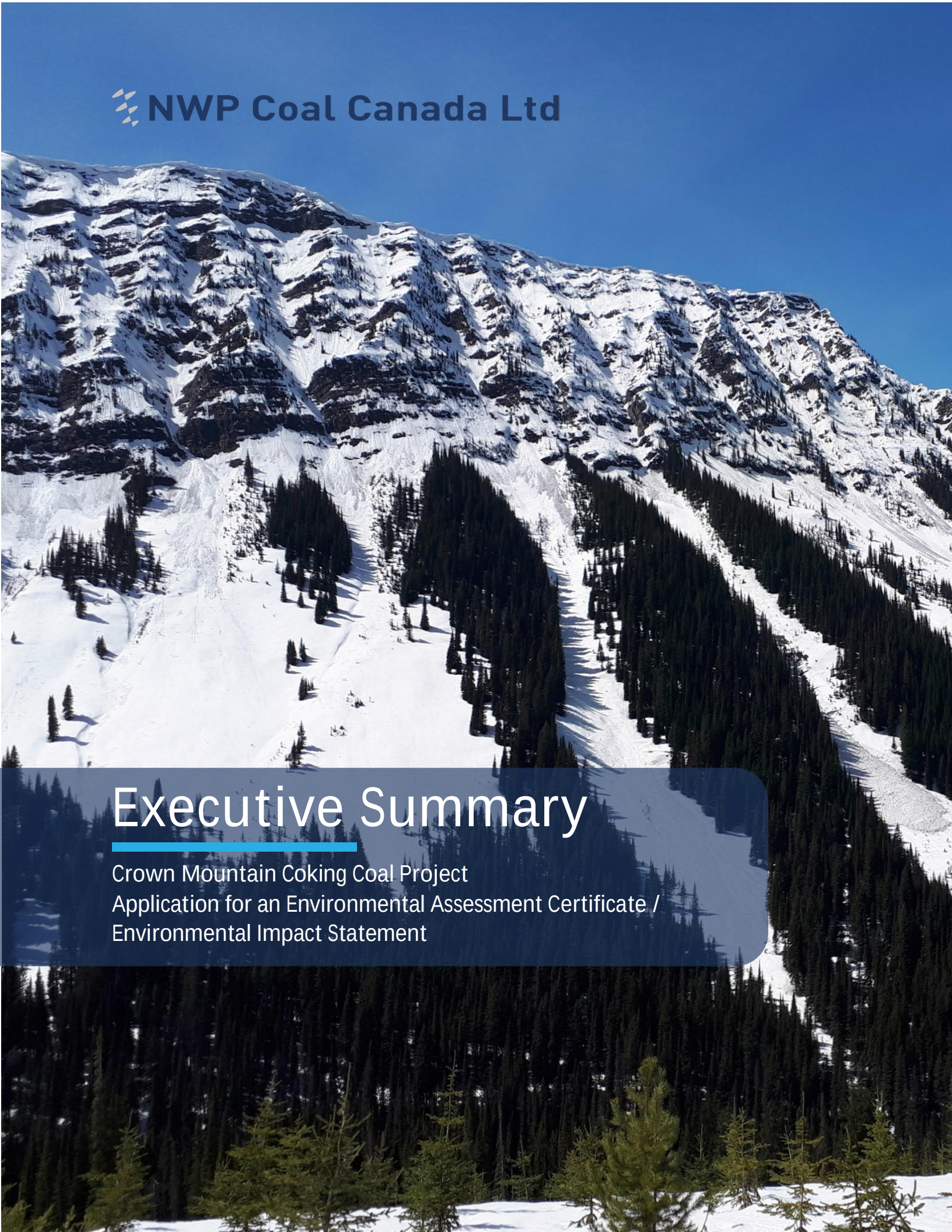
NWP Coal Canada Ltd



Executive Summary

Crown Mountain Coking Coal Project
Application for an Environmental Assessment Certificate / Environmental Impact Statement

Table of Contents

E. Executive Summary E-1

E.1 Introduction and Environmental Assessment Context E-1
E.2 Project Overview E-4
E.2.1 Project Proponent E-4
E.2.2 Need and Purpose of the Project E-4
E.2.3 Project History E-5
E.2.4 Project Phases and Construction Overview E-6
E.2.5 Economic Benefits E-6
E.2.6 Project Capital and Operating Costs E-7
E.2.7 Mineral Resources and Reserves E-7
E.2.8 Geochemical Characterization E-7
E.2.9 Project Components E-8
E.2.10 Mining Methods E-8
E.2.11 Coal Processing E-9
E.2.12 Mine Rock and Coal Reject Management E-9
E.2.13 Water Management E-10
E.2.14 Reclamation and Closure E-11
E.2.14.1 Reclamation Requirements E-12
E.2.14.2 Soil Salvage E-13
E.2.14.3 Final Reclaimed Period E-13
E.3 Alternative Means of Carrying out the Project E-13
E.4 Environmental Assessment Process E-15
E.4.1 Provincial Environmental Assessment Process E-15
E.4.2 Federal Environmental Assessment Process E-16
E.4.3 Applicable Permits E-16
E.5 Consultation and Engagement Overview E-20
E.5.1 Indigenous Communities Consultation and Engagement E-20
E.5.2 Public and Stakeholder Consultation and Engagement E-21
E.5.3 Government Agencies Consultation and Engagement E-22
E.6 Effects Assessment Scope and Approach E-22
E.7 Summary of Effects Assessments E-23
E.7.1 Atmospheric Environment Assessment E-23
E.7.1.1 Background and Context E-23
E.7.1.2 Effects Assessment E-24
E.7.1.3 Mitigation Measures E-26
E.7.1.4 Follow-up Strategy E-27
E.7.2 Acoustic Environment Assessment E-27
E.7.2.1 Background and Context E-27
E.7.2.2 Effects Assessment E-28
E.7.2.3 Mitigation Measures E-28
E.7.2.4 Follow-up Strategy E-29
E.7.3 Soil and Terrain Assessment E-29
E.7.3.1 Background and Context E-29
E.7.3.2 Effects Assessment E-30

E.7.3.3 Mitigation Measures E-31
E.7.3.4 Follow-up Strategy E-31
E.7.4 Groundwater Assessment E-32
E.7.4.1 Background and Context E-32
E.7.4.2 Effects Assessment E-32
E.7.4.3 Mitigation Measures E-33
E.7.4.4 Follow-up Strategy E-33
E.7.5 Surface Water Quantity Assessment E-34
E.7.5.1 Background and Context E-34
E.7.5.2 Effects Assessment E-34
E.7.5.3 Mitigation Measures E-36
E.7.5.4 Follow-up Strategy E-36
E.7.6 Surface Water Quality Assessment E-36
E.7.6.1 Background and Context E-36
E.7.6.2 Effects Assessment E-37
E.7.6.3 Mitigation Measures E-38
E.7.6.4 Follow-up Strategy E-39
E.7.7 Fish and Fish Habitat Assessment E-39
E.7.7.1 Background and Context E-39
E.7.7.2 Effects Assessment E-40
E.7.7.3 Mitigation Measures E-43
E.7.7.4 Follow-up Strategy E-44
E.7.8 Landscapes and Ecosystems Assessment E-44
E.7.8.1 Background and Context E-44
E.7.8.2 Effects Assessment E-45
E.7.8.3 Mitigation Measures E-45
E.7.8.4 Follow-up Strategy E-46
E.7.9 Vegetation Assessment E-47
E.7.9.1 Background and Context E-47
E.7.9.2 Effects Assessment E-47
E.7.9.3 Mitigation Measures E-48
E.7.9.4 Follow-up Strategy E-48
E.7.10 Wildlife and Wildlife Habitat Assessment E-49
E.7.10.1 Background and Context E-49
E.7.10.2 Effects Assessments E-50
E.7.10.3 Mitigation Measures E-52
E.7.10.4 Follow-up Strategy E-53
E.7.11 Physical and Cultural Heritage Assessment E-55
E.7.11.1 Background and Context E-55
E.7.11.2 Effects Assessment E-56
E.7.11.3 Mitigation Measures E-57
E.7.11.4 Follow-up Strategy E-57
E.7.12 Economic Conditions Assessment E-58
E.7.12.1 Background and Context E-58
E.7.12.2 Effects Assessment E-59
E.7.12.3 Mitigation Measures E-61
E.7.12.4 Follow-up Strategy E-61

E.7.13 Socio-Community Assessment E-62
E.7.13.1 Background and Context E-62
E.7.13.2 Effects Assessment E-63
E.7.13.3 Mitigation Measures E-64
E.7.13.4 Follow-up Strategy E-65
E.7.14 Land Use Assessment E-65
E.7.14.1 Background and Context E-65
E.7.14.2 Effects Assessment E-66
E.7.14.3 Mitigation Measures E-67
E.7.14.4 Follow-up Strategy E-68
E.7.15 Effects of the Environment on the Project E-69
E.7.16 Accidents and Malfunctions Assessment E-69
E.7.17 Human and Ecological Health Assessment E-71
E.7.17.1 Background and Context E-71
E.7.17.2 Effects Assessment E-72
E.7.17.3 Mitigation Measures E-73
E.7.17.4 Follow-up Strategy E-73
E.8 Indigenous Communities E-73
E.8.1 Health and Socio-Economic Conditions E-74
E.8.2 Physical and Cultural Heritage, and Any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance E-76
E.8.3 Current Use of Lands and Resources for Traditional Purposes E-78
E.8.3.1 Fishing E-79
E.8.3.2 Hunting and Trapping E-80
E.8.3.3 Harvesting and Gathering E-81
E.8.3.4 Ceremonial/Sacred Areas E-82
E.8.3.5 Access and Travel Routes E-82
E.8.3.6 Mitigation Measures E-82
E.8.3.7 Cumulative Effects Assessment to the Environment on Indigenous Communities E-85
E.8.4 Impact on Aboriginal and Treaty Rights and Interests E-86
E.8.4.1 Impact on Current Use of Water for Traditional Purposes (Ktunaxa Nation) E-88
E.8.4.2 Impact on Current Use of Lands and Resources for Traditional Purposes: Fishing E-88
E.8.4.3 Impact on Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping E-89
E.8.4.4 Impact on Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering E-91
E.8.4.5 Impact on Physical and Cultural Heritage and Change to a Structure, Site, or Item that is of Historical, Archaeological, Paleontological, or Architectural Significance E-92
E.8.4.6 Impact on Health and Socio-Economic Conditions E-92
E.8.5 Summary of Changes to the Environment on Indigenous Peoples E-93
E.9 Summary of Effects on Matters of Federal Interest E-95
E.9.1 Changes to Components of the Environment within Federal Jurisdiction E-95
E.9.1.1 Fish and Fish Habitat E-95

E.9.1.2 Species at Risk E-96
E.9.1.3 Migratory Birds E-96
E.9.2 Changes to the Environment that Would Occur on Federal or Transboundary Lands E-97
E.9.2.1 Background and Context E-97
E.9.2.2 Effects Assessment E-99
E.9.2.3 Mitigation Measures E-100
E.9.2.4 Follow-up Strategy E-101
E.9.3 Changes to the Environment on Indigenous Peoples E-101
E.9.4 Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions E-102
E.10 Management and Monitoring Plans E-103
E.10.1 Elk Valley Water Quality Plan E-104
E.11 Summary and Conclusions E-105
E.12 References E-112

Figures

Figure E.1-1: Project Location E-2
Figure E.1-2: Proposed Project Layout E-3
Figure E.4-1: Summary of the Environmental Assessment Approach for the Project E-16

Tables

Table E.3-1: Alternative Project Means Evaluated E-14
Table E.4-1: Applicable Provincial Permitting and Approval Requirements E-17
Table E.4-2: Applicable Federal Permitting and Approval Requirements E-19
Table E.7-1: Summary of Residual Environmental Effects of Accidents or Malfunctions E-71
Table E.11-1: Summary of Significance Determination for Residual and Cumulative Effects E-106
Table E.11-2: Summary of Significance Determination for Residual and Cumulative Effects and Severity of Adverse Impacts on Rights and Interests of the identified Indigenous Communities E-107

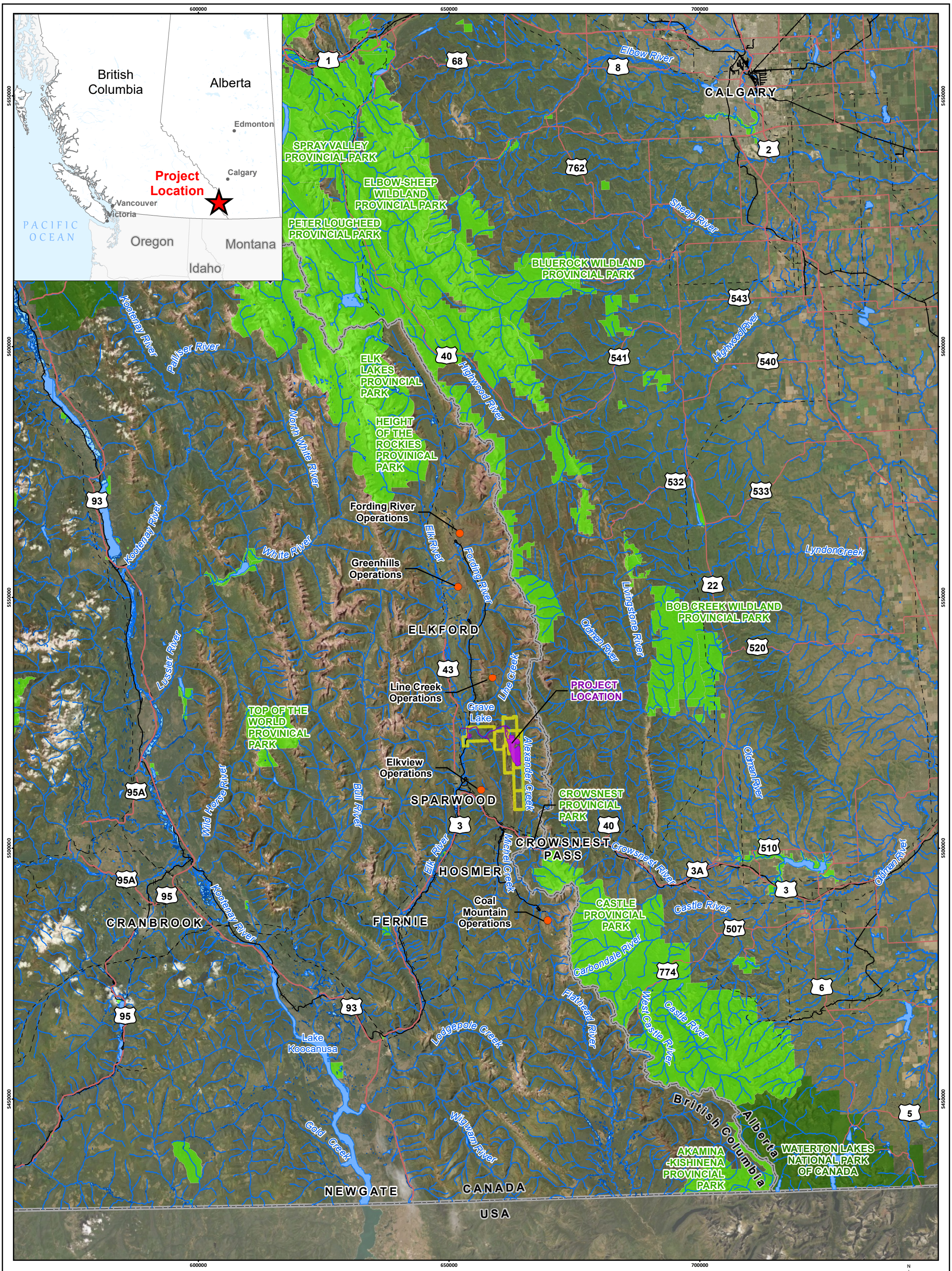
E. Executive Summary

E.1 Introduction and Environmental Assessment Context

NWP Coal Canada Ltd (NWP) proposes to develop and operate the Crown Mountain Coking Coal Project (the Project), an open pit steelmaking coal mine located in the Elk Valley coal field of the East Kootenay Region of British Columbia (B.C.) (Figure E.1-1). The Project resource is a relatively small shallow coal deposit that outcrops in the eastern portion of the Elk Valley adjacent to the Alexander Creek Syncline which is the major geological feature of the Elk Valley coalfields. The shallow outcropping seams provide a discrete opportunity for open-pit mining with a low strip-ratio reducing the volume of mine rock removal and management and reducing the overall project footprint.

The location and scale of the project provide a unique opportunity for the development of a steelmaking coal project with a substantially reduced environmental impact than that of historical and current coal production in Canada and other key producer locations. NWP has sought to design the project to maximise the opportunity for accelerated reclamation and utilise best practice environmental design and management such that any negative environmental impacts are eliminated or minimised and that suitable environmental offsets are established to seek to achieve a net overall environmental benefit from the Project.

The proposed Project comprises ten coal licenses that cover approximately 5,630 hectares (ha) of land and is located between several existing steelmaking coal mines in the Elk Valley and Crowsnest coal fields, with Teck Coal Limited's (Teck) Elkview Operations located approximately 8 kilometres (km) southwest of the Project and their Line Creek Operations located approximately 12 km north of the Project (Figure E.1-2). The Project pits and Mine Rock Storage Facility will be located on provincial Crown Land, and the rail loadout and haul road will be located on private land (Land Title and Survey Authority of British Columbia, 2021). Canfor's operating area tenure, A19040, covers the entirety of the Project footprint. The Project's rail loadout overlaps with Teck's privately held conservation lands.



Crown Mountain Coking Coal Project

Figure E.1-1
Project Location

LEGEND

- Project Footprint
- Coal License Boundary
- Existing Teck Mine
- Highway
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- Provincial Park/Protected Area
- National Park
- British Columbia/Alberta Border

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Scale 1:700,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada. Imagery Provided By ESRI.

Map Created By: RB
Map Checked By: LKD
Map Coordinate System: NAD 1983 UTM Zone 11N

NWP Coal Canada Ltd

Project: 12-6231
Status: FINAL
Date: 2022-03-11

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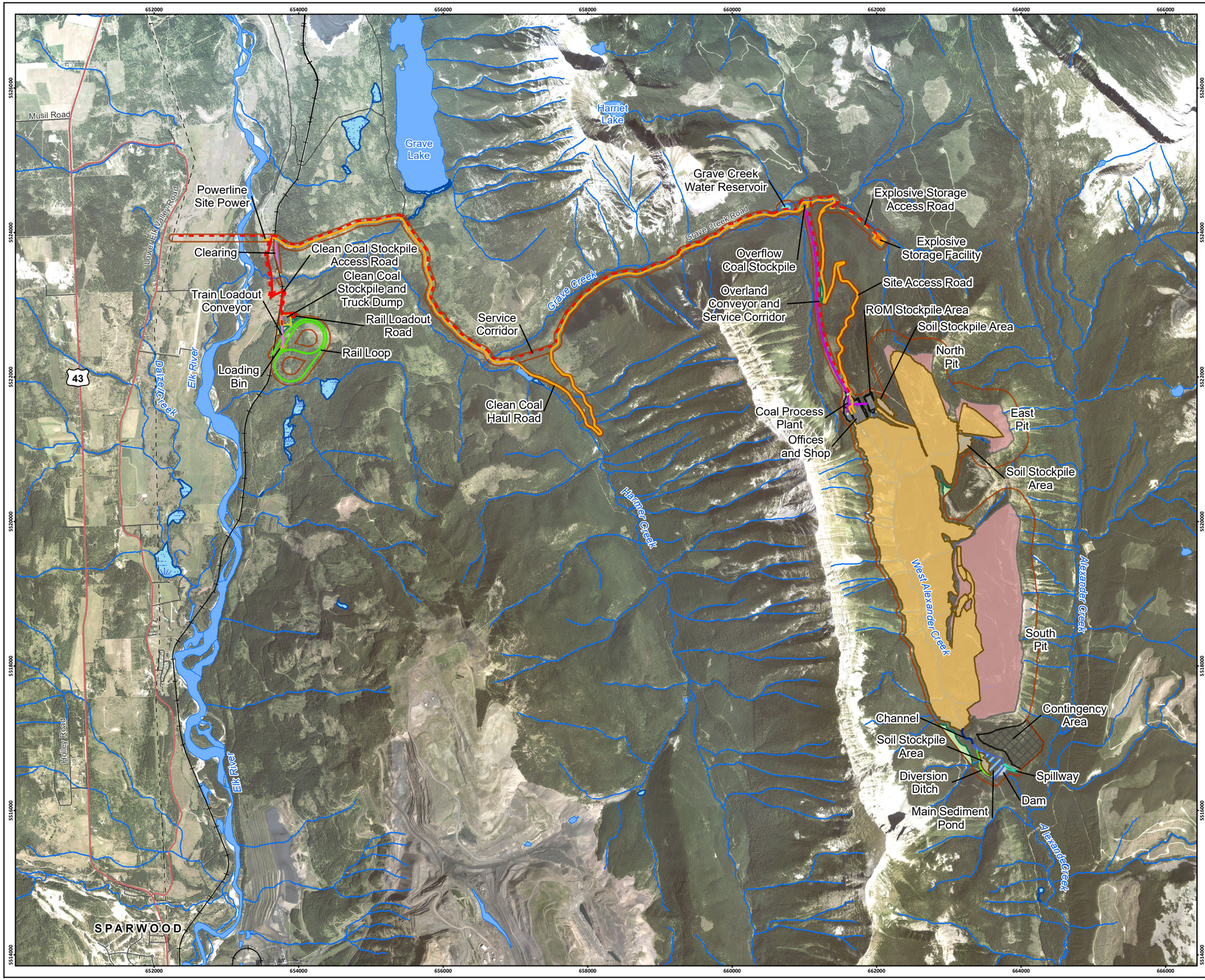

Crown Mountain Coking Coal Project

Figure E.1-2
Proposed Project Layout

LEGEND

- Project Footprint
- Channel to Ultimate Pond
- Clean Coal Haul Road\Site Access
- Explosive Storage Access\Facility Road
- Rail Loadout Road
- Rail Loop
- Service Corridor
- Coal Process Plant Conveyor
- Coal Process Plant Duct
- Train Loadout Conveyor
- Waste Dump
- Mined Area
- Clean Coal Stockpile and Truck Dump
- Overflow Coal Stockpile
- Soil Stockpile Area
- Explosive Storage Facility\Pad
- Loading Bin
- Plant Site\ROM Stockpile Area
- Powerline-Site Power
- Water Reservoir
- Main Sediment Pond
- Dam
- Spillway
- Diversion Ditch
- Clearing
- Additional Area
- Contingency Area
- Highway
- Arterial/Collector Road
- Local/Resource Road
- Railway
- Transmission Line
- Watercourse
- Waterbody
- Wetland
- British Columbia/Alberta Border

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Scale 1:50,000

Map Drawing Information:
Data Provided By NWP Coal Canada Ltd, Dillon Consulting Limited, Province of British Columbia GeoBC Open Data, Government of Alberta Open Data, Natural Resource Canada.
Imagery Provided By GeoBC OrthoImagery (Aug 2016).

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Construction of the proposed Project is anticipated to be completed over 1.5 years. The anticipated production capacity of the Project is up to 4.0 million run-of-mine tonnes (M ROMt) per annum to produce approximately 1.95 million tonnes per annum (Mtpa) of saleable export coal for a duration of approximately 15 years, not including site decommissioning. This equates to a coal production capacity of approximately 10,150 ROM (run-of-mine) tonnes per day. Exploration activities have indicated that the coal at the Project site is typical of high quality hard coking coals produced from existing mines in the Elk Valley. The high quality coking coal would be transported via railway to coastal B.C., where it would be shipped overseas to be used in steelmaking.

The Project is in close proximity to important infrastructure, which includes major roads, rail service, access to power and Sparwood. These features will be important for the development of the Project. Due to the nature of the terrain and the geology of the area, surface mining methods are suitable for the planning and development of the Project.

The proposed Project is subject to a coordinated federal-provincial EA process under the principles of the Canada–British Columbia Agreement for Environmental Assessment Cooperation (the Agreement). Under the Agreement, federal and provincial jurisdictions work together on impact assessments for projects that require both a federal and a provincial assessment to increase efficiency and certainty and achieve quality assessments. This document is the Environmental Assessment (EA) for the Project and is being submitted to the Impact Assessment Agency of Canada (IAAC) as an Environmental Impact Statement (EIS) pursuant to the Canadian Environmental Assessment Act, 2012 (CEA Act; 2012) and to the B.C. Environmental Assessment Office (EAO) as an Application for an Environmental Assessment Certificate (Application) pursuant to the provincial Environmental Assessment Act (EAA; 2018).

E.2 Project Overview

E.2.1 Project Proponent

The proponent of the proposed Crown Mountain Coking Coal Project is NWP, a Canadian subsidiary of Jameson Resources Limited and Bathurst Resources Limited. NWP is the legal entity that would develop, manage, and operate the proposed Project. NWP is 78% owned by Jameson Resources Limited and 22% by Bathurst Resources Limited. Jameson Resources Limited, an Australia Securities Exchange (ASX) listed company (ASX: JAL), focuses on the exploration and development of coking coal projects in Western Canada. Bathurst Resources Limited is a New Zealand registered, ASX listed company (ASX: BRL) that specializes in coal exploration, development, and production.

E.2.2 Need and Purpose of the Project

The purpose of the Project is to use best practice mining and environmental management methods to extract shallow steelmaking coal reserves at the site and to process and export premium low-volatile hard coking coal in high demand by Asian steelmakers. While there is an expected transition towards the decarbonisation of the global steel industry over the next thirty years, the transition from existing conventional blast furnace technology requiring coking coal will take many years. In particular, in Asia where more than 75% of steel is produced in blast furnaces, the demand for coking coal is expected to continue to grow until at least 2050.

The development of the Project provides an opportunity for the continuation of the existing steelmaking coal export industry from the Elk Valley with substantial employment generation and significant ongoing regional, provincial and national economic benefit. The Project will provide a positive economic return to shareholders and the economy whilst ensuring a far improved environmental outcome than that of historical and current coal production.

E.2.3 Project History

The history of exploration and development of the Elk Valley and the Project area extends back to coal development activities in southern Alberta and southeastern British Columbia in the late nineteenth century. In 1897, the Crow's Nest Pass Coal Company was established to develop the coal resources on the British Columbian side of the Crow's Nest Pass. Several subsidiaries were created to operate ancillary activities; they included the Morrissey, Fernie and Michel Railways, and the Crow's Nest Pass Electric Light and Power Company. Various mines were opened at Coal Creek, Natal, Michel and Morrissey. The Crown Mountain Coal and Coke Company was founded in 1907 but few records remain of its activities other than mention in 1912 of an exploration program up Alexander Creek. After the Second World War, demand for coal dropped and the Crow's Nest Pass Coal Company diversified through a subsidiary, Crow's Nest Pass Oil and Gas Company. As the 1950s and 1960s progressed, the mines were closed, and the company moved into forest products.

In 1965, the name of the company was changed from Crow's Nest Pass Coal Company to Crows Nest Industries Limited (Crows Nest Industries). In 1977, Shell Canada Limited (Shell) purchased Crow's Nest Industries and renamed it Crows Nest Resources Limited (Crows Nest Resources). In 1991, Shell sold the company, and ownership and responsibility for at least some of its coal assets were transferred with the sale. Eventually the property was relinquished and later acquired by Morris Geological, owned by local long standing coal geologist, Mr. Robert Morris.

In April 2011, NWP (then 100% owned by Jameson) entered into an Option Agreement with Mr. Morris to acquire up to 100% of the Project. The Option Agreement was structured such that NWP would initially earn up to 90% of the Project based on committed geological expenditure and completion of associated technical reports. In June 2012, NWP obtained an approval from the British Columbia Ministry of Mines and Energy to undertake exploration activities and commenced a drilling program in September 2012.

Following the 2012 exploration program, NWP engaged Norwest Corporation (now Stantec) to undertake a Preliminary Economic Assessment for potential development of the Project. The Preliminary Economic Assessment concluded that Project presented potential opportunity for a robust economic return.

Large diameter coring was undertaken in 2013 to obtain bulk coal samples to analyse coal quality and coking properties of the potential product. A Pre-Feasibility Study for the Project was completed by Norwest in 2014. That Study confirmed the hard coking coal properties of the product and the likely attractive economics of the Project.

NWP initiated baseline environmental studies in 2013. Since 2013, baseline studies focused on the following disciplines:

- Archaeology;
- Fish and fish habitat;
- Wildlife (furbearers, ungulates, birds, bats, amphibians, Gillette's checkerspot);
- Soil and terrain mapping, and soil chemistry;
- Aquatic health;
- Vegetation and terrestrial ecosystem mapping;
- Wetlands;
- Hydrology;
- Meteorology;
- Noise;
- Air quality (dustfall); and
- Socio-economics.

The respective baseline assessments discuss the various task and timings of the baseline worked completed for the Crown Mountain Coking Coal Project environmental assessment process.

In October 2014, NWP submitted an initial Project Description for the Project to the EAO and the Canadian Environmental Assessment Agency (CEAA) seeking to initiate the commencement of the Environmental Assessment process. Following the completion of the Pre-Feasibility Study PFS and commencement of the EA, work commenced on the preparing the Bankable Feasibility Study (BFS). Following a further exploration program in 2018 and a range of detailed technical and economic studies, the BFS was completed in July 2020. The BFS concluded that "Crown Mountain represents a compelling high quality coking coal opportunity for development with a competitive operating and capital cost structure and access to existing common user rail and port infrastructure."

E.2.4 Project Phases and Construction Overview

The life of the proposed Project is anticipated to be approximately 34 years (from Construction and Pre-Production through to Post-Closure). It is expected that the Construction and Pre-Production Phase will last approximately 1.5 years. Operation of the Project will continue for approximately 15 years based on current anticipated production capacity.

The Project will be developed and operated in the following broad phases:

- Pre-Development (including regulatory approvals, engineering design and Project financing);
- Construction and Pre-Production;
- Operations;
- Reclamation and Closure (noting progressive reclamation will commence in Year 2 of Operations); and
- Post-Closure.

E.2.5 Economic Benefits

Over the course of the Project, NWP believes the Project will offer several benefits locally and regionally, including:

- Creation of 330 full-time equivalent jobs when in operation, creating more than 5,500 person-years of direct employment on the Project plus substantial indirect employment in the region due to demand for goods and services for the Project;
- Creation of significant local and regional employment during Project construction;

- Contribution of more than $1.21 billion (B) in Gross Domestic Product to the region during the life of the Project;
- Generation of tax revenue to Municipal, Provincial and Federal Governments of more than $40 million (M) during construction and more than $400M during the life of the Project; and
- Based on long term hard coking coal price forecasts of USD 165/tonne (as used in the Project BFS), generation of Mineral royalty payments to British Columbia of more than $200M. It is noted that current coal prices (circa USD 400/tonne) and future forecasts are well in excess of the long term price used in the BFS. At a long term average price of USD 200/tonne, the total mineral royalty payable to British Columbia would be more than $450M.

E.2.6 Project Capital and Operating Costs

The total estimated initial capital cost for the design, construction and commissioning of the Project is estimated at $561 million with an estimated Pre-Production capital expenditure (excluding owner's costs, contingency and reclamation security) of $412 million. The Life of Mine average operating cost for the Project is estimated at $117.85/clean metric tonne (cmt).

E.2.7 Mineral Resources and Reserves

Coal generally falls into two major categories, thermal coal which is used for heat and power generation, and coking coal, which is used in the metal making process to create coke. The coke (a hard, porous, and highly concentrated carbon rock) is then used in high temperature blast furnaces for manufacturing metals. This Project has high quality coking coal similar to the deposits at nearby mines. A long, productive history of mining in the region has proven the value of this high-quality coking coal to global markets. The coal deposits of the Elk Valley Coalfield are typical of those for Inner Foothills and Rocky Mountain areas which have been subjected to a relatively high level of tectonic deformation. From place-to-place coal deposits of this type may be characterized by tight folds, some with steeply inclined or overturned limbs. These features can be seen in different parts of the coal field, but they are far from being universal.

The Project is divided into two distinct structural domains separated by a northerly trending thrust fault that is named the Crown Mountain Thrust Fault. These two domains exist as two distinct Geology Types. Mineral resource areas for the Project are generally named North Block and South Block. In-place coal reserves have been identified. Total in-place coal resources as of 2019 (measured and indicated) total over 66,000 kilotonnes. Mineral resources are not mineral reserves and there is no assurance that all mineral resources will ultimately be reclassified as proven or probable reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability.

Reserves estimates are based on the ROM tonnage and a marketable coal product tonnage (also referred to as "clean" coal). The reference point for Marketable Coal Reserves is upon exiting the processing plant. Calculated ROM coal reserves for the Project total approximately 49,000 kilotonnes. This includes approximately 40,000 kilotonnes proven and approximately 9,000 kilotonnes of probable reserves.

E.2.8 Geochemical Characterization

NWP has established a geochemical baseline to support analyses related to potential effects to water from processes including metal leaching. Based on studies completed and wider knowledge of the geochemistry of the Elk Valley coal mines, it is evident that acid rock drainage (ARD) is typically of low

concern; however, background knowledge has identified metal leaching, specifically relating to the release of selenium of principal concern.

E.2.9 Project Components

The development of the Project, as proposed, includes the following major Project components:

- Open pit surface mining operation using conventional truck and shovel mining methods with capacity for production of up to 4.0 million tonnes per year (Mtpa) ROM coal. The surface mine has been sequenced to limit the creation of external mine rock storage facilities (MRSF) and allow for on-going progressive reclamation.
- The Coal Handling Process Plant (CHPP), with a nominal capacity of 546 to 570 tonnes per hour, is capable of producing up to 2.2 Mtpa clean coal product with a target ash of 9.5% for coking coal and 10% for pulverized coal for injection (PCI) with a total moisture of 9% or less. The CHPP includes coarse, fine, and ultrafine coal washing circuits. The Project will produce dewatered coal wastes and does not require a conventional tailings impoundment.
- The primary water source will be supplied from the interim sediment pond for the first four years of the operation, and then the primary water source will be the mined out North Pit. There will be a backup water supply source from a pond in the Grave Creek catchment and will be pumped to the site facilities for use at the site. Potable water will be sourced from a well.
- A series of two sedimentation ponds are proposed for managing the combined run-off from the mine footprint and undisturbed ground as the mine development advances. These ponds will be placed downstream of the main mine rock dump and will be decommissioned and reconstructed through the mine life to accommodate the advancing mine rock placement. Sedimentation ponds were sized for two phases of mining: an Interim Sediment Pond for operations up to the end of Year 4 (EOY 4) and an ultimate Main Sediment Pond for the full mine footprint into Post-Closure.
- Maintenance, warehouse, office and dry complex to support the operation and personnel. A clean coal handling and rail loadout system will be built to convey product coal from the site via a 2.7 km overland conveyor system to a transfer bin where coal is then loaded on to highway legal trucks. The trucks will haul the coal on the upgraded Grave Creek Road to a rail loadout system with 2 x 25,000 ton capacity stockpiles to load the trains. Coal would be railed to one of the existing coal terminals on the west coast of British Columbia. Based on publicly available information, existing coal terminals will have sufficient uncontracted capacity for the estimated coal production from the Project.

The Project is in close proximity to important infrastructure, which include major roads, rail service, access to power, and a mining town site. These features will be important for the development of the Project. Due to the nature of the terrain and the geology of the area, surface mining methods are suitable for the planning and development of the Project.

E.2.10 Mining Methods

The Project will have three open pit areas where surface mining will take place. The Project will use a conventional open pit, truck and shovel mining method to provide a nominal production rate of 3.7 Million Run of Mine tonnes (ROMt)/year). Annual mine production of waste is to peak at 24 Million bank cubic metres (Mbcm)/year with an average stripping ratio of 4.7 bank cubic metres (bcm)/ROMt.

