20. MITIGATION

This chapter describes mitigation measures that, if imposed in any Board decision granting Alaska Railroad Corporation (ARRC or the Applicant) the authority to construct and operate the 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 Surface Transportation Board's (STB) Section of Environmental Analysis (SEA) has recommended preliminary mitigation measures.

20.1 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 Northern Rail Extension (NRE), as required by the National Environmental Policy Act (NEPA). SEA's review included both construction of the new rail line and associated facilities, and rail operations over the proposed NRE and the existing line between Fairbanks and the proposed NRE. 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 B and C provide information on SEA's agency consultation activities.

20.1.1 Limits of the Board's Conditioning Power

The Board has limited authority to impose conditions to mitigate potential environmental impacts. As a government agency, the Board can only impose conditions that are consistent with its statutory authority. Accordingly, 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 the 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 NRE and intend to use information in this EIS for decisionmaking purposes. They could require additional mitigation measures in their RODs and permits.

20.1.2 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. In January 2008, the Applicant submitted its proposed voluntary mitigation measures to SEA.

Since the announcement of the NRE project in 2005, 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 in an effort to address many of the concerns that have been raised.

As an alternative to mitigation measures 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. In particular, SEA encourages ARRC and the Alaska Department of Natural Resources (ADNR) to discuss potential negotiated agreements on the subjects of mitigating and monitoring train-moose collisions on the proposed rail line and on selecting and designing potential rail line crossings for various types of recreational and other trails on ADNR-managed lands.

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 approving 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.

20.1.3 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.

SEA emphasizes that the recommended 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.

20.2 Mitigation Measures

For the environmental resource areas discussed in the EIS, if SEA concluded that the impacts would be negligible, no mitigation would be warranted. For this reason, this chapter does not discuss energy resources, socioeconomics, or 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.

20.2.1 Topography, Geology, and Soils

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to topography, geology, and soils:

VM-1 The Applicant shall be subject to U.S. Environmental Protection Agency jurisdiction under the National Pollutant Discharge Elimination System (NPDES) for stormwater discharges resulting from 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-2 Project facilities shall be designed in accordance with engineering criteria related to permafrost, seismic events, and other geologic hazards to comply with applicable design codes. For example, the project shall be designed 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.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for impacts to topography, geology, and soils:

1) The Applicant shall not place bridge piers or abutments in known areas of permafrost.

2) Features of the rail line project that would occupy areas of permafrost shall be constructed to minimize thaw and subsidence. Construction methods might include insulate/fill methods in permafrost areas that could not be avoided during excavation.

3) Any material source development and rehabilitation within floodplains shall follow the general procedures and guidelines outlined in *North Slope gravel pit performance guidelines* (Mclean, 1993).

20.2.2 Water Resources

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to water resources:

VM-3 Prior to initiating any project-related construction activities, a spill prevention, control, and countermeasure plan for petroleum products or other hazardous materials, as required by Federal and state regulations, shall be developed. The plan shall prevent discharges and contain such discharges if they occur. The plan shall include a requirement to conduct weekly inspections of equipment of any fuel, lube oil, hydraulic, or antifreeze leaks. If leaks are found, the Applicant shall require the contractor(s) to immediately remove the equipment from service and repair or replace it.

VM-4 Federal permits, including those required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, shall be obtained from the U.S. Army Corps of Engineers prior to initiation of construction. The Applicant shall also obtain necessary state permits and authorizations (*e.g.*, Alaska Department of Fish & Game Fish Habitat Permit, Alaska Department of Natural Resources Land Use Permit, and an Alaska Department of Environmental Conservation Section 401 water quality certification). Permit stipulations shall be incorporated into construction contract specifications.

VM-5 Compensatory mitigation for unavoidable impacts to wetlands shall be implemented as part of the U.S. Army Corps of Engineers Section 404 permit.

VM-6 The new rail line shall be designed and constructed in such a way as to maintain natural water flow and drainage patterns to the extent practicable. This shall include placing equalization culverts through the embankment as necessary, preventing impoundment of water or excessive drainage, and maintaining the connectivity of floodplains and wetlands.

VM-7 The smallest area practicable around any streams shall be disturbed and, as soon as practicable following construction activities, disturbed areas shall be revegetated using native vegetation.

VM-8 Bridges and culverts shall be designed, constructed, and operated to maintain existing water patterns and flow conditions as practicable.

VM-9 Culverts shall be designed and constructed for new fish-stream crossings with a width greater than or equal to 125 percent of the width of the stream at the ordinary high water stage. The culvert grade shall approximate the surrounding slope of the stream channel. Whenever possible, new culverts shall be buried to approximately 40 percent of their diameter with substrate material that would remain stable at expected

flood discharge rates. This shall not apply to any water crossing more than 15 feet in bank-to-bank width due to span length limitations. Alternative design measures shall be required to meet the same design goals on streams more than 15 feet wide at ordinary high water.

VM-10 When project-related construction activities, such as culvert and bridgework, shall require work in streambeds, these activities shall be conducted during low-flow conditions or as otherwise permitted.

VM-11 During construction, project-related construction vehicles shall be directed to avoid driving in or crossing streams at other than established crossing points.

VM-12 Temporary stream crossings shall be placed across waterways during construction to provide access for contractors, work crews, and heavy equipment.

VM-13 Temporary structures shall avoid overly constricting active channels and shall be removed as soon as practicable after the crossing is no longer needed.

