

Table of Contents

Volume I

1. Purpose and Need for Agency Action	1-1
1.1 Introduction.....	1-1
1.1.1 Existing Port Facilities and Activity	1-1
1.1.2 Previous Port and Rail Planning Studies	1-3
1.2 Purpose and Need	1-3
1.3 Project Context.....	1-4
1.4 National Environmental Policy Act Process.....	1-5
1.5 Agency Responsibilities.....	1-6
1.5.1 Lead Agency	1-6
1.5.2 Cooperating Agencies.....	1-7
1.5.2.1 Federal Railroad Administration.....	1-7
1.5.2.2 U.S. Army Corps of Engineers	1-7
1.5.2.3 U.S. Coast Guard	1-8
1.5.3 Other Federal Agencies.....	1-8
1.5.3.1 U.S. Environmental Protection Agency.....	1-8
1.5.3.2 Advisory Council on Historic Preservation	1-9
1.5.3.3 U.S. Fish and Wildlife Service	1-9
1.5.3.4 National Marine Fisheries Service.....	1-10
1.6 Scoping and Public Involvement	1-10
1.6.1 Scoping Notice and Public Meetings.....	1-10
1.6.2 Tribal and Government-to-Government Consultation.....	1-11
1.6.3 Request for Comments on the Draft EIS	1-12
1.6.4 Public Comment Meetings.....	1-12
1.7 Draft EIS Organization and Format.....	1-13
2. Proposed Action and Alternatives.....	2-1
2.1 Proposed Action.....	2-1
2.1.1 Proposed Rail Line Construction.....	2-1
2.1.1.1 Right-of-Way	2-3
2.1.1.2 Rail Line Access Roads	2-3
2.1.1.3 Railbed Construction	2-3
2.1.1.4 Track Construction.....	2-3
2.1.1.5 Acquisition of Materials for Rail Line Construction	2-4
2.1.1.6 Construction Staging Areas	2-4
2.1.1.7 Bridges and Culverts.....	2-4
2.1.1.8 Construction Schedule	2-5
2.1.1.9 Grade Crossings.....	2-6
2.1.1.10 Associated Facilities	2-6
2.1.2 Proposed Rail Line Operations	2-7
2.2 Alternatives Development	2-8
2.2.1 Alignment Development Process.....	2-8
2.2.2 Alternatives Considered but Eliminated from Detailed Study	2-8

2.3 Alternatives Selected for Detailed Study	2-11
2.3.1 Southern Segments.....	2-14
2.3.1.1 Mac West	2-14
2.3.1.2 Mac East.....	2-14
2.3.2 Connector Segments	2-14
2.3.2.1 Connector 1	2-14
2.3.2.2 Connector 2.....	2-14
2.3.2.3 Connector 3.....	2-14
2.3.3 Northern Segments.....	2-15
2.3.3.1 Willow.....	2-15
2.3.3.2 Houston	2-15
2.3.3.3 Houston North.....	2-15
2.3.3.4 Houston South.....	2-18
2.3.3.5 Big Lake.....	2-18
2.3.4 No-Action Alternative	2-20
2.4 Comparison of Alternatives	2-20
2.4.1 Topography, Geology and Soils	2-20
2.4.2 Water Resources	2-21
2.4.2.1 Surface Water.....	2-21
2.4.2.2 Groundwater	2-22
2.4.2.3 Floodplains.....	2-22
2.4.2.4 Wetlands	2-22
2.4.3 Biological Resources	2-23
2.4.3.1 Vegetation Resources.....	2-24
2.4.3.2 Wildlife Resources.....	2-24
2.4.3.3 Fisheries Resources.....	2-25
2.4.3.4 Threatened and Endangered Species	2-27
2.4.4 Cultural and Historic Resources	2-27
2.4.5 Subsistence.....	2-28
2.4.6 Climate and Air Quality	2-29
2.4.7 Noise and Vibration	2-29
2.4.8 Energy Resources.....	2-30
2.4.9 Transportation Safety and Delay	2-30
2.4.9.1 Grade Crossing Safety	2-30
2.4.9.2 Traffic Delay	2-31
2.4.9.3 Rail Safety.....	2-31
2.4.10 Navigation.....	2-31
2.4.11 Land Use	2-32
2.4.11.1 Land Use	2-32
2.4.11.2 Parks and Recreational Resources	2-33
2.4.11.3 Hazardous Materials and Waste Sites.....	2-34
2.4.12 Socioeconomics	2-35
2.4.13 Environmental Justice.....	2-35
2.4.14 Cumulative Effects.....	2-35
2.4.15 Comparison of Potential Impacts.....	2-36

