
TABLE OF CONTENTS

PART A - INTRODUCTION

EXECUTIVE SUMMARY	i
PREFACE TO APPLICATION	i
ACRONYMS AND ABBREVIATIONS	i
GLOSSARY	GL-1
TABLE OF CONTENTS	i
List of Figures	xli
List of Tables	l
List of Appendices	lxxxi
TABLE OF CONCORDANCE	i
1.0 PROPOSED PROJECT OVERVIEW	1-1
1.1 Proponent Description	1-1
1.1.1 Proponent Contact Information	1-2
1.1.2 Website	1-3
1.2 Project Description	1-4
1.2.1 Purpose of the Project	1-4
1.2.2 Project Location	1-4
1.2.3 Project Background and History	1-7
1.2.4 Project Phases	1-8
1.2.5 Project Components	1-8
1.2.6 Project Activities	1-17
1.2.7 Resource and Material Requirements – Land Based	1-37
1.2.8 Wastes and Emissions – Land Based	1-38
1.2.9 Resource and Material Requirements – Marine	1-40
1.2.10 Wastes and Emissions – Marine	1-41
1.2.11 Project Design Standards and Policies	1-42
1.2.12 Schedule	1-43
1.3 Project Setting	1-44
1.3.1 Regional Development Areas	1-44
1.3.2 Nisga’a Lands, the Nass Wildlife Area and the Nass Area	1-44
1.3.3 Regional and Municipal Populations	1-45
1.3.4 Land Ownership and Land Use	1-47
1.3.5 Relationship Between Project Objectives to any Broader Private or Public Sector Policies, Plans or Programs	1-52

1.4	Applicable Approvals and Authorizations.....	1-53
1.4.1	Past Submissions to Provincial and Federal Agencies	1-53
1.5	Alternative Means of Undertaking the Project	1-54
1.5.1	Route and Facility Site Selection Process.....	1-54
1.5.2	Route and Facility Site Evaluation Criteria	1-56
1.5.3	Route Alternatives	1-59
1.5.4	Alternative Facility Sites.....	1-74
1.5.5	Alternative Construction Methods.....	1-76
1.5.6	Summary of Selected Alternatives.....	1-77
1.6	Project Benefits.....	1-78
1.6.1	Capital Costs	1-79
1.6.2	Operating Costs.....	1-81
1.6.3	Employment.....	1-82
1.6.4	Government Revenue.....	1-91
1.6.5	Contribution to the British Columbia Economy	1-94
1.6.6	Community and Social Benefits	1-94
1.7	Figures.....	1-96
2.0	ENVIRONMENTAL ASSESSMENT PROCESS.....	2-1
2.1	Provincial Environmental Assessment Process	2-1
2.2	Federal Environmental Assessment Process.....	2-11
2.3	Nisga’a Final Agreement	2-12
2.3.1	Assessment Requirements	2-12
2.3.2	Consultation with Nisga’a Nation.....	2-12
2.4	Applicable Authorizations	2-12
 PART B – ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION, AND SIGNIFICANCE OF RESIDUAL EFFECTS		
 PART B-1 – ASSESSMENT METHODS		
3.0	ASSESSMENT METHODS.....	3-1
3.1	Issues Scoping and Selection of Valued Components.....	3-1
3.1.1	Introduction.....	3-1
3.1.2	Scope of the Assessment and Potential Effects	3-4
3.2	Description of Existing Conditions.....	3-8
3.3	Assessment of Project-Specific Effects	3-9
3.3.1	Project Interactions with VC.....	3-9
3.3.2	Assessment of Residual Effects	3-11

3.4	Assessment of Cumulative Effects	3-13
3.4.1	Project and Activities Inclusion List.....	3-13
3.4.2	Assessment of Cumulative Effects	3-14
3.5	Confidence and Risk	3-16
3.6	Follow-Up Strategy.....	3-16
3.7	Summary of Conclusions.....	3-16

PART B-2 – ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS

4.0	ENVIRONMENTAL BACKGROUND.....	4-1
4.1	Physical Environment	4-1
4.2	Atmospheric Environment.....	4-2
4.3	Acoustic Environment	4-3
4.4	Freshwater Aquatic Resources.....	4-4
4.5	Hydrology	4-5
4.6	Marine Resources.....	4-6
4.7	Wildlife and Wildlife Habitat	4-6
4.8	Vegetation and Wetland Resources	4-7
4.9	Soil	4-10
5.0	AIR QUALITY.....	5-1
5.1	Introduction.....	5-1
5.2	Scope of Assessment and Potential Effects	5-1
5.2.1	Regulatory and Policy Setting	5-1
5.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	5-1
5.2.3	Selection of Indicators	5-2
5.2.4	Selection of Effects	5-2
5.2.5	Selection of Measurable Parameters	5-4
5.2.6	Boundaries	5-5
5.2.7	Residual Effects Description Criteria	5-9
5.2.8	Likelihood of Residual Effects	5-10
5.2.9	Significance Thresholds for Residual Effects.....	5-10
5.3	Existing Conditions for Air Quality.....	5-11
5.3.1	Baseline Data Sources.....	5-11
5.3.2	Baseline Overview	5-11
5.3.3	Traditional Knowledge Information	5-15
5.4	Project Interactions with Air Quality.....	5-15
5.4.1	Justification of Rank 0	5-16
5.4.2	Justification of Rank 1	5-16
5.4.3	Justification of Rank 2	5-16

5.5	Assessment of Residual Effects on Air Quality.....	5-17
5.5.1	Analytical Methods.....	5-17
5.5.2	Assessment of Change in Air Quality.....	5-19
5.5.3	Summary of Project Residual Effects on Air Quality.....	5-38
5.6	Cumulative Effects on Air Quality	5-41
5.6.1	Assessment of Potential Cumulative Effects	5-41
5.6.2	Summary of Cumulative Effects.....	5-42
5.6.3	Confidence and Risk	5-43
5.7	Follow-up Program and Compliance Reporting.....	5-43
5.8	Summary of Conclusions.....	5-43
5.9	Figures.....	5-44
6.0	GREENHOUSE GASES	6-1
6.1	Introduction.....	6-1
6.2	Scope of Assessment and Potential Effects	6-1
6.2.1	Regulatory and Policy Setting	6-2
6.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	6-3
6.2.3	Selection of Effects	6-4
6.2.4	Selection of Indicators	6-4
6.2.5	Selection of Measurable Parameters.....	6-4
6.2.6	Boundaries	6-5
6.2.7	Residual Effects Description Criteria	6-6
6.2.8	Likelihood of Residual Effects	6-8
6.2.9	Significance Thresholds for Residual Effects.....	6-8
6.3	Existing Conditions for Greenhouse Gases	6-8
6.3.1	Baseline Data Sources.....	6-8
6.3.2	Baseline Overview	6-8
6.3.3	Traditional Knowledge Information	6-12
6.4	Project Interactions with Greenhouse Gases.....	6-12
6.4.1	Justification of Interaction Rankings	6-13
6.5	Assessment of Residual Effects on Greenhouse Gases	6-14
6.5.1	Analytical Methods.....	6-14
6.5.2	Assessment of Greenhouse Gas Emissions.....	6-14
6.5.3	Confidence and Risk	6-21
6.5.4	Summary of Project Residual Effects on Greenhouse Gases	6-22
6.6	Cumulative Effects on Greenhouse Gases.....	6-25
6.6.1	Assessment of Potential Cumulative Effects	6-25
6.6.2	Summary of Cumulative Effects.....	6-27
6.6.3	Confidence and Risk	6-27

6.7	Follow-up Program and Compliance Reporting	6-28
6.7.1	Annual Greenhouse Gas Reporting	6-28
6.7.2	Leak Detection and Repair.....	6-28
6.7.3	Detailed GHG Management Plan	6-28
6.7.4	Research and Development.....	6-29
6.8	Summary of Conclusions	6-29
7.0	ACOUSTIC ENVIRONMENT	7-1
7.1	Introduction.....	7-1
7.2	Scope of Assessment and Potential Effects	7-1
7.2.1	Regulatory and Policy Setting	7-1
7.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	7-4
7.2.3	Selection of Effects	7-5
7.2.4	Selection of Indicators	7-5
7.2.5	Selection of Measurable Parameters	7-5
7.2.6	Boundaries	7-5
7.2.7	Residual Effects Description Criteria	7-6
7.2.8	Likelihood of Residual Effects	7-8
7.2.9	Significance Thresholds for Residual Effects.....	7-8
7.3	Existing Conditions for Acoustic Environment.....	7-8
7.3.1	Baseline Data Sources.....	7-8
7.3.2	Baseline Overview	7-9
7.3.3	Traditional Knowledge Information	7-16
7.4	Project Interactions with Acoustic Environment	7-16
7.4.1	Justification of Rank 0	7-17
7.4.2	Justification of Rank 1	7-17
7.4.3	Justification of Rank 2	7-17
7.5	Assessment of Residual Effects on Acoustic Environment.....	7-18
7.5.1	Analytical Methods.....	7-18
7.5.2	Assessment of Change in Ambient Sound Levels	7-19
7.5.3	Confidence and Risk.....	7-29
7.5.4	Summary of Project Residual Effects on Acoustic Environment.....	7-30
7.6	Cumulative Effects on Acoustic Environment	7-34
7.6.1	Assessment of Potential Cumulative Effects	7-34
7.6.2	Summary of Cumulative Effects.....	7-35
7.6.3	Confidence and Risk	7-36
7.7	Follow-up Program and Compliance Reporting	7-36
7.8	Summary of Conclusions.....	7-36
7.9	Figures.....	7-36

8.0	WATER QUALITY	8-1
8.1	Introduction.....	8-1
8.2	Scope of Assessment and Potential Effects	8-1
8.2.1	Regulatory and Policy Setting	8-1
8.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	8-2
8.2.3	Selection of Indicators	8-3
8.2.4	Selection of Effects	8-4
8.2.5	Selection of Measurable Parameters	8-4
8.2.6	Boundaries	8-5
8.2.7	Residual Effects Description Criteria	8-7
8.2.8	Likelihood of Residual Effects	8-8
8.2.9	Significance Thresholds for Residual Effects.....	8-9
8.3	Existing Conditions for Water Quality	8-9
8.3.1	Baseline Data Sources.....	8-9
8.3.2	Baseline Overview	8-10
8.3.3	Traditional Knowledge Information	8-16
8.4	Project Interactions with Water Quality	8-16
8.4.1	Justification of Rank 0	8-17
8.4.2	Justification of Rank 1	8-18
8.4.3	Justification of Rank 2	8-19
8.5	Assessment of Residual Effects on Water Quality	8-19
8.5.1	Analytical Methods.....	8-19
8.5.2	Assessment of Change in Freshwater Quality Related to Toxicity	8-25
8.5.3	Assessment of Change in Marine Water Quality Related to Toxicity	8-27
8.5.4	Summary of Project Residual Effects on Water Quality	8-30
8.6	Cumulative Effects on Water Quality.....	8-33
8.6.1	Assessment of Potential Cumulative Effects	8-33
8.6.2	Confidence and Risk.....	8-34
8.7	Follow-up Program and Compliance Reporting.....	8-34
8.8	Summary of Conclusions.....	8-35
8.9	Figures.....	8-35
9.0	HYDROLOGY.....	9-1
9.1	Introduction.....	9-1
9.2	Scope of Assessment and Potential Effects	9-1
9.2.1	Regulatory and Policy Setting	9-1
9.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	9-2

9.2.3	Selection of Effects	9-2
9.2.4	Selection of Indicators	9-3
9.2.5	Selection of Measurable Parameters	9-3
9.2.6	Boundaries	9-4
9.2.7	Residual Environmental Effects Description Criteria.....	9-5
9.2.8	Likelihood of Residual Effects	9-7
9.2.9	Significance Thresholds for Residual Effects.....	9-7
9.3	Existing Conditions for Hydrology.....	9-8
9.3.1	Baseline Data Sources.....	9-8
9.3.2	Baseline Overview	9-8
9.3.3	Traditional Knowledge Information	9-12
9.4	Project Interactions with Hydrology	9-13
9.4.1	Justification of Rank 0	9-14
9.4.2	Justification of Rank 1	9-14
9.5	Assessment of Residual Effects on Hydrology.....	9-23
9.5.1	Confidence and Risk	9-23
9.5.2	Summary of Project Residual Effects	9-24
9.6	Cumulative Effects on Hydrology	9-25
9.6.1	Assessment of Potential Cumulative Effects	9-25
9.6.2	Summary of Cumulative Effects.....	9-26
9.6.3	Confidence and Risk	9-27
9.7	Follow-up Program and Compliance Reporting	9-27
9.8	Summary of Conclusions.....	9-27
9.9	Figures.....	9-27
10.0	FRESHWATER AQUATIC RESOURCES	10-1
10.1	Introduction.....	10-1
10.2	Scope of Assessment and Potential Effects	10-1
10.2.1	Regulatory and Policy Requirements.....	10-1
10.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	10-3
10.2.3	Selection of Indicators	10-5
10.2.4	Selection of Effects	10-5
10.2.5	Selection of Measurable Parameters	10-6
10.2.6	Boundaries	10-7
10.2.7	Residual Effects Description Criteria	10-8
10.2.8	Likelihood of Residual Effects	10-10
10.2.9	Significance Thresholds for Residual Effects.....	10-10

10.3	Existing Conditions for Freshwater Aquatic Resources	10-11
10.3.1	Baseline Data Sources.....	10-11
10.3.2	Field Surveys Methods	10-12
10.3.3	Baseline Overview	10-14
10.3.4	Traditional Knowledge Information	10-23
10.4	Project Interactions with Freshwater Aquatic Resources	10-25
10.4.1	Justification of Rank 0	10-26
10.4.2	Justification of Rank 1	10-26
10.4.3	Justification of Rank 2	10-29
10.5	Assessment of Residual Effects on Freshwater Aquatic Resources	10-30
10.5.1	Analytical Assessment Techniques for Freshwater Aquatic Resources	10-30
10.5.2	Assessment of Change in Fish Habitat	10-36
10.5.3	Assessment of Residual Effects on Change in Fish Health or Mortality Risk.....	10-47
10.5.4	Assessment of Residual Effects on Change in Water Quality.....	10-53
10.5.5	Confidence and Risk	10-56
10.5.6	Summary of Project Residual Effects on Freshwater Aquatic Resources	10-57
10.6	Cumulative Effects on Freshwater Aquatic Resources.....	10-62
10.6.1	Assessment of Potential Cumulative Effects	10-62
10.6.2	Summary of Cumulative Effects.....	10-66
10.6.3	Confidence and Risk	10-66
10.7	Follow-up Programs and Compliance Reporting	10-66
10.8	Summary of Conclusions.....	10-67
10.9	Figures.....	10-67
11.0	MARINE RESOURCES.....	11-1
11.1	Introduction.....	11-1
11.2	Scope of Assessment and Potential Effects	11-1
11.2.1	Regulatory and Policy Setting	11-1
11.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	11-5
11.2.3	Selection of Indicators	11-7
11.2.4	Selection of Effects	11-11
11.2.5	Selection of Measurable Parameters	11-13
11.2.6	Boundaries	11-13
11.2.7	Residual Effects Description Criteria	11-16
11.2.8	Likelihood of Residual Effects	11-17
11.2.9	Significance Thresholds for Residual Effects.....	11-17

11.3	Existing Conditions for Marine Resources	11-18
11.3.1	Baseline Data Sources.....	11-18
11.3.2	Baseline Overview	11-18
11.3.3	Traditional Knowledge Information	11-26
11.4	Project Interactions with Marine Resources	11-27
11.4.1	Justification of Rank 0	11-29
11.4.2	Justification of Rank 1	11-30
11.4.3	Justification of Rank 2	11-36
11.5	Assessment of Residual Effects on Marine Resources	11-37
11.5.1	Analytical Methods	11-37
11.5.2	Assessment of Change in Fish Habitat	11-38
11.5.3	Assessment of Harm to Fish, Marine Mammals, or Species at Risk	11-59
11.5.4	Assessment of Change in Behaviour of Fish, Marine Mammals, or Species at Risk Due to Pressure Waves or Underwater Noise	11-74
11.5.5	Confidence and Risk	11-79
11.5.6	Summary of Project Residual Effects on Marine Resources ...	11-79
11.6	Cumulative Effects on Marine Resources.....	11-84
11.6.1	Assessment of Potential Cumulative Effects	11-84
11.6.2	Summary of Cumulative Effects.....	11-90
11.6.3	Confidence and Risk	11-91
11.7	Follow-up Program and Compliance Reporting	11-91
11.8	Summary of Conclusions	11-92
11.9	Figures.....	11-92
12.0	SOILS	12-1
12.1	Introduction.....	12-1
12.2	Scope of Assessment and Potential Effects	12-2
12.2.1	Regulatory and Policy Setting	12-2
12.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	12-2
12.2.3	Selection of Indicators	12-3
12.2.4	Selection of Effects	12-4
12.2.5	Selection of Measurable Parameters	12-4
12.2.6	Boundaries	12-5
12.2.7	Residual Effects Description Criteria	12-7
12.2.8	Likelihood of Residual Effects	12-8
12.2.9	Significance Thresholds for Residual Effects.....	12-8

12.3	Existing Conditions for Soils	12-9
12.3.1	Baseline Data Sources	12-9
12.3.2	Baseline Overview	12-10
12.3.3	Traditional Knowledge Information	12-16
12.4	Project Interactions with Soils	12-16
12.4.1	Justification of Rank 0	12-17
12.4.2	Justification of Rank 1	12-17
12.4.3	Justification of Rank 2	12-18
12.5	Assessment of Residual Effects on Soils	12-18
12.5.1	Analytical Methods	12-18
12.5.2	Assessment of Change in Soil Quality	12-21
12.5.3	Assessment of Change in Soil Quantity	12-25
12.5.4	Summary of Project Residual Effects on Soils	12-28
12.6	Cumulative Effects on Soils	12-34
12.6.1	Assessment of Potential Cumulative Effects	12-34
12.6.2	Summary of Cumulative Effects	12-35
12.6.3	Confidence and Risk	12-35
12.7	Follow-up and monitoring Program and Compliance Reporting	12-36
12.8	Summary of Conclusions	12-36
12.9	Figure	12-36
13.0	VEGETATION AND WETLAND RESOURCES	13-1
13.1	Introduction	13-1
13.2	Scope of Assessment and potential effects	13-2
13.2.1	Regulatory and Policy Setting	13-2
13.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process	13-4
13.2.3	Selection of Indicators	13-5
13.2.4	Selection of Effects	13-6
13.2.5	Selection of Measurable Parameters	13-7
13.2.6	Boundaries	13-8
13.2.7	Residual Effects Description Criteria	13-11
13.2.8	Likelihood of Residual Effects	13-12
13.2.9	Significance Thresholds for Residual Effects	13-13
13.3	Existing Conditions for Vegetation and Wetland Resources	13-16
13.3.1	Baseline Data Sources	13-16
13.3.2	Baseline Overview	13-24
13.3.3	Traditional Knowledge Information	13-43

13.4	Project Interactions with Vegetation and Wetland Resources	13-45
13.4.1	Justification of Rank 0	13-47
13.4.2	Justification of Rank 1	13-47
13.4.3	Justification of Rank 2	13-49
13.5	Assessment of Residual Effects on Vegetation and Wetland Resources...	13-49
13.5.1	Analytical Methods	13-49
13.5.2	Assessment of Change in Abundance of Plant Species of Interest.....	13-50
13.5.3	Assessment of Change in Abundance or Condition of Ecological Communities of Interest.....	13-58
13.5.4	Summary of Project Residual Effects on Vegetation and Wetland Resources.....	13-81
13.6	Cumulative Effects on Vegetation and Wetland Resources	13-87
13.6.1	Assessment of Potential Cumulative Effects	13-87
13.6.2	Summary of Cumulative Effects.....	13-100
13.6.3	Confidence and Risk	13-100
13.7	Follow-up Program and Compliance Reporting	13-100
13.8	Summary of Conclusions.....	13-101
13.9	Figures.....	13-101
14.0	WILDLIFE AND WILDLIFE HABITAT	14-1
14.1	Introduction.....	14-1
14.2	Scope of Assessment and Potential Effects	14-1
14.2.1	Regulatory and Policy Setting	14-1
14.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	14-3
14.2.3	Selection of Effects	14-6
14.2.4	Selection of Indicators	14-7
14.2.5	Selection of Measurable Parameters	14-8
14.2.6	Boundaries	14-10
14.2.7	Likelihood of Residual Effects	14-29
14.2.8	Significance Thresholds for Residual Effects.....	14-29
14.2.9	Confidence and Risk	14-35
14.3	Existing Conditions for Wildlife and Wildlife Habitat.....	14-35
14.3.1	Baseline Data Sources.....	14-36
14.3.2	Baseline Overview	14-38
14.3.3	Traditional Knowledge Information	14-39
14.4	Project Interactions with Wildlife and Wildlife Habitat	14-41
14.4.1	Justification of Rank 0	14-47
14.4.2	Justification of Rank 1	14-47
14.4.3	Justification of Rank 2	14-53

14.5	Assessment of Residual Effects on Wildlife and Wildlife Habitat.....	14-54
14.5.1	Analytical Methods.....	14-64
14.5.2	Assessment of Change in Habitat	14-68
14.5.3	Assessment of Change in Mortality Risk.....	14-108
14.5.4	Assessment of Change in Movement.....	14-123
14.5.5	Summary of Project Residual Effects on Wildlife and Wildlife Habitat	14-132
14.6	Cumulative Effects on Wildlife and Wildlife Habitat	14-135
14.6.1	Assessment of Potential Cumulative Effects	14-135
14.6.2	Summary of Cumulative Effects.....	14-185
14.6.3	Confidence and Risk.....	14-187
14.7	Follow-up Program	14-188
14.8	Summary of Conclusions.....	14-188
14.9	Figures.....	14-189
15.0	SUMMARY OF ASSESSMENT OF POTENTIAL ENVIRONMENTAL EFFECTS	15-1
 PART B-3 – ASSESSMENT OF POTENTIAL ECONOMIC EFFECTS		
16.0	ECONOMIC BACKGROUND	16-1
17.0	EMPLOYMENT	17-1
17.1	Introduction.....	17-1
17.2	Scope of Assessment and Potential Effects	17-1
17.2.1	Regulatory and Policy Setting	17-1
17.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	17-1
17.2.3	Selection of Indicators	17-2
17.2.4	Selection of Effects	17-3
17.2.5	Selection of Measurable Parameters.....	17-3
17.2.6	Boundaries	17-4
17.2.7	Residual Effects Description Criteria	17-9
17.2.8	Likelihood of Residual Effects	17-10
17.2.9	Significance Thresholds for Residual Effects.....	17-10
17.3	Existing Conditions for Employment	17-10
17.3.1	Baseline Data Sources.....	17-11
17.3.2	Baseline Overview	17-11
17.3.3	Traditional Knowledge Information	17-29
17.4	Project Interactions with Employment.....	17-29
17.4.1	Justification of Rank 0	17-31
17.4.2	Justification of Rank 1	17-31
17.4.3	Justification of Rank 2	17-31