VM-14 As part of the National Pollutant Discharge Elimination System Stormwater Construction Permit and Stormwater Pollution Prevention Plan, during construction:

- Temporary barricades, fencing, and/or flagging shall be used to contain project-related impacts to the construction area and avoid impacts beyond the project footprint.
- Areas disturbed, except for the rail line embankment, shall be returned to their preconstruction contours to the extent practicable, and reseeded or replanted with native vegetation within one growing season following construction to provide permanent stabilization and minimize the potential for erosion.
- Contaminant-free embankment and surface materials shall be used.
- Appropriate best management practices shall be used within parallel drainage ditches that are within 1,000 feet of perennial waters to provide stormwater retention and filtration. Drainage ditches shall be maintained as necessary (e.g., by removing accumulated sediments to maintain stormwater retention capacity and function).

VM-15 For the portions of the project within the Fairbanks North Star Borough (FNSB), the Applicant shall coordinate with the local FNSB Floodplain Administrator to ensure that new project-related stream and floodplain crossings were appropriately designed. For crossings within the mapped 100-year floodplain, drainage crossing structures shall be designed to pass a 100-year flood.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for impacts to water resources:

4) During the final design process and facility siting, the Applicant shall conduct pre-siting investigations of potential borrow areas, staging areas, camps, and access roads to:

- Identify the highly sensitive areas within the project area (in consultation with U.S. Fish and Wildlife Service and Alaska Department of Fish and Game) and

locate facilities in previously disturbed sites and not in sensitive habitat areas, to the extent practicable.

- Avoid to the extent practicable areas that could affect or be affected by flooding (especially with frequent recurrence intervals during the construction window); areas that have moderate to high densities of fine-grained permafrost soils, especially if the permafrost area is adjacent to or nearby a waterbody; and areas that are otherwise sensitive.
- Minimize to the extent practicable the total number and footprint area of facilities (*e.g.,* for borrow areas, by hauling material longer distances to avoid environmentally sensitive areas adjacent to water bodies; and for access roads, by minimizing width).
- During construction, minimize the duration and extent of activity to develop the facilities and provide surface treatments to minimize soil compaction (*e.g.*, scarify compacted soils through the compacted zone during reclamation to promote infiltration) and promote vegetation regrowth, including a reclamation plan that addresses rehabilitating recharge characteristics to maintain long-term hydrologic stability, habitat, and final usage (*e.g.*, recreation, aquatic habitat). Plans for excavation depths shall be developed in cooperation with appropriate agency staff to both minimize areal extent (by maximizing depth) and maximize post-project function (through such measures as leaving shelves or gently sloping littoral areas).

5) For conveyance structures located in active braided channels, the Applicant shall examine the seasonal and annual stages and extent of flooding for the braided rivers to determine the optimum construction window and to estimate heights for protective berms or dikes necessary to minimize flooding during the construction period and to minimize the effect on drainage patterns during flooding.

6) The Applicant shall avoid potential ice-jam locations and permafrost areas, fine-grained sediments, and steep, high streambanks when locating ice bridges and approaches. Specially adapted best management practices shall be applied for construction activities within these types of areas. For example, the Applicant shall slot ice bridges in several areas to accommodate faster disintegration of the bridge during the spring breakup period.

7) The Applicant shall evaluate construction water needs in relation to streamflow rates and minimize effects of water supply extraction from watercourses. If the Applicant uses groundwater as a water supply source, the Applicant shall evaluate estimated groundwater withdrawal rates in relation to annual and seasonal recharge rates and minimize effects of water withdrawal on surface water and groundwater.

8) The Applicant shall conduct detailed site-specific hydraulic analyses and modeling (*e.g.*, as indicated in Roach, 2007, and Zufelt, 2007), including examination of potential ice-jam and scour effects, for the Tanana River crossings to predict changes to flow paths, velocity profiles, and scour at high-flow discharges.

9) The Applicant shall conduct site-specific analyses of seasonal variations in sediment transport mechanisms before the bridge construction work proposed in the two large braided streams (Delta Creek and the Little Delta River) to minimize the potential for disturbance.

10) As previously discussed, bridges and culverts shall be designed, constructed, and operated to maintain existing water patterns and flow conditions as practicable. At a minimum, large rail bridges shall be designed for a 100-year flood to pass through with less than 1 foot of rise in the tail-water elevation. The designs shall also consider local and broad backwater effects associated with large flood events on major tributaries, including potential flooding scenarios associated with the Chena River Flood Control project.

11) During final design, rail line and access roads located in floodplains shall allow for the flow of floodwaters to floodplain storage areas by incorporating a sufficient number and size of culverts or bridges. The Applicant shall conduct site-specific analyses that incorporate flood conveyance and hydraulics and flood storage requirements of the 100-year flood as part of the design. For crossings within the mapped 100-year floodplain, the Applicant shall design drainage crossing structures to pass a 100-year flood without increasing the surface water elevation of the base flood by more than 1 foot, consistent with Federal Emergency Management Agency regulations (44 Code of Federal Regulations Part 9).

12) Impacts to all waters of the United States, including wetlands, shall be avoided and minimized to the extent practicable.

13) Jurisdictional delineations of wetlands and other surface waters that are subject to Section 404 of the Clean Water Act shall be completed for all ancillary facilities proposed outside of the right-of-way.