3. Topography, Geology, and Soils	3-1
3.1 Regulatory Setting	3-1
3.2 Study Area	3-1
3.3 Topography	3-2
3.3.1 Analysis Methodology	3-2
3.3.2 Affected Environment.....	3-2
3.3.3 Environmental Consequences.....	3-2
3.3.3.1 Proposed Action.....	3-2
3.3.3.2 No-Action Alternative	3-4
3.4 Geology and Soils	3-4
3.4.1 Analysis Methodology	3-4
3.4.2 Affected Environment.....	3-5
3.4.3 Environmental Consequences.....	3-7
3.4.3.1 Proposed Action.....	3-7
3.4.3.2 No-Action Alternative	3-14
3.5 Permafrost	3-14
3.5.1 Analysis Methodology	3-14
3.5.2 Affected Environment.....	3-14
3.5.3 Environmental Consequences.....	3-15
3.5.3.1 Proposed Action.....	3-15
3.5.3.2 No-Action Alternative	3-16
3.6 Seismic Hazards.....	3-16
3.6.1 Analysis Methodology	3-16
3.6.2 Affected Environment.....	3-17
3.6.3 Environmental Consequences.....	3-17
3.6.3.1 Proposed Action.....	3-17
3.6.3.2 No-Action Alternative	3-19
4. Water Resources	4.1-1
4.1 Regulatory Setting	4.1-1
4.2 Surface Water.....	4.2-1
4.2.1 Study Area	4.2-1
4.2.2 Analysis Methodology	4.2-1
4.2.3 Affected Environment.....	4.2-2
4.2.3.1 Hydrologic Environment	4.2-2
4.2.3.2 Water Quality Conditions	4.2-5
4.2.4 Environmental Consequences.....	4.2-9
4.2.4.1 Proposed Action.....	4.2-10
4.2.4.2 No-Action Alternative	4.2-26
4.3 Groundwater	4.3-1
4.3.1 Study Area	4.3-1
4.3.2 Analysis Methodology	4.3-1
4.3.3 Affected Environment.....	4.3-1
4.3.4 Environmental Consequences.....	4.3-7
4.3.4.1 Proposed Action.....	4.3-7
4.3.4.2 No-Action Alternative	4.3-8

4.4 Floodplains.....	4.4-1
4.4.1 Study Area	4.4-1
4.4.2 Analysis Methodology	4.4-1
4.4.3 Affected Environment.....	4.4-1
4.4.4 Environmental Consequences.....	4.4-2
4.4.4.1 Proposed Action.....	4.4-4
4.4.4.2 No-Action Alternative	4.4-10
4.5 Wetland Resources.....	4.5-1
4.5.1 Study Area	4.5-1
4.5.2 Analysis Methodology	4.5-1
4.5.3 Affected Environment.....	4.5-1
4.5.3.1 Unique or Sensitive Wetlands.....	4.5-3
4.5.3.2 Wetland Functions and Values	4.5-5
4.5.4 Environmental Consequences.....	4.5-6
4.5.4.1 Proposed Action.....	4.5-6
4.5.4.2 No-Action Alternative	4.5-23
5. Biological Resources	5.1-1
5.1 Regulatory Setting	5.1-1
5.2 Vegetation Resources.....	5.2-1
5.2.1 Study Area	5.2-1
5.2.2 Analysis Methodology	5.2-1
5.2.3 Affected Environment.....	5.2-1
5.2.3.1 Fire Ecology.....	5.2-2
5.2.3.2 Invasive and Noxious Plants.....	5.2-4
5.2.3.3 Rare Plants	5.2-5
5.2.4 Environmental Consequences.....	5.2-5
5.2.4.1 Proposed Action.....	5.2-5
5.2.4.2 No-Action Alternative	5.2-22
5.3 Wildlife	5.3-1
5.3.1 Study Area	5.3-1
5.3.2 Analysis Methodology	5.3-1
5.3.3 Affected Environment.....	5.3-2
5.3.3.1 Mammals.....	5.3-2
5.3.3.2 Birds.....	5.3-4
5.3.4 Environmental Consequences.....	5.3-6
5.3.4.1 Proposed Action.....	5.3-6
5.3.4.2 No-Action Alternative	5.3-28
5.4 Fisheries Resources.....	5.4-1
5.4.1 Study Area	5.4-1
5.4.2 Analysis Methodology	5.4-1
5.4.3 Affected Environment.....	5.4-3
5.4.4 Environmental Consequences.....	5.4-5
5.4.4.1 Proposed Action.....	5.4-5
5.4.4.2 No-Action Alternative	5.4-22
5.5 Threatened and Endangered Species	5.5-1