The mine production schedule follows the sequence of North Pit and then transitions to the East Pit followed by mining the South Pit, from the southern end of the South Pit towards the north. The mining sequence was selected for the following reasons:

- The North and East Pits have better Hard Coking Coal quality when compared with the South Pit as well as a lower proportion of PCI coal. Mining these two areas first can provide a consistent Hard Coking Coal product for the first 5 years of Operations;
- The North Pit being mined out first allows for short waste and coal hauls and allows for backfilling from East Pit; and
- The operational advantages of mining up-dip based on the geometry of the South Pit allows for a more straightforward backfill sequencing and reduces the frequency/duration of dumping above active mining areas. Dumping above active mining areas is a geotechnical and operational risk and would require mitigation measures under B.C. mine safety regulations.

The southern end of the South Pit has lower strip ratio when comparing with the northern end of the South Pit. The lower strip ratio allows for smaller dump footprint, which allows additional time to demonstrate the effectiveness of the Layer Cake dumping sequence prior to increasing the dump footprint in West Alexander Creek.

E.2.11 Coal Processing

Coal processing is the general term applied to the handling of mined material to enhance its value for sale to commercial coal markets. Coal processing involves breaking up the material that has been mined from the pits (known as ROM material). Breaking up the ROM material makes it easier to remove rocks and debris from the coal so that the output of the process results in entirely clean coal. Coal processing requires equipment and facilities for transporting, handling, and preparing the end-product of clean coal. For this Project, the Coal Handling Process Plant (CHPP) is a key facility required for coal processing. Within the CHPP, ROM material is broken down, washed with water, and then using density differences between coal and rock, the coal is floated and rocks sink. Extra steps within the CHPP then remove fine coal from fine rock in the wash water. The last step is drying the coal. Dry, clean coal is then moved to a Rail Loadout (RLO) facility for off-site transport and sale. Material generated during coal processing that does not end up as clean coal is commonly referred to as coal rejects (rocks) and tailings (fines material). Both rejects and tailings are an important component of the Project's reclamation strategy, used in layering of the mine rock dumps.

E.2.12 Mine Rock and Coal Reject Management

The Project mine rock management strategy is aligned with NWP corporate philosophy and project-wide strategies as reflected throughout this Application for an Environmental Assessment Certificate/Environmental Impact Statement (Application/EIS). A core concept of the mine rock management strategy is to effectively manage mine rock on-site so that it does not present a long-term liability to future generations. This is a key element of enabling the Project's vision of keeping water clean, protecting sensitive aquatic habitat, and providing an acceptable post-closure landscape that meets the needs of local Indigenous nations and other people in the region. The mine rock management strategy intends to limit the mine disturbance footprint through progressive reclamation activities and avoid impacts to drainages outside of West Alexander and Grave Creeks. This will be achieved by limiting the placement of mine rock to within the West Alexander Creek basin only. To effectively manage mine rock

on-site, NWP is proposing a Layer Cake method within the Mine Rock Storage Facility (MRSF), which intends to mitigate both selenium and nitrate simultaneously while reducing selenium release. NWP is not currently proposing active treatment as an alternative to mine rock management.

The mine plan is estimated to produce approximately 270 million cubic metres (m^3) (in-situ or bank) of mine rock, or approximately 351 million m^3 of placed mine rock assuming an overall swell factor of 30%. The majority of the waste mine rock will be placed as a valley fill located on the west side of the mined out South Pit in the valley of West Alexander Creek. This external dump has been designated as the Main Dump. Where the mining sequence allows, mine rock will be backfilled in the North, East, and South Pits safely and economically in order to reduce the disturbance area of the Project.

Mine rock dumps will be designed to limit oxygen and water infiltration by interlayering and capping mine rock with plant rejects and filtered process waste material. A key consideration for the location of the process plant site is the need to haul the coal process wastes for disposal and placement. The location of the plant will provide material that is expected to be suitable for layering/capping as well as being near the mine rock dump and available for economical placement in sequence with the mining process. In addition, the layering plan eliminates the need for a separate coal process wastes storage facility (i.e., a conventional tailings dam or filtered waste pile is not required).

It is expected that the mixture of coarse rejects and fine rejects from the plant will contain a sufficient proportion of fine-grained material to permit its use as a planned hydraulic barrier between successive lifts of mine rock and be included as part of the final cover for the mine rock dump piles once they have been placed to grade. Based on calculated mine rock and rejects volumes, it is estimated that several hydraulic barriers can be placed through a given waste dump profile. An effective hydraulic barrier will also impede the movement of oxygen through the rock matrix. The potential for selenium release from the mine rock dumps has been modeled to be substantially reduced by the creation of effective hydraulic barriers because they will reduce water and oxygen movement through the mine rock dumps. A low permeability layer of stockpiled plant rejects will be used to cap the mine rock, which will be overlain with topsoil to provide a growing medium for vegetation.

E.2.13 Water Management

Clean water diversion infrastructure is not planned at site. A high-level summary of the key proposed water management infrastructure components includes:

- Temporary Construction Ponds: As-needed control structures during early construction to manage Total Suspended Solids (TSS);
- Interim Settling Pond: Captures all site mine affected water during Years 0 to 4. Water from pond recycled for use in CHPP;
- Main Settling Pond: Captures all site mine affected water during years 5 to closure. Water from pond released if it meets release criteria;
- North Pit: Water from north pit recycled for use in CHPP;
- Grave Creek Reservoir: Supply reservoir as alternate/make-up during years -1 to closure;
- Contingency only: May pump water from Main Settling Pond to CHPP if water quality challenges exist; and
- Contingency only: May treat water from Main Settling Pond if water quality challenges exist.

The main, interim, and temporary construction sediment ponds will be constructed with mine rock fill to create embankments across the natural drainage flow direction combined with the surrounding natural slopes for containment. Liners will be used in each pond to retain water, and decant water will be routed to the West Alexander Creek via spillway and outlet channel structures. The Grave Creek Reservoir will be excavated, and a rock fill berm will be constructed on the western edge to provide containment. The reservoir will be lined, with flows exceeding capacity directed to Grave Creek. Mine rock fill for construction will be sourced from nearby road coats or mine rock. No deleterious materials will be placed as fill. The rock fill would be placed in thin lifts and compacted. Experience at other nearby mines has shown the mine rock and glacial till to be suitable for use in embankment construction. Prior to construction, the fill materials would be tested for PAG and metal leaching characteristics. A feasibility level geotechnical stability assessment, including preliminary factors of safety, has been developed for the impoundments (Stantec, 2021).

A conceptual plan for a geotechnical instrumentation and monitoring program for the sediment ponds has been developed, including the main objectives of confirming design assumptions and performance; additionally, the monitoring program would provide data for future optimizations and provide early warning of potential defects or impending failure (Stantec, 2021). Key items to monitor include:

- Horizontal movement of embankment or foundation soils;
- Vertical settlements;
- Porewater pressures; and
- Seepage rates.

NWP would develop a detailed instrumentation and monitoring program at a later design stage. The detailed program is likely to include the following instruments to assist in monitoring:

- Slope inclinometers;
- Piezometers;
- Monitoring wells;
- Staff gauge; and
- Survey monuments.

During design, guidelines including the B.C. Ministry of Environment (2015) Assessing the Design, Size and Operation of Sediment Ponds Used in Mining have been used as applicable in addition to the Canadian Dam Association (2013) Dam Safety Guidelines for the Main and Interim Sediment Ponds. These references were used in guiding design relative to consequence classification, seismic design criteria, inflow design flood, and factors of safety (Stantec, 2021).

E.2.14 Reclamation and Closure

The Project Landform Design and Reclamation Plan consists of a number of phases. The initial phase, during pre-production and preparation of the pit and dump footprints, will involve clearing and soil salvage followed by haulage and placement in soil stockpiles. As areas become available, resloping and/or grading and progressive reclamation activities will be carried out during Operations. Following the completion of mining, the major portion of the resloping and reclamation of the Crown Mountain area will be completed. The final reclamation process includes resloping and reclaiming the disturbed footprint of the North, East and South pits and the West Dump of the Crown Mountain area.

E.2.14.1 Reclamation Requirements

The Landform Design and Reclamation Plan is designed to meet British Columbia reclamation and closure regulations that require that the owner prepare a reclamation and closure plan showing specific end-land uses and that it be updated at regular intervals (five years) over the life of mine. NWP plans to retain ownership, control, and responsibility for all Project components throughout the life of the mine. The Project Landform Design and Reclamation Plan provides conceptual discussion on how decommissioning could occur for major permanent facilities and serves as a preliminary framework to guide the refinement of future decommissioning and reclamation planning. Post-Operations, the major landforms on the Crown Mountain Property will include resloped dumps, exposed pit walls with benches, and reclaimed roads and infrastructure footprints. No end-pit lakes are currently planned in the Post-Closure landscape. A saturated rock fill is expected to form within the mined out North Pit footprint.

Each post-operational major landform type is discussed here:

- Waste Dumps: After active mining, the dumps will be resloped to 2:1 (Horizontal(H):Vertical(V)) slope or flatter, according to B.C. mine reclamation requirements, and the soil will be replaced and revegetated by seeding with a native vegetation mixture and planting tree seedlings. The mine plan has accommodated the stripping and stockpiling of soil. As noted elsewhere, the current water management plan does not include actively treating water through the North Pit saturated rock fill. Drainage channels will be developed alongside haul roads at specified intervals to manage surface runoff and to mitigate erosion. Drainage channels will also be developed along the outer slopes of the waste dumps. Final platforms will be graded to slope gently (1% to 2%) outwards to direct flow away from the waste dump surface and outer slope faces and towards the drainage channels. Most areas are anticipated to shed water by sheet flow; where needed, a surface water drainage system may be established and armoured, and some areas may see coarse rock soakaways to direct surface water into the rockdrain system under the dump.
- Pit Walls and Benches: The pit walls and benches will be left in their post-mining configuration to provide escape terrain for ungulate species, which can take advantage of the steeper terrain to avoid predators. The exposed, gently sloping pit floors will be covered with soil and revegetated. Water management channels within the Post-Closure pit will be developed, where required, to minimize erosion.
- Roads and Shop/Laydown Areas: As part of the closure plan, buildings, power lines, steel structures, tanks and other infrastructure will be dismantled or demolished. Concrete foundations will be broken up or buried under a suitable depth of cover. Roads and shop/laydown areas will be ripped by dozers and regraded prior to soil placement in order to manage runoff. Soil will be replaced on these areas and they will be revegetated. Larger areas will require the construction of drainage channels to control runoff and mitigate erosion.
- Water Management Infrastructure: After mine closure, the water management structures, including the remaining sediment ponds, will remain in place until the reclamation earthwork activities have been completed; these include resloping dump faces and re-establishing vegetation to prevent surface erosion. Once the reclamation activities have been completed, the ponds will be regraded, and any impoundments will be breached to prevent the accumulation of runoff water. This will allow surface waters to flow along the natural local drainage systems. Depending on potential selenium management requirements, portions of the existing water management system can be left in place for an extended period.

E.2.14.2 Soil Salvage

Soil will be cleared from the mining area and mine rock dump areas prior to excavation or backfilling of mine rock. The soil will be dozed into windrows, then loaded by excavators into haul trucks and placed in soil stockpiles located around the Project area. Based on baseline data collection, it is estimated that 50% of the topsoil excavated will be suitable for reclamation. With a swell factor of 10%, there will be approximately 1.49 million loose cubic metres of topsoil that will need to be handled over the life of mine. The water management section describes measures to limit erosion from the soil stockpiles.

E.2.14.3 Final Reclaimed Period

The remaining angle of repose dump slopes are resloped to an overall angle of 2H:1V. Remaining reclamation material is re-handled from stockpiles and placed on the designated dump surfaces for reclamation and revegetation. The selenium mitigation plan considers including a layer of plant rejects as part of the final cover. Stockpiled rejects would be used for this final cover construction.

E.3 Alternative Means of Carrying out the Project

Responsible development of a coal resource requires a project applicant to thoroughly evaluate the various activities necessary during all Project phases while assessing various Alternative Means of Carrying out the Project. Alternative means to carrying out the project requires a thorough assessment of how a coal mining resource is designed, developed, and operated.

For the Crown Mountain Coking Coal Project, a series of primary decision evaluations were necessary. Many of these primary decision evaluations resulted in secondary, and sometimes other subsequent, decisions. These decisions and associated Alternative Means analyses were completed for six primary decision areas:

- Mining Design: Mining Design is the category of Project components related to how the mine is designed, operated, and ultimately reclaimed. Mine Design elements include mining method (e.g., surface vs. underground), location and design of the Mine Rock Storage Facility (MRSF), how Run of Mine (ROM) coal moves across the site (i.e., from the pit to the wash plant), sequencing of extraction and reclamation activities, mine equipment selection, explosives usage, and mine operatorship.
- Energy Source: Energy Source relates to how the mine is powered. Alternative Means for energy sources include connection to the electrical grid, B.C. Hydro connection, natural gas supply, and alternative electrical power sources (e.g., solar or wind).
- Major Facilities and Components: Major Facilities and Components include location and design decisions related to the Coal Handling Process Plant (CHPP), the Rail Loadout (RLO), and the Clean Coal Stockpile.
- Site Access: Site Access includes Alternative Means associated with how the site is accessed and how clean coal moves across the site (i.e., from the wash plant to the RLO).
- Water Use: Water Use is a category of Project components including water sources (supply) and disposal (management).
- Tailings Disposal: Tailings Disposal involves the siting and treatment method for fine tailings.

Table E.3-1 shows a list of alternative means evaluated for each of the six primary decision evaluations.

Table E.3-1: Alternative Project Means Evaluated

Primary and Secondary Decision Areas	Alternative Means Evaluated	Preferred Means
Mining Design		
Mining Method	• Surface Mining (Open Pit) • Underground Mining	Open Pit Mine
Mine Rock Storage Facility Location	• West Alexander Creek drainage • Hybrid Option (combination of various drainages) • Saddle between Alexander Creek and Grave Creek • Grave Creek drainage	West Alexander Creek Drainage
Mine Rock Storage Facility Design	• Conventional MRSF Design • Layer Cake MRSF Design	Layer Cake MRSF Design
Mine Sequence	• North Pit to South Pit • South Pit to North Pit	North Pit to South Pit
Reclamation Sequence	• Stockpiling Soil on Initial MRSF Platform • Early Reclamation of Initial MRSF Platform	Stockpiling Soil on Initial MRSF Platform
Mine Equipment Selection	• Diesel Powered Drills and Primary Shovels • Electrically Powered Drills and Primary Shovels	Diesel Powered Drills and Primary Shovels
Explosives Usage	• New Conventional Explosives • Conventional Explosives • Bagged Explosives • Ripping Rock	New Conventional Explosives
Mine Operatorship	• Company-Operated Mine Model • Third Party Mine Operatorship	Company-Operated Mine Model
Energy Source	• Connect to BC Hydro Grid • Natural Gas/Diesel Generators On-site • Alternative Electrical Sources	Connect to BC Hydro Grid
Major Facilities and Components		
CHPP Location	• Grave Prairie, Near the Elk River RLO • Alexander Creek Near Highway 3 • Adjacent to the Mine • Contract or Third Party CHPP	CHPP Adjacent to the Mine
CHPP Design: Fine Product Coal Drying	• Fluidized Bed Thermal Dryer • Hyperbaric Disc Filters	Hyperbaric Disk Filters
RLO Location and Design	• South of Highway 3 • West of Grave Lake • Parallel Main Line • Southern Loadout Options	Southern Loadout Option
Clean Coal Stockpile	• North of Grave Creek • Adjacent to the RLO	Adjacent to the RLO
Site Access	• Upgrade Grave Creek Valley Road • Upgrade Alexander Creek Valley Road • Build a New Road in Grave Creek	Upgrade Grave Creek Valley Road

Primary and Secondary Decision Areas	Alternative Means Evaluated	Preferred Means
Water Use	• Sole Source from Grave Creek • Sole Source from West Alexander Creek • Primary Source from West Alexander Creek/ Secondary Source from Grave Creek	Primary Source from West Alexander Creek/ Secondary Source from Grave Creek
Tailings Disposal	• Conventional Tailings Pond • Belt Filter Press with Combined Disposal • Plate Press Filtration with Combined Disposal	Belt Filter Press with Combined Disposal

E.4 Environmental Assessment Process

The proposed Project requires approval under the federal CEA Act (2012) and the provincial EAA (2018). The Project is subject to a coordinated federal-provincial EA process conducted under the principles of the Canada–British Columbia Agreement for Environmental Assessment Cooperation (the Agreement). Under the Agreement, federal and provincial jurisdictions work together on impact assessments for projects that require both a federal and a provincial assessment to increase efficiency and certainty and achieve quality assessments.

Figure E.4-1 provides an illustration of the general approach used to complete the Application/EIS of the proposed Project and follows the general principles and specific guidance of environmental assessment and federal and provincial regulators, respectively.

The purpose of this Application/EIS is to obtain regulatory approvals to construct and maintain the proposed Project. To satisfy regulatory requirements, the Application/EIS:

- Identifies the scope of the Project and the assessment;
- Describes the proposed Project and environmental setting (biophysical, socio-economic and Indigenous peoples components);
- Identifies, assesses, and mitigates potential adverse environmental effects, including Project effects and cumulative effects; and
- Evaluates the significance of any residual Project effects and cumulative effects.

E.4.1 Provincial Environmental Assessment Process

A new coal mine with a production capacity of greater than 250,000 tonnes per year of clean coal or raw coal or a combination of both clean coal and raw coal is considered a Reviewable Project pursuant to the Reviewable Projects Regulation (B.C. Reg. 370/2002) under the EAA (2002). The Project is therefore considered a Review Project under the EAA (2002). The Application/EIS has been developed pursuant to the Application Information Requirements (AIR) approved by EAO and complies with relevant instructions provided in the Section 11 Order and any other direction provided by EAO. The Project can be viewed on the EAO EPIC at: https://projects.eao.gov.bc.ca/p/588511f9aaecd9001b828bf0/project-details.

Pursuant to Section 2(2) of the EAA (2002), the EAO is the authority responsible for provincial review of this proposed Project. NWP submitted the Final AIR to the EAO on April 26, 2018. The EAA (2002) was repealed by the EAA (2018) in 2019. As per subsection 78(6) of the EAA (2018), the EA process for the

Project was continued under the 2002 Act. On May 3, 2023, the Project was transitioned to the EAA (2018) through a Transition Order under Section 78(7) of the 2018 Act.

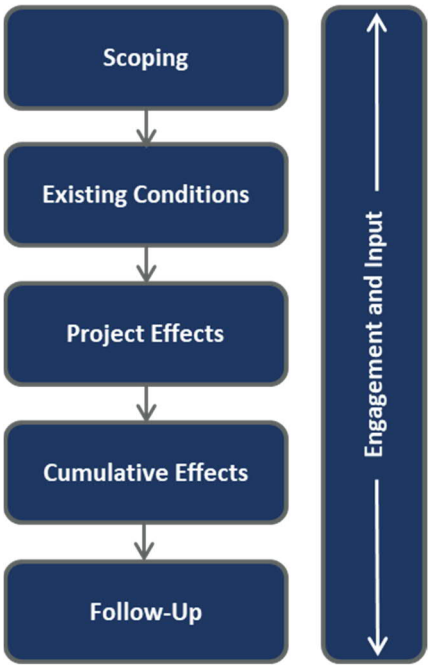

Figure E.4-1: Summary of the Environmental Assessment Approach for the Project

E.4.2 Federal Environmental Assessment Process

The construction, operation, decommissioning, and abandonment of a coal mine with a production capacity of more than 3,000 tonnes per day (tpd) is considered a Designated Project pursuant to the Regulations Designating Physical Activities (SOR/2012-147) under the CEA Act (2012). The anticipated production capacity of the Project is up to 4.0 M ROMt per annum (approximately 10,150 tpd) for 15 years. The Project is therefore considered a Designated Project under the CEA Act (2012). The Project can be viewed on the Canadian Impact Assessment Registry at:
https://iaac-aeic.gc.ca/050/evaluations/proj/80087.

Pursuant to Section 15(d) of the CEA Act, 2012, the CEAA is the authority responsible for federal review of this proposed Project. CEAA issued the final Guidelines for the Preparation of an Environmental Impact Statement for the Crown Mountain Coking Coal Project (EIS Guidelines; CEAA, 2015) to NWP on February 20, 2015 for the preparation of an EIS.

The CEA Act (2012) was repealed by the Impact Assessment Act (IAA; 2019) in 2019. As per subsection 181(1) of the IAA (2019), the environmental assessment process for the Project was continued under CEA Act (2012).

E.4.3 Applicable Permits

In addition to the federal and provincial environmental assessment processes, the Project will require a variety of permits and approvals from federal and provincial agencies for the construction, operation, and

reclamation and closure of the Project as well as regional and local permits that may be required. At this time, NWP is not pursuing concurrent permitting under the Concurrent Approval Regulation (B.C. Reg. 371/2002).

A list of potential provincial authorizations required for the Project is outlined in Table E.4-1. The list is not intended to be exhaustive due to the complexity of government regulatory processes and the large number of minor permits, licences, approvals, consents and authorizations, and potential amendments that will be required throughout the life of the Project. All required provincial authorizations will be secured prior to construction of the proposed Project.

A list of potential federal authorizations, licences, and permits that are anticipated to be required to develop the Project is provided in Table E.4-2. All required federal authorizations will be secured prior to construction of the proposed Project.

Table E.4-1: Applicable Provincial Permitting and Approval Requirements

Permit or Approval Required	Enabling Legislation	Regulatory Authority	Applicable Project Activity or Component
Environmental Assessment Certificate	Environmental Assessment Act, 2018	Environmental Assessment Office	The Crown Mountain Coking Coal Project. Certificate includes conditions that the proponent must fulfil to proceed with the Project.
Coal Lease	Coal Act, 2004	Ministry of Energy, Mines and Low Carbon Innovation	Authorization for the exploration and production of coal
Mines Act Permit	Mines Act, 1996	Ministry of Energy, Mines and Low Carbon Innovation	Permit to construct, operate, close/decommission, and reclaim a mine
Liquid Effluent Discharge Permit	Environmental Management Act, 2003	Ministry of Environment and Climate Change Strategy	Authorization to discharge mine-affected effluent to receiving waters from any water storage facility or diversion structure
Air Emissions Discharge Permit	Environmental Management Act, 2003	Ministry of Environment and Climate Change Strategy	Authorization for air emissions discharges, including sources of dust (e.g., conveyors, haul roads) and emissions from the Coal Handling Process Plant
Record of Sewerage System and Sewerage System Letter of Certification	Public Health Act, 2008, Sewerage System Regulation,	Interior Health Authority	Septic tank and disposal field
Hazardous Waste Registration	Environmental Management Act, 2003, Hazardous Waste Regulation	Ministry of Environment and Climate Change Strategy	Authorization of temporary storage of hazardous wastes (e.g., waste oil, batteries)

Permit or Approval Required	Enabling Legislation	Regulatory Authority	Applicable Project Activity or Component
Registration of Petroleum Storage and Distribution Facilities	Environmental Management Act, 2003 Petroleum Storage and Distribution Facilities Storm Water Regulation	Ministry of Environment and Climate Change Strategy	Fuel storage areas
Construction Permits for Water Supply Systems	Drinking Water Protection Act, 2001	Interior Health Authority	Potable water wells, water system construction, and water system operations
Occupant License to Cut - Mine Site and Special Use Permit	Forest Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Licenses to harvest timber for site clearing and for use of Crown Land within a Provincial Forest
Occupant Licence to Cut	Forest Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Vegetation clearing (tree removal) on Crown land
Road Use Permit	Forest Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Approval for the use of forest service roads
Heritage Conservation Act Concurrence Letter	Heritage Conservation Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Concurrence Letter stating that the archaeological assessment is complete.
Section 14 Heritage Inspection Permit	Heritage Conservation Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Areas of archaeological potential within the Project footprint
Section 12 Site Alteration Permit	Heritage Conservation Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Alteration of an archaeological site
Industrial Access Permit	Industrial Roads Act, 1996	Ministry of Transportation and Infrastructure	Access improvements to access roads.
License of Occupation and Statutory Right of Way	Land Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Authorization to occupy crown land for powerline right-of-way
Explosives Storage and Use Permit	Mines Act,1996	Ministry of Energy, Mines and Petroleum Resources	Approval for explosive storage and use.
Mining Right of Way Permit	Mining Right of Way Act, 1996	Ministry of Energy, Mines and Petroleum Resources	Right of way access within Crown or private lands

Permit or Approval Required	Enabling Legislation	Regulatory Authority	Applicable Project Activity or Component
Permit to Connect a Powerline	Safety Standards Act, 2003 – Electrical Safety Regulation	B.C. Hydro	Connection of a private powerline to the B.C. Hydro grid
Highway Use Permit - Resource & Industrial Access	Transportation Act, 2004	Ministry of Transportation and Infrastructure	New roads joining onto a public road
Water Use Approval, Water Use License	Water Sustainability Act, 2014	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	License to divert, store, and use water and make changes in or around a stream
Change Approval For Work In And About A Stream	Water Sustainability Act, 2014	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Approval for changes in and about a stream that are of a complex nature
Wildlife Permit	Wildlife Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Permits for wildlife salvages and bird nest removal or relocation
Fish Collection Permit	Wildlife Act, 1996	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Authorizes the capture and/or collection of fish
Pesticide Use Permit	Integrated Pest Management Act, 2003	Ministry of Forests, Lands, Natural Resource Operations and Rural Development	Noxious weed and invasive plant control in disturbed areas within the Project footprint
Pesticide User License	Integrated Pest Management Act, 2003	Ministry of Environment and Climate Change Strategy	Control of noxious weeds

Table E.4-2: Applicable Federal Permitting and Approval Requirements

Permit or Approval Required	Enabling Legislation	Regulatory Authority	Applicable Project Activity or Component
Canadian Environmental Assessment Act, 2012 Decision Statement	Canadian Environmental Assessment Act, 2012	Impact Assessment Agency of Canada	Decision statement on whether the proposed project is likely to cause significant adverse environmental effects. It includes conditions, consisting of mitigation measures, and a follow-up program that the proponent must fulfil to proceed with the project.
Fisheries Act Authorization	Fisheries Act, 1985	Fisheries and Oceans Canada	Authorization under Section 35(2) of the Fisheries Act for harmful alteration, disruption, or destruction (HADD) of fish habitat.

Permit or Approval Required	Enabling Legislation	Regulatory Authority	Applicable Project Activity or Component
Factory Licence	Explosives Act, 1985	Natural Resources Canada	License required for the on-site explosive manufacture
International River Improvements Act Notification	International River Improvements Act, 1985	Environment and Climate Change Canada	A notification under the International River Improvements Act may be required as the Project is located within the watershed of Lake Koocanusa. If required, NWP will notify and provide the Minister of Environment in writing with the information referred to in paragraphs 6(a) to (e) of the Regulation.
Magazine Licence	Explosives Act, 1985	Natural Resources Canada	License for the storage of explosive products
Migratory Bird Permit	Migratory Birds Convention Act, 1994	Environment and Climate Change Canada	Permit for vegetation clearing during migratory bird nesting season.
Species at Risk Act Permit	Species at Risk Act, 2002	Environment and Climate Change Canada	Permits required for activities that may affect a listed species or its habitat and for the handling of sensitive species for wildlife salvages.
Transportation of Dangerous Goods Act and Regulations Permits	Transportation of Dangerous Goods Act, 1992	Transport Canada	Permits for the transportation of dangerous goods by rail, road, or air.
Radio-isotope License	Nuclear Safety and Control Act, 1997	Natural Resources Canada	Authorization for nuclear devices such as slurry density flow meters
Radio Licenses	Radiocommunications Act, 1985	Industry Canada	License for the on-site radio communication system.

E.5 Consultation and Engagement Overview

NWP is committed to creating and sustaining relationships and ongoing dialogue with regulators, communities, Indigenous communities, and stakeholders to support the environmental, social, and economic sustainability of the Project. Consultation has been and will continue to be a key component of Project development, and to date has focused on three broad groups: Indigenous communities, public stakeholders (e.g., local governments, members of the public, non-governmental organizations), and government agencies. Consultation undertaken for the Project was conducted in accordance with the provincial Public Consultation Policy Regulation (B.C Reg. 373/2002), the Project Section 11 and Section 13 Orders (issued May 27, 2015 and October 30, 2020, respectively), and the federal CEA Act, 2012.

E.5.1 Indigenous Communities Consultation and Engagement

NWP has taken, and continues to take, a proactive and inclusive approach to engagement and partnership with Indigenous communities associated with the Project. NWP has engaged with the KNC who represent the Tobacco Plains Band, St. Mary's Band, Lower Kootenay Band, and the ?Akisq'nuk First Nation.

Engagement has been via site tours, in-person meetings, calls/conference calls, letters, and emails. The KNC has provided input to a wide range of EA process-related tasks and documents including: Project Description; Indigenous Consultation Plan; Valued Components Document; and Application Information Requirements. In addition, the KNC has been involved with discussions related to overall Project design, and provided input to baseline programs, data analysis and modelling, and Application/EIS development.

NWP has also engaged with the Shuswap Indian Band, Kainai First Nation (Blood Tribe), Piikani Nation, Stoney Nakoda First Nations, Métis Nation of Alberta Region 3, Métis Nation of British Columbia, Siksika Nation, and Tsuut'ina Nation. Engagement has been via site tours, in-person meetings, calls/conference calls, letters, and emails. NWP has provided Project information to each of the Nations including the Project-specific archaeological reports. Each of these communities was provided draft sections of the Application/EIS for review prior to submission by NWP. Several Indigenous communities have also participated in site tours, with additional tours planned in 2023 when the site is accessible.

Throughout the EA process, Indigenous communities and groups have provided comments and input related to the Project. General themes of issues and concerns raised to date by Indigenous communities include: archaeology/ heritage resources; water quality; fish and fish habitat; wildlife and wildlife habitat; land use; and potential cumulative effects.

Engagement with all Indigenous communities is ongoing.

E.5.2 Public and Stakeholder Consultation and Engagement

NWP recognizes that the proposed Project has the potential to affect local communities and a variety of public stakeholders. As such, NWP has actively engaged with individuals, groups, and local communities throughout the life of the Project and the pre-Application phases. NWP developed a public and stakeholder consultation and engagement program with the primary objective to effectively and proactively communicate information about the proposed Project and involve those who may be potentially affected by, or have an interest in, the Project. The Public Consultation Program developed for the Project is designed to meet the requirements outlined in the Province of B.C.'s Public Consultation Policy Regulation (B.C. Reg. 373/2002) and the consultation provisions described in the B.C. EAO environmental assessment review procedures ordered under Section 11 of the B.C. Environmental Assessment Act (2002).

Public stakeholders include residents of local communities, recreational users or those with recreational interest (e.g., hikers, hunters), community and public interest groups, and those with commercial interests (e.g., other mineral tenure holders in the area). Engagement has occurred on a number of fronts including during public comment periods, a public Open House, and direct meetings and correspondence, as well as part of a variety of other public events (e.g., Coal Miner Days). NWP has also engaged the public via social media, several online surveys, and quarterly Project newsletters.

General themes of issues and concerns raised to date by public stakeholders include: water quality; fish communities; wildlife and connectivity of wildlife; greenhouse gas (GHG) emissions; and access to existing recreational infrastructure.

NWP is committed to working with local communities and stakeholders in a respectful and transparent manner to ensure that relevant information is collected to guide Project development. Engagement with public and stakeholders is ongoing.

E.5.3 Government Agencies Consultation and Engagement

NWP has engaged at the local, provincial, and federal levels with representatives from government agencies regarding the proposed Project, with the aim of providing opportunities to learn about the Project as well as to identify any issues, concerns and interests relating to the Project in the context of relevant provincial and federal policies and legislation.

Engagement with government agencies has taken a number of forms, including: calls/meetings to provide Project-related information; scheduled calls with the EAO and Impact Assessment Agency of Canada (IAAC, formerly the Canadian Environmental Assessment Agency); agency specific calls/discussions related to baseline programs; Working Group and sub-Working Group (e.g., terrestrial, aquatic, geochemistry/water quality) meetings; and open houses (included participation of EAO and IAAC representatives). NWP worked closely with the EAO, IAAC, and other supporting regulatory agencies to develop a range of EA process-related documents including: Project Description; Valued Components Document; First Nations Consultation Plan; Public Consultation Plan; and Application Information Requirements.

General themes of issues and concerns raised include: water quality; aquatic habitat; wildlife and wildlife habitat; vegetation; geochemistry and mine rock management; land use; traditional land use; Indigenous rights; and potential cumulative effects.

NWP will continue to work with regulators at all levels, in particular the Working Group during the upcoming Screening/Conformity Review and the Application/EIS review phase of the provincial and federal EA processes.

E.6 Effects Assessment Scope and Approach

The EA scope and approach for the Project was developed following the provincial AIR requirements (EAO, 2018a), and the federal EIS Guidelines (CEAA, 2015) issued for the project, as well as applicable government policy, standards and guidance. The key steps in the Projects assessment were: issues scoping, selection of valued components (VC) and intermediate components (IC), definition of spatial and temporal boundaries, description of existing conditions, determination of potential effects, identification of mitigation measures, evaluation of residual effects (including significance determination for VCs), and assessment of cumulative effects.

Issues scoping involved researching, compiling, and analyzing information to identify natural and human environment issues that may be related to a project. The issues identified through this initial scoping exercise considered regional and local values held by Indigenous communities, the public, and stakeholders. Issues that were identified through the scoping process informed the selection of VCs to be assessed as part of the environmental assessment process.

VCs scoped into the assessment were based on the provincial Pre-Application process and associated requirements, including the Valued Components for Environmental Assessment (NWP, 2016) and related guidance document (EAO, 2013a) and the Project AIR (EAO, 2018). Issues raised during consultation on the Valued Components for Environmental Assessment document (NWP, 2016), the draft AIR, and consultation with the Ktunaxa Nation Council were considered in the selection of VCs. VCs were also scoped into the assessment based on the federal terms of reference for the Project, specifically the EIS Guidelines (CEAA, 2015). In the context of the CEA Act, 2012, VCs are selected to identify and analyze environmental effects under federal jurisdiction as described in Section 5 of the Act.

The methods present a structured approach to assessing effects of the Project on the environmental, economic, social, heritage, and health components relevant to this EA. Effects assessment methods may vary by Valued Component (VC) and as such, details on the approach to the effects assessment for VC are presented in detail in relevant chapters of the Application/EIS, as applicable.

E.7 Summary of Effects Assessments

E.7.1 Atmospheric Environment Assessment

E.7.1.1 Background and Context

The Province of B.C. has been divided into seven air management zones for the National Air Quality Management System (AQMS; B.C. MOE, 2014). Air zones are areas that typically exhibit similar air quality characteristics, issues and trends, and are the basis for monitoring, reporting, and taking action under the AQMS. The Project is located in the Southern Interior Air Zone within the Western Airshed (B.C. MOE, 2014). The Atmospheric regional study area (RSA) overlaps with a portion of the South Saskatchewan Air Zone along the B.C.-Alberta border.

Within the vicinity of the Project, current land uses include: residential; recreational (e.g., hunting, all-terrain vehicle [ATV] trails, fishing, hiking, etc.); exploration; resource; industrial; rangeland; agriculture, and forestry. Mining in the East Kootenay region has been ongoing for well over a century, with coal being the dominant resource extracted in the area.

Existing air quality in the Atmospheric Local Study Area (LSA) and Atmospheric Regional Study Area (RSA) is affected by natural air emissions (e.g., wind-blown dust, forest fires) and anthropogenic air emissions (e.g., existing coal mines, vehicular traffic, construction activities, residential heating, and winter road gritting). Other industrial activities in the Atmospheric RSA that may affect local and regional air quality and GHG emissions include pulp mills, sawmills, and several oil and gas facilities, in addition to prevalent agriculture and forestry practices.

Air emissions resulting from coal mining and processing include: fugitive dust, particulate matter, CO, sulphur oxides (SOx), oxides of nitrogen (NOx), VOCs, and GHGs (Province of B.C., 2009; Rout et al., 2014). Emissions of these compounds have the potential to affect human health and aquatic and terrestrial ecosystems.

E.7.1.2 Effects Assessment

The Project activities and components have the potential to result in adverse effects to the air quality and greenhouse gas VCs in both the local and regional atmospheric environments, and could result in residual effects to the atmospheric environment. The thresholds for determining the significance of residual effects for the atmospheric environment assessment are based on: 1) frequent and widespread exceedances of the most stringent ambient air quality objectives for criteria air contaminants, and 2) quantitative levels used to define low, medium, and high magnitudes of GHG emissions based on emissions from other mines in Canada and with respect to the federal and provincial reporting program.