17.5	Assessment of Residual Effects on Employment	17-32
17.5.1	Analytical Methods	17-32
17.5.2	Assessment of Change in Labour Availability	17-34
17.5.3	Assessment of Change in Wage Rates	17-45
17.5.4	Assessment of Change in Training Requirements	17-47
17.5.5	Assessment of Change in In-Migration and Labour Force Stability	17-50
17.5.6	Confidence and Risk	17-53
17.5.7	Summary of Project Residual Effects on Employment	17-53
17.6	Cumulative Effects on Employment	17-58
17.6.1	Assessment of Potential Cumulative Effects	17-58
17.6.2	Summary of Cumulative Effects	17-64
17.6.3	Confidence and Risk	17-64
17.7	Follow-up Program and Compliance Reporting	17-65
17.8	Summary of Conclusions	17-65
17.9	Figures	17-66
18.0	SUMMARY OF ASSESSMENT OF POTENTIAL EMPLOYMENT (ECONOMIC) EFFECTS	18-1
 PART B-4 – ASSESSMENT OF POTENTIAL SOCIAL EFFECTS		
19.0	SOCIAL BACKGROUND	19-1
20.0	COMMUNITY INFRASTRUCTURE AND SERVICES	20-1
20.1	Introduction	20-1
20.2	Scope of Assessment and Potential Effects	20-2
20.2.1	Regulatory and Policy Setting	20-2
20.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process	20-2
20.2.3	Selection of Indicators	20-4
20.2.4	Selection of Effects	20-4
20.2.5	Selection of Measurable Parameters	20-5
20.2.6	Boundaries	20-6
20.2.7	Residual Effects Description Criteria	20-8
20.2.8	Likelihood of Residual Effects	20-9
20.2.9	Significance Thresholds for Residual Effects	20-9
20.3	Existing Conditions for Community infrastructure and services	20-10
20.3.1	Baseline Data Sources	20-10
20.3.2	Baseline Overview	20-10
20.3.3	Socio-Economic Information from Aboriginal Groups	20-28

20.4	Project Interactions with Community infrastructure and services	20-32
20.4.1	Justification of Rank 0	20-34
20.4.2	Justification of Rank 1	20-34
20.4.3	Justification of Rank 2	20-34
20.5	Assessment of Residual Effects on Community infrastructure and services.....	20-35
20.5.1	Analytical Methods	20-35
20.5.2	Assessment of Change in Demand for Accommodations.....	20-35
20.5.3	Assessment of Increased Demand on Emergency and Protection Services.....	20-39
20.5.4	Assessment of Increased Demand on Health Care Services....	20-43
20.5.5	Assessment of Increased Demands on and Use of Community Recreation and Leisure Facilities.....	20-45
20.5.6	Assessment of Change in Demand on Water and Waste Management.....	20-48
20.5.7	Confidence and Risk	20-52
20.5.8	Summary of Project Residual Effects on Community Infrastructure and Services	20-53
20.6	Cumulative Effects on Community infrastructure and services	20-60
20.6.1	Assessment of Potential Cumulative Effects	20-60
20.6.2	Summary of Cumulative Effects.....	20-68
20.6.3	Confidence and Risk	20-68
20.7	Follow-up Program and Compliance Reporting	20-69
20.8	Summary of Conclusions	20-69
20.9	Figures.....	20-69
21.0	TRANSPORTATION	21-1
21.1	Introduction.....	21-1
21.2	Scope of Assessment and Potential Effects	21-1
21.2.1	Regulatory and Policy Setting	21-1
21.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	21-2
21.2.3	Selection of Indicators	21-3
21.2.4	Selection of Effects	21-4
21.2.5	Selection of Measurable Parameters	21-4
21.2.6	Boundaries	21-5
21.2.7	Residual Effects Description Criteria	21-6
21.2.8	Likelihood of Residual Effects	21-8
21.2.9	Significance Thresholds for Residual Effects.....	21-8

21.3	Existing Conditions for Transportation	21-8
21.3.1	Baseline Data Sources.....	21-8
21.3.2	Baseline Overview	21-9
21.3.3	Traditional Knowledge Information	21-16
21.4	Project Interactions with Transportation.....	21-16
21.4.1	Justification of Rank 0	21-18
21.4.2	Justification of Rank 1	21-18
21.4.3	Justification of Rank 2	21-18
21.5	Assessment of Residual Effects on Transportation	21-19
21.5.1	Analytical Methods	21-19
21.5.2	Assessment of Decreased Navigability of Marine Waterways, Rivers and Lakes.....	21-21
21.5.3	Assessment of Increased Demands on Major Roads and Highway Infrastructure	21-27
21.5.4	Assessment of Increased Demands on Railways and Airports	21-30
21.5.5	Confidence and Risk	21-32
21.5.6	Summary of Project Residual Effects on Transportation	21-33
21.6	Cumulative Effects on Transportation	21-34
21.6.1	Assessment of Potential Cumulative Effects	21-34
21.6.2	Summary of Cumulative Effects.....	21-37
21.6.3	Confidence and Risk	21-37
21.7	Follow-up Program and Compliance Reporting	21-37
21.8	Summary of Conclusions.....	21-37
21.9	Figures.....	21-37
22.0	VISUAL QUALITY.....	22-1
22.1	Introduction.....	22-1
22.2	Scope of Assessment and Potential Effects	22-1
22.2.1	Regulatory and Policy Setting	22-2
22.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	22-4
22.2.3	Selection of Indicators	22-4
22.2.4	Selection of Effects	22-5
22.2.5	Selection of Measurable Parameters	22-5
22.2.6	Boundaries	22-6
22.2.7	Residual Effects Description Criteria	22-8
22.2.8	Likelihood of Residual Effects	22-9
22.2.9	Significance Thresholds for Residual Effects.....	22-9

22.3	Existing Conditions for Visual Quality.....	22-10
22.3.1	Baseline Data Sources.....	22-10
22.3.2	Baseline Overview	22-12
22.3.3	Traditional Knowledge Information	22-15
22.4	Project Interactions with Visual Quality.....	22-15
22.4.1	Justification of Rank 0	22-17
22.4.2	Justification of Rank 1	22-17
22.4.3	Justification of Rank 2	22-18
22.5	Assessment of Residual Effects on Visual Quality.....	22-19
22.5.1	Analytical Methods	22-19
22.5.2	Assessment of Change to Visual Quality.....	22-23
22.5.3	Confidence and Risk.....	22-26
22.5.4	Summary of Project Residual Effects on Visual Quality.....	22-27
22.6	Cumulative Effects on Visual Quality	22-30
22.6.1	Assessment of Potential Cumulative Effects	22-30
22.6.2	Summary of Cumulative Effects.....	22-32
22.6.3	Confidence and Risk	22-32
22.7	Follow-up Program and Compliance Reporting.....	22-33
22.8	Summary of Conclusions.....	22-33
22.9	Figures.....	22-33
23.0	LAND AND RESOURCE USE	23-1
23.1	Introduction.....	23-1
23.2	Scope of Assessment and Potential Effects	23-2
23.2.1	Regulatory and Policy Setting	23-2
23.2.2	Influence of Consultations on the Identification of Issues and the Assessment Process.....	23-3
23.2.3	Selection of Indicators	23-3
23.2.4	Selection of Effects	23-4
23.2.5	Selection of Measurable Parameters.....	23-5
23.2.6	Boundaries	23-6
23.2.7	Residual Effects Description Criteria	23-9
23.2.8	Likelihood of Residual Effects	23-10
23.2.9	Significance Thresholds for Residual Effects.....	23-10
23.3	Existing Conditions for Land and Resource Use.....	23-10
23.3.1	Baseline Data Sources.....	23-10
23.3.2	Baseline Overview	23-11
23.3.3	Traditional Knowledge Information	23-67

23.4	Project Interactions with Land and Resource Use	23-67
23.4.1	Justification of Rank 0	23-69
23.4.2	Justification of Rank 1	23-71
23.4.3	Justification of Rank 2	23-75
23.5	Assessment of Residual Effects on Land and Resource Use	23-76
23.5.1	Analytical Methods	23-76
23.5.2	Assessment of Change in Land Use in Parks and Protected Areas	23-77
23.5.3	Assessment of Change in Outdoor Recreation Use	23-79
23.5.4	Assessment of Change in Commercial Fishing Activity	23-83
23.5.5	Assessment of Change in Guide Outfitting and Commercial Trapping Activities	23-88
23.5.6	Confidence and Risk	23-91
23.5.7	Summary of Project Residual Effects on Land and Resource Use	23-91
23.6	Cumulative Effects on Land and Resource Use	23-97
23.6.1	Assessment of Potential Cumulative Effects	23-97
23.6.2	Summary of Cumulative Effects	23-108
23.6.3	Confidence and Risk	23-108
23.7	Follow-up Program and Compliance Reporting	23-108
23.8	Summary of Conclusions	23-109
23.9	Figures	23-109
24.0	SUMMARY OF ASSESSMENT OF POTENTIAL SOCIAL EFFECTS	24-1
PART B-5 – ASSESSMENT OF POTENTIAL HERITAGE EFFECTS		
25.0	HERITAGE AND ARCHAEOLOGICAL BACKGROUND	25-1
26.0	HERITAGE AND ARCHAEOLOGICAL RESOURCES	26-1
26.1	Introduction	26-1
26.2	Scope of Assessment and Potential Effects	26-2
26.2.1	Regulatory and Policy Setting	26-2
26.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process	26-3
26.2.3	Selection of Effects	26-5
26.2.4	Selection of Indicators	26-5
26.2.5	Selection of Measurable Parameters	26-5
26.2.6	Boundaries	26-6
26.2.7	Residual Effects Description Criteria	26-8
26.2.8	Likelihood of Residual Effects	26-10
26.2.9	Significance Threshold for Residual Effects	26-10

26.3	Existing Conditions for Heritage and Archaeological Resources.....	26-10
26.3.1	Baseline Data Sources and Methods.....	26-10
26.3.2	Baseline Overview – Archaeological and Historical Resources	26-13
26.3.3	Baseline Overview – Palaeontological Resources	26-23
26.3.4	Traditional Knowledge Information	26-26
26.4	Project Interactions with Heritage and Archaeological Resources	26-27
26.4.1	Justification of Rank 0	26-28
26.4.2	Justification of Rank 1	26-28
26.4.3	Justification of Rank 2	26-30
26.5	Assessment of Residual Effects on Heritage and Archaeological Resources	26-30
26.5.1	Analytical Methods	26-30
26.5.2	Assessment of Disturbance to Historical and Archaeological Sites	26-31
26.5.3	Summary of Project Residual Effects on Heritage and Archaeological Resources.....	26-36
26.6	Cumulative Effects on Heritage and Archaeological Resources	26-38
26.6.1	Assessment of Potential Cumulative Effects	26-38
26.6.2	Summary of Cumulative Effects.....	26-40
26.6.3	Confidence and Risk	26-40
26.7	Follow-up Program and Compliance Reporting.....	26-41
26.8	Summary of Conclusions.....	26-41
27.0	SUMMARY OF ASSESSMENT OF POTENTIAL ARCHAEOLOGICAL AND HERITAGE EFFECTS.....	27-1
 PART B-6 – ASSESSMENT OF POTENTIAL HEALTH EFFECTS		
28.0	HEALTH BACKGROUND.....	28-1
29.0	HUMAN HEALTH.....	29-1
29.1	Introduction.....	29-1
29.2	Scope of Assessment and Potential Effects	29-2
29.2.1	Regulatory and Policy Setting	29-2
29.2.2	Influence of Consultation on the Identification of Issues and the Assessment Process.....	29-3
29.2.3	Selection of Indicators	29-4
29.2.4	Selection of Effects	29-5
29.2.5	Boundaries	29-6
29.2.6	Residual Effects Description Criteria	29-8
29.2.7	Likelihood of Residual Effects	29-9
29.2.8	Significance Thresholds for Residual Effects.....	29-9

29.3	Existing Conditions.....	29-10
29.3.1	Baseline Methods and Data Sources.....	29-10
29.3.2	Baseline Overview	29-10
29.3.3	Traditional Knowledge Information	29-12
29.4	Project Interactions with Human Health.....	29-13
29.4.1	Justification of Rank 0	29-14
29.4.2	Justification of Rank 1	29-14
29.4.3	Justification of Rank 2	29-23
29.5	Assessment of Residual Effects on Human Health.....	29-23
29.5.1	Analytical Methods	29-23
29.5.2	Assessment of Change to Human Health.....	29-24
29.5.3	Summary of Project Residual Effects on Human Health from Air Quality	29-30
29.6	Cumulative Effects to Human Health	29-32
29.6.1	Assessment of Potential Cumulative Effects	29-32
29.6.2	Cumulative Effects to Human Health	29-33
29.6.3	Confidence and Risk	29-35
29.7	Follow-up Program and Compliance Reporting	29-36
29.8	Summary of Conclusions	29-36
29.9	Figures.....	29-36
30.0	SUMMARY OF ASSESSMENT OF POTENTIAL HEALTH EFFECTS	30-1
PART B-7 – ACCIDENTS OR MALFUNCTIONS AND EFFECTS OF THE ENVIRONMENT ON THE PROJECT		
31.0	ACCIDENTS OR MALFUNCTIONS	31-1
31.1	Introduction.....	31-1
31.1.1	Identification of Potential Accidents or Malfunctions Scenarios	31-1
31.1.2	Methods Used to Assess the Potential Risk of an Accident or Malfunction	31-2
31.2	Emergency Response Planning.....	31-4
31.3	Hazardous Material Spills.....	31-6
31.3.1	Description of the Potential Event	31-6
31.3.2	Likelihood that the Potential Event Could Occur	31-7
31.3.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-7
31.3.4	Description of the Potential Residual Effect.....	31-8
31.3.5	Likelihood of the Effect Occurring.....	31-9
31.3.6	Contingency, Clean-up, and Restoration Methods	31-9

31.3.7	Assessment of Residual Effects and their Significance.....	31-10
31.3.8	Conclusion on the Potential Risk of Hazardous Material Spills	31-13
31.4	Release of Drilling Muds	31-13
31.4.1	Description of the Potential Event	31-13
31.4.2	Likelihood that the Potential Event Could Occur	31-14
31.4.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-14
31.4.4	Description of the Potential Residual Effect.....	31-14
31.4.5	Likelihood of the Effect Occurring.....	31-15
31.4.6	Contingency, Clean-up, and Restoration Methods	31-15
31.4.7	Assessment of Residual Effects and their Significance.....	31-15
31.4.8	Conclusion on the Potential Risk of Release of Drilling Muds	31-16
31.5	Leakage or Failure of the Pipeline During Operation.....	31-16
31.5.1	Description of the Potential Event	31-16
31.5.2	Likelihood that the Potential Event Could Occur	31-17
31.5.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-18
31.5.4	Description of the Potential Residual Effect.....	31-19
31.5.5	Likelihood of the Effect Occurring.....	31-20
31.5.6	Contingency, Clean-up, and Restoration Methods	31-20
31.5.7	Assessment of Residual Effects and their Significance.....	31-20
31.5.8	Conclusion on the Potential Risk of Release of Leakage or Failure of the Pipeline During Operation.....	31-20
31.6	Motor Vehicle or Helicopter Accidents	31-20
31.6.1	Description of the Potential Event	31-21
31.6.2	Likelihood that the Potential Event Could Occur	31-21
31.6.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-21
31.6.4	Description of the Potential Residual Effect.....	31-22
31.6.5	Likelihood of the Effect Occurring.....	31-22
31.6.6	Contingency, Clean-up, and Restoration Methods	31-23
31.6.7	Assessment of Residual Effects and their Significance.....	31-23
31.6.8	Conclusion on the Potential Risk for Motor Vehicle or Helicopter Accidents.....	31-23
31.7	Marine Vessel Accidents	31-24
31.7.1	Description of the Potential Event	31-24
31.7.2	Likelihood that the Potential Event Could Occur	31-24
31.7.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-25
31.7.4	Description of the Potential Residual Effect.....	31-26

31.7.5	Likelihood of the Effect Occurring.....	31-26
31.7.6	Contingency, Clean-up, and Restoration Methods	31-26
31.7.7	Assessment of Residual Effects and their Significance.....	31-26
31.7.8	Conclusion on the Potential Risk for Marine Vessel Accidents.....	31-27
31.8	Forest Fire	31-28
31.8.1	Description of the Potential Event	31-28
31.8.2	Likelihood that the Potential Event Could Occur	31-28
31.8.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-29
31.8.4	Description of the Potential Residual Effect.....	31-30
31.8.5	Likelihood of the Effect Occurring.....	31-31
31.8.6	Contingency, Clean-up, and Restoration Methods	31-31
31.8.7	Assessment of Residual Effects and their Significance.....	31-31
31.8.8	Conclusion on the Potential Risk for Forest Fire.....	31-35
31.9	Fly Rock From Blasting.....	31-35
31.9.1	Description of the Potential Event	31-35
31.9.2	Likelihood that the Potential Event Could Occur	31-35
31.9.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-36
31.9.4	Description of the Potential Residual Effect.....	31-36
31.9.5	Likelihood of the Effect Occurring.....	31-36
31.9.6	Contingency, Clean-up, and Restoration Methods	31-36
31.9.7	Assessment of Residual Effects and their Significance.....	31-37
31.9.8	Conclusion on the Potential Risk for Fly Rock from Blasting	31-37
31.10	Explosion and Fire	31-37
31.10.1	Description of the Potential Event	31-37
31.10.2	Likelihood that the Potential Event Could Occur	31-37
31.10.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-38
31.10.4	Description of the Potential Residual Effect.....	31-38
31.10.5	Likelihood of the Effect Occurring.....	31-39
31.10.6	Contingency, Clean-up, and Restoration Methods	31-39
31.10.7	Assessment of Residual Effects and their Significance.....	31-39
31.10.8	Conclusion on the Potential Risk for Explosion and Fire.....	31-39
31.11	Sediment Release into Watercourses or Marine Environment	31-40
31.11.1	Description of the Potential Event	31-40
31.11.2	Likelihood that the Potential Event Could Occur	31-40
31.11.3	Design Measures to Reduce the Likelihood of the Event and Consequences of an Effect	31-41
31.11.4	Description of the Potential Residual Effect.....	31-42
31.11.5	Likelihood of the Effect Occurring.....	31-42

31.11.6	Contingency, Clean-up, and Restoration Methods	31-42
31.11.7	Assessment of Residual Effects and their Significance.....	31-42
31.11.8	Conclusion on the Potential Risk for Sediment Release into Watercourses or Marine Environment.....	31-43
31.12	Conclusions on Potential Risk from Accidents or Malfunctions.....	31-43
32.0	EFFECTS OF THE ENVIRONMENT ON THE PROJECT	32-1
32.1	Introduction.....	32-1
32.1.1	Identification of Effects of the Environment on the Project Scenarios	32-1
32.1.2	Assessment Methods.....	32-3
32.2	Contingency Planning.....	32-4
32.3	Land-based Climate Effects.....	32-4
32.3.1	Existing Climate Conditions	32-5
32.3.2	Description of the Potential Effect.....	32-5
32.3.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-7
32.3.4	Contingency, Clean-up, and Restoration Methods	32-7
32.3.5	Likelihood and Consequence of Potential Effects	32-8
32.3.6	Conclusions on Potential Risk of Climate Effects.....	32-8
32.4	Land-based Geophysical Hazards.....	32-9
32.4.1	Existing Land-based Geophysical Conditions	32-9
32.4.2	Description of the Potential Effect.....	32-9
32.4.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-10
32.4.4	Contingency, Clean-up, and Restoration Methods	32-10
32.4.5	Likelihood and Consequence of Potential Effects	32-11
32.4.6	Conclusions on Potential Risk of Land-based Geophysical Hazards	32-11
32.5	Forest Fire	32-11
32.5.1	Existing Conditions with Respect to Fire Potential	32-11
32.5.2	Description of the Potential Effect.....	32-12
32.5.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-13
32.5.4	Contingency, Clean-up, and Restoration Methods	32-13
32.5.5	Likelihood and Consequence of Potential Effects	32-14
32.5.6	Conclusions on Potential Risk of Forest Fire	32-14
32.6	Land-based Exterior Corrosion (Integrity)	32-14
32.6.1	Description of the Potential Effect.....	32-15
32.6.2	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-15
32.6.3	Contingency, Clean-up, and Restoration Methods	32-15

