODs [Records of Decision] of these agencies. Sections 1502.16(h), 1505.2(c). This will serve to...alert agencies or officials who can implement these extra measures, and will encourage them to do so. Because this EIS [Environmental Impact Statement] is the most comprehensive environmental document, it is an ideal vehicle in which to lay out not only the full range of environmental impacts but also the full spectrum of appropriate mitigation.

Agencies participating as cooperating agencies may issue individual decisions concerning the proposed Port MacKenzie rail extension and intend to use information in this EIS for decisionmaking purposes. They could require additional mitigation measures in their RODs and permits.

19.1.2 Voluntary Mitigation and Negotiated Agreements

SEA encourages applicants to propose voluntary mitigation. In some situations, voluntary mitigation might replace mitigation measures the STB might otherwise impose, or it could supplement mitigation the STB might impose. Because applicants gain a substantial amount of knowledge about the issues associated with a proposed right-of-way during project planning, and because they consult with regulatory agencies during the permitting process, they are often in a position to offer relevant voluntary mitigation.

Since the announcement of the proposed Port MacKenzie Rail Extension, the Applicant has been working with local communities and interested agencies to learn about concerns they have about the project. Based on those consultations, the Applicant has worked with a team of technical specialists from various disciplines to develop voluntary mitigation measures in an effort to address many of the concerns that have been raised. The Applicant included many of its proposed voluntary mitigation measures in the Preliminary Environmental and Alternatives Report (ARRC, 2007).

As an alternative to mitigation measures that the Board could unilaterally impose on applicants (notwithstanding mitigation required by other regulatory agencies that may have jurisdiction over potentially affected resources), SEA encourages applicants to negotiate mutually acceptable agreements with affected communities and other government entities to address potential environmental impacts, if appropriate. Negotiated agreements could be with neighborhoods, communities, counties, cities, regional coalitions, states, and other entities. If applicants submit to the Board any negotiated agreements with communities or other entities, the Board would require compliance with the terms of any such agreements as environmental conditions in any final decision authorizing the proposed action or alternatives. These negotiated agreements would supersede any environmental conditions for that particular community or other entity that the Board might otherwise impose.

19.1.3 Preliminary Nature of Mitigation

SEA's preliminary mitigation measures are based on the information available to date, consultations with appropriate agencies, and the environmental analysis presented in this document. These preliminary mitigation measures could be imposed by the Board in addition to ARRC's voluntary mitigation measures.

SEA emphasizes that the identified mitigation measures are preliminary and invites public and agency comments on these proposed mitigation measures. For SEA to assess the comments effectively, it is critical that the public be specific regarding any desired mitigation and the reasons why the suggested mitigation would be appropriate.

SEA will make its final recommendations on mitigation to the Board in the Final EIS after considering all public comments on the Draft EIS. SEA intends to include all of the voluntary mitigation measures submitted by the Applicant in its recommendations to the Board. The Board will then make its final decision regarding this project and any conditions it might impose. In making its decision, the Board will consider the Draft EIS, the Final EIS, public comments, and SEA's final mitigation recommendations.

19.2 Mitigation Measures

For the environmental resource areas discussed in the Draft EIS, if SEA concluded that the impacts would be negligible, no mitigation would be warranted. For this reason, this section does not discuss energy, subsistence, socioeconomics, and environmental justice. The following discussion does not address the No-Action Alternative, because that alternative would result in no change in impacts from those already occurring.

Much of the mitigation that follows is technical in nature. To assist readers, SEA has defined some terms used in the mitigation measures in the Glossary that follows Chapter 22.

19.2.1 Topography, Geology, and Soils

19.2.1.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to topography, geology, and soils:

- VM-1 The Applicant shall design project-related rail line and associated facilities in accordance with engineering criteria related to permafrost, seismic events, and other geologic hazards to comply with applicable design codes. For example, the Applicant shall design the project in accordance with the latest applicable seismic codes taking into account the region's potential for earthquake activity, to mitigate potential damage to bridges and tracks.

19.2.1.2 SEA's Preliminary Mitigation Measures

SEA did not identify preliminary mitigation measures for potential project-related impacts to topography, geology, and soils.

19.2.2 Water Resources

19.2.2.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to water resources:

- VM-2 The Applicant shall be subject to U.S. Environmental Protection Agency and Alaska Department of Environmental Conservation jurisdiction under the National Pollutant Discharge Elimination System (NPDES) for storm water discharges resulting from project-related construction activities. Requirements that are commonly part of a Stormwater Pollution Prevention Plan associated with a NPDES Stormwater Construction Permit include the following:
- Ground disturbance shall be limited to only the areas necessary for project-related construction activities.

- During earthmoving activities, topsoil shall be reused wherever practicable and stockpiled for later application during reclamation of disturbed areas.
- Appropriate erosion control measures shall be employed to minimize the potential for erosion of soil stockpiles until they are removed and the area is restored.
- Disturbed areas shall be restored as soon as practicable after construction ends along a particular stretch of rail line, and the goal of restoration shall be the rapid and permanent reestablishment of native ground cover on disturbed areas to prevent soil erosion.
- The bottom and sides of drainage ditches shall be revegetated using natural recruitment from the native seed sources in the stockpiled topsoil or a seed mix free of invasive plant species.
- If weather or season precludes the prompt reestablishment of vegetation, temporary erosion control measures shall be implemented.