To characterize the residual Project effects on air quality, an air quality dispersion modelling assessment was developed to evaluate air quality at key locations within the Atmospheric LSA and Atmospheric RSA under existing and proposed (i.e., mine development) scenarios. The model and associated emissions calculations also incorporated proposed design mitigation measures to reduce emissions of criteria air contaminants. To characterize the residual Projects effects on greenhouse gases, a quantitative greenhouse gas assessment was conducted to quantify greenhouse gas emissions resulting from Project activities. As a conservative approach, the residual effects assessment was conducted based on predicted worst-case scenario Project emissions of criteria air contaminants in Year 13 of the Project and worst-case scenario greenhouse gas emissions in Year 12.

Based on the evaluation of potential Project effects on air quality and greenhouse gas VCs, potential residual effects to the air quality and greenhouse gas VCs that may remain after implementation of proposed mitigation measures include:

- Change in ambient criteria air contaminant concentrations; and
- Change in greenhouse gas emissions.

Dispersion model predictions for the Project effects assessment showed localized elevated levels of some ambient criteria air contaminants (i.e., maximum 1-hour concentrations of NO_2, maximum 24-hour concentrations of TSP, PM_{10}, and $PM_{2.5}$, and annual maximum concentrations of TSP and $PM2_{.5}$) at up to 53 sensitive receptor locations in the Atmospheric LSA. The maximum distance from the sensitive receptors with exceedances frequency greater than 1% of the modelling period to the Project footprint is approximately 2 km. All receptors located more than 2 km from the Project footprint are either predicted with exceedances below 1% frequency or below corresponding air quality objectives. Therefore, while exceedances may occur nearby, exceedances are not expected to be widespread in most of the Atmospheric LSA. The majority of exceedances at the sensitive receptor locations are related to fugitive dust from the unpaved haul road. The dispersion modelling assumes the worst-case scenario and does not account for periods of rain or snow, which will alleviate localized dust concentrations. As such, the frequency and of exceedances of objectives at the sensitive receptors is anticipated to be lower than what was predicted by the conservatism built into the model. Based on the results of the assessment, the residual effects of the Project on a change in ambient criteria air contaminant concentrations are considered not significant. The residual effects assessment characterization includes several potential sources of uncertainty and, therefore, this significance determination was assigned a low level of confidence.

The greenhouse gas assessment for the Project effects assessment showed that Project GHG emissions will range from between 10,000 and 500,000 tonnes CO_2e per annum. Worst-case scenario Project GHG

emissions will account for a 0.63% increase in total provincial GHG emissions and a 0.06% increase in total national GHG emissions. The future peak of potential GHG emissions from the Project result in 0.66% of B.C.'s total emissions from 2007. The Project lifespan is for 15 years and is expected to be fully decommissioned prior to 2050. Therefore, any increases in GHG emissions from the Project will cease with the end of the Project's Operations phase, prior to the 2050 provincial target under the Climate Change Accountability Act (2007). After atmospheric mixing, there will be no measurable difference to global GHG emissions as a result of the Project. Based on the results of the assessment, the residual effects of the Project on a change in greenhouse gas emissions are considered not significant. The confidence in the characterization of the residual effect on the atmospheric environment from a change in greenhouse gas emissions from the Project has a high level of confidence, as all GHG emissions were estimated using conservative emission factors, assumptions, and activity levels.

A cumulative effects assessment was undertaken for the air quality and greenhouse gas VCs because there is a possibility that potential Project residual effects may remain after the implementation of proposed mitigation measures. The cumulative effects assessment focused on two Project residual effects, a change in ambient criteria air contaminant concentrations; and a change in greenhouse gas emissions. The cumulative effects assessment involved the identification of past, present, and reasonably foreseeable future projects or activities followed by an evaluation to characterize cumulative residual effects on ambient criteria air contaminant concentrations and greenhouse gas emissions in the Atmospheric RSA under various temporal cases (Base Case, Project Case, and Future Case). The assessment of cumulative effects under the Project Case included all past and present projects/activities which have the potential to contribute to adverse cumulative effects on the air quality and greenhouse gas VCs, while the Future Case considers the potential for overlapping of Project effects with those of reasonably foreseeable future projects or activities.

The Project Case cumulative effects assessment for a change in ambient criteria air contaminant concentrations was based on available emissions data from existing operations and predicted worst-case annual emissions for the Project. The Project has the potential to contribute up to 37.1% of NO_2, 17.5% of SO_2, 8.2% of CO, 9.7% of TSP, 5.7% PM_{10}, and 6.6% of $PM_{2.5}$ annual emissions in the Atmospheric RSA; however, this is likely a considerable overestimate of Project Case emissions, as some existing operations are likely already captured in the Base Case scenario and the methodology used in the development of emissions estimates from the Project are generally thought to be very conservative compared to actual emissions from modern equipment. With respect to the Future Case, a quantitative assessment was not possible due to the unavailability of adequate information related to the reasonably foreseeable future projects in the Atmospheric RSA (i.e., proposed mine site development details, emissions predictions, etc.); however, it is understood that mitigation measures and appropriate operational practices are in place for all of the current coal mines in the Elk Valley, and similarly it is expected that appropriate mitigation strategies will be developed and implemented for the proposed future coal mining operations.

The residual cumulative effects of the Project on a change in ambient criteria air contaminant concentrations in combination with those of past and present projects or activities during all phases are considered not significant. This significance determination for the Project Case was assigned a moderate level of confidence as it was based only on a mass comparison using limited publicly available data for existing operations and does not include a comparison to relevant B.C. AAQOs and CAAQS. The availability of information related to reasonably foreseeable future projects and activities in the Atmospheric RSA is limited and a quantitative assessment of future cumulative effects on a change in ambient criteria air

contaminant concentrations was not possible. As such, this significance determination for the Future Case was assigned a low level of confidence.

The Project Case cumulative effects assessment for a change in greenhouse gas emissions was based on available emissions data from existing operations and predicted worst-case annual emissions for the Project. The Project has the potential to contribute up to 19.6% of annual greenhouse gas emissions in the Atmospheric RSA. In combination with the GHG emission from existing projects and activities in the Atmospheric RSA, the Project Case will account for approximately 3.2% of B.C.'s anthropogenic GHG emissions and 0.29% of Canada's GHG emissions; however, the Project Case likely overestimates future emissions of GHGs, as the assessment was based on conservative emission factors, assumptions, and activity levels. With respect to the Future Case, a quantitative assessment was not possible due to the unavailability of adequate information related to the reasonably foreseeable future projects in the Atmospheric RSA (i.e., proposed mine site development details, emissions predictions, etc.); however, it is understood that mitigation measures and appropriate operational practices are in place for all of the current coal mines in the Elk Valley, and similarly it is expected that appropriate mitigation strategies will be developed and implemented for the proposed future coal mining operations in order to reduce or eliminate sources of GHG emissions.

The residual cumulative effects of the Project on a change greenhouse gas emissions in combination with those of past and present projects or activities during all phases are considered not significant. This significance determination for the Project Case was assigned a moderate level of confidence as it was based only on a mass comparison using limited publicly available data for existing operations and does not account for GHG emissions or sinks from other sources in the Atmospheric RSA. The availability of information related to reasonably foreseeable future projects and activities in the Atmospheric RSA is limited and a quantitative assessment of future cumulative effects on a change in greenhouse gas emissions was not possible. As such, this significance determination for the Future Case was assigned a low level of confidence.

E.7.1.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the air quality and greenhouse gas VCs. Potential effects to the air quality and greenhouse gas VCs will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to air quality and greenhouse gas VCs related to Project and cumulative effects include but are not limited to:

- Project design optimization to use existing access roads and areas of existing disturbance and minimize travel distances in order to reduce vehicle travel distances and speeds that would result in additional generation of criteria air contaminants (CACs);
- Limit CAC emissions through the application of standard industry practices and emissions control measures;
- Implement dust suppression methods and inspect measures regularly;
- Use of hyperbaric drying rather than thermal drying;
- Enforcement of low speed limits for vehicular traffic throughout the site and limit long-term idling, where possible;
- Inspect and maintain all vehicles and combustion equipment per manufacturer recommendations and operate within regulatory requirements;

- Limit the mine disturbance footprint through Project design and progressive reclamation;
- Participate in the Regional Air Monitoring Program and Regional Air Working Group; and
- Implement the Air Quality and Greenhouse Gas Management Plan, Ecological Restoration Plan, Landform Design and Reclamation Plan, and Soil Management Plan.

E.7.1.4 Follow-up Strategy

As required by CEA Act, 2012, a follow-up program is required for "(a) verifying the accuracy of the environmental assessment of a designated project; and (b) determining the effectiveness of any mitigation measures". Both a Project-specific follow-up program and regional monitoring program are necessary to verify the effects predictions and the effectiveness of mitigation measures, which will improve the low to moderate levels of confidence assigned to the prediction of residual effects (Project and cumulative) on ambient criteria air contaminant concentrations and greenhouse gas emissions. The follow-up program will include the implementation of an air monitoring program to collect air quality data at strategic locations within the Atmospheric LSA, in addition to a regional monitoring program in the Atmospheric RSA in collaboration with other proponents. The results of the monitoring program will be relied upon to determine whether additional mitigation measures or adaptive management strategies are needed.

E.7.2 Acoustic Environment Assessment

E.7.2.1 Background and Context

The acoustic environment in the area near the Project and surrounding the Acoustic LSA comprises natural noise sources (e.g., wind, birds, insects), and anthropogenic sources (e.g., residential; recreational; mining; forestry; transportation). Natural sources of ground vibration include volcanic occurrences and seismic events caused by movements along the edges of tectonic plates. The Project location occurs in a medium relative hazard zone for seismic activity (Natural Resources Canada, 2015), but earthquakes do occur in the area (Natural Resources Canada, 2020). The Project is a greenfield site in the East Kootenay, and is a combination of the Montane Spruce and Engelmann Spruce (Subalpine Fir) geoclimatic zones. Anthropogenic sources of background vibration may include seismic exploration for mining and oil and gas developments; quarrying and resource extraction; large trucks and earth-moving equipment; and timber harvesting and hauling.

Mining in the East Kootenay region has been ongoing for well over a century, with coal being the dominant resource extracted in the area. There are several existing metallurgical coal mines in the Elk Valley and Crowsnest coal fields, including Teck's Elkview Operations at approximately 8 km southwest of the Project and the Line Creek Operations, at approximately 12 km north of the Project. Additionally, the Canadian Pacific (CP) mainline and the Sparwood/Elk Valley Airport are within the Acoustic LSA, which affect the acoustic environment near the Project. None of the above activities currently occur within the Project footprint or Acoustic LSA; however, these activities are present within the greater region in which the Project is located.

Project Construction and Pre-Production and Operations phases will result in increased local noise and vibration levels in the environment near the Project. Increased levels of noise and vibration from equipment and mining activities can result in potential sensory disturbance to noise receptors, including human and wildlife receptors. Sensory disturbance may affect receptor health and quality of life (e.g., wildlife use of forage areas).

E.7.2.2 Effects Assessment

The Project will result in increased local noise and vibration levels due to the various Project components and activities, including but not limited to blasting, mining, hauling, and dumping. An increase in noise and vibration has the potential to result in sensory disturbance to humans and wildlife living in the area, and potential disruptions to recreational and commercial land uses such as hiking, hunting and trapping, and fishing, as well as result in changes to human and wildlife health and behaviour patterns.

Human and wildlife (terrestrial and aquatic) receptors were selected as discussed in the AIR (EAO, 2013b). The effects assessment is reflective of worst-case noise emissions and vibration levels for the Project and were compared against the relative federal and provincial guidelines/standards, as well as baseline information and assessments conducted in 2017. Receptors were assessed against Continuous Operations and Blasting Operations, as they were identified as significant noise and vibration sources associated with the Project.

Of the receptors, only two human receptors (locations of possible, but not occupied, Indigenous dwellings) showed some noise levels in exceedance of guidelines; wildlife receptors were most affected within the Project site itself up to a distance of 1,500 m for noise and up to 400 m to 500 m for vibration levels. All other receptors results were in compliance with the respective criteria and applicable guidelines. In addition, cumulative noise and vibration effects are negligible as other operations in the area are beyond the 1.5 km criteria being used for this assessment as required under the cumulative effects in the B.C. Oil and Gas Commission (OGC) guidelines (2018) as well as beyond the 3 km where noise and vibration are no longer distinguishable from background conditions.

Although the Project will result in increased local noise and vibration levels, the intensity of those levels will be more or less equal to those expected for general construction and operation activities and will not exceed applicable guidelines based on the predictions and modelling of the effects assessment and the application of best management practices (BMPs) and mitigation.
With the application of mitigation measures and BMPs, the residual effects of Project-related noise and vibration levels on the acoustic environment during all phases of the Project, are predicted to be not significant, with a moderate level of confidence. Given that there is no anticipated spatial and temporal overlap between the noise and vibration levels associated with the Project and other past, present, and reasonably foreseeable future projects and activities, it follows that cumulative effects are not likely to occur.

E.7.2.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the acoustic environment. Potential effects to the acoustic environment VCs will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to the acoustic environment related to Project and cumulative effects include but are not limited to:

- Limit construction activities, especially those with high noise impact, to daytime hours;
- Utilize standard noise-dampening devices on equipment;
- Discourage unnecessary idling of equipment;
- Perform regular maintenance and inspections on all Project equipment;

- Inform employees of noise impacts and potential mitigation/control measures through appropriate training;
- Install and maintain noise mitigation measures, where possible, on and around Project infrastructure;
- Notify near-by residents prior to construction activities that may generate significant noise for which mitigation may not be feasible;
- Conduct blasting in batches to reduce frequency rather than in smaller, more frequent blasts and coordinate with neighbouring mining operations such that Blasting Operations do not coincide;
- The quantity of charge used per delay will not exceed 2,300 kilograms (kg) throughout the Project and the time delay will not be less than 25 milliseconds (ms);
- Minimize potential cumulative effects by coordinating with neighbouring mining operations so that the Blasting Operations do not coincide; and
- Implement the Noise and Vibration Management Plan.

E.7.2.4 Follow-up Strategy

To assess changes in the acoustic environment over the course of the Project, site-specific monitoring will be implemented as part of the Noise and Vibration Monitoring Program. The monitoring program details specific actions to be taken during the Project phases (Construction and Pre-Production, Operations, and Reclamation and Closure) to monitor the changes in noise and vibration levels.

Monitoring is important to the Project as it provides feedback on the effectiveness of mitigation measures and management strategies. More specifically, monitoring as part of the Noise and Vibration Management Plan will be used to:

- Ensure regulatory compliance for the duration of the Project;
- Set out monitoring protocols such as monitoring station locations, collection procedures, frequency, and triggers for action;
- Assist in evaluating the accuracy and adequacy of predictions made as part of baseline studies; and
- Provide information to develop appropriate adaptive management strategies in a timely manner to maintain noise levels and reduce the potential for impacts on the acoustic and natural environment (including humans and wildlife).

This Noise and Vibration Monitoring Program has been designed to provide comparable and consistent data for which to assess changes in the acoustic environment as a result of the Project. The monitoring program will be reviewed regularly to ensure it is consistent with current legislation and to assess its effectiveness over time.

E.7.3 Soil and Terrain Assessment

E.7.3.1 Background and Context

Current land uses within the Soil Quality and Quantity LSA and Terrain LSA include: residential; recreational (e.g., hunting, all-terrain vehicle [ATV] trails, fishing, hiking, etc.); exploration; resource; industrial; transportation; rangeland; agriculture; and forestry. Forestry, agriculture, and mining in the East Kootenay have been ongoing for well over a century, with coal being the dominant resource extracted

in the area. Fire suppression is practiced in the Elk Valley and there have not been any large fires in the last several years (Tourism Fernie, 2020; B.C. Wildlife Service, 2020). Controlled burning projects have been carried out to improve wildlife habitat and increase available forage in the Elk Valley, funded through the Fish and Wildlife Compensation Program (e.g., Ministry of Forests, Lands, Natural Resource Operations and Rural Development [FLNRORD], 2020).

Historical and current mining, forestry, and agricultural activities in the Elk Valley have resulted in removal and contamination of soils and intensive modification of existing terrain. Other sources of soil and terrain impacts in the Elk Valley include development of local municipalities, off-road vehicle use, natural and anthropogenic air emissions, natural processes, and climate change.

The quantity and quality of soils are important components of terrestrial ecosystems as this is the upper layer of the earth's surface in which plants actively grow. Soil quality can serve as an indicator of the characteristics of soils within an area (e.g., soil microbes as biological indicators within soils). Soil quantity refers to the amount, depth, and distribution of soil and is related to the closure phase of the Project when areas are reclaimed (e.g., using stockpiled soils to reclaim disturbed areas). Soil quality will be considered in the assessment of ecosystems, vegetation, wildlife, and human health. Localized changes in terrain are expected to occur as a result of Project activities such as pit development and extraction. Changes in terrain can potentially impact ecosystem distribution and functioning, wildlife movement, and overall habitat connectivity.

E.7.3.2 Effects Assessment

The Project is predicted to result in a not significant residual effect on soil quantity in the form of loss of soil quantity during clearing and grubbing, and soil salvage activities within disturbed areas of the Project footprint. In addition, a not significant residual effect is predicted to occur to soil quality due to interactions with seepage and ML/ARD associated with mine site drainage infrastructure. Based on the characterization of residual effects on soil quantity and soil quality, potential local effects are associated with disturbance areas and engineered mine site drainage infrastructure (i.e., drainage ditches and sedimentation ponds) within the Project footprint.

The maximum loss of soil quantity is predicted to occur during clearing and grubbing, and soil salvage activities for the Project resulting from excavation, erosion, and compaction during the removal and/or relocation of soil from the Project footprint. Changes to soil quantity are confined to the limits of the Project footprint and the respective footprints of other reasonably foreseeable future projects or activities, are considered not significant at the scale of the RSA, given the implementation of erosion control and other mitigation measures. Since potential changes to soil quantity beyond the Project footprint are not significant, and because there are no overlapping effects of other past, present, or reasonably foreseeable future projects or activities within the RSA itself, no cumulative effects on soil quantity resulting from the Project have been identified and further cumulative effects assessment for soil quantity is not warranted. The residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities on soil quantity during all phases of the Project are rated not significant, with a high level of confidence.

The Project is predicted to result in a not significant residual effect to soil quality marked by increased concentrations of some constituents in soil (primarily metals) within the Project footprint. The adverse

effects on soil quality are predicted to result from interactions with mine site water (i.e., seepage) and ML/ARD within the context of engineered mine drainage infrastructure. Given that ML/ARD potential for the Project is generally low, based on the ML/ARD characterization of the coal and mine rock, and implementation of ML/ARD management and other mitigation measures considered effective for the protection of soil quality, successful reclamation is anticipated to be feasible, and is anticipated to result in no cumulative effect on soil quality. The residual effects on soil quality due to the Project are rated not significant, with a high level of confidence, and are limited to the extent of the RSA with no spatial or temporal overlap with those of past, present, and other reasonably foreseeable future projects or activities; no cumulative effects are deemed likely to occur. As such, a cumulative effects assessment for soil quality is not warranted.

Potential residual effects on terrain resulting from the Project were not identified during the effects assessment.

E.7.3.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the soil and terrain VCs. Potential effects to the soil and terrain VCs will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to the soil and terrain VCs related to Project and cumulative effects include but are not limited to:

- Biomass and soil salvage will be conducted within the Project footprint disturbance areas according to BMPs, including segregation of the upper productive soil unit from lower soils;
- Engineered controls such as benching, ditching, damming, retention and settling ponds, revegetation and recontouring, slope stabilization, mulching, silt-fencing, designated vehicular and heavy equipment travel areas, and placement of other erosion control features during development of the site;
- Conduct regular inspections to confirm control measures are effective and functioning properly;
- Progressive reclamation including recontouring towards stable post-mine landforms using salvaged soil and biomass, with an emphasis on the creation of both micro- and meso-topography to facilitate diverse ecosystems; and
- Implement the Soil Management Plan, Air Quality and Greenhouse Gas Management Plan, Ecological Restoration Plan, Landform Design and Reclamation Plan, Erosion and Sediment Control Plan, Spill Prevention, Control, and Countermeasures Plan, Vegetation and Ecosystems Management and Monitoring Plan, and the Site Water Management Plan.

E.7.3.4 Follow-up Strategy

The follow-up program includes a monitoring program for soil quantity and quality, which will be used to evaluate the effectiveness of preventative erosion and sediment control strategies throughout all phases of the Project. The follow-up program will include scheduled inspections, implementation of plans and guidelines, installation and inspection of erosion control measures, monitoring stations at watercourses, communication and reporting plans, as well as reports documenting the findings of the monitoring program for submission to senior management and the applicable regulatory agencies, as required.

The monitoring program will be refined and supplemented with additional site-specific details prior to commencement of the Project and throughout each Project phase. Monitoring results will be compared

to baseline data to assess the effectiveness of mitigation measures to support the evaluation and improvement of soil management and erosion control practices, and inform the development of adaptive management measures, should they be required.

E.7.4 Groundwater Assessment

E.7.4.1 Background and Context

Within the Groundwater LSA and RSA, current land uses include: residential; recreational (e.g., hunting, all-terrain vehicle [ATV] trails, fishing, hiking, etc.); exploration; resource; industrial; rangeland; agriculture; and forestry. Mining in the East Kootenay region has been ongoing for well over a century, with coal being the dominant resource extracted in the area. Historical and current mining activities in the Elk Valley have resulted in elevated concentrations of selenium, nitrate, sulphate and cadmium in local surface waters, as well as calcite formation in some watercourses (Teck Resources Limited, 2014). Other sources of water quality impacts include local municipalities, agriculture, forestry, and natural and anthropogenic air emissions.

Groundwater quality and quantity are linked to the surface water environment, and as such, impacts to groundwater may result in changes in surface water resources and vice versa. Groundwater may be impacted as a result of mine development and dewatering activities, mine rock management and other mine-related activities. Changes in groundwater quantity may result in stream flow reductions or changes in peak flow, which may affect downstream surface water quantity. Potential changes in groundwater quality and quantity can also affect sources of drinking water.

E.7.4.2 Effects Assessment

The Project is predicted to result in a residual effect on groundwater quantity in the form of reduced baseflow (groundwater) contribution to surface watercourses at the boundary of the Groundwater LSA. Based on the characterization of residual effects on groundwater quantity, potential local effects are associated with mine pit development and dewatering, altered mine site drainage patterns and groundwater-surface water interaction, and water table elevation changes in the local vicinity of the pits during filling of pits to spill point levels at the Reclamation and Closure phase of the Project.

At their maximum extent, the predicted effects on groundwater quantity are in the range of a 5% reduction of baseflow at Alexander Creek (below the confluence of West Alexander Creek and Upper Alexander Creek), and a 2% reduction of baseflow at Grave Creek. These effects are predicted to be limited to the extent of the Groundwater LSA, and are predicted to be not significant with a moderate level of confidence that will be improved through a follow-up program. Since no measurable change to groundwater quantity is anticipated for groundwater flowing through bedrock, and no mapped aquifers have been identified within the Project footprint or Groundwater LSA, further cumulative effects assessment for groundwater quantity is not required, and the residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities on groundwater quantity during all phases of the Project are rated not significant, with a high level of confidence.

The Project is predicted to result in a residual effect to groundwater quality marked by increased concentrations of some Constituents of Concern (COCs) in groundwater within the Project footprint.

These changes are attributed to infiltration of mine contact water and the Mine Rock Storage Facility (MRSF) from mine site drainage and seepage to groundwater, and groundwater-surface water interaction associated with discharge of sediment pond water to West Alexander Creek. Residual effects on groundwater quality (if measurable at 101 years from beginning of the mine Operations phase) due to the Project are predicted to be not significant with a moderate level of confidence and will be limited to the extent of the Groundwater LSA. A follow-up program for groundwater quality will improve the confidence of this prediction. In terms of cumulative effects on groundwater quality, since no past, present, or reasonably foreseeable projects or activities, which are expected to have an adverse effect on groundwater quality, have been identified within the Groundwater LSA, no spatial or temporal overlap of the Project effects with those of other past, present, or reasonably foreseeable future projects or activities is predicted. As such, cumulative effects are not likely to occur, and a cumulative effects assessment for groundwater quality is not warranted, and the residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities on groundwater quality during all phases of the Project are rated not significant, with a high level of confidence.

E.7.4.3 Mitigation Measures

Mitigation measures were identified for each potential effect on groundwater quantity and quality. Potential effects to groundwater quantity and quality will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to groundwater quantity and quality related to Project and cumulative effects include but are not limited to:

- Limit erosion and contain sediment through the application of standard industry practices;
- Divert clean, non-contact water away from the sediment ponds, where possible;
- Appropriate sizing of sediment ponds and installation of impermeable liners to minimize seepage losses and convey runoff during storm events;
- Saturated backfill of mine rock with high selenium levels in the East and North Pits and engineered layering of coal rejects and mine rock at the Mine Rock Storage Facility;
- During active mining, dewatering will be carried out using drainage ditches, berms, sumps and pumps to the sediment ponds;
- Follow provincial and federal requirements for the storing and handling of explosives, collect and dispose of decontamination water off site, line all blast holes, minimize the use of emulsion bulk explosives, and optimize the blast hole size and pattern design;
- Conduct regular inspections to confirm control measures are effective and functioning properly;
- Limit the mine disturbance footprint through Project design and progressive reclamation; and
- Implement the Erosion and Sediment Control Plan, Spill Prevention, Control, and Countermeasures Plan, and the Site Water Management Plan.

E.7.4.4 Follow-up Strategy

The implementation of a Project-specific follow-up program to verify the effects predictions and the effectiveness of mitigation measures will improve the moderate level of confidence assigned to the prediction of residual effects on groundwater quantity and quality. The follow-up program includes the implementation of a Site Water Management Plan (SWMP), including seasonal groundwater monitoring, groundwater level measurement and sampling and development of a Trigger Action Response Plan (TARP). Monitoring results will be compared to baseline data and modelled predictions to support the

evaluation and improvement of the model, and inform the development of adaptive management measures, should they be required.

E.7.5 Surface Water Quantity Assessment

E.7.5.1 Background and Context

The hydrologic conditions in the Aquatic RSA and LSA are controlled by natural factors (e.g., climate; relief; geology; vegetation) and anthropogenic factors (e.g., mining; forestry; agriculture; hydroelectric dams; climate change).

The Aquatic RSA for the Project is situated over the dividing line of Upper Kootenay Basin and the Central Kootenay Basin hydrologic zones (Zone Numbers 19 and 20, respectively). This area is characterized by low precipitation and dry summers, cold and dry winters, and low-to-moderate snow pack (Columbia Basin Trust, 2017). The Aquatic RSA is comprised of the full extents of the Elk River and extends downstream to include the portion of Lake Koocanusa located north of the Canada-USA border. The Elk River watershed covers an area of approximately 4,381 km^2 and is generally oriented in a north to south direction. The current land cover of the Elk River watershed is coniferous, shrub, and barren (68.4%, 14.8%, and 8.9%, respectively; FLNRORD, 2019). The Elk River has many significant tributaries, including the Fording River, Line Creek, Wigwam River, and Michel Creek.

Locally, the Project is situated in an area of steep topography of the Front Ranges Rocky Mountains of B.C. The relief on the Project footprint generally ranges from 1,850 to 2,200 metres above sea level (m asl). The area is characterized by rugged ridges with moderate to steep-sloping sides at higher elevations and gentle slopes at lower elevations. The west side of the Project footprint is characterized by steep sided ridges and subdued mountains, while those on the east are rugged with many cirques and U-shaped valleys. The setting is truly mountainous, underlain mostly by structurally deformed sandstone, siltstone, mudstone, and coal.

Hydrologic conditions may be impacted by reduction in streamflows associated with alteration of natural flow regimes that could potentially result from the proposed water withdrawal and other mine development activities. Changes to surface water hydrology have the potential to impact aquatic and terrestrial ecosystems, vegetation, wildlife, and human receptors through direct influences on physical habitat and water quality.

E.7.5.2 Effects Assessment

The Project will involve changes in land use and hydrology which could result in a residual effect on surface water quantity. The thresholds for determining the significance of residual effects for the surface water quantity assessment are based on changes in water quantity (i.e., streamflow) conditions within the receiving drainage environment.

For the purpose of the assessment, a significant residual adverse environmental effect is defined as a change in surface water quantity that would result in:

- An increase in streamflows within the receiving watercourses which would cause a higher potential for flooding or erosion and related impacts to downstream lands or infrastructure; or

- A reduction in streamflows within the receiving watercourses which would cause changes to the fluvial regime and geomorphic conditions.

To characterize the residual effects on surface water quantity, a long-term water balance and loading model was developed which examined multiple long-term scenarios to evaluate streamflow characteristics at key locations within the Aquatic LSA and Aquatic RSA under existing and proposed (i.e., mine development) land use conditions, in addition to climate change conditions. The model also incorporated proposed mitigation measures which will impact surface water quantity.

Based on the evaluation of potential Project effects on surface water quantity, potential residual effects that may remain after implementation of proposed mitigation measures include:

- Changes to surface water quantity due to site construction activities;
- Changes to surface water quantity due to operational activities; and
- Changes to surface water quantity due to mine closure and reclamation activities.

Based on the results of the assessment, the residual effects on surface water quantity related to site construction activities, operational activities, and mine closure and reclamation activities are considered not significant. The residual effects assessment characterization includes several potential sources of uncertainty and, therefore, this significance prediction is assigned a moderate level of confidence.

A cumulative effects assessment was undertaken for the surface water quantity VC because there is a possibility that potential Project residual effects may remain after the implementation of proposed mitigation measures. The cumulative effects assessment involved the identification of past, present, and reasonably foreseeable future projects or activities followed by an evaluation to characterize cumulative residual effects on surface water in the Aquatic RSA under various temporal cases (base case, Project case, and future case). The assessment of cumulative effects under the Project case includes all past and present projects/activities which have the potential for contributing to adverse cumulative effects on surface water quantity, while the future case considers the potential for substantive overlapping of effects with reasonably foreseeable future projects or activities.

The water balance and loading model that was prepared for the Aquatic RSA includes the cumulative interactions with effects from ongoing mining operations, forestry activities, and hydroelectric and reservoirs dams in the Elk Valley. The results of model indicate that the predicted change in surface water quantity for the Project case is negligible to non-detectable (i.e., less than 1% compared to baseline), when considering mean annual and mean monthly flows during all Project phases at multiple nodes in the Aquatic RSA.

With respect to the future case, a qualitative assessment was not possible due to the unavailability of adequate information related to the reasonably foreseeable future projects in the Aquatic RSA (i.e., proposed mine site development details, water management plan, etc.); however, it is understood that mitigation measures and appropriate operational practices are in place for all of the current coal mines in the Elk Valley, and similarly it is expected that an appropriate mitigation strategy would be developed and implemented for the proposed future coal mining operations.

E.7.5.3 Mitigation Measures

Mitigation measures were identified for each potential effect on surface water quantity. Potential effects to surface water quantity will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to surface water quantity related to Project and cumulative effects include but are not limited to:

- Segregate and divert non-contact surface runoff around mine disturbed areas and water control facilities;
- Control outflows from water management facilities to maintain streamflow conditions in the receiving watercourses to the extent possible, particularly during low flow conditions;
- Limit surface water withdrawals to minimize impacts on streamflows;
- Implement progressive contouring and reclamation of dump site areas to minimize changes in land use and hydrological characteristics;
- Decommission and reclaim water management facilities to restore natural streamflow conditions in the receiving watercourses to the extent possible; and
- Implement the Site Water Management Plan.

E.7.5.4 Follow-up Strategy

As required by the CEA Act, 2012, a follow-up program must be defined to verify the effects predictions or the effectiveness of mitigation. In this light, a comprehensive hydrometric monitoring program will be developed and implemented to facilitate an ongoing examination of streamflow conditions within the receiving watercourses downstream of the Project footprint.

The proposed hydrometric monitoring program will involve the installation of a water level gauge station at specified locations which will consist of a water level logger and staff gauge. In addition, stream gauging will be conducted periodically to measure discharge rates such that a rating curve (water level vs. flow relationship) can be established at each location.

The monitoring program will also involve the installation and operation of a climate station to collect meteorological data that is representative of the Project footprint. The results of the monitoring program will be relied upon to determine whether additional mitigation measures or adaptive management strategies are needed.

E.7.6 Surface Water Quality Assessment

E.7.6.1 Background and Context

The hydrologic conditions in the Aquatic RSA and LSA are controlled by natural factors (e.g., climate; relief; geology; vegetation) and anthropogenic factors (e.g., mining; forestry; agriculture; hydroelectric dams; climate change).

The Aquatic RSA for the Project is situated over the dividing line of Upper Kootenay Basin and the Central Kootenay Basin hydrologic zones (Zone Numbers 19 and 20, respectively). This area is characterized by low precipitation and dry summers, cold and dry winters, and low-to-moderate snow pack (Columbia Basin Trust, 2017). The Aquatic RSA is comprised of the full extents of the Elk River and extends

downstream to include the portion of Lake Koocanusa located north of the Canada-USA border. The Elk River watershed covers an area of approximately 4,381 km^2 and is generally oriented in a north to south direction. The current land cover of the Elk River watershed is coniferous, shrub, and barren (68.4%, 14.8%, and 8.9%, respectively; FLNRORD, 2019). The Elk River has many significant tributaries, including the Fording River, Line Creek, Wigwam River, and Michel Creek.

Locally, the Project is situated in an area of steep topography of the Front Ranges Rocky Mountains of B.C. The relief on the Project footprint generally ranges from 1,850 to 2,200 metres above sea level (m asl). The area is characterized by rugged ridges with moderate to steep-sloping sides at higher elevations and gentle slopes at lower elevations. The west side of the Project footprint is characterized by steep sided ridges and subdued mountains, while those on the east are rugged with many cirques and U-shaped valleys. The setting is truly mountainous, underlain mostly by structurally deformed sandstone, siltstone, mudstone, and coal.

Project activities during Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure may influence surface water quality within and downstream of the Project footprint. Changes to surface water quality from mining activities may result in potential effects to receptor VCs, including aquatic health, vegetation, wildlife, and human and ecological health. Surface water quality measured through loadings and concentrations of metal and non-metal constituents were selected as the measurement indicators for surface water quality effects in the AIR (EAO, 2018).

E.7.6.2 Effects Assessment

The Project activities and components have the potential to result in adverse effects to surface water quality in both the immediate and downstream aquatic environments, and could result in a residual effect to surface water quality. The thresholds for determining the significance of residual effects for the surface water quality assessment are based on the approved or working B.C. water quality guidelines for the protection of freshwater aquatic life, the Canadian Council of Ministers of the Environment (CCME) guidelines for the protection of freshwater aquatic life (where B.C. guidelines do not exist), and the Elk Valley long-term water quality targets (considered only for downstream effects in the Elk River and Lake Koocanusa; Teck [2014]).

To characterize the residual Project effects on surface water quality, a site-wide water and load balance model was developed to evaluate surface water quality at key locations within the Project footprint, Aquatic LSA, and Aquatic RSA under existing and proposed (i.e., mine development) scenarios. The model also incorporated proposed design mitigation measures for surface water quality.

Based on the evaluation of potential Project effects on surface water quality, potential residual effects that may remain after implementation of proposed mitigation measures include:

- Change in surface water quality from disposal of mine rock and coal rejects;
- Change in surface water quality from surface water – groundwater interactions; and
- Change in surface water quality from sediment pond discharge.

Model predictions for the Project effects assessment showed localized elevated levels of some parameters (i.e., cadmium, cobalt, selenium) in West Alexander Creek and Alexander Creek. Concentrations of these parameters showed a distinct seasonal cycle, with higher concentrations in the

winter and lower concentrations during the spring freshet. Modelling suggests that there will be no measurable change to surface water quality in the Elk River or Lake Koocanusa as a result of the Project. Based on the results of the assessment, the residual effects of the Project on surface water quality related to the disposal of mine rock and coal rejects, surface water – groundwater interactions, and sediment pond discharge are considered not significant. The residual effects assessment characterization includes several potential sources of uncertainty and, therefore, this significance determination was assigned a moderate level of confidence.