32.6.4	Likelihood and Consequence of Potential Effects	32-15
32.6.5	Conclusions on Potential Risk of Corrosion.....	32-16
32.7	Marine-based Climate Effects.....	32-16
32.7.1	Existing Marine Climate Conditions	32-16
32.7.2	Description of the Potential Effect.....	32-16
32.7.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-17
32.7.4	Contingency, Clean-up, and Restoration Methods	32-17
32.7.5	Likelihood and Consequence of Potential Effects	32-18
32.7.6	Conclusions on Potential Risk of Marine-based Climate Effects	32-18
32.8	Marine-based Geophysical Hazards	32-18
32.8.1	Existing Marine Geophysical Conditions	32-18
32.8.2	Description of the Potential Effect.....	32-18
32.8.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-19
32.8.4	Contingency, Clean-up, and Restoration Methods	32-19
32.8.5	Likelihood and Consequence of Potential Effects	32-19
32.8.6	Conclusions on Potential Risk of Marine-based Geophysical Hazards	32-19
32.9	Seabed Conditions	32-20
32.9.1	Existing Marine Seabed Conditions.....	32-20
32.9.2	Description of the Potential Effect.....	32-20
32.9.3	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-20
32.9.4	Contingency, Clean-up, and Restoration Methods	32-21
32.9.5	Likelihood and Consequence of Potential Effects	32-21
32.9.6	Conclusions on Potential Risk of Other Marine-based Geophysical Hazards	32-21
32.10	Marine-based Exterior Corrosion (Integrity)	32-21
32.10.1	Description of the Potential Effect.....	32-21
32.10.2	Project Design Measures to Reduce Likelihood of Occurrence and Consequences of Effect	32-22
32.10.3	Contingency, Clean-up, and Restoration Methods	32-22
32.10.4	Likelihood and Consequence of Potential Effects	32-22
32.10.5	Conclusions on Potential Risk of Marine-based Exterior Corrosion.....	32-22
32.11	Conclusions on Potential Risk	32-23
32.12	Figures.....	32-28

PART C – ABORIGINAL CONSULTATION

33.0	ABORIGINAL CONSULTATION	33-1
33.1	Introduction.....	33-1
33.1.1	Aboriginal Interests and Concerns Assessment Methods	33-8
33.1.2	Aboriginal Interests.....	33-9
33.1.3	Potential Effects on Aboriginal Interests	33-10
33.1.4	Spatial and Temporal Boundaries	33-13
33.1.5	Mitigation.....	33-13
33.1.6	Characterization of Residual Adverse Effects	33-13
33.1.7	Cumulative Effects.....	33-17
33.1.8	Follow-up and Monitoring.....	33-18
33.1.9	Aboriginal Concerns	33-18
33.2	Halfway River First Nation.....	33-21
33.2.1	Background	33-21
33.2.2	Results of Aboriginal Consultation Plan Implementation	33-23
33.2.3	Potential Adverse Effects on Interests	33-33
33.2.4	Disruption of Hunting	33-34
33.2.5	Disruption of Trapping	33-39
33.2.6	Disruption of Fishing	33-44
33.2.7	Disruption of Plant Gathering	33-49
33.2.8	Disruption or Reduced Use of Trails and Travelways.....	33-55
33.2.9	Disruption or Reduced Use of Habitation Areas	33-60
33.2.10	Disturbance or Reduced Use of Gathering Areas	33-64
33.2.11	Disturbance or Reduced Use of Sacred Areas	33-68
33.2.12	Disruption of Cultural Transmission	33-72
33.2.13	Disruption of Governance.....	33-75
33.2.14	Characterization of Residual Adverse Effects	33-75
33.2.15	Cumulative Effects.....	33-78
33.2.16	Follow-up and Monitoring.....	33-84
33.2.17	Concerns of Halfway River First Nation	33-84
33.3	McLeod Lake Indian Band	33-99
33.3.1	Background	33-99
33.3.2	Results of Aboriginal Consultation Plan Implementation	33-101
33.3.3	Potential Adverse Effects on Interests	33-110
33.3.4	Disruption of Hunting	33-110
33.3.5	Disruption of Trapping	33-115
33.3.6	Disruption of Fishing	33-119
33.3.7	Disruption of Plant Gathering	33-124
33.3.8	Disruption or Reduced Use of Trails and Travelways.....	33-128
33.3.9	Disruption or Reduced Use of Habitation Areas	33-128
33.3.10	Disturbance or Reduced Use of Gathering Areas	33-132
33.3.11	Disturbance or Reduced Use of Sacred Areas	33-136

33.3.12	Disruption of Cultural Transmission	33-140
33.3.13	Disruption of Governance.....	33-140
33.3.14	Characterization of Residual Adverse Effects	33-140
33.3.15	Cumulative Effects.....	33-142
33.3.16	Follow-up and Monitoring.....	33-147
33.3.17	Concerns of McLeod Lake Indian Band	33-147
33.4	Saulteau First Nations	33-157
33.4.1	Background	33-157
33.4.2	Results of Aboriginal Consultation Plan Implementation	33-159
33.4.3	Potential Adverse Effects on Interests	33-168
33.4.4	Disruption of Hunting	33-169
33.4.5	Disruption of Trapping	33-176
33.4.6	Disruption of Fishing	33-182
33.4.7	Disruption of Plant Gathering	33-188
33.4.8	Disruption or Reduced Use of Trails and Travelways	33-194
33.4.9	Disruption or Reduced Use of Habitation Areas	33-199
33.4.10	Disturbance or Reduced Use of Gathering Areas	33-205
33.4.11	Disturbance or Reduced Use of Sacred Areas	33-210
33.4.12	Disruption of Cultural Transmission	33-216
33.4.13	Disruption of Governance	33-220
33.4.14	Characterization of Residual Adverse Effects	33-220
33.4.15	Cumulative Effects.....	33-222
33.4.16	Concerns of Saulteau First Nations.....	33-229
33.5	West Moberly First Nations.....	33-243
33.5.1	Background	33-243
33.5.2	Results of Aboriginal Consultation Plan Implementation	33-245
33.5.3	Potential Adverse Effects on Interests	33-255
33.5.4	Disruption of Hunting	33-256
33.5.5	Disruption of Trapping	33-263
33.5.6	Disruption of Fishing	33-268
33.5.7	Disruption of Plant Gathering	33-274
33.5.8	Disruption or Reduced Use of Trails and Travelways	33-279
33.5.9	Disruption or Reduced Use of Habitation Areas	33-283
33.5.10	Disturbance or Reduced Use of Gathering Areas	33-288
33.5.11	Disturbance or Reduced Use of Sacred Areas	33-293
33.5.12	Disruption of Cultural Transmission	33-299
33.5.13	Disruption of Governance	33-302
33.5.14	Characterization of Residual Adverse Effects	33-302
33.5.15	Cumulative Effects.....	33-304
33.5.16	Follow up and Monitoring	33-311
33.5.17	Concerns of West Moberly First Nations	33-311

33.6	Lake Babine Nation	33-331
33.6.1	Background	33-331
33.6.2	Results of Aboriginal Consultation Plan Implementation	33-334
33.6.3	Potential Adverse Effects on Interests	33-345
33.6.4	Disruption of Hunting	33-346
33.6.5	Disruption of Trapping	33-350
33.6.6	Disruption of Fishing	33-354
33.6.7	Disruption of Plant Gathering	33-360
33.6.8	Disruption or Reduced Use of Trails and Travelways	33-365
33.6.9	Disruption or Reduced Use of Habitation Areas	33-369
33.6.10	Disturbance or Reduced Use of Gathering Areas	33-369
33.6.11	Disturbance or Reduced Use of Sacred Areas	33-369
33.6.12	Disruption of Cultural Transmission	33-373
33.6.13	Disruption of Governance Interests	33-375
33.6.14	Characterization of Residual Adverse Effects	33-375
33.6.15	Cumulative Effects.....	33-377
33.6.16	Follow-up and Monitoring.....	33-382
33.6.17	Concerns of Lake Babine Nation.....	33-382
33.7	Nak'azdli Band	33-394
33.7.1	Background	33-394
33.7.2	Results of Aboriginal Consultation Plan Implementation	33-396
33.7.3	Potential Adverse Effects on Interests	33-407
33.7.4	Disruption of Hunting	33-407
33.7.5	Disruption of Trapping	33-413
33.7.6	Disruption of Fishing	33-418
33.7.7	Disruption of Plant Gathering	33-425
33.7.8	Disruption or Reduced Use of Trails and Travelways	33-431
33.7.9	Disruption or Reduced Use of Habitation Areas	33-435
33.7.10	Disturbance or Reduced Use of Gathering Areas	33-440
33.7.11	Disturbance or Reduced Use of Sacred Areas	33-440
33.7.12	Disruption of Cultural Transmission	33-446
33.7.13	Disruption of Governance	33-446
33.7.14	Characterization of Residual Adverse Effects	33-446
33.7.15	Cumulative Effects.....	33-448
33.7.16	Follow-up and Monitoring.....	33-453
33.7.17	Concerns of Nak'azdli Band	33-453
33.8	Takla Lake First Nation	33-461
33.8.1	Background	33-461
33.8.2	Results of Aboriginal Consultation Plan Implementation	33-463
33.8.3	Potential Adverse Effects on Interests	33-474
33.8.4	Disruption of Hunting	33-475
33.8.5	Disruption of Trapping	33-480
33.8.6	Disruption of Fishing	33-485

33.8.7	Disruption of Plant Gathering	33-492
33.8.8	Disruption or Reduced Use of Trails and Travelways	33-498
33.8.9	Disruption or Reduced Use of Habitation Areas	33-502
33.8.10	Disturbance or Reduced Use of Gathering Areas	33-506
33.8.11	Disturbance or Reduced Use of Sacred Areas	33-506
33.8.12	Disruption of Cultural Transmission	33-511
33.8.13	Disruption of Governance	33-514
33.8.14	Characterization of Residual Adverse Effects	33-514
33.8.15	Cumulative Effects	33-516
33.8.16	Follow-up and Monitoring	33-521
33.8.17	Concerns of Takla Lake First Nation	33-521
33.9	Tl'azt'en Nation	33-537
33.9.1	Background	33-537
33.9.2	Results of Aboriginal Consultation Plan Implementation	33-539
33.9.3	Potential Adverse Effects on Interests	33-553
33.9.4	Disruption of Hunting	33-554
33.9.5	Disruption of Trapping	33-561
33.9.6	Disruption of Fishing	33-566
33.9.7	Disruption of Plant Gathering	33-573
33.9.8	Disruption or Reduced Use of Trails and Travelways	33-579
33.9.9	Disruption or Reduced Use of Habitation Areas	33-583
33.9.10	Disturbance or Reduced Use of Gathering Areas	33-583
33.9.11	Disturbance or Reduced Use of Sacred Areas	33-583
33.9.12	Disruption of Cultural Transmission	33-587
33.9.13	Disruption of Governance	33-589
33.9.14	Characterization of Residual Adverse Effects	33-589
33.9.15	Cumulative Effects	33-591
33.9.16	Follow-up and Monitoring	33-596
33.9.17	Concerns of Tl'azt'en Nation	33-596
33.10	Gitxsan	33-609
33.10.1	Background	33-609
33.10.2	Results of Aboriginal Consultation Plan Implementation	33-612
33.10.3	Potential Adverse Effects on Interests	33-625
33.10.4	Disruption of Hunting	33-625
33.10.5	Disruption of Trapping	33-633
33.10.6	Disruption of Fishing	33-638
33.10.7	Disruption of Plant Gathering	33-644
33.10.8	Disruption or Reduced Use of Trails and Travelways	33-649
33.10.9	Disruption or Reduced Use of Habitation Areas	33-653
33.10.10	Disturbance or Reduced Use of Gathering Areas	33-658
33.10.11	Disturbance or Reduced Use of Sacred Areas	33-662
33.10.12	Disruption of Cultural Transmission	33-667
33.10.13	Disruption of Governance	33-667

33.10.14	Characterization of Residual Adverse Effects	33-667
33.10.15	Cumulative Effects.....	33-669
33.10.16	Follow-up and Monitoring.....	33-674
33.10.17	Concerns of Gitxsan.....	33-675
33.11	Gitanyow	33-691
33.11.1	Background	33-691
33.11.2	Results of Aboriginal Consultation Plan Implementation	33-694
33.11.3	Potential Adverse Effects on Interests	33-707
33.11.4	Disruption of Hunting	33-707
33.11.5	Disruption of Trapping	33-713
33.11.6	Disruption of Fishing	33-718
33.11.7	Disruption of Plant Gathering.....	33-724
33.11.8	Disruption or Reduced Use of Trails and Travelways.....	33-729
33.11.9	Disruption or Reduced Use of Habitation Areas	33-729
33.11.10	Disturbance or Reduced Use of Gathering Areas	33-733
33.11.11	Disturbance or Reduced Use of Sacred Areas	33-733
33.11.12	Disruption of Cultural Transmission	33-737
33.11.13	Disruption of Governance.....	33-737
33.11.14	Characterization of Residual Adverse Effects	33-739
33.11.15	Cumulative Effects.....	33-741
33.11.16	Follow-up and Monitoring.....	33-747
33.11.17	Concerns of Gitanyow	33-747
33.12	Lax Kw'alaams Band.....	33-759
33.12.1	Background	33-759
33.12.2	Results of Aboriginal Consultation Plan Implementation	33-761
33.12.3	Potential Adverse Effects on Interests	33-772
33.12.4	Disruption of Hunting	33-773
33.12.5	Disruption of Trapping	33-779
33.12.6	Disruption of Fishing	33-785
33.12.7	Disruption of Plant Gathering.....	33-794
33.12.8	Disruption or Reduced Use of Trails and Travelways.....	33-800
33.12.9	Disruption or Reduced Use of Habitation Area, Gathering Area and Sacred Areas Interests	33-806
33.12.10	Disruption of Cultural Transmission	33-814
33.12.11	Disruption of Governance.....	33-814
33.12.12	Characterization of Residual Adverse Effects	33-814
33.12.13	Cumulative Effects.....	33-816
33.12.14	Follow-up and Monitoring.....	33-822
33.12.15	Concerns of Lax Kw'alaams Band	33-822
33.13	Metlakatla First Nation	33-839
33.13.1	Background	33-839
33.13.2	Results of Aboriginal Consultation Plan Implementation	33-843
33.13.3	Potential Adverse Effects on Interests	33-857

33.13.4	Disruption of Hunting	33-858
33.13.5	Disruption of Trapping	33-864
33.13.6	Disruption of Fishing	33-869
33.13.7	Disruption of Plant Gathering	33-878
33.13.8	Disruption or Reduced Use of Trails and Travelways	33-885
33.13.9	Disruption or Reduced Use of Habitation Areas Interests	33-891
33.13.10	Disturbance or Reduced Use of Gathering Areas Interests ...	33-897
33.13.11	Disturbance or Reduced Use of Sacred Areas	33-897
33.13.12	Disruption of Cultural Transmission	33-903
33.13.13	Disruption of Governance	33-905
33.13.14	Characterization of Residual Adverse Effects	33-905
33.13.15	Cumulative Effects	33-907
33.13.16	Follow up and Monitoring	33-913
33.13.17	Concerns of Metlakatla First Nation	33-914
33.14	Gitxaala Nation	33-925
33.14.1	Background	33-925
33.14.2	Results of Aboriginal Consultation Plan Implementation	33-927
33.14.3	Potential Adverse Effects on Interests	33-938
33.14.4	Disruption of Hunting	33-938
33.14.5	Disruption of Trapping	33-943
33.14.6	Disruption of Fishing	33-948
33.14.7	Disruption of Plant Gathering	33-954
33.14.8	Disruption or Reduced Use of Trails and Travelways	33-960
33.14.9	Disruption or Reduced Use of Habitation Areas	33-966
33.14.10	Disturbance or Reduced Use of Gathering Areas and Sacred Areas	33-967
33.14.11	Disruption of Cultural Transmission	33-973
33.14.12	Disruption of Governance	33-975
33.14.13	Characterization of Residual Adverse Effects	33-977
33.14.14	Cumulative Effects	33-979
33.14.15	Follow-up and Monitoring	33-985
33.14.16	Concerns of Gitxaala Nation	33-985
33.15	Yekooche First Nation	33-995
33.15.1	Background	33-995
33.15.2	Results of Aboriginal Consultation Plan Implementation	33-996
33.15.3	Potential Adverse Effects on Interests	33-1005
33.15.4	Disruption of Hunting	33-1006
33.15.5	Disruption of Trapping	33-1011
33.15.6	Disruption of Fishing	33-1016
33.15.7	Disruption of Plant Gathering	33-1022
33.15.8	Disruption or Reduced Use of Trails and Travelways	33-1030
33.15.9	Disruption or Reduced Use of Habitation Areas	33-1034
33.15.10	Disturbance or Reduced Use of Gathering Areas	33-1038
33.15.11	Disturbance or Reduced Use of Sacred Areas	33-1042

33.15.12	Disruption of Cultural Transmission	33-1046
33.15.13	Disruption of Governance.....	33-1048
33.15.14	Characterization of Residual Adverse Effects	33-1049
33.15.15	Cumulative Effects.....	33-1051
33.15.16	Follow-up and Monitoring.....	33-1055
33.15.17	Concerns of Yekooche First Nation.....	33-1056
33.16	Kitselas Band	33-1067
33.16.1	Background	33-1067
33.16.2	Results of Aboriginal Consultation Plan Implementation ...	33-1069
33.16.3	Potential Adverse Effects on Interests	33-1077
33.16.4	Disruption of Hunting.....	33-1077
33.16.5	Disruption of Trapping	33-1082
33.16.6	Disruption of Fishing.....	33-1087
33.16.7	Disruption of Plant Gathering.....	33-1093
33.16.8	Disruption or Reduced Use of Trails and Travelways.....	33-1099
33.16.9	Disruption or Reduced Use of Habitation Areas	33-1099
33.16.10	Disturbance or Reduced Use of Gathering Areas and Sacred Areas	33-1099
33.16.11	Disruption of Cultural Transmission	33-1099
33.16.12	Disruption of Governance.....	33-1099
33.16.13	Characterization of Residual Adverse Effects	33-1099
33.16.14	Cumulative Effects.....	33-1102
33.16.15	Follow-up and Monitoring.....	33-1108
33.16.16	Concerns of Kitselas Band.....	33-1108
33.17	Kitsumkalum Indian Band	33-1115
33.17.1	Background	33-1115
33.17.2	Results of Aboriginal Consultation Plan Implementation ...	33-1117
33.17.3	Potential Adverse Effects on Interests	33-1128
33.17.4	Disruption of Hunting.....	33-1128
33.17.5	Disruption of Trapping Interests.....	33-1135
33.17.6	Disruption of Fishing.....	33-1139
33.17.7	Disruption of Plant Gathering.....	33-1146
33.17.8	Disruption or Reduced Use of Trails and Travelways Interests	33-1153
33.17.9	Disturbance or Reduced Use of Habitation Areas, Gathering Areas, and Sacred Areas Interests.....	33-1159
33.17.10	Disruption of Cultural Transmission Interests.....	33-1166
33.17.11	Disruption of Governance Interests	33-1166
33.17.12	Characterization of Residual Adverse Effects	33-1166
33.17.13	Cumulative Effects.....	33-1168
33.17.14	Follow-up and Monitoring.....	33-1173
33.17.15	Concerns of Kitsumkalum Indian Band.....	33-1174

33.18	Blueberry River First Nations.....	33-1187
33.18.1	Background.....	33-1187
33.18.2	Land Use and Practices.....	33-1188
33.18.3	Consultation Activities.....	33-1189
33.19	Doig River First Nation	33-1193
33.19.1	Background.....	33-1193
33.19.2	Land Use and Practices.....	33-1194
33.19.3	Consultation Activities.....	33-1195
33.20	Fort Nelson First Nation	33-1197
33.20.1	Background.....	33-1197
33.20.2	Land Use and Practices.....	33-1197
33.20.3	Consultation Activities.....	33-1198
33.21	Prophet River First Nation.....	33-1201
33.21.1	Background.....	33-1201
33.21.2	Land Use and Practices.....	33-1201
33.21.3	Consultation Activities.....	33-1202
33.22	Treaty 8 Tribal Association	33-1203
33.22.1	Background.....	33-1203
33.22.2	Land Use and Practices.....	33-1203
33.22.3	Consultation Activities.....	33-1204
33.23	Carrier Sekani Tribal Council.....	33-1205
33.23.1	Background.....	33-1205
33.23.2	Land Use and Practices.....	33-1206
33.23.3	Consultation Activities.....	33-1206
33.24	Office of the Wet'suwet'en.....	33-1207
33.24.1	Background.....	33-1207
33.24.2	Land Use and Practices.....	33-1208
33.24.3	Consultation Activities.....	33-1210
33.25	Tsay Keh Dene First Nation	33-1211
33.25.1	Background.....	33-1211
33.25.2	Land Use and Practices.....	33-1211
33.25.3	Consultation Activities.....	33-1212
33.26	Métis	33-1213
33.26.1	Background.....	33-1213
33.26.2	Land Use and Practices.....	33-1214
33.26.3	Engagement Activities.....	33-1215
33.27	Aboriginal Interests, Concerns and Mitigation Summary Table	33-1217
33.27.1	Figures.....	33-1224

34.0	NISGA'A NATION	34-1
34.1	Background Information	34-1
34.1.1	Nisga'a Final Agreement	34-1
34.1.2	Nisga'a Nation	34-4
34.1.3	Project Infrastructure Location Relative to Nisga'a Nation	34-9
34.2	Consultation with Nisga'a	34-11
34.2.1	Executive Summary	34-11
34.2.2	Introduction	34-11
34.2.3	Objectives of PRGT's Consultation Program with Nisga'a Nation	34-12
34.2.4	Summary of Past Consultation Activities	34-12
34.2.5	Nisga'a Nation Consultation – Next Steps	34-23
34.2.6	Summary of Key Issues and Responses Raised during Pre-Application Consultation	34-24
34.2.7	Chronology of Key Nisga'a Pre-Application Consultation Activities	34-31
34.3	Environmental Setting for the Project	34-37
34.3.1	Introduction	34-37
34.3.2	Physical Features	34-37
34.3.3	Climate	34-38
34.3.4	Terrestrial Resources	34-39
34.3.5	Aquatic Resources	34-40
34.4	Methods for the Environmental Effects Assessment	34-41
34.4.1	Introduction	34-41
34.4.2	Establishing the Scope of the Assessment	34-41
34.4.3	Describing the Existing Conditions for each Nisga'a Interest	34-47
34.4.4	Project Interactions with Nisga'a Interests	34-48
34.4.5	Assessment of Effects on Nisga'a Interests	34-49
34.4.6	Assessing Potential Cumulative Effects for each Nisga'a Interest	34-50
34.4.7	Follow-up Measures	34-53
34.4.8	NLG Feedback on Nisga'a Interests	34-53
34.5	Effects on Nisga'a Land Interests	34-55
34.5.1	Introduction	34-55
34.5.2	Establishing the Scope of the Assessment for Land Interests	34-55
34.5.3	Existing Conditions for Nisga'a Lands and Nisga'a Fee Simple Lands	34-60
34.5.4	Project Interactions with Nisga'a Lands and Category B Lands	34-62