- VM-3 The Applicant shall obtain Federal permits required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, from the U.S. Army Corps of Engineers prior to initiation of project-related construction activities in wetlands and waterbodies. The Applicant also agrees to obtain necessary state permits and authorizations (e.g., Alaska Department of Fish and Game Fish Habitat Permit, Alaska Department of Natural Resources Land Use Permit, and an Alaska Department of Environmental Conservation Section 401 water quality certification). The Applicant shall incorporate stipulations into construction contract specifications.
- VM-4 The Applicant shall avoid and minimize impacts to waters of the U.S., including wetlands, to the extent practicable. The Applicant shall provide compensatory mitigation for unavoidable impacts to wetlands as part of the U.S. Army Corps of Engineers Section 404 permit, to the extent practicable in accordance with the reasonable requirements of the Clean Water Act.
- VM-5 The Applicant shall design and construct the proposed rail line in such a way as to maintain natural water flow and drainage patterns to the extent practicable. This shall include installing bridges or placing equalization culverts through the embankment as necessary, preventing impoundment of water or excessive drainage, and maintaining the connectivity of floodplains and wetlands.
- VM-6 The Applicant shall disturb the smallest area practicable around any streams and, as soon as practicable following project-related construction activities, revegetate disturbed areas using native vegetation.
- VM-7 The Applicant shall minimize the number of temporary stream crossings constructed to provide access for contractors, work crews, and heavy equipment to the extent practicable. Where needed, temporary structures shall be placed to avoid overly constricting active channels and shall be removed as soon as practicable after the crossing is no longer needed.
- VM-8 The Applicant shall coordinate with the Matanuska Susitna Borough (MSB) Floodplain Administrator to ensure that new project-related stream and floodplain

crossings are appropriately designed. For crossings within the mapped 100-year floodplain, drainage crossing structures shall be designed to pass a 100-year flood.

- VM-9 The Applicant shall evaluate project-related construction water needs in relation to stream flow rates and groundwater recharge rates, as appropriate, and shall and minimize effects on surface water and groundwater. Water withdrawals shall be subject to prior written approval by the Alaska Department of Natural Resources Division of Mining, Land and Water, and also from the Alaska Department of Fish and Game Division of Habitat for withdrawals from fish-bearing waters.
- VM-10 For all project-related crossings of fish-bearing waters that incorporate bridges or culverts, the Applicant shall design, construct, and maintain the conveyance structures in accordance with the National Marine Fisheries Service 2008 publication, “Anadromous Salmonid Passage Facility Design” [National Marine Fisheries Service, 2008. Anadromous Salmonid Passage Facility Design. NMFS, Northwest Region, Portland, Oregon] or equivalent and reasonable requirements.
- VM-11 The Applicant shall time project-related construction in anadromous streams to minimize adverse effects to salmon during critical life stages when practicable. The Applicant shall incorporate timing windows [i.e., those time periods when salmon are least vulnerable to disturbances], as specified by the Alaska Department of Fish and Game Division of Habitat, into construction contract specifications for instream work. The Applicant shall design and construct stream crossings so as not to impede fish passage or impair the hydrologic functioning of the waterbody.
- VM-12 When project-related activities, such as culvert and bridge construction, require work in streambeds, the Applicant shall conduct activities, to the extent practicable, during either summer or winter low-flow conditions.

19.2.2.2 SEA’s Preliminary Mitigation Measures

SEA recommends the following additional preliminary measures as mitigation for potential project-related impacts to water resources:

- 1) The Applicant shall design, construct, and operate the rail line and associated facilities, including bridge abutments, to maintain existing water patterns and flow conditions and provide long-term hydrologic stability by conforming to natural stream gradients and stream channel alignment and avoiding altered subsurface flow, to the extent practicable. Project-related supporting structures (e.g., bridge piers) shall be designed to minimize scour and increased flow velocity, to the extent practicable.
- 2) Prior to project-related construction, the Applicant shall complete jurisdictional delineations of wetlands and other surface waters that are subject to Section 404 of the Clean Water Act for all associated facilities proposed outside of the right-of-way.
- 3) The Applicant shall implement all reasonable best management practices imposed by the U.S. Army Corps of Engineers’ (USACE) under Section 404 of the Clean Water Act to minimize project-related impacts to waters of the U.S., including wetlands. Standard best management practices are specified in the USACE Alaska District’s Nationwide Permits

General Best Management Practice Guide (U.S. Army Corps of Engineers, 2007. “Nationwide Permits: General Best Management Practice.” Alaska District, Regulatory Program. Online at: <http://www.poa.usace.army.mil/reg/NWPs.htm>) and could include the following:

- Containing sediment and turbidity at the work site by installing diversion or containment structures.
 - Disposing of dredge spoils or unusable excavated material not used as backfill at upland disposal sites in a manner that minimizes impacts to wetlands.
 - Revegetating wetlands as soon as possible, preferably in the same growing season, by systematically removing vegetation, storing it in a manner to retain viability, and replacing it after construction to restore the site.
 - Using fill materials that are free from fine material.
 - Stockpiling topsoil and organic surface material, such as root mats, separately from overburden and shall return it to the surface of the restored site.
 - Dispersing the load of heavy equipment such that the bearing strength of the soil (the maximum load the soil can sustain) would not be exceeded. Suitable methods could include, but are not limited to, working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats, and using tracked rather than wheeled vehicles.
 - Using techniques such as brush layering, brush matting, live siltation (a revegetation technique used to trap sediment), jute matting and coir logs to stabilize soil and reestablish native vegetation.
- 4) Prior to initiating project-related construction activities, the Applicant shall mark stream channels and existing culvert locations in the project construction area before snowfall obscures their location to avoid damage to these areas.
 - 5) During project-related design, the Applicant shall align road and track crossings of water bodies perpendicular or near perpendicular to waterbodies, where practicable, to minimize crossing length and potential bank disturbance.
 - 6) During project-related construction, the Applicant shall remove all project-related construction debris (including construction materials, soil, or woody debris) from water bodies, including wetlands, as soon as practicable during the open-water period, or prior to break-up for debris on top of or within ice or snow crossings.
 - 7) The Applicant shall construct project-related water crossings in a manner that minimizes disturbances to streambeds, streambanks, and flow. Measures to meet these goals could include installing bridge piers during the winter, and initially constructing permanent project-related crossing structures, when practicable, to avoid the need to construct both temporary and permanent crossing structures.

- 8) During project-related construction, the Applicant shall perform all off-road travel and clearing in a manner that maintains existing surface and subsurface hydrology and water quality, to the extent practicable. Except for off-road travel approved by the land owner, project-related construction activities beyond the 200-foot right-of-way (ROW) shall be supported only by ice roads, winter trails, existing or temporary roads, or air or boat service. Project-related wintertime off-road travel beyond the ROW shall be limited to areas where snow and ice depth are sufficient to protect the ground surface and vegetation. Summertime off-road travel beyond the ROW shall occur only if it can be accomplished without damaging vegetation or the ground surface, including streambanks that may be crossed.
- 9) The Applicant shall design, construct, and use project-related winter roads to avoid degradation of water quality and to protect the roadbed from significant rutting, ground disturbance, or thermal erosion of permafrost areas. Where feasible and prudent, if the surface organic mat is removed or excessively reduced over thaw-unstable permafrost terrain, that area shall be stabilized by re-covering it with insulating material, revegetating, or installing water-bars as soon as practicable. Soil cuts or fills located in thaw-unstable permafrost terrain shall be avoided to the extent practicable. All cuts shall promptly be stabilized.
- 10) The Applicant shall not mine gravel required for project-related construction within the limits of ordinary high water of waterbodies unless otherwise authorized by the Alaska Department of Natural Resources (ADNR), Division of Mining, Land, and Water. The Applicant also shall consult with the Alaska Department of Fish and Game (ADF&G) and the U.S. Army Corps of Engineers (USACE) prior to conducting these activities. Mine-site development and restoration within the limits of ordinary high water of waterbodies shall be performed in accordance with the reasonable requirements of ADNR, ADF&G, and USACE.
- 11) The Applicant shall abandon project-related geotechnical boreholes in compliance with the reasonable requirements of Alaska Department of Environmental Conservation 18 Alaska Administrative Code 80.015(e), Well protection, source water protection, and well decommissioning.
- 12) The Applicant shall follow all applicable Federal regulations and standard protocols for transporting hazardous substances and other deleterious compounds to minimize the potential for a spill occurrence.
- 13) Prior to construction, the Applicant shall consult with the Alaska Department of Environmental Conservation or other regulatory agencies to determine appropriate regulations and associated requirements for project-related tank storage facilities. At a minimum, the Applicant shall place tank storage facilities as far as practicable from streams or rivers, and implement secondary containment measures (e.g., use of lined and bermed pits).

- 14) The Applicant shall direct the operators of project-related vehicles to not drive in or cross streams other than at crossing points determined by the Alaska Department of Environmental Conservation and U.S. Army Corps of Engineers.
- 15) During project-related construction, the Applicant shall minimize to the extent practicable, the duration and extent of activity at temporary construction facilities, such as staging areas, and provide surface treatments to minimize soil compaction (e.g., scarify compacted soils during reclamation to promote infiltration) and promote vegetation regrowth after the facilities are no longer needed to support construction.
- 16) The Applicant shall ensure that all project-related culverts and bridges are sufficiently clear of debris to avoid stream-flow alteration and increased flooding. The Applicant shall inspect all drainages, bridges, and culverts semi-annually (or more frequently, as seasonal flows dictate) for debris accumulation and remove and properly dispose of debris promptly.
- 17) During final design of the project, the Applicant shall conduct all siting, design, and development of the rail line and associated facilities according to the reasonable requirements within the jurisdiction of the Alaska Department of Natural Resources and the Alaska Department of Fish and Game.
- 18) If the Surface Transportation Board authorizes the Big Lake Segment, the Applicant shall mitigate impacts to the Su-Knik Mitigation Bank in accordance with the reasonable requirements of the U.S. Army Corps of Engineers and other appropriate authorizing agencies.
- 19) The Applicant shall use contaminant-free embankment and surface materials in project-related construction.
- 20) The Applicant shall return all project-related stream crossing points to their preconstruction contours to the extent practicable.
- 21) During construction, the Applicant shall prohibit project-related construction vehicles from driving in or crossing streams at other than established crossing points.
- 22) During construction, the Applicant shall use temporary barricades, fencing, and/or flagging in sensitive habitats to contain project-related impacts to the construction area. The Applicant shall locate staging areas in previously disturbed sites to the extent practicable and not in sensitive habitat areas.