A cumulative effects assessment was undertaken for the surface water quality VC because there is a possibility that potential Project residual effects may remain after the implementation of proposed mitigation measures. The cumulative effects assessment was focused on the single effect that has the potential to result in detectable concentrations of contaminants from the Project in the Aquatic RSA, namely change in surface water quality from sediment pond discharge, since residual effects resulting from a change in surface water quality from the disposal of mine rock and coal rejects or a change in surface water quality from surface water – groundwater interactions were limited to within the extent of the Project footprint. The cumulative effects assessment involved the identification of past, present, and reasonably foreseeable future projects or activities followed by an evaluation to characterize cumulative residual effects on surface water quality in the Aquatic RSA under various temporal cases (base case, Project case, and future case). The assessment of cumulative effects under the Project case included all past and present projects/activities which have the potential to contribute to adverse cumulative effects on surface water quality, while the future case considers the potential for substantive overlapping of Project effects with those of reasonably foreseeable future projects or activities.

For the Project case, the regional water and load balance model predictions include the cumulative interactions with effects from ongoing mining operations. The results of model indicate that the predicted change in surface water quality for the Project case is negligible to non-detectable when considering median monthly concentrations of nitrate, selenium, and sulphate during all Project phases at nodes in the Elk River and Lake Koocanusa. Estimated mass contributions of the Project to Michel Creek are minimal and water quality in Michel Creek is expected to continue to meet Teck's permit limits in Michel Creek in lieu of a regional water quality target for this watercourse.

With respect to the future case, a qualitative assessment was not possible due to the unavailability of adequate information related to the reasonably foreseeable future projects in the Aquatic RSA (i.e., proposed mine site development details, proposed water treatment technologies and mitigation measure, etc.); however, it is understood that mitigation measures and appropriate operational practices are in place for all of the current coal mines in the Elk Valley, and similarly it is expected that appropriate mitigation strategies will be developed and implemented for the proposed future coal mining operations.

E.7.6.3 Mitigation Measures

Mitigation measures were identified for each potential effect on surface water quality. Potential effects to surface water quality will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to surface water quality related to Project and cumulative effects include but are not limited to:

- Limit erosion and contain sediment through the application of standard industry practices;

- Divert clean runoff around mine disturbed areas, where possible;
- Limit dust generation and emissions through the application of standard industry practices and emissions control measures;
- Follow provincial and federal requirements for the storing and handling of explosives, collect and dispose of decontamination water off site, line all blast holes, minimize the use of emulsion bulk explosives, and optimize the blast hole size and pattern design;
- During active mining, dewatering will be carried out using drainage ditches, berms, sumps and pumps. Pit dewatering will be coordinated to meet overall water quality objectives;
- Engineered layering of coal rejects and mine rock to limit ML/ARD and saturated backfill of mine rock in the East and North Pits;
- Diverting clean, non-contact water away from the sediment ponds, where possible;
- Appropriate sizing of sediment ponds to minimize seepage losses and convey runoff during storm events and installation of impermeable liners;
- Conduct regular inspections to confirm control measures are effective and functioning properly;
- Limit the mine disturbance footprint through Project design and progressive reclamation;
- Implement a collaborative long-term surface water quality monitoring program with other nearby proponents; and
- Implement the Site Water Management Plan, Erosion and Sediment Control Plan, Air Quality and Greenhouse Gas Management Plan, Soil Management Plan, and Spill Prevention, Control, and Countermeasures Plan.

E.7.6.4 Follow-up Strategy

Both a Project-specific follow-up program and regional monitoring program are necessary to verify the effects predictions and the effectiveness of mitigation measures, which will improve the moderate level of confidence assigned to the prediction of residual effects (Project and cumulative) on surface water quality. The follow-up program will include the implementation of an aquatic effects monitoring program to collect surface water quality data at strategic locations within the receiving watercourses downstream of the Project footprint, in addition to a regional monitoring program in Michel Creek in collaboration with other proponents. The results of the monitoring program will be relied upon to determine whether additional mitigation measures or adaptive management strategies are needed.

E.7.7 Fish and Fish Habitat Assessment

E.7.7.1 Background and Context

Key watercourses in the Project footprint, Fish and Fish Habitat LSA, and Aquatic RSA include the Elk River, Michel Creek, Alexander Creek, West Alexander Creek, Harmer Creek, and Grave Creek. Waterbodies in the immediate vicinity of the Project include Grave Lake, Harriet Lake, Mite Lake, and Barren Lake.

The Elk River Valley is extensively used as a recreational fishery, particularly the section of the Elk River between Sparwood and Elkford. Lakes located within the vicinity of the Project are used for recreational fishing and some are stocked with sportfish, according to the Freshwater Fisheries Society of B.C. (2020). Given the high recreational fishing pressure in the area, the Elk River and its tributaries are designated as Classified Waters (FLNRORD, 2019), including Alexander Creek which occurs east of the Project and within the coal licence areas. Classified Waters require a special angling license to fish the waters and were

created to preserve the unique fishing opportunities provided by highly productive trout streams in B.C. (FLNRORD, 2019b). Fishing is prohibited in Grave Creek and its tributaries (FLNRORD, 2019). Trout or qustit' (including Westslope Cutthroat Trout; WCT) from the Elk River and tributaries are also important to the Ktunaxa Nation as they provide an important food source and hold cultural significance (Davidson et al., 2018)

The management of cumulative effects to aquatic ecosystems is an ongoing concern in the Elk Valley due to historic, current, and ongoing mining, timber harvesting, recreation, and municipal development pressures in the area (Davidson et al., 2018; Province of B.C., 2020). WCT and riparian habitat were selected as VCs for the Elk Valley Cumulative Effects Management Framework (EV-CEMF). Although many healthy WCT populations persist in the East Kootenay, the species faces severe reductions to distribution and abundance throughout its range due to over-harvest, habitat fragmentation and degradation, water quality impacts, hybridization and competition with non-native salmonids, and climate change impacts to streamflows and thermal regimes (Davidson et al., 2018). In addition, high-quality WCT habitat is primarily controlled by riparian areas, which have been extensively impacted by anthropogenic disturbance in the Elk Valley (Davidson et al., 2018). Although EV-CEMF focuses on WCT, many of these impacts negatively impact all fish species in the Elk Valley. Mitigation efforts and management responses to WCT and riparian habitat impacts in the Elk Valley are ongoing to ensure the long-term sustainability of aquatic ecosystems in the region.

Six representative fish species were identified as receptor VCs for the Project in the provincial AIR (EAO, 2018): Westslope Cutthroat Trout, Bull Trout (Salvelinus confluentus), Kokanee (Oncorhynchus nerka), Burbot (Lota lota), Mountain Whitefish (Prosopium williamsoni), and Longnose Sucker (Catostomus catostomus). Additionally, benthic invertebrate communities were identified as a receptor VC representative of the aquatic health discipline in the Project area.

E.7.7.2 Effects Assessment

The Project has the potential to affect fish and fish habitat in the Fish and Fish Habitat LSA. The Project is anticipated to result in 31,928 m^2 of instream habitat loss due to mine design in West Alexander Creek, 3,237 m^2 of habitat loss due to changes in water quantity below the Main Sediment Pond in West Alexander Creek, and an estimated 36.13 ha of associated functional riparian habitat removal. The total instream habitat loss in West Alexander Creek is therefore estimated at 35,165 m^2 and accounts for all fish bearing habitat in West Alexander Creek. Uncertainty exists whether offsetting would be appropriate in compensating for complete removal of a suspected resident population of WCT home range in West Alexander Creek. Limited offsetting opportunities exist in the Fish and Fish Habitat LSA, with most of the available offsetting measures currently located in the Aquatic RSA. As a result, the residual effects of instream habitat loss due to mine design and development and habitat loss due to changes in water quantity were found to be significant. Further consultation with DFO and Indigenous groups are required to assess the feasibility of an offsetting strategy.

Changes in water quality were found to be not significant for both pathways of effects to fish and fish habitat, i.e., increased TSS and increased metal concentrations. The water quality model predictions were found to have no significant effect to fish and fish habitat. The possibility for bioaccumulation exists but is found to be not significant as it relates to aquatic wildlife. Based on the results from the water quality

model and the human health and ecological risk assessment, there is no significant threat to fish and fish habitat presented.

The potential of the Project to result in fish mortality was found to be not significant. This is due to the ability of the Project to mitigate all potential mortality pathways around aquatic habitats during all Project phases. The primary mitigation measure will be the salvage of fish from all directly impacted areas. In addition, a permanent fish barrier be designed and installed at the confluence of West Alexander and Alexander Creeks.

The potential of the Project to result in a change in fishing pressure due to greater accessibility to the Project area was found to be not significant, as minimal recreational angling use is anticipated in West Alexander Creek, and access to Alexander Creek will not be increased due to the Project. The primary mitigation measures include implementing the Access Management Plan, including the establishment of No Unauthorized Entry (NUE) areas, securing access areas, and coordination with local conservation enforcement should increases in recreational fishing be observed by NWP employees.

The effect of blasting on fish and fish habitat VCs was found to be not significant. All potential effects will be fully mitigated by adjusting blasting timing and volume of explosives used. This ensures that all blasts throughout the Project will remain below the 13 mm/s threshold for the protection of fish and fish habitat.

Potential effects to changes in streambed structure were found to be not significant. Three pathways of effect were identified: calcite, increased sediment, and changes in geomorphology. Calcite is anticipated to be fully mitigated through the addition of anti-scalants when and as needed throughout all Project phases. Sediment releases will be mitigated through the Main Sediment Pond at the downstream end of West Alexander Creek and is therefore not anticipated to substantially impact fish and fish habitat. The geomorphology assessment found that one reach of Alexander Creek (ALE7) has high sensitivity to changes in geomorphology due to the braided characteristic of this reach and the lack of confinement. The section of Alexander Creek below the confluence with West Alexander Creek is less resilient to changes in flow and sediment load and could become aggraded. While the effects of potential changes in geomorphology do not pose substantial risk to fish and fish habitat, continued monitoring will be required to ensure sediment and erosion plans are effective in mitigating the potential risk posed by the Project activities to geomorphology below the confluence.

A cumulative effects assessment was undertaken for the fish and fish habitat VCs because there is a possibility that potential Project residual effects may remain after the implementation of proposed mitigation measures. The potential residual effects identified include: instream habitat loss due to mine design and development; habitat loss due to changes in water quantity; changes in water quality; changes in streambed structure; and functional riparian disturbance. The cumulative effects assessment involved the identification of past, present, and reasonably foreseeable future projects or activities followed by an evaluation to characterize cumulative residual effects on fish and fish habitat in the Aquatic RSA under various temporal cases (Base Case, Project Case, and Future Case). The assessment of cumulative effects under the Project Case included all past and present projects/activities that have the potential to contribute to adverse cumulative effects on fish and fish habitat, while the future case considers the potential for substantial overlapping of Project effects with those of reasonably foreseeable future projects or activities.

No past, present, or reasonably foreseeable future projects or activities that may have an adverse effect on fish and fish habitat are expected to spatially or temporally overlap with the residual effects resulting from instream habitat loss due to mine design and development and changes in streambed structure, as these residual effects are limited to within the extent of the Project footprint. The habitat loss is anticipated to be compensated following DFO's strategy for offsetting instream habitat losses that result from HADD. The assumption is therefore that, under these regulatory habitat loss restrictions, no other project or activity in the Aquatic RSA would result in habitat loss due to HADD. Given that there is no anticipated spatial and temporal overlap between these residual effects and those of other past, present, and reasonably foreseeable future projects or activities, it follows that cumulative effects are not likely to occur. The cumulative effects assessment therefore focused only on the following residual effects of the Project: habitat loss due to changes in water quantity, changes in water quality, and functional riparian disturbance in the Aquatic RSA. In addition, the following effects of other projects and activities occurring or which may occur in the Aquatic RSA were evaluated as overlapping with the effects of the Project: riparian disturbance, as driven by landscape-scale disturbances associated with forestry harvesting; road development associated with the construction and operation of the Project and after the Project has been decommissioned; increased urban and recreational development in the Aquatic RSA; and increased natural disturbance due to fire and insect outbreaks.

Future disturbance was simulated under the following scenarios: 1) The direct effects of the proposed Project development at maximum build-out and Post-Closure, 2) Project maximum build-out with cumulative effects, and 3) Project maximum build-out with cumulative effects and natural disturbance. The Aquatic Hazard for Scenario 1 increases upon peak mining at 2038 and decreases with mine reclamation at 2055. Compared to an aging forest alone, Aquatic Hazard score would have been 0.58 without mining. Mining acts to increase the Hazard in the Aquatic Watersheds (AW) by 0.04 points. In Scenario 2, most AWs demonstrate increased Aquatic Hazard upon peak mining at 2038 and decreased hazard at 2055 after mine reclamation. Scenario 3 builds off Scenario 2 by adding fire and insect outbreak natural disturbances. Most AWs demonstrate increases in Aquatic Hazard at peak mining and either decreases or have unchanged hazard at 2055. While the Aquatic Hazard increases with the cumulative assessments developed in Scenario 2 and 3, these increases are moderate (upper moderate in Scenario 3 2038) and decrease in the Future Case models of these scenarios. The cumulative effects on fish and fish habitat, arising from the Project in conjunction with other projects and activities and natural disturbances are therefore found to be not significant.

The cumulative effects assessment focuses only on a change in surface water quality from the sediment pond discharge, which has the potential to spatially or temporally overlap with currently operating or proposed projects or activities in the Aquatic RSA. The water quality model that was prepared for the Aquatic RSA includes the cumulative interactions with effects from ongoing mining operations in the Elk Valley. The results of the model indicate that the predicted change in surface water quality for the Project Case is negligible to non-detectable when considering monthly median predicted concentrations during all Project phases at multiple nodes in the Aquatic RSA. Estimated mass contributions of the Project to Michel Creek are minimal and water quality in Michel Creek is expected to continue to meet Teck's permit limits in Michel Creek in lieu of a regional water quality target for this watercourse. Water quality is the main potential pathway for effects to species in the larger Elk River and Lake Koocanusa watershed. Since this assessment looked at sensitive species across the entire watershed that may be most likely impacted by the Project, it is not anticipated that the Project will have a negative impact on any other aquatic species present in the Elk River watershed.

Using the thresholds for ranking the level of hazard associated with the extent of loss of riparian habitat provided for by the EV-CEMF (Davidson et al., 2018), the reduction of riparian habitat associated with construction of the Project footprint would be classified as a low risk. The cumulative loss of riparian habitat within the Landscape and Ecosystems LSA is permanent and potentially irreversible; however, following implementation of the recommended mitigation measures, including applicable ecological restoration measures, the magnitude of the residual effect is considered to be low. Consequently, the residual cumulative effect associated with the adverse change in abundance (or area) of riparian habitat is considered to be not significant.

The water balance and loading model that was prepared for the Aquatic RSA includes the cumulative interactions with effects from ongoing mining operations, forestry activities, and hydroelectric dams in the Elk Valley. The results of model indicate that the predicted change in surface water quantity for the Project case is negligible to non-detectable (i.e., less than 1% compared to baseline) when considering mean annual and mean monthly flows during all Project phases at multiple nodes in the Aquatic RSA. No measurable residual cumulative effects to fish and fish habitat from changes in surface water quantity are predicted beyond the Aquatic LSA boundary, within the remainder of the Aquatic RSA. The residual cumulative effects of habitat loss due to changes in surface water quantity during all phases of the Project on fish and fish habitat were therefore rated not significant.

E.7.7.3 Mitigation Measures

Mitigation measures were identified for each potential effect on fish and fish habitat VCs. Potential effects to fish and fish habitat VCs will be reduced through design mitigation, regulatory requirements, site reclamation, and BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to fish and fish habitat VCs related to Project and cumulative effects include but are not limited to:

- Avoid killing fish by means other than fishing;
- Plan in water works, undertakings, or activities to respective timing windows to protect fish;
- Develop No Unauthorized Entry areas to prohibit public access to the Project footprint, secure access roads to restrict and enforce unauthorized access, and implement a no angling policy for NWP employees and contractors;
- Avoid conducting works, undertakings, or activities in water, placing fill or other temporary or permanent structures below the high-water mark, and fording of watercourses;
- Minimize Project impacts by obtaining an authorization under the Fisheries Act for HADD of fish habitat caused by habitat loss, and developing an offsetting plan to compensate and replace for habitat loss caused by the Project;
- Maintain fish passage by avoiding changing flow or water level and obstructing or interfering with the movement and migration of fish;
- Maintain an undisturbed vegetated buffer zone between areas of on-land activity and the high-water mark of any waterbody;
- Limit erosion and contain sediment through the application of standard industry practices;
- Engineered layering of coal rejects and mine rock to limit ML/ARD and saturated backfill of mine rock in the East and North Pits;
- Use bubble/air curtains to disrupt shock waves, and design of blasts and delay configurations to minimize vibration, avoid using explosives in or near water;
- Divert clean, non-contact water away from the sediment ponds, where possible;

- Appropriate sizing of sediment ponds to minimize seepage losses and convey runoff during storm events and installation of impermeable liners and energy dissipation devices;
- Limit the mine disturbance footprint through Project design and progressive reclamation;
- Conduct regular inspections to confirm control measures are effective and functioning properly;
- Decommission and reclaim water management facilities to restore natural streamflow conditions in the receiving watercourses to the extent possible; and
- Implement the Fish and Fish Habitat Management Plan, Site Water Management Plan, Erosion and Sediment Control Plan, Soil Management Plan, Air Quality and Greenhouse Gas Management Plan, Noise and Vibration Management Plan, Spill Prevention, Control, and Countermeasures Plan and Site Water Management Plan, Access Management Plan, Vegetation and Ecosystems Management and Monitoring Plan, and Ecological Restoration Plan.

E.7.7.4 Follow-up Strategy

As required by the CEA Act, 2012, a follow-up program must be defined to verify the effects predictions or the effectiveness of mitigation. Therefore, a comprehensive surface water quality monitoring program will be developed and implemented to facilitate an ongoing examination of surface water quality within the receiving watercourses downstream of the Project footprint, in addition to reference sites upstream of the Project. This follow-up strategy focuses on the implementation of an Aquatic Effects Monitoring Program (AEMP) as part of the Fish and Fish Habitat Management Program, which will include surface water quality, sediment, benthic invertebrate, and fish tissue monitoring (in fish bearing watercourses). The AEMP will include regular surface water quality monitoring at the specific locations and will include the collection of both in-situ field parameters and water samples for laboratory analysis.

As an addition to the AEMP, a fish and fish habitat specific monitoring program will be developed to assess fish communities and fish habitat. Through continued monitoring, changes in populations and habitat can be more readily detected and adaptive management strategies applied. The aim of the Fish and Fish Habitat Management Plan is to assess mitigations are effective and will provide an adaptive management framework to support early detection of effects, and adequate response procedures for protecting fish and fish habitat.

E.7.8 Landscapes and Ecosystems Assessment

E.7.8.1 Background and Context

Terrestrial ecosystems provide habitat for wildlife species, provide essential ecosystem services to human populations, and contribute to terrestrial and aquatic biodiversity (Environment Canada, 1995; EV-CEMF Working Group, 2018). Degradation of landscapes and terrestrial ecosystems have occurred as a result of the cumulative impacts of human activities, including industry, farming, forestry, urban development, construction of linear features, and consumption of resources (Environment Canada, 1995; EV-CEMF Working Group, 2018).

Given the complex relationships between terrestrial ecosystems, wildlife, aquatic ecosystems, and human activities, ecosystems that provide unique features on the landscape, comprise important habitat components, or demonstrate sensitivities to disturbance were identified as receptor VCs for the Project. These ecosystems are:

- Avalanche chutes;

- Grasslands;
- Riparian habitat;
- Old growth and mature forest; and
- Wetland ecosystems.

An understanding of the potential effects to landscapes and ecosystems is important for consideration in Project design, engineering and operations planning, as well as assessment and mitigation of potential environmental effects. Five representative terrestrial ecosystem types were identified as receptor VCs for the Project in the provincial AIR (EAO, 2018): avalanche chutes, grasslands, riparian habitat, old growth and mature forest, and wetland ecosystems.

E.7.8.2 Effects Assessment

The Project is predicted to have the potential to change the abundance and distribution of landscape and ecosystem VCs through overlap with the planned Project footprint. Additionally, effects were predicted to occur through:

- Alteration of disturbance regimes (in the case of avalanche chutes);
- Altered hydrological regimes (in the case of riparian habitat); and
- Potential effects to plant vigour (and therefore composition and structure) in all VCs associated with to the potential introduction and/or spread of weeds and invasive plant species and deposition of sediments and dust.

The effect of the introduction and/or spread of weeds and invasive species, as well as the deposition of sediments and dust, are able to be mitigated through standard industry practices. The Project's Ecological Restoration Plan will assist in reducing the net effect of ecosystems impacted as a result of the Project; however, not all landscapes and ecosystems VCs can be restored to baseline conditions.

For those potential effects that could not be completely mitigated and for which residual Project effects remained after mitigation, their potential to interact with the effects of other past, present, or reasonably foreseeable future projects or activities to result in cumulative effects was considered. The cumulative effects assessment assumed that the extent of effects to landscapes and ecosystem VCs from past and present projects or activities were largely encompassed in the existing (baseline) conditions for disturbed land cover/ecosystem types. Reasonably foreseeable future projects and activities were mapped for their incremental contribution to the overlap with landscapes and ecosystems VCs in the Landscapes and Ecosystems RSA. Assuming that the entire mapped area of a VC will be removed or substantially altered within the respective footprints of other projects or activities, changes in the abundance and distribution of applicable VCs were predicted throughout the Landscapes and Ecosystems RSA. Reasonably foreseeable future projects and activities were assumed to be held to the same regulatory requirements as the Project, and therefore are likely to involve the implementation of similar mitigation measures. Residual cumulative effects were predicted for all landscapes and ecosystems VCs; however, there were none considered to be significant, particularly in consideration of the Project's respective modest contribution to those cumulative effects.

E.7.8.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the landscape and ecosystems VCs. Potential effects to the landscape and ecosystems VCs will be reduced through design mitigation,

regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to landscape and ecosystem VCs related to Project and cumulative effects include but are not limited to:

- Project design optimization to use existing access roads and areas of existing disturbance;
- Minimize disturbance and soil compaction, reduce areas of exposed soil, and establish exclusion / "no work" zones and setback buffers;
- Control, manage, and remove invasive plants on site to prevent spread;
- Implement dust suppression methods and inspect measures regularly;
- Restore with appropriate native vegetation and monitor changes in plant community and areas of revegetation;
- Monitor and inspect erosion and sediment control measures;
- Schedule blasting during periods of relatively high stability in the snowpack, when feasible;
- Implement minimum design standards for water management infrastructure;
- Document any new wetland areas observed in Project footprint over the course of the Project;
- Monitor reclaimed wetlands and wetland function;
- Employ progressive reclamation and revegetation;
- Conduct education and training on the protection of natural resources; and
- Implement the Air Quality and Greenhouse Gas Management Plan, Ecological Restoration Plan, Landform Design and Reclamation Plan, Soil Management Plan, Erosion and Sediment Control Plan, and the Vegetation and Ecosystems Management and Monitoring Plan.

E.7.8.4 Follow-up Strategy

Given that there was some uncertainty in several of the mitigation measures, as well as uncertainty in some of the preliminary data used to predict potential effects and the measures to mitigate them, confidence in the effects predictions was generally considered to be moderate, and therefore follow-up programs are recommended.

The follow-up program will:

- Describe/quantify (where appropriate) the Project activities conducted over the preceding year, including but not limited to the extent of clearing, volume of material mined, and type of infrastructure installed;
- Describe the mitigation measures implemented (including their maintenance, alteration, and/or removal) over the preceding year;
- Provide the results of monitoring conducted in the preceding year;
- Identify deficiencies in mitigation measures or monitoring protocols as well as their proposed resolution; and
- Verify the accuracy of predictions and conclusions provided in this environmental assessment.

Mitigation and monitoring strategies proposed for the landscapes and ecosystem VCs will be updated over the course of the Project, as appropriate, to maintain consistency with provincial and federal regulatory requirements, best management practices, and scientific methods and research techniques. Throughout the life of the Project, material amendments to mitigation measures and monitoring programs will be carried out in collaboration with Indigenous communities, provincial and federal agencies, and key stakeholders.

E.7.9 Vegetation Assessment

E.7.9.1 Background and Context

Vegetation is an important component of functioning terrestrial and aquatic ecosystems and is an important resource for wildlife, the public, and Indigenous communities. Vegetation species and communities, particularly those that are considered sensitive or vulnerable to extinction, can be affected by human activities. Given the complex relationships between vegetation, wildlife, and human activities, representative vegetation species and communities that demonstrate sensitivities to disturbance were identified as receptor VCs for the Project. These include:

- Listed and sensitive plant communities and species (herein referred to as listed plant communities and species);
- Limber pine (Pinus flexilis);
- Whitebark pine (Pinus albicaulis); and
- Culturally significant plants and ecosystems.

An understanding of the potential effects to the aforementioned vegetation VCs with respect to the Project is critical to the Project design, engineering, operations, and assessment and mitigation of potential environmental effects.

Ktunaxa Nation knowledge holders recognize the importance of vegetation for human use and as habitat for other living things (EV-CEMF Working Group, 2018). The Elk Valley has abundant and diverse vegetation resources, although human land-uses are prevalent on the landscape and many habitats have been modified (EV-CEMF Working Group, 2018). Historical and current mining, forestry, and agricultural activities in the Elk Valley have resulted in removal, fragmentation, and intensive modification of terrestrial ecosystems. Other sources of vegetation impacts in the Elk Valley include development of local municipalities, off-road vehicle use, intensive grazing (both by wildlife and livestock), loss of natural fire patterns, introduction of invasive plant species, natural and anthropogenic air emissions, and climate change.

E.7.9.2 Effects Assessment

Vegetation VCs assessed included listed plant communities and species, limber pine, and whitebark pine. Potential residual effects on listed plant communities and whitebark pine were predicted to be the result of overlap with the planned Project footprint, resulting in a potential change in the abundance and distribution of these VCs, with the exception of limber pine which is not known to be present in the Project footprint. Predicted residual effects to listed plant communities and species also included potential changes in plant composition and structure as well as changes in listed plant communities or species structure as a result of invasive plants and dust deposition. The project also has the potential to result in indirect effects to vegetation VCs through the introduction and/or spread of weeds and invasive species and the deposition of sediments and dust. These effects are anticipated to be mitigated through standard industry practices.

Despite these potential effects, the Project was not predicted to result in significant environmental effects on any of the vegetation VCs. The Project's Ecological Restoration Plan will assist in reducing the net effect of the Project on the vegetation VCs; however, not all effects to these VCs can be restored to baseline conditions. For those potential effects that could not be completely mitigated and for which residual

Project effects remained after mitigation, their potential to interact with the effects of other past, present, or reasonably foreseeable future projects or activities to result in cumulative effects was considered. In the cumulative effects assessment, the extent of effects to vegetation VCs from past and present projects or activities were considered to be largely encompassed in the existing (baseline) conditions for disturbed land covers and ecosystem types. Reasonably foreseeable future projects and activities were mapped for their incremental contribution to the overlap with vegetation VCs in the Landscapes and Ecosystems RSA. Assuming that the entire mapped area of a VC will be removed or substantially altered within the respective footprints of other projects or activities, changes in the abundance and distribution of applicable VCs were predicted throughout the Landscapes and Ecosystems RSA. Reasonably foreseeable future projects and activities were assumed to be held to the same regulatory requirements as the Project, and therefore are likely to involve the implementation of similar mitigation measures. Residual cumulative effects were predicted for all vegetation VCs; however, there were none considered to be significant, particularly in consideration of the Project's respective modest contribution to those cumulative effects.

E.7.9.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the vegetation VCs. Potential effects to the vegetation VCs will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to vegetation VCs related to Project and cumulative effects include but are not limited to:

- Project design optimization to use existing access roads and areas of existing disturbance;
- Minimize disturbance and soil compaction, reduce areas of exposed soil, and establish exclusion / "no work" zones and setback buffers;
- Control, manage, and remove invasive plants on site to prevent spread;
- Implement dust suppression methods and inspect measures regularly;
- Adhere to least risk windows;
- Salvage top soils to retain seedbank for whitebark pine;
- Conduct operational monitoring of retained critical habitat;
- Conduct education and training on at-risk vegetation and invasive plant species;
- Implement proposed federal recovery strategy for whitebark pine;
- Employ progressive reclamation and revegetation;
- Implement the Air Quality and Greenhouse Gas Management Plan, Ecological Restoration Plan, Landform Design and Reclamation Plan, Soil Management Plan, Erosion and Sediment Control Plan, and the Vegetation and Ecosystems Management and Monitoring Plan.

E.7.9.4 Follow-up Strategy

Given that there was some uncertainty in several of the mitigation measures, as well as uncertainty in some of the preliminary data and predictive modelling used to predict potential effects and the measures to mitigate them, confidence in the effects predictions was generally considered to be moderate, and therefore follow-up programs are recommended. Follow-up programs will allow for the Project to adaptively manage environmental effects as they arise throughout the phases of the Project.
The proposed follow-up program for vegetation VCs will:

- Describe/quantify (where appropriate) the Project activities conducted over the preceding year including but not limited to the extent of clearing, volume of material mined and type of infrastructure installed;
- Describe the mitigation measures implemented (including their maintenance, alteration and/or removal) over the preceding year;
- Provide the results of monitoring conducted in the preceding year;
- Identify deficiencies in mitigation measures or monitoring protocols as well as their proposed resolution; and
- Verify the accuracy of predictions and conclusions provided in this environmental assessment.

Mitigation and monitoring strategies proposed for the vegetation VCs will be updated over the course of the Project, as appropriate, to maintain consistency with provincial and federal regulatory requirements, best management practices, and scientific methods and research techniques. Throughout the life of the Project, material amendments to mitigation measures and monitoring programs will be carried out in collaboration with Indigenous communities, provincial and federal agencies, and key stakeholders.

E.7.10 Wildlife and Wildlife Habitat Assessment

E.7.10.1 Background and Context

The Project is located in the Elk Valley within the front ranges of the southern Rocky Mountains in south eastern B.C. The Elk Valley stretches more than 180 km from the mouth of the Elk River at Lake Koocanusa in the south, north to its headwaters in Elk Lakes Provincial Park near the Continental Divide along the B.C.-Alberta border (EV-CEMF, 2018; George et al., 1987). The Elk Valley forms part of the Continental Ranges of the Rocky Mountains. Elevations in the Terrestrial LSA range from 1,170 m above sea level (m asl) along the Elk River west of Grave Lake up to above 2,700 m asl along the Continental Divide at the northeast corner of the Terrestrial LSA. Erickson Ridge (2,480 m asl) is a major north-south limestone ridgeline from the Kootenay Group within the Terrestrial LSA that separates the Project from Teck Coal Limited's (Teck) Elkview Operations to the southwest. Immediately north of Erickson Ridge, across the east-west flowing Grave Creek is Sheep Mountain (2,460 m asl), of the same geologic origin. Sheep Mountain parallels Grave Lake as its western shore and is connected via a north-south ridgeline to Mount Salter (2,530 m asl) immediately south of the east-west Line Creek valley.

High density of roads in the Elk Valley are associated with low habitat suitability for key wildlife species and have been highlighted as having high potential for affecting the function of aquatic ecosystem functioning and grizzly bear habitat. Ungulate risk of mortality via direct collisions with vehicles, and indirectly by increasing hunter access and facilitating predator movement (i.e., enhanced predation rates; Resources Information Standards Committee [RISC], 1999; Guide Outfitters Association of British Columbia [GOABC], 2016). Locations of high collision risk were identified as Mitigation Emphasis Sites (MES; Lee et al., 2019). Two MES are located within proximity to the Terrestrial LSA, based upon significant clusters of animal-vehicle collisions reported during 2012-2017. The MES are located within the Alexander-Michel Creek crossing and approximately three km south of Sparwood (Lee et al., 2019).
Sensitive habitats are ecosystems that are ecologically sensitive or rare on the landscape and have considerable value to biodiversity. Sensitive habitats provide essential resources and features for species at risk and other regionally important wildlife. Within the Terrestrial RSA, sensitive habitats include

riparian and wetland ecosystems, alpine ecosystems, avalanche chutes, grasslands, and old-growth (EAO, 2018). The 24 species identified were grouped into six VC groups for assessment.

E.7.10.2 Effects Assessments

E.7.10.2.1 Ungulate Community

Moose, elk, bighorn sheep, and mountain goat (bighorn sheep and mountain goat considered as one VC) were selected as ungulate VCs. The potential effects of the Project on ungulate VCs were determined to be habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk. Various mitigation measures will avoid or minimize potential effects to ungulate VCs, though potential residual effects may remain. These residual effects were determined to be not significant. The residual cumulative effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk on ungulate VCs arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities were considered not significant. The confidence in the determination of significance was considered high.

Follow-up monitoring for ungulate VCs will include monitoring wildlife movement across Grave Creek Road at Grave Creek Canyon, monitoring of use of the overland conveyor wildlife underpasses, and footprint and facility monitoring.

E.7.10.2.2 Carnivore Community

Grizzly bear, wolverine, American badger, American marten, and Canada lynx were selected as carnivore VCs. The potential effects of the Project on carnivore VCs were determined to be habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk (for grizzly bear and American badger only). Various mitigation measures will avoid or minimize potential effects to carnivore VCs, though potential residual effects may remain. These residual effects were determined to be not significant. The residual cumulative effects of habitat loss and degradation, sensory disturbance, disruption to movement, and increased mortality risk on carnivore VCs arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities were considered not significant. The confidence in the determination of significance was considered moderate to high. Follow-up monitoring for carnivore VCs will include monitoring wildlife movement across Grave Creek Road at Grave Creek Canyon, monitoring of use of the overland conveyor wildlife underpasses and Project footprint, and facility monitoring.

E.7.10.2.3 Bat Community

At-risk bats such as the little brown myotis and northern myotis, and the eastern red bat (not listed as at-risk but detections within B.C. are rare and are becoming of increasing interest) have the potential to occur within the Terrestrial LSA and were therefore considered together as a VC. All three bat VCs were detected in the Terrestrial LSA during baseline surveys. The potential effects of the Project on at-risk bats were determined to be habitat loss and degradation, sensory disturbance, and increased mortality risk. Various mitigation measures will avoid or minimize potential effects to at-risk bats, though potential residual effects may remain. These residual effects were determined to be not significant. There will be incremental loss of at-risk bat habitat arising from the effects of the Project in combination with those of all other past, present, and reasonably foreseeable future projects and activities; however, the primary serious threat to the two at-risk bat species (little brown myotis and northern myotis) is white-nose

syndrome. In the Project-level effects assessment, the risk of increased mortality from white-nose syndrome was predicted to be fully mitigated with no residual effects. While the effect of incremental habitat loss cannot be discounted, its influence on at-risk bat abundance and distribution is expected to be low. The residual cumulative effects of the Project in combination with reasonably foreseeable future projects and activities were determined to be not significant. Follow-up monitoring is to include pre-clearing bat roost and hibernaculum surveys and footprint and facility monitoring.

E.7.10.2.4 Bird Community

Migratory birds (as represented by Olive-sided Flycatcher, Barn Swallow, woodpeckers, and migratory bird guilds), Northern Goshawk, and bird species at risk were selected as wildlife VCs. Bird species at risk included Olive-sided Flycatcher, Barn Swallow, Common Nighthawk and Evening Grosbeak. Effects to waterbird health (as represented by Mallard, Harlequin Duck, Red-winged Blackbird, American Dipper, and Spotted Sandpiper) were also included because of their inclusion under the aquatic health VC for the Human and Ecological Health Assessment. The potential effects of the Project on bird VCs were considered to be habitat loss and degradation, sensory disturbance, increased mortality risk, and waterbird health. Various mitigation measures will avoid or minimize potential effects to bird VCs, though potential residual effects may remain. These residual effects were determined to be not significant. The residual cumulative effects of habitat loss and degradation, sensory disturbance, and waterbird health arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities were considered not significant. Follow-up monitoring is to include pre-clearing raptor stick nest surveys, pre-clearing breeding bird surveys (if limited clearing is required during the general nesting period), and footprint and facility monitoring.