5.5.1	Study Area	5.5-1
5.5.2	Analysis Methodology	5.5-1
5.5.3	Affected Environment.....	5.5-1
5.5.4	Environmental Consequences.....	5.5-4
5.5.5	No-Action Alternative	5.5-5
6.	Cultural and Historic Resources	6-1
6.1	Regulatory Setting	6-1
6.1.1	Federal Regulations	6-1
6.1.2	State Regulations	6-2
6.1.3	Local Regulations	6-2
6.2	Study Area	6-2
6.3	Analysis Methodology	6-4
6.4	Affected Environment.....	6-6
6.4.1	Prehistory	6-6
6.4.1.1	Prehistoric Sites	6-6
6.4.1.2	Prehistoric Cultural Sequences	6-7
6.4.2	History.....	6-7
6.4.2.1	Dena'ina Place Names and Trails.....	6-8
6.4.2.2	Russian America, 1740 to 1867	6-8
6.4.2.3	Alaska Purchase and Territory, 1867 to 1958.....	6-11
6.4.2.4	Statehood, 1959 to 2008	6-13
6.4.3	Cultural Resources in the Project Area.....	6-15
6.4.3.1	Documented Cultural Resources.....	6-15
6.4.3.2	Cultural Landscapes.....	6-17
6.5	Environmental Consequences.....	6-27
6.5.1	Proposed Action.....	6-28
6.5.1.1	Common Impacts	6-28
6.5.1.2	Impacts by Rail Line Segment.....	6-30
6.5.2	No-Action Alternative	6-35
6.5.3	Tribal Consultation	6-35
7.	Subsistence.....	7-1
7.1	Regulatory Setting	7-1
7.1.1	Federal Regulations	7-1
7.1.2	State Regulations	7-2
7.2	Study Area	7-4
7.3	Analysis Methodology	7-4
7.4	Affected Environment.....	7-7
7.4.1	Subsistence Use Areas	7-7
7.4.2	Resource Availability.....	7-9
7.4.3	Subsistence Access	7-11
7.4.4	Competition.....	7-12
7.5	Environmental Consequences.....	7-13
7.5.1	Proposed Action.....	7-13
7.5.1.1	Construction Impacts	7-14

7.5.1.2 Operations Impacts	7-14
7.5.2 No-Action Alternative	7-15
8. Climate and Air Quality	8-1
8.1 Regulatory Setting	8-1
8.1.1 Federal Regulations	8-1
8.1.2 State Regulations	8-3
8.2 Analysis Methodology	8-3
8.3 Study Area	8-3
8.4 Affected Environment.....	8-3
8.5 Environmental Consequences.....	8-5
8.5.1 Proposed Action.....	8-5
8.5.1.1 Common Impacts.....	8-5
8.5.1.2 Impacts by Alternative.....	8-9
8.5.2 No-Action Alternative	8-9
9. Noise and Vibration	9-1
9.1 Regulatory Setting	9-1
9.2 Study Area	9-2
9.3 Analysis Methodology	9-2
9.4 Affected Environment.....	9-3
9.5 Environmental Consequences.....	9-5
9.5.1 Proposed Action.....	9-5
9.5.1.1 Construction Noise and Vibration	9-5
9.5.1.2 Noise from Operations.....	9-8
9.5.1.3 Vibration from Operations.....	9-18
9.5.2 No-Action Alternative	9-19
10. Energy Resources.....	10-1
10.1 Regulatory Setting	10-1
10.2 Analysis Methodology	10-1
10.3 Study Area	10-1
10.4 Affected Environment.....	10-1
10.4.1 Project Area	10-1
10.4.2 State of Alaska	10-2
10.5 Environmental Consequences.....	10-2
10.5.1 Proposed Action.....	10-2
10.5.1.1 Common Impacts.....	10-2
10.5.1.2 Impacts by Alternative.....	10-3
10.5.2 No-Action Alternative	10-3
11. Transportation Safety and Delay	11-1
11.1 Regulatory Setting	11-1
11.2 Analysis Methodology	11-2
11.3 Affected Environment.....	11-3
11.4 Environmental Consequences.....	11-4