19.2.3 Biological Resources

19.2.3.1 Applicant's Voluntary Mitigation Measures

The Applicant proposed the following measures for mitigating potential project-related impacts to biological resources:

- VM-13 The Applicant shall restrict its project-related workers from (1) hunting or fishing while stationed at work camps; (2) harassing wildlife, including winter or calving concentrations of moose (cows with yearling calves can be particularly defensive); (3) approaching known occupied bear dens; and (4) feeding wildlife.
- VM-14 The Applicant shall obtain project-related state permits and authorizations, including the Alaska Department of Fish and Game Fish Habitat Permit.
- VM-15 The Applicant shall implement Essential Fish Habitat (EFH) conservation measures as agreed upon with the National Marine Fisheries Service during the EFH consultation process for this project.
- VM-16 The Applicant shall clear vegetation in preparation for project-related construction before or after the typical migratory bird nesting season as identified by the U.S. Fish and Wildlife Service (USFWS)(typically May 1 to July 15), to the extent possible to ensure compliance with the Migratory Bird Treaty Act. If clearing is required during the nesting season, the Applicant shall conduct a nest survey and consult with the USFWS, prior to clearing the vegetation, to identify additional appropriate compliance measures.
- VM-17 During the bald eagle nesting season (typically March through August), the Applicant and its contractor(s) shall use their best efforts to avoid bald eagle disturbance during project-related construction. Nests shall be protected in accordance with U.S. Fish and Wildlife Service guidelines.
- VM-18 Subject to consultation with the Alaska Department of Fish and Game and Alaska Department of Natural Resources, the Applicant shall work with adjacent land managers to develop alternative preferred habitat away from the proposed rail line and construct a widened embankment to allow moose a place to retreat on one side when a train passes in an effort to reduce the potential for moose strikes.
- VM-19 The Applicant shall use appropriate methods to handle, store, and dispose of waste generated during project-related construction activities. Food and garbage shall be secured and disposed in a manner to prevent bears from gaining access to such materials and in accordance with applicable and reasonable Federal, state, and local regulations.

19.2.3.2 SEA's Preliminary Mitigation Measures

SEA recommends the following additional preliminary measures as mitigation for potential project-related impacts to biological resources:

- 23) In consultation with appropriate agencies, including the U.S. Fish and Wildlife Service (USFWS) and the Alaska Department of Fish and Game (ADF&G), the Applicant shall locate project-related associated facilities to minimize the size and degree of impacts to highly sensitive habitat areas (as defined by the USFWS and the ADF&G). Off-ROW areas shall be restored in accordance with a reclamation plan developed in cooperation with USFWS, ADF&G, or other appropriate agency staff.

- 24) During project-related construction, the Applicant shall not clear riparian vegetation within 100 feet of fish-bearing water bodies and 50 feet of non-fish-bearing water bodies and emergent wetlands, unless approved by the Alaska Department of Natural Resources.
- 25) Prior to the project's final design, the Applicant shall consult with the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), and the Alaska Department of Fish and Game (ADF&G) on the precise locations of any highly sensitive habitat areas (as defined by the USFWS and the ADF&G) within the project area. Consistent with the standards of those agencies, highly sensitive habitat areas could include high-functioning wetland communities, fens, late-succession forests, and areas that have moderate to high densities of fine-grained permafrost soils, especially if the permafrost area is adjacent to or near a waterbody. Where practicable, the Applicant shall avoid the destruction or fragmentation of highly sensitive habitat areas, if they are encountered during surveying and preconstruction activities, through refinements in the project's final design.
- 26) To reduce potential collision and electrocution impacts to birds resulting from project-related power lines and communication towers, the Applicant shall:
- Consult with the U.S. Fish and Wildlife Service for current guidelines on tower siting, marking, and guy lines.
 - Incorporate standard, raptor-proof designs, as outlined in "Suggested Practice for Avian Protection on Power Lines: The State of the Art in 2006" (Avian Power Line Interaction Committee. 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, DC, and Sacramento, CA. Online at <http://www.aplic.org/>), into the design of electrical distribution lines in areas of identified bird concerns to avoid electrocution of eagles, owls, and other smaller raptors, including:
 - Use of marking techniques such as balls or flappers to increase transmission line visibility, especially in areas where sandhill cranes and bald eagles are likely to roost, forage, or nest.
 - Maintain a minimum 60-inch separation between conductors and/or grounded hardware and potentially use insulation materials and other applicable measures, depending on line configuration.
 - Incorporate standard raptor-proof designs (as outlined in "Avian Protection Plan Guidelines." Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service. 2005. Online at http://www.aplic.org) into the design of the electrical distribution lines to reduce bird collisions.
- 27) To the extent practicable, the Applicant shall minimize the project-related ground disturbance, clearing of established vegetation, removal of wildlife habitats and riparian vegetation. The Applicant shall also minimize the re-establishment of vegetation near the railbed that would be attractive to moose.

