

Rook I Project

Environmental Impact Statement

Section 17 Other Land and Resource Use

Submitted to:
Canadian Nuclear Safety Commission
Saskatchewan Ministry of Environment

Submitted by:
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Executive Summary

Section Purpose

Section 17 of the Environmental Impact Statement (EIS) provides a comprehensive assessment of potential effects of the Rook I Project (Project) on other land and resource use. This assessment included consideration of both potential effects from the Project and cumulative effects from the Project and other reasonably foreseeable developments (RFDs). The other land and resource use assessment used widely accepted scientific practices and incorporated Indigenous and Local Knowledge.

Other land and resource use represented a valued component (VC) for the Environmental Assessment (EA); the selection was based on other land and resource uses being key economic activities and central features of the social setting in northern Saskatchewan. The other land and resource use assessment focused on the commercial and recreational uses that are derived from the natural environment. Commercial resource use included activities in which people from both non-Indigenous and Indigenous communities may participate: commercial fishing and trapping; lodges, outfitting and ecotourism; forestry; and mining. Recreational uses included use of parks and protected areas by Indigenous or non-Indigenous peoples, as well as fishing and hunting activities that are conducted by non-Indigenous people under provincial licences.

The assessment of other land and resource use was informed by the assessments completed for fish and fish habitat and wildlife and wildlife habitat. The other land and resource use assessment provided information that was used to support other VC assessments such as economy, Indigenous land and resource use, and community well-being.

Setting

At a regional scale, the Project would be located within the southern Athabasca Basin adjacent to Patterson Lake, along the upper Clearwater River system, approximately 40 km east of the Saskatchewan-Alberta border and 640 km northwest of the city of Saskatoon. The other land and resource use local study area (LSA) includes the areas surrounding Patterson, Vermeersch, Wickenkamp, Forrest, Beet, and Naomi lakes, plus the Highway 955 corridor between the Project site and La Loche. The other land and resource use regional study area (RSA) is bounded by the N-19 trapping block.

Existing Conditions (Section 17.3)

Commercial trapping and lodge and outfitting services are the main other land and resource use activities conducted within the LSA.

For the management of big game, the Project is located within Wildlife Management Zone (WMZ) 75 and Game Bird Management Unit (GBMU) 6. Average annual harvest from WMZ 75 is five moose for 29 licensed hunters and five black bear for 12 licensed hunters (Government of Saskatchewan 2020). Harvest in GBMU 6 mainly consists of ruffed grouse, spruce grouse, sharp-tailed grouse, and ptarmigan, in order of decreasing licensed hunters and harvest numbers.

Saskatchewan fur harvest statistics from 1970 to 2020 illustrate a declining trend in the number of trappers and pelts harvested (Government of Saskatchewan 2021a). This decline was corroborated by the Birch Narrows Dene Nation (BNDN) and Buffalo River Dene Nation (BRDN), who noted trapping was the primary industry in the region up until the 1960s, and since which time it has been declining due to low fur prices and anti-fur

campaigns (BNDN-JWG 2021; BRDN-JWG 2021). Trapping still provides benefits to trappers and their families, including money from fur sales, meat from certain species, and some use of furs for domestic purposes. The N-19 trapping block, whose boundaries are included in the Project's RSA, recorded 258 pelt harvests in 2019/2020 for a total value of just over \$7,500 (Government of Saskatchewan 2021a).

There are approximately 10 active commercial fish harvesters from La Loche to Patterson Lake; however, over the past 20 years, Patterson Lake was only commercially fished in the 2016/2017 season.

There are three lodge and outfitting operations with allocations within or partially within the LSA: Forest Lake Outfitters, Big Bear Contracting, and Lone Wolf Camps. Kisslinger Outfitters are located within the RSA and is accessed via the Highway 955 corridor. Lloyd Lake Lodge and Bolton Lake Wilderness Retreat are remote fly-in operations also located in the RSA. The closest operation to the proposed Project is Forest Lake Outfitters, which shares the existing access road for the Project and has allocations for sports fishing on Patterson Lake and other local lakes. Lodge and outfitting services have experienced a downturn due to the COVID-19 pandemic.

For recreational users, the RSA contains all or portions of the Clearwater River Provincial Park, the Clearwater River Canadian Heritage River, the Methye Portage Historic Trail, and the Preston Lake Wildlife Refuge.

Commercial forestry activity is not conducted in the other land and resource LSA or RSA.

There are five uranium operations located in northern Saskatchewan (i.e., Cigar Lake, Key Lake Mill, McArthur River Mine, McClean Lake Mine and Mill, and Rabbit Lake Mine and Mill; CNSC n.d). However, there are no current active mines in the LSA or RSA. The Cluff Lake Mine was closed in 2002 and is located at the north end of Highway 955. Approximately 92 mineral dispositions have been granted to 12 companies that are within, or partially overlap, the LSA, including the Project's and Fission's mineral dispositions, which are proposed for development.

Potential Effects and Proposed Mitigation (Section 17.4)

An analysis was completed to evaluate Project components and activities and associated effects pathways that could potentially affect other land and resource use. The evaluation also considered similar combined effects from the Fission Patterson Lake South Property, the identified RFD for the other land and resource use assessment.

Project activities that would have the potential to affect other land and resource use during the Project lifespan include:

- land clearing, site preparation, construction of facilities and infrastructure;
- transportation of personnel and materials to and from the site;
- process plant and underground operations;
- handling and storage of waste rock, special waste rock, and ore;
- power generation;
- water intakes for potable and process water;
- effluent treatment plant and treated effluent discharge;
- sewage treatment plant and water storage and effluent monitoring ponds;
- additional infrastructure (e.g., camp, maintenance shop, offices); and
- other supporting mining construction, operation, and decommissioning and reclamation activities.

Similar activities that could affect other land and resource use would be expected to occur for the Fission Patterson Lake South Property.

As part of the pathways analysis, proposed environmental design features and mitigation measures were considered to determine whether effects on the environment could be avoided or reduced to negligible levels, thereby removing the pathway. Project environmental design features such as the underground tailings management facility and a limited Project footprint were designed to minimize the Project's effects on other land and resource use. NexGen reduced the Project footprint and corresponding maximum disturbance area (i.e., 981 ha, or four times larger than the currently anticipated Project footprint) by:

- optimizing the use of cleared areas for Project activities;
- using existing road infrastructure to the extent possible, including the existing bridge crossing;
- storing tailings underground; and
- designing an efficient infrastructure footprint (i.e., buildings clustered together).

In addition, proposed mitigation measures that would reduce effects on other land and resource use include:

- robust site environmental management processes;
- design of facilities and infrastructure to minimize sensory disturbance;
- implementation of progressive and final reclamation; and
- development and implementation of a Decommissioning and Reclamation Plan, Security Program, and Indigenous and Public Engagement Program.

These mitigations have been used within the mining sector and have been proven effective. Similar mitigation and management practices would also be expected to be implemented by the Fission Patterson Lake South Property.

After mitigation measures were considered, the pathways screening analysis determined that many of the potential pathways from the Project to the environment could be removed from the assessment. However, it was identified that the Project could still adversely affect other land and resource use from the following pathways:

- access to and area available for land and resource use; and
- quality of the resource use experience.

These pathways were carried forward into the residual effects analysis.

Residual Effects Analysis (Section 17.5)

A residual effects analysis was conducted to determine the potential effects on other land and resource use under two assessment cases: effects of the Project (i.e., Application Case), and combined effects of the Project and the Fission Patterson Lake South Property (i.e., RFD Case). The residual effects analysis considered three measurement indicators:

- access to, and area available for, land and resource use;
- availability of fish and wildlife for harvesting; and
- quality of the resources and the quality of resource use experience.

Access to, and Area Available for, Land and Resource Use

The following are expected residual effects on access to, and area available for, land and resource use:

- Access to other land and resource use around infrastructure would be limited for safety reasons for the Project and the Fission Patterson Lake South Property.
- Access would be affected by additional traffic and upgrades to the access road for the Project and the Highway 955 by-pass for the Fission Patterson Lake South Property.
- For the Project, availability of other land and resource use would be reduced within the maximum disturbance area by 981 ha or 0.7% of the LSA.
- The Fission Patterson Lake South Property activities are predicted to contribute an incremental loss of 1,545 ha of land available for other land and resource use, equivalent to 2.0% of the LSA.
- The Project and the Fission Patterson Lake South Property would not restrict small watercraft from navigation of Patterson Lake.

With mitigations, there would be continued opportunities for other land and resource use with the predicted changes in access to, and area available for, land and resource use from the Project and the Fission Patterson Lake South Property.

Quality of the Resource Use Experience

The following are expected residual effects on quality of the resource use experience for the Project and cumulative effects with the Fission Patterson Lake South Property:

- Sensory disturbances (i.e., light, noise, air quality, and aesthetics):
 - Project noise levels are predicted to be below government thresholds but could affect the aesthetics for some individual land and resource users.
 - Light trespass would be localized around infrastructure.
 - Sky glow is expected to obscure faint stars for trappers and lodge and outfitting clientele on clear nights.
 - Dust emissions would be highly localized.
- Resource user safety may be affected from increased traffic along the access road and adjacent highway.
- Perceptions that mine activities adversely affect the quality of fish and wildlife for harvest.
- Perceptions of contamination at decommissioned facilities.

With mitigations, there would be continued levels of opportunities for other land and resource use with the predicted changes to the quality of the resource use experience from the Project and the Fission Patterson Lake South Property. This includes incorporating safety mitigation measures to protect users on the access road and Highway 955. Individuals may experience different levels of effects from sensory disturbances and perceptions of effects.

Significance Determination (Section 17.6)

The weight of evidence from the analysis, including consideration of experiences at other uranium operations in northern Saskatchewan where multiple uses remain compatible, predicted that other land and resource use can continue in local areas not affected by the projects; resources equivalent in abundance and quality would continue to be available to resource users. Changes to the aesthetics of other land and resource use would be primarily dependent on proximity to the projects and individual sensitivities. The number of resource users potentially affected are limited.

Incremental and cumulative effects resulting from the Project, previous and existing developments, and the Fission Patterson Lake South Property on the other land and resource use are predicted to be **not significant**.

Prediction Confidence and Uncertainty (Section 17.7)

Overall, there was a moderate to high degree of confidence in the predictions related to the other land and resource use assessment. Uncertainty was primarily and appropriately addressed by making assumptions that conservatively overestimated rather than underestimated potential effects (i.e., a precautionary assessment).

Monitoring, Follow-Up, and Adaptive Management (Section 17.8)

Meetings would be held with community members, commercial trappers, outfitters, and other potentially affected land users, as applicable, both independently and as part of the Indigenous and Public Engagement Program. The results of the monitoring conducted by the independent Indigenous Monitors would be evaluated and modifications to monitoring plans would be made as required to support adaptive management and foster continual improvement.

Abbreviations and Units of Measure

Abbreviation	Definition
BNDN	Birch Narrows Dene Nation
BRDN	Buffalo River Dene Nation
CNSC	Canadian Nuclear Safety Commission
CRDN	Clearwater River Dene Nation
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ENV	Saskatchewan Ministry of Environment
FFMC	Freshwater Fishing Marketing Corporation
GBMU	Game Bird Management Unit
HABISask	Hunting, Angling and Biodiversity Information of Saskatchewan
JWG	Joint Working Group
KP	key person
LPA	local priority area
LSA	local study area
MN-S	Métis Nation – Saskatchewan
NexGen	NexGen Energy Ltd.
NR2	Northern Region 2
Project	Rook I Project
RFD	reasonably foreseeable development
RSA	regional study area
IKTLU	Indigenous Knowledge and Traditional Land Use
VC	valued component
WMZ	wildlife management zone
WRSA	waste rock storage area
WSE	water surface elevation

Unit	Definition
%	percent
\$	Canadian dollars unless otherwise stated
cm	centimetre
ha	hectare
km	kilometre
km ²	square kilometre
km/h	kilometres per hour
kg	kilogram
m	metre
m ³	cubic metre
mg/cm ² /30 d	milligrams per square centimetre per 30 days
mSv/yr	millisieverts per year

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17 OTHER LAND AND RESOURCE USE

17.1 Introduction

NexGen Energy Ltd. (NexGen) is proposing to develop a new uranium mining and milling operation in northwestern Saskatchewan, called the Rook I Project (Project). The Project would be located approximately 40 km east of the Saskatchewan-Alberta border, 130 km north of the Northern Village of La Loche, and 640 km northwest of the city of Saskatoon (Figure 17.1-1). The Project would reside within Treaty 8 territory and the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, along the upper Clearwater River system. Patterson Lake is at the interface of the Boreal Shield and Boreal Plain ecozones. Access to the Project would be from an existing road off Highway 955 (Figure 17.1-2), with on-site worker accommodation serviced by fly-in/fly-out access.

Section 17, Other Land and Resource Use, of the Environmental Impact Statement (EIS) characterizes the potential residual effects of the proposed Project on other land and resource use, which is an attribute or component of the human environment. Other land and resource use represents a valued component (VC) for the Environmental Assessment (EA).

The other land and resource use VC is one of two VCs that encompass land and resource use in the anticipated area of the Project; the second VC is Indigenous land and resource use. Indigenous land and resource use is described in Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use, and focuses on activities that are an expression of Aboriginal and Treaty Rights, including hunting and trapping, fishing, gathering for food and ceremonial purposes; places of occupancy such as cabins and camp sites; access and travel routes; and culturally important sites such as those with a spiritual or historical importance for traditional or cultural purposes for Indigenous Peoples. Other land and resource use focuses on the commercial and recreational uses that are derived from the natural environment. Commercial resource use includes activities in which people from both non-Indigenous and Indigenous communities may participate: commercial fishing and trapping; lodges, outfitting and ecotourism; forestry; and mining. Recreational uses include use of parks and protected areas by Indigenous or non-Indigenous peoples, as well as fishing and hunting activities that are conducted by non-Indigenous people under provincial licences. Other land and resource uses are key economic activities and central features of the social setting in northern Saskatchewan.

The assessment of other land and resource use incorporated findings from the fish and fish habitat (Section 11) and wildlife and wildlife habitat (Section 14) assessments, as fish and wildlife support commercial resource use activity, along with potential linkages to human health associated with the consumption of water, fish, and wildlife (Section 15). Likewise, effects on other land and resource use have linkages with the resource economy (Section 18), community well-being (Section 19), and cultural and heritage resources and Indigenous land and resource use (Section 16).

The Project has the potential to cause adverse effects on other land and resource use by:

- alteration of surface water quantity and quality, which could influence fish habitat and fish productivity;
- removal of vegetation communities and associated wildlife habitat, which could alter the abundance and distribution (or availability) of wildlife;
- noise, light, and air emissions, which could result in a decrease in the aesthetic qualities or appeal for land users of the local area around the Project;

- access restrictions, traffic patterns changes, and the presence of a large workforce, which could alter resource user safety and the aesthetics of the area around the Project; and
- land user concerns and perceptions about the potential health effects of fresh water and harvesting fish and wildlife containing metals and radionuclides, which could decrease the use of land and resources by the public adjacent to the Project.

Together, these potential changes in availability of natural resources, aesthetic quality, and potential health concerns may adversely influence recreation, tourism, and guiding opportunities for other land and resource users. A simplified linkage diagram, Figure 17.1-3, illustrates how proposed Project activities could result in a direct or indirect effect on other land and resource use, and the VCs that could be influenced through changes to other land and resource use.

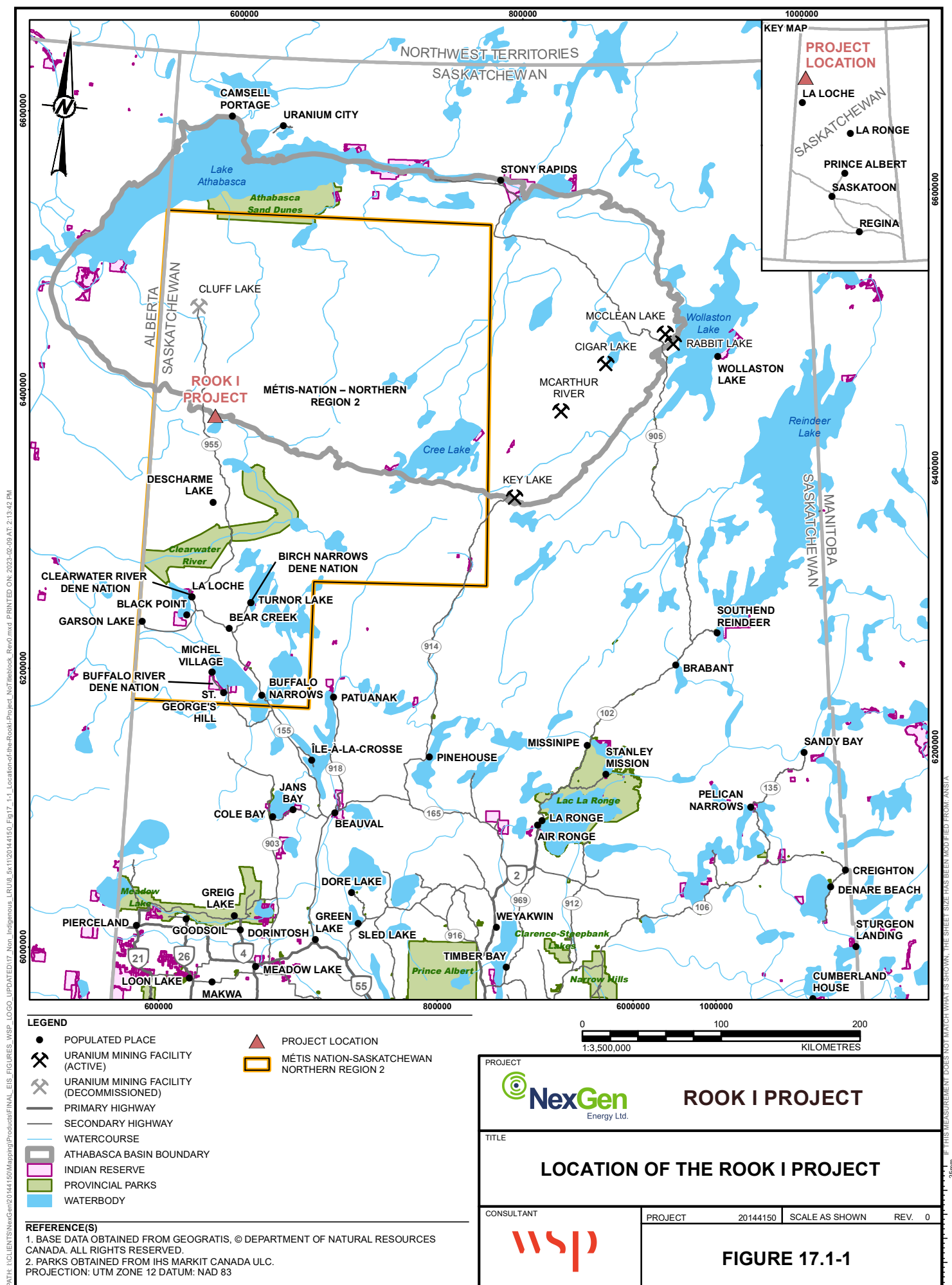
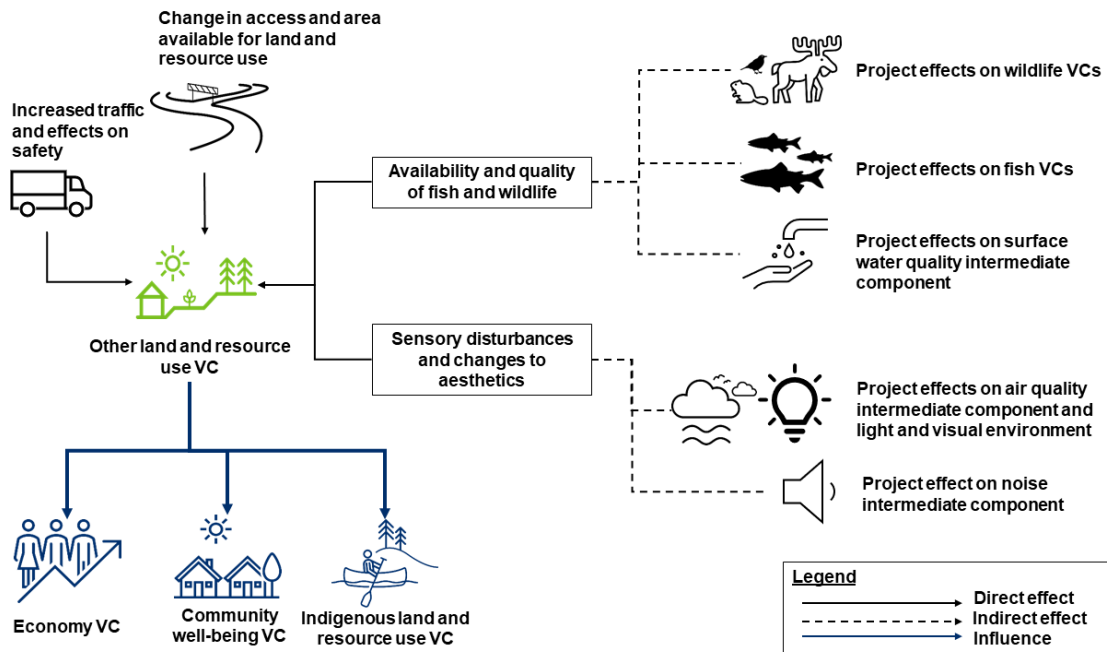


Figure 17.1-3: Linkage Diagram of Project Effects to Other Land and Resource Use and Influenced Valued Components



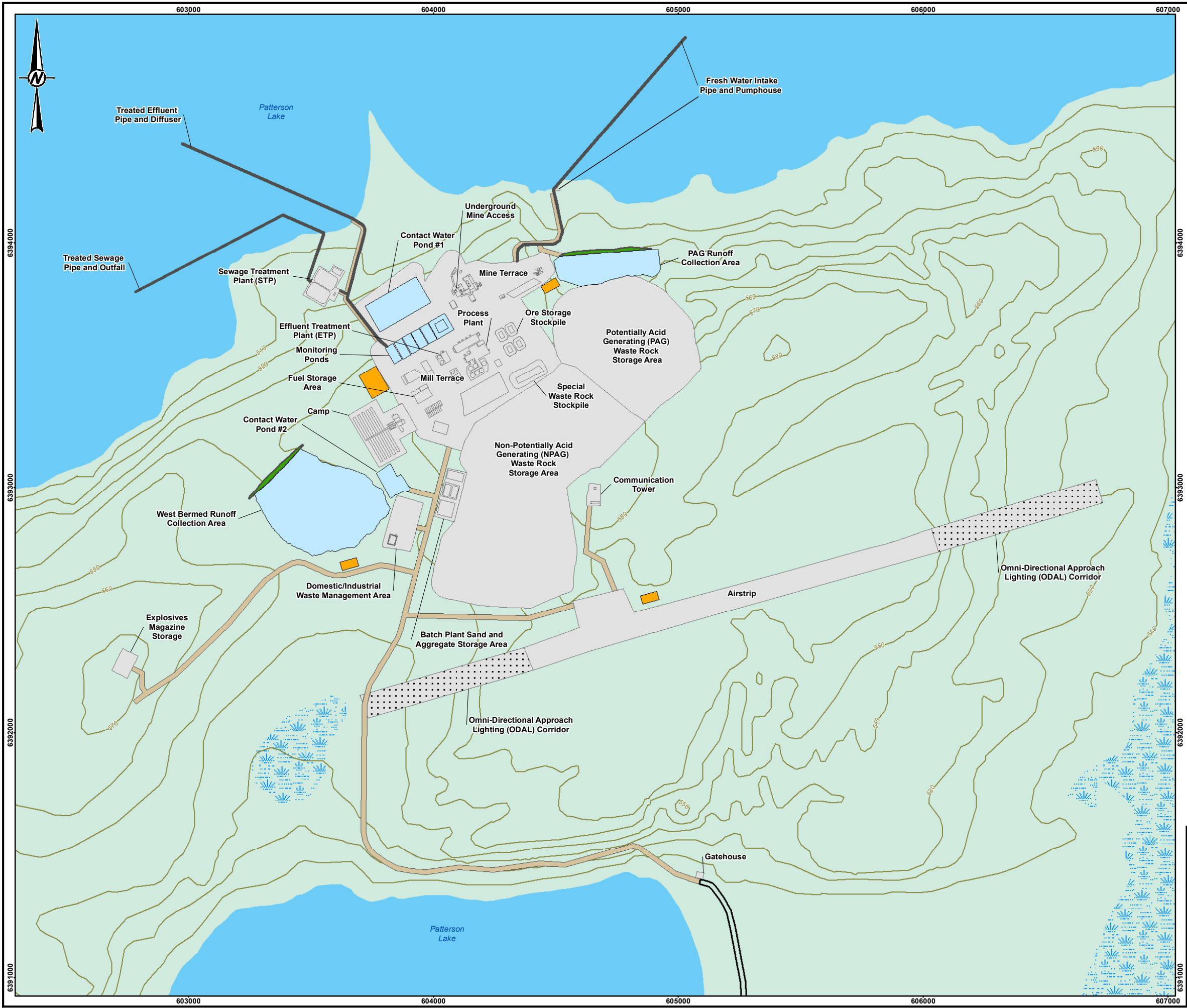
17.1.1 Project Summary

The Project would include the following key facilities to support the extraction and processing of uranium from the Arrow deposit for transportation off site (Figure 17.1-4):

- underground mine development;
- process plant buildings, including uranium concentrate packaging facilities;
- paste tailings distribution system;
- underground tailings management facility;
- potentially acid generating waste rock storage area (WRSA);
- non-potentially acid generating WRSA;
- special waste rock¹ and ore storage stockpiles;
- surface and underground water management infrastructure, including water management ponds, effluent treatment plant (ETP), and sewage treatment plant (STP);
- conventional waste management facilities and fuel storage facilities;
- ancillary infrastructure, including maintenance shop, warehouse, administration building, and camp;
- airstrip and associated infrastructure; and
- access road to Project and site roads.

¹ Special waste rock is mine rock that is mineralized with insufficient grade to be considered ore (i.e., greater than 0.03% of triuranium octoxide [U_3O_8] and less than 0.26% U_3O_8). All special waste would be temporarily stored in the special waste rock stockpile.

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LEGEND

- ELEVATION CONTOUR (10 m INTERVAL)
- WATERBODY
- WETLAND
- WOODED AREA
- INTAKE OR DISCHARGE PIPE
- ACCESS ROAD
- CONTACT WATER CONTAINMENT BERM
- OMNI-DIRECTIONAL APPROACH LIGHTING (ODAL) CORRIDOR
- PROJECT INFRASTRUCTURE
- SITE ROAD
- TOPSOIL STORAGE AREA
- WATER MANAGEMENT POND

0 0.5 1
1:15,500 KILOMETRES

REFERENCE(S)

1. PROJECT FEATURES OBTAINED FROM NEXGEN, APRIL 6, 2021 AND UPDATED JUNE 8, 2021 .
2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
PROJECTION: UTM ZONE 12 DATUM: NAD 83

PROJECT Rook I Project			
TITLE LAYOUT OF INFRASTRUCTURE AND FACILITIES FOR THE ROOK I PROJECT			
CONSULTANT 	PROJECT 20144150	SCALE AS SHOWN	REV. 0
FIGURE 17.1-4			

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

17.1.2 Purpose and Approach to the Assessment

The purpose of Section 17 is to provide a detailed and comprehensive assessment of all potential Project-specific effects and cumulative effects from the Project and other previous, existing, and reasonably foreseeable developments (RFDs), if applicable, on other land and resource use. This section meets the Terms of Reference for the Project submitted to the Saskatchewan Ministry of Environment (ENV) and the Canadian Nuclear Safety Commission (CNSC) *Generic Guidelines for the Preparation of an Environmental Impact Statement – Pursuant to the Canadian Environmental Assessment Act, 2012* (Appendix 1A, Concordance Tables). The assessment of other land and resource use followed the overall EA approach and methods (Section 6, Environmental Assessment Approach and Methods) and includes the following primary steps:

Step 1 – Define component-specific methods (Section 17.2): presents the specific approaches and methods used to measure and assess the effects of the Project on other land and resource use as well as cumulative effects from the Project, other previous and existing projects and activities, and RFDs, if applicable.

Step 2 – Characterize existing conditions (Section 17.3): describes and characterizes existing conditions to provide context and a basis for evaluating potential changes to other land and resource use caused by the Project.

Step 3 – Evaluate Project interactions and mitigations (Section 17.4): identifies Project components and/or activities with the potential to affect other land and resource use and provides environmental design features and mitigation policies and actions committed to by NexGen to avoid or minimize potential adverse effects. A pathways analysis was used to focus further assessment on key interactions between the Project and other land and resource use by evaluating the different effects pathways to determine if, after incorporation of mitigation, there is still potential to cause residual adverse effects. Primary pathways anticipated to result in residual adverse effects after incorporation of mitigation are carried forward to Step 4 for further analysis. Where potential adverse effects are adequately mitigated and thus not forwarded for further analysis (i.e., where mitigation results in negligible effects or avoids the pathway altogether), the reasons for concluding the assessment at this stage are provided.

Step 4 – Analyze residual effects (Section 17.5): evaluates and describes the potential Project effects on other land and resource use that are anticipated to occur through the primary pathways. The residual effects analysis is presented as an integrated narrative that describes the effects of the Project over time and highlights predicted effects at the point when adverse effects of the Project are expected to be greatest. This step also includes an analysis of residual cumulative effects from the Project, other previous and existing projects and activities, and RFDs.

Step 5 – Classify residual effects and determine significance (Section 17.6): summarizes the results of the residual effects analysis using effects criteria (i.e., direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of occurrence). Significance is determined using the results of the residual effects analysis and classification. Significance is determined for adverse effects only and for the maximum adverse effects of the Project and the cumulative effects from the Project, other previous and existing projects and activities, and RFDs.