11.4.1	Proposed Action.....	11-4
11.4.1.1	Grade Crossing Safety	11-4
11.4.1.2	Grade Crossing Delay	11-6
11.4.1.3	Rail Safety.....	11-7
11.4.2	No-Action Alternative	11-7
12.	Navigation Resources.....	12-1
12.1	Regulatory Setting	12-1
12.1.1	Federal Regulations	12-1
12.1.1.1	U.S. Coast Guard	12-1
12.1.1.2	U.S. Army Corps of Engineers	12-2
12.1.2	State Regulations	12-2
12.1.2.1	Alaska Department of Natural Resources.....	12-3
12.1.3	Local Agencies.....	12-4
12.2	Study Area	12-4
12.3	Analysis Methodology	12-4
12.4	Affected Environment.....	12-5
12.5	Environmental Consequences.....	12-10
12.5.1	Proposed Action.....	12-10
12.5.1.1	Common Impacts.....	12-10
12.5.1.2	Impacts by Rail Line Segment.....	12-10
12.5.1.3	Summary of Impacts by Alternative	12-13
12.5.2	No-Action Alternative	12-14
13.	Land Use	13.1-1
13.1	Land Use	13.1-1
13.1.1	Regulatory Setting	13.1-1
13.1.1.1	Federal Regulations	13.1-1
13.1.1.2	State Regulations	13.1-1
13.1.1.3	Local Regulations	13.1-2
13.1.2	Study Area	13.1-3
13.1.3	Analysis Methodology	13.1-3
13.1.4	Affected Environment.....	13.1-3
13.1.4.1	Existing Land Ownership	13.1-3
13.1.4.2	Existing Land Use.....	13.1-6
13.1.4.3	Existing Zoning.....	13.1-6
13.1.4.4	Existing Land Use Plans	13.1-7
13.1.5	Environmental Consequences.....	13.1-11
13.1.5.1	Proposed Action.....	13.1-11
13.1.5.2	No-Action Alternative	13.1-20
13.2	Parks and Recreation Resources	13.2-1
13.2.1	Regulatory Setting	13.2-1
13.2.1.1	Federal Regulations	13.2-1
13.2.1.2	State Regulations	13.2-3
13.2.1.3	Local Regulations	13.2-4
13.2.2	Study Area	13.2-5

13.2.3	Analysis Methodology	13.2-12
13.2.4	Affected Environment.....	13.2-12
13.2.4.1	Federal Recreation Facilities.....	13.2-12
13.2.4.2	State Recreation Areas and Facilities	13.2-12
13.2.4.3	Matanuska-Susitna Borough Recreation Areas and Facilities.....	13.2-15
13.2.4.4	Rivers and Lakes.....	13.2-17
13.2.5	Environmental Consequences.....	13.2-18
13.2.5.1	Proposed Action.....	13.2-18
13.2.5.2	No-Action Alternative	13.2-24
13.2.6	Sections 4(f) and 6(f) Evaluation Summary	13.2-24
13.2.6.1	Section 4(f) Evaluation Summary.....	13.2-25
13.2.6.2	Section 6(f) Evaluation Summary.....	13.2-26
13.3	Hazardous Materials and Waste Sites.....	13.3-1
13.3.1	Regulatory Setting	13.3-1
13.3.2	Study Area	13.3-3
13.3.3	Analysis Methodology	13.3-4
13.3.4	Affected Environment.....	13.3-4
13.3.5	Environmental Consequences.....	13.3-10
13.3.5.1	Proposed Action.....	13.3-10
13.3.5.2	No-Action Alternative	13.3-12
14.	Socioeconomics.....	14-1
14.1	Regulatory Setting	14-1
14.2	Analysis Methodology.....	14-1
14.3	Study Area	14-2
14.4	Affected Environment.....	14-2
14.4.1	Southern Segments.....	14-3
14.4.2	Northern Segments.....	14-3
14.5	Environmental Consequences.....	14-3
14.5.1	Proposed Action.....	14-3
14.5.1.1	Common Impacts	14-3
14.5.1.2	Impacts by Segment.....	14-5
14.5.2	No-Action Alternative	14-6
15.	Environmental Justice.....	15-1
15.1	Regulatory Setting	15-1
15.2	Study Area	15-1
15.3	Analysis Methodology.....	15-2
15.4	Affected Environment.....	15-2
15.5	Environmental Consequences.....	15-4
15.5.1	Proposed Action.....	15-4
15.5.2	No-Action Alternative	15-7
16.	Cumulative Impacts.....	16-1
16.1	Applicable Regulations.....	16-1
16.2	Affected Environment.....	16-1