- 28) The Applicant shall implement standard best management practices to minimize impacts to vegetation during project-related forest clearing, including:
- Minimizing construction vehicle traffic in areas where excessive soil compaction and rutting would cause erosion
 - Using low ground pressure construction vehicles to minimize disruption to soil
- 29) Prior to project-related construction, the Applicant shall consult with the Alaska Department of Natural Resources to develop mitigation to address the spread and control of nonnative invasive plants (NIPs). The mitigation shall include developing and implementing a monitoring and control plan for NIPs during project-related rail line construction and operations. In addition to specifying that only seed mixes containing native or non-sustaining seed (such as annual rye) that are free of invasive plant species be used, this plan could include:
- Developing and implementing aggressive management programs to limit colonization by invasive plant species and eradicate any invasive species within the rail line right-of-way and support facilities
 - Requiring pressure washing of the wheels, tracks, undercarriages, buckets, etc., of all equipment at staging areas before they are allowed into the construction area
 - Implementing procedures to prevent, control, and monitor any NIPs that might germinate as a result of a spill of grain or animal feeds (e.g., hay, pellets) during rail line operations
 - Minimizing contact with roadside sources of weed seed that could be transported to other areas
 - Using only certified weed-free straw and mulch for erosion
 - Ensuring that adequate topsoil depth (minimum 4 inches) and textures are in place and promptly reseeded or revegetated using only plant species native to Southcentral Alaska
 - Using only seed meeting certified standards pursuant to 11 Alaska Administrative Code 34.075, Prohibited Acts
- 30) Unless otherwise approved by the Alaska Department of Fish and Game, project-related detonation of explosives within, beneath, or in proximity to fish-bearing waters shall not result in overpressures exceeding 2.7 pounds per square inch unless the water body, including its substrate, is frozen solid. Peak particle velocity stemming from explosive detonation shall not exceed 0.5 inch per second during the early stages of egg incubation.
- 31) The Applicant shall comply with the reasonable requirements of Alaska Statute (AS) 16.05.841, Fishway Required, and AS 16.05.871, Protection of Fish and Game, regarding project-related winter ice bridge crossings and summer ford crossings of all anadromous and resident fish streams. If necessary, natural ice thickness could be augmented (through removing snow, adding ice or water, or other technique) if site-specific conditions, including water depth, are sufficient to protect fish habitat and maintain fish passage.

- 32) The Applicant shall not narrow an anadromous water body between its mean high water lines for the project, unless authorized in writing by the Alaska Department of Fish and Game (ADF&G) prior to project-related construction, thereby enabling ADF&G to apply reasonable design criteria or requirements.
- 33) The Applicant, in consultation with the Alaska Department of Fish and Game (ADF&G) and the Alaska Department of Natural Resources, shall evaluate, implement, and monitor various aspects of project-related rail design, maintenance, and operations to document moose mortality from collisions with trains, and to develop a strategy to reduce the moose-train collision mortality rate. The strategy could include:
- Maintaining vegetation along the right-of-way (ROW) in primary (e.g., grasses/sedges) or late (e.g., old-growth spruce) successional stages. If vegetation is allowed to progress to the secondary successional stage (i.e., shrubs), maintaining it at the shortest possible height, not to exceed 0.5 meter, encouraging shrubs of non-preferred moose browse species (e.g., alder, dwarf birch), and minimizing re-growth of willow, paper birch, and aspen.
 - Mowing vegetation in late summer before energy stores are transferred to the roots.
 - In winter, plowing snow back from the track to the outer edge of the trackside clearing to allow moose easy access away from the tracks when a train approaches.
 - Not seeding grasses after approximately July 15, because fresh green growth has been noted to attract moose to ROWs during early fall, resulting in high rates of moose/train collisions.
 - Developing a plan in conjunction with the ADF&G to catalog all strikes (not just confirmed or suspected deaths) in a timely manner that shall include, but is not necessarily limited to: precise location (latitude and longitude), date and time; weather and other environmental conditions at the time and location of strike; and attributes associated with the train, such as horn use, speed, and track characteristics.
 - Designing, constructing, and operating all aspects of the rail line to minimize significant alteration of moose and other wildlife movement and migration patterns.
- 34) The Applicant shall prepare and implement a bear interaction plan to minimize conflicts between bears and humans. In consultation with the Alaska Department of Fish and Game, the Applicant shall develop appropriate educational programs and management plans when project-related construction and operations plans are being prepared.
- 35) The Applicant shall not conduct project-related construction and land clearing activities within 0.5 mile of known occupied bear dens, unless alternative mitigation measures are approved by the Alaska Department of Fish and Game (ADF&G). The Applicant shall obtain a list of known den sites from the ADF&G Division of Wildlife Conservation prior to commencement of any project-related activities and shall report occupied dens encountered.
- 36) Prior to initiating project-related construction activities, the Applicant shall consult with the local offices of the Natural Resource Conservation Service and the Palmer Plant Center

to develop an appropriate plan for restoration and revegetation of disturbed areas (including appropriate seed mix specifications). This would apply to areas that cannot be revegetated using natural recruitment from the native seed sources in the stockpiled topsoil.