Step 6 – Describe uncertainty and define prediction confidence (Section 17.7): identifies key uncertainties and explains how these uncertainties have been addressed to achieve a conservative, precautionary assessment. The implications of the approaches used to address uncertainties and the level of confidence in the residual effects analysis are discussed.

Step 7 – Identify monitoring and follow-up (Section 17.8): outlines the proposed actions to verify predicted residual effects. The purpose of these actions is to evaluate effectiveness of planned mitigation designs, policies, and practices, and address key sources of uncertainty.

17.2 Component Methods

17.2.1 Incorporation of Indigenous and Local Knowledge

Indigenous and Local Knowledge related to other land and resource use was shared by potentially affected First Nations and Métis Groups (collectively referred to as Indigenous Groups) and local priority area (LPA) community members through the engagement process for the Project and for which NexGen would prioritize local training, employment, and business opportunities for the Project. These communities are located along, or accessed via, Highways 155 and 955 north of the intersection of Highways 155 and 925 and include the following communities (Figure 17.2-1):

- Clearwater River Dene Nation;
- Clearwater Clear Lake (Métis Nation – Saskatchewan name for Northern Region 2);
- La Loche (Local 39);
- Birch Narrows Dene Nation;
- Turnor Lake (Local 40);
- BRDN / Dillon;
- Buffalo Narrows (Local 62);
- Bear Creek (Local 156);
- Descharme Lake;
- Garson Lake;
- Black Point (Local 162);
- Michel Village (Local 65); and
- St. George's Hill (Local 70).

The overall approach and methods for the incorporation of Indigenous and Local Knowledge into the EA is discussed in detail in Section 3, Indigenous and Local Knowledge. Issues and concerns related to other land and resource use raised by Indigenous Groups and LPA community members, and how they were addressed are summarized in Appendix 2B, Summary of Issues and Concerns Identified by Indigenous Groups, and identified and addressed in this assessment, where applicable.

A key source of Indigenous and Local Knowledge is the Project-specific studies completed by Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies (henceforth referred to collectively as Indigenous Knowledge and

Traditional Land Use [IKTLU] Studies). The IKTLU Studies that were reviewed and referenced in the EIS as technical support documents (TSDs) are listed below:

- TSD II (BNDN), Birch Narrows Dene Nation Traditional Knowledge and Use Study Specific to NexGen Energy Limited's Proposed Rook I Project;
- TSD III (BRDN), Buffalo River Dene Nation Traditional Knowledge and Use Study Specific to NexGen Energy Limited's Proposed Rook I Project;
- TSD IV (MN-S), Métis Nation-Saskatchewan Northern Region 2 Traditional Land Use & Diet Study for the NexGen Rook I Project;
- TSD V.1 (CRDN), Preliminary Identification of Issues and Concerns Related to the Proposed NexGen Energy Ltd. Rook I Project in the Patterson Lake Area; A Review; Clearwater River Dene Nation; Traditional Land Use and Occupancy Mapping Interviews; 2010 – 2016;
- TSD V.2 (CRDN), Clearwater River Dene Nation Indigenous Rights and Knowledge Survey Related to the Proposed NexGen Energy Ltd. Rook 1 Project in the Patterson Lake Area;
- TSD V.3 (CRDN), Socio-economic and Harvest Study; Clearwater River Dene Nation; NexGen Rook 1 Project; and
- TSD VI (YNLR), Provision of Athabasca Denesųliné Traditional Knowledge, Land Use and Occupancy Information for the NexGen Rook I Project Environmental Assessment.

Another key source of Indigenous and Local Knowledge was information shared by Indigenous Group representatives during Joint Working Group (JWG) meetings. The JWG's represent an agreed upon primary engagement mechanism as outlined in the Study Agreements signed by each of the primary Indigenous Groups and NexGen. More details regarding the JWG's can be found in Section 2, Indigenous, Regulatory, and Public Engagement and Section 3, Indigenous and Local Knowledge. There are four JWG's with the Project's primary Indigenous Groups (Section 2.4.1, Identification of Indigenous Groups for Engagement):

- Clearwater River Dene Nation (CRDN) JWG;
- Métis Nation – Saskatchewan (MN-S) JWG representing MN-S Northern Region 2 (NR2);
- Birch Narrows Dene Nation (BNDN) JWG; and
- Buffalo River Dene Nation (BRDN) JWG.

The leadership of each Indigenous Group selected their JWG participants with consideration of group diversity; where possible, members included Elders, youth, different genders, a range of ages, and land users around Patterson Lake.

In addition to the IKTLU Studies and JWG's, Indigenous and Local Knowledge shared during specific engagement activities undertaken through the EA development process was incorporated into the assessment, where appropriate. These engagement activities included, but were not limited to:

- community information sessions held in four locations in 2019 (NexGen 2019);
- site tours;
- comments from the CRDN (2019a) on the Cluff Lake Mine licence renewal;
- other formal and informal meetings;
- workshops with specific groups (e.g., Fur Block N-19 trapper's workshop); and

- environmental and socio-economic baseline data collection.

Comments submitted by Indigenous Groups on the Project Description (CRDN 2019b; MN-S 2019; YNLRO 2019; ACFN 2019; CNSC 2019) were also reviewed for applicable Indigenous and Local Knowledge.

Indigenous and Local Knowledge related to other land and resource use was incorporated into the assessment by viewing the information as complementary and influential alongside scientific information. Where possible, knowledge from each potentially affected Indigenous Group or LPA community member was described separately and cited accordingly. Where information is described for multiple potentially affected Indigenous Groups, they are collectively referred to as “Indigenous Groups” throughout the assessment.

Indigenous and Local Knowledge was included in the other land and resource use assessment in the following ways:

- **Component Methods – VCs:** Indigenous and Local Knowledge was considered in the selection of the VC of other land and resource use and reflects the importance of commercial fishing and trapping to both Indigenous and non-Indigenous land users, including members of LPA communities, for income and supporting livelihoods and community well-being. The value of cabins, travel routes, quality of resources, and quality of the land use experience to both Indigenous and non-Indigenous land users was also reflected in the assessment for other land and resource use (Section 17.2.2).
- **Component Methods – Spatial Boundaries:** The spatial boundary selected for the local study area (LSA) reflects shared Indigenous and Local Knowledge regarding the specific locations of travel routes used to access trapping and other harvesting areas, including travel routes from Highway 955, along the existing access road, and east to destinations on the Clearwater and Mirror rivers (Section 17.2.3).
- **Existing Conditions:** Indigenous and Local Knowledge informed the characterization of existing conditions through the identification of cabin locations and travel routes, and the level of use and species targeted for commercial trapping and fishing. Indigenous and Local Knowledge was also shared about the effects of wildfires on resource use, trends in the populations of moose, furbearers, and fish, as well as how mining and exploration activities in the Patterson Lake area have affected other land and resource use (Section 17.2.6).
- **Project Interactions and Mitigation:** Indigenous and Local Knowledge informed the scoping of Project interactions, pathway analyses, and consideration of mitigation measures (Section 17.4, Project Interactions and Mitigations). This includes observations and experiences of Indigenous and non-Indigenous land users related to the existing and cumulative effects of mining and exploration activities on access to and area available for land and resource use, quality of the resource use experience, changes to air or water quality, and availability of wildlife and fish (Section 17.4).
- **Residual Effects Analysis:** Indigenous and Local Knowledge, including long-term observations and experiences of Indigenous and non-Indigenous land users in the Patterson Lake area, was used to inform the residual effects analysis related to changes in access and availability of land and resource use areas, and the quality of the resource use experience (Section 17.5.1, Application Case).
- **Monitoring, Follow-Up, and Adaptive Management:** Feedback provided by Indigenous Groups during engagement, including recommendations, was considered in the development of monitoring and follow-up activities (Section 17.8). In addition, it is planned that ongoing feedback from Indigenous Groups on the effectiveness of mitigations would be considered when updating monitoring and management plans.

Independent Indigenous Monitors chosen by each primary Indigenous Group would have opportunities to participate in environmental monitoring programs for the Project.

Specific references to Indigenous and Local Knowledge, and comments and concerns related to other land and resource use raised by Indigenous Groups and LPA community members, are included in the applicable subsections of this assessment.

17.2.2 Valued Components, Measurement Indicators, and Assessment Endpoints

17.2.2.1 Valued Components

Valued components are aspects of the biophysical, cultural, and socio-economic environments that are considered to have scientific, social, cultural, economic, historical, archaeological, or aesthetic importance (Beanlands and Duinker 1983; CNSC 2021). The BNDN and BRDN define VCs as tangible biophysical resources (e.g., particular places and species) and less tangible social, economic, cultural, health, and knowledge-based values (e.g., social cohesion, place names, Indigenous language) (TSD II: BNDN; TSD III: BRDN).

Valued components were selected based on multiple considerations (Section 6.3.1, Valued Components) such as:

- potential for interaction with the Project and degree of interaction, including presence, abundance, and amount of spatial overlap of a VC with the Project;
- sensitivity of a VC to potential Project effects and level of damage or harm that could be realized should an adverse effect occur;
- ecological and socio-economic/cultural value to Indigenous Groups and local communities, government agencies, and the public;
- recent experience with similar projects in Saskatchewan and other jurisdictions in Canada; and
- avoidance of redundancy with other VCs; for example, if two potential VCs represent the same attributes, mitigation actions, and potential effects from the Project, only one was evaluated as part of the assessment.

Selection of the other land and resource use VC was based on the history of, and reliance on, commercial trapping and fishing industries by local communities. This VC also recognizes the overall importance of lodge and outfitting services, parks and protected areas, recreational hunting and fishing activities, and cabin use to the provincial economy and recreational opportunities for Saskatchewan residents. Additional resource sector industries, such as forestry and mining, offer economic opportunity to northern Saskatchewan residents.

Although in some instances there is overlap between activities as described in cultural and heritage resources and Indigenous land and resource use (Section 16), this section focuses more narrowly on uses for commercial or recreational purposes and extends to both Indigenous and non-Indigenous users. Section 16 focuses on Indigenous land and resource use as an expression of Aboriginal and Treaty Rights. Commercial trapping and fishing, as assessed in this section, is primarily undertaken by Indigenous Peoples from the LPA communities or by other residents of northern Saskatchewan. The operation of lodges and outfitting services and use of cabins includes both Indigenous and non-Indigenous users who may or may not be residents in the LPA communities, and in some instances, are based outside of northern Saskatchewan. Recreational hunting and fishing as assessed in this section are conducted under licence primarily by non-Indigenous land and resource users. This section also includes recreational land and resource use, such as birding, wildlife viewing, hiking, canoeing, and camping, that occurs within parks and protected areas. Outside of parks and protected areas,

other recreational land and resource use (e.g., snowmobiling, all-terrain vehicle [ATV] use, hiking, camping) is understood from the results of 2019 to 2021 key person (KP) interview program to be minimal and is, therefore, not included in the other land and resource use VC.

17.2.2.2 Measurement Indicators

Measurement indicators are used to characterize changes to attributes of the environment from the Project, other human developments, and natural factors. The changes in measurement indicators are used to predict overall effects on VCs and assessment endpoints (Section 6.3.2, Assessment Endpoints and Measurement Indicators). Three measurement indicators were identified and used for the other land and resource use assessment (Table 17.2-1):

- **Access to, and area available for, land and resource use:** refers to the ability to travel to and utilize the land base for other land and resource use. Reductions in the area available may occur due to travel obstructions such as closing roads, waterways, or trails for safety purposes and loss of the use of the proposed Project footprint. The assessment considers removal of areas where land and resource use is practiced and also where travel to other resource use areas may be affected.
- **Availability of fish and wildlife for harvesting:** refers to changes in the abundance and distribution of fish and wildlife species that, in turn, could affect harvest success. For example, trapping relies primarily on American marten harvests. Should the population of American marten decline or be displaced, trappers may not be as successful at harvesting this species as prior to the Project. The assessment therefore considers any effects on the availability and distribution of species harvested and subsequent potential effect on the activities of hunters, trappers, and fish harvesters.
- **Quality of the resources and the quality of resource use experience:** refers to potential changes in the resource use experience related to sensory disturbances (i.e., noise, light, and dust), disturbances from presence of a Project workforce, quality and safety of the resource use experience, and quality of the fish and wildlife resources.

17.2.2.3 Assessment Endpoints

Assessment endpoints are qualitative expressions that represent the key properties of VCs that should be protected (e.g., wildlife abundance and quality, the ability to access resource harvesting areas are maintained at a level that allows for continued opportunities for other land and resource use); as such, assessment endpoints incorporate the concept of sustainability and function as significance thresholds (Section 6.3.2). Assessment endpoints are used to guide the determination of significant effects on other land and resource use. The endpoint used in this assessment is continued level of opportunities for other land and resource use. The level of opportunity is dynamic as it is subject to factors such as markets, business fluctuations, and government policies; however, the level refers to the amount of access, the availability of resources, and the quality of resources and resource use experience.

Table 17.2-1: Valued Component, Rationale, Measurement Indicators, and Assessment Endpoints

VC	Rationale	Measurement Indicators	Assessment Endpoints
Other land and resource use	▪ Forestry, recreation, tourism, and guiding occurs in the area ▪ Fish and wildlife harvesting has social and economic value to land and resource users ▪ Access to land and resource use may be affected by Project activities	▪ Access to and area available for land and resource use ▪ Availability of fish and wildlife for harvesting ▪ Quality of the resources and the quality of resource use experience	▪ Continued level of opportunities for other land and resource use

VC = valued component.

To determine whether the assessment endpoint would be met, each of the other land and resource use activities (e.g., hunting, commercial trapping, fishing) are described in Section 17.3, Existing Conditions. Each activity was examined for linkages with supporting components such as the Project description, intermediate components (e.g., hydrology, noise, air quality), other VCs (e.g., walleye, moose), relevant TSDs (e.g., TSD IX, Transportation Risk Assessment Report), and supplemental information (e.g., KP interviews, workshops). Table 17.2-2 identifies the key linkages between the other land and resource use activities described in Existing Conditions (Section 17.3), the measurement indicators used to evaluate effects on those activities, and the supporting components which supported the assessment.

Table 17.2-2: Key Linkages between Measurement Indicators, Other Land and Resource Use Activities, and Supporting Technical Support Document, Intermediate Component, or Valued Component

Measurement Indicator	Other Land and Resource Use Activity	Relevant EA Supporting Documentation, Intermediate Components, and VCs
Access to and area available for land and resource use	▪ Hunting	▪ Project Description (Section 5)
	▪ Commercial trapping	▪ Indigenous, Regulatory, and Public Engagement (Section 2) ▪ Project Description (Section 5) ▪ TSD II: BNDN, TSD III: BRDN, TSD IV: MN-S, IV, TSD V.1: CRDN, TSD V.2: CRDN and TSD VI: YNLR
	▪ Fishing (commercial and recreational)	▪ Project Description (Section 5) ▪ Waterways navigation (Section 9, Hydrology)
	▪ Lodge and outfitting services and ecotourism	▪ Waterways navigation (Section 9, Hydrology)
	▪ Cabins, parks and protected areas, forestry, and mining and exploration	▪ Project Description (Section 5) ▪ TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN, TSD V.2: CRDN
Availability of fish and wildlife for harvesting	▪ Hunting	▪ Moose and black bear (Section 14, Wildlife and Wildlife Habitat) ▪ Human Health Risk Assessment (TSD XXI, Environmental Risk Assessment)
	▪ Commercial trapping	▪ Upland ecosystems habitat for American marten (Section 13, Vegetation) ▪ Gray wolf, beaver, and other wildlife representative of effects on furbearers (Section 14, Wildlife and Wildlife Habitat)
	▪ Fishing (commercial and recreational)	▪ Northern pike, lake whitefish, walleye, and lake trout (Section 11, Fish and Fish Habitat) ▪ Human Health Risk Assessment (TSD XXI)
Quality of the resources and the quality of resource use experience	▪ All topics	▪ Air Quality, Noise, and Climate Change (Section 7) ▪ Surface Water Quality and Sediment Quality (Section 10) ▪ Terrain and Soils (Section 12) ▪ Vegetation (Section 13) ▪ Wildlife and Wildlife Habitat (Section 14) ▪ Transportation Risk Assessment Report (TSD IX) ▪ Light Effects Analysis Report (TSD XI) ▪ Human Health Risk Assessment (TSD XXI)

VC = valued component; EA = Environmental Assessment; BNDN = Birch Narrows Dene Nation; BRDN = Buffalo River Dene Nation; CRDN = Clearwater River Dene Nation; MN-S = Métis Nation – Saskatchewan; TSD = Technical Support Document; YNLR = Ya'thi Néné Lands and Resources.

17.2.3 Spatial Boundaries

The spatial boundaries selected for the other land and resource use assessment support a description of the existing environment in sufficient detail to identify, understand, and assess potential Project interactions with the other land and resource use VC, including the contribution of the Project to residual effects and/or perceived effects. The spatial boundaries for the assessment of other land and resource use consisted of a site study area, maximum disturbance area, LSA, and regional study area (RSA; Table 17.2-3; Figure 17.2-1).

The site study area was equivalent to the anticipated area of the Project footprint, which covers 228 ha and includes the access road and bridge, and all proposed Project infrastructure (Figure 17.1-4). To the degree possible, the Project footprint was minimized based on NexGen's vision and values, which aligned with feedback from Indigenous Groups, to reduce both the area of restricted access to Indigenous and other land users and the effects on the terrestrial environment.

A maximum disturbance area was used for the assessment to address uncertainty in the final design of the Project so that adverse effects on the terrestrial environment were not underestimated (i.e., the maximum disturbance area is four times larger than the currently anticipated Project footprint). The maximum disturbance area, which covers 981 ha, represents the smallest scale of assessment and an area where the potential direct effects of the proposed Project on soils, vegetation, and wildlife can be assessed accurately and precisely. The spatial boundary of the maximum disturbance area was delineated by applying buffers to the outer edges of the currently anticipated Project infrastructure (Section 6.4.1, Spatial Boundaries). The spatial boundary for terrestrial resources was also constrained to the shoreline of Patterson Lake (Figure 17.2-1). The maximum disturbance area is consistent with the maximum disturbance area for related VCs.

The LSA and RSA for the other land and resource use VC were defined to include predicted effects on supporting intermediate components (e.g., noise, air quality) and VCs (e.g., fish and fish habitat, wildlife and wildlife habitat). Potential effects to supporting intermediate components and VCs included incremental and cumulative effects from the Project and other RFDs and natural factors such as climate change and wildfire, where applicable.

The LSA for supporting intermediate components and VCs contained most or all of the expected direct and indirect effects of the proposed Project. The RSA provided broader context for Project-specific effects and was large enough to sufficiently capture cumulative effects from RFDs and natural factors. The total area of the LSA is 125,679 ha (1,257 km²), which can be sub-divided into three sub-areas including:

- the Highway 955 corridor from La Loche to the access road turnoff: 20,350 ha (203 km²);
- the maximum disturbance area including the access road: 981 ha (9.81 km²); and
- the remaining area 104,348 ha (1,043.48 km²).

The other land and resource use LSA (Figure 17.2-1) incorporates:

- the Project footprint;
- the maximum disturbance area defined in the vegetation (Section 13) and wildlife (Section 14) assessments, which provides a conservative spatial estimate of the direct effects;
- the terrestrial, aquatic, and human health RSAs delineated by the Clearwater watershed boundaries where ecosystems could potentially be directly or indirectly affected by the Project;
- the area of both the Project and the Fission Patterson Lake Property boundaries, which is considered in the cumulative assessment for other VCs and the other land and resource use VC;
- areas where access to outfitting allocation areas may change, specifically at Vermeersch and Wickenkamp lakes and areas north of the Project and Forrest, Beet, and Naomi lakes south and east of the Project;

- the Highway 955 corridor north of La Loche where changes to traffic volumes and traffic disturbances may affect land use activities, which is defined as a 1,200 m wide corridor to capture road and roadside effects and includes:
 - a 100 m buffer on each side of the road centreline for the road allowance;
 - an additional 200 m buffer each side where hunting should be restricted²;
 - an additional 300 m buffer on each side where land use activities may occur along the road corridor such as trapping, hunting, and outfitting (2019 to 2021 KP interview program); and
- destinations that require travel through Project-affected areas for trapping and other uses, which may result in avoidance from perceived risks or displacement of resource harvest activities, such as areas as far east as the junction of Clearwater and Mirror rivers and adjoining lakes east of the Project (e.g., CRDN-mapped travel routes from Highway 955, along the existing access road, and east to destinations on the Clearwater and Mirror rivers; TSD V.1: CRDN, Figure 2, and TSD V.2: CRDN, Figure 19).

The other land and resource use RSA was designed to provide broader context for the assessment of Project effects on VCs and the appropriate scale for the assessment of cumulative effects, if applicable (Section 6.4.1, Spatial Boundaries). The other land and resource use RSA includes the LSA plus the boundaries of the N-19 trapping block (totaling 6,499 km²) where cumulative effects on commercial fishing and trapping may occur. While cumulative effects are not expected in most areas of the trapping block, the spatial boundaries of the trapline are a familiar reference for local Indigenous communities and capture the broad land usage patterns of local communities. The N-19 trapping block is also meaningful to use in defining the RSA because it is a defined management area with membership that is regulated by a local trapping association and generally only open to local Indigenous community residents³.

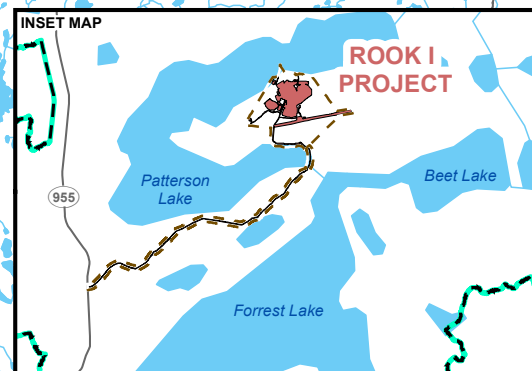
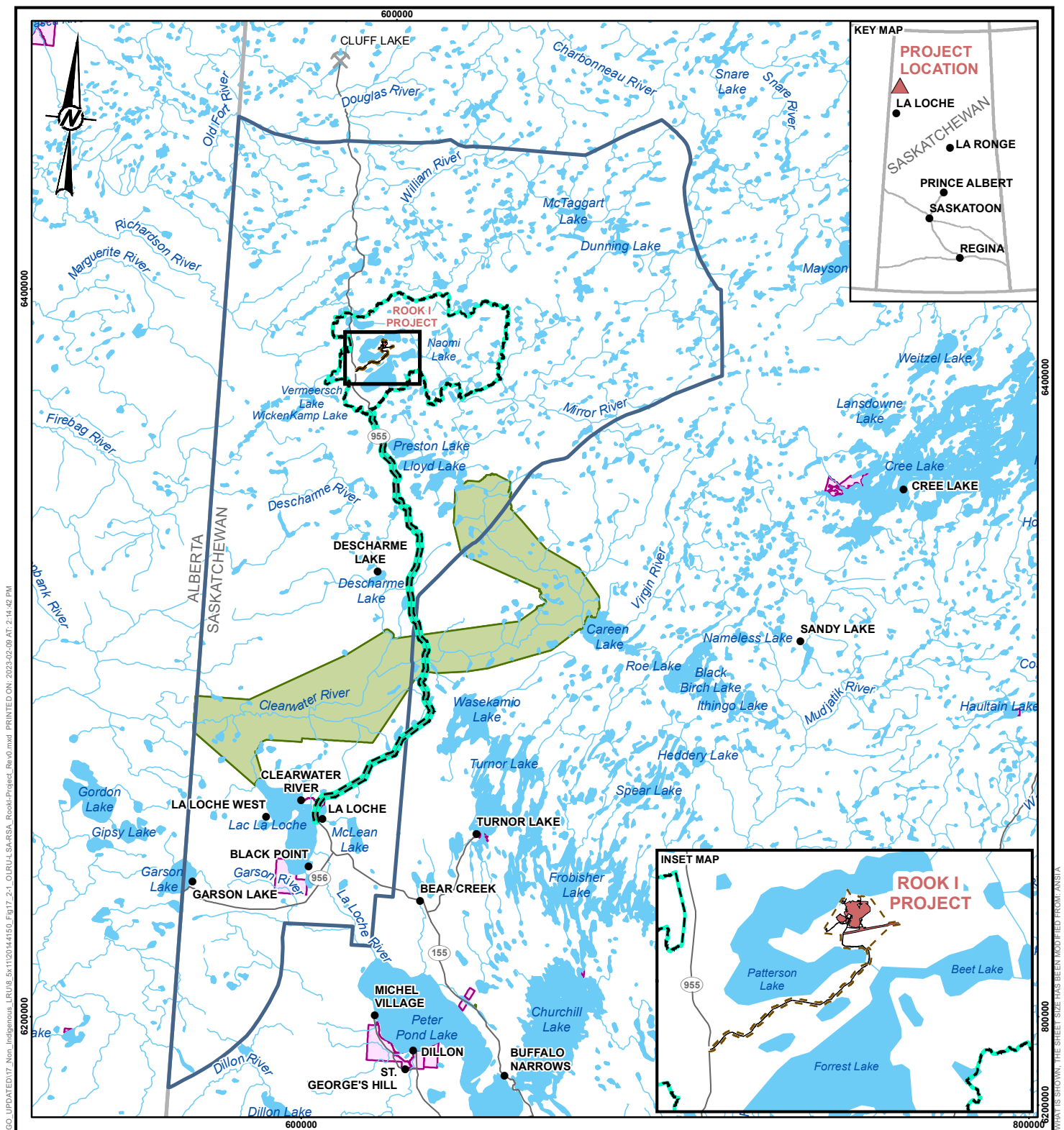
² In Saskatchewan, *The Wildlife Act (1988)* c. W-13.12 prohibits shooting a firearm across or along a provincial highway, provincial road, or municipal road. A no hunting buffer distance is not specified in Saskatchewan. Bait for the purpose of big game hunting cannot be placed within 200 metres of a provincial highway, provincial road, or municipal road. Distances are defined in the Wildlife Acts of Manitoba (i.e., 300 m from road centre lines) and Alberta (i.e., 365 m or 400 yards). Hunters must not discharge their firearms back towards the roadway.

³ The Northern Fur Conservation Block constitutes most of the forested area of northern Saskatchewan. This area was partitioned into 89 Fur Conservation Areas (FCAs or Trapping blocks) in 1946. The FCAs were established to allow recovery of the beaver population, and to function as the units of management whereby the fur harvest of a restricted number of trappers could be managed through an orderly trapline management system that would reduce conflicts and maintain forest trap-lines as commercial entities. Each FCA is composed of a group of registered/licenced trappers, from which a representative council of not more than five members is chosen. Each FCA membership and elected council is responsible for its own administration, organization, and operation. FCA blocks have authority on issues relevant to their membership and block administration (ENV 2012).

Table 17.2-3: Spatial Boundaries for Assessment of Other Land and Resource Use Valued Components

Spatial Boundary	Surface Area	Description
Site study area	228 ha (2.3 km ²)	Equivalent to the currently anticipated Project footprint, which includes all proposed mine infrastructure and facilities (199 ha) and the access road (29 ha).
Maximum disturbance area	981 ha (9.8 km ²)	Incorporates a level of uncertainty into the Project design so that effects are not underestimated. The maximum disturbance area was defined using bounding points offset from outermost components of the anticipated Project footprint.
LSA	125,679 ha (1,257 km ²)	▪ The maximum disturbance area. ▪ The terrestrial, aquatic and human health RSAs, where ecosystems and resources could potentially be directly or indirectly affected by the Project. ▪ Defined by the expected extent of the direct and indirect effects from the Project for intermediate components and supporting VCs that inform the assessment. ▪ Areas where access to outfitting allocation areas may change. ▪ The Highway 955 corridor north of La Loche, which is defined as a 1,200 m wide corridor to account for effects to trapping, hunting, and outfitting activities that may occur along the road corridor (but outside of the road allowance and where hunting is restricted). ▪ Destinations that require travel through Project-affected areas.
RSA	649,900 ha (6,499 km ²)	▪ The LSA plus the boundaries of the N-19 trapping block. ▪ Provides broader scale context for assessing potential indirect Project effects and cumulative effects, if applicable.

LSA = local study area; RSA = regional study area.



LEGEND

- POPULATED PLACE
- ✂ URANIUM MINING FACILITY (DECOMMISSIONED)
- SECONDARY HIGHWAY
- WATERCOURSE
- INDIAN RESERVE
- PROVINCIAL PARKS
- WATERBODY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- OTHER LAND AND RESOURCE USE LOCAL STUDY AREA
- OTHER LAND AND RESOURCE USE REGIONAL STUDY AREA

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
 2. PARKS OBTAINED FROM IHS MARKIT CANADA ULC.
- PROJECTION: UTM ZONE 12 DATUM: NAD 83

0 40 80
1:1,500,000 KILOMETRES

PROJECT		Rook I Project			
TITLE		OTHER LAND AND RESOURCE USE LOCAL AND REGIONAL STUDY AREAS			
CONSULTANT		PROJECT		PHASE	
wsp		DESIGN	GE	2023-02-09	3314 - 6
		GIS	NO	2023-02-09	SCALE AS SHOWN
		CHECK	JO	2023-02-09	REV. 0
		REVIEW	KG	2023-02-09	FIGURE 17.2-1

17.2.4 Temporal Boundaries

The temporal scope of the assessment focuses on the 43-year period from initial Construction to the end of Decommissioning and Reclamation (i.e., Closure) as defined by the following Project phases (Section 6.4.2, Temporal Boundaries):

- **Construction Phase (Construction):** includes site preparation; mine, process plant, and additional infrastructure development; transportation of people and materials to and from the Project; and all activities associated with commissioning the Project up until Operations commences. The duration of Construction is expected to be four years.
- **Operations Phase (Operations):** includes all activities associated with mining and processing ore; tailings management; management of waste rock, domestic waste, and hazardous materials; water management; release of treated effluent; site maintenance; progressive reclamation; and transportation of staff and materials to and from the Project up until Decommissioning and Reclamation commences. The duration of Operations is expected to be 24 years.
- **Decommissioning and Reclamation Phase (Closure):** includes two stages expected to occur over 15 years:
 - **Active Closure Stage:** includes active decommissioning and reclamation activities that occur post-Operations, such as backfilling mine workings, removal of physical infrastructure, recontouring and revegetating disturbed areas, waste disposal and removal, and any other activities required to achieve decommissioning objectives and return the site to a safe and stable condition prior to the Transitional Monitoring Stage. The duration of the Active Closure Stage is expected to be five years.
 - **Transitional Monitoring Stage:** includes monitoring and reporting activities that occur post-Active Closure that would continue until monitoring and reporting verifies that the performance criteria have been met. Once performance criteria have been fully demonstrated, an application to be released from the CNSC licence would be submitted to the CNSC for approval. Once that is achieved, and upon Provincial approval, the land would be transferred under Provincial management through the Institutional Control Program. The duration of the Transitional Monitoring Stage is nominally 10 years; however, NexGen acknowledges this duration would be dependent on the achievement of performance criteria.