16.3	Methodology	16-2
16.3.1	Establish Boundaries.....	16-2
16.3.2	Collect and Screen Project and Action Data.....	16-2
16.3.3	Evaluate Potential Cumulative Impacts	16-2
16.4	Other Relevant Projects and Actions	16-6
16.4.1	Brief History of the Project Area	16-6
16.4.2	Projects and Actions Analyzed in this EIS	16-7
16.5	Environmental Consequences	16-10
16.5.1	Geology and Soils	16-10
16.5.2	Water Resources	16-11
16.5.3	Biological Resources	16-11
16.5.4	Cultural and Historic Resources	16-12
16.5.5	Subsistence.....	16-13
16.5.6	Climate and Air Quality.....	16-14
16.5.7	Noise and Vibration	16-16
16.5.8	Energy	16-16
16.5.9	Transportation Safety and Delay	16-17
16.5.10	Navigation.....	16-17
16.5.11	Land Use	16-17
16.5.12	Socioeconomics	16-18
16.5.13	Environmental Justice.....	16-19
17.	Short-Term Use Versus Long-Term Productivity of the Environment.....	17-1
17.1	Applicable Regulations.....	17-1
17.2	Short-Term Uses and Long-Term Productivity	17-1
17.2.1	Land Use	17-1
17.2.2	Water Resources	17-2
17.2.3	Biological Resources	17-3
17.2.4	Air Quality	17-4
18.	Irreversible and Irretrievable Commitment of Resources.....	18-1
18.1	Applicable Regulations.....	18-1
18.2	Resource Commitments	18-1
18.2.1	Construction Materials and Labor	18-1
18.2.2	Physical Setting.....	18-2
18.2.3	Groundwater	18-2
18.2.4	Biological Resources	18-2
18.2.5	Cultural Resources	18-3
18.2.6	Land Use and Ownership.....	18-3
18.2.7	Energy Resources.....	18-4
18.2.8	Financial Resources	18-4
19.	Mitigation.....	19-1
19.1	Overview of SEA's Approach to Recommended Mitigation	19-1
19.1.1	Limits of the Board's Conditioning Power.....	19-1
19.1.2	Voluntary Mitigation and Negotiated Agreements.....	19-2

19.1.3 Preliminary Nature of Mitigation.....	19-2
19.2 Mitigation Measures	19-3
19.2.1 Topography, Geology, and Soils	19-3
19.2.1.1 Applicant's Voluntary Mitigation Measures	19-3
19.2.1.2 SEA's Preliminary Mitigation Measures	19-3
19.2.2 Water Resources	19-3
19.2.2.1 Applicant's Voluntary Mitigation Measures	19-3
19.2.2.2 SEA's Preliminary Mitigation Measures	19-5
19.2.3 Biological Resources	19-8
19.2.3.1 Applicant's Voluntary Mitigation Measures	19-8
19.2.3.2 SEA's Preliminary Mitigation Measures	19-9
19.2.4 Cultural Resources	19-13
19.2.4.1 Applicant's Voluntary Mitigation Measures	19-13
19.2.4.2 SEA's Preliminary Mitigation Measures	19-13
19.2.5 Climate and Air Quality	19-13
19.2.5.1 Applicant's Voluntary Mitigation Measures	19-13
19.2.5.2 SEA's Preliminary Mitigation Measures	19-13
19.2.6 Noise and Vibration	19-14
19.2.6.1 Applicant's Voluntary Mitigation Measures	19-14
19.2.6.2 SEA's Preliminary Mitigation Measures	19-14
19.2.7 Transportation	19-14
19.2.7.1 Applicant's Voluntary Mitigation Measures	19-14
19.2.7.2 SEA's Preliminary Mitigation Measures	19-15
19.2.8 Navigation.....	19-15
19.2.8.1 Applicant's Voluntary Mitigation Measures	19-15
19.2.8.2 SEA's Preliminary Mitigation Measures	19-16
19.2.9 Land Use	19-16
19.2.9.1 Applicant's Voluntary Mitigation Measures	19-16
19.2.9.2 SEA's Preliminary Mitigation Measures	19-18
20. References.....	20-1
21. List of Preparers	21-1
22. Draft EIS Circulation	22-1
22.1 Federal Agencies.....	22-1
22.2 State and Local Agencies.....	22-1
22.3 Alaska Native Villages and Corporations.....	22-2
22.4 Federal, State, and Local Elected Officials.....	22-2
22.5 Other Organizations	22-3
Glossary	GL-1
Index	IN-1