14) As suggested in the U.S. Environmental Protection Agency 1996 report on the functional profile of black spruce wetlands in Alaska, the Applicant shall protect water quality functions of adjacent wetlands by using calcareous fill to buffer acid deposition; manipulating warm, aerobic fill surfaces to degrade organic contaminants; and creating constructed wetlands for uptake of metals (Post, 1996).

15) The impact of development on key wetlands, including fens, shall be minimized. Key wetlands are those that are important to fish, waterfowl, shorebirds, and other wildlife species because of their high value or scarcity in the region.

16) As specified in the U.S. Army Corps of Engineers Alaska District's Nationwide Permits General Best Management Practice guide (USACE, 2007b):

- Sediment and turbidity at the work site shall be contained by installing diversion or containment structures.
- Dredge spoils or unusable excavated material not used as backfill at upland disposal sites shall be disposed of in a manner that minimizes impacts to wetlands.
- Wetlands shall be revegetated 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.
- Stream banks shall be restored and revegetated using techniques such as brush layering, brush mattressing, and use of jute matting and coir logs to stabilize soil and reestablish native vegetation.

- Topsoil and organic surface material, such as root mats, shall be stockpiled separately from overburden and returned to the surface of the restored site.
- Fill materials that are free from fine material shall be used.
- The load of heavy equipment shall be dispersed such that the bearing strength of the soil shall not be exceeded, either by using mats when working in wetlands or by using tracked rather than wheeled vehicles.

17) Stream channels and existing culvert locations shall be marked before snowfall to avoid damage to these areas.

18) Road and track crossings of water bodies shall be aligned perpendicular or near perpendicular to watercourses to minimize crossing length and potential bank disturbance.

19) All construction debris (including construction materials, soil, or woody debris) shall be removed from surface waters immediately upon placement during the open-water period, or prior to break-up for debris on top of or within ice or snow crossings.

20) Except at approved crossing or other approved work locations, riparian vegetation shall not be cleared within 100 feet of fish-bearing water bodies.

21) Construction of temporary crossings shall be minimized by installing bridge piers during the winter and initially constructing permanent crossing structures when practical.

22) All surface travel and clearing shall be performed in a manner that maintains existing surface and subsurface hydrology and water quality. Except for approved off-road travel, 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. Wintertime off-road travel beyond the ROW shall be approved only for areas where snow and ice depth are sufficient to protect the ground surface and vegetative mat. Summertime off-road travel beyond the ROW shall be authorized only if it could be accomplished without damaging vegetation or the ground surface, including stream banks that may be crossed.

23) Winter roads shall be designed, constructed, and used to avoid degradation of water quality and to protect the roadbed from significant rutting, ground disturbance, or thermal erosion. Where feasible and prudent, if the surface organic mat was removed or excessively reduced over thaw-unstable permafrost terrain, that area shall be stabilized by re-covering it with insulating material, revegetating, or water-barring the area; soil cuts or fills in thaw-unstable permafrost terrain must be avoided; all cuts shall be stabilized; and routes selected that shall be less likely to be used or damaged by off-road vehicle traffic when the soil was not frozen or snow-covered.

24) Gravel mining required for construction or operations shall be restricted to the minimum necessary to develop and operate the rail line efficiently and with minimal environmental damage. Gravel mine sites shall not be located within the active floodplain of a watercourse unless the Alaska Department of Natural Resources Division of Mining, Land, and Water, after consultation with Alaska Department of Fish and Game, determines that there would be no feasible and prudent alternative, or that a floodplain mine site would enhance fish and/or wildlife habitat after mining operations were completed and the site was appropriately closed. Mine site

development and rehabilitation within floodplains shall follow the general procedures and guidelines outlined in *North Slope gravel pit performance guidelines* (Mclean, 1993).

25) Geotechnical boreholes can allow communication or comingling of waters between surface water and groundwater and between subsurface aquifers if the boreholes are deep enough, which could result in the contamination of groundwater. Geotechnical boreholes shall be abandoned in compliance with the requirements of Alaska Department of Environmental Conservation 18 Alaska Administrative Code 80.015(e).

26) Spill barriers or absorbent material shall be provided at the down-gradient ends of staging areas and camp sites to contain any potentially contaminated surface runoff. Erosion and sediment controls shall also be required as needed at these locations.

27) Standard protocols for transporting hazardous substances and other deleterious compounds to minimize the potential for a spill occurrence near or adjacent to water bodies shall be followed.

28) Tank storage facilities shall be placed at the farthest practical locations away from any streams or rivers, and standard protocols (*i.e.*, lined and bermed pits for secondary containment) for storing chemical and petroleum products shall be implemented. The Applicant shall consult with Alaska Department of Environmental Conservation to determine appropriate measures and distances.

20.2.3 Biological Resources

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to biological resources:

VM-16 The Applicant shall restrict workers from hunting or fishing while stationed at work camps.

VM-17 State permits and authorizations, like the Alaska Department of Fish and Game Fish Habitat Permit, shall be obtained. Permit stipulations shall be incorporated into the construction contract specifications.

VM-18 Construction in anadromous streams shall be timed where practicable to minimize adverse effects to salmon during critical life stages. Timing windows, as specified by Alaska Department of Fish and Game's Division of Habitat, shall be incorporated into construction contract specifications for instream work. Stream crossings shall be designed and constructed so as not to impede fish passage or impair the hydrologic functioning of the waterbody.