The temporal boundaries applied to the cumulative effects assessment includes the duration of residual effects from previous and existing developments that overlap with residual effects from the Project, and the period during which the residual effects from RFDs overlap with the Project.

17.2.5 Assessment Cases

The concept of assessment cases was applied to the other land and resource use assessment to estimate the incremental and cumulative effects from the Project and other developments (Section 6.5, Assessment Cases). The approach incorporated temporal boundaries for analyzing the potential effects from previous, existing, and approved projects and RFDs before, during, and after the anticipated lifespan of the Project. There are no known approved (but not yet constructed) projects in the LSA and RSA for the other land and resource use VC. Assessment cases for the Project included a Base Case, Application Case, and RFD Case.

Base Case for other land and resource use is represented by existing conditions. The Base Case describes the existing environment in the LSA before application of the proposed Project to provide an understanding of the current conditions that may be influenced by the Project. The temporal boundary of the Base Case includes the combined effects from previous and existing human disturbances and natural factors (e.g., fire, floods, disease,

insects) on the environment and other land and resource use. As such, existing conditions represent the cumulative effects of historical and current environmental pressures that have influenced the observed condition and patterns of the other land and resource use VC (CEA Agency 2018).

Application Case for other land and resource use represents predictions of the combined effects of the previous and existing projects/activities and natural factors in the Base Case plus the potential effects from the proposed Project. This case was also used to identify and assess incremental, Project-specific changes that are predicted to occur to the other land and resource use VC.

Reasonably Foreseeable Development Case for other land and resource use includes the Base Case, Application Case, and RFDs that have not yet been approved. Reasonably foreseeable developments are defined as projects and activities that fit any of the first three and both of the last two criteria from the list below:

- are currently under regulatory review or have officially entered a formal regulatory application process;
- have been publicly disclosed by other proponents;
- may be induced by the Project;
- have the potential to change the Project or the effects predictions; and
- occur in the spatial assessment boundary defined for other land and resource use.

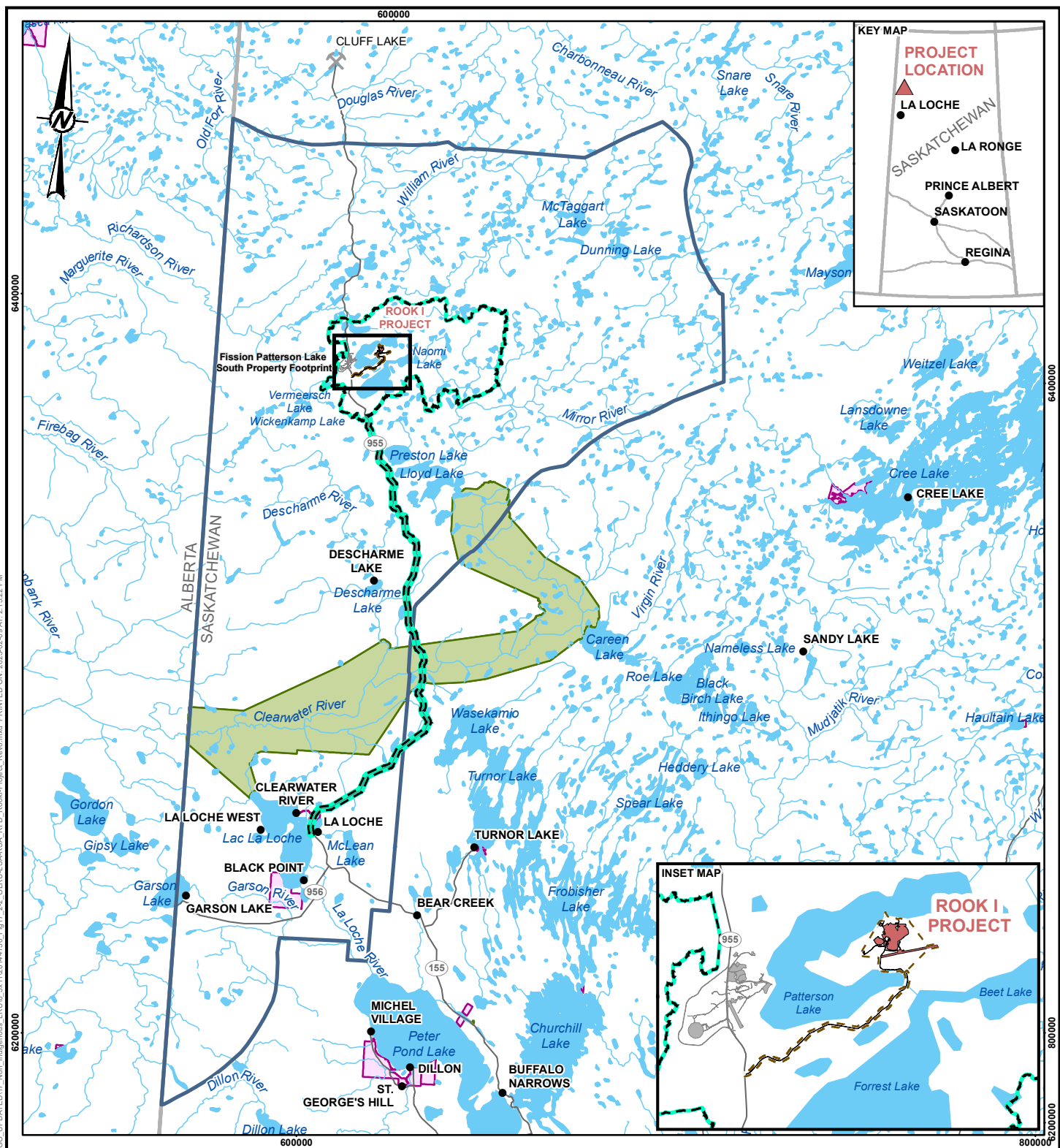
A key criterion for selecting other projects to include in the RFD Case was that the projects must cause similar effects on aspects of the other land and resource use VC influenced by the Project (Hegmann et al. 1999). The Fission Patterson Lake South Property, which is planned by Fission Uranium Corp. (Fission 2019, 2021a), was included in the RFD Case (Figure 17.2-2). Public information describes a projected three-year construction period and seven-year operating period (production and processing) (Fission 2019, 2021a). The anticipated start of construction and duration of active decommissioning at the Fission Patterson Lake South Property were not publicly available at the time this assessment was completed. For the assessment, it was assumed that the duration of active decommissioning for the Fission Patterson Lake South Property would be similar to the Active Closure Stage for the Project (i.e., five years) (Section 6.5.3, Reasonably Foreseeable Development Case).

The proposed surface infrastructure layout plan (Fission 2019, 2021a) is the anticipated physical footprint of the Fission Patterson Lake South Property and includes the proposed highway bypass, airstrip, and all proposed mine site infrastructure. A hypothetical maximum disturbance area, as applied in Section 17.2.3 to the Project footprint, was also used for the Fission Patterson Lake South Property to address uncertainty in project design. The CRDN and MN-S specifically mentioned the potential for of cumulative effects from the Project and the nearby proposed Patterson Lake South Property (CRDN 2019b; MN-S-JWG 2020; CRDN-JWG 2021).

As a scenario within the RFD Case (where applicable), potential effects from climate change, including how natural factors (e.g., fire and insects) may be altered resulting from climate change, was considered within the assessment. Indigenous Groups indicated concerns about cumulative effects from human development, policies, and climate change (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN).

The other land and resource use assessment includes a quantitative and qualitative analysis of predicted changes on measurement indicators and associated effects from the Fission Patterson Lake South Property on the other land and resource use VC. In addition, the discussion of potential changes from natural disturbance factors and climate change considered information from qualitative analyses provided in the fish and fish habitat (Section 11), vegetation (Section 13), and wildlife and wildlife habitat (Section 14) assessments.

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LEGEND

- POPULATED PLACE
- ⚡ URANIUM MINING FACILITY (DECOMMISSIONED)
- SECONDARY HIGHWAY
- WATERCOURSE
- INDIAN RESERVE
- PROVINCIAL PARKS
- WATERBODY
- PROPOSED PROJECT FOOTPRINT
- MAXIMUM DISTURBANCE AREA
- FISSION PATTERSON LAKE SOUTH PROPERTY FOOTPRINT
- OTHER LAND AND RESOURCE USE LOCAL STUDY AREA
- OTHER LAND AND RESOURCE USE REGIONAL STUDY AREA

REFERENCE(S)

1. FISSION (FISSION URANIUM CORP.) OBTAINED FROM 2019 TECHNICAL REPORT ON THE PRE-FEASIBILITY STUDY OF THE PATTERSON LAKE SOUTH PROPERTY USING UNDERGROUND MINING METHODS.
 2. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
 3. PARKS OBTAINED FROM IHS MARKIT CANADA ULC.
- PROJECTION: UTM ZONE 12 DATUM: NAD 83

0 40 80
1:1,500,000 KILOMETRES

PROJECT



NexGen

Energy Ltd.

ROOK I PROJECT

TITLE

REASONABLY FORESEEABLE DEVELOPMENTS
IN THE REGIONAL STUDY AREA

CONSULTANT



PROJECT			20144150	PHASE		3314 - 6
DESIGN	GE	2023-02-09		SCALE AS SHOWN	REV.	0
GIS	NO	2023-02-09		FIGURE 17.2-2		
CHECK	JO	2023-02-09				
REVIEW	KG	2023-02-09				

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI/A

17.2.6 Existing Conditions

Existing conditions were characterized to provide context for the measurement indicators and the assessment of incremental and cumulative effects from the proposed Project and other RFDs in the LSA and RSA. Consideration was given to the measurement indicators and assessment end points so data in the assessment would be relevant for future mitigation and management variable monitoring. The characterization of the existing environment included review of both primary and secondary data sources. Multiple research methods were used to describe and evaluate the other land and resource use VC existing conditions.

Quantitative recreational hunting harvests and participation levels, commercial trapping production and value, and commercial fishing production by lake and by species were available from ENV databases. The data sources were retrieved by request from government officials and, in the case of fur production, from annual reports (Government of Saskatchewan 2016, 2017, 2018a, 2019a,b, 2021a). Simple statistics were generated from the data, including totals and five-year average intervals. The five-year average interval studied was selected purposely to include pre-COVID pandemic years as the pandemic has materially affected both the commercial fishing and trapping industries due to community lockdowns and fur marketing and fish processing closures (FFMC 2020; 2021 trapper's workshop).

An important source of place-based information came from Hunting, Angling and Biodiversity Information of Saskatchewan (HABISask), which is the Government of Saskatchewan's client-centred online mapping application that consolidates new information and existing applications (SKCDC 2021). Important land use boundaries, harvest regions, and management units or zones that occur in the RSA are published on HABISask, including:

- Wildlife Management Zones (WMZs);
- Game Bird Management Units (GBMUs);
- game bird districts;
- trapping fur blocks;
- recreational fishing restrictions;
- provincial parks;
- commercial forest zones, timber allocations, and Timber Supply Areas; and
- mineral dispositions.

The locations of commercial forest zones, timber allocations, and Timber Supply Areas in the Project RSA were retrieved from HABISask and then verified with the ENV provincial forester to be current. Mineral dispositions were downloaded from HABISask and overlaid with the LSA to report the number and tenure of dispositions. All dispositions were confirmed active, and therefore were included.

Existing tourism was characterized through information gained about parks, protected areas, lodges, and outfitting. National sources of data included national historic sites from Parks Canada and heritage rivers from the Canadian Heritage Rivers System. Once assembled and verified, these land use boundaries and management zones were overlaid with Project components in a geographic information system program to describe existing conditions and make predictions about potential Project interactions with various land uses. Expert interviews were conducted with Provincial staff including wildlife specialists, the fur harvest statistics coordinator, fisheries biologists, and foresters to validate the interpretation of the data.

Four sources of cabin information were used: the CRDN (TSD V.1: CRDN) provided mapped locations of cabins; local knowledge from the trapper's workshop (July 2021) produced a map of cabins; a noise receptor map (Section 7.3.2, Component Methods, Figure 7.3-2) documented where Project noise may be detected at resource cabin locations; and a map from the Saskatchewan Public Safety Agency (SPSA 2020a) illustrated communities and structures including homes, lodges, and cabins located in northern Saskatchewan.

To validate the data, cabins documented in at least two of four sources were considered for assessment. Completing this verification process improved the reliability of the data given that the presence of resource user cabins may not be known to the SPSA depending on whether cabin owners applied for Crown Land leases or not. Similarly, the CRDN noted that data are currently being refined by:

verifying and updating the 2014 cabin data set and maps...to clearly differentiate cabins in active use from ancestral cabins, many of which have fallen into ruin or have been destroyed by the numerous forest fires that have gone through CRDN traditional lands. (TSD V.1: CRDN)

A KP interview program was undertaken to address gaps that could not be readily filled and to provide context and perspectives on interests and concerns about the Project. Interview guides were developed to learn more from land user groups such as outfitters and cabin owners. Consent was gained through a standard explanation of why the interview was being requested, the confidentiality of responses provided, the method for reporting interview results (i.e., the interview would be used in summary only), and that participation in the interview was voluntary as was the right to refuse answering any question raised. Interviewees had the opportunity to ask questions and provide their consent.

Initial KP interviews were conducted between October 2019 and March 2020 with land user groups such as outfitters and cabin owners. Key persons were selected based on their possession of knowledge and experience that could be relevant to characterizing other land and resource use. Additional KP interviews were conducted between May 2021 and July 2021. Lodge and outfitting operations that were not interviewed previously were identified through a web search and verified through consultation with the Provincial Outfitting Specialist to confirm that all local lodge and outfitting operations had the opportunity to be interviewed. These additional interviews provided a description of outfitting operations, operation areas, and resources used, though not all operators participated in an interview.

Data were validated and supplemented through several means, including discussion during JWG meetings and review of JWG meeting records. Local Knowledge was recorded in the 2021 trapper's workshop notes and 2019 community information session feedback. The 2019 to 2021 KP interview program notes were also used to validate data. The IKTLU Studies supported the integration of Indigenous and Local Knowledge into the assessment. The socio-economic variables to consider within the existing conditions subsection were confirmed from this approach of data validation and the identification of supplemental data.

17.2.7 Project Interactions and Mitigations

Interactions (i.e., linkages) between Project components or activities, and the corresponding potential changes to measurement indicators, were identified by a pathway analysis that was then used to inform the residual effects analysis for the other land and resource use VC (Section 6.7, Pathways Analysis). The first part of the analysis was to identify all potential effects pathways for all phases of the Project (Section 6.7.1, Identification of Project Interactions). Each pathway was initially assumed to have a linkage to potential effects on the other land and resource use VC.

Potential pathways from Project activities to the other land and resource use VC were identified using the following:

- review of the Project description (Section 5) and potential effect scoping by the project development, environmental, and socio-economic teams for the Project;
- input from Indigenous, regulatory, and public engagement (Section 2) and Indigenous and Local Knowledge (Section 3);
- scientific knowledge;
- previous experience with mining projects including uranium mines in northern Saskatchewan and diamond mines in the Northwest Territories (Intergroup 2013); and
- consideration of potential effects identified from the Terms of Reference (Section 1, Appendix 1A).

Potential adverse effects of the Project were then identified, and practicable mitigation was applied to avoid, minimize, and/or rehabilitate adverse effects on the other land and resource use VC (Section 6.7.2, Identification of Mitigation). Avoidance and minimization are widely recognized as the most important approach for biodiversity conservation (BBOP 2021). Avoidance designs and actions integrated into the Project were developed iteratively between the Project's environmental and project development teams. Minimization techniques and technology were also identified and implemented collaboratively between Project teams.

Each potential effect pathway was evaluated using proposed mitigation to predict whether the pathway had the potential to cause residual adverse effects (Section 6.7.3, Pathway Screening). A screening-level assessment was applied using Indigenous and Local Knowledge, scientific knowledge, logic, experience with similar developments, and an understanding of the effectiveness of mitigation (i.e., level of certainty that mitigation would work) to assign each pathway to one of the following categories:

- **No pathway:** Analysis reveals that the pathway could be removed (i.e., the effect is avoided) by mitigation so that the Project would result in no measurable socio-economic and/or environmental change relative to existing conditions or guideline values and, therefore, would have no residual effect on other land and resource use.
- **Secondary pathway:** The pathway could result in a measurable but minor socio-economic and/or environmental change relative to existing conditions or guideline values, but this change would be sufficiently small that it would have a negligible residual effect on other land and resource use. Therefore, the pathway is not expected to contribute to effects of RFDs to cause a significant effect.
- **Primary pathway:** The pathway is likely to result in a socio-economic and/or environmental change relative to existing conditions or guideline values and could cause a greater than negligible effect on other land and resource use.

Project interactions determined as no pathway or secondary pathways were not carried forward for further assessment (Section 6.7.3). Primary pathways that could result in changes to the environment with one or more associated measurement indicator and have the potential to cause a greater than negligible effect on other land and resource use were carried forward to the residual effects analysis and residual effects classification (Section 17.5).

17.2.8 Residual Effects Analysis

The residual effects analysis measures and describes the effects of the proposed Project on the other land and resource use VC relative to existing conditions. The residual effects analysis was conducted using the spatial boundaries (Section 17.2.3 Spatial Boundaries) and temporal boundaries (Section 17.2.4, Temporal Boundaries) identified for the assessment. Residual effects are described for each of the measurement indicators for the primary pathways identified for the other land and resource use VC in the LSA and RSA (Section 17.4.3, Primary Pathways). The residual effects analysis was completed for the Application Case and the RFD Case (Section 6.8, Residual Effects Analysis).

The other land and resource use VC measurement indicators were used to measure incremental change from existing conditions and to describe Project effects for primary pathways. The approach considers the following:

- Changes in access to, and the area available for, land and resource use were identified through a qualitative comparison of reported land and resource use that overlaps the maximum disturbance area and non-Project supporting infrastructure (e.g., Highway 955). Temporary disturbances to access were also considered such as the installation of in-lake infrastructure on Patterson Lake. Changes in access and the quantity of available land base may affect other land and resource use.
- Changes in the availability of fish and wildlife for harvesting were identified based on the results of resource-specific assessments such as fish and fish habitat VCs including northern pike (*Esox lucius*), lake whitefish (*Coregonus clupeaformis*), walleye (*Sander vitreus*), and lake trout (*Salvelinus namaycush*) (Section 11, Fish and Fish Habitat), and wildlife and wildlife habitat VCs including moose (*Alces alces*), black bear (*Ursus americanus*), grey wolf (*Canis lupus*), and beaver (*Castor canadensis*) (Section 14, Wildlife and Wildlife Habitat), as well as for American marten (*Martes americana*) through consideration of suitable habitat as assessed in the vegetation assessment (Section 13). The fish and fish habitat and wildlife and wildlife habitat assessments considered potential effects on the abundance and distribution of VCs at the population level. The other land and resource use, in turn, considered how effects to the animals could affect hunting, trapping, and fishing success.
- Changes in the quality of the resources and the quality of resource use experience were assessed based on the results of the noise, light, air quality, water quality, terrain, vegetation, and wildlife assessments, review of Project safety risks, the environmental risk assessment, and the human health risk assessment. A qualitative assessment was conducted on potential changes to safety, changing perceptions concerning the potential quality of country foods for consumption, disturbances from changes in the landscape, and the presence of other resource users.

17.2.9 Residual Effects Classification and Determination of Significance

The residual effects analysis uses a reasoned narrative to describe anticipated changes to each measurement indicator caused by the proposed Project and the associated effects on each VC. The residual effects analysis also considers effects from both the Project and RFDs. These narrative descriptions of anticipated effects represent the foundation for the residual effects classification and significance determination. Residual effects are summarized or classified in tabular form using effects criteria, which are intended to provide structure and comparability across VCs and intermediate components assessed for the Project (Section 6.9.1, Residual Effects Classification).

The residual effects classification uses direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of occurrence as criteria. The approach to classify each residual effect criterion for the assessment of other land and resource use is provided in Table 17.2-4.

Table 17.2-4: Definitions Applied to Effects Criteria Classifications for the Assessment of Other Land and Resource Use

Criterion	Rating	Definition
Direction	Positive	Change in measurement indicator results in net improvement or benefit to other land and resource use
	Neutral	Change in measurement indicator results in net balance to other land and resource use
	Negative	Change in measurement indicator results in net degradation or loss to other land and resource use
Magnitude	Qualitative narrative or numeric quantification	Change in measurement indicator is described by effect size (e.g., quantity of land in ha no longer available for resource use)
Geographic extent	Project footprint	Change in measurement indicator is confined to the Project footprint
	Local	Change in measurement indicator extends beyond the Project footprint but within the LSA
	Regional	Change in measurement indicator extends beyond the LSA is confined to the RSA
	Beyond regional	Change in measurement indicator extends beyond the RSA
Duration	Qualitative narrative or numeric quantification	Change in measurement indicator is described by effect duration (e.g., months, years)
Reversibility	Reversible	Change in measurement indicator is reversible within a clearly defined time period
	Irreversible	Change in measurement indicator is predicted to influence other land and resource use indefinitely
Frequency	Occasional	Change in measurement indicator is expected to occur rarely (e.g., once or a few times)
	Periodic	Change in measurement indicator is expected to occur consistently at regular intervals or associated with temporal events (e.g., during dry summers)
	Continuous	Change in measurement indicator is expected to occur all the time
Probability of occurrence	Unlikely	Change in measurement indicator is not expected to occur, but not impossible
	Possible	Change in measurement indicator may occur, but is not likely
	Probable	Change in measurement indicator is likely to occur, but is uncertain
	Certain	Change in measurement indicator will occur

RSA = regional study area; LSA = local study area.

While most criteria could be assigned categorical ratings for the other land and resource use VC, predicted effect sizes were provided in specific terms (i.e., narrative or numeric quantification) in the residual effects characterization (Table 17.2-1). Similarly, duration was described in specific terms (e.g., months or years). Applying a category rating to a criterion such as magnitude might lead to confusion or misinterpretation of the effects assessment, or result in the criterion not being easily categorized in a meaningful way. For example, characterizing magnitude solely using an ordinal scale (i.e., low, moderate, or high) in a manner meaningful for the other land and resource use VC is often not appropriate as additional context is required to properly characterize the effects. Universal effect size boundaries, such as a 20% change in a measurement indicator at the RSA or LSA scale used to define a high magnitude effect, work poorly because these size boundaries fail to consider context. Depending on the ecological and socio-economic context, and the context from the cumulative effects from previous and existing developments and activities that also interact with a VC, a 20% change from existing conditions in the study area may be required to cause a high magnitude effect on one measurement indicator, whereas a 2% change in the study area may be sufficient to cause a high magnitude effect for another measurement indicator (Section 6.9.1, Residual Effects Classification).

The significance of adverse residual effects on the other land and resource use VC was evaluated using the assessment endpoint (i.e., continued level of opportunities for other land and resource use) as a significance threshold (Section 6.9.2, Significance Determination). This assessment endpoint or threshold is qualitatively defined by the maintenance of access to a land base to perform other land and resource use activities, continued availability of fish and wildlife for harvesting, and equivalent quality of resources and resource use experience without the proposed Project. The classification of residual effects criteria provides the foundation for determining if the threshold for significance is exceeded.

Resilience (i.e., societal/cultural tolerance), adaptability, and existing conditions provide important ecological, social, and cultural context for the determination of significance on continued opportunities for other land and resource use. Existing conditions represent the combined effects of previous and current human activities and natural factors that have shaped the observed condition and patterns of the other land and resource use VC in the LSA and RSA. These conditions represent the starting point for assessing potential Project effects and were considered as context to help define how close the VC might be to its resilience limits when making the significance determination for the Project as well as the Fission Patterson Lake South Property. Overall, a detailed and transparent account of whether the predicted effects of the Project could be significant by causing the threshold to be exceeded was prepared for the other land and resource use VC by combining the available scientific literature, data collected in the LSA and RSA, and logical reasoning (i.e., a weight of evidence or reasoned narrative approach).

Confidence in the significance prediction was identified and discussed for the other land and resource use VC as part of the reasoned narrative. If uncertainty was high about where a threshold for a significant effect would occur in the range of potential values, and if the effect could be assessed as significant or not significant, a precautionary approach was applied, and the effect was identified as significant.

17.2.10 Prediction Confidence and Uncertainty

The purpose of the assessment is to predict the future conditions for other land and resource use with the addition of the Project and the Fission Patterson Lake South Property. As with all predictions of future conditions, the predictions made in this assessment embody some degree of uncertainty. The assessment applied a precautionary (i.e., conservative) approach to address uncertainty by identifying the greatest magnitude, duration, and geographic extent of potential adverse effects when a range of outcomes were possible. Consequently, uncertainty was addressed in a manner that increased the level of confidence that residual effects were conservatively estimated. The key uncertainties for other land and resource use and the way they were addressed are presented as part of this assessment (Section 17.7).

17.2.11 Monitoring, Follow-Up, and Adaptive Management

Monitoring programs are proposed to address the uncertainties associated with the effects predictions and to evaluate the performance of mitigation. In general, monitoring is used to verify the effects predictions. Monitoring is also used to identify any unanticipated effects and to support the implementation of adaptive management to limit these effects. Typically, monitoring includes one or both of the following categories that may be applied during the Project lifespan:

- **Regulatory compliance monitoring:** monitoring activities, procedures, and programs undertaken to confirm the implementation of approved design standards, mitigation and conditions of approval, and NexGen commitments (e.g., monitoring activities would focus on the species relied upon for other land and resource use).

- **Follow-up monitoring:** programs designed to test the accuracy of effects predictions, reduce or address uncertainties, determine the effectiveness of mitigation, or provide appropriate feedback to operations for modifying or adopting new mitigation designs, policies, and practices (e.g., implementation of adaptive management). Results from these programs can be used to increase the certainty of effect predictions in future EAs.

Where relevant, conceptual monitoring programs would be proposed to confirm predictions and to address the uncertainties associated with the effects predictions and mitigation, and upon Project approval, would be included in the Integrated Management System.

The implementation of robust, long-term environmental testing and monitoring has also been requested by Indigenous Groups to verify protection of the environment, including community-led monitoring during Construction and Operations of the proposed Project (TSD IV: MN-S; TSD V.2: CRDN; TSD VI: YNLR).

In addition to environmental monitoring programs typically implemented for projects (i.e., as noted above), NexGen is working with local Indigenous Groups to implement independent environmental monitoring. In combination with standard Project monitoring processes, independent Indigenous monitoring would be used to verify Project performance and to determine if mitigations and controls are effective in protecting the receiving environment.

Adaptive management measures may also be proposed to address the uncertainties associated with the effects predictions and mitigation. The process for determining when, how, and where to use adaptive management would be described within the Integrated Management System Manual.

17.3 Existing Conditions

This subsection describes the setting and characterization of the existing environment (i.e., Base Case) conditions in the LSA and RSA for the other land and resource use VC. This subsection is organized by the activities that constitute other land and resource use as important context relative to the measurement indicators identified (Table 17.2-2):

- access to and area available for land and resource use;
- availability of fish and wildlife for harvesting; and
- quality of the resources and the quality of resource use experience.

The activities described include recreational (non-Indigenous) hunting and fishing; commercial trapping; commercial fishing; lodge and outfitting services and ecotourism; cabins, parks, and protected areas; forestry and wildfire protection; and mining and exploration. These activities are dependent on the lands and resources that support them. It is important to note that, due to the Project's remote location, resource use by recreational users and commercial fishers is nominal (meaning virtually absent but not confirmed to be zero), and two resource user groups were confirmed to conduct activities in the LSA: trappers, and lodge and outfitting services.

The history of key government legislation and policy and select historic events that set the context for the management of other land and resource use, in particular hunting, commercial trapping, and fishing, is provided in Annex X, Socio-economic Baseline Report, Section 5.1.1.4, Key Government Policies. Those policies and events that are particularly important in influencing the current resource use context are also highlighted in the subsections below.

Around 2004, a committee was formed to develop a land use plan that would guide permitted development in the RSA north of La Loche. Representatives from the CRDN, La Loche, the ENV, and the Ministry of Government Relations formed a committee to complete the land use plan; however, the land use plan was never completed (Happ 2021). Land use planning is of interest to governments, communities, and developer and was the subject of a workshop facilitated in 2018 by the provincial government. A regional planning forum was held by the provincial government in 2018 that was intended for capacity building and to build networks to support land use planning processes (Government of Saskatchewan 2019c).

17.3.1 Hunting

The ENV manages the conservation and allocation of wildlife resources on behalf of all Saskatchewan residents. Many resource management tools are used to manage species abundance and reduce potential conflict between resource users. Tools include defining hunting seasons, establishing wildlife management areas, considering other land use activities, limiting firearm types, issuing licenses (e.g., hunting), and setting harvest limits. In addition to these tools, the ENV has developed a wildlife allocation policy to determine how harvestable game is allocated to hunters and to manage resource management conflicts (ENV 2017a).