List of Tables

Table 1-1 Cooperating Agency Involvement in the Port MacKenzie Rail Extension EIS	1-5
Table 2-1 SEA Questions on Port MacKenzie Rail Extension Alignments and ARRC Responses.....	2-9
Table 2-2 Summary and Comparison of Potential Impacts	2-37
Table 3-1 Slope Analysis of Alternative Segments and Segment Combinations	3-3
Table 3-2 Slope Analysis of Proposed Port MacKenzie Rail Extension Alternatives	3-4
Table 3-3 Natural Resources Conservation Service Mapped Soils Units in the Study Area	3-8
Table 3-4 Locally Important Agricultural Soils in the Study Area	3-9
Table 3-5 Construction Impacts to Soils by Segment and Segment Combination	3-10
Table 3-6 Erodibility of Soils by Segment and Segment Combination.....	3-10
Table 3-7 Construction Impacts to Soils by Rail Line Alternative.....	3-13
Table 3-8 Erodibility of Soils by Rail Line Alternative	3-13
Table 4.1-1 Water Resources Laws, Regulations, and Executive Orders	4.1-1
Table 4.2-1 Federal and Alaska Water Quality Standards for Fresh Water in Natural Environments	4.2-5
Table 4.2-2 Summary of Water Quality Data in Streams Collected in 2008	4.2-7
Table 4.2-3 Waterbody Crossings by Segment/Segment Combinations	4.2-14
Table 4.2-4 Summary of Waterbody Crossings along the Southern Segments/Segment Combinations	4.2-17
Table 4.2-5 Summary of Waterbody Crossings along the Northern Segments/Segment Combinations	4.2-20
Table 4.2-6 Waterbody Crossings by Alternative.....	4.2-25
Table 4.3-1 Alaska Department of Natural Resources-Identified Drinking Water Supply Wells in the Study Area	4.3-3

Table 4.3-2 Historic Water Quality Parameters Compared to State and Federal Standards for Drinking-Water Quality.....	4.3-5
Table 4.4-1 Floods in the Proposed Port MacKenzie Rail Extension Study Area Since 1980.....	4.4-2
Table 4.4-2 Floodplain Summary for the Proposed Port MacKenzie Rail Extension Southern Segments and Segment Combinations	4.4-5
Table 4.4-3 Floodplain Summary for the Proposed Port MacKenzie Rail Extension Northern Segments and Segment Combinations	4.4-7
Table 4.4-4 Potential Impacts to Floodplains by Alternative	4.4-11
Table 4.5-1 Summary of Wetland Types within 500 Feet of the Centerline of Proposed Rail Line Segments	4.5-2
Table 4.5-2 Wetlands within the 200-foot Right-of-Way of the Southern Segments and Segment Combinations	4.5-12
Table 4.5-3 Wetlands within the 200-foot Right-of-Way for the Northern Segments and Segment Combinations	4.5-17
Table 4.5-4 Summary of Impacts to Wetlands (acres) within the 200-Foot Right-of-Way by Alternative.....	4.5-21
Table 5.1-1 Applicable Federal and State Laws and Regulations	5.1-2
Table 5.2-1 Vegetation Cover Classes within the Study Area of the Proposed Port MacKenzie Rail Extension Alternatives.....	5.2-4
Table 5.2-2 Prohibited and Restricted Noxious Weeds in the Proposed Port MacKenzie Rail Extension Study Area.....	5.2-5
Table 5.2-3 Weed Sites Near Proposed Port MacKenzie Rail Extension Segments and Parks Highway	5.2-8
Table 5.2-4 Summary of Impacts to Vegetation (acres) by Segments and Segment Combinations for the Southern Segments.....	5.2-12
Table 5.2-5 Summary of Impacts to Vegetation (acres) by Segments and Segment Combinations for the Northern Segments.....	5.2-16
Table 5.2-6 Impacts to Vegetation (acres) by Alternative.....	5.2-18