VM-19 When project-related construction activities, such as culvert and bridgework, require work in streambeds, activities shall be conducted, to the extent practicable, during either summer or winter low-flow conditions.

VM-20 Essential Fish Habitat (EFH) conservation measures shall be implemented as agreed upon with the National Marine Fisheries Service during the EFH consultation process.

VM-21 Clearing of vegetation in preparation for construction shall occur 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 would be required during the nesting season, a nest survey shall be conducted and the USFWS shall be consulted, as necessary, to identify additional compliance measures. This shall also mitigate potential impacts to moose and many other mammals, because it encompasses the period when young are born.

VM-22 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 construction. Nests shall be protected in accordance with USFWS guidelines.

VM-23 Subject to consultation with 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 located 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.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for impacts to biological resources:

29) The Applicant shall accommodate the restoration efforts underway by U.S. Fish and Wildlife Service for Piledriver Slough and other sloughs occurring within the Piledriver Slough drainage during rail line construction and operations. Crossings shall be consistent with ongoing and planned fish habitat restoration efforts.

30) The proposed rock revetment of the Salcha Alternative Segment 1 crossing would restrict or eliminate the current flushing flows that reduce beaver dams along Piledriver and Twentythreemile Sloughs. To mitigate for permanent habitat alteration, the Applicant shall provide for removal of large beaver dams that would otherwise become permanent.

31) Where practicable, the Applicant shall make minor refinements to the proposed alternatives to avoid destruction or fragmentation of sensitive vegetation communities if they are encountered during surveying and preconstruction activities. Sensitive habitats include high-functioning wetland communities, fens, and late-succession forests.

32) To reduce collision and electrocution impacts to birds resulting from powerlines 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, safe designs, as outlined in Suggested Practice for Avian Protection on Power Lines (APLIC, 2006), into the design of electrical distribution lines in areas of identified bird concerns to avoid electrocution of eagles, owls, and other smaller raptors, including:
    - Design communication towers without guy lines.

- Use 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, to avoid electrocution of eagles, owls, and other smaller raptors.
- Incorporate standard raptor-proof designs as outlined in Avian Protection Plan Guidelines (APLIC and USFWS, 2005) into the design of the electrical distribution lines to reduce bird collisions.

33) The Applicant shall locate the access road immediately adjacent to the railbed to the extent feasible and prudent to minimize the project footprint, amount of ground disturbance, clearing of established vegetation, removal of wildlife habitats and riparian vegetation, and establishment of vegetation near the railbed that is attractive to moose.

34) As part of the National Pollutant Discharge Elimination System Stormwater Construction Permit and Stormwater Pollution Prevention Plan, standard best management practices that minimize impacts to vegetation shall include:

- Minimizing the removal or disturbance of vegetation within the right-of-way (ROW);
- Minimizing contact with roadside sources of weed seed that could be transported to other areas;
- Using low ground pressure equipment to minimize disruption to vegetation and soil;
- Developing and implementing aggressive management programs to limit colonization by invasive species plants and eradicate any invasive species within the rail ROW and support facilities;
- Using only certified weed-free straw and mulch for erosion control;
- Ensuring that adequate topsoil depth (minimum 4 inches) and textures are in place and promptly reseeding or revegetating using only plant species native to Interior Alaska;
- Using only seed meeting certified standards pursuant to 11 Alaska Administrative Code 34.075;
- Implementing dust control measures to stabilize soils from wind erosion and to reduce dust from construction activities; and
- Restoring temporarily cleared construction areas to previous conditions, including topography and vegetation communities.

35) Similarly, standard best management practices to minimize impacts to vegetation during forest clearing shall include:

- Avoiding operating equipment where excessive soil compaction and rutting would cause erosion that affects water quality; and

- Using low ground pressure equipment to minimize disruption to soil.

36) U.S. Department of Defense Alaska Command, Bureau of Land Management, and Alaska Department of Natural Resources shall be consulted with to develop mitigation to address the spread and control of nonnative invasive plants (NIPs), which shall include a monitoring and control plan for NIPs during rail line construction and operations. In addition to specifying that only seed mixes containing native or nonsustaining seed (such as annual rye) that are free of invasive plant species shall be used, this plan may include:

- Pressure washing of the wheels, tracks, undercarriages, buckets, etc., of all equipment at staging areas before they are allowed into the construction area; and
- 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.

37) Any restoration/revegetation on or adjacent to BLM managed lands shall be developed with a BLM authorizing officer (including species used, sources, etc.).

38) Under Title 16 of the Alaska Statutes, the measures listed below shall be imposed by the Alaska Department of Fish and Game for all activities below the ordinary high water mark in specified anadromous water bodies and in fish-bearing waters that could block fish passage. Exceptions to these requirements, including the use of spill containment and recovery equipment or material source development, may be allowed on a case-by-case basis.

- All ice crossings shall be drilled before equipment crossing to determine the ice thickness.
- Alteration of river, stream, or lake banks or beds, except for approved permanent crossings, shall be prohibited.
- The operation of equipment, excluding boats, in open water areas of rivers and streams shall be prohibited. Exceptions for water withdrawal shall be permitted on a site-specific basis.
- Ice or snow bridges and approach ramps constructed at river, slough, or stream crossings shall be substantially free of extraneous materials (for example, soil, rock, wood, or vegetation) and shall be removed or breached before spring breakup.
- Bridges are the preferred watercourse crossings in fish spawning and important rearing habitats. In areas where culverts are used, they shall be designed, installed, and maintained to provide efficient passage of fish.