34.5.5	Assessment of Residual Effects on Nisga’a Lands and on Nisga’a Fee Simple Lands	34-67
34.5.6	Cumulative Effects on Nisga’a Lands and Category B Lands	34-74
34.5.7	Follow-up Measures.....	34-77
34.5.8	NLG Feedback on Nisga’a Interests Regarding Nisga’a Lands and Nisga’a Category B Lands	34-78
34.6	Effects on Other Nisga’a Land-Related Interests	34-81
34.6.1	Introduction.....	34-81
34.6.2	Establishing the Scope of the Assessment	34-83
34.6.3	Existing Conditions for Other Nisga’a Land-Related Interests	34-87
34.6.4	Project Interactions with Other Nisga’a Land-related Interests	34-96
34.6.5	Assessment of Residual Effects on Other Nisga’a Land Related Interests.....	34-107
34.6.6	Summary of Residual Effects on Other Nisga’a Land-related Interests	34-119
34.6.7	Cumulative Effects on Other Nisga’a Land-related Interests	34-124
34.6.8	Follow-up Measures.....	34-128
34.6.9	NLG Feedback from Nisga’a Regarding Other Land-Related Interests.....	34-128
34.7	Effects on Nisga’a Access to Other Lands	34-131
34.7.1	Introduction.....	34-131
34.7.2	Establishing the Scope of the Assessment	34-131
34.7.3	Existing Conditions for Nisga’a Access to Other Lands	34-135
34.7.4	Project Interactions with Nisga’a Interests related to Nisga’a Access to Other Lands.....	34-137
34.7.5	Assessment of Residual Effects on the Ability of Nisga’a Representatives to Access Non-Nisga’a Lands and of Nisga’a Citizens to Access Crown Lands.....	34-139
34.7.6	Cumulative Effects on Nisga’a Access to Other Lands.....	34-141
34.7.7	Follow-up Measures.....	34-142
34.7.8	NLG Feedback on Nisga’a Interests Regarding Access to Other Lands.....	34-142
34.8	Effects on Nisga’a Nation Interests in Freshwater Fish and Aquatic Plants.....	34-143
34.8.1	Introduction.....	34-143
34.8.2	Establishing the Scope of the Assessment	34-143
34.8.3	Existing Conditions for Freshwater Fish and Aquatic Plants.....	34-157

34.8.4	Project Interactions with Nisga'a Interest in Freshwater Fish and Aquatic Plants	34-172
34.8.5	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Exercise Their Right to Harvest Salmon Species	34-175
34.8.6	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Exercise their Right to Harvest Oolichan	34-187
34.8.7	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Exercise Their Right to Harvest Nass Steelhead	34-189
34.8.8	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Exercise Their Right to Harvest Non-salmon Species (Dolly Varden, Bull Trout, Rainbow Trout, and Pacific Lamprey).....	34-193
34.8.9	Summary of Residual Effects on the Right of Nisga'a Citizens to Harvest Freshwater Fish (Nass Salmon, Nass Steelhead, Oolichan, and Non-salmon Species)	34-197
34.8.10	Cumulative Effects on the Right of Nisga'a Citizens to Harvest Freshwater Fish (Nass Salmon, Nass Steelhead, Oolichan, and Non-salmon Species) and Aquatic Plants.....	34-201
34.8.11	Follow-up Measures.....	34-203
34.8.12	NLG feedback on the Right of Nisga'a Citizens to Harvest Freshwater Fish (Nass Salmon, Nass Steelhead, Oolichan, and Non-salmon Species) and Aquatic Plants.....	34-204
34.9	Effects on Nisga'a Nation Interests in Marine Fish and Aquatic Plants.....	34-207
34.9.1	Introduction.....	34-207
34.9.2	Establishing the Scope of the Assessment	34-207
34.9.3	Existing Conditions for Marine Fish and Aquatic Plants	34-215
34.9.4	Project Interactions with the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants.....	34-225
34.9.5	Assessment of Residual Effects on the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants.....	34-230
34.9.6	Cumulative Effects on the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants.....	34-261
34.9.7	Follow-up Measures.....	34-267
34.9.8	NLG Feedback on Nisga'a Interests Regarding the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants	34-267
34.10	Effects on the Right of Nisga'a Citizens to Harvest Wildlife.....	34-270
34.10.1	Introduction.....	34-270
34.10.2	Establishing the Scope of the Assessment Regarding the Right of Nisga'a Citizens to Harvest Wildlife.....	34-271

34.10.3	Existing Conditions Regarding the Ability of Nisga'a Citizens to Harvest Wildlife.....	34-279
34.10.4	Project Interactions with Nisga'a Interests Regarding the Ability of Nisga'a Citizens to Harvest Wildlife	34-284
34.10.5	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Harvest Wildlife.....	34-288
34.10.6	Mitigation.....	34-297
34.10.7	Cumulative Effects on the Ability of Nisga'a Citizens to Harvest Wildlife.....	34-313
34.10.8	Follow-up Measures.....	34-320
34.10.9	NLG Feedback on Potential Project Effects on the Ability of Nisga'a Citizens to Harvest Wildlife.....	34-321
34.11	Effects on Nisga'a Interests regarding the Right of Nisga'a Citizens to Harvest Migratory Birds	34-323
34.11.1	Introduction.....	34-323
34.11.2	Establishing the Scope of the Assessment.....	34-324
34.11.3	Existing Conditions Related to Harvest of Migratory Birds	34-331
34.11.4	Project Interactions with Nisga'a Interests Regarding the Right to Harvest Migratory Birds	34-338
34.11.5	Assessment of Residual Effects on the Ability of Nisga'a Citizens to Exercise Their Right to Harvest Migratory Birds.....	34-340
34.11.6	Cumulative Effects on Ability of Nisga'a to Exercise Their Right to Harvest Migratory Birds.....	34-354
34.11.7	Follow-up Measures.....	34-359
34.11.8	NLG Feedback Regarding Assessment of the Ability of Nisga'a Citizens to Exercise Their Right to Harvest Migratory Birds.....	34-359
34.12	Effects on The Nisga'a InterestS Regarding the Harvest of Non-Timber Forest Resources	34-361
34.12.1	Introduction.....	34-361
34.12.2	Establishing the Scope of the Assessment for Nisga'a Interests Regarding the Harvest of Non-Timber Forest Resources	34-362
34.12.3	Existing Conditions for Nisga'a Interests Regarding Harvest of Non-Timber Forest Resources	34-369
34.12.4	Project Interactions with Nisga'a Interests Regarding the Harvest of Non-Timber Forest Resources	34-372
34.12.5	Assessment of Residual Effects on Nisga'a Interests Related to the Harvest of Non-Timber Forest Resources	34-375
34.12.6	Cumulative Effects on Nisga'a Interest Related to the Harvest of Non-Timber Forest Resources.	34-387

34.12.7	Follow-up Measures.....	34-393
34.12.8	NLG Feedback on Nisga’a Interests Regarding the Harvest of Non-Timber Forest Resources	34-393
34.13	Existing and Future Economic, Social, and Cultural Well-being of Nisga’a Citizens Assessment (Pursuant to Paragraph 8(f) of Chapter 10 of the NFA)	34-395
34.13.1	Introduction.....	34-395
34.13.2	Scope of the Assessment of Potential Project Effects on Nisga’a Interests Pursuant to Chapter 10, Paragraph 8(f) of the NFA.....	34-396
34.13.3	Describing the Existing Conditions for each Nisga’a Interest.....	34-400
34.13.4	Project Interactions with Nisga’a Interests	34-401
34.13.5	Assessment of Residual Effects for each Nisga’a Interest.....	34-401
34.13.6	Cumulative Effects Assessment Methods.....	34-401
34.14	Effects on Nisga’a Economic well-being	34-405
34.14.1	Introduction.....	34-405
34.14.2	Scope of the Assessment for Nisga’a Economic Interests.....	34-406
34.14.3	Existing Conditions for Nisga’a Economic Interests.....	34-412
34.14.4	Project Interactions with Nisga’a Economic Interests	34-423
34.14.5	Methods for Assessment of Residual Effects	34-427
34.14.6	Assessment of Residual Effects on Nisga’a Citizens’ Employment and Income	34-428
34.14.7	Assessment of Residual Effects on Nisga’a Citizens’ Business Activities.....	34-434
34.14.8	Assessment of Residual Effects on Natural Resource Activities and Related Earnings or Values	34-441
34.14.9	Assessment of Nisga’a Lisims Government Expenditures	34-450
34.14.10	Confidence	34-452
34.14.11	Summary of Project Residual Effects on Nisga’a Economic Interests.....	34-452
34.14.12	Cumulative Effects on Nisga’a Economic Interests	34-456
34.14.13	Confidence and Risk.....	34-465
34.14.14	Follow-Up Measures.....	34-465
34.15	Effects on Nisga’a Social Well-being.....	34-467
34.15.1	Introduction.....	34-467
34.15.2	Scope of the Assessment for Nisga’a Social Well-Being	34-468
34.15.3	Existing Conditions for Nisga’a Social Interests	34-472
34.15.4	Project Interactions with Nisga’a Social Interests	34-483
34.15.5	Methods for Assessment of Residual Effects	34-490
34.15.6	Assessment of Residual Effects on Migration and Population in Nisga’a Nation Communities	34-492

34.15.7	Assessment of Residual Effects on Infrastructure and Services in Nisga’a Nation Communities	34-495
34.15.8	Assessment of Residual Effects on Occupational and Non-Occupational Health Risks	34-500
34.15.9	Assessment of Residual Effects on Occupational and Non-Occupational Accident Risks.....	34-506
34.15.10	Assessment of Residual Effects on Crime	34-510
34.15.11	Assessment of Residual Effects on Family and Community Well-being.....	34-513
34.15.12	Summary of Residual Effects on Nisga’a Social Well-Being	34-517
34.15.13	Cumulative Effects on Nisga’a Social Well-Being	34-521
34.15.14	Follow-Up Measures.....	34-532
34.16	Effects on Nisga’a Cultural Well-Being	34-533
34.16.1	Introduction.....	34-533
34.16.2	Scope of the Assessment for Nisga’a Cultural Well-Being...	34-533
34.16.3	Existing Conditions for Cultural Interests	34-537
34.16.4	Project Interactions with Nisga’a Cultural Interests	34-546
34.16.5	Methods for Assessment of Residual Effects	34-550
34.16.6	Assessment of Effects of Environmental Impacts on the Cultural Activities and Practices of Nisga’a Citizens.....	34-551
34.16.7	Assessment of Residual Effects of Changing Work Patterns and Income on Nisga’a Cultural Activities and Practices	34-561
34.16.8	Summary of Residual Effects on Nisga’a Cultural Interests	34-565
34.16.9	Cumulative Effects on Nisga’a 8(f) Cultural Interests	34-568
34.16.10	Follow-Up Measures.....	34-577
34.17	Conclusion	34-579
34.17.1	Figures.....	34-588

PART D – PUBLIC CONSULTATION

35.0	PUBLIC CONSULTATION.....	35-1
35.1	Summary	35-1
35.1.1	Identification of Public Stakeholders.....	35-2
35.1.2	Local Government Stakeholders.....	35-3
35.1.3	Profiles of Regional Districts and Large Population Centres	35-6
35.1.4	Public Consultation Activities	35-7
35.1.5	Consultation Tools and Approaches	35-12
35.1.6	Summary of Changes to the Consultation Plan as a Result of Public Input.....	35-13

35.2	Summary Table.....	35-14
35.3	Conclusion	35-20
35.4	Figures.....	35-20

PART E – ENVIRONMENTAL MANAGEMENT PLANS AND FOLLOW-UP PROGRAMS

36.0	SUMMARY OF PROPOSED ENVIRONMENTAL AND OPERATIONAL MANAGEMENT PLANS	36-1
36.1	Project-Specific Environmental management Plan	36-1
36.2	Management and Construction Monitoring Plans	36-2
36.2.1	Traffic Management Plan	36-3
36.2.2	Access Management Plan	36-3
36.2.3	Marine Access/Traffic Management Plan	36-5
36.2.4	Nisga’a Access Management Plan.....	36-6
36.2.5	Caribou Habitat Restoration Plan	36-6
36.2.6	Mountain Goat Helicopter Management Plan	36-6
36.2.7	Bird Nest Mitigation and Management Plan	36-7
36.2.8	Metal Leaching and Acid Rock Management Plan	36-7
36.2.9	Chemical and Waste Management Plan	36-8
36.2.10	Invasive Plant Species Management Plan.....	36-8
36.2.11	Soil Handling/Conservation Management Plan.....	36-9
36.2.12	Erosion and Sedimentation Control Management Plan.....	36-9
36.2.13	Watercourse Monitoring Plan	36-10
36.2.14	Sediment and Related Water Quality Monitoring Plan	36-10
36.2.15	Greenhouse Gas Management Plan	36-10
36.2.16	Heritage Resources Management Plan	36-10
36.3	Contingency Plans	36-11
36.3.1	Emergency Response Plan.....	36-11
36.3.2	Spill Contingency Plan	36-15
36.3.3	Flood and Excessive Flow Contingency Plan.....	36-16
36.3.4	Fire Suppression Contingency Plan	36-16
36.3.5	Adverse Weather Contingency Plan	36-16
36.3.6	Wet Soils Contingency Plan	36-17
36.3.7	Soil Handling Contingency Plan.....	36-17
36.3.8	Soil Erosion Contingency Plan	36-17
36.3.9	Permafrost Contingency Plan	36-18
36.3.10	Directional Drilling Procedures and Instream Drilling Mud Release Contingency Plan.....	36-18

36.4	Unanticipated Discovery Plans	36-19
36.4.1	Plant Species and Ecological Communities of Concern Discovery Contingency Plan.....	36-19
36.4.2	Wildlife Species of Concern Discovery Contingency Plan	36-19
36.4.3	Heritage or Palaeontological Resource Discovery Contingency Plan	36-19
36.4.4	Traditional Land Use Sites Discovery Contingency Plan.....	36-19
36.5	CONCEPTUAL DECOMMISSIONING PLAN.....	36-20
37.0	FOLLOW-UP AND MONITORING PROGRAMS	37-1
37.1	Introduction.....	37-1
37.2	Reporting Structure.....	37-5
 PART F – CONCLUSIONS		
38.0	CONCLUSIONS	38-1
38.1	Environment.....	38-1
38.2	Economic	38-2
38.3	Social.....	38-2
38.4	Heritage.....	38-2
38.5	Health.....	38-3
38.6	Cumulative Effects.....	38-3
38.7	Accidents or Malfunctions.....	38-3
38.8	Effects of the Environment on the Project.....	38-3
38.9	Consultation Activities.....	38-4
38.10	Consultation with Aboriginal Groups	38-4
38.11	Effects on Aboriginal Interests	38-4
38.12	Nisga’a Nation	38-4
38.13	Summary of Project Design Elements	38-5
38.13.1	Project Components	38-7
38.14	Amendment Process.....	38-9
38.15	Summary of Residual Effects	38-10
38.16	Summary of Mitigation Measures	38-59
38.17	Figures.....	38-141

39.0	REFERENCES	39-1
1.0	Project Overview	39-1
2.0	Environmental Assessment Process.....	39-1
3.0	Assessment Methods.....	39-2
4.0	Environmental Background	39-2
5.0	Air Quality	39-4
6.0	Greenhouse Gases	39-6
7.0	Acoustic Environment	39-8
8.0	Water Quality.....	39-9
9.0	Hydrology	39-11
10.0	Freshwater Aquatic Resources.....	39-12
11.0	Marine Resources.....	39-16
12.0	Soil	39-28
13.0	Vegetation and Wetland Resources	39-29
14.0	Wildlife and Wildlife Habitat	39-33
16.0	Economic Background.....	39-53
17.0	Employment.....	39-54
19.0	Social Background.....	39-56
20.0	Community Infrastructure and Services	39-61
21.0	Transportation	39-69
22.0	Visual Quality	39-71
23.0	Land and Resource Use	39-73
26.0	Heritage and Archaeological Resources	39-89
29.0	Human Health	39-99
31.0	Accidents and Malfunctions	39-101
32.0	Effects of the Environment on the Project.....	39-105
33.0	Aboriginal Consultation.....	39-107
38.0	Conclusions.....	39-180

LIST OF FIGURES

Figure 1-1: Project Location	1-97
Figure 1-2: Marine Route Alternatives	1-98
Figure 1-3: Access Roads and Ancillary Sites.....	1-99
Figure 1-3a: Access Roads and Ancillary Sites Mapbook.....	1-100
Figure 1-3b: Access Roads and Ancillary Sites Mapbook	1-101
Figure 1-3c: Access Roads and Ancillary Sites Mapbook.....	1-101
Figure 1-3d: Access Roads and Ancillary Sites Mapbook	1-103
Figure 1-3e: Access Roads and Ancillary Sites Mapbook.....	1-104
Figure 1-3f: Access Roads and Ancillary Sites Mapbook	1-105
Figure 1-3g: Access Roads and Ancillary Sites Mapbook	1-106
Figure 1-4: Corridor and Right-of-way Widths	1-107
Figure 1-5: Typical ROW Plan and Profile	1-108
Figure 1-6: Conceptual Layout for Compressor Station.....	1-109
Figure 1-7: Conceptual Layout for Metering Station	1-110
Figure 1-8: Typical Watercourse Crossing Methods – Open-Cut	1-111
Figure 1-9: Typical Watercourse Crossing Methods – HDD	1-112
Figure 1-10: Typical Watercourse Crossing Methods – Dam and Pump	1-113
Figure 1-11: Aboriginal and Non-Aboriginal Communities near the Project - Index	1-114
Figure 1-12: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 1 of 8	1-115
Figure 1-13: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 2 of 8	1-116
Figure 1-14: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 3 of 8	1-117
Figure 1-15: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 4 of 8	1-118
Figure 1-16: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 5 of 8	1-119
Figure 1-17: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 6 of 8	1-120
Figure 1-18: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 7 of 8	1-121
Figure 1-19: Aboriginal and Non-Aboriginal Communities near the Project – Sheet 8 of 8	1-122
Figure 1-20: Alternative Pipeline Routes	1-123
Figure 5-1: Assessment Areas for Air Quality	5-45

Figure 5-2: Regional Emission Sources for the Johnson Creek Compressor Station.....	5-46
Figure 5-3: Regional Emission Sources for the Witter Lake Compressor Station	5-47
Figure 7-1: Assessment Areas and Human Receptors for Acoustic Environment for the Construction Phase	7-37
Figure 7-2: Project Only Case Predicted Noise Contour Map for Johnson Creek Compressor Station.....	7-38
Figure 7-3: Project-Only Case Predicted Noise Contour Map for the Callazon Creek Compressor Station.....	7-39
Figure 7-4: Project-Only Case Predicted Noise Contour Map for the Witter Lake Compressor Station.....	7-40
Figure 7-5: Project-Only Case Predicted Noise Contour Map for the Middle River Compressor Station.....	7-41
Figure 7-6: Project-Only Case Predicted Noise Contour Map for the Morrison Lake Compressor Station.....	7-42
Figure 7-7: Project-Only Case Predicted Noise Contour Map for the Kispiox Compressor Station.....	7-43
Figure 7-8: Project-Only Case Predicted Noise Contour Map for the Borden Lake Compressor Station.....	7-44
Figure 7-9: Project-Only Case Predicted Noise Contour Map for the Ishkeenickh Compressor Station.....	7-45
Figure 8-1: Assessment Area for Water Quality.....	8-36
Figure 9-1: Assessment Areas for Hydrology	9-28
Figure 9-2: Hydrology Mapbook - Index.....	9-29
Figure 9-3: Hydrology Mapbook – Sheet 1 of 8.....	9-30
Figure 9-4: Hydrology Mapbook – Sheet 2 of 8.....	9-31
Figure 9-5: Hydrology Mapbook – Sheet 3 of 8.....	9-32
Figure 9-6: Hydrology Mapbook – Sheet 4 of 8.....	9-33
Figure 9-7: Hydrology Mapbook – Sheet 5 of 8.....	9-34
Figure 9-8: Hydrology Mapbook – Sheet 6 of 8.....	9-35
Figure 9-9: Hydrology Mapbook – Sheet 7 of 8.....	9-36
Figure 9-10: Hydrology Mapbook – Sheet 8 of 8.....	9-37
Figure 10-1: Spatial Boundaries for the Freshwater Aquatic Resources.....	10-68
Figure 10-2: Major Drainages.....	10-69
Figure 10-3: Watershed Groups.....	10-70
Figure 10-4: Mapped Watercourses Crossed by the Prince Rupert Gas Transmission Project	10-71
Figure 10-5: Decision Process for Pipeline Watercourse Crossing Technique	10-72
Figure 10-6: Pipeline Risk Management Framework.....	10-73