19.2.4 Cultural Resources

19.2.4.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to cultural resources:

- VM-20 The Applicant shall develop protocols to inform and prepare project-related construction supervisors of the importance of protecting archaeological resources, graves, and other cultural resources and how to recognize and treat the resources.
- VM-21 The Applicant shall comply with the Programmatic Agreement developed through the Section 106 process under the National Historic Preservation Act.

19.2.4.2 SEA's Preliminary Mitigation Measures

SEA did not identify additional preliminary measure as potential mitigation for project-related impacts to cultural resources.

19.2.5 Climate and Air Quality

19.2.5.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to climate and air quality:

- VM-22 To minimize fugitive dust emissions created during project-related construction activities, the Applicant shall implement appropriate fugitive dust suppression controls, such as spraying water or other established measures. The Applicant shall also operate water trucks on haul roads as necessary to reduce dust.
- VM-23 To limit project-related construction emissions, the Applicant shall work with its contractor(s) to ensure that construction equipment is properly maintained and that required pollution-control devices are in working condition.

19.2.5.2 SEA's Preliminary Mitigation Measures

SEA did not identify additional preliminary mitigation measures for potential project-related impacts to climate and air quality.

19.2.6 Noise and Vibration

19.2.6.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts from noise and vibration:

- VM-24 The Applicant shall work with its construction contractor(s) to minimize, to the extent practicable, construction-related noise disturbances near residential areas. Construction and maintenance vehicles shall be in good working order with properly functioning mufflers to control noise.
- VM-25 The Applicant shall consult with affected communities regarding its planned construction schedule to minimize, to the extent practicable, project-related construction noise and vibration disturbances in residential areas during evenings and weekends.
- VM-26 Prior to initiating construction activities related to the proposed rail line, the Applicant shall establish a Community Liaison to consult with affected communities, landowners, and agencies. Among other responsibilities, the Community Liaison shall assist communities or other entities with the process of establishing quiet zones, if requested.

19.2.6.2 SEA's Preliminary Mitigation Measures

SEA recommends the following additional preliminary measure as mitigation for potential project-related impacts from noise and vibration:

- 37) If the Surface Transportation Board authorizes the Big Lake Segment, the Applicant shall not conduct pile driving associated with bridge construction on the segment during nighttime hours.

19.2.7 Transportation

19.2.7.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to transportation:

- VM-27 The Applicant shall establish a Diagnostic Team comprising Applicant staff, community members, representatives of the Alaska Department of Transportation and Public Facilities and other entities regarding project-related roadway/rail line crossings in consultation with Federal Railroad Administration safety officials. This process shall result in appropriate safety measures for every roadway/rail line crossing.
- VM-28 The Applicant shall coordinate with Federal, state, and local emergency management officials in the project area. The Applicant shall provide, upon request, applicable hazardous-materials training and/or project-related information to enhance readiness.

- The Applicant shall incorporate the proposed rail line into its existing emergency response process and shall update its Oil Spill Contingency Plan to include the proposed rail line.
- VM-29 During construction of project-related tracks across existing roads, the Applicant shall notify road users of temporary road closings and other construction-related activities. The Applicant shall provide for detours and associated signage, as appropriate, or maintain at least one open lane of traffic at all times to allow for the quick passage of emergency and other vehicles. The Applicant shall display signs providing the name, address, and telephone number of a contact person onsite to assist the public in obtaining immediate responses to questions and concerns about project activities.
- VM-30 To the extent practicable, the Applicant shall confine all project-related construction traffic to project-specific roads within the right-of-way (ROW) or established public roads. Where traffic cannot be confined to these roads, the Applicant shall make necessary arrangements with landowners to gain access. The Applicant shall remove and restore upon completion of project-related construction any temporary access roads constructed outside the rail line ROW unless otherwise agreed to with the landowners.
- VM-31 The Applicant shall consult with appropriate state and local transportation agencies to determine the final design and other details of project-related grade crossings and warning devices.
- VM-32 Before the start of project-related operations, the Applicant shall contact appropriate local, state and Federal emergency response organizations and shall provide them with information concerning the proposed operations, schedules, and any site hazards or restrictions that could impact responders.

19.2.7.2 SEA's Preliminary Mitigation Measures

SEA did not identify additional preliminary mitigation measures for potential project-related impacts to transportation.

19.2.8 Navigation

19.2.8.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to navigation:

- VM-33 The Applicant shall obtain a Section 9 Bridge Permit from the U.S. Coast Guard for construction of project-related bridges over navigable rivers.
- VM-34 In coordination with the U.S. Coast Guard, the Applicant shall provide adequate clearances for navigation of recreational boats on navigable rivers.

19.2.8.2 SEA's Preliminary Mitigation Measures

SEA recommends the following additional preliminary measures as mitigation for potential project-related impacts to navigation:

- 38) In coordination with the Alaska Department of Natural Resources (ADNR), the Applicant shall ensure that project-related bridges and culverts placed on navigable or public waters, as determined by the ADNR, are designed and installed to accommodate:
- Navigation by recreational boat users in a manner that shall not impede existing uses, to the extent practicable, and
 - Public access and use of the statutory easements as established by the reasonable requirements of Alaska Statute 38.05.127, Access to Navigable or Public Water.