39) 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, was frozen solid. Peak particle velocity stemming from explosive detonation shall not exceed 0.5 inch per second during the early stages of egg incubation.

40) Winter ice bridge crossings and summer ford crossings of all anadromous and resident fish streams shall require prior Alaska Department of Fish and Game permit

authorization under Alaska Statute 16.05.841 and Alaska Statute 16.05.871. If necessary, natural ice thickness may generally 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.

41) An anadromous water body shall not be narrowed between its ordinary high water marks, unless specifically authorized in writing by Alaska Department of Fish and Game prior to construction.

42) Water withdrawal from fish-bearing waters shall be subject to prior written approval by the Alaska Department of Natural Resources Division of Mining, Land and Water and the Alaska Department of Fish and Game Division of Habitat and shall reserve adequate flow to support indigenous aquatic life. The watercourse shall not be blocked to the passage of fish. Each water intake directly accessible by fish shall be designed to prevent the intake, impingement, or entrapment of fish.

43) The Applicant, Alaska Department of Fish and Game, and Alaska Department of Natural Resources shall review and discuss potential methods of both rail design and warning systems to reduce moose-train mortality, such as:

- 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 was allowed to progress to the secondary successional stage (i.e., shrubs), it shall be maintained at the shortest possible height, not to exceed 0.5 meter. Preferably, shrubs shall be of non-preferred moose browse species (e.g., alder, dwarf birch). Every effort shall be made to minimize re-growth of willow, paper birch, and aspen. Vegetation shall be mowed in late summer prior to energy stores being sent to the root systems.
- 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 Alaska Department of Fish and Game 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, sex and age of moose; weather and other environmental conditions at 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.

44) The most appropriate and efficient methods to achieve the goal of proper handling, storage, and disposal of human food, garbage, and waste that may become putrid shall be used. Food and garbage shall be secured and disposed of during construction and operations in a manner to prevent bears from becoming habituated to such materials.

45) A bear interaction plan to minimize conflicts between bears and humans shall be prepared and implemented. The Alaska Department of Fish and Game shall assist the Applicant in developing educational programs and camp layout and management plans as the Applicant prepares its construction and operations plans.

46) Construction and land clearing activities shall not be conducted within 0.5 mile of known occupied grizzly and black bear dens, unless alternative mitigation measures were approved by Alaska Department of Fish and Game. The Applicant shall obtain a list of known den sites from Alaska Department of Fish and Game's Division of Wildlife Conservation prior to commencement of any activities and shall report occupied dens encountered in the field to Alaska Department of Fish and Game.

47) Harassment of wildlife, including winter or calving concentrations of moose (cows with yearling calves can be particularly defensive) and known occupied bear dens, shall be prohibited. Workers shall be instructed not to feed wildlife.

48) The Applicant shall coordinate with U.S. Department of Defense Alaska Command and Bureau of Land Management regarding fire suppression for potential rail-ignited fires.

20.2.4 Cultural Resources

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to cultural resources:

VM-24 The Applicant shall develop protocols to inform and prepare construction supervisors of the importance of protecting archaeological resources, graves, and other cultural resources and how to recognize and treat the resources.

VM-25 The Programmatic Agreement (PA) being developed by SEA, the Alaska State Historic Preservation Office, cooperating agencies, and consulting parties requires that areas within the limits of project disturbance that have not been surveyed be surveyed. Potential stipulations include:

- The PA shall detail procedures and methodologies for identification of resources and reporting, reviewing, and implementing appropriate treatment measures for any cultural resources found within the project area.
- The PA shall identify appropriate actions should previously undiscovered archaeological or cultural resource sites be unearthed during construction activities.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measure as potential mitigation for impacts to cultural resources:

49) If a determination of Adverse Effect is made for the project, a mitigation program for affected historic properties shall be developed in consultation with the Alaska State Historic Preservation Office, as described in the Programmatic Agreement. Mitigation for affected historic properties may involve stabilization/ preservation, or archaeological excavation to recover data, or, as in the case of historic architecture, it

may involve Historic American Building Survey/Historic American Engineering Record documentation and other data-recording strategies.

20.2.5 Subsistence

Applicant's Voluntary Mitigation Measures

The Applicant did not identify voluntary mitigation measures for impacts to subsistence.

SEA's Preliminary Mitigation Measures

In addition to the preliminary measures related to public access identified in Section 20.2.10, SEA identified the following measure as potential mitigation for impacts to subsistence:

50) The Applicant shall schedule certain construction activities that could temporarily block access trails and waterways to occur during the winter to the extent practicable, especially activities related to bridge construction and near access points in the right-of-way, because travel is less restricted and use of the area is at lower levels during this season.

20.2.6 Climate and Air Quality

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to climate and air quality:

VM-26 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 approved measures. The Applicant shall also operate water trucks on haul roads as necessary to reduce dust.

VM-27 To limit construction-related 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.

SEA's Preliminary Mitigation Measures

SEA did not identify preliminary mitigation measures for impacts to climate and air quality.

20.2.7 Noise and Vibration

All of the receptors that SEA estimates would experience adverse noise impacts from the proposed rail line operations would result from locomotive horn sounding. The Federal Railroad Administration (FRA) requires horn sounding at public grade crossings as a safety measure. As a further safety measure, the Applicant elects to sound locomotive horns at private grade crossings.