Figure 10-7: Pipeline Realignments to Avoid Effects on Freshwater Aquatic Resources	10-74
Figure 10-8: Pipeline Watercourse Crossing Results	10-75
Figure 11-1: Assessment Areas for Marine Resources	11-93
Figure 11-2: Alternative Marine Routes	11-94
Figure 11-3: Other Projects in the Regional Assessment Area	11-95
Figure 12-1: Assessment Areas for Soils	12-37
Figure 13-1: Assessment Areas for Vegetation and Wetland Resources	13-102
Figure 13-2: Rare Plant Locations	13-103
Figure 13-3: Traditional Land Use Species – Black Huckleberry (<i>Vaccinium membranaceum</i>)	13-104
Figure 13-4: Traditional Land Use Species – Devil’s Club (<i>Oplopanax horridus</i>)	13-105
Figure 13-5: Traditional Land Use Species – Labrador Tea (<i>Rhododendron groenlandicum</i>)	13-106
Figure 13-6: Traditional Land Use Species – Western Redcedar (<i>Thuja plicata</i>)	13-107
Figure 13-7: Traditional Land Use Species – Pine Mushroom (<i>Tricholoma magnivelare</i>)	13-108
Figure 13-8: Traditional Land Use Species – Soopolallie (<i>Shepherdia canadensis</i>)	13-109
Figure 13-9: Invasive Plant Locations	13-110
Figure 13-10: Invasive Plant Locations	13-111
Figure 13-11: Invasive Plant Locations	13-112
Figure 13-12: Invasive Plant Locations	13-113
Figure 13-13: Red- and Blue- Listed Ecological Communities, KP 0 to KP 230	13-114
Figure 13-14: Red- and Blue- Listed Ecological Communities, KP 200 to KP 450	13-115
Figure 13-15: Red- and Blue- Listed Ecological Communities, KP 420 to KP 680	13-116
Figure 13-16: Red- and Blue-listed Ecological Communities, KP 640 to KP 100 (Lelu Island)	13-117
Figure 13-17: Old Forest KP 0 to KP 230	13-118
Figure 13-18: Old Forest KP 200 to KP 450	13-119
Figure 13-19: Old Forest KP 420 to KP 680	13-120
Figure 13-20: Old Forest KP 640 to KP 110 (Lelu Island)	13-121
Figure 13-21: Old Growth Management Areas, KP 0 to KP 230	13-122
Figure 13-22: Old Growth Management Areas, KP 200 to KP 450	13-123
Figure 13-23: Old Growth Management Areas, KP 420 to KP 680	13-124
Figure 13-24: Old Growth Management Areas, KP 640 to KP 110 (Lelu Island)	13-125
Figure 13-25: Wildlife Tree Patches, KP 0 to KP 230	13-126
Figure 13-26: Wildlife Tree Patches, KP 200 to KP 450	13-127

Figure 13-27: Wildlife Tree Patches, KP 420 to KP 680	13-128
Figure 13-28: Wildlife Tree Retention Areas, KP 640 to KP 80 (Lelu Island).....	13-129
Figure 13-29: Wetlands, KP 0 to KP 230	13-130
Figure 13-30: Wetlands, KP 200 to KP 450	13-131
Figure 13-31: Wetlands, KP 420 to KP 680	13-132
Figure 13-32: Wetlands, KP 640 to KP 110 (Lelu Island)	13-133
Figure 14-1: Terrestrial Assessment Area for Wildlife	14-190
Figure 14-2: Assessment Area for Marine Birds	14-191
Figure 14-3: Assessment Areas for Grizzly Bear	14-192
Figure 14-4: Assessment Area for Caribou Herd Ranges.....	14-193
Figure 14-5: Administrative Boundaries	14-194
Figure 14-6: Change in Linear Density in the Rocky Grizzly Bear Assessment Area.....	14-195
Figure 14-7: Change in Linear Density in the Moberly/Hart Grizzly Bear Assessment Area.....	14-196
Figure 14-8: Change in Linear Density in the Omineca East Grizzly Bear Assessment Area.....	14-197
Figure 14-9: Change in Linear Density in the Nation Grizzly Bear Assessment Area.....	14-198
Figure 14-10: Change in Linear Density in the Omineca/Babine Grizzly Bear Assessment Area.....	14-199
Figure 14-11: Change in Linear Density in the Cranberry Grizzly Bear Assessment Area.....	14-200
Figure 14-12: Change in Linear Density in the Khutzymateen/Stewart Grizzly Bear Assessment Area	14-201
Figure 17-1: Assessment Areas for Employment	17-67
Figure 17-2: Labour Requirements of Existing and Proposed Major Pipeline Projects in BC, 2013 to 2020	17-68
Figure 20-1: Assessment Areas for Community Infrastructure and Services.....	20-70
Figure 21-1: Assessment Areas for Transportation	21-38
Figure 21-2: Marine Navigation	21-39
Figure 21-3: Marine Navigation Subset Map 21-3.....	21-40
Figure 21-4: Marine Navigation Subset Map 21-4.....	21-41
Figure 21-5: Road, Rail, and Air Transportation Infrastructure	21-42
Figure 22-1: Potential Landscape Visibility from Selected Viewpoints Based on Viewshed Analysis.....	22-34
Figure 22-2: Visual Sensitivity Units where Existing Visual Condition Exceeds Established Visual Quality Objectives.....	22-35

Figure 22-3: Visual Sensitivity Unit 274 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-36
Figure 22-4: Visual Sensitivity Unit 2212 and 2213 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-37
Figure 22-5: Visual Sensitivity Units 1655 and 1657 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-38
Figure 22-6: Visual Sensitivity Unit 897 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-39
Figure 22-7: Visual Sensitivity Unit 2335 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-40
Figure 22-8: Visual Sensitivity Units 2190 and 2193 where the Established Visual Quality Objective/Recommended Visual Quality Class has been Exceeded	22-41
Figure 22-9: Visual Sensitivity Assessment within Anhuluut'ukwsim LaxmihlS Angwinga'asanskwhl Nisga'a (Nisga'a Memorial Lava Bed Park) and along Nisga'a Highway where the Provisional Established Visual Quality Objective has been Exceeded	22-42
Figure 23-1: Assessment Areas for Land and Resource Use.....	23-110
Figure 23-2: Regional Districts - Provincial.....	23-111
Figure 23-3: Land and Resource Management Plan Overview	23-112
Figure 23-4: Parks and Protected Areas.....	23-113
Figure 23-5: Recreational Values	23-114
Figure 23-6: Administrative Regions - Hunting	23-115
Figure 23-7: Wildlife Management Units.....	23-116
Figure 23-8: Limited Entry Hunting Zone: Goat.....	23-117
Figure 23-9: Limited Entry Hunting Zone: Elk.....	23-118
Figure 23-10: Limited Entry Hunting Zone: Grizzly Bear	23-119
Figure 23-11: Limited Entry Hunting Zone: Moose.....	23-120
Figure 23-12: Guide Outfitter Tenures	23-121
Figure 23-13: Trapping Tenures - Index.....	23-122
Figure 23-14: Trapping Tenures (A).....	23-123
Figure 23-15: Trapping Tenures (B).....	23-124
Figure 23-16: Trapping Tenures (C).....	23-125
Figure 23-17: Trapping Tenures (D).....	23-126
Figure 23-18: Provincial Angling Regions	23-127
Figure 23-19: Recreational Marine Fishing in PMFAs 3 and 4 (2002-2007).....	23-128

Figure 23-20: DFO Commercial Groundfish Effort for Various Years in PFMAs 3 and 4	23-129
Figure 23-21: DFO Commercial Salmon Fishery Distribution for Various Years in PFMAs 3 and 4	23-130
Figure 23-22 DFO Commercial Shrimp Fishery Distribution for Various Years in PFMAs 3 and 4	23-1
Figure 23-23: DFO Commercial Shellfish Effort for Various Years in PFMAs 3 and 4	23-2
Figure 23-24: Agricultural Land Tenure.....	23-3
Figure 23-25: Forest Regions.....	23-4
Figure 23-26: Timber Supply Areas	23-5
Figure 23-27: Tree Farm Licences.....	23-6
Figure 23-28: Mountain Pine Beetle Infestation.....	23-7
Figure 23-29: Mineral and Oil and Gas Tenures	23-8
Figure 26-1: Assessment Areas for Heritage and Archaeological Resources	26-42
Figure 26-2: Key Areas of Palaeontological Potential	26-43
Figure 26-3: Heritage Resource Sites – Mapbook - Index	26-44
Figure 26-4: Heritage Resource Sites –Mapbook Sheet 1 of 5.....	26-45
Figure 26-5: Heritage Resource Sites – Mapbook Sheet 2 of 5.....	26-46
Figure 26-6: Heritage Resource Sites – Mapbook Sheet 3 of 5.....	26-47
Figure 26-7: Heritage Resource Sites – Mapbook Sheet 4 of 5.....	26-48
Figure 26-8: Heritage Resource Sites – Mapbook Sheet 5 of 5.....	26-49
Figure 29-1: Assessment Areas for Human Health	29-37
Figure 29-2: Human Receptors Near Johnson Creek Compressor Station.....	29-38
Figure 29-3: Human Receptors Near Callazon Creek Compressor Station.....	29-39
Figure 29-4: Human Receptors Near Witter Lake Compressor Station	29-40
Figure 29-5: Human Receptors Near Middle River Compressor Station	29-41
Figure 29-6: Human Receptors Near Morrison Lake Compressor Station.....	29-42
Figure 29-7: Human Receptors Near Kispiox Compressor Station.....	29-43
Figure 29-8: Human Receptors Near Borden Lake Compressor Station.....	29-44
Figure 29-9: Human Receptors Near Ishkeenickh Compressor Station	29-45
Figure 29-10: Tissue and Sediment Sampling Near Lelu Island	29-46
Figure 31-1: Risk Matrix Showing Colour-coded Risk Levels	31-49
Figure 31-2: Risk Level Legend	31-50
Figure 32-1: Risk Matrix Showing Colour-coded Risk Levels	32-29
Figure 32-2: Risk Level Legend	32-30

Figure 33-1: Halfway River First Nation Asserted Traditional Territory with Other Projects.....	33-1225
Figure 33-2: Halfway River First Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1226
Figure 33-3: McLeod Lake Indian Band Traditional Territory with Other Projects	33-1227
Figure 33-4: McLeod Lake Indian Band Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1228
Figure 33-5: Saulteau First Nations Asserted Traditional Territory with Other Projects.....	33-1229
Figure 33-6: Saulteau First Nations Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1230
Figure 33-7: West Moberly First Nations Asserted Traditional Territory with Other Projects.....	33-1231
Figure 33-8: West Moberly First Nations Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1232
Figure 33-9: Lake Babine Nation Traditional Territory with Other Projects	33-1233
Figure 33-10: Lake Babine Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1234
Figure 33-11: Nak'azdli Band Traditional Territory with Other Projects	33-1235
Figure 33-12: Nak'azdli Band Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1236
Figure 33-13: Takla Lake First Nation Traditional Territory with Other Projects	33-1237
Figure 33-14: Takla Lake First Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1238
Figure 33-15: Tl'azt'en Nation Traditional Territory with Other Projects.....	33-1239
Figure 33-16: Tl'azt'en Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1240
Figure 33-17: Gitxsan Nation Traditional Territory with Other Projects	33-1241
Figure 33-18: Gitxsan Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project - Index	33-1242
Figure 33-18a: Gitxsan Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project – Sheet 1 of 3	33-1243
Figure 33-18b: Gitxsan Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project - Sheet 2 of 3	33-1244
Figure 33-18c: Gitxsan Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project - Sheet 3 of 3	33-1245
Figure 33-19: Gitanyow Nation Traditional Territory with Other Projects.....	33-1246
Figure 33-20: Gitanyow Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1247

Figure 33-21: Lax Kw'alaams Band Traditional Territory with Other Projects	33-1248
Figure 33-22: Lax Kw'alaams Band Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1249
Figure 33-23: Metlakatla First Nation Traditional Territory with Other Projects	33-1250
Figure 33-24: Metlakatla First Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1251
Figure 33-25: Gitxaala Nation Traditional Territory with Other Projects	33-1252
Figure 33-26: Gitxaala Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1253
Figure 33-27: Yekooche Statement of Intent Area with Other Projects.....	33-1254
Figure 33-28: Yekooche Statement of Intent Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1255
Figure 33-29: Kitselas Band Traditional Territory with Other Projects	33-1256
Figure 33-30: Kitselas Band Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1257
Figure 33-31: Kitsumkalum First Nation Traditional Territory with Other Projects	33-1258
Figure 33-32: Kitsumkalum First Nation Areas of Interest and Other Areas of Interest and Other Projects in the Vicinity of PRGT Project.....	33-1256
Figure 34-1: Proposed Route through the Nass Area	34-589
Figure 34-2: Overview of the Nass Area	34-590
Figure 34-3: Major Projects in the Nass Area Considered in the Cumulative Effects Assessment.....	34-591
Figure 34-4: Nisga'a Lands and Nisga'a Fee Simple Lands	34-592
Figure 34-5: Nisga'a Forest Lands	34-593
Figure 34-6: Tree Farm Cutblocks in the Nass Area	34-594
Figure 34-7: Nisga'a Memorial Lava Bed Provincial Park	34-595
Figure 34-8: Nisga'a Commercial Recreation Tenure.....	34-596
Figure 34-9: Nisga'a Traplines	34-597
Figure 34-10: Nisga'a Guided Angling Tenures	34-598
Figure 34-11: Nisga'a Guide Outfitting Tenure	34-599
Figure 34-12: Nisga'a Water Reservations for Domestic, Industrial and Agricultural Purposes.....	34-600
Figure 34-13: Nisga'a Water Reservations for the Purpose of Investigating Hydropower Potential	34-601
Figure 34-14: Assessment Areas of the Marine Component of The Assessment of Project Effects on Nisga'a Interests.....	34-602
Figure 34-15: Existing Conditions: The Marine Component of the Nass Area	34-603
Figure 34-16: Nass Bay Marine Resources Survey Sites	34-604

Figure 34-17: Nasoga Gulf Marine Resources Survey Sites	34-605
Figure 34-18: Nasoga Gulf Bivalve Harvesting Area.....	34-606
Figure 34-19: Assessment Areas of the Project Effects on Nisga’a Interests Related to Wildlife.....	34-607
Figure 34-20: Grizzly Bear Habitat Distribution in the Nass Wildlife Area	34-608
Figure 34-21: Total Grizzly Bear Harvest (Resident and Non-resident) from 1976 to 2011 in the Wildlife Management Units Overlapping the NWA (BC MFLNRO 2013b)	34-609
Figure 34-22: Moose Habitat Distribution in the Nass Wildlife Area.....	34-610
Figure 34-23: Total Moose Harvest (resident and non-resident) from 1976 to 2011 in the Wildlife Management Units overlapping the NWA (BC MFLNRO 2012b).....	34-611
Figure 34-24: Mountain Goat Habitat Distribution in the Nass Wildlife Area	34-612
Figure 34-25: Total Mountain Goat Harvest (resident and non-resident) from 1976 to 2011 in the Wildlife Management Units overlapping the Nass Wildlife Area (MFLNRO 2012b)	34-613
Figure 34-26: Assessment Areas of the Project Effects on Nisga’a Interests Related to Migratory Birds.....	34-614
Figure 34-27: Assessment Areas of the Project Effects on Nisga’a Interests Related to Non-Timber Forest Resources	34-615
Figure 34-28a: Nisga’a Land Use and Project Disturbances: Forest Resources Zones.....	34-616
Figure 34-28b: Nisga’a Land Use and Project Disturbances: Special Management Areas	34-617
Figure 34-29: Nisga’a Lands and Nisga’a Area Infrastructure Overview	34-618
Figure 34-30: Nisga’a Land Use and Project Disturbances: Wildlife Areas, Sensitive Zones, and Agricultural Lands	34-619
Figure 35-1: Local Governments, Private Land, and Crown Land - Index	35-21
Figure 35-2: Local Governments, Private, and Crown Land - Sheet 1 of 3	35-22
Figure 35-3: Local Governments, Private, and Crown Land - Sheet 2 of 3	35-23
Figure 35-4: Local Governments, Private, and Crown Land - Sheet 3 of 3	35-24
Figure 38-1: Project Location	38-142
Figure 38-2: Marine Route Alternatives	38-143
Figure 38-3: Access Roads and Ancillary Sites.....	38-144

LIST OF TABLES

Table 1-1: Contributors to the EAC Application	1-3
Table 1-2: Coordinates of Pipeline Start and End Points by Route Name	1-5
Table 1-3: Coordinates of Compressor Stations and Metering Station (Centre Point).....	1-5
Table 1-4: Land Based and Marine Alternatives to Portland Inlet/Chatham Sound	1-7
Table 1-5: Overview of Route Options Paralleling Existing Disturbances	1-10
Table 1-6: Preferred Construction Methods for Marine Entry/Exit.....	1-29
Table 1-7: Project Schedule	1-43
Table 1-8: Communities within 10 km of the Pipeline Route and Route Alternatives	1-45
Table 1-9: Past Submissions to Provincial and Federal Agencies	1-54
Table 1-10: Summary of Key Land Based Alternatives, Routing Evaluation and Status.....	1-62
Table 1-11: Summary of Key Marine Alternatives, Routing Evaluation and Status.....	1-70
Table 1-12: Summary of Compressor Station Alternatives.....	1-75
Table 1-13: Estimated Construction Spending in Canada and Foreign Countries	1-80
Table 1-14: Estimated Construction Spending within Canada by Project Component	1-80
Table 1-15: Estimated Construction Spending within Canada by Service and Commodity	1-81
Table 1-16: Estimated Annual Operating Costs	1-82
Table 1-17: Estimated Composition of the Direct Land-Based Pipeline and Compressor Station Construction Labour Force.....	1-83
Table 1-18: Hourly Wage Rates during Project Construction	1-84
Table 1-19: Estimated Construction Employment in Canada.....	1-86
Table 1-20: Estimated Annual Operation Labour Force.....	1-86
Table 1-21: Estimated Operation Employment in Canada	1-88
Table 1-22: Estimated Labour Income in British Columbia and Canada.....	1-88
Table 1-23: Estimated Government Revenue during Construction (2013 \$ millions)	1-92
Table 1-24: Estimated Annual Government Revenue during Operations (2013 \$ millions).....	1-93
Table 1-25: Project's Influence on Gross Domestic Product in British Columbia and Canada.....	1-94
Table 2-1: Overview of Key Provincial Environmental Assessment Milestones.....	2-2
Table 2-2: Agencies, Departments, and Aboriginal Groups on the Working Group for the Project.....	2-4
Table 2-3: Documented Issues and Concerns Identified during the Preparation of the AIR and Application and How These Issues Are Addressed	2-7

Table 2-4: Potential Authorizations Required during Project Planning	2-13
Table 2-5: Potential Authorizations Required Prior to Project Construction	2-14
Table 2-6: Potential Authorizations Required during and following Project Construction.....	2-15
Table 3-1: List of Valued Components for the Project.....	3-2
Table 3-2: Potential Project Effects on [VC Name] – Example	3-10
Table 3-3: Summary of Project Residual Effects - Example.....	3-12
Table 5-1: Measurable Parameters for Air Quality.....	5-4
Table 5-2: Ambient Air Quality Standards and Objectives	5-7
Table 5-3: Supplemental AAQO for CACs.....	5-8
Table 5-4: Characterization of Residual Effects for Air Quality.....	5-9
Table 5-5: Ambient Background Concentrations Applied in the Dispersion Modelling Assessment.....	5-12
Table 5-6: Potential Project Effects on Air Quality.....	5-15
Table 5-7: Air Dispersion Modelling Results for the Johnson Creek Compressor Station	5-22
Table 5-8: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Johnson Creek Compressor Station	5-23
Table 5-9: Air Dispersion Modelling Results for the Callazon Creek Compressor Station	5-24
Table 5-10: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Callazon Creek Compressor Station	5-25
Table 5-11: Air Dispersion Modelling Results for the Witter Lake Compressor Station	5-26
Table 5-12: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Witter Lake Compressor Station.....	5-27
Table 5-13: Air Dispersion Modelling Results for the Middle River Compressor Station	5-28
Table 5-14: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for Middle River Compressor Station	5-29
Table 5-15: Air Dispersion Modelling Results for the Morrison Lake Compressor Station	5-30
Table 5-16: Air Dispersion Modelling Results for the Kispiox Compressor Station.....	5-32
Table 5-17: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Kispiox Compressor Station	5-33
Table 5-18: Air Dispersion Modelling Results for the Borden Lake Compressor Station	5-34
Table 5-19: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Borden Lake Compressor Station	5-35

Table 5-20: Air Dispersion Modelling Results for the Ishkeenickh Compressor Station	5-36
Table 5-21: SO ₂ and NO ₂ Air Dispersion Modelling Results Compared to US EPA and WHO Objectives for the Ishkeenickh Compressor Station	5-37
Table 5-22: Summary of Project Residual Effects: Air Quality	5-39
Table 5-23: Potential Cumulative Effects on Air Quality	5-41
Table 6-1: Measurable Parameters for Greenhouse Gases	6-5
Table 6-2: Characterization of Residual Effects for Greenhouse Gases.....	6-7
Table 6-3: GHG Emissions Released in British Columbia and Canada	6-9
Table 6-4: Proposed or Under Construction Natural Gas Pipelines with Associated Compression Stations in BC	6-10
Table 6-5: GHG Footprint for Existing Natural Gas Pipelines with Associated Compressor Stations in BC	6-11
Table 6-6: Potential Project Effects on Greenhouse Gases	6-12
Table 6-7: Construction Emission Calculations	6-14
Table 6-8: Operation Emission Calculations	6-15
Table 6-9: Summary of Project Residual Effects: Greenhouse Gases.....	6-23
Table 6-10: Potential Cumulative Effects on Greenhouse Gases	6-26
Table 7-1: Measurable Parameters for Acoustic Environment.....	7-5
Table 7-2: Characterization of Residual Effects for Acoustic Environment	7-7
Table 7-3: Suggested Construction Noise MNL.....	7-10
Table 7-4: Health Canada Suggested Construction Noise MNL for Human Receptors within 1.5 Kilometres of the Project Footprint	7-11
Table 7-5: Noise Criteria Based on British Columbia Noise Control Guideline.....	7-14
Table 7-6: Potential Project Effects on Acoustic Environment	7-16
Table 7-7: Mitigated Equipment Sound Power Levels.....	7-21
Table 7-8: Compressor Station Construction Noise Modelling Results	7-23
Table 7-9: Land-Based Pipeline Construction Activities Associated Total Sound Power Level	7-24
Table 7-10: Worst-Case Noise Prediction Results for Land-Based Pipeline Construction.....	7-24
Table 7-11: Noise Prediction at Various Distances for Pipeline Construction at Water Crossings.....	7-25
Table 7-12: Noise Prediction Results for Marine Pipeline Construction	7-26
Table 7-13: Operation Noise Modelling Results	7-27
Table 7-14: Low Frequency Analysis for Compressor Station Operation	7-28
Table 7-15: Summary of Project Residual Effects: Acoustic Environment	7-31
Table 7-16: Potential Cumulative Effects on Acoustic Environment.....	7-34