One central concept to resource management is application of the “allocation hierarchy”. The first requirement that needs to be satisfied is conservation. The second is that of Indigenous rights-holders having first right of access to game (e.g., fish and wildlife) populations for sustenance purposes, under the authority of a constitutionally protected Treaty or Aboriginal Right. Saskatchewan residents who hold a valid hunting or fishing licence are given first priority in allocation of the remaining allowable harvest and, lastly, non-residents of Saskatchewan may purchase a guided hunt through licensed outfitters or a fishing license should an allowable harvest remain (ENV 2017a).

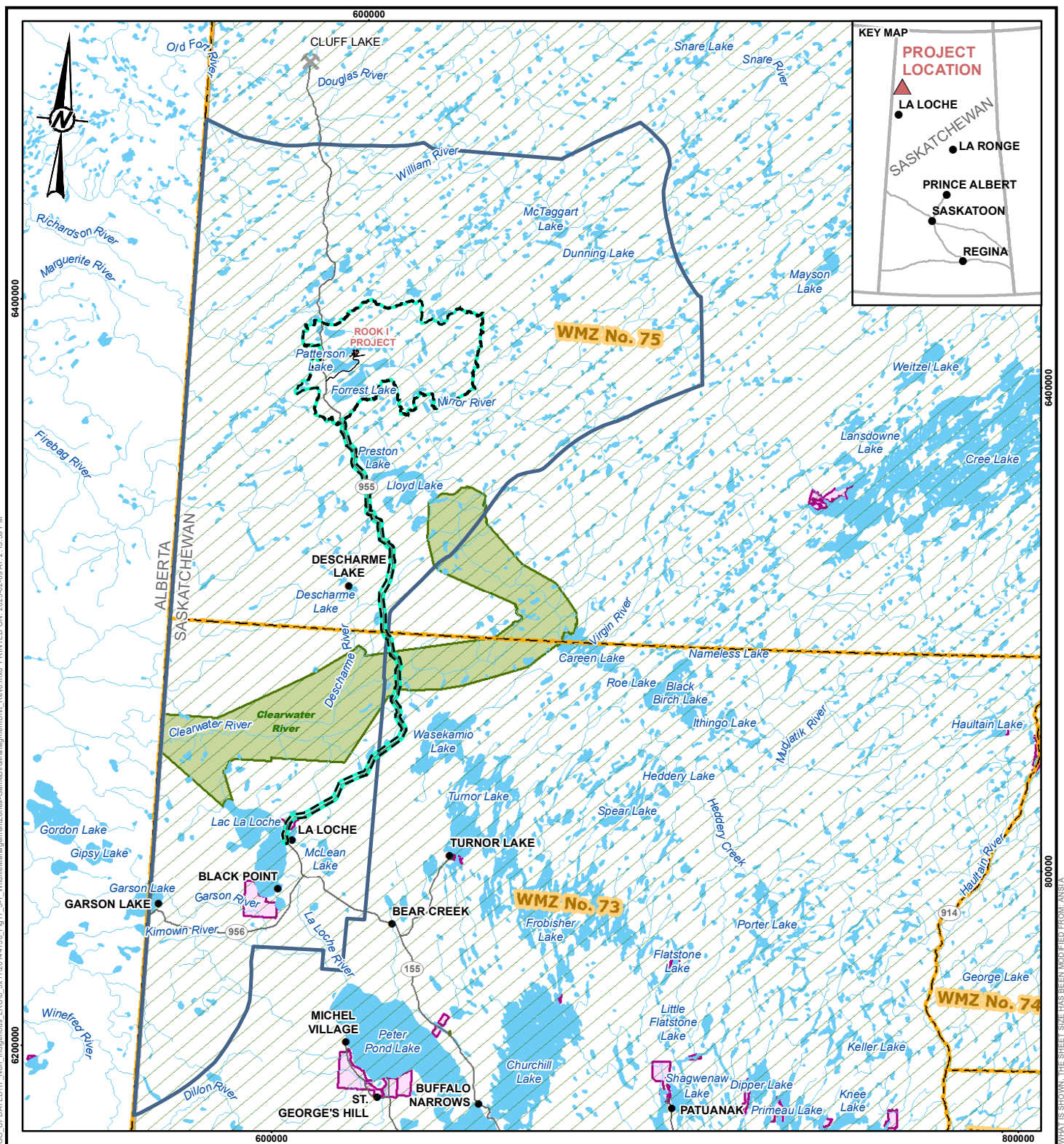
This subsection describes licensed resident hunting and the management zones, districts, and units used to conduct wildlife management in the LSA and RSA (Figure 17.3-1). For each game species, the following is described: the maximum harvest or “bag limit” (i.e., the maximum number of fish or game animals that one person can take) and lawful hunting seasons, the number of licences allocated, and hunting success rates. Guided hunting through licensed outfitters is described in Section 17.3.4, Lodge and Outfitting Services and Ecotourism, and Indigenous Peoples’ rights-based hunting is described in Section 16.3.2, Contemporary Indigenous Land and Resource Use.

17.3.1.1 Wildlife Management Zones, Districts, and Units

The Wildlife Management Zones and Special Areas Boundaries Regulations, 1990, define WMZs as areas for managing, harvesting, controlling, or regulating wildlife. Zones are chosen based on several factors including ecosystem classification and land tenure or ownership. Wildlife Management Zones are primarily used to help with species conservation, with the goal that hunters are harvesting the surplus of a species. The ENV sets different hunting limits and seasons by zone. For the management of big game, the LSA is located within WMZ 75 and the RSA includes portions of WMZ 73 and WMZ 75 (Figure 17.3-1).

Game birds are managed under two different management units: game bird districts and GBMUs. Migratory birds such as geese, ducks, cranes, coots, and snipe are managed in two areas: the North Game Bird District and the South Game Bird District. Both the LSA and RSA are located within the North Game Bird District. For the purposes of managing upland bird harvests, there are six GBMUs in Saskatchewan (Conkin 2018). Game Bird Management Unit 6, the Forest GBMU, covers approximately the northern third of the province and contains both the LSA and RSA (Figure 17.3-1).

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LEGEND

- POPULATED PLACE
- ✂ URANIUM MINING FACILITY (DECOMMISSIONED)
- SECONDARY HIGHWAY
- WATERCOURSE
- INDIAN RESERVE
- PROVINCIAL PARKS
- WATERBODY
- PROPOSED PROJECT FOOTPRINT
- OTHER LAND AND RESOURCE USE LOCAL STUDY AREA
- OTHER LAND AND RESOURCE USE REGIONAL STUDY AREA
- WILDLIFE MANAGEMENT ZONES
- GAME BIRD MANAGEMENT UNITS
- GBMU NO. 6 (FOREST)

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
 2. PARKS OBTAINED FROM IHS MARKIT CANADA ULC.
 3. WILDLIFE MANAGEMENT, GAME BIRD DISTRICTS & GAME BIRD MANAGEMENT UNITS (GBMU), SASKATCHEWAN MINISTRY OF ENVIRONMENT, FISH AND WILDLIFE.
- PROJECTION: UTM ZONE 12 DATUM: NAD 83

0 40 80
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PROJECT		ROOK I PROJECT				
						
TITLE						
WILDLIFE MANAGEMENT ZONES AND GAME BIRD MANAGEMENT UNITS IN THE REGIONAL STUDY AREA						
CONSULTANT		PROJECT		PHASE		
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		DESIGN	GE	2023-02-09	SCALE AS SHOWN	REV. 0
		GIS	NO	2023-02-09	FIGURE 17.3-1	
		CHECK	JO	2023-02-09		
		REVIEW	KG	2023-02-09		

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17.3.1.2 Big Game Hunting

In WMZ 75, big game (e.g., moose, black bear) licences are currently made available to Saskatchewan resident hunters for a moose hunting season that extends from 1 September to 30 November. For hunters who reside elsewhere in Canada or outside Canada, guided hunts are available for one bull moose in WMZ 75 through a limited allocation of licences to licensed outfitters in the area (Section 17.3.4). Black bear licences are available to both Saskatchewan and Canadian residents for hunting in spring from 15 April to 30 June and in fall from 25 August to 14 October. Non-residents of Canada may also purchase a non-resident licence and hunt black bears through the services of a licensed outfitter using the same season dates. Harvest of one moose or bear of either sex is permitted per licence per year (Government of Saskatchewan 2021b). Other big game species such as woodland caribou (*Rangifer tarandus caribou*), white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), and pronghorn (*Antilocapra americana*) are not hunted by licensed hunters in WMZ 75 due to the absence or low abundance of these species (Tokaruk 2021). Wolf, though also classified as big game, is trapped by licensed trappers in this area rather than hunted (Section 17.3.2, Commercial Trapping).

The hunter harvest survey (Government of Saskatchewan 2020) is used to understand how game populations are responding to current management strategies. The hunters harvest survey was established in 2014 and was made mandatory in 2020 (Tokaruk 2021). Available data collected from the 2015 to 2020 hunting seasons are presented in Table 17.3-1 for WMZ 75 (Tokaruk 2021).

Table 17.3-1: Reported and Estimated Annual Licensed Hunter Participation and Harvest by Species in WMZ 75

Years	Moose				Black Bear			
	Reported ^(a)		Estimated Total ^(b)		Reported ^(a)		Estimated Total ^(b)	
	Licensed Hunters ^(c)	Harvest	Licensed Hunters	Harvest	Licensed Hunters ^(d)	Harvest	Licensed Hunters	Harvest
2015	n/a	n/a	19	5	n/a	n/a	n/a	n/a
2016	n/a	n/a	40	0	n/a	n/a	n/a	n/a
2017	n/a	n/a	31	4	n/a	n/a	n/a	n/a
2018	n/a	n/a	17	4	n/a	n/a	n/a	n/a
2019	9	2	42	9	4	2	14	7
2020	14	3	27	6	6	2	10	4
Average	12.5	2.5	29.3	4.6	5.0	2.0	12.0	5.5

Note: Averages are only for years with reported or estimated data.

a) Reported through annual hunting surveys for the 2019 and 2020 hunting seasons. Reported data not available (n/a) from 2015-2018.

b) Estimated total calculated from survey response rates. Estimated data not available (n/a) from 2015 to 2018 for black bear.

c) Saskatchewan residents (non-Indigenous).

d) Saskatchewan and Canadian residents (non-Indigenous).

n/a = not available.

Based on the last six years of data available at the time of assessment, the average annual estimated moose harvest by licensed hunters in WMZ 75 was approximately five moose by 29 licensed hunters, and black bear harvest from 2019 to 2020 was an average of six bears by 12 licensed hunters. Few licensed hunters travel to this area to hunt due to the long distance from major centres and the limited road access. Longer travel and limited access, in combination with lower moose densities, attracts fewer hunters to the area (Tokaruk 2021). Indigenous Knowledge shared by Indigenous Groups also suggests low densities of moose in the area of the proposed Project. The CRDN have observed declining moose populations in the area of the Project since 2014:

It gets harder, I guess - to find a moose . . . I'll get one in the fall, if that. But last year I got one moose and that was it for the three weeks we been there. And that's for two families; you know what I mean. . . . We got just one moose last year. Before we [got] . . . two, three. (TSD V.2: CRDN)

The MN-S also reported that moose have moved farther away because of too much activity in the area of the proposed Project (TSD IV: MN-S), and the BNDN noted a decrease in the populations of large game, including moose, reporting that exploration activities in the region and the slow rate of vegetation regrowth following wildfires are underlying causes of their declines (TSD II: BNDN).

17.3.1.3 Migratory Waterfowl Game Bird Hunting

Currently, the North Game Bird District is open for hunting from 1 September to 16 December annually. Species permitted to be harvested include: Canada, cackling, and white-fronted geese (*Branta canadensis*, *Branta hutchinsii*, *Anser albifrons*); white and blue phase snow geese and Ross's geese (*Anser caerulescens*, *Anser rossii*); sandhill cranes (*Antigone canadensis*); and ducks, coots, and snipe. Based on 2020 harvest survey results, no respondents reported harvesting in the North Game Bird District in 2019 (Tokaruk 2021). The MN-S and BRDN reported that there are fewer ducks in general compared to the past, which was attributed to reduced air and water quality, and climate change, as noted by a member of BRDN:

Even here we used to get lots of ducks and they've dwindled down from 100 to a handful and that's a big decrease, which I notice because back when I used to go hunting for ducks on the prairie I'd be gone [for] half [an] hour and get my five, six ducks and be back. And now I'll be gone walking around all day. So . . . I see a big difference. (TSD III: BRDN)

17.3.1.4 Upland Game Bird Hunting

Upland bird species hunting is permitted from 15 September to 31 December for species such as ptarmigan, and sharp-tailed, spruce, and ruffed grouse (Government of Saskatchewan 2019a). Harvest effort and harvests of upland game birds in GBMU 6 are provided in Table 17.3-2 (Tokaruk 2021).

Table 17.3-2: 2019 Upland Game Bird Harvest and Harvest Effort in Game Bird Management Unit 6

Species / Year	Ptarmigan (<i>Lagopus</i> sp.)		Sharp-tailed grouse (<i>Tympanuchus phasianellus</i>)		Spruce grouse (<i>Canachites canadensis</i>)		Ruffed grouse (<i>Bonasa umbellus</i>)		Estimated Total	
	Licensed Hunters	Harvest	Licensed Hunters	Harvest	Licensed Hunters	Harvest	Licensed Hunters	Harvest	Licensed Hunters	Harvest
2018	8	55	30	74	170	890	277	1,505	485	2,524
2019	6	6	19	23	19	23	225	1,038	269	1,090
2020	8	48	75	146	300	1,134	497	1,579	880	2,907
Average	7	36	41	81	163	682	333	1,374	545	2,174

Note: Reported through the 2019 to 2021 annual hunting surveys for the 2018-2020 hunting seasons for GBMU 6.
GBMU = Game Bird Management Unit.

Based on harvest data from 2018-2020, spruce grouse and ruffed grouse are the most important upland birds harvested based on quantity harvested. Spruce grouse harvest appears more variable over time than ruffed grouse which is harvested in more consistent quantities over time. Harvests of all species were lowest in 2019. Conkin (2018) suggested that while there is little Saskatchewan-based research available on spruce and ruffed grouse, populations are affected by variables such as population cycles, severe weather, predators, disease, and other factors. Variability in hunting effort also influences harvests and has been documented (Conkin 2018).

17.3.2 Commercial Trapping

This subsection focuses on trapping for commercial purposes, whereas trapping for traditional purposes by Indigenous Peoples is described in Section 16.3, though it is noted that trapping for commercial purposes and for sustenance (i.e., traditional purposes) are performed concurrently.

17.3.2.1 History of Commercial Trapping

Indigenous Peoples in northern Saskatchewan have been involved in trapping fur-bearing animals for commercial purposes since the 1700s. By the twentieth century, trapping had become an important part of Indigenous livelihoods, with the fur trade introducing tools such as steel traps along with providing people with more access to European goods (Passelac-Ross 2005). Individual trappers harvested within large territories, practising a seasonal round of rotating harvesting self-regulated by local families and bands according to local fur resources. Should the resources fail in one area, they could move to a more productive region nearby. These family trapping areas were passed from generation to generation (Gulig 1997).

By the 1930s, the Great Depression had pushed many people in Saskatchewan from southern regions into the north, and the number of licensed non-Indigenous trappers approached half the number of Indigenous trappers in the north. The provincial game branch began leasing traplines in the north to anyone who wanted to purchase the rights to an area. This structure was problematic, as this introduced government-imposed regulations on a practice that had traditionally been self-regulated by local families and bands. Indigenous trappers and communities were not consulted in the establishment of these leased traplines until after non-Indigenous interests were satisfied (Gulig 1997).

A system of extensive fur conservation blocks was organized in the 1940s with the intention that communities could sustain themselves through hunting, trapping, and commercial fishing (Tough and McGregor 2007). The *Fur Act* (1953) designated “fur blocks” for the purpose of managing and conserving fur resources⁴. The northern fur block was further divided into community sections called Fur Conservation Areas. Quotas were placed on beaver and muskrat (*Ondatra zibethicus*), and these were trapped on a community basis, with the number permitted for harvest for each person dependant on population levels (Bureau of Publications for the Department of Natural Resources 1948).

Since the 1970s, the fur industry in Canada has encountered volatility in world prices followed by major setbacks on the world market. The European Union’s ban on leg-hold traps and its demand that more humane methods be used to trap animals increased the cost of supplies for trappers and decreased the market and the price for furs as public interest in the product waned. Animal rights groups have also had an effect on reducing the demand for fur products, which has affected their prices (Myers and Summerville 2004). With relatively low fur prices and the high cost of accessing traplines, the number of trappers has been decreasing. Saskatchewan fur harvest statistics from 1970 to 2020 illustrate a declining trend in the number of trappers and pelts harvested (Government of Saskatchewan 2021a). This decline was corroborated by JWG discussions on traditional and wage economies with the BNDN and BRDN, who noted trapping was the primary industry in the region up until the 1960s, since which time it has been declining due to low fur prices and anti-fur campaigns (BNDN-JWG 2021; BRDN-JWG 2021). Low fur prices have resulted in trappers having to alter the species they pursue, and they cannot make enough from their traplines to recoup their costs, which include skidoos, fuel, and equipment (TSD II: BNDN). Comments from the BNDN and BRDN on the low price of furs include:

You know, one time I remember back in the ‘60s – 1966, 1967, you know, the price of a lynx was \$1,200 . . . [Today] You’d be lucky if you get \$22. (TSD II: BNDN)

Well, it [trapping] was [important to me]. Right now, it’s kind of low on the price. So, it’s kind of – it’s important to me. But it’s not really going too far nowadays because you’re just trapping for gas. If you don’t catch much, then you’re not making anything. Just buy your gas again and go again. (TSD II: BNDN)

And then from there [a decade ago] on, the [fur] prices go down, down, down. Just about nothing now. I don’t know which government we’ll have to go see to get the fur price for us to bring it up; I don’t know who to go to. Because . . . like a beaver, the beaver price is just down [to] nothing, just about. Maybe about five dollars, or 10 dollars. And there’s lots of beaver, if the prices go – you know people walking around here, they’ll be out trapping somewhere. (TSD III: BRDN)

The CRDN reported to have been very involved in mercantile trapping in the 1960s and 1980s, and during the 1960s and 1970s the Government of Saskatchewan recognized and supported CRDN trappers in their commercial trapping endeavors in the Patterson Lake area by flying trapping partners in (TSD V.2: CRDN). The CRDN have indicated that a large wildfire on CRDN traditional lands that occurred in the 1980s is “the underlying reason which precipitated the steep decline in CRDN mercantile trapping which has continued into the present day because of depressed fur market conditions” (TSD V.2: CRDN).

⁴ The authority to constitute an area as a registered trapline district, a fur conservation area or a fur conservation block is now granted to the minister under *The Wildlife Act, 1998*.

Indigenous Groups have reported that furbearer populations have declined in the area of the Project and further north, which was attributed to mining and exploration activities and climate change, including the increasing frequency of wildfires in recent years. As noted by members of CRDN and BNDN:

From that year [2013] to this year [2020], it's way different now . . . and then we used to hunt - He [husband] used to trap. He used to catch a lot of martens and lynx . . . fisher. Now not much. (TSD V.2: CRDN)

Yeah [ability to trap has changed over time] . . . I have to switch routes once in a while or all the burns that are happening up there. Yeah. Less animals Weather is unpredictable nowadays The more activity you have up there, the less animals are on your trail There's less animals up there I had less fur last winter. (TSD II: BNDN)

Beaver is different. With the burnt country, they don't stay around. They move toward the green area, so the beavers are gone. (TSD II: BNDN)

17.3.2.2 Commercial Trapping in the Regional Study Area

Trapping still provides benefits to trappers and their families, including money from fur sales, meat from certain species, and some use of furs for domestic purposes, such as moccasins and gloves. Trapping continues to be a source of supplemental income for many, bringing in between \$1.5 million and \$6.0 million per annum for 4,500 trappers (Government of Saskatchewan 2021a). In northern Saskatchewan, the fur-bearing animals that have consistently been trapped are beaver, muskrat, squirrel, American marten, mink (*Neogale vison*), weasel (*Mustela* spp.), fox, and otter. Other fur-bearing animals that have been trapped more rarely in the northern region include wolf, lynx (*lynx canadensis*), fisher (*Pekania pennanti*), wolverine (*Gulo gulo*), and black bear (Hay 2007).

To be eligible to trap, trappers must be Saskatchewan residents and hold a Fur Conservation Area Fur Licence, which can be purchased annually for the period from 1 October to 30 September, thus covering the winter trapping season followed by time to prepare pelts for sale. Trapping is generally conducted in winter between November and March when fur is at its best or "prime" quality (2021 trapper's workshop; Government of Saskatchewan 2019b). Since trapping is conducted in winter months generally from November to March, a trapping season spans two years. The season is referenced using both years, for example, the winter season of 2019/2020.

Each fur block has a fur block chairperson, who is tasked with coordinating trappers in a fur block and participating in a co-management board with the Province. Some fur blocks have trappers assigned to zones, and other fur blocks are open, with trappers working larger areas. Trappers frequently shift their activity throughout a fur block to adjust to changes in animal density and movement and to prevent over-harvesting (2021 trapper's workshop). Figure 17.3-2 shows the N-19 trapping block that contains the LSA and the boundaries of which define the RSA.

In 2019/2020, 258 pelt harvests were recorded from the N-19 trapping block for a total value of just over \$7,500 (Government of Saskatchewan 2021a). American marten and lynx pelts contributed to over 90% of the income generated. The 2019/2020 pelt harvests were lower than the five-year average⁵ of 418 pelts for just under \$17,000 (Government of Saskatchewan 2016, 2017, 2018a, 2019b, 2021c). Industry slowdown occurred due to the COVID-19 pandemic necessitating community lockdowns and closure of fur markets (2021 trapper's workshop). In other years, a wider variety of species was harvested, such as fisher, muskrat, wolf, and others; however, lynx and American marten brought in an average of over 80% of the value of pelts sold. A BNDN trapper indicated that they target lynx and American marten "because the other ones are not really worth much" and a BRDN member suggested that "if the prices improved, a lot of people would trap because there's lots of animals over there" (TSD II: BRDN; BRDN-JWG 2020). Generally, trappers make decisions to harvest specific species based on economic returns for effort expended, personal preferences, the abundance of animals in their trapping area, the equipment available to them, and their level of experience. Wild fur harvests and cash values for the last five years for which data are available are shown in Table 17.3-3.

Table 17.3-3: Fur Block N-19 Wild Fur Harvest and Value 2014/2015 to 2019/2020

Species	2014/2015		2015/2016		2016/2017		2017/2018		2019/2020		5-Year Average	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Beaver	10	\$160	n/a	n/a	5	\$77	13	\$187	n/a	n/a	5.6	\$85
Coyote	2	\$208	1	\$85	n/a	n/a	11	\$1,285	n/a	n/a	2.8	\$315
Fisher	33	\$3,124	16	\$868	10	\$614	18	\$1,071	9	\$193	17.2	\$1,174
Fox – cross	6	\$203	1	\$17	n/a	n/a	1	\$26	1	\$39	1.8	\$71
Fox – red	13	\$273	4	\$49	3	\$56	15	\$226	7	\$62	8.4	\$133
Fox – silver	n/a	n/a	n/a	n/a	n/a	n/a	2	\$56	1	\$53	0.8	\$27
Lynx	31	\$3,075	25	\$1,320	17	\$1,604	27	\$2,172	28	\$1,561	25.6	\$1,946
American marten	193	\$17,219	147	\$9,386	127	\$12,574	169	\$13,836	203	\$5,315	167.8	\$11,666
Mink	28	\$353	9	\$97	6	\$103	6	\$100	4	\$21	10.6	\$135
Muskrat	254	\$1,041	74	\$161	56	\$192	110	\$356	n/a	n/a	98.8	\$350
Otter	7	\$321	3	\$88	2	\$76	4	\$162	2	\$43	3.6	\$138
Squirrel	99	\$62	121	\$50	n/a	n/a	7	\$3	n/a	n/a	45.4	\$23
Weasel	86	\$190	39	\$78	6	\$15	1	\$2	2	\$5	26.8	\$58
Wolf	5	\$1,657	n/a	n/a	1	\$235	3	\$534	n/a	n/a	1.8	\$485
Wolverine	2	\$597	n/a	n/a	1	\$302	n/a	n/a	1	\$264	0.8	\$233
Total	769	\$28,483	440	\$12,199	234	\$15,849	387	\$20,017	258	\$7,554	417.6	\$16,820

Sources: Government of Saskatchewan 2016, 2017, 2018a, 2019b, 2021c.

Notes: 2018/2019 data were not compiled by the Province that year. A trapping season spans two years since trapping is conducted in winter months, generally from November to March.

Dollar values are total value of harvest for current for the year reported.

n/a = no harvest.

17.3.2.3 Commercial Trapping in the Local Study Area

Trapping is primarily conducted during winter months, and most trappers travel to their traplines by truck on the regional road network then snowmobile out to traps. Cabins used to support trapping activities are located both within and outside of the LSA (2021 trapper's workshop; TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; Section 17.3.5, Cabins).

⁵ 2014/2015 to 2019/2020, excluding the 2018/2019 season for which harvest data are not available.

The CRDN describe the Patterson Lake area as “up north” and have historically met at Descharme Lake as a hub and branched off to other destinations from there (TSD V.1: CRDN; TSD V.2: CRDN). The Cluff Lake Road, otherwise known as Highway 955, was used to travel to destinations north of Descharme Lake, to Athabasca Lake and beyond. Patterson Lake is locally known as “Upper Pelican Lake” and is a trapping area (TSD V.1: CRDN; TSD V.2: CRDN).

Within the maximum disturbance area, the CRDN documented trapping areas between Patterson and Forrest lakes that overlap with the proposed access road and on the Patterson Lake peninsula (Figure 4, TSD V.1: CRDN).

In the LSA, several trappers use the Highway 955 corridor to trap for American marten (2021 trapper’s workshop). The CRDN (TSD V.1: CRDN) documented trapping north of Patterson Lake, between Patterson and Forrest lakes and within the proposed Project footprint. Furbearers trapped by past and present CRDN members were indicated to include beaver, fisher, American marten, mink, muskrat, otter, porcupine, weasel, and wolverine (TSD V.1: CRDN, Appendix A). Recent fur production listed in Table 17.3-3 suggested a focus on American marten and lynx fur production over the past five years. CRDN describes the Patterson Lake area as “good for everything” (TSD V.1: CRDN).

The MN-S (TSD IV: MN-S) documented a trapline north of Patterson Lake but did not provide additional information on this line or the type of trapping conducted at this location. The MN-S also mapped trapping in areas north of Patterson Lake, including at Gedak Lake (Figure C, Table 1, TSD IV: MN-S). The BRDN noted historical trapping in the Patterson Lake area, but no BRDN community members reported trapping there recently in acknowledgement of CRDN community tenure within the N-19 trapping block boundaries (TSD III: BRDN). The BRDN and MN-S have also identified other trapping interests in the area of the Project, which are described in Section 16 (Cultural and Heritage Resources and Indigenous Land and Resource Use). The Ya’thi Néné Lands and Resources identified the area of the Project to be an “important furbearer area”, though it is not currently used for furbearer harvesting by Ya’thi Néné Lands and Resources members (Figure 10; TSD VI: YNLR).

17.3.3 Fishing

Fishing includes consideration of commercial fishing and recreational fishing, also known as angling. Commercial fishing, by definition, is fishing for profit under a commercial fishing licence. These licences are issued to either Indigenous rights-holders or non-Indigenous individuals. Recreational fishing is fishing for sport or leisure, and though fish are consumed, they are not considered to be subsistence harvesting. Sport fishing in Saskatchewan is regulated by The Fisheries Regulations under *The Fisheries (Saskatchewan) Act, 2020*. Angling licences are required to authorize non-Indigenous people to fish. This subsection describes licensed commercial fishing and licensed angling conducted in the LSA and RSA. Rights-based fishing for food is described in Section 16.3, Existing Conditions.

17.3.3.1 Commercial Fishing

Commercial fishing is an important industry in northern Saskatchewan, though with significant variability depending on distance to markets and lake accessibility. This subsection examines the historical context, fish marketing, and commercial fishing in the LSA and RSA.

Commercial Fishing Context

Between the late 1960s and the mid-1970s, commercial fishers in northern Saskatchewan landed about 11 million pounds (approximately 500,000 kg) of fish annually, valued at nearly \$2 million, from roughly 170 lakes (Environment Canada 1975). Up to the late 1980s or early 1990s, commercial fishing was an important industry for LPA communities. Fish harvesters made sufficient income to live off. Catches contributed to subsistence diets, and dried fish was sold in southern communities for extra cash income. After one lake quota was taken, fish harvesters moved on to the next lake. Commercial fishing was conducted in both winter and summer (2019 to 2021 KP interview program).

Currently, throughout Saskatchewan, there are approximately 1,200 lakes with commercial fishing quotas (Demuth 2020). Between 200 and 250 of those lakes were commercially fished in 2019 (Demuth 2020, 2021a, 2021b). Commercial fishing within the province is managed by The Fisheries Regulations. Commercial fishing predominately occurs north of Prince Albert, which is outside of the RSA. The CRDN, MN-S, BNDN, and BRDN reported that they continue to fish commercially, which is mostly practiced during the winter months; however, the locations where commercial fishing currently occurs was not provided in the IKTLU Studies (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.2: CRDN). Lake quotas are reviewed and adjusted based on assessments by the ENV. The time between assessments varies by each individual lake. Each licence has a breakdown quota per species; when the quota for one species is reached, the lake is closed. There is both a sustainability and economic benefit for fish harvesters to try to target a different fish species when one species is approaching quota to prevent lake closure (as occurs when the quota is reached). Quota limits vary by lake and are based on an estimated sustainable harvest level. Fish harvesters submit daily catch records, which the ENV has access to and manages. As the catch approaches the quota, the Province will give 48 hours' notice to all fish harvesters on that lake to pull out their nets before closing the lake. In the event that a quota is surpassed, the ENV will impose a regulation such as a reduction in the quota for the following year.