19.2.9 Land Use

19.2.9.1 Applicant's Voluntary Mitigation Measures

The Applicant voluntarily proposed the following measures for mitigating potential project-related impacts to land use:

- VM-35 The Applicant shall develop a spill prevention, control, and countermeasure plan for petroleum products and/or response plan for hazardous materials, as required by applicable Federal and state regulations, prior to initiating any project-related construction activities. These plans shall address methods for preventing discharges and spill control, and containment and cleanup should a release occur. Plans shall include a requirement to conduct weekly inspections of equipment for any fuel, lube oil, hydraulic, or antifreeze leaks. The plan shall provide that, if leaks are found, the Applicant shall require the contractor(s) to immediately remove the equipment from service and repair or replace it.
- VM-36 As part of the National Pollutant Discharge Elimination System Stormwater Construction Permit and Stormwater Pollution Prevention Plan, the Applicant shall:
- Restore land used for temporary staging areas during project-related construction to natural conditions if occurring on undeveloped Alaska Department of Natural Resources land or to its former uses if occurring on private land.
 - Restore public land areas that were directly disturbed by project-related construction equipment and not owned by the Applicant (such as temporary access roads, haul roads, and crane pads) to their original condition, as reasonable and practicable, upon completion of construction.
 - In business and industrial areas, store project-related equipment and materials in established storage areas or on the Applicant's property. The Applicant shall prohibit parking of equipment or vehicles, or storage of materials along driveways or in parking lots, unless agreed to by the property owner.

- Prohibit project-related construction vehicles, equipment, and workers from accessing work areas by crossing business or agricultural areas, including parking areas or driveways, without advance notice to/permission from the owner.
- VM-37 For each of the public grade crossings on the proposed rail line, the Applicant shall provide permanent signs prominently displaying both a toll-free telephone number and a unique grade crossing identification number in compliance with Federal Highway Administration regulations (23 Code of Federal Regulations Part 655). Applicant's personnel shall answer the toll-free number 24 hours a day.
- VM-38 The Applicant shall continue its ongoing community outreach efforts by maintaining a Web site about the project throughout the construction period of the rail line.
- VM-39 In the event of any damage caused by project-related construction activities, the Applicant shall work with affected landowners to appropriately redress any damage to each landowner's property.
- VM-40 The Applicant shall work with affected businesses or farms to appropriately address project-related construction activity issues affecting any business or farm.
- VM-41 To the extent practicable, the Applicant shall ensure that entrances and exits for businesses are not obstructed by project-related construction activities, except as required to move equipment.
- VM-42 Depending on the alternative approved, during construction of the crossings over navigable rivers, some short-term temporary restrictions of watercraft traffic could occur for safety purposes. In that event, the Applicant shall install warning devices to notify boaters of project-related bridge construction activities. The Applicant also shall display signs providing the name, address, and telephone number of a contact person onsite to help waterway users obtain immediate responses to questions and concerns about project activities.
- VM-43 The Applicant shall make reasonable efforts to minimize disruptions to utilities by scheduling project-related construction work and outages to low-use periods. The Applicant shall notify residents and other utility customers in advance of project-related construction activities requiring temporary service interruptions.
- VM-44 The Applicant shall make reasonable efforts to identify all utilities that are reasonably expected to be materially affected by the project-related construction within the right-of-way (ROW) or that cross the ROW. The Applicant shall consult with utility owners during design and construction so that utilities are protected during project-related construction activities. The Applicant shall notify the owner of each such utility identified prior to project-related construction activities and shall coordinate with the owner to minimize damage to utilities.
- VM-45 In accordance with the Applicant's Oil Spill Contingency Plan and Emergency Response Plan, the Applicant shall make the required notifications to the appropriate Federal and state environmental agencies in the event of a reportable hazardous materials release. The Applicant shall work with the appropriate agencies, such as the Alaska Department of Environmental Conservation, the U.S. Environmental

Protection Agency, and the U.S. Fish and Wildlife Service, to respond to and remediate releases.

VM-46 At least one month before initiating construction activities in the area, the Applicant shall provide the information described below regarding project-related construction of the proposed rail line, and other information, as appropriate, to fire departments within the project area, the Federal Emergency Management Agency, and the Matanuska Susitna Borough Emergency Operations Department:

- The schedule for construction throughout the project area, including the sequence of construction of public grade crossings and approximate schedule for these activities at each crossing;
- A 24-hour emergency telephone number to reach the Applicant in the event of an emergency
- The name and number of the Applicant's project contact, who shall be available to answer questions or attend meetings for the purpose of informing emergency-service providers about the project-related construction and operations; and
- Revisions to this information, including changes in construction schedule, as appropriate.