Table 8-1: Measurable Parameters for Water Quality	8-5
Table 8-2: Characterization of Residual Effects for Water Quality	8-7
Table 8-3: Potential Project Effects on Water Quality	8-16
Table 8-4: British Columbia and Canadian Council of Ministers of Environment Water Quality Guidelines for the Protection of Freshwater Aquatic Life	8-20
Table 8-5: British Columbia and Canadian Council of Ministers of Environment Water Quality Guidelines for the Protection of Marine Life	8-23
Table 8-6: Marine and Freshwater Sediment Screening Criteria and Guidelines	8-24
Table 8-7: Summary of Project Residual Effects: Water Quality	8-31
Table 9-1: Measurable Parameters for Hydrology	9-4
Table 9-2: Characterization of Residual Environmental Effects for Hydrology	9-6
Table 9-3: Summary of Watershed Size Upstream of Project Crossings	9-10
Table 9-4: WSC Stations	9-11
Table 9-5: Potential Project Effects on Hydrology	9-13
Table 9-6: Environmental Protection and Mitigation Measures for Hydrology	9-15
Table 9-7: Summary of Project Residual Effects	9-24
Table 9-8: Potential Cumulative Effects on Hydrology	9-25
Table 10-1: Measurable Parameters – Freshwater Aquatic Resources	10-6
Table 10-2: Characterization of Residual Effects for Freshwater Aquatic Resources	10-9
Table 10-3: Stream Classification for Project Watercourses	10-12
Table 10-4: Watercourse Crossings by Major Watershed and Watershed Group	10-15
Table 10-5: Fish Species of Conservation Concern in the Project LAA and RAA	10-17
Table 10-6: High Sensitivity Watercourse Crossings by Major Drainage	10-18
Table 10-7: Medium Sensitivity Watercourse Crossings by Major Drainage	10-21
Table 10-8: Potential Project Effects on Freshwater Aquatic Resources	10-25
Table 10-9: Crossing Technique Decision Process Results	10-34
Table 10-10: Project Interactions, Activities, and Potential Effects on Fish Habitat	10-36
Table 10-11: Pipeline Realignment for Freshwater Aquatic Resources	10-39
Table 10-12: Risk Determination Results	10-44
Table 10-13: Area to Fish Habitat Affected	10-46
Table 10-14: Project Interactions, Activities, and Potential Effects on Fish Health or Mortality Risk	10-47
Table 10-15: Project Interactions, Activities, and Potential Effects on Water Quality	10-53
Table 10-16: Residual Effects – Fish, Fish Habitat, and Water Quality	10-58
Table 10-17: Potential Cumulative Effects	10-64
Table 11-1: Indicator Species for Marine Resources	11-10

Table 11-2: Measurable Parameters for Marine Resources	11-13
Table 11-3: Characterization of Residual Effects for Marine Resources	11-16
Table 11-4: Summary of Baseline Information on Marine Resources within the LAA	11-19
Table 11-5: Conservation Status of Marine Species in the RAA1	11-23
Table 11-6: Potential Project Effects on Marine Resources	11-28
Table 11-7: Interaction of Potential Project Mechanisms with Marine Route Options.....	11-29
Table 11-8: NOAA Permanent Auditory Injury Criteria (Received Level) for Marine Mammals.....	11-68
Table 11-9: Proposed Behavioural Response Criteria for Marine Mammals.....	11-77
Table 11-10: Summary of Project Residual Effects: Marine Resources	11-80
Table 11-11: Potential Cumulative Effects on Marine Resources.....	11-86
Table 12-1: Measurable Parameters for Soils	12-4
Table 12-2: Characterization of Residual Effects for Soil.....	12-7
Table 12-3: Soil Types in ALR Land along the Pipeline Route	12-10
Table 12-4: Land Use in ALR Land along the Pipeline Route.....	12-11
Table 12-5: Soil Types in Non-ALR Land along the Pipeline Route.....	12-11
Table 12-6: Parent Materials in Non-ALR Land along the Pipeline Route.....	12-12
Table 12-7: Summary of Ecosystem Types in Non-ALR land along the Pipeline Route	12-12
Table 12-8: Topsoil Water and Wind Erosion Ratings and Compaction along ALR Lands.....	12-15
Table 12-9: Subsoil Water and Wind Erosion Ratings and Compaction along ALR Lands.....	12-15
Table 12-10: Potential Project Effects on Soils	12-16
Table 12-11: Summary of Project Residual Effects: Soils	12-29
Table 12-12: Potential Cumulative Effects on Soils.....	12-34
Table 13-1: Indicators for Assessment of Vegetation and Wetland Resources.....	13-5
Table 13-2: Measurable Parameters for Vegetation and Wetland Resources.....	13-7
Table 13-3: Characterization of Residual Effects for Vegetation and Wetland Resources	13-11
Table 13-4: Significance Thresholds for Residual Effects on Vegetation and Wetlands	13-14
Table 13-5: Focal Traditional-use Species	13-17
Table 13-6: Non-spatial Old Forest Objective Approaches.....	13-19
Table 13-7: Old Forest Retention Targets within Planning Units Crossed by the Pipeline Route	13-20
Table 13-8: Ecosystem Types in the Assessment Areas.....	13-24
Table 13-9: Structural Stages in the Assessment Areas.....	13-25

Table 13-10: Disturbance Types in the Assessment Areas.....	13-26
Table 13-11: Historic Rare Plant Occurrences in the RAA.....	13-27
Table 13-12: Rare Plant Species Encountered in the Regional Assessment Area.....	13-28
Table 13-13: Location and Proximity of Rare Plant Occurrences.....	13-28
Table 13-14: Suitable Habitat for Focal Traditional-use Species.....	13-29
Table 13-15: Historic Records of Invasive Plants.....	13-29
Table 13-16: Additional Field Records of Invasive Plants.....	13-30
Table 13-17: Rare Ecological Communities in the Assessment Areas.....	13-31
Table 13-18: Non-spatial Old Forest Baseline Conditions.....	13-33
Table 13-19: Interior Old Forest Baseline Conditions for the Fort St. James District	13-38
Table 13-20: Old Growth Management Areas Occurring within the RAA.....	13-39
Table 13-21: Wildlife Tree Retention Areas in the Assessment Areas	13-42
Table 13-22: Wetland Classes in the Assessment Areas	13-42
Table 13-23: Treed Wetland Communities in the Assessment Areas	13-43
Table 13-24: Potential Project Effects to Vegetation and Wetland Resources.....	13-46
Table 13-25: Mitigation Measures for Change in Abundance of Plant Species of Interest.....	13-52
Table 13-26: Rare Plant Species Observed in the Project Footprint and LAA	13-54
Table 13-27: Traditional-use Species Habitat in the Project Footprint and LAA	13-56
Table 13-28: Mitigation Measures for Change in the Abundance or Condition of Ecological Communities of Interest.....	13-60
Table 13-29: Area of Ecosystem Types within the RAA, LAA and Project Footprint.....	13-62
Table 13-30: Area of Estuary within the RAA, LAA, and Project Footprint, by BGC Subzone/Variant	13-63
Table 13-31: Area of Grassland within the RAA, LAA, and Project Footprint by BGC Subzone/Variant	13-63
Table 13-32: Rare Ecological Communities Mapped in the RAA, LAA, and Project Footprint.....	13-65
Table 13-33: Potential Effects on Old Forest Retention Orders ¹	13-68
Table 13-34: Old Growth Management Areas in the Project Footprint and LAA	13-71
Table 13-35: Wildlife Tree Retention Areas in the Project Footprint and LAA	13-73
Table 13-36: Wetland Communities in the RAA, LAA, and Project Footprint	13-76
Table 13-37: Treed Wetland Communities in the Project Footprint and LAA	13-78
Table 13-38: Summary of Project Residual Effects: Vegetation and Wetland Resources	13-82
Table 13-39: Potential Cumulative Effects on Vegetation and Wetland Resources	13-88
Table 13-40: Area of Temporary and Permanent Disturbances of Currently Existing Projects within the RAA	13-89

Table 13-41: Proposed Projects within the Regional Assessment Area that Overlap the Project	13-90
Table 13-42: Potential Cumulative Effects on Plant Species at Risk	13-92
Table 13-43: Potential Cumulative Effects on Traditional Use Species (including pine mushrooms).....	13-93
Table 13-44: Potential Cumulative Effects on the Spread of Invasive Specie	13-94
Table 13-45: Potential Cumulative Effects on Ecological Communities	13-95
Table 13-46: Potential Cumulative Effects on Listed Ecological Communities	13-96
Table 13-47: Potential Cumulative Effects on Old Growth Forests	13-97
Table 13-48: Potential Cumulative Effects on Old Growth Management Areas (OGMAs)	13-98
Table 13-49: Potential Cumulative Effects on Wildlife Tree Retention Areas (WTRAs).....	13-98
Table 13-50: Potential Cumulative Effects on Wetlands.....	13-99
Table 14-1: Indicators for Assessment of Wildlife and Wildlife Habitat	14-7
Table 14-2: Potential Project Effects on Terrestrial and Marine Indicators of Wildlife and Wildlife Habitat.....	14-9
Table 14-3: Spatial Boundaries for Wildlife and Wildlife Habitat.....	14-12
Table 14-4: Summary of Regional Land and Resource Management Plans	14-14
Table 14-5: Summary of Relevant Management Objectives and General Wildlife Measures for Caribou Herd Ranges, Ungulate Winter Ranges, and Wildlife Habitat Areas Intersected by the Project Footprint	14-25
Table 14-6: Characterization of Residual Effects for Wildlife and Wildlife Habitat	14-28
Table 14-7: Summary of Magnitude Definitions for Qualitative Assessment	14-33
Table 14-8: Potential Project Effects on Grizzly Bear, Woodland Caribou, Moose, and Mountain Goat	14-42
Table 14-9: Potential Project Effects on Marten and Fisher.....	14-43
Table 14-10: Potential Project Effects on Terrestrial Birds.....	14-44
Table 14-11: Potential Project Effects on Amphibians.....	14-45
Table 14-12: Potential Project Effects on Marine Birds	14-46
Table 14-13: Project Activities and Physical Works Carried Forward to Detailed Assessment.....	14-54
Table 14-14: Mitigation Measures Considered in the Assessment of Wildlife and Wildlife Habitat	14-55
Table 14-15: Change in Effective Grizzly Bear Spring Feeding Habitat in the Portion of the LAA within each GBAA	14-73
Table 14-16: Change in Effective Grizzly Bear Summer Feeding Habitat in the Portion of the LAA within each GBAA	14-74

Table 14-17: Change in Effective Grizzly Bear Fall Feeding Habitat in the Portion of the LAA within each GBAA.....	14-75
Table 14-18: Direct Change in Grizzly Bear Habitat in Resource Management Plan Areas	14-75
Table 14-19: Change in Effective Marten Year-Round Living Habitat in the LAA	14-76
Table 14-20: Change in Effective Fisher Natal Denning Habitat in the LAA.....	14-77
Table 14-21: Direct Change in Provincially-Defined Fisher Habitat in the BWBS Zone	14-77
Table 14-22: Change in Effective Woodland Caribou Habitat within the LAA of each Caribou Herd Range	14-78
Table 14-23: Direct Change in Designated WHA for Woodland Caribou in the LAA.....	14-78
Table 14-24: Change in Effective Moose Winter Feeding Habitat in the LAA	14-79
Table 14-25: Change in Effective Moose Winter Shelter Habitat in the LAA.....	14-80
Table 14-26: Direct Change in Moose Habitat Defined in Resource Management Plan Areas	14-80
Table 14-27: Direct Change in Habitat within Designated UWR for Mountain Goat in the LAA	14-81
Table 14-28: Change in Effective Northern Goshawk, Coastal Subspecies, Breeding Habitat in the LAA.....	14-81
Table 14-29: Change in Effective Northern Goshawk, Interior Subspecies, Breeding Habitat in the LAA.....	14-82
Table 14-30: Change in Effective Band-tailed Pigeon Breeding Habitat in the LAA.....	14-83
Table 14-31: Change in Effective Western Screech-Owl Breeding Habitat in the LAA ..	14-84
Table 14-32: Change in Effective Common Nighthawk Breeding Habitat in the LAA....	14-85
Table 14-33: Change in Effective Great Blue Heron Breeding Habitat in the LAA.....	14-86
Table 14-34: Change in Effective Marbled Murrelet Breeding Habitat in the LAA.....	14-87
Table 14-35: Change in Effective Canada Warbler Breeding Habitat in the LAA	14-88
Table 14-36: Change in Effective Olive-sided Flycatcher Breeding Habitat in the LAA	14-89
Table 14-37: Change in Effective Rusty Blackbird Breeding Habitat in the LAA	14-90
Table 14-38: Change in Effective Old Forest Songbird Community Breeding Habitat in the LAA	14-91
Table 14-39: Change in Effective Young Forest Songbird Community Breeding Habitat in the LAA.....	14-92
Table 14-40: Change in Effective Grassland and Shrubland Songbird Community Breeding Habitat in the LAA.....	14-93
Table 14-41: Change in Effective Wetland Songbird Community Habitat in the LAA....	14-94
Table 14-42: Change in Effective Western Toad Breeding Habitat in the LAA.....	14-95

Table 14-43: Change in Effective Western Toad Overwintering Habitat in the LAA	14-96
Table 14-44: Change in Effective Pond-dwelling Amphibian Breeding Habitat in the LAA	14-97
Table 14-45: Summary of Project Residual Effects on Change in Habitat	14-103
Table 14-46: Change in Grizzly Bear Habitat Suitability as a Function of Linear Feature Density	14-111
Table 14-47: Change in Grizzly Bear Core Security Habitat1	14-112
Table 14-48: Change in Linear Feature Density within Grizzly Bear Assessment Areas	14-113
Table 14-49: Change in Linear Feature Density within Woodland Caribou Herd Ranges.....	14-114
Table 14-50: Summary of Project Residual Effects on Change in Mortality Risk for Grizzly Bear, Marten, Fisher, Caribou, Moose, Mountain Goat and Marine Birds	14-120
Table 14-51: Summary of Project Residual Effects on Change in Movement.....	14-129
Table 14-52: Summary of Project Residual Effects: Wildlife and Wildlife Habitat	14-133
Table 14-53: Summary of Project Residual Effects: Wildlife and Wildlife Habitat (cont'd).....	14-134
Table 14-54: Potential Cumulative Effects on Wildlife and Wildlife Habitat.....	14-136
Table 14-55: Two-Step Cumulative Effects Assessment for Change in Habitat.....	14-138
Table 14-56: Two-Step Cumulative Effects Assessment for Change in Mortality Risk	14-151
Table 14-57: Cumulative Effects on Grizzly Bear Habitat Suitability as a Function of Linear Feature Density	14-160
Table 14-58: Cumulative Effects on Grizzly Bear Core Security Habitat.....	14-161
Table 14-59: Cumulative Effects on Linear Feature Density for Grizzly Bear Assessment Areas	14-162
Table 14-60: Summary of Cumulative Residual Effects for Change in Mortality Risk for Grizzly Bear	14-164
Table 14-61: Cumulative Effects on Linear Feature Density in Caribou Herd Ranges.....	14-169
Table 14-62: Summary of Cumulative Residual Effects for Change in Mortality Risk for Caribou.....	14-170
Table 14-63: Summary of Cumulative Residual Effects for Change in Mortality Risk for Moose.....	14-176
Table 14-62: Summary of Cumulative Residual Effects for Change in Mortality Risk for Moose.....	14-177
Table 14-64: Two-Step Cumulative Effects Assessment for Change in Movement	14-180
Table 15-1: Summary of Project Residual Environmental Effects.....	15-1

Table 16-1: Summary of Economic Indicators for the Local Assessment Area and the Regional Assessment Area.....	0-5
Table 17-1: Measurable Parameters for Employment	17-4
Table 17-2: Urban and Rural Communities and Reserves in the LAA	17-6
Table 17-3: 2011 Census and National Household Survey Coverage for the LAA and RAA	17-8
Table 17-4: Characterization of Residual Effects for Employment.....	17-9
Table 17-5: Significance Thresholds for Employment.....	17-10
Table 17-6: 2011 Labour Force Census Statistics for the LAA and RAA	17-12
Table 17-7: Changes in Labour Force Characteristics 2006 to 2011 for the LAA and RAA	17-13
Table 17-8: Employment by Industry in the LAA and RAA, 2011.....	17-15
Table 17-9: Changes in Basic and Non-Basic Employment in the LAA and RAA, 2006 to 2011	17-17
Table 17-10: Construction Employment by Occupation in the LAA and RAA, 2006.....	17-18
Table 17-11: Detailed Occupations of Workers in the Trades and Transportation and Equipment Operators in the LAA and RAA, 2006.....	17-19
Table 17-12: Average and Median Income in the LAA and RAA, 2010	17-20
Table 17-13: Highest Level of Educational Attainment in the LAA and RAA, Population Aged 25 to 64, 2011	17-21
Table 17-14: Aboriginal and Non-Aboriginal Labour Force Characteristics for the LAA and RAA, 2011	17-24
Table 17-15: Aboriginal and Non-Aboriginal Educational Attainment and Earnings, for the LAA and RAA, 2006.....	17-26
Table 17-16: Changes in Labour Force Indicators for the Aboriginal and Non-Aboriginal Populations in the LAA and RAA between 2006 and 2011.....	17-27
Table 17-17: Potential Project Effects on Employment	17-30
Table 17-18: Employment Ratios Used to Calculate Induced Regional Construction Employment Effects.....	17-33
Table 17-19: Summary of Project Construction Activities in Each LAA Sub-region	17-36
Table 17-20: Total Cost of Facilities to be Constructed in the LAA and BC Component of Purchases.....	17-36
Table 17-21: Major Projects Under Construction, Proposed, and On Hold in the LAA and RAA, 2013	17-38
Table 17-22: Project Local Labour Component by LAA Sub-region and Expected Local Participation	17-40

Table 17-23: Project Purchases of Goods and Services from Businesses and Associated Indirect Employment, LAA.....	17-42
Table 17-24: Summary of Construction Employment Effects in the LAA	17-43
Table 17-25: Summary of Project Residual Effects: Employment.....	17-54
Table 17-26: Potential Cumulative Effects on Employment	17-58
Table 17-27: Forecast Population Changes in Regional Districts Crossed by PRGT Pipeline	17-64
Table 18-1: Summary of Residual Project Employment (Economic) Effects.....	18-2
Table 20-1: Measurable Parameters for Community Infrastructure and Services.....	20-5
Table 20-2: Characterization of Residual Effects for Community Infrastructure and Services	20-8
Table 20-3: Potential Project Effects on Community Infrastructure and Services	20-33
Table 20-4: Summary of Project Residual Effects: Community Infrastructure and Services	20-54
Table 20-5: Potential Cumulative Effects on Community Infrastructure and Services.....	20-61
Table 21-1: Measurable Parameters for Transportation	21-4
Table 21-2: Characterization of Residual Effects for Transportation.....	21-7
Table 21-3: Large Vessel Traffic in the LAA.....	21-10
Table 21-4: Vessel Count by Type in Porpoise Harbour between April and November 2013.....	21-11
Table 21-5: Baseline Traffic Volumes.....	21-13
Table 21-6: Potential Project Effects on Transportation.....	21-17
Table 21-7: Freshwater Navigable Water Crossings	21-21
Table 21-8: Road Segment Analysis, Peak Project Conditions.....	21-29
Table 21-9: Summary of Project Residual Effects: Transportation.....	21-33
Table 21-10: Potential Cumulative Effects on Transportation	21-34
Table 22-1: Categories and Descriptions of Visually Altered Forest Landscapes (as per the Forest Planning and Practices Regulation)	22-3
Table 22-2: Categories and Descriptions of Visual Sensitivity Classes and their Relationship to Altered Forest Landscape Classes	22-3
Table 22-3: Measurable Parameters for Visual Quality	22-6
Table 22-4: Characterization of Residual Effects for Visual Quality	22-8
Table 22-5: Visible Landscape within the Local and Regional Assessment Areas Based on Viewshed Analysis.....	22-12
Table 22-6: Viewpoint Distribution and Viewing Distance along the Project Footprint.....	22-13
Table 22-7: Visual Sensitivity Unit Distribution and Existing Visual Quality Objectives along the Project Footprint	22-15

Table 22-8: Potential Project Effects on Visual Quality.....	22-16
Table 22-9: Categories and Descriptions of Visually Altered Forest Landscapes (as per the Forest Planning and Practices Regulation).....	22-20
Table 22-10: Potential Visibility of the Project Footprint based on Viewshed Analysis.....	22-25
Table 22-11: Summary of Potential Effects of Project Footprint on Visual Sensitivity Units.....	22-25
Table 22-12: Summary of Project Residual Effects: Visual Quality.....	22-28
Table 22-13: Potential Cumulative Effects on Visual Quality	22-31
Table 23-1: Selection of Effects	23-4
Table 23-2: Measurable Parameters for Land and Resource Use.....	23-5
Table 23-3: Administrative Boundaries.....	23-7
Table 23-4: Characterization of Residual Effects for Land and Resource Use	23-9
Table 23-5: Regional Districts Identified Within the Land and Resource Use Assessment Areas	23-12
Table 23-6: RMZs and Other Management Areas (by land use plan) within the Land and Resource Use Assessment Areas	23-15
Table 23-7: Provincial Park Classifications and Protected Areas in British Columbia.....	23-17
Table 23-8: Proportion of Land and Resource Use Assessment Areas within Provincial Parks, Protected Areas, and Ecological Reserves	23-18
Table 23-9: Proportion of Parks Overlapped by the Land and Resource Use Project Footprint and Local Assessment Area	23-19
Table 23-10: Forms of Crown Land Allocation – Map Reserves.....	23-22
Table 23-11: Map Reserves in the Land and Resource Use Project Footprint.....	23-23
Table 23-12: Visitors to Northern British Columbia by Quarter (%).....	23-24
Table 23-13: Recreation Features, Significance, and Sensitivity in the Land and Resource Use Assessment Areas	23-27
Table 23-14: Proportion of Active Recreation Trails Overlapped by the Land and Resource Use Assessment Areas	23-30
Table 23-15: Proportion of Wildlife Management Units in the Land and Resource Use Assessment Areas	23-31
Table 23-16: Limited Entry Hunting Zones in the Land and Resource Use Assessment Area Areas	23-34
Table 23-17: Guide Outfitters Operating in the Land and Resource Use Assessment Areas	23-37
Table 23-18: Proportion of Guide Outfitter Tenures in the Land and Resource Use Assessment Areas	23-38
Table 23-19: Proportion of Trapline Tenures Overlapped by the Land and Resource Use Assessment Areas	23-41