Commercial fishing is conducted primarily through fishing co-operatives. Co-operatives are established within communities, including local towns and hamlets and Indigenous communities, and their residents can obtain membership. The lakes that are selected for commercial fishing by the Province are chosen based on historical use; these lakes tend to be close to the co-operative locations. According to a 2007 economic impact study conducted by the Freshwater Fishing Marketing Corporation (FFMC), over 88% of northern Saskatchewan commercial fish harvesters and their helpers self-identified as Indigenous, inclusive of Métis (GTA 2021). The Saskatchewan Commercial Fisherman's Co-operative Federation Ltd. reports that commercial fishing is an important source of income for northern Saskatchewan families and that over 700 fish harvesters belong to local fishing co-operatives (Stewart 2006).

The ENV does not impose a maximum number of memberships per co-operative, as this is managed by each co-operative. The ENV is responsible for issuing fishing licences and setting lake quotas, fishing seasons, and allowable fishing gear (e.g., mesh sizes, how many gillnet gangs [i.e., a group of nets or panels strung together] are permitted). Market conditions also influence the commercial fishery (e.g., type and number of fish targeted due to market prices) and, more recently, the COVID-19 pandemic has also affected the fisheries.

Licences can be issued annually or every second year (i.e., pulse fisheries, which is a fisheries management technique for preventing fish stocks from being overfished by periodically permitting a cycle of fishing followed by a fallow period that allows stocks to recover). Once a licence is obtained, licensees will determine if it makes economic sense to fish that year. The decision to fish takes into consideration the following factors: access to the lake, quota, available time, market prices, fuel and other operating costs, and personal reasons.

Fish Marketing

Established in 1969, the FFMC acted as a single-desk marketer of Canada's inland fish catch under the *Freshwater Fish Marketing Act*. The FFMC's mandate was to purchase all legally caught fish, create an orderly fish market, and increase returns to fish harvesters (Government of Canada 2021). In 2012, the Saskatchewan government left the *Freshwater Fish Marketing Act*. Fisheries were no longer required to sell to the FFMC and, likewise, the FFMC was no longer obligated to purchase from them as there was now a free market approach (Government of Canada 2021). Given the choice, some fish harvesters continue to sell to the FFMC and others market their catch to small processors and for local consumption. Fish harvesters in the region currently market to either J. Waite's Fisheries in Buffalo Narrows or to the Île-à-la-Crosse Fish Company in Île-à-la-Crosse. These fish packers then sell for the best available prices on the market, whether that is to the FFMC or to other buyers.

To provide fresh, unfrozen fish to the packing companies, fish harvesters must empty their nets and drive to one of the two fish packers available (2019 to 2021 KP interview program). The distance to transport fish to the packers was stated to be a deterrent to fishing because "fish freight costs are too high, so people don't bother fishing that area" (BNDN-JWG 2020). The Île-à-la-Crosse fish processing facility has capacity for double the current commercial harvest (DMCA 2018). An opportunity has been identified for a fish collection and sorting depot in La Loche to further develop the local commercial fishing sector, although there is a current skill gap in the workforce given the decline in commercial fishing over the last decade (DMCA 2018).

In the past (assumed to be sometime during the height of commercial fishing from the late 1960s to the early 1990s), fish harvesters in the RSA depended on the value of lake whitefish, as many lakes were classified as export grade⁶ fetching top dollar (2019 to 2021 KP interview program). Mixing catches from different lakes led to a downgrade in the quality rating of lake whitefish, which reduced the profitability of the fishery (2019 to 2021 KP interview program).

More recently, until the 30 April 2020 end of fiscal year, fish harvesters were receiving \$3.96/kg (round weight) for walleye, locally known as pickerel, which was almost double the price received for lake whitefish (i.e., \$1.94) and almost four times the price received for northern pike (i.e., \$1.00; FFMC 2020). These prices made northern Saskatchewan fish harvesters heavily reliant on the pickerel catch to maintain financial viability; in 2017 for example, pickerel accounted for 63% of fish harvesters' income but only made up 23% of the catch (Financial Post 2017).

By early spring of 2020, the FFMC indicated in its annual report that the COVID-19 pandemic had begun to materially affect FFMC operations and financial results (FFMC 2020). This statement was validated in the 2019 to 2021 KP interview program, which also indicated that fish harvesters were not fishing during the 2019/2020 season as supplementary income was available from the Canadian Emergency Response Benefit (DFO 2020), which enabled fish harvesters to remain safe at home. By late April 2020, the FFMC communicated to fish harvesters that they would not buy the same volume of fish, particularly walleye, due to a glut of inventory and low demand caused by food service industry closures (CBC 2020a,b).

⁶ Export grade exhibits a light-coloured flesh with low levels of parasitisation by *Triaenophorus crassus*, a muscle cyst that darkens the meat.

Commercial Fishing in the Local and Regional Study Areas

Lakes that have been active in the LSA and RSA in the last five years include Patterson Lake in the LSA and Lloyd Lake and Lac La Loche in the RSA. Patterson Lake has an annual quota of 6,250 kg of walleye, northern pike, lake whitefish, and lake trout. Lloyd Lake has an annual quota of 13,350 kg of walleye, northern pike, lake whitefish, and lake trout, and Lac La Loche has an annual quota of 76,000 kg of walleye, northern pike, and lake whitefish. Table 17.3-4 shows production in round weight (kg) by species from each of the three lakes.

Table 17.3-4: Commercial Fishery Production in Round Weight from 2015/2016 to 2019/2020

Lake Name	Year	Lake Trout (kg)	Lake Whitefish (kg)	Northern Pike (kg)	Walleye (kg)	Other (Unspecified, Mullet) (kg)	Quota Species (kg)	Total Harvest (kg)
Lac La Loche	2015/2016	n/a	19,859	40,055	77	n/a	59,991	59,991
Lac La Loche	2016/2017	n/a	26,022	48,537	6	1,659	74,565	76,224
Lac La Loche	2017/2018	n/a	16,012	47,446	94	1,672	63,552	65,223
Lac La Loche	2018/2019	n/a	4,500	11,857	171	1,585	16,527	18,112
Lac La Loche	2019/2020	n/a	1,616	4,387	360	7	6,363	6,370
Average Annual Harvest (2015/2016-2019/2020)		n/a	13,602	30,456	141	1231	44,200	45,184
Lloyd Lake	2015/2016	6	1,706	928	623	n/a	3,263	3,263
Lloyd Lake	2016/2017	n/a	2,610	587	1,840	468	5,037	5,505
Lloyd Lake	2017/2018	n/a	2,447	1,593	2,092	55	6,132	6,187
Lloyd Lake	2018/2019	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lloyd Lake	2019/2020	n/a	428	39	8	52	475	527
Average Annual Harvest (2015/2016-2019/2020)		6	1,798	787	1,141	192	3,727	3,871
Patterson Lake	2016/2017	127	50	13	n/a	n/a	190	190

Source: Demuth 2021a. Fish Production Data by Lake and by species (summary tables in MS Excel, pers. comm).

Averages are based on available years with harvest data.

Commercial fishery production from Patterson Lake only occurred in the 2016/2017 season from 2015 to 2020.

n/a = No harvest.

In the RSA, Lloyd Lake has been fished more consistently but is not harvested to its potential, averaging less than 4,000 kg of its 13,000 kg quota over the last five years. The distance to fish packing facilities and winter road conditions is likely deterring commercial fishing on both Patterson and Lloyd lakes (2019 to 2021 KP interview program). Currently, there are only approximately 10 active commercial fish harvesters who fish Lac La Loche and lakes north to Patterson Lake (2019 to 2021 KP interview program).

In the LSA, Patterson Lake has only been commercially fished once in the past 20 years, during 2016/2017. According to an interview, the fish harvester who used to fish Patterson Lake retired and the licence was not taken up by a new fish harvester (2019 to 2021 KP interview program). In 2010/2011, a fish harvester requested a licence to fish on Patterson Lake but did not use the allocation. A very small harvest of less than 200 kg was taken from Patterson Lake in 2016/2017.

17.3.3.2 Recreational Fishing

Waterbodies in the LSA and RSA are within the Northern Zone, a zone established by the ENV for fisheries management through establishment of recreational fishing seasons, catch limits, and other special regulations. Information pertaining to fisheries management is in the Saskatchewan Angling Guide, where fishing seasons, catch limits, and any special regulations are published (Government of Saskatchewan 2021d). The open fishing season generally lasts from the third week of May to the second week of April in the following year. Catch limits refer to the maximum number and size of fish an angler is allowed to keep or have in their possession (Government of Saskatchewan 2021d). General catch limits specify limits for all lakes where special regulations have not been established. For example, under general catch limits in the Northern Zone, northern pike and walleye have a limit of five and four fish, respectively, and not more than one fish caught can be over 75 cm in

length for northern pike and not more than one over 55 cm in length for walleye (Government of Saskatchewan 2021e).

Special regulations are designated Catch and Release (CR) Waters CR1, CR2, and CR3, each of which is more restrictive on the number and size of fish caught than the previous, and all of which are more restrictive than general limits. Special regulations are in effect for one lake in the LSA: Patterson Lake, which is designated with CR1 limits (Government of Saskatchewan 2021e). The CR1 designation limits northern pike and walleye annual harvest to three and two fish, respectively. In the RSA, Lloyd Lake has a CR2 designation which restricts Arctic grayling annual harvest to one fish that must not exceed 35 cm in length.

Recreational fishing is not common in the LSA and RSA for two reasons: the remoteness of the region and the low proportion of non-Indigenous residents in the area; over 95% of residents in the region are Indigenous and, therefore, conduct rights-based fishing not requiring licensing (Section 16.3). Some Indigenous Group members and LPA community members have commented that there are fewer fish in the lakes in area of the proposed Project, which was attributed to a perception of pollution, overfishing, and overharvesting of minnows for bait (TSD IV: MN-S; TSD V.2: CRDN; NexGen 2019). The CRDN have reported that fish populations in Patterson Lake and Forrest Lake have decreased during the late 1970s and 1980s, and that fish populations in the lake have never fully recovered (TSD V.2: CRDN).

It is likely that some fishing takes place concurrently with other activities, such as hunting, camping, or canoeing in Clearwater River Provincial Park, but equivalent fishing opportunities can be found closer to larger population centres and without the time or expense of reaching the LSA and RSA. Local resource harvesters have observed self-guided family groups who fish lakes in the area that have been stocked with rainbow, brook, and lake trout (2019 to 2021 KP interview program).

Guided sport fishing opportunities are available and are described in Section 17.3.4.

17.3.4 Lodge and Outfitting Services and Ecotourism

This subsection discusses two topics: lodge and outfitting services, and ecotourism. Lodge and outfitting services have played an important role in northern economies and since 2000, with nature and adventure travel having emerged as one of the fastest-growing segments of the tourism industry (CPAWS–Wildlands League and Ontario Nature 2005). Ecotourism is also a growing industry which provides non-consumptive recreational activities for experiencing the wilderness (Reed and Mills 2007). While both industries have experienced a downturn due to the COVID-19 pandemic, a restart marketing strategy has been launched by Tourism Saskatchewan to speed recovery (Tourism Saskatchewan 2021a). Despite marketing, there are several factors that are limiting the tourism industry in the RSA. For example, La Loche region is noted to have significant challenges with respect to limited highway access, a lack of developed attractions in the region, lack of accommodations and restaurants to serve visitors, and a small and underdeveloped outfitting industry (DMCA 2018). The contribution of these services to economic effects are presented in Section 18, as applicable.

17.3.4.1 Lodge and Outfitting Services

Between 620 and 630 Saskatchewan lodge and outfitting operations are licensed each year (ENV 2017b). Outfitters offer a wide variety of hunting and angling services, and although anyone can access outfitting services, 90% of hunters using outfitting services are non-residents of the province. In 2006, it was estimated that the industry contributed over \$40 million to the Saskatchewan economy (ENV 2017b).

Currently, opportunities to establish businesses for hunting big game and/or migratory birds and angling are fully allocated, making it difficult to start up any new facilities in Saskatchewan (Government of Saskatchewan 2021f). The province is known for black bear and moose hunting opportunities (Tourism Saskatchewan 2021a).

Outfitting licences are issued annually by the ENV and specify the following conditions:

- the type of fishing and/or hunting activity allowed;
- the species and amounts that may be harvested;
- where and when an outfitter or guide is authorized to provide services;
- the number of clients that can be served at one time or annually;
- the type of equipment that an outfitter can provide; and
- other terms and conditions considered appropriate for fish and wildlife management.

Outfitters can offer fishing and/or hunting services, depending on the suitability of the area in which they operate. In accordance with The Outfitter and Guide Regulations, 2004, outfitters pay a one-time application fee and annual fees based on the number of categories in which they offer services (e.g., big game such as white-tailed deer, moose, or bear; fishing; and game bird). Big-game outfitters also pay a resource allocation fee for each client. Outfitter clients are required to buy individual hunting and/or fishing licences.

Many outfitters and lodges provide guided and self-directed fishing activities during the open-water season. This service usually includes a shore lunch and eating fish at the lodge or camp. Many of the lodges follow the practice of catch and release. A few of the lodges offer services that bring clients to other nearby lakes, either by float plane or by ATV. In the northern WMZs, most of the outfitters and lodges have limited road access, relying on float planes and small private landing strips on land.

In the northern portion of the RSA, including the LSA, hunting allocations are exclusively for bear tags⁷, and in the southern portion of the RSA, hunting allocations are exclusively for moose. Bear hunting seasons occur in spring and fall from 15 April to 30 June and from 25 August to 14 October, respectively. Guided moose hunts permit the harvest of one bull moose between 1 September and 30 November (Government of Saskatchewan 2020).

Kisslinger Outfitters is located in the RSA but outside of the LSA and is accessed via the Highway 955 corridor. Lloyd Lake Lodge and Bolton Lake Wilderness Retreat are remote fly-in operations also located in the RSA. There are three lodge and outfitting operations with allocations within or partially within the LSA: Forest Lake Outfitters, Big Bear Contracting, and Lone Wolf Camps. The closest operation to the proposed Project site is Forest Lake Outfitters, which shares the existing access road with NexGen and has allocations for sports fishing on Patterson Lake and other local lakes. Exact locations are not provided to protect commercial interests. Each operation is described below to the extent possible based on publicly available information and whether or not consent was provided by the operators to be interviewed.

⁷ A tag authorizes the hunt to hunt the game species indicated on the tag.

Kisslinger Outfitting

In the RSA, Kisslinger Outfitting operates from a drive-up base camp located on the west side of Highway 955, just south of Clearwater River Provincial Park. Accommodations include 14 rooms for up to 20 hunters. Kisslinger Outfitters offers primarily spring bear hunts at over 25 bear bait sites along the highway (Kisslinger Outfitting 2021). About 10 days of guided hunting takes place per group. The operation is open for 24 weeks of the year from 1 May to 15 October and hosts between 50 and 60 guests annually. Guests also fish for northern pike, Arctic grayling, walleye, and lake trout on nearby lakes (2019 to 2021 KP interview program).

Lloyd Lake Lodge

In the RSA, Lloyd Lake Lodge is located on the western shores of Lloyd Lake, situated approximately 40 km south of the proposed Project site. The lodge has five guest cabins that can accommodate up to 20 guests (Lloyd Lake Lodge 2021a). This fly-in lodge offers guided fishing packages for northern pike, walleye, lake trout, and Arctic grayling (Lloyd Lake Lodge 2021b). Attempts to contact the operation for an interview to obtain additional information were not successful.

Bolton Lake Wilderness Retreat

In the RSA, Bolton Lake Wilderness Retreat is a remote fly-in facility catering to corporate retreats and resource exploration groups. The lodge is situated approximately 33 km due east of Patterson Lake. An airstrip and helipad services the lodge, and the network of surrounding trails serve exploration activity year-round. Exploration clients access the lodge by air. It is a 35-minute flight from La Loche and about 50 minutes from Fort McMurray, depending on the aircraft used. Land access to the lodge is via 55 km of winter trail accessed just north of Patterson Lake.

Under a Commercial Outfitters Licence, the lodge has an allocation area that includes Meanwell Lake, Dell Lake, Dyke Lake, Clearwater River, and Mirror River (Tourism Saskatchewan 2021b). The operation has six bear tag allocations. Bear are noted to be abundant in the area. The lodge is run year-round and has capacity for 21 people. Walleye and northern pike fishing are offered in the open water season, along with hikes and ATV trail use. Over 32 km of trail are permitted for use (2019 to 2021 KP interview program).

The Bolton Lake Wilderness Retreat was sold to new owners in May 2021. The new owners plan to maintain the existing operation as is until they are more familiar with the operation. Potential initiatives include conducting a spring bear hunt and/or river tours for tourists. A fall bear hunt was not planned for 2021 (2019 to 2021 KP interview program).

Forest Lake Outfitters

In the LSA, Forest Lake Outfitters maintains three guest cabins on the west shore of Beet Lake and an outpost camp with two cabins on Forrest Lake. Access to the facility is either by float plane to Beet Lake or by road. Driving access is via Highway 955 using the Patterson Lake turnoff, travelling the road for about 6 km, then turning right and travelling an additional 4 km to the Forest Lake outpost camp (Forest Lake Outfitters 2013). The 6 km long Patterson Lake turnoff road is the same access road used to reach the existing NexGen exploration camp facilities and proposed Project site. This road has been widened and improved for better access to the NexGen exploration camp (2019 to 2021 KP interview program). The additional 4 km roadway to Forest Lake Outfitters remains unimproved. At the terminus of this roadway is the Forest Lake outpost camp, where boat transport is provided to the main operation on Beet Lake.

The Forest Lake Outfitters operation has allocations on six interconnected lakes and one river: Patterson, Beet, Naomi, Forrest, Vermeersch, and Wickenkamp lakes, and the Clearwater River (Forest Lake Outfitters 2013). The first four lakes (i.e., Patterson Lake, Beet Lake, Naomi Lake and Forrest Lake) are accessed via interconnecting waterbodies from Beet Lake, and the latter two lakes (i.e., Vermeersch Lake and Wickenkamp Lake) are accessed via ATV along the existing access road from the Forest Lake outpost camp. Fish targeted in the lakes include walleye, northern pike, and lake trout (2019 to 2021 KP interview program).

The operation hosts an average of 45 to 60 guests annually, normally for five days for each client group. Clients are self-guided using operation-supplied boats and fuel. Clients use ATVs to access Vermeersch and Wickenkamp lakes on the opposite side of Highway 955 using 10 km of roadway, including the 6 km of roadway in common with the existing access road to the proposed Project site. Though the operation has bear tags, its focus has been exclusively on fishing (2019 to 2021 KP interview program).

Big Bear Contracting

Big Bear Contracting is located in the LSA. Little information about this outfitting operation is available from public sources. An allocation area for bear hunting located along Highway 955 from just south of Forrest Lake to about 48 km north is partially in the LSA.

Lone Wolf Camps

In the LSA and RSA, Lone Wolf Camps offers fishing from their cabins on the shores of Carswell Lake just south of Lake Athabasca. Guided bear hunting is offered on the west side of Highway 955, opposite Forrest Lake in the Wickenkamp and Wenger Lake area (2019 to 2021 KP interview program). Few details were provided in the initial interview and the operator could not be reached though follow-up calls were made to request a second KP interview.

17.3.4.2 *Ecotourism*

Although there is not universal agreement on the definition of ecotourism, it is generally agreed that the main tenets are conservation, sustainability, environmental education, and nature-based activities (Donahoe and Needham 2006).

One operator in the RSA conducts canoe tours down the Clearwater River from Lloyd Lake to the Saskatchewan-Alberta border. CanoeSki Discovery Company (2021) advertises a 12-day, 258 km paddle on the Clearwater River. Based on an interview with the president and chief executive officer of the business, the Clearwater Heritage Canoe Trip is not currently being offered, nor is it planned for the foreseeable future (2019 to 2021 KP interview program).

The Carswell impact structure, which is impact crater within the Athabasca Basin of the Canadian Shield in northern Saskatchewan and also known as Carswell crater, is located at the end of Highway 955 and may occasionally attract self-guiding visitors. Poor road conditions and the need to pack extra fuel may deter all but the most determined visitors. The crater is almost 40 km in diameter and the rim is still visible. The Cluff Lake Mine, now closed, is located within the crater.

No other ecotourism interests were identified in the RSA, and none occur in the LSA.

17.3.5 Cabins

As of February 2020, there were 937 remote recreational cabins and 15 remote residential sites on Crown resource land in Saskatchewan, primarily located in northern Saskatchewan (Regina Leader-Post 2020), plus an unknown number of traditional resource use cabins. Cabins provide access to recreational opportunities and shelter for resource harvesters seeking extended access to resources such as fish, meat, or fur. Remote recreational cabins and residential sites are also used as a base by Indigenous land users from which traditional activities are undertaken, to spend time with family, and they serve as educational centres where traditional ways of life and knowledge are passed down to younger generations by Elders and other adult members of an extended family (TSD II: BNDN; TSD III: BRDN; TSD IV: MN-S; TSD V.1: CRDN; TSD V.2: CRDN; Section 16, Cultural and Heritage Resources and Indigenous Land and Resource Use). To build and legally occupy a cabin, permission is granted through Crown Resource Land Leases, known as a resource land disposition (Government of Saskatchewan 2021g). Examples of intended uses include:

- remote recreational cottages;
- traditional resource use cabins;
- commercial and industrial operations; and
- wild rice harvesting.

Around 2004, a committee was formed to develop a land use plan that would guide permitted development in the RSA north of La Loche. Representatives from the CRDN, La Loche, the ENV, and the Ministry of Government Relations formed a committee to complete the land use plan. At the request of CRDN Chief Roy Cheecham, the ENV implemented a development freeze or “land freeze” until the land use plan was completed. The land freeze limited land dispositions including gravel dispositions, cabin leases, and all other forms of leases except mineral exploration and development. The land use plan was never completed, and the freeze remained in effect until 2020, when by request from the CRDN, the ENV “unfroze” dispositions for traditional resource use cabins. The remainder of land dispositions remain “frozen” (Happ 2021). Available provincial data for cabins included home addresses but did not include locations of cabins in the RSA.

Four sources of information provided cabin locations in the LSA (i.e., wildfire maps, trapper’s workshop, CRDN’s IKTLU Study, and the noise receptor mapping). A map dated 22 July 2020 from the SPSA (2020a) displaying remote structures (e.g., homes, lodges, cabins) shows three cabin sites in the LSA: one on Forrest Lake, one on Beet Lake, and one west of Highway 955 near Vermeersch Lake. The first two are understood to be outfitters’ cabins (Section 17.3.4), and the latter was verified to be a resource user’s cabin (2021 trapper’s workshop). It should be noted that the presence of resource user cabins may not be known to the Provincial agencies depending on whether owners apply for leases. As of 2020, resource user cabin leases may be acquired from the Province provided they meet one of two conditions: a commercial fishing operator may apply for a cabin lease on their licensed lake or a licensed N-19 trapping block trapper may apply for a cabin lease within N-9 (Happ 2021).

The 2021 trapper’s workshop also provided the location of an additional historical cabin site northeast of Patterson Lake. The CRDN supplied locations of five additional cabins (past, current and future planned) in the LSA in Figure 2 of their IKTLU Study (TSD V.1: CRDN): one cabin on the south arm of Patterson Lake near Highway 955, two cabins on the north arm of Patterson Lake, and two cabins on Forrest Lake. The status of these cabins, whether historical, current, or planned for the future, was not available, and these locations could not be validated when cross-referenced with three other sources of information. The CRDN have commented

that they are concerned about the growing number of non-Indigenous users moving into lake areas and building recreational cabins in “longstanding family spaces, without the prior knowledge or agreement of the community or CRDN families already there” (TSD V.2: CRDN).

An additional source of information for cabin identification was the noise receptor map (Section 7.3.2, Component Methods, Figure 7.3-2), which documents additional resource cabins at the east end of Gedak Lake at its outlet and the east side of Naomi Lake. The CRDN referred to Gedak Lake as “an Elders Camp” (TSD V.2: CRDN). The noise receptor map also shows three historical cabin and camp sites on the Patterson Lake peninsula and on the shores of Beet and Forrest lakes.

In summary, the LSA contains two outfitting lodge/cabin sites (i.e., one each on Forrest Lake and Beet Lake), and three resource user cabins (i.e., one each on the east side of Highway 955 near Vermeersch Lake, at the east end of Gedak Lake, and at the east end of Naomi Lake). Historical cabin or camp sites have been documented on the northeast shore of Patterson Lake, on the Patterson Lake peninsula, at the east end of Beet Lake, and on Forrest Lake. Additional sites other than the Gedak Lake camp were provided by CRDN (TSD V.2: CRDN) but could not be validated against other information sources. The CRDN reported that they were in the process of verifying the location of cabins and camps, which would be updated as available (TSD V.2: CRDN).

17.3.6 Parks and Protected Areas

Parks and protected areas include provincial parks, Canadian heritage rivers, national historic sites, and wildlife refuges. The RSA contains all or portions of the Clearwater River Provincial Park, the Clearwater River Canadian Heritage River, the Methye Portage Historic Trail, and the Preston Lake Wildlife Refuge (Figure 17.3-3). There are no parks or protected areas located in the LSA.

17.3.6.1 Provincial Parks

In the RSA, Clearwater River Provincial Park is located approximately 60 km northeast of La Loche on Highway 955 (Figure 17.3-3). The park is accessed just north of the bridge over the Clearwater River near the Warner Rapids, known as the Warner Rapids bridge. The park spans 200,000 ha and is classified as a wilderness site, meaning that amenities are limited to tenting sites, primitive (i.e., no amenities) sites, and non-electric sites (Tourism Saskatchewan 2021c). Park uses include activities such as birding, wildlife viewing, hiking, canoeing, and fishing. Because of the remoteness of the park and the expertise required to navigate the high difficulty ranked (i.e., class II to IV) rapids, it is recommended by Saskatchewan Parks that only experienced canoeists use the river system.

17.3.6.2 Canadian Heritage River

The Canadian Heritage Rivers System is Canada's national river conservation program and gives national recognition of outstanding rivers and encourages the long-term management of these rivers to conserve their natural, cultural, and recreational values. Designated in 1987, the portion of the Clearwater River in Saskatchewan, recognized for its cultural heritage dating back over 6,000 years, has been designated as part of the Canadian Heritage River Systems (CHRS 2021). The Clearwater River natural heritage values include two distinct geological areas: the Precambrian Shield in the upper portion of the river and the Interior Plains downstream. Its cultural heritage stems from a travel route for Indigenous Peoples. The Methye Portage is an approximately 20 km historical trail that spans the plateau linking the Churchill and Arctic watersheds. The Clearwater River's recreational heritage provides visitors with an extended wilderness canoe and camping experience. The Saskatchewan portion of the river falls within the Clearwater River Provincial Park, while the Clearwater River committee provides leadership for the designation in Alberta (CHRS 2017).

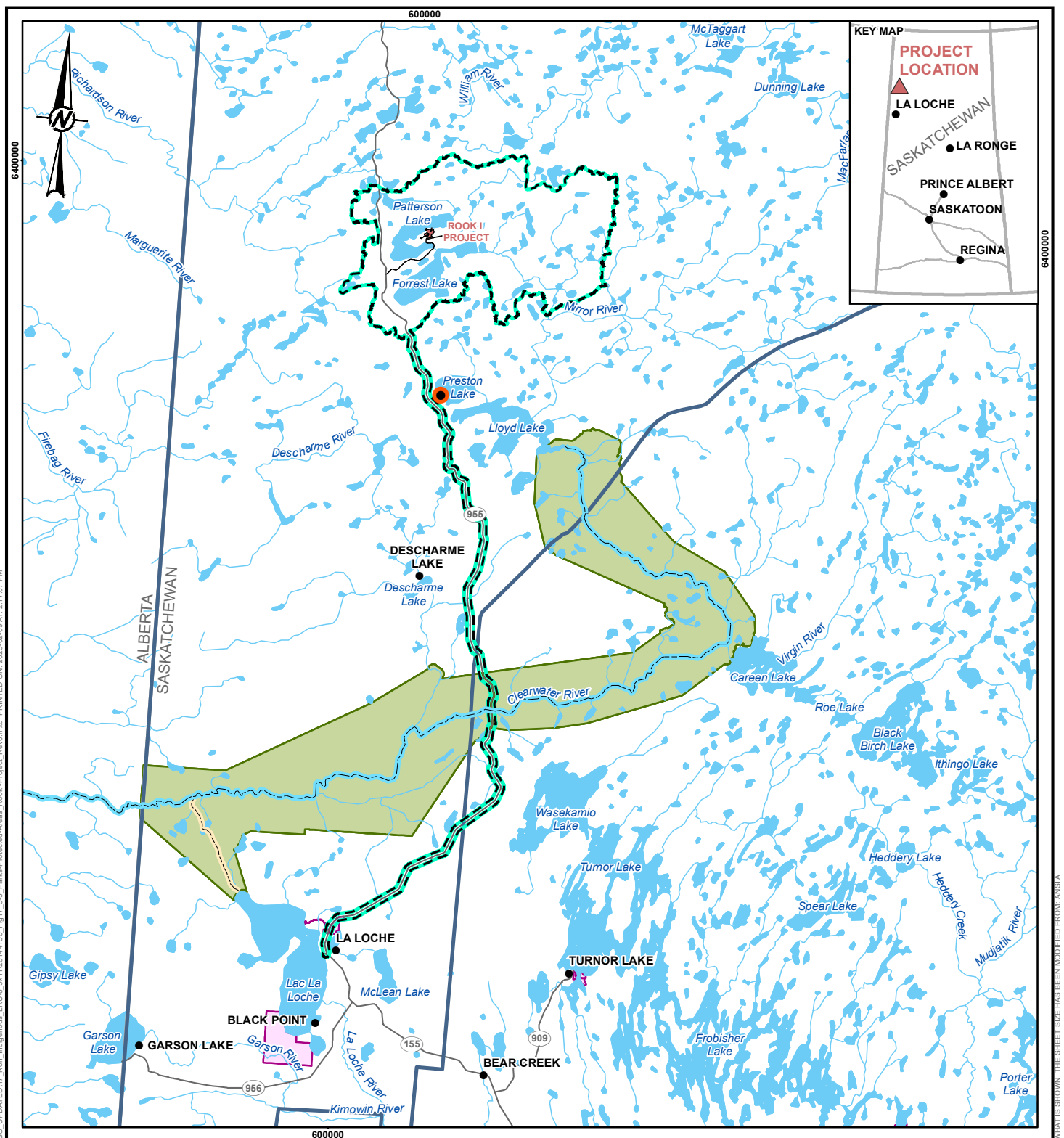
17.3.6.3 National Historic Site

Over 970 national historic sites commemorate unique Canadian history and culture coast to coast. Sites include sacred spaces, archaeological sites, battlefields, heritage houses, and historical districts (Parks Canada 2021a). In the RSA, the Methye Portage Historic Trail, also known as Portage La Loche, is located within the Clearwater River Provincial Park boundary and was designated a national historic site in 1933 (Parks Canada 2021b). Known for thousands of years prior, the Dene First Nations Peoples showed the route to explorer Peter Pond in 1778 (Tourism Saskatchewan 2021d). Spanning over 20 km, this trail links the east with the Athabaskan and McKenzie watersheds and was the first overland trade route to the northwest (Tourism Saskatchewan 2021d). The trail is accessed by boat at the end of Wallis Bay on Lac La Loche and ends at the Clearwater River.