19.2.9.2 SEA's Preliminary Mitigation Measures

SEA recommends the following additional preliminary measures as mitigation for potential project-related impacts to land use:

- 39) Prior to project-related construction, the Applicant shall consult with Alaska Department of Natural Resources (ADNR) and other appropriate agencies and user groups to develop a plan to ensure construction activities occur during the most appropriate timeframe to limit potential impacts on recreation activities. The Applicant also shall comply with the following measures:
 - The plan shall be developed prior to completion of final engineering plans and following consultation with the ADNR, the Alaska Department of Fish and Game, other appropriate government agencies, and user groups to determine the location of all officially recognized trails that would be crossed by the rail line.
 - The plan shall designate temporary access points if main access routes must be obstructed during project-related construction and include an agreed-upon number and location of access points as determined during consultation with applicable agencies.
- 40) The Applicant shall consult with the appropriate management agencies, including the Alaska Department of Natural Resources and the Alaska Department of Fish and Game to ensure that project-related bridges and culverts are designed, constructed, and maintained to accommodate travel by winter modes of transportation (snow machine, dog sled, etc.) on streams and rivers used for recreational access, as determined under mitigation measure 38.

- 41) The Applicant shall consult with resource management agencies including the Alaska Department of Natural Resources, the Alaska Department of Fish and Game, and appropriate trail user groups regarding provision, access, and design of crossings for trail easements that intersect with the rail line. Consultation shall include concerns related to general dispersed-use access, informal public trails on state land, blazed section lines, and long stretches of rail line without designated public crossings.
- 42) When project-related construction takes place on state and private land, the Applicant shall consult with the Alaska Department of Natural Resources Division of Forestry to salvage or dispose of commercial and personal use timber within the right-of-way in accordance with the Forest Practices Act and the Susitna Forestry Guidelines. Timber salvage and disposal shall comply with Alaska Statute 41.17.082, Control of Infestations and Disease.
- 43) If unanticipated sources of hazardous or regulated materials or potentially contaminated areas are encountered during project-related construction activities, the Applicant shall immediately notify the Alaska Department of Environmental Conservation and stop all work in the area until a corrective action plan has been approved. Handling, treatment, and disposal of any hazardous materials shall occur in full compliance with all Federal, state, and local requirements.
- 44) The Applicant shall conduct project-related right-of-way acquisition in conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601 *et seq.*), regulations promulgated pursuant to that statute (49 Code of Federal Regulations Part 24), and all reasonable terms and conditions of Alaska Statute 34.60.010 through 34.60.150, Relocation Assistance and Real Property Acquisition Practices.
- 45) The Applicant shall consult with local airports in the vicinity and the Alaska Department of Transportation & Public Facilities and the Federal Aviation Administration to ensure that notice has been given to pilots of the construction and location of new project-related communication towers.
- 46) If the Surface Transportation Board authorizes the Mac West Segment, the Applicant shall consult with the Alaska Department of Fish and Game to develop and implement measures, including consideration of replacing refuge acreage used for rail right-of-way, to minimize impacts to the Susitna Flats Game Reserve to the extent practicable.
- 47) If the Surface Transportation Board authorizes the Mac West Segment, the Applicant shall consult with Alaska Department of Natural Resources and Matanuska-Susitna Borough to determine an appropriate location of and relocate the Point MacKenzie Trailhead, Parking Lot, and the eastern end of the Figure 8 Loop Trail to another site.
- 48) If the Surface Transportation Board authorizes the Willow Segment, the Applicant shall consult with the Alaska Department of Fish and Game and the Alaska Department of Natural Resources to develop and implement measures, including consideration of replacing acreage used for rail right-of-way, to minimize impacts to the Nancy Lake State

Recreation Area, Little Susitna State Recreation River, and Willow Creek State Recreation Area to the extent practicable.

- 49) If the Surface Transportation Board authorizes the Houston North Segment, the Applicant shall consult with the Alaska Department of Natural Resources (ADNR) to develop and implement measures to minimize impacts to the Little Susitna State Recreation River and the Nancy Lake Creek Junction public use site. The Applicant shall replace any camping or other facilities within the right-of-way, as determined through consultation with ADNR.
- 50) If the U.S. Army Corps of Engineers completes a full-scale remedial investigation and feasibility study of the nature and extent of contamination or explosive hazards within the right-of-way within the boundaries of the former Susitna Gunnery Range, the Applicant shall observe the findings and recommendations of the study as approved by Alaska Department of Environmental Conservation.
- 51) In the event that construction or other intrusive activities associated with the rail line proceed within the boundaries of the former Susitna Gunnery Range prior to completion of a remedial investigation and feasibility study (RI/FS) by the U.S. Army Corps of Engineers (USACE), or in the event that the USACE does not conduct a RI/FS, the Applicant shall work with field-work contractors to arrange for an unexploded ordnance (UXO) sweep when conducting project-related field work in the area. Further, the Applicant shall ensure that field-work contractors are provided with training for the identification of UXO's and shall notify USACE in the event they discover munitions before or during construction. If UXO are encountered during construction or other intrusive activities associated with the rail line, the Applicant shall immediately stop all work in the area and notify the Alaska Department of Environmental Conservation (ADEC) and the USACE. The Applicant shall delay work until a response plan has been approved by ADEC and USACE and implemented.
- 52) Prior to initiation of project-related construction activities, and for a period of one year following start-up of operations on the rail line, the Applicant shall establish a Community Liaison to consult with affected communities, businesses, and appropriate agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. The Applicant shall provide the name and phone number of the Community Liaison to mayors and other appropriate local officials in each community through which the proposed rail line passes.
- 53) Project-related construction vehicles, equipment, and workers shall not access work areas by crossing residential properties without the permission of the property owners.