Table 23-20: Furbearing Species Management Classes	23-41
Table 23-21: Region 6 and 7A Waterbodies Identified within the Land and Resource Use Assessment Areas	23-44
Table 23-22: Commercial Fisheries Categories and Landed Values.....	23-47
Table 23-23: Harvesting Seasons in British Columbia for Salmon, Shellfish and Finfish	23-51
Table 23-24: Agriculture Land Tenure Identified within the Land and Resource Use Assessment Areas	23-54
Table 23-25: Proportion of Agricultural Tenures Overlapped by the Land and Resource Use Assessment Areas	23-55
Table 23-26: Forest Regions in the Land and Resource Use Assessment Areas.....	23-56
Table 23-27: Allowable Annual Cut and Proportion of Timber Supply Areas in the Land and Resource Use Assessment Areas	23-58
Table 23-28: Proportion of Tree Farm Licence Areas in the Land and Resource Use Assessment Areas	23-59
Table 23-29: Timber Cut Blocks (Active and Pending) in the Land and Resource Use Assessment Areas	23-60
Table 23-30: Mountain Pine Beetle Infestation by Area and Severity	23-61
Table 23-31: Mineral Tenures in the Assessment Areas	23-62
Table 23-32: Transmission Lines in the Land and Resource Use Assessment Areas	23-65
Table 23-33: Potential Project Effects to Land and Resource Use	23-68
Table 23-34: Standard Mitigation – Agricultural Land Use	23-74
Table 23-35: Summary of Project Residual Effects: Land and Resource Use	23-92
Table 23-36: Potential Cumulative Effects on Land and Resource Use.....	23-98
Table 24-1: Summary of Project Residual Social Effects	24-2
Table 25-1: Locations of Heritage and Archaeological Background Information	25-1
Table 26-1: Measurable Parameters for Heritage and Archaeological Resources	26-6
Table 26-2: Characterization of Residual Effects for Heritage and Archaeological Resources	26-9
Table 26-3: Subarctic/Boreal Forest: Frequency of Site Types in the RAA per Borden Block	26-15
Table 26-4: Interior Plateau: Frequency of Site Types within the RAA per Borden Block	26-17
Table 26-5: Northwest Coast Culture Region: Frequency of Site Types in the RAA per Borden Block	26-20
Table 26-6: Triassic to Cretaceous Strata from Hudson’s Hope to MacKenzie.....	26-24
Table 26-7: Late Paleozoic to Mesozoic Strata North of Fort St. James.....	26-25
Table 26-8: Jurassic to Cretaceous Strata of the Hazelton Area.....	26-26

Table 26-9: Potential Project Effects on Heritage and Archaeological Resources.....	26-27
Table 26-10: Historical and Archaeological Sites within 37.5 m of the Pipeline Centreline.....	26-33
Table 26-11: Summary of Project Residual Effects on Heritage and Archaeological Resources	26-37
Figure 27-1: Summary of Project Residual Archaeological and Heritage Effects	27-2
Table 29-1: Indicators of Human Health	29-5
Table 29-2: Measurable Parameters for Human Health	29-5
Table 29-3: Characterization of Residual Effects on Human Health	29-8
Table 29-4: Significance Thresholds for Residual Effects	29-9
Table 29-5: Baseline Concentration Ratios for Human Receptors from Air Inhalation....	29-11
Table 29-6: Baseline Hazard Quotients for Human Receptors from Consumption of Marine Traditional and Country Foods.....	29-12
Table 29-7: Potential Interactions between Project Activities and Human Health	29-13
Table 29-8: Maximum Concentration Ratios for Human Health from Inhalation of Criteria Air Contaminants during Project Operation (Project Case)	29-26
Table 29-9: Maximum Concentration Ratios for Human Health from Inhalation of Hazardous Air Pollutants during Project Operation (Project Case).....	29-28
Table 29-10: Summary of Incremental Lifetime Cancer Risks from Inhalation Exposure to Volatile Organic Compounds and Polycyclic Aromatic Hydrocarbons, Johnson Creek Compressor Station during Project Operation (Project Case).....	29-29
Table 29-11: Summary of Project Residual Effects to Human Health.....	29-31
Table 29-12: Potential Cumulative Effects on Human Health	29-32
Table 30-1: Summary of Project Residual Health Effects.....	30-2
Table 31-1: Potential Interactions Accidents or Malfunctions and Valued Components....	31-3
Table 31-2: Accidental Event Scenario According to Project Phase and Associated Response Plan	31-5
Table 31-3: Likelihood of Sediment Release from Various Pipeline Installation Methods.....	31-40
Table 31-4: Summary of Likelihood of Accidents or Malfunctions.....	31-44
Table 32-1: Scenarios and Rationale for Land-based and Marine-based Environmental Effects	32-2
Table 32-2: Summary of Assessment of Effects of the Environment on the Project	32-24
Table 33-1: Meetings Led by the Environmental Assessment Office	33-6
Table 33-2: Aboriginal Interest Linkages to Valued Components	33-14
Table 33-3: Characterization of Residual Effects	33-16
Table 33-4: Aboriginal Concern Linkages to Valued Components.....	33-19

Table 33-5: Summary of Key Issues in Relation to Consultation Activities Identified by Halfway River First Nation and PRGT's Response	33-29
Table 33-6: Chronology of Key PRGT-Led Consultation Activities	33-30
Table 33-7: Halfway River First Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-37
Table 33-8: Halfway River First Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-42
Table 33-9: Halfway River First Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-47
Table 33-10: Halfway River First Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-53
Table 33-11: Halfway River First Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-58
Table 33-12: Halfway River First Nation Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-62
Table 33-13: Halfway River First Nation Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-66
Table 33-14: Halfway River First Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-70
Table 33-15: Summary of Project Residual Effects on Halfway River First Nation Interests	33-77
Table 33-16: VC Assessment Sections That Inform Potential Cumulative Effects on Halfway River First Nation Interests	33-78
Table 33-17: VC Potential Cumulative Effects on Halfway River First Nation Interests	33-81
Table 33-18: Concerns, Mitigation Measures, and Recommendations by Halfway River First Nation	33-85
Table 33-19: Summary of Key Issues in Relation to Consultation Activities Identified by McLeod Lake Indian Band and PRGT's Responses	33-106
Table 33-20: Chronology of Key PRGT-Led Consultation Activities with McLeod Lake Indian Band.....	33-107
Table 33-21: McLeod Lake Indian Band Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-113
Table 33-22: McLeod Lake Indian Band Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-117
Table 33-23: McLeod Lake Indian Band Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-122
Table 33-24: McLeod Lake Indian Band Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-126

Table 33-25: McLeod Lake Indian Band Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-130
Table 33-26: McLeod Lake Indian Band Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-134
Table 33-27: McLeod Lake Indian Band Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-138
Table 33-28: Summary of Project Residual Effects on McLeod Lake Indian Band Interests	33-141
Table 33-29: VC Assessment Sections That Inform Potential Cumulative Effects on McLeod Lake Indian Band Interests.....	33-142
Table 33-30: VC Potential Cumulative Effects on McLeod Lake Indian Band Interests	33-145
Table 33-31: Concerns, Mitigation Measures and Recommendations by McLeod Lake Indian Band.....	33-149
Table 33-32: Summary of Key Issues in Relation to Consultation Activities Identified by Saulteau First Nations and PRGT's Responses.....	33-164
Table 33-33: Chronology of Key PRGT-Led Consultation Activities with Saulteau First Nations	33-165
Table 33-34: Saulteau First Nations Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-174
Table 33-35: Saulteau First Nations Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-180
Table 33-36: Saulteau First Nations Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-186
Table 33-37: Saulteau First Nations Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-192
Table 33-38: Saulteau First Nations Potential Adverse Effects on Trails and 33- Travelways Interests and Mitigation Measures	33-197
Table 33-39: Saulteau First Nations Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-203
Table 33-40: Saulteau First Nations Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-208
Table 33-41: Saulteau First Nations Potential Adverse Effects on Sacred Areas and Mitigation Measures.....	33-214
Table 33-42: Summary of Project Residual Effects on Saulteau First Nations Interests	33-221
Table 33-43: VC Assessment Sections That Inform Potential Cumulative Effects on Saulteau First Nations' Interests.....	33-223
Table 33-44: VC Potential Cumulative Effects on Saulteau First Nations Interests	33-226

Table 33-45: Concerns, Mitigation Measures, and Recommendations by Saulteau First Nations	33-231
Table 33-46: Summary of Key Issues in Relation to Consultation Activities Identified by West Moberly First Nations and PRGT's Responses	33-251
Table 33-47: Chronology of Key PRGT-Led Consultation Activities with West Moberly First Nations.....	33-252
Table 33-48: West Moberly First Nations Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-260
Table 33-49: West Moberly First Nations Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-266
Table 33-50: West Moberly First Nations Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-272
Table 33-51: West Moberly First Nations Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-277
Table 33-52: West Moberly First Nations Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-281
Table 33-53: West Moberly First Nations Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-286
Table 33-54: West Moberly First Nations Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-291
Table 33-55: West Moberly First Nations Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-297
Table 33-56: Summary of Project Residual Effects on West Moberly First Nations Interests	33-303
Table 33-57: VC Assessment Sections That Inform Potential Cumulative Effects on West Moberly First Nations Interests	33-305
Table 33-58: VC Potential Cumulative Effects on West Moberly First Nations Interests	33-308
Table 33-59: Concerns, Mitigation Measures and Recommendations by West Moberly First Nations	33-312
Table 33-60: Summary of Key Issues in Relation to Consultation Activities Identified by Lake Babine Nation and PRGT's Responses	33-340
Table 33-61: Chronology of Key PRGT-Led Consultation Activities with Lake Babine Nation	33-341
Table 33-62: Lake Babine Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures.....	33-348
Table 33-63: Lake Babine Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures.....	33-352
Table 33-64: Lake Babine Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures.....	33-357

Table 33-65: Lake Babine Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-363
Table 33-66: Lake Babine Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-367
Table 33-67: Lake Babine Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-371
Table 33-68: Summary of Residual Adverse Effects on Lake Babine Nation Interests	33-376
Table 33-69: VC Assessment Sections That Inform Potential Cumulative Effects on Lake Babine Nation Interests	33-378
Table 33-70: VC Potential Cumulative Effects on Lake Babine Nation Interests	33-380
Table 33-71: Concerns, Mitigation Measures and Recommendations by Lake Babine Nation	33-384
Table 33-72: Summary of Key Issues in Relation to Consultation Activities Identified by Nak'azdli Band and PRGT's Responses	33-402
Table 33-73: Chronology of Key PRGT-Led Consultation Activities with Nak'azdli Band Interests	33-403
Table 33-74: Nak'azdli Band Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-410
Table 33-75: Nak'azdli Band Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-415
Table 33-76: Nak'azdli Band Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-421
Table 33-77: Nak'azdli Band Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-428
Table 33-78: Nak'azdli Band Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-433
Table 33-79: Nak'azdli Band Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures	33-437
Table 33-80: Nak'azdli Band Potential Adverse Effects on Sacred Area Interests and Mitigation Measures	33-443
Table 33-81: Summary of Project Residual Effects on Nak'azdli Band Aboriginal Interests	33-447
Table 33-82: VC Assessment Sections That Inform Potential Cumulative Effects on Nak'azdli Band Interests	33-448
Table 33-83: VC Potential Cumulative Effects on Nak'azdli Band Interests	33-451
Table 33-84: VC Concerns, Mitigation Measures and Recommendations Nak'azdli Band	33-454
Table 33-85: Summary of Key Issues in Relation to Consultation Activities Identified by Takla Lake First Nation and PRGT's Responses	33-469

Table 33-86: Chronology of Key PRGT-Led Consultation Activities with Takla Lake First Nation	33-470
Table 33-87: Takla Lake First Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-478
Table 33-88: Takla Lake First Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-483
Table 33-89: Takla Lake First Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-489
Table 33-90: Takla Lake First Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-495
Table 33-91: Takla Lake First Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-500
Table 33-92: Takla Lake First Nation Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-504
Table 33-93: Takla Lake First Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-509
Table 33-94: Summary of Project Residual Effects on Takla Lake First Nation Aboriginal	33-515
Table 33-95: VC Assessment Sections That Inform Potential Cumulative Effects on Takla Lake First Nation Interests	33-516
Table 33-96: VC Potential Cumulative Effects on Takla Lake First Nation Interests	33-519
Table 33-97: Concerns, Mitigation Measures and Recommendations by Takla Lake First Nation	33-522
Table 33-98: Summary of Key Issues in Relation to Consultation Activities Identified by Tl'azt'en Nation and PRGT's Responses.....	33-545
Table 33-99: Chronology of Key PRGT-led consultation Activities with Tl'azt'en Nation	33-547
Table 33-100: Tl'azt'en Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures.....	33-558
Table 33-101: Tl'azt'en Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures.....	33-564
Table 33-102: Tl'azt'en Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures.....	33-570
Table 33-103: Tl'azt'en Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-576
Table 33-104: Tl'azt'en Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-581
Table 33-105: Tl'azt'en Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-585

Table 33-106: Summary of Project Residual Effects on Tl'azt'en Nation Interests	33-590
Table 33-107: VC Assessment Sections That Inform Potential Cumulative Effects on Tl'azt'en Nation Interests	33-592
Table 33-108: VC Potential Cumulative Effects on Tl'azt'en Nation Interests	33-594
Table 33-109: Concerns, Mitigation Measures, and Recommendations by Tl'azt'en Nation	33-597
Table 33-110: Summary of Key Issues in Relation to Consultation Activities Identified by Gitxsan and PRGT's Responses.....	33-619
Table 33-111: Chronology of Key PRGT-Led Consultation and Engagement Activities	33-620
Table 33-112: Gitxsan Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-630
Table 33-113: Gitxsan Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-636
Table 33-114: Gitxsan Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-641
Table 33-115: Gitxsan Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures.....	33-647
Table 33-116: Gitxsan Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-651
Table 33-117: Gitxsan Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-656
Table 33-118: Gitxsan Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-660
Table 33-119: Gitxsan Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-664
Table 33-120: Summary of Project Residual Effects on Gitxsan Interests	33-668
Table 33-121: VC Assessment Sections That Inform Potential Cumulative Effects on Gitxsan Interests	33-670
Table 33-122: VC Potential Cumulative Effects on Gitxsan Interests	33-673
Table 33-123: Concerns, mitigation Measures, and Recommendations by Gitxsan	33-676
Table 33-124: Summary of Key Issues in Relation to Consultation Activities Identified by the GHS and PRGT's Responses	33-701
Table 33-125: Chronology of Key PRGT-led Consultation Activities with the GHS.....	33-702
Table 33-126: Chronology of Key PRGT-led Consultation Activities with Luux Hon	33-706
Table 33-127: Gitanyow Potential Adverse Effects on Hunting Interests and Mitigation Measures.....	33-711

Table 33-128: Gitanyow Potential Adverse Effects on Trapping Interests and Mitigation Measures.....	33-716
Table 33-129: Gitanyow Potential Adverse Effects on Fishing Interests and Mitigation Measures.....	33-721
Table 33-130: Gitanyow Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-727
Table 33-131: Gitanyow Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures	33-731
Table 33-132: Gitanyow Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures.....	33-735
Table 33-133: Summary of Project Residual Effects on Gitanyow Interests	33-740
Table 33-134: VC Assessment Sections That Inform Potential Cumulative Effects on Gitanyow Interests.....	33-742
Table 33-135: VC Potential Cumulative Effects on Gitanyow Interests.....	33-745
Table 33-136: Concerns, Mitigation Measures and Recommendations by Gitanyow	33-748
Table 33-137: Summary of Key Issues in Relation to Consultation Activities Identified by Lax Kw'alaams Band and PRGT's Responses	33-767
Table 33-138: Chronology of Key PRGT-Led Consultation Activities with Lax Kw'alaams Band	33-769
Table 33-139: Lax Kw'alaams Band Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-776
Table 33-140: Lax Kw'alaams Band Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-782
Table 33-141: Lax Kw'alaams Band Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-789
Table 33-142: Lax Kw'alaams Band Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-796
Table 33-143: Lax Kw'alaams Band Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-802
Table 33-144: Lax Kw'alaams Band Potential Adverse Effects on Habitation, Gathering and Sacred Areas Interests and Mitigation Measures	33-809
Table 33-145: Summary of Project Residual Effects on Lax Kw'alaams Band Interests	33-815
Table 33-146: VC Assessment Sections That Inform Potential Cumulative Effects on Lax Kw'alaams Band Interests	33-816
Table 33-147: VC Potential Cumulative Effects on Lax Kw'alaams Interests	33-819
Table 33-148: Concerns, Mitigation Measures and Recommendations by Lax Kw'alaamas Band	33-823

Table 33-149: Summary of Key Issues in Relation to Consultation Activities Identified by Metlakatla First Nation and PRGT's Responses	33-850
Table 33-150: Chronology of Key PRGT-led Consultation Activities with Metlakatla First Nation	33-851
Table 33-151: Metlakatla First Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-862
Table 33-152: Metlakatla First Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-867
Table 33-153: Metlakatla First Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-873
Table 33-154: Metlakatla First Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-881
Table 33-155: Metlakatla First Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-887
Table 33-156: Metlakatla First Nation Potential Adverse Effects on Habitation Areas Interests and Mitigation Measures.....	33-893
Table 33-157: Metlakatla First Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-899
Table 33-158: Summary of Project Residual Effects on Metlakatla First Nation Interests	33-906
Table 33-159: VC Assessment Sections that Inform Potential Cumulative Effects on Metlakatla First Nation Interests.....	33-907
Table 33-160: VC Potential Cumulative Effects on Metlakatla First Nation Interests	33-910
Table 33-161: Concerns, Mitigation Measures and Recommendations by Metlakatla First Nation	33-915
Table 33-162: Summary of Key Issues in Relation to Consultation Activities Identified by Gitxaala Nation and PRGT's Responses	33-932
Table 33-163: Chronology of Key PRGT-Led Consultation Activities with Gitxaala Nation	33-934
Table 33-164: Gitxaala Nation Potential Adverse Effects on Hunting and Mitigation Measures	33-941
Table 33-165: Gitxaala Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures.....	33-946
Table 33-166: Gitxaala Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-951
Table 33-167: Gitxaala Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-957
Table 33-168: Gitxaala Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-963

Table 33-169: Gitxaala Nation Potential Adverse Effects on Gathering Areas and Sacred Areas Interests and Mitigation Measures.....	33-969
Table 33-171: Summary of Project Residual Effects on Gitxaala Nation Aboriginal Interests.....	33-978
Table 33-172: VC Assessment Sections That Inform Potential Cumulative Effects on Gitxaala Nation Interests.....	33-979
Table 33-172: VC Potential Cumulative Effects on Gitxaala Nation Interests	33-982
Table 33-173: Concerns, Mitigation Measures and Recommendations by Gitxaala Nation.....	33-986
Table 33-174: Summary of Key Issues in Relation to Consultation Activities identified by Yekooche First Nation and PRGT's Responses	33-1001
Table 33-175: Chronology of Key PRGT-Led Consultation Activities with Yekooche First Nation and PRGT's Responses	33-1002
Table 33-176: Yekooche First Nation Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-1009
Table 33-177: Yekooche First Nation Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-1014
Table 33-178: Yekooche First Nation Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-1019
Table 33-179: Yekooche First Nation Potential Adverse Effects on Plant Gathering Interests and Mitigation Measures	33-1028
Table 33-180: Yekooche First Nation Potential Adverse Effects on Trails and Travelways Interests and Mitigation Measures	33-1032
Table 33-181: Yekooche First Nation Potential Adverse Effects on Habitation Areas and Mitigation Measures	33-1036
Table 33-182: Yekooche First Nation Potential Adverse Effects on Gathering Areas Interests and Mitigation Measures.....	33-1040
Table 33-183: Yekooche First Nation Potential Adverse Effects on Sacred Areas Interests and Mitigation Measures	33-1044
Table 33-184: Summary of Project Residual Effects on Yekooche First Nation Interests	33-1050
Table 33-185: VC Assessment Sections That Inform Potential Cumulative Effects on Yekooche First Nation Interests.....	33-1051
Table 33-186: VC Potential Cumulative Effects on Yekooche First Nation Interests	33-1054
Table 33-187: Concerns, Mitigation Measures and Characterization of Residual Concerns with Respect to Potential Effects by Yekooche First Nation.....	33-1057
Table 33-188: Summary of Key Issues in Relation to Consultation Activities Identified by Kitselas Band and PRGT's Responses	33-1072

Table 33-189: Chronology of Key PRGT-Led Consultation Activities with Kitselas Band	33-1074
Table 33-190: Kitselas Band Potential Adverse Effects on Hunting Interests and Mitigation Measures	33-1080
Table 33-191: Kitselas Band Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-1085
Table 33-192: Kitselas Band Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-1090
Table 33-193: Kitselas Band Potential Adverse Effects on Plant Gathering and Mitigation Measures	33-1096
Table 33-194: Summary of Residual Adverse Effects on Kitselas Band Interests.....	33-1101
Table 33-195: VC Assessment Sections That Inform Potential Cumulative Effects on Kitselas Band Interests.....	33-1102
Table 33-196: VC Potential Cumulative Effects on Kitselas Band Interests	33-1105
Table 33-197: Concerns, Mitigation Measures, Recommendations by Kitselas Band	33-1109
Table 33-198: Summary of Key Issues in Relation to Consultation Activities Identified by Kitsumkalum Indian Band and PRGT's Responses.....	33-1123
Table 33-199: Chronology of Key PRGT-led Consultation Activities with Kitsumkalum Indian Band	33-1124
Table 33-200: Kitsumkalum Indian Band Potential Adverse Effects on Hunting and Mitigation Measures.....	33-1132
Table 33-201: Kitsumkalum Indian Band Potential Adverse Effects on Trapping Interests and Mitigation Measures	33-1137
Table 33-202: Kitsumkalum Indian Band Potential Adverse Effects on Fishing Interests and Mitigation Measures	33-1143
Table 33-203: Kitsumkalum Indian Band Potential Adverse Effects on Marine Plant Gathering Interests and Mitigation Measures.....	33-1149
Table 33-204: Kitsumkalum Indian Band Potential Adverse Effects on Marine Trails and Travelways Interests and Mitigation Measures	33-1155
Table 33-205: Kitsumkalum Indian Band Potential Adverse Effects on Habitation Areas, Gathering Areas and Sacred Areas Interests and Mitigation Measures	33-1162
Table 33-206: Summary of Project Residual Effects on Kitsumkalum Indian Band Interests	33-1167
Table 33-207: VC Assessment Sections That Inform Potential Cumulative Effects on Kitsumkalum Indian Band Interests.....	33-1168
Table 33-208: VC Potential Cumulative Effects on Kitsumkalum Indian Band Interests	33-1171