17.3.6.4 Wildlife Refuge

The Wildlife Management Zones and Special Areas Boundaries Regulations, 1990, define wildlife refuges as areas for protecting, propagating, managing, controlling, regulating, or enhancing wildlife or its habitat (W-13.1 Reg 45). Generally, wildlife refuges are situated where migratory bird colonies are of importance to the Province (Lees 2018). These refuges are protected areas in which no hunting is permitted and any development requires additional permits. In the RSA, there is a wildlife refuge located on a small island on Preston Lake. Like provincial parks, wildlife refuges are not required to abide by the same regulations as WMZs and have their own set of management considerations as a protected area. The refuge at on Preston Lake protects a pelican colony during its nesting and rearing period (Sidle et al. 1984). As per The Wildlife Amendment Regulations, 2018, people are prohibited from being within 100 m of this refuge between 15 April and 15 September annually. Traditional land use dispositions (i.e., either leases or permits) are not issued within a 5 km buffer around this wildlife refuge (Happ 2020).

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LEGEND

- POPULATED PLACE
- PRESTON LAKE WILDLIFE REFUGE
- CANADIAN HERITAGE RIVER
- SECONDARY HIGHWAY
- WATERCOURSE
- INDIAN RESERVE
- PROVINCIAL PARKS
- WATERBODY
- PROPOSED PROJECT FOOTPRINT
- METHYE PORTAGE HISTORIC TRAIL
- OTHER LAND AND RESOURCE USE LOCAL STUDY AREA
- OTHER LAND AND RESOURCE USE REGIONAL STUDY AREA
- WILDLIFE REFUGE

REFERENCE(S)

1. BASE DATA OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
 2. PARKS OBTAINED FROM IHS MARKIT CANADA ULC.
- PROJECTION: UTM ZONE 12 DATUM: NAD 83

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PROJECT



NexGen
Energy Ltd.

ROOK I PROJECT

TITLE

PARKS AND PROTECTED AREAS

CONSULTANT



PROJECT

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17.3.7 Forestry and Wildfire Protection

This subsection discusses two topics: forestry and wildfire protection. Forests cover more than half (i.e., 34.3 million ha) of Saskatchewan, and almost one third of these forests are commercially viable (i.e., 11.7 million ha; Government of Saskatchewan 2021h). About 5.3 million ha of forested areas are considered productive enough for timber harvest, making forestry an important industry in the province. Wildfire protection is necessary in Saskatchewan due to the active wildfire regime and average of 435 fires per year in provincial forests (SPSA 2020b).

17.3.7.1 Forestry

The Forest Resources Management Regulations of Saskatchewan define forest operations as the harvesting, use, renewal, or maintenance of a forest product, and includes all related activities.

The RSA is north of the commercial forest zone; commercial forestry activity is not conducted in the LSA or RSA.

17.3.7.2 Wildfire Protection

Wildfires are unplanned fires that burn organic soil, grasses, shrubs, trees, and associated vegetative fuels (Provincial Auditor of Saskatchewan 2021). Wildfires can play a natural and beneficial role on the boreal landscape. When they do occur, wildfires can affect land use patterns for hunting, fishing, and trapping and burn cabins. The SPSA is responsible for the prevention, detection, control, suppression, and investigation of wildfires in Saskatchewan's wildfire management areas, including provincial forests (Provincial Auditor of Saskatchewan 2021). In the event of a wildfire, the SPSA assesses how to best manage the situation using a hierarchy of priority for "values-at-risk" including:

- human life;
- communities and major public industry and infrastructure;
- commercial forest; and
- other values (Dallyn 2012).

Given that there are valuable assets in areas where wildfire may occur, wildfire must be effectively managed to protect life and property. The decision to suppress (i.e., fight) a fire is made by assessing each wildfire and making decisions about how to manage it (Tymstra et al. 2020).

When there are structural values-at-risk that require wildfire protection, several strategies are used. For larger facilities, such as mine sites and similar facilities, facility workers would be trained to respond to immediate wildfire threats, and equipment to fight wildfires would be kept on site. Effective March 2015, *The Wildfire Act* (s.20) requires industrial and commercial operators operating during the wildfire season to submit wildfire prevention and preparedness plans.

Based on wildfire prevention and preparedness plans submitted, the SPSA stores information about values-at-risk in its Wildfire Management Database. Temporary values-at-risk include forestry, tree planting, and mining exploration work camps. Permanent values-at-risk include the name and location of communities, major public and industrial infrastructure, commercial timber, structures, natural resources, commercial industrial operations, cottages, and cabins (Provincial Auditor of Saskatchewan 2021).

The SPSA incorporated the ENV's Wildfire Management Branch and the Ministry of Government Relations' Emergency Management and Fire Safety in January 2019. The SPSA has fire bases, located in La Loche and

Buffalo Narrows with a Response Centre in Buffalo Narrows that oversees the Buffalo Narrows Protection Area where the Project is located. Emergency Services Officers and Protection Officers are responsible for communicating risk information concerning communities and commercial operators (SPSA n.d.). Wildfire response depends on the values-at-risk and an area that might benefit ecologically from a fire. In these areas, consideration is given to fighting fires based on a careful assessment of the values present (Dallyn 2012; Saskadapt 2021).

The CRDN are concerned that the Province's fire management approach leaves their homelands vulnerable to fire and note that their "cabins are ... not protected in the event of fire" (TSD V.1: CRDN). Both the BRDN (and MN-S also stated that the fire management approach has led to cabin losses (TSD III: BRDN; TSD IV: MN-S). In addition to the loss of cabins, the CRDN and BNDN have reported that increasing wildfires in recent years has led to decreases in wildlife populations across their traditional lands in northern Saskatchewan and resulted in a loss of hunting and trapping opportunities in the long term (TSD V.1: CRDN; TSD II: BNDN).

As mentioned in Section 17.3.5, the presence of resource user cabins may not be known to the SPSA depending on whether owners apply for leases.

Fires have played a dominant role structuring landscape patterns because they account for the vast majority of the area burned within the region (Kansas et al. 2016; Skatter et al. 2017). Scientific predictions suggest that wildfire will become both more severe and frequent by the end of this century (Saskadapt 2021). Overall, the area burned in Canadian forests has increased over the past several decades because of several factors, including climate change (Gillett et al. 2004; Girardin et al. 2013). This prediction has already been observed by CRDN and BNDN members who report that fires are more frequent, tend to be bigger, and burn hotter than in earlier times (TSD II: BNDN; TSD V.1: CRDN; TSD V.2: CRDN). The MN-S and BRDN have also commented on the effects of climate change in general on the land and resources (TSD III: BRDN; TSD IV: MN-S).

17.3.8 Mining and Exploration

Under *The Crown Minerals Act*, mineral exploration is allowed on granted mineral Crown dispositions and mineral extraction is granted under Crown leases. The Project includes 32 contiguous mineral rights claims covering a total area of 35,065 ha as of 1 January 2023. These claims are part of the NexGen's larger SW2 mineral claim package comprised of 61 contiguous mineral rights claims totalling 84,651 ha (Figure 17.3-4).

The Project is located on provincial Crown Land; as the owner, the Province of Saskatchewan can grant surface rights under the authority of the *Forest Resources Management Act* and the *Provincial Lands Act*. Granting surface rights for the purpose of accessing the land to extract minerals is done by issuing a mineral surface lease subject to the Crown Resource Land Regulations. Mineral surface leases have a 33-year maximum term which may be extended, as necessary.

NexGen does not currently hold surface rights of the Project site. Surface rights are obtained after the ministerial review and approval of the EA, and the successful negotiation of a mineral surface lease agreement with the Province of Saskatchewan.

About 92 mineral dispositions have been granted to 12 companies that are within or partially overlap the LSA (Figure 17.3-4; Table 17.3-5); all 92 mineral dispositions in the LSA are considered active. Although mineral dispositions are continuous in the area, they do not necessarily lead to the development of the resource because of the many factors that come into consideration (e.g., resource geology, environment, technical and economic feasibility, markets). Currently, of the active mineral dispositions (Table 17.3-5) and in addition to the proposed

Project, only the Fission Patterson Lake South Property is in advanced exploration and proposed for development.

Table 17.3-5: Active Mineral Dispositions within or Partially within the Local Study Area

Owner	Number of Parcels
Canalaska Uranium Ltd.	2
Clean Commodities Corp.	4
Dale Resources; T. Young; M. Lederhouse; Matthew J. Mason	1
Denison Mines Corp.	5
Fission 3.0 Corp.	11
Fission Uranium Corp.	16
Forum Energy Metals Corp.	1
James Hutton	1
NexGen	38
Orano Canada Inc.	3
Purepoint Uranium Group Inc.; Cameco Corporation; Orano Canada Inc.	9
Radio Fuels Corp.	1
Total	92

Source: SKCDC 2021.

There are five uranium operations located in northern Saskatchewan (Cigar Lake, Key Lake Mill, McArthur River, McClean Lake, and Rabbit Lake Mine and Mill; CNSC n.d). However, there are no current active mines in the LSA or RSA. Just outside the northern portion of the RSA, the now closed Cluff Lake Mine was operated by AREVA Resources Canada Inc. (now Orano). The mine closed in 2002, was decommissioned, and is in a transitional monitoring phase, after which the Province will take responsibility for the site (Hiyate 2020). The exact date this mine will transfer to the Province is not known.

Local exploration activities on Patterson Lake have affected local resource users. In reference to drilling and exploration camps located on both the Patterson Lake peninsula (NexGen) and west shore (Fission), exploration activities occurring as early as 2014 caused CRDN members to be “much taken aback by the increased intensity of exploration activities in the Patterson Lake area (i.e., helicopter and airplane surveys and drilling camps). The drilling barges operating on Patterson Lake were shocking and particularly disturbing” (TSD V.1: CRDN). The CRDN have commented about changes to the landscape that was previously unspoiled by human activity, clean and peaceful, which is now reported to be “all cut up and fragmented” (TSD V.2: CRDN). The CRDN report that the exploration activity has already “displaced CRDN members from a long-standing intensively utilized harvesting corridor and area, which includes trails and water routes, staging areas, and ancestral family use locales, cabins and camps” (TSD V.1: CRDN). The BNDN also discussed exploration activities that led to “too many roads and lots of activity going on” and that increased human activity and traffic along Highway 955 from mineral exploration in the Patterson Lake area have affected access to hunting and fishing areas (TSD II: BNDN). These comments show that Indigenous Groups have concerns with the level of exploration activity in the Patterson Lake area.

The Project Description for the Project was accepted 16 April 2019. Fission has recently entered the formal regulatory application process with the submission of its Project Description (Fission 2021b) to ENV and issuance of a ministerial determination on 13 December 2021 that an environmental impact assessment is required.

17.4 Project Interactions and Mitigations

The pathways analysis identified potential adverse effects of the Project on other land and resource use, identified practicable mitigation for these potential effects, and determined whether potential effects could be sufficiently mitigated such that they are not expected to cause a residual adverse effect. As described in Section 17.2.7, Project Interactions and Mitigations, the pathways analysis assigned each potential effect as:

- no pathway (i.e., mitigation results in no effect on other land and resource use);
- secondary pathway (i.e., mitigation results in a negligible effect on other land and resource use); or
- primary pathway (i.e., effect that is greater than negligible and carried forward for further assessment).

The pathway analysis is summarized in Table 17.4-1. The subsections following the table provide the rationale used to assign potential effects to the no pathway and secondary pathway categories and list primary pathways. Each Project interaction identified as a primary pathway was carried forward for detailed assessment in Section 17.4.3. Effects pathways apply to all Project phases unless otherwise noted.

Note that the mitigation measures are intended to address Indigenous and non-Indigenous land users and recognize there is considerable overlap between the two. The intent is to accommodate all, and not exclude any individuals, involved in other land and resource use. It is acknowledged that many mitigation measures outlined below (e.g., grievance mechanisms) would also overlap with mitigation measures presented in the Section 16. This approach is intended to collectively address all land users, both Indigenous and non-Indigenous, across these two sections.

The environmental design features and mitigation in Table 17.4-1 represent the list of key actions used to inform the pathway analysis as part of preparing the EIS. In addition to this list of key actions, NexGen would implement the Environmental Protection Program, which would describe the processes required to monitor and characterize emissions from Project facilities and activities. This program would be used to periodically evaluate mitigation performance and identify additional mitigation, where required, and prompt potential adaptive management measures (Section 17.8). This program would include provisions for unrestricted, independent Indigenous environmental monitoring by each of the four primary Indigenous Groups (Section 2). Where relevant, adaptive management measures may also be proposed to address uncertainties associated with effects predictions and mitigation. The process for determining when, how, and where to use adaptive management would be described within the Integrated Management System Manual.

Potential accidents and malfunctions that have the capability of influencing biophysical or human environments are assessed in Section 21, Accidents and Malfunctions.

Table 17.4-1: Potential Effects Pathways for Other Land and Resource Use

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
OLU-01	Project components or activities that contribute to the Project footprint during all Project phases : - land clearing, site preparation, and construction of facilities and infrastructure - process plant - handling and storage of waste rock, special waste rock, and ore - STP and water storage and effluent monitoring ponds - additional infrastructure (e.g., roads, airstrip, camp, maintenance shop, offices) - access road upgrade - removal of infrastructure - reclamation and revegetation of facilities and infrastructure - transportation of personnel and materials to and from the site	Access to and area available for land and resource use: Presence of Project infrastructure and activities could restrict access and reduce area available for or displace other land and resource users.	Limit the Project footprint to the extent practical using practices such as: - optimizing the use of cleared areas for Project activity - using existing access road infrastructure, including existing bridge crossing - storing tailings underground - designing an efficient infrastructure footprint (i.e., buildings clustered together) - Implement progressive reclamation and revegetation of disturbed areas no longer required Reclaim and revegetate areas where non-permanent Project facilities have been decommissioned - Develop and implement a Preliminary Decommissioning and Reclamation Plan - Implement a Security Program to provide safe and coordinated access via the access road to locations where other land and resource use is practiced - Develop a Ground Transportation Emergency Response Plan to address traffic safety on the access road, including education of workers (e.g., staff contractors) - Implement Indigenous and Public Engagement Program to share information on Project plans and activities - Establish a Project feedback and grievance mechanism to record and action issues identified by LPA residents (or other members of the public) - Implement Benefit Agreements	Primary pathway
OLU-02	Project components or activities that contribute to the Project footprint, air and dust emissions and deposition, sensory disturbance (e.g., noise, lights), and presence of workforce during all Project phases : - land clearing, site preparation, and construction of facilities and infrastructure - underground shaft and mine development - process plant and underground operations - handling and storage of waste rock, special waste rock, and ore - power generation - ETP and treated effluent discharge - STP and water storage and effluent monitoring ponds - water intakes for potable and process water - additional infrastructure (e.g., camp, maintenance shop, and offices) - removal of infrastructure - reclamation and revegetation of facilities and infrastructure - transportation of personnel and materials to and from the site - site and highway traffic	Quality of resource use experience: Sensory disturbances, changes to aesthetics, and safety concerns could change the quality of the resource use experience for other land and resource users in the area surrounding the Project. Similarly, perceptions of effects on the quality of the fish and wildlife resources may adversely affect the quality of the experience and/or result in certain areas being avoided. Knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future.	- Implement mitigations that avoid and limit effects on fish (Section 11.4, Project Interactions and Mitigations), vegetation (Section 13.4, Project Interactions and Mitigations), and wildlife (Section 14.4, Project Interactions and Mitigations) Enclose or dampen equipment in process buildings where the total sound level is expected to be more than approximately 80 A-weighted^(a) decibels, where feasible Use noise suppression (mufflers) on vehicles and inspect regularly to make sure they are functioning properly Limit light pollution to the extent practicable for built infrastructure - Implement progressive reclamation and revegetation of disturbed areas no longer required Reclaim and revegetate areas where non-permanent Project facilities have been decommissioned - Develop and implement a Preliminary Decommissioning and Reclamation Plan Apply water and/or suppressants to site roads, access road, and airstrip, as necessary. Use dust suppressants that minimize environmental risk and are government approved for use Limit vehicle speed on unpaved site roads to reduce fugitive dust during Construction and Operations - Work with local Indigenous Groups and communities to develop fishing policies that consider both fisheries protection and traditional use activities - Implement an Environmental Monitoring Plan that includes monitoring ambient air and water quality and applying adaptive management, if necessary - Implement a Project-specific Waste Management Program - Implement Radiation Protection Program to monitor and keep worker and visitor radiological exposures as low as reasonably achievable - Implement a Project-specific Environmental Monitoring Plan - Implement a Project-specific Effluent and Emissions Plan - Implement Indigenous and Public Engagement Program that includes, among other activities, sharing monitoring results with local communities, engagement of trappers and Indigenous land users to share Project information and address any issues as they arise, and sharing of environmental monitoring results with local communities - Implement a Security Program to provide safe and coordinated access via the access road to locations where other land and resource use is practiced - Develop a Ground Transportation Emergency Response Plan to address traffic safety on the access road, including education of workers (e.g., staff contractors) - Establish a Project feedback and grievance mechanism to record and action issues identified by LPA residents (or other members of the public) - Implement Benefit Agreements - Develop a Ground Transportation Emergency Response Plan to mitigate safety risks related to the transportation of materials and equipment to and from the Project site - Develop an Emergency Response Assistance Plan for the transportation of uranium concentrate from the Project site	Primary pathway

Table 17.4-1: Potential Effects Pathways for Other Land and Resource Use

Pathway ID	Project Components/Activities	Effects Pathway	Environmental Design Features and Mitigation	Pathway Assessment
OLU-03	Project components or activities that contribute to the Project footprint, air and dust emissions and deposition, sensory disturbance (e.g., noise, lights), and the presence of a workforce during all Project phases : - land clearing, site preparation, and construction of facilities and infrastructure - underground shaft - site traffic - transportation of personnel and materials to and from the site - power generation - process plant - handling and storage of waste rock, special waste rock, and ore - additional infrastructure (e.g., camp, maintenance shop, and offices) - water intakes for potable and process water - ETP and treated effluent discharge - STP and water storage and effluent monitoring ponds - removal of infrastructure - reclamation and revegetation of facilities and infrastructure	Availability of wildlife and fish: Project footprint and activities may alter the availability of wildlife and fish, thus reducing or displacing opportunities for other land and resource use.	Limit the Project footprint to the extent practical using practices such as: - optimizing the use of cleared areas for Project activity - using existing road infrastructure, including existing access road and bridge crossing - storing tailings underground - designing an efficient infrastructure footprint (i.e., buildings clustered together) - Implement mitigations that avoid and limit effects on fish and wildlife (Section 11.4, Section 14.4) - Implement a Project-specific Environmental Monitoring Plan - Implement a Project-specific Effluent and Emissions Plan - Implement Indigenous and Public Engagement Program to share information on Project plans and activities - Implement a Security Program to provide safe and coordinated access via the access road to locations where other land and resource use is practiced - Establish a Project feedback and grievance mechanism to record and action issues identified by LPA residents (or other members of the public) - Implement Benefit Agreements - Implement a Project-specific Environmental Protection Program. - Develop and implement a Preliminary Decommissioning and Reclamation Plan	Secondary pathway
OLU-04	Project components or activities that contribute to contaminant air criteria and dust emissions and deposition, and treated effluent release during all Project phases : - land clearing, site preparation, and construction of facilities and infrastructure - underground shaft and mine development - process plant and underground operations - underground tailings management facility - handling and storage of waste rock, special waste rock, and ore - power generation - ETP and treated effluent discharge - STP and water storage and effluent monitoring ponds - additional infrastructure (e.g., camp, maintenance shop, and offices) - removal of infrastructure - reclamation and revegetation of facilities and infrastructure - site traffic - transportation of personnel and materials to and from the site	Changes to air or water quality: - Changes to air or water quality may result in actual contamination of fish and wildlife and discourage other land and resource uses in proximity to the Project. - Changes to air or water quality may result in actual changes to human health, discouraging other land and resource uses in proximity to the Project. - Does not include perceived changes as addressed in pathway OLU-02, quality of resource use experience.	- Implement mitigations that avoid and limit effects on fish (Section 11.4), vegetation (Section 13.4), and wildlife (Section 14.4) Reclaim and revegetate areas where non-permanent Project facilities have been decommissioned - Develop and implement a Preliminary Decommissioning and Reclamation Plan - Implement an Environmental Monitoring Plan that includes monitoring ambient air and water quality and applying adaptive management, if necessary - Implement a Project-specific Waste Management Program - Implement Radiation Protection Program to monitor and keep worker and visitor radiological exposures as low as reasonably achievable - Implement a Project-specific Environmental Monitoring Plan - Implement a Project-specific Effluent and Emissions Plan - Implement Indigenous and Public Engagement Program that includes, among other activities, sharing monitoring results with local communities, engagement of trappers and Indigenous land users to share Project information and address any issues as they arise, and sharing of environmental monitoring results with local communities - Establish a Project feedback and grievance mechanism to record and action issues identified by LPA residents (or other members of the public) - Implement Benefit Agreements	No pathway
OLU-05	Project components/activities that have potential to alter the timing and thickness of ice formation and timing of ice thaw in localized area of the Patterson Lake North Arm – West Basin during all Project phases : effluent treatment plant and treated effluent discharge	Safety risk from altered ice conditions: Treated water discharged through the diffuser may change timing and thickness of ice formation and timing of ice thaw, which could increase risk of people breaking through the ice.	The final effluent treatment plant diffuser design would avoid effects to ice cover	No pathway

Bolded text represents the key topic of the environmental design features and mitigation.
(a) A-weighted decibels are an expression of the relative loudness of sounds in air as perceived by the human ear.
ETP = effluent treatment plant; STP = sewage treatment plant; BNDN = Birch Narrows Dene Narrows; BRDN = Buffalo River Dene Nation; CRDN = Clearwater River Dene Nation; MN-S = Métis Nation – Saskatchewan; NR2 = Northern Region 2; LPA = local priority area.

17.4.1 No Pathways

The following Project interactions were predicted to result in no pathway to other land and resource use and were not carried forward in the assessment.

OLU-04: Changes to air and water quality:

- Changes to air or water quality may result in actual contamination of fish and wildlife and discourage other land and resource uses in proximity to the Project.
- Changes to air or water quality may result in actual changes to human health, discouraging other land and resource uses in proximity to the Project.

This pathway has been addressed through intermediate components and VCs (Section 7.2, Air Quality; Section 10, Surface Water Quality and Sediment Quality; Section 11, Fish and Fish Habitat; Section 13, Vegetation; Section 14, Wildlife and Wildlife Habitat) and the environmental risk assessment (TSD XXI, Environmental Risk Assessment) by predicting changes to several ecological receptors, of which lake whitefish, northern pike, moose, and spruce grouse are of relevance to other land and resource users. This pathway focuses on the health of the resources relied on by resource users (e.g., fish, moose) due to potential physical and chemical changes to air and water quality, and the potential for actual contamination to discourage land use. Perceived changes in resource quality are separately addressed in quality of resource use experience (pathway OLU-02, Section 17.4.3).

Activities such as land clearing, site preparation, construction of facilities, site traffic, handling of waste rock during Construction and Operations, and removal of infrastructure and revegetation during Closure would generate fugitive dust (Section 7.2). Accumulation of airborne dust produced from the Project could result in local and direct changes to vegetation (Section 13.4), which could affect wildlife habitat. Metals and radionuclides in dust could also affect plants, either indirectly through the soil (Section 12.4.2, Secondary Pathways) or directly through the surface of the plant (Section 13.4), which could change wildlife. In addition, participants of the 2021 trapper's workshop and LPA community members commented on the potential Project effects on water quality, fish, and wildlife in the area of the Project.

An ecological risk assessment was completed to determine the health risks to aquatic and terrestrial wildlife receptors from the Project air emissions, which included inhalation and ingestion (i.e., soil, sediment, water, plants, animals) exposure pathways. The risk assessment modelled exposure pathways during Operations and an upper bound scenario (i.e., a more conservative, precautionary model). Results indicated that predicted levels of metals and radionuclides in the environment from the proposed Project for the upper bound scenario would not cause adverse effects on the health of wildlife VCs and other wildlife receptors (TSD XXI).

Following Project Closure, runoff and seepage from the WRSAs and groundwater flow from the underground tailings management facility could alter surface water quality in Patterson Lake and adversely affect the health, survival, and reproduction of wildlife. Proven engineered designs would be applied to the proposed Project to limit runoff and seepage from WRSAs such as installing covers on the WRSAs at Closure. During Operations, potentially acid generating waste rock would be separated from non-potentially acid generating waste rock, and special waste rock would also be stored separately. The special waste rock stockpile and potentially acid generating WRSA would be lined with high density polyethylene to prevent seepage (Mine Waste Management Plan). Engineered paste tailings would be used to permanently store tailings in the underground tailings management facility to control sources of COPCs.

The far-future scenario was assessed using the regional surface water quality model and included an upper bound scenario (Section 10.2.8, Residual Effects Analysis). Most water quality parameters remained below their respective threshold values in the far-future scenario, except for cobalt and copper. In this scenario, cobalt exceedances were predicted for Patterson Lake North Arm – West Basin and Patterson Lake South Arm. Copper exceedances were predicted for Patterson Lake North Arm – West Basin (Section 10.5.1.2, Regional Surface Water Quality Model). For the upper bound scenario, cobalt exceedances were predicted for Patterson Lake North Arm – West Basin, Patterson Lake South Arm, Forrest Lake North Basin, and Beet Lake. Copper exceedances in the upper bound scenario were predicted for Patterson Lake North Arm – West Basin and Patterson Lake South Arm (Section 10.5.2.1, Regional Surface Water Quality Model).

The ecological risk assessment applied the modelled concentrations of water quality constituents as input values for exposure pathways associated with the ingestion of sediment, water, plants, and animals to determine the health risks to ecological receptors for the far-future and upper bound scenarios. The ecological risk assessment predicted that changes in surface water quality for the upper bound scenario would not cause adverse effects on the health of ecological receptors (TSD XXI).

Regarding fish, the results of the risk assessment indicated that direct toxicity from exposure to elevated copper concentrations cannot be ruled out for selected aquatic receptors (i.e., fish and fish food). An aquatic health assessment was undertaken to further evaluate the potential effects of exposure of aquatic biota in Patterson Lake to elevated copper concentrations (Appendix 11A, Aquatic Health Assessment of the Potential for Adverse Effects of Predicted Far-Future Copper Concentrations in Patterson Lake), focusing on the limited instances where concentrations exceed the minimum receptor-specific threshold of 0.002 mg/L. Predicted concentrations above the low effect threshold may result in potential adverse effects on sensitive aquatic receptors. Therefore, a review of the potential magnitude of effects on sensitive species was undertaken. The results of this analysis indicated that adverse effects on aquatic biota are unlikely to occur because predicted copper concentrations are lower than the lowest low effect concentration for the most sensitive aquatic species.

The environmental risk assessment also considered exposure to radon gas. All predicted radon gas emissions are well below the radiation dose benchmarks for all ecological receptors. Overall, the results indicate that there would be no adverse environmental health effects on terrestrial and aquatic receptors from Project-related air emissions and changes in water quality. Therefore, this pathway was determined to have no measurable effects on the health of the resources used by other land and resource users and was not carried forward in the assessment.

The human health risk assessment (Section 15, Human Health; TSD XXI) considered exposure to radionuclides and non-radionuclides during Operations (i.e., identified as the highest risk period for the Project) due to direct exposure (i.e., breathing or skin contact) or consumption of water and country foods. This pathway focuses on the health of humans. The dose limit for radiation protection from radionuclides is 1 millisieverts per year (mSv/yr). For non-radionuclides constituents of potential concern, a toxicity reference value is used to assess risk. There are no predicted exceedances of the public dose limit of 1 mSv/yr, and there are no exceedances of the toxicity reference values (i.e., hazard quotient less than 0.2) for human receptors for non-radionuclides and non-carcinogens (i.e., copper, cobalt, uranium). No significant adverse effect on any human receptors as a result of releases from the Project is likely during Operations for the Application Case and RFD Case. Therefore, this pathway was determined to have no measurable effects on the health of resource users and was not carried forward in the assessment.