SEA considers safety to be of paramount importance when evaluating rail projects and potential mitigation. Congress directed FRA to develop and issue regulations requiring the use of locomotive horns at public grade crossings. Congress also provided FRA with the authority to allow exceptions to the horn sounding requirement. FRA's Use of Locomotive Horns at Highway-Rail Grade Crossings: Final Rule and amendments (70 *FR* 21844-21920, April 27, 2005, as amended at 71 *FR* 47614-47667, August 17, 2006; 71 *FR* 14850, March 29, 2007; 72 *FR* 44790-44792, August 9, 2007; 73 *FR* 30661-30662, May 28, 2008) requires the sounding of

locomotive horns at public grade crossings and addresses issues such as horn loudness, sounding time, and sounding distance from a grade crossing. The final rule also includes procedures through which communities can develop quiet zones (in which locomotive horns are not sounded) when alternative safety measures fully compensate for the absence of the warning provided by locomotive horn sounding. Examples of such safety measures include four-quadrant gates, median barriers, and the closing of selected grade crossings within the quiet zone.

FRA's final rule establishes that the community or public authority ("the public entity responsible for traffic control or law enforcement at the public highway-rail grade or pedestrian crossing"; 49 CFR 222.37) alone has the authority to pursue establishment of a quiet zone. While the community must notify the railroad and provide the railroad an opportunity to participate, it is the community's responsibility to fund and establish a quiet zone in consultation with the FRA. SEA is not proposing to require that the Applicant establish or fund quiet zones as a mitigation measure because locomotive horn sounding is a safety-related activity under the jurisdiction of FRA, not the Board, and FRA's regulations clearly state that establishment of a quiet zone is up to the community, in consultation with FRA.

The exposure of receptors to vibration resulting from rail line operations can be reduced through the use of resilient fasteners and ballast mats. Resilient rail fasteners can be used to reduce vibration, but typically the attenuated frequency range is higher than the frequency range of vibration induced by freight rail operations. That is, the frequency range of the mitigation method must match the frequency range of the train-induced vibration to be effective. Ground-borne vibration produced by freight rail operations is typically at lower frequencies than the vibration that can be effectively reduced by resilient rail fasteners. Ballast mats can also be used to attenuate vibration, and ballast mats can reduce vibration levels at lower frequencies; however, even with careful design of the mat and underlying bed support, performance can be uncertain because of the dependence of ground-borne vibration propagation on actual soil conditions.

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measure as potential mitigation for noise impacts:

VM-28 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.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for noise impacts:

51) The Applicant shall consult with affected communities regarding the construction schedule to minimize, to the extent practical, construction-related vibration disturbances in residential areas during evenings and weekends.

52) 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.

20.2.8 Transportation

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for transportation impacts.

VM-29 The Applicant shall establish a Diagnostic Team comprised of ARRC staff, community members, Alaska Department of Transportation and Public Facilities, and others to apply Federal and state regulations regarding 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-30 The Applicant shall continue its ongoing efforts with community officials to identify the public emergency response teams in the project area and shall provide, upon request, hazardous-materials training. Before the start of operations, the Applicant shall contact the appropriate departments and agencies to provide them with information concerning the proposed operations to allow the departments and agencies to incorporate the information into local response plans.

VM-31 During construction of tracks across existing roads, road users shall be notified 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. Signs providing the name, address, and telephone number of a contact person shall be displayed onsite to assist the public in obtaining immediate responses to questions and concerns about project activities.

VM-32 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. Any temporary access roads constructed outside the rail line ROW shall be removed and restored upon completion of construction unless otherwise agreed to with the landowners.

VM-33 The Applicant shall coordinate with U.S. Department of Defense Alaska Command and Bureau of Land Management personnel, as appropriate, regarding activities occurring within military base and training areas.

VM-34 Appropriate state and local transportation agencies shall be consulted with to determine the final design and other details of grade crossings and warning devices.

VM-35 For each of the public grade crossings on the new and existing rail line, permanent signs prominently displaying both a toll-free telephone number and a unique grade crossing identification number in compliance with Federal Highway Administration (23 Code of Federal Regulations Part 655) shall be provided. Applicant's personnel shall answer the toll-free number 24 hours a day.

SEA's Preliminary Mitigation Measures

SEA did not identify preliminary mitigation measures for impacts to transportation.

20.2.9 Navigation

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to navigation:

VM-36 A Section 9 Bridge Permit shall be obtained from the U.S. Coast Guard for construction of bridges over navigable rivers (*e.g.*, Tanana River, Little Delta River, Delta River, and Delta Creek). Permit stipulations shall be incorporated into the construction contract specifications.

VM-37 In coordination with the U.S. Coast Guard, adequate clearances for navigation of recreational boats on navigable rivers shall be provided.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measure as potential mitigation for impacts to navigation:

53) The Applicant shall set bridge foundations and operate construction equipment during the winter when practicable.

54) The Applicant shall coordinate with Alaska Department of Natural Resources to ensure that bridges and culverts on secondary streams (those not within the jurisdiction of U.S. Coast Guard) are designed to accommodate navigation by recreational boat users in a manner that shall not impede existing ongoing uses, to the extent possible.