Table 33-209: Concerns, Mitigation Measures and Recommendations by Kitsumkalum Indian Band	33-1175
Table 33-210: Blueberry River First Nations Issues and PRGT Responses.....	33-1190
Table 33-211: Doig River First Nation Issues and PRGT Response.....	33-1196
Table 33-212: Fort Nelson First Nation Issues and PRGT Response.....	33-1199
Table 33-213: Prophet River First Nation Issues and PRGT Response	33-1202
Table 33-214: Treaty 8 Tribal Association Issues and PRGT Response.....	33-1204
Table 33-215: Carrier Sekani Tribal Council Issues and PRGT Response	33-1206
Table 33-216: Métis Issues and PRGT Responses	33-1216
Table 33-217: Aboriginal Interests, Concerns and Mitigation	33-1217
Table 34-1: Nisga'a Nation Registered Population	34-6
Table 34-2: Nisga'a Lisims Government Current Council.....	34-8
Table 34-3: Nisga'a Village of Gitlaxt'aamiks Current Chief and Council	34-8
Table 34-4: Nisga'a Village of Gitwinksihklw Current Chief and Council	34-8
Table 34-5: Nisga'a Village of Laxgalts'ap Current Chief and Council	34-9
Table 34-6: Nisga'a Village of Gingolx Current Chief and Council.....	34-9
Table 34-7: Proximity of Alternate Routes to Nisga'a Villages.....	34-10
Table 34-8: Summary of EAO-led Meetings.....	34-19
Table 34-9: Summary of Key Issues Raised by Nisga'a (as of January 2014).....	34-25
Table 34-10: Chronology of Key Nisga'a Pre-Application Consultation Activities led by PRGT	34-31
Table 34-11: Nisga'a 8(e) Interests to be Assessed in the Application	34-42
Table 34-12: Nisga'a 8(f) Interests to be Assessed in the Application.....	34-43
Table 34-13: RAA Boundaries for the Assessment of Nisga'a 8(e) Interests	34-45
Table 34-14: Development Projects Included in the Scenario Analysis.....	34-51
Table 34-15: Potential Effects of the Project on Nisga'a Lands and Nisga'a Fee Simple Lands	34-57
Table 34-16: Characterization of Residual Effects on Nisga'a Land Interests.....	34-58
Table 34-17: Potential Project Interactions with Nisga'a Lands and Category B Lands ..	34-63
Table 34-18: Areas of Land Potentially Affected by the Project.....	34-68
Table 34-19: Summary of Residual Effects on Nisga'a Lands and Category B Lands.....	34-71
Table 34-20: Potential Cumulative Effects on Nisga'a Nation's Land Interests.....	34-75
Table 34-21: NLG Feedback and PRGT Responses.....	34-78
Table 34-22: Nisga'a Land-related Interests.....	34-81
Table 34-23: Potential Effects of the Project on Other Nisga'a Land-related Interests	34-84
Table 34-24: Spatial Boundaries Used in the Assessment of Potential Effects on Other Land-related Interests	34-85

Table 34-25: Characterization of Residual Effects	34-86
Table 34-26: Nisga’a Traplines within Nisga’a Lands and Nisga’a Traplines Wholly Outside Nisga’a Lands	34-91
Table 34-27: Nisga’a Guided Angling Waterbodies and Angling Guides	34-92
Table 34-28: Guide Outfitter Tenures in the Nass Area, Nass Wildlife Area and Nisga’a Lands	34-94
Table 34-29: Volumes for Nisga’a Water Reservation.....	34-94
Table 34-30: Sites with Heritage Value to Nisga’a Nation	34-96
Table 34-31: Potential Project Interactions with other Nisga’a Land-Related Interests ...	34-97
Table 34-32: Traplines that are Potentially Affected by the Project	34-112
Table 34-33: Summary of Potential Residual Effects on Other Nisga’a Land-Related Interests	34-120
Table 34-34: Potential Cumulative Effects on Nisga’a Nation’s Other Land-related Interests	34-126
Table 34-35: Summary of NLG Feedback on Other Nisga’a Land-Related Interests.....	34-129
Table 34-36: Potential Effects of the Project on Nisga’a Access to Other Lands	34-133
Table 34-37: Characterization of Residual Effects	34-134
Table 34-38: Potential for Project Interactions with Access to Other Lands in the Nass Area.....	34-137
Table 34-39: Summary of Comments Received by NLG on the Draft Nisga’a Chapter related to Freshwater Fish and Aquatic Plants.....	34-145
Table 34-40: Measurable Parameters Selected to Assess Effects on the Right of Nisga’a Citizens to Harvest Freshwater Fish and Aquatic Plants.....	34-153
Table 34-41: Characterization of Residual Effects on the Right to Harvest Freshwater Fish and Aquatic Plants	34-156
Table 34-42: Potential Interactions of the Project with Freshwater Fish Species and Aquatic Plants Harvested by Nisga’a Citizens	34-173
Table 34-43: Potential Interactions (Rank 0 and Rank 1) Not Considered Further in the Potential Effects Assessment	34-174
Table 34-44: Classification of Harvested Species by Nisga’a Citizens for the Assessment of Potential Effects of the Project	34-176
Table 34-45: The Relative Productive Capacity of Major Watersheds and Other Tributaries (for the Production of Anadromous Salmon Species) Crossed by the Pipeline Route in the Nass Area.....	34-181
Table 34-46: Summary of Project Interactions with High Productive Watersheds for Anadromous Salmon and Steelhead Populations in the Nass Area Crossed by the Pipeline Route	34-184

Table 34-47: Summary of Project Residual Effects: Right of Nisga'a Citizens to Harvest Freshwater Fish (Nass Salmon, Nass Steelhead, Oolichan, and Non-salmon Species) and Aquatic Plants	34-198
Table 34-48: Summary of NLG Feedback on the Right of Nisga'a Citizens to Harvest Freshwater Fish (Nass Salmon, Nass Steelhead, Oolichan, and Non-salmon Species) and Aquatic Plants	34-204
Table 34-49: Influence of Consultation on the Assessment	34-209
Table 34-50: Measurable Parameters Used to Evaluate Potential Effects on the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants	34-210
Table 34-51: Characterization of Residual Effects on the Ability of Nisga'a to Harvest Marine Resources	34-214
Table 34-52: Summary of Baseline Information on Marine Resources within the LAA	34-217
Table 34-53: Information on Marine Species or Groups of Harvesting Interest	34-219
Table 34-54: Estimated Catch Numbers for Salmon by Nisga'a Fishers from 2006-2011a.....	34-221
Table 34-55: Potential Project Interactions with the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants.....	34-226
Table 34-56: Interaction of Potential Project Mechanisms with Marine Pipeline Routes	34-227
Table 34-57: Potential Interactions with Rank 1	34-228
Table 34-58: Summary of Residual Effects on Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants	34-259
Table 34-59: Potential Cumulative Effects by Project Regarding the Ability of Nisga'a to Exercise Their Right to Harvest Marine Fish and Aquatic Plants.....	34-262
Table 34-60: Reasonably-foreseeable Future Projects within the Nass Area and Construction Timelines Potentially Overlapping with Construction of PRGT Marine Works	34-263
Table 34-61: PRGT Response to NLG Feedback Regarding Assessment of the Ability	34-268
Table 34-62: Selected Indicators for Wildlife and Wildlife Habitat Assessed in Section 14.....	34-270
Table 34-63 Influence of Consultation on the Assessment	34-272
Table 34-64: Measurable Parameters for the Potential Effect of the Project on Nisga'a Interests Regarding the Right of Nisga'a Citizens to Harvest Wildlife... ..	34-274
Table 34-65: Characterization of Residual Effects on the Change in the Ability of Nisga'a Citizens to Harvest Designated Species	34-278
Table 34-66: Potential Interactions between Project Activities and the Change in Ability to Harvest Designated Species	34-285

Table 34-67: Potential Interactions not Considered Further	34-286
Table 34-68: Change in Regional Grizzly Bear Habitat in the NWA	34-291
Table 34-69: Change in Effective Grizzly Bear Seasonal Feeding Habitat in the Portion of LAA in each GBAA	34-292
Table 34-70: Change in Regional Moose Habitat in the NWA	34-292
Table 34-71: Change in Effective Moose Winter Feeding and Shelter Habitat in the LAA	34-293
Table 34-72: Effect of Project on Mountain Goat UWR in the NWA	34-293
Table 34-73: Change in Grizzly Bear Habitat Suitability as a Function of Linear Density	34-295
Table 34-74: Change in Grizzly Bear Core Security Habitat	34-295
Table 34-75: Change in Linear Feature Density within Grizzly Bear Assessment Areas	34-295
Table 34-76: Mitigation Measures Considered in the Assessment of Wildlife and Wildlife Habitat (Section 14).....	34-297
Table 34-77: Summary of Project Residual Effects: Change in Ability to Harvest Wildlife	34-312
Table 34-78: Potential Cumulative Effects on the Ability of Nisga’a Citizens to Harvest Wildlife.....	34-314
Table 34-79: Cumulative Effects on Linear Feature Density for Grizzly Bear Assessment Areas	34-317
Table 34-80: Summary of Cumulative Residual Effects for Change in Ability to Harvest Moose	34-319
Table 34-81: Summary of NLG Feedback Regarding Change in the Ability of Nisga’a Citizens to Harvest Wildlife.....	34-321
Table 34-82: Measurable Parameters for Change in Ability to Harvest Migratory Birds.....	34-326
Table 34-83: Characterization of Residual Effects on the Ability to Harvest Migratory Birds.....	34-330
Table 34-84: Species Detections by Ecosection	34-334
Table 34-85: Potential Project Effects on the Ability of Nisga’a Citizens to Exercise Their Right to Harvest Migratory Birds.....	34-338
Table 34-86: Potential Interactions Not Considered Further	34-339
Table 34-87: Potential Effects Carried Forward to Detailed Assessment	34-340
Table 34-88: Summary of Suitable Wetlands for Breeding and Fall Migration Waterfowl by Ecosection.....	34-342
Table 34-89: Indicated Breeding Pair (IBP) Estimates for Waterfowl by Ecosection	34-342
Table 34-90: Number of IBP Potentially Displaced by Project Activities in the Project Footprint.....	34-343

Table 34-91: Potential Effects from the Project on Upland Game Birds in the Nass Area.....	34-344
Table 34-92: Mitigation Measures Considered in the Assessment of Change in Habitat for Migratory Birds	34-346
Table 34-93: Mitigation Measures Considered in the Assessment of Change in Mortality Risk for Migratory Birds.....	34-348
Table 34-94: Summary of Project Residual Effects on Ability of Nisga’a to Exercise Their Right to Harvest Migratory Birds.....	34-352
Table 34-95: Potential Cumulative Effects by Project on the Ability of Nisga’a Citizens to Exercise Their Right to Harvest Migratory Birds.....	34-355
Table 34-96: PRGT Response to NLG Feedback Regarding Assessment of the Ability of Nisga’a Citizens to Exercise Their Right to Harvest Migratory Birds	34-360
Table 34-97: Focal Species for the Harvest of Non-Timber Forest Resources by Nisga’a Citizens	34-361
Table 34-98: Influence of Consultation on the Assessment of Nisga’a Interests Regarding the Harvest of Non-Timber Forest Resources.....	34-363
Table 34-99: Measurable Parameters for the Change in the Ability to Harvest Non-Timber Forest Resources	34-365
Table 34-100: Characterization of Residual Effects on the Change in the Ability to Harvest Non-Timber Forest Resources.....	34-368
Table 34-101: Nisga’a Citizens’ Use of Focal Species	34-370
Table 34-102: Potential Interactions between Project Activities and Nisga’a Interests Related to the Harvest of Non-Timber Forest Resources	34-373
Table 34-103: Potential Interactions Not Considered Further.....	34-374
Table 34-104: Change in Focal Species Suitable Habitat in the LAA within the Nass Area.....	34-377
Table 34-105: Summary of Project Residual Effects: Change in Ability to Harvest Non-Timber Forest Resources	34-385
Table 34-106: Potential Cumulative Effects on Nisga’a Interests Regarding the Ability to Harvest Non-Timber Forest Resources	34-388
Table 34-107: Summary of Cumulative Residual Effects for Change in Ability to Harvest Non-Timber Forest Resources.....	34-391
Table 34-108: Summary of NLG Feedback on Nisga’a Interests Regarding Change in Ability to Harvest Non-Timber Forest Resources	34-394
Table 34-109: Identification of Nisga’a Economic Interests and Measurable Parameters.....	34-408
Table 34-110: Characterization of Residual Project Effects on Nisga’a Economic Interests.....	34-410
Table 34-111: Nisga’a Labour Force Characteristics (2006)	34-413

Table 34-112: Nisga’a Workplace Experience	34-414
Table 34-113: Highest Level of Education Attained	34-415
Table 34-114: Household and Individual Income	34-415
Table 34-115: Nisga’a Land Use Plan Resource Stewardship Zones and Special Management Areas	34-417
Table 34-116: Nisga’a Land Use Zones Intersected by the Pipeline Route	34-419
Table 34-117: Businesses Located in Nisga’a Villages (2006)	34-419
Table 34-118: Project Interactions with Nisga’a Economic Interests	34-424
Table 34-119: Estimated Project Nisga’a Labour Force.....	34-431
Table 34-120: Summary of NLG Feedback on Nisga’a Citizens’ Employment and Income.....	34-434
Table 34-121: Estimated Project Purchases of Goods and Services from Nisga’a Businesses and Associated Indirect Employment.....	34-437
Table 34-122: Summary of Construction Employment Effects in Nisga’a.....	34-438
Table 34-123: NLG Feedback on Nisga’a Citizens’ Business Activities.....	34-440
Table 34-124: Nisga’a Land Use Zones Potentially Affected by the Project.....	34-445
Table 34-125: Pine Mushroom High Value Habitat Affected by the Project Footprint..	34-447
Table 34-126: Summary of NLG Feedback on Natural Resources Activities and Related Earnings or Values.....	34-450
Table 34-127: Summary of Adverse Residual Effects: Nisga’a Economic Well-Being.	34-453
Table 34-128: Cumulative Effects Initial Analysis – Economic Interests.....	34-456
Table 34-129: Cumulative Effects on Nisga’a 8 (f) Economic Interest	34-458
Table 34-130: Estimated Employment of Nisga’a citizens for Proposed Development Projects in the Nass Area	34-461
Table 34-131: Measurable Parameters for Nisga’a Social Interests.....	34-469
Table 34-132: Characterization Description Criteria for the Assessment of Residual Adverse Effects on Nisga’a Social Interests.....	34-471
Table 34-133: Populations of Nisga’a Villages	34-473
Table 34-134: Measurable Parameters of Health Problems	34-482
Table 34-135: Project Interactions with Nisga’a Social Interests.....	34-483
Table 34-136: Straight-Line Distances and Access between Camps and Nisga’a Villages	34-497
Table 34-137: Summary of Adverse Residual Effects: Nisga’a Social Well-Being	34-518
Table 34-138: Cumulative Effects Initial Analysis – Nisga’a Social Interests	34-522
Table 34-139: Potential Cumulative Effects on Nisga’a Social Interests.....	34-523
Table 34-140: Summary of Cumulative Residual Effects for Nisga’a Social Interests ..	34-531
Table 34-141: Measurable Parameters for Nisga’a Cultural Interests.....	34-535
Table 34-142: Characterization of Residual Effects for Nisga’a 8(f) Cultural Interests .	34-536

Table 34-143: Nisga’a Language Use (2012).....	34-543
Table 34-144: Knowledge of Aboriginal Language and Aboriginal Language as Mother Tongue.....	34-544
Table 34-145: Project Interactions with Nisga’a Cultural Interests.....	34-547
Table 34-146: Nisga’a Land Use Zones Potentially Affected by the Project.....	34-555
Table 34-147: Summary of Nisga’a Citizens’ Concerns of Environmental Impact on Cultural Activity	34-558
Table 34-148: Summary of NLG Feedback on Nisga’a Cultural Interests	34-561
Table 34-149: Summary of Adverse Residual Effects: Nisga’a Cultural Well-Being	34-566
Table 34-150: Initial Cumulative Effects Assessment – NFA 8(f) Cultural Interests	34-569
Table 34-151: Potential Cumulative Effects by Project on Nisga’a 8(f) Cultural Interests	34-570
Table 34-152: Summary of Cumulative Residual Effects for Nisga’a Cultural Interests	34-576
Table 35-1: TransCanada’s Values, Policies, and Guiding Principles Documents	35-1
Table 35-2: Local Government Consultation	35-4
Table 35-3: Profiles of Regional Districts	35-6
Table 35-4: Summary of Public Consultation Activities (as of March 2014)	35-8
Table 35-5: Summary of Planned and Ongoing Public Consultation.....	35-10
Table 35-6: Overview of Public Consultation Tools	35-12
Table 35-7: Summary of Key Stakeholder Concerns, Responses and Mitigation.....	35-14
Table 37-1: Summary of Follow-up Programs	37-1
Table 38-1: Land and Marine Based Alternatives	38-6
Table 38-2: Summary of Residual Effects.....	38-11
Table 38-3: Summary of Mitigation Measures	38-60

LIST OF APPENDICES

Appendix A	BCEAO Documents
	A-1 - Section 10 Order
	A-2 - Section 11 Order
	A-3 - AIR Issued
	A-4 - Project Description Updates
	A-5 - Application Evaluation Decision
Appendix B	CEAA Correspondence
Appendix C	Consultation Materials
	C-1 - Public Consultation Plan and Public Consultation Reports #1 and #2
	C-2 - Public Materials (including Open Houses)
	C-3 - Working Group Comment Tracking Table
	C-4 - Compiled Public Comments and Proponent Responses
Appendix D	Project Inclusion List
Appendix E	Air Quality
	E- - Air Quality Technical Data Report
	E-1 - Abbreviations and Glossary
	E-2 - Climate Normals Used to Characterize Existing Climate
	E-3 - Detailed Emission Inventory
	E-4 - CALMET Modelling Description
	E-5 - CALPUFF Modelling Description and Figures
	E-6 - Isopleth Maps
Appendix F	Greenhouse Gases
Appendix G	Acoustic Environment
Appendix H	Water Quality
	H-1 - Technical Data Report
	H-2 - BGC ARD ML Potential Report
Appendix I	Hydrology
Appendix J	Hydrogeology
Appendix K	Freshwater Aquatic Resources
	K-1 - Proposed Watercourse Crossing Locations, Fish Bearing Status, and Stream Class
	K-2 - Water Quality Data
	K-3 - Watercourse Crossing Sensitivity, Scale of Residual Effects, and Risk Rating Results
	K-4 - Proposed Watercourse Crossing Methods
	K-5 - Risk Management Framework Methodology

Appendix L	Marine Resources
	L-1 - Review of Existing Information
	L-2 - Interidal Survey
	L-3 - Shallow Subtidal
	L-4 - Benthic Habitat Mapping Survey
	L-5 - Sediment and Water Quality Report
	L-6 - Conceptual Fish Habitat Offsetting Strategy
	L-7 - Sediment Fate Modelling
Appendix M	Soil
Appendix N	Terrain
Appendix O	Vegetation and Wetland Resources
Appendix P	Wildlife and Wildlife Habitat
	P-1 - Technical Data Report
	P-2 - Habitat Suitability Model Results for Grizzly Bear
Appendix Q	Economic
	Q-1 - Economic Data
	Q-2 - Education Services
Appendix R	Community Infrastructure and Services
	R-1 - Synopsis of Quality of Life Indicators Memo
	R-2 - Housing and Commercial Accommodations
	R-3 - Emergency and Protective Services
	R-4 - Health Care Services and Infrastructure
	R-5 - Recreation Infrastructure and Services
	R-6 - Water and Waste Management
Appendix S	Visual Quality
Appendix T	Land and Resource Use
	T-1 - Land Use Planning Regimes Overlapping the Project Footprint
	T-2 - Summary of Recreational Sites (table)
	T-3 - Hunting Seasons, Bag Limits, and Harvest Statistics
	T-4 - Trapping Seasons
	T-5 - Freshwater and Marine Recreational Fishing Regulations and Marine Catch Statistics
	T-6 - Industrial Land Use
Appendix U	Heritage
Appendix V	Human Health
	V-1 - Human Health and Ecological Risk Assessment
	V-2 - Sensitive Human Receptor Locations and Air Quality Modelling
	V-3 - Baseline Sediment Quality Data
	V-4 - Baseline Concentrations of Dioxins and Furans in Marine Tissues\near Lelu Island

Appendix W

Aboriginal Consultation

- W-1 - Aboriginal Consultation Plan
- W-2 - Aboriginal Consultation Report #1
- W-3 - Aboriginal Comments on Draft Aboriginal Consultation Report No. 1
- W-4 - Draft Aboriginal Consultation Report #2
- W-5 - Aboriginal Comments on Draft Aboriginal Consultation Report No. 2

Appendix X

Nisga'a Nation

- X-1 - Nisga'a Lisims Government (NLG) Comments on Draft Aboriginal Consultation Reports
- X-2 - Issues Summary Table (Section 34.17)