Denison Mines

Wheeler River Project

Final Environmental Impact Statement

November 2024

Powering
PEOPLE, PARTNERSHIPS AND PASSION.

Wheeler River Project

Final Environmental Impact Statement

Executive Summary

November 2024

Denison Mines Corp.

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Abbreviations, Acronyms and Units

Abbreviation / Acronym	Definition
AADT	Average annual daily traffic
ALARP	As low as reasonably practical
CEAA	Canadian Environmental Assessment Agency
CNSC	Canadian Nuclear Safety Commission
COPC	Constituent of potential concern
CSA	Canadian Standards Association
Denison	Denison Mines Corp.
DWWTP	Domestic wastewater treatment plant
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMS	Environmental Management System
ERFN	English River First Nation
GHG	Greenhouse gas
HRMP	Heritage Resources Management Plan
ILRU	Indigenous Land and Resource Use
IPCC	Intergovernmental Panel on Climate Change
IPP	Indigenous Peoples Policy
ISR	In situ recovery
IWWTP	Industrial wastewater treatment plant
KI	Key Indicators
LSA	Local Study Area
MLTC	Meadow Lake Tribal Council
MN-S	Métis Nation – Saskatchewan
MP	Measurable Parameters
NAD	Northern Administration District
NASA	National Aeronautics and Space Administration
NRC	Natural Resources Canada
OLRU	Other Land and Resource Use
PAGC	Prince Albert General Council
PCC	Prairie Climate Centre
PML	Patuanak Métis Local #82
Project	Wheeler River Project
RAP	Reconciliation Action Plan

Abbreviation / Acronym	Definition
RSA	Regional Study Area
SML	Sipishik Métis Local #37
TAADT	Truck average annual daily traffic
TSP	Total suspended particulate
UBS	Uranium bearing solution
VC	Valued Components
WTP	Water treatment plant
YNLR	Ya'thi Néné Lands and Resource Office

Units	Definition
%	percent
ha	hectares
km	kilometre
L/s	litres per second
m	metre
m^3	cubic metres
mSv/yr	millisieverts per annum

1 Introduction

This Executive Summary is associated with the draft Environmental Impact Statement (EIS) for the Wheeler River Project (the Project) proposed by Denison Mines Corp. (Denison). Following the *Generic Guidelines for the Preparation of an Environmental Impact Statement Pursuant to the Canadian Environmental Assessment Act, 2012* (CNSC 2021a) and the provincial Terms of Reference for the Project (Denison 2019), this Executive Summary contains the following information:

- a high-level overview of the Project and Environment Assessment results (Section 2);
- a concise description of all key Project components and related activities (Section 3);
- a summary of the consultation conducted with Indigenous groups, the public, and government agencies (Section 4);
- an overview of the key environmental effects of the Project and proposed technically- and economically-feasible mitigation measures (Section 5);
- conclusions on the residual environmental effects of the Project after taking mitigation measures into account and the significance of those effects (Section 5); and
- sufficient details to support understanding of the Project, its potential environmental effects, mitigation measures, the significance of the residual effects and follow-up programs (Sections 3, 4, 5 and 6).

2 Project Overview

The Wheeler River Project (the Project) is Denison's proposed in situ recovery (ISR) uranium mine and processing plant:

- Location: northern Saskatchewan, Canada.
- Project components and activities: the central Project components are the ISR mine and the processing plant. Supporting Project components and activities include those needed for waste management, water management, distribution of electricity, and transportation, such as pads, ponds, buildings, roads, and an airstrip.
- Inputs: freshwater, chemicals (for mining, uranium processing, treating water), electricity, and fuel.
- Outputs: waste (organics, clean waste rock, special waste rock (drilling core), domestic waste, industrial waste, precipitates from the processing plant and water treatment, sewage), air emissions including greenhouse gas emissions (GHGs), noise, and treated effluent.
- Product: U_3O_8 or yellowcake. The product Denison sells is ultimately used as fuel in nuclear power plants, supporting global efforts to reduce GHG emissions.

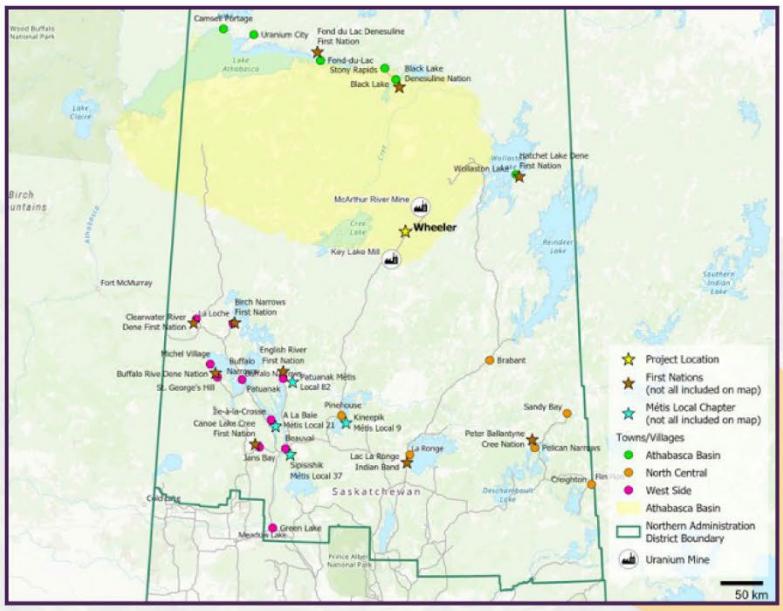
- Employment: Approximately 300 workers during Construction and 180 during Operation. The Project will be operated as a fly-in-fly-out operation.
- Project duration: Total of approximately 38 years, about 2 years for Construction, 15 years for Operation, 5 years for Decommissioning, and 15 years for Post-Decommissioning periods.

The environmental assessment (EA) outlined in this environmental impact statement (EIS) was transparent and conservative, following a standard, step-wise approach for evaluating Project effects including cumulative effects. In an effort to generate a conservative EA and provide operational flexibility, Denison developed an assessment basis for the EA which bound, or was higher than, the current understanding of the Project's engineering design basis. For example, the direct Project footprint based on engineering site plans is about 75 ha, but the EIS assumed the Project's area of disturbance was closer to 170 ha. Similarly, the annual production for current engineering design is 6 Mlbs U_3O_8 per year over 10 years, but the EIS assumed production of 9 Mlbs U_3O_8 per year over 15 years, with a peak production up to 12 Mlbs U_3O_8 in a given year to allow for operational flexibility. This means that, for example, the EIS assessed inputs needed and outputs generated on an annual basis as being 50% more than expected.

Residual effects remaining after mitigation were largely linked to land clearing, increases in traffic, emissions to air, waste generation, and water management. Residual effects were evaluated for 32 Valued Components (VCs) and significance determined for receptor VCs. The evaluations and conclusions of the EIS are that the Project can be constructed, operated, and decommissioned while regional plant communities are stable and continue to function, regional fish and wildlife populations are viable and healthy, human health is protected, there is continued opportunity for land use activities, including exercising Indigenous rights, and there is continued social and economic viability of local economies. The EIS outlines mitigation measures, monitoring requirements, and commitments needed for Denison to have confidence that Project is operating as planned and that the actual effects resulting from Project Construction, Operation, and Decommissioning are at or below predicted effects.

Overall, the Project has the potential to achieve a superior standard of environmental sustainability when compared to conventional uranium mining operations. Owing, in large part, to the use of the ISR mining method, the Project has potentially fewer residual effects remaining after mitigation when compared to conventional open pit or underground mining methods and conventional milling activities.

Importantly, Denison has been proactively engaging with Indigenous communities and organizations, the general public, and regulatory agencies since 2016. The use of a collaborative approach to engagement and advancement of the Project is exemplified by the input these groups have provided to influence both project designs and the EA in various ways. Denison views the EIS as an important planning tool that will be used to support future activities and represents one stage in the rigorous EA, licensing, and permitting process for a uranium mining facility in Canada.

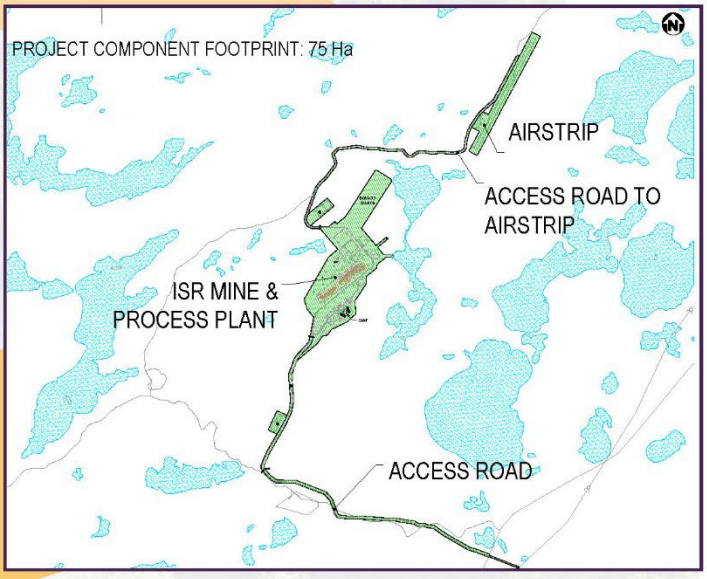


LOCATION

The Wheeler River Project is located in northern Saskatchewan in the Athabasca Basin.

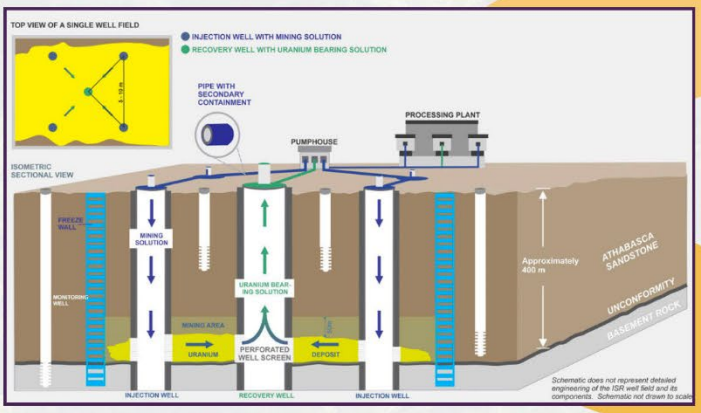
PROJECT FOOTPRINT

The main Project components are the in situ recovery mine and the processing plant.



IN SITU RECOVERY

In situ recovery uses an acidic solution to leach uranium ores from the ground through a series of injection and recovery wells. The processing plant houses the tanks and equipment to process the uranium recovered from in situ recovery into yellowcake. Denison will sell the yellowcake to the market for use in nuclear power plants, supporting global efforts to reduce greenhouse gas emissions.



VALUED COMPONENTS & PROJECT INTERACTIONS

Denison is assessing elements, called valued components, important to people or the environment, and the potential effects of the Project on these elements.

3 Project Setting

The Project is a proposed ISR uranium mine and processing plant located in the Athabasca Basin region of northern Saskatchewan, Canada (Figure 1).

More specifically, the Project site is located approximately 600 km north of Saskatoon and is found mid way between Cameco Corporation's Key Lake Operation and McArthur River Operation approximately 4 km west of Highway 914.

The Project is a joint venture between Denison (90%) and JCU (Canada) Exploration Company Ltd. (JCU) (10 %). Denison is also a 50% owner of JCU, which means that Denison has an effective 95% ownership interest in the Project. Denison is the operator of the Project and as such is the proponent in all regulatory matters.

The Project falls within the boundaries of Treaty 10, in the Nuhtsiye-kwi Benéne (Ancestral Lands) of English River First Nation (ERFN), in the traditional territory of the Kineepik Métis Local #9, in the homeland of the Métis, and within Nuhenéné, the traditional territory of the Athabasca Denesųłiné. It is also located within the Northern Administration District (NAD) of Saskatchewan (Figure 1). The NAD of Saskatchewan includes approximately 250,000 square kilometers (about 44% of Saskatchewan's land area), and is home to 36,000 people, or approximately 3.2% of the Province's population (Statistics Canada 2022).

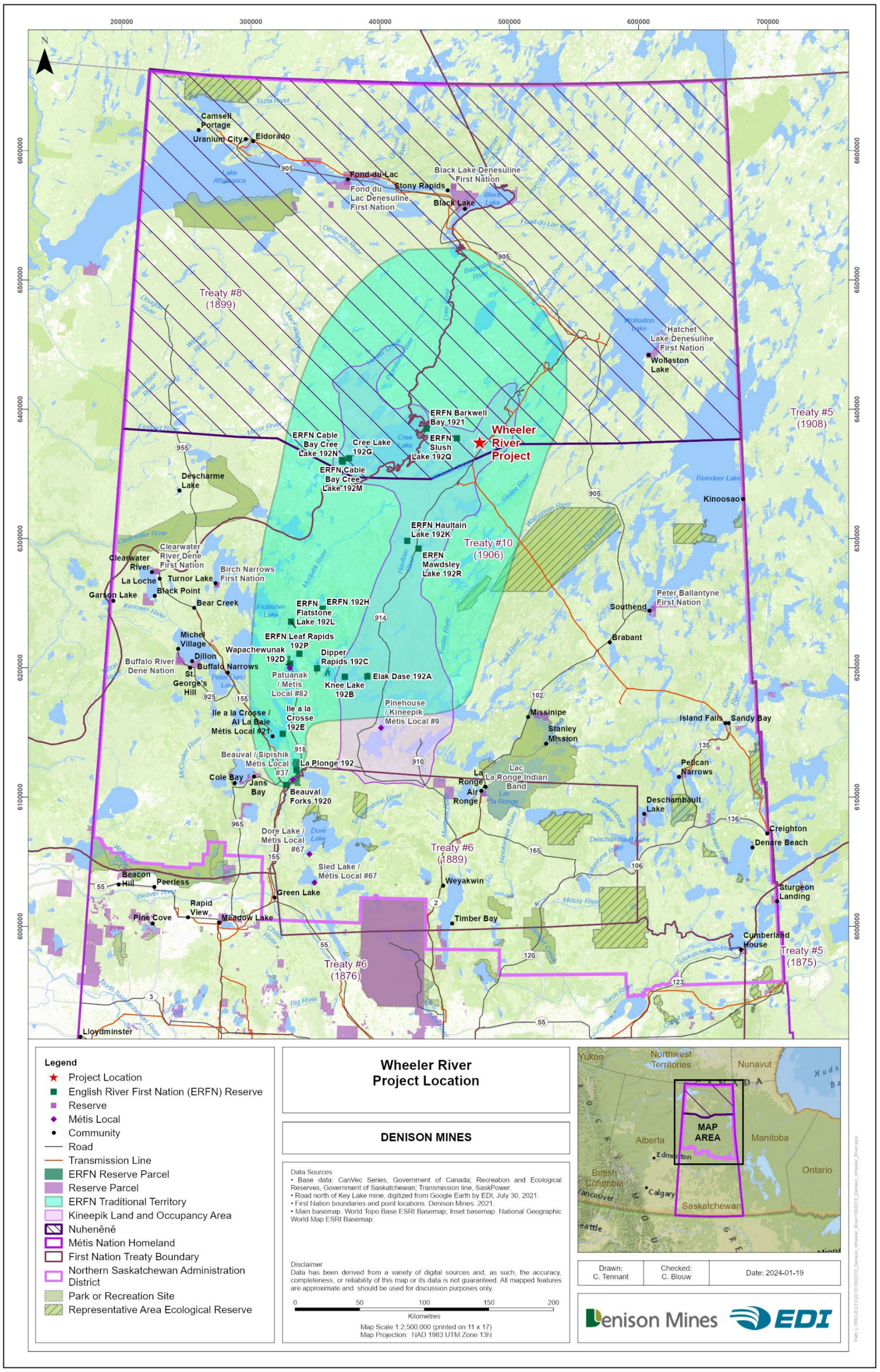


Figure 1: Wheeler River Project Location

No populated communities are located in the immediate proximity of the Project. Travelling by existing roads, the closest populated community to the Project is approximately 260 km away. Calculated using a straight line, the closest communities are approximately 150 km from the site. Recreational, industrial, and traditional resource user leases occur nearby. The closest recreational lease is located approximately 2.5 km away. The closest traditional resource user lease is approximately 12 km away.

3.1 Purpose of and Need for the Project

A recent report by the United Nations Intergovernmental Panel on Climate Change examined 89 climate change mitigation scenarios and concluded that achieving the 1.5°C target from the Paris Agreement will require an immediate reduction in global GHG emissions and an increase in nuclear power generation of approximately 2.5 times by 2050 (World Nuclear Association 2021). Without a significant contribution from nuclear energy, as the global power mix shifts to respond to climate change initiatives, the cost of achieving meaningful decarbonisation targets will steadily rise, or targets will simply go unmet. Nuclear energy is critical to global climate change objectives because of its unique combination of low carbon emissions, large scale, and high level of reliability.

Nuclear power is safe and reliable. The Canadian nuclear industry is one of the most closely monitored industries in the world. Major nuclear facilities are the most protected critical infrastructure in Canada. Not once has a nuclear incident caused a death in Canada and very few other industries have such a strong health and safety record. Canada's nuclear safety record is unmatched by any other industry in the world (Canadian Nuclear Association 2022). It is one of the few reliable energy sources that can reduce greenhouse gas emissions. The world's current use of nuclear power already reduces emissions by about 2.5 billion tonnes of carbon dioxide each year by avoiding fossil fuels (World Nuclear Association 2022a).

Mining of uranium is the first step in the nuclear fuel cycle, which ultimately concludes with the fabrication of nuclear fuel assemblies provided to nuclear power plants for the purpose of generating low-carbon, reliable, and low-cost baseload electricity.

Presently, the annual global uranium supply is less than annual global demand, and limited inventories have been accessed to make up the supply shortfall. In the upcoming decade, many new uranium mining projects will be required to meet the needs of existing global nuclear power plants, without considering additional demands from new plants (both conventional and emerging small modular reactor designs) and life extension of existing plants (World Nuclear Association 2022b).

The purpose of the Project is to construct and operate an ISR uranium mine and processing plant to provide uranium supply necessary to meet existing and increasing global demand for nuclear power generation. Facilitating global growth in nuclear through environmentally sustainable

uranium exports positions Canada and the Province of Saskatchewan to not only help Canada meet its climate change objectives, but to support numerous nations around the world to do the same. Canada has a unique endowment of uranium resources in northern Saskatchewan, and these resources are needed to help avert a global climate crisis.

The ISR mining method proposed for the Project has the potential to improve overall economics for smaller scale uranium deposits while minimizing disturbance to the land and resources in the area.

ISR mining uses a water-based solution, fortified with mining reagents, to dissolve naturally occurring uranium from within a host rock, while the host rock remains in place (in situ) below surface. This mining method allows for the removal the uranium mineralization without physically removing the host rock for processing on surface. Accordingly, the Project involves no underground or open pit mine workings, no heavy equipment is needed to excavate rocks, and people do not work underground. Taken together, ISR mining is an environmentally sustainable way to mine uranium, as minimal surface disturbance occurs, minimal waste rock is generated, and no long term storage of conventional tailings is required.

Denison recognizes the thriving culture and deep-rooted traditions of northern Saskatchewan communities and their aspirations of achieving economic growth and prosperity. Denison strives to achieve the development of the Project through positive partnerships with Communities of Interest, integrating information from Indigenous and non-Indigenous Interested Parties, and maintaining high standards for environmental protection and worker safety.

3.2 Project Proponent

Denison is a publicly traded uranium development and exploration company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada. The company trades on the Toronto Stock Exchange and NYSE American Exchange, and is headquartered in Toronto, Ontario, with offices in Saskatoon, Saskatchewan, and Elliot Lake, Ontario.

Denison (and its predecessor companies) has over 50 years of uranium mining experience in Ontario, Saskatchewan, and the United States. Today, the company is part owner (22.5%) of the McClean Lake Joint Venture, which includes the McClean Lake Operation in northern Saskatchewan. In addition, Denison provides expert mine decommissioning and care and maintenance services through its Closed Mines group, which is responsible for Denison's closed uranium mining operations in the Elliot Lake region of northern Ontario.

Denison currently holds licences with the Canadian Nuclear Safety Commission (CNSC) for its decommissioned uranium mine sites in the Elliot Lake region, and for the areas within the Wheeler River Property as part of feasibility field testing (Federal Nuclear Substance and Radiation Device Licence). Additionally, Denison holds a permit to Operate a Pollutant Control Facility with the Province of Saskatchewan in connection with the feasibility field testing at Wheeler River.

Denison's performance under its licences and permits exemplifies the company's commitment to the operation of its facilities in a manner that prioritizes safety, environmental protection, and sustainable development.

3.3 Regulatory Framework for the Environmental Impact Statement

3.3.1 Federal and Provincial Cooperation and Legislation

The Federal and Provincial Environmental Assessment (EA) processes for the Project will be conducted in parallel. The Environmental Assessment and Stewardship Branch of the Saskatchewan Ministry of Environment (SK MOE) and the CNSC will cooperate in conducting a coordinated provincial-federal EA that will follow the spirit of the Canada-Saskatchewan Agreement on Environmental Assessment Cooperation (2005; Government of Canada 2016) to the extent possible. The agreement allows for cooperation in the assessment of projects that require regulation by both levels of government. The cooperation agreement creates opportunity for a single EIS that meets the requirements of both levels of government, such that each level of government can make an independent decision on the approval of the Environmental Impact Statement.

Denison has prepared the draft EIS to meet the requirements outlined in *The Environmental Assessment Act* (Government of Saskatchewan 2018) and has submitted the draft EIS to the SK MOE's Environmental Assessment and Stewardship Branch. The Project will require issuance of a ministerial approval under Section 15 of the *Environmental Assessment Act* as well as a permit to construction and operate a pollutant control facility before construction can begin. Denison will apply for the Provincial construction and operating permit at a later date.

The proposed Project will include the Construction, Operation, and Decommissioning of a uranium mine, processing plant, and supporting facilities on a site that is not within the boundaries of an existing licensed uranium mine or mill. As such, the Project is a designated project as set out in Section 31 of the Regulations Designating Physical Activities (Government of Canada 2014) and is, therefore, subject to an EA. The CNSC is the federal authority responsible for the EA and the EIS for the Project has been prepared to comply with the federal requirements of the *Canadian Environmental Assessment Act, 2012* (Government of Canada 2019).