20.2.10 Land Use

Applicant's Voluntary Mitigation Measures

The Applicant identified the following voluntary measures as potential mitigation for impacts to land use:

VM-38 Prior to initiation of construction activities related to this project, and for 1 year following start-up of operations on the new rail line, the Applicant shall provide a Community Liaison to consult with affected communities, businesses, and agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. The Applicant shall provide the name and telephone number of the Community Liaison to mayors and other appropriate local officials in each community through which the new rail line passes.

VM-39 The Applicant shall continue its ongoing community outreach efforts by maintaining a web site about the project throughout the construction period of the proposed rail line.

VM-40 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-41 The Applicant shall address concerns about fragmentation of neighborhoods and farm properties by maintaining the connectivity of major roadways and working with local residents on specific right-of-way acquisition issues.

VM-42 The Applicant shall work with affected businesses or farms to appropriately address project-related construction activity issues affecting any business or farm.

VM-43 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-44 The Applicant shall consider fencing on a case-by-case basis for agricultural areas.

VM-45 Depending on the alternative selected, during construction of the crossings over navigable rivers, some short-term temporary restrictions of watercraft traffic could occur for safety purposes. The Applicant shall install warning devices to notify boaters of project-related bridge construction activities. Signs providing the name, address, and telephone number of a contact person shall be displayed onsite to help waterway users obtain immediate responses to questions and concerns about project activities.

VM-46 The Applicant shall make reasonable efforts to minimize disruptions to utilities by scheduling construction work and outages to low-use periods. The Applicant shall notify residents and other utility customers in advance of construction activities requiring temporary service interruptions.

VM-47 As part of the National Pollutant Discharge Elimination System Stormwater Construction Permit and Stormwater Pollution Prevention Plan:

- Land used for temporary staging areas shall be restored to natural conditions if occurring on undeveloped Alaska Department of Natural Resources land or restored to its former uses if occurring on military or private land.
- Public land areas that were directly disturbed by project-related construction and were not owned by the Applicant (such as temporary access roads, haul roads, and crane pads) shall be restored to their original condition, as reasonable and practicable, upon completion of construction.
- In business and industrial areas, project-related equipment and materials shall be stored in established storage areas or on the Applicant's property. Parking of equipment or vehicles, or storage of materials along driveways or in parking lots, shall be prohibited unless agreed to by the property owner.
- Project-related construction vehicles, equipment, and workers shall not access work areas by crossing business or agricultural areas, including parking areas or driveways, without advance notice to/permission from the owner.

VM-48 Reasonable efforts shall be made to identify all utilities that are reasonably expected to be materially affected by the proposed 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-49 Contractor(s) shall be required to dispose of waste generated during project-related construction activities in accordance with applicable Federal, state, and local regulations.

VM-50 In accordance with the Applicant's Oil Spill Contingency Plan and Emergency Response Plan, the required notifications to the appropriate Federal and state environmental agencies in the event of a reportable hazardous materials release shall be made. The Applicant shall work with the appropriate agencies, such as Alaska Department of Environmental Conservation, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service, to respond to and remediate releases.

VM-51 Before the start of operations, the appropriate departments and agencies shall be contacted and provided with information concerning the proposed operations to allow the departments and agencies to incorporate the information into local response plans.

VM-52 At least 1 month before initiating construction activities in the area, the information described below regarding project-related construction of the new rail line, and any additional information, as appropriate, shall be provided to fire departments within the project area, Federal Emergency Management Administration, the Fairbanks North Star Borough Emergency Operations Department, and the Delta Greely Local Emergency Planning Committee, including:

- 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 telephone number for the Applicant's contact, who shall be available to answer questions or attend meetings for the purpose of informing emergency-service providers about the project construction and operations; and
- Revisions to this information, including changes in construction schedule, as appropriate.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for impacts to land use:

55) Prior to construction, the Applicant shall develop a plan to ensure construction activities occur during the most appropriate timeframe to limit potential impacts on recreation activities. The Applicant shall observe the following measures:

- The plan shall be developed prior to completion of final engineering plans in consultation with Alaska Department of Natural Resources, Alaska Department of Fish and Game, other appropriate government agencies, and user groups to determine the location of all established and recognized state trails, including a discussion of informal, legal trails on state land, and the pattern of recreation activities (time and location of most frequented recreation areas).
- The plan shall designate temporary access points if main access routes must be obstructed during construction and include an agreed-upon number and location of access points as determined during consultation with applicable agencies.

56) The Applicant shall consult with U.S. Army Corps of Engineers, Alaska Department of Natural Resources Division of Mining, Land and Water, and Alaska Department of Fish and Game land managers regarding possible impacts to and mitigation for the lake, boat ramp, and water accessway that might be built as part of the proposed

Moose Creek grade separation between the existing Alaska Railroad Corporation rail line and Richardson Highway.

57) If Salcha Alternative Segment 2 is included in a license issued by the Board, the Applicant shall consult with the Alaska Department of Transportation and Public Facilities, Fairbanks North Star Borough Department of Parks and Recreation, Fairbanks North Star Borough School Board, Salcha School, and the Salcha Ski Club to determine the precise extent of potential effects to the Salcha School and the Salcha Ski Area. Mitigation could include, but is not limited to, full relocation and reconstruction of affected recreation facilities, parking lots, and recreation-support facilities of all types for both the school and ski area. The Applicant shall use caution to select a construction period of least disturbance to recreational activities at the school and ski area and to the cross-country ski season, in particular.