To provide information to land users on any changes to air and water quality, an Indigenous and Public Engagement Program defines activities for sharing environmental monitoring results with local communities and

engaging trappers, outfitters, and other land users to share Project information, provide Project updates, and provide two-way communication opportunities to hear and address any issues or concerns (i.e., grievance mechanism). Also, through the Benefit Agreements there would be a commitment by NexGen to fund independent Indigenous Monitors for each of the four primary Indigenous Groups. NexGen would provide required assistance and support to the Indigenous Monitors when on-site.

OLU-05: Safety risk from altered ice conditions:

- Treated water discharged through the diffuser may change timing and thickness of ice formation and timing of ice thaw, which could increase risk of people breaking through the ice.

Treated water from the ETP for the proposed Project would be discharged through a diffuser in the Patterson Lake North Arm – West Basin. Evaluation of the conceptual design suggested that operation of the diffuser is expected to increase the flow velocity at the lake water surface, which could delay ice freeze-up, reduce ice thickness if ice is formed, and advance ice break-up in a localized area around the diffuser. Project-related changes in ice conditions could increase the risk of injury or mortality if any people walking or snowmobiling over this area of Patterson Lake break through the ice. To prevent this risk, the final ETP diffuser design for the Project would avoid changes to ice cover relative to existing conditions; therefore, this pathway was not carried forward in the assessment.

17.4.2 Secondary Pathways

OLU-03: Availability of wildlife and fish:

- Project footprint and activities may alter the availability of wildlife and fish, thus reducing or displacing opportunities for other land and resource use.

The species potentially affected by the Project and relevant to recreational hunting and trapping include moose, black bear, grey wolf, beaver, and American marten. Moose are hunted recreationally by non-Indigenous users. Black bear hunting is conducted through outfitting operations. Commercial trapping focuses on American marten, with grey wolf and beaver trapped infrequently. Changes to the distribution of wildlife would occur through direct removal or alteration of soil and vegetation leading to loss of wildlife habitat; alteration of final terrain and soil conditions that could change the final ecosystems that could be reclaimed on the landscape; and sensory disturbances such as the presence of people, lights, dust, smells, and noise (Section 14.4, Project Interactions and Mitigations). Limiting the possession of firearms to only authorized personnel on site as required by the Nuclear Safety Regulations would prevent hunting by the workforce. The Waste Management Program would be implemented to limit the attraction of wildlife to the Project (Section 14.4).

The wildlife assessment (Section 14) includes the following VC species that are hunted or trapped by resource users in the other land and resource use LSA: moose, black bear, grey wolf, and beaver. American marten was not included as a wildlife VC due to ecological and assessment redundancy with other VCs (Section 14.2.2.1, Valued Components). However, American marten was identified as preferred harvest species and was included in the assessment of other land and resource use. The assessment of effects on the upland ecosystem VC, specifically mature forest, was used to determine potential effects on American marten. While the assessment of Project effects to wildlife considered three measurement indicators for each species, the survival and reproduction indicator was most relevant to the availability of wildlife for harvesting, combined with the overall conclusions of Section 14. Survival and reproduction are tightly associated with habitat availability and distribution (the other two measurement indicators for wildlife). Based on these parameters, the Project is

expected to have a negligible effect on the abundance and distribution of each of these species, as summarized below. Refer to Section 14 for the assessment details.

- **Moose:** The proposed Project is not expected to have a measurable effect on moose survival and reproduction. The calculated losses of suitable moose habitat in the RSA, which may affect survival and reproduction rates, represent 815.2 ha (1.0%) in the Application Case relative to the Base Case. These changes are expected to be well within the resilience and adaptive capacity limits of moose, which are habitat generalists and capable of utilizing a variety of land cover types. Based on a home range size of 97 km² (9,700 ha), the estimated loss of 815.2 ha of low, moderate, and high suitability moose habitat comprises less than one moose home range. Habitat loss caused by the Project is expected to have a negligible effect on the abundance and distribution of moose. Although moose are expected to avoid areas associated with high levels of human presence and noise (i.e., area around Patterson Lake), this avoidance is unlikely to influence survival or reproduction because suitable habitat outside of the wildlife LSA remains abundant and well connected and distributed across the wildlife RSA.
- **Black bear:** The proposed Project is not expected to have a measurable effect on black bear survival and reproduction. Sensory disturbance may affect reproductive success and survival of some individuals in close proximity to the Project as a result of denning site abandonment, early emergence from hibernation, or avoidance of areas near the Project. However, these effects are not expected due to mitigation and presence of poor-quality denning habitat under existing conditions. The calculated losses of black bear habitat in the wildlife RSA in the Application Case would be 946.8 ha (1.1%) and 911.0 ha (1.0%) of available low, moderate, and high suitability spring and fall habitat, respectively. These changes are expected to be well within the resilience and adaptive capacity limits of black bears. Using a home range size of 79.8 km² (7,980 ha), the estimated losses of suitable spring and fall habitat is unlikely to affect more than one individual. The anticipated loss of suitable habitat is not predicted to influence black bear survival or reproduction because suitable habitat remains abundant and well connected and distributed across the wildlife RSA. As habitat availability is not limiting, black bears would be expected to shift or alter their home ranges to exclude areas of high disturbance or use these areas less frequently when human activity levels are higher.
- **Grey wolf:** The proposed Project is not expected to have a measurable effect on grey wolf survival and reproduction. A total of 946.8 ha (1.1%) and 846.2 ha (1.2%) of available low, moderate, and high suitability habitat would be lost in the wildlife RSA in the Application Case during the snow-free period and winter, respectively. Grey wolves are highly adaptive and expected to be resilient to the small Project-related changes in availability and distribution of habitat. A change in prey availability could affect grey wolf survival and reproduction. However, large or significant changes to moose or beaver (i.e., two important prey species) abundance and distribution are not predicted. Reproductive output and survival could decrease if wolves are forced to occupy marginal or lower suitability habitat. Conservatively assuming that the entire maximum disturbance area (980.8 ha) becomes unsuitable for grey wolves, the loss of habitat would remove approximately 1.5% (981 ha of 66,000 ha) of a core wolf home range. Project-related losses to available grey wolf habitat are not expected to result in effects on the abundance and distribution of grey wolves.
- **Beaver:** Changes to beaver survival, reproduction, and abundance because of alterations to the amount, distribution, and connectivity of habitats are expected to be small because there is limited availability of suitable beaver habitat in the wildlife LSA under existing conditions. The Project would largely alter poor suitability habitat. Beavers are also relatively tolerant of sensory disturbance associated with human and

infrastructure presence. Changes to the local and regional distribution of habitats would be small and highly localized and beaver habitat should remain well connected through existing wetlands, waterbodies, and watercourses. Loss of all suitable available habitat (36.2 ha) represents about 4 home ranges and loss of available high and moderate suitability habitat (7.4 ha) represents less than one annual home range for beavers in the boreal region. Habitat loss is unlikely to have a measurable effect on the beaver population in the RSA. Habitat is not considered limiting for beavers; they can utilize different types of landscapes because they can engineer their environment. Specifically, beavers can build dams to increase the suitability of habitats.

- **American marten:** Although American Marten was not an identified as a wildlife VC, changes to the upland ecosystem VC is representative of marten habitat (Section 14.2.2.1 Valued Components; Table 14.2-1). Suitable habitat for American marten in the vegetation RSA is represented by landcover types associated with mature upland deciduous, coniferous, and mixed deciduous-coniferous ecosites, which were defined in the vegetation assessment (Section 13.2.6.1.1, Upland Ecosystem Mapping; Table 13.2-3). Subsequently, changes in the availability of mature upland ecosites from the proposed Project (Section 13.5.1, Upland Ecosystems) were used to determine the residual effects from changes in the availability and distribution of suitable habitat on American marten. The Project is expected to result in a loss of 112.1 ha of suitable habitat for American marten, representing 0.6% of the total available suitable habitat in the wildlife RSA. Based on a home range size of 200 ha, the anticipated loss of 112.1 ha of suitable habitat represents approximately 60% of a single American marten home range. A 200 ha home range size is at the low end of the recorded values for home range size in North America (Smith and Schaefer 2002). Compared to the highest value for home range size (i.e., 9,700 ha) recorded in Smith and Schaefer (2002), the 112.1 ha represents 1% of a single home range.

American marten display life history traits (e.g., high mobility, strong dispersal ability; Buskirk and Rugiero 1994) that provide flexibility to adapt to different types of human development. The Project is not expected to have a measurable effect on American marten survival and reproduction. Incremental changes to habitat availability, habitat distribution, and survival and reproduction from the Project are expected to remain within the species' resilience and adaptability limits and result in a negligible change in American marten abundance and distribution.

In total, the Project would remove 981 ha of land (the maximum disturbance area) during Construction, Operations, and the Active Closure Stage for 43 years. Regrowth of mature upland forest habitat, such as that used by American marten, would take longer than 43 years extending from 60 to 80 years after the Active Closure Stage (Section 13.5.1). As part of the Project design, NexGen optimized the use of cleared areas for Project activities by using existing road infrastructure, including the existing bridge crossing; using underground storage for tailings; and designing an efficient infrastructure footprint (i.e., buildings clustered together). Efficient use of land reduces the effect of the Project on other land and resource use. Hunting opportunities by workers on site would be limited by prohibiting firearms or other hunting equipment by unauthorized personnel on site (Nuclear Safety Regulations).

Overall, the Project would have negligible effects on moose and black bear hunting due to a low level of recreational hunting presently occurring in the other land and resource use LSA (Section 17.3.1, Hunting) and a negligible change to the abundance and distribution of these species (Section 14). Low levels of trapping in the Project footprint and negligible effects to species trapped, combined with limited geographical extents of the effect, are expected to limit the effects on trapping to a negligible level. Access to resource harvest locations may change, which is discussed in Section 17.5.1.1, Access to and Area Available for Land and Resource Use.

Overall, the Project would have negligible effects on fishing success in the LSA due to a low level of recreational fishing (Section 17.3.3, Fishing) present and negligible effects on fish and fish habitat. The use of the LSA by recreational fish harvesters has not been confirmed; however, clients of Forest Lake Outfitters fish Patterson Lake and may consume fish. The quality of fish for consumption is discussed in detail in the fish and fish habitat assessment (Section 11) and human health risk assessment (Section 15.9, Key Findings) and fish would remain safe to eat even at high consumption rates.

The Project would require in-lake infrastructure on Patterson Lake, which would include a fresh water intake, treated effluent diffuser, a treated sewage outfall, and associated pipelines (Section 5, Project Description). The installation and operation of in-lake infrastructure would result in either a direct loss or alteration of fish habitat in Patterson Lake, and turbulence from in-lake infrastructure operation may affect fish habitat in Patterson Lake, which could affect the distribution of fish. The in-lake infrastructure is not expected to have a measurable effect on the abundance of northern pike, lake whitefish, walleye, and lake trout (Section 11). The infrastructure footprint is small and would be sited away from sensitive habitat. The Project site entrance would include a gatehouse to limit public access. Potential changes in angler pressure and fish harvest levels in Saskatchewan would continue to be managed by ENV, which is the provincial government agency responsible for managing fisheries resources in the province. With respect to Construction and Operations staff on site, NexGen would gather feedback on whether a no-fishing policy is a desired mitigation to reduce effects on harvested fish populations from increased fishing pressure.

In summary, with the identified mitigation measures, the potential effect on the availability of fish and wildlife for harvesting with respect to other land and resource use is predicted to be negligible, and so this pathway was not carried forward in the assessment.

17.4.3 Primary Pathways

The following Project interactions were predicted to be primary pathways to other land and resource use and were advanced for further assessment of residual effects (Section 17.5, Residual Effects Analysis):

OLU-01: Access to and area available for land and resource use:

- The presence of Project infrastructure could restrict access and reduce area available for or displace other land and resource users.

OLU-02: Quality of resource use experience:

- Sensory disturbances, changes to aesthetics, and safety concerns could change the quality of the resource use experience for other land and resource users in the area surrounding the Project. Similarly, perceptions of effects on the quality of the fish and wildlife resources may adversely affect the quality of the experience and/or result in certain areas being avoided. Knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future.

17.5 Residual Effects Analysis

17.5.1 Application Case

17.5.1.1 Access to and Area Available for Land and Resource Use

The proposed Project would be located 130 km north of the Northern Village of La Loche, and 640 km northwest of the city of Saskatoon with few overlapping industrial developments in the RSA. Therefore, the effects felt by the community would be lower than if the Project were located in closer proximity to communities and had more surrounding development (Intergroup 2013).

The presence of Project infrastructure, including management of site access, could change access for other land and resource use. The access road gatehouse and NexGen safety policies would restrict access to the surface lease area for the safety of employees and harvesters (Figure 17.1-3) and would displace all resource use activities currently occurring within the maximum disturbance area. Access to parts of Patterson Lake may be temporarily restricted during construction of in-lake infrastructure, but unrestricted access to the lake is expected during Operations and Closure. Limited access would last until the Transitional Monitoring Stage is complete and the site is transferred to the Province of Saskatchewan for Institutional Control, when it would then become available for unrestricted land use activities.

The Project would remove up to 981 ha of land (i.e., maximum disturbance area) from access by resource users during Construction, Operations, and the Active Closure Stage. As part of the Project design, NexGen reduced the Project footprint and maximum disturbance area by optimizing the use of cleared areas for Project activities; using existing road infrastructure to the extent possible, including the existing bridge crossing; using underground storage for tailings; and designing an efficient infrastructure footprint (i.e., buildings clustered together; Section 5.4, Project Components). After a site tour of the Project footprint area with Elders, a Métis Local President said, “The best part I liked was the minimal disturbance and compact area. That really impressed me and the Elders I took up there. Other mining facilities I have visited have been huge” (BNDN-JWG 2021). The maximum disturbance area is 0.7% of the other land and resource use LSA.

The Project is not predicted to restrict access to or between the lakes in the other land and resource use LSA. Water surface elevations (WSE) on Patterson Lake and on downstream lakes were assessed as part of the hydrology assessment (Section 9.6.1, Residual Effects Analysis). Findings predicted up to a 1% increase in WSE on Patterson Lake (0.8 cm), and less than 1% increases in WSEs for Forrest, Beet, and Naomi lakes (0.2 cm to 0.4 cm; Section 9, Hydrology). Changes in WSE are expected to be negligible for the duration of the Project and therefore open-water navigation on lakes or downstream is not expected to be affected. These increases in mean monthly WSEs are large enough that they may be measurable, though they are well within the range of natural variation that exist in the Base Case.

The installation or operation of the in-lake infrastructure is not expected to affect recreational fish harvesters, as the amount of fish habitat affected in Patterson Lake is small and would not meaningfully affect fish populations or fisheries productivity. If required by DFO, NexGen would develop an offsetting plan and implement offsetting measures as required by the federal *Fisheries Act* and DFO policy. The in-water infrastructure would also not interfere with lodge and outfitting clients’ open-water fishing activities due to the infrastructure being submerged and the minimal footprint of the infrastructure itself.

A residual adverse effect of access to commercial trapping areas is predicted during Construction, Operations and Closure in the maximum disturbance area (981 ha) or in 0.7% of the LSA. The effect is expected to be

negligible due to the currently limited amount of trapping activity occurring within the maximum disturbance area combined with other commercial trapping areas available in close proximity. This assessment was shared by one of the participants in the 2021 trapper's workshop, who noted they did not believe the Project would affect their activities to the north and south of Patterson Lake; however, if the Project did affect them, they would advise NexGen. Other uranium mining and milling operations in northern Saskatchewan have demonstrated that trapping remains a commercially viable option for trappers in proximity to existing sites. Should the Project cause a loss of income for trappers, there is a history of compensation commitments to trappers in the province. In 2018, five compensation agreements were active around five mining operations in northern Saskatchewan, \$40,000 in cash payments were disbursed, and fuel valued at over \$6,000 was provided to support the continuation of trapping (Government of Saskatchewan 2018b).

Throughout all phases of the Project, monitoring and communication would be key to creating good working relationships that would facilitate open communication with local resource user groups such as the N-19 Trappers Association (Section 17.8). If the Project proceeds, NexGen commits to holding an annual meeting with N-19 trappers to provide a forum to discuss and resolve Project-related issues as they arise. Provisions would also be included in the Benefit Agreements including funding and human resources to support community-related initiatives including but not limited to cultural and traditional values and land uses (e.g., trapping); the establishment of the Environmental Committee to monitor environmental performance of the Project; and funding for full-time independent Indigenous Monitors to enable unrestricted environmental monitoring subject to the Monitor complying with appropriate health and safety and other reasonable site-specific policies.

17.5.1.2 *Quality of the Resource Use Experience*

The presence of the Project may affect the quality of the resource use experience in the following ways:

- changes to noise, light, air quality, and aesthetics during Construction, Operations, and the Active Closure Stage;
- changes to resource user safety along the access road and within the Highway 955 corridor during Construction, Operations, and the Active Closure Stage;
- changes to perceptions of the quality of the fish and wildlife resources during all Project phases; and
- knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future.

The two resource user groups that are expected to experience these changes are trappers and lodge and outfitting owners and clientele. The overall effect is discussed at the end of Section 17.5.1.2. Other groups such as recreational hunters, and recreational and commercial fish harvesters are either not active or only nominally active in the other land and resource use LSA.

Noise

Project activities would produce noise during Construction, Operations, and Active Closure Stage. Noise was frequently mentioned as a key interest and concern in LPA communities, and was noted as an important component (NexGen 2019). Noise was modelled during Construction and Operations to capture maximum predicted noise effects from Project-related activities (Section 7, Air Quality, Noise, and Climate Change). Most Project noise sources would be effectively continuous or steady state throughout day and night. Sources in this category include equipment associated with land clearing, site preparation and construction of facilities and

infrastructure, underground shaft and mine development, ventilation fans, site traffic, power generation, and process plant and underground operations. In contrast, noise associated with the Project airstrip would be intermittent. A temporal snapshot for the Closure Phase was not included because activities during the Active Closure Stage would be similar, but less intense, relative to activities during Construction (Section 7). The level of activities during the Transitional Monitoring Stage of Closure are expected to generate negligible noise levels relative to ambient (i.e., background) conditions; therefore, this stage was not modelled.

In the absence of Saskatchewan-specific regulations or guidelines, existing noise levels were characterized in the context of thresholds from federal guidance documents from Environment and Climate Change Canada (ECCC) and Health Canada, and the Alberta Energy Regulator Directive (Section 7.3.3, Existing Conditions). Noise was modelled to verify if ECCC thresholds for continuous daytime and nighttime noise of 55 decibels and 45 decibels, respectively, would be exceeded. Health Canada formulas were used to predict high annoyance and sleep disturbance noise during Construction and Operations. Analysis based on guidance from the Alberta Energy Regulator measured low frequency noise in a two-part test applicable for normal operations during Operations.

Project noise levels are predicted to comply with thresholds set out in ECCC (i.e., below 55 decibels [continuous daytime] and 45 decibels [continuous nighttime]), Health Canada (i.e., high annoyance and sleep disturbance), and Alberta Energy Regulator (i.e., low frequency noise) guidance documents (Section 7). Noise levels would be measured to prevent health and safety noise exceedances for workers or other receptors such as trappers and outfitting clientele. However, it is recognized that noise could have an effect on the aesthetics of individual resource users. Individuals may perceive and experience noise differently. For example, tolerance to noise may be higher for some individuals than others, especially when there are expectations of a quiet and peaceful wilderness experience. Sensitivity levels may vary among individual resource users and are difficult to measure quantitatively. However, it is possible that some individuals may be affected negatively and choose not to conduct trapping or purchase outfitting services offered near the LSA (Section 7.3.2, Figure 7.3-2). The degree to which avoidance may occur is subject to individual sensitivities and choices.

Light

A light analysis was undertaken to evaluate potential effects resulting from artificial lighting anticipated for the Project (TSD XI, Light Effects Analysis Report). The Project would increase ambient light at night in the other land and resource use LSA during Construction, Operations, and the Active Closure Stage. Quantitative light modelling focused on the Construction and Operations phases to capture the maximum predicted light trespass and sky glow from Project-related activities. As such, Active Closure Stage lighting was not modelled because it is expected to be less intense than during either Construction or Operations. The lighting requirements of the Project include illuminated parking lots, roadways, and the airstrip, which would have intermittent requirements. Project-related lighting may affect light trespass and sky glow, which are defined as follows:

- light trespass, which is light or illuminance that strays from its intended purpose onto nearby areas where lighting may be undesirable (e.g., light in the surrounding forest); and
- sky glow, which is stray light that is scattered in the atmosphere, brightening the natural sky and reducing star visibility (e.g., light reflecting off of particles suspended in the air).

Light trespass levels are predicted to be unchanged by the Project at resource use locations outside of the Project footprint. Sky glow during Construction and Operations would result in skies brighter than the current E1 lighting zone (i.e., equivalent to a relatively uninhabited rural area), making it an E2 lighting zone

(i.e., equivalent to a sparsely inhabited rural area) in localized areas such as the Patterson Lake peninsula and the northern portions of Patterson and Forrest lakes. Sky glow is expected to obscure faint stars for trappers and lodge and outfitter clientele on clear nights. This may affect area aesthetics for some trappers and outfitter clientele; however, changes to the star visibility are expected to be localized to the locations mentioned above.

Air Quality

Emissions of fugitive dust and small particles from burning gas and diesel fuel could affect air quality for resource users during all Project phases. Increased airborne dust could be caused by land clearing, site preparation and construction of facilities and infrastructure, site traffic, transportation of personnel and materials to and from the site, and handling and storage of waste rock and ore. Exposure to dust and small particles can occur through breathing, fresh water, and eating plants, fish, and wildlife. These pathways were assessed through the human health risk assessment (Section 15.4, Project Interactions and Mitigation).

Air quality was frequently mentioned as a key interest and concern in LPA communities, and was noted as an important component of the EIS (NexGen 2019). The presence of fugitive dust would be likely to occur during dry spring to autumn months and may affect the aesthetics for resource users. Air quality modelling was completed to predict the amount and spatial extent of dust deposition and associated constituents as a result of the Project during Construction and Operations (Section 7.2; Appendix 7A, Air Dispersion Modelling Report). Results indicate that the dust deposition rate would be higher during Operations than Construction, which is a function of the type of dust and the height that dust is released. Rates of dust deposition and accumulation would also depend on the rate of supply from the source, wind speed, precipitation events, topography, and vegetation cover (Brown and Berg 1980; Rusek and Marshall 2000).

The annual dust deposition rate during Operations was predicted to be 11.2 micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) at the boundary of the maximum disturbance area, which is well below the Saskatchewan Ambient Air Quality Standard of $60 \mu\text{g}/\text{m}^3$ (Section 7.2.5, Residual Effects Analysis). Therefore, dust from the Project would be highly localized within the other land and resource use LSA. Dust is not expected to affect winter activities, such as trapping and ice fishing.

Mitigation to minimize fugitive dust from the Project includes:

- implementing an Environmental Monitoring Plan that includes ambient air monitoring and adaptive management based on ambient air quality standards;
- application of water and/or dust suppressants to site roads, access road, and airstrip, as necessary;
- establishing a Project feedback and grievance mechanism to record and action issues identified by LPA residents (or other members of the public);
- funding full-time independent Indigenous Monitors to enable unrestricted environmental monitoring subject to the Monitor complying with appropriate health and safety and other reasonable site-specific policies; and
- limiting vehicle speed on unpaved site roads to reduce fugitive dust emissions.

Mitigation is expected to be effective on provincial roadways. Traffic volumes on both the access road and Highway 955 are predicted to be highest during Construction, due to transport of mining equipment, and are predicted to decline during Operations and drop further during the Active Closure Stage (TSD IX, Transportation Risk Assessment Report). Dust suppression and speed limit enforcement on regional roads such as Highway 955 would be a Provincial responsibility due to the public ownership of that road.

Aesthetics

In addition to the aesthetic aspect of changes to noise, light, and air quality, other factors that may affect the resource use experience are shoreline development and changes to the wilderness experience. Inclusion of these factors is supported by research conducted on the profitability of remote tourism, which found that the “most important features of the landscape are beauty, undeveloped shorelines, abundant fish and wildlife, and the peace and quiet associated with remote wilderness areas” (CPAWS–Wildlands League and Ontario Nature 2005). Visual aesthetics was noted as an important component in LPA communities (NexGen 2019). The proposed Project is expected to change the wilderness experience for trappers and outfitter clientele through observations of increased human activity detectable from the southern and northern arms of Patterson Lake, shoreline development on the Patterson Lake peninsula, and through observations of increased traffic on the access road and Highway 955.

NexGen has minimized the Project footprint and maximum disturbance area to the degree possible by: optimizing the use of cleared areas for Project activity; using existing road infrastructure, including the existing bridge crossing; using underground storage for tailings; and designing an efficient infrastructure footprint (i.e., buildings clustered together). Efficient use of land has limited the overall Project footprint, including shoreline development.

Safety

The Project may affect the safety of resource users along the access road and Highway 955 through increased traffic volumes, and increases in large vehicles (i.e., tracker trailers). This could affect trappers, lodge and outfitting operators, and lodge and outfitting clientele.

Traffic and safety were frequently mentioned as a key interest and concern in LPA communities, and were noted as important components (NexGen 2019). The LPA community members (NexGen 2019) and trappers participating in the 2021 workshop expressed concerns about increased traffic volumes and hauling trucks on the roads affecting safety, including from large trucks, narrow roads, dust, and loose gravel.

Effects on recreational fish harvesters or hunters are less likely due to their nominal use of the RSA. Signage would be installed to warn public of safety risks around the Project site. Road safety measures are outlined below.

Access Road

The access road to the Project site is appropriate for the level of traffic during existing conditions. However, several characteristics of the access road may cause issues that would be exacerbated by increased traffic volumes associated with the Project:

- steep grades and vertical crest curves may create undesirable sight distances for oncoming vehicles;
- lighting is absent except for a small, solar-powered light at the intersection with Highway 955; and
- drainage after heavy rains or spring thaw may flood the access road (Stantec 2019).

Access to a local outfitting operation, Forest Lake Outfitters (Section 17.3.4.1, Lodge and Outfitting Services) would involve sharing the access road with Project traffic for the first 6 km of the existing access road. This outfitter’s clients use 4×4 trucks to access an outpost camp on Forrest Lake. During the summer, ATV drivers also make use of the access road to access Vermeersch and Wickenkamp lakes on the opposite side of Highway 955. Trapping has also been reported along the access road (TSD V.2: CRDN). Shared road use by

over-dimensional vehicles carrying heavy loads simultaneously with untrained drivers of trucks, snowmobiles, or ATVs over 6 km of shared access road is expected to be incompatible for safety reasons, and would require that measures be taken to help protect people. The access road would be upgraded by NexGen for safety and ability to accommodate the increase in heavy equipment traffic, and a Ground Transportation Emergency Response Plan would be developed to promote safety for all users.

The Ground Transportation Emergency Response Plan would contain measures to address resource user traffic safety (i.e., mitigate safety risks related to the transportation of materials and equipment) to and from the Project site, including on the access road, and the Security Program would contain measures within the maximum disturbance area, including the following:

- Educate Project staff on traffic safety including consideration of the safety of other non-Project users of the roads.
- Provide an orientation and safety training for resource users who use the access road on a regular basis (e.g., trappers, lodge and outfitting service providers).
- Where necessary, establish procedures for escorting resource users who are driving personal vehicles on the access road (e.g., lodge and outfitting clients).
- Conduct annual safety audits to confirm that management measures are effective in protecting safe passage of Project and other vehicular traffic.
- Evaluate annually how the objectives of the Security Program were met using measurable indicators and modify the plan as needed to foster continual improvement.

Highway 955

The width of Highway 955 varies throughout the corridor and is typically between 7 m and 8 m wide. Road conditions were evaluated as 'fair' south of the Clearwater River crossing but as 'poor' north of the crossing (Stantec 2019). In the northern section, trees were observed directly adjacent to the road, leaving no pullout capability along this section of highway (Stantec 2019). Trappers also indicate that they use the Highway 955 corridor by parking on the side of the road and if the mine was approved, they believe road improvements would be necessary (2019 to 2021 KP interview program).

NexGen, has approached the Province regarding road improvements including increasing road width, increasing pullout frequency, and increasing routine maintenance along Highway 955 to accommodate the increase in traffic volumes. NexGen has committed to open and continuous dialogue with trappers that is intended to enable trappers to raise issues or concerns for discussion and resolution (2021 trapper's workshop). As part of an Indigenous and Public Engagement Program, NexGen commits to meeting regularly with trappers on an as-needed basis to discuss access or other issues. The Security Program would contain limited measures to address resource user traffic safety on Highway 955 due to this roadway being under provincial purview; however, road upgrade and maintenance cost-sharing agreements would include provisions for safe and ploughed pullouts for trappers. In addition, an Emergency Response Assistance Plan would be developed to support the response to any unplanned events that may occur along provincial roadways during the transportation of uranium concentrate from the Project site.

Perceptions of Fish and Wildlife Resource Quality

In Section 15 and as summarized in Section 17.4.1, No Pathways, the human health risk assessment considered radionuclide and non-radionuclide exposure during Operations and determined that risk thresholds

were not exceeded when compared to guidelines. It was concluded that the human health risks through exposure to contaminants of potential concern, such as through consumption of country foods, is negligible. However, land users' perceptions of the risk associated with consuming water, fish, and wildlife is also important to consider and could result in an adverse effect because of the influence this perception has on the resource use experience and, potentially, on the individual choices made to avoid land and resource use near the proposed Project. More general perceptions over the quality of country foods as potentially affected by the Project (e.g., the perception that animals may be in poorer health, smaller in size, or otherwise seen as less desirable) could also adversely affect land and resource use.