3.3.2 Additional Information Related to the Regulatory Framework and Licensing/Permitting

In addition to regulatory requirements from federal and provincial Acts and regulations, Denison has applied several other guidelines, policies, standards, and codes to the Project while completing the EIS. These include, but are not limited to:

- technical guidance from the Impact Assessment Agency of Canada (formerly the Canadian Environmental Assessment Agency; e.g., CEAA 2015a, b, c);
- various CNSC regulatory documents (e.g., REGDOC-2.9.1 [CNSC 2020]; REGDOC-2.11-2 [CNSC 2021c]; REGDOC-3.1.2 [CNSC 2018]; REGDOC-3.2.2 [CNSC 2019]);
- various standards from the Canadian Standards Association (e.g., N288.4-10 [CSA 2010]; N288.5-11 [CSA 2011]; N288.6-12 [CSA 2012a]; N286-12 [CSA 2012b]; N288.7-15 [CSA 2015]; N294-19 [CSA 2019]; and
- guidance from the Government of Saskatchewan (e.g., Northern Mine Decommissioning and Reclamation Guidelines [Government of Saskatchewan 2008]; Saskatchewan Environmental Code and attendant standards [Government of Saskatchewan 2022]).

3.4 Project Description

3.4.1 Project Area

The Project is anticipated to have a total footprint of 75 ha. By applying a buffer around these components, the maximum footprint of the Project was estimated to be 170 ha (Figure 2). This spatial area with the buffer is referred to as the Project Area in the biophysical and human environment assessments of the EIS.

3.4.2 Project Components

The proposed site layout for the Project is provided in Figure 3. Various components associated with the Project, which are described in subsequent subsections, include:

- mining;
- processing;
- water management;
- waste management;
- access and transportation;
- power and heating; and
- support facilities.

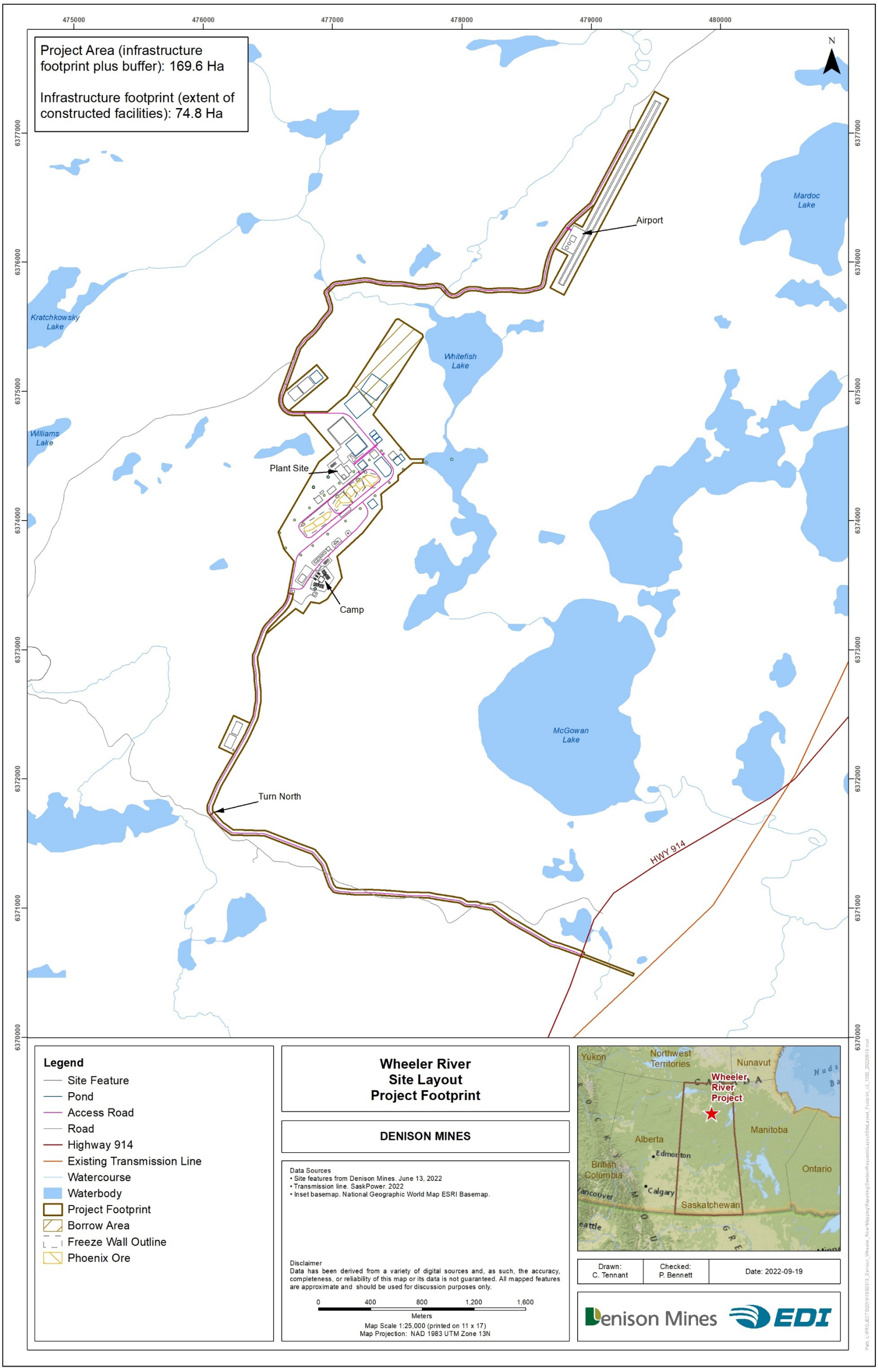


Figure 2: Project Area

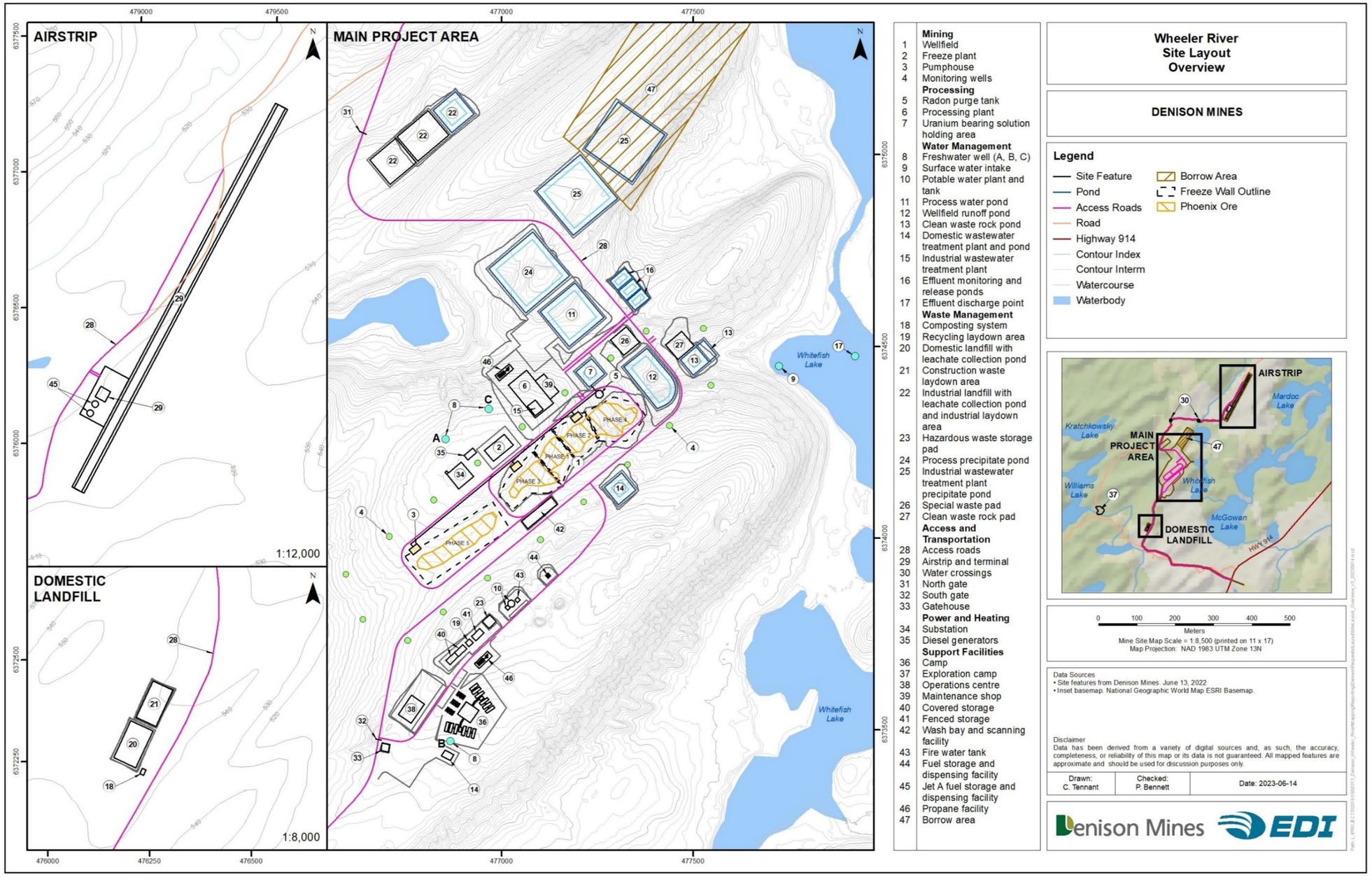


Figure 3: Wheeler River Project Proposed Site Layout

3.4.2.1 Mining

The uranium deposit is geologically situated at or above the unconformity between the Athabasca Basin sandstone and older basement rocks, approximately 400 m below the surface. The deposit has an average thickness of 5 m and extends approximately 750 m in length. Mining will be completed using an ISR method. A water-based low pH or acidic mining solution is injected from surface pumphouses via a series of injection wells, entering the uranium deposit mining area (approximately 400 metres below surface) via slotted well screens installed at the base of the injection wells. As the mining solution travels from an injection well towards a recovery well, uranium contained in the host rock is dissolved and transported to surface within the mining solution.

The mining solution will be prepared on site by adding reagents, likely sulphuric acid, hydrogen peroxide, and ferric sulphate, to water. Water will be sourced from either a shallow groundwater well or Whitefish Lake. The concentration of reagents required to create the mining solution will be based on previous field and laboratory test work.

The mining solution will be pumped underground to the uranium deposit via an injection well and recovered as uranium bearing solution (UBS; i.e., mining solution now containing dissolved uranium) through a series of recovery wells. Once UBS is recovered to surface, it will be pumped into the processing plant where the uranium will be removed. Typical extraction flow rates of the UBS are estimated to range up to 10 L/s and the production capacity is not expected to exceed 12 million pounds of U_3O_8 per year during Operation. Mud rotary and diamond drilling, both well-established drilling techniques, are expected to be used to create the holes for the injection and recovery wells that make up the wellfield and the holes for various monitoring wells (Figure 4). Figure 5 provides an overview of Denison's current conceptual well installation sequence based on current level of engineering. Specific details may change as the Project advances through engineering design stages. The wellfield will comprise a series of injection and recovery wells in the general arrangement of one recovery well in the centre surrounded by four injection wells (Figure 5). The final wellfield is expected to include approximately 300 injection and recovery wells over an area measuring 90 m wide x 750 m long.

The mining area has been defined for this Project as the area inside the freeze wall (described below) and up to 50 m above the uranium deposit. Groundwater flow at the depth of the deposit (~400m below surface) moves at a rate of less than 1 meter/year. Containment of the mining solution and uranium bearing solution within the mining area will be achieved through a defence-in-depth approach with three levels of containment:

1. Design and operation of the injection and recovery wells

The wells are designed with both an outside and inside casing which will minimize the potential accidental release of mining solution or UBS into the sandstone above the mining area. The wells will be constructed of materials resistant to the mining solution that meet well design

specifications. Wells will be pressure grouted from the ore zone to surface and tested for mechanical integrity to confirm they are functioning properly. Operation of the wellfield will allow for monitoring of pressure changes and any pressure losses can be quickly identified by operators.

2. Inward hydraulic gradient from wellfield operation

A hydraulic gradient will be present in the mining area as the mining solution is pumped from an injection well (areas of high pressure) towards a recovery well (areas of low pressure). This consistent gradient in pressure causes the solutions to preferentially flow towards the low-pressure areas in a controlled manner. Hydrogeologic studies and models have been completed and show that mining solution within the mining area can be controlled by maintaining an inward hydraulic gradient.

3. Creation of a freeze wall

Denison is proposing a freeze wall for tertiary containment of the mining solution. The engineered freeze wall will extend from the surface of land down to the basement rock below the depth of the uranium deposit. The very low permeability basement rock underlying the uranium deposit serve as a natural aquitard; however, the sandstone hosting the uranium deposit is permeable and groundwater can flow horizontally through the deposit. Ground freezing technology is well established throughout the world. Its use in a mining environment was pioneered in Saskatchewan's potash mining industry for shaft sinking activities, and later adapted for use in Saskatchewan's uranium industry. Ground freezing to control and eliminate groundwater from entering the mining areas is a fundamental component of two existing Athabasca Basin underground uranium mines: Cameco Corporation's McArthur Operation and Cigar Lake Operation. The freeze wall for the Project will be established ahead of the commencement of mining activities by drilling vertical holes (using common diamond drilling methods) from surface to the basement rock. These holes will be cased and outfitted to allow for the recirculation of a freeze brine, which will gradually reduce the temperature of the ground near the drill hole and ultimately freeze the water within the rock to create a continuous in-ground freeze wall around the perimeter of the mining area. A total of over 300 freeze holes are planned for the Project. Once completed, the freeze wall will create a physical boundary around the mining area that will completely isolate it from the surrounding regional groundwater.

Groundwater monitoring wells will be configured to demonstrate effective containment of solution within the mining area and provide early warning of any vertical migration of the mining solution or UBS within the perimeter of the freeze wall. Additional monitoring wells will be positioned to monitor groundwater pressures and quality outside of the mining area, including outside of the perimeter of the freeze wall. Monitoring groundwater conditions along the freeze wall perimeter also serves to monitor any loss of freeze capacity of the freeze wall. Groundwater samples taken outside of the mining area during Operations are expected to be comparable to regional groundwater quality.

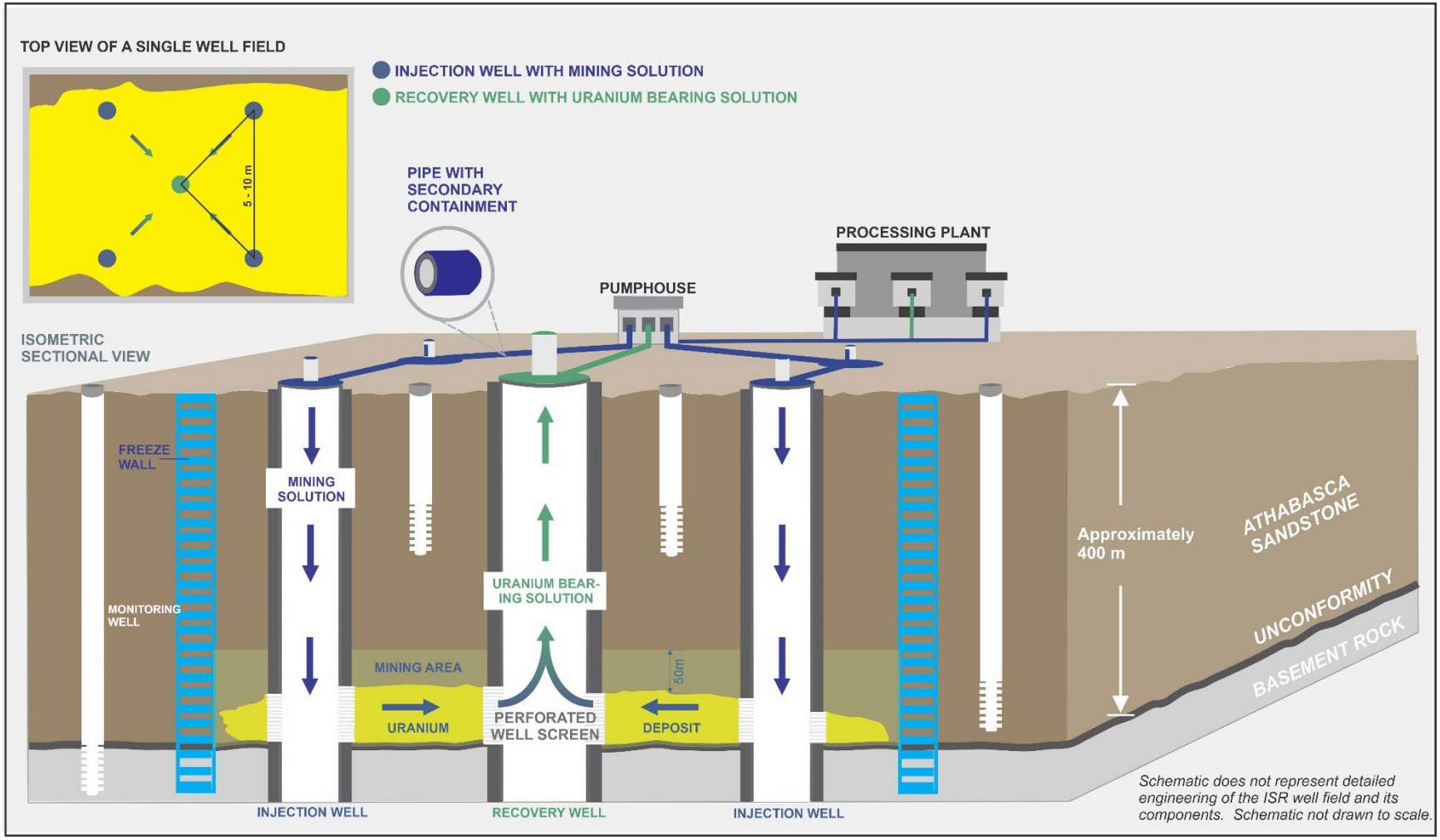


Figure 4: Overview of the In Situ Recovery Process

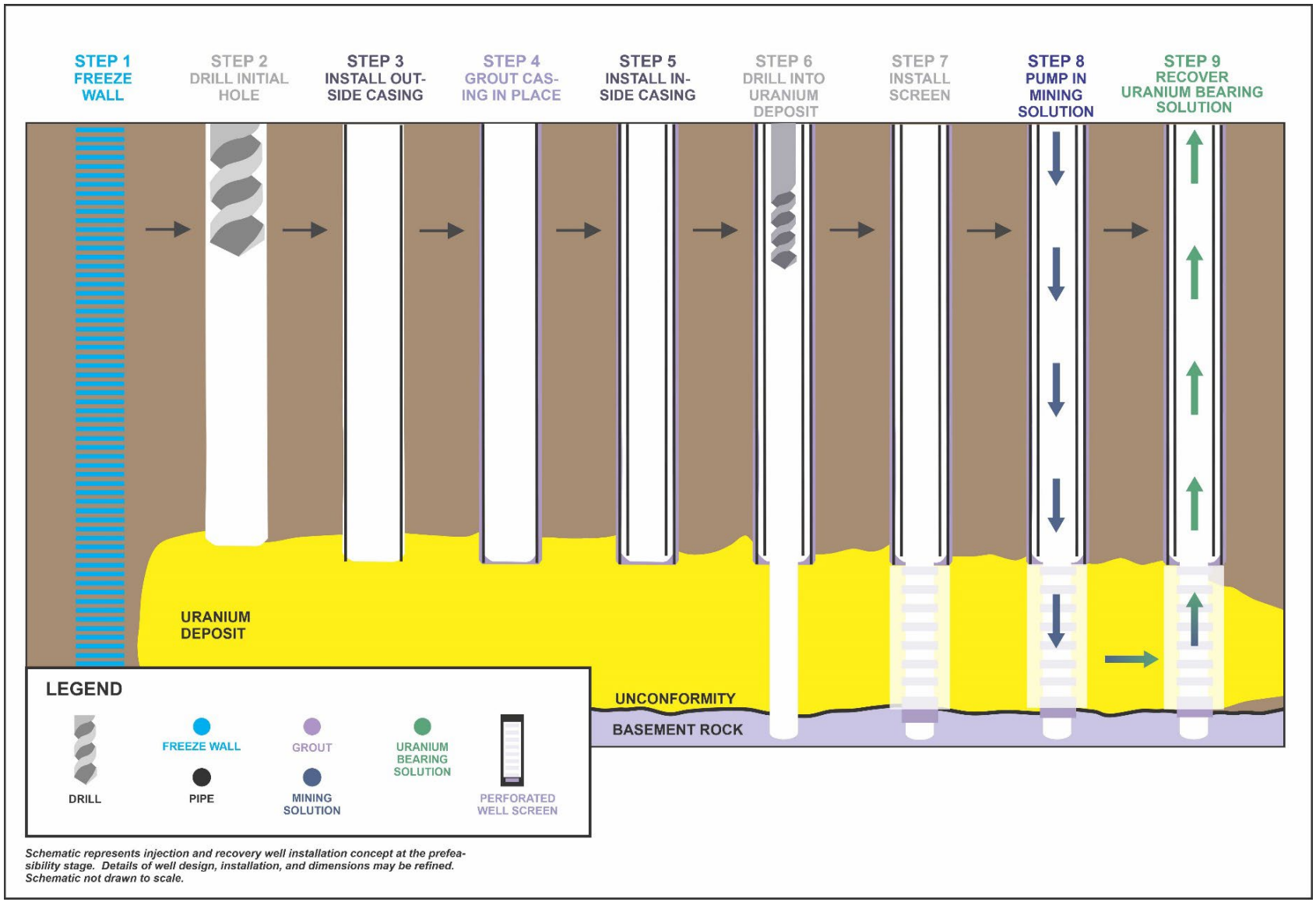


Figure 5: Proposed Injection and Recovery Well Installation Sequence

3.4.2.2 Processing

Processing of the UBS to Triuranium Octoxide or U_3O_8 (often referred to as the final uranium product or yellowcake) will take place in the processing plant. Denison's processing plans are based on numerous metallurgical tests completed as part of preliminary engineering activities.