58) If Eielson Alternative Segment 3 is included in any license issued by the Board, the Applicant shall consult with Eielson Air Force Base and Alaska Department of Fish and Game to determine the degree of impact to parking areas and campsites. Mitigation could include, but is not limited to, construction of alternative access roads to existing campsites, creating grade-separated crossings (thus negating the necessity of using locomotive horns for at-grade crossings), or moving campsites to locations outside the affected area.

59) If Eielson Alternative Segment 3 is included in any license issued by the Board, the Applicant shall consult with Eielson Air Force Base and Alaska Department of Fish and Game to determine the degree of impact on the parking area west of Grayling Lake. If the parking area would be reduced in size as a result of its proximity to the proposed rail centerline, the Applicant shall ensure adequate parking space outside of the right-of-way, which could include expansion of the parking area at its eastern end.

60) The Applicant shall consult with the appropriate management agencies to provide enough bridge clearance for passage of recreational watercraft (of a size appropriate to the particular waterbody) and other uses under bridges on major recreation access streams and rivers. Rivers of particular note include Piledriver Slough, the Little Salcha River, the Fivemile Clearwater River, and the Richardson Clearwater River.

61) The Applicant shall consult with resource management agencies, such as the Fairbanks North Star Borough, Alaska Department of Natural Resources, and Bureau of Land Management, and appropriate trail user groups regarding provision, access, and design of crossings for legal trail easements that intersect with the proposed rail line. Consultation shall include discussion of general dispersed-use access, informal public trails on state land, blazed section lines, and long stretches of rail line without designated public crossings.

62) The Applicant shall provide crossings for the following: the trail to the Blair Lakes Area; Silver Fox Lodge Trail; Alaska Department of Natural Resources (ADNR) Winter Trail (ARRC has included two crossings of this trail as part of the proposed action); Koole Lake Trail; Donnelly-Washburn Trail; ADNR Forestry Winter Road; and Rainbow Lake Trail.

63) The Applicant shall consider, in collaboration with applicable resource management agencies, the provision of trail crossings for the following: Piledriver Slough Dog Mushing Trails; Phillips Road/Delta Junction Area Trail Network; existing trails

designated on the Fairbanks North Star Borough Recreational Trails Map, including those used for dog mushing; and potentially a subset of "Important Trails in the Planning Area" listed in the Tanana Basin Area Plan.

64) The Applicant shall consult with appropriate agencies and user groups (which could include Fairbanks North Star Borough Department of Parks and Recreation, Alaska Department of Natural Resources, Alaska Department of Fish and Game, Bureau of Land Management, Eielson Air Force Base, Fort Greely, Fort Wainwright, and the Salcha Dog Mushers Association) to determine a construction period of least disturbance to recreation activities associated with waterways and the trail system.

65) The Applicant shall consult with appropriate agencies and user groups to identify and designate temporary access points if main access routes must be obstructed during construction and such temporary points are deemed necessary in consultation with area land managers and user groups. Crossings shall preserve access for a variety of motorized and non-motorized uses. To the extent possible, without increasing resource use conflicts among subsistence, commercial, sport, and recreational users, proposed rail line construction and operations shall make full, nonexclusive use of existing winter roads, trails, and clearings to minimize additional clearing and habitat disturbance in the project area.

66) Where feasible and prudent, timber with commercial or personal use values from lands that would be cleared for the rail line right-of-way shall be salvaged.

67) When performing construction activities anywhere on military lands, the Applicant shall coordinate with the Fort Wainwright contaminant specialists.

68) Coordination with Bureau of Land Management (BLM)/ U.S. Department of Defense Alaska Command (ALCOM) shall occur during the right-of-way (ROW) permitting process, and the ROW instrument issued by BLM/ALCOM shall include stipulations to ensure military training is not adversely affected.

20.2.11 Visual Resources

Applicant's Voluntary Mitigation Measures

The Applicant did not identify voluntary mitigation measures for impacts to visual resources.

SEA's Preliminary Mitigation Measures

SEA identified the following preliminary measures as potential mitigation for impacts to visual resources where the rail line would be located on Bureau of Land Management-administered land:

69) To minimize the visual impact of the cleared right-of-way:

- Structures (excluding safety-related devices) associated with the build alternatives shall be located as far from crossings as practicable to avoid attracting visual attention and, in heavily vegetated areas, shall be painted to blend with the surrounding vegetation to the extent consistent with safety considerations.
- Clearing at road crossings shall be minimized, which could be accomplished by leaving a few larger trees and some smaller trees and shrubs untouched, to reduce visual contrast and mimic natural clearings in the landscape, where consistent with safety measures.

- Native trees and bushes shall be planted densely around the base of bridge supports located on land to break up the uniform lines, colors, and smooth textures of the bridge supports.
- Bridges shall be painted a color to match the surrounding landscape. Where these bridges continue into the vegetation and for bridges over small streams and rivers, structures shall be painted a uniform dark color, such as dark green or black, to match the existing landscape.

70) To reduce visual impact in areas of high visibility (such as residential areas):

- Native vegetation shall be planted along the right-of-way to reduce the contrast with line, color, and texture.
- In areas with hillcuts, slopes shall be shaped to reflect the natural landscape, where practicable, and planted with native materials to provide an amorphous and irregular form and rough texture.
- Excess material shall be disposed of in a suitable fill location and not cast on downhill slopes.
- To the extent consistent with safety considerations, structures shall be painted a color that blends with the existing vegetation, or self-weathering steel shall be used.