Table 5.3-1 Direct Loss of Wildlife Habitat for the Southern Segments and Segment Combinations (acres)	5.3-14
Table 5.3-2 Estimated Nesting Habitat Loss Impacts to Birds for the Southern Segments and Segment Combinations (individuals displaced).....	5.3-16
Table 5.3-3 Estimated Nesting Habitat Disturbance to Swans, Loons, Raptors, and Owls along the Southern Segments and Segment Combinations (nests or nesting lakes disturbed)	5.3-16
Table 5.3-4 Direct Loss of Wildlife Habitat for the Northern Segments and Segment Combinations (acres)	5.3-18
Table 5.3-5 Estimated Nesting Habitat Loss to Birds for the Northern Segments and Segment Combinations (individuals displaced).....	5.3-19
Table 5.3-6 Estimated Nesting Habitat Disturbance Impacts to Swans, Loons, Raptors, and Owls along the Northern Segments and Segment Combinations (nests or nesting lakes disturbed)	5.3-20
Table 5.3-7 Direct Loss of Wildlife Habitat for the Alternatives (acres)	5.3-21
Table 5.3-8 Core Habitats Greater than 100 Acres Fragmented by Alternative.....	5.3-23
Table 5.3-9 Estimated Nesting Habitat Loss for Birds for the Alternatives.....	5.3-25
Table 5.3-10 Estimated Nesting Habitat Disturbance to Swans, Loons, Raptors, and Owls by Alternative	5.3-26
Table 5.4-1 Fish Potentially Present in the Port MacKenzie Rail Extension Study Area	5.4-4
Table 5.4-2 Salmon Spawning Run Timing within the Port MacKenzie Rail Extension Study Area	5.4-5
Table 5.4-3 Fish-Bearing Streams the Southern Segments would Cross	5.4-10
Table 5.4-4 Summary of Fish-Bearing Streams Crossed by the Southern Segments and Segment Combinations	5.4-13
Table 5.4-5 Fish-Bearing Streams the Northern Segments would Cross	5.4-14
Table 5.4-6 Summary of Fish-Bearing Streams the Northern Segments and Segment Combinations would Cross	5.4-17
Table 5.4-7 Summary of Fish-Bearing Streams Crossed by Alternatives	5.4-18

Table 6-1	Prehistoric Cultural Sequences in Upper Cook Inlet.....	6-8
Table 6-2	Alaska Heritage Resources Survey Sites in the Project Area.....	6-17
Table 6-3	Southern Segments - Known Cultural Resources within the Project Area and Right-of-Way	6-30
Table 6-4	Northern Segments - Known Cultural Resources within the Project Area and Right-of-Way	6-31
Table 6-5	Summary of Impacts to Cultural Resources by Alternative.....	6-33
Table 7-1	2007 Game Management Unit 16B TM565 and TM567 Tier II Moose Harvesters by Community	7-10
Table 7-2	Harvests of Large Land Mammals in Game Management Units Near the Proposed Port MacKenzie Rail Extension, 2005 through 2007	7-11
Table 7-3	2007 Travel Methods for Tier II TM565 and TM567 Moose Hunts in Game Management Unit 16B.....	7-12
Table 7-4	Game Management Unit 16B Moose Harvesters by Community, 2003 through 2007	7-12
Table 8-1	National and Alaska Ambient Air Quality Standards	8-2
Table 8-2	Measured Ambient Air Concentrations for Anchorage and Butte, Alaska (2005 through 2007)	8-5
Table 8-3	Estimated Construction Emissions along the Proposed Port MacKenzie Rail Extension and the Matanuska-Susitna Borough 2001 Emissions Inventory	8-6
Table 8-4	Estimated Annual Average Operations Emissions (metric tons per year) along the Proposed Port MacKenzie Rail Extension.....	8-7
Table 8-5	Estimated Annual Highway Emissions Compared to Proposed Port MacKenzie Rail Extension Operations Emissions (metric tons per year).....	8-8
Table 8-6	Annual Average Emissions of Greenhouse Gases Associated with Proposed Port MacKenzie Rail Extension Construction and Operations.....	8-9
Table 9-1	Measured Ambient Sound Levels in the Proposed Port MacKenzie Rail Extension Study Area	9-4
Table 9-2	Construction Equipment Noise Levels (dBA).....	9-6