When the UBS comes to surface, radon gas will naturally migrate out of solution and into the atmosphere. To keep radiation exposure of process plant worker as low as reasonably achievable (ALARA,) a radon purge tank will be used to remove an initial volume of radon before the solution enters the processing plant. A holding area for the UBS will be designed to safely store the UBS on surface prior to processing to allow for a controlled flow of UBS into the plant.

The processing plant includes a two stage precipitation circuit:

The first process precipitate circuit is designed to remove non-uranium constituents, including iron and radium-226 from the UBS. Process precipitates will be radioactive and contain between 2 to 3% uranium which is considered economical as feed for other mills in Saskatchewan. The process precipitates will be safely and temporarily stored on site for eventual off-site reprocessing and final disposal at an approved facility.

Then, through a series of tanks and filters, and with the addition of reagents, the uranium contained in the UBS is precipitated, dried, and packaged via the uranium circuit.

The final product will be transported off site to customers. Water generated in the processing plant will be treated in the industrial wastewater treatment plant to meet regulatory requirements, and either be recycled for use in the wellfield or process plant or released to Whitefish Lake.

An overview of the processing plant is provided in Figure 6.

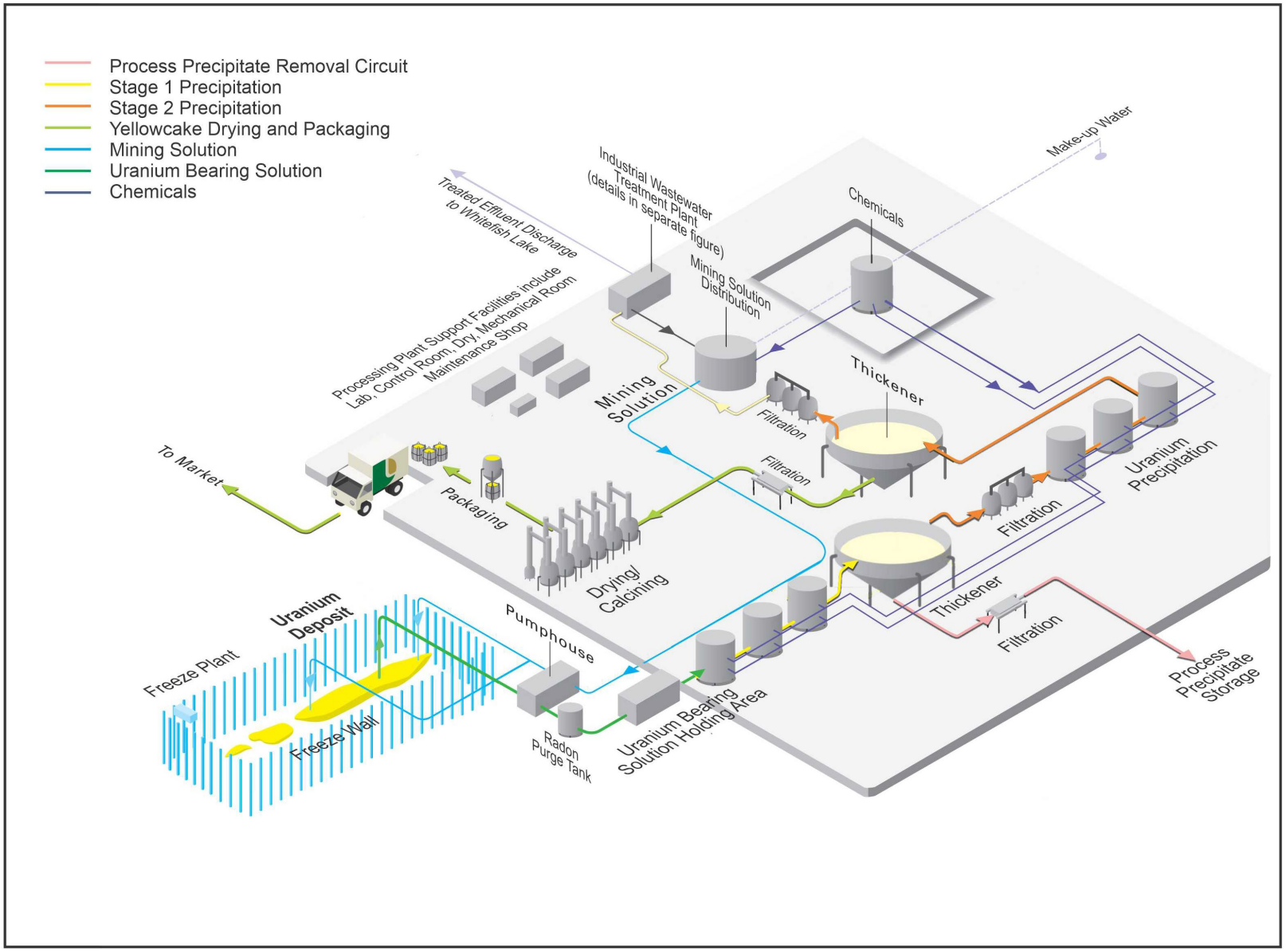


Figure 6: Processing Plant Overview

3.4.2.3 Water Management

Water management for the Project involves distribution of freshwater, collection of runoff water, recycling and treatment of process water, and collection and treatment of industrial and domestic wastewater. As part of Denison's approach to sustainable mining at the Project, Denison intends to recycle process water to the greatest extent possible, thereby reducing the demand for fresh water supply and reducing the volume of treated effluent released.

A freshwater distribution system will be designed to provide fresh water for the fire water system, the potable water treatment plant (WTP), the processing plant including mining solution preparation, the wash bay, drilling, and batch plant operation. Water will be sourced from either a shallow groundwater well or Whitefish Lake.

A process water pond, double-lined with leak detection, has been designed to capture water from a variety of areas, including the process precipitate storage pad and special waste pad. The pond will be designed to hold up to 30,000 m^3 of water and will be located next to the processing plant. The pond will be able to receive water from all site ponds and monitoring wells. If required, water in this pond can be used directly in the process plant or be directed to the industrial wastewater treatment plant (IWWTP), located in the processing plant building.

Domestic wastewater, including greywater (e.g., water drained from sinks, showers, washing machines) and blackwater (i.e., sewage), will be generated at site will be piped or pumped to the on-site domestic wastewater treatment plant (DWWTP). Treated effluent from the DWWTP pond will be routed to the process water pond.

A three-stage IWWTP will be used to treat potentially contaminated waters produced from the processing plant and other various sources (e.g., wash bay sump water, leachate from the industrial landfill, wellfield runoff pond), routed to the IWWTP through the process water pond.

The first stage of water treatment will produce a radioactive precipitate which will be stored and handled with the precipitates generated in the process precipitate removal circuit, as they will be similar in composition. The second stage of water treatment will generate non-radioactive IWWTP precipitates, which will be permanently disposed of on site in an appropriately designed pond. At decommissioning, the non-radioactive material in the IWWTP precipitates will be covered and decommissioned in place. The third stage of water treatment is neutralization.

It is Denison's intent to incorporate treated water (to the extent possible) back into the mining water balance as make-up water in the processing plant to generate additional mining solution. Any excess treated water from the IWWTP will be pumped to the effluent monitoring and release ponds.

Denison plans to construct and operate three effluent monitoring and release ponds, which will receive treated water from the IWWTP. There will also be an option to recycle water from these

ponds back into the processing plant via the process water pond. Each pond will be operated with the following stages: 1) filling, 2) holding while awaiting quality confirmation, and 3) releasing to Whitefish Lake once water quality is confirmed to meet discharge limits. All effluent released to surface water will meet federal and provincial regulatory discharge criteria.

3.4.2.4 Waste Management

Conventional waste, radiologically contaminated waste, and hazardous waste will be managed at the Project. Denison is committed to conducting stringent waste characterization throughout the life of the Project. This includes physical, radiological, and chemical characterization to maintain accurate waste inventories and determine how wastes will be dispositioned through either re-use, recycling, temporary storage, or permanent disposal (on or off site). This includes clearance of waste or materials that meets unconditional release requirements and can be safely removed from site.

Drilling activities will generate small volumes of two types of waste rock (drill cuttings): clean waste rock from the sandstone and special waste rock for the area close to the uranium deposit. Both waste rock types will be handled appropriately on surface, including contact water management. Clean waste rock will be used where possible in construction and special waste rock will be processed through the processing plant or disposed of off site.

The processing plant and IWWTP will generate two types of precipitates: process precipitates which have uranium and radioactivity, and the IWWTP precipitates which are non-radioactive.

Two waste landfills are included as part of the proposed Project. The design and operation of these facilities is consistent with best management practices both at northern Saskatchewan mine sites and from comparable jurisdictions. The two landfills are the:

- Domestic Waste Landfill
- Industrial Waste Landfill

The domestic landfill will have a composite liner system with leachate collection. The landfill will be fenced, contoured to direct runoff away from the facility, and managed to avoid attracting wildlife and birds.

The industrial landfill will have a double geosynthetic composite liner system. There will be an associated leachate collection pond immediately north of the industrial landfill, which will have a double liner system with leak detection. Radiologically material from operational activities that cannot be cleaned to pass radiological clearance (e.g., used wellfield piping, laboratory waste) will be disposed of in the industrial landfill and classified as low level radioactive material.

Additionally, a small pad designated for temporary storage of hazardous waste such as paints, solvents, hydrocarbons, and used oil, will be required to support the Project. The temporary

storage pad will have a composite liner system. Hazardous wastes will be stored temporarily on this pad before being taken off site by waste management service providers for proper recycling or disposal.

3.4.2.5 Access and Transportation

Mainland access to the site will be from Highway 914. A 7-km section of road will be constructed from the highway to the Project site and a 5 km long road will also be constructed from the Project site to the proposed airstrip. Additional site roads will include a service loop to the camp.

As a proposed fly in-fly out operation, the Project will require an airstrip to bring personnel to and from the site. A 1,600-m long airstrip is proposed to be positioned in a natural and relatively flat valley northeast of the Project site.

Access to the Project Area will be controlled by both a north and south security gate. The main, south gate will be located close to the operations centre and staffed as required. The north gate will be a simple locked gate.

3.4.2.6 Power

Electrical service to the Project will be provided via an approximate 5-km extension tap from the existing 138 kV overhead transmission line that runs along Highway 914. The transmission line service owned and operated by SaskPower will terminate at an onsite electrical substation. Optimization of the precise line route will be completed as the Project advances.

Power transmission to the site (e.g., assessment, obtaining necessary permits, and construction) will be led by SaskPower is considered ancillary to this Project. Diesel generators will be installed to service the site and maintain essential functions during a power outage.

3.4.2.7 Support Facilities

The following support facilities will be constructed on the Project site (see Figure 3):

- camp;
- operations centre;
- covered and fenced storage;
- wash bay and radiological clearance scanning area;
- fire water system;
- facilities to support hazardous substances management:
  - fuel storage and dispensing facility;
  - propane facility;
- borrow area.

3.4.3 Project Schedule and Activities

The proposed Project schedule and activities according to phase are summarized in Table 1.

Table 1: Project Phase, Year, and Associated Activities

Phase and Year	Description of Activities	
Construction Year 1 to 3	• Development of access roads and air strip • Site preparation and earthworks; clearing, leveling and grading of the project area • Power generation – generators • Installation of main substation and distribution of power around site • Wellfield and freeze hole drilling; ground freezing • Batch plant operation (concrete); crusher at borrow area • Development of surface infrastructure (camp, operations centre, plants, ponds, pads and support facilities) • Waste management (composting, domestic and industrial landfill operation, recycling)	• Water management (including treatment and site run-off) • Groundwater supply • Surface water withdrawal • Fuel management (e.g., propane for comfort heating; vehicle and aircraft fuel) • On-site and off-site operation of vehicles and transport of materials • Air transportation for workers • Regulatory site inspections • Engagement - site visit from Interested Parties • Employment and expenditures
Operation Year 3 to 18	• Operation of the ISR wellfield • Wellfield and freeze wall drilling • Operation and expansion of freeze wall • Batch plant operation (grout and cement); crusher at borrow area • Expansion of pond and pads • Operation of the processing plant and production of uranium concentrate • Water withdrawal from groundwater or surface water body • Management of surface water (including seepage and site run-off) • Water treatment, both domestic and industrial • Water release to surface water body • Waste management (composting, domestic and industrial landfill operation, recycling) • Hazardous waste management (temporary storage, handling, and off-site transportation)	• Storage and disposal of drill waste rock, process precipitates and industrial wastewater treatment plant precipitates • On-site and off-site operation of vehicles and transport of materials • Power supply – primarily power from the grid, also generators and back-up generators • Package and transport of nuclear substances • Fuel management (e.g., propane for comfort heating; vehicle and aircraft fuel) • Air transportation for workers • Progressive decommissioning and reclamation • Regulatory site inspections • Engagement - site visit from Interested Parties • Employment and expenditures
Decommissioning Year 18 to 23	• Site water management, treatment, and release • Mining horizon remediation and thawing of freeze wall • Process water treatment and release	• Power generation – generators • Waste management (composting and landfill operation)

Phase and Year	Description of Activities	
	• Closure of ISR and freeze wells and related infrastructure • Decontamination of surface facilities and injection, recovery, and monitoring wells • Asset removal (including site power transmission lines and electrical infrastructure) • Demolition and disposal of non-salvageable surface infrastructure and materials • Remediation of surface areas (wellfield, pads, ponds, domestic wastewater treatment location, and process plant area)	• Decommissioning of landfills; hazardous materials management (temporary storage and off-site disposal) • On-site and off-site operation of vehicles and transport of materials • Reclamation of disturbed areas • Regulatory site inspections • Engagement - site visit from Interested Parties • Employment and expenditures
Post-Decommissioning Year 23 to 38	• Environmental monitoring • Regulatory site inspections	• Engagement - site visit from Interested Parties • Employment and expenditures

3.4.4 Management Systems

A detailed management system, based on the CNSC's safety and control areas and focused on anticipated compliance verification criteria, will be developed to support licensing activities. For the EIS, an Environmental Management System (EMS) framework is provided to support review of the assessment and provide confidence in the significance determinations and overall conclusions.

Denison would develop an EMS for the Project consistent with the principals set out by CAN/CSA ISO 14001, *Environmental Management Systems – Requirements with Guidance for Use,* with consideration to applicable provincial and federal requirements and consideration of other guidance as may be deemed appropriate.

In general terms, the EMS is a framework that provides the means to proactively manage environmental risks and opportunities. The EMS provides processes, procedures, policies, assigned roles and responsibilities, and considers continual monitoring and improvement of organizational structures and practices. Within the specific context of the Project, the EMS provides an overall perspective on how potentially adverse effects would be minimized and managed over the Project life. In addition, the EMS establishes expectations (and associated mechanisms) for contractors and sub-contractors to comply with environmental commitments and policies including auditing and enforcement programs.

Denison is responsible for, and committed to providing, sufficient resources to: develop and implement the EMS to meet statutory/regulatory requirements; meet its corporate expectations with respect to environment performance; meet the expectations of its Interested Parties,

including Indigenous communities, with respect to environment performance; and fulfill any commitments made through the EA process and beyond through all Project phases.

Various Project design features have been proposed that serve to eliminate, reduce, or control potential Project effects on the biophysical and human environments through all Project phases.

3.4.5 Project Alternatives

Denison first evaluated potential production from the Project in 2010. Since that time, the Project has undergone significant design and review stages and has naturally evolved into the Project described herein. During the planning process, it is common to consider various means by which to fulfill a specific aspect of the Project.

Alternative means are the various ways Denison considered to implement Project components and activities. A systematic assessment of these alternatives is used to select preferred alternatives that are carried forward as Project design elements. These preferred alternatives ultimately become the basis upon which potential Project-related effects are evaluated in the EIS. The alternative means assessment was carried out as follows:

1. Identification of Alternative Means: Project components for which alternate means were considered are identified;
2. Consideration of Technical and Economic Feasibility: the technical and economic feasibility of these alternate means is considered—only alternate means that are deemed technically and economically feasible are carried forward;
3. Potential Residual Effects Associated the Alternative Means: the potential residual effects of each alternative, in consideration of mitigation, are described; and,
4. Evaluation of Alternative Means: a comparative evaluation of alternative means takes place that considers the potential residual effects for each alternative relative to various assessment criteria and indicators.

Based on these steps, a preferred alternative means for each respective Project component or activity evaluated was selected. Input received from Indigenous people and other Interested Parties was integral to the alternatives means assessment.

The alternative means assessment is conducted at a screening level, as is appropriate given the stage at which Project planning was when the alternatives were considered. The assessment considered both quantitative (where possible) and qualitative information available at the time. In addition, the comparative evaluation identified alternatives that were more preferred versus those which were less preferred.

As an example, five mining methods were evaluated through an increasingly rigorous process and considered factors such as: safety, environment, production rates, capital costs, operating costs,

schedule, operational flexibility, and risk. The top four mining methods considered for the Phoenix deposit were: jet boring, surface boring, micro tunnel boring, and ISR. Independent preliminary economic assessment or class 5 level assessments were completed on each of these four options in 2017. Ultimately, the alternative assessment results showed that ISR had advantages over boring and the other options including fewer environmental effects, lower costs, fewer technical risks, fewer safety risks for worker and positive feedback from Communities of Interest. Denison selected the ISR mining method for the Phoenix deposit in the 2018 prefeasibility study (PFS; Denison2018). Subsequent test work has validated the selection of the ISR mining method and accordingly, the ISR mining method was selected as the basis for the EA for the Project.

3.4.6 Greenhouse Gas Emissions

The Government of Canada requires that greenhouse gas (GHG) emissions be assessed in support of any project seeking federal approval. The GHGs that are required for emissions reporting include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which are reported on an annual basis.

Direct or scope 1 emissions associated with combustion sources (e.g., using diesel or gas in mobile equipment, burning propane for building and process heat) are the main source scope 1 GHG emissions anticipated at the Project, with a minor contribution from the loss of a vegetation associated with the development of the Project Area during the first year of Construction. Indirect or scope 2 emissions are associated with the generation of electricity required to power the Project. Total emissions (direct and indirect) across all Project phases were estimated to be below 0.031 Mt CO2e per year. For comparison, the average annual province-wide total GHG emissions (2014 to 2019) were 75.2 Mt CO_2e. The majority of GHG emissions in Saskatchewan as a percentage of province-wide totals are from the oil and gas sector (30%), agriculture (24%), Electricity (20%), and transportation (15%).

Denison will look to optimize the use of energy, including the potential to reduce combustion sources from fossil fuels through further electrification or alternative energy sources during upcoming engineering and design phases.

3.4.7 Project Benefits

The Project will provide an input source of uranium to nuclear power plants, contributing to clean energy production globally. The amount of uranium produced during the life of mine from the Project could supply power to 1 000 000 Canadian homes for 100 years. (WNA, 2022, Stats Can, 2019).

Direct financial benefits will be realized by the Province of Saskatchewan through royalties during the Operational phase of the Project. Additionally, federal and provincial governments will benefit from corporate and personal income tax collected as a result of mining the operation.

Denison will concentrate initial and sustained efforts towards employment and training initiatives for the Project targeted at the Communities of Interest. Best efforts will be made to make sure employment is maximized within the Communities of Interest and beyond that, with Indigenous people and Residents of Saskatchewan's North. Denison will work with the leadership of the Communities of Interest to assist in determining appropriate hiring practices during all phases of the Project.

Approximately 300 workers are expected to be required during Construction. During Operation, about 180 people will be employed annually to operate the wellfield and processing plant, and provide various supporting activities such as security, camp operations, operation of the water treatment and potable water plants, environmental monitoring, and maintenance of roads, equipment, and buildings.

Positions expected throughout Construction and Operation include supervisory and management positions, trade positions, professional and technical positions, as well as labour positions. Training applicable for various positions is offered through Saskatchewan Indian Institute of Technologies, Saskatchewan Polytechnic, and other institutions in northern Saskatchewan. Specific training for the Project will be developed through a systematic approach including a needs analysis.

Denison has established a procurement approach that requires the procurement of all goods and services for the Project to first consider businesses based within the Communities of Interest prior to looking elsewhere in northern Saskatchewan, southern Saskatchewan, and/or outside of Saskatchewan. Throughout all phases of the Project, Denison will prioritize procurement efforts within the immediate vicinity and region.

Programs and actions focused on producing socio-economic benefits for Communities of Interest have been initiated for the Project. Denison's corporate Indigenous Peoples Policy (IPP) reflects the company's belief that reconciliation is advanced through collaboration with Indigenous peoples and communities to build long-lasting, respectful, trusting, and mutually beneficial relationships, while aspiring to avoid adverse effects of Denison's activities and operations (Denison 2021).

3.4.8 Indigenous Knowledge

Denison recognizes the value Indigenous Knowledge (IK) and Local Knowledge (LK) adds to project planning, the completion of the EIS, and throughout the lifespan of the Project. Denison has recorded and stored information regarding IK, LK, and engagement activities in an Engagement Database referenced throughout the EIS. Indigenous perspectives can be complementary to the Cumulative Effects Assessment (CEA) for the Project. ERFN and KML have shared their Indigenous Knowledge on past, present, and predicted cumulative effects, through the following sources:

- *Wheeler River Project – Summary of Health and Socio-Economic Study Results* (ERFN and SVS 2022a);

- *Wheeler River Project - Summary of Traditional Knowledge Study Results* (ERFN and SVS 2022b); and
- *Kineepik Valued Ecosystem Components – KML Pre-statement for Denison EIS* (KML and NVP 2022).

The Métis Nation – Saskatchewan shared their Métis knowledge study which included secondary literature approved for use by the MN-S and primary information collected during interviews with nine Métis citizens from Northern Region 1 (NR1) and Northern Region 3 (NR3), as the following source:

- *The Wheeler River Project: Métis Knowledge Study Report* (MN-S and Two World Consulting 2023).

The Ya'thi Néné Lands and Resources Office also shared a report with Denison that, focused primarily on the Athabasca Denesųłiné First Nations including Hatchet Lake, Black Lake, and Fond du Lac, as the following source:

- *An Exploration of Recorded Athabasca Denesųłiné Traditional Knowledge, Land Use and Occupancy Information in the Vicinity of Denison Mines Wheeler River Project* (Ya'thi Néné Lands and Resources Office 2022).