At the trapper's workshop (July 2021), individuals reported that fur-bearing species (i.e., American marten, fishers, lynx, and fox) harvested near Patterson Lake were not edible for human consumption or, in the case of lynx, not eaten (2021 trapper's workshop). Fish were not reported to be consumed either; fish harvested locally by trappers were used only to bait traps (2021 trapper's workshop). Since there is no known food produced by trappers in the Patterson Lake area, perceptions of the suitability of resources for consumption are likely not applicable to commercial trapping activities. Concerns were not raised about the health of the animals that would have bearing on trapping activity (2021 trapper's workshop). Concerns regarding the health of resources harvested for traditional purposes are discussed in Section 16.5.1.3.6, Perceptions of Wildlife, Fish, Water and Plant Resource Quality. As noted, each of the Benefit Agreements provide the option for independent Indigenous environmental monitoring opportunities, including sampling related to the Project. In addition, NexGen commits to providing opportunities for annual communication and information about the Project with trappers, and by providing periodic tours of the Project site for community members and holding annual open-houses or information sessions in Indigenous communities on Project-related matters, including but not limited to environmental and cultural protection.

Lodge and outfitting clients are understood to have a shore lunch of fish; however, given the nominal number of meals for a nominal number of fish harvesters and the lack of actual potential to affect human health, this effect is not likely to be detectable. As part of the Indigenous and Public Engagement Program, communications would be prepared for the public, including local outfitting operations and trappers, to advise on outcomes of the human health risk assessment and ongoing monitoring of the fish resource. A residual adverse effect is predicted on lodge and outfitting clients who use the LSA because of the perception of effects on fish. The extent of this effect depends largely on the perceptions of individual clients, which are difficult to predict and therefore remain uncertain. To address this uncertainty, NexGen would conduct regular meetings with local outfitters to provide Project updates and communicate on any issues and concerns as they arise in relation to the Project.

Knowledge of the Decommissioned Site

Knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future; for example, this knowledge could result in some trappers avoiding the area during the Transitional Monitoring Stage and beyond due to perceived concerns of contamination. Overall, local community members, including trappers, remain uncertain about land reclamation after closure of a uranium mine. Using Cluff Lake as an example, CRDN (2019a) shared with the CNSC:

Overall, there is a general perception that even though the site is being reclaimed and "looks better" it will never "be the same again" and should be "avoided in case there is risk to our family's health and safety".

While LPA communities have a long-standing and intimate relationship with the land and waters, outfitting clients are short-term visitors and will likely not know the local land use history. For this reason, they are less likely to have concerns about the quality of the land and waters.

Before the Project footprint is transferred to the Province of Saskatchewan, a Detailed Decommissioning and Reclamation Plan would be developed, submitted for review and approval, and implemented to promote unrestricted future use of the Project footprint for other land and resource use activities. NexGen communicated at BNDN and BRDN JWG meetings that the Northern Mines Decommissioning and Reclamation Guidelines (ENV 2008) have a general objective to leave all disturbed areas safe for traditional land use and in good ecological condition consistent with the surrounding physical and biological environment (BNDN-JWG 2021; BRDN-JWG 2021). The involvement of Indigenous communities in the development of the Detailed Decommissioning and Reclamation Plan would be key to encouraging future use of the site.

The timeframe of an altered landscape that can accommodate the resumption of resource use activities begins when the site is transferred to the Province of Saskatchewan for Institutional Control and onwards.

Overall, and considering the uncertainty associated with the potential perceptions outlined above, other land and resource use is conservatively predicted to be adversely affected in the LSA. The residual adverse effect would be limited to trappers and lodge and outfitting clientele.

17.5.2 Reasonably Foreseeable Development Case

The RFD Case considers the Fission Patterson Lake South Property in combination with the Project. Section 17.6 discusses the interaction of Project effects with climate change.

17.5.2.1 Access to and Area Available for Land and Resource Use

Infrastructure for the proposed Fission Patterson Lake South Property is expected to include an underground mine, mine infrastructure and facilities, site support infrastructure, processing plant buildings, waste rock storage facility, surface tailings management facility, permanent and temporary accommodation camps, mine support buildings, water management facilities, and an airstrip (Fission 2019, 2021a). Additional disturbance projected as a result of the Fission Patterson Lake South Property includes ground clearing to build and relocate roads. The life of the mine is expected to be three years of construction and seven years of production. Assuming that the duration of Closure is the same as the Project (i.e., 15 years), the maximum overlap of effects is 25 years for both projects.

The Fission Patterson Lake South Property has committed to minimizing the amount of land disturbed for the project (Fission 2019, 2021a). Cumulative effects from the two projects are likely but uncertain (i.e., probable) given that the Fission Patterson Lake South Property has recently entered the formal regulatory application process.

Assuming the proposed Fission Patterson Lake South Property would maintain similar access restrictions as assumed for the Project, approximately 1,545 ha of additional land would become unusable for the length of time the projects overlapped (i.e., 25 years). This restriction of access would result in a cumulative reduction of 2,526 ha (i.e., maximum disturbance area of 981 ha in addition to Fission project footprint of 1,545 ha) in land available for trapping in the LSA and changes in access and ice conditions on additional shoreline segments of Patterson Lake.

It is assumed that the Fission Patterson Lake South Property would not restrict navigation of Patterson Lake by small watercraft. This assumption would mean that access to Patterson Lake would be maintained for a local

outfitting operation. Some temporary restrictions in water access may occur if in-lake infrastructure is installed as part of the Fission Patterson Lake South Property. Allocation lakes of the same outfitter on the west side of Highway 955 may be affected by the proposed Highway 955 by-pass, a surface tailings management facility, and other infrastructure (Fission 2019). Should the infrastructure layout cause a loss of use of the two allocation areas west of the highway, the effect would be adverse for this outfitting operation.

Overall, an adverse residual effect is expected on commercial trapping due to the cumulative loss of trapping area amounting to an additional 1,545 ha or a combined total of 2.0% of the LSA. Although localized, this effect is predicted to be probable if the Patterson Lake South Property receives approval.

17.5.2.2 *Quality of the Resource Use Experience*

In the RFD Case, the presence of the Project and the Fission Patterson Lake South Property could affect the quality of the resource use experience through:

- changes to light, noise, air quality, and aesthetics during all Project phases;
- changes to safety on Patterson Lake in winter and along the Highway 955 corridor during all Project phases;
- changes to perceptions of the quality of the fish and wildlife resources; and
- knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future.

Light modelling results (TSD XI) suggest cumulative sky glow associated with Project Construction and Operations would convert portions of the other land and resource use LSA from an E1 zone, a relatively uninhabited rural area, to an E2 lighting zone (i.e., a sparsely inhabited rural area). This change in sky glow rating would occur in localized areas such as the Patterson Lake peninsula and the northern portions of Patterson and Forrest lakes. With the proposed Fission Patterson Lake South Property, brighter skies would convert all 16 receptors in the noise RSA (which is the same study area as for light) spanning from Gedak Lake to Forrest Lake to Naomi Lake to the E2 lighting zone (TSD XI).

With respect to noise effects, the Fission Patterson Lake South Property is a similar type of development to the Project and is anticipated to have comparable equipment and noise emissions. Noise levels from the Fission Patterson Lake South Property, in combination with either Project Construction or Operations activities, are predicted to comply with ECCC, Health Canada, and Alberta Energy Regulator guidelines in the noise RSA (Section 7.3.6, Residual Effects Classification). These measurement indicators (i.e., guideline thresholds) are designed to identify potential effects on the health and safety of workers at the Project site and at local receptor locations such as resource user or outfitter cabins. Project noise could have a qualitative effect on the aesthetics of resource use. Individuals may perceive and experience noise differently. For example, tolerance to noise may be higher for some individuals than others especially when there are expectations of a quiet and peaceful wilderness experience. Sensitivity levels may vary among individual resource users and are difficult to measure quantitatively. However, it is reasonable to expect that some individuals may be affected negatively and choose not to conduct trapping or purchase outfitting services offered in the RFD Case that expands the spatial distribution of noise to effectively cover all of Patterson Lake north to Gedak Lake and from Forrest Lake to Naomi Lake (Section 7.3.6).

Additional shoreline development segments relative to the Application Case would likely be visible on the west shorelines of Patterson Lake.

With respect to travel safety, traffic associated with the Fission Patterson Lake South Property would not overlap with the access road or site roads, though use of Highway 955 for project access would occur. Cumulative traffic volumes would incrementally change the nature and safety of access to trapping areas and outfitting operations. Highway 955 is under provincial purview.

As discussed in Section 17.5.1.2, at the present time, food is not a product of trapping in the Patterson Lake area, making the perception of contamination a nominal issue. Recreational hunting and fishing, other than that conducted by outfitting clientele, has not been confirmed in the LSA. Consumption of wildlife by outfitter clientele through hunting is unlikely due to black bear being the only species offered for guided hunts; consumption of fish by outfitter clientele may occur through shore lunches or evening meals. These meals would be limited. It is possible that some clientele may not be comfortable eating fish from waters near a mine and mill site because of perceptions of potential contamination. These perceptions may persist for some individuals despite predictions from the human health risk assessment (Section 15, Human Health; TSD XXI, Environmental Risk Assessment) showing that fish taken from waterbodies close to the Project site would be safe to eat (Section 17.4.1, No Pathways).

17.6 Residual Effects Classification and Determination of Significance

17.6.1 Classification Summary

Residual effects on other land and resource use from changes in access to and area available for land and resource use, and the quality of the resource use experience are summarized in Table 17.6-1 according to direction, magnitude, geographic extent, duration, reversibility, frequency, and probability of occurrence following the methods described in Section 17.2.8, Residual Effects Analysis. Effective implementation of mitigation outlined in Section 17.4 is expected to reduce the magnitude of effects on other land and resource use.

Table 17.6-1: Classification of Residual Effects on Other Land and Resource Use Measurement Indicators

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Access to and area available for land and resource use	Direction	▪ Negative	▪ Negative
	Magnitude	▪ Negligible: Restriction on access to land for safety purposes would affect few resource users; other alternative areas are locally available ▪ Nominal restrictions to small portions of Patterson Lake during Construction for installation of in-lake infrastructure	▪ Small: Reduction in access to land-based resource use; alternative areas are locally available ▪ Nominal restrictions to waterbodies for safety purposes
	Geographic extent	▪ Local: Maximum disturbance area of 981 ha (or 0.7% of LSA) would be restricted for trapping	▪ Local: Combined maximum disturbance areas of 1,545 ha and 981 ha, totalling 2,526 ha
	Duration	▪ 43 years – Construction, Operations, and Closure	▪ Maximum of 25 years, depending on the extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	▪ Reversible	▪ Reversible (Project and Fission Patterson Lake South Property)
	Frequency	▪ Continuous	▪ Continuous
	Probability of occurrence	▪ Certain (Project)	▪ Probable (Fission Patterson Lake South Property)
	Direction	▪ Negative	▪ Negative

Table 17.6-1: Classification of Residual Effects on Other Land and Resource Use Measurement Indicators

Measurement Indicator	Criterion	Rating / Effect Size	
		Application Case	RFD Case
Quality of resource use experience	Magnitude	- Negligible to small: Air quality and light residual effect would be difficult to detect and few resource users would experience changes - Noise within guidelines for health and safety, though individual sensitivities may vary - Aesthetics negligible to small though individual sensitivities may vary - Travel safety: negligible - Negligible to small effect on lodge and outfitting clients' perceptions of fish for consumption though individual sensitivities may vary	- Negligible to small: Air quality and light effects difficult to detect - Negligible noise, within guidelines for health and safety, though individual sensitivities may vary - Aesthetics negligible to small though individual sensitivities may vary - Travel safety: negligible - Negligible to small effect on lodge and outfitting clients' perceptions of fish for consumption though individual sensitivities may vary
	Geographic extent	Local: Maximum disturbance area, noise LSA, access road corridor, and Highway 955 corridor	Local: Cumulative altered shorelines on Patterson Lake, noise RSA, and Highway 955 corridor
	Duration	43 years – Construction, Operations, and Closure	Maximum of 25 years, depending on the extent of temporal overlap between the Project and the Fission Patterson Lake South Property
	Reversibility	Reversible	Reversible (Project and Fission Patterson Lake South Property)
	Frequency	Periodic: Changes are expected to occur consistently or at regular intervals and would vary with the use and user	Periodic: Changes are expected to occur consistently or at regular intervals and would vary with the use and user
	Probability of occurrence	Probable (Project)	Probable (Fission Patterson Lake South Property)

LSA = local study area; RSA = regional study area; RFD = reasonably foreseeable development.

17.6.2 Significance Determination

In determining the significance of effects to other land and resource use, consideration was given to the combination of residual effects (i.e., access to and area available for land and resource use, and the quality of resource use experience) combined with the overall presence of other land and resource use in the LSA as compared to the RSA. Due to the Project's remote location, resource use for commercial and recreational purposes is nominal (meaning virtually absent but not confirmed to be zero), and only two resource user groups were identified as potentially affected: trappers, and lodge and outfitting clientele. Other groups such as recreational hunters and fish harvesters, and commercial fish harvesters are not active or nominally active in the other land and resource use LSA, and other opportunities for these uses exist throughout the RSA.

Access to and Area Available for Land and Resource Use

For the Application Case, predicted changes in access to, and area available for, land and resource use as a result of the Project is predicted to be adverse, negligible, local, for the duration of the Project (i.e., 43 years for Construction, Operations, and Closure), reversible, continuous, and certain (Table 17.6-1). The magnitude of these changes is expected to be negligible as land-based access for resource use purposes is premised on safety, meaning that access would only be restricted in a small area to maintain both the safety of the operation and of resource users in the maximum disturbance area. Experience at other uranium mine sites in northern Saskatchewan suggests that trapping and outfitting can remain compatible activities with active mining operations, so long as effective communication with resource users is maintained, and accommodation of these

activities is supported in consideration of required safety measures (Intergroup 2013). Evidence from socio-economic monitoring of diamond mines in Northwest Territories indicates that, while predicted to decrease as a result of mining, trapping increased in local communities although the specific reasons for this were not explored (Intergroup 2013).

The geographic extent of changes to access for resource use is classified as local; however, the actual area restricted is the maximum disturbance area of 981 ha, representing a small portion of the LSA (0.7%). Although effects are predicted to last for the duration of the Project, they are predicted to be reversible following the Active Closure Stage as resource users are expected to be able to return to the maximum disturbance area to carry out land use activities.

Other land and resource activities such as trapping and outfitting have historically been adaptable and have shifted in response to external factors such as government programs/policies and/or external market forces. Mining represents an additional external factor, but the continued presence of trapping and outfitting in proximity to other uranium operations in Saskatchewan demonstrates that these activities can remain compatible and would continue to fluctuate relative to an array of factors, such as fur prices (Intergroup 2013). Should a loss of income occur, there are remedies such as trapping compensation agreements that have been implemented successfully with trappers around five mining operations in northern Saskatchewan (Government of Saskatchewan 2018b). At this time, the trappers do not predict their activities would be affected and they have agreed to raise any issues with NexGen as they arise (2021 trapper's workshop). NexGen is committed to maintaining positive working relationships with those active in areas proximal to the Project through on-going communication and implementation of adaptive management strategies should any issues arise over the course of the Project lifespan. Thus, opportunities for other land and resource use are predicted to continue at a similar level in the Application Case relative to the Base Case.

For the RFD Case, predicted changes in access to and area available for land and resource use as a result of the Patterson Lake South Property is predicted to be probable pending project approval, adverse, small, localized (i.e., in the LSA), for a period of overlap when both projects are being constructed/operated/closed (approximately 25 years), and continuous (Table 17.6-1). Land-based access for resource use purposes would be restricted in the Project maximum disturbance area of 981 ha and in the Patterson Lake South Property area estimated at 1,545 ha representing a small area (2,526 ha) and proportion (2.0%) of the LSA. Similar to the Application case, it is reasonable to assume the effects of the Patterson Lake South Property would be reversible following the project's closure because it would be bound by the same CNSC and ENV regulatory requirements that require the site to be restored to a condition similar to its pre-Project condition. Although there are no examples from northern Saskatchewan with uranium operations as proximal as the Project and the Patterson Lake South Property (i.e., approximately 4 km apart), there are existing operations wherein the same resource users are affected by multiple operations (e.g., the Key Lake Operation and McArthur River Operation) and uses remain compatible. While it is not within the operational control of the Project to minimize the effects of another project on changes in access to resources, there are actions NexGen could potentially take to help mitigate changes in access at a regional level. Such actions could include collaboration with Fission and other land and resource users on a regional scale as may be required. Regional initiatives to mitigate access could include promotion of continued land and water use close to the Project. Such initiatives would help maintain the area as an active landscape for resource users, particularly for trappers from local Indigenous communities. However, although NexGen would explore regional initiatives, these types of initiatives have not been considered within the significance determination of the other land and resource use VC because they have not yet been developed.

Quality of the Resource Use Experience

For the Application Case, the quality of the resource use experience is predicted to be adverse, negligible to small, local (within the LSA), 43 years duration, and reversible. Light trespass would remain unchanged, but there may be an increase of sky glow (for receptors within 10 km surrounding the Project) to levels above relatively uninhabited rural areas and potentially up to levels in sparsely inhabited rural areas. The effects of light would be minimized with infrastructure design. The effects to air quality (i.e., dust) could be mitigated to a negligible magnitude with appropriate dust suppression measures. Safety for other resource users would be managed through the Security Program. Noise is predicted to be within guidelines for health and safety and could be mitigated by enforcing speed limits for traffic, enclosing noise producing equipment, prohibiting the use of engine retarder brakes, and using noise suppression (i.e., mufflers) on vehicles. Aesthetics, perceptions of the quality of fish and wildlife resources, and knowledge of the decommissioned site are subject to individual perceptions and sensitivities and proximity to the Project. These effects are likely to be negligible overall but may affect some trappers and outfitter clientele while others may not be affected at all. Effects are expected to occur in the other land and resource use LSA such as along roadways but be most detectible in the noise and light LSA.

The majority of other land and resource use occurs in areas not proximal to the Project, and not within the areas that would form the Project footprint and the maximum disturbance area. Most overlap in uses occur as trappers and outfitters travel along the access road or in the LSA to access other areas. As such, the geographic extent of effects to the resource use experience is expected to be only in a small portion of the LSA, and potential conflicts in uses such as traffic management would be managed through the Security Program. Changes would be periodic (i.e., they would occur consistently at regular intervals – which in the case of outfitting is more likely in the spring/summer months and for trapping more likely in the winter months). Effects are considered to be reversible over time and uses are expected to be sustained as resource users become accustomed to the presence of the operation. NexGen is committed to maintaining positive working relationships with those active in areas proximal to the Project and would continue to encourage those uses so long as safety permits. Thus, opportunities for other land and resource use are predicted to continue at a similar level in the Application Case relative to the Base Case.

For the RFD Case, the quality of the resource use experience is predicted to be adverse, negligible to small, local, approximately 25 years duration (i.e., the time both projects overlap), periodic, reversible, and probable. In certain ways, the proximity of the South Patterson Lake Property to the Project is advantageous relative to the experience of resource users. The location of the two developments near each other concentrates disturbance to one portion of the LSA and limits the effects on the number of resource users (i.e., influences only those who use that portion of the LSA). The remaining land and resources in the LSA would be maintained and intact.

Similar to the Application Case, aesthetics, perceptions of the quality of fish and wildlife resources, and knowledge of the decommissioned site are subject to individual perceptions and sensitivities. Although these potential effects could be compounded by a second development, the same resource users in the LSA are potentially affected by both projects. Effects would be limited to perceptions of industry in the area and minor changes to natural aesthetics based on individual sensitivities, though outfitter clientele and trappers using the Patterson Lake area do have access to local alternate fishing and trapping locations. NexGen is committed to maintaining positive working relationships with those active in areas proximal to the Project and would be open to taking a regional approach to adaptive management and mitigation, if required. Overall, continued levels of opportunities for other land and resource use are predicted in the RFD Case.

Climate Change

The extent of changes to other land and resource use activities associated with climate change is inherently difficult to predict. Although projected future climate extremes indicate a future that is likely to be wetter annually (Appendix 22A, Section 22A4, Future Climate), climate change is still anticipated to increase fire frequency within the RSA (Hart et al. 2019). Changes associated with fire could affect travel in the LSA (e.g., cutting new trails through burnt areas); however, fire suppression activities would be enhanced according to Saskatchewan's fire suppression practices due to the presence of additional values-at-risk in the area. Changes to conditions in the LSA may result in increased expense (i.e., time and effort) and decreased safety (i.e., deadfall in burnt areas) to secure resources if areas in the LSA burn. However, fire-return intervals may be limited by self-regulation as young stands of trees burn less frequently due to fuel limitations (i.e., limited fuels from vegetation available to support a fire) in early successional vegetation that inhibit ignition (Hart et al. 2019).

Drought and flood conditions may also affect resource use and navigation in the open water season. Water surface elevations on Patterson Lake and on downstream lakes are predicted to result in negligible changes (i.e., 0.01 m or less) on Patterson Lake, Beet Lake, and Naomi Lake, making WSE change difficult to distinguish from existing conditions. This negligible change means that any water access via boat is predicted to remain within current water level variations. While conditions related to climate change may continue over a long term, resource users are expected to incrementally adapt to and become accustomed to new conditions.

Given ongoing mechanisms for communication, other land and resource users would have a forum to discuss and resolve any issues, and NexGen would remain open to working with other relevant stakeholder to address issues if they arise.

Significance Summary

Overall, the weight of evidence from the analysis, including consideration of experiences at other uranium operations in northern Saskatchewan where multiple uses remain compatible, predicts that other land and resource use could continue in local areas not affected by the projects and resources equivalent in abundance and quality would continue to be available to resource users. Changes to the aesthetics of other land and resource use would be primarily dependent on proximity to the projects and individual sensitivities. The number of resource users potentially affected are limited.

Based on the residual effects analysis, the residual adverse effects for both the Application Case and the RFD Case were determined to be not significant. Opportunities for other land and resource use are expected to continue. Monitoring and follow-up are described in Section 17.8.

Effects of climate change are likely to result from fire, flood or drought conditions in a beyond-regional context which may disrupt travel, safety and require increases in effort to harvest. While additional fire protection associated with the projects may reduce the incidence or extent of burnt land and associated costs for resource users in terms of time and effort, flood or drought conditions may impact travel on a periodic and seasonal basis. Given that Project-associated WSEs would not exceed natural variation, climate change-associated flood or drought conditions are not expected to be more severe than at locations outside of the maximum disturbance area. Therefore, when considering climate change in the RFD Case, effects were determined to be not significant. Regardless, climate change conditions will require other land and resource users to adopt strategies to remain safe and continue to practice other land and resource use.

17.7 Prediction Confidence and Uncertainty

Scientific inference is associated with uncertainty and prediction confidence depends on the level of uncertainty and the way it is addressed. The primary factors affecting confidence in the predictions made in the other land and resource assessment include:

- the availability and accuracy of baseline data;
- the level of understanding of the strength of primary pathways (i.e., mechanisms) in terms of the effects they are likely to have on fish and wildlife VCs and the other land and resource use VC (e.g., the relationship between cause and effect is clear as supported further by the analyses in Section 11, Section 14, and Section 15);
- the level of certainty associated with the effectiveness of proposed mitigations, where applicable; and
- the level of understanding of the cumulative drivers of change and associated effects on fish and wildlife VCs and the other land and resource use VC.

The data sources for the baseline conditions had limitations. Large geographical management units such as the WMZs, GBMUs, fur blocks, and recreational fishing zones prevent precise descriptions of harvest activities and locations within each zone. Management units may be as large as one third of the province, and the availability of data often depends on reporting requirements. Mandatory annual hunting surveys where participation and harvest rates are reported by WMZ were instituted in 2020; data collected prior to that date estimated total harvests from a sample of voluntary responses. While trapping and commercial fishing data are more precise than hunting data due to the stringent harvest reporting requirements in both industries, there is a data gap for the 2018/2019 trapping season production as this data was not compiled by ENV that year. The COVID-19 global pandemic disrupted travel in Saskatchewan and beyond for outfitting clients, commercial fishers, and trappers alike. The pandemic affected supply chains, fuel costs, and access to fur markets; closed fish processing plants; and has virtually eliminated American tourism since 2020. Inclusion of the 2019/2020 data likely resulted in a baseline description with lower resource harvests than may have otherwise been the case. Though qualitative, the effects of the COVID-19 pandemic have been described where applicable.

The data collected from KP interviews may not be representative of the perspectives of all lodge and outfitters and trappers. Key persons were selected based on their knowledge and experience that could be relevant to characterizing the other land and resource use VC. Data presented from the KP interviews are based on the individuals' knowledge and experience, and their willingness to participate and share data openly. Where possible, information provided was verified using other sources of information such as literature, interviews with former owners, website materials, and professional experience.

Uncertainty was managed by:

- reviewing historical data and relevant studies completed in the LSA and RSA;
- completing quality assurance and quality control of baseline data;
- validation with Indigenous and Local Knowledge where possible;
- triangulating data sources for verification of precision and accuracy; and
- comparing assessment results to relevant published scientific literature.

Remaining uncertainty was primarily addressed by making assumptions that overestimated rather than underestimated potential effects (i.e., a precautionary assessment). For example, the maximum disturbance

area used for the Project was conservatively sized to allow flexibility for potential future Project design changes. Also, the extents of the other land and resource use LSA were spatially inclusive (i.e., broad-based) to capture potential effects on resource users and resource use VC in recognition of the connectedness of land and resource use across the landscape. Overall, there is a medium-high degree of confidence in the predictions related to the changes to other land and resource use during Construction, Operations, and Closure.

The extent of climate change effects (e.g., future temperature increases) is difficult to project with certainty, as scientific knowledge of the processes is incomplete and the socio-economic factors that would influence the magnitude of such increases are difficult to predict (IPCC 2007). These conditions would require resource users to embrace adaptation strategies to remain safe and practice resource use.

17.8 Monitoring, Follow-Up, and Adaptive Management

This subsection presents a summary of the identified monitoring and follow-up required to confirm effects predictions and address the uncertainty identified in Section 17.7.

Specifically, follow-up and monitoring programs would be used to:

- evaluate the effectiveness of reclamation and other mitigation actions, and modify or enhance them as necessary through monitoring and developing updated mitigation measures, if required;
- identify unanticipated negative effects, including possible accidents and malfunctions; and
- contribute to the overall continual improvement of the Project.

Proposed recommendations for enhancement and monitoring are as follows:

- Include meetings with community members, commercial trappers, outfitters, and other potentially affected land users, as applicable, both independently and as part of the Indigenous and Public Engagement Program to review the previous season and understand if they experienced any issues or concerns that could be addressed. Conduct follow-up as needed.
- Conduct discussions and/or agreements with potentially affected lodge and outfitting operations and continue ongoing communications on an as-needed basis. The focus of discussions is anticipated to include access management, safety, and management of other potential interactions with the Project.
- Evaluate the results of the monitoring conducted by the independent Indigenous Monitors and suggest modifications to monitoring plans as required to conduct adaptive management and foster continuous improvement.
- Evaluate how the objectives of the Security Program were met using measurable indicators and modify the plan as needed to foster continual improvement.
- Develop and implement a Preliminary Decommissioning and Reclamation Plan.
- Meet with other mining operations active in the region to collaboratively identify concerns and develop effective responses to mitigate identified concerns.

In addition, Environmental Committees (i.e., one per primary Indigenous Group) composed of two NexGen and two Indigenous Group representatives would be established to act in an oversight manner to monitor the environmental performance of the Project and verify the parties are implementing the regulatory and environmental commitments made in respect of the Project.

Indigenous Groups have made recommendations related to mitigating the effects of the Project on the environment, including community-led long-term environmental testing and monitoring during Construction and Operations of the proposed Project (TSD IV: MN-S; TSD V.2: CRDN; YNLRO 2019). NexGen has committed to provide funding for the lifespan of the Project for a full-time independent Indigenous Monitor chosen by each primary Indigenous Group; this Indigenous Monitor would have access to conduct environmental sampling for the Project, subject to the Indigenous Monitor complying with appropriate health and safety and other reasonable site-specific policies. The Indigenous Monitor would be able to report openly and without restriction to the Environmental Committee and Indigenous Group's community members on the performance of the Project. The Indigenous Monitor would also provide regular reports to the Environmental Committee.

17.9 Key Findings

Due to the proposed Project's remote location, resource use for commercial and non-Indigenous recreational purposes (i.e., other land and resource use) is nominal, and only two resource user groups were confirmed to conduct activities in the LSA: trappers, and lodge and outfitting clientele. Other groups such as recreational hunters and fish harvesters, and commercial fish harvesters are not active or nominally active in the other land and resource use LSA; other opportunities for these uses exist throughout the RSA.

The assessment of potential effects of the proposed Project on other land and resource use incorporated information from a variety of primary and secondary sources. Analysis of potential effects considered information from other projects and the perspectives and concerns of resource users.

Many other land and resource use components did not have pathway linkages with the Project that needed to be considered for assessment. Those components included recreational hunting and fishing, commercial fishing, parks and protected areas, and forestry due to negligible levels of activity or lack of spatial overlap with the Project.

After the application of mitigation, residual Project effects on lodge and outfitting services and commercial trapping would result from the following pathways:

- The presence of Project infrastructure would restrict access and reduce area available for, or displace, other land and resource users.
- Sensory disturbances, changes to aesthetics, and safety concerns may change the quality the resource use experience for other land and resource users in the area surrounding the Project. Similarly, perceptions of effects on the quality of the fish and wildlife resources may adversely affect the quality of the experience and/or result in certain areas being avoided. Knowledge of the decommissioned site may change the perceived suitability of the area for other land and resource use in the future.

Residual effects were analyzed as part of both the Application Case and the RFD Case, which considered the cumulative effects of the Patterson Lake South Property. Potential effects resulting from climate change were also considered.

In summary, residual adverse effects on other land and resource use were assessed as not significant for both the Application and RFD Cases due to the limited number of resource users that have the potential to be affected, the negligible to small magnitude of the effects, the effects being local, and the effects being reversible.

As part of an Indigenous and Community Engagement Strategy, monitoring and adaptive management would involve regular communications with local community members, N-19 trappers, local outfitters, and other land users, as required; implementation and annual evaluation of the Security Program; and inclusion of community members such as trappers in the preparation and execution of the Detailed Decommissioning and Reclamation Plan and future iterations of the plan.

17.10 References

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