Table 9-3	Federal Transit Administration Construction Noise Criteria	9-6
Table 9-4	Estimated Construction Noise and Vibration Levels	9-7
Table 9-5	Estimated Pile-Driving Noise and Vibration Levels at ARRC-Proposed Bridge Locations along the Port MacKenzie Rail Extension	9-7
Table 9-6	Estimated Pile-Driving Noise and Vibration Levels at Potential Bridge Locations along the Port MacKenzie Rail Extension	9-8
Table 9-7	Noise Receptor Counts for the Proposed Port MacKenzie Rail Extension – Rail Operations	9-17
Table 9-8	Estimated Areas of Potential Noise Impact within Section 4(f) Properties (Acres).....	9-18
Table 11-1	At-Grade Crossings	11-3
Table 11-2	Predicted Accident Frequency.....	11-4
Table 11-3	Hazard Index Summary	11-5
Table 11-4	Grade Crossing Delay.....	11-6
Table 12-1	Navigable and Potentially Navigable Waterways the Proposed Port MacKenzie Rail Extension Segments would Cross.....	12-5
Table 12-2	Navigable and Possible Navigable Stream Crossings by Rail Line Segment	12-7
Table 12-3	Summary of Impacts to Navigation by Rail Line Alternative.....	12-13
Table 13.1-1	Land Ownership (acres) within the 200-Foot Right-of-Way of Proposed Port MacKenzie Rail Extension Rail Line Segments	13.1-4
Table 13.1-2	Summary of Applicable Land Use Plans and Documents.....	13.1-8
Table 13.1-3	Forested Land (acres) within the 200-Foot Right-of-Way by Rail Line Segment.....	13.1-13
Table 13.1-4	Summary of Impacts to Land Ownership (acres) by Alternative.....	13.1-21
Table 13.1-5	Summary of Impacts to Land Use by Alternative	13.1-22
Table 13.2-1	Officially Recognized Trails Crossed by Rail Line Segment ROWs.....	13.2-14

Table 13.2-2 Officially Recognized, with Recorded Easements Crossed by Rail Line Segment ROWs.....	13.2-16
Table 13.2-3 Officially Recognized Trails without Recorded Easements Crossed by Rail Line Segment ROWs	13.2-16
Table 13.2-4 Impacts to Recreational Areas, Trails and Refuge by Alternative	13.2-24
Table 13.3-1 Applicable Environmental Regulations, Agencies, and Oversight Programs.	13.3-1
Table 13.3-2 Known Hazardous Material Sites and Regulated Facilities of Concern	13.3-8
Table 14-1 Estimated Port MacKenzie Rail Extension Construction Work Force and Equipment Needs	14-4
Table 15-1 Demographics in the Project Area by Segment.....	15-5
Table 15-2 Individuals and Families below the Poverty Level in the Project Area: Number and Percentage of Population by Location, 1999	15-7
Table 18-1 Maximum Acreage of Affected Land within the 200-Foot Right-of-Way by Ownership	18-4

Volume II

List of Appendices

Appendix A	Agency Consultation
Appendix B	Tribal and Government-to-Government Consultation
Appendix C	Wetlands
Appendix D	Vegetation Resources
Appendix E	Wildlife Resources
Appendix F	Fisheries Resources
Appendix G	Essential Fish Habitat
Appendix H	Biological Assessment
Appendix I	Cultural Resources
Appendix J	Draft Programmatic Agreement
Appendix K	Noise and Vibration Impacts
Appendix L	Grade Crossing Safety and Delay Analysis
Appendix M	Draft Section 4(f) and Section 6(f) Evaluation
Appendix N	Hazardous Material Sites and Regulated Facilities – Federal and State Databases and Records
Appendix O	Cumulative Impacts