Denison has brought this Indigenous Knowledge and Traditional Knowledge together with western science throughout the EA process. Additionally, Denison is supporting several processes to aid community-led collection of IK. These processes are at different stages of completion. Denison will continue to consider and integrate results from any forthcoming materials provided by communities as it advances the EIS process.

4 Summary of Engagement

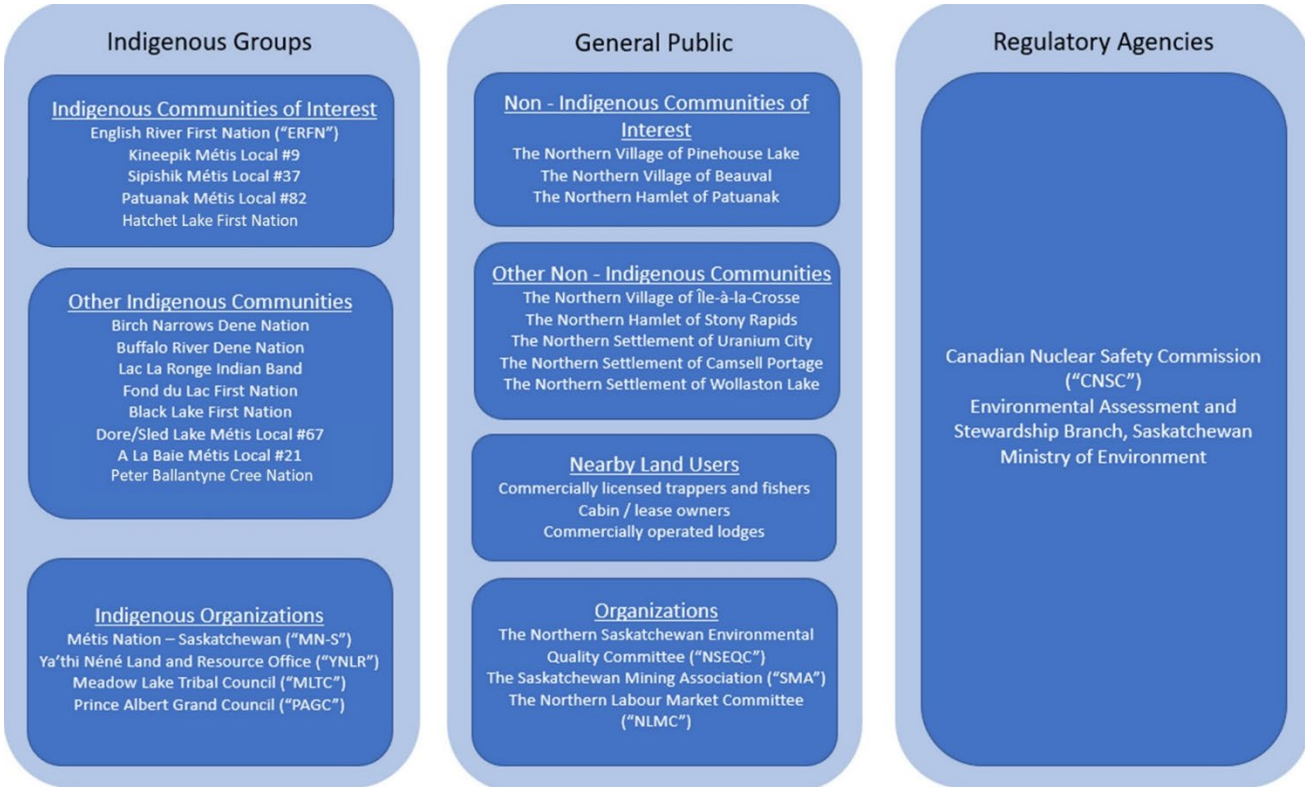
4.1 Introduction

Denison understands the importance of engaging with local and Indigenous communities, residents, businesses, organizations, land users and the various regulatory authorities, which are collectively referred to herein as Interested Parties. Since 2016, Denison has engaged with Interested Parties to develop meaningful relationships and facilitate a collaborative approach to engagement and the advancement of the project. Interested Parties are further categorized into three broad groups, each with several sub-categories:

- Indigenous Groups
  - Indigenous Communities of Interest (COI)
  - Other Indigenous Communities
  - Indigenous Organizations
- General Public

  - Non-Indigenous COI
  - Other Non-Indigenous Communities
  - Nearby Land Users
  - Organizations
- Regulatory Agencies

A list of the Interested Parties for the Project can be found below.



Notes:

1 The Métis Nation – Saskatchewan (MN-S) holds the delegated Duty to Consult for Dore/Sled Lake Métis Local #67 and A La Baie Métis Local # 21, Sipishik Métis Local #37 (SML), and Patuanak Métis Local #82 (PML).

2 Engagement activities with the Athabasca Basin First Nations and Communities (Fond du Lac, Black Lake, Hatchet Lake, Stony Rapids, Camsell Portage, Uranium City and Wollaston Lake) occur through YNLR.

Denison has developed and implemented an engagement plan to guide and structure engagement activities related to the Project.

The implementation of the engagement plan for the Project has faced various challenges, most notably the COVID-19 pandemic. Adopting an adaptive approach has been key to the successful implementation of an effective and meaningful engagement process for Interested Parties.

Additionally, in 2021, Denison announced the adoption of the IPP (Denison 2021). The IPP reflects Denison's recognition of the important role of Canadian business in the process of reconciliation with Indigenous peoples in Canada and outlines Denison's commitment to take action towards advancing reconciliation. The IPP was developed based on Denison's experiences with, as well as feedback and guidance received from, Indigenous communities with whom Denison is actively engaged. This approach was designed to make sure the IPP appropriately captures a mutual vision for reconciliation. The IPP identifies five key areas of action that support the ongoing development of a continuously evolving Reconciliation Action Plan (RAP): Engagement; Empowerment; Environment; Employment; and Education. Through the RAP, Denison is striving to interweave the principles of reconciliation throughout all areas of the company's operations.

4.2 Engagement Approach and Methods

Interested Parties are categorized into three broad groups, each with several sub-categories. These include Indigenous Groups, the General Public, and Regulatory Agencies. As part of our adaptive approach, engagement activities for each of these groups of Interested Parties have been tailored to comply with both federal and provincial regulatory legislation and, importantly, meet the expectations of each Interested Party.

Engagement is defined as the sharing and gathering of project-related information from Interested Parties, and the collaboration with Interested Parties, in good faith, with the goal of developing mutually acceptable resolutions to issues identified. Developing authentic relationships with Interested Parties to facilitate productive engagement is expected to play an integral role in the long-term success of the Project.

Engagement activities for the Project can and will evolve over time – as information is gathered that is pertinent to Denison’s understanding of the Interested Parties and their relationship to, and interest in, the Project.

Engagement methods have included in-person, remote (audio only, virtual, and digital), and print and have generally occurred in alignment with the following phases:

- Pre-Project Description (April 2016 to May 2019);
- Post-Project Description (July 2019 to October 2022);
- Environmental assessment outcomes and relationship to licensing/approvals (October 2022 to January 2024); and
- Future Activities (following Final EIS Submission).

Planned methods of engagement were reviewed in March 2020 in response to the onset of the COVID-19 pandemic in Canada. Activities that included direct in-person interaction, such as site visits, were not possible in 2020 and 2021 and necessitated a shift to a remote style of engagement.

For each engagement activity, any perspectives that were shared by an Interested Party were recorded and consolidated into a single Engagement Database. Since 2016, this has culminated in over 2,000 unique entries, comprised of stand-alone comments, questions, queries, issues, concerns or other. The perspectives associated with the unique entries have been, where appropriate, interwoven into and throughout elements of the EA for the Project, highlighting how engagement outcomes have influenced various considerations in the EIS. Where appropriate, appendices of EIS sections contain summary tables that provide details on each unique entry that has been used in or otherwise informed an element of that section of the EIS, including information on issues raised and Denison's responses.

4.3 Engagement with Indigenous Groups

Denison is committed to conducting meaningful engagement with Indigenous communities and organizations potentially affected by the Project, and to maintain collaborative relationships with these communities and organizations throughout all phases of the Project.

Indigenous peoples have a unique relationship with the environment, and importantly, Indigenous and Treaty Rights, which must be fully respected during the process of Project development, Construction, Operation, and Decommissioning. To this end, Denison's objectives with respect to Indigenous engagement associated with the Project are as follows:

- build and maintain relationships built on trust and transparency;
- create a respectful dialogue that promotes communication between Denison and Indigenous communities and organizations, in a timely and accurate fashion; and
- understand how the proposed development of the Project may affect the ability of Indigenous peoples to exercise collective Indigenous/Treaty Rights.

Consistent with the history associated with other uranium mining projects located within the Northern Administration District (NAD; Figure 7), Denison recognizes that many Indigenous communities located within the NAD typically have some level of interest in uranium mining activities. Given potentially varied interests of multiple Indigenous communities, criteria was established to guide the development of the engagement program.

Through a process of (i) discussion with potentially interested Indigenous groups, (ii) consideration of applicable criteria, and (iii) interaction with representatives of the SK MOE and the CNSC, Denison identified the following Indigenous Communities of Interest:

- English River First Nation (ERFN);
- Kineepik Métis Local #9 (KML);
- Sipishik Métis Local #37;
- Patuanak Métis Local #82; and

- Hatchet Lake First Nation.

To formalize Denison's early commitment to work together, Memoranda of Understanding were signed with some communities and organizations in 2018. More recently, participation and funding agreements have been reached to provide capacity for interested parties to actively participate in the environmental assessment process.

Denison recognizes other Indigenous communities exist with potential interests in the Project, including Indigenous communities that have been identified by a Regulatory Agency as having a potential interest in the Project. These other Indigenous communities have been identified to include Birch Narrows Dene Nation, Buffalo River Dene Nation, Lac La Ronge Indian Band, Fond du Lac First Nation, Black Lake First Nation, Peter Ballantyne Cree Nation, Dore/Sled Lake Métis Local #67, and A La Baie Métis Local #21.

Denison also recognizes certain Indigenous organizations offer a single point of contact to member communities to facilitate information sharing and collection. In many cases these organizations have been delegated the right to represent an Indigenous community or group of Indigenous communities in connection with the Project. The four Indigenous organizations that have been identified include the Métis Nation – Saskatchewan (MN-S), Ya'thi Néné Lands and Resource Office (YNLR), Meadow Lake Tribal Council (MLTC), and Prince Albert Grand Council (PAGC). The Project is located within the MN-S homeland.

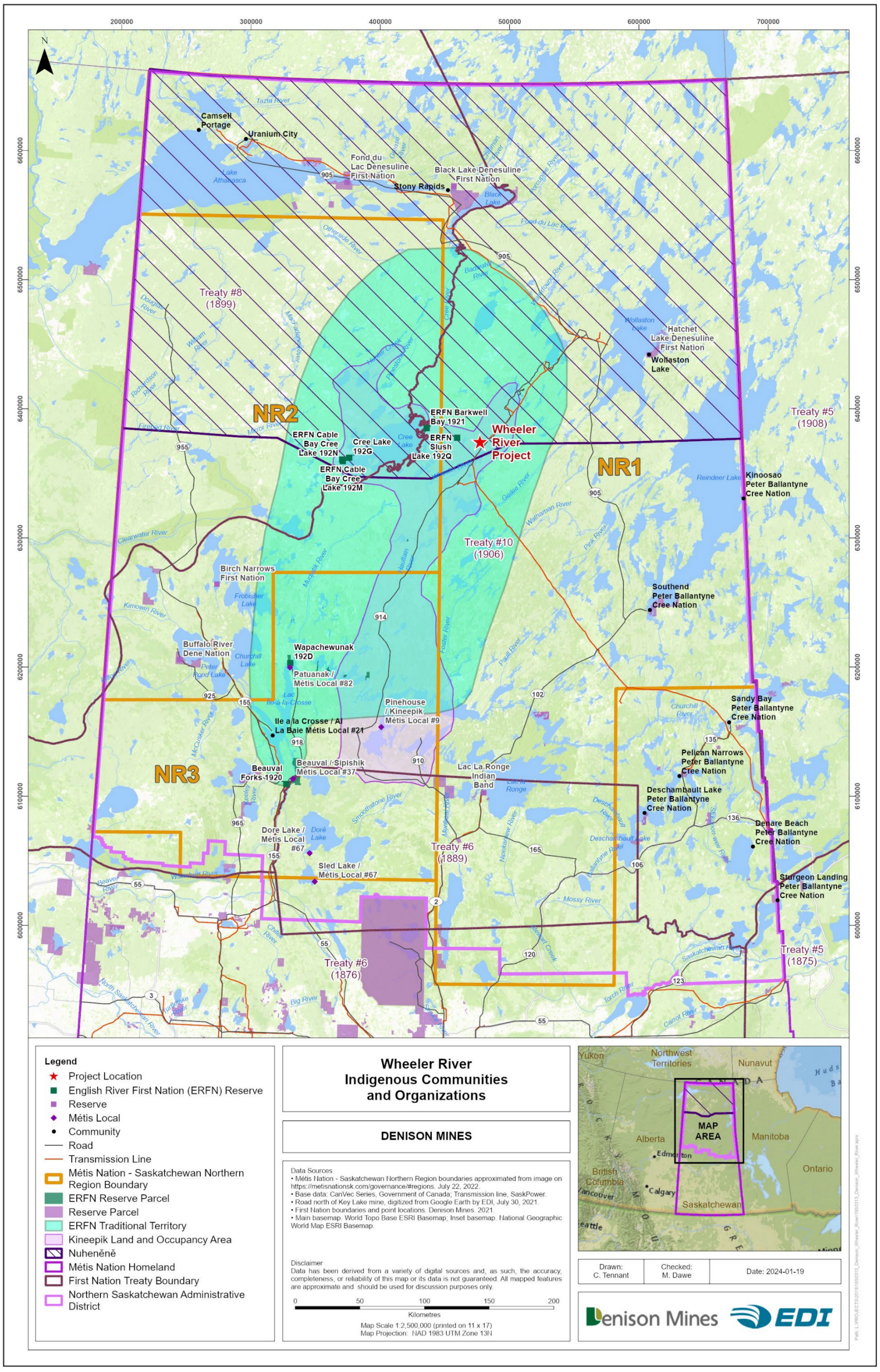


Figure 7: Identified Indigenous Communities and Organizations

A summary of engagement activities with each of the Indigenous Communities of Interest is provided in Table 2 and key results from engagement with Indigenous Groups are summarized in Table 3.

Table 2: Summary of Engagement Activities with Indigenous Community of Interest

Year	Engagement Activity	Total Number				
		English River First Nation (ERFN)	Hatchet Lake First Nation (HLFN)	Kineepik Métis Local #9 (KML)	Sipishik Métis Local #82 (SML)	Patuanak Métis local #82 (PML)
2016	Meeting	2		1	1	
2018	Workshop	1		1	1	
2019	Site Tour	1		1	1	1
	Meeting		1	1	1	1
2020	Due to the development of the Covid-19 pandemic, Denison suspended the EA and related engagement activities in 2020.					
2021	Virtual Meeting	3	1	From 2019, the MN-S has been representing Kineepik Métis Local #9, Sipishik Métis Local #37 and Patuanak Métis Local #82 in respect of engagement with Denison for the Project.		
	Virtual Leadership Meeting		1			
	Nuhtsiye-kwi Benéne Committee Meeting	3				
	Survey	1	1			
2022	Open House	2		1	In late 2021, Kineepik Métis Local #9 revoked their delegated Duty to Consult to the MN-S and Denison re-engaged directly with them	
	Leadership	1		1		
2023	Meeting	1	1	2		
	Site Tour	1		1		
2024	Workshop	1				
	Meeting		1	1		
	Site Tour			1		

Note: Before 2019, Denison undertook engagement activities in the Patuanak area (including with Patuanak Métis Local #82) more broadly through work done in relation to the ERFN Wapachewunak reserve, consistent with the strong interconnections in the area.

Table 3: Key Results from Engagement with Indigenous Groups

Topic	Summary of the Issue, Interest, or Concern	How Comment was Addressed/Considered in the Draft Environmental Impact Statement
Project Description	Questions and clarifications on ISR mining methodology, including freeze wall technology and Project power requirements.	**Section 2** provides information about the ISR mining method, freezing technology and wastewater treatment process.
Economics	Concern and interest in economic opportunities associated with the Project and education and training to facilitate access to employment.	**Section 13** summarizes local, provincial, and federal Project benefits and Denison's approach to employment, training, and business participation opportunities for communities.
Human Health	General concerns are expressed about radiation levels, and treated effluent quality in relation to overall water quality in the area.	**Section 8** provides information on expected effluent release and how this will be mitigated and monitored. **Section 10** provides information on how potential human health effects of the Project are considered, mitigated, and monitored.
Indigenous Knowledge	Concern for the appropriate inclusions of Indigenous knowledge in the assessment process	**Section 3** describes how the inclusion of Indigenous Knowledge was approached across all topics in the assessment process.
Terrestrial - Wildlife	Concerns were shared about the potential effects of Project construction on wildlife, including possible effects on game for hunting. Noted desire to document pocket (location) for caribou calving as well as an ongoing role in the mitigation of any possible effects.	**Section 9** describes existing wildlife environment and anticipated effects associated with Construction, as well as plans for ongoing mitigation and monitoring.
Aquatic	Interest in understanding existing water flows and existing fish species composition, size, and quality.	**Section 8** provides information on the baseline study program that was completed to understand aquatic species present today and documents any differences before, during, and after the Project.
Water	Effects to surface water quality and quantity from effluent release and water taking, including groundwater.	**Section 8** describes how surface water quality and groundwater is considered within the EIS, including in relation to withdrawals.
Land Use	Interest in sharing Indigenous Knowledge and history, and integration of this information in EIS.	**Section 11** documents how and what Indigenous Knowledge was shared and how it was integrated throughout the EA process. **Section 13** provides more information about the traditional economy and how it was integrated in the economic assessment of the Project.
Quality of Life – Community Wellbeing	Concern with racism and other factors in workplace affecting employee retention.	**Section 12** describes the various policies and programs in place to support worker and community well-being, along with worker rotation.
Monitoring	Interest in having transparency of environmental monitoring data for operating mines.	**Section 16** describes anticipated monitoring programs and approach.
Cumulative Effects Project Description	Interest in understanding cumulative effects associated with the construction of the processing facility and the potential to accept material from other deposits or companies.	**Section 2** provides information about the Project development elements. **Section 16** summarizes project cumulative and residual effects.

4.4 Engagement with the General Public

The General Public includes (i) Non-Indigenous Communities of Interest, which are located near existing transportation infrastructure used by the Project (Figure 8), and (ii) nearby Land Users, such as commercial trappers or fishers, cabin/lease owners, or commercially operated lodges, are in the vicinity of the Project. Several relevant groups or organizations represent various of the general public interests relevant to the Project.

Engagement activities with these Interested Parties have included information sharing, in-person and virtual meetings, workshops, and site visits. In some cases, opportunities to confirm specific elements relative to the Project, such as nearby land use activities, have informed aspects of the EA.

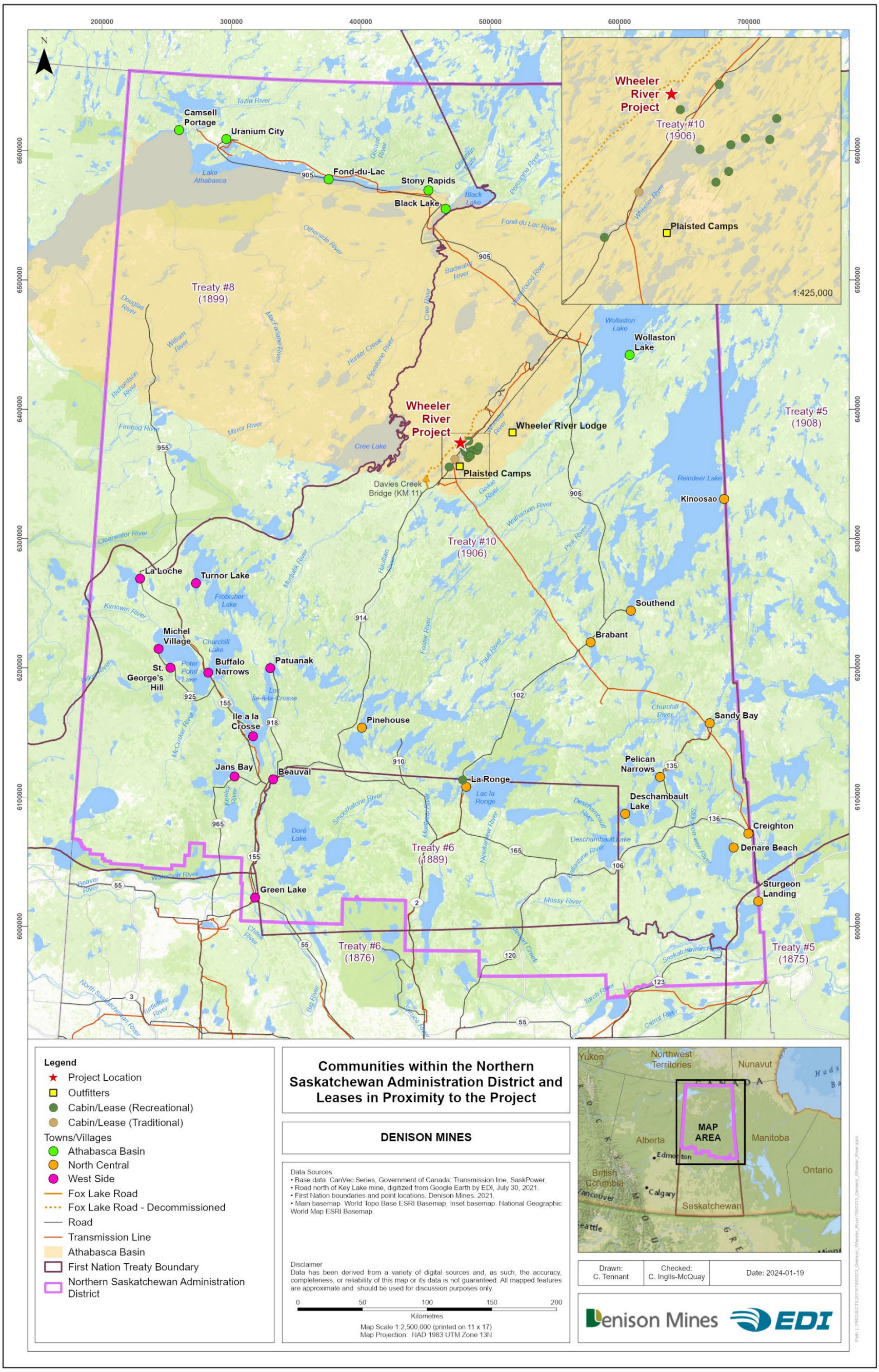


Figure 8: Communities within the Northern Administration District of Saskatchewan

The main forms of engagement with the General Public included correspondence to share information with leadership, community meetings, a workshop on early infrastructure options, a site visit, two online surveys (2021 and 2022), and a meeting and information session on preliminary effects and mitigation. Due to the COVID-19 pandemic, engagement switched to virtual meetings in 2020/2021. In mid-2022, appropriate engagement activities moved back to in-person. Key results from engagement with the general public are summarized in Table 4.