E.7.10.2.5 Amphibian Community

Western toad was selected as a wildlife community VC. Health effects to amphibians (as represented by Columbia spotted frog) were also included because of its inclusion under aquatic health for the Human and Ecological Health Assessment. Both species were recorded within the Terrestrial LSA, though only western toad was found within the Project footprint. The potential effects of the Project on amphibians were determined to be habitat loss and degradation, increased mortality risk, and amphibian health. Various mitigation measures will avoid or minimize potential effects, though potential residual effects may remain. These residual effects were determined to be not significant. The residual cumulative effects of habitat loss and degradation, increased mortality risk, and amphibian health arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities were also considered not significant. Follow-up monitoring is to include pre-clearing amphibian surveys if sensitive habitats and time-periods cannot be avoided, and footprint and facility monitoring.

E.7.10.2.6 Gillette's Checkerspot

Gillette's checkerspot is a species of global conservation concern and is currently ranked as Blue-listed in B.C. Surveys as recently as 2014 and as far back as 2008 showed populations in the southeastern portions of B.C. in the Flathead and Upper Elk River drainages near the Project; however, only two observations of four individuals were confirmed in the Terrestrial LSA, and none were observed within the Project footprint. The potential effects of the Project on Gillette's checkerspot were determined to be focused on habitat loss and degradation. Various mitigation measures will avoid or minimize potential effects to Gillette's checkerspot, though potential residual effects may remain. These residual effects were

determined to be not significant. There will be incremental loss of Gillette's checkerspot habitat arising from the effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects and activities, though determined to be not significant. Follow-up monitoring is to include pre-disturbance surveys in high-quality habitat, and footprint and facility monitoring.

E.7.10.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the wildlife VCs. Potential effects to the wildlife VCs will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to wildlife VCs related to Project and cumulative effects include but are not limited to:

- Project design optimization to use existing access roads and areas of existing disturbance;
- Clear vegetation only in the year in which the area will be required for construction or operation to minimize the extent of cleared vegetation, to the extent possible;
- Sequence the development of pits and Mine Rock Storage Facility areas to limit total disturbance during any one period and maximize progressive reclamation opportunities.
- Minimize disturbance and establish exclusion / "no work" zones and setback buffers;
- Implement dust suppression methods and inspect measures regularly;
- Manage vehicle traffic, site access, and gaps in snowbanks;
- Prevent wildlife entrapment, minimize attractants, and management chemical hazards to reduce wildlife disruptions and mortality;
- Elevate conveyor elevated to create underpasses;
- Adhere to least risk windows;
- Avoidance of known and high potential bat hibernacula and protection of bat roosts;
- Use directed/focused lighting to minimize sensory disturbance and use lights only in non-essential areas (without compromising worker safety);
- Implement a wildlife education program to raise awareness of requirements and commitments to avoid wildlife and protect wildlife and wildlife habitat;
- Employ progressive reclamation and revegetation;
- Conduct surveys of suitable amphibian breeding habitat prior to clearing, grubbing, and deposition of mine rock and, if amphibians are found, conduct a salvage program to avoid mortality;
- Participate in regional initiatives where relevant and appropriate and adoption of new management practices and measures to meet regional planning objectives where possible
- Implement the Air Quality and Greenhouse Gas Management Plan, Ecological Restoration Plan, Landform Design and Reclamation Plan, Noise and Vibration Management Plan, Erosion and Sediment Control Plan, Site Water Management Plan, the Vegetation and Ecosystems Management and Monitoring Plan, Waste Management Plan, and the Wildlife Management and Monitoring Plan.

E.7.10.4 Follow-up Strategy

E.7.10.4.1 Ungulate Follow-up Strategy

Two mitigation measures were identified as having uncertainty in their effectiveness: the overland conveyor underpasses and traffic-related mitigations at Grave Creek Canyon. Along the conveyor, underpasses will be created by elevating the conveyor to at least 2.4 m above ground (or higher where terrain can be used to create more clearance) at intervals of two per 1,000 m. Use of the conveyor underpasses and habitats adjacent to the conveyor will be dependent on the sensitivity of ungulate VCs to the physical presence of the conveyor and the noise that is generated. A program will be developed to monitor ungulate and other wildlife use of underpasses and areas immediately adjacent, using remote wildlife cameras.

A north-south corridor that connects Erickson Ridge to Sheep Mountain through Grave Creek Canyon is known to occur. Measures to mitigate the effects of increased traffic volume along Grave Creek Road on the frequency of crossing by wildlife will be implemented; however there is uncertainty on their effectiveness. A program will be developed to monitor ungulate and other wildlife movement across Grave Creek Road at Grave Creek Canyon and in areas immediately adjacent (for comparison) using remote wildlife cameras, similar to the program for the overland conveyor.

Other wildlife monitoring to support the verification of mitigation measures and effects predictions relating to ungulates VCs will include:

- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and reporting on wildlife mortality, incidents, accidents, or near misses; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.10.4.2 Carnivore Follow-up Strategy

Two mitigation measures were identified as having uncertainty in their effectiveness: the overland conveyor underpasses, and traffic-related mitigations at Grave Creek Canyon. Along the conveyor, underpasses will be created by elevating the conveyor to at least 2.4 m above ground (or higher where terrain can be used to create more clearance) at intervals of two per 1,000 m. Use of the conveyor underpasses and habitats adjacent to the conveyor will be dependent on the sensitivity of carnivore VCs to the physical presence of the conveyor and the noise that is generated. A program will be developed to monitor carnivore and other wildlife use of underpasses and areas immediately adjacent, using remote wildlife cameras.

A north-south corridor that connects Erickson Ridge to Sheep Mountain through Grave Creek Canyon is known to occur. Measures to mitigate the effects of increased traffic volume along Grave Creek Road on the frequency of crossing by wildlife will be implemented; however there is uncertainty on their effectiveness. A program will be developed to monitor carnivore and other wildlife movement across Grave Creek Road at Grave Creek Canyon and in areas immediately adjacent (for comparison) using remote wildlife cameras, similar to the program for the overland conveyor.

Other wildlife monitoring to support the verification of mitigation measures and effects predictions relating to carnivore VCs will include:

- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and reporting on wildlife mortality, incidents, accidents, or near misses; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.10.4.3 Bat Follow-up Strategy

Wildlife monitoring to support the verification of mitigation measures and effects predictions relating to at-risk bat VCs will include:

- Pre-clearing bat roost and hibernaculum surveys will be conducted in areas considered to have high potential for roosting or hibernation;
- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and monitoring of use of Project infrastructure by bats; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.10.4.4 Bird Follow-up Strategy

Wildlife monitoring to support the verification of mitigation measures and effects predictions relating to bird VCs will include:

- For raptors that may nest earlier in the season (as early as March 15), pre-disturbance stick-nest surveys will be conducted;
- If limited vegetation clearing during the general nesting period for most migratory birds in the region (April 13 to August 19) is unavoidable, breeding bird point counts will be conducted to determine the potential presence of breeding birds;
- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and monitoring of use of Project infrastructure by birds; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.10.4.5 Amphibian Follow-up Strategy

Wildlife monitoring to support the verification of mitigation measures and effects predictions relating to amphibian VCs will include:

- Where avoidance of sensitive time periods (breeding and post-breeding) is not possible, pre-disturbance amphibian surveys will be conducted for amphibian presence;
- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and monitoring of use of Project infrastructure by amphibians; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.10.4.6 Gillette's Checkerspot Follow-up Strategy

Gillette's checkerspot was not observed within the footprint during baseline surveys; however, since suitable habitat exists, there is still potential for its presence. To verify predictions and as a mitigation measure, pre-disturbance surveys for Gillette's checkerspot will be completed in high-quality habitats within the Project footprint. Locations of high-quality Gillette's checkerspot habitat will be identified based on and informed by the baseline surveys, the habitat suitability mapping, and terrestrial ecosystem mapping. High-quality habitats within disturbance footprints will then be surveyed during the prime flight window for the species and during weather conditions suitable for adult butterfly activity.

Other wildlife monitoring to support the verification of mitigation measures and effects predictions relating to Gillette's checkerspot will include:

- Monitoring of footprint and habitat losses/gains to track and compare the planned footprint with the actual footprint and to track ecological restoration;
- Recording and reporting on wildlife mortality, incidents, accidents, or near misses; and
- Monitoring of species occurrence at the local level by Project personnel documenting incidental observations of wildlife (i.e., wildlife sighting and incidents).

E.7.11 Physical and Cultural Heritage Assessment

E.7.11.1 Background and Context

Any Project involving ground disturbance has the potential for interaction with physical and cultural heritage. Archaeological resources (materials and sites) including artifacts (i.e., lithic artifacts, faunal remains, fire-altered rock) and features (i.e., a constellation of artifact contexts [e.g., burials, hearths, roasting pits]) are largely contained to surficial and relatively shallow subsurface matrices (i.e., topsoil and mineral soil), whereas palaeontological objects (i.e., fossils) tend to be found in underlying matrices (i.e., bedrock). Accordingly, the Construction and Pre-Production phase of the Project has the greatest potential for interaction with physical and cultural heritage, as it is during this phase that the majority of the ground disturbance and earth moving activities will take place. The discovery, systematic recovery, and interpretation of these resources can provide valuable information about previous human activity occurring within the landscape (in the case of archaeological objects), or natural history and evolution of flora and fauna in earlier eras (in the case of palaeontological objects); however, the disruption or destruction of these non-renewable resources can result in a non-reversible Project effect.

Physical and cultural heritage, including archaeological resources has been selected as a VC because of its importance to the people of the Elk Valley and British Columbia as a whole, and because these resources are recognized and managed by provincial regulatory agencies, and potentially affected Indigenous peoples have an interest in the preservation and management of physical and cultural heritage related to their history and culture.

Previous archaeological assessments within the Archaeological LSA are numerous, and have primarily been associated with forestry-related development. The first documented archaeological survey in the middle Elk River drainage area was conducted by Wayne T. Choquette (1973), which resulted in the recording of 16 historical sites (i.e., postdating A.D. 1846) and 76 pre-contact sites (i.e., predating A.D. 1846 artifacts).

As a result of the multi-year, phased approached to the archaeological assessment for the Project (from 2017 to 2019), conducted under Heritage Inspection Permit (HIP) 2015-0098, 28 pre-contact archaeological sites were discovered and nine previously recorded pre-contact archaeological sites were updated. A supplementary archaeological assessment was completed on a revised location for the Rail Loadout (RLO) Facility of Phase I under Multi-Assessment Permit. In total, 110 archaeological potential polygons are situated within or partially overlap with the Archaeological LSA. A small archaeological program was undertaken for the Crown Mountain Weather Station and no archaeological resources were recovered/identified.

E.7.11.2 Effects Assessment

The Project activities and components have the potential to result in adverse effects to physical and cultural heritage in the Project footprint. As a result of the archaeological assessments completed for the Project, 28 archaeological sites were discovered in the Archaeological LSA, and 9 previously recorded archaeological sites were updated. There are currently no known palaeontological sites within the Project footprint, but there is a high potential to encounter fossils in the Mist Mountain and Morrissey Formations underlying the proposed mining areas; the risk to fossils in these areas was therefore assessed to be high. No residual effects from ground disturbance activities are predicted on sites of historical or architectural significance or on palaeontological resources as a result of the Project through limiting Project activities to the extent of the approved Project footprint and through the implementation of the Chance Find Protocol.

Based on the findings of the archaeological assessment, the Project footprint has been re-engineered and consciously placed to minimize direct impacts to as many archaeological sites as possible in the locality of Grave Prairie; however, 15 pre-contact archaeological sites, either in part or in entirety, will be directly impacted through development of the Project. Implementation of the Project's mine plan will therefore require a substantial amount of archaeological investigation, mitigation, excavation, and monitoring under applicable heritage permitting to abide by provincial legislation and meet guidelines put forth by applicable Indigenous communities to address pre-contact artifact concentrations and/or features that have been identified as containing increased significance. Based on the evaluation of potential Project effects on archaeological resources, a change in physical and cultural heritage due to ground disturbance activities during Construction and Pre-Production and Operations may remain as a potential residual effect.

A significant adverse residual environmental effect on physical and cultural heritage is one that results in a permanent Project-related disturbance to, or destruction of, all or part of a historical, archaeological, palaeontological, or architectural resource considered to be of major importance due to factors such as rarity, condition, cultural significance (e.g., ancestral burial mound), or opportunities for research, and that cannot be mitigated or compensated. Therefore, in consideration of the above discussion, the significance threshold, the mitigation that has been implemented to date, and the mitigation that will be implemented as the Project moves forward, both under provincial regulation and authorization, the environmental effects of the Project on physical and cultural heritage (and particularly archaeological resources) for all phases of the Project are rated not significant.

Forestry and related road development/upgrades, excluding logging that will occur as part of Construction and Pre-Production, is the only reasonably foreseeable future activity predicted to occur in the

Archaeological RSA that will spatially and temporally overlap with Project effects with a potential for adverse cumulative effects on archaeological resources. Assuming that all proponents responsible for future projects and/or activities in the Archaeological RSA follow legislated mitigation requirements and collaborate to ensure that additional appropriate mitigation measures are adopted, if required, no residual cumulative effects are predicted on physical and cultural heritage (and particularly archaeological resources) in the Archaeological RSA.

Due to the evolution of the mine plan and associated infrastructure, portions of the Project footprint have not been subjected to an in-field archaeological assessment; therefore, a subsequent archaeological impact assessment will be required as part of the physical and cultural heritage follow-up strategy to determine if and where archaeological resources are present.

E.7.11.3 Mitigation Measures

Mitigation measures were identified for each potential effect on physical and cultural heritage. Potential effects to the physical and cultural heritage will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to physical and cultural heritage related to Project and cumulative effects include but are not limited to:

- Project design optimization to use existing access roads and areas of existing disturbance;
- Avoidance of known archaeological sites will be undertaken wherever possible to preserve pre-contact archaeological resources;
- Conduct consultation with appropriate Indigenous groups;
- Complete further archaeological impact assessments, including evaluative investigations, under a Section 12.2 Heritage Inspection Permit to determine if and where archaeological resources are present;
- Undertake monitoring by a qualified archaeologist throughout the duration of mechanical activity during Construction and Pre-Production within and adjacent to currently delineated site areas and areas identified within the baseline reporting as containing high archaeological potential;
- Complete salvage inspections (e.g., sample screening) of mechanically-excavated, archaeologically-pertinent sediment extracted from, and potentially immediately adjacent to, delineated archaeological site boundaries;
- Implement incident response procedures for Chance Finds and the discovery of human remains in the event that previously undiscovered artifacts or sites are encountered during Project-related activities; and
- Conduct periodic surveillance of mechanical activity and implemented ground disturbance beyond recorded archaeological sites will be conducted to confirm that any inadvertently exposed and unidentified archaeological material is handled appropriately and adheres to Best Practices, Chance Find Procedure, and methodology and conditions of heritage permitting.

E.7.11.4 Follow-up Strategy

For any residual effects due to the Project assessed, in consideration of applied mitigation measures and best practices to avoid, minimize, or reduce effects, the residual effects of activities associated with the Project, during each of the Project phases, on archaeological resources were rated not significant, with a moderate level of confidence. Further cumulative effects assessment for archaeological resources is not warranted; however, CEA Act, 2012 requires that a follow-up program be conducted when the level of

confidence in the Project effects assessment is less than high, either to verify the effects predictions or to verify the effectiveness of mitigation measures.

Effective design and construction, mitigation, adaptive measures, and good housekeeping and management practices, as well as additional archaeological assessments will be required during Construction and Pre-Production and Operations. The implementation of these site-specific mitigation and/or adaptation measures, including appropriate design, monitoring, and response to incidents, can significantly reduce the potential for adverse effects on archaeological resources.

Before the onset of construction activity, the Follow-Up Strategy (i.e., supplemental archaeological assessment[s] on un-assessed terrain with the Project footprint) will be completed. Additionally, supplemental inspection and investigation of all 15 sites, to be conducted under applicable heritage permitting, will be required to ensure that a thorough understanding of the archaeological sites is had and adequate (i.e., representative) artifact assemblages with contextual information have been obtained. The extent of the pre-construction inspection and investigation of the 15 sites within the Project footprint cannot be detailed at this time due to the dynamic state of the mitigative process, based in part on evolving legislation (i.e., the Heritage Conservation Act) and Indigenous consultation requirements. Additional surveys and monitoring will be required to further refine the extent of the inspection and investigation for these sites.

The Follow-up strategy will be refined and supplemented with additional site-specific details prior to commencement of the Construction and Pre-Production phase, as the permitting process progresses. Throughout each Project phase, monitoring results will be used to assess the effectiveness of mitigation measures to support the evaluation and improvement of mitigation measures, and inform the development of adaptive management measures, should they be required.

E.7.12 Economic Conditions Assessment

E.7.12.1 Background and Context

Economic conditions are a key component to consider due to the nature of the Project and its potential effects on local and regional economies, primarily through the generation of employment opportunities, the procurement of goods and services, and tax revenues. Economic effects are critical to understanding how Project-related effects may benefit regional and local communities.

Coal production is a mainstay of the Province's economy, generating billions of dollars in annual revenue and supporting thousands of well-paid jobs. Mining has been an important component of the provincial economy for over 150 years. The B.C. mining industry contributes to the overall provincial economy, both directly and indirectly, through investment (in exploration and drilling, physical infrastructure, etc.), job creation, tax revenues, and royalties. More indirectly, mining companies purchase goods from suppliers within the Province who in turn purchase goods from other companies. Workers in the industry spend wages at local businesses in their communities. In 2017, British Columbia's mineral and coal exports were worth more than $9 billion (Trade and Invest British Columbia, 2018).

Coal production currently represents over half of the total mineral production revenues in the Province. For recent years, B.C.'s coal exports were reported to be worth $6.7 billion in 2019, $4.1 billion in 2020,

and $7.1 billion in 2021. Coal is B.C.'s largest single export commodity (Government of British Columbia [Government of B.C.], 2018). In 2018, coal mining provided 4,460 direct mining employment jobs. Mineral refining and smelting as well as downstream mineral processing provided an additional 22,335 jobs in the Province in 2018. The average annual salary and benefits for the B.C. mining industry were $123,700 in 2018 (Government of B.C., 2018). Further to the above, a 2020 study completed by Deloitte for the B.C. Chamber of Commerce reported that coal mining in the Elk Valley contributes the following to Canada per annum: $2.3 billion in labour income, $1.5 billion in government revenues, and about 30,500 jobs. (Deloitte, 2020).

The East Kootenay coalfields extend along the northwest-southeast structural grain of the Rocky Mountain Front Ranges in southern British Columbia, and include three fields: Flathead, Crowsnest, and Elk Valley. In the last 20 years, these fields have produced more coal than the rest of B.C.'s coalfields combined (Government of B.C., 2018). In 2018, Teck's coal mines in the Elk Valley produced approximately 26 million tonnes of steelmaking coal (Teck Resources Limited, 2018), approximately 84% of the 31 million tonnes steelmaking coal produced in B.C. in 2018 (Coal Association of Canada, 2022).

Coal mining has played a significant role in the modern history and economy of the Elk Valley and the Regional District of East Kootenay (RDEK). The growth of the communities of Fernie and Sparwood during the first half of the 1900s and Elkford during the 1970s was the direct result of the development of Elk Valley mines. Since 1898, more than 830 million tonnes of mainly metallurgical coal have been produced from the Crowsnest and Elk Valley fields (Government of B.C., 2018).

E.7.12.2 Effects Assessment

Project activities during the Construction and Pre-Production, Operations, and Reclamation and Closure phases have the potential to affect economic conditions.

The total economic impact of the Project will be comprised of direct, indirect, and induced effects. For employment, income, and regional and local economies, indirect and induced effects can be expected to occur. Indirect effects refer to the economic activities generated by the Project upstream in the supply chain, including material providers, capital asset providers (e.g., heavy equipment manufacturers), and contractors retained by NWP for the Project. Induced economic effects refer to the economic effects generated through consumer spending derived from labour income. This consumer spending can be expected to support other businesses and generate additional local labour opportunities.

Potential economic effects of the Project include:

- Changes in employment, employment income and training;
- Changes to the regional and local economy; and,
- Change in government finances.

Mitigation and benefit enhancement measures were identified for each potential effect.

- Changes in employment, employment income and training:
  The Project is expected to result in positive effects to employment, income, and training, as the site activities will require labour during Construction Planning, Construction, and Pre-Production, Operations, and Reclamation and Closure. In addition to direct employment benefits, it is anticipated that the Project will also generate indirect and induced employment effects. In order

to enhance the benefits of employment, income, and training at the local and regional level, the Project will focus on implementing measures to support local and Indigenous hiring and training. Some of the key mitigation and benefit enhancements include:

- Ongoing engagement with local residents with connections in the Economic Conditions LSA communities;
- Implement measures to support local hiring and training;
- Development of and adherence to Skills, Training, and Employment Plan;
- Encourage employees and contractors to transition from positions held during Construction Planning, Construction, and Pre-Production to positions available during Operations;
- Collaborate with existing educational institutions to support targeted-skills hiring;
- To encourage more Indigenous staff, NWP should undertake discussions with local interested communities to receive their input and suggestions regarding job awareness, training, and transportation to the mine. With this input, NWP is to develop a specific hiring plan to increase Indigenous people participation in the Project workforce; and
- Develop and encourage opportunities for Indigenous capacity building, direct and indirect employment, and education and training, as outlined in NWP's Indigenous Policy.

- Changes to the regional and local economy:
  The procurement of goods and services is anticipated to positively affect the regional and local economy during all phases of the Project. Benefit enhancements measures to support local and regional procurement are as follows:
  - Provide notice of and encourage Indigenous owned businesses to participate in Project procurement opportunities, as described in NWP's Indigenous Policy. Project procurement opportunities to be designed/packaged to increase participation;
  - Build relationships with existing Indigenous-owned businesses (e.g., water quality services, plant nurseries, etc.);
  - Develop partnerships with the local Chamber of Commerce and other economic development organizations;
  - Leverage existing economic planning initiatives and efforts; and,
  - Build relationships with regional and local suppliers.
- Changes in government finances:
  Project Construction and Pre-Production, Operations, and Reclamation and Closure will require economic activity, which is taxed, generating revenue for municipal, provincial, and federal governments. Economic activities associated with the Project can be reasonably expected to enhance government fiscal positions at all levels.

In order to enhance these benefits at the local level, one existing mechanism that supports the distribution of property taxes between local communities is the Elk Valley Property Tax Sharing Agreement. Through this agreement, property taxes levied on the Project would be directed to incorporated municipalities (i.e., Sparwood, Elkford, and Fernie) and Electoral Area A of the RDEK.

As a result of the economic conditions assessment, the Project is not expected to result in adverse economic effects or adverse cumulative effects. The Project is expected to result in positive economic outcomes for employment, income, the regional and local economies, and government finances. These positive outcomes are to be enhanced through initiatives such as training programs to maximize the hiring of local workers and from Indigenous communities. Relative to existing conditions, these positive effects

are expected to occur during all Project phases, with the primary economic benefits occurring during Construction Planning, Construction, and Pre-Production, and Operations, which together are expected to occur over an 18 year period. During the Reclamation and Closure stage, spending can be expected to slow, reducing the positive economic effects relative to the previous Project stages.

E.7.12.3 Mitigation Measures

Mitigation measures were identified for each potential effect on economic conditions. Potential effects to economic conditions will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to economic conditions related to Project and cumulative effects include but are not limited to:

- Engage with local residents with connections in communities;
- Development of and adherence to a local hiring system, including local and Indigenous employment targets;
- Encourage employees and contractors to transition from positions held during Construction Planning, Construction, and Pre-Production to positions available during Operations;
- Develop and encourage opportunities for Indigenous capacity building, direct and indirect employment, and education and training, as outlined in NWP's Indigenous Policy;
- Create more awareness of job opportunities and benefits available at NWP through outreach programs (e.g., schools, local communities), job advertisements and public communications;
- Implement an inclusive recruitment process and develop an equal opportunities program for all employees; and
- Provide resources to support employees experiencing violence (work or domestic) and discriminatory or non-inclusive behaviours.

E.7.12.4 Follow-up Strategy

In the absence of potential residual adverse economic effects, and subsequently a cumulative effects assessment, a formal follow-up program is not required for the economic conditions VC; however, there are a number of recommended initiatives for NWP to implement, including:

- Develop and implement a Community Awareness and Involvement Plan that would include employment and training related notices;
- Building upon existing partnerships with the local Chamber of Commerce and other economic development organizations;
- Ongoing engagement of local Indigenous communities to receive their input on how to increase participation of Indigenous people in the workforce, development of an appropriate program for this, and monitoring of the program regarding its effectiveness;
- Continue to work with Fernie Pride to receive input on how to achieve diversity and inclusiveness objectives at the mine;
- Work with local childcare service providers to explore how to improve and support required childcare facilities in the local communities (to support local hiring);
- Discuss with the local municipalities the need for and form of a socio-economic monitoring program, which could include participating in existing monitoring programs related to the mining industry in the Elk Valley; and

- Monitor employee in-migration that may be attracted to the area because of the Project and possible implications of this (e.g., increase in demand of local services).

E.7.13 Socio-Community Assessment

E.7.13.1 Background and Context

Socio-community valued components (VCs) are key components to consider due to the nature of the Project and its potential effects on social conditions, as well community health and well-being. The socio-community assessment is critical to understanding how local and regional communities function and how these communities may be affected by Project-related effects.

Along with forestry, mining is the core industry in the area of the Project, with Socio-Community LSA communities dependent upon the sector as the primary industry and source of demand for other businesses within the community. Currently, there are four operating mines within the RDEK, with planned mines at various stages of the development process.

The population of the local area includes a variety of small communities in B.C. and Alberta, including Sparwood, Elkford, Fernie, and Crowsnest Pass. Individuals also live in the RDEK, including Electoral Area A. The community of Cranbrook is also considered as a regional service centre for the Project. Local communities such as these are likely to provide workers and house new workers, and potentially their families, either permanently or temporarily. Local communities in the Socio-Community LSA in B.C. can be characterized as having a relatively larger working age population when compared to the RDEK, Cranbrook, and Crowsnest Pass. These communities also have a lower median age. The RDEK also has a large temporary or seasonal population. Temporary and seasonal populations enter the Socio-Community LSA for a variety of reasons, including recreation, tourism, and working in the mining sector.

Housing characteristics in the Socio-Community LSA and RSA are defined by movements in the mining sectors, with values corresponding to the sector's performance. Availability of rental housing was identified as a concern through primary data collection. Near the Project, rental costs are similar to, or have previously exceeded, the costs of ownership. Shift work at the mine sites in the Socio-Community LSA is viewed as the driver of the high costs of rentals and shelter overall. Housing issues are often driven by income inequalities between those in the mining sector and other community members, as mining employees tend to have higher wages and can generally afford to spend additional income on housing. This inflates the price of shelter for other community members, negatively impacting them.

Health services overall are lacking in Socio-Community LSA communities, with local residents known to seek health care services outside of their communities, and in some cases, moving to other communities in order to receive the services they need. Ambulatory, fire and emergency services in the Socio-Community LSA communities were identified as adequate. Despite the large catchment/service area served by the Elkford detachment of the Royal Canadian Mounted Police (RCMP), policing services are generally sufficient for the communities in the Socio-Community LSA.

There is an overarching lack of sufficient child care in the communities in the Socio-Community LSA, especially with the growing number of families in the area having children. With the exception of aging infrastructure, community indoor recreation facilities and infrastructure are adequate in communities in

the Socio-Community LSA. Through the primary research program, key informants indicated that there are no significant capacity issues with existing indoor and municipal recreation facilities and infrastructure.

Within the Socio-Community LSA and Socio-Community RSA, no specific issues related to capacity and performance of community infrastructure were identified; however, some communities are in the process of studying infrastructure capacity. In addition, it was noted that industrial traffic does place a burden on road transportations systems within the Socio-Community LSA. Traffic concerns are enhanced in the summer months with seasonal tourism.

Communities in the Socio-Community LSA tend to be above the median for community well-being. Perceptions of health for community members in the Socio-Community RSA tend to be below the provincial averages; however, community members within the Socio-Community RSA are more likely to perceive a sense of community belonging (69%) compared to provincial averages (65%). Overall, a lower proportion of community members within the Socio-Community RSA are satisfied or very satisfied with their life (87%) compared to provincial averages (92%) (Statistics Canada, 2013).

E.7.13.2 Effects Assessment

Project activities during the Construction and Pre-Production, Operations, and Reclamation and Closure phases have the potential to affect the socio-community VCs.

Considering the socio-community VCs/indicators, the baseline conditions of the Socio-Community LSA/RSA and the various Project components, activities and phases, the following potential Project effects were identified:

- Change in housing, community services, and infrastructure, which includes:
  - Change in population and demographics of communities;
  - Change in housing demand and supply;
  - Change in availability of community services; and
  - Change in community infrastructure demand and availability (e.g., water, wastewater, and transportation infrastructure).
- Change in community health and well-being, which includes:
  - Change in community well-being (e.g., increased drug and alcohol abuse, crime rates, perceptions regarding increased outsiders in communities, etc.);
  - Change in public safety due to physical hazards (e.g., truck traffic);
  - Potential for Project nuisance effects to residents (e.g., from noise and change in satisfaction with place and use/enjoyment of property);
  - Change in community health conditions (e.g., change in air quality, consumption of contaminated water or food); and
  - Change in availability/reliance on country foods.

Mitigation and benefit enhancement measures were identified for each potential effect:

- Change in housing, community services, and infrastructure:
  Project-related population growth due to the influx of temporary employees required for Construction and Pre-Production activities as well as the in-migration of permanent employees (and their families) during the Operations phase has the potential to change the supply and

demand of housing options and increase the demand on community services and infrastructure. During all stages of the Project, changes to the demand for housing, community services, and infrastructure are anticipated to be negligible and not adverse, as Project-related population changes are predicted to be minimal. In order to minimize changes to the demand for housing, community services, and infrastructure, NWP intends to capture local labour force, particularly during the Operations phase. In addition, NWP will contribute to municipal government revenues through the payment of taxes that will partially offset for potential increases in demand for community services and infrastructure, and ultimately support local government expenditures and enhancements on community services and infrastructure.

To minimize the increase in local populations and additional demand on local services and infrastructure, NWP intends to implement the following mitigation and benefit enhancement measures:

- Implement measures to support local, Indigenous, and regional hiring, including job training, to capture the local labour force and limit the change in population and demand for housing/services;
- Ongoing development of a local hiring system, including local and Indigenous employment targets, to capture local labour force and limit worker influx and temporary worker population increase;
- Continued participation in and support of community and Indigenous housing initiatives (e.g., Elkford Senior Housing Society, East Kootenay Métis Housing Society, etc.);
- Monitoring of housing availability and engagement with the local municipalities to determine if any actions can be taken by NWP to resolve supply issues as it relates to the Project; and
- Payments of taxes to communities in the Socio-Community LSA through the Elk Valley Sharing Agreement to support community services etc.

Cumulative effects assessments consider overlapping effects for all residual effects. In general, this involves the assessment of the residual Project effects in combination with those of past, present, or reasonably foreseeable future projects or activities. If no Project residual effect occurs, no cumulative effects assessment is required.

E.7.13.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the socio-community VCs. Potential effects to socio-community VCs will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to socio-community VCs related to Project and cumulative effects include but are not limited to:

- Implement measures to support local, Indigenous, and regional hiring and training, to capture the local labour force and limit the change in population;
- Contribute to the ongoing development of a local hiring system, including local and Indigenous employment targets, to capture local labour force and limit the change in population;
- Monitor housing supply and engage with local municipalities, agencies/NGOs, and developers to determine how best to support the provision of housing for mining workers in the community;
- Develop relationships with local municipalities and BC Ambulance Service;

- Allocate taxes to Socio-Community LSA communities through the Elk Valley Property Tax Sharing Agreement, which could support government expenditures on community services and infrastructure;
- Implement and adhere to policies outlined in the Health and Safety Management Plan; and
- Incorporate diversity and inclusivity and GBA+ in all areas of the company such that acceptable and expected behaviours are integrated in the company and are reflected at the community level.

E.7.13.4 Follow-up Strategy

Recommended monitoring and follow-up activities related to the socio-community environment are as follows:

- NWP to support and participate in a local community working group to monitor socio-economic impacts on the local communities as a result of the Project. The scope of this program is to be determined with the input of the local communities and may involve integration with ongoing monitoring activities related to other mine projects in the Elk Valley. Key issues to be considered include housing supply and provision of day care services in the local communities;
- NWP to monitor housing supply and engage with local municipalities, agencies/non-governmental organizations (NGOs), and developers to determine how best to support the provision of housing for mining workers in the local communities;
- NWP to continue to engage with interested Indigenous communities regarding the extent to which harvesting activities occur within the Project footprint and to establish any additional measures to mitigate impacts on traditional harvesting activities, including the development of the mine closure plan and to re-establish the lands for traditional activities; and
- NWP to develop, implement, and publicly report on a complaints monitoring program, including related to possible Project disturbances such as air quality and noise concerns.

E.7.14 Land Use Assessment

E.7.14.1 Background and Context

The East Kootenay is characterized by resource extraction industries such as mining and forestry, as well as nature-based tourism and recreation features and opportunities. In the Elk Valley, coal is the leading mineral resource product. In addition to the proposed Project, the Land Use and Access LSA overlaps with one active coal mining operation, Teck's Elkview Operations.

The Elk Valley offers an abundance of opportunities for outdoor recreation, which is highly valued by local residents and visitors to the area. There are many provincial and regional parks and protected areas transected by the Land Use and Access RSA. Within the Land Use and Access LSA, parks and protected areas are limited to Crowsnest Provincial Park, the Big Ranch Conservation Area located near Grave Prairie, and the Elk River Conservation Lands. The Big Ranch Conservation Area and the Elk River Conservation Lands are provincially designated conservation lands (i.e., acquired or secured through various legal tools and agreements). In addition to these protected lands, there are also privately held conservation lands within the Land Use and Access LSA near Grave Prairie and Alexander Creek, which are managed and controlled by the private landowner and partners.

Hunting and fishing are prevalent activities throughout the Land Use and Access RSA and Land Use and Access LSA. Hunting for big game species commonly occurs in forested areas in both the Land Use and Access RSA and Land Use and Access LSA. Guided outfitters also operate within the Land Use and Access RSA. It is expected that the Project footprint may be subject to hunting activity. Trapping activity, particularly for martens, also occurs within the Land Use and Access LSA and Project footprint. The Project footprint overlaps with four traplines; two of these traplines have not reported harvests since 2008. Within the Land Use and Access LSA, the Elk River, Michel Creek and Alexander Creek are popular fishing areas for both public use and guided fishing trips.

Within the Land Use and Access RSA and Land Use and Access LSA, there is an extensive and interconnected network of local and regional trails used for hiking, running, crossing country skiing, and mountain biking. The Land Use and Access LSA transects multiple sections of the Elk Valley Trail and the Great Divide Trail. Motorized recreation (i.e., ATV and snowmobile) activities also occur on designated trails, gravel roads, access roads, and forestry roads that are located in the Land Use and Access RSA and Land Use and Access LSA.

The Project footprint overlaps with two interconnected roads where motorized use is permitted; however, specific restrictions (e.g., seasonal closures and ATV-only use during certain periods) prohibit motorized use. In addition, the Project footprint overlaps with two staging areas for motorized recreation. One staging area is located along Harmer Creek Road south of Grave Lake, while the other is located near the northern entry to the mine site.

Tourism in the Elk Valley is largely concentrated in Fernie, a renowned destination for winter activities including downhill skiing, with a growing summer visitor base. Sparwood and Elkford have expressed interest in enhancing tourism opportunities in their communities.