Table 4: Key Results from Engagement with the General Public

Topic	Summary of the Issue, Interest or Concern	How Comment was Addressed/Considered in the Draft Environmental Impact Statement
Project Description	Questions and clarifications on ISR mining methodology, road options, and waste.	**Section 2** provides information about the ISR mining method, wastewater treatment and road options.
Economics	Concern and interest in economic opportunities associated with Project and education and training to facilitate access.	**Section 13** summarizes local, provincial, and federal Project benefits and Denison's approach to employment, training, and business participation opportunities for communities.
Human Health Quality of Life	Questions were asked about hauling of products, what routes would be used and concern over radioactivity.	**Section 12** provides information on the traffic and road infrastructure considerations of the Project. **Section 10** Human Health provides information on the considerations for human health and safety (including radiation exposure.
Aquatic	Interest in information about surface water sampling programs.	**Section 8** describes how surface water quality is considered within the EIS.
Land and Resource Use	Russell Lake was noted of particular importance for recreational/ commercial fishing.	**Section 11** provides information on how the Project will interact with land and resources including how potential effects will be mitigated.
Quality of Life – Community Wellbeing	Concern with racism and other factors in workplace affecting employee retention.	**Section 12** describes the various policies and programs in place to support worker and community well-being, along with worker rotation.
Monitoring	Interest in having transparency of environmental monitoring data for operating mines.	**Section 16** describes anticipated monitoring programs and approach.
Cumulative Effects Project Description	Interest in understanding cumulative effects associated with the construction of the processing facility and the potential to accept material from other deposits or companies.	**Section 2** provides information about the Project development elements. **Section 16** summarizes project cumulative and residual effects.

4.5 Engagement with Regulatory Agencies

The Project will undergo a joint provincial-federal EA process led by SK MOE's Environmental Assessment and Stewardship Branch and the CNSC. As both the Provincial and Federal government entities are involved in the assessment and regulatory process, Denison began engaging with the CNSC and the SK MOE in 2018 to provide staff an overview of the Project.

Denison holds regular (monthly) meetings with the CNSC and the SK MOE to discuss the proposed components of the Project, the EA approach and assessment methodologies. Additionally, Denison ensures the regulatory agencies are provided with the opportunity to attend Denison's engagement activities with other Interested Parties (either virtually or in-person). Attendees from the CNSC and SK MOE have attended most of Denison's key engagement activities with Interested Parties in 2019 (site visit), 2020 / 2021 (virtual meetings), 2022 and 2023 (in-person meetings and site visits), and 2024 (in-person meetings). Denison plans to continue this approach during the Future Activities engagement phase (following Final EIS Submission).

4.6 Future Engagement Activities

Denison believes that the development of positive and effective working relationships with Interested Parties will not conclude with the completion of the environmental assessment and licensing process, but that it is iterative and ongoing. Denison is committed to offering sustained opportunities for engagement with Indigenous communities and organizations, the general public, and regulatory agencies throughout the Project lifespan, and adapting and adjusting those activities on an as-needed basis.

5 Overview of the Environmental Assessment

5.1 Approach and Methodology of the Assessment

Denison considers the EA to be a planning and decision-making tool that assesses the potential effects of the Project in a careful and precautionary manner, so that mitigation can be designed and applied to support the approval of the Project by the appropriate regulators (i.e., SK MOE and the CNSC). As such, the EA is a process for identifying the Project's potential interactions with the biophysical and human environment, predicting adverse effects, identifying mitigation measures, and evaluating residual and cumulative effects remaining after mitigation. The EA also outlines the proposed efforts for monitoring and reporting to verify compliance with the terms and conditions of approval and the follow-up necessary to assess the accuracy and effectiveness of predictions and mitigation measures presented in the EA.

In carrying out the various assessments, it has been assumed that an average of 9 million pounds of U_3O_8 will be produced each year with up to 12 million pounds U_3O_8 produced in any individual year, and that Operation could last up to 15 years. The intent of the assessment case is to allows for a

conservative assessment of the Project and to facilitate operational flexibility from one year to the next.

The EA approach involves "overlaying" the Project onto the existing environment to identify and describe whether, how, and to what degree components of the environment are likely to change due to the Project. Changes remaining after mitigation measures have been considered are called residual effects, and these are the changes that are further evaluated and characterized (Figure 9).

The key elements of the EA for the Project involve:

- defining the scope of the assessment in terms of Valued Components (VCs), selected Key Indicators (KI) for each VC, Measurable Parameters (MPs), and the spatial and temporal boundaries for the assessment;
- identifying the influence of Indigenous Knowledge, local knowledge, and engagement on the assessment (see Section 4);
- describing the existing environment for each VC;
- determining which Project components and/or activities interact with the VCs;
- determining potential Project effects and applicable mitigation measures (e.g., design features) and operational methods that will be used to avoid or limit adverse effects resulting from the Construction, Operation, Decommissioning, and Post-Decommissioning activities of the Project;
- completing a residual effects evaluation (e.g., characterizing anticipated adverse effects remaining after implementing appropriate mitigation);
- determining the significance, when applicable, of the identified adverse residual effects;
- identifying cumulative effects, i.e., the spatial and/or temporal overlapping of residual Project effects with the same residual effects resulting from other past, present, and reasonably foreseeable projects or activities (including characterization of cumulative effects and significance determination);
- describing monitoring and follow-up programs that will be completed; and
- summarizing, in plain language, the main points of the assessment, including potential residual and cumulative effects to the VC/KI from the Project and relevant mitigation, monitoring and follow-up.

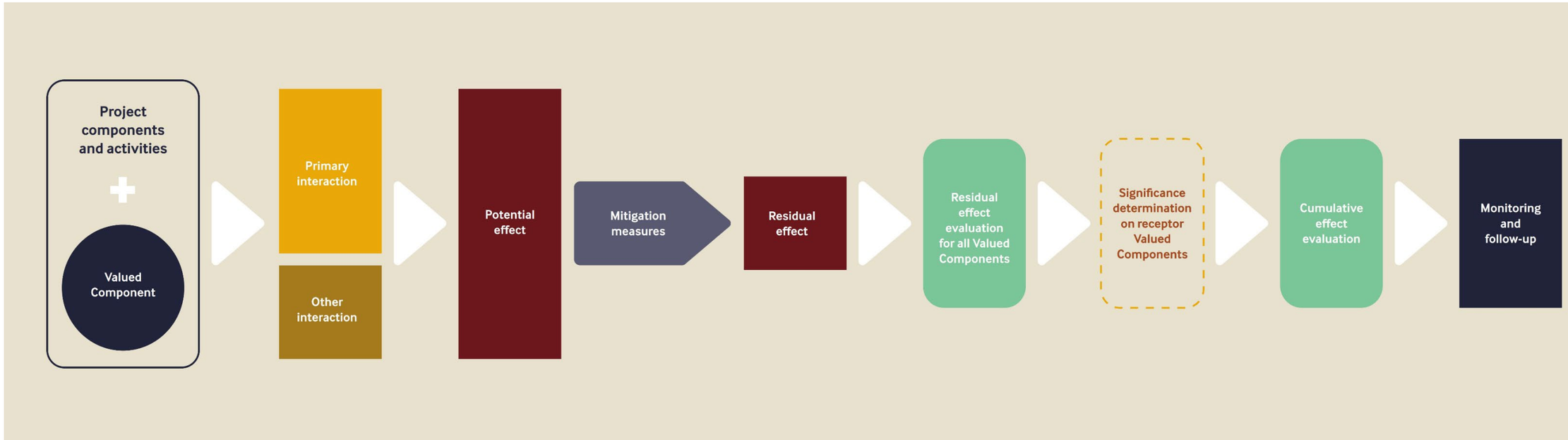


Figure 9: Steps to Completing the Environmental Assessment for the Project

5.1.1 Valued Components, Key Indicators and Measurable Parameters

The VCs are aspects of the biophysical and human environments that will likely be affected (adversely or positively) by the Project. The VCs reflect identified scientific, local and Indigenous Knowledge, and community interests regarding the Project and its potential effects. Initial direction and input into VC selection were obtained through discussions with Indigenous groups, government agencies and the public. Denison reviewed and considered this input to develop a VC list to focus the detailed assessment for the EA.

A KI is an important component or aspect of the VC that is expected to be affected (changed) as a result of the Project. A MP is parameter or metric associated with the KI that can be used to detect and measure Project-related changes.

5.1.2 Spatial Boundaries

Spatial boundaries for the EA were defined for each VC, based on the extent of the anticipated Project-related effects (i.e., direct and indirect) on the VC. When determining the spatial boundaries, the following information was considered, as appropriate and available:

- Indigenous and local knowledge and engagement;
- information on current land and resource use by Indigenous communities;
- other pertinent ecological, technical, social, and cultural considerations (e.g., watersheds, ecozones);
- input from federal and provincial regulators and the public; and
- professional expertise of Denison and qualified third-party expert consultants.

The study areas for this EA were identified for each VC according to the following definitions:

- **Project Area** (see Figure 2)**:** the area within which the Project and all components/activities are located (i.e., the Project footprint; the area of maximum physical disturbance). This area is not VC-specific, but consistent throughout the EA.
- **Local Study Area (LSA) – specific for each VC:** the area that surrounds the Project Area where both direct and indirect effects resulting from Project activities can be reasonably measured. The LSA is established to assess the potential, largely direct effects of the Project and represents the extent to which there is a reasonable potential for the Project or Project-related activities to interact with and potentially adversely effect the VC.
- **Regional Study Area (RSA) – specific for each VC:** the area that surrounds and includes the LSA, established to assess the potential, largely indirect, effects of the Project in a regional context. The RSA is large enough to capture the extent of potential effects (i.e., zone of influence) on a VC and defines the area within which cumulative effects may occur (i.e., cumulative effects assessment boundary).

5.1.3 Temporal Boundaries

The Project has four primary temporal boundaries or phases to be considered in the EA (Figure 10).

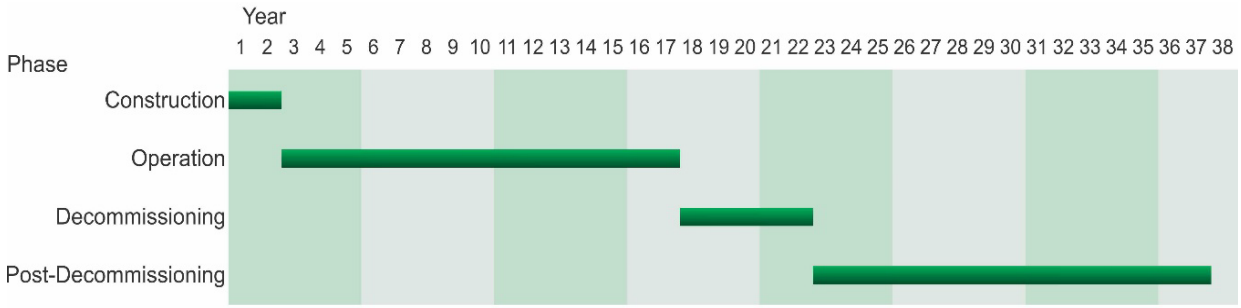


Figure 10: Four Temporal Boundaries/Phases for the Project

Additionally, a "future centuries" scenario is considered to assess the potential effects post-restoration (i.e., beyond the Project timeline of 0 to 38 years) and to reflect the time period over which the highest constituents concentrations in groundwater are predicted to migrate towards and interact with surface water.

For a list of activities associated with each phase of the Project, please see Table 1.

5.2 Atmospheric and Acoustic Environment

5.2.1 Air Quality

The existing air quality environment in the Project Area is typical of a remote northern setting. The baseline monitoring program for the Project indicated low existing levels of dust, nitrogen dioxide (NO_2), sulphur dioxide, and radon. The Project is expected to introduce new emission sources to the area, which in turn are expected to change the ambient air environment. Predictions of air quality concentrations were completed as part of the assessment using dispersion modelling to evaluate how the anticipated Project activities may change the existing air quality environment, and what the potential effects of those changes may be.

Air emission sources associated with the Project include site clearing and construction activities, dust from use of unpaved road surfaces, fuel combustion (e.g., power generators, diesel-powered mobile equipment), drilling in the wellfield, and process operations at the ISR plant. Potential effects related to Air Quality were identified pertaining to the predicted concentrations in air of various air quality indicators, including particulate matter, combustion products, and radon.

Several mitigation measures were identified to minimize the residual effects of the Project on Air Quality. These include regular watering of unpaved roads and surfaces to supress dust emissions, limiting vehicle speeds, equipping the process exhausts with scrubbers, and making sure stack heights are sufficiently high to prevent building downwash effects.

Results of the air quality modelling were compared to thresholds set by federal and provincial authorities pertaining to the predicted concentrations in air of various air quality indicators. Residual effects were predicted at receptors located beyond the Property Boundary for 24-hour concentrations of total suspended particulate (TSP), particulate matter (PM_{10}), and uranium, and 1-hour concentrations of NO_2 during at least one Project phase. Overall, residual effects were predicted to be limited in geographic extent and mostly infrequent. The 24-hour TSP and PM_{10} exceedances for Construction and Operation were predicted to be sporadic. Residual effects were predicted to be short-term for Construction and unlikely for Operation. For Decommissioning, 24-hour TSP exceedances were predicted to be infrequent. Exceedances of the 24-hour uranium criterion for Operation and the 1-hour NO_2 criterion in all three Project phases were predicted to be infrequent. There is no significance determination for the Air Quality VC, as the results for Air Quality are carried through to Aquatic, Terrestrial and Human Health assessments, where effect significance has been evaluated.

Air emissions from other reasonably foreseeable projects in the area are not expected to combine with those from the Project and increase ambient air concentrations. However, there is potential for a cumulative effect at sensitive locations near Highway 914 due to Project-related traffic and traffic from Cameco's McArthur River and Key Lake operations. A 5-km portion of Highway 914 from the Project access road and south towards Key Lake was included in the air model and emissions from Project traffic were assessed. While traffic associated with Cameco's operations was not modelled, conservative regional background concentrations were added to the air model predictions. Air emissions from Cameco-related traffic are adequately captured by the conservative background concentrations and thus considered in the assessment of Project-related effects.

To confirm the residual effects of the Project on Air Quality, and to demonstrate compliance with provincial ambient air quality standards, an adaptive air emissions monitoring plan will be implemented at the permitting and licensing stage. The air emissions monitoring plan will evaluate the effectiveness of the dust management plan.

5.2.2 Noise

The Project Area is currently characterized by low ambient sound levels that are primarily attributable to sounds of nature, as would be expected for a remote location. The Project is expected to introduce new sound sources of an industrial nature into this environment, which is expected to change the nature of the existing environment and result in localized increases in sound levels. Any change to the existing sound environment in the vicinity of the Project has the potential to affect Indigenous groups and the public in terms of creating nuisance noise that may affect human health and change animal behaviours as related to hunting activity.

Noise sources associated with the Project include site clearing activities, construction of facilities, power generators, diesel-powered mobile equipment, drilling in the wellfield, on-site traffic and air

traffic, chilling equipment associated with the freeze plant, and various equipment associated with the ISR process (e.g., pumps).

The assessment of Noise included a baseline monitoring program to characterize existing sound levels, and the use of predictive models to assess how the Project may affect the existing sound environment. The predicted changes to the sound environment were assessed against federal and provincial guidelines to evaluate the resulting change.

Mitigation measures included limiting the use of equipment during night-time hours where possible, planning the site layout such that significant noise sources are as far as possible from sensitive locations, and making sure generator air discharges are directed away from sensitive locations. A noise monitoring program has been recommended to evaluate the effectiveness of mitigation measures and predictions made in the assessment.

The predicted sound levels were below the threshold values from the federal and provincial guidelines at all receptor locations; however, the increase in noise from baseline conditions was predicted to be noticeable at the nearest cabin. As a conservative approach, this was carried forward as a residual effect and follow-up monitoring will be conducted. As with the Air Quality VC, the Noise VC has not been evaluated for significance. The Noise VC was carried through the Terrestrial and Land and Resource Use assessments, where a significance determination has been completed.

Noise emissions from other reasonably foreseeable projects in the area are not expected to combine with those from the Project and increase ambient noise levels. However, there is potential for a cumulative effect at sensitive locations near Highway 914 resulting from Project-related traffic and Cameco's McArthur River and Key Lake operations. A model was prepared that estimated the contributing sound levels of this amount of traffic on Highway 914 at each of the sensitive receptors. The predicted sound levels due to combined truck traffic along Highway 914 did not change the acoustic assessment results based on the federal or provincial guidelines.

5.3 Geology and Groundwater

5.3.1 Geology

Geology includes bedrock, soils, and geomorphology (i.e., the study of physical features on the earth and their relationship to underlying geological structures). Geology was recognized as an important component of the environment that may be affected by the Project, and changes to Geology could in turn lead to effects on other VCs selected for assessment. For example, terrain morphology dictates landscape function, such as surface drainage patterns, and reflects the underlying surficial (geological) materials.

Geology was considered to be an intermediate VC (i.e., does not have an assessment endpoint). Changes to this intermediate VC were evaluated to facilitate the assessment of Project

interactions, with links to other disciplines for inclusion in their assessments, including Terrestrial Environment, and Land and Resource Use.

The geological conditions are well understood based on Project-specific and regional information. The Project Area and operations have been designed to limit disturbance to the natural geological environment. One component of the geologic assessment focused on subsidence at ground surface associated with extraction of rock mass (ore) at significant depth (approximately 400 m) below ground, from within the mining area. The assessment predicted a very minor change in ground elevation in the range of 2.4 to 2.8 mm within a discrete and localized area of the Project Area. This minor change may not be measurable and is likely within the bounds of other routine operational surface disturbances. Subsidence, should it occur, will be limited in terms of vertical displacement, and localized to a small portion of the Project Area.

As assessment was completed to understand the potential cumulative effects of the Project with existing and future developments on the physical aspects of the Geology VC. No cumulative effects on the Geology VC are expected. Subsidence is expected to be limited in terms of vertical displacement, if detectable, and localized to a small portion of the Project Area that does not spatially overlap with other project footprints and their potential effects on geology.

As part of the mining operations, detailed monitoring activities will be completed to assess the performance of various components of the Project associated with engineering mining designs, subsidence, performance, and infrastructure designs to protect the Geology VC. Subsidence at ground surface within the wellfield will be evaluated from Construction through to Decommissioning, by monitoring the elevation of collars (top of pipe) for wells within the wellfield. Contingency plans, including measures for adaptive management and emergency preparedness plans, will be designed to safeguard the local environment.

5.3.2 Groundwater

Groundwater is an integral component of the hydrologic cycle and is considered an important component and pathway (intermediate VC) to the Surface Water VC. Groundwater was selected as a VC for assessment because it is important in maintaining ecological habitats through its influence on the hydrology and water quality of surface water bodies, including wetlands. Indigenous Knowledge and engagement activities clearly identified the importance Interested Parties place on groundwater as a pathway to surface water, and the associated potential for changes in groundwater inputs to surface water to influence Fish and Fish Habitat, Sediment Quality, Vegetation, Wildlife, Human Health, and Indigenous Land and Resource Use.

The groundwater assessment focused on predicting changes in groundwater flow patterns and groundwater table elevations (Groundwater Quantity), and concentrations of chemical constituents in groundwater that may affect local surface water environments (Groundwater Quality).

The primary potential effects from the Project on groundwater included changes to Groundwater Quantity and Groundwater Quality during Operation as a result of surface facilities (ponds, landfills, laydown and wash areas) and mining, as well as the migration of chemical constituents in groundwater from the remediated mining area as natural groundwater flow conditions are re-established in Post-Decommissioning.

The overall Project Area and Operation have been designed to limit disturbance to the natural groundwater environment outside of the immediate mining area. To minimize residual effects of the Project on Groundwater Quantity and Quality, and protect discharges to local surface water bodies, specific and established engineering design features and mitigation measures will be employed, such as liners, leak detection systems, leachate collection systems at landfills, pads, and ponds, as well as impermeable cover designs during decommissioning. The freeze wall will be established as tertiary containment before mining operations commence to create hydraulically isolated mining area. Groundwater will be remediated during Decommissioning to acceptable standards, which are referred to as mining area decommissioning objectives. These objectives reflect concentrations of mining-associated groundwater constituents that are protective of the surface water environment after giving consideration to the removal of the hydraulic isolation of the freeze wall following the decommissioning stage.

To carefully evaluate how constituents dissolved in the remediated groundwater within the mining area may migrate away from and interact with the environment, a rigorous numerical model of groundwater flow and chemical constituent behaviour along the groundwater flow path was used as a predictive tool. The model was founded on proven scientific principles and processes (e.g., groundwater flow, contaminant transport, and geochemical reaction processes) and allowed future conditions to be evaluated. A determination of significance is not defined for the Groundwater VC; however, the results of the numerical model support the conclusion that, with the implementation of appropriate mitigation, the residual effects of the Project on the Groundwater VC will not result in a significant adverse effect to surface water. Migration of dissolved constituent concentrations along the groundwater flow path from the mining area to Whitefish Lake (the local surface water receptor) is predicted to take hundreds to thousands of years, with concentrations in groundwater reaching Whitefish Lake remaining below values that would result in an environmental risk.

As assessment was completed to understand the potential cumulative effects of the Project with existing and future developments on the Groundwater Quantity and Quality. No cumulative effects are expected since changes in Groundwater Quantity and Quality are localized and not anticipated to overall spatially or temporally with changes in groundwater associated with existing or reasonably foreseeable developments. Results of cumulative effects assessments for VCs in the aquatic environment are discussed in the next section.

Groundwater Quantity and Quality will be monitored from pre-Construction through Operation to assess the performance of the engineering mining designs and performance and infrastructure designs put in place to protect the Groundwater VC. During Decommissioning, monitoring will focus on demonstrating that groundwater remediation within the ISR mining zone meets decommissioning objectives. In Post-Decommissioning, the primary objectives of monitoring will be to demonstrate that natural flow conditions are re-established, and that chemical stability has been achieved with respect to groundwater quality. Chemical stability will be demonstrated by verifying groundwater reactive transport of constituents of potential concern in remediated groundwater aligns with the predictive model. A groundwater monitoring plan including an excursion contingency plan and measures for adaptive management will be implemented for the Project.

5.4 Aquatic Environment

5.4.1 Surface Water Quantity

The Surface Water Quantity VC considers hydrological parameters of interest, including flow regimes and water levels in watercourses and waterbodies within defined study areas. Key considerations of the assessment are associated with how Project activities, including but not limited to water-taking activities, treated water release, and changes to drainage patterns, may change hydrological conditions.

Denison initiated baseline hydrological monitoring for the Project in 2011, which has continued to the present. The extensive hydrological records for the area were utilized to establish a site-specific hydrological flow model to support the effects assessment for the Project.

Project interactions with the Surface Water Quantity VC are generally associated with changes in watershed areas as a result of mine construction and implementation of the water management plan, water-taking activities, and treated effluent discharge. The full measure of change in watershed areas will be realized during Construction, whereas water-taking activities and treated effluent discharge will occur through Operation and Decommissioning.

To mitigate the residual effects of the Project on Surface Water Quantity, Denison will minimize water taking activities by maximizing recycling of contact and process water for re-use. Denison will also limit and stage construction of the Project Area, maintain existing drainage patterns with the use of culverts, where applicable, and maintain access roads by periodically regrading and/or ditching to improve water flow, reduce erosion, and manage vegetation growth.

Flows and water levels in lakes and rivers within the LSA for the Surface Water Quantity VC are expected to experience some adverse change (i.e., reduction) as a result of altering the drainage areas reporting specifically to Whitefish Lake and water taking from this same waterbody. However, under all scenarios, including under low flow (5^{th} percentile), the reduction in flow is

expected to be less than 3% and, therefore, below the criterion for magnitude of 5% - which is the level that would be considered a low effect to existing environmental flows. Effects to surface water flows and levels are also predicted to be localized to the sub-watersheds within proximity to the Project and specifically Whitefish Lake. The effects are predicted to be fully reversible following Decommissioning as natural drainage patterns will be restored. Following mitigation through design and water management, the residual effects on Surface Water Quantity from the Project are predicted to be not significant.

As the interactions of the Project with the Surface Water Quantity VC is of small magnitude, highly localized to Whitefish Lake and not further propagated downstream of this immediate area, interaction with other existing or reasonably foreseeable activities are not expected to occur over the Project timeline. Therefore, no cumulative effects are expected for the Surface Water Quality VC.

Monitoring programs will be established for confirming the predictions made in the assessment. The programs should remain consistent with the historical long-term monitoring study to facilitate continued establishment of long-term streamflow trends at the site through relationships to long-term, government-operated hydrometric gauging stations in the same watersheds.

5.4.2 Surface Water Quality

The Project is located in a primarily undisturbed area of the boreal forest and the existing water quality in the lakes and rivers is indicative of a low level of disturbance. Water quality parameters during baseline were generally below guidelines for the protection of aquatic life; however, several constituents had concentrations above the guidelines, including aluminum, lead, copper, iron, and cadmium. In these cases, the maximum concentration was only marginally above the guideline value. The waters within the LSA and RSA sustain aquatic life and support activities that are important to local users and Indigenous peoples. Changes to Surface Water Quality have the potential to influence (i) biodiversity and biological function through direct exposure and indirect food chain influence (i.e., aquatic sediments, fish and fish habitat, and benthic invertebrates), and (ii) the cultural values of Indigenous peoples and communities, the general public, and other Interested Parties.

Project activities may interact with Surface Water Quality during all Project phases. In general, the interactions were characterized as being primarily associated with routine controlled discharges from the site. During site preparation and construction, the primary effect pathway related to the mobilization of suspended material into natural surface water features is as a result of land disturbance and clearing. During Operation and Decommissioning, water from the treated effluent monitoring ponds will be released to the environment and directed to Whitefish Lake only. Direct discharge of treated effluent to the natural environment has the potential to change surface water constituent concentrations and temperature. Potential effects to Surface Water Quality as a result

of Project discharges (surface drainage and effluent release) to local receiving environments were assessed by way of conservative numerical modeling.

To mitigate effects of the Project on Surface Water Quality, Denison will develop and implement a site-wide water management plan that includes an integrated framework to manage water quality and establish water management practices for each of the primary site aspects and areas of the site where contact water is expected. Water management will include maximizing the recycle and reuse of contact and process water to reduce freshwater intake and release of treated effluent to Whitefish Lake. Denison will design the treated effluent discharge diffuser/outfall to provide effective mixing and dilution such that discharge flows do not detrimentally affect water quality in a localized area of Whitefish Lake. Denison will also develop site-specific effluent treatment protocols to meet release limits in accordance with provincial standards and licence/permit conditions.

Residual adverse effects are expected on Surface Water Quality due to the mobilization of solids and treated effluent discharge to Whitefish Lake; however, with the implementation of appropriate design criteria for site water management and the effluent discharge pipeline and diffuser, in addition to meeting provincial and federal criteria for discharge criteria and mine water treatment (as needed), the residual effects of the Project on Surface Water Quality are anticipated to be not significant.

The residual effects of the Project are expected to temporally interact with the residual effects of other projects and activities in the surface water quality RSA. The primary Project activity potentially contributing to cumulative effects on surface water quality is the discharge of treated effluent to the aquatic environment during Operation and Decommissioning which may interact with other projects' releases to drainages which ultimately report to Russell Lake. Temporal overlap of foreseeable projects and the Project will also occur during "future centuries" as there is potential for increased contaminant transport via groundwater to surface water during this period. During all phases ("Future Centuries" included) the changes in surface water quality due to effluent discharge or groundwater interaction from foreseeable projects and activities are not anticipated to spatially overlap with those from the Project and therefore a cumulative effect is not expected.

Monitoring programs will confirm the effectiveness of mitigation measures and predictions made in the assessment and will include measurement of radiological and non-radiological water quality parameters to meet regulatory criteria. Monitoring will occur within the collection ponds and the receiving water (i.e., Whitefish Lake). In consultation with Indigenous communities, relevant federal and provincial agencies, and other Interested Parties, in the development and implementation of this VC-specific program, specific monitoring and follow-up plans will be prepared to refine and finalize the monitoring approach.

5.4.3 Sediment Quality and Benthic Invertebrates

The Sediment Quality and Benthic Invertebrate VCs were selected for inclusion because Project activities have the potential to affect them via erosion-driven mobilization of suspended sediment, groundwater interactions with surface water features, and treated effluent discharge to the natural environment throughout all phases of development.

Baseline sediment quality surveys confirmed that the waterbodies in the LSA (i.e., McGowan Lake, Whitefish Lake North, and Whitefish Lake South) were dominated by clay substrates, with silt and sand being present in lesser proportions. For parameters where sediment quality guidelines are available, sediment metal concentrations in these waterbodies were at or below their respective reference criteria or guidelines for the protection of aquatic life.

Benthic invertebrate communities were characteristic of depositional lake habitats (i.e., chironomids, midges, water fleas, and worms) in McGowan Lake and Whitefish Lake. Overall, the diversity of benthic invertebrate communities was highest in McGowan Lake followed by Whitefish Lake South and then Whitefish Lake North.

The physical and chemical attributes of aquatic sediments directly influence benthic invertebrate community distribution, diversity, abundance, and health. Potential changes to water quantity and quality are key considerations in the assessment process and draw a high level of concern from interested parties. Changes to Surface Water Quality have the potential to influence sediment particle size, chemistry, and distribution within the aquatic environment, and in turn influence biodiversity and biological function. Such effects are of interest with respect to the cultural values of Indigenous communities.

Project activities may interact with Sediment Quality and Benthic Invertebrates during all Project phases. In general, the interactions were characterized as being primarily associated with (i) routine controlled discharges from the site and (ii) mobilization of suspended material into natural surface water features as a result of land disturbance and clearing. During Operation and Decommissioning, water from the effluent monitoring ponds will be tested prior to release to the environment. Routine discharge of this sort will be directed to Whitefish Lake only. Additionally, a reduction in surface drainage reporting to Whitefish Lake, due to Project development activities, may change water levels and flows in the receiving water, thereby influencing the depositional properties of the lake and the benthic invertebrate community. The installation of the pipeline and diffuser structure will result in the overprinting of a small proportion of the Whitefish Lake (LA-5) benthic substrate (less than 0.05% of LA-5).

To mitigate effects of the Project on Sediment Quality and Benthic Invertebrates, Denison will develop and implement a site-wide water management plan that includes an integrated framework to manage water quality and establish water management practices for each of the primary site aspects and areas of the site where contact water is expected. This plan will include the collection

and monitoring of contact water to determine whether treatment is required prior to release to the environment, which will inform optimal levels of treatment. This plan will also include the monitoring and management of effluent, including contingency for effluent treatment as may be required so that water discharge objectives are achieved as defined by applicable provincial and federal regulatory instruments. These measures are expected to mitigate effects associated with mobilization of solids and changes to Sediment Quality that may affect Benthic Invertebrates. Denison will design the discharge diffuser/outfall to have the smallest footprint possible while still providing effective mixing and dilution such that discharge flows do not detrimentally affect sediments.

The assessment predicted residual effects to Sediment Quality and Benthic Invertebrates due to change in sediment quantity and physical quality (particle size), change in sediment quality (chemical composition), change in aquatic habitat (area), and change in water level or flow; however, with the implementation of appropriate mitigation measures and the predicted effects being assessed as low magnitude, localized, and fully reversible, the residual effects on Sediment Quality and Benthic Invertebrates are anticipated to be not significant.

The residual effects of the Project are expected to temporally interact with the residual effects of other projects and activities in the Sediment Quality and Benthic Invertebrate VCs RSA. The primary Project activity potentially contributing to cumulative effects on sediment quality and benthic invertebrates is via the surface water quality pathway and specifically through the discharge of treated effluent to the aquatic environment during Operation and Decommissioning which may interact with other projects' releases to drainages which ultimately report to Russell Lake. Temporal overlap of foreseeable projects and the Project will also occur during "future centuries" as there is potential for increased contaminant transport via groundwater to surface water during this period. During all phases ("Future Centuries" included) the changes in surface water quality due to effluent discharge or groundwater interaction from foreseeable projects and activities are not anticipated to spatially overlap with those from the Project and therefore a cumulative effect on Sediment Quality and Benthic Invertebrates is not expected.

Monitoring and follow-up are recommended for the Sediment Quality and Benthic Invertebrate VCs to verify the accuracy of the predicted effects and effectiveness of proposed mitigation measures. The sediment quality and benthic invertebrate monitoring program will be considered in conjunction with the surface water quantity (hydrology) and surface water quality monitoring programs as they are specifically tied to these programs from the perspective of pathways of effects. Monitoring of total suspended solids in the effluent monitoring ponds and other catchment ponds, prior to discharge to the environment, will be important in providing context to further evaluate Project-related effects to Sediment Quality and Benthic Invertebrates in the receiving water environment (Whitefish Lake or LA-5).

5.4.4 Fish and Fish Habitat

The Fish and Fish Habitat VC was selected for inclusion in the assessment as Project activities have the potential to cause erosion-driven mobilization of suspended sediment. Project activities are also expected to discharge treated effluent to the natural environment, overprint fish habitat, and locally increase access to fisheries resources with the addition of a new access road and temporary increase of employees to the site. Furthermore, inclusion of the Fish and Fish Habitat VC is vital due to its importance to Indigenous peoples from a cultural and subsistence perspective. Fish and Fish Habitat is inclusive of wetland features within the LSA, and for the purposes of this assessment the Fish and Fish Habitat VC should be considered in tandem with the Wetlands VC, which is further discussed in Section 9 of the EIS.

Fish and fish habitat surveys in the LSA and RSA identified river, stream, and lake features that support a variety of fish species, including Lake Trout, Lake Whitefish, Northern Pike, Walleye, Yellow Perch, Arctic Grayling, and several other sucker and forage fish species. With the help of Indigenous Knowledge, Local Knowledge, and in-field surveys, critical spawning and nursery habitats for keystone species were identified and summarized for the LSA, specifically for Whitefish Lake and Russell Lake. Baseline conditions for the Fish and Fish Habitat VC were assessed in conjunction with baseline information specific to the Surface Water Quantity and Surface Water Quality VCs due to the interconnected nature of these VCs.

Project activities may interact with Fish and Fish Habitat during all Project phases. In general, the interactions were characterized as being primarily associated with routine controlled discharges from the site and mobilization of suspended material into natural surface water features as a result of land disturbance and clearing. During Operation and Decommissioning, excess treated water from the effluent monitoring ponds will be released to the environment. Routine discharge of this sort will be directed to Whitefish Lake only. Changes in Surface Water Quality due to treated effluent discharge may affect the water chemistry and water temperatures of Whitefish Lake. The installation of the pipeline and diffuser structure (discussed above) will result in the overprinting of a small proportion of the Whitefish Lake (LA-5) substrate (less than 0.05% of LA-5). No other alteration, disruption, or destruction of aquatic habitat in the LSA is expected. Changes in fish populations resulting from increased fishing activity, which may occur following improved accessibility due to the development of access roads, are also possible.

To mitigate effects of the Project on Fish and Fish Habitat, Denison will develop and implement a site-wide water management plan that includes an integrated framework to manage water quality and establish water management practices (i.e., runoff control and silt fencing) for each of the primary site aspects and areas of the site where contact water is expected. This plan will include the collection and monitoring of contact water to determine whether treatment is required prior to release to the environment, which will inform optimal levels of treatment. This plan will also

include the monitoring and management of treated effluent, including contingency for effluent treatment as may be required so that water discharge objectives are achieved as defined by applicable provincial and federal regulatory instruments. These measures are expected to mitigate effects associated with mobilization of solids and changes to water and sediment quality that may affect Fish and Fish Habitat. Denison will design the discharge diffuser/outfall to have the smallest footprint possible while still providing effective mixing and dilution such that discharge flows do not detrimentally affect fish lifecycle processes.

Construction of the access road will involve the installation of two stream crossings. These stream crossings are located at the historical watercourse crossings along the proposed airstrip access road. These crossings will be constructed as clear-span bridges, and their mitigative design will provide for protection of Fish and Fish Habitat.

A lack of transportation to fishing areas will minimize the geographic extent of any workforce fishing, and a lack of facilities to store or cook fish will limit the quantity of harvest.

The assessment predicted residual effects on Fish and Fish Habitat due to change in water quality (including temperature), change in sediment quality, change in aquatic habitat (aerial extent), and change in fish harvest from increased site access. However, with the implementation of appropriate mitigation measures, the predicted residual effects were characterized as low magnitude, localized, and fully reversible, and are, therefore, anticipated to be not significant.

The residual effects of the Project are expected to temporally interact with the residual effects of other projects and activities in the Fish and Fish Habitat RSA. The primary Project activity potentially contributing to cumulative effects on Fish and Fish Habitat is via the surface water quality pathway and specifically through the discharge of treated effluent to the aquatic environment during Operation and Decommissioning which may interact with other projects' releases to drainages which ultimately report to Russell Lake. Temporal overlap of foreseeable projects and the Project will also occur during "future centuries" as there is potential for increased contaminant transport via groundwater to surface water during this period. During all phases ("Future Centuries" included) the changes in surface water quality due to effluent discharge or groundwater interaction from foreseeable projects and activities are not anticipated to spatially overlap with those from the Project and therefore a cumulative effect on Fish and Fish Habitat is not expected. Physical alteration or loss of fish habitat is expected to be localized and of small spatial extent. No interactions with existing and reasonably foreseeable activities are envisioned over the Project timeline in this regard; therefore, no cumulative effects are expected to Fish and Fish Habitat.

Monitoring for the Fish and Fish Habitat VC will occur to verify the accuracy of the predicted effects and the effectiveness of the proposed mitigation measures. Effluent and receiving water quality monitoring will be conducted as per federal and provincial regulations and will include radiological

and non-radiological parameters. Monitoring of the biological environment will be undertaken to meet federal and provincial regulations (e.g., Metal and Diamond Mining Effluent Regulations Environmental Effects Monitoring program) and will occur in consultation with Indigenous groups. Monitoring of worker habits in relation to fisheries resources may be applicable to allow for adaptive management of the Fish and Fish Habitat VC.

5.4.5 Fish Health

The Fish Health VC was selected for inclusion as treated effluent discharge to the natural environment has the potential to change chemical and radiological exposure. Furthermore, inclusion of the Fish Health VC is vital due to its importance to Indigenous peoples from a cultural and subsistence perspective. Generally, constituents of potential concern in fish may include heavy metals, including mercury. Concentrations of mercury and selenium in fish tissues collected during baseline studies were below guidelines that are protective of human health and freshwater aquatic life.

The main Project activity that may affect Fish Health is the release of treated effluent to Whitefish Lake. Changes in surface water quality and sediment quality have the potential to affect Fish Health in the receiving environment.

To mitigate effects of the Project on Fish Health, Denison will develop and implement a site-wide water management plan that includes an integrated framework to manage surface water quality and establish water management practices for each of the primary site aspects and areas of the site where contact water is expected. This plan will include the collection and monitoring of contact water to determine whether treatment is required prior to release to the environment, which will inform optimal levels of treatment. This plan will also include the monitoring and management of treated effluent, including contingency for effluent treatment as may be required so that water discharge objectives are achieved as defined by applicable provincial and federal regulatory instruments. These measures are expected to mitigate effects associated with changes in Surface Water Quality and Sediment Quality that may affect Fish Health.

The assessment predicted residual effects on Fish Health due to treated effluent discharge. Identified residual effects are expected to be associated with changes in Surface Water Quality and Sediment Quality; however, the changes are expected to remain well below levels that may affect Fish Health. Considering this, and with the implementation of appropriate mitigation measures, the predicted residual effects of the Project on Fish Health are expected to be not significant.

The residual effects of the Project are expected to temporally interact with the residual effects of other projects and activities in the Fish Health RSA. The primary Project activity potentially contributing to cumulative effects on fish health is via the surface water quality pathway and specifically through the discharge of treated effluent to the aquatic environment during Operation and Decommissioning which may interact with other projects' releases to drainages which

ultimately report to Russell Lake. Temporal overlap of foreseeable projects and the Project will also occur during "future centuries" as there is potential for increased contaminant transport via groundwater to surface water during this period. Changes to fish tissue concentrations in the LSA are also predicted to remain within or near existing levels and are not predicted to be associated with effects on Fish Health, nor propagated further downstream (i.e., to Russell Lake). During all phases ("Future Centuries" included) the changes in surface water quality due to effluent discharge or groundwater interaction from foreseeable projects and activities are not anticipated to spatially overlap with those from the Project and therefore a cumulative effect on Fish Health is not expected.

A monitoring program for Fish Health is recommended to confirm the effectiveness of mitigation measures and predications made in the assessment. The program will involve the collection of multiple fish species to assess changes in fish tissue concentration of constituents of interest.

5.5 Terrestrial Environment

5.5.1 Terrain, Soil, and Organic Matter/Peat

The Project Area is primarily located on undeveloped forested land (with some discrete anthropogenic disturbance) within gently rolling terrain characterized by eskers and drumlins. The Project has mostly been sited on stable terrain designated as upland and/or anthropogenically disturbed land (>99% of the Project Area), and (to the extent possible) avoids lowland, lakes, and waterbodies. The soil erosion potential and susceptibility to compaction will likely vary depending on slope class and slope position and other site-specific characteristics (e.g., cover vegetation and exposure).

Primary Project activities with the potential to cause adverse effects on Terrain, Soil, and Organic Matter/Peat including surface land clearing, major earthworks, surface/grading preparations, and/or associated mobilization of equipment, assets, and personnel that will occur during Construction, Operation, and Decommissioning. Denison will rely on a variety of mitigation measures to minimize potential effects on Terrain, Soil, and Organic Matter/Peat, including Project design measures to optimize the Project Area, development of an erosion and sediment control plan, and a commitment to progressive and final reclamation to achieve a safe, stable, and self-sustaining landscape.

Following implementation of these Project-specific mitigations, the assessment predicted residual effects on Terrain (morphology and stability), Soil (quantity and quality), and Organic Matter/Peat (quantity). Changes in Terrain, Soil, and Organic Matter/Peat are anticipated to be within the range of natural variation; therefore, the residual effects are predicted to be not significant. The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the Terrestrial RSA resulting in potential cumulative effects on Terrain, Soil and Organic Matter/Peat. With the implementation of appropriate Project mitigation measures and best

management practices (i.e., applicable to all projects within the Terrestrial RSA), the cumulative effects are also predicted to be not significant.

Monitoring programs are recommended for confirming the effectiveness of mitigation measures and predictions made in the assessment, and then implementing adaptive management (if/where applicable) to reduce effects during the lifetime of the Project. These include monitoring during Construction to verify that the Project is built to design specifications, soil salvage monitoring during any land clearing activities, and soil quality monitoring during Operation.

5.5.2 Vegetation and Ecosystems

The Project Area is in an area of the boreal forest with minimal existing anthropogenic and some past wildfire disturbances. The area is dominated by upland jack pine and black spruce forests in various stages of post-fire regeneration, with smaller areas of wetland ecosystems along streams and seepage areas and associated with shallow lakes. One listed plant species was observed during vegetation surveys (i.e., Alaskan clubmoss).