E.7.14.2 Effects Assessment

The Project is located in an area valued for recreation activities, particularly by residents of the Elk Valley. The development and operation of the Project will result in the loss of land used for recreation activities (e.g., hunting, snowmobiling, ATV use etc.) and result in some disruption to recreation activities that are expected to continue in the vicinity of the Project. Of note are the potential for impacts to Alexander Creek and impacts to downstream fish populations that could impact recreation fishing. The Project will also result in nuisance effects including noise and air emissions (dust), particularly on lands that are in close proximity to the coal haul route (e.g., along Harmer Creek Road and Grave Creek Road). Some informal campsites along these roads could be impacted.

Project development, including logging and site clearing activities near the rail loadout and mine site, is expected to reduce the land available for commercial purposes, specifically long-term forestry activities and trapping.

Project upgrades to Grave Creek Road may temporarily disrupt access to lands used for recreational and commercial purposes during Construction and Pre-Production. Increased traffic on Harmer Creek Road and Grave Creek Road could result in safety concerns for some users, and as such, these users may choose to use different areas or access routes. Therefore, these changes may be noticeable to land users, and have the potential to change day-to-day use of Harmer Creek Road and Grave Creek Road for some users

due to safety concerns. During blasting activities, the Project would result in temporary closure of areas due to safety considerations. These closures have the potential to limit access to areas accessed via linear features (i.e., via roads in the Alexander Creek Access Management Area). Therefore, blasting activities are expected to result in a noticeable effect to land users; however, they are not expected to change day-to-day land use.

It regards to potential visual impacts, based on the visibility model, the landforms associated with surrounding ridges and the dense evergreen forest effectively block views to the Project in locations where there are sensitive receptors that include residences, institutions, and recreational properties, which are primarily located at lower elevations to the west of the Project site and along the Elk River. There is potential for views of the mine site by some recreational land users (e.g., hunters, hikers) from higher elevation locations (e.g., ridgelines) located to the east and west of the mine site.

In regards to cumulative effects, although it is reasonably certain that the project will result in: the removal of recreation lands, removal of a section of the West Alexander Creek, removal of forestry lands, removal of trapping lands, disturbance of adjacent lands used for recreation in the vicinity of the Project, and land access restrictions, the full extent of loss associated with past, present, and reasonably foreseeable future projects or activities cannot be accurately predicted with the information available (the recreation & commercial value of the other future mine sites is not known). Consequently, the determination of significance is assessed to have only a moderate level of confidence. In consideration of planned mitigation for the Project, in addition to similar mitigation being assumed for other reasonably foreseeable future projects or activities, the residual cumulative environmental effects of the Project in combination with those of past, present, and reasonably foreseeable future projects or activities on access to lands for recreation activities, during all phases of the Project, are considered not significant.

E.7.14.3 Mitigation Measures

Mitigation measures were identified for each potential effect on the land use VCs. Potential effects to land use VCs will be reduced through design mitigation, regulatory requirements, site reclamation, BMPs, including Project-specific management plans and monitoring programs. Key mitigation measures to reduce the potential for adverse effects to the land use VCs related to Project and cumulative effects include but are not limited to:

- Develop No Authorized Entry (NUE) area in collaboration with regulators and key stakeholders based on safety, logistical, and administrative considerations and communicate NUE areas with land users;
- Establish new conservation lands, which may be held privately by NWP, an Indigenous community, or a recognized conservation organization;
- Maintain access to Harmer Creek Road and Grave Creek Road for public use during all Project phases and when necessary, communicate to the public when road restrictions may be in place for access roads around the Project;
- Create and maintain (snow plow) a new loadout area for snowmobile use for the duration of the Project, with the new loadout being located further up Grave Creek Road past the mine site entrance;
- Implement fish habitat offsetting measures and mitigation outlined in the Fish and Fish Habitat Management Plan;

- Implement Ecological Restoration Plan to revegetate wildlife areas to allow for a return of sport hunting activity following the Project;
- Conduct monitoring and follow-up of any public complaints regarding project noise;
- Continue discussions with the Government of B.C. and stakeholders about potentially developing an alternate trail that would remain open during blasting activities, thereby maintaining access to snowmobile cabins;
- Publicly communicate the blasting restriction zone, including with local clubs/associations and the owners of the cabins; and
- Implement and adhere to the Noise and Vibration Management Plan and the Air Quality and Greenhouse Gas Management Plan

E.7.14.4 Follow-up Strategy

Given that there was some uncertainty in terms of the scale of land access restrictions from the No Unauthorized Entry (NUE)/blasting restriction area, some follow-up measures are recommended to confirm the effects and mitigation that includes ongoing engagement of provincial agencies and with local recreation land users regarding the defining of the NUE.

Follow-up actions required to implement the recommended mitigation include:

- NWP will collaborate with Indigenous communities, regulators, and local land-users to establish conservation lands in excess of the loss of existing conservation lands. The new lands will provide important recreation opportunities for all. The new conservation lands will be managed by NWP, an Indigenous Nation, or recognized conservation organization. Once established and in place, NWP will provide communications to land users to ensure awareness of the new conservation area, its mandate and management efforts, and the provision of appropriate signage;
- NWP will engage with local land users including local clubs/associations regarding the establishing of the No Unauthorized Entry (NUE) Area including any blasting restriction areas. Once established and in place, NWP will provide communications to land users to ensure awareness of the NUE Area and the provision of appropriate signage;
- NWP will engage with Canfor to develop and implement a plan for the removal of timber on the Project footprint that is of commercial value prior to construction commencement;
- NWP will continue to engage with trappers to keep them informed of Project implementation timing and to ensure continued access to their trap lines. NWP to continue discussion related to accommodations with the tenure holder of TR0423T006, which overlaps with the mine site;
- NWP will provide awareness to the community regarding the use of Grave Creek Road and any use restrictions that may be put in place for periods of time;
- NWP will continue to engage with local land users including the Elk Valley Mountaineers Snowmobile Club and the Sparwood Fish and Wildlife Association regarding access to lands that surround the Project footprint, including the establishing of the NUE Area and possible bow only hunting area around the Project. Related, NWP will develop a mitigation plan regarding access to and use of the Elk Valley Mountaineers snowmobile club cabin located near Alexander Creek; and
- NWP will engage with the local community, local land users, and the Ktunaxa Nation on mine closure planning with the idea to support and allow recreation activities again on Project lands during Post-Closure. Related to this, NWP will also develop a process to document the ongoing engagement activities with communities of interest and the Ktunaxa Nation related to closure

planning and will record interest and concerns and preferences with closure, the actions, and commitments from NWP to address these, and track implementation.

E.7.15 Effects of the Environment on the Project

As outlined in Section 2(1)(c) of the CEA Act, 2012, the environmental assessment of a project must take into consideration the potential effects of the environment on that project. To complete this, an assessment of the potential effects that environmental conditions may have on the Crown Mountain Coking Coal Project (the Project) was completed. Environmental conditions refer to natural or anthropogenic events or forces that may affect the normal function or stability of Project-related activities or operations. The determination of the potential severity of these effects is based on the ability of the Project, as constructed, to withstand both normal and extreme environmental conditions that may be experienced at the site and within the vicinity.

The scope of the assessment of effects of the environment on the Project is based on the Project AIR (EAO, 2018) and the Project EIS Guidelines (CEAA, 2015). The primary environmental factors included in the assessment to have possible consequences on the proposed Project include, but are not necessarily limited to, the following:

- Extreme weather, including:
  - Extreme precipitation events;
  - Extreme temperatures;
  - Extreme wind events; and
  - Extreme hydrological events.
- Geophysical events, including:
  - Avalanches;
  - Seismic events; and
  - Landslides;
- Forest fires; and
- Climate change.

The assessment of effects of the environment on the project determined that extreme weather, geophysical events, forest fires, and climate change all have the potential to affect the Project and associated infrastructure. This, in turn, could result in impacts to aquatic and terrestrial habitat through sedimentation, spill of hydrocarbons, the discharge of debris, loss of habitat, or wildlife mortality. The implementation of appropriate and site-specific mitigation or adaptation measures, including appropriate design, monitoring, maintenance of facilities, and response to incidents, can significantly reduce the potential for the environment to impact the site and the associated impact to habitat. With effective design and construction, mitigation, adaptive measures, and good housekeeping and management practices, the residual effects of the environment on the Project (including the residual effects of extreme weather, geophysical hazards, forest fires, and climate change) are rated not significant, with a high level of confidence.

E.7.16 Accidents and Malfunctions Assessment

A project must take into consideration the potential environmental effects of accidents or malfunctions that may occur in relation to the designated project. Accidents or malfunctions refer to unplanned events

or conditions that are not considered part of normal Project operations or activities as they are planned, which are associated with a loss or failure of Project components or processes.

The focus of the accidents and malfunctions assessment is on understanding the likelihood, consequences, and predicted risk of a potential credible accident, malfunction, or other unplanned event should one occur, and on identifying mitigation and emergency response measures that could be implemented. Credible accidents and scenarios were identified based on knowledge of the Project and past professional experience of NWP and the Project designers and engineers with similar types of projects and Project activities. Even with detailed planning and implementation of preventative measures, the potential exists for accidents or malfunctions to occur during any Project phase, and if they occur, for adverse environmental effects to result if these events are not addressed or responded to in an appropriate manner.

Based on professional judgment, experience with other mining projects, and in consideration of the requirements and guidelines provided in the AIR and EIS Guidelines, respectively, the following key accidents or malfunction scenarios have been identified as having a reasonable potential to occur as a result of the Project:

- Release of Hazardous Materials;
- Loss of Containment;
- Uncontrolled Detonation of Explosives;
- Fire;
- Slope Failure;
- Wildlife Encounter; and
- Vehicle or Equipment Collision.

The assessment of the potential risk of environmental effects resulting from accidents or malfunctions involves the use of the risk matrix, where the residual risk is determined based on the likelihood and consequence of that particular accident or malfunction. Table E.7-1 identifies the summary of residual environmental effects of accidents or malfunctions based on the risk assessment completed for the project.

In the unlikely event of a major industrial accident at the Project involving a large scale release of hazardous material, fire, wildlife encounter, or vehicle or equipment collision, there is a potential for significant residual adverse effects; however, the risk to VCs from Project-related accidents and malfunctions, considering mitigation and the advanced level of design information in the EA, provide for a very low probability of an event occurring. As a result of Project design and emergency response measures, the results of the risk assessment indicate that the residual risk (severity and likelihood) of accidents and malfunctions is very low to moderate.

Table E.7-1: Summary of Residual Environmental Effects of Accidents or Malfunctions

Accident or Malfunction	Valued Component												
	Air Quality	Acoustic Environment	Soils and Terrain	Groundwater	Surface Water	Fish and Fish Habitat	Terrestrial Ecosystems	Vegetation	Wildlife	Archaeological Resources	Economic Conditions	Socio-Community	Land Use
Release of Hazardous Materials	NS		NS	NS	NS	NS	NS	NS	NS	NS			
Loss of Containment			NS		NS	NS	NS	NS	NS				NS
Uncontrolled Detonation of Explosives	NS	NS			NS	NS	NS	NS	NS				
Fire	NS		NS		NS	NS	NS	NS	NS		NS	S(U)	NS
Slope Failure	NS				NS	NS			NS			NS	NS
Wildlife Encounter									NS			S(U)	
Vehicle or Equipment Collision									NS			S(U)	

Note: NS = effects are not significant; S (L) = effects are significant and are likely to occur; S (U) = effects are significant but are not likely to occur; empty cell = no anticipated interaction.

E.7.17 Human and Ecological Health Assessment

E.7.17.1 Background and Context

The biogeoclimatic zones of the Elk River area include elements of Montane Spruce, Interior Cedar-Hemlock, and Interior Douglas Fir. Prevailing conditions vary from undisturbed to areas of considerable disturbance associated with land use activities including: residential; recreational (e.g., hunting, all-terrain vehicle [ATV] trails, fishing, hiking, etc.); exploration; resource; industrial; rangeland; agriculture; and forestry. Collectively, the biogeoclimatic zones and variances in disturbances dictate the type and quality of habitat for terrestrial/aquatic wildlife and local people that may be present as receptors.

The Project has the potential to release chemical contaminants to the environment through controlled or uncontrolled releases such as permitted effluent discharge, surface water runoff, seepage, fugitive dust, and atmospheric emissions from vehicle traffic or other direct facility emissions. These emissions and releases, in turn, have the potential to alter environmental quality of local and regional landscapes which could potentially expose human and wildlife receptors to chemical releases from the Project. The degree of exposure and the potential risks to human health, terrestrial wildlife health, aquatic wildlife health (e.g., fish, amphibians, invertebrate communities, water birds) are of concern to local residents, communities, and regulatory agencies.

Human health risk assessment (HHRA) and ecological risk assessment (ERA) are systematic and well-documented processes to define and quantify potential health risks, which in the present instance serve as surrogate measures of potential health impacts from the Project.

E.7.17.2 Effects Assessment

The Project will involve changes in land use, and potential changes in water quality, air quality, soil quality and sediment quality, and certain food quality which, through various pathways, may influence the valued components of human health or ecological health. As result of this potential, a human health and ecological risk assessment was conducted to quantitatively assess the collective effects (health risks) of potential changes in quality to the above-noted media, using various exposure models and food chain models. Quantitative expressions of health risk in the form of hazard quotients (HQs) and incremental lifetime cancer risks (ILCRs) were derived based on accepted practices and guidance from Health Canada, Environment and Climate Change Canada, and CCME.

The thresholds for determining the significance of human and ecological risk estimates were established with consideration for federal/provincial policy, conservatism of the risk assessment process and uncertainties inherent in the process. This approach was applied for the effects assessment of the Base Case, Project Case, and Cumulative Case.

Based on consideration of the health risk magnitude, inherent conservatism of the risk assessment (i.e., cautionary approach to overestimate rather than underestimate risk), and uncertainties, the residual Project effects, significance of determination, and confidence levels are summarized as follows:

- Terrestrial wildlife health – No significant residual effect associated with the Project with a moderate level of confidence.
- Aquatic wildlife health - No significant residual effect associated with the Project with a moderate level of confidence.
- Human health - No significant residual effect associated with the Project with a high level of confidence.

Based on the results of the assessment of the Operations phase of the Project, the residual effects on human and ecological health related to activities to be conducted during Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure are considered not significant, with a moderate to high level of confidence.

A cumulative effects assessment was also conducted using the same methods as the Project Case to understand the status of residual Project health risks when coupled with potentially overlapping additional environmental influences from other past, present, or reasonably foreseeable future projects or activities in the area.
Residual cumulative effects significance of determination, and confidence are summarized as follows:

- The residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities to terrestrial wildlife health are considered not significant. The confidence level ascribed to cumulative terrestrial wildlife health risk is moderate.
- The residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities during Operations (and by inference other less influential Project phases) to aquatic wildlife health are considered not significant. The confidence level ascribed to cumulative aquatic wildlife health risk is moderate.
- The residual cumulative effects of the Project in combination with those of other past, present, and reasonably foreseeable future projects or activities during Operations (and by inference other

less influential Project phases) to human health are considered not significant. The confidence level ascribed to human health risk is “high”.

The results of the cumulative effects assessment indicate that there are no significant residual cumulative effects to ecological or human health anticipated because of the Project in combination with other past, present, and reasonably foreseeable future projects or activities.

E.7.17.3 Mitigation Measures

The assessment of health risk to ecological receptors and people associated with local land use inherently considers the Project’s mitigation measures that are engineered and operationally planned within the Project and reflected in the fate and transport modelling of the air quality modelling and the surface water quality modelling. A wide array of design mitigation measures are therefore directly reflected in the predicted environmental quality for surface water and air, and then secondarily integrated when predicting how these media affect soil, plant/animal tissue (i.e., food) and sediment quality. Therefore, to a large extent, various aspects of the potential linkages between Project activities and health risk to VCs have been mitigated before the health risks are quantified (i.e., health risk predictions are based on the residual effects of the various receptor VCs assessed in other chapters).

Further opportunity to mitigate health risk to individual receptors may be possible through mitigation of exposure, which is an essential component of any toxicological health risk; this would fundamentally mean mitigation measures that either further reduce the exposure point concentration of substances to ecological receptors and people (e.g., use of dust suppression along haul road to decrease fugitive airborne particulate concentrations and dispersion), or through reduction of the frequency/duration by which ecological receptors and people may come into contact with the substances through contact with certain media, such as water, air, and food. Institutional mitigation measures such as fencing or operational policies may be invoked until the mine is closed and fully reclaimed in order to mitigate potential exposures and health risk.

E.7.17.4 Follow-up Strategy

No specific follow-up activities are required with respect to the human and ecological health assessment. Planned follow-up monitoring requirements associated with potential changes to the biophysical environment can be considered as suitable inputs to revisit the predictions of the human health and ecological risk assessment (HHERA) and its associated models. Biophysical monitoring of surface water, sediment, air quality and possibly plant/animal tissue can be used as inputs to the multimedia food web and exposure model to validate the outputs of the HHERA (i.e., risk estimates) and identify whether additional risk management actions are necessary.

E.8 Indigenous Communities

In the subsections that follow, we provide a high-level summary of the effects assessments that are detailed in the Application/EIS. It is noted that where necessary, the key findings for the assessment of the health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (consistent with the requirements of Section 5(1)(c) of the CEA Act, 2012 are differentiated into those considered for Ktunaxa Nation which is collectively identified

for ʔakink'um‡asnuq‡iʔit (Tobacco Plains Band), ʔakisq'nuk First Nation (Columbia Lake Band), ʔaq'am (St. Mary's Band), and Yaqan Nuʔkiy (Lower Kootenay Band), and the Indigenous Communities identified as:

- Shuswap Indian Band;
- Stoney Nakoda (Iyarhe Nakoda) (Bearspaw First Nation, Chiniki First Nation, and Wesley First Nation);
- Métis Nation of British Columbia (including Elk Valley Métis Nation);
- Kainai (Blood Tribe);
- Piikani Nation (Aapátohsipikáni);
- Siksika Nation;
- Tsuut'ina Nation; and
- Métis Nation Alberta – Region 3.

For the purposes of this assessment, the assessment boundaries consist of the Project footprint, the Aboriginal and Treaty Rights and Interests/Ktunaxa Nation Rights and Interests (ATRI/KNRI) Local Study Area (LSA) (ATRI/KNRI LSA), and the Aboriginal and Treaty Rights and Interests/Ktunaxa Nation Rights and Interests (ATRI/KNRI) Regional Study Area (RSA) (ATRI/KNRI LSA).

E.8.1 Health and Socio-Economic Conditions

For the purposes of this assessment, health and socio-economic conditions are referenced in the Application/EIS as social, health, and economic conditions. Based on the background information research and the consultation activities with the Indigenous Communities to date, there are no anticipated interactions between the Project and Indigenous Communities' housing, transportation, or social services and education, and therefore, no unmitigated Project effects on these aspects of social and health conditions are anticipated. There are also no anticipated unmitigated negative Project effects related to Indigenous Communities' economic ventures such as commercial operations, forestry, or logging, and commercial fishing. Some impacts to hunting (and trapping, where applicable) may occur.

The Project can be generally expected to result in positive economic outcomes for employment, income, the regional and local economies, and government finances within the Economic Regional Study Area (RSA). In this light, specific Project-related effects to economic conditions are not carried forward in this assessment.

The residual effects of a change to social and health conditions due to the Project are characterized as being long-term in duration but low in magnitude as the predicted residual effects to wildlife and human health are considered to present a low risk, and the potential change in country foods is only associated with the Project footprint or close to the haul road, which are areas that will be restored. The low exposure risk is unlikely to adversely affect individuals or local populations and therefore there is an unlikely disruption to country food quality. A wide array of design mitigation measures are directly reflected in the predicted quality of surface water and air, and secondarily integrated when predicting how these media affect soil, plant/animal tissue (i.e., food) and sediment quality. As such, mitigation measures applicable to the surface water and air quality VCs are applicable, as well as avoidance strategies to reduce exposure by humans and wildlife during operations, such as site fencing to preclude access and signage. The residual effects of the Project on aquatic and terrestrial wildlife health and human health during all Project phases are considered not significant. As such, residual effects to social and health conditions due to the Project,

in particular changes to the actual or perceived quality of country foods and indirect disturbance to Indigenous land users, are also considered not significant. Given the conservative nature of the exposure/risks and proposed mitigation in Reclamation and Closure, and based on the publicly available information and input received from engagement activities related to the use of the Project footprint by the identified Indigenous Communities, the Project is not anticipated to result in significant adverse residual effects to aquatic and terrestrial wildlife or Indigenous persons. In the present case, an overall moderate level of confidence that the estimated health risk to aquatic and terrestrial wildlife and human health as a result of the Project is low and not significant is predicted. Additionally, no adverse residual effects on socio-economic conditions related to Indigenous Communities were predicted, therefore no cumulative effect to socio-economic conditions are expected to occur. As such, the residual cumulative effects of a change to social, health, and economic conditions arising from the Project on the identified Indigenous Communities in combination with other past, present, and reasonably foreseeable future projects and activities during all phases are considered not significant. The wildlife and human health risk estimates inherently consider operational activities, emissions, and other contaminant releases intrinsic to the predictive modelling of water quality, air quality, and secondarily food via transport, fate, and food chain modelling. Based on the current information available to NWP, it is anticipated that the contribution of the Project's residual effects is unlikely to cause a change in the cumulative effects that could affect the viability or sustainability of country food within the ATRI/KNRI RSA by the identified Indigenous Communities.

Specific to the social, health, and economic conditions as they relate to the identified Indigenous Communities, some of the mitigation measures identified in the Indigenous Impact Management Plan include:

- With respect to the consumption of water, country foods, and medicine, develop a process to monitor potential project contaminants during the relevant phases of the Project including related mitigation strategies and a culturally appropriate communication strategy to inform Indigenous community members regarding the relative safety or risks of water, country foods, and medicine consumption in proximity of the Project based on scientific and Traditional Knowledge.
- Support a joint process for the incorporation of Traditional Knowledge and the participation of Indigenous community representatives in monitoring activities related to water, country foods, and medicines consumption within and downstream (Alexander Creek) of the Project.
- Avoidance strategies to reduce exposure by Indigenous harvesters active near the Project footprint during Operations, such as site fencing to preclude access and signage.
- Implementation of the Health and Safety Management Plan to mitigate possible social issues that could emerge as a result of the changes to the environment due to the Project.
- Incorporating diversity and inclusivity and GBA+ in all areas of the company such that acceptable and expected behaviours are integrated in the company and are reflected at the community level;
- Implementation of social safety measures and preventative plans to reduce incidents and developing incident support programs.
- Collaborating with local Indigenous organizations on diversity and inclusivity initiatives and events.
- Providing preferential employment provisions including where applicable training programs that encourage Indigenous community members to have the training, skills, and qualifications to apply for jobs that become available.

- Developing a well-being management plan with Indigenous partners to address ways to reduce the potential effects of shift work for new Indigenous employees and to promote the safety and security of Indigenous women, girls, and 2SLGBTQIAA+ people in the workplace.
- Defining goals for a certain percentage of the workforce to be comprised of Indigenous employees while prioritizing Indigenous women where applicable and requirements that all contractors and subcontractors agree to the preferential hiring process.
- Providing flexible and individually tailored shift work hours for Indigenous employees new to shift work and possibly wage based employment, as well as those Indigenous employees needing time off for traditional hunting, fishing, trapping, and/or gathering activities.
- Designation of an Indigenous Project Liaison to assist Indigenous employees and to address workplace concerns and the availability of different types of cultural leaves for Indigenous employees, where applicable.
- Distribution of relevant materials where applicable in local languages and on-site interpretation where needed for Indigenous employees, and employment assistance programs that offer culturally relevant support for Indigenous employees, where applicable.
- Where possible, contracting and sub-contracting related to the Project will be given to qualified businesses that are owned at least in part by Indigenous Community members, and requirements that all businesses contract employ Indigenous employees.
- NWP will work with the identified Indigenous Communities to create economic benefits for the community that might include initiatives related to capacity building, direct and indirect employment, education and training, and procurement and business relationships.
- NWP will support activities related to monitoring and address potential beneficial and adverse economic and social effects related to increased participation of Indigenous community members in the NWP work force including providing support to related Indigenous Communities to conduct community-based surveys to monitor baseline trends and track positive and negative changes in socio-economic conditions.

E.8.2 Physical and Cultural Heritage, and Any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance

For the purposes of this assessment, physical and cultural heritage is assessed together with any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance. This is because of their potential for cultural importance to the Indigenous Communities and based on their (currently undefined but) potential link to Indigenous ancestry, where the Project may potentially impact the physical and cultural heritage of Indigenous Communities. Pre-contact archaeological artifacts are an immensely important connection between Indigenous Peoples, their ancestors, culture, history, and traditional knowledge (i.e., physical and cultural heritage).

As part of the Project planning process, and following preliminary findings of the Archaeological Baseline Program, the Project footprint was re-designed to minimize direct impacts to as many archaeological sites as possible. NWP has already mitigated this through the redesign of the Rail Loadout to avoid impacts to suspected ancestral burials that were identified during the Baseline Archaeological Program. Following the most recent conclusions of the Archaeological Baseline Program, and the current Project footprint configuration, there are 15 pre-contact archaeological sites identified within the Project footprint that are

anticipated to be directly impacted as a result of the Project. As currently identified, none of the sites contain suspected ancestral burial grounds. Eight of the 15 pre-contact archaeological sites were identified as having the potential for indirect impacts as a result of the Project. The 15 pre-contact archaeological sites are located in areas where adjustments to the Project footprint cannot be made. Therefore, additional mitigation in the form of salvaging these resources through a controlled, permitted, professional archaeological excavation will be required in consultation with appropriate Indigenous community representatives. A Heritage Resources response procedure will be put in place as per the application of a provincial Section 12.4 Alteration Permit (to be held concurrently with a Section 12.2 Heritage Inspection Permit), and will be followed in the event that a Heritage Resource is discovered during Project-related activities. Currently, no linkages to pre-contact archaeological sites within the Project footprint have been identified with respect to the Indigenous Communities. These determinations may potentially be updated through ongoing consultation with the identified Indigenous Communities. Other than for the archaeological sites mentioned, there is no interaction between the Project and paleontological or built heritage resources.

The Grave Prairie Cultural Landscape contains extremely important Ktunaxa cultural values and is located within the Project footprint. The area of Grave Prairie has significant cultural significance to Ktunaxa and that any additional infrastructure including the proposed Rail Loadout, is not compatible with this cultural landscape. Ktunaxa Nation noted that the area contains two "zones"; a "Culturally Significant Area" where no new activities or infrastructure will be accepted and a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to additional development. The impacts to this site of any proposed development as stated by Ktunaxa Nation, cannot be mitigated, and avoiding the physical remains of Ktunaxa ancestors is not enough to justify the proposed rail loadout facility as indicated by Ktunaxa Nation. Continued consultation to mitigate these impacts where they have the potential to interact with Project-related activities will be undertaken through the Indigenous Impact Management Plan.

As the Project moves forward, both under provincial regulation and authorization and through consultation with the Indigenous Communities, the residual environmental effects of the Project on physical and cultural heritage and on a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance for all phases of the Project are rated not significant due to the mitigation that has been implemented to date, and the mitigation that will be implemented. No residual effects on a change in heritage resources due to other Project activities were predicted in consideration of planned mitigation. Monitoring during the Construction and Pre-Production and Operations phases, and adaptive management, as necessary, will confirm these effects predictions and the effectiveness of mitigation, or provide information to implement adaptive corrective actions and strategies.

Specific to the physical and cultural heritage and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance with respect to the identified Indigenous Communities, some of the mitigation measures identified in the Indigenous Impact Management Plan include:

- A subsequent archaeological impact assessment will be required as part of the physical and cultural heritage follow-up strategy to determine if and where archaeological resources are present.
- Continued support of site visits from representatives of the identified Indigenous Communities.

- Providing opportunities for ceremonies on the land prior to construction of Project infrastructure.
- Seeking consent from the identified Indigenous Communities where applicable on any cultural heritage site or resource that may be impacted by a proposed development/land alteration.
- Protection of all cultural heritage sites and resources and managed in a way that is respectful of Indigenous stewardship, cultural values, and traditional teachings.
- Evaluating all options to reduce impacts of the rail loadout on the Grave Prairie Cultural Landscape as recommended by Ktunaxa Nation including the adequate consideration to avoidance impact through alternative means that may include:
  - Longer truck haul to a less sensitive load out location;
  - The extension of rail to the Alexander Valley section of the facility; and
  - Agreements with existing operators to share already existing rail load out infrastructure if possible.
- As the Grave Prairie Cultural Landscape includes a "Culturally Sensitive Area" which requires rigorous in-depth assessments prior to contemplating additional development, NWP will continue to work with the identified Indigenous Communities to address related concerns.
- Supporting the development of a Traditional and Cultural Protection Plan to include cultural programs on site where applicable; and events and activities in communities where resource capacity may be supported.
- NWP will work with the identified Indigenous Communities to support measures to document and protect Indigenous efforts to safeguard knowledge and language related to the Elk Valley and the surrounding areas including supporting the establishment of a plan for educational and potential work on the remaining tangible and intangible Indigenous cultural heritage and to the protection and revitalization of Indigenous Knowledge for future generations in the Elk Valley.
- Supporting the recording of the nature and extent of any identified trail corridors and associated passes in proximity of the Project footprint including areas potentially disturbed by Project-related infrastructure.
- Supporting the rehabilitation of trails, marking of trail sections interrupted by disturbance within the Project footprint, and any additional archival information available regarding them.

E.8.3 Current Use of Lands and Resources for Traditional Purposes

At the time of the submission of this Application/EIS, with the exception of Tsuut'ina Nation's site visit report and the consideration of the critical receptor locations related to current and rights-based use shared by the Ktunaxa; the identified Indigenous Communities have yet to submit a Traditional Knowledge/Traditional Land and Resource Use study for the Project. In the absence of this information being provided to NWP, the assessment of effects on Indigenous Communities was largely based on available secondary source information and on input received from engagement activities, with the understanding that the assessment results may be refined through continued consultation with the identified Indigenous Communities. Additionally, as no results of a Traditional Knowledge/Land Use study was provided by any identified Indigenous Community, the confidence of the effects assessment on the current use of lands and resources by Indigenous Communities is considered to be low to moderate. The assessment of the effects on the land use did assume that the Project footprint and surrounding areas may be used or could be used in the future by Indigenous Communities for traditional purposes. It is hoped that this can be confirmed through ongoing consultation efforts.

Based on the interactions identified, a summary of potential unmitigated effects to Indigenous Communities is outlined, and where applicable, using information on anticipated effects to receptor and intermediate VCs. Where no appropriate representative VC was identified to serve as a surrogate for effects, additional biophysical information from Project-specific baseline studies and publicly available information was used, where available, to allow for an understanding of potential residual effects to Indigenous resource, use, or species of interest. Indigenous Communities' rights and interests are grouped by the categories outlined within Section 5(1)(c) of the relevant provisions of the CEA Act, 2012.

While water is given special consideration by Ktunaxa Nation, for all identified Indigenous Communities, surface water and ground water quality and quantity are addressed within the current use of lands and resources for traditional purposes under Fishing, through access to healthy aquatic systems.

E.8.3.1 Fishing

The residual effects of the Project on the current use of lands and resources by the Indigenous Communities with respect to the opportunity to fish and the use of fish species for traditional purposes are characterized as short-term to long-term, as the potential for adverse effects to opportunities for fishing will generally be anticipated to occur until Project activities are completed. Changes in the opportunity to fish and access aquatic systems is restricted to the Fish and Fish Habitat Local Study Area (LSA) and the opportunities to fish and access to healthy aquatic systems in watercourses currently used or potential used in the future may be altered as a result of Project's residual effects on fish and fish habitat VCs.

The Project is anticipated to result in short-term to long-term changes in opportunities for fishing as a result of the removal of a section of West Alexander Creek and restrictions on access to sections of the creek due to the mine blasting restriction area. While no information was available through preliminary feedback from the identified Indigenous Communities and publicly available information to indicate that the West Alexander Creek is used by Indigenous Communities, there is potential for traditional fishing to be identified at a later time. The alteration of the landscape may also impact the sense of place for the Indigenous Communities as it relates to traditional fishing activities if traditional activities related to fishing are tied to the sense of place, as there is potential that the residual effect may result in long-term to permanent alienation and be considered a potentially significant effect. An impact on sense of place can only be identified by the Indigenous Communities, most of whom have not identified such an impact to date through Traditional Knowledge/Traditional Land and Resource Use studies for the Project. The loss of instream habitat, will be offset through the fish habitat offsetting plan and as such, no permanent effects on fishing opportunities are anticipated in the ATRI/KNRI RSA. In consideration of the above and the Project's design to reduce impacts to fish and fish habitat VCs, the residual effect of the Project on the current use of lands and resources for the traditional purpose of fishing is rated as not significant.

The residual effects to opportunities for fishing and access to aquatic systems will be further discussed through continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Water quality will be monitored and managed to ascertain it meets all permitting conditions, and contingencies will be implemented on an as needed basis that are detailed in the Project Description and the Selenium Management Plan. Thus, the continued

consultation and follow-up program to be implemented is expected to improve the low to moderate level of confidence.

E.8.3.2 Hunting and Trapping

Potential residual effects to hunting and trapping by Indigenous Communities is characterized as being long-term, due to the potential for adverse effects to several species of interest including grizzly bear, elk, moose, mountain (bighorn) sheep, mountain goat, American badger, Canada lynx, American marten, waterfowl (ducks and geese), migratory birds, and raptors. The effects related to habitat loss and degradation, sensory disturbance, disruption to movement, and mortality risk are expected to continue to the end of the Reclamation and Closure phase of the Project. The potential for negative effects to opportunities for hunting is low to moderate based on the limited amount of expected loss of high-quality habitat, or the semi-permanent nature of infrastructure such as that of linear infrastructure that might impact species movements, and the limited percentage of high-quality habitat that will be impacted by potential sensory disturbance. The potential effects to opportunities for hunting and trapping are restricted to the Project footprint and the Terrestrial LSA, and the potential for adverse effects to species of interest are expected to occur continuously as the Project activities are completed, from Construction and Pre-Production to Reclamation and Closure. The Project-related changes in the use of lands and resources for the traditional purpose of hunting and trapping are anticipated to be partially reversible as the site is reclaimed and ecosystems are re-established.

It is anticipated that Indigenous Communities currently have a low level of use in the Terrestrial LSA used to evaluate effects to VCs due to previously noted disturbances. The anticipated low level of use by Indigenous Communities, coupled with the lack of significant adverse effects to most wildlife VCs that are potentially used for hunting and trapping purposes, indicates no residual effect on the change in current use of lands and resources for traditional hunting and trapping. The Project is not anticipated to result in the permanent loss of access or the ability to conduct traditional land and resource use related to hunting and trapping within the Project footprint or VC study areas.

Though impacts to hunting and trapping will not be permanent, the alteration of the landscape may also impact the sense of place for the Indigenous Communities. If traditional hunting and trapping of species of interest is tied to the sense of place, there is potential that the residual effect may result in long-term to permanent alienation and be considered a potentially significant effect. An impact on sense of place can only be identified by the Indigenous Communities, most of whom have not identified such an impact to date through Traditional Knowledge/Traditional Land and Resource Use studies for the Project. As part of Reclamation and Closure, wildlife habitat will be reclaimed within the Project disturbance footprint, and will result in a variety of wildlife habitat types for use by ungulate, carnivore, bird, and other wildlife species. Based on these facts, as well as the Project's design to reduce impacts to wildlife VCs, ecosystems, land use, air, and noise, the residual effect of the Project on the use of lands and resources for traditional hunting and trapping is rated not significant.

The residual effects to opportunities for hunting and trapping will be further discussed through continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Thus, the continued consultation and follow-up program to be implemented is expected to improve the low to moderate level of confidence.

E.8.3.3 Harvesting and Gathering

The Project has the potential to affect culturally significant plants and ecosystems through reduction of ecosystem/community abundance and distribution, as well as alteration of ecosystem composition and structure (i.e., species abundance and distribution). The total area of potential culturally significant ecosystems to be removed as a direct overlap with components of the Project footprint is 1,193 ha., Clearing, grubbing, logging and the related vegetation removal during the Construction and Pre-Production and Operations phases of the Project will reduce the abundance and distribution of potential culturally significant ecosystems in the ATRI/KNRI LSA. Given the relatively frequent and common distribution of potential culturally significant plants, the proportional loss of such ecosystems providing habitat for these species within the Project footprint is relatively high (i.e., 93%). This extent of loss within the Project footprint comprises a small proportion (i.e., approximately 1%) of the overall extent of the estimated area of culturally significant ecosystems in the ATRI/KNRI LSA. The Project will result in the loss of about 1% of the estimated area of culturally significant ecosystems in the ATRI/KNRI LSA.