The main Project activities that may affect Vegetation and Ecosystems, Listed Plant Species, and Wetlands are clearing activities during Construction, water management and use, vehicle and aircraft traffic, and the use of equipment during all Project phases. Effects on Vegetation and Ecosystems, Listed Plant Species, and Wetlands include direct disturbance through vegetation clearing and soil disturbance, and indirect effects such as introduction and/or proliferation of invasive plants, edge effects, change to water quantity and quality, and dust deposition.

To mitigate effects of the Project on Vegetation and Ecosystems, Listed Plant Species, and Wetlands, the Project Area is located mostly within previously disturbed areas, minimizing direct and indirect disturbance on vegetation. Denison will clearly delineate the boundaries of the Project to reduce accidental encroachment, conduct appropriate soil salvage and soil management, maintain surface water drainage, implement sediment and erosion control measures and suppress dust (as warranted), and monitor for the introduction and proliferation of invasive plants.

The assessment predicted residual effects on Vegetation and Ecosystems, Listed Plant Species, and Wetlands due to changes in the extent of habitat types, changes in the constituent concentrations of potential concern in plant tissue, changes in the number of listed plants, and changes in the area of wetland ecosystems. The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the Terrestrial RSA resulting in cumulative effects on Vegetation and Ecosystems. The residual effects of the Project and the cumulative effects (interacting with residual effects from other projects and activities) on Vegetation and Ecosystems, Listed Plant Species, and Wetlands are predicted to be not significant.

Monitoring programs are recommended for confirming the effectiveness of mitigation measures and predictions made in the assessment, and then implementing adaptive management (if/where

applicable) to reduce effects during the lifetime of the Project. Vegetation and invasive plants will be routinely monitored throughout the life of the Project, soil monitoring during salvaging and stockpiling activities will be undertaken, and progressive reclamation and revegetation of disturbed areas will be monitored. Monitoring will also be employed to understand uptake of constituents of potential concern in plants (if any). Pre-construction surveys for listed plant species will also be undertaken within previously unsurveyed locations in the Project Area.

5.5.3 Ungulates, Furbearers, and Woodland Caribou

The Project is in an area characterized by relatively low human use and provides suitable habitat for a variety of terrestrial wildlife species, including moose, furbearers (such as wolverine, pine marten, mink, and muskrat), and woodland caribou.

The main Project activities that may affect wildlife habitat and mortality are clearing activities during Construction, vehicle and aircraft traffic, and the use of equipment during all Project phases.

To mitigate effects of the Project on wildlife habitat and mortality, the Project Area is mostly within previously disturbed areas, minimizing direct and indirect habitat loss and/or alteration. Denison will conduct site clearing activities outside of the sensitive time periods for wildlife, conduct pre-clearing wildlife sweeps to identify sensitive wildlife habitat or presence of species at risk, minimize noise from Project activities, and optimize transportation and equipment use.

The assessment predicted residual effects on wildlife via direct loss of habitat through vegetation clearing, changes in how wildlife may use their preferred habitats due to sensory disturbance, direct mortality through wildlife-vehicle collisions, and indirect mortality due to the potential for increased harvest and/or predation. The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the Terrestrial RSA resulting in cumulative effects on wildlife. The residual effects of the Project and the cumulative effects (interacting with residual effects from other projects and activities) on terrestrial wildlife are predicted to be not significant.

Monitoring programs are designed to meet regulatory requirements and/or to demonstrate compliance with environmental commitments made in the EIS. Examples include pre-clearing wildlife sweeps and monitoring the success of reclamation and revegetation of disturbed areas. Based on the results of the assessment, no specific follow-up monitoring (to address any uncertainties identified during the assessment process) is required for terrestrial wildlife.

5.5.4 Raptors, Migratory Breeding Birds, and Bird Species at Risk

The Project location, characterized by relatively low human use, provides suitable habitat for a variety of year-round resident and migratory bird species, including Bald Eagle, Osprey, waterbirds, waterfowl, upland game birds, and bird species at risk (such as Common Nighthawk, Short-eared Owl, Yellow Rail, Rusty Blackbird, and Olive-sided Flycatcher).

The main Project activities that may affect bird habitat and mortality are clearing activities during construction, vehicle and aircraft traffic, and the use of equipment during all Project phases.

To mitigate effects of the Project on bird habitat and mortality, Denison will conduct site clearing activities outside of the nesting period, conduct pre-clearing wildlife sweeps to identify the presence of occupied nests or the presence of species at risk, implement no-disturbance setback buffers around active or suspected nests as per guidelines and regulations, minimize noise from Project activities, and optimize transportation and equipment use.

The assessment predicted residual effects on birds via direct loss of habitat, changes in how birds use their preferred habitats due to sensory disturbance, and direct mortality mainly through the possibility for incidental take (i.e., the inadvertent destruction of birds and/or their nests and eggs) and vehicle collisions. The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the Terrestrial RSA resulting in cumulative effects on birds. The residual effects of the Project and the cumulative effects (interacting with residual effects from other projects and activities) on birds are predicted to be not significant.

Monitoring programs are designed to meet regulatory requirements and/or to demonstrate compliance with environmental commitments made in the EIS. Examples include pre-construction nest surveys and monitoring the success of reclamation and revegetation of disturbed areas. Based on the results of the assessment, no specific follow-up monitoring (to address any uncertainties identified during the assessment process) is required for birds.

5.6 Human Health

5.6.1 Human Health

The Project is located at a remote site, with no populated communities in proximity. However, Indigenous Knowledge and Local Knowledge indicate the presence of local cabins and the practice of traditional activities (e.g., hunting, fishing, and gathering) within the RSA for the Human Health VC. The Human Health VC and associated key indicator were evaluated via an environmental risk assessment that included a human health risk assessment and an ecological risk assessment. The selection of human receptors (camp worker, seasonal resident, recreational fisher/hunter, fisher/trapper, and future permanent resident) for evaluation of the Human Health VC was informed by Indigenous Knowledge, Local Knowledge, information from baseline studies, and professional judgement. The assumptions made for the traditional foods diet (i.e., amounts consumed and food types) were informed by an existing English River First Nations' country foods study and through engagement with a local fisher/trapper.

The main Project activities that may affect Human Health are air emissions during Construction, Operation, and Decommissioning, and the release of treated effluent to Whitefish Lake during

Operation and Decommissioning. Long-term transport of groundwater constituents to Whitefish Lake in future centuries may also affect Human Health far into the future.

To mitigate effects of the Project on Human Health, Denison will develop and implement a site-wide water management plan, develop site-specific effluent treatment to treat constituents of potential concern to appropriate release limits, monitor and manage effluent, and create and implement a dust management plan.

The assessment of Human Health through the human health risk assessment predicted residual effects on the fisher/trapper receptor (one of six human receptors evaluated) from eating a relatively significant amount of fish near the inlet at Russell Lake. The assessment predicted that the fisher/trapper could ingest an elevated amount of selenium over the Project phases if 183 kg (402 lbs) of fish was consumed annually. Comparatively, a traditional user's annual fish consumption was predicted to be 27 kg/year from the English River First Nation's Country Food Study (CanNorth 2017) and 88 kg/year for the high consumer for the boreal shield in the First Nations Food, Nutrition and Environment Study for Saskatchewan. The surface water and fish tissue concentrations at Russell Lake remained within an acceptable range. The fisher/trapper receptor is representative of one person who consumes a unique composition and quantity of traditional foods and the residual effect on the fisher/trapper receptor is not predicted to be significant. No residual effects were predicted for all other human receptors due to exposure to radionuclides and non-radionuclides throughout the food chain during the Project phases and far into the future during the future centuries.

For cumulative effects, existing, as well as reasonably foreseeable projects within the Wheeler River system have been considered for potential to interact with the Human Health VC due to air emissions and waterborne effluent. Air emissions from the Project are expected to be localized and unlikely to overlap with the existing or predicted emissions from existing and reasonably foreseeable projects. Potential residual effects from releases of treated mine water from existing and reasonably foreseeable projects are expected to be spatially limited in proximity to the mine site and are not anticipated to extend to the Wheeler River; therefore, no cumulative effects on human health from water and related aquatic pathways are expected.

Monitoring programs are outlined to confirm the effectiveness of mitigation measures and verifying and improving model predictions made in the assessment. Environmental monitoring would follow requirements and guidance in CSA N288.4-19 and would be informed by the results of engagement activities. Examples of monitoring include surface water, sediment, and soil samples, as well as fish tissue, benthic invertebrate tissue, and country food samples such as blueberries from Whitefish Lake, McGowan Lake, Russell Lake, and reference locations, as applicable.

5.6.2 Worker Health and Safety

Workers within the Project Area will be exposed to radiation from uranium-bearing materials, as well as to other workplace hazards typical of mining operations. The existing environment in the Project Area is characterized by background levels of radiation exposure from radioactive elements in the U-238 decay chain, as well as cosmic radiation. Background radiation doses are on the order of 2 millisieverts per annum (mSv/yr). Dose limits are defined in terms of incremental (above background) doses.

The Project will interact with the Worker Health and Safety VC through worker exposure to radiation from uranium-bearing materials in the wellfield and processing plant, mainly during Operation and Decommissioning. These materials include ore cuttings from well drilling, the uranium-bearing solution that carries uranium to the processing plant, precipitates removed from the processed solution, and uranium concentrate (i.e., yellowcake), which is the final product from the processing plant. Radon, a radioactive gas, is released from process materials to workplace air, and uranium concentrate dust is released to air during the dry parts of the process. Expected radiation doses to workers in different job categories were calculated for comparison to the worker dose limit of 20 mSv/yr (averaged over a 5-year period).

Mitigation measures that are part of Project design include a berm around the ore cuttings waste storage area, which provides shielding from radiation exposure, and worker use of powered air purifying respirators in the drying and packaging areas of the process plant. These mitigations were factored in during calculation of worker doses. Other mitigations include monitoring of exposure levels in work areas, personal dose monitoring of every worker, and work planning to manage time in proximity to radiation sources, all in accordance with a radiation protection plan. These mitigations are expected to keep worker radiation doses below the worker dose limit and as low as reasonably achievable. In addition, a health and safety plan will address management of non-radiological work hazards in accordance with federal and provincial regulations.

Radiation doses for all workers were calculated to be lower than the worker dose limit. Based on this result, and considering the use of monitoring and safe work practices under a radiation protection plan and health and safety plan, no residual effects on worker health are anticipated.

Cumulative effects for Worker Health and Safety were not considered since no residual adverse effects were identified.

Monitoring activities during all phases of the Project will include measuring the levels of exposure to radiation, radon, and radioactive dust in the workplace. Administrative (warning) levels and action levels will be defined for these measurements to facilitate work planning, corrective actions, and a safe working environment.

5.7 Land and Resource Use

Two broad categories of land and resource use were assessed relative to the Project: Indigenous Land and Resource Use (ILRU) and Other Land and Resource Use (OLRU). ILRU considered traditional or subsistence practices by Indigenous people including hunting and fishing for domestic purposes, as well as non-commercial trapping of furbearers for food or fur, gathering of natural items for ceremonial practices, herbs, roots, berries, plant medicines, food, and firewood. OLRU considered both recreational and commercial use of resources, including hunting and fishing, commercial trapping, commercial fishing, lodge and outfitting services, ecotourism, forestry, and mining, which may be conducted by either Indigenous or non-Indigenous peoples under the authority of provincial licenses or by resource allocations. It is acknowledged that certain activities in each of these categories are pursued by the same individuals, as resource harvesters often pursue both traditional and commercial harvests simultaneously.

5.7.1 Indigenous Land and Resource Use

The Project is within the Nuhtsiye-kwi Benéne of ERFN, the traditional territory of Kineepik Metis Local #9, and the Nuhenéné of the Athabasca Denesųłiné communities. Much of the documented shared use of land and resources by Indigenous communities occurs close to their primary populated communities, although some uses are documented in proximity to the Project footprint and surrounding areas such as Russell Lake and along the Wheeler River. Recorded uses include hunting sites (moose and woodland caribou), the gathering of plants for food or subsistence purposes, trapping of aquatic furbearers (including beaver and muskrat), and fishing (including Walleye, Northern Pike, Lake Trout, Lake Whitefish, and Arctic Grayling). Proximal to the Project, many of the most recent uses were by an ERFN Trapper who passed away prior to the filing of the EIS. These uses are considered as representative of future land use by the ERFN. Other Indigenous groups have documented uses on Russell Lake, proximal to the Fox Lake Road, and areas south of the Key Lake Gate.

The Key Lake gate on Highway 914 limits access to areas close to the Project site to lease holders (e.g., cabin owners) and some Indigenous communities. The closest areas of more intensive community use are ERFN's cultural camp at kilometre 160 and Kineepik Métis Local #9/Northern Village of Pinehouse's cultural camp at kilometre 67, which are south of the gate along Highway 914.

The various phases of the Project have the potential to induce different effects on ILRU and its KIs: resource availability for harvesting subsistence resources (terrestrial and aquatic resource availability and health of resources), land and waters available for traditional practices, and perceived suitability of land and resources (aesthetic experience, perceived suitability of resources for safe use, and quality of resources of consumption).

The KIs of resource availability, land and waters available for traditional practices, and perceived suitability of land and resources for aesthetics were not carried forward to residual effects assessment and can be eliminated, reduced, or controlled through mitigation measures. Mitigation for these effects is well understood. It is expected that wildlife and fish will still be available and abundant enough to support traditional harvesting practices, the health of the resources is not expected to be affected, and the lands and waters affected by the Project are minimized, in part by the small Project Area, which is 1.69 square kilometres.

The Project is expected to have an adverse effect on the perceived suitability of the lands and resources therein for some resource users in the area closest to the Project Area and on either side of local access roads and the haul road for the Key Lake operation – McArthur River operation. The effects are a result of the Project's presence, the introduction of a different uranium mining method in the region, noise, dust, increased competition for resources, and concern about personal exposure to contaminated water and soils. This effect is anticipated to vary by individual; some may continue activities and others may avoid areas close to the Project.

To mitigate effects of the Project on the perceived suitability of lands and the resources therein, Denison will develop management plans, implement emergency response programs, and minimize the amount of land disturbed by the Project to the greatest extent practicable. Mitigation will reduce risks associated with increased traffic, noise, air quality, the potential for constituents of potential concern to enter the environment, waste management, the introduction of a different mining method, and human health. The mitigation strategies that have been proposed have been successful in similar contexts, such as management of noise, traffic, dust, and competition for resources.

Denison acknowledges that Indigenous communities continue to have an interest in obtaining a greater understanding about the ISR mining method, and will continue to engage meaningfully with them through the life of the Project. Overall, given the extent of the ILRU LSA, adverse effects are low in magnitude, the geographic extent of effects are limited, and the effects are reversible, the residual effects on ILRU are anticipated to be not significant.

The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the ILRU RSA, resulting in potential cumulative effects to Indigenous land use activity in the area. This is largely due to the proposed Highway 914 extension project.

With mitigation measures, the residual effects of the Project and the cumulative effects (interacting with residual effects from other projects and activities) may result in increased competition as additional resource users may access the area from locations further north, as well as from the south as the Key Lake gate would be bypassed. These cumulative changes could exacerbate perceptions of the areas suitability for continued Indigenous land and resource use.

Monitoring or follow-up activities proposed for ILRU relate largely to those programs associated with the biophysical environment.

5.7.2 Other Land and Resource Use

OLRU activities include commercial and recreational activities, which tend to occur in the OLRU LSA and consist of trapping, commercial fishing, and leaseholders and cabin owners. Trapping and commercial fishing take place in the OLRU LSA and was known to be conducted exclusively by the ERFN Trapper who passed away prior to the time of filing the EIS. It is anticipated that the ERFN trapline allocations may be passed to another individual in the future. Lease holders and cabin owners with land tenures can also be found near the Project. The current extent of commercial and recreational uses is limited due to access restrictions at the Key Lake gate, which limit access to those with a lease, commercial license, those who operate outfitting businesses, and members from select Indigenous communities.

The various phases of the Project will have different effects on OLRU and its KIs: change to resource availability (including terrestrial and aquatic resource availability and the health of resources); land available to conduct recreational and commercial harvests (including the availability and accessibility of land and waterways); and changes to the perceived suitability of land and resources (including aesthetics of resource use and perceived suitability of resources for safe use). The KIs of resource availability and land available to conduct recreational and commercial harvests were not carried forward to residual effects assessment as these effects can be eliminated, reduced, or controlled through mitigation measures.

The Project is predicted to have an adverse effect on the perceived suitability of the lands and resources therein for some resource users in the area closest to the Project Area and on either side of local access roads and the haul road for the Key Lake mill operation – McArthur River operation. The perceived suitability of lands and resources for safe use may be affected by the Project's presence, traffic, noise, dust dispersion, air emissions, and the potential for constituents of potential concern to enter to the environment. The introduction of a different uranium mining method in the region may further cause concern for some resource users. This effect is anticipated to vary by individual; some may continue activities and others may avoid areas close to the Project. Typically, the magnitude of perceived effects declines with increasing distance from the Project and Project activities.

To mitigate effects of the Project on the perceived suitability of lands and the resources therein, Denison will develop management plans, implement emergency response programs, and minimize the amount of land disturbed by the Project. Mitigation will reduce risks associated with increased traffic, noise, air quality, the potential for constituents of potential concern to enter the environment, waste management, the introduction of a different mining method, and human

health. The mitigation strategies that have been proposed have been successful in similar contexts, such as management of noise, traffic, dust, and competition for resources.

Denison had established a relationship with the ERFN Trapper who recently passed away. If another trapper is interested in taking over the late ERFN Trapper's trapline in the future, Denison will enter into a relationship with them similar to what was contemplated previously with the ERFN Trapper. Given the low magnitude and limited geographic extent of residual effects along with the context that resource users have exhibited resiliency to changing conditions, the overall residual effects of the Project on OLRU are predicted to be not significant.

The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the OLRU RSA, namely the Highway 914 extension project, resulting in potential cumulative effects to commercial and recreational resource users. This is largely due to the Highway 914 extension project.

With mitigation measures, the residual effects of the Project and the cumulative effects (interacting with residual effects from other projects and activities) may result in increased competition as additional resource users may access the area from locations further north, as well as from the south as the Key Lake gate would be bypassed. As most other land and resource use activities are regulated by the Province, it is not expected that direct competition for uses would be affected, however the presence of additional people may reduce the wilderness experience for some users. These cumulative changes could exacerbate perceptions of the area's suitability for continued use.

Monitoring or follow-up activities proposed for OLRU relate largely to those programs associated with the biophysical environment, such as for wildlife and water quality. No additional monitoring or follow-up activities are proposed for OLRU.

5.7.3 Heritage Resources

The Project includes areas that the Government of Saskatchewan's Heritage Conservation Branch classify as being sensitive (i.e., areas that have the potential to contain heritage resources as they are in undisturbed terrain near significant waterbodies, rivers, or streams). Heritage resources consist of physical and cultural heritage sites. Archaeological sites were considered in the Heritage Resources assessment. Denison completed two Heritage Resources assessments during baseline studies, and two archaeological sites were identified in the Project Area. Since each archaeological site included only a single artifact, the Heritage Conservation Branch determined that the sites were of low interpretive value and work could continue as planned.

Despite the completion of two Heritage Resources assessments during baseline studies, it is possible that additional archaeological sites may be identified during the life of the Project. Project activities that may disturb the ground, including clearing and levelling activities, drilling of holes,

infrastructure construction, reclamation, and traffic throughout the life of the Project, may affect archaeological sites.

To mitigate effects on archaeological sites, Denison has developed and implemented a Heritage Resources Management Plan (HRMP). The HRMP outlines the steps that Denison will take if an additional archaeological site is identified during the life of the Project. These steps include having the archaeological site assessed by a qualified archaeologist, holding discussions with local Indigenous leadership, and implementing mitigation measures as directed by the Heritage Conservation Branch. The mitigation measures may include avoidance of the site, systematic testing of the site, an archaeological excavation, and/or construction monitoring.

Residual effects on archaeological sites may involve a decrease in the number of archaeological sites. The assessment predicted that given the low number of archaeological sites identified in the Project Area, and considering measures outlined in the HRMP to make sure any additional archaeological sites are assessed properly, the likelihood of residual effects on Heritage Resources is considered low with a low frequency of occurrence. This resulted in the overall conclusion that residual effects of the Project on Heritage Resources are anticipated to be not significant.

5.8 Quality of Life

5.8.1 Cultural Expression

Cultural Expression provides an understanding of the activities that Indigenous people in the LSA, which is reflective of the same spatial boundaries as Indigenous Land and Resource Use, which are considered as the activities that support Indigenous communities' cultural continuity. The Cultural Expression VC considers changes to the KIs of knowledge transmission and the traditional diet. Knowledge transmission encompasses cultural activities and practices that provide an opportunity for knowledge sharing among family and community members with measurable parameters including changes to cultural practices that support knowledge transmission and changes in the location of cultural practices that support knowledge transmission. The traditional diet includes species such as moose, woodland caribou, fish, and berries, and is of cultural and traditional importance to Indigenous communities. Traditional diet considered the measurable parameters of changes in the availability of country foods included in a traditional diet and changes in the perceived suitability and safety of foods in a traditional diet.

The Project and its activities may change the location of cultural practices that support knowledge transmission and the participation in cultural practices and subsequent knowledge transmission. Indigenous Land and Resource Use changes are expected to persist in proximity to the Project and in the LSA; however, knowledge transmission is often site-specific. For example, cultural camps support the transmission of knowledge on the land. Cultural camps near the Project Area are located south of the Key Lake gate, with the ERFN cultural camp located at kilometre 160 of Highway 914, and cultural camps hosted by Pinehouse Lake held at Gordon Lake, Muskeg Lake, and

at kilometre 67 of Highway 914. Participants in the *Métis Knowledge Study* noted overlap with other Indigenous cultural camps, such as Kilometer 160 of the Key Lake Road, demonstrating the kinship ties that the Métis maintain with their "extended First Nations relations" (MN-S and Two Worlds Consulting 2023). These locations are not expected to be affected by the Project. The anticipated lack of effect to cultural camps, a small Project footprint, and likely persistence of the undertaking ILRU activities throughout the LSA are expected to minimize potential effects of the Project to knowledge transmission. Further to this, participation in the worker rotation system is not expected to substantially change opportunities for Project employees to participate the traditional land use activities that support cultural activities and associated knowledge transmission.