The Project is anticipated to result in a reduction in the abundance and distribution of culturally significant plants and ecosystems, including potential alteration of the respective composition and structure through a reduction in vigour and alteration of nutritional value from the effects of deposition of dust and sedimentation, competition with weeds and invasive, non-native plant species.

Impacts to traditional harvesting and gathering activities due to the removal of culturally significant plants and ecosystems will be reduced through the implementation of impact management measures which include the Ecological Restoration Plan. Mitigation measures recommended to reduce the extent and severity of potential effects to landscapes and ecosystems will act to reduce and mitigate the extent and severity of potential effects to culturally significant plants and ecosystems.

Though impacts to harvesting and gathering will not be permanent, the alteration of the landscape may also impact the sense of place for the Indigenous Communities. If traditional harvesting and gathering of culturally significant plants is tied to the sense of place, there is potential that the residual effect may result in long-term to permanent alienation and be considered a potentially significant effect. An impact on sense of place can only be identified by the Indigenous Communities, most of whom have not provided such information to date through Traditional Knowledge/Traditional Land and Resource Use studies for the Project. As the ecological restoration activities will reclaim impacted vegetation communities, this assessment preliminarily concludes that the residual effect of the Project on the current use of lands and resources for harvesting and gathering is rated as not significant. This rating comes with a low level of confidence that is expected to be improved by information provided by affected Indigenous Communities.

Residual effects on the opportunities for harvesting and gathering will be further discussed through continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Continued consultation and a follow-up program collaboratively developed with the Indigenous communities to be implemented is expected to improve the low level of confidence.

E.8.3.4 Ceremonial/Sacred Areas

For the purposes of this assessment, the potential residual effects to ceremonial/sacred areas for traditional purposes are presented in the physical and cultural heritage section. This is assessed together with any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance due to their potential for cultural importance to the Indigenous Communities and based on their (currently undefined but) potential link to Indigenous ancestry. The use of lands and resources for traditional purposes also addresses ceremonial/sacred areas through the sections on water (for Ktunaxa Nation only), fishing, hunting and trapping, and harvesting and gathering, where the Project may potentially impact the physical and cultural heritage of Indigenous Communities through ceremonial bundles that utilize certain species of cultural significance and related to the accessibility to areas of such traditional activities. The residual environmental effects of the Project on physical and cultural heritage and on a structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance (including ceremonial/sacred areas) for all phases of the Project were rated not significant due to the current information available regarding the identification of specific sites (none identified) within the Project footprint by the Indigenous Communities, the mitigation that has been implemented to date, and the mitigation that will be implemented. Continued consultation to mitigate these impacts where they have the potential to interact with Project-related activities will be undertaken through the Indigenous Impact Management Plan.

E.8.3.5 Access and Travel Routes

Ancient travel routes and landforms of cultural significance are tied to hunting and wildlife trails, key habitat types such as waterbodies, and locations of physical and cultural heritage. Known or anticipated transboundary movement corridors for ungulate species of interest along the Continental Divide include the Crowsnest, Deadman, and Racehorse Passes in the eastern portion of the ATRI/KNRI LSA. Movement corridors for grizzly bear include Alexander Creek, West Alexander Creek, and Grave Creek Canyon. Some fishing access corridors may be impacted as a result of direct losses to watercourses that may be potentially used by Indigenous Communities (e.g., West Alexander Creek). Other connectivity habitats potentially used include the Michel-Alexander linkage at the southern portion of the Fish and Fish Habitat LSA; access to this area will not be impacted as a result of the Project. There are no identified Project-related effects to the use of access and travel routes by Indigenous Communities, and therefore specific Project-related effects to access or travel routes are not carried forward in this assessment.

E.8.3.6 Mitigation Measures

Mitigation measures have been identified to avoid, minimize, or otherwise address potential adverse effects to the identified Indigenous Communities' rights and interests. Specific mitigation related to the identified Indigenous Communities' rights and interests can be referenced in the respective Indigenous Impact Management Plan for each identified Indigenous Community. Through the assessment of effects and continued consultation with Indigenous Communities, mitigation for the use of lands and resources for traditional purposes may continue to be identified and implemented. A range of mitigation measures have been incorporated into the Project and management plans and programs to reduce or eliminate adverse effects on VCs or VC groups that may be of interest to Indigenous Communities. Detailed mitigation measures are provided in the Application/EIS for relevant VCs as well as the Project-specific management plans.

The key mitigation measures to reduce impacts to the identified Indigenous Communities' rights and interests include:

- Best management practices and procedures related to each VC of interest.
- Design of mitigation measures as outlined in the Application/EIS.
- Restoration and progressive reclamation at various phases of the Project.
- Follow-up, monitoring and offsetting and compensation programs related to anticipated residual effects of select VCs (e.g., Ecological Restoration Plan and related on-site restoration).
- Implementation of the engagement agreements between NWP and the identified Indigenous Communities.
- Confirmation and implementation of the Indigenous Impact Management Plan that outlines mitigation measures to avoid, minimize, reduce, and/or offset potential direct and indirect impacts of the Project and utilizes adaptive management approaches for follow-up strategies and monitoring programs.
- Consideration of collaborative strategies for addressing the cumulative effects where applicable, with the identified Indigenous Communities, other proponents, and regulatory agencies.
- Following the spirit and intent of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and its guiding principles and supporting the recognition of Indigenous stewardship and governance in the Elk Valley.
- Recognizing and respecting the deep personal, community, and cultural attachment of the identified Indigenous Communities to the land and resources where NWP does business and incorporating NWP's understanding of Indigenous interests, values, knowledge, and ways of knowing into NWP decision-making where possible.

In addition to the mitigations outlined in the specific VC chapters, the following mitigation measures are proposed to reduce the potential impact on the identified Indigenous Communities' rights and interests:

- Engaging with the identified Indigenous Communities to refine the Indigenous Impact Management Plan specific to the rights-based activities and other interests (e.g., cultural activities, hunting, trapping, fishing, gathering, and cultural heritage) exercised by the identified Indigenous Communities within the Project footprint.
- The Indigenous Impact Management Plan will further describe cross-cultural awareness training, which will be developed in collaboration where possible, with the identified Indigenous Communities. This training is expected to build awareness and reduce potential adverse interactions with the identified Indigenous Communities and will include cultural awareness education and training for staff and on-the-ground personnel during the applicable phases of the Project.
- Encouraging the participation of the identified Indigenous Communities to the applicable Project Advisory and the Environmental Stewardship committees.
- Participating in the Elk Valley Cumulative Effects Management Framework as co-led by the KNC.
- Encouraging the participation of the identified Indigenous Communities in the Environmental Monitoring Committee to review, shape, and steer monitoring activities and to guide future priorities.
- Supporting possible opportunities to augment VC-specific monitoring programs to include responses to concerns raised by the identified Indigenous Communities utilizing adaptive management approaches for follow-up strategies.

- Encouraging the participation of the identified Indigenous Communities in the Reclamation Planning Committee to review how traditional knowledge has been incorporated, including Indigenous traditional use and cultural expression as part of the Project closure goals.
- Supporting access to the Project site and provide applicable available resources for the Indigenous-Guardians Program to develop and lead monitoring programs related to the Project.
- Incorporating feedback from the identified Indigenous Communities in the development of an Access Management and Monitoring Program which would address any concerns raised regarding access to areas that might be temporarily restricted due to safety concerns (e.g., in the Project footprint during construction and operations) by creating alternatives to guarantee access to key land use areas. Establishment of No Unauthorized Entry (NUE) areas in order to ensure worker and public safety within and near the Project.
- Supporting the establishment of conservation lands that may be privately held by NWP, an Indigenous Community, or a recognized conservation organization.
- Supporting Indigenous work related to land and resource use planning objectives in proximity to the Project and following the EAC, supporting Indigenous work related to land and resource use planning objectives for consideration during the relevant Project phases.
- Providing access to requested reports and identify feedback opportunities where applicable including the various mitigation and monitoring plans as well as those related to the Indigenous Impact Management Plan.

Specific to the use of lands and resources for traditional purposes by Indigenous Communities, some of the mitigation measures include:

- Water and Fishing:
  - Implementation of the Sediment and Erosion Control Management Plan, the Site Water Management Plan, Fish and Fish Habitat Management Plan, Ecological Restoration Plan, and the Air Quality and Greenhouse Gas Management Plan.
  - Progressive reclamation and re-vegetation throughout the mine life to minimize erosion potential and reduce the Project footprint, minimizing the potential for runoff effects to surface water, including limiting the mine disturbance footprint with collaboration where possible with Indigenous Communities.
  - Prohibiting or limiting non-Indigenous access to fishing areas to assure compliance with fishing restrictions.
  - Respecting traditional fisheries timing windows and seasonal rounds where possible.
  - As there is potential for access within the Project footprint, NWP is committed to, where possible, creating permanent access during the Post-Closure phase for future traditional activities, including fishing.
  - Educating the Project workforce about fish and fish habitats and implementing an angling policy for NWP non-Indigenous employees and contractors.
  - Coordinating with local conservation enforcement for Alexander and West Alexander Creeks should increases in non-Indigenous recreational fishing be observed by NWP employees.
- Hunting and Trapping:
  - Implementation of the Wildlife Management and Monitoring Plan, Ecological Restoration Plan, and the Access Management Plan.

    - Progressive reclamation during Operations, where possible, minimizing habitat and sensory disturbances, reducing barriers or filters to movement, and preventing wildlife entrapment with collaboration where possible with Indigenous Communities.
    - Wildlife protection protocols, wildlife education for contractors and employees, and managing vehicle traffic and site access.
    - Implementation of mitigation measures for applicable receptor wildlife VCs.
    - As there is potential for access within the Project footprint, NWP is committed to, where possible, creating permanent access during the Post-Closure phase for future traditional activities, including hunting and trapping.
    - Respecting traditional hunting and trapping timing windows and seasonal rounds, where possible.
- Harvesting and Gathering:
    - Implementation of the Vegetation and Ecosystems Management and Monitoring Plan, Ecological Restoration Plan, and the Air Quality and Greenhouse Gas Management Plan.
    - Minimizing Project footprint, to the feasible extent, by clearing only what is required for Operations and delaying clearing of areas until required for construction or operation to maintain ecosystem functioning.
    - Implementation of an Invasive Plant Management Plan to limit the effects that invasive plants may have on natural vegetation.
    - As there is potential for access within the Project footprint, NWP is committed to where possible creating permanent access during the Post-Closure phase for future traditional activities, including harvesting and gathering.
    - Respecting traditional harvesting and gathering timing windows and seasonal rounds, where possible.
    - Identifying opportunities for harvesting and gathering prior to construction for Indigenous Community members within the Project footprint and the reestablishment of plant harvesting activities in the reclamation phase.
    - Consideration of support for possible mapping of all high priority cultural use areas in the proximity to the Project by Indigenous Communities, including support for research and development of approaches for restoring Landscape and Ecosystem VCs.

NWP will participate in regional cumulative effects initiatives, where relevant and appropriate, and will adopt management practices and measures to meet regional planning objectives, where possible, over the course of the Project. In addition to the above-listed mitigation measures, NWP is committed to ongoing dialogue with the identified Indigenous Communities, to identify and understand the use of lands and resources for traditional purposes within the Project footprint, the ATRI/KNRI LSA, and the ATRI/KNRI RSA through the EA processes as well as during the Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure phases of the Project.

E.8.3.7 Cumulative Effects Assessment to the Environment on Indigenous Communities

The assessment of residual cumulative effects of the Project to the environment on the identified Indigenous Communities in combination with those of past, present, and reasonably foreseeable future projects and activities on wildlife and human health concluded no significant adverse cumulative effects on terrestrial, aquatic, and human health. The wildlife and human health risk estimates inherently

consider operational activities, emissions, and other contaminant releases intrinsic to the predictive modelling of water quality, air quality, and secondarily food via transport, fate, and food chain modelling. Based on the current information available to NWP, it is anticipated that the contribution of the Project's residual effects is unlikely to cause a change in the cumulative effects that could affect the viability or sustainability of traditional use of lands and resources within the ATRI/KNRI RSA by the identified Indigenous Communities. Acknowledging the perspectives shared by the identified Indigenous Communities through feedback received, considering the overall disturbance of lands and waters that has occurred within the Elk Valley over time, the identified Indigenous Communities have noted that the cumulative effects of industrial development have had an effect on the waterways and the species that are impacted by the watercourses within the Elk Valley. The additional cumulative effects of the Project, while determined to be minor in nature, may potentially exacerbate current and ongoing effects in the Elk Valley from other past and current projects, and these could potentially lead to an impact on the exercise of the rights and interests of the identified Indigenous Communities, for the foreseeable future. As identified throughout the Application/EIS, engagement is ongoing, and the identified Indigenous Communities may provide additional information about the potential impact on the exercise of their rights and interests.

Cumulative effects of the Project on Ktunaxa Nation's Title, Rights and related interests specifically, may occur where the Project has a residual cumulative effect on traditional activities such as water use, fishing, hunting and trapping, harvesting and gathering, or on physical activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, physical and cultural heritage areas, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance. Acknowledging the Ktunaxa perspective, considering the overall disturbance of lands and waters that has occurred within the Elk Valley over time, and considering both quantitative disturbances, and more qualitative factors, NWP understands that it is the opinion of the Ktunaxa Nation that a threshold on adverse, long term effect on the exercise of Ktunaxa rights in the KNRI RSA has already been surpassed. The additional cumulative effects of the Project, while determined to be minor in nature, may potentially exacerbate current and ongoing effects in the Elk Valley from other past and current projects, and on Ktunaxa Nation's exercise of their rights and interests, for the foreseeable future. The potential impact of the residual cumulative effects on the exercise of Ktunaxa Nation's Title, Rights and related interests will be further discussed through continued consultation with Ktunaxa Nation, as well as through the implementation of the Indigenous Impact Management Plan, the development of potential follow-up strategies, and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. On-going programs of environmental and socio-economic monitoring undertaken in collaboration with the Ktunaxa Nation and the co-development of offsets and mitigation measures are addressed in the Application/EIS. As engagement is ongoing, the Ktunaxa Nation may provide additional information about the potential effects of the Project on Ktunaxa Nation's rights and interests.

E.8.4 Impact on Aboriginal and Treaty Rights and Interests

At the time of the submission of this Application/EIS, with the exception of Tsuut'ina Nation's site visit report and consideration of the sensitive receptor locations shared by the Ktunaxa, the identified Indigenous Communities have yet to submit a Traditional Knowledge/Traditional Land and Resource Use study for the Project. It is to be noted that the assessment on impact to the identified Indigenous Communities' rights and interests is not meant to supersede the Crown's formal consultation process to

determine adverse impacts to rights. Therefore, the information utilized in the assessment of impact on Aboriginal and/or Treaty rights and interests of the identified Indigenous Communities reflects NWP's determination of the confidence of the level of severity of impacts utilizing secondary sources that are publicly available and based on input received from engagement activities. The confidence is considered to be low to moderate where applicable, reflecting the current information that is available through ongoing consultation with the Indigenous Communities. Based on the interactions identified, a summary of the potential impact on the Aboriginal and Treaty rights and interests of the identified Indigenous Communities is outlined below. Indigenous Communities' rights and interests are grouped by the categories outlined within Section 5(1)(c) of the relevant provisions of CEA Act, 2012.

The potential for impacts on Aboriginal and/or Treaty rights and interests may occur when there is potential for residual (after mitigation) Project effects (direct, indirect, and/or cumulative) on traditional activities such as fishing, hunting and trapping, harvesting and gathering, or on activities associated with traditional use such as travel and navigation, ceremonial and sacred sites, physical and cultural heritage areas, and social, health, and economic conditions. The assessment of the impact on the Aboriginal and/or Treaty rights and interests of the identified Indigenous Communities is through the determination of potential Project effects as identified through the potential future use of the Project footprint with and without the Project.

The objective of assessing the level of the severity of the impact on the Aboriginal and Treaty rights and interests of the identified Indigenous Communities is to assess the level of severity of the impacts that the Project may have on the exercise of these rights and related interests. As the assessment of the potential impacts on Indigenous Communities' rights and interests are in consideration of the existing and potential future use of the Project footprint, the ATRI/KNRI LSA, and the ATR/KNRI RSA by these Indigenous Communities to exercise their rights and interests with and without the Project, this includes a comparison of the impact on potential future exercise of Indigenous Communities' rights and interests in the Project footprint, the ATRI/KNRI LSA, and the ATRI/KNRI RSA.

Based on the evaluation of the environmental effects of the Project, as determined through Project-related residual effects and residual cumulative effects anticipated for the applicable VCs of interest (e.g., Wildlife and Wildlife Habitat VCs) and anticipated effects to non-VC groups (i.e., broad ecosystem types), and after implementation of the mitigation measures outlined in the Indigenous Impact Management Plan as well as additional information (certain intermediate and receptor VCs) included in the assessment, there is potential for adverse impacts on the Aboriginal and/or Treaty rights and interests of the identified Indigenous Communities that may remain, including:

- Change to current use of water for traditional purposes (Ktunaxa Nation);
- Change to current use of lands and resources for traditional purposes: Fishing;
- Change to current use of lands and resources for traditional purposes: Hunting and trapping;
- Change to current use of lands and resources for traditional purposes: Harvesting and gathering;
- Change to physical and cultural heritage and change to a structure, site, or item that is of historical, archaeological, paleontological, or architectural significance; and
- Change to social, health, and economic conditions.

E.8.4.1 Impact on Current Use of Water for Traditional Purposes (Ktunaxa Nation)

The degree in severity of impact on Ktunaxa Nation's rights for the use of water for traditional purposes is rated as moderate. The potential impacts to water quality and access to healthy aquatic systems are predicted to be small in spatial extent. Mitigation and the Project's design to reduce impacts to water quality and access to healthy aquatic systems and the provision of the listed mitigation measures, should allow for access to healthy aquatic systems to continue in the Elk Valley (other than the upper sections of West Alexander Creek) including those for traditional purposes. There is potential for the Project to result in the permanent alienation of Ktunaxa Nation from water access locations within the Project footprint, for which there is no current mitigation identified. It should be noted that through this assessment it has been determined that the impact on the Ktunaxa Nation's rights and interests related to the potential for the Project to result in their permanent alienation from locations within the Project footprint is rated as a low level impact due to the current information available on Ktunaxa Nation's use of the Project footprint for traditional purposes.

Baseline data were sufficient to evaluate effects for the surface water quality and quantity VCs. While a few critical receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint were identified, based on the information available, the Ktunaxa Nation have not expressed to date an interest in possibly using the Project-impacted watercourse (Alexander Creek) in the future. Based on the identification of critical receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, the assessment determined that the degree of severity to Ktunaxa Nation's rights and interests are rated as moderate. It should be noted that there is existing potential for water use access available in the KNRI LSA and RSA.

Continued consultation with Ktunaxa Nation, as well as the development of potential follow-up and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up, are expected to improve the moderate confidence rating in the severity assessment of impact on Ktunaxa Nation's rights and interests.

Past and ongoing projects and activities located in the KNRI LSA and RSA may potentially be impacting the real or perceived quality and quantity of water use available for Ktunaxa Nation in preferred locations to exercise Ktunaxa Nation's rights and interests. With respect to the reasonably foreseeable future projects and activities in the KNRI RSA and based on the historical baseline of cumulative effects, past and current development activity in the KNRI LSA and RSA includes for example other mines, forestry activity (including logging in the Elk Valley), housing development, transportation facilities (roads), and recreation activities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on watercourses (water quality and quantity) and possibly fishing activity.

E.8.4.2 Impact on Current Use of Lands and Resources for Traditional Purposes: Fishing

The degree in severity of impact on Aboriginal and Treaty rights and interests of the identified Indigenous Communities for the use of lands and resources for fishing and fishing opportunities is rated as low to moderate. The potential impacts to fish and fish habitat are predicted to be small in spatial extent. Mitigation and the Project's design to reduce impacts to fish and fish habitat VCs and the provision of fish habitat compensation, should allow for fishing opportunities to continue in the Elk Valley (other than the

upper sections of West Alexander Creek) including those for traditional purposes. There is potential for the Project to result in the permanent alienation of the identified Indigenous Communities from fishing locations within the Project footprint related to the experience of being on the land, for which there is no current mitigation identified. It should be noted that through this assessment it has been determined that the impact on the identified Indigenous Communities' rights and interests related to the potential for the Project to result in the permanent alienation of the Indigenous Communities from locations within the Project footprint is rated as a low level impact due to the current information available on their use of the Project footprint for traditional purposes.

Though baseline data were sufficient to evaluate effects for the fish and fish habitat VCs, a few critical receptor locations related to the current or rights-based use by Ktunaxa Nation within the Project footprint and information from Tsuut'ina Nation's site visit were identified. Based on the information available, the identified Indigenous Communities including Ktunaxa Nation have not expressed to date an interest in possibly using the Project-impacted watercourse (Alexander Creek) in the future. While the identification of critical receptor locations related to the current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, were made available, areas currently or potentially used by the identified Indigenous Communities for fishing opportunity have not been identified within the ATRI LSA through publicly-available information prior to the assessment. It should be noted that there is existing potential for the harvesting of keystone species such as Westslope Cutthroat Trout, Kokanee, Burbot, Mountain Whitefish, and Bull Trout, which have been identified as a species of importance to Indigenous Communities based on preliminary feedback where applicable and as identified by IAAC within the ATRI/KNRI LSA.

Continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures regarding fish and fish habitat are expected to improve the confidence rating and the severity assessment of impact on the Aboriginal and Treaty rights and interests of the identified Indigenous Communities.

Past and ongoing projects and activities located in the ATRI/KNRI LSA and RSA may be impacting the real or perceived quality and quantity of fish and fishing opportunities available for traditional purposes in preferred locations to exercise the identified Indigenous Communities' rights and interests. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on lands and resources for traditional hunting and trapping in the ATRI/KNRI LSA.

E.8.4.3 Impact on Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping

The degree in severity of impact on the identified Indigenous Communities' rights and interests for the current use of lands and resources for hunting and trapping is rated as low to moderate. The potential impacts are likely to be small in spatial extent, reversible in the long term, and with few effects to health and/or country foods. Mitigation and the Project's design to reduce impacts to wildlife VCs and the implementation of management, monitoring, and restoration plans, should allow for hunting and trapping activities to continue within the ATRI/KNRI LSA, including those for traditional purposes. There is potential for the Project to result in the permanent alienation of the identified Indigenous Communities from hunting and trapping locations within the Project footprint related to the experience of being on the land, for which there is no current mitigation identified. It should be noted that through this assessment it has

been determined that the impact on the identified Indigenous Communities' rights and interests related to the potential for the Project to result in the permanent alienation of the Indigenous Communities from locations within the Project footprint is rated as a low level impact due to the current information available on their use of the Project footprint for traditional purposes.

Though baseline data were sufficient to evaluate effects for the wildlife VCs, a few critical receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint and in the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information were identified. These in combination with other factors listed above, determined the impact on Ktunaxa Nation's opportunities for hunting and trapping to be rated as moderate. It is noted that Ktunaxa Nation have previously identified the grizzly bear, elk, moose, bighorn sheep, mountain goat, American badger, Canada lynx, American marten, waterfowl (ducks and geese), migratory birds, and raptors specifically as species of importance based on preliminary feedback from the Ktunaxa Nation where applicable and as identified by IAAC.

Though baseline data were sufficient to evaluate effects for identified wildlife VCs and information from Tsuut'ina Nation's site visit were identified, areas currently or potentially used by the identified Indigenous Communities for hunting and trapping have not been identified within the ATRI LSA through publicly-available information. As information related to the identified Indigenous Communities' use of the ATRI LSA (other than information from Tsuut'ina Nation's site visit) to hunt and trap was not made available prior to the assessment, in combination with other factors listed above, the impact on opportunities for hunting and trapping is rated as low to moderate. It is noted that the identified Indigenous Communities have previously identified the grizzly bear, elk, moose, bighorn sheep, mountain goat, American badger, Canada lynx, American marten, waterfowl (ducks and geese), migratory birds, and raptors specifically as species of importance based on preliminary feedback from the Indigenous Communities where applicable and as identified by IAAC. Due to the mitigation measures proposed for the identified species as well as the characterization of the residual effects, the Project is unlikely to contribute to limiting the current use of lands and resources for traditional hunting and trapping. Therefore, through this assessment it has been determined that the impact on the identified Indigenous Communities' opportunities for hunting and trapping is rated as low to moderate.

Continued consultation with the identified Indigenous Communities as well as through the development of potential follow-up and monitoring and adaptive management measures regarding wildlife VCs are expected to improve the confidence rating and the severity of impact on the Aboriginal and Treaty rights and interests of the identified Indigenous Communities.

Past and ongoing projects and activities located in the ATRI/KNRI LSA and RSA may be impacting the real or perceived quality and quantity of country foods available in relation to hunting and trapping for traditional purposes in preferred locations to exercise rights and interests of the identified Indigenous Communities. It is anticipated that these activities will continue in the future without the Project and will continue to have influence on lands and resources for traditional hunting and trapping in the ATRI/KNRI LSA. There is a potential for cumulative impacts due to the spatial distribution of historical disturbance as a result of mining in the Elk Valley which has followed economic coal resources to form a long north-south band of potential mining-related disturbance. Past disturbance has also potentially affected the quantity and quality of certain ecosystems available for the practice of Indigenous Communities' rights and interests in the Elk Valley.

E.8.4.4 Impact on Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering

The degree in severity of impact on the identified Indigenous Communities' rights and interests for the current use of lands and resources for harvesting and gathering is rated as moderate as potential impacts are likely to be small in spatial extent, reversible long-term, with few effects to health and/or country foods. There is potential for the Project to result in the permanent alienation of the identified Indigenous Communities from harvesting and gathering locations within the Project footprint, for which there is no current mitigation identified. It should be noted that through this assessment it has been determined that the impact on the identified Indigenous Communities' rights and interests related to the potential for the Project to result in the permanent alienation of the Indigenous Communities from locations within the Project footprint is rated as a low level impact due to the current information available on their use of the Project footprint for traditional purposes.

Though baseline data were sufficient to evaluate effects for the Project VCs, a few critical receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint and information from Tsuut'ina Nation's site visit were identified. While the identification of critical receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, was made available, areas currently or potentially used by the identified Indigenous Communities for harvesting and gathering have not been identified within the ATRI LSA through publicly-available information prior to the assessment. As such, there is no information indicating that the identified Indigenous Communities currently use the Project footprint and the ATRI LSA for harvesting and gathering. It should be noted that through this assessment it has been determined that the impact on the identified Indigenous Communities' opportunities for harvesting and gathering is rated as moderate. Though site-specific input from most of the identified Indigenous Communities (other than Ktunaxa Nation and Tsuut'ina) is not presently available, it is generally understood that traditional use of the land is dependent not only on the resources that may be present, but may also depend on the history and tradition experienced in the context of a specific landscape (i.e., "sense of place"). Consequently, traditional use of lands for harvesting and gathering may be permanently affected as the sense of place inherent to the lands within the Project footprint and the Landscapes and Ecosystems LSA may not be restored once permanently and physically altered.

Continued consultation with the Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on the Aboriginal and Treaty rights and interests of the identified Indigenous Communities.

Past and ongoing projects and activities located in the ATRI/KNRI LSA and RSA may be impacting the real or perceived quality and quantity of country foods available for traditional harvesting and gathering in preferred locations to exercise Indigenous Communities' rights and interests. Without the Project footprint, past disturbance has affected the quantity and quality of certain ecosystems available for the practice of the rights and interests of the Indigenous Communities in the Elk Valley. Within the ATRI/KNRI RSA, these ecosystems are also important for maintaining biodiversity across the landscape, a critically important Indigenous cultural value.

E.8.4.5 Impact on Physical and Cultural Heritage and Change to a Structure, Site, or Item that is of Historical, Archaeological, Paleontological, or Architectural Significance

The degree in severity of impact on the identified Indigenous Communities' rights and interests related to physical and cultural heritage resources and structures, sites, or things of historical, archaeological, paleontological, or architectural significance is rated as moderate to high as potential impacts are likely to be small in spatial extent, and with no effects to health. These heritage resources may be of interest to the identified Indigenous Communities based on their potential linkage to their ancestry though none other than on the Grave Prairie Cultural Landscape in the KNRI LSA by Ktunaxa Nation have been identified based on preliminary consultation with the Indigenous Communities where applicable and as noted by IAAC. Though baseline data were sufficient to evaluate effects for known heritage resources, the lack of regional information on Indigenous Communities' physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance increases the degree of severity of adverse impacts.

Continued consultation with the identified Indigenous Communities, as well as the development of potential follow-up and monitoring and adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on the Aboriginal and/or Treaty rights and interests of the Indigenous Communities.

Without the Project footprint, the cumulative effect of past developments on Indigenous practice of rights and interests has influenced Indigenous Communities' use of ancestral east-west trails. The Elk River valley has seen substantial residential development which may potentially impact physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance that are anticipated to continue without the Project. Past disturbance has also potentially affected the real or perceived change in accessibility to physical and cultural heritage and structures, sites, or things that are of historical, archaeological, paleontological, or architectural significance for Indigenous Communities and will likely continue to impact Indigenous Communities' rights and interests without the Project in place.

E.8.4.6 Impact on Health and Socio-Economic Conditions

The degree in severity of impact on the identified Indigenous Communities' health and socio-economic conditions is rated as low as potential impacts are likely to be small in spatial extent, reversible long-term, and with few effects to health and/or country foods. There is potential for the Project to result in the permanent alienation of the identified Indigenous Communities from locations used for traditional purposes within the Project footprint, for which there is no current mitigation identified. It should be noted that through this assessment it has been determined that the impact on the identified Indigenous Communities' rights and interests related to the potential for the Project to result in the permanent alienation of the Indigenous Communities from locations within the Project footprint is rated as a low level impact due to the current information available on their use of the Project footprint for traditional purposes.

Though baseline data were sufficient to evaluate effects for socio-community, economic, and human health VCs, a few critical receptor locations related to current or rights-based use by Ktunaxa Nation and information from Tsuut'ina Nation's site visit within the Project footprint were identified. While the

identification of critical receptor locations related to current or rights-based use by Ktunaxa Nation within the KNRI LSA and those expected to occur in the KNRI LSA based on publicly-available information, was made available, areas currently or potentially used by Indigenous Communities for traditional purposes have not been identified within the ATRI LSA through publicly-available information prior to the assessment. As such, there is no information indicating that the Indigenous Communities currently uses the Project footprint and the ATRI LSA for traditional purposes.

Continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up and monitoring and adaptive management measures as necessary is expected to improve the confidence rating and the severity of impact on the Aboriginal and Treaty rights and interests of the Indigenous Communities.

With respect to the economic conditions without the Project, potential future use may potentially be negatively impacted due to the lack of the residual positive economic effects of the Project. Without the Project, impacts on the rights and interests of identified Indigenous Communities related to social and health conditions will continue as a result of activities within the Elk Valley and those outside of the Elk Valley that have the potential to impact food systems. These past and ongoing activities may be impacting the ability of the Indigenous Communities to exercise their rights related to the social, health, and economic conditions of their traditional territory and will likely continue to impact the rights and interests of the identified Indigenous Communities without the Project. This also emphasizes the potential cumulative effect of past developments on Indigenous Communities' practice of rights and interests related to health and socio-economic conditions.

E.8.5 Summary of Changes to the Environment on Indigenous Peoples

Based on the current information available to NWP through a review of public resources, it is predicted at this time that there will not be any significant residual effects from the Project to affect Aboriginal and/or Treaty rights or interests, this assumption will be subject to an ongoing program of environmental and socio-economic monitoring undertaken in collaboration with potentially impacted Indigenous Communities and the co-development of offsets and/or mitigation measures addressed through the Indigenous Impact Management Plan.

It is anticipated that traditional land and resource use activities should be able to continue, except where prohibited for safety purposes (e.g., on the mine site during construction and operations) and surrounding areas including access and egress points. It is also anticipated that activities related to the exercise of Aboriginal and/or Treaty rights and related interests should be able to continue by the members of the identified Indigenous Communities based on the information available regarding their use of the Project footprint and the ATRI/KNRI LSA. Based on the current information available to NWP, it is anticipated that the contribution of the Project's residual effects is unlikely to cause a change in the cumulative effects that could affect the viability or sustainability of traditional use of lands and resources within the ATRI/KNRI RSA by the identified Indigenous Communities. It should be noted that dialogue is ongoing with the identified Indigenous Communities with respect to validating and following up on assessment outcomes and addressing any potential new measures that may be identified as the assessment proceeds in order to address potential impacts on the Aboriginal and/or Treaty rights and interests of the Indigenous Communities.

The Application/EIS assesses the Project effects on Ktunaxa Nation's sectors that correspond with traditional land and resource use are based on the identification of the critical receptor locations related to current or rights-based use by Ktunaxa Nation within the Project footprint, the KNRI LSA, and the KNRI RSA and the permission to use publicly-available information. The Ktunaxa Nation sectors include potential change to current use of water for traditional purposes, potential change to current use of lands and resources for traditional purposes, potential change to physical and cultural heritage, potential change to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and potential change to health and socio-economic conditions. Specific to Ktunaxa Nation, the potential impact of the residual cumulative effects on the exercise of Ktunaxa Nation's Title, Rights and related interests will be further discussed through continued consultation with Ktunaxa Nation, as well as through the development of potential follow-up, and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up. Ongoing programs of environmental and socio-economic monitoring undertaken in collaboration with the Ktunaxa Nation and the co-development of offsets and mitigation measures are addressed through the Indigenous Impact Management Plan.

Mitigation measures will reduce or eliminate effects on resources which are relied upon in order to exercise Aboriginal and/or Treaty rights and related interests for current (and future) use, and reduce or eliminate effects on conditions that may prohibit or deter the exercise of Aboriginal and/or Treaty rights and interests. Residual cumulative effects are not anticipated to alter the long-term persistence and viability of fish, wildlife, and vegetation species of interest within the ATRI/KNRI RSA which are relied upon to exercise Aboriginal and/or Treaty rights and related interests. The potential for residual cumulative effects of the Project in combination with reasonably foreseeable future projects and activities on physical and cultural heritage and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance are restricted to those located within the footprint of the Project and of other potential projects developed within the ATRI/KNRI RSA. The comprehensiveness of the Indigenous Impact Management Plan and the monitoring programs for the specific elements of the environment reflect the nature of the potential interaction with the environment, the anticipated magnitude or extent of the environmental effects, the expected effectiveness of mitigation, the level of certainty in the environmental effects predictions, and the resulting potential for impact on the rights and interests of the identified Indigenous Communities. As the potential for, and consequences of, adverse environmental effects increases, so does the comprehensiveness of the Indigenous Impact Management Plan in order to meet the requirements and objectives of each mitigation measure and/or monitoring program.

Communication of the results of the follow-up strategies and/or monitoring programs to the Indigenous Communities is an essential component of the Indigenous Impact Management Plan to be implemented by NWP. It also offers the opportunity to incorporate input from Indigenous Communities into the design of the Indigenous Impact Management Plan and related monitoring programs and any consequential adaptive management, where applicable.

Follow-up strategies related to the rights and interests of the identified Indigenous Communities are proposed where the effects assessment determines that uncertainty exists in the predictions of effects or in the effectiveness of mitigation proposed. Using an adaptive management plan, the follow-up strategies and the monitoring programs will be periodically evaluated for effectiveness and the appropriateness of their elements and the parameters being measured and reported. This evaluation will be done in

consultation with the appropriate regulatory agencies and the results of these strategies and programs will be analyzed. If any elements of the follow-up strategies and the monitoring programs warrant adjustment to meet the aim and intent, then in consultation with regulatory agencies, the strategies and the programs may be adjusted. It is anticipated that as a condition of the approval of the Project, the results of the follow-up strategies, and the monitoring programs or measures being conducted will be reported to the appropriate regulatory agencies, both federal and provincial.

E.9 Summary of Effects on Matters of Federal Interest

E.9.1 Changes to Components of the Environment within Federal Jurisdiction

E.9.1.1 Fish and Fish Habitat

The potential effects of the Project on fish and fish habitat were considered to be:

- Fish mortality;
- Change in fishing pressure;
- Instream habitat loss due to mine design and development;
- Habitat loss due to changes in water quantity;
- Changes in water quality;
- Change in fish and fish habitat due to blasting;
- Changes in streambed structure; and
- Functional riparian disturbance.

Various mitigation measures will avoid or minimize potential effects to fish and fish habitat, though potential residual effects may remain. These residual effects were determined to be not significant, with the exception of the residual effects of instream habitat loss due to mine design and development and habitat loss due to changes in water quantity, which were both found to be significant for Westslope Cutthroat Trout only with a high likelihood to occur. The residual cumulative effects of habitat loss due to changes in water quantity, changes in water quality, functional riparian disturbance, and additional effects assessed under the EV-CEMF related to riparian disturbance at the landscape scale, road development, increased urban and recreational development, and increased natural disturbance due to fire and insect outbreaks arising from the Project in combination with other past, present, and reasonably foreseeable future projects and activities were considered not significant.

As required by the CEA Act, 2012, a follow-up program must be defined to verify the effects predictions or the effectiveness of mitigation. This follow-up strategy focuses on the implementation of an Aquatic Effects Monitoring Program (AEMP), which will include surface water quality, sediment, benthic invertebrate, and fish tissue monitoring (in fish bearing watercourses). As well, a monitoring program will be developed as part of the Fish and Fish Habitat Management Plan to assess fish communities and fish habitat. The aim of this program will be to assess if mitigation measures are effective and to provide an adaptive management framework to support early detection of effects and adequate response procedures for protecting fish and fish habitat.

E.9.1.2 Species at Risk

Aquatic and terrestrial federally-listed species at risk have the potential to be impacted by the proposed Project. Westslope Cutthroat Trout may be impacted by the Project through instream habitat loss due to mine design and development, habitat loss due to changes in water quantity, changes in water quality, changes in streambed structure, and functional riparian disturbance. The federally-listed whitebark pine may be impacted by the Project through mortality and/or loss of habitat and changes in rates of germination, growth and reproduction. Wildlife at-risk species, including listed carnivores, birds, bats, and an amphibian have the potential to be impacted through habitat loss, sensory disturbance, disruption to movement, and increased mortality risk.

Residual effects of instream habitat loss due to mine design and development and habitat loss due to changes in water quantity were both found to be significant for Westslope Cutthroat Trout only, with a high likelihood to occur. No significant adverse residual cumulative effects are predicted for Westslope Cutthroat Trout. No significant adverse residual or cumulative effects are predicted on vegetation and wildlife species at risk as a result of the Project. Follow-up programs will be used to verify environmental effects predictions on species at risk or to verify the effectiveness of mitigation measures where there is uncertainty (i.e., low to moderate confidence). Where environmental effects exceed that predicted under the effects assessment, or mitigation measures prove to be ineffective, alternative strategies are developed to adaptively manage the Project's effects on species at risk.

E.9.1.3 Migratory Birds

Potential effects to migratory birds arising from the Project were assessed. The assessment concluded that proposed mitigation measures for the Project will not result in increased mortality risk to migratory birds, with no residual effects expected; however, it was anticipated that residual effects for habitat loss and degradation and sensory disturbance will remain. As such, the effects of habitat loss and degradation as well as sensory disturbance were therefore carried forward into the residual effects assessment.

The determination of significance of adverse residual effects was therefore completed for the combined effects of habitat loss and degradation and sensory disturbance. Although residual effects to migratory birds were predicted as a result of habitat loss and degradation and sensory disturbance, there were no significant residual effects to migratory birds anticipated as a result of the Project. The majority of habitat lost within the Project footprint will be for birds using forested habitats (83.4% of the Project footprint). With respect to sensory disturbance, of the three representative migratory bird species (i.e., Olive-sided Flycatcher, Barn Swallow, and woodpeckers), the loss of high-quality habitat and habitat affected by sensory disturbance was largest for Olive-sided Flycatcher. Despite this, sensory disturbance was not expected to result in significant adverse effects to migratory birds because suitable Olive-sided Flycatcher habitat may be created with the creation of new edge habitat, and reclamation activities will restore some Olive-sided Flycatcher habitat by the end of Reclamation and Closure and a permanent reduction in the population as a result of the Project is likely minimal or nil. A relatively small amount of high-quality woodpecker habitat will be lost or affected by sensory disturbance in the Terrestrial LSA , but a permanent reduction in the population as a result of the Project is likely minimal or nil. No change to Barn Swallow abundance is expected, considering that little or no breeding habitat is present in the Project footprint and that feeding habitat is widely available in the Terrestrial LSA.

Despite these effects on habitat loss and degradation and sensory disturbance, based on the characterization of the residual effects, the Project would not limit the ability of migratory birds to persist and maintain self-sustaining populations in the Terrestrial LSA. The residual effects of habitat loss and degradation and sensory disturbance on migratory birds were therefore considered to be not significant, with a high level of confidence.

E.9.2 Changes to the Environment that Would Occur on Federal or Transboundary Lands

Pursuant to Section 5(1)(b) of the Canadian Environmental Assessment Act, 2012 (CEA Act, 2012), changes to the environment that would occur on transboundary lands require assessment in the Project's Application/EIS.

The Application/EIS presents the assessment of potential changes to the environment that may occur on transboundary lands, including assessment of federal lands, lands in a province other than B.C., and lands outside of Canada. Federal lands nearest the Project include the ?aq'am First Nation Bummer's Flat 1 Reserve (approximately 69 km southwest), Stoney Nakoda Edan Valley 216 Reserve (approximately 70 km northeast), Tobacco Plains 2 (approximately 80 south), Piikani Nation Peigan Timber Limit 147B (approximately 52 km east in Alberta), and Parcels 73 and 82 of the Dominion Coal Blocks (approximately 20 and 40 km southwest, respectively). Lands outside of B.C. and Canada include lands within the Province of Alberta (approximately 5 km east) and the State of Montana (approximately 85 km south). Federal land is not required to facilitate the Project and the Project does not overlap with any federal land.

E.9.2.1 Background and Context

The Application/EIS describes the transboundary considerations (i.e., baseline and regional information) for each VC as it relates to transboundary lands, including both federal lands and lands outside of B.C. and Canada. The Application/EIS outlines the potential impact to transboundary lands within the respective Local Study Area (LSA) and Regional Study Area (RSA) for each VC.

The proposed Project is located approximately 5 km west from the Alberta border along the western side of the Continental Divide and 85 km north from the Montana border in the U.S.A. In consideration of the atmospheric environment, the Project overlaps with a portion of the South Saskatchewan Air Zone along the B.C.-Alberta border. The most frequent wind direction recorded at the baseline climate station was from the southeast. The acoustic environment in the area near and surrounding the Project comprises natural noise sources (e.g., wind, birds, insects), and anthropogenic sources (e.g., residential, recreational, mining, forestry, transportation). Natural sources of ground vibration include volcanic occurrences and seismic events caused by movements along the edges of tectonic plates. Overlapping Project-related effects on the acoustic environment are not expected to physically overlap with federal lands or lands outside of B.C. or Canada.

The Elk Valley forms part of the Continental Ranges of the Rocky Mountains and stretches more than 180 km from the mouth of the Elk River at Lake Koocanusa in the south, and north to its headwaters in Elk Lakes Provincial Park near the Continental Divide along the B.C.-Alberta border (Elk Valley Cumulative Effects Management Framework Working Group, 2018; George et al., 1987). Soils and terrain of the Project area do not physically overlap with federal lands or lands outside of B.C. or Canada. Suitable terrain

for the development of avalanche conditions may occur throughout the Rocky Mountains, extending into Alberta to the east, and into the U.S.A. to the south. Grasslands in Alberta have a similar composition to the Elk Valley. High elevation grasslands in Montana generally occur as two plant community types which have analogues in B.C. (Vance et al., 2017). Several passes between Alberta and B.C. contain riparian habitats that cross the Continental Divide.

A groundwater divide generally coincides with the topographic saddle between the West Alexander and Grave Creek drainages and is assumed to follow ridgelines away from that. At a large scale, groundwater flow will move from high elevation recharge areas to low elevation discharge areas via the most permeable pathways. As such, groundwater quality and quantity that may be influenced by the Project is not anticipated to interact with federal lands or lands outside of B.C. or Canada, given existing topography. In terms of surface water, the Elk River has many significant tributaries, including the Fording River, Line Creek, Wigwam River, and Michel Creek. Extensive water monitoring has been conducted in the Elk River and Lake Koocanusa to assess the impacts from the Elk River. Results of the 2019 Koocanusa Reservoir Monitoring Program showed that monthly average concentrations of the Elk Valley Water Quality Program Order constituents (i.e., dissolved cadmium, nitrate, and sulphate) were below respective B.C. WQG at permitted stations in the Canadian portion of the reservoir (Minnow Environmental Inc., 2020). Monthly average selenium concentrations were below the B.C. WQG in all months at all permitted stations, with the exception of the station at the mouth of the Elk River.

The Elk River outlet into the Canadian portion of Lake Koocanusa is located approximately 80 km southwest of the Project. Lake Koocanusa extends 65 km from the U.S.A. border to the Kootenay River Inlet, providing a wide range of aquatic habitat. Water levels in the lake are controlled by Libby Dam, which results in significant seasonal variations in aquatic habitat availability. Lake Koocanusa currently supports 11 native fish species and 6 introduced species, including an abundant Bull Trout population (Leschied, 2017). Westslope Cutthroat Trout are present in low densities in Lake Koocanusa, likely due to a low competitive advantage for food resources. Transboundary effects into Alberta will not occur as a result of the Project as all watersheds within and surrounding the Project footprint are located on the western side of the Continental Divide.

The Southern Rocky Mountain Trench and the Columbia Basin are considered a “hotspot” and a centre of rarity in the province for plants (Douglas et al., 1994). Plant communities of similar composition and structure to those found near the Project can occur in neighbouring areas in Alberta and Montana (Baker et al., 2020; Montana Natural Heritage Program [MNHP], 2017) as well as the Dominion Coal Blocks south of the Project. Whitebark pine occurs in both neighbouring Alberta and Montana in habitats that are similar to that encountered in the Landscapes and Ecosystems LSA and Landscapes and Ecosystems RSA.

Several wildlife VCs are anticipated to move across transboundary lands. Ungulate species are highly mobile animals with migratory behaviour and with known populations occurring on both sides of the B.C.-Alberta border. It is therefore highly likely that individuals exhibit seasonal or regular transboundary movements. Grizzly bear are also highly mobile with markedly large home ranges and a distribution that includes contiguous portions of Alberta and Montana (COSEWIC, 2012a). Wolverines are wide-ranging animals with exceptionally large home ranges and a distribution that includes contiguous portions of Alberta and Montana (COSEWIC, 2014b). American badger and Canada lynx are wide ranging animals with populations in B.C., Alberta, and Montana while American marten, with their high dispersal capacity, may also regularly disperse across the Alberta border along the Continental Divide. Bats are highly mobile and

for those species that are migratory, spend a substantial amount of the year outside Canada. Similarly, some birds of the Elk Valley are migratory and may spend a substantial amount of the year outside Canada. Amphibian species assessed as part of the Project, Western toad and Columbia spotted frog, can migrate to breeding and/or foraging sites; however, movement of these species into the U.S.A and Alberta are not expected.

The Project is expected to increase employment opportunities and employment income benefit for both local and regional communities, resulting in a positive effect on other provinces as some employees in the Elk Valley coal mines come from out of province, such as Alberta. The shift schedules at the mines (e.g., 4 day on/off shifts) allow for employees to come from out of the region to work at the mines. As well as employees, it is possible that some required goods (e.g., mine equipment) and services (e.g., construction contractors) could be procured from out of province.

E.9.2.2 Effects Assessment

The Application/EIS assessed the potential for transboundary effects for all VCs and detailed the potential changes that may occur on transboundary lands within the respective LSAs and RSAs for each VC. Information from the VC assessment chapters of the Application/EIS was used to assess the potential for effects on transboundary lands as a result of the Project. Where changes to or on transboundary lands are anticipated as a result of the Project, the Project residual effects assessments for each VC formed the basis by which Project and residual effects are evaluated for transboundary lands.

The Project-residual effects assessment predicted that the Project has the potential to cause changes to transboundary lands and therefore result in transboundary effects on the following VCs:

- Atmospheric environment (i.e., air quality and greenhouse gas):
  - Project greenhouse gas emissions will be measurable and potentially important in the context of local and provincial GHG emissions, but will be very small in a global context. Despite the relative low quantity of emissions, the Project will contribute to national and international greenhouse gas emissions, thereby contributing to global climate change at the transboundary level.
- Surface water quality:
  - There is the potential for transboundary effects to surface water quality in Lake Koocanusa to occur during the Operations, Reclamation and Closure, and Post-Closure phases of the Project as a result of the Interim and Main Sediment Pond discharges to the receiving environment into West Alexander Creek. Flow from the sediment ponds will move downstream from Alexander Creek to Michel Creek and subsequently the Elk River to its outlet with Lake Koocanusa, approximately 80 km downstream of the Project; however, contributions from the Project to changes in surface water quality are predicted to be minimal, including transboundary effects into the U.S.A. Transboundary effects into Alberta will not occur as a result of the Project as all watersheds within and surrounding the Project footprint are located on the western side of the Continental Divide.
- Fish and fish habitat:
  - Potential impacts to fish and fish habitat caused by changes in water quality have the potential to impact waterbodies downstream of the Project in the Fish and Fish Habitat LSA and Aquatic RSA; however, minimal contribution lower down in the Aquatic RSA (Elk River

and Lake Koocanusa) is anticipated to occur due to the sediment ponds and adequate management of releases downstream, including transboundary effects into the U.S.A.

- Wildlife and wildlife habitat:
  - Highly mobile wildlife species that cover large ranges and that cross transboundary lands could be impacted as a result of residual effects related to habitat loss and degradation and disruption to movement. It is likely that some ungulate and carnivore populations in the Terrestrial LSA exhibit transboundary movements to Alberta or Montana, and may exhibit movements to the closest federal lands to the Project (i.e., Dominion Coal Block Parcels 73 and 82). Known or anticipated movement corridors along the Continental Divide include the Crowsnest, Deadman, and Racehorse passes. Residual effects to ungulate VCs (if present) have the potential to be considered transboundary effects within Alberta and not the U.S.A. as it is beyond the home range of any of the ungulate VCs assessed.
  - Bats are highly mobile and for those species that are migratory, spend a substantial amount of the year outside Canada, and populations near the Project may be part of larger populations that span across both the B.C./Alberta and the Canada/U.S.A. borders. The residual effects of habitat loss and degradation on at-risk bats may have the potential to influence transboundary jurisdictions.
  - Migratory bird populations can spend a substantial amount of the year outside of Canada and thus may be part of larger populations that span across both the B.C./Alberta and the Canada/U.S.A. borders. While Project-related disturbances to bird habitat are limited to the Project footprint and do not extend beyond provincial borders, the residual effect of habitat loss and degradation on bird VCs may have the potential to influence transboundary jurisdictions.
- Economic conditions:
  - The Project will result in positive economic impacts, including additional employment and income, contribute to regional and local economies, and contribute to government finance through taxes and royalty payments.

No significant adverse cumulative effects related to changes to the environment that would occur on transboundary lands are expected to occur as a result of the Project acting in combination with the effects of other past, present, and reasonably foreseeable future projects or activities. Although Project-residual effects have been predicted for some VCs that may cross international or provincial borders and therefore potentially result in effects in transboundary jurisdictions outside of B.C., with the implementation of mitigation measures, effects have been determined to be either beneficial (economic), or adverse but not significant.

E.9.2.3 Mitigation Measures

Key mitigation measures for Project-related effects specific to avoiding or reducing potential effects on federal lands or transboundary lands include but are not limed to:

- Use of hyperbaric drying rather than thermal drying;
- Engineered layering of coal rejects and mine rock to limit metal leaching and acid rock drainage (ML/ARD) to reduce oxygen, nitrate, and selenium within the Mine Rock Storage Facility and remove selenium from contact water;
- Management of appropriately sized sediment ponds to settle particles and control discharge of contact water into the receiving environment;

- Vegetation clearing and tree harvesting will be conducted outside the general bird nesting period (April 13 to August 19 in each year) to avoid impacts to nests when occupied by a bird or eggs and will be avoided during the most sensitive period for bats (May 30 to September 1 in the Kootenay Region);
- Avoidance of mature and old growth with large-diameter trees, and suitable cave hibernacula, where practical alternatives are available;
- Directed/focused lighting will be used where possible, rather than broad area lighting, to minimize sensory disturbance. Light in non-essential areas will only be used when necessary, without compromising worker safety;
- Measures will be implemented to minimize potential Project effects on movement corridors (e.g., through Grave Creek Canyon), including signage along Project roads to warn vehicle operators of the potential to encounter wildlife;
- Underpasses will be created by elevating the conveyor to at least 2.4 m above ground (or higher where terrain can be used to create more clearance) at intervals of two per 1,000 m; and
- Limit the mine disturbance footprint through Project design and progressive reclamation.

E.9.2.4 Follow-up Strategy

Follow-up programs will be implemented as part of the follow-up strategy and will include use of VC-specific management and monitoring plans to support the verification of mitigation measures and effects predictions. In addition, NWP will use an Environmental Management System (EMS) based on key components of International Organization for Standardization (ISO) 14001. The EMS will provide the structure and procedures for implementing environmental management plans, ensuring compliance with regulations and permit requirements, and continuously improving environmental protection measures and environmental performance. The EMS, the accompanying Environmental Policy, and the NWP Employee Code of Conduct form the basis through which NWP will require contractors and sub-contractors to comply with environmental management programs, adhere to regulatory permitting requirements, and achieve auditing programs. Through the EMS, NWP will monitor the Project's performance against established objectives and standards and will correct environmental management strategies where necessary by implementing contingency measures and corrective actions.

E.9.3 Changes to the Environment on Indigenous Peoples

Section 5(1)(c) of the Canadian Environmental Assessment Act, 2012 requires that a federal Environmental Impact Statement must evaluate changes to the environment that may affect Indigenous Peoples. This section is a high-level summary of key findings of the assessment of the effects of the Project on Indigenous health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, and any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance to address those requirements.

For Health and Socio-Economic conditions [Section 5(1)(c)(i)], the potential changes to the environment are change in the actual or perceived quality of fish resources for sustenance fishing/country foods, change in the actual or perceived quality of wildlife resources for hunting/country foods, change in the actual or perceived quality of terrestrial plants and medicine resources for sustenance/country foods, and change due to the indirect disturbance, or health effects, to Indigenous land users because of changes in air quality or surface water quality.

For the purpose of this assessment, Physical and Cultural Heritage [Section 5(1)(c)(ii)] and Any Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance [Section 5(1)(c)(iv)] are assessed together and the potential changes to the environment are change in the value of place as a result of the permanent loss or changes to unknown pre-contact archaeological sites, and the potential for change of physical and cultural heritage and the ability to know and teach the cultural and social aspects as a result of the loss or changes to pre-contact archaeological sites.

For Current Use of Lands and Resources for Traditional Purposes [Section 5(1)(c)(iii)], the potential changes to the environment are change to current use of lands and resources for traditional purposes as it relates to water (for Ktunaxa Nation only), fishing, hunting and trapping, harvesting and gathering, ceremonial/sacred areas, access and travel routes, and physical and cultural heritage and the change in the value of place as a result of the change in accessibility to the use of lands and resources for water (for Ktunaxa Nation only), fishing, hunting and trapping, harvesting and gathering, ceremonial/sacred areas, and physical and cultural heritage, and the loss of waterbodies.

The assessment of potential residual Project and cumulative effects of changes to the environment on Indigenous Peoples as they relate to Indigenous health and socio-economic conditions, physical and cultural heritage, any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance, and the current use of lands and resources for traditional purposes are further detailed in the Application/EIS. Based on the current information available to NWP, it is anticipated that the contribution of the Project's residual effects is unlikely to cause a change in the cumulative effects that could affect the viability or sustainability of the traditional use of lands and resources by Indigenous Communities. While it is predicted at this time that there will not be any significant residual effects from the Project to affect Aboriginal or Treaty rights or interests, this assumption will be subject to an ongoing program of environmental and socio-economic monitoring undertaken in collaboration with potentially impacted Indigenous Communities and the co-development of offsets and/or mitigation measures as necessary.

Project-residual effects to Indigenous Communities as a result of the extent of the KNRI/ATRI RSA have been predicted that may cross provincial borders and therefore potentially result in effects in transboundary jurisdictions outside of B.C. With the implementation of mitigation measures, these effects (including residual Project and cumulative effects) have been determined to be either beneficial (economic), or adverse but not significant. Specific to the impact on rights of Indigenous Communities, the degree of severity of adverse impacts as currently noted are not predicted to occur outside of the ATRI/KNRI RSA which are in combination with the potential future use with or without the Project. Therefore, any potential results in effects in transboundary jurisdictions outside of B.C. are expected to be mitigated with the implementation of the Indigenous Impact Management Plan and through continued consultation with the identified Indigenous Communities, as well as through the development of potential follow-up, and monitoring and adaptive management measures to implement corrective actions as necessary based on that follow-up.

E.9.4 Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions

Provided that federal authorities consider the effects of the Project in view of the various other factors outlined in legislation that require consideration prior to exercising a power, duty, or function under the

legislation under their respective jurisdiction, changes to the environment from the Project that are directly linked or necessarily incidental to a federal decision are not predicted.

E.10 Management and Monitoring Plans

The proposed Environmental Management System (EMS) and associated Environmental Management Plans (EMPs) for the Project were developed as per requirements outlined in the EIS Guidelines (CEAA, 2015) and the AIR (EAO, 2018). The Project EMS will direct the development and implementation of the Environmental Management Plans (EMPs) required for environmental protection during the Construction and Pre-Production, Operations, Reclamation and Closure, and Post-Closure phases of the Project (i.e., the EMS will be implemented over the entire life cycle of the Project). The EMS will include key components of ISO 14001, including:

- Environmental Policy: Describes corporate principles, objectives, and targets relating to environmental management and environmental performance;
- Planning: NWP will establish and maintain documented objectives and targets for each EMP, and will update EMPs on an annual basis to target specific issues and areas for continuous improvement;
- Implementation: NWP with establish resource requirements, organizational structure, reporting structure, roles and responsibilities, information and data management, and communication protocols; and
- Evaluation and Corrective Action: NWP will monitor the Project's performance against established objectives and standards and will correct environmental management strategies where necessary by implementing contingency measures and adaptive management procedures as required.

The use of EMPs is an overarching strategy that will be used to translate specific commitments and management measures committed to in the Application/EIS into the planning documents, engineering designs, contract documents and the day-to-day construction and operation of the proposed Project.

Each EMP outlines the plan scope and objectives, applicable legislation, BMPs, and industry standards, corporate roles and responsibilities, relevant Project components/activities, environmental protection and mitigation measures, monitoring, evaluation of environmental performance, and individual reporting requirements. The VC assessment chapters identify proposed monitoring and follow-up programs to verify the predictions of effects and the effectiveness of mitigation measures. Where applicable, further details on the proposed monitoring programs are included in the individual EMPs. Conceptual monitoring programs are outlined in each VC assessment chapter and the relevant VC management plans to verify that the Project is implemented as presented in the Application/EIS and that mitigation measures are effectively implemented and conditions and requirements related to laws and regulations are met.

Environmental Management Plans included in the Application/EIS include:

- Environmental
  - Air Quality and Greenhouse Gas Management Plan;
  - Archaeology Management Plan;
  - Ecological Restoration Plan;
  - Erosion and Sediment Control Plan;

    - Fish and Fish Habitat Management Plan;
    - Landform Design and Reclamation Management Plan;
    - Noise and Vibration Management Plan;
    - Site Water Management Plan;
    - Soil Management Plan;
    - Spill Prevention, Control, and Countermeasures Plan;
    - Vegetation and Ecosystems Mitigation and Monitoring Plan;
    - Waste Management Plan;
    - Wildlife Management and Monitoring Plan;
- Health and Safety
    - Access Management Plan;
    - Mine Emergency Response Plan;
    - Health and Safety Management Plan;
    - Traffic Control Plan;
- Communication and Reporting
    - Community Relations and Communications Plan;
    - Compliance Reporting Plan;
    - Indigenous Engagement and Reporting Plan; and
    - Indigenous Impact Management Plan.

Specific to Aboriginal and/or Treaty rights and interests, NWP will develop and implement the Indigenous Impact Management Plan based on the result of the outcomes of the assessment processes. Preparation of detailed EMPs, building upon the conceptual EMPs presented in the Application/EIS, will occur during permitting and/or after the issuance of the Environmental Assessment Certificate, and will be completed prior to Construction and Pre-Production.

E.10.1 Elk Valley Water Quality Plan

The Elk Valley Water Quality Plan (EVWQP) was brought into force by Ministerial Order to address operational challenges associated with Teck's Elk Valley operations and related releases. The purpose of the EVWQP is to identify a strategy and implement solutions to address increasing selenium and nitrate water concentrations within the Valley and assess and track levels of cadmium and sulphate in waters, while at the same time allowing for continued sustainable mining in the Valley. The Plan also lays out a strategy to address calcite formation associated with historical and current mining activity.

In addition to other provincially and federally mandated criteria and/or guidance documents relating to coal mining effluent (ECCC, 2022), NWP intends to manage waters influenced by their development activities in alignment with the EVWQP to ensure that the overall goals of the plan are met and maintained. Projections made in the EA documents prepared by NWP and its consultants indicate that this should not be a challenge. Nevertheless, monitoring planned by NWP will provide the information necessary to validate this position or cause necessary mitigation measures to be put into place to ensure that the goal of the EVWQP and NWP's own internal goals are achieved.

E.11 Summary and Conclusions

The proposed Project strives to use best practice mining and environmental management methods to extract shallow steelmaking coal reserves at the site and to process and export premium low-volatile hard coking coal in high demand by Asian steelmakers. The development of the Project provides an opportunity for the continuation of the existing steelmaking coal export industry from the Elk Valley with substantial employment generation and significant ongoing regional, provincial, and national economic benefit. The Project will provide a positive economic return to shareholders and the economy whilst ensuring a far improved environmental outcome than that of historical and current coal production. NWP's goal is to establish sustainable development and operations where they are a trusted community partner with environmentally responsible operations. NWP will look to foster and maintain enduring relationships based on trust – implementing a range of strategies focused on being socially responsible, opportunities for Indigenous employment, foster diversity and stakeholder engagement.

Over the course of the Project, NWP believes the Project will offer several benefits locally and regionally, including:

- Creation of 330 full-time equivalent jobs when in operation creating more than 5,500 person-years of direct employment on the Project plus substantial indirect employment in the region due to demand for goods and services for the Project;
- Creation of significant local and regional employment during Project construction;
- Contribution of more than $1.21B in Gross Domestic Product to the region during the life of the Project;
- Generation of tax revenue to Municipal, Provincial and Federal Governments of more than $40M during construction and more than $400M during the life of the Project; and
- Based on long term hard coking coal price forecasts of USD165/tonne (as used in the Project BFS), generation of Mineral royalty payments to British Columbia of more than $200M. It is noted that current coal prices (circa USD 400/tonne) and future forecasts are well in excess of the long term price used in the BFS. At a long term average price of USD200/tonne, the total mineral royalty payable to British Columbia would be more than $450M.

As demonstrated in this Application/EIS, the effects assessments have concluded, for the most part, that the residual adverse effects of the Project (including cumulative environmental effects) to various VCs affected by the Project are not significant, with a generally moderate to high level of confidence (Table E.11-1). As well, the degree of severity of impacts (low, moderate, high) of Potential Project-related impacts to the identified Indigenous Communities' rights and related interests in consideration of the existing and anticipated future use of the Project footprint, the ATRI/KNRI LSA, and the ATRI/KNRI RSA by the Indigenous Communities are also ranked not significant (Table E.11-2). The confidence related to the degree of severity of adverse impacts to the identified Indigenous Communities' rights and related interests are generally noted as being low or low to moderate due to the lack of Project-specific traditional land use studies submitted by most of the potentially impacted Indigenous Communities.

Table E.11-1: Summary of Significance Determination for Residual and Cumulative Effects

Valued Component	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect
Air Quality (Chapter 6)	Not Significant	Not Significant
Greenhouse Gases (Chapter 6)	Not Significant	Not Significant
Acoustic Environment (Chapter 7)	Not Significant	Not Significant
Soil Quantity (Chapter 8)	Not Significant	N/A
Soil Quality (Chapter 8)	Not Significant	N/A
Terrain (Chapter 8)	N/A	N/A
Groundwater Quantity (Chapter 9)	Not Significant	N/A
Groundwater Quality (Chapter 9)	Not Significant	N/A
Surface Water Quantity (Chapter 10)	Not Significant	Not Significant
Surface Water Quality (Chapter 11)	Not Significant	Not Significant
Westslope Cutthroat Trout (Chapter 12)	Significant	Not Significant
Bull Trout (Chapter 12)	Not Significant	Not Significant
Kokanee / Burbot / Longnose Sucker / Mountain Whitefish (Chapter 12)	Not Significant	Not Significant
Benthic Invertebrates (Chapter 12)	Not Significant	Not Significant
Avalanche Chutes (Chapter 13)	Not Significant	Not Significant
Grassland Ecosystems (Chapter 13)	Not Significant	Not Significant
Riparian Habitat (Chapter 13)	Not Significant	Not Significant
Old Growth and Mature Forests (Chapter 13)	Significant	Not Significant
Wetland Ecosystems (Chapter 13)	Not Significant	Not Significant
Listed and Sensitive Plant Communities (Chapter 14)	Not Significant	Not Significant
Limber Pine (Chapter 14)	N/A	N/A
Whitebark Pine (Chapter 14)	Not Significant	Not Significant
Grizzly Bear (Chapter 15)	Not Significant	Not Significant
Wolverine (Chapter 15)	Not Significant	Not Significant
American Badger (Chapter 15)	Not Significant	Not Significant
American Marten (Chapter 15)	Not Significant	Not Significant
Canada Lynx (Chapter 15)	Not Significant	Not Significant
Elk (Chapter 15)	Not Significant	Not Significant
Bighorn Sheep and Mountain Goat (Chapter 15)	Not Significant	Not Significant
Moose (Chapter 15)	Not Significant	Not Significant
At-Risk Bat Species (Chapter 15)	Not Significant	Not Significant

Valued Component	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect
Amphibians of the RSA (represented by Columbia Spotted Frog) (Chapter 15)	Not Significant	Not Significant
Western Toad (Chapter 15)	Not Significant	Not Significant
Migratory Birds (Chapter 15)	Not Significant	Not Significant
Raptors (Chapter 15)	Not Significant	Not Significant
Waterbirds (Chapter 15)	Not Significant	Not Significant
Gillette's Checkerspot (Chapter 15)	Not Significant	Not Significant
Physical and Cultural Heritage (Chapter 16)	Not Significant	Not Significant
Economic Conditions (Chapter 17)	Not Significant	N/A
Housing and Community Services and Infrastructure (Chapter 18)	N/A	N/A
Community Health and Well-being (Chapter 18)	N/A	N/A
Land-use and Access (Chapter 19)	Not Significant	Not Significant
Recreation and Tourism (Chapter 19)	Not Significant	Not Significant
Commercial Land Use (Chapter 19)	Not Significant	Not Significant
Visual Aesthetics (Chapter 19)	N/A	N/A
Human Health (Chapter 22)	Not Significant	Not Significant
Wildlife Health (Chapter 22)	Not Significant	Not Significant
Transboundary Lands (Chapter 32)	Not Significant	Not Significant
Indigenous Peoples: Current Use of Lands and Resources for Traditional Purpose (Chapter 23 to 31)	Not Significant	Not Significant

Table E.11-2: Summary of Significance Determination for Residual and Cumulative Effects and Severity of Adverse Impacts on Rights and Interests of the identified Indigenous Communities

Indigenous Community	Potential Impact on Indigenous Communities' Rights and Interests	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect	Degree of Severity for Adverse Impacts
Ktunaxa Nation	Change to Current Use of Water for Traditional Purposes	Not Significant	Not Significant	Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Moderate

Indigenous Community	Potential Impact on Indigenous Communities' Rights and Interests	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect	Degree of Severity for Adverse Impacts
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
Shuswap Indian Band	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
	Change to Current Use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
Stoney Nakoda Nation	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Item that is of Historical, Archaeological,	Not Significant	Not Significant	Moderate to High

Indigenous Community	Potential Impact on Indigenous Communities' Rights and Interests	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect	Degree of Severity for Adverse Impacts
	Paleontological, or Architectural Significance			
	Change to Social and Health Conditions	Not Significant	Not Significant	Low
Métis Nation of British Columbia	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Not Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
Kainai (Blood Tribe)	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Not Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
Piikani Nation	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate

Indigenous Community	Potential Impact on Indigenous Communities' Rights and Interests	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect	Degree of Severity for Adverse Impacts
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Not Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
Siksika Nation	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Not Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
Tsuut'ina Nation	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological,	Not Significant	Not Significant	Moderate to High

Indigenous Community	Potential Impact on Indigenous Communities' Rights and Interests	Determination of Significance of Project Residual Effect	Determination of Significance Cumulative Effect	Degree of Severity for Adverse Impacts
	Paleontological, or Architectural Significance			
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low
Métis Nation of Alberta – Region 3	Change to Current use of Lands and Resources for Traditional Purposes: Fishing	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Hunting and Trapping	Not Significant	Not Significant	Low to Moderate
	Change to Current Use of Lands and Resources for Traditional Purposes: Harvesting and Gathering	Not Significant	Not Significant	Moderate
	Change to Physical and Cultural Heritage and Change to a Structure, Site, or Thing that is of Historical, Archaeological, Paleontological, or Architectural Significance	Not Significant	Not Significant	Moderate to High
	Change to Social, Health, and Economic Conditions	Not Significant	Not Significant	Low

Mitigation and management measures have been developed to avoid, minimize, or eliminate environmental effects to the extent that they are not significant, and in many cases, to the extent that no residual effect is predicted. Follow-up measures to verify the effects predictions or the effectiveness of mitigation have been proposed where there is uncertainty in the predictions or where additional confidence is needed to determine that the mitigation will effectively reduce or eliminate the effects.

NWP acknowledges that provincial and federal authorities have the difficult task of balancing the societal needs for goods and commodities such as metallurgical coal, the effects of the Project including cumulative effects, and potential rights and interests of Indigenous peoples, particularly in light of cumulative effects in the Elk Valley as well as other regulatory and policy frameworks such Government of Canada's climate goals. At the same time, while the Project has the potential to result in significant adverse residual effects on Westslope Cutthroat Trout and old growth and mature forest, the Project is intended to fill a societal need to soften surging global demand for metallurgical coal while creating employment, income, investment, taxes, royalties, and value-added spin-offs for the benefit of residents of the Elk Valley, where employment and incomes tend to lag behind those of other economic regions of rural B.C.

Where significant adverse residual effects were predicted, NWP has committed to carefully monitor the Project performance through follow-up measures, management actions, and collaborations with other

parties throughout the Project life, and to adapt to changing conditions as negative changes occur to minimize the extent of those adverse effects. In this light, although significant adverse residual effects are anticipated for some VCs, NWP Coal believes that the significant adverse residual effects of the Project, carefully monitored and managed through design, careful execution, mitigation, response, and adaptive management are outweighed by the benefits of the Project to the residents of the Elk Valley and the Province of B.C., such that those significant adverse residual effects should be deemed by the respective Ministers to be justifiable under the circumstances.

NWP is committed to creating and sustaining relationships and ongoing dialogue with regulators, communities, and stakeholders to support the environmental, social, and economic sustainability of the Project. Through the implementation of an EMS and Project-specific mitigation measures and policies and procedures, NWP anticipates the Project will create economic, social, and environmental benefits for local communities, the Elk Valley, the Province of B.C., and Canada.

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