For traditional diet, the Project may reduce the availability of country foods because of changes to the abundance of harvested resources, restricted access, and avoidance of areas where the Project is located, including areas where hunting, fishing, trapping, and gathering occur. For Indigenous peoples, the traditional diet is often preferred, and it is considered healthy. The Project's potential effects on the availability and abundance of species that are important to a traditional diet (e.g., moose, Walleye) are expected to be low; however, the perceived suitability of country foods was still considered as having potential to be adversely affected by the Project.

The Project may adversely affect traditional diet for residents of the LSA through perceived changes in the suitability and safety of resources that support a traditional diet, particularly for activities that occur in proximity to the Project. As a result, some resource users may change their behaviour and limit the amount of traditional foods in their diet. The availability and abundance of those resources is not expected to substantially change; therefore, such changes may be limited to a small number of users proximal to the Project site. The residual effect to the traditional diet overall is expected to be low in magnitude.

To mitigate effects of the Project on the traditional diet, mitigation measures associated with the Project include adopting culturally sensitive employment policies to reduce the potential effects of Project employment on cultural activities; working with Indigenous communities to understand culturally important periods; reducing the Project footprint to the extent practicable; reducing risks associated to increased traffic, noise, air quality, and the potential for constituents of potential concern to enter the environment; and implementing an environmental monitoring program consistent with Canadian Standards Association for nuclear facilities and mines.

The residual effects of the Project are expected to interact with the residual effects of other projects and activities in the Cultural Expression RSA resulting in potential cumulative effects. This is largely due to the Highway 914 extension project. As the effects of the Highway 914 extension project on harvested resources are not tied to perceived changes in the suitability of harvested resources, no overlap occurs between the effects of the projects on the traditional diet key

indicator, specifically changes in the perceived suitability and safety of country foods in a traditional diet. Therefore, no cumulative effect is anticipated for Cultural Expression.

No monitoring or follow-up activities are proposed specific to Cultural Expression. Monitoring and follow-up activities proposed for ILRU will focus on the biophysical environment and the resources that support cultural expression.

5.8.2 Community Well-being

Community well-being can be defined in multiple ways, depending on the community or the people being considered. The assessment focused on ways in which the Project could interact with Community Well-being, and included the KIs of population and demographics, employment and associated income for local workers, and community cohesion. Individuals and families may have experiences associated with the Project that vary in different ways, with the possibility of both positive and negative outcomes.

The Project is not expected to substantially change the population and demographics of communities in the LSA because 1) the Project will rely on a fly-in/fly-out worker rotation system with pick-up points in the LSA and outside of the LSA, thus minimizing any requirement to relocate to access employment and 2) the definition of Residents of Saskatchewan's North currently requires an extended period of residency in order to qualify. These factors limit the potential for in-migration to the LSA.

Project employment and business opportunities could provide additional income to individuals and households. Additional income could be beneficial as increased income is associated with improved health outcomes, or if used to support traditional harvesting activities (e.g., buying a new quad, repairing a boat) or purchasing healthier foods. Increased income has also been shown in various studies to have certain negative impacts on community cohesion, such as potential for increased use of substances, spending time away from family during worker rotation, with resulting potential increases in household stress levels.

To mitigate effects of the Project on community cohesion, Denison will work with communities to develop culturally sensitive hiring practices and provide supports to individual workers and their families. Supports could include (i) providing multiple centrally located pick-up points for fly-in/fly-out workers to minimize the potential for migration and time spent away from families; (ii) establishing health and wellness programming, life skills and financial literacy programming, an Employee and Family Assistance Program, a no drug and alcohol policy on site; and (iii) implementing culturally sensitive employment policies (e.g., having an Elder on site for counselling). After mitigation, and given the small size of the operation (180 employees during operation), Project residual effects related to income and community cohesion are expected to result in positive and some potentially adverse outcomes. The communities overall are resilient and expected to accommodate the anticipated changes as there is already considerable experience

with other similar fly-in/fly-out operations in the region. Overall, the conclusion for changes to income and community cohesion relative to Community Well-being is that the residual effects are expected to be not significant.

The cumulative effects assessment considered the Highway 914 extension project; however, the two projects (the Project and the Highway 914 extension project) have distinct local and regional study areas, meaning the geographic boundaries for each project are unique. Potential changes to community cohesion resulting from employment are unlikely to result in any discernable changes, particularly as the opportunities associated with the all-weather road may involve a broader labour pool. Accordingly, the cumulative effects conclusions are predicted to be not significant.

Monitoring and follow-up would be used to monitor progress on achieving employment and contracting targets and identify opportunities to improve employment and procurement, continue and maintain communication with communities, and contribute to the overall and continual improvement of the Project.

5.8.3 Infrastructure and Services

Infrastructure and services play an important function to the communities in the LSA and beyond. The assessment considered the potential for the various phases of the Project to affect KIs related to Infrastructure and Services VC that were identified as important through Project-related engagement – including traffic, community infrastructure and services, and emergency services capacity. Changes could be caused by increased traffic volumes and potential increases in collisions on roadways requiring the use of emergency services, increased demand on community infrastructure and services (e.g., support for family members of workers participating in the worker rotation system), and increased demand for emergency services as in the event of an accident or malfunction at the mine site or along Highway 914.

Project related traffic volumes are expected to be similar during Construction and Operation and are anticipated to be similar or less during Decommissioning. During Construction, the truck average annual daily traffic (TAADT) and average annual daily traffic (AADT) volumes are predicted to increase by 14 and 22 vehicles, respectively. During Operation, both the TAADT and AADT are predicted to increase by 18 vehicles to 32 and 40 vehicles, respectively. This increased truck traffic is considered low in magnitude.

As the LSA communities are located away from the Project site, most physical Project activities, except for vehicular traffic to move equipment, supplies and personnel, are not predicted to affect Infrastructure and Services in the LSA. The Project site and associated camp will be fully equipped to meet the needs of the Project and its workforce and will operate independently. The extent to which community infrastructure and services and health and emergency services will be affected would vary by community and individual and depend on the capacity of existing facilities and

services. Supports provided to employees on site, inclusive of an Employee and Family Assistance Program, are expected to minimize potential effects to community services.

Accidents and malfunctions are the key factor that could increase pressure on emergency services; however, they were determined to be highly unlikely to unlikely in probability (EcoMetrix 2022), as they would be mitigated by various preventative operational protocols and the emergency response plans Denison will implement. Vehicular accidents are the only potential effects pathway for the Infrastructure and Services VC, that could not be effectively addressed on site and may, therefore, require emergency services from communities in the LSA.

Mitigation for Infrastructure and Services broadly includes the use of designated pick-up and drop-off points; appropriate driver training; an Emergency Response Plan in case of a spill; on-site and accessible services and programs for workers and families; ongoing communication between Denison, LSA communities, and relevant authorities; an on-site primary care paramedic; a health and safety management plan; services and programs provided on-site and accessible to workers (including health and wellness programming, health promotion, immunization programs, life skills programming, and workforce education); and an Employee and Family Assistance Program.

The communities are generally resilient and are expected to accommodate the anticipated changes associated with the Project as they have considerable experience with other similar uranium operations in the region. The overall conclusion relative to changes to Infrastructure and Services is not significant.

The cumulative effects assessment considered the Highway 914 extension project, which has the potential to increase traffic volumes along the existing Highway 914. Although estimates of traffic volume increases were not provided in the Highway 914 extension project EIS, it is safe to assume that the cumulative effects could be an increased requirement for maintenance and increased potential for collisions that could result in injury or death to people and wildlife. The Highway 914 extension project implemented the following mitigations:

- reducing project-related traffic during construction;
- implementing speed limits in specific areas of concern;
- installing and maintaining signage along the highway; and
- conducting regular inspection and maintenance activities on the highway and associated components.

Although the cumulative changes to traffic may be discernable to users of the highway, it is anticipated that the overall increases in traffic can be effectively managed.

With respect to community infrastructure and services, both projects (the Project and the Highway 914 extension project) are removed from communities, and thus the potential for changes

in demand could stem from (a) employment and (b) emergency response. With respect to employment, the Highway 914 extension project may involve a broader labour pool, and as such cumulative effects are not anticipated. For emergency response, the Highway 914 extension project would allow for connections to community-based emergency services beyond the LSA, thus potentially reducing capacity constraints on any one community. Accordingly, the cumulative effects conclusions are predicted to be not significant for Infrastructure and Services.

With the application of mitigation measures, the assessment of cumulative effects and determination of significance for community emergency services capacity does not change with consideration of the Highway 914 extension project. For monitoring and follow-up, vehicular accidents will be monitored on Highways 165 and 914 for noticeable increases. Denison will also continue to liaise with communities, service providers, mine/mill operators, and emergency response providers for the duration of the Project.

5.9 Economics

The various phases of the Project will have different effects on Economy and its KIs: employment and training, income, the traditional economy, government revenues, and business opportunities.

The Project is expected to create employment and business opportunities and increase income for workers and businesses in the LSA. Opportunities include an estimated workforce during the Construction period of approximately 300 people and during the Operations phase of 180 people. Mining positions are higher paying than many other industrial positions. Residents and communities in the LSA will be given first priority for employment and training and business opportunities, followed by Indigenous and/or other communities in the RSA. The Project is also anticipated to positively affect the governments of Saskatchewan and Canada through payments (e.g., uranium royalties, corporation income tax, personal income tax) that are directly and indirectly linked to the Project activities. Because the Project is expected to positively affect employment and training, income, business opportunities, and government revenues, these effects were not carried through the residual effects evaluation.

Changes associated with Project employment may also affect the traditional economy of residents in the LSA through: (1) the physical presence of the Project and its associated activities and how these may interact with traditional activities and (2) participation in the wage economy and how this can contribute to an individual's ability to partake in traditional activities, including that the commuter-rotation system may result in some individuals having less time to participate in the traditional economy. The Project is not expected to have a significant effect on Indigenous and other land and resource use close to the Project site; these types of land and resource use activities near existing uranium operations have persisted in proximity to these sites. With respect to traditional resource users in the LSA, there is less certainty regarding the extent to which participation in the workforce may affect individual traditional resource use behaviours. It is likely

to vary by individual, and in many instances traditional resource use may be positively supported by the income gained through employment.

To maximize potential positive effects of the Project for the Economy VC, mitigation includes the implementation of a workforce development plan to initially prioritize Indigenous and non-Indigenous Communities of Interest in the LSA for employment and training opportunities; establishment of a procurement approach through all phases of the Project with a focus on businesses based within the LSA communities, followed by Indigenous and/or businesses in the Regional Study Area; and development of the Project's Surface Lease Agreement and Human Resource Development Agreement.

Generally, the mitigation measures designed to protect Indigenous land and resource use measures are expected to be protective of participation in the traditional economy. For certain specific cases, there may be a need for one-off arrangements (i.e., a trapper compensation agreement if/when an existing trapline is passed to another individual), to be responsive to other considerations potentially brought forward by select Indigenous communities.

For the most part, effects of the Project are expected to be positive to the Economy VC and have the potential to contribute to both the LSA and RSA and beyond. The only potential residual adverse effects relate to the traditional economy, which can be mitigated in large part by measures related to potential changes to land and resources use. Any residual adverse effects will occur in the LSA, and are expected to be potentially frequently occurring (due to the daily nature of work) but negligible to low in magnitude, medium-term in duration, and reversible after Decommissioning.

The cumulative effects assessment, which involved the Highway 914 extension project, considered the same factors as changes to ILRU. Cumulatively, the magnitude of changes to traditional economy are associated largely with changes resulting from the Highway 914 road extension project, as easing access would result in an increase of users in the area potentially putting pressure on the items harvested as part of the traditional economy, particularly relative to existing conditions in which access restrictions are currently in place.

Monitoring would be used to assess progress on achieving employment and contracting outcomes. Follow-up items will be focussed on the continuation and maintenance of communication about topics of importance with Indigenous and non-Indigenous communities. Monitoring relative to the traditional economy includes those activities associated with ILRU.

5.10 Accidents and Malfunctions

An assessment of potential accident and malfunction was carried out in alignment with federal (CNSC 2020) and provincial (Government of Saskatchewan 2014a, 2014b) guidance, as well as

recent EA practice in consideration of proposed uranium mining developments in the Athabasca Basin.

The objective of the assessment was to evaluate the potential human health or biophysical environmental effects resulting from radiological and conventional accidents and malfunctions in consideration of proposed environmental protection measures. The assessment considered all mine-life phases focusing on the Project site, the Project site access road and specific off-site locations along the mine-related transportation route (i.e., provincial highway system) of interest to local Indigenous peoples.

The assessment followed a risk-based approach, whereby hazards were identified, design features and mitigation measures were considered, likelihood and consequence were evaluated, and an overall risk rating based on likelihood and consequence was assigned using a risk matrix.

A total of 70 potential Project-related hazard scenarios were identified and evaluated through the initial screening process as described above.

Seven scenarios were considered moderate or high risk and were advanced for more detailed quantitative assessment. The results of the quantitative assessment of the seven accident and malfunction scenarios are summarized below:

- Loss of freeze capacity – The scenario whereby a loss of containment of mining solution would occur due to loss of freeze capacity was deemed “highly unlikely”. The freeze wall provides tertiary containment, and the postulated excursion could only occur under the highly unlikely scenario where the multi-barrier containment system was compromised by independent events, over a prolonged period of time. In this highly unlikely event, migration of lixiviant (mining solution) is likely to be slow and localized and mitigation could be implemented. The consequence was deemed to be “major”. The overall risk rating for this bounding scenario in consideration of probability and consequence was determined as “moderate”.
- Loss of integrity of the freeze wall – The scenario whereby there would be a loss of freeze wall integrity due to an external seismic event was deemed “highly unlikely”. The Project area has a very low level of seismicity—there have been no recorded earthquakes with a magnitude greater than 3 within 200 km of the site (NRCan 2021b). In this highly unlikely event, and assuming the seismic activity does result in a loss of freeze wall containment, migration of lixiviant (mining solution) is likely to be slow and localized and mitigation could be implemented. The consequence was deemed to be “major”, given the potential impact to the underlying freeze wall infrastructure, which could take a significant amount of time to repair/replace. The overall risk rating, however, for this bounding scenario in consideration of probability, consequence and mitigation measures, was determined as “moderate”.

- Vessel or pipe leak inside the processing building – Based on data from the Center for Chemical Process Safety of the American Institute of Chemical Engineers on the average probabilities of failures for different components in processing plant, the probability of this scenario was assessed as “likely”. The severity of the consequences of this scenario was predicted to be “minor”, given control measures within the processing plant and emergency response measures. The overall risk rating for this bounding scenario in consideration of probability and consequence was given as “low”.
- A terrestrial release (to ground) of radioactivity, fuels or chemicals – Based on traffic and accident statistics it was determined that the probability that this scenario would occur was “unlikely”. The severity of the consequences of this scenario was predicted to be “minor” given control measures, the likely limited spatial extent of potential effects, and emergency response measures. The overall risk rating for this bounding scenario in consideration of probability and consequence was given as “low”.
- Aquatic release of uranium concentrate (radioactivity) – Based on traffic and accident statistics it was determined that the probability that this scenario would occur was “highly unlikely”. The severity of the consequences of this scenario was predicted to be “moderate” given control measures, the likely limited spatial extent of potential effects and their transience, and emergency response measures. The overall risk rating for this bounding scenario in consideration of probability and consequence was given as “low”.
- Aquatic (to water) release of fuels or chemicals – Based on traffic and accident statistics it was determined that the probability that this scenario would occur was “unlikely”. The severity of the consequences of this scenario was predicted to be “moderate” given control measures, the likely limited spatial extent of potential effects and their transience, and emergency response measures. The overall risk rating for this bounding scenario in consideration of probability and consequence was given as “low”.
- Fire and/or explosion within the processing plant – Based on data from the Center for Chemical Process Safety of the American Institute of Chemical Engineers on the probability that this accident and malfunction scenario may occur, the probability of this scenario was predicted to be “highly unlikely". The severity of the consequences of this scenario was predicted to be “moderate”, given control measures, emergency response measures and the expected level of exposure to radioactivity for workers and the public. The overall risk rating for this bounding scenario in consideration of probability and consequence was given as “low”.

Overall, based on the assessment of accidents and malfunctions presented herein, it is anticipated that potential effects could be addressed through engineering design and compliance with industry best practices that reduce risks associated with the hazard scenarios to ALARP. Based on this assessment, the risks may be characterized as tolerable.

5.11 Effects of the Environment on the Project

Both the *Canadian Environmental Assessment Act, 2012* and the Canadian Nuclear Safety Commission's *Generic Guidelines for the Preparation of an Environmental Impact Statement – Pursuant to the Canadian Environmental Assessment Act, 2012* require an environmental assessment to account for changes to the Project that may be caused by the environment. The environmental setting of the Project has affected its design and will affect its management over the life of the Project.

Environmental components that have influenced the Project design (e.g., site selection, layout, and engineering) include the following:

- Geology and terrain have influenced the mine location and layout.
- Indigenous Knowledge of land and resource use was incorporated into the design of baseline programs and selection of valued components for the environmental assessment. It was also integral to informing Project design, influencing selection of access road alignments, mining methods, and proposed treated effluent discharge locations.
- Vegetation communities and wetlands influenced the size of the Project Area, which has been reduced to the extent practicable.
- Consideration of potential effects to fish and fish habitat led Denison to design the Project to recycle process water to the greatest extent possible, thereby reducing the demand for fresh water supply. As a result of the focus on water recycling, the volume of treated effluent requiring discharge is expected to be low.

Set within this context, the focus of Effects of the Environment on the Project is on the potential effects of natural hazards on the Project (i.e., seismic events, forest fires, extreme weather, and climate change). In terms of seismic events, the potential effect on the Project is low because northern Saskatchewan, where the Project is located, is one of the least earthquake-prone areas in Canada, ranking as a low seismic hazard zone (NRC 2021 a,b).

Forest fires are common throughout most of northern Saskatchewan, and are an important natural disturbance of northern boreal forest ecosystems (Parisien et al. 2004). It is expected that Denison will enter into a fire control agreement with the Province of Saskatchewan, as other northern uranium mine and mill facilities have done, which will allow for fire fighting support from the province should a fire develop near the Project. Denison's Forest Protection Program will include information on how to prevent and suppress forest fires near the Project. Fire guards (i.e., buffer zones of 30 m) will be established and maintained between specific Project facilities (e.g., main camp, processing plant) and forested areas to minimize potential risks from forest fires. On-site emergency response equipment will be available for fire suppression and setting up fire

suppression systems, and staff on site will be trained in the operation of this equipment and in fire-fighting readiness and techniques.

Various mitigation measures and management plans will be put in place at the Project to minimize the effects of extreme weather events (i.e., major precipitation events, drought, extreme high and low temperatures, extremely high winds) on the Project, including, but not limited to, the following examples:

- Suitable equipment and design systems will be selected for the Project to enable operation under extreme weather events.
- Denison's emergency preparedness and response plan for the Project will include information on planning for and responding to severe weather events.
- Weather forecasts will be monitored, which will provide advanced warning and time to prepare for extreme events.
- Health and safety policies will be implemented, and risk assessments will be undertaken, before working in adverse weather conditions.
- Employees will be required to wear appropriate personal protective equipment (e.g., rain gear) while working outside in extreme weather. Radio communication will be maintained with anyone working away from the mine site under these conditions.
- Diesel generators will be available on site at strategic locations, outside of site runoff areas, to provide back-up power in the case of a power outage. Generators will be used to maintain power to the processing plant and the accommodations facility, as well as to maintain other essential services, when required.

Climate change can be defined as a long-term change in average weather patterns, particularly since the early 20th century, that are largely attributed to increased levels of atmospheric greenhouse gases produced by human activities (NASA 2021). In general, research suggests increased warming over the coming decades due to climate change is likely to cause changes in the frequency, severity, and/or nature of weather extremes in the northern portions of North America (IPCC 2021). Climate models are used to depict how the climate is likely to change in the future at particular locations. Climatic projections for the Project were derived from an interactive, online climate modelling tool (i.e., Climate Atlas; PCC 2019).

The Project will be developed with consideration of the predicted changes in climate conditions that could occur during its lifecycle from pre-construction design through to monitoring during Post-Decommissioning. Denison has incorporated design features, mitigation measures, and management plans related to forest fires and extreme weather into the Project, which are also applicable to environmental changes due to climate change. The Project has also been designed using engineering best practices and will meet current regulations and building codes. Additional

growing days due to predicted increased temperatures may be beneficial to the Project during Decommissioning, allowing for accelerated revegetation and reclamation of natural vegetation communities.

6 Monitoring and Follow-up Programs

Monitoring programs are designed to meet regulatory requirements (e.g., permit or license conditions), and/or to demonstrate compliance with environmental commitments made in the EIS. Follow-up programs are those that are proposed to address any uncertainties identified during the EA process (e.g., to verify predictions made during the EA; determine the effectiveness of proposed and implemented mitigation measures) and to determine when to implement adaptive management measures.

Information on monitoring and follow-up programs presented within the EIS is conceptual in nature and provides a preliminary description of the activities proposed for the Project. Detailed programs will be developed as Project designs are finalized, which may influence the nature, frequency, and locations of monitoring activities. Input from regulatory agencies, the public, and Indigenous Peoples will be considered. Monitoring and follow-up programs will be finalized as the Project advances into and through the licensing process.

Monitoring and follow-up programs for the Project will be integrated within Denison's overall EMS framework (see Section 3.4.4) and implemented through the various programs, plans, and procedures that would be developed therein. Generally, Denison is anticipating establishing monitoring and follow-up programs in relation to the following VCs (as outlined in the various subsections of Section 5):

- Air Quality and Noise;
- Groundwater;
- Surface Water Quantity and Quality;
- Fish Habitat and Health;
- Terrain and Soil;
- Vegetation and Ecosystems, Listed Plant Species, and Wetlands;
- Ungulates, Furbearers, and Woodland Caribou;
- Raptors and Migratory Breeding Birds;
- Human Health and Worker Health and Safety;
- Indigenous Land and Resource Use, Other Land and Resource Use, and Heritage Resources; and
- Economy.

7 Conclusions

On the basis of the Project information and related evaluation and assessment of effects, Denison believes that the Project can be constructed, operated, and decommissioned in a manner that is not likely to cause significant adverse effects to the biophysical or human